BEFORE THE NATIONAL GREEN TRIBUNAL

WESTERN ZONE BENCH AT PUNE

APPEAL NO. 631 OF 2025

IN THE MATTER OF:

M/s Samvedna Biomedical Waste Incinerator ...APPELANT

VERSUS

State Environmental Impact Assessment Authority, Gujarat & Ors. ...RESPONDENTS

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THROUGH

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Date: 10.02.2026

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AFFIDAVIT-IN-REPLY ON BEHALF OF RESPONDENT NO. 3 M/S SHREE KHODAL WASTE MANAGEMENT IN RESPONSE TO MEMORANDUM OF APPEAL NO. 631/2025(WZ)

1. I, Hetal Jethabhai Ahir, the authorized signatory of the Respondent No. 3 M/s Shree Khodal Waste Management, having my office at 620, 6th Floor, Fortune Business Hub, Near Shell Petrol Pump, Science City Road, Sola, Ahmedabad - 380060, do hereby state on solemn affirmation as under.
2. I say that I am presently the Partner, M/s Shree Khodal Waste Management, i.e. Respondent No. 3, and I am authorized to file the present Affidavit. I am filing this Affidavit-in-Reply in response to the contents of the Memorandum of Appeal No. 631/2025(WZ) preferred by the Appellant challenging the Environmental Clearance dated 11.11.2025 granted by Respondent No. 1 State Environmental Impact Assessment Authority, Gujarat ('SEIAA') to the Answering Respondent for the establishment of common Bio-Medical Waste Treatment Facility (CBWTF) at Plot No. 5 & 6, GIDC Shehera, Taluka Shehera, District Panchmahal, Gujarat -389210 (hereinafter referred to as the 'Facility').

3. At the outset, I deny each and every averment and conclusion made in the present Appeal No. 631/2025(WZ) which is contrary to and/or inconsistent with what has been submitted on record in the present Affidavit-in-Reply. Furthermore, nothing stated in the present Affidavit-in-Reply on behalf of the Respondent No. 3 shall be construed as an admission for the want of any specific and para-wise denial or non-traverse unless and until the same is specifically admitted hereinafter.

I. BRIEF FACTS LEADING TO GRANT OF THE IMPUGNED EC

4. It is respectfully submitted that the present Answering Respondent, i.e., the Project Proponent M/s Shree Khodal Waste Management, has been granted the impugned EC dated 11.11.2025 for the establishment of a CBWTF at Plot Nos. 5 & 6, GIDC Estate, Shehera, Taluka Shehera, District Panchmahal, Gujarat.
5. That the total plot area of the project site is 5,678.68 sq. metres. The geographical coordinates of the centre of the project site are Latitude 22°56'14.72" N and Longitude 73°38'13.31" E, with an average elevation of 121 metres above Mean Sea Level. The project site falls within Seismic Zone III (Moderate Damage Risk Zone).
6. It is submitted that there is no Wildlife Sanctuary, National Park, Eco-Sensitive Zone, Critically Polluted Area, Wetland, Coastal Regulation Zone, Defence Installation, or any protected area within a 10-km radius of the project site.
7. The impugned Facility is a Category B1 project under Activity 7(da) of the EIA Notification, 2006, and is a greenfield project. The project components and permitted waste handling capacity, as disclosed in Form-1 and the Final EIA Report, are as follows:

Facility	Capacity	Working Hours (Per Day) x No. of Days (Per Year)	Waste to be Handled (MT/Per day)	Waste to be Handled (MT/Per Annum)
Incinerator	100 kg/hour	20 hours per day for 360 days	2.0 MT/day	720 MT/year
Autoclave	50 kg per cycle	10 cycles per day	0.5 MT/day	180 MT/year
Shredder	50 kg per cycle	10 cycles per day	0.5 MT/day	180 MT/year
Total			2.5 MT/day	900 MT/year

8. Furthermore, the impugned Facility is proposed to cater to healthcare facilities within a 75-km radius, covering the districts of Panchmahal, Mahisagar, and Dahod in the State of Gujarat.
9. It is submitted that all transportation vehicles shall be GPS-enabled, leak-proof, labelled with the biomedical waste symbol, and designed to prevent any spillage during transit. Standard Operating Procedures (SOPs) for waste collection, handling, and transportation shall be implemented.
10. That the Answering Respondent has assured that the project shall maintain Zero Liquid Discharge (ZLD) at all times. Approximately 2.6 KLD of industrial effluent shall be treated in an in-house Effluent Treatment Plant (ETP) and reused within the premises, including for incinerator quenching. Domestic wastewater shall be disposed through a soak pit.

11. Furthermore, the total fresh water requirement of the project is 11.2 KLD, sourced from GIDC water supply, and no groundwater extraction is proposed.
12. Additionally, a green belt covering approximately 33% of the total plot area (about 1,964 sq. metres) shall be developed using native plant species, with approximately 300 trees, in accordance with CPCB guidelines.

II. SUBMISSION OF FORM-I AND APPRAISAL BY AUTHORITIES

13. It is submitted that the Proposal for grant of Environmental Clearance (EC) was initially submitted along with Form□1 and the Pre□Feasibility Report on 07.06.2023 on the MoEF&CC online portal, bearing Proposal No. SIA/GJ/INFRA2/432576/2023.
14. Pursuant to observations made by the regulatory authorities, a Gap Analysis Report was prepared, and the proposal was resubmitted on 16.01.2024, elaborating the justification for setting up the CBWTF in the said region. A copy of the Form-I submitted by the Answering Respondent as available on Parivesh Website is annexed and marked herewith as **ANNEXURE R-1.**
15. Thereafter, the proposal was placed before the State Expert Appraisal Committee (SEAC), Gujarat, and was considered in the 897th Part□B Meeting held on 29.08.2024 for reconsideration of Terms of Reference (ToR).
16. Accordingly, the ToR were granted on 21.01.2025 by SEIAA, Gujarat. Thereafter, baseline environmental studies were conducted during the winter season from 01.12.2024 to 28.02.2025.
17. Draft EIA Report was submitted for public consultation on 16.05.2025, and a Public Hearing was duly conducted on 09.07.2025 at 12:00 noon at the project site, strictly in accordance with the provisions of the EIA Notification, 2006.

18. All issues, objections, and suggestions raised during the public hearing were comprehensively addressed in the Final EIA Report, along with a tabulated action plan and budgetary allocations. A copy of the Final EIA Report dated July 2025 is annexed and marked herewith as **ANNEXURE R-2**.

19. Furthermore, the Gujarat Pollution Control Board (GPCB) has granted the impugned Facility a Consent to Establish (CTE) bearing no. CTE-82981 dated 23.05.2025, establishing that all relevant statutory regulations have been adhered to by the Answering Respondent. A copy of the CTE-82981 dated 23.05.2025 is annexed and marked herewith as **ANNEXURE R-3.**

20. I submit that the following preliminary issues, which are germane to the present Appeal, are being furthered by the Respondent No. 3 so that the same may be considered by this Hon'ble Tribunal while deciding on the legality and correctness of the impugned order dated 11.11.2025:

I. PRESENT APPEAL FILED EXCLUSIVELY FOR PERSONAL COMMERCIAL INTERESTS OF THE APPELLANT

21. It is submitted that the present Appeal is a classic instance of abuse of the appellate jurisdiction of this Hon'ble Tribunal by an existing commercial operator, seeking to stifle lawful competition under the garb of environmental protection.

22. It is further submitted that the Appellant has failed to demonstrate even a *prima facie* violation of the EIA Notification, 2006, the Bio-Medical Waste Management Rules, 2016, or the CPCB Guidelines dated 12.04.2025, a *sine qua non* for challenge to grant of EC.

23. The entire present Appeal is founded on a distorted and selective reading of the CPCB Guidelines, divorced from their context, purpose, and implementation framework.

24. It is respectfully submitted that the EC dated 11.11.2025 granted to Answering Respondent by SEIAA is the culmination of a detailed, multi-stage appraisal process involving grant of Terms of Reference, preparation and appraisal of EIA/EMP, conduct of public hearing, scrutiny by the State Expert Appraisal Committee (SEAC) and SEIAA across multiple meetings, consideration of repeated objections by the Respondent Authorities as raised by the Appellant, and imposition of specific safeguards and conditions while granting the impugned EC. There is thus no scope whatsoever to allege non-application of mind, procedural impropriety or violation of any statutory regulation.

4. That the Appellant themselves operate a CBWTF located on Plot No. 217/1, Chandpura Industrial Estate, Halol – 389350, which is located at a distance of roughly 49 kms from the impugned Facility. It is further submitted that the present Appeal is not in furtherance of environmental protection but is squarely motivated by the Appellant's desire to protect its commercial monopoly in the region.

5. Such private commercial interest is evident from the Appellant's own conduct of submitting as many as eight objection letters at different stages of the appraisal process, all raising substantially identical objections, which have been repeatedly examined and rejected by the SEAC and SEIAA, and are scrutinized and detailed in the ensuing paragraphs.

6. The Minutes of the SEAC meeting dated 12.08.2025 explicitly record that the objections raised by the Appellant were "unreasonable" and appeared to be aimed only at delaying the processing of a new CBWTF proposal. The SEAC further observed that such conduct by existing operators must be strongly discouraged and that frivolous complaints without genuine reasons deserve to be overlooked. These observations, which have been accepted by SEIAA, completely demolish the Appellant's narrative of alleged illegality in grant of EC.

II. NO ABSOLUTE PROHIBITION ON ESTABLISHMENT OF THE FACILITY UNDER BMW RULES, 2016 OR CPCB GUIDELINES

7. The cornerstone of the Appellant's challenge is the assertion that there can be only one CBWTF within a radius of 75 km. It is submitted that this assertion finds no support whatsoever in the Bio-Medical Waste Management Rules, 2016, (BMWM Rules 2016) do not prescribe any rigid distance-based prohibition, nor do they confer any vested, exclusive or unfettered right upon an existing CBWTF operator to establish a monopoly in any particular area.

8. The CPCB Guidelines dated 12.04.2025, relied upon by the Appellant, are themselves clarificatory and facilitative in nature. The said Guidelines do not impose a blanket embargo on establishment of a CBWTF within a 75 km radius. On the contrary, the said Guidelines expressly contemplate situations where additional facilities may be required, subject to gap analysis and assessment of waste generation, capacity utilization, and logistical considerations. Accordingly, relevant portions of the said Guidelines are reproduced as follows:

> *"2) Criteria for development of a new Common Bio-medical Waste Treatment and Disposal Facility for a locality or region.*
> *Prior to allowing any new CBWTF, following criteria or steps may be followed:*

> *…*
> *b) SPCB/PCC is required to conduct gap analysis w.r.to coverage area of the bio-medical waste generation, its projection over a period of next ten years, adequacy of existing treatment capacity of the CBWTF in each coverage area of radius 75 KM, as given in Annexure-I and as per methodology for conduct of gap analysis given at Appendix-I.*
> *Further**, **decision may be taken by concerned SPCB/PCC based on gap analysis report to allow new facility or expansion of an existing facility**….*
> *…*
> *d) Alternately, **a CBWTF may also be allowed to be established on a land procured by an entrepreneur in accordance with the location criteria** suggested under these guidelines." (emphasis supplied)*

9. Thus, it is submitted that the CPCB Guidelines of 2025 clearly provide that any decision to permit a new CBWTF may be taken by the concerned Pollution Control Board based on the gap analysis report. Furthermore, the said CPCB Guidelines of 2025 also provide that a new CBWTF may be allowed in accordance with the location criteria. The Answering Respondent categorically submits that both the aforementioned conditions are fulfilled in the present case, as the not only has the impugned EC been granted on the basis of a gap analysis Report, but the impugned Facility is also in adherence with the location criteria laid down in the said Guidelines of 2025.

10. Notwithstanding the above, it is pertinent to note that the entire memorandum of Appeal has conspicuously failed to cite any specific clause of the BMWM Rules 2016 or CPCB Guidelines of 2025 which categorically prohibit the establishment of the impugned Facility. It is submitted that mere repetition of the phrase "75 km radius" without reference to an enforceable statutory mandate cannot form the basis for setting aside a duly granted EC.

11. It is further submitted that such an omission of primary statutory provisions being relied upon by the Appellant to establish any illegality in grant of EC must necessarily be deemed to be material defect, rendering the Appeal to be dismissed.

III. GAP ANALYSIS CONDUCTED AND NECESSITY OF ADDITIONAL FACILITY ESTABLISHED

10. Without prejudice to the aforementioned issue regarding absence of any statutory prohibition, it is submitted that a comprehensive gap analysis was in fact conducted and appraised by the competent authorities.

11. That the Report on Gap Analysis Study for Bio-Medical Waste Management of Gujarat State 2023 ('Gap Analysis Report 2023'), annexed at **Pg. 166-630** of the present Appeal, has clearly demonstrated a deficit in biomedical waste treatment capacity of existing CBWTFs in present and projected scenarios, particularly with respect to Dahod and Mahisagar districts, which are distinct from the limited portrayal sought to be made by the Appellant by selectively focusing on Panchmahal district alone, as done in **Para 17, Pg. 14** of Appeal.

12. That the said Gap Analysis Report 2023 has made definitive observations regarding the enhancement of CBWTF capacities for the districts of Dahod (**Pg. 310**) and Mahisagar (**Pg. 399**), and accordingly the said Gap Analysis Report 2023 categorically observes – *"Considering the current management of BMW by the CBWTFs, it is recommended to enhance the capacity of the CBWTFs to effectively manage the biomedical waste"* – with respect to both districts.

13. Furthermore, even with respect to Panchmahal District, the Gap Analysis Report observes a 93% Gap in its worse case scenario projects, in addition to various other deficiencies in effective collection and segregation of Bio-Medical Waste.
14. Additionally, the following tabular representation of the present and projected scenarios of BMW Management for the three districts of Dahod, Mahisagar, and Panchmahal has been compiled as per information available in the Gap Analysis Report 2023, and provides district wise BMW data, both in its present scenario, as well as in the projected worst case scenario, i.e., in the event of sharp increase in spread of disease, spike in illnesses, and outbreak of epidemic-like conditions, all of which would lead to significantly greater use of medical facilities, and consequentially, create greater quantities of BMW.
15. Furthermore, the said tabular representation clearly evidences significant gaps in the consented capacity and total collection of BMW versus the BMW generated within the three districts of Dahod, Mahisagar, and Panchmahal.

District-wise BMW Data (Present & Worst Case Scenario)

District	No. of Beds	CBWTF Consents as per GPCB (kg/month)	Total BMW Generation – Present Scenario (kg/month)	Total BMW Collection (kg/month)	Total BMW – Worst Case Scenario (kg/month)
Dahod	5076	24,546	25,728	22,696	69,235
Panchmahal	4326	16,465	15,949	15,224	31,806
Mahisagar	2472	7,663	9,104	7,530	19,380

Gap Analysis – Present, Consented & Worst Case Scenario

District	Gap in Collection vs Present Scenario of BMW Generation	Gap in Collection vs BMW Consent Granted	Gap in Present Scenario of BMW Generation vs Consent Granted	Gap in Worst Case Scenario vs Consent Granted
Dahod	22,696 – 25,728 = **-3,032** (-13.3%)	22,696 – 24,546 = **-1,850** (-8.1%)	24,546 – 25,728 = **-1,182** (-4.8%)	24,546 – 69,235 = **-44,689** (-182%)
Panchmahal	15,224 – 15,949 = **-725** (-4.76%)	15,224 – 16,465 = **-1,241** (-8.19%)	15,949 – 16,465 = **-516** (-3.2%)	16,465 – 31,806 = **-15,341** (-93.17%)
Mahisagar	7,530 – 9,104 = **-1,574** (-20.9%)	7,530 – 7,663 = **-133** (-1.7%)	7,663 – 9,104 = **-1,441** (-18.8%)	7,663 – 19,380 = **-11,717** (-152.9%)

16. Lastly, the Answering Respondent submits that the Gap Analysis Report 2023 also provides for the projected gap as is estimated to be present in the year 2032, and has accordingly compiled the following information:

Gap Analysis for Projected BMW Generation – Year 2032

District	GPCB Consent – CBWTF (kg/month)	BMW Generation 2032 (kg/month)	GAP (kg/month)	GAP(MT/day) (considering 25 days)
Panchmahal	16,465	62,174	**-45,709**	**1.828**
Dahod	24,546	80,031	**-55,485**	**2.219**
Mahisagar	7,663	43,182	**-35,519**	**1.420**
TOTAL	—	—	—	**5.4 MT/day**

10. Accordingly, the Answering Respondent submits that the aforementioned tabular representation of data compiled in the Gap Analysis Report 2023 clearly evidences a projected gap of 5.2 MT for the three concerned districts, of which the impugned Facility will only cater to 2.5 MT.
11. It is further borne out from the Gap Analysis Report 2023 that, as a matter of fact, every CBWTF in the State of Gujarat is located within 75 km of another CBWTF, as per Figure 6.1 of the Gap Analysis Report 2023 as on **Pg. 618** of the present Appeal. This empirical reality itself demonstrates that the so-called "75 km rule" is neither absolute nor determinative, and has never been treated as such by regulatory authorities.
12. However, notwithstanding the above, the Answering Respondent submits that as per Table 2.1 of the Gap Analysis Report 2023 as on **Pg. 199** of the present Appeal, there is only one CBWTF operating within the entire districts of Panchmahal and Dahod, i.e., the Appellant's facility, and only two CBWTFs in Mahisagar, one of which is the Appellant's facility.
13. It is also pertinent to note that the same facility operated by the Appellant is the sole CBWTF for the district of Chotaudepur, and one of two CBWTFs for the districts of Vadodara and Bharuch, indicating the significant monopoly that is enjoyed by the Appellant in BMW Management in several districts of Gujarat.
14. That all such information is available in the documents annexed to Appeal as well. However, the deliberate suppression of the gaps identified in Dahod, Panchmahal and Mahisagar districts by the Appellant amounts to a material concealment of facts and renders the Appeal liable to be dismissed on this ground alone. The Answering Respondent categorically submits that such

selective presentation of data to suit private commercial objectives and establish their monopoly, which necessarily amounts to malfeasance and gross misuse of the appellate jurisdiction of this esteemed Hon'ble Tribunal.

15. In this context, the present Appeal must necessarily be observed as a *mala fide* attempt at consolidating monopoly, bereft of any issue of environmental conservation, and devoid of any legal merit whatsoever. That all such issues raised in the present Appeal have already been considered by the relevant statutory authorities, who have not only found no merit in the submissions of the Appellant, but have also gone so far as to the term the same as frivolous.

IV. OBJECTIONS OF THE APPELLANT WERE DULY CONSIDERED – NO VIOLATIONS FOUND AFTER DETAILED DELIBERATIONS

13. The Appellant's own pleadings, as on **Para 13, Pg. 12**, and **Para 16, Pg. 14**, admit that its objections were considered by the Respondent Authorities during the appraisal process, including in the SEAC meeting held on 12.09.2025 and SEIAA Meeting dated 10.11.2025. Once such consideration is admitted, the allegation of non-application of mind becomes wholly untenable.

14. The law is well settled that mere non-acceptance of an objector's submissions does not amount to violation of natural justice. Regulatory authorities are required to consider objections, not to accept them. The grant of Terms of Reference, recommendation by SEAC, and eventual grant of Environmental Clearance despite the Appellant's objections clearly indicate that such objections lacked legal and factual merit.

15. The Answering Respondent submits that, as per the present Appeal, eight objection letters were sent to the Respondent authorities by the Appellant from 3.01.2025 till 3.11.2025, wherein substantially similar issues essentially attempting to consolidate the Appellant's monopoly were raised. That the said objection letters are detailed as follows:

    I. First objection letter dated 3.01.2025 (**Pg. 49-52**) was sent by the Appellant to SEIAA. The primary ground raised herein was that since the area of operation of the Answering Respondent's facility *"is within our coverage area, they will hamper viability of our existing CBWTF".* Therefore, it is evident that Appellant is purely motivated by private commercial interests as opposed to environmental.

    II. Second objection letter dated 4.01.2025 (**Pg. 119-120**) was sent by Appellant to SEAC, GPCB and CPCB. The primary ground herein was the ToR granted to a second CBWTF sought to be made operational by the Appellant. That the said second CBWTF, located in Dahod district, was sought to be operated with a capacity of 9.5 TPD, and that the *"operational readiness of our upcoming facility"* is not considered by the Gap Analysis. However, such arguments are unsustainable as the said second CBWTF has only been permitted to operate at 2.5 TPD capacity, as per EC dated 12.09.2025 annexed at **Pg. 33-41.**

    III. Third objection letter dated 27.01.2025 (**Pg. 121-122**) was sent by Appellant to SEIAA, wherein the Appellant once again stated that since the upcoming Dahod CBWTF was in advanced stage of

consideration for grant of EC, the impugned Facility must not be permitted. The Appellant's entire stance was based on the fact that *"redundant CBWTFs within a 75km radius must be avoided to ensure optimal utilization of resources",* without raising any significant environmental law violation whatsoever.

IV. Fourth objection letter dated 29.01.2025 (**Pg. 123-124**) was sent by Appellant to SEIAA against grant of ToR to the impugned Facility, wherein once again the Appellant has sought that SEIAA "*re-evaluate the necessity of the proposed CBWTF by Shree Khodal Waste Management, considering our facility's ability to cater to the BMW management needs of Dahod and Mahisagar districts."* Such statements by the Appellant indicate their selfish commercial interests in protecting their monopoly in the area.

V. Fifth objection letter dated 11.04.2025 (**Pg. 126**) was sent by Appellant to SEIAA, objecting to the Recommendation of ToR for the impugned Facility, wherein the Appellant has mentioned *that "no application should be considered based on false or misleading undertakings that may compromise the viability of an existing CBWTF…".* It is submitted that no specific allegation regarding false or misleading information has been raised in the present Appeal, and it is evident that such statements are made to unfairly prejudice the Answering Respondent.

VI. Sixth objection letter dated 7.07.2025 (**Pg. 127-128**) was sent by Appellant to GPCB and District Collector, Panchmahal, wherein

objections were raised to the Public Hearing scheduled for the impugned Facility. Yet again the Appellant has stated that the impugned Facility *"is located within our coverage area of 75 Km as per CPCB Guidelines which will affect our viability".* It is further submitted that the Appellant participated in the Public Hearing organized for the impugned Facility, and was provided every opportunity to raise all their objections. By the Appellant's own admission, these objections were considered by SEIAA in meeting 12.09.2025, as admitted to on Pg. 12, Para 13 of the present Appeal.

VII. Seventh objection letter dated 16.09.2025 (**Pg. 145-147**) was sent by Appellant to SEIAA and SEAC on the same grounds. Yet again the Appellant has stated that *"Allowing another CBWTF within Panchmahal will make our available spare capacity go entirely unutilized, seriously jeopardizing our sustainability, contrary to the intent of BMW Rules"*. It is patently clear that all objections being raised by the Appellant were an attempt to protect their own commercial interests, and such are not in line with the intent of BMW Rules whatsoever. That this Hon'ble Tribunal in *O.A. 900/2022 titled M/s Rainbow Environments Pvt. Ltd. v. State of Punjab and Ors.* has held vide order dated 15.12.2022 that the object of the CPCB Guidelines is to "*ensure effective treatment of bio medical waste for protection of environment and public health and not merely to advance business interest of a Facility by creating monopoly"*. A copy of the order dated 15.12.2022 in O.A. 900/2022 titled *M/s Rainbow*

Environments Pvt. Ltd. v. State of Punjab and Ors. is annexed and marked herewith as **ANNEXURE R-4.**

VIII. Eighth objection letter dated 3.11.2025 (**Pg. 159-161**) was sent by Appellant to SEAC and SEIAA. Herein as well, the Appellant has stated that *"establishing a new CBWTF only 48.59 km from our existing facility will divide limited waste load, cause underutilization of both facilities, increase per-kg operational cost and create risks of non-compliance due to unsustainable competition".* However, after considering the repeated submissions and vague statements by the Appellant, all authorities have rightfully rejected the same.

16. It is further submitted that the evidence of such consideration by the authorities of the objections raised by the Appellant is apparent on bare perusal of the SEIAA 358th Meeting dated 12.09.25, annexed at **Pgs. 129-135**, which evidence that SEIAA has carried out a detailed deliberation on the same grounds which are repeatedly raised by the Appellant, and after such deliberation, has referred the matter back to SEAC for reconsideration on the following points:

> *"i.* ***SEAC shall re-examine the proposal in light of the GAP Analysis Report for Panchmahal, Dahod, and Mahisagar Districts*** *each as the proponent has submitted an undertaking stating that its operations will serve these districts. SEAC is requested to examine and provide district wise area map delineating the coverage areas of existing facilities located in Panchmahal, Dahod, and Mahisagar Districts, if any, and the proposed areas to be covered in Panchmahal, Dahod, and Mahisagar Districts by M/s Shree Khodal Waste Management.*
>
> *ii. As per the details mentioned in recommendation, the undertaking dated 21-06-2025 submitted by* ***M/s Shree Khodal Waste Management lacks consent from M/s Samvedna***

> ***BMW Incinerator,*** *the existing common facility located at Chandrapur Industrial Estate, Tal: Halol, Dist: Panchmahal."*
>
> *(emphasis supplied)*

17. Thus, it is evident that the primary grounds of the present Appeal were flagged by SEIAA who accordingly sought a re-examination of the issue by SEAC.

18. In response to Point (i) as above-mentioned, SEAC has provided a detailed Gap Analysis of present and projected BMW Management Requirements for the districts of Dahod, Mahisagar, and Panchmahal, and detailed the same on **Pg. 155**, wherein SEAC has clearly observed Gaps in the Consented Quantities and the Collection of BMW as compared to the total generation of BMW for the districts of Dahod, Panchmahal, and Mahisagar. Furthermore, on the same Point (i), SEAC has also observed the following:

> *"As per the GEMI Report, on comparing the data of GPCB granted Consent quantity and estimated Future BMW generation figures as of 2032,* ***there is an estimated gap of 5.4 tonnes per day for BMW treatment and disposal system****. Out of which Shree Khodal Waste Management has been granted TOR for BMW Waste Management facility of 2.5 MT/day." (emphasis supplied)*

19. Furthermore, SEAC has observed that the Answering Respondent has submitted a Coverage Area map, which clearly shows that the impugned Facility will cater to areas beyond 75 kms of the existing CBWTF operated by the Appellant, as well as will cater to new HCFs within 75 kms of the Facility. It is apparent that a detailed assessment of the relevant facts – including an estimated gap of 5.4 TPD, of which the impugned facility would cater to only 2.5 TPD – was undertaken by SEAC after the matter was referred back.

20. With regards to Point (ii) as raised by SEIAA with regards to seeking consent of the Appellant, SEAC has made the following pertinent observations:

"10) SEAC noted the submission made by PP regarding NOC from M/s Samvedna BMW incinerator. ***SEAC strongly feels that no competitor will provide such NOC*** *which is likely to affect his business and such a pre-condition, basically is self- stalling of project.* ***So submission made by PP is justified and no such NOC can be insisted and if not provided, it must be accepted as genuine reason****.*

11) ***SEAC also noted the contents of complaint of M/s Samvedna BMW Incinerator dated: 19.09.2025.*** *SEAC since last two years has noted that almost all projects of CBWTFs have been followed and flooded by repeated complaints.* ***Barring very few genuine grounds, the contents have been focused to highlight how the new project threatens their existing operations and citing limited interpretation of distance and area coverage criteria which holds true only if there is no GAP analysis done****. Largely the objective of such complaints has been to delay their own and was of the opinion that the complaints of existing CBWTF facility is unreasonable and it is only for delay in processing or hearing of new CVWTF proposal.* ***This complaint is also of the same nature****. SEAC, in accordance with available GAP, need of CBWTF infrastructure at district level and overall wider concern of BMW treatment infrastructure,* ***feels that such approach by existing players must be strongly discouraged and frivolous complaint without any genuine reasons, must be overlooked****.*

12) Committee found presentation and submission of project proponent satisfactory. (emphasis supplied)

21. It is submitted that SEAC has clearly observed that no NoC/Consent from the Appellant is required to be obtained by the Answering Respondent for operation of the impugned Facility, and that such an NoC/Consent is likely to never be given by a competitor operating in the same industry. SEAC has also made categorical observations that the Complaints made by the Appellant are frivolous, without any genuine reasons, and made with the sole purpose of delaying grant of EC. Accordingly, SEAC has definitively held that such Complaints as made by the Appellant must be overlooked.

22. The aforementioned responses of SEAC were considered by SEIAA, who has deliberated on the issue as in 386th Meeting dated 10.11.2025, Minutes of which

are annexed at **Pg. 162-164**. Based on the detailed response received from SEAC, and after carrying out a detailed discussion and deliberation on the matter, SEIAA was pleased to accept the recommendations of SEAC, and unanimously grant the impugned EC, by incorporating all conditions stipulated by SEAC, as well as prescribing Fourteen (14) additional conditions.

23. Therefore, it is submitted that SEAC has comprehensively assessed all issues upon which the matter was referred back by SEIAA. That such assessment by SEAC has also been deliberated upon by SEIAA, who have accepted SEAC's recommendations, and further included an additional set of conditions in the impugned EC which have been made binding upon the Answering Respondent. Accordingly, it is evident that a detailed appraisal of all the relevant material has been carried out by SEAC and SEIAA in grant of the impugned EC, and no lack of application of mind or absence of reason can be construed whatsoever.

24. It is respectfully submitted that this Hon'ble Tribunal, as held by the Hon'ble Supreme Court in *Rajeev Suri v. DDA 2022 11 SCC 1* must interfere with an Environmental Clearance only where there is a complete absence of application of mind, perversity, or violation of statutory mandate by the Expert Appraisal bodies. However, none of these contingencies arise in the present case.

V. PARA-WISE RESPONSE TO ALLEGATIONS AND GROUNDS AS RAISED IN THE PRESENT APPEAL

25. Paragraphs 1 to 7 of the Appeal being matters of record do not call for any specific response.

26. Paragraph 8 is denied. The interpretation sought to be placed by the Appellant on the CPCB Guidelines dated 12.04.2025 is erroneous, strained, and legally

unsustainable. In any event, the requirement of gap analysis stands duly complied with.

27. Paragraph 10 is misleading. The objections raised by the Appellant at the ToR stage were duly considered and rejected by the competent authority. Grant of ToR despite such objections conclusively establishes that the objections were devoid of legal basis.

28. Paragraph 12 is emphatically denied. The Appellant's repeated objections are motivated by commercial self-interest and not by environmental considerations. The gap analysis clearly establishes the necessity of the Facility.

29. Paragraph 13 fortifies the case of Respondent No. 3, inasmuch as the Appellant admits that its objections during public hearing were considered, thereby negating allegations of arbitrariness.

30. Paragraphs 15 and 16 further reveal that even the eighth objection of the Appellant was examined and rejected, with the authority recording that such objections were baseless.

31. Paragraph 17 is denied. The Appellant has deliberately suppressed the findings relating to Dahod and Mahisagar districts, rendering the Appeal misleading and mala fide.

32. Paragraph 18 exposes the Appellant's contradictory stance, as it admits that Respondent No. 3's sister concern is located beyond 75 km, while itself operating multiple facilities within the same radius.

33. Ground (a) is denied as illogical and unsupported by any statutory violation.

34. Ground (b) is denied for want of any specific provision in the CPCB Guidelines imposing an absolute prohibition.

35. Ground (c) is denied. There is no legal obligation upon Respondent No. 3 to furnish any undertaking beyond what is stipulated by the regulatory framework.
36. Ground (d) is denied as being vague and untenable.
37. Ground (e) is denied. The EC process commenced well in advance and followed the prescribed procedure over several months, negating any allegation of undue haste.
38. Ground (f) is denied. Repeated consideration of objections, multiple SEAC deliberations, and conditional grant of EC clearly establish application of mind.
39. Ground (g) is denied. No material whatsoever has been placed on record to substantiate the allegation of a fettered mind.
40. In view of the foregoing submissions, it is respectfully prayed that the present Appeal be dismissed with exemplary costs, as it is frivolous, vexatious, and an abuse of the process of law, filed solely to obstruct a lawfully granted Environmental Clearance and to perpetuate commercial monopoly.
41. That the Hon'ble Supreme Court in a recent case has imposed penalties for initiating proceedings before this Hon'ble Tribunal to subserve personal business interests of rival commercial enterprises, as opposed to raising genuine environmental concerns. It is submitted that the present Appeal has been pursued solely to subserve the personal business interests of the Appellant, and accordingly, as such conduct squarely falls within what has been admonished by the Hon'ble Supreme Court, similar penalties must be imposed in the present case while dismissing the Appeal. A copy of the order in **Arun Kumar Sharma & Ors. v. State of Madhya Pradesh & Ors. 2025 INSC 826** is annexed and marked herewith as **ANNEXURE R-5.**

42. Any other order deemed fit in the interest of justice may also be passed.

Date: 10.02.2026

ADVOCATE FOR RESPONDENT NO.3

I know the Affiant

SHREE KHODAL WASTE MANAGEMENT

PARTNER

Affiant

(Respondent No. 3)



SOLEMNLY AFFIRMED
BEFORE ME

JAIMIN B. TRIVEDI
NOTARY
GOVT. OF INDIA
10 FEB 2026

PARIVESH
Ministry of Environment, Forest and Climate Change
Government of India

आज़ादी का अमृत महोत्सव

सत्यमेव जयते

Back

Project Name:	SHREE KHODAL WASTE MANAGEMENT	**Single Window Number:**	SW/120608/2023
		Proposal Number:	SIA/GJ/INFRA2/432576/2023
State:	GUJARAT	**Current Status:**	TOR Granted
Submission Date:	16/01/2024	**Project Category:**	B1
Sector:	INFRA2	**Proposal For:**	Fresh ToR
Project Proponent Name:	Shree Khodal Waste Management		

View Agenda View MoM

Project Details

1. Details of Project

1.1. Name of the Project	SHREE KHODAL WASTE MANAGEMENT
1.2. Project Proposal For	New
1.3. Project ID (Single Window Number)	SW/120608/2023
1.4. Description of Project	M/s. Shree Khodal Waste Management has proposed a "Common Biomedical Waste Treatment Facility" at GIDC, Sehra which require a plot area of 5,600 m2 • Proposed Project will be providing services to all the health care units of Panchmahal District, and will also extend to health care units that fall within 75 km radius; the proposed project aims to cater to near about 2500- 2700 hospitals / clinics/ health care units. • The proposed facility will involve activities as envisaged in CBWTF rules, 2016, 2018 and 2019, such as collection of segregated wastes, safe transportation to CBWTF, operation of treatment facilities and processing of the biomedical waste for safe disposal. The Proposed project of CBWTF falls under Category B, schedule 7d(A) as per the EIA notification 14th Sep, 2006 and subsequent amendments dated 1st December, 2009 & 17th April, 2015. The proposed site is located at Plot No.5+6, GIDC Shehra, Taluka & district-Panch Mahal, Gujarat-389210.

2. Details of the Company/Organization/User Agency making application

2.1. Legal Status of the Company/Organization/User Agency	Others
2.2. Name of the Company/ Organization/User agency	SHREE KHODAL WASTE MANAGEMENT

Registered address

2.3. Address	620, FORTUNE BUSINESS HUB, SCIENCE CITY ROAD, SOLA, AHMEDABAD, GUJARAT 380060
2.4. State	GUJARAT
2.5. District	AHMADABAD
2.6. Pin Code	380060
2.7. E-mail address	skwm007@gmail.com
2.8. Mobile number	xxxxxx6622

3. Details of the person making application

3.1. Name	SHREE KHODAL WASTE MANAGEMENT
3.2. Designation	Partner

Correspondence address

3.3. Address	620, FORTUNE BUSINESS HUB, SCIENCE CITY ROAD, SOLA, AHMEDABAD, GUJARAT 380060
3.4. State	GUJARAT
3.5. District	AHMADABAD
3.6. Pin Code	380060
3.7. E-mail address	skwm007@gmail.com
3.8. Mobile number	xxxxxx6622

Project Location

4. Location of the Project or Activity

4.1. Upload KML	Khodal Waste.kml
4.2. Whether the project/activity falling in the state/UT sharing international borders	NO

5. Shape of the Project	Non - Linear

Location Details

Toposheet No	State/UT	District	Sub District	Village	Plot/Survey/Khasra No.
F43H9	GUJARAT	Panch Mahals	Shehera	Shehera	Plot No.5+6, GIDC Shehra, Taluka & district-Panchmahal, Gujarat-389210

Remarks
Plot No.5+6, GIDC Shehra, Taluka & district-Panchmahal, Gujarat-389210

6. Land Requirement (in Ha) of the project or activity

6.1. Nature of Land involved	
6.2. Non-Forest Land [A]	0.5678
6.3. Forest Land [B]	0
6.4. Total Land [A+B]	0.5678

Project Activity Cost

7. Project/Activity Cost

7.1. Total Cost of the Project at current price level (in Lakhs)	507 Amount in Words : **Five Hundred Seven Lakh(s) Only**

8. Employment likely to be generated

8.1. During construction phase

Permanent employment

8.1.1. No. of permanent employment (No.s) [A]	30
8.1.2. Period of employment (No. of days) [B]	300
8.1.3. No. of man-days [X]=[A]*[B]	9000

Temporary employment

8.1.4. Temporary / Contractual employment (No. of Man days) [Y]	10
8.1.5. Total [X] +[Y]	9010

8.2. During operational phase

Permanent employment

8.2.1. No. of permanent employment (No.s) [A]	20
8.2.2. Period of employment (No. of days) [B]	300
8.2.3. No. of man-days [X]=[A]*[B]	6000

Temporary employment

8.2.4. Temporary / Contractual employment (No. of Man days) [Y]	10
8.2.5. Total [X] +[Y]	6010

Others

9. Whether Rehabilitation and Resettlement (R&R) involved?	NO
10. Whether project area involves shifting of watercourse/road/rail/Transmission line/water pipeline, etc. required?	NO
11. Whether any alternative site(s) examined or part thereof for the non-site-specific component?	Not applicable as the project or activity is site specific
12. Whether there is any Government Order or Policy/ Court order relevant or restricting to the site?	NO
13. Whether there is any litigation pending against the project and/or land in which the project is proposed to be set up?	NO
14. Whether the proposal involves violation of Act/Rule/Regulation/Notification of Central/State Government?	NO

Basic Information

1. Category of the Project/Activity

1.1. Name of the project proposal	SHREE KHODAL WASTE MANAGEMENT	
1.2. Type of Proposal	New	
1.3. Whether the Project Activity (Construction/ Operation) has been undertaken without obtaining **prior** Environmental Clearance under the provision of EIA Notification 1994/ 2006?	No	
1.4. Whether multiple items (Components) as per the notification involved in the proposal?	No	
1.4.1. Item No. as per schedule to EIA Notification, 2006	7(da) Bio-Medical Waste Treatment Facilities	NA
Capacity	900	TPA

2. Whether project/activity attracts the General Condition specified in the Schedule of EIA Notification?	No
3. Whether any Protected Areas Notified Under the Wild Life (Protection) Act, 1972 are located within 10 km of the project site	No
4. Whether any Severely Polluted Areas as identified by the CPCB from time to time located in proximity to the project site	No
5. Whether any Critically Polluted Areas as identified by the CPCB from time to time located in proximity to the project site	No
6. Whether any Notified Eco-Sensitive area notified under Environmental (Protection) Act, 1986 located in proximity to the project site	No
7. Whether any Inter-State Boundaries and International Boundaries located in proximity to the project site	No
8. Whether any Eco-sensitive Zone notified/proposed to be notified under Environment (Protection) Act, 1986 located within 10 km of the project site	No
9. Whether any forest land present within 10 km of the project site	Yes
9.1. Whether located within/outside Forest land	Outside

Name of Forest	Shortest distance from the project boundary in Km	Remarks
Reserved Forest between Zoz & Patiya Village	0.25	Nearest Reserved Forest from Site

10. Category of the Project as per EIA Notification, 2006	B1
10.1. Whether proposal is required to be appraised at Central level?	No
11. Whether Proposal has interlinked / interdependent projects or activities?	No
11.1. Reason thereof	It is a standalone Project.
12. Whether any Forest Land involved in the project or part thereof	No
13. Whether NBWL recommendation is required?	No

14. Land Acquisition Details

Type of Land	In case of non-forest land, please specify	Type of privately owned land	Type of land in terms of ownership	Supporting documents			Status of Land Acquisition
				Document Name	Remarks	Document	
Non-forest Land	Other (Please specify)	N/A	Non-Notified Land Parcel of GIDC Shehera	Land Allotment Letter	Shree Khodal Waste management at Plot No. 5 & 6, GIDC Shehera, Taluka Shehera and District Panchmahal.	gidc allotment letter.pdf Preview	Acquired

Project Details

15. Details of CTE

15.1. Whether consent under Air & Water Act has been obtained from SPCB / UTPCC?	Yes
15.1.1. Reference Number of Consent obtained from SPCB / UTPCC	CTE-82981
15.1.2. Date of consent issued	23/05/2025
15.1.3. Validity of consent (Valid up to)	23-05-2032
15.1.4. Upload copy of consent order	cte.pdf
16. Whether the project/activity located in Notified Industrial Area?	Yes

16.1. Type of Industrial Area	Industrial Area
16.2. Name of the Notified Industrial Area	GIDC Shehra
16.3. Year of notification of the Industrial area	After 14th September 2006
16.4. Copy of Notification of Industrial area	NA.pdf
16.5. Whether Prior Environmental Clearance available for Notified Industrial Area?	No
16.5.1. Reason thereof	It is a non-notified industrial area.
17. Whether the project/activity located in CRZ or ICRZ area?	No
18. Whether the project proposed to be located in Territorial waters (Off-shore)	No
19. Whether project/activity attracts the Specific Condition specified in the Schedule of EIA Notification?	No

Product Details

20. Details of Products & By-products

Name of Product	Product / By Product	Quantity / Capacity	Unit	Mode of Transport / Transmission	Remarks
Shredder capacity	Product	50	Kg/Cycle	Road	10 cycle per day x 360 days
Autocalve capacity	Product	50	Kg/Cycle	Road	10 cycle per day x 360 days
Incinerator Capacity	Product	100	Kg/hr	Road	20 hrs. x 360 days
Total Capacity of Common Biomedical Waste Treatment and Disposal Facilities (CBWTF)	Product	900	Tons per Annum (TPA)	Road	The above CBWTF will be established in 5678.68 Sqm area.

21. Whether any other Environmental Sensitive area exists within 10 Km from the project/activity boundary?	No

Note : Others, interalia, includes areas protected under international conventions/ Area important or sensitive ecological reasons/ Sensitive species of flora or fauna/ Inland or coastal/Tourist places/ Defence installations / Densely populated areas/ Areas containing important, high quality, or scarce resources/ Areas susceptible to natural Hazards

22. Status of collection of baseline data	Already collected
22.1. Period of baseline data collection	
22.1.1. From	01/12/2024
22.1.2. To	28/02/2025
22.2. Seasons of collection	Winter
22.3. Number of Monitoring locations for	
22.3.1. Meteorology (Nos.)	1
22.3.2. Ambient Air Quality (Nos.)	9
22.3.3. Surface Water Quality (Nos.)	10
22.3.4. Ground Water Quality (Nos.)	9
22.3.5. Ground water level (Nos.)	0
22.3.6. Noise Level (Nos.)	8
22.3.7. Soil Quality (Nos.)	9
22.3.8. Summary on the baseline situation	summary of baseline.pdf
22.3.9. Map showing the monitoring locations	sampling location.pdf

Consultant Details

25. Whether QCI/NABET Accredited EIA Consultant engaged?	Yes
25.1. Accreditation No. / Organization Id	ORG000844
25.2. Name of the EIA Consultant Organization	Kadam Environmental Consultants
25.3. Address	871/B/3, GIDC Makarpura, Vadodara- 390010,Gujarat
25.4. Mobile No.	9714861611
25.5. E-mail Id	sangram@kadamenviro.com
25.6. Category of Accreditation (Eligible for Category A / Eligible for Category B)	A
25.7. Sector(s) of Accreditation	1,2,4,6,7,8,10,13,16,17,18,19,20,21,23,27,30,31,32,32 A,33,36,37,38,39,22,34,9,14,24,11,28,29
25.8. Validity of Accreditation	07/03/2027

Project Details

1. Introduction of Project or Activity	
1.1. Need for the project or activity and its importance to the country/region	An effective Common Biomedical Waste Treatment Facility requirement in Panchmahal District.
1.2. Demand - Supply Gap and Domestic and export markets, if any	Based on the GAP Analysis of GEMI the CBWTF project is proposed for 900 MTPA.
2. Social Infrastructure	
2.1. Readily available	Greenfield Project
2.2. Proposed to be developed	Admin Building, Collected waste & Treated waste room, Hazardous waste storage room, Electrical room, OHC, Security Cabin, Drivers rest room, Canteen, etc.
3. Connectivity to the project or activity	
3.1. Nearest railway station and its distance (in Km)	Godhra Railway Station 18.03
3.2. Nearest Airport and its distance (in Km)	Vadodara Airport 80.78
3.3. Nearest Town/City/District head quarter and its distance (in Km)	Shehera 2.08
4. Soil classification	The project area falls under Middle Gujarat Agro-climatic Zone (GJ-3). Soil texture varied from sandy loam to sandy clay loam
5. Distance from the HFL of the river in m, if any	N/A
6. Benefits of the project	
6.1. Social benefits of project or activity	The benefits of the proposed project are proper management of Biomedical Wastes, Treatment and Disposal, Employment generation (temporary and permanent) in operation and construction phase of the facility, social upliftment of surrounding areas and villages through CER/CSR.
6.2. Financial benefits of project or activity	For the establishment of a Common Bio-Medical Waste Treatment Facility, an investment of Rs. 4.87 crores are anticipated. The costs earmarked for environmental monitoring is INR 96.3 Lacs as Capex and INR 10.26 Lacs per annum is operation & maintenance of facilities. Investment in CER activity is Rupees 10 Lakhs.
7. Project/ Activity Construction Status	To be Started
7.1. Likely date of start of construction activity (start of mining operations in case of mining proposals)	07/10/2025
7.2. Likely date of completion of construction activity (end of mining operations in case of mining proposals)	07/10/2026

Resource Utilization

8. Use of resources for construction or operation of the project

8.1. Whether requirement of water involved in the project?	Yes

Details of Water requirement during Construction stage

Sr.No.	Source	Quantity in KLD Present	Quantity in KLD with Expansion	Method of water withdrawal	Distance from Source in mtr	Mode of Transport	Details of Permission	Competent Authority	Upload a copy of the permission letter/NOC	Status of Permission/NOC	Proof of application	Reason for non-submission	Justification
1	GIDC Water Supply	50	N/A	GIDC Water Supply	100	Pipeline	GIDC Allotment Letter	No	N/A	N/A	N/A	N/A	N/A

Details of Water requirement during Operational stage

Sr.No.	Source	Quantity in KLD Present	Quantity in KLD with Expansion	Method of water withdrawal	Distance from Source in mtr	Mode of Transport	Details of Permission	Competent Authority	Upload a copy of the permission letter/NOC	Status of Permission/NOC	Proof of application	Reason for non-submission	Justification
1	Other	11.2	N/A	Others	100	Pipeline	Water Supply permission granted in the Land Allotment letter.	No	N/A	N/A	N/A	N/A	N/A

8.2. Other information, if any	Water Supply permission granted in the Land Allotment letter.
8.3. Whether requirement of Minerals and/or fuels involved in the project?	Yes

Details thereof

Name of Minerals / Fuel	Quantity per annum in MT	Source	Mode of transport	Distance from source in Km	Details of linkage / supply agreement
HSD	0.047	Nearest Source	Road	10	

8.4. Other information, if any	N/A

8.5. Construction material	No
8.6. Timber	No
8.7. Electric Power:	Yes
8.7.1. Total Electricity requirement (MW):	0.048
8.7.2. Main Source:	MGVCL
8.7.3. Renewable energy proposed to install (KW):	0.0012
8.7.4. Percentage contribution of renewable energy:	20
8.7.5. Standby arrangements (details of DG Sets):	1 DG Set of 60 KVA
8.7.6. Stack height in m (DG set):	12
8.7.7. Energy conservation measures:	N/A
8.8. Whether any other natural resources / other raw materials required?:	No
8.9. Whether any use of substances or materials, which are hazardous (as per MSIHC rules) to human health or the environment (flora, fauna, and water supplies) required?	No
8.10. Whether any resource efficiency / optimization / recycling and reuse envisaged in the project?	Yes
8.10.1. Details	Shredded material and Spent oil will be sent to authorized Recyclers.

Physical Changes

9. Construction, operation or decommissioning of the Project involving actions, which will cause physical changes in the locality:

9.1. Whether any permanent or temporary change in land use, land cover or topography due to project activity?	No
9.2. Whether any clearance of existing vegetation due to project activity?	No
9.3. Whether any loss of native species or genetic diversity?	No
9.4. Whether any demolition works involved in project activity?	No
9.5. Whether any linear structures proposed for diversion or demolition due to project activity? (e.g. roads, transmission lines, rail line, pipeline, conveyor, etc.)	No
9.6. Whether any closure or diversion of existing transport routes or infrastructure due to project leading to changes in traffic movements?	No
9.7. Whether any closure or diversion of water bodies present in project area or realignment of water courses passing through project area?	No
9.8. Whether any dismantling or decommissioning or restoration works or reclamation works (Long-term/ short-term)?	No
9.9. Whether any construction works for temporary use for project activity?	No
9.10. Whether any cut and fill excavations proposed for the project activity?	No
9.11. Whether any underground works including tunnelling?	No
9.12. Whether any dredging involved in project?	No
9.13. Whether any offshore structures involved in project?	No
9.14. Whether any new road, rail, sea, airports, helipad, etc. during construction or operation?	No
9.15. Whether any construction of new linear structures? (e.g. transmission lines, pipelines, etc.)	No
9.16. Whether any Facilities for storage of goods or raw materials?	No
9.17. Whether any Facilities for long term/ permanent housing of operational workers/ staff?	No
9.18. Whether any impoundment, damming, culverting, realignment or other changes to the hydrology of watercourses or aquifers?	No
9.19. Whether any Stream crossings, temporary and permanent?	No
9.20. Whether any influx of people to an area in either temporarily or permanently?	No
9.21. Whether any other information would like to submit?	No

Pollution Details

10. Release of pollutants to Air and Mitigation measures

10.1. Whether any probable air pollutants generated?	Yes

Air Pollution Source	Probable Pollutants	Mitigation Measures
DG sets	PM10, PM2.5, SO2, NO2	Adequate Stack Height will be provided
Others	PM, SO2, NO2, CO, HCL, Dioxins and Furans	Quencher followed by Venturi Scrubber, ID Fan with adequate stack height.
Transport of raw material/products	PM, CO, HC, NO2	Well maintained and PUC certified vehicle will be used.

10.2. Other information, if any	N/A

10.3. Generation of Noise & Vibration and mitigation measures

10.3.1. Whether any probable generation of Noise and vibration from the proposed project?	Yes
10.3.1.1. Sources of Noise	Plant machinery & Vehicle movement for transportation of material
10.3.1.2. Sources of Vibration	DG Set, Incinerator, Autoclave, Shredder, Pump, Vehicular Movement
10.3.1.3. Details of blasting, if any	Not Envisaged
10.3.1.4. Other information, if any	N/A
10.3.1.5. Whether any mitigation measures proposed for Noise & Vibration?	Yes
10.3.1.5.1. Mitigation measures proposed for control of Noise	Acoustic enclosures, PPE, Development of Green belt, Periodic monitoring, Etc.
10.3.1.5.2. Mitigation measures proposed for control of vibration	Acoustic enclosures, PPE, Development of Green belt, Periodic monitoring, Etc.
10.3.1.5.3. Other information, if any	N/A
10.3.2. Whether any probable generation of Light and Heat?	No

10.4. Discharge of pollutants to water and mitigation measures

10.4.1. Whether any probable water pollutants generated?	No

Details of reuse / recycle of wastewater

Details	Qty / Capacity	
10.5. Quantity of waste water generation per day (KLD)	2.6	
10.6. Quantity of treated water proposed to use per day (KLD)	2.6	
10.7. Quantity of treated water proposed to discharge outside the premises (KLD)	0.0	
10.8. Purpose for which treated water is proposed to use	For Quenching in Incinerator	
10.9. Whether it is proposed to opt/avail common off-site Sewage Treatment Plant (CSTP)/Effluent Treatment Plant (CETP) facility?	No	
10.10. Whether it is proposed to setup on-site Sewage Treatment Plant (STP)/Effluent Treatment Plant (ETP) facility?	Yes	
10.10.1. Whether 100% of the waste water generated will be treated?	Yes	
10.11. Type of treatment plant	ETP	
10.12. ETP/STP Capacity	STP	
	5.0	KLD
	ETP	
	N/A	N/A
10.13. ETP/STP Technology	STP	ETP
	Primary, Secondary Biological with Activated Sludge & Tertiary	N/A

10.14. Whether the adequacy of the Sewage Treatment Plant (STP) or Effluent Treatment Plant certified by an independent expert?	No
10.14.1. Reasons thereof	Not applicable
10.15. Whether any other mitigation measures proposed?	Yes
10.15.1. Details thereof	The waste water treatment system achieves Zero Liquid Discharge.
10.16. Whether Dual Plumbing System proposed to be implemented?	No
10.16.1. Reasons thereof	Not applicable
10.17. Whether any discharge of treated effluent involved?	No

Water Requirements

11. Ground water intersection and water conservation measures:

11.1. Whether ground water table intersection involved in the project activities?	No
11.2. Area category from Groundwater availability perspective?	Sa
11.3. Whether Rainwater harvesting proposed	Yes
11.3.1. Capacity of facilities provided	1
11.3.2. Description of facilities provided	Rain water storage tank- 40 cu. m.
11.3.3. Description	Rain water harvesting Tank of 40 KL is provided for storage & utilization.
11.3.4. Total Quantity of water requirements met from water harvestingin KLD	11.2
11.3.5. Storage capacity of rain water harvested in cubic meters	40
11.4. Whether any other water conservation measures proposed?	No
11.5. Whether the ZLD is proposed?	Yes
11.5.1. Details of ZLD	The waste water of 3.4 KLD will be sent to ETP for treatment and reuse in Quenching of Incinerator.

12. Greenbelt

12.1. Area proposed for green belt (in Ha)	0.1964
12.2. Width of green belt (in m) along the boundaryof the project or activity	5
12.3. Percentage of the total area covered under green belt	33
12.4. Details of the species proposed for plantation	Kachnar, Asoka, Siris, Neem, Banyan, Peepal, Jamun, Jambu, Teak, etc.
12.5. No. of tree saplings to be planted	360
12.6. Funds allocated for plantation in Lakhs.	4.5

Waste Generation

13. Production of wastes during construction or operation or decommissioning

13.1. Whether any generation of Solid waste (domestic wastes)? Yes

Name of the waste	Source	Qty (TPA)	Mode of disposal	Mode of Transport
Municipal Solid Waste	Site	0.5	Municipal Solid Waste Disposal Site	Road

13.2. Whether any generation of plastic waste? Yes

Name of the waste	Source	Qty (TPA)	Mode of disposal	Mode of Transport
Shredded Materials	Shredder	180	Sent to Authorized recycler	Road

13.3. Whether any generation of e-waste?	No
13.4. Whether any generation of batteries waste?	No
13.5. Whether any generation of Bio-medical waste?	No

13.6. Whether any generation of hazardous wastes (as per Hazardous Waste Management Rules)? Yes

Name of the waste	Source	Qty (TPA)	Mode of disposal	Mode of Transport
Used / Spent Oil	Process areas and rotating equipment's	0.5	Sent to Oil Recyclers	Road
Incineration Ash	Incinerator	22	TSDF / Landfilling	Road
ETP Sludge	ETP	16.2	TSDF / Landfilling	Road
Encapsulated Waste	Process areas	1.5	TSDF / Landfilling	Road

13.7. Whether any generation of construction or demolition wastes?	No
13.8. Whether any generation of other wastes?	No
13.9. Whether any generation of surplus products?	No
13.10. Whether measures for waste minimization proposed?	No

Risk Assessment

14. Whether any risks associated with project activities which could affect human health or the environment, -

14.1. From explosions, spillages, fires etc. from storage, handling, use or production of hazardous substances?	No
14.2. From any other causes?	No
14.3. Could the project be affected by natural disasters causing environmental damage (e.g.	

14.3. Could the project be affected by natural disasters causing environmental damage (e.g. floods, earthquakes, landslides, cloudburst etc)?	No
14.4. Changes in occurrence of disease or affect disease vectors (e.g. insect or water borne diseases)	No
14.5. Could project adversely affect the wellbeing of people in project area e.g. by changing living conditions?	No
14.6. Vulnerable groups of people who could be adversely affected by the project e.g. hospital patients, children, the elderly etc.	No
14.6.1. Has cumulative risk assessment been performed?	Yes
14.6.1.1. Measures proposed against the risk associated	ra & dmp.pdf
14.7. Whether any likely impacts of the proposed activity on the existing facilities adjacent to the proposed site due to generation of dust, smoke, odorous fumes or other hazardous gases?	No

15. Factors which should be considered (such as consequential development) which could lead to environmental effects or the potential for cumulative impacts with other existing or planned activities in the locality

15.1. Whether lead to development of supportive facilities, ancillary development or development stimulated by the project which could have impact on the environment e.g.: Supportive infrastructure (roads, power supply, waste or waste water treatment, etc.); housing development; industries in supply chain and downstream; any other?	No
15.2. Whether lead to after-use of the site, which could have an impact on the environment? (e.g. mine void, dump sites, etc.)	No
15.3. Whether set a precedent for later developments?	No
15.4. Have cumulative effects due to proximity to other existing or planned projects with similar effects?	No
15.5. Whether lead to growth of alien species, if any?	No
15.6. Is there any threat of the project to the biodiversity (including displacement of fauna-both terrestrial and aquatic and avi-fauna or creation of barriers for their movement)?	No
15.7. Will the proposed project in any way result in the obstruction of a view, scenic amenity or landscapes?	No
15.8. Is there any impact on anthropological or archaeological sites or any important site feature in the vicinity of the proposed site have been considered?	No
15.9. Will the proposed project result in any changes to the demographic structure of local population?	No
15.10. Will the project cause adverse effect on local communities, disturbance to sacred sites or other cultural values?	No

16. CBWTF Proposals

Project configuration	
16.1. Project components	M/s Shree Khodal Waste Management
16.2. Any other details	M/s Shree Khodal Waste Management is a Partnership firm, established in 2023, for getting engaged in Biomedical Waste Treatment and Disposal Facility
16.3. Nearest operational CBWTF details	M/s. Samvedna Biomedical waste management Facility - at a distance of approx. 69 km
16.4. Details of wastes to be handled	Biomedical Waste, Category- Yellow, Red, Blue & White
16.5. Details of member units	NA
16.6. Mode of transportation of wastes to CBWTF	Road
16.7. Land area distribution for proposed activities in Ha	0.5678

16.8. Whether road/river /seasonal nallah /irrigation canal passes through project site

S.No.	Type of Road/Waterway	Any diversion is proposed	No Object Certificate obtained	Application for NOC has been submitted	NOC from the concerned department or authority	Proof of application for NOC	Reason thereof (No Object Certificate obtained - Not Applicable)	Reason thereof (NOC has not been submitted)
1	N/A	No	N/A	No	N/A	N/A	N/A	N/A

Enclosures

17. Layout Plan showing the components of the project and green belt proposed; general location and specific location of the project along with coordinates	site layout plan.pdf
18. Schematic representation of the feasibility drawings which give information for EIA purpose	EIA Chart.pdf

19. Additional Information

S. No.	Document Name	Remark	Document
1	SEAC Format	Details of Proposed Project	seac format.pdf
2	Proposed Site Location	KML File	bmw site.kml

2	Proposed Site Location	KML File	bhtw site.kml
3	TOR Letter	Granted TOR Letter	tor.pdf
4	Essential Details Sought	EDS	EDS Reply letter.pdf
5	Partnership Deed	Partnership Deed	Partnership Deed.pdf
6	GIDC Allotment Letter	NA	Sahera.pdf

20. Document CheckList

20.1. Land-Related Documents	Ownership document	Yes
	Mine lease document (in case of mining)	Not Applicable
	Letter of Intent (in case of mining)	Not Applicable
	Project layout	Yes
	Gazette notification of notified industrial area (if applicable)	No
20.2. Public Hearing-Related Details	Public hearing proceedings	Yes
	Advertisements	Yes
20.3. EIA/EMP - Related Details	Pre-feasibility report	No
	EIA/EMP report (in case of Cat A, B1)	Yes
	EMP report (in case of Cat B2)	No
	Budgetary provision table for EMP	Yes
	Mining plan (in case of mining)	Not Applicable
	DSR in case of minor minerals	Not Applicable
20.4. Water Permission-Related Details	Permission for withdrawal of surface water	Yes
	Permission for abstraction of ground water	Not Applicable
20.5. Compliance and Monitoring Documents	Certified compliance report (in case of Expansion Proposals)	Not Applicable
	Action Taken Report (if any)	Not Applicable
	Closure report from RO (if any)	Not Applicable
20.6. Previous Clearances	Previous TOR granted (if any)	Not Applicable
	Previous EC granted (if any)	Not Applicable
	Previous EC transferred (if any)	Not Applicable
20.7. Wildlife and Forest Related Documents	Conservation plan for Schedule-I species	Yes
	NBWL/SBWL recommendation	Not Applicable
	In principle (stage-I) forest clearance	Not Applicable
	Final (stage-II) forest clearance	Not Applicable
20.8. NOC from Other Departments/Ministries	Existing CTE/CTO	Yes
	NOC from airport authority on the permissible height of the building (if applicable)	Not Applicable
20.9. Others	Court case details (if any)	Not Applicable
	Violation details (if any)	Not Applicable
	Summary of the project	Yes

21. ☑ I certify that I have uploaded all the required documents and correctly indicated them in the checklist. In case any discrepancy is found, or any required document is missing, the application shall be liable to be rejected at our own risk and cost.

Undertaking

22. ☑ I hereby give undertaking that the data and information given in the application and enclosures are true to be best of my knowledge and belief and I am aware that if any part of the data and information is found to be false or misleading at any stage, the project will be rejected and clearance given if any to the project will be revoked at our risk and cost. In addition to the above, I hearby give undertaking that no activity/construction/expansion has been taken up

22.1. Name	SHREE KHODAL WASTE MANAGEMENT
22.2. Designation	Partner
22.3. Company	SHREE KHODAL WASTE MANAGEMENT
22.4. Address	620, FORTUNE BUSINESS HUB, SCIENCE CITY ROAD, SOLA, AHMEDABAD, GUJARAT 380060
22.5. Date	07/06/2023

TRUE COPY

M/S SHREE KHODAL WASTE MANAGEMENT

Final EIA & EMP Report for Greenfield Common Biomedical Waste Treatment & Disposal Facility (CBWTF) at Plot No. 5 & 6, GIDC Shehera, Taluka Shehera & Dist: Panchmahal, Gujarat

JULY 2025









Kadam
Environmental Consultants
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ACCREDITATION DETAILS

NABET Certificate No NABET/EIA/2326/RA0303 dated 11-10-2023 valid till 19-03-2026

Baseline Monitoring Season – Winter - December 2024 to February 2025, Analysis done at M/s Kadam Labs Private Ltd, NABL & MoEF&CC approved Laboratory; Certificate No TC-13450 dated 9/4/2024 and valid till 8/4/2026

Public Hearing Applicable & Completed

M/S SHREE KHODAL WASTE MANAGEMENT

Final EIA & EMP Report for Common Biomedical Waste Treatment & Disposal Facility (CBWTF) at Plot No. 5 & 6, GIDC Shehera, Taluka Shehera & Dist. Panchmahal, Gujarat

© Kadam Environmental Consultants ('Kadam'), July 2025

This report is released for the use of the M/s. Shree Khodal Waste Management, Regulators and relevant stakeholders solely as part of the subject project's Environmental Clearance process. Information provided, unless attributed to referenced third parties, is copyrighted and shall not be used for any other purpose without the written consent of Kadam.

Applicability of GC / SC – Not Applicable

QUALITY CONTROL							
Name of Publication	Proposed Common Biomedical Waste Treatment & Disposal Facility (CBWTF) at Plot No.5 & 6, GIDC Shehera, Taluka Shehera & Dist. Panchmahal, Gujarat - 389210						
Project Number	2459598358	**Issue No.**	1	**Revision No.**	0	**Released**	July, 2025
DISCLAIMER							
Kadam has taken all reasonable precautions in the preparation of this report as per its auditable quality plan. Kadam also believes that the facts presented in the report are accurate as on the date it was written. However, it is impossible to dismiss absolutely, the possibility of errors or omissions. Kadam therefore specifically disclaims any liability resulting from the use or application of the information contained in this report. The information is not intended to serve as legal advice related to the individual situation.							

Description of images on the front page:

1. Site Photograph 1
2. Typical photo of a similar facility
3. Proposed Site Layout
4. Site Photograph 2

UNDERTAKING BY PROJECT PROPONENT

Shree Khodal Waste Management

620, 6th Floor, Fortune Business Hub, Near Shell Petrol Pump,
Science City Road, Sola, Ahmedabad, Gujarat- 380060.

Date:21st June, 2025

TO WHOMSOEVER IT MAY CONCERN

We, Shree Khodal Waste Management, are proposing a new Common Biomedical Waste Treatment and Disposal Facilities (CBWTF) At Plot No.5 & 6, GIDC Shehera, Taluka Shehera, Dist. Panchmahal, Gujarat.

The proposed project is classified as Category B1 project and falls under Activity 7(da); Common Bio-medical Treatment Facility as specified in the EIA Notification, 2006, and its subsequent amendment dated 17th April, 2015.

We have appointed Kadam Environmental Consultants, an EIA Consultancy Organization, duly accredited for the Sector(s) 32 (A), Common Bio-medical Treatment Facility Category B1 by NABET, for conducting the EIA study.

We hereby give an undertaking that the data and the information given in the EIA Report and its relevant enclosures, prepared by Kadam Environmental Consultants, are factually correct to the best of our knowledge and belief.

Thanking You

Yours truly,

For, SHREE KHODAL WASTE MANAGEMENT

PARTNER

Abhishek Joshi

(Partner)

DECLARATION BY EXPERTS CONTRIBUTING TO THIS REPORT

"I, hereby, certify that I was a part of the EIA team in the following capacity that developed this Report".

EIA Sector Number as per NABET	7(d) a	Name of Sector as per NABET	Bio-medical Waste Treatment Facility

EIA COORDINATOR

Name	Anand Kunte	
Signature & Date	21/4/25	
Period of involvement	August 2024 – April 2025	
Contact Information	**Address:** Kadam Environmental Consultants, 871/B/3, Near Himalaya Machinery, GIDC Makarpura, Vadodara - 390010	Landline No.: 0265 - 6131000

FUNCTIONAL AREA EXPERTS

S. No.	Functional Areas	Name of the Expert	Involvement		Signature & Date
			Period	Task	
1	Air Pollution Prevention, Monitoring & Control (AP)	Anand Kunte	August 2024 to March 2025	Site visit, selection of monitoring locations based on windrows, review of actual field sampling, evaluation of results of Ambient Air Quality Monitoring (AAQM), identification of air emission sources, suggestions on their APCM measures, identification of impacts and suggestions on mitigation measures, contribution to EIA documentation.	21/4/25
2	Water Pollution Prevention, Control & Prediction of Impacts (WP)	Anand Kunte	December 2024 to March 2025	Site visit, selection of sampling locations for surface water, review of actual field sampling, water balance estimation, waste water treatment and disposal, identification of impacts, suggestion of mitigation measures, contribution to EIA documentation.	21/4/25
3	Solid waste and Hazardous Waste Management (SHW)	Anand Kunte	December 2024 to March 2025	Identification & Categorization of solid and hazardous waste generated from the facility, suggestions on mitigation measures for management of hazardous waste, collection, storage and disposal, identification of impacts, suggestion of mitigation measures, contribution to EIA Documentation.	21/4/25
4	Socio-Economics (SE)	Sangram Kadam	December 2024 to March 2025	Site Visit & Field Survey, Assessment of baseline socio economic status of study area, identification of socio-economic impacts due to project activity, suggestion of mitigation measures, contribution to EIA documentation, suggestions for CER /CSR activity.	15.4.25
5	Ecology and Biodiversity (EB)	Deepali Gangwar	December 2024 to March 2025	Site Visit, Field Survey of biological environment in the study area based on primary and secondary data, identification of impacts, suggestion of mitigation measures, contribution to EIA documentation.	05.03.2025

S. No.	Functional Areas	Name of the Expert	Involvement		Signature & Date
			Period	Task	
6	Hydrogeology, ground water and Water Conservation (HG)	Nilkanth Kavlanekar	December 2024 to March 2025	Understanding of groundwater conditions, selection of groundwater sampling locations, review of actual field sampling and interpretation of results, identification of impacts, suggestion of mitigation measures and contribution to EIA documentation.	15/4/25
7	Geology (GEO)	Nilkanth Kavlanekar	December 2024 to March 2025	Geology and geomorphology analysis based on secondary data, primary field observations, identification of impacts, suggestion of mitigation measures, contribution to EIA documentation.	15/4/25
8	Soil Conservation (SC)	B.K. Patel	December 2024 to March 2025	Site Visit, selection of soil sampling locations based on land use, analysis of soil results and its interpretation, Identification of impacts, suggestion of mitigation measures, and contribution to the EIA documentation.	15/4/25
9	Meteorology, Air Quality Modelling & Prediction (AQ)	Anand Kunte	December 2024 to March 2025	Observations on local meteorological conditions, Air quality modelling due to air emissions of proposed project in AIRMOD and prediction based on meteorological conditions of one season baseline monitoring, prediction of incremental increase in air quality parameters due to proposed project, identification of impacts, suggestion of mitigation measures, contribution to EIA documentation.	21/4/25
10	Noise and Vibration (NV)	Mahendra Jadav	December 2024 to March 2025	Site Visit, selection of sampling locations, baseline noise assessment, running of Sound Plan for prediction of incremental increase in noise levels, identification of impacts and suggestion of mitigation measures, identification of Impact and mitigation measure and preparation of FAE report.	18/4/25
11	Land Use (LU)	Sangram Kadam	December 2024 to March 2025	Site Visit, Development of land use maps of study area using GIS/ google related Tools, OSM Maps, site visit for ground truth Survey, finalization of land use Map, identification of impacts, suggestions of mitigation measures, contribution to EIA documentation.	15.4.25
12	Risk Assessment & Hazard Management (RH)	Parul Patel	December 2024 to March 2025	Risk Assessment and Safety Management Plan, Risk Assessment analysis in PHAST Software, DMP, suggestions of mitigation measures, contribution to EIA Documentation.	Parul Patel 19/04/2025

EIA: FUNCTIONAL AREA EXPERT (CATEGORY B), FUNCTIONAL AREA ASSOCIATE AND TEAM MEMBERS

Name	Functional Area	Involvement		Signature
		Task	Under FAE	
Team Members				
Mr. Kushal Chavare	HG	Understanding and representing groundwater conditions, finalization of survey findings	N.B. Kavlanekar	
	GEO	Geology and geomorphic analysis based on secondary data and in co-operation with FAE		
	LU	Supervision in development of land use maps of study area using Google Image/ related tools, site visit for ground truth survey, Supervision in preparation of draft FAE report	Sangram Kadam	
Mr. Pratik Panchal	RH	Assisting in impact identification and mitigation measures, PHAST modelling	Parul Patel	
Mr. Hitendrasinh Parmar	SE	Secondary data collection, evaluation of Socio-Economic status of the study area, assistance in assessment of the possible change to socio-economic issues arising out of the proposed project activity and in draft FAE Report documentation	Sangram Kadam	31-03-25

EIA: OTHER MEMBERS

Name	Functional Area	Involvement		Signature
		Task	Under FAE	
Team Members				
Aarti Sharma	SE	Secondary data collection, evaluation of Socio-Economic status of the study area, assistance in assessment of the possible change to socio-economic issues arising out of the proposed project activity and in draft FAE Report documentation	Sangram Kadam	
Anup Ohja	NV	Baseline noise assessment, running of Sound Plan for prediction of incremental increase in noise levels, identification of impacts and suggestion of mitigation measures and preparation of Draft FAE report	Mahendra Jadav	
Megha Oza	LU	Assisting in Development of land use maps of study area using GIS/ google related Tools, OSM Maps, site visit for ground truth Survey, identification of impacts, suggestions of mitigation measures and preparing draft FAE Report.	Sangram Kadam	
Margi Dhimar	WP, SHW, AP/AQ	Site visit, evaluation of results of Ambient Air Quality Monitoring (AAQM), identification of air emission sources, review of actual field sampling, identification of impacts and suggestions on mitigation measures, mitigation measures for management of hazardous waste, collection, storage and disposal, preparation of draft FAE report.	Anand Kunte	

Declaration by the Head of the Accredited Consultant Organization / Authorised Person:

I, Sangram Kadam, hereby, confirm that the above-mentioned experts prepared the EIA Report for M/s. Shree Khodal Waste Management and Common Biomedical Waste Treatment and Disposal Facility (CBWTF) at Plot No. 5 & 6, GIDC Shehra, Taluka & Dist. Panchmahal, Gujarat. I also confirm that Kadam Environmental Consultants shall be fully accountable for any misleading information mentioned in this statement.

Signature	: 
Name	: Sangram Kadam
Designation	: Director
Name of the EIA Consultant Organization	: Kadam Environmental Consultants
NABET Certificate No. & Issue Date	: NABET/EIA/2326/RA0303, Issued on 11-10-2023, Valid up to 19-03-2026

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LIST OF PERSONS MET AND INSTITUTIONS VISITED

The following persons consulted in relation to the project during the EIA study:

1. Client – M/s Shree Khodal Waste Management,
    - Mr. Abhishek Joshi
2. Ecology and Biodiversity – Met during visit for the Ecology & Biodiversity,
    - Mr. R. V. Patel- RFO, Shehera
3. Seva Sadan Officer- Persons met during Socio Economic Study
    - Ms. Tejal Mundasva
4. Social Assessment Study – Persons met during Socio Economic Study

S. No.	Villages	Date	Location within Village	Participant Names
1	Zoz	05.02.2025	Gram Panchayat	Chetanbhai (Villager)
			Government Primary School	Biyola Rajendrasinh(Prinicpal)
2	Varial		Gram Panchayat	Vijaykumar Bariya(Sarpanch)
			Government Primary School	Hareshbhai Patel(Prinicpal)
3	Salampur		Government Primary School	Hanif Shaikh(Prinicpal)
4	Hansapur		Government Primary School	Pinkeshkumar Patel(Prinicpal)
5	Palikhanda		Government Primary School	Kirtikumar Patel(Prinicpal)
6	Dalwada	06.02.2025	Gram Panchayat	Vikramsinh Pagi(Sarpanch)
			Government Primary School	Subhashchandra Patel(Prinicpal
7	Bhensal		Gram Panchayat	Dalpatbhai Pagi(Talti)
			Government Primary School	Ratilal Patel(Principal)
8	Vijapur		Government Primary School	Mukeshbhai Goswami(Prinicpal)

1 INTRODUCTION

Proposed project is for development of Common Bio-medical Waste Treatment Facility (CBWTF) for treatment and safe disposal of Bio-medical wastes generated from medical and health care facilities within 75 km area of the proposed site location at Shehera.

The facility includes an Incineration Plant, Autoclave & Shredder facility including ancillary facilities like Storage of incoming wastes and products/recyclables, solid and hazardous waste and ETP with ZLD system.

As per the Subequent amendment of EIA Notification, 2006 dated 17th April, 2015 mention that: -

In the said notification, in the Schedule, after item 7(d) and the entries relating thereto, the following item and entries shall be inserted, namely:—

(1)	(2)	(3)	(4)	(5)
"7(da)	Bio-Medical Waste Treatment Facilities	-	All projects	-

Thus the proposed project falls under Schedule 7(da)- Bio-medical waste treatment facility (BWTF), Category B. The proposed site is located at Plot No. 5 & 6, GIDC Shehera, Taluka Shehera & District Panchmahal, Gujarat - 389210.

The facility is being developed by Shree Khodal Waste Management company.

1.1 Purpose of the Report

Purpose of this report is to identify environmental aspects & impacts arising out of the proposed project and to propose mitigation measures in the form of an EIA Report and seek Environmental Clearance for the proposed CBWTF facility. The EIA Report is prepared as per the Terms of Reference (TOR) issued by SEAC, vide their letter Ref: SEIAA/GUJ/TOR/7(da)/57/2025 dated 21st January, 2025; as presented at ***Annexure 1.***

This report is prepared based on guidelines of EIA Notification, 2006 as amended till date.

1.2 Identification of project and project proponent

1.2.1 Identification of the project

The proposed project falls under Activity: 7(da) – Common Bio- medical waste treatment facility (CBWTF), Category B as per EIA Notification and its latest amendments.

Type of Proposal (New/Expansion/Modernization) - New

1.2.2 Identification of project proponent

M/s Shree Khodal Waste Management (SKWM) is a Partnership firm, established in 2023, for getting engaged in Biomedical Waste Treatment and Disposal Facility to be established as per BMW Rules 2016 & latest updated Guidelines for Common Bio-medical Waste Treatment and Disposal Facilities dated 12th April 2025. M/s SKWM proposes to have Collection, Segregation, Transportation, Handling, Storage, Treatment, Processing and Disposal Facility for BMW catering to the health care facilities in a 75 km radius covering Panchmahal, Mahisagar and Dahod districts of Gujarat State.

1.3 Brief description of nature, size, location of the project and its importance to the country / region

1.3.1 Brief Description of Nature and Size of Project

The proposed project is of Common Biomedical Waste Treatment & Disposal Facility with project components as presented in ***Table 1-1*** as below:

Table 1-1: Project Components & their capacity

Sr. No.	Facility	Capacity	Working Hrs. per day and No. of days per year	Waste to be handled (MT per day)	Waste to be handled (MTPA)
1	Incinerator	100 Kg/hr	20 hrs. x 360 days	2.0	720
2	Autoclave	50 Kg	10 cycle per day x 360 days	0.5	180
3	Shredder	50 Kg	10 cycle per day x 360 days	0.5	180
Total				**2.5**	**900**

1.3.2 Location of the project

The proposed project is a greenfield project to be developed at Plot No. 5 & 6, non-notified GIDC Estate at Shehera, Taluka Shehera & Dist. Panchmahal, Gujarat. The plot allotment letter of GIDC to the project proponent is presented at ***Annexure 2.***

General locational details of project are presented in ***Table 1-2*** as below:

Table 1-2: Locational Details of Project

Sr. No.	Particulars	Description
1	Plot / Survey No / Khasra No / Area	Plot No. 5 & 6 admeasuring an area of 5678.68 sq. m.
2	Village	Non-Notified GIDC Estate near Village Shehera
3	Tehsil /Taluka	Shehera
4	Village Panchayat	Nagarpalika Shehera
5	District, State, Pin Code	Panchmahal, Gujarat - 389210
6	Lat Long of centre of project site	22°56'14.72"N, 73°38'13.31"E
7	Survey of India OSM No (covering 10 km of study area)	F43H9 and F43B12
8	Average Elevation	121 m above MSL
9	Seismic Zone	Zone III – Moderate Damage Risk Zone
10	Nearest Railway Station	Godhra Railway Station ~ 18.03 Km S aerial distance from project site
11	Nearest Airport	Vadodara International Airport ~ 80.78 Km SSW aerial distance from project site
12	Nearest National Highway	NH - 59 ~ 14 Km S of project site
13	State Highway SH - 05	Adjacent to the site.

There is no Wildlife Sanctuary or National Park or Protected Area or Biosphere Reserve or Tiger Reserve or Elephant Reserve or Critically Polluted Area or Severely Polluted area or Eco Sensitive Zone or State/UT boundary or International Boundary or area protected under International Convention / National legislation / Local Legislation or Wetland or coastal zone or Defence Installation within the 10 Km of the study area.

1.3.3 Proposed Schedule for EC Clearance Process

The proposed schedule for EC clearance process is presented in ***Table 1-3.***

Table 1-3: Project Schedule for EC Clearance Process

Sr. no.	Process	Date	Remark
1	Form 1 along with Pre-Feasibility report uploaded MoEF&CC online portal to obtain ToR	07/06/2023	Proposal No. SIA/GJ/INFRA2/432576/2023
2	Resubmission of Proposal by Proponent	16/01/2024	A Gap Analysis Report was prepared by GEMI, based on which the proposal was resubmitted elaborating the justification of setting up of BMW facility in this area
3	Presentation before SEAC for obtaining TOR	897th Part-B meeting of SEAC, TOR Re-Consideration - No 2, Date: 29/08/2024	-
4	Granted TOR	21/01/2025	-
5	Baseline Studies	1st December 2024 – 28th February 2025	Winter Season
6	Draft EIA report submission for Public Hearing	16th May 2025	Submitted for Public Hearing
7	Public Hearing	09th July 2025	Conducted
8	Receipt of CTE	23rd May 2025	CTE for the project is received as presented at ***Annexure 18***
9	Final EIA report Submission	July 2025	Public Hearing Completed
10	EC Clearance	Application by July 2025	Expected by September 2025

1.3.4 Regulatory Framework

The major regulatory provisions applicable to the project are tabulated in as under:

Table 1-4: Regulatory Framework for proposed project

Sr. No.	Applicable Act	Concern Authority or Board	Permission Status
1	Air (Prevention and Control of Pollution) Act, 1981 and its subsequent amendments.	MoEF&CC and GPCB	Consent to Establish (CTE) from Gujarat Pollution Control Board has been received, the CTE is attached as ***Annexure 18***. Consent to Operate under Air Act and Water Act will be obtained from the same Board after receipt of Environment Clearance. Fresh water requirement is 11.2 KLD and source of water is GIDC Supply. It does not attract CGWA permission as no ground water withdrawal is envisaged in the project.
2	Water (Prevention and Control of Pollution) Act, 1974 andits subsequent amendments.	MoEF&CC and GPCB	
3	The Environment (Protection) Act, 1986 & its subsequent amendments	MoEF&CC, GPCB, SEAC, SEIAA	Environment Clearance: Environment Clearance from SEIAA, Gujarat is mandatory before construction and commissioning of proposed project
4		GPCB	Consent to Establish (CTE) from Gujarat Pollution Control Board has been received, the CTE is received and attached as ***Annexure 18***. Consent to Operate under Air Act and Water Act will be obtained from the same Board after receipt of Environment Clearance.
5	Hazardous Waste (Management & Handling) Rules 2016	GPCB	Membership of TSDF site i.e. Varni Enviro Care Pvt. Ltd. is obtained for disposal of hazardous waste. The same is presented as ***Annexure 12***.
6	Public Liability Insurance Act, 1991	District Collector	PLI will be taken up once the facility constructions are started and further ready for commissioning
7	Motor Vehicle Act, 1989	Ministry of Shipping, Road Transport and Highways	Unit will follow all the conditions applicable under the rule.

Sr. No.	Applicable Act	Concern Authority or Board	Permission Status
8	The Factories Act, 1948	Ministry of Labor, DGFASLI and Directorate of Industrial Safety and Health/ Factories Inspectorate	Factories license will be obtained before execution of the proposed project.
9	The Companies Act, 2013 (Section 135 & 469)	Ministry of corporate affairs (MCA)	Unit will carry out CER/CSR as elaborated in the EIA report. Total budget allocation for CER is kept to 10 Lacs.
10	The Building and Other Construction Workers Act, 1996 and its amendments	Ministry of Labor, DGFASLI and Directorate of Industrial Safety and Health/Factories Inspectorate	Required permissions for construction activities will be obtained by civil contractor and/or by the Shree khodal Waste Management Pvt. Ltd prior to commencing the construction phase.
11	The Petroleum Act, 1934	Ministry of Petroleum and Natural Gas, Ministry of Shipping, MoEF&CC, SPCB/UTPCC, Chief Controller of Explosives, district authority, Commissioner of Customs, Port Conservator, State Maritime Board (Import)	Due to less storage threshold quantity of Diesel, PESO license is not applicable.

1.4 Importance of the project to the country and region

Proposed project will be providing services to all hospitals/clinics/health care units of Panchmahal, Mahisagar and Dahod Districts within 75 km radius of the site. The proposed facility will be operated smoothly in conjunction with the another biomedical waste management facility available in the region (M/s Samvedna BMW Incinerator Facility in Halol).

The proposed facility will involve activities such as collection of segregated wastes, safe transportation to CBWTF, operation of treatment facilities and processing of the biomedical waste for safe disposal.

The major benefits of the proposed project are proper management of Biomedical Wastes, Treatment and Disposal. Other benefits are employment generation (temporary and permanent) in running of the facility, social upliftment of surrounding areas and villages through CER/CSR.

1.5 Scope of study

1.5.1 General scope

The scope of the study is to carry out Environmental Impact Assessment (EIA) to identify, predict and evaluate potential environmental including socio-economic aspects other than air, water and solid waste, noise, land use & land cover etc. which may result from the proposed development and operations of the CBWTF and to develop a suitable Environmental Management Plan (EMP) to mitigate the undesirable effects.

Based on the proposed TOR issued by SEIAA Gujarat, the EIA report is prepared covering the generic structure of Report as per EIA notification and covering the following:

- Baseline data and analysis with respect to Air, Water, Noise, Land, Biological and Socio-Economics components for one season.
- Identification and Prediction of aspects and impacts on environment and suggesting mitigation measures.
- Preparation of Environmental Monitoring, Management and RA/DMP Plan.
- Post Project Monitoring Plan.
- Conducting Public Hearing.
- Incorporating the comments and suggestions of stakeholders of the project in the Final EIA report after Public Hearing.

1.5.2 Terms of Reference and its Compliance

As per ToR Letter No. SEIAA/GUJ/TOR/7(da)/57/2025 dated 21st January, 2025 issued by SEIAA, Gujarat, as attached vide ***Annexure 1***: TOR Letter issued by SEIAA

The summarized pointwise compliance to the TOR points is presented in **Table 1-5*.***

Table 1-5: Compliance to the TOR Conditions

Sr. No.	ToR Point	Compliance
A	**Standard TOR Conditions**	
1	Importance and benefits of the project.	The benefit of the proposed project is proper management of Biomedical Wastes, Treatment and Disposal. Other benefits are employment generation (temporary and permanent) in running of the facility, social upliftment of surrounding areas and villages through CER/CSR. The project benefits are highlighted in **Chapter -8** of the EIA Report.
2	Reasons for selecting the site with details of alternate sites examined/rejected/selected on merit with comparative statement and reason/basis for selection. The examination should justify site suitability in terms of environmental damages, resources sustainability associated with selected site as compared to rejected sites. The analysis should include parameters considered along with weightage criteria for short-listing selected site.	As mentioned in the CPCB guideline of CBWTF - A CBWTF shall preferably be developed in a notified industrial area without any requirement of buffer zone. The site has been selected in a non-notified GIDC area near Shehera village. No alternative sites have been surveyed since the current site is located in GIDC area (criteria based on the CPCB guidelines) and this site is proposed to serve for treatment and disposal of Biomedical Waste from Health Care Facilities (HCF's) in the three districts named as Mahisagar, Panchmahal and Dahod. The site is suitable and in compliance with the Biomedical Waste Management Rules as presented in ***Table 2-15*** in **Chapter 2**, **Page No *65.*** The site has also been acknowledged and mentioned satisfactory in the TOR letter (Page No 8 of 20) under reference as ***Annexure 1***: TOR Letter issued by SEIAA **.**
3	The cost of the Project (capital cost and recurring cost) as well as the cost towards implementation of EMP should be clearly spelt out.	The cost of the project is **4.87 Crores**. Cost on Environmental Matters is to the tune of **Rs. 124.55 Lacs** Capital and **Rs. 22.11 Lacs** per annum on recurring expenditure.
4	Details of various waste management units with capacities for the proposed project. Details of utilities indicating size and capacity to be provided.	As per the Biomedical Waste Management Rule, different category waste is stored separately as per the colour coding system. The yellow category waste storage room is of 36 Sq. m., Blue category waste storage room is of 24 sq. m. and the red category waste storage room is of 36 sq. m. Hazardous waste have separate storage room of 52 sq. m. Other facility areas are elaborated in the area breakup table presented in **Table 2-3**.
5	List of waste to be handled and their characteristics. Details of temporary storage facility for storage of Bio-medical waste at project site.	The list of types of wastes to be handled and their nomenclatures, Type & Colour Coding of Biomedical Waste along with Collection and Disposal methods are elaborated in **Table 2-5 in Chapter 2.** The different category waste is stored separately as per the colour coding system. The yellow category waste storage room is of 36 sq.m., Blue category waste storage room is of 24 sq.m. and the red category waste storage room is of 36 sq.m. Hazardous waste have separate storage room of 52 sq. m on the proposed site.
6	Other chemicals and materials required with quantities and storage capacities.	No other chemicals will be stored on site. Only HSD will be stored for use in DG set (used during power failure only) and diesel storage tank will be of only 100 litres capacity.
7	Detailed design of pre-treatment and waste stabilization facility of Biomedical waste.	All biomedical wastes will be separately collected in closed containers based on segregation and colour coding method and stored in separate waste storage areas on site. The facility will follow the Bio medical waste colour coding system and it will have the category wise segregation of waste at the source only and will be further transported in separate

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		containers in closed truck transportation to storage areas at the facility as per categorization.
8	Project proponents would also submit a write up on how their project proposal conform to the stipulations made in the " Bio-Medical Waste Management Rules, 2016 ", notified by the MoEF&CC on 28th April, 2016.	The compliance of the Bio-medical waste management rule, 2016 and as per the revised guidelines 2025 and the compliance for the incinerator, shredder and Autoclave design also presented in tabular formats at **Table 2-11, Table 2-12, Table 2-13, Table 2-14 & Table 2-15 in Chapter 2.** All the project components are designed in compliance with the issued guidelines of CPCB from time to time.
9	Process description along with major equipment and machineries, process flow sheet (quantitative) from Bio-Medical waste material to disposal to be provided.	The process starts at the point of waste generation, with immediate segregation into colour coded, barcoded containers. Waste is then collected, safely transported and sent by containerized, trackable vehicle and stored temporarily and then sent to final treatment using facility-specific equipment such as incinerators, autoclaves, and shredders, in alignment with regulatory requirements. Detailed Description covered in **Section No.2.6**
10	Details of man-power requirement (regular and contract).	20 persons will be required during project operation phase. During construction phase, temporary manpower will be employed for construction purpose.
11	A detailed layout of the project site indicating all the project components.	A detailed layout plan is presented in ***Figure 2-4*** with major components of the facility like Incinerator area, Autoclave area and the shredder area. It also contains the details of other facilities like ETP area, Sharp pit area, Vehicle parking and washing area, admin building area, etc.
12	Submit the details of the road/rail connectivity along with the likely impacts and mitigative measures	The road connecting the site is GJ SH 5 (Godhra to Modasa) via Shehera. Traffic Survey was carried out during baseline monitoring and predicted Incremental Traffic due to the proposed facility will have negligible impact on the movement of existing traffic due to proposed project.
13	Details of the control and monitoring systems during combustion process.	Incineration Plant will have Primary and Secondary Chambers for combustion of waste and off gases from Primary Combustion. Temperatures of minimum of 800^0 C and maximum of 1050^0 C will be maintained in both Primary and Secondary Chambers (as per CPCB Guidelines). The tail gas cleaning system comprises of Quencher followed by Venturi Scrubber, ID Fan with adequate stack height. Continuous Emission Monitoring System will be installed at proposed incinerator for parameters like Temperature, O_2, CO_2, CO, PM, NOx, NH_3, SO_2, HC and Dioxins and Furans. In addition to the Continuous monitoring system, stack monitoring will be carried out by a third party NABL accredited laboratory once in two months.
14	Examine the details of transportation of Bio-Medical wastes, and its safety in handling.	The transportation of the Bio- medical waste will be done as per the specification mentioned in the Biomedical waste management rule like GPS system for tracking vehicles, bar code system, separate cabin for waste storage containers, base of the waste cabin will be leak proof, vehicle will be labelled with the bio-medical waste symbol, etc.
15	Detailed soil analysis of the site including its permeability, water holding capacity be included.	Baseline Soil analysis includes permeability and Water holding capacity, besides routine analysis of physio-chemical properties and fertility status of soils. The results and analysis detailes are provided at ***Table 3-31***.
16	Submit the present land use and permission required for any conversion such as forest, agriculture etc.	Presently the site is a scrub land which is earmarked for Industrial use as it is acquired by GIDC. The Allotment letter of GIDC is enclosed vide **Annexure 1**: TOR Letter issued by SEIAA .
17	Specify the land area and space allotted for each activity proposed within the facility. The area	Total plot area of the site is 5678.68 sq. m comprising of Plot No. 5 & 6. The principal project activity is of covered Incineration plant in an area of 738 sq.m besides which temporary waste

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	requirements for each activity shall be calculated as per the CPCB guidelines for the specified activity.	storage areas of Yellow, Blue, Red waste are proposed in an area of 96 sq.m. Adjacent to the storage areas of incoming waste there is Shredder and Autoclave Room of total area of 72 sq.m. Underground Fire water tank is located besides the Incinerator Area along with Treated Waste Storage area of 60 sq.m. Other waste management areas cover sharp pit, Hazardous Waste Storage Area, ETP area; all put together of 176 sq. m. Other ancillary areas are of Vehicle parking, vehicle wash, Admin Building, OHC Centre, Security, Driver Rest Room, Electric room, Visitor staff parking area, Canteen, Fire water Tank & Rain Water Collection Tank all of 583 sq.m. The green belt area proposed is 1964 sq. m. which is 33% of the plot area.
18	Status of the land purchases in terms of land acquisition Act. If acquisition is not complete, stage of the acquisition process and expected time of complete possession of the land.	The Plot No. 5 & 6 of Shehera Village is located in a non-notified GIDC area and have received the Allotment area from the GIDC attached as ***Annexure 2***.
19	The EIA would address to the conformity of site to the stipulations as made in the Bio-Medical Waste Management Rules, 2016 and Hazardous and Other Wastes (Management and Trans-Boundary Movement) Rules, 2016 and will have a complete chapter indicating conformity to the said rules. NOC shall be obtained from State Pollution Control Board/Committee (SPCB/SPCC) regarding site suitability for establishment of Bio-Medical Waste Treatment Facilities.	The site is located in the GIDC area so the siting criteria will not be applicable and also as mentioned in the CPCB guidelines siting criteria of CBWTF is compiled which includes Location criteria, Land requirement Criteria & Coverage Area.
20	Post project reclamation management program with financial allocation.	Post monitoring plan has been prepared which inludes parameters like air, water, storm water, noise, odour, etc with financial allocation of Rs 101.3 Lacs Capex investment. Cover under ***Table 6-2.***
21	Examine and submit the details of online pollutant monitoring.	Continuous Emission Monitoring System (CEMS) will be installed at Incinerator Stack of the proposed incinerator system and which will be connected to CPCB/SPCB server.
22	Project proponent must ensure Good Combustion Practice (GCP) to reduce the possibilities of formation of 'Total dioxins and furans'. In addition, GCP must be coupled with appropriate End-of-the-pipe treatment at low temperature to reduce the emission of 'Total dioxins and furans' below the standards. Further, the project proponent must provide detailed Standard operating procedure (SOPs) for sampling and monitoring of 'Total dioxins and furans'.	We will ensure the Good Combustion Practice (GCP) to reduce the possibilities of formation of 'Total dioxins and furans'. A dioxin control system will be installed in the incineration plant. Regular monitoring of Dioxin and Furans will be done to check its emissions.
23	Environmental Management Plan should be accompanied with Environmental Monitoring Plan and environmental cost and benefit assessment. Regular monitoring shall be carried out for odour control.	Noted. Monitoring Plan is covered in ***Section 6.3,*** which indicate the regular monitoring of the odour and installing Continuous Emission Monitoring System at proposed incinerator for parameters like Temperature, O_2, CO_2, CO, PM, NOx, NH_3, SO_2, HC and Dioxins and Furans.. Cost on Environmental Matters and Project Benefits are covered in the **Section No. 10.5.10** of the **Chapter – 10**. Environment Management Plan for each parameters is considered in **Chapter- 10.**
24	Water quality around the landfill site shall be monitored regularly to examine the impact on the ground water.	This is common biomedical waste treatment facility project and not a landfill project.
25	A detailed draft EIA/EMP report should be prepared in accordance with the above additional TOR and should be submitted to the Ministry in accordance with the Notification.	The Draft EIA and this Final EIA report (after public hearing) has been prepared in accordance with the TOR points and is submitted to the Ministry in accordance with the Notification. The present table is a tabular chart with detailed point wise compliance of TOR points.

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26	Air Quality Index shall be calculated for base level air quality.	There were 8 locations selected for monitoring of ambient air around the project site and air quality monitoring for same location was done. National Air Quality index was calculated and presented in EIA report.
27	Baseline data on Ground water quality is required.	Baseline data was collected from 9 locations for Ground Water sampling and results are presented in this EIA report. The Shehera Taluka is under "Safe" category according to CGWA.
28	Possible carbon footprint contribution from each activities and mitigation measures proposed shall be included as part of Environment Management Plan.	Details about Carbon Footprint is presented at ***Annexure 13***
29	Examine and submit details of the proposed odour control measures.	Odour control measures: Closed containers will be used during transportation in order to prevent exposure and release of odours, General cleaning at periodic intervals and Good housekeeping practices will be adopted, Daily washing of waste collecting vehicles and storage area with hypo-chloride solution, etc.
30	The storage and handling of Bio-Medical wastes shall be as per the Bio-Medical Waste Management Rules, 2016.	The list of types of wastes to be handled and their nomenclatures, Type & Colour Coding of Biomedical Waste along with Collection and Disposal methods are elaborated in **Table 2-5 in Chapter 2.** The different categories of waste are stored separately as per the colour coding system. The yellow category waste storage room is of 36 sq. m., Blue category waste storage room is of 24 sq. m. and the red category waste storage room is of 36 sq. m. Hazardous waste have separate storage room of 52 sq. m on the proposed site.
31	Details of storage and disposal of pre-processing and post-processing rejects/inerts and products. List of proposed end receivers for the rejects/inerts/products should be provided. MoUs to be submitted in this regard.	Rejects like Incineration Ash/ ETP Sludge/Encapsulated waste will be sent to TSDF, the shredded material & Spent Oil will be sent to authorized recyclers. The details are provided in the tabular format as presented at ***Table 2-21***: Types of Solid & Hazardous Waste and its Management.
32	Details of hazardous/solid waste generation and their management.	Total five different types of hazardous/solid waste generation are predicted. Hazardous waste like Incineration Ash/ ETP Sludge/Encapsulated waste will be sent to TSDF, the shredded material & Spent Oil will be sent to authorized recyclers. Generated waste management is cover under the ***Table 2-21***: Types of Solid & Hazardous Waste and its Management***.***
33	Detailed hydro-geological studies and possible impact if any accidental contamination occurs shall be included.	Geologically, Panchamahal district is the manifestation of diverse geological extension from Lower Proterozoic to Holocene with different rock types such as granitic to basalt and limestone to alluvium. The study area is predominantly covered by phyllite, mica schist, metasubgraywacke and chlorite Schist, quartzite and phyllitic quartzite, quartz mica schist, protoquartzite & dolomite of Lunavad group of Aravalli Supergroup from Lower Proterozoic Age and Granite/Granodiorite of Godhra Granite from Upper Proterozoic Age as presented in ***Figure 3-16.*** Hydrogeology : The area is rocky region and hence will have minimal impact due to any accidental contamination of runoffs / percolation in soil.
34	Examine and submit details of monitoring of water quality around the landfill site.	Ground water quality monitoring wells will be installed on periphery of site 2 Nos for monitoring of any contamination in ground water.
35	Examine and submit details of impact on water body and mitigative measures during rainy season.	Storm waters will be drained outside the site premises into road side drainage. Care will be taken that no contaminated storm waters will be discharged outside the site premises.
36	Details of Drainage of the project up to 5 km radius of study area. If the site is within 1 km radius of any major river, peak and lean season river discharge as well as flood occurrence frequency based on peak rainfall data of the past 30 years. Details of	The study area experiences semi-arid climate condition with erratic rainfall and high evaporation due to the adjacent coastal zone. The topography & drainage pattern shows the study area does not fall in flood prone region as presented in **Figure 3-15: Flood Hazard Map** showing site location.

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	Flood Level of the project site and maximum Flood Level of the river shall also be provided.	
37	Details of effluent treatment and recycling process.	Domestic waste water will be sent to soak pit & Industrial waste water will be treated in in-house ETP and treated water will be reused in plant premises achieving ZLD. The details of effluent treatment and recycling process are provided in **Section No. 2.13** of the **Chapter- 2**
38	A certificate from the local body supplying water, specifying the total annual water availability with the local authority, the quantity of water already committed, the quantity of water allotted to the project under consideration and the balance water available. This should be specified separately for ground water and surface water sources, ensuring that there is no impact on other users.	Source: GIDC water supply. Proponent has obtained GIDC allotment Letter in which statement has been written for water supply from GIDC. Refer ***Annexure 2***: Plot Allotment Letter by GIDC to Shree Khodal Waste Management
39	A certificate of adequacy of available power from the agency supplying power to the project along with the load allowed for the project.	Proposed unit at full capacity will demand 60 KVA of power, which is being supplied through Madhya Gujarat Vij Company Ltd.
40	Submit details of a comprehensive Disaster Management Plan including emergency evacuation during natural and man-made disaster.	Detailed Disaster Management plan with on-site emergency plan and off-site emergency plan covered in **Section No.-7.8.**
41	Hazard identification and proposed mitigation measures.	HIRA and consequence analysis for HSD storage on-site is carried out along with mitigation measures as elaborated in **Chapter -7**:**ADDITIONAL STUDIES** of the EIA Report.
42	A detailed Plan for green belt development.	Total 33 % of plot area is developed as green belt to the tune of 1964 sq. m. Green belt with native plant species will be developed in the site premises with total plantations of 300 Nos and additional plantations availability will be made considering survival rate of 80%. Green belt will be developed besides the processing areas and along periphery of the site. This is presented in **Section No.- 10.5.7 in Chapter 10 of EIA report**
43	Public hearing to be conducted for the project in accordance with provisions of Environmental Impact Assessment Notification, 2006 and the issues raised by the public should be addressed in the Environmental Management Plan. The Public Hearing should be conducted based on the ToR letter issued by the Ministry and not on the basis of Minutes of the Meeting available on the web-site.	Public hearing was conducted on 09th July,2025 at 12:00 Noon at Plot No. 5 & 6, GIDC Shehera, Taluka Shehera, Dist. Panchmahal with provisions of EIA notification, 2006. All the raised issue by the public are incorporated in the EIA Report in ***Section- 7.1***.
44	The project proponents shall satisfactorily address all the complaints/suggestions that have been received against the project till the date of submission of proposals for Appraisal.	Public hearing observations are addressed in the report which covers all the objection/suggestion received verbal or written. ***Section 7.1.4, Table 7-1 and Table 7-2.***
45	Details of litigation pending against the project, if any, with direction /order passed by any Court of Law against the Project should be given.	No any litigation pending against the proposed project.
B	**Additional TOR Points by SEIAA as per TOR Letter**	
1	All conditions mentioned in TOR recommendation of SEAC vide letter dated 27.12-2024 shall be strictly adhere to.	This tabular chart provides pointwise compliance to all TOR conditions.
2	PP shall Carry out Public Hearing for their proposed project as per provision of EIA Notification.	Public hearing was conducted on 09th July,2025 at 12:00 Noon at Plot No. 5 & 6, GIDC Shehera, Taluka Shehera, Dist. Panchmahal with provisions of EIA notification, 2006.
3	With reference to Gap analysis, proposed treatment capacity of BMW waste shall be 28691 Kg/Month, where proponent shall operate all machineries in such a way that overall BMW shall be incinerated / autoclaved / shredded, that total BMW waste shall	The proposed capacity for Handling of Biomedical Waste at proposed site will not exceed the TOR / EC capacity granted.

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	not be exceed of 28691 Kg/ Month, predicted to reach 47,289 Kg/Month in 2028.	
4	Total 2.6 KLD of effluent generated shall be treated in ETP and treated effluent shall be reused backed in quenching of incinerator within premises, there shall be no discharge of any industrial effluent and maintain Zero Liquid Discharge (ZLD).	The ETP will be ZLD and 2.6 KLD from ETP will be recycled for quenching of Incinerator system.
5	Proponent shall have to obtain EC before installation of project after conduction of Public hearing.	Public hearing was conducted on 09th July,2025 at 12:00 Noon at Plot No. 5 & 6, GIDC Shehera, Taluka Shehera, Dist. Panchmahal with provisions of EIA notification, 2006. The final report after public hearing will be submitted for grant of EC to SEAC and SEIAA Gujarat. After grant of EC only the project will be started.
6	Proponent shall strictly comply siting criteria of GPCB	The site is located in the GIDC area so the siting criteria of GPCB will not be applicable. The CPCB guidelines on siting criteria of CBWTF is complied which includes Location criteria, Land requirement Criteria & Coverage Area.
7	PP shall carry out CER (Corporate Environment Responsibility) activity of their project cost, as per their submission vide OM of MoEF & CC dated 1.5.2018 of Rs 9.74 Lakh.	As per the CER office memorandum dated 1st May, 2018 of MoEF&CC the CER budget for 3 year comes to INR 10.0 lacs i.e. 0.2 % of project cost INR 4.87 Crore
8	PP shall give undertaking with NOC of agency of Samvedna BMW management as their area of operation will not affect the existing customer of Samvedna BMW management Dahod will not conflict into business interest of each other. No conflict agreement and certificate shall be given at the time of EC.	The undertaking Letter is attached as ***Annexure 14***.
9	Proponent shall provide all Fire prevention and safety measure for fire control, even though fire NOC is not mandatory by labour and skilled department.	The site will be provided with Fire hydrant system and fire extinguishers and will also take necessary Fire NOC for operations.
10	PP shall submit detail of STP with capacity at the time of EC application	The proposed project will have septic tank and soak pit system for small quantity of sewage generated.
11	PP shall provide detail of incinerator including primary & secondary chamber including capacity at the time of EC application.	Details of incinerator with primary and secondary chamber with design specific are covered. Also the compliance for the criteria of incinerator by CPCB are complied.
12	PP shall submit TSDF membership at the time of EC application.	The TSDF Membership Willingness Letter is attached as ***Annexure 12***
13	PP shall submit detail of ETP with capacity at the time of EC application	The ETP with capacity of 5 KLD will be provided and other details provided in the **Section No.-2.13.**
14	PP shall provide total green area of 33.88 % as per their submission.	The total area of green belt is 1964 sq. m. which is 33% of the total plot area.
15	Proponent shall obtain Environment Clearance from Competent authority before operation of their plant.	This final EIA report is prepared for the Environment Clearance Procedure. The construction & operation of the proposed project will start only after CTE and EC Clearance is received.
16	Proponent shall strictly comply revised CPCB Guidelines for common biomedical waste treatment facilities.	The compliance of the Bio-medical waste management rule, 2016 and 2025 and as per the revised guidelines and the compliance for the incinerator, shredder and Autoclave design also presented in tabular formats at **Table 2-11, Table 2-12, Table 2-13, Table 2-14 & Table 2-15 in Chapter 2.** All the project components are designed in compliance with the latest issued guidelines of CPCB.
17	CBMWTF shall comply all conditions/Amendments of BMW Rules and guidelines issued by the CPCB from time to time.	Noted and Complied
18	The CBWTF shall setup technology system as per CPCB guideline strictly comply, design criteria for	The site will adhere to the revised guidelines 2025 and the compliance for the incinerator, shredder and Autoclave design

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	incinerator, autoclave and shredder as per the CPCB guidelines.	as presented in tabular formats at **Table 2-11, Table 2-12 & Table 2-13 in Chapter 2.** All the project components are designed in compliance with the issued guidelines of CPCB.
19	The entire activities proposed under CER shall be submitted to the regional office of MoEF &CC as a part of half -yearly compliance report and to district collector. The monitoring report shall be posted on the website of PP.	Noted, after getting the Environment clearance the compliance report will be submitted.
20	The CBWTF shall strictly ensure mercury waste management at health care facility as per the Bio-Medical Waste Management Rules 2016.	Mercury will be handled with extreme care and mitigation measure will be taken as per the SOP mentioned in the Biomedical rule waste management rule, 2016
21	The CBWTF shall establish Standard Operating Procedure for waste collection, handling, transportation, treatment and disposal as per Bio-Medical Waste Management Rules 2016 and amended time to time.	Standard Operating Procedure for waste collection, handling, transportation, treatment and disposal as per Bio-Medical Waste Management Rules 2016 will be prepared.
22	Consent to operate shall be obtained from GPCB under Air (Prevention & Control of Pollution) Act, 1974 and Water (Prevention & Control of pollution) Act, 1974 before operation, failing which the Environmental Clearance herein shall be deemed to be withdrawn.	CTE receipt received from GPCB and once EC is received then only we will start construction activities on site. Sooner CTO application will be made to GPCB.
23	The CBWTF shall provide continuous emission monitoring system (CEMS) and an arrangement shall also be done for reflecting the online monitoring results on the company's server, which can be assessable by the GPCB on real time basis.	CEMS will be installed and operated as per CPCB requirements for Incineration System.
24	Authorization from Gujarat Pollution Control Board shall be obtained as applicable under Biomedical Waste Management Rules 2016.	CTE receipt is received as authorization under BMW waste handling from GPCB.
25	The proponent shall comply with Environmental standard notified by Ministry of Environment, Forest & Climate change for incinerator along with the technology/guidelines.	All standard for Incineration System will be complied as per CPCB norms.
26	There shall not be any spillage from the transportation vehicles.	Proper mitigation measures during transportation will be taken as mentioned like Vehicle will be fitted with GPS to track the movement of the vehicle, Separate cabins will be provided for driver/staff and the biomedical waste containers, The base of the waste cabin will be leak proof to avoid spillage of liquid during transportation, the vehicle will be labelled with the bio-medical waste symbol, etc.
27	The project proponents shall set up separate Environment Management Cell for effective implementation of stipulated environmental safeguards under the supervision of Senior Executive.	Environment Management Cell details covered in the **Section No.-6.4 in Chapter 6.**
28	All measures shall be taken to prevent soil and ground water contamination.	All the Mitigation Measures will be taken in consideration like care will be taken to avoid any spillages on soil in the plant areas which will not have an impact on soil quality, regular water sprinkling and use of fertilizers will improve the fertility of soil and maintain proper green belt for control of soil erosion and also improve quality of soil, etc. Ground water contamination will be avoided.
29	Complete zero liquid discharge (ZLD) status shall be maintained all the time and there shall be no any discharge wastewater from plant premises.	ZLD of treated water will be maintained in site premises.
30	This shall be Subject to concurrence of GPCB and approval of CPCB on the report submitted by GPCB	

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	and its recommendation for special and difficult area, where norms could not be strictly followed.	
31	Executive summary of the project – giving a prima facie idea of the objectives of the proposal, use of resources, justification, etc. In addition, it should provide a compilation of EIA report, including EMP and post project monitoring plan in brief.	The Executive Summary of the EIA report is provided in the **Chapter 11.**
32	Need for the proposed expansion should be justified in detail and Justification for selecting the proposed unit size.	No need of expansion the current capacity is justified in the ***Section- 2.5.1*** and ***Chapter 5 Table 5.1: Gap Analysis*** The capacity is justified as per the Gap Analysis
33	Submit details of nearest biomedical waste treatment facilities.	M/s. Samvedna Biomedical waste management Facility - Common Bio Medical Waste Treatment Facility (hereafter referred as CBWTF) at Plot No. 217/1, Chandrapura Industrial Estate, Chandarpura, Taluka Halol & District- Panchmahal-389350, Gujarat.
34	Submit the details of districts and talukas to be covered by proposed facility within coverage area of 75 km.	The Facility will collect the waste from Dahod, Mahisagar and Panchmahal District.
35	Submit Notarized undertaking regarding the proposed facility will not interfere with the coverage area of the existing CBWTF and beds covered by existing CBWTF.	***Annexure 14*** gives an undertaking that the proposed BMW facility will not interfere with the coverage area of the existing CBWTF and beds covered by existing CBWTF.
36	Submit Notarized undertaking for installation of online monitoring system for parameters like Total dioxins and furans with stack attached to incinerator.	Undertaking for installation of online monitoring system is provided as ***Annexure 15***.
37	Submit details of measures to be taken for control of air pollution including measures to control emission of Dioxin and Furan.	Mitigation measures like dioxin control system is installed in the incineration plant. Regular monitoring of Dioxin and Furans will be done to check its emissions.
38	Details of vehicle washing facility and OHC.	The details of vehicle washing facility and OHC facilty is provided in **Section No.-2.5.**
39	Status of all the applicable Rules, Acts, Regulation, Clearances in a tabular form.	It is provided in the Tabular Format under **Table 1-4** which covers the Rules, Acts & Regulation applicable for the Proposed Project.
40	Provision of STP for treatment and disposal of domestic waste water.	The domestic waste water will be treated in septic tank and soak pit system.
41	Details of generation and mode of disposal of STP sludge.	Domestic sewage generated will be ~ 0.8 KLD and it will treated in septic tank and soak pit system.
42	Adoption of atomization process like DCS/PLC including emergency response to eliminate risk associated with the hazardous processes, fire safety certificate / Fire No-Objection certificate (NOC) from the concern authority as per the prevailing Rules / Gujarat Fire Prevention and Life Safety Measures Act, 2016 and provision of Occupational health Centre(OHC) within premises.	All the mitigation measuares will be taken care and fire water Tank area will be developed in the site facility. Detailed provided in the **Section No.-7.** OHC facility is also provided in the premises.
43	Details of mechanism for monitoring of chlorine content in the biomedical waste.	Monitoring of chlorine content in the biomedical waste will be monitored in the Environmental Laboratory by Chemical Analysis as specified in **Section No 6.5.1**.
44	Details with respect to justification for proposed expansion: (1) To address proportionate availability of space for production plant. (2) To address proportionate availability of storage area for raw materials finished goods, utilities considering fire-safety norms & PESO standards and goods carrier movement within premises. (3) To address proportionate captive/ common infrastructure available to accommodate additional load due to proposed expansion. (4) Environment impact and	The facility is a green field project & will not have expansion as per the GAP Analysis and all facilities are designed as per BMW guidelines, Incineration Facility as per CPCB guidelines and adequate storage facilities are provided for incoming wastes, treated wastes and hazardous / solid waste scrap on site. The impacts and mitigation measures have also been identified and covered in **Chapter 4** of this report.

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	its mitigation measures for common/ captive infrastructure due to proposed production.	
45	Compliance of MoEF&CC 's OM dated 01/05/2018 regarding "Corporate Environment Responsibility" (CER). Fund allocation for Corporate Environment Responsibility (CER) shall be made as per MoEF&CC O.M. No. 22-65/2017-IA.III dated 01/05/2018 for various activities therein. The details of fund allocation and activities for CER shall be incorporated in EIA/EMP report as per MoEF&CC OM dated: 30.09.2020.	CER budget is provided of Rs 10 Lacs and details about the activity covered under CER are provided in ***Table 10-11***.
46	Explore the use of renewable energy to the maximum extent possible. Details of provisions to make the project energy-efficient through energy efficient devices and adoption of modes of alternative eco-friendly sources of energy like solar water heater, solar lighting etc. Measures proposed for energy conservation.	All street lights will be solar powered. Solar will also be provided on building terraces in the project in order to have use of renewable energy to the extent possible.
47	A tabular chart with index for point-wise compliance of below mentioned TORs.	This is the tabular chart with index for point wise compliance of TORs.
48	Gap analysis of biomedical waste being generated by the, proposed members with regard to Proposed common biomedical waste incineration facility in the region of 75 km including your CBMWF.	Gap Analysis is presented in Chapter 5. The Gaps have been identified based on a separate report prepared by GEMI.
49	Submit the criteria for assessing waste generation and area to be catered by the proposed project along with documentary evidence.	Gap Analysis is presented in Chapter 5. The Gaps have been identified based on a separate report prepared by GEMI. The proposed facility will cater form Dahod, Mahisagar and Panchmahal District.
50	Land possession documents and NA permission for the proposed project site.	Presently the site is a scrub land which is earmarked for Industrial use as it is acquired by GIDC. The Allotment letter of GIDC is enclosed vide ***Annexure 1***.
51	Details of proposed layout clearly demarcating peripheral open path for unobstructed movement of fire tender as well as various activities such as security, weighbridge, laboratory facility, temporary BMW storage area, vehicle parking area, and others such as admin building, canteen, worker's room, health centres, vehicle cleaning areas/ maintenance areas, 33% greenbelt, internal roads, etc.	Total plot area of the site is 5678.68 sq. m comprising of Plot No. 5 & 6. The principal project activity is of covered Incineration plant in an area of 738 sq.m besides which all storage areas of Yellow, Blue, Red waste in an area of 96 sq.m. Adjacent to the storage areas of incoming waste there is Shredder and Autoclave Room of total area of 72 sq.m. Underground Fire water tank is located besides the Incinerator Area along with Treated Waste Storage area of 60 sq.m. Other waste management areas cover sharp pit, Hazardous Waste Storage Area, ETP area; all put together of 176 sq. m. Other ancillary areas are of Vehicle parking, vehicle wash, Admin Building, OHC Centre, Security, Driver Rest Room, Electric room, Visitor staff parking area, Canteen, Fire water Tank & Rain Water Collection Tank all of 583 sq.m. The green belt area proposed is 1964 sq. m. which is 33% of the total plot area. ***Figure 2-4***
52	Present land use pattern of the study area shall be given based on recent satellite imagery as well as field investigation clearly indicating, residential area, industries, vegetation (agricultural land, irrigated, un-irrigated, un-cultivable land-as per the revenue records, forest land- as per the records) grazing and waste land.	Presently the site is a scrub land which is earmarked for Industrial use as it is acquired by GIDC. Land use map has been prepared and placed at ***Figure 3-2*** which is prepared based on the recent satellite imagery as well as field investigation.
53	Point wise compliance prevailing of guidelines published by MoEF&CC & CPCB for sitting and designing of the proposed CBWTF.	The compliance of the Bio-medical waste management rule, 2016 and as per the revised guidelines and the compliance for the incinerator, shredder and Autoclave design also presented in tabular formats at **Table 2-11, Table 2-12, Table 2-13, Table 2-14 & Table 2-15 in Chapter 2.** All the project components are designed in compliance with the issued guidelines of CPCB.

Sr. No.	ToR Point	Compliance
54	Details of handling of mercury waste from the member units with quantity, its handling methodology, transportation, storage, stabilization process and final disposal to TSDF. How it will be ensured that the mercury will be segregated from the biomedical waste before it is received from the HCUs. Action plan in this regard shall be incorporated in EIA report.	Mercury to be handled with extreme care and mitigation measure to taken as per the SOP mentioned in the Biomedical rule waste management rule, 2016, which is incorporated in the EIA Report.
55	Compliance of Revised Guidelines for Common Bio-medical Waste Treatment and Disposal Facilities published by CPCB vide dated 21/12/2016. Action plan for compliance of BMW Rules through continuous vigilant monitoring of member HCUs, guidance & training programmes.	The compliance of the Bio-medical waste management rule, 2016 and as per the revised guidelines and the compliance for the incinerator, shredder and Autoclave design also presented in tabular formats at **Table 2-11, Table 2-12, Table 2-13, Table 2-14 & Table 2-15 in Chapter 2.** All the project components are designed in compliance with the issued guidelines of CPCB.
56	Ensure that design of Incinerator, Autoclave, Shredder and storage facilities shall be as per the CPCB guidelines.	As per the revised guidelines and the compliance for the incinerator, shredder and Autoclave design also presented in tabular formats at **Table 2-11, Table 2-12 & Table 2-13 in Chapter 2.** All the project components are designed in compliance with the issued guidelines of CPCB.
57	Compliance of odour control guideline published by CPCB.	Mitigation measures covered like during transportation, the closed containers will be used in order to prevent exposure and release of odours, general cleaning at periodic intervals and Good housekeeping practices will be adopted, daily washing of waste collecting vehicles and storage area with hypo-chloride solution, all Bio-Medical Waste will be stored always in closed containers and in plastic bags.
58	Water requirement for the project and permission from the concern authority. Submit detailed water balance diagram.	The total water requirement for the proposed project is 13.8 KLD in which the fresh water requirement is 11.2 KLD and Recycle water will be 2.6 KLD. The water supply will be GIDC water Supply. The GIDC Allotment Letter is attached as ***Annexure 2***.
59	Quality and quantity of waste water to be generated from the proposed project.	Domestic waste water (0.8 KLD) will be sent to soak pit & Industrial waste water (2.6 KLD) will be treated in in-house ETP and treated water (2.6 KLD) will be reused in plant premises achieving ZLD unit.
60	Action plan for 'Zero' discharge of effluent (ZLD) shall be included. Notarized undertaking for assuring that underground drainage connection will not be taken in the unit and there shall be no effluent discharge outside the plant premises.	Domestic waste water will be sent to soak pit & Industrial waste water will be treated in in-house ETP and treated water will be reused in plant premises achieving ZLD unit.
61	Economical and technical viability of the effluent treatment system to achieve Zero Liquid Discharge (ZLD).	Economical: Long-term savings on water procurement and disposal, potential byproduct recovery, enables regulatory compliance, Payback Period. Technical: High water recovery, multi-stage treatment, real-time monitoring, supports water reuse, Resource Recovery, Space Requirements, etc.
62	Stream wise qualitative & quantitative analysis of each waste stream to be generated. Characteristics of untreated and treated wastewater. A detailed effluent treatability study vis-à-vis the adequacy and efficacy of the treatment facilities proposed for the wastewater to be generated. The characteristic on which treatability is based shall also be stated.	The details of the Effluent Treatment Plant (ETP) are provided in the **Section No. - 2.13** and cover all major components, including primary, secondary, and tertiary treatment units.
63	Details of the ETP units including its capacity, size of each unit, retention time and other technical parameters.	The details of the Effluent Treatment Plant (ETP) are provided in the **Section No. - 2.13** and cover all major components, including primary, secondary, and tertiary treatment units.
64	Undertaking stating that a separate electric meter will be provided for the proposed ETP and	Noted. The mentioned Facility will be provided and Logbooks will be maintained.

Sr. No.	ToR Point	Compliance
	Incinerator & logbook for operation of ETP & incinerator will be maintained.	
65	Plans for management, collection and disposal of waste streams to be generated from spillage, leakages, washing etc. Measures proposed for preventing effluent discharge during unforeseen circumstances.	All chemical, hazardous waste storage and fuel storage and handling areas will be provided with proper bunds to avoid run-off contamination. All storage areas will be enclosed and provided with bunds to collect any runoff waters and divert it to ETP. Storm water drainage will be provided separate with interceptor's design in order to ensure that no contamination will go out of the site premises. All waste waters (industrial and domestic) generated will be taken to ETP and treated in ETP and then recycled and reused leading to ZLD concept.
66	One season Site-specific micro-meteorological data using temperature, relative humidity, hourly wind speed and direction and rainfall should be incorporated.	One complete Season monitoring have already completed which covers meteorological data and the detailed provided in the **Section No.3.6.**
67	Anticipated environmental impacts due to the proposed project/production may be evaluated for significance and based on corresponding likely impacts VECs (Valued Environmental Components) may be identified. Baseline studies may be conducted within the study area of 5 km for all the concerned/identified VECs and likely impacts will have to be assessed for their magnitude in order to identify mitigation measures.	Details have been provided in ***Chapter 4*** of the EIA Report, where the assessment covers Valuable Environmental Components (VECs)—including air, water, soil, noise, traffic, and solid/hazardous waste (SHW), etc. Each component's baseline status, potential project impacts, and relevant mitigation measures are thoroughly addressed as part of the environmental impact assessment.
68	One complete season base line ambient air quality data (except monsoon) to be given along with the dates of monitoring. The parameters to be covered shall be in accordance with the revised National Ambient Air Quality Standards as well as project specific parameters. Locations of the monitoring stations should be so decided so as to take into consideration the pre-dominant downwind direction, population zone and sensitive receptors. There should be at least one monitoring station in the upwind direction. There should be at least one monitoring station in the pre dominant downwind direction at a location where maximum ground level concentration is likely to occur.	One complete season base line ambient air quality data is provided along with the dates of monitoring. The parameters covered are in accordance with the revised National Ambient Air Quality Standards as well as project specific parameters. Locations of the monitoring stations was decided so as to take into consideration the pre-dominant downwind direction, population zone and sensitive receptors. Detailed provided in the **Section No.3.7.**
69	Modelling indicating the likely impact on ambient air quality due to proposed activities. The details of model used and input parameters used for modelling should be provided. The air quality contours may be shown on location map clearly indicating the location of sensitive receptors, if any, and the habitation. The wind rose showing pre-dominant wind direction should also be indicated on the map. Impact due to vehicular movement shall also be included into the prediction using suitable model. Results of Air dispersion modelling should be superimposed on satellite image / geographical area map.	Modelling indicating the likely impact on ambient air quality due to proposed activities is presented in EIA report. The details of model used and input parameters used for modelling is provided. The air quality contours are shown on clearly indicating the location of no sensitive receptors The wind rose showing pre-dominant wind direction E indicated on the map. Impact due to vehicular movement is also included into the prediction using suitable model. Details provided in the **Section No.4.8.2.**
70	Baseline status of the noise environment, impact of noise on present environment due to the project and proposed measures for noise reduction including engineering controls.	Baseline status of the noise environment, impact of noise on present environment due to proposed project detailed provided in the **Section No.3.9.** The impact will be minimal on the surrounding due to proposed project**.**
71	Specific details of (i) Process gas emission from each unit process with its quantification, (ii) Air pollution Control Measures proposed for process gas emission, (iii) Adequacy of the air pollution control measures for process gas emission, measures to achieve the GPCB norms (iv) Details of	The specific details regarding process gas emissions, utilities, fuel usage, flue gas emissions, air pollution control measures, and fugitive emissions are comprehensively provided in **Section No. 2.14 in *Table 2-20***. This includes proposed APCM systems and their adequacy to meet GPCB norms.

Sr. No.	ToR Point	Compliance
	the utilities required (v) Type and quantity of fuel to be used for each utility (vi) Flue gas emission rate from each utility (vii) Air Pollution Control Measures proposed to each of the utility along with its adequacy (viii) List the sources of fugitive emission along with its quantification and proposed measures to control it.	
72	Technical details of APCM along with its adequacy as per CPCB guideline for proposed Incinerator, details of its operational controls with DCS, system for online monitoring of the pollutants from the stack etc. Details of provisions to be kept in APCM to ensure that in any case the air emission does not cross the GPCB norms, preventive maintenance, failure / tripping control system, guarantee from the APCM supplier, alternative arrangements in case of the failure of the APCM etc.	APCM Measures like adequate stack height to attain maximum dispersion of flue gases containing SPM, SO_2, NOx and CO, In the incineration system Quencher followed Venturi Scrubber are provided**.**
73	Examine and submit the details of online pollutant monitoring and Provision of CEMS (Continuous Emission Monitoring system).	Details for the pollutant monitered and their result are provided in the ***Section- 3.7***. Continuous Emission Monitoring System (CEMS) will be installed at stack of the proposed incinerators and which will be connected to CPCB/SPCB server.
74	Occupational health impacts on the workers and mitigation measures proposed to avoid the human health hazards along with the personal protective equipment to be provided to the workers. Plan for pre-employment and periodical medical check-up of the workers.	Occupational health impacts on the workers and mitigation measures are proposed to avoid the human health hazards along with the personal protective equipment. Quantitative Risk assessment is also completed.
75	Details of the proposed overall safety and health protection measures during the project design, construction and operation phases.	Overall health and safety aspects are covered in EIA report in **Chapter 7**.
76	Details on surface/storm water management.	Storm water drainage is planned to be provided along periphery of roads with storm water outlets having interceptors. All plant, storage, handling areas will be provided with dykes / bunds in order to eliminate any spillages entering into storm water drainages.
77	Risk assessment including prediction of the worst-case scenario and maximum credible accident scenario. The worst-case scenario should take into account the maximum inventory of storage at site at any point in time. The risk contours should be plotted on the plant layout map clearly showing which of the activities would be affected in case of an accident taking place. Measures to guard against fire hazards including details of fire detection and control system and fire control plan showing hydrant pipeline network, provision of DG Sets, fire pumps, jockey pump, toxic gas detectors etc.	Risk assessment including prediction of the worst-case scenario and maximum credible accident scenario. The worst-case scenario is taken into account the maximum inventory of storage at site at any point of time. The risk contours is plotted on the plant layout map which clearly shows that the affected area is well within the boundaries of site and no damage will be caused offsite, in case of an accident taking place. Measures to guard against fire hazards including details of fire detection and control system and fire control plan is covered in **Section No.7.1.**
78	Membership of Common Environmental Infrastructure including TSDF, CHWIF etc. (Whichever is applicable)	Membership of Varni Enviro Care Ltd is attached as ***Annexure 12*** for disposal of hazardous waste.
79	(a) Does the company have a well laid down Environment Policy approved by its Board of Directors? If so, it may be detailed in the EIA report. (b). Does the Environment Policy prescribe for standard operating process / procedures to bring into focus any infringement / deviation / violation of the environmental or forest norms / conditions? If so, it may be detailed in the EIA.	Environment Policy is not yet formulated as it is green field project. But will be done soon. Environmental Policy will also be prepared soon and submitted in the Final EIA Report.

Sr. No.	ToR Point	Compliance
80	What is the hierarchical system or administrative order of the company to deal with the environmental issues and for ensuring compliance with the EC conditions Details of this system may be given.	The hierarchical system will be EHS department reporting to the CEO of the facility who further reports to the Directors of the company.
81	Does the company have a system of reporting of non-compliances / violations of environmental norms to the Board of Directors of the company and / or shareholders or stakeholders at large? This reporting mechanism should be detailed in the EIA Report.	The system of reporting of non-compliance / violation of environment norms to Board of Directors will be made. The reporting mechanism will be through EHS department to the CEO of facility and further to the Board of Directors in their periodic board meetings.
82	Certificate of accreditation issued by the NABET, QCI to the environmental consultant should be incorporated in the EIA Report.	NABET Certificate of Environment Consultant Organization is presented at ***Annexure 7***.
83	A tabular chart for the issues raised and addressed during public hearing/consultation and commitment of the project proponent on the same should be provided. An action plan to address the issues raised during public hearing and the necessary allocation of funds for the same should be provided.	A tabular chart for the issues raised and addressed during public hearing/consultation are presented in ***Table 7-1*** and commitment of the project proponent on the same is also provided. An action plan to address the issues raised during public hearing and the necessary allocation of funds for the same is provided at ***Table 7-2***.
84	PP shall ensure participation of people during Public Hearing with equality in gender so as to encourage woman participation in Public hearing & at the same time their issues shall also be given weightage. PP shall made adequate efforts in this regard and shall submit the relevant documents.	Noted and Complied.
85	Details of three-year greenbelt development program including annual budget, types &number of trees to be planted, area under green belt development [with map], budgetary outlay; along with commitment of the management to carry out the tree plantation activities outside the premises at appropriate places in surrounding area. Notarised undertaking regarding development of green belt within premises as per the commitment before SEAC. Green belt shall be developed with native plant species that are significant and used for the pollution abatement as per the CPCB guidelines.	Three year overheads for Proposed Greenbelt Development within project premises & Annual Maintenance is provided with the **4,50,000/-** Capital cost. Other details are provided in the **Section No.- 10.5.7**

2 PROJECT DESCRIPTION

This chapter provides a condensed description of project developments and their aspects which are likely to cause effects and impact on to the surrounding environment in terms of air emissions, waste water generation and accidental discharges, solid and hazardous waste generated and its disposal, socio economic changes, ecology and environment, risk and safety at large in surroundings.

The type, size, magnitude, detailed description of project and its operations, technology adopted and their likely pollution potential / pollution load statement from the project developments is presented in the following sections as under:

2.1 Type of Project

The project is setting up of a Common Biomedical Waste Management Facility (CBWMF) consisting of BMW processing in Incineration Plant (burning of infectious / contagious and anatomical wastes), Autoclave (Sterilization of recyclables) and Shredder (Shredding of recyclables to make it amenable for recycling) including collection, transportation and ultimate disposal of ash to TSDF disposal / shredded materials to recycling facility.

2.2 Need for the project

With rapid urbanization in Panchmahal, Mahisagar & Dahod Districts, there is a need of having one more treatment and disposal facility for Bio Medical Waste generated by increased health care facilities.

Based on the gap analysis results of Biomedical waste actual generation vrs treatment facility available, there is a need of providing one more facility in the region and will be able to cater and provide adequate services to all the health care units of Panchmahal, Mahisagar and Dahod District.

This will also comply with safe disposal of biomedical wastes and also save on the long transportation costs for disposal of biomedical wastes. The proposed facility will involve activities such as dedicated collection & transportation of segregated wastes, storage, operation of processing / treatment facilities of biomedical wastes such as Incineration, Autoclaving and Shredding for safe disposal of bio-medical wastes in an environmental friendly manner.

2.3 Location (General Location, Specific Location, project boundary and Site Layout)

The project will be located at Plot No. 5 & 6, Non-notified GIDC Shehera Taluka & Dist. Panchmahal, Gujarat. The plot allotment letter by GIDC to Shree Khodal Waste Management is presented at ***Annexure 2***.

This selected site is located in a GIDC estate complying with the siting guidelines of CBWTF; viz., in relation to:

1) Site being located in a non-notified estate (industrial) &

2) Site is located away from residential area and sensitive areas and nearest habitation of village is more than 500 m (buffer zone) around the facility location.

The compliance of the location of the site with respect to the siting criteria as per CPCB is presented in ***Table 2-1*** as below:

Table 2-1: Siting Criteria as per CPCB & its Compliance with respect to the facility development

Particulars	CPCB Criteria	Compliance
Location	A CBWTF shall preferably be developed in a notified industrial area without any requirement of buffer zone	GIDC has issued **Plot Allotment Letter No: GIDC/ALT/Seh1/RM/18 dated: 06.05.2023** in the name of Shri Jethabhai

Particulars	CPCB Criteria	Compliance
	A CBWTF can be located at a place reasonably far away from notified residential and sensitive areas and should have buffer distance of preferably 500m so that it shall have minimal impact on these areas. In case of non-availability of such a land, the buffer zone distance from the notified residential area may be reduced to less than 500 m by SPCB/PCC without referring the matter to CPCB by prescribing additional control measures such as Adoption of best available technologies (BAT) by the proponent of CBWTF Prescribing stringent standards for operation of the CBWTF by the SPCB/PCC. Adoption of zero liquid discharge by the CBWTF and In case of any complaints from the public, then CBWTF should prove that the facility is not causing any adverse impact on environment and habitation in the vicinity.	Ghelabhai Bharwad for Plot No: 5 & 6, GIDC Shehera Industrial Estate mentioning purpose as processing and treatment of biomedical waste. Shri Jethabhai Ghelabhai (Ahir) is a partner of M/s Shree Khodal Waste Management. GIDC Shehera is a non-notified GIDC area, **hence public hearing will be conducted.** Nearest Village Shehera is > 500 m from the site boundary. **Compliance to control measures:** Adoption of best available technology for Incineration and Autoclaving system The emissions standards for incinerator will be in compliance with the air emission standards for Incinerator system as per CPCB guidelines. The site will comply with Zero Liquid discharge for waste water treatment and disposal. There will be no complaints from public regarding CBWTF facility and its operations.
	The CBWTF can also be developed as an integral part of the Hazardous Waste Treatment Storage and Disposal Facility (TSDF) subject to obtaining of necessary approvals from the authorities concerned including 'environmental clearance' as per Environmental Impact Assessment 2006 and further amendments notified under the Environment (Protection) Act, 1986, provided there is no CBWTF exist within 150 KM distance from the existing TSDF.	The site is being developed as a standalone CBWTF only and under Category 7(da) as per EIA Notification. Thus the application for EC Clearance for the standalone CBWTF site is being made to SEAC, SEIAA Gujarat
Land Requirement	A CBWTF shall be set up on a plot size of not less than 1 Acre in all the areas	Site area is 5678.68 sq. m i.e. > 1 acre.
	In case of upcoming or new CBWTFs (both in municipal limits with population more than 25 Lakhs or in rural areas), land area requirement may be relaxed (but in any case not less than 0.5 Acre) by SPCB/PCC	
Coverage Area	A CBWTF located within the respective State/UT shall be allowed to cater healthcare units situated at a radial distance of 75 km. In a radial distance of 75 km, where 10,000 beds are not available, existing CBWTF in the locality may be allowed to cater the healthcare units situated up to 150 km radius w.r.t. to its location provided the bio-medical waste generated is collected, treated and disposed of within 48 hours as stipulated under BMWM Rules.	The site will cover medical and healthcare facilities within 75 km radius of the site and will cater to the needs of Panchmahal, Mahisagar and Dahod District.
	In case, number of beds exceed 10,000 in a locality and existing treatment capacity is not adequate, in such a case, a new CBWTF may be allowed in such a locality in compliance to various provisions notified under the Environment (Protection) Act, 1986, to cater services only to such additional bed strength of the HCFs located.	The site will cover medical and healthcare facilities within 75 km radius of the site which covers areas of Panchmahal, Mahisagar and Dahod District.
	In case of hilly areas, considering the geography, only one CBWTF with adequate treatment capacity may be developed covering at least two district to cater	No hilly areas are encountered in the area

Particulars	CPCB Criteria	Compliance
	treatment services to HCFs located in respective districts.	

Location map showing general & specific location of proposed project is presented in ***Figure 2-1.***

Site location with project boundary showing on google is presented in ***Figure 2-2*** along with site coordinates as per **Table 2-2** as below:

Table 2-2: Co-ordinates of Project Boundary

Code	Latitude	Longitude
1	22° 56' 12.95" N	73° 38' 12.47" E
2	22° 56' 14.64" N	73° 38' 11.48" E
3	22° 56' 15.73" N	73° 38' 13.64" E
4	22° 56' 15.33" N	73° 38' 13.89" E
5	22° 56' 15.71" N	73° 38' 14.60" E
6	22° 56' 14.48" N	73° 38' 15.36" E

Site photographs are presented in ***Figure 2-3*** *while Site* Layout Map is presented in ***Figure 2-4.***

Figure 2-1: General Site Location Map

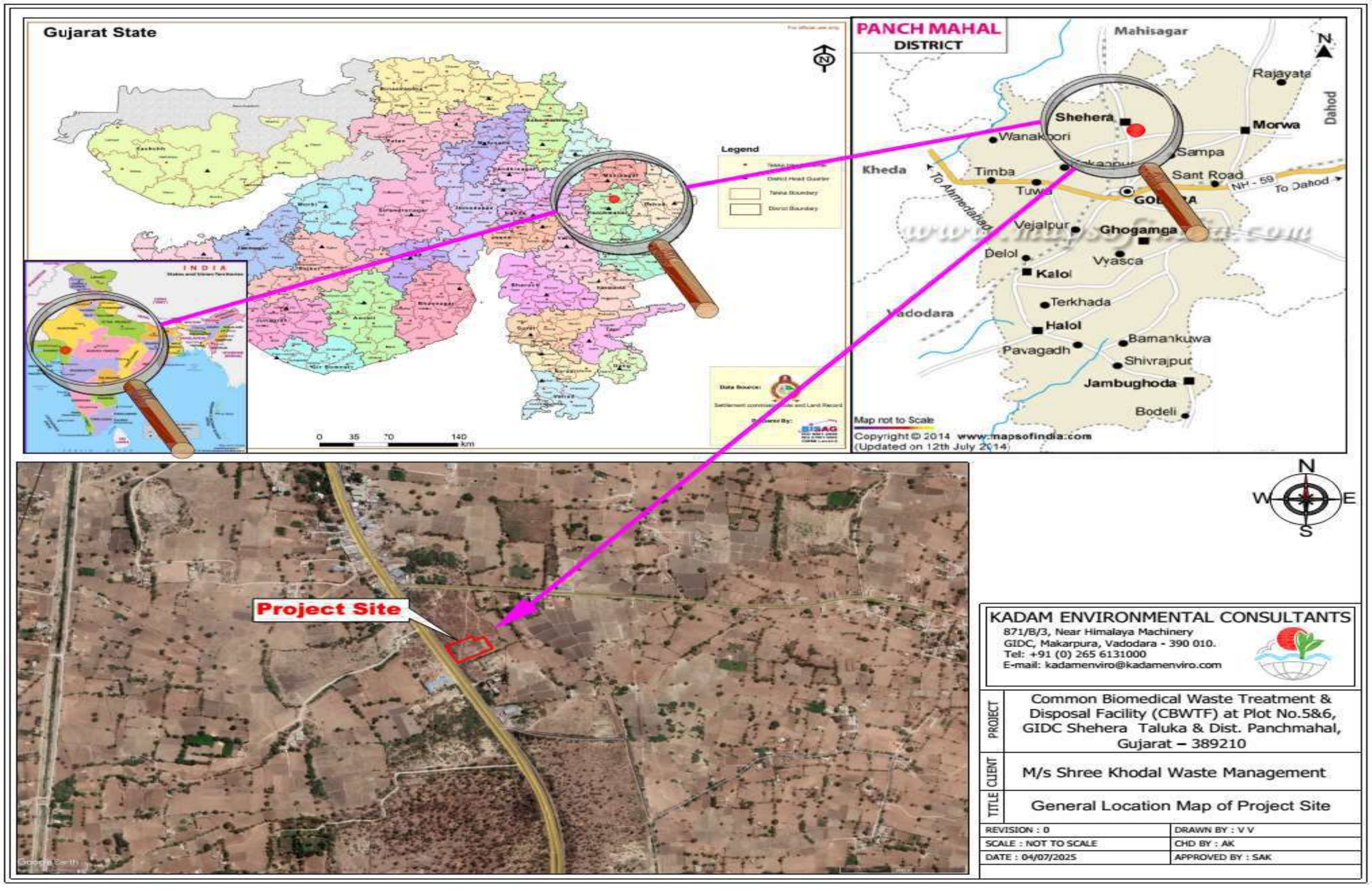


Figure 2-2: Site Location with Project Boundary shown on Google Map



N
W E
S

LEGEND

Project Site Boundary

	Latitude	Longitude
A	22°56'12.95"N	73°38'12.47"E
B	22°56'14.64"N	73°38'11.48"E
C	22°56'15.73"N	73°38'13.64"E
D	22°56'15.33"N	73°38'13.89"E
E	22°56'15.71"N	73°38'14.60"E
F	22°56'14.48"N	73°38'15.36"E

SCALE

0 25 50m

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PROJECT: Common Biomedical Waste Treatment & Disposal Facility (CBWTF) at Plot No.5&6, GIDC Shehera Taluka Shehera & Dist. Panchmahal, Gujarat – 389210

CLIENT: M/s Shree Khodal Waste Management

TITLE: Project Site Boundary Map

REVISION :00	DRAWN BY : KK
SCALE : AS SHOWN	CHECKED BY : AK
DATE : 04/07/2025	APPROVED BY : SK
SOURCE : Enhance Version of Google Earth pro.	

2.4 Site Photographs

The site photographs taken during visits are presented in ***Figure 2-3*** as below:

Figure 2-3: Site Photographs

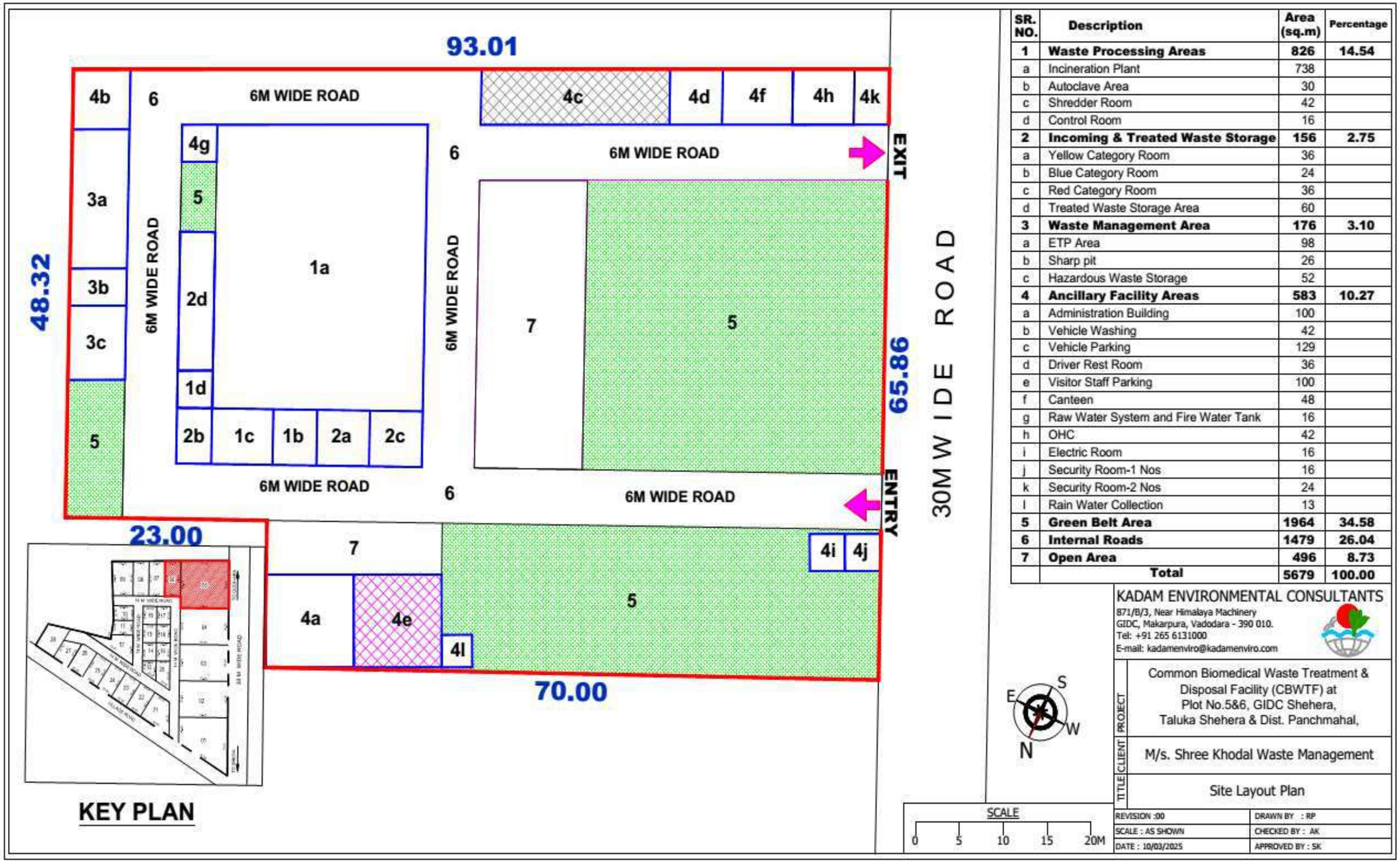








Figure 2-4: Layout Plan of CBWT Facility



SR. NO.	Description	Area (sq.m)	Percentage
1	**Waste Processing Areas**	**826**	**14.54**
a	Incineration Plant	738	
b	Autoclave Area	30	
c	Shredder Room	42	
d	Control Room	16	
2	**Incoming & Treated Waste Storage**	**156**	**2.75**
a	Yellow Category Room	36	
b	Blue Category Room	24	
c	Red Category Room	36	
d	Treated Waste Storage Area	60	
3	**Waste Management Area**	**176**	**3.10**
a	ETP Area	98	
b	Sharp pit	26	
c	Hazardous Waste Storage	52	
4	**Ancillary Facility Areas**	**583**	**10.27**
a	Administration Building	100	
b	Vehicle Washing	42	
c	Vehicle Parking	129	
d	Driver Rest Room	36	
e	Visitor Staff Parking	100	
f	Canteen	48	
g	Raw Water System and Fire Water Tank	16	
h	OHC	42	
i	Electric Room	16	
j	Security Room-1 Nos	16	
k	Security Room-2 Nos	24	
l	Rain Water Collection	13	
5	**Green Belt Area**	**1964**	**34.58**
6	**Internal Roads**	**1479**	**26.04**
7	**Open Area**	**496**	**8.73**
	Total	**5679**	**100.00**

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PROJECT: Common Biomedical Waste Treatment & Disposal Facility (CBWTF) at Plot No.5&6, GIDC Shehera, Taluka Shehera & Dist. Panchmahal,

CLIENT: M/s. Shree Khodal Waste Management

TITLE: Site Layout Plan

REVISION :00 | DRAWN BY : RP
SCALE : AS SHOWN | CHECKED BY : AK
DATE : 10/03/2025 | APPROVED BY : SK

2.5 Size or magnitude of operation

Total plot area of the site is 5678.68 sq. m comprising of Plot Nos 5 and 6 together as per Plot Allotment Letter of GIDC is enclosed vide ***Annexure 2***. The layout plan of GIDC showing the two plots 5 and 6 along with their dimensions is also presented in ***Annexure 2***.

The area breakup of the site as per the layout plan as above is presented in **Table 2-3** as under:

Table 2-3: Area Breakup at Site

Sr. No	Description	Area (sq. m)	Percentage
1	**Waste Processing Areas**	**826**	**14.55**
a	Incineration Plant	738	
b	Autoclave Area	30	
c	Shredder Room	42	
	Control Room	16	
2	**Incoming & Treated Waste Storage**	**156**	**2.75**
a	Yellow Category Room	36	
b	Blue Category Room	24	
c	Red Category Room	36	
d	Treated Waste Storage Area	60	
3	**Waste Management Area**	**176**	**3.10**
a	ETP Area	98	
b	Sharp pit	26	
c	Hazardous Waste Storage	52	
4	**Ancillary Facility Areas**	**583**	**10.25**
a	Administration Building	100	
b	Vehicle washing	42	
c	Vehicle Parking	129	
d	Driver Rest Room	36	
e	Visitor staff parking	100	
f	Canteen	48	
g	Raw Water System and Fire Water Tank	16	
h	OHC	42	
i	Electric Room	16	
J	Security room – 1 Nos	16	
k	Security room – 2 Nos	24	
l	Rain water collection	13	
5	**Green Belt Area**	**1964**	**34.59**
6	**Internal Roads**	**1479**	**26.05**
7	**Open area**	**496**	**8.72**
Total		**5678**	**100.00**

The facility operations include segregated waste collection, waste receipt, storage of waste as per categories in respective areas/rooms, waste processing such as Incineration, Shredding & autoclaving of various categories of

biomedical waste, ensuring compliance with Bio Medical Waste Management Rules 2016 and 2025 and its latest amendments.

The magnitude of operations relates to processing of BMW to total of 2.5 MT per day.

Separate entry and exit gates are planned for incoming wastes and treated waste output / disposal to authorized recyclers, ash for disposal to TSDF.

The facility is considered with a 35% green belt inside of the facility as presented in Layout Plan enclosed vide ***Figure 2-4***.

2.5.1 Justification for Selection of capacity for Biomedical Waste Processing facility

While deliberating the Gap Analysis of BMW generation as per GAP Analysis report for BWM in state of Gujarat, the TOR was given to us by SEAC Gujarat for 2.5 Tonnes per day. Based on the TOR received the facility is designed for 2 Tonnes of waste incineration (80% incineration) and remaining 20% of recyclable wastes i.e 0.5 MT per day is designed to go to Autoclave and Shredder facility for recycling of recyclables.

The design capacities have been framed to accommodate the waste generation based on its classification and generation quantities anticipated to be received. The design capacities of different components of facility is presented in **Table 2-4** as below:

Table 2-4: Design Capacities of components of CBWM Facility

Sr. No.	Facility	Capacity	Working Hrs. per day and no. of days per year	Waste to be handled (MT per day)	Waste to be handled (MTPA)
1	Incinerator	100 Kg/hr	20 hrs. x 360 days	2.0	720
2	Autoclave	50	10 cycle per day x 360 days	0.5	180
3	Shredder	50	10 cycle per day x 360 days	0.5	180
4	**Total**			**2.5**	**900**

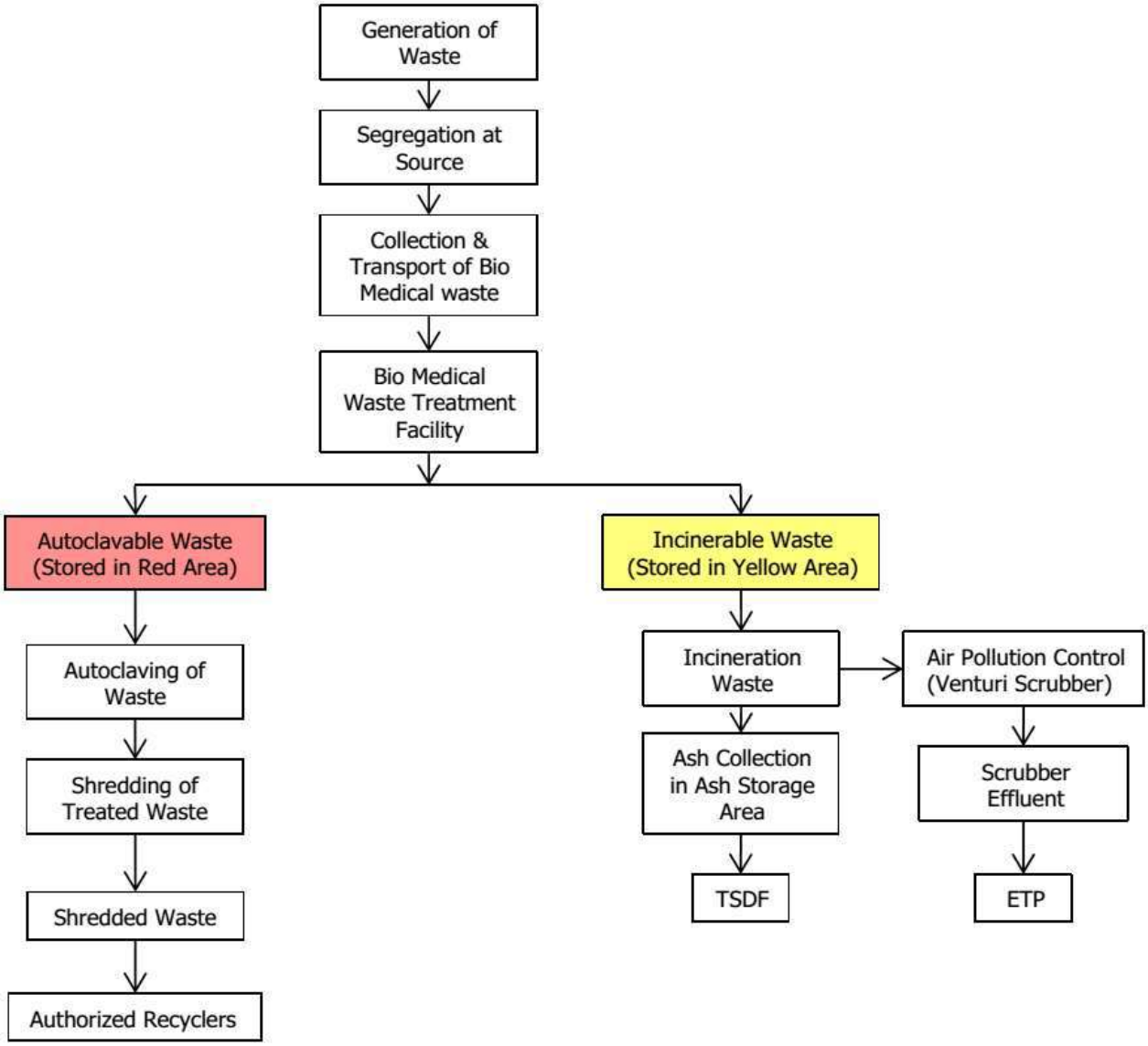
2.6 Technology and Process Description

To enable effective management and handling of the bio-medical wastes, the MoEF&CC has issued separate regulations for the management and handling of these wastes. In response to these rules, Government and major Private Hospitals initiated their arrangements for treatment and disposal of bio-medical wastes.

However, the smaller nursing homes, clinics, multispecialty hospitals and other similar institutions which do not have or can afford such facilities need a common modality and arrangements for treatment and disposal of their biomedical wastes in accordance with the Biomedical Waste Management Rules.

A Common Biomedical Waste Treatment Facility will have following facility management flow chart from source to end use of waste disposal as presented in ***Figure 2-5*** as under:

Figure 2-5: Biomedical Waste Management Facility Process Flow Chart



Bio-Medical Waste Process Description

An integrated biomedical waste management system for treatment and safe disposal of biomedical wastes is essential having key components described as under:

Waste Segregation:

Waste segregation will allow for separate treatment and minimize the environmental impacts associated with further processing. Primarily the segregation is into domestic, hazardous waste and infectious waste separately. Further the infectious waste will be segregated into plastics, metals, and other infectious waste. Segregation is done at source. CPCB has issued clear guidelines for colour coded segregation system of wastes.

The waste segregation fractions and their collection container colour coding system is elaborated in **Table 2-5** as under:

Table 2-5: Type & Colour Coding of Biomedical Waste along with Collection Method

Sr No	Category	Type of Waste	Collection Method	Disposal
1	Yellow	• Human anatomical waste containing human tissues, organs, body parts, and foetus • Animal anatomical waste containing experimental animal carcasses, body parts, organs, tissues • Soiled waste containing contaminated items with blood, body fluids like dressings, plaster casts, cotton swabs, discarded blood bags including the bags of blood components • Expired or discarded medicines (solid / liquid) containing pharmaceutical waste like antibiotics, cytotoxic drugs including all contaminated items along with glass or plastic ampoules vials etc. • Chemical waste containing chemicals used in production of biological and used or discarded disinfections • Chemical liquid waste as generated due to the use of chemicals as disinfectants, silver X- ray film development fonnalin, infected secretions, aspirated body fluids, liquid from laboratories and floor washings, cleaning house keeping etc • Discarded linen, mattresses, bedding contaminated with blood or body fluids. • Microbiology bio teleology and other clinical laboratory waste including blood bags, laboratory, cultures, stocks or specimens of microorganisms, live or attenuated vaccines, human and animal cell cultures used in research, industrial laboratories, production of biological residual toxins, dishes and devices used for cultures.	Yellow Coloured non-chlorinated plastic bags or containers	Incineration, Autoclaving or Micro waving followed by shredding or mutilation or combination of sterilization and shredding Expired cytotoxic drugs and items contaminated with cytotoxic drugs to be returned back to the manufacturer or supplier for incineration at temp. > 1000$_o$C.
2	Red	Contaminated waste (Recyclables) - Waste generated from disposable items such as tubing bottles, intravenous tubes and sets, catheter, urine bags, syringes (without needles and fixed needle syringes)	Red Coloured non-chlorinated plastic bags	Autoclaving or microwaving followed by shredding or mutilation or combination of sterilization and shredding. Plastic waste will not be landfilled
3	White (translucent)	Waste Sharps - Needles, syringes with fixed needles, needles from needle tip cutter or burner, scalpels, blades, or any other contaminated sharp object that may cause puncture and cuts. This includes both used, discarded and contaminated metal sharps	Leak Proof Containers	Autoclaving followed by shredding or mutilation; combination of shredding era autoclaving; and sent for final disposal to iron foundries (with necessary permission from PCB) or secured /

Sr No	Category	Type of Waste	Collection Method	Disposal
				sanitary landfill or designated concrete waste sharp pits.
4	Blue	Glass wares, metal body implants - Glass wares used during the treatment, vials, ampoules other than contaminated with cytotoxic waste.	Card board boxes with blue colour markings	Disinfection (by soaking the washed glass waste after cleaning with detergent and Sodium Hypochlorite treatment) or through autoclaving or microwaving.

Waste Collection and Transport:

Wastes will be segregated as per the colour coding, properly packed and placed at a secured designated point by the health care establishment from where Bio Medical Waste Management Services; will collect the waste. Upon collection, wastes will be placed into closed containers enclosed in a containerized vehicle. The proposed vehicles will be dedicated for the purpose and shall adopt the conditions specified in the BMW Management Rules-2016.

The Biomedical waste collection vehicle possesses the following:

a) Vehicle will be fitted with GPS to track the movement of the vehicle.
b) Separate cabins will be provided for driver/staff and the biomedical waste containers.
c) The base of the waste cabin will be leak proof to avoid spillage of liquid during transportation.
d) The waste room designed for storing waste containers in tiers and also provided with a lighting provision, washing and disinfection.
e) The waste storage room will have provisions in the rear/or sides for waste containers loading and unloading facility.
f) The vehicle will be labelled with the bio-medical waste symbol (as per the Schedule III of the Rules) and also display the name, address and telephone number of the CBWTF.
g) The vehicle driver will always carry valid registration of the vehicle obtained from the concerned transport authority and also carry valid pollution under control certificate issued by the authorized issuing agency.

Bar code / QR code label will be pre-printed directly on the designated colour coded bags /containers, through the Operator of CBMWTF. Collection of waste will be carried out on regular interval basis, based on generation, in dedicated trucks by the operator of CBMWTF

It will be ensured that the total time taken from generation of biomedical waste to its treatment, which also includes collection and transportation time, will not exceed 48 hours. Vehicles used for collection of Bio-Medical Waste from member units will be registered with Gujarat Pollution Control Board

Treatment/ Storage/ Disposal:

The segregated biomedical wastes will be collected at a centralised facility and will undergo either disinfection or destruction as follows:

A. Disinfecting Unit (Autoclave)

Disinfecting unit is the one which effectively kills all the microorganisms. Autoclaving, Microwaving, Hydro-claving and chemical disinfection processes are the most prevalent technologies used for disinfection of bio-medical waste.

Autoclaves are also known as steam sterilizers, and are typically used for healthcare applications. The Destruction unit will be followed by Disinfection Unit. (Incinerator & Shredder followed by Autoclave).

B. Destruction Unit (Incinerator)

Destruction unit is one that will completely destroy the waste into ash. High temperature Incineration is a process by which combustible materials are burnt producing combustion gases and non-combustible residue and ash. The combustible gases are vented into the air after treatment through air pollution control devices. Ash remain after the destruction/ incineration process is disposed-off securely into a landfill site.

Shredding is one of the most widely recognized methods of product destruction, involving the mechanical breakdown of products into smaller pieces. The waste are made to break down into smaller pieces and the end product will be sent to authorized recycler.

Upon receipt at the facility, containers having wastes will be unloaded based on their category and colour coding:

- Category **Yellow** shall be directly taken to the incinerator
- Category **Red** and White shall be taken to autoclave
- Category **Blue** shall be subjected to disinfection.

Residue from these units will be disposed into a landfill.

C. Waste Storage

All bio-medical wastes transported to the facility by vehicles shall be unload and stored as per type of waste in different colour coding waste storage areas. The unloading area will be made impermeable with a garland drain connected to ETP, to carry liquid spillages during unloading.

The liquid generated during handling of wastes and washing, will be diverted to the inlet of ETP. In the storage room, wastes will be stacked with clear distinction as per the colour coding of the containers.

The storage room will have provisions of proper roofing, well ventilated areas, easy to wash floors and walls, smooth and fine surfaces and garland drains for collection of any spillages.

Adequate storage of 156 sq. m area (inclusive of storage areas of various category of incoming wastes and treated waste storage) will be provided. The size of the rooms will be adequate to store all wastes transported to the CBWTF. The liquid generated during handling of wastes and washing, will be diverted to the inlet of ETP. In the storage rooms, wastes will be stacked with clear distinction as per the colour coding of the containers.

From here, the coloured containers will be sent to the respective treatment equipment.

The storage rooms will be well ventilated and will have easy to wash floors & walls, smooth and fine surfaces etc. Additional Hazardous Waste storage is provided of 52 sq.m.

D. Waste disposal

Waste disposal remains to exist irrespective of the treatment options viz., disinfected materials not recycled and incineration ashes needs to be sent to landfill site. Thus the secured landfill site remains to be an integral part of a Common bio-medical waste management facility.

Waste storage of certain hazardous waste like mercury and cyto-toxins that do not have a cost-effective treatment technology as yet are primary sent for deep burial by encapsulation to secure landfills.

E. Incineration

This is a high temperature thermal process employing combustion of the waste under controlled condition for converting it into inert material and gases. Incinerators will be HSD fired refractory lined Static Solid Hearth type. It will have primary and secondary combustion chambers to ensure optimal combustion.

The biomedical waste is incinerated in two stages i.e. the primary chamber and the secondary combustion chamber which are positioned adjacent to each other. The flue gases then pass through the Quencher followed by Venturi Scrubber and are let out to atmosphere via ID fan and chimney. The Primary Combustion Chamber operates under near pyrolytic condition where the wastes are decomposed & all volatiles are released. The substrate remaining gets converted into sterile ash. The volatiles released from the Primary Combustion Chamber are then completely burnt in the Secondary Combustion Chamber under high temperature & excess air. The Stack Emission released parameters such as Particulate Matter, HCl, NOx, Hg & compounds, dioxins and furans, etc. The bleed liquid will be directed to the Effluent Treatment Plant (ETP) for appropriate treatment and disposal.

The incinerator will be selected considering the following operating parameters:

- Combustion efficiency will be minimum 99%.
- Primary combustion chamber shall be maintained at minimum of 800 °C (± 50 °C) and secondary combustion chamber shall be maintained at minimum of 1050 °C (± 50 °C).
- Flue gas residence time in secondary chamber shall be minimum of 2 sec.
- TOC content of ash collected at bottom of furnace shall be less than 3% or their loss on ignition shall be less than 5% on dry weight basis.
- For online monitoring of flue gas emissions online monitoring system (CEMS) system shall be provided as per CPCB guideline.

Technical Description of Incineration System to be adopted is presented in **Table 2-6** as below:

Table 2-6: Technical Description Of The Incineration Facility

Sr. No.	Design Details	Specifications
Incinerator		
1	Type of waste	Bio Medical Waste
2	Auxiliary Fuel	Diesel
3	Type of Burner Operation	Fully automatic burners
4	Temperature Primary Chamber Secondary Chamber	$800^0C \pm 50^0C$ $1050^0C \pm 50^0C$
Primary Chamber		
1	Type	Static Solid Hearth
2	Material of Thickness	Mild Steel, 6 mm thick
3	Refractory thickness	115 mm thick
4	Material.	Refractory bricks confirming to IS-8
5	Temperature resistance	1400^0C
6	Insulation thickness	115 mm thick
7	Material	Insulation bricks IS-2042
8	Ash Removal	Manual
Secondary Chamber		
1	Type	Static Solid Hearth
2	Material of Thickness	Mild Steel, 6 mm thick
3	Refractory thickness	115 mm thick
4	Material	Refractory bricks confirming to IS – 8 - 1994
5	Temperature resistance	1400^0C
6	Insulation thickness	115 mm thick
7	Material	Insulation bricks IS - 2042
8	Residence time for flue gas	2 Sec
Emergency Stack		
1	Type of operation	Automatic pneumatic control damper
2	MOC	Mild Steel, 6 mm thick
3	Refractory	50 mm thick castable
4	Insulation	80 mm thick castable
Collection Unit		
1	MOC	Mild Steel
2	Design Temperature	1450 deg. C

Sr. No.	Design Details	Specifications
3	Ash Collection Model	Auto (through rotary air lock)
Air Cooled Flue Gas Cooler With Cooling Fan		
1	MOC	Mild Steel, 6 mm thick
2	Type	Shell and tube type
3	MOC of tubes	Carbon steel
4	Design Temperature	900 deg. C
Flue Gas Neutralizing System		
1	Type	Auto Injection through rotary feeder
2	MOC	Stainless Steel
3	Feeding Hopper	Provided
Dioxin Control System		
1	Type	Auto Injection through rotary feeder
2	MOC	Mild Steel
3	Feeding Hopper	Provided
Filtration System With Pneumatic Controls		
1	Type	Pulse jet cleaning
2	Application	Particulate removal
3	MOC	Mild Steel
4	Cleaning and maintenance door	Provided
5	Dust removal	Automatic through screw conveyor
I.D. Fan		
1	Type	High pressure Centrifugal type
2	MOC	Stainless Steel Impeller and Mild Steel rubber lined casing
3	Drive	Belt driven
Combustion Fan		
1	Type	Centrifugal
2	Modulation	Manual damper control
3	MOC	Mild steel
4	Drive	Direct drive
Burner		
1	No. of Burners	As per standard design of incinerator
2	Type	Mono block fully automatic HSD fired
3	Fuel	Diesel
Fuel Storage		
1	MOC & Capacity	Mild Steel, 1 KL capacity
2	Other Standard Accessories	Diesel level indicator, piping with valves & N. R. Valve
3	Visual Checking of Fuel	Provided
Control Panel		
1	Type	PLC with SCADA
2	MOC	CRCA Sheet
3	Type of temperature controller	Digital
4	Finish & Painting type	Powder coated
5	Audio-visual alarm system	Provided
Chimney of 30 meters Height		

Sr. No.	Design Details	Specifications
1	MOC	Mild steel
2	Type	Self-supporting
3	Height	30 meters from ground level
4	Ladder	Provided
5	Other Standard Accessories	The chimney is painted externally with two coats of heat resistant aluminium paint
6	Ladder	Spiral cage up to inspection platform and monkey cage ladder for rest height of the chimney
7	Inside Protection	3 mm thick rubber lining from inside

Emission norms designed for the Incineration process[1] are elaborated in **Table 2-7** as under:

Table 2-7: Emission Standards for Treatment and Disposal of Biomedical Waste by Incineration Process

Sl. No.	Parameter	Standards	
1.	2.	3.	4.
		Limiting concentration in mg/Nm^3 unless stated	Sampling Duration in minutes, unless stated
1.	Particulate matter	50	30 or $1NM^3$ of sample volume, whichever is more
2.	Nitrogen Oxides NO and NO_2 expressed asNO_2	400	30 for online sampling or grab sample
3.	HCl	50	30 or $1NM^3$ of sample volume, whichever is more
4.	Total Dioxins and Furans	$0.1ngTEQ/Nm^3$ (at 11% O2)	8 hours or $5NM^3$ of sample volume, whichever is more
5.	Hg and its compounds	0.05	2 hours or $1NM^3$ of sample volume, whichever is more

Primary Chamber:

The first phase of the incineration is combustion without air, comparable to gasification. This combustion in a reduced atmosphere produces combustion gas rich in CO and not in CO_2. This is a considerable advantage for the post-combustion of gases - CO is combustible. The process runs in a complete self-combustion and doesn't need any other combustible, except for the preheating or the starting, if waste has a calorific power superior to 2000 kcal/kg.

It will be Static Solid Hearth type with construction material will be Mild Steel. Design temperature will be 1400°C and waste charging will be automatic through DFDV system with Conveyor. The ash removal will be manual and burners and Combustion fan is provided as per standards makes.

[1] Revised Guidelines for Common Bio-medical Waste Treatment Facilities

Secondary Chamber:

The second phase is a post-combustion (secondary chamber) at high temperature of the gases produced by the rotary furnace. The high content of CO in these gases permits a re-lighting by simple air injection without using any other combustible. This process is therefore especially well adapted for a treatment on the site.

It will also be Static Solid Hearth type with construction material will be Mild Steel. Design temperature will be 1400°C and waste charging will be automatic through DFDV system with Conveyor. The ash removal will be manual and burners and Combustion fan is provided as per standards makes.

B. Autoclave

An autoclave is an equipment designed to deliver 121°C temperature under 15 psi pressures to a chamber, with the goal of decontaminating or sterilizing the contents of the chamber. Decontamination is the reduction of contamination to a level where it is no longer a hazard to people or the environment.

It is intended to install an autoclave for disinfection and sterilization of all bio-hazardous materials and items contaminated with potentially infectious agents such as culture media, surgical instruments, laboratory equipments, glassware including sharps.

Technical Description of Autoclave System to be adopted is presented in **Table 2-8** as below:

Table 2-8: Technical Description of Autoclave Facility

Sr. No.	Description	Details
1	Hinge	SS 304
2	Insulation	The sterilization chamber is insulated with 50-mm thick Mineral Wool, which is held in place by an outer cover of SS 304. The average surface temperature of the machine is not be more than 55°C (Room temperature 23°C + 20°C)
3	Central Locking Parts	CI Casting, wrinkle-black painted
4	Shooting Bolts	Tempered, Chrome coated
5	Outer Insulation	SS 304
6	Operating Pressure	1.2 kg/cm^2
7	Operating Temperature	121^{0}C & 134^{0}C
8	Stand	MS pipe
9	Steam Generator	SS 304 having 2 No's heating elements of 6Kw each
10	Other accessories	Steam trap, pressure switch, Automation Accessories like solenoid pneumatic valves, vacuum pump etc.
11	Automation Hardware	Micro-processor/ PLC based automation Auto-control panel, Automation Accessories
12	Software	SCADA software, for controlling, Monitoring and recording of cycle Parameters

C. Shredder

Shredding is shredding process to cut recyclable wastes into smaller pieces so as to make the waste unrecognizable. Shredder has non- corrosive sharp blades capable for shredding of plastic waste, sharps, bottles, needles, tubing's, and other general waste. The low speed two shaft systems are effective for shredding hard and solid waste.

It is intended to establish a Shredder for the disinfected waste fraction further segregated to HDPE, PP, rubber, latex, glass and metal. The segregated materials will then be shredded completing the process of disinfection of the waste.

Table 2-9: Technical Description Of The Shredder Facility

Sr. No.	Description	Details
1	Design	Robust design with minimum maintenance and minimum manual handling

2	Shredder Blade	Hardened alloy steel
3	Limit Switch	Considered to switch off the shredder if hopper lid is opened
4	Mechanism of reverse motion of shaft	Considered
5	Type	Low Speed
7	Anti-Vibration Mounting	Yes Considered
8	Control Panel	Yes Considered
9	Emergency stop	Considered for safety
10	Bucket Trolley	Considered at the bottom of the shredder

2.7 Cost of Project

Cost of the proposed project is estimated to be **Rs 4.87 Crores**. Breakup of investment is presented in **Table 2-10.**

Table 2-10: Break-up of Capital Cost of Project

Sr. No	Description	Cost (Rs. in Crores)
1.	Land	1.7
2.	Building, Sheds & Civil developmental works	1.17
3.	Plant & Machinery	2.0
	Total	**4.87**

2.8 Handling & Disposal of Mercury Waste

For handling of Mercury waste, the following steps will be taken up in compliance with CPCB guidelines on "Environmentally Sound Techniques for Mercury Waste Generated from Healthcare Facilities";

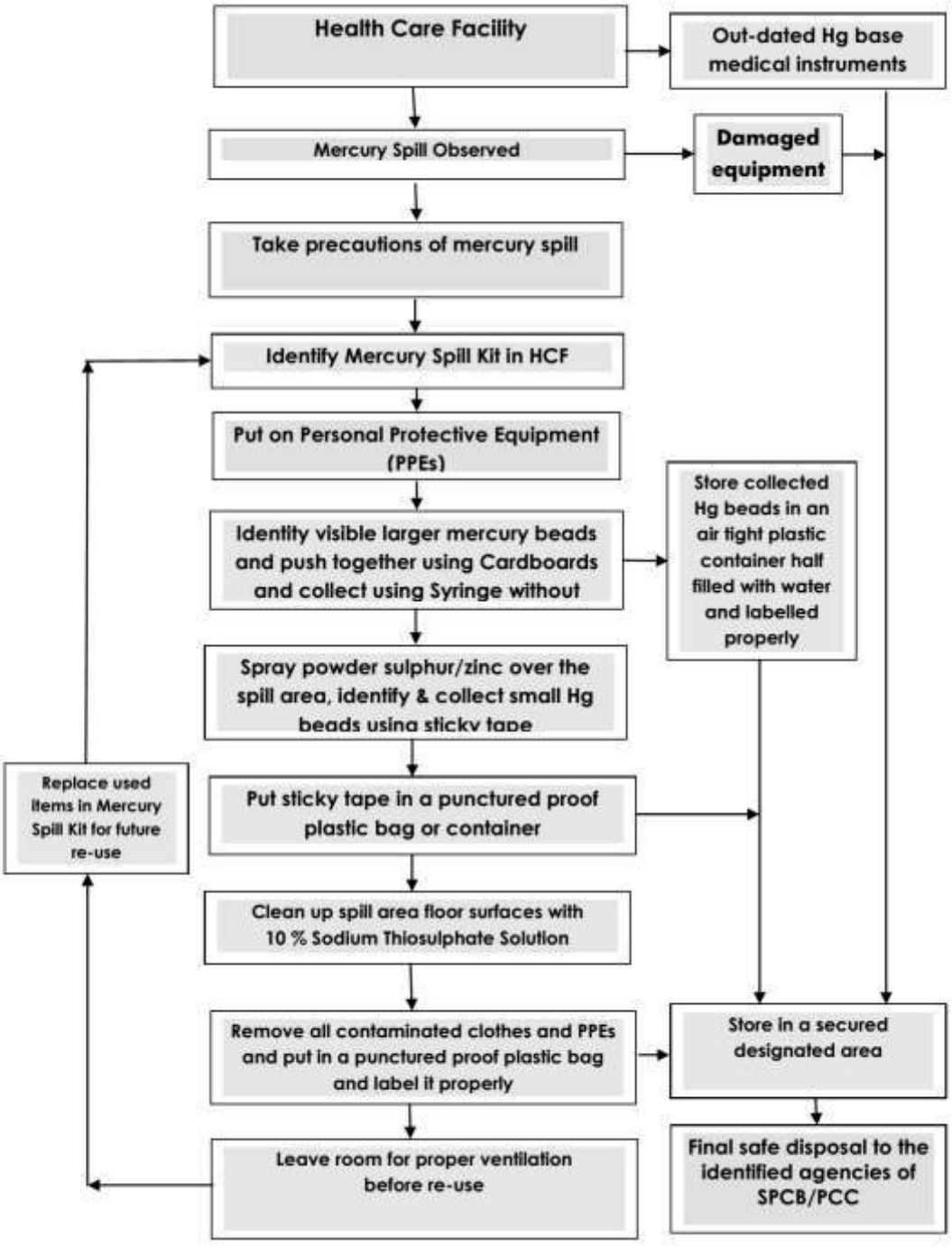
i. Evacuate area: As far as possible, people who are not involved in the clean-up; remain away from spill area to limit exposures and to prevent the spread of contamination.
ii. Put on face mask: In order to prevent breathing of mercury vapour, wearing a protective face mask will be made compulsory.
iii. People working in the area will not wear jewellery so that the mercury cannot combine (amalgamate) with the precious metals.
iv. All PPEs such as rubber or latex gloves etc will be used during handling of mercury wastes. If there are any broken pieces of glass or sharp objects, pick them up with care. Place all broken objects on a paper towel, fold the paper towel and place in a puncture proof yellow bag or container. Secure the plastic bag/container and label it as items contaminated with mercury.
v. Locate all mercury beads and look for mercury in any surface cracks or in hard-to reach areas of the floor. Checking of wide area beyond the spill. Utilization of flashlight to locate additional glistening beads of mercury that may be sticking to the surface or in small cracked areas. Cardboard sheets will be used to push the spilled beads of mercury together.
vi. A syringe (without needle) will be used to suck the beads of mercury. Collected mercury will be placed slowly and carefully into an unbreakable plastic container/glass bottle with an airtight lid half filled with water. After removing larger beads, use of sticky tape will be made to collect smaller hard-to-see beads. Place the sticky tape in a punctured proof yellow bag and secure properly. Commercially available powdered sulphur or zinc stains mercury a darker colour and can make smaller beads easier to see (powder sulphur can be used because (i) it makes the mercury easier to see since there will be a colour change from yellow to brown and (ii) it binds the mercury so that it can be easily removed and suppresses the vaporization of any missing mercury).
vii. All materials used during the clean-up, including gloves, mercury spills collected from the spill area will be placed into a yellow plastic bag or container with lid and sealed properly and labelled as mercury containing waste.

viii. Sprinkle sulphur or zinc powder over the area. Either powder will quickly bind any remaining mercury. In case, zinc powder is used, moisten the powder with water after it is sprinkled and use a paper towel to rub it into cracks in the flooring. Use the cardboard and then dampened paper towels to pick up the powder and bound mercury. Place of all towels and cardboard in a yellow plastic bag and seal all the bags that were used and store in a designated area. All the mercury spill surfaces will be decontaminated with 10 % sodium thiosulfate solution. Keep a window open to ventilate after the clean-up. After ensuring all the mercury has been removed, resume normal vacuuming and utilize the cleaned area for routine operation.

ix. All the bags or containers containing items contaminated with mercury will be marked properly and labelled as waste mercury containing.

This waste shall be categorized as yellow-e chemical waste and shall be disposed as per the options given in flowchart below:

Figure 2-6: Flow chart for Mercury waste handling



CBWTF will have separate storage provision for storage of mercury bearing waste collected from the member health care facilities.

The capacity of the mercury storage provision will be maximum of 90 days and the collected mercury bearing waste will be disposed of through a TSDF located nearby following the manifest as per Hazardous and Other Waste (Management and Transboundary Movement) Rules, 2016.

The charges for collection and disposal of mercury bearing waste will be collected by the CBWTF from the respective members.

2.9 Compliance to CPCB Guidelines for Treatment and Disposal Facilities for BMW

A statement of compliance of the Incineration, Autoclave and Shredder facility as per CPCB guidelines is presented in ***Table 2-11, Table 2-12, Table 2-13*** & **Table 2-14** as below:

Table 2-11: Compliance of CBWTF Incinerator as per CPCB guidelines

Particulars	CPCB Guideline	Compliance
Key Design Criteria		
Capacity	Capacity should not be less than 50 kg/hr	Capacity of proposed incinerator is 100 kg/hr
Chambers	Incineration shall be designed for primary and secondary combustion systems	Two Chamber (Primary and Secondary) Incinerator will be installed for incineration of waste as well as gases as per guidelines.
Size of opening	Greater than size for waste bag to be fed	The size of opening will be greater than size of the waste bags to be fed in the Incinerator.
Pressure in the Incineration primary chambers	A minimum negative draft of 1.27 to 2.54 mm (or rounded to 2 to 3 mm) of WC (Water Column) shall be maintained in the primary chamber to avoid leakage of gaseous emissions from the chamber and for safety reasons.	Negative draft will be maintained as per the design of Incinerator system as per guidelines.
Residence time	Ensure minimum residence time of two seconds in secondary chamber	Secondary chamber will be designed to obtain 2 seconds of residence time.
Incinerator thickness temperature with standing capacity	Min. 250°C and outside surface temperature < 50°C above ambient temperature	Incinerator will be designed as per these temperature considerations
Temperature	Minimum temperature of 800° C in the primary chamber and 1050 +/- 50°C in the secondary chamber.	The required temperatures will be maintained in both the chambers and will be operated in AUTO mode.
Burner	There shall be a separate burner each for the Primary & Secondary chamber	Separate burners will be provided for primary and secondary chambers
Waste handling	There shall not be any manual handling during charging of waste	BMW will be charged through conveyer belt.
Thickness	Incinerator will be made of mild steel with minimum thickness of 5 mm.	Thickness of the incinerator will be more than 5 mm.
Refractory bricks	Minimum thickness : 115 mm; IS: 8-1983 & IS:2042-1972	Refractory bricks with mentioned thickness will be provided
Refractory lining of hot ducts	Shall be done with refractory castable (min, 45 mm thickness) and insulating castable (min. 80 mm thickness)	Incinerator will be designed accordingly.
Thermocouple location	Primary chamber- Before admission of secondary air	Incinerator will be designed accordingly.
	Secondary chamber: at the end of secondary chamber or before the admission of dilution medium	
Heat burning time prior to waste charge	Max. of 60 minutes	60 minutes of heat burning time will be provided prior to waste charge.
Temperature control	Automatic switch on/off for temperature control is mandatory.	Auto Temperature control will be considered in the system design
PLC system	PLC system is Mandatory	PLC system will be provided
Emergency vent	Emergency vent is must.	Emergency vent will be considered in the Incinerator design
Continuous emission monitoring system	For CO, CO_2 and O_2	Continuous Emission monitoring system will be installed at the outlet of the Incinerator
Stack height	Stack height shall not be less than 30 meters	30 m stack height is proposed for incinerator stack.
Air Pollution Control Devices		
Dry System		
Particulates	Bag filter	Provision of Ceramic bag filter is considered for control of fine particulates.
Acid Gas	Alkali Dosing	Alkali dosing will be carried out for neutralization of acidic gases

Dioxins and Furans	Flue Gas Cooling (Heat Exchanger)	Cooling fan (Heat Exchanger) will be provided

Table 2-12: Compliance of CBWTF Autoclave as per CPCB guidelines

Particulars	CPCB Guideline	Compliance
Key design criteria		
Temperature	>121 °C	Autoclave will be designed & operated as per the guidelines
Pressure	15 psi	
Residence time	45 – 60 minutes	

Table 2-13: Compliance of CBWTF Shredder as per CPCB guidelines

Particulars	CPCB Guideline	Compliance
Key design criteria		
Hopper and cutting chamber	Designed to accommodate the waste bag full of bio-medical waste	Proposed shredders will be designed to accommodate the waste bag full of bio-medical waste.
Speed	The shredder should have low rotational speed (maximum 50 RPM). This will ensure better gripping and cutting of the bio-medical waste;	Rotation speed will be maintained to maximum of 50 RPM for proper shredding.
Discharge Height	Minimum 3 feet	Discharge height of 3 feet will be provided which is sufficient to accommodate the containers for collection of shredded material.
Blade	The shredder blade should be highly resistant and should be able to shred waste sharps, syringes, scalpels, blades, plastics, catheters, intravenous sets/ bottles, blood bags, gloves, bandages etc.	Suitable shredder blades will be considered.
	Blade shall be of non-corrosive and hardened steel	Non-corrosive blade made form hardened steel will be used in shredder.
Motor	The minimum capacity of the motor attached with the shredder shall be 3 KW for 50 Kg/hr	4 KW motors will be provided to shredders.
Safety	If hopper lid or door of collection box is opened, the shredder should stop automatically for safety of operator.	Proposed shredders will have all the safety measures suggested in the guideline.
	In case of shock-loading (non-shreddable material in the hopper), there should be a mechanism to automatically stop the shredder to avoid any emergency/accident	Shredders will have mechanism to stop automatically during shock load to avoid accident.
Other Features	In case of overload or jamming, the shredder should have mechanism of reverse motion of shaft to avoid any emergency/accident	Shredders will be equipped with the said feature.

Table 2-14: Compliance of CBWTF Storage as per CPCB guidelines

Particulars	CPCB Guideline	Compliance
Untreated waste storage area		
Size of the room	The size of the room shall be adequate to store all wastes transported to the CBWTF	Total 96 sq.m of area is provided to store the incoming wastes
Use of the different portions of the storage room	The front portion of the room shall be utilized for unloading the wastes from the vehicle and back or side portion shall be utilized for shifting the wastes to the respective treatment equipment	Storage area will be designed in a way to utilize as per mentioned in the Guidelines.
Floor	The floor shall be made impermeable so that any liquid spillage during unloading does not percolates into the ground	Impermeable flooring will be provided.
Separate area for mercury bearing waste	Separate storage provision for storage of mercury bearing waste collected from the member health care facilities	Separate storage in the Hazardous waste Storage area will be provided to store mercury bearing waste.
Capacity	Capacity of the storage room is to store BMW for 48 hours and mercury waste for 90 days.	Adequate storage area will be provided for BMW & mercury waste storage.

Particulars	CPCB Guideline	Compliance
Treated waste storage area		
Storage area	Separate space should be provided to store the wastes treated in different treatment units	Separate storage area of 60 sq.m will provided to store treated BMW.
	The wastes shall be stored in separate group as per the disposal options.	The incoming wastes as well as treated wastes are stored separately as per the categories as per BMW Rules
Ash storage area.	Incineration ash generated in the process of incineration shall be stored safely in a separate area under the shed so as to avoid entry of rain water during the monsoon and for easy collection.	Ash will be stored in containers in hazardous waste storage area.

2.10 Compliance to CPCB Revised Guidelines for Treatment and Disposal Facilities for BMW

The compliance to the CPCB revised guidelines for treatment and disposal facilities for BMW dated 21-12-2016 is presented in **Table 2-15** as below:

Table 2-15: Compliance of CBWTF as per revised guidelines dated 21.12.2016

Particulars	CPCB Criteria	Proposed Biomedical waste management Site
Location	A CBWTF shall preferably be developed in a notified industrial area without any requirement of buffer zone	• GIDC has issued Plot Allotment Letter No: GIDC/ALT/Seh1/RM/18 dated: 06.05.2023 in the name of Shri Jethabhai Ghelabhai Bharwad for Plot No: 5 & 6, GIDC Shehera Industrial Estate mentioning purpose as processing and treatment of biomedical waste. Shri Jethabhai Ghelabhai (Ahir) is a partner of M/s Shree Khodal Waste Management. • GIDC Shehera is a non-notified GIDC area, **hence public hearing will be conducted.** • Nearest Village Shehera is > 500 m from the site boundary. • Compliance to control measures: 1. We will adopt best available technology for Incineration and Autoclaving system 2. The emissions standards for incinerator will comply to stringent standards of air emissions for an Incinerator system as per CPCB 3. The site will comply with Zero Liquid discharge. Sewage will be treated in Septic Tank. ETP will follow an Evaporator system and the condensates from Evaporator will be reused back for in plant purposes. 4. We assure that there will be no complaints from public regarding CBWTF facility causing any adverse impacts on environment and habitation.
	A CBWTF can be located at a place reasonably far away from notified residential and sensitive areas and should have buffer distance of preferably 500m so that it shall have minimal impact on these areas. In case of non-availability of such a land, the buffer zone distance from the notified residential area may be reduced to less than 500 m by SPCB/PCC without referring the matter to CPCB by prescribing additional control measures such as Adoption of best available technologies (BAT) by the proponent of CBWTF Prescribing stringent standards for operation of the CBWTF by the SPCB/PCC. Adoption of zero liquid discharge by the CBWTF and In case of any complaints from the public, then CBWTF should prove that the facility is not causing any adverse impact on environment and habitation in the vicinity.	
	The CBWTF can also be developed as an integral part of the Hazardous Waste Treatment Storage and Disposal Facility (TSDF) subject to obtaining of necessary approvals from the authorities concerned including 'environmental clearance' as per Environmental Impact Assessment 2006 and further amendments notified under the Environment (Protection) Act, 1986, provided there is no CBWTF exist within 150 KM distance from the existing TSDF.	The site is being developed as a standalone CBWTF only. Under Category 7(da) as per EIA Notification, the application for EC Clearance for the standalone CBWTF site is being made to SEAC, SEIAA Gujarat

Particulars	CPCB Criteria	Proposed Biomedical waste management Site
Land Requirement	A CBWTF shall be set up on a plot size of not less than 1 Acre in all the areas	Site area is 5678.68 sq. m i.e. > 1 acre.
	In case of upcoming or new CBWTFs (both in municipal limits with population more than 25 Lakhs or in rural areas), land area requirement may be relaxed (but in any case not less than 0.5 Acre) by SPCB/PCC	
Coverage Area	A CBWTF located within the respective State/UT shall be allowed to cater healthcare units situated at a radial distance of 75 km. In a radial distance of 75 km, where 10,000 beds are not available, existing CBWTF in the locality may be allowed to cater the healthcare units situated up to 150 km radius w.r.t. to its location provided the bio-medical waste generated is collected, treated and disposed of within 48 hours as stipulated under BMWM Rules.	The site will cover medical and healthcare facilities within 75 km radius of the site and will cater to the needs of Panchmahal, Mahisagar and Dahod District.
	In case, number of beds exceed 10,000 in a locality and existing treatment capacity is not adequate, in such a case, a new CBWTF may be allowed in such a locality in compliance to various provisions notified under the Environment (Protection) Act, 1986, to cater services only to such additional bed strength of the HCFs located.	The site will cover medical and healthcare facilities within 75 km radius of the site which covers areas of Panchmahal, Mahisagar and Dahod District.
	In case of hilly areas, considering the geography, only one CBWTF with adequate treatment capacity may be developed covering at least two district to cater treatment services to HCFs located in respective districts.	No hilly areas are encountered in the area
Forest	No forest land shall be converted into non-forest activity for the sustenance of the industry.	No forest land will be converted into non-forest in this proposed project
Agricultural Land	No prime agricultural land shall be converted into industrial site.	The site is already identified as industrial land and is a non-notified GIDC Estate
Ecologically and/or otherwise Sensitive areas	5 km depending on the geo-climatic conditions the requisite distance may be decided appropriately by the Environmental agency.	No ecological or otherwise sensitive areas are present in the study area of 10 Km of the project site
Transport/Communication system	500 m away from National highway and railway line	The site is adjacent to the State Highway SH 154 from Godhra to Lunavada. No National highway or railway line is present within 500 m of the project site
Coastal areas	500 m away from HTL	No CRZ areas are present in the study area of site
Flood plain of the river line system	500m away from floodplain or modified flood plain affected by dam in upstream or flood control system	No Flood plains present in the vicinity of the site

2.11 Resources Requirements for the project

The resources requirements for the proposed project viz., water, power, fuel, manpower, utilities etc. are described in subsequent sections.

2.11.1 Electricity / Power

Proposed unit at full capacity will demand 60 KVA of power, which is being supplied through Madhya Gujarat Vij Company Ltd. The company proposes to install D.G. set of capacity 60 KVA (1 No.) to serve as an alternative source of power supply (for essential services) to this unit during emergency in case of power failure.

Table 2-16: Electricity/ Power Requirement

Sr. No.	Item	KVA	Source
1	Normal Power	60	MGVCL
2	D.G. Set	60	Standby Power

2.11.2 Manpower

20 persons will be required during project operation phase. During construction phase, temporary manpower will be employed during construction purposes.

2.11.3 Water

Total water requirement for proposed project is 13.8 KLD (11.2 KLD fresh + 2.6 KLD recycled), which will be sourced from GIDC water supply source as available. Necessary water supply will be provided by GIDC as per their plot allotment letter.

2.11.3.1 Water Consumption

In the proposed project, the water will be mainly used in following areas:

- Incinerator, Autoclave and Shredder Washing
- Scrubber System
- General Washing (Truck and Floor) from plant areas
- Domestic
- Gardening

The total fresh water consumption for the proposed project will be 11.2 KLD while 2.6 KLD of waste water will be recycled for quenching in Incineration Plant.

Source of water – GIDC Supply.

Table 2-17: Fresh Water Consumption and Utility

Application	Water Requirement (KLD)	Remarks
Domestic	1	20 x 50 LPCD water requirement
Gardening	4	1964 sq.m (2 Litres per sq.m water application depth)
Industrial		
Incinerator	5.3	Total water required for Incineration System operations
Autoclave	1	Water requirement for Autoclave operations
Shredder	0.4	Water requirement for Shredder operations
Reagent Preparation	0.4	Reagents required in Incineration System
Scrubbing System	0.5	Scrubber Makeup
General Washings (Truck / Floor)	1.2	-
Industrial Total	**8.8**	Fresh – 6.2 KLD Recycle – 2.6 KLD
Grand Total (A+B+C)	**13.8**	**Source of water will be GIDC water supply**
Recycle Water	**2.6**	
Fresh Water	**11.2**	**Fresh Water Input to site**

2.11.3.2 Waste Water Generation & Disposal

The waste water generated from the process areas and utilities will be collected and treated in a waste water treatment plant located within the site premises. The domestic sewage will be disposed of in Septic tank & soak Pit and industrial waste water will be treated in an ETP and treated water will be further sent for Quenching purpose in Incineration System.

Sludge from the ETP will be disposed to TSDF site.

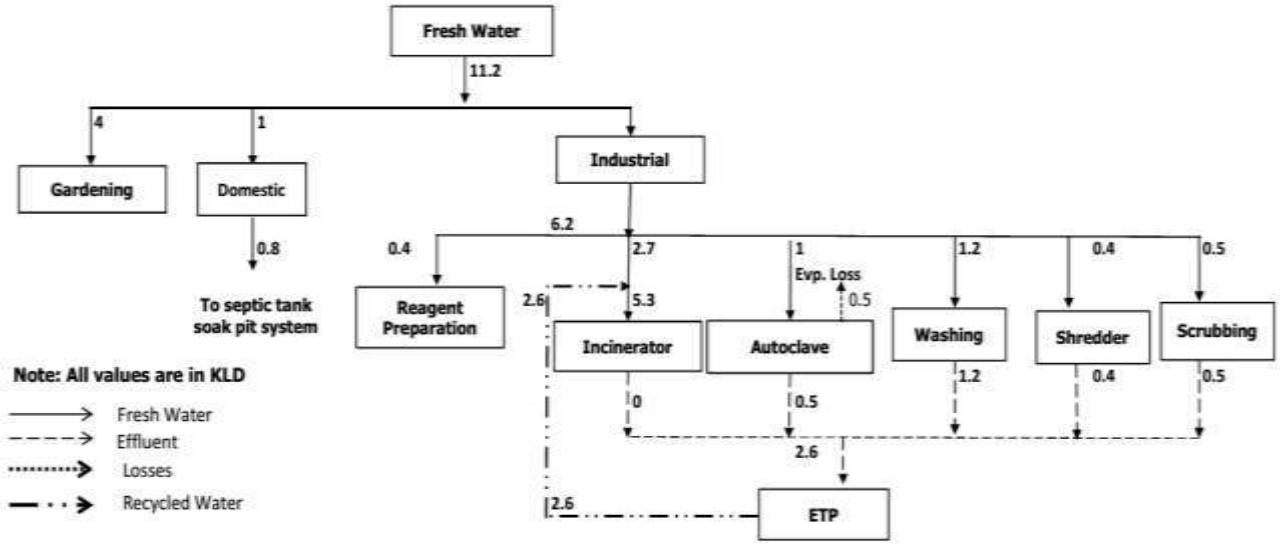
Table 2-18: Wastewater Generation and Disposal

Category	Waste Water Generation (KLD)	Remarks
Domestic	0.8 (80% of water requirement)	Sewage water will be disposed of in Septic tank soak pit.
Industrial		
Incinerator	0	Waste Water will be treated in ETP and then utilized in Incinerator for quenching.
Autoclave	0.5	
Shredder	0.4	
Scrubbing System	0.5	
General Washing (Truck/Floor)	1.2	
Total Industrial waste water	**2.6**	
Total (Industrial + Domestic)	**3.4**	0.8 KLD loss in septic tank and soak pit system
Recycling Waste Water from ETP after Treatment	**2.6**	Recycling Water 2.6 KLD to Incinerator quenching

2.12 Water Balance Diagram

A water balance diagram is prepared for water consumption in different areas of site premises, waste water going to ETP and recycle water back for industrial use is presented in **Figure 2-7** as below:

Figure 2-7: Water Balance Diagram



2.13 Effluent Treatment System

The combined waste water from the plant areas including utility and scrubber blowdown will be collected ETP area for treatment in a full-fledged ETP consisting of Primary, Secondary Biological and Tertiary Treatment Stages.

All the waste water streams will combine in the equalization tanks of ETP. The combined design inlet and outlet characteristics of ETP are presented in **Table 2-19** as below:

Table 2-19: Design Combined Inlet and Outlet Characteristics for ETP

S. No.	Parameters	Proposed ETP	
		Proposed ETP Design Inlet	Design Outlet
1	Design Flow in KLD	5	5
2	pH	5 - 9	6.5 – 8.5
3	COD	5000	< 250
4	BOD	2000	< 100
5	TDS	2500	< 3000
6	SS	250	< 100

The ETP description is as under:

Equalization and Neutralization:

Primary Collection and equalization of waste water will be done in equalization tanks. Neutralization using Lime is carried out in the tanks to have further proper coagulation and flocculation treatment as lime also has a coagulating effect.

Primary Treatment

Primary Treatment is a first step which removes the colloidal and suspended solids from effluent waters by means of coagulation and flocculation process. In this process the TSS and COD levels comedown to 75% and 15 - 20% of initial levels.

Secondary Treatment

This is the second step of wastewater treatment it mainly consists of biological degradation of the Primary treated water by addition of oxygen and settlement of the biological sludge in secondary settling tank with recirculation for maintaining MLSS levels in aeration tank as sludge. Normally it is found that the reduction levels in COD, BOD after an efficient secondary treatment will be 75% and 85% in one stage treatment. Two stage biological treatment would further result in COD and BOD reductions to a level of 80% and 88%.

Tertiary Treatment

This is the final stage of treatment where the effluent after secondary biological treatment is further disinfected using Sodium Hypo Chloride. Disinfection is carried out in order to kill pathogens.

The effluent is further passed through tertiary polishing stage of treatment in PSF and ACF system for removal of tertiary colloidal suspended solids and residual COD and BOD by means of adsorption. The filters are provided with sand and gravel media bed of different size gradations along with activated carbon as filtration and adsorption media.

Sludge Handling and Management

Sludge from Primary Settling tank (Primary sludge) and waste secondary biological sludge are further sun dried on sludge drying beds or dewatered using filter press / screw press system. Dewatered sludge's are packed in HDPE Bags and sent to TSDF site for ultimate disposal.

2.14 Air Emissions

The details of flue gas stacks, their height, diameter and APCM proposed is presented in **Table 2-20** as below:

Table 2-20: Details of Flue Gas Stacks, its Height, Diameter and APCM

Sr. No.	Stack attached to	Capacity	Fuel	Quantity of Fuel	Air Pollution Control Measure (APCM)	Stack Diameter and Height above GL (m)	Parameter with Permissible limit
1	DG	1 No – 60 KVA	HSD	15 Lit/hr	Acoustic Enclosure will be provided. Adequate Stack Height will be provided as per capacity	12	Particulate Matter - 150 mg/Nm^3, SO_2: 100 ppm, NOx: 50 ppm Particulate Matter-150 mg/Nm3, SO_2: 100 ppm, NOx: 50 ppm
2	Incinerator	100 Kgs/hr	HSD	32 Lit/hr	Quencher followed by Venturi Scrubber, ID Fan with adequate stack height.	30	Particulate Matter - 50 mg/Nm3, SO2: 200 mg/Nm^3, HCl: 50 mg/Nm^3, CO: 100 mg/Nm3, TOC: 20 mg/Nm^3, NOx (NO and NO2 expressed as NO2): 400 mg/Nm^3, Hg: 0.05 ng/m3, HCl: 50 mg/Nm^3 , Dioxins and Furans: 0.1 ng TEQ/ Nm3

2.14.1 Fugitive Gas Emissions

Dust will be generated from transportation activity. For which paved road will be constructed and only PUC certified vehicles will be used for transportation activity.

2.14.2 Odour Control Measures

Odour management is one of the important issue in CBWTF. The main aim is to minimize the number of sources of possible odour generation. The mitigation measures proposed to minimize and control odour are as follows:

- It will be ensured that the total time taken from generation of bio-medical waste to its treatment, which also includes collection and transportation time, should not exceed 48 hours.
- During transportation, the closed containers will be used in order to prevent exposure and release of odours.
- General cleaning at periodic intervals and Good housekeeping practices will be adopted.
- Daily washing of waste collecting vehicles and storage area with hypo-chloride solution.
- All Bio-Medical Waste will be stored always in closed containers and in plastic bags.
- Plantation of trees will also supress the odours inside the site premises and along periphery.
- Spray of deodorants in specific handling and processing areas where odour nuisance is persistent and un-avoidable to certain extent.

2.15 Solid & Hazardous Waste Management

The details of Hazardous and Non-Hazardous Waste Types, their quantity of generation and methods of storage, treatment and disposal is presented in **Table 2-21** as below:

Table 2-21: Types of Solid & Hazardous Waste and its Management

Sr. No.	Name	Source of generation	Category and Schedule as per HW Rules	Quantity (MT/Annum)	Storage and handling	Management / Disposal
1	Used / Spent Oil	Process areas and rotating equipment's	5.1	0.5	Stored in Drums	Pre-Processing facility / Co-processing of waste / Sent to Oil Recyclers

Sr. No.	Name	Source of generation	Category and Schedule as per HW Rules	Quantity (MT/Annum)	Storage and handling	Management / Disposal
2	Incineration Ash	Incinerator	37.2	720 x 0.03 = 21.6 ~ 22 MT	Packed in HDPE Bags	TSDF / Landfilling
3	ETP Sludge	ETP	35.3	44 Kgs per day x 365 = 16,060 Kgs ~ 16.2 MT	Packed in HDPE Bags	TSDF / Landfilling
4	Shredded Materials	Shredder	Non-Hazardous	180 MT	Packed in HDPE Bags	Sale to Authorized recycler
5	Encapsulated Waste	Process areas	35.3	1.5 MT	Packed in HDPE Bags	Sent to authorized TSDF for final disposal

These wastes will be properly handled, collected and stored in dedicated solid and hazardous waste areas on site.

A dedicated storage area for Hazardous waste is earmarked to 52 sq.m on site and for other wastes i.e treated waste storage area of 60 sq.m on site.

These areas will be developed with HDPE lining at base as a secondary containment layer for safe storage and no contamination to soil or ground water.

These wastes will be further disposed to authorised facility through manifest. A willingness letter of waste management facility is enclosed where these wastes could be disposed of as presented at ***Annexure 12***.

3 DESCRIPTION OF THE ENVIRONMENT

3.1 Introduction

The baseline status of environmental quality in the vicinity of project site serves as the basis for establishment of prevailing environment status and identification, prediction and evaluation of impacts. This chapter describes existing environmental baseline data of the study area pertaining to the project activity for EC Clearance process.

3.2 Study Area

Considering the proposed project boundary, a radial distance of 10 km is deemed as **'study area'** for baseline data collection and environmental monitoring. The study area covers areas of Shehera Taluka of Panchmahal district of Gujarat State. Baseline data was collected for various environmental attributes so as to compute the impacts that are likely to arise due to the proposed project.

3.3 Monitoring Period

As per TOR consideration, the baseline data for the proposed project was carried out during **December 2024 – February 2025** over one season (Winter) period. The data is collected in the study area with respect to meteorological conditions, baseline air quality, noise levels, water (surface and ground) quality, soil quality, land use and socio-economic conditions during the study period. The methodology for conducting the baseline environmental survey was considered as per guidelines of EIA Manual of the MoEF&CC. The analysis of baseline samples was carried out in the laboratory of M/s Kadam Labs Pvt Ltd. (An NABL approved Laboratory). The original test reports of all samplings conducted on site is presented at ***Annexure 20***.

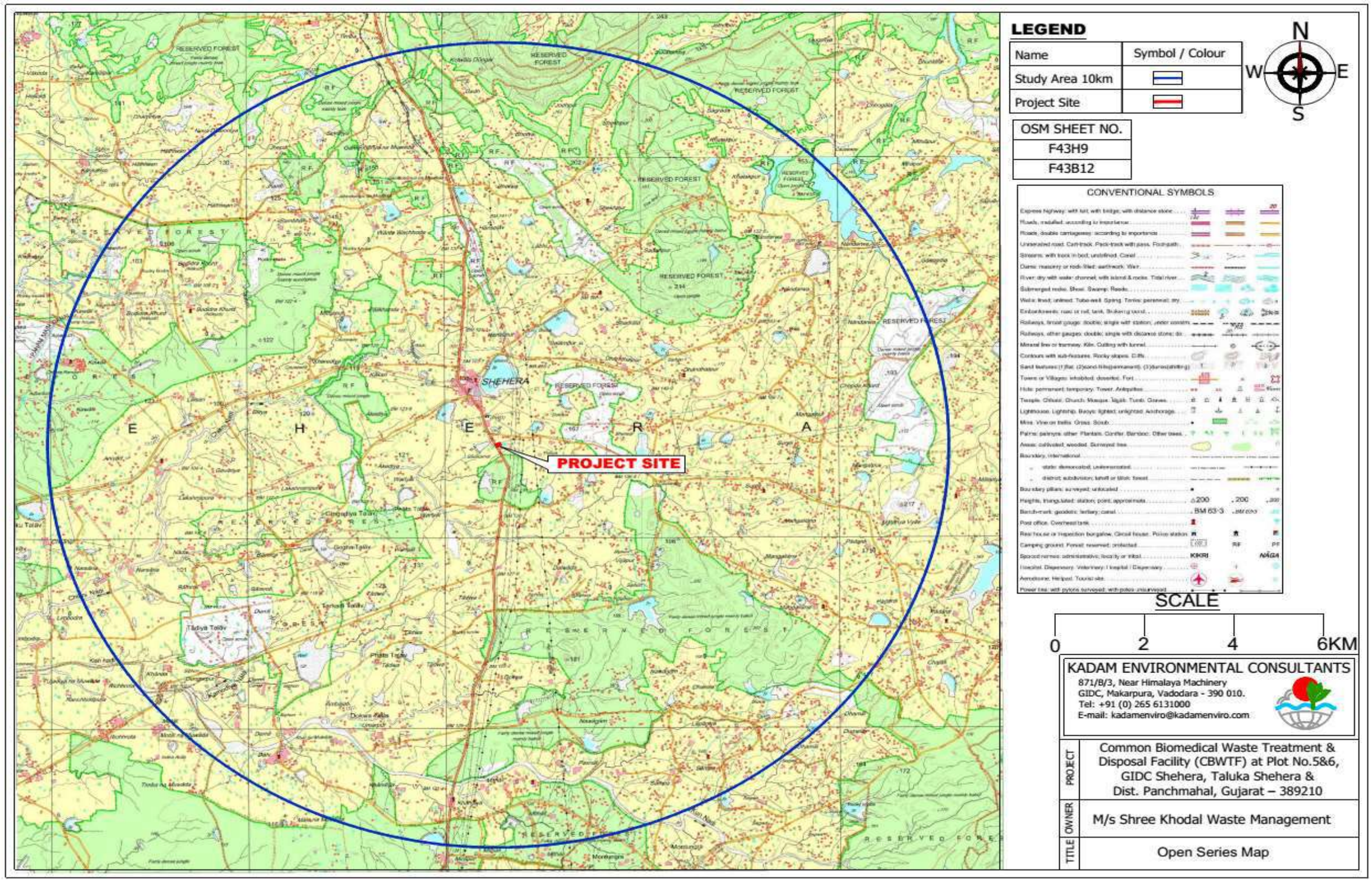
3.4 Methodology

The main aim of the baseline study is to identify the baseline environmental attributes which can be affected due to the proposed project. The study mainly covers assessment of the baseline environmental conditions and further assessment of impact from proposed project on the environment. The scope of the baseline studies includes following environmental components:

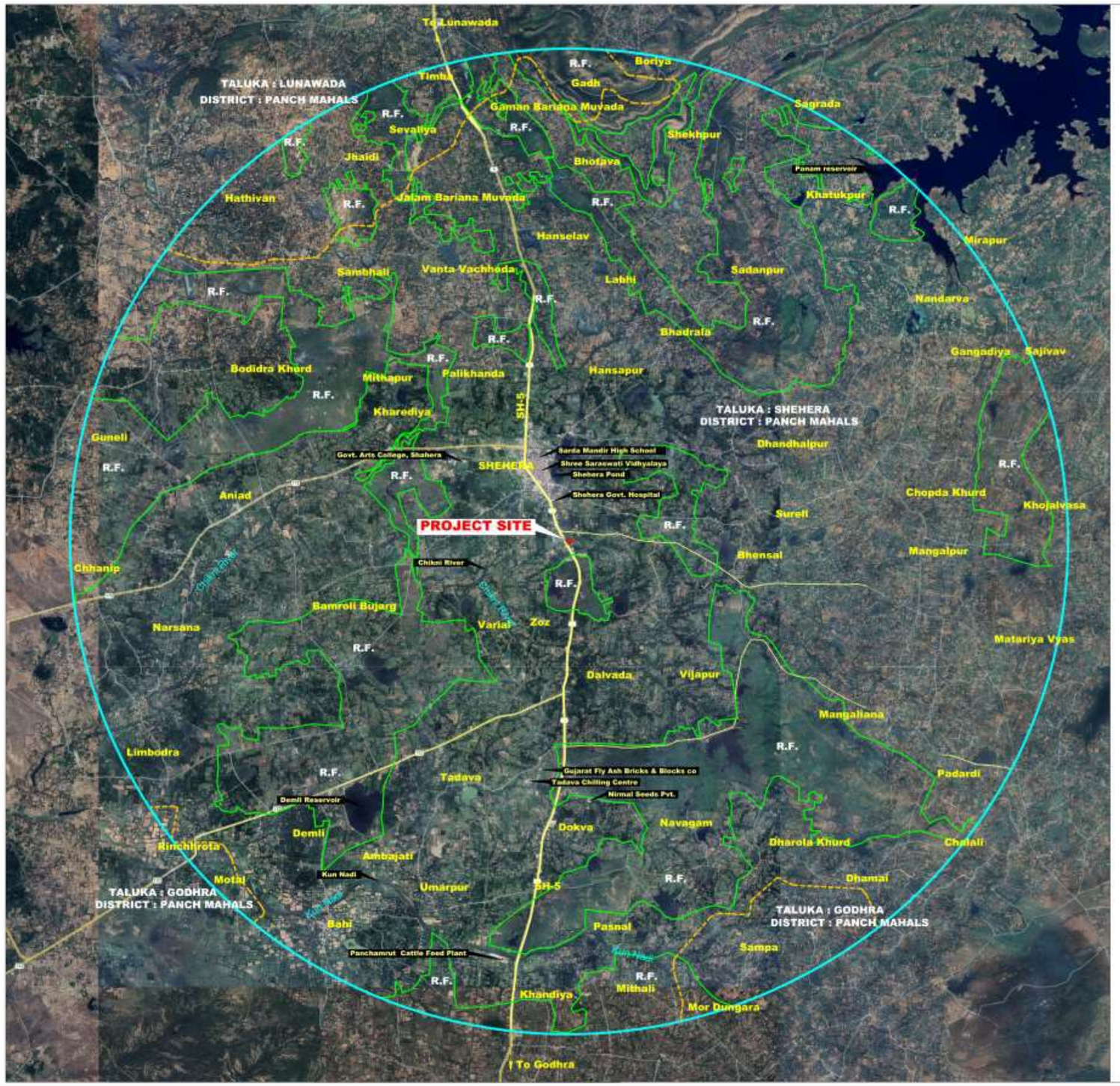
- Ambient Air Quality
- Water Quality (Ground & Surface water)
- Ecological/Biological environment
- Noise Levels
- Soil Quality
- Land Use and Land Cover
- Socio-Economic Environment

An OSM Map of 10 km radius of study area from project site is presented in ***Map 3-1.*** The Satellite imagery showing site location with lat-longs and study area of 10 km radius is presented in ***Map 3-2*** as under:

Map 3-1: OSM Map of 10 km radius of study area from project site



Map 3-2: Satellite Image of 10 km radius of study area from project site



LEGEND

Name	Symbol / Colour
Project Site	
Study Area	
Reserved Forest	
Taluka Boundary	

N
W E
S

	Company Name	Distance in km	Direction
1	Gujarat Fly Ash Bricks & Blocks co	4.62	SSW
2	Tadava Chilling Centre	4.85	SSW
3	Nirmal Seeds Pvt.	5.25	SSE
4	Panchamrut Cattle Feed Plant	8.58	SSW
5	Shehera Pond	1.12	NNW
6	Shehera Govt. Hospital	0.85	NNW
7	Sarda Mandir High School	1.76	NNW
8	Shree Saraswati Vidhyalaya	1.8	NNW
9	Govt. Arts College, Shahera	2.6	NW
10	Chikni River	1.73	WSW
11	Kun Nadi	7.8	SW
12	Panam reservoir	9.1	NE
13	Demli Reservoir	6.15	SW

SCALE

0 2 4 6Km

KADAM ENVIRONMENTAL CONSULTANTS
871/B/3, Near Himalaya Machinery
GIDC, Makarpura, Vadodara - 390 010.
Tel: +91 (0) 265 6131000
E-mail: kadamenviro@kadamenviro.com

PROJECT	Common Biomedical Waste Treatment & Disposal Facility (CBWTF) at Plot No.5&6, GIDC Shehera, Taluka Shehera & Dist. Panchmahal, Gujarat – 389210
OWNER	M/s Shree Khodal Waste Management
TITLE	Map showing Sensitivity Location in the Study area

REVISION : 0	DRAWN BY : KK
SCALE : As Shown	CHD BY : MO
DATE : 27/03/2025	APPROVED BY : SK

3.5 Land Use/Land Cover

3.5.1 Classification of Land Use and Land cover

The National Remote Sensing Agency (NRSA), Government of India, conducted a land use survey using Remote Sensing Techniques in the year 1988-89 at the behest of the Planning Commission for classifying land by visual interpretation techniques and digital techniques. NRSA's output resulted in a two-level system of classification, comprising seven primary land use / land cover categories. Some of these primary categories required further delineation, leading to a second level of classification that resulted in further sub-categories.

This system of classification has been the basis for Kadam's land use / land cover studies. Whilst these categories are generally found relevant with respect to describing land use and land cover classes in the Indian context, sometimes modifications are required, and made, to include additional sub-categories, which are more relevant in describing the land use and land cover for a particular study. Such sub-categories are defined, and are presented in ***Table 3-1*** as below:

Table 3-1: Land use and Land Cover Classification System

Sr. No.	Level 1 Classification	Level 2 Classification
1.	Built-up Land or Habitation	Residential / Commercial
		Industrial
2.	Agricultural Land	Crop Land & Fallow Land
		Plantations
3.	Forests	Evergreen / Semi-evergreen Forest
		Deciduous Forest
		Degraded Forest
		Scrub (Forest)
		Open Forest
		Dense or Close Forest
		Forest Blank
		Forest Plantations
		Mangrove Forest
4.	Wastelands	Salt-Affected Land
		Waterlogged Land
		Marshy / Swampy / Mud Land Area
		Gullied / Ravenous Land
		Land without Scrub
		Sandy Area (Coastal or Desertic)
		Barren Rocky / Stony Waste / Sheet Rock Area
5.	Water Bodies	Reservoir / Lakes / Ponds / Tanks
		River / Stream / Drain
		Sea
		Creek
6.	Others	Shifting Cultivation
		Grassland / Grazing Land
		Snow Covered / Glacial Area
		Ports / Harbours
		Salt Pan
		Salt Stack
		Mining

Sr. No.	Level 1 Classification	Level 2 Classification
		Aquatic Farming / Culture
		Sand Dunes
7.	Vegetation Cover	Scrub
		Open Vegetation
		Dense or Close Vegetation
		Aquatic Vegetation
		Mangroves

The land use and land cover classification details and Land Use site visit photographs are presented at ***Annexure 16.***

3.5.2 Methodology Adopted for Land Use / Land Cover Identification in Study Area

To accomplish the objective, the following steps were undertaken:

- Secondary data collection
- Interpretation of Satellite data
- Checking of Interpreted Imagery
- Field survey / Ground Truthing
- Generation of final land use / land cover map

3.5.3 Secondary data collection

This covers secondary data from Toposheet/Open series map by Survey of India and remote sensing data using the licensed software, Google Earth Pro having high resolution (< 1.0 m) imagery were used as base maps for preparation of land use and land cover map of the study area. OSM and Satellite image for 10 km radius of study area is presented at ***Map 3-1.***

A site visit was undertaken in the study area by the LU expert on 7/2/2025 for ground truthing and review of sensitive ecological features in the area.

3.5.4 Interpretation and Checking of Satellite data

The downloaded satellite imagery was interpreted considering the basic elements of interpretation such as size, shape, texture, pattern, location, association, shadow, aspect and resolution along with ground truth and ancillary information collected during the preliminary reconnaissance survey the interpretation was accomplished. The description of general classification scheme followed in the project for land use interpretation has been described earlier in ***Section 3.5.1.***

3.5.5 Field Survey and Ground Truthing

The aim of ground truth studies is to confirm whether the interpreted land uses are correct thereby improving the authenticity/quality of the land use map. It also allows interaction with local parties and stakeholders, thereby giving background information on the land use.

Ground truth was carried out to check the authenticity of the interpreted data. The survey consisted of traversing the study area, cross-checking of identified major features with those represented on the map.

Field notes were made and information was recorded pertaining to co-ordinates, photographs and identified land uses. Additional features identified or remarks made against existing interpretation were also recorded.

The field survey was carried out in the study area by Kadam's land use and land cover Functional Area Expert.

GPS readings were taken during the surveys wherever it was felt that additional confirmation in interpretation of the data and also observations of land features were noted. Additionally, spot checks were also done to confirm the land use / land cover interpretation even where confidence of interpretation was authenticated to be high.

Table 3-2 enumerates the land features and its corresponding GPS readings of all the ground truthing locations selected.

Table 3-2: GPS readings within study area

Sr. No.	Location	Latitude (North)	Longitude (East)	Land use/ Land cover Classification
1	At site	22° 56′ 13.72″	73° 38′ 12.66″	Scrub land
2	Kun River	22° 51′ 47.0099″	73° 37′ 37.3767″	River
3	Bhotva Village	23° 0′ 36.2749″	73° 37′ 13.7403″	Crop Land
4	Forest area Nr. Tadava Village	22° 53′ 38.4059″	73° 38′ 6.3344″	Scrub Forest
5	Salampur Village	22° 57′ 19.6950″	73° 39′ 1.5548″	Residential
6	Nr. Site (Shehera Village)	22° 56′ 15.8194″	73° 38′ 7.6151″	Pond
7	Gujarat Fly Ash Brics & Blocks co.	22°53'47.36"N	73°37'51.01"E	Industrial
8	Tadava Village Pond	22° 53′ 38.7145″	73° 38′ 4.1839″	Pond
9	Nr. Zoz Village	22°55'23.13"N	73°38'17.47"E	Land Without Scrub
10	Sureli Village	22°55'43.12"N	73°41'39.43"E	Residential
11	Aniad Village	22°55'47.09"N	73°35'29.74"E	Crop Land
12	Water Body near Bhotva	23° 0′ 7.2413″	73° 37′ 57.9869″	Pond
13	Chikni River	22°54'59.44"N	73°38'11.75"E	River
14	Shehera water reservoir	22° 57′ 23.7871″	73° 38′ 13.3899″	Reservoir
15	Reserve Forest	23° 0′ 29.1463″	73° 38′ 0.3954″	Scrub Forest

3.5.6 List of Major Industries

The list of major industries with name and type identified within the study area of 10 km radius is presented in **Table 3-3** and also presented in ***Map 3-2***

Table 3-3: Major Industries within Study Area – 10 km radius

Sr. No.	Name of Industry	Distance (Km)	Direction w.r.t Site
1	Gujarat Fly Ash Brics & Blocks Co.	~ 4.62	SSW
2	Tadava Chilling Centre	~ 4.85	SSW
3	Nirmal Seeds Pvt. Ltd	~ 5.25	SSE
4	Panchamrut Cattle Feed Plant	~ 8.58	SSW

3.5.7 Land use and Land Cover Classification of the Study Area

The land use and land cover of the above mentioned study area covering various categories. The features identified have been presented, considering the Classification provided in ***Table 3-4***.

Table 3-4: Synopsis of Land use / Land cover Classification Used for the Project

S. No.	Level 1 Classification	Level 2 Classification
1.	Built-up Land or Habitation	Residential / Commercial
		Industrial
2.	Agricultural Land	Crop Land/Fallow Land
		Plantations
3.	Water Bodies	Reservoir / Lakes / Ponds / Tanks
		River /Stream/ Drain

S. No.	Level 1 Classification	Level 2 Classification
4.	Wastelands	Land without Scrub
		Rocky area
5.	Vegetation Cover	Scrub
		Open vegetation
		Dense Vegetation
6.	Forest Area	Scrub Forest
		Open Forest
		Dense Forest
		Blank Forest
7.	Others	Muddy Area
		Canal
		Grass Land

The images classified into the above-mentioned classes for different regions of interest are presented in an overall Land use and Land cover map presented at **Figure 3-2**.

All land uses are discussed in the subsequent sub-sections.

Built-up Land or Habitation

Residential / Commercial

Habitation covers 4.67% of study area. The study area covers Taluka's Godhra, Shehera and Lunawada.

Industrial Area

Only 0.12% of study area covers Industries. No major industries found in study area.

Agricultural Land

Crop Land / Fallow Land

This class is dominating the study area by 60.04% of the total study area.

The cultivate crops in this particular area are mostly, wheat (cereal grain), Paddy (Rice), maize. The irrigation is essentially through reservoir, pump-water from bore-well, Canal and rain water run-off.

Plantation

The level of class covers 0.57% and mostly observed plantation of Teak Tree (Tectona Grandis), Castor Plant (Ricinus Communis), eucalyptus sp. (nilgiri) etc. were observed within the study area.

Water Bodies

Reservoir / Lakes / Ponds / Tanks

The level of class covers 2.89% of the study area.

Rivers / Stream

The level of this class covers 4.48% of total study area. The study area has two major rivers namely Kun river and Chikni river.

Canal

The level of this class covers 0.22% of total study area. Sub canal of Narmada canal is present in study area.

Vegetation Cover

The level of class covers the study area by 11.37% of vegetation cover.

Waste Land

Land without Scrub

The class land without scrub has 0.52% of the study area.

Rocky Area

The class rocky area has 0.08% of the study area.

Others

The glass grass land has 0.08% of the study area

Wasteland

The class rocky area has 0.08% of the study area. Land without scrub covers 0.52 % of study area.

Forest Area

The total area under the Forest class is about 14.83 %. The sub-class of scrub forest covers 7.75%, open forest covers 3.89%, dense forest covers 2.98%, and blank forest covers 0.22%. the study area is covered with many Reserved forests.

3.5.8 Class Wise Area Statistics

The area statistics of the land use classes in the study area are presented in **Table 3-5**

Table 3-5: Area Statistics for Land Use/Land Cover Classification in the Study Area

Sr. No.	Level1 Classification	Level2 Classification	Area, Level 2 Class			Area, Level 1 Class		
			Ha.	~km²	~%	Ha.	~km²	~%
1.	Built-up Land or Habitation	Residential / Commercial	14.83	1482.98	4.67	15.20	1520.08	4.80
		Industrial	0.37	37.10	0.12			
2	Agricultural Land	Crop Land / Fallow Land	190.49	19049.00	60.04	192.29	19229.50	60.72
		Plantation	1.80	180.50	0.57			
3	Water Bodies	Reservoir / Lakes / Ponds / Tanks	9.18	917.84	2.89	7.60	2409.72	7.60
		River / Stream	14.21	1420.88	4.48			
		Canal	0.71	71.00	0.22			
4	Vegetation Cover	Scrub	14.21	1421.17	4.48	11.37	3608.79	11.37
		Open Vegetation	15.72	1571.69	4.95			
		Dense Vegetation	6.16	615.93	1.94			

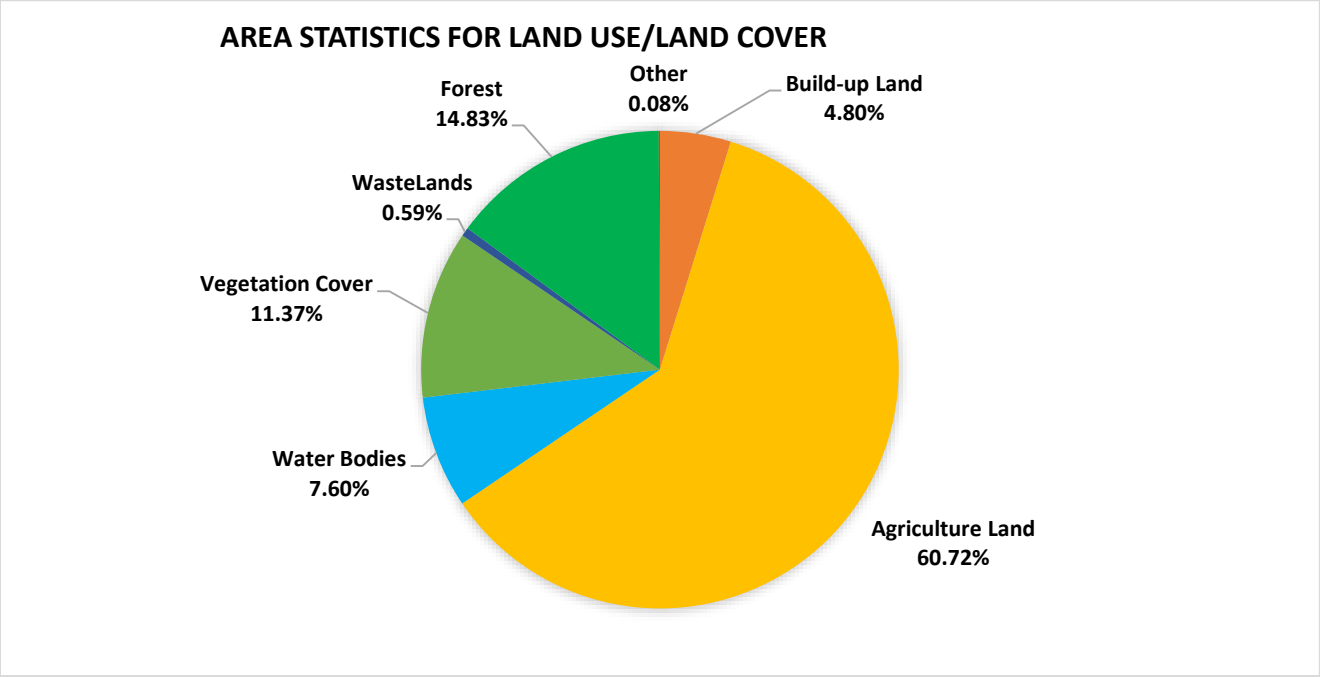
Sr. No.	Level1 Classification	Level2 Classification	Area, Level 2 Class			Area, Level 1 Class		
			Ha.	~km²	~%	Ha.	~km²	~%
5	Wastelands	Land without Scrub	1.64	163.83	0.52	0.59	188.74	0.59
		Rocky Area	0.25	24.91	0.08			
6	Forest	Blank Forest	0.69	68.79	0.22	14.83	4705.35	14.83
		Dense Forest	9.45	945.42	2.98			
		Scrub Forest	24.58	2457.53	7.75			
		Open Forest	12.34	1233.62	3.89			
7	Other	Grass Land	0.27	26.93	0.08	0.08	0.08	0.08
TOTAL								**100**

Note: Roads are not separately calculated

3.5.9 Final Map Preparation – Land Use and Land Cover

A final Land use map (as presented in **Figure 3-2**) is prepared for study area showing all surface features and Land use classes. The proportional presence of different land uses and land cover in terms of statistical percentages are derived for the study area. The Pie Chart of LU & LC classes in the study area is presented in **Figure 3-1.**

Figure 3-1: Pie Chart of LU/LC classes in the study area



It can be seen from the above pie chart that around 60% of study area is agriculture land and other major contribution is of forests i.e. 14.83% which are mostly reserved forests.

The proposed site is located in a non-notified industrial area of GIDC industrial estate and the scrub land parcel has already been earmarked for industrial purpose utilization. Hence change in land use is already done as it is taken over by GIDC for industrial development.

Figure 3-2: Land use and Land cover Map of 10 km radius of study area



LEGEND

Name	Symbol / Colour
Proposed Project Site	
Study Area	
Road	
Reservoir Forest Boundary	
Canal	
Taluka Boundary	

LAND USE / LAND COVER CLASSES

1st Level Classification	2nd Level Classification	Symbol / Colour
Built-up / Habitation	Residential / Commercial	
	Industrial	
Agricultural Land	Crop Land / Fallow Land	
	Plantation	
Water Bodies	Ponds / Lakes / Tanks / Reservoir	
	River	
Vegetation Cover	Scrub	
	Open Vegetation	
	Dense Vegetation	
	Grass land	
Wasteland	Land Without Scrubs	
	Rocky area	
Forest Area	Scrub Forest	
	Open Forest	
	Dense Forest	
	Blank Forest	
Other	Muddy Area	

SCALE

0 2 4 6Km

KADAM ENVIRONMENTAL CONSULTANTS
871/B/3, Near Himalaya Machinery
GIDC, Makarpura, Vadodara - 390 010.
Tel: +91 (0) 265 6131000
E-mail: kadamenviro@kadamenviro.com

PROJECT	Common Biomedical Waste Treatment & Disposal Facility (CBWTF) at Plot No.5&6, GIDC Shehera, Taluka Shehera & Dist. Panchmahal, Gujarat – 389210
OWNER	M/s Shree Khodal Waste Management
TITLE	Map showing Landuse / Land cover in the Study area

REVISION : 0	DRAWN BY : KK
SCALE : As Shown	CHD BY : MO
DATE : 29/01/2025	APPROVED BY : SK

3.5.10 Environmental Sensitivity of the project site

The Environmental Sensitivity of the project site with respect to the study area is presented in ***Table 3-6*** as below:

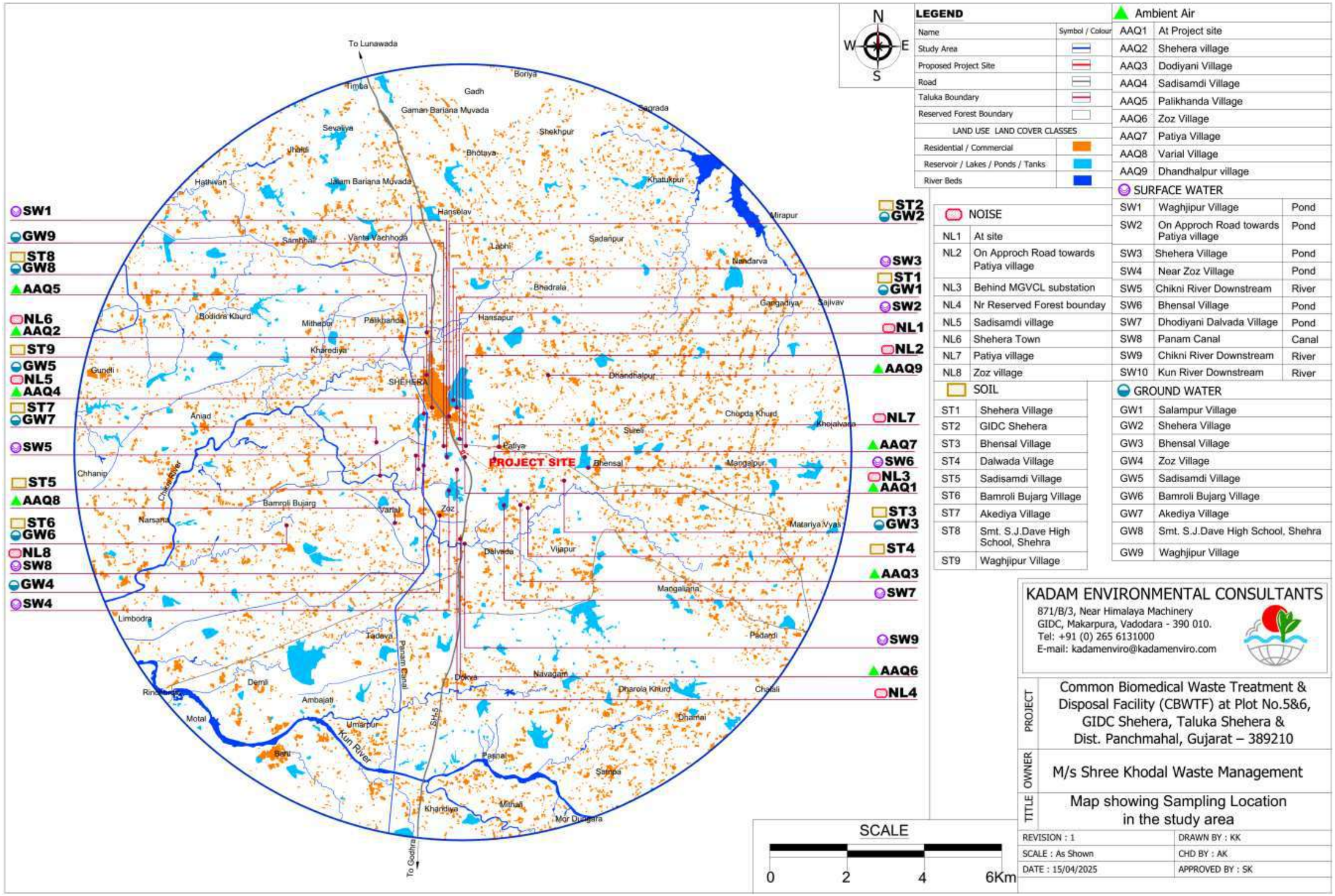
Table 3-6: Environmental Sensitivity based on Land Use/Land Cover Classification in the Study Area

S. No.	Sensitive Ecological Features	Name of feature / Location	Aerial Distance (km)	Direction	Reason of Significance
1	Water courses / water bodies	Kun River	~ 8.26	S	2nd river in study area south of project site within 10 km of study area
		Chikni River	~ 1.72	WSW	River downstream of project site within study area
		Shehera Pond	~ 1.18	N	North of project site having major habitation within study area.
		Patiya Village Pond	~ 0.76	ENE	Pond Upstream of project site
		Waghjipura Pond	~ 0.13	W	Nearest pond west of project site
		Zoz Pond	~ 0.65	SSW	Pond Downstream of project site
		Dodiyani (Dalwada)	~ 1.37	SE	Pond within study area – cross stream
		Panam Canal	~ 0.95	W	Water Supply Canal for Irrigation purpose in study area
		Panam Dam (Surface Water Source)	~ 9.18	NE	North East within study area
2	Inland, coastal, marine waters	-	-	-	-
3	Mountains/hilly area	-	-	-	-
4	Airport	Vadodara Airport	~ 79.6	SW	Outside the study area.
5	Railway station	Godhra Railway station	~ 18.09	SSW	Outside the study area.
6	Areas containing important, high quality or scarce resources (forestry, agriculture, fisheries, tourism, minerals)	R.F between Zoz and Patiya	~ 0.25	SSE	Reserve Forests falling nearby the site out of total 22 RFs in the study area.
		R.F near Dokaliya	~ 1.4	E	
		RF between Bamroli and Varial Village	~ 2.87	W	
		R.F near Vijapur Village	~ 3.0	ESE	
		R.F near Bhadrala	~ 4.41	NE	
		R.F. between Palikhanda & Hanselav	~ 3.46	N	

3.5.11 Combined Sampling Location Map for Baseline Monitoring

A combined sampling location map is prepared showing the sampling locations of Air, Surface Water, Ground Water, Soil and Noise, Traffic Data during the monitoring period from December 2024 to February 2025 is presented in **Figure 3-3.**

Figure 3-3: Combined Sampling Location Map (December 2024 to February 2025 – Winter Season)



LEGEND

Name	Symbol / Colour
Study Area	
Proposed Project Site	
Road	
Taluka Boundary	
Reserved Forest Boundary	
LAND USE LAND COVER CLASSES	
Residential / Commercial	
Reservoir / Lakes / Ponds / Tanks	
River Beds	

NOISE

NL1	At site
NL2	On Approch Road towards Patiya village
NL3	Behind MGVCL substation
NL4	Nr Reserved Forest bounday
NL5	Sadisamdi village
NL6	Shehera Town
NL7	Patiya village
NL8	Zoz village

SOIL

ST1	Shehera Village
ST2	GIDC Shehera
ST3	Bhensal Village
ST4	Dalwada Village
ST5	Sadisamdi Village
ST6	Bamroli Bujarg Village
ST7	Akediya Village
ST8	Smt. S.J.Dave High School, Shehra
ST9	Waghjipur Village

Ambient Air

AAQ1	At Project site
AAQ2	Shehera village
AAQ3	Dodiyani Village
AAQ4	Sadisamdi Village
AAQ5	Palikhanda Village
AAQ6	Zoz Village
AAQ7	Patiya Village
AAQ8	Varial Village
AAQ9	Dhandhalpur village

SURFACE WATER

SW1	Waghjipur Village	Pond
SW2	On Approch Road towards Patiya village	Pond
SW3	Shehera Village	Pond
SW4	Near Zoz Village	Pond
SW5	Chikni River Downstream	River
SW6	Bhensal Village	Pond
SW7	Dhodiyani Dalvada Village	Pond
SW8	Panam Canal	Canal
SW9	Chikni River Downstream	River
SW10	Kun River Downstream	River

GROUND WATER

GW1	Salampur Village
GW2	Shehera Village
GW3	Bhensal Village
GW4	Zoz Village
GW5	Sadisamdi Village
GW6	Bamroli Bujarg Village
GW7	Akediya Village
GW8	Smt. S.J.Dave High School, Shehra
GW9	Waghjipur Village

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E-mail: kadamenviro@kadamenviro.com

PROJECT	Common Biomedical Waste Treatment & Disposal Facility (CBWTF) at Plot No.5&6, GIDC Shehera, Taluka Shehera & Dist. Panchmahal, Gujarat – 389210
OWNER	M/s Shree Khodal Waste Management
TITLE	Map showing Sampling Location in the study area
REVISION : 1	DRAWN BY : KK
SCALE : As Shown	CHD BY : AK
DATE : 15/04/2025	APPROVED BY : SK

3.6 Meteorology

3.6.1 Secondary Meteorological Data Collection & Review (Long term Meteorology[2])

The general agro-climate zone of the study area is Semi-Arid[3]. The secondary meteorological data is taken from India Meteorological Department (IMD), **Long Term Climatological Tables, 1991-202**0, Vadodara Station, as enclosed at ***Annexure 3.*** These climatological tables give useful information about a region's weather, since they are collected over a 30-year period.

Station of Vadodara is selected as it is the nearest IMD station and falls at comparative same elevation as Shehera.

Long-term meteorological data was interpreted for important parameters like temperature, humidity, wind speed, wind direction, cloud cover and rainfall. The findings are provided as below:

Temperature

The mean daily maximum and minimum temperatures recorded were 40.1°C (in the month of May) and 13.2 °C (in the month of January) respectively. The highest temperature recorded was 46.2 °C on 5th May, 2004. The lowest temperature recorded was 2.8 °C on 22nd January, 1962.

In winter season, mean daily maximum temperature was recorded between 29.4°C – 32.1°C and mean daily minimum temperature was recorded between 13.2 °C – 15.4 °C. In summer season, mean daily maximum temperature was recorded between 36.5°C – 40.1°C and mean daily minimum temperature was recorded between 19.7 – 27.4 °C. In monsoon season, mean daily maximum temperature was recorded between 31.7°C – 37.3 °C and mean daily minimum temperature was recorded between 25.2°C – 27.6 °C. In the post monsoon season, mean daily maximum temperature was recorded between 30.8°C – 35.8°C and mean daily minimum temperature was recorded between 14.3 °C – 22.7 °C.

Humidity

Most humid conditions are found in the monsoons, followed by summer, post–monsoons, and winter in that order. Mornings are more humid than evenings and relative humidity ranges from a high of 52-74 % in monsoon mornings to low of 31-38 % in winter evenings. Highest humidity levels observed during June – Sept months which is period of active monsoon season.

In monsoon season humidity in morning hours' ranges between 75% – 88% while in evening hours it was between 52-74 %. In post monsoon season humidity in morning hours' ranges between 67% – 72% while in evening hours it was between 41% – 46%. In winter season humidity in morning hours' ranges between 64% – 70% while in evening hours it was between 31% – 38%. In summer humidity in morning hours' ranges between 55 – 65% while in evening hours it was between 24% – 32%. Summer is hot and humid.

Wind direction

Interpretation of Long term wind direction data is presented in ***Table 3-7.***

Table 3-7: Predominant Wind Direction

Wind Direction	First Predominant		Second Predominant		Third Predominant	
Month	Morning	Evening	Morning	Evening	Morning	Evening
January	N	NW	NE	NE,N	NW	W

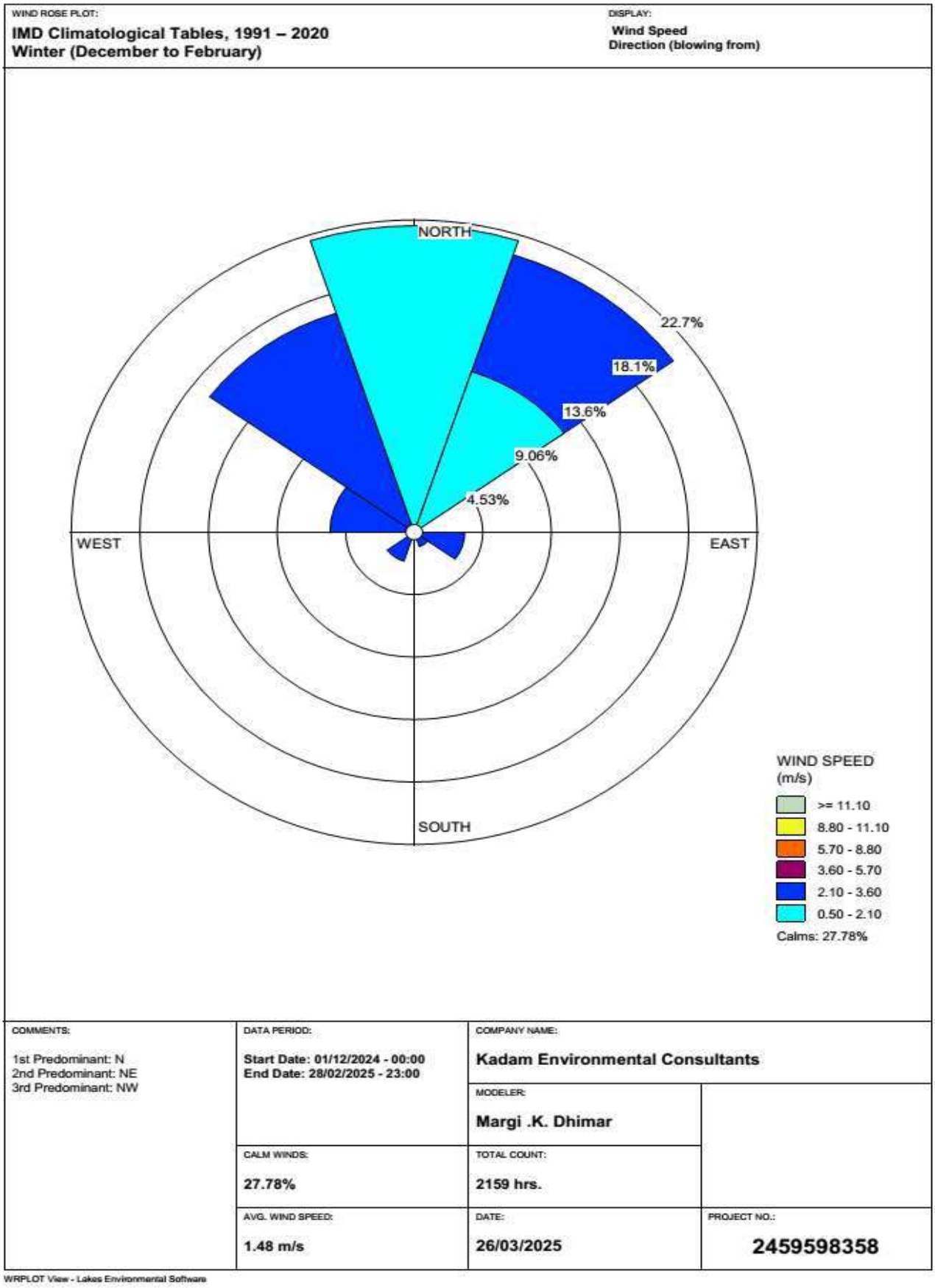
[2] Indian Meteorological Department (IMD), Long Term Climatological Tables, 1991 – 2020, for Vadodara Station.

[3] Long-term Strategies and Programmes for Mechanization of Agriculture in Agro Climatic Zone–III: Gujarat Plains and Hills region by Dr B.S. Pathak, Section 3.6, page no. 240 (2 of 10).

Wind Direction	First Predominant		Second Predominant		Third Predominant	
February	NE,N	NW	NW	N,W	W,SW	NE
April	SW	NW	NE	W	N	SW,NE
April	SW	W	S,NW	NW	W	SW
May	SW	W	W	SW	S	NW
June	SW	SW	W	W	S	S
July	SW	SW	S	S	W	W
August	SW	SW	W	W	S	S
September	SW	W	W	SW	S	NW
October	NE	NE	SE,E	NW	S,SW	N
November	NE	NE	N	N	SE,E	NW
December	N	NE	NE	N,NW	E	E

Based on wind patterns data, the wind-rose diagram for December, January, February month as per long-term meteorological data of Vadodara station is presented in **Figure 3-4*.***

Figure 3-4: Wind rose diagram (from Long Term Climatological Table (Dec-Jan-Feb))



Based on the above wind rose diagram it can be seen that wind directions as per long term IMD Data for monitoring period of December 2024 to February 2025 shows that N is 1st predominant wind direction, NE is 2nd predominant wind direction and NW is the 3rd predominant wind direction.

Rainfall

Annual total rainfall was recorded 1007.1 mm. Highest rainfall was recorded in monsoon season i.e. 1155.3 mm on 1st August, 2019. Rainfall distribution in other season was recorded as 4.4 mm in winter, while 5 mm in summer and 26.2 mm in post monsoon. August was observed as the rainiest month.

Cloud Cover

The area remains cloudy between the months of June – September i.e. in the range of 2.4 - 4.1, which is the active period of the monsoon season. In Winter season (December, January & February), the low clouds are in the range of 0.1 – 1.2, whereas the all clouds are in the range of 0.8 – 1.2 Oktas of sky.

3.6.2 Primary meteorological Data collection & Review (Site-specific meteorology)

Baseline meteorological data has been collected hourly by installing meteorological station in the study area.

The data logger for collection of baseline meteorological data was installed at Shehera Village near to project site at ~ 2.09 km in NNW direction. (Co-ordinates of the Met station were 22°57'16.25"N & 73° 37' 41.94"E). Photographs of site specific meteorological data collection is presented in **Figure 3-5**.

Figure 3-5: Meteorological Station Location at Shehera village near project site



Methodology of Site-specific meteorological data collection

Methodology for site-specific meteorological data collection in the study area is presented in ***Table 3-8.***

Table 3-8: Monitoring Methodology of Meteorological Data

Sr. No.	Environmental Component	Sampling location	Total Sampling Period	Sampling Frequency	Sample Collection & Analysis					Method
					Parameters	Field Instrument	Analytical Instrument	Sensitivity	Detection Limit	
1.	Meteorological Data	Shehera village, near Project site at ~0.8 Km in NE direction	December, 2024 to February, 2025	24-hour data collection with hourly reading recording	Temperature	Thermometer	Data Logger	1 °C	-40 to +60 °C	IS: 8829 -1978
					Relative Humidity	Hygro meter	Data Logger	1 %	0-100%	IS: 8829 -1978
					Wind Speed	Wind Anemometer	Data Logger	0.1 km/hr.	0 to 200 km/hr.	IS: 8829 -1978
					Wind Direction	Wind Vane	Data Logger	3 degrees	0 TO 359 degrees	IS: 8829 -1978
					Rainfall	Rain Gauge	Data Logger	-	1 mm	IS: 8829 -1978
					Cloud Cover	Visual	-		-	-

Hourly Average Site-Specific Meteorological data (from December, 2024 to February, 2025)

The data obtained has been compiled to obtain average data. Compiled mean meteorological data are as presented in ***Table 3-9.***

Table 3-9: Hourly average site-specific meteorological data

Time (Hrs.)	Temp (°C)	Relative Humidity (%)	Wind Speed (m/s)	Predominant Wind Direction (Blowing from)	Cloud Cover (Tenth)	Rainfall (mm)
0	17.3	70.3	1.9	E	0	0
1	16.9	72.2	1.9	E	0	0
2	17.3	70.6	2.2	E	0	0
3	18.4	67.0	2.2	E	0	0
4	19.9	63.1	1.9	E	0	0
5	21.5	58.9	2.0	E	0	0
6	22.4	57.3	1.9	E	0	0
7	22.9	57.0	1.8	E	0	0
8	23.1	56.8	1.8	E	0	0
9	24.2	52.0	1.9	E	0	0
10	25.5	46.6	1.9	E	0	0
11	25.7	48.1	1.8	E	0	0
12	25.2	47.7	1.8	ENE	0	0
13	25.3	46.2	1.9	E	0	0
14	25.3	45.4	2.1	ENE	0	0
15	25.3	45.1	2.1	ENE	0	0
16	25.1	45.2	2.1	ENE	0	0
17	24.6	46.4	2.0	ENE	0	0
18	23.7	49.4	1.9	ENE	0	0
19	21.8	54.0	1.7	ENE	0	0
20	20.4	58.8	1.7	ENE	0	0
21	19.4	62.4	1.7	E	0	0
22	18.6	65.3	1.8	E	0	0
23	17.9	67.9	1.8	E	0	0
Average	**22.0**	**56.4**	**1.9**	**E**	**0**	**0**

Brief Summary of site-specific meteorological data is presented in ***Table 3-10.***

Table 3-10: Max., Min. & Average data Summary of Site-specific Meteorological data

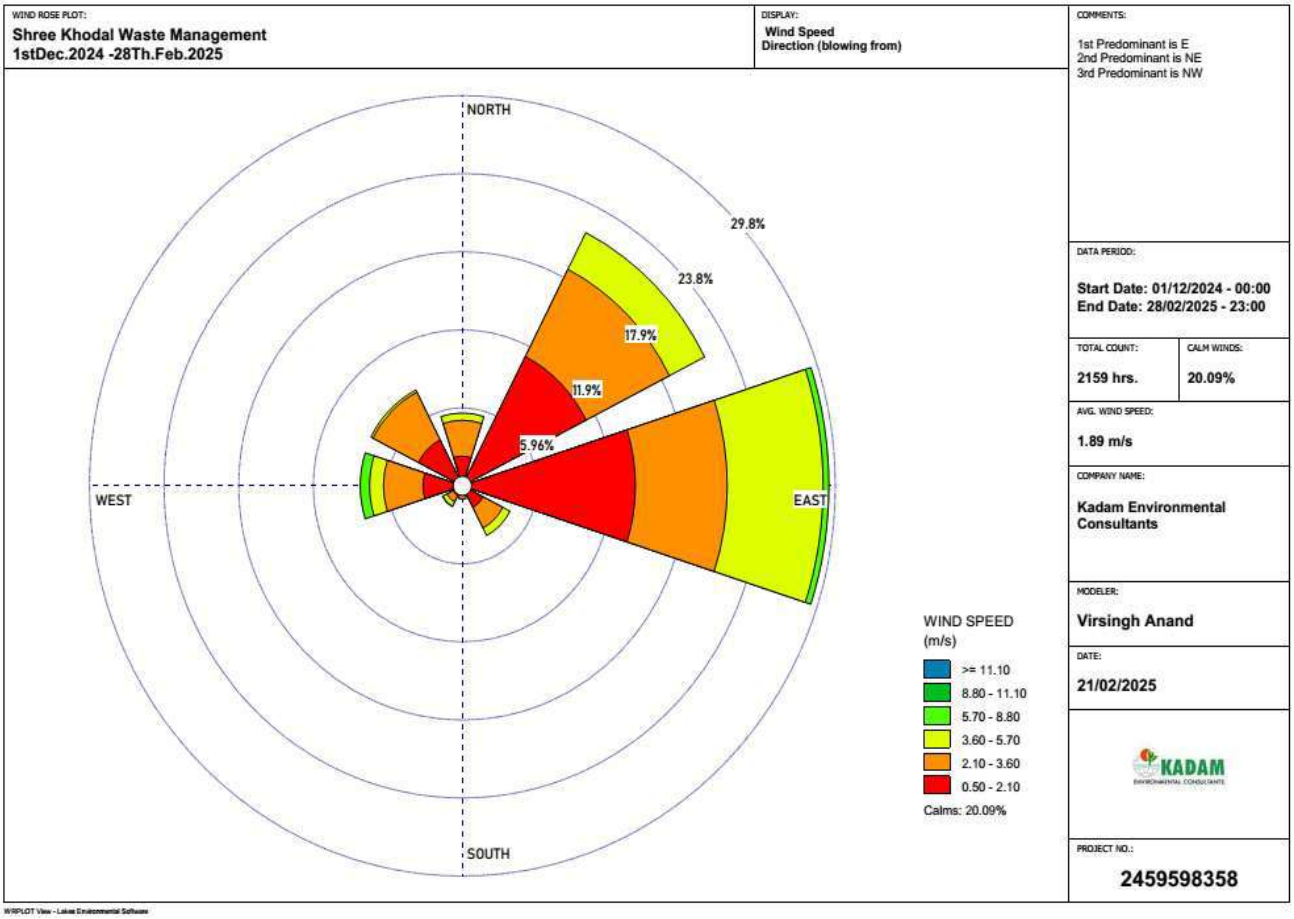
Parameter	Unit	From Dec 2024 – February 2025		
		Maximum	**Minimum**	**Average**
Temperature	°C	25.7	16.9	22.0
Humidity	%	72	45	56
Wind Speed	m/s	2.2	1.7	1.9
Wind Direction	Wind Blowing From	**1st Predominant**	**2nd Predominant**	**3rd Predominant**
		E	ENE	N
Cloud Cover	Tenth	0	0	0
Rainfall	mm	0	0	0

Site Specific meteorological data shows that:

- Average Temperature recorded as 22.0˚C with maximum temperature recorded as 25.7˚C and Minimum of 16.9˚C. Average relative humidity was 56.4% with maximum Humidity as 72.2% and Minimum of 45.1%.
- Average wind speed was recorded as 1.9 m/s. Maximum wind speed was recorded as 2.2 m/s.
- Wind blows predominantly from E direction. Wind rose diagram for site specific meteorological data from December, 2024 to February, 2025 is presented as **Figure 3-6*.***

- There was low cloud cover and rainfall was not recorded in the season.

Figure 3-6: Wind rose Diagram



3.6.3 Atmospheric Inversion level/Mixing height from site-specific

Determination of hourly average atmospheric inversion level/mixing height generated from the modelling study AERMOD runs based Meteorological site-specific data is presented in **Table 3-11.**

Table 3-11: Average Atmospheric Inversion / Mixing height in 24 hrs based on site specific Meteorological data

Time (Hour)	Atmospheric level/Mixing height (m)	Time (Hour)	Atmospheric level/Mixing height (m)
1	93.81	13	732.35
2	138.15	14	879.66
3	136.63	15	971.01
4	114.83	16	1080.2
5	127.83	17	723.42
6	102.55	18	155.3
7	181.51	19	114.3
8	211.35	20	117.46
9	330.15	21	114.15
10	462.91	22	106.64
11	517.92	23	95.522
12	625.28	24	99.011

3.6.4 Comparison of Site-Specific data with Secondary Data of IMD

Site specific meteorological data is compared with IMD's secondary data as presented in **Table 3-12.**

Table 3-12: Comparision of Site Specific Meteorological observations vrs Long Term Meteorological Data of IMD, Vadodara

Sr. No.	Parameters	Site Specific; (24 hours) (1st December, 2024 to 28th February, 2025)	IMD (Long term 1951 – 2020); (December, January & February)	Remarks
1.	Wind Speed	Average Wind Speed is 1.9 m/s	Average Wind Speed ranges from 1.4 to 2 m/s	Divergences noted can be ascribed to location difference, differences in number of readings and duration of meteorological observations (one season v/s long term)
2.	Wind Direction	Wind blows predominantly from East direction. Calm Conditions: 20.09 %	Wind blows predominantly from N direction. Calm conditions: 27.78 %	
3.	Temperature	Max.: 25.7°C Min.: 16.9°C	Highest : 46.2°C (5th May, 2004) Lowest: 2.8°C (26th January 1962)	
4.	Relative Humidity	Max.: 72 % Min.: 45 %	Max.: 88 % Min.: 21 %	

3.7 Ambient Air Quality & Air pollution

The basic objective of ambient air quality (AAQ) determination around the proposed project site was to assess the existing ambient levels of primary air pollutants in the area.

The criteria for selecting monitoring stations on the basis of available meteorological data and other related factors was to assess the general ambient air quality status of the area and to record the prevailing concentration of pollutants for determining critical targets for worst maximum concentrations.

3.7.1 Primary Data Collection & Review – Site Specific Ambient Air Quality Monitoring

Ambient Air Quality Monitoring was conducted at Nine (9) different locations within the study area. The frequency of monitoring was 24 hours twice a week at each station spread over one month with gaseous sample being changed two times (at 8 hour intervals)

Parameters monitored & Methodology of Ambient Air Quality Monitoring

The pollutants monitored are Particulate Matter (PM 10, PM 2.5), Sulphur Dioxide (SO_2), Oxides of Nitrogen (NO_X), Hydrogen Fluoride (HF,) Hydrochloric Acid (HCL), Volatile Organic Carbons (VOC), Ammonia (NH_3), Ozone (O_3), Mercury (Hg), Hydrocarbons (HC-as Methane) and Carbon Monoxide (CO). AAQM monitoring was finalised as per IS 5182 methods. The sampling methodology for ambient air quality monitoring is as given in **Table 3-13.**

Table 3-13: Methodology for Ambient Air Quality Monitoring

Sr. No.	Env. Component	Sampling location	Total Sampling Period	Sampling Frequency	Sample Collection & Analysis					Method
					Parameters	Field Instrument	Analytical Instrument	Sensitivity	Detection Limit	
1.	Ambient Air Quality	9 (Nine) Locations	December, 2024 to February, 2025	24 –hour sample collection twice a week at each station	PM $_{10}$	Respirable Dust Sampler	Electronic balance	0.01 mg	10.0 µg/m3	IS: 5182: Part 23
					PM $_{2.5}$	Respirable Dust Sampler	Electronic balance	0.01 mg	2.0 µg/m3	LAB-SOP-111, Issue No 01
					SO_2	Impinger Module with control valve & Flow Meter	Spectro-photometer	0.001	3.75 µg/m3	IS: 5182: Part 2
					NOx	Impinger Module with control valve & Flow Meter	Spectro-photometer	0.001	6 µg/m3	IS: 5182: Part 6
					NH_3	Impinger Module with control valve & Flow Meter	Spectro-photometer	0.001	10 µg/m3	LAB-SOP-109, Issue No 01
				Sample collection once a week at each station	HC as Methane	Tedler Bags & Pump	HC Analyser	0.01 ppm	0.099 mg/m3	IS 5182 (Part 21)
				1 hour sample collection once a week at each station	CO	Tedler Bags & Pump	Non-dispersive Infrared (NDIR)	0.01 PPM	0.23 mg/m3	IS 5182 (Part 10)
				24 –hour sample collection	Ozone	Impinger Module with control valve & Flow Meter	Spectro-photometer	0.001	1 µg/m3	IS 5182 (Part 9)

Sr. No.	Env. Component	Sampling location	Total Sampling Period	Sampling Frequency	Sample Collection & Analysis					Method
					Parameters	Field Instrument	Analytical Instrument	Sensitivity	Detection Limit	
				twice a week at each station	Mercury (Hg)	Respirable Dust Sampler	ICPMS	0.001 ppb	0.384 ng/m3	USEPA-625-R-96-010 a
					HCL	Impinger Module with control valve & Flow Meter	-	-	0.602 mg/m3	Methods for air sampling and analysis, APHA Intersociety Committee by Morris Katz : 1972
					VOC (as BTX)	Charcoal tube attached with sampler	Gas Chromatography	-	1 µg/m3	IS 5182 (Part 11)

Selection of AAQ Monitoring Locations with Rationale

Nine (9) AAQM stations were selected on the basis of local meteorological conditions mainly wind direction patterns which include base station, upwind station, downwind station and crosswind station as per wind regime. These stations were located within rural settlements as well as in consideration of other important features of the study area. Sampling location map for AAQ monitoring stations is presented in ***Figure 3-8.*** Details of AAQ monitoring locations along with justification of location are presented in ***Table 3-14.***

Table 3-14: Ambient Air Quality monitoring locations

AAQM Station Code	Sampling Location name	Latitude	Longitude	Distance from project site (km)	Direction from project site	Justification of monitoring station locations
AAQ1	At Project site	22°56'10.06"N	73°38'16.06"E	~ 0.12	SSE	At Site
AAQ2	Shehera village	22°57'16.47"N	73°37'41.84"E	~ 2.08	NNW	Cross Wind
AAQ3	Dodiyani Village	22°55'31.85"N	73°39'4.73"E	~ 1.93	SE	Cross Wind
AAQ4	Sadisamdi Village	22°56'28.56"N	73°38'8.79"E	~ 1.15	WSW	1st Predominant Downwind
AAQ5	Palikhanda Village	22°57'53.1"N	73°37'40.70"E	~ 3.15	NNW	Cross Wind
AAQ6	Zoz Village	22°55'4.29"N	73°38'10.05"E	~ 2.12	S	2nd Predominant Downwind
AAQ7	Patiya Village	22°55'47.32"N	73°33'29.24"E	~ 0.83	ESE	1st Predominant Upwind
AAQ8	Varial Village	22°55'16.14"N	73°37'12.71"E	~ 2.45	SW	2nd Predominant Downwind
AAQ9	Dhandhalpur village	22°57'17.60"N	73°39'28.90"E	~ 3.28	ENE	2nd Predominant Upwind

Photographs of Ambient Air Quality Sampling are presented in **Figure 3-7**

Figure 3-7: Ambient Air Quality Monitoring



AAQ 01: Project Site



AAQ 02: Shehera Village



AAQ 03: Dodiyani Viillage



AAQ04: Sadisamdi Village



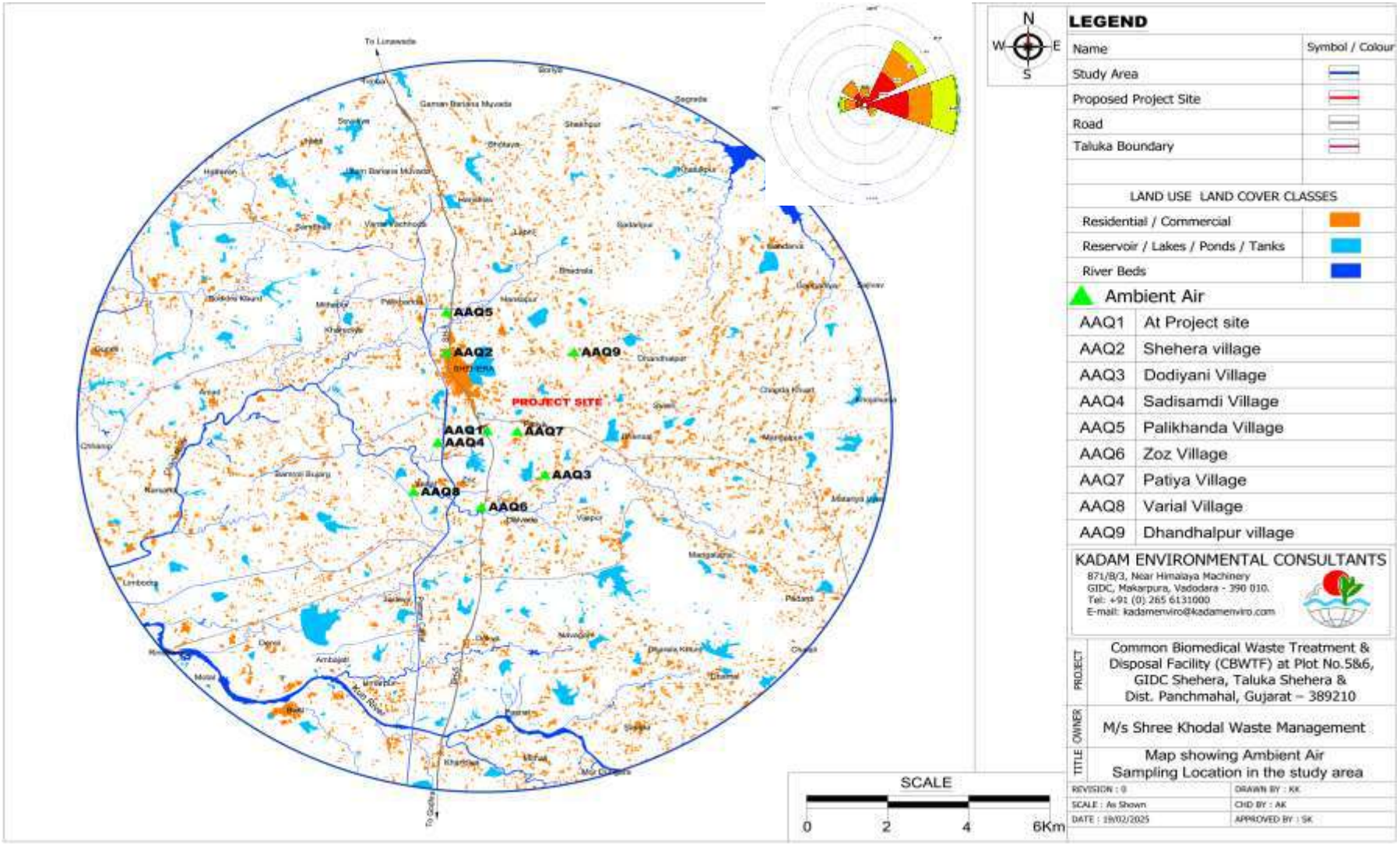
AAQ05: Palikhanda village



AAQ06: Zoz village

		
AAQ07: Patiya Village	AAQ08: Varial village	AAQ09: Dhandhalpur Village

Figure 3-8: Sampling Location Map (Ambient Air)



Ambient Air Monitoring Analysis Results

Date wise detailed results of AAQM analysis at the monitoring stations are presented in ***Annexure 3***.

Compiled average data of ambient air quality analysis are presented in ***Table 3-15.***

Table 3-15: Ambient Air Monitoring analysis results at Monitoring locations

Station Code – Sampling Location	Unit of Average Concentration	Average Pollutant Concentration in µg/m3 except CO in mg/m3								
	Pollutants	**PM 10**	**PM 2.5**	**SO_2**	**NO_X**	**HCL**	**Hg**	**HC**	**VOC**	**CO**
	Duration	**(24 hr)**	**(24 hr)**	**(24 hr)**	**(24 hr)**	**(24 hr)**	**(24 hr)**	**(24 hr)**	**(24 hr)**	**(1 hr)**
NAAQS by CPCB dated 18th November, 2009	**Industrial, Residential, Rural and Other Area**	**100**	**60**	**80**	**80**	**NS**	**NS**	**NS**	**NS**	**4**
	Ecologically Sensitive Area (Notified by Central Govt.)	**100**	**60**	**80**	**80**	**NS**	**NS**	**NS**	**NS**	**4**
AAQ01 - At Site	Maximum	102	42	11.2	22.2	<1	<1	984	<1	1.24
	Minimum	66	11	3.8	10.3	<1	<1	891	<1	1.05
	Average	83	29	7.4	15.8	<1	<1	925	<1	1.12
	98th Percentile	93	42	10.4	22.1	<1	<1	979	<1	1.23
AAQ02 - Shehera Village	Maximum	93	48	11.2	22.0	<1	<1	997	<1	1.28
	Minimum	41	12	3.8	6.0	<1	<1	847	<1	0.88
	Average	75	26	6.5	12.6	<1	<1	912	<1	1.08
	98th Percentile	93	44	10.4	20.2	<1	<1	990	<1	1.27
AAQ03 – Dodiyani Village	Maximum	104	51	9.0	23.5	<1	<1	958	<1	1.23
	Minimum	58	9	3.8	6.0	<1	<1	831	<1	0.87
	Average	81	28	6.2	13.3	<1	<1	892	<1	1.05
	98th Percentile	95	47	8.6	21.8	<1	<1	955	<1	1.23
AAQ04 – Sadisamdi Village	Maximum	93	41	8.7	17.9	<1	<1	943	<1	1.24
	Minimum	44	18	4.3	8.8	<1	<1	801	<1	0.95
	Average	72	27	6.7	13.9	<1	<1	884	<1	1.09
	98th Percentile	93	39	8.7	17.6	<1	<1	940	<1	1.23

AAQ05 – Palikhanda Village	Maximum	94	38	8.5	17.7	<1	<1	911	<1	1.28
	Minimum	60	20	4.6	10.9	<1	<1	882	<1	0.85
	Average	84	27	6.3	14.3	<1	<1	897	<1	0.99
	98th Percentile	94	37	8.5	17.6	<1	<1	911	<1	1.25
AAQ06 – Zoz Village	Maximum	104	39	8.3	17.0	<1	<1	943	<1	1.20
	Minimum	61	15	5.0	10.3	<1	<1	752	<1	0.89
	Average	88	26	6.7	14.3	<1	<1	853	<1	1.08
	98th Percentile	103	38	8.3	16.9	<1	<1	937	<1	1.20
AAQ07 – Patiya Village	Maximum	104	52	8.8	18.8	<1	<1	858	<1	1.24
	Minimum	55	16	3.8	6.0	<1	<1	774	<1	0.88
	Average	82	28	6.6	12.4	<1	<1	832	<1	1.09
	98th Percentile	103	48	8.6	18.2	<1	<1	857	<1	1.24
AAQ08 – Varial Village	Maximum	93	30	8.6	17.9	<1	<1	987	<1	1.27
	Minimum	66	8	5.3	6.0	<1	<1	829	<1	0.87
	Average	82	21	7.0	11.5	<1	<1	896	<1	0.99
	98th Percentile	93	30	8.5	17.7	<1	<1	982	<1	1.25
AAQ09-Dhandhalpur Village	Maximum	82	38	6.3	9.2	<1	<1	982	<1	1.27
	Minimum	38	29	7.7	6.0	<1	<1	829	<1	0.87
	Average	49	23	7.6	6.1	<1	<1	895	<1	0.99
	98th Percentile	65	39	6.1	10.4	<1	<1	978	<1	1.25

Interpretation of Results of Baseline Air Quality

Average concentration of PM_{10} was recorded in range from minimum 49 µg/m^3 to maximum 88 µg/m^3;

Average concentration of $PM_{2.5}$ was recorded in range from minimum 21 µg/m^3 to maximum 29 µg/m^3;

Average concentration of SO_2 was recorded in range from minimum 6.2 µg/m^3 to maximum 7.6 µg/m^3;

Average concentration of NO_X was recorded in range from minimum 6.1 µg/m^3 to maximum 15.8 µg/m^3;

Average concentration of HCL, Hg & VOC was recorded < 1. CO levels were recorded in range of 0.99 mg/m^3 to 1.12 mg/m^3 at various locations which is within the specified limit of CPCB. HC levels were recorded in range of 925 µg/m^3 to 1017 µg/m^3 at various locations which is within the specified limit of CPCB.

At all the locations average concentration of NH_3 & O_3 were found below detection limit; It is observed that average results of all the parameters at all the locations were within the specified limits of CPCB.

National Air Quality Index (AQI)

The AQI Values for all the 24 hrs monitoring values have been calculated and found in the range of satisfactory (51-100). The calculated AQI index as per the CPCB guideline in presented in the **Table 3-16**. The baseline air quality level of average concentration is within the National Ambient Air Quality Standards prescribed for industrial, residential, rural & other area and also satisfies the air quality index (AQI) for all the monitoring.

Table 3-16: Air Quality Index Calculation

Calculation of AQI						
Date 10-Mar-25			**Station**	At Site		
			City	Panchmahal		
			State	Gujarat		
Pollutants		**concentration in µg/m3 (except for CO)**	**Sub-Index**			**Air Quality Index**
				check		
PM10	24-hr avg.	88.00	88	1		
PM2.5	24-hr avg.	29.00	48	1		
SO2	24-hr avg.	7.60	10	1		
NOx	24-hr avg.	15.80	20	1	**AQI =**	**88**
*CO (mg/m3)	max 8-hr	1.12	56	1		
O3	max 8-hr	<1	0	0		
NH3	24-hr avg.	<1	0	0		

* Concentrations of minimum three pollutants are required; one of them should be PM10 or PM2.5
* The check displays "1" when a non-zero value is entered

Good (0–50)	Minimal Impact	**Poor (201–300)**	Breathing discomfort to people on prolonged exposure
Satisfactory (51–100)	Minor breathing discomfort to sensitive people	**Very Poor (301–400)**	Respiratory illness to the people on prolonged exposure
Moderate (101–200)	Breathing discomfort to the people with lung, heart disease, children and older adults	**Severe (>401)**	Respiratory effects even on healthy people

3.8 Traffic Survey

Traffic survey is one of the parameter to estimate possible increase in pollution level in the vicinity of project area due to movement of vehicles. The vehicle movement may have impact on ambient air quality and it is considered as

line source. Vehicles are of two types, passenger and commercial/goods vehicles. Passenger vehicles include Buses, private cars, Taxies & Jeeps; whereas commercial/goods vehicles take account of tankers, trucks and containers.

Traffic survey was carried out on principal site approach roads. Traffic survey has vital role in finding existing traffic density on the roads approaching to the site. In comparison with existing traffic concentration, it is easy to estimate not only incremental numbers of various means of transportation but also pollution levels due to proposed traffic movements in relation to the project.

3.8.1 Survey Methodology

Manual methods use field personal to count and classify traffic flowing pass a fixed point. Number of enumerators needed to count the vehicle depends upon the number of lanes in highway on which count is to be taken, type and accuracy of information desired. IRC recommends recording of data in each direction of travel separately and posting of observers for each direction.

Vehicles count were recorded at every 15 min interval for 24 hours (day and night). The data is recorded mostly in five dash system in which vertical lines are entered for the first 4 vehicles which is followed by an oblique line for the fifth so as to represent a total of 5. Once an observer is familiar with this system, he tends to follow this; which is simple and hassle free to count.

Based on traffic count on road, the capacity of road will be estimated by using equivalent factor for PCU for various category vehicles. It is compared with IRC recommended PCU/day. All calculations are based on Guidelines for Capacity of Roads in Rural Areas (First Revision) IRC: 64 - 1990.

3.8.2 Parameters / Vehicle Classification

Vehicles were classified into two type i.e. mechanized and non-mechanized vehicles. The mechanized vehicles include two wheelers (bikes / mopeds / scooters), three wheelers (rickshaw / small 3W Tempos), and four wheelers (cars / jeeps / trucks / buses / tractors etc.). The non-mechanized vehicles include cycle / tricycle / carts.

3.8.3 Road Identification for traffic survey

For the proposed project, traffic survey was carried out, on a working day, for the selected two roads at a location on main approach roads to the project site as below;

- On Highway SH 05 towards Modasa – Location **22° 56' 5.74"N 73° 38' 16.49"E** (Refer Traffic Survey Data Sheet ***Annexure 6***) carried out on 20/01/2025.
- On Highway SH 05 towards Godhra – Location **22° 56' 2.50"N, 73° 38' 17.36"E** (Refer Traffic Survey Data Sheet ***Annexure 6***) carried out on 20/01/2025.

Traffic survey was carried out as per IRC guidelines, on both sides (up & down) on selected roads. There is the main Highway connecting to project site SH- 5 from Modasa Godhra Highway. There will be movement of heavy vehicles during construction phase as well as during operational phase for transportation of materials & wastes from member units for disposal at site.

3.8.4 Survey Photographs

Photographs of traffic survey study are presented in **Figure 3-9** as below:

Figure 3-9: Traffic Survey photographs



SH - 05 Modasa Godhra Highway (Towards Godhra)



SH - 05 Modasa Godhra Highway (Towards Modasa)



Measuring the width of the Road

3.8.5 Existing Traffic (Vehicle count) based on Survey

Existing traffic count as vehicles over 24 hour duration traffic flow is presented in **Table 3-17.**

Table 3-17: Existing Traffic Survey Count over 24 hour duration

Name of the Road	Traffic Flow	Mechanized						Non-mechanized			Total
		2W	3W	4W				2W	3W	4W	
		Bikes	Auto	Car	Truck	Bus	Tractor	Bicycle	Tricycle	Carts	
SH - 05 Modasa Godhra Highway	Towards Godhra	1951	856	1368	730	729	347	256	0	0	6246
	Towards Modasa	1839	863	1584	820	900	380	325	0	0	6711
Total		**322**	**48**	**317**	**249**	**148**	**93**	**100**	**0**	**0**	**1303**

Traffic survey study data near Waghjipur village on SH-05 for traffic flow towards Modasa

Existing Traffic count as vehicles in PCU/day for traffic flow towards Modasa is presented in **Table 3-18.**

Table 3-18: Existing traffic in PCU/day on SH-05 for traffic flow towards Modasa

Sr. No.	Types of Vehicle	No. of Vehicles	% Composition	Equivalent factor**	Calculated PCU* (PCU/day)
Mechanized Vehicles					
1	Motor Cycle or Scooter	1839	27.4	0.50	920
2	Passenger Car, Pick-up Van or Auto Rickshaw	2130	31.7	1.00	2130

Sr. No.	Types of Vehicle	No. of Vehicles	% Composition	Equivalent factor**	Calculated PCU* (PCU/day)
3	Agricultural Tractor, Light Commercial Vehicle	317	4.7	1.50	475
4	Truck or Bus	1720	25.6	3.00	5160
5	Truck-Trailer, Agricultural Tractor-Trailer	380	5.7	4.50	1710
Non-Mechanized Vehicles					
6	Cycle	325	4.8	0.50	163
7	Cycle-rickshaw	0	0.0	2.00	0
8	Hand Cart	0	0.0	3.00	0
9	Horse-drawn vehicle	0	0.0	4.00	0
10	Bullock Cart	0	0.0	8.00	0
Total		**6711**	**100.0**		**10557**

Source: *PCU: Passenger Car Unit, **Equivalent Factor for PCU calculations are considered from Guidelines for Capacity of Roads IRC, Table 1: Recommended PCU (Passenger Car Unit) factor for various types of vehicles in Rural Areas.

Traffic survey study data near Waghjipur village on road towards Godhra via SH-05.

Existing Traffic count as vehicles in PCU/day for traffic flow towards Godhra is presented respectively in Table 3-19***.***

Table 3-19: Existing traffic in PCU/day on road towards Godhra via SH-05

Sr. No.	Types of Vehicle	No. of Vehicles	% Composition	Equivalent factor**	Calculated PCU* (PCU/day)
Mechanized Vehicles					
1	Motor Cycle or Scooter	1951	31.2	0.50	976
2	Passenger Car, Pick-up Van or Auto Rickshaw	1950	31.2	1.00	1950
3	Agricultural Tractor, Light Commercial Vehicle	274	4.4	1.50	410
4	Truck or Bus	1459	23.4	3.00	4377
5	Truck-Trailer, Agricultural Tractor-Trailer	347	5.6	4.50	1562
Non-Mechanized Vehicles					
6	Cycle	265	4.2	0.50	133
7	Cycle-rickshaw	0	0.0	2.00	0
8	Hand Cart	0	0.0	3.00	0
9	Horse-drawn vehicle	0	0.0	4.00	0
10	Bullock Cart	0	0.0	8.00	0
Total		**6246**	**100**	**-**	**9407**

Source: *PCU: Passenger Car Unit, ** Equivalent Factor for PCU calculations are considered from Guidelines for Capacity of Roads IRC, Table 1: Recommended PCU (Passenger Car Unit) factor for various types of vehicles in Rural Areas.

3.9 Noise Environment

3.9.1 Monitoring Methodology of Noise level

Monitoring of noise is done by identifying adequate number of noise quality monitoring locations. Background noise quality is monitored in dB (A) Leq (d) and dB (A) Leq (n) at the selected locations.

Methodology of Noise Level Analysis:

- Identification of sources of noise around the project site area.

- Identification of baseline monitoring station based on source of noise generation.
- Noise sampling during study period and reporting results for day and night time.
- To run SoundPLAN software for assessment of noise levels.
- Determining possible impacts of Noise & Vibrations on the environment due to proposed project activities.
- Suggestions of mitigation measures of noise / vibrations control and reduction in noise / vibrations of sources exceeding the allowable limits of SPL.

Table 3-20: Monitoring Methodology for noise

Environment Component	Sampling location	Sampling Frequency	Methodology	Sample collection		Sampling Parameter
				Sampling equipment	Detection Limit	
Ambient Noise	8 Locations	Once during the study (Hourly reading for 24 hours at each location)	IS 9989:1981	Sound Level Meter (SLM)	0.1 dB (A)	Noise level in Decibels – dB (A)

The standard for monitoring ambient noise level as per CPCB guidelines is as given in **Table 3-21.**

Table 3-21: Ambient Air Standards in respect of Noise for Different Areas/Zones

Ambient Air Standards in Respect of NOISE	Area Code	Category	Limits in dB(A) Leq*	
			Day Time	Night Time
THE NOISE POLLUTION (REGULATION AND CONTROL) RULES, 2000	A	Industrial	75.0	70.0
	B	Commercial	65.0	55.0
	C	Residential	55.0	45.0
	D	Silence	50.0	40.0

Note: Day Time: 6:00 AM to 10:00 PM; Night Time: 10:00 PM to 6:00 AM

dB(A) Leq*: denotes the time weighted average of the level of sound in decibels on scale A which is relatable to human hearing.

3.9.2 Noise Level results

Locations for noise monitoring were identify by desktop study and fix the location during field survey at 2.0 km maximum from the project site and at sensitive locations ambient noise monitoring i.e. habitation area. The locations of Noise monitoring are presented in **Figure 3-11**.

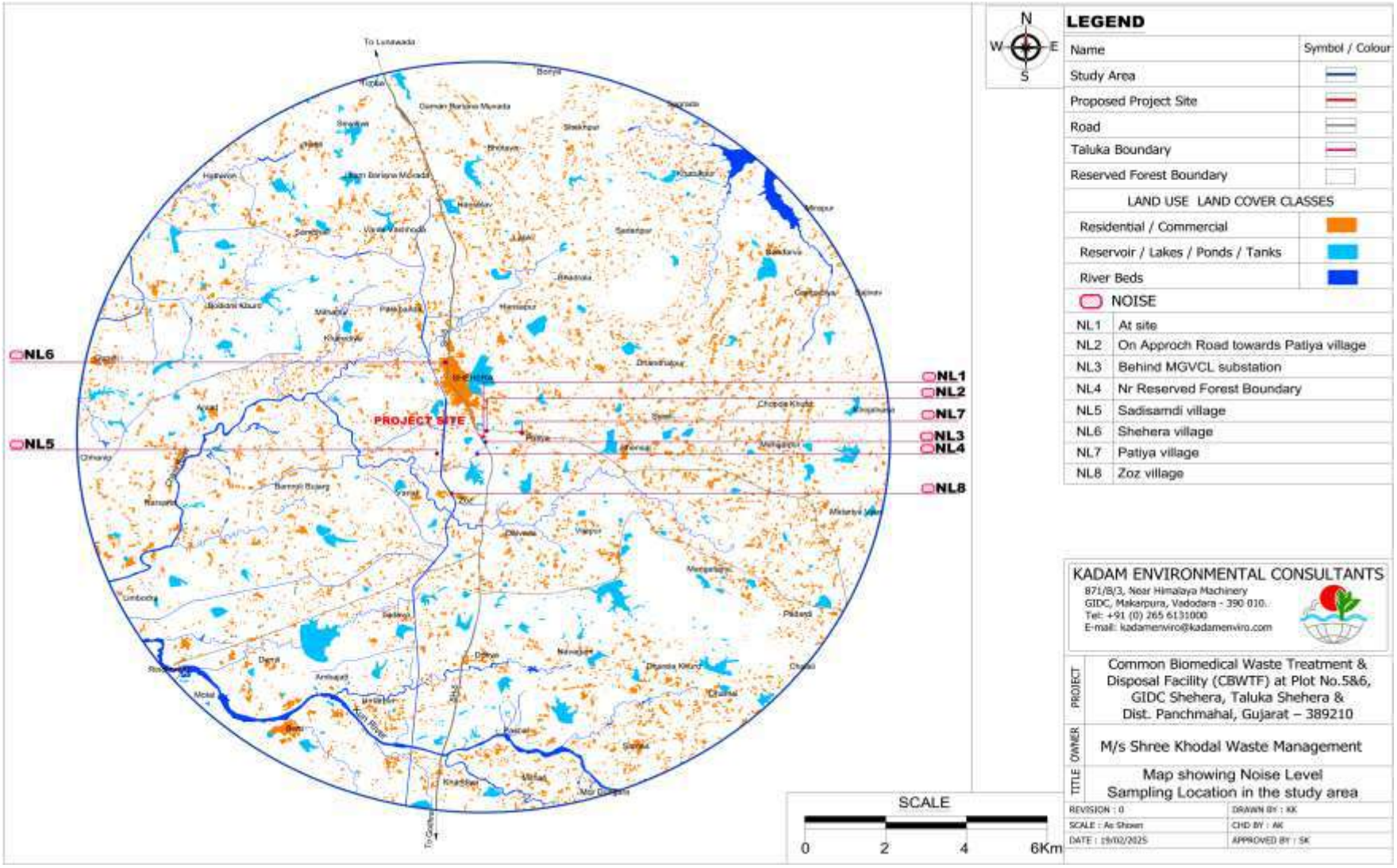
Photographs of Ambient Noise Monitoring Locations are presented in **Figure 3-10.**

Figure 3-10: Noise Monitoring Locations

		
NV01: Project Site	NV02: Along road to Patiya Village (other end of Shehera GIDC plots)	NV03: Nr MGVCL Sub Station office

		
NV04: Nr. Reserved Forest boundary of Zoz and Patiya Village	NV05: Sadisamdi Village	NV06: Shehera Village
		
NV07: Patiya Village	NV08: Zoz village	

Figure 3-11: Noise Monitoring Location Map



The average noise levels monitored are presented in ***Table 3-22.***

Table 3-22: Monitoring of Noise Levels in baseline

Sr. No.	Location	Date	Category	Distance w.r.t site (km)	Direction (from site)	Lat.	Long	CPCB Limits in dB (A)		Average Noise levels in dB (A)	
								Day Time	Night Time	Day Time	Night Time
NL01	Project Site	20/01/2025	Industrial	0.0	Base	22°56'14.65"N	73°38'13.33"E	75.0	70.0	55.2	47.5
NL02	Along road to Patiya Village (other end of Shehera GIDC plots)	22/01/2025	Residential	~ 0.1	NE	22°56'17.23"N	73°38'25.76"E	55.0	45.0	54.9	44.3
NL03	Nr MGVCL Sub Station office	22/01/2025	Residential	~ 0.2	SE	22°56'10.57"N	73°38'18.73"E	55.0	45.0	54.2	43.5
NL04	Reserved Forest boundary of Zoz and Patiya Village	22/01/2025	Silence	~ 0.4	S	22°56'1.44"N	73°38'11.44"E	50.0	40.0	49.3	39.0
NL05	Sadisamdi village	04/01/2025	Residential	~ 0.4	SW	22°56'0.78"N	73°37'34.01"E	55.0	45.0	54.3	43.4
NL06	Shehera Village	22/01/2025	Commercial	~ 1.0	NNW	22°57'15.69"N	73°37'43.99"E	65.0	55.0	62.6	53.6
NL07	Patiya village	22/01/2025	Residential	~ 1.1	E	22°56'18.18"N	73°38'48.46"E	55.0	45.0	54.5	44.7
NL08	Zoz village	22/01/2025	Residential	~ 1.6	SW	22°55'27.03"N	73°37'46.18"E	55.0	45.0	54.5	44.8

Observations

Noise level during day time & night time, in Industrial area & Residential area was observed within CPCB standards i.e. Industrial area (75 dB A (d) & 70 dBA (n)), commercial area (65 dB A (d) & 55 dB A (n)), residential area (55 dB A (d) & 45 dB A (n)) and silence area (50 dB A (d) & 40 dB A (n)).

3.10 Surface Water Environment

3.10.1 Surface Water Sampling Locations

Surface Water in nearby areas consist of village ponds, river Kun and Chikni and the Panam Canal waters. The entire area is irrigated by pond and canal waters.

The surface water sampling locations were selected in the study area based on review of land use pattern, understanding of surface topography and surface drainage pattern from site (source pathway receptor model). Nearby ponds within 10 km of study were sampled in habituated village in order to understand baseline surface water quality.

Sampling map of surface water locations is presented in ***Figure 3-13.***

The details of surface water sampling locations are presented in **Table 3-23.**

Table 3-23: Details of Surface Water Sampling Locations

Nomen-clature	Location	Date of Sampling	Source	Latitude (N) Longitude (E)	Distance (km) from project site	Direction from project site	Justification
SW01	Waghjipur Village Pond	28/01/2025	Pond	22°56'11.10"N 73°37'58.79"E	~ 0.38 Km	WSW	Downstream
SW02	Pond on road towards Patiya Village	28/01/2025	Pond	22°56'26.16"N 73°38'9.98"E	~ 0.33 Km	NNW	Upstream
SW03	Shehera Village Pond	22/01/2025	Pond	22°56'56.48"N 73°38'3.05"E	~ 1.29 Km	N	Upstream
SW04	Zoz Village Pond	28/01/2025	Pond	22°55'42.86"N 73°37'59.42"E	~ 1.00 Km	SSW	Downstream
SW05	Chikni River Downstream	28/01/2025	River	22°55'56.00"N 73°36'56.90"E	~ 2.21 Km	W	Downstream
SW06	Bhensal Village Pond	22/01/2025	Pond	22°56'14.76"N 73°40'17.27"E	~ 2.93 Km	E	Upstream
SW07	Dodhiyani (Dalvada) Village Pond	22/01/2025	Pond	22°55'31.74"N 73°38'49.98"E	~ 1.64 Km	SE	Upstream
SW08	Panam Canal	22/01/2025	Canal	22°55'59.17"N 73°37'38.11"E	~ 1.06 Km	WSW	Downstream
SW09	Chikni River Upstream	30/01/2025	River	22°55'0.18"N 73°38'12.54"E	~ 2.29 Km	S	Upstream
SW10	Kun River	11/02/2025	River	22°51'44.27"N 73°37'39.87"E	8.37 Km	S	Downstream

Photographs of surface water sampling locations are presented in photo documentation as **Figure 3-12.**

Figure 3-12: Surface Water Sampling Locations

		
SW 01: Waghjipur Village Pond	SW 02: Pond on road towards Patiya Village	SW 03: Shehera Village Pond
		
SW 04: Zoz Village Pond	SW 05: Chikni River Downstream	SW 06: Bhensal Village Pond
		
SW 07: Dodhiyani (Dalvada) Village Pond	SW 08: Panam Canal	SW 09: Chikni River Upstream
		
SW 10: Kun River		

3.10.2 Analysis Method Adopted

Surface water samples are collected using manual grab sampling technique. The samples were further analysed as per the APHA Standard Methods (23rd Edition, 2017). **Table 3-24** below describes analytical methodology for parameters to be analysed and their minimum detection limit as per instruments available at KEC laboratory.

Table 3-24: Methodology of Surface Water Samples Testing

S. No	Parameters	Methodology	Minimum Detection Limit
1	pH	APHA: 4500 H+ B(24th Edition), Electrometric method	1
3	Temperature	APHA: 2550 B (24th Edition), Standard Thermometer	0.5 Deg C
4	Turbidity	APHA: 2130 B (24th Edition), Nephelometric Method	0.1 NTU
5	TDS	APHA: 2540C (24th Edition), Gravimetric	3 mg/l
6	Electrical conductivity	APHA: 2510 B (24th Edition), Conductivity meter	1 µmho/cm
7	COD	APHA: 5220 B (24th Edition), Open reflux method	5 mg/l
8	BOD	IS: 3025 (part-44):1993 (RA 2014) Iodometric	2 mg/l
9	Chlorides	APHA:4500-Cl- B (24th Edition), Argentometric method	1.0 mg/l
10	Phenolic compounds	APHA: 5530-D (24th Edition), Direct photometric Method	0.001 mg/l
11	Sulphates	APHA:4500-E as SO_4 2-(24th Edition), Turbidimetric method	1 mg/l
12	Total Hardness	APHA: 2340-C (24th Edition), EDTA Titrimetric method	2 mg/l
13	Ca++ Hardness	APHA: 3500-Ca-B (24th Edition) EDTA Titrimetric method	2 mg/l
14	Mg++ Hardness	APHA: 3500-Mg-B (24th Edition), By calculation	2 mg/l
15	Total Alkalinity	APHA: 2320 B (24th Edition), Titration method	5 mg/l
16	Nitrate	IS:3025 (part-34) 1988 (RA 2014), 3.3 colorimetric method	0.2 mg/l
17	Fluoride	APHA:4500 F-D (24th Edition),SPADNS method	0.05 mg/l
18	Sodium	APHA:3500 Na-B (24th Edition), Flame emission Photometric method	1 mg/l
19	Potassium	APHA: 3500 K-B (24th Edition) Flame emission Photometric method	1 mg/l
20	Calcium	APHA: 3500-Ca-B (24th Edition) EDTA Titrimetric method	2 mg/l
21	Magnesium	APHA: 3500-Mg-B (24th Edition), Calculation method	2 mg/l
22	Salinity	APHA: 2520 B (24th Edition), Electrical Conductivity method	-
23	Total Nitrogen	APHA: 4500 N Org-B, (24th Edition), Macro Kjeldahl method	0.2 mg/l
24	Total Phosphorous	APHA: 4500 P-C (24th Edition), Colorimetric method	1 mg/l
25	Dissolved Oxygen	APHA: 4500 O-C(24th Edition), Iodometric method	0.2 mg/l
26	Ammonical Nitrogen	IS:3025 (part-34), 1988 (RA 2014), Distillation & colorimetric	0.1 mg/l
27	SAR	Flame photometric & EDTA method	-
28	Heavy Metals		
a	Arsenic (as As)	APHA: 3500-As-B (24th Edition) Silver diethyl dithiocarbamate method/APHA: 3114-B (23rd Edition) AAS	0.002 mg/l
b	Cadmium (as Cd)	APHA: 3111-B(24th Edition) AAS	0.003 mg/l
c	Chromium (as Cr)	APHA: 3500-Cr-B (24th Edition), colorimetric method	0.02 mg/l
d	Copper (as Cu)	APHA: 3500-Cu-B (24th Edition) Neocuproine method/ APHA: 3111- B (23rd Edition) AAS	0.03 mg/l
e	Cyanide (as CN)	APHA: 4500 CN- D & E(24th Edition)	0.05 mg/l
f	Iron (as Fe)	APHA: 3500-Fe-B (24th Edition), Phenanthroline method/APHA: 3111-B(23rd Edition) AAS	0.05 mg/l
g	Lead (as Pb)	APHA: 3111-B(24th Edition) AAS	0.01 mg/l
h	Mercury (as Hg)	IS 3025 (P-48): 1994 (RA 2014))/ APHA: 3112-B (24th Edition) AAS	0.001 mg/l
i	Manganese (as Mn)	APHA: 3500-Mn-B (24th Edition) Persulphate method/ APHA: 3111-B (24th Edition) AAS	0.02 mg/l
j	Nickel (as Ni)	APHA: 3111-B(24th Edition) AAS	0.02 mg/l

S. No	Parameters	Methodology	Minimum Detection Limit
k	Zinc (as Zn)	APHA: 3111-B(24th Edition) AAS	0.03 mg/l
l	Boron (as B)	APHA: 4500 B-C (24th Edition), Carmine method	0.1 mg/l
29	Total Coliform	APHA: 9221-B (24th Edition), Multiple Tube Fermentation	-
30	Faecal Coliform	APHA: 9221-E (24th Edition), Multiple Tube Fermentation	-

3.10.3 Quality of Surface water

Analytical results of the surface water /Pond /River water samples are presented in **Table 3-25** and Map of Surface Water Sampling Locations is presented in ***Figure 3-13.***

Figure 3-13: Surface Water Sampling Map

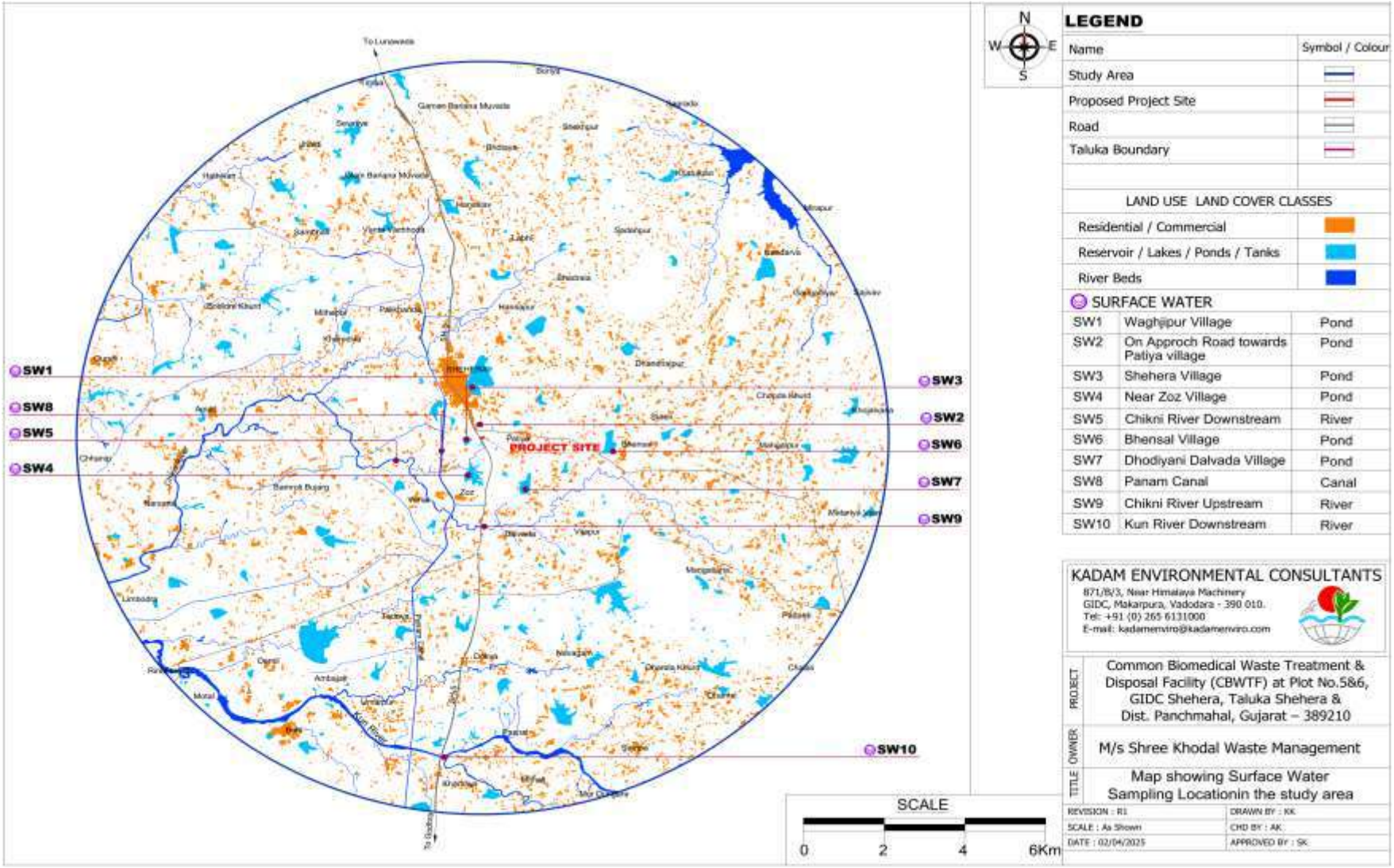


Table 3-25: Analysis results of Surface water

Sr. No.	Parameters	Unit	Classification for Inland Surface Water (CPCB)					Surface Water Quality									
								SW01	SW02	SW03	SW04	SW05	SW06	SW07	SW08	SW09	SW10
								Waghjipur Village Pond	Nearest Pond in Upstream of Project site	Shehera Village Pond	Zoz Village	Chikni River Upstream	Bhensal Village	Dodhiyani Village	Canal	Chikni River Downstream	Kun River
			A	B	C	D	E	Pond	Pond	Pond	Pond	Stream	Pond	Pond	Stream	Stream	Stream
1	pH	pH Scale	6.5 to 8.5	6.5 to 8.5	6.0 to 9.0	6.5 to 8.5	6.5 to 8.5	6.95	7.43	7.38	6.85	6.76	7.50	7.39	7.42	7.18	7.43
2	Dissolved Oxygen	mg/l	6.0	5.0	4.0	4.0	NS	5.2	5.8	5.2	5.6	4.9	4.9	5.3	5	5.20	5.8
3	Total Dissolved Solids	mg/l	500.0	NS	1500.0	NS	2100	288	456	364	208	248	248	208	232	276	456
4	Electrical Conductivity	µmohs/cm	NS	NS	NS	1000	2250	530	905	589	376	474	452	378	487	510	905
5	BOD	mg/l	2.0	3.0	3.0	NS	NS	6	4	<2	7	3	<2	<2	<2	6	4
6	Colour	Pt.co	10	300	300	-	-	10	10	10	10	10	10	10	10	10	10
7	Total Hardness	mg/l	300	NS	NS	NS	NS	120	260	160	70	160	150	120	150	180	260
8	Ca++ Hardness	mg/l	200	NS	NS	NS	NS	66	112	50	30	80	60	50	82	110	112
9	Mg++ Hardness	mg/l	100	NS	NS	NS	NS	54	148	110	40	80	90	70	68	70	148
10	Copper	mg/l	1.5	NS	1.5	NS	NS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.03	<0.001	<0.001	<0.001
11	Iron	mg/l	0.3	NS	50	NS	NS	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01
12	Manganese	mg/l	0.5	NS	NS	NS	NS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.02	<0.001	<0.001	<0.001
13	Chlorides(as CL)	mg/l	250	NS	600	NS	600	62	86	128	86	48	52	33	52	48	86
14	Sulphate	mg/l	400	NS	400	NS	1000	32	42	16	25	10	13	15	17	11	42
15	Nitrate (as NO3)	mg/l	20	NS	50	NS	NS	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
16	Fluoride	mg/l	1.5	1.5	1.5	-	-	0.09	0.79	<0.001	0.63	<0.05	0.25	0.18	1.14	0.06	0.79
17	Phenolic Compound	mg/l	0.002	0.005	0.005	NS	NS	<0.001	<0.001	<0.05	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
18	Free Ammonia	mg/l	NS	NS	NS	1.2	NS	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
19	Mercury	mg/l	0.001	NS	NS	NS	NS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
20	Cadmium	mg/l	0.01	NS	0.01	NS	NS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.003	<0.001	<0.001	<0.001
21	Arsenic	mg/l	0.05	NS	0.2	NS	NS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.01	<0.001	<0.001	<0.001
22	Cyanide	mg/l	0.05	0.05	0.05	NS	NS	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
23	Lead	mg/l	0.1	NS	0.1	NS	NS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.01	<0.001	<0.001	<0.001
24	Zinc	mg/l	15	NS	15	NS	NS	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.03	<0.01	<0.01	<0.01
25	Chromium	mg/l	0.05	1	0.05	NS	NS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.02	<0.001	<0.001	<0.001
26	Boron	mg/l	NS	NS	NS	NS	2	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01
27	Sodium Absorption Ratio	mg/gm	NS	NS	NS	NS	26	0.35	0.33	0.62	0.64	0.23	0.26	0.19	0.26	0.21	0.33
28	Total Coliform	MPN/100ml	50	500	5000	-	-	N.D(<1.8)	N.D(<1.8)	15	N.D(<1.8)	N.D(<1.8)	10	21	17	N.D(<1.8)	N.D(<1.8)

Note: NS - Not Specified

S. No.	Class	Intended Use
1	A	Drinking water source without conventional treatment but after disinfection
2	B	Outdoor bathing (organized)
3	C	Drinking water source with conventional treatment followed by disinfection
4	D	Propagation of wild life, fisheries
5	E	Irrigation, industrial cooling etc.

Observation of surface water (Pond & River) quality:

Following inferences can be drawn based on the baseline water quality results.

River / Stream water: Quality of SW05 & SW08 can be compared with Class B or C as per classification of Inland surface water and can be used for outdoor bathing or for drinking after treatment, while SW09 & SW10 can be compared with class D or E and can be used for Propagation of wildlife & fisheries or for irrigation & industrial use.

Pond water: Quality of SW3, SW6 & SW7 can be compared with class B as per Inland surface water and can be used for outdoor bathing. The Quality of SW1, SW2 & SW4 can be compared with class D or E as per Inland surface water classification and can be used for Propagation of wild life, fisheries or for Irrigation and Industrial use.

3.11 Physiography & Topography

The major physiographic units observed in the study area are undulating plain, highly dissected Plateau and hills. The main geomorphic units in the district area are alluvial plains, metasedimentary and granitic pediplains, Deccan Plateau, Moderately dissected plateau and dissected hills of volcanic and metasedimentary rocks.

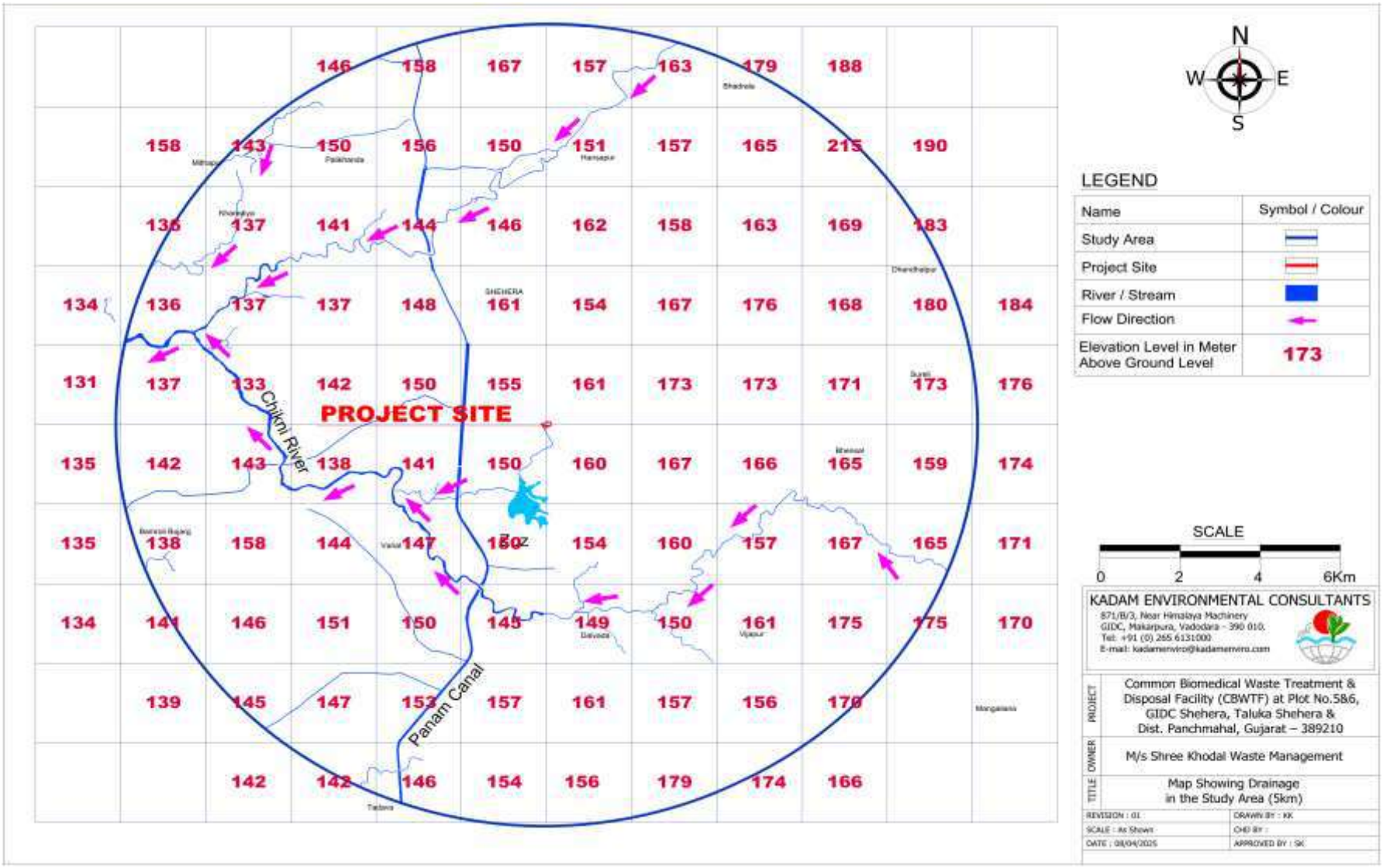
The district has variation in topography which represents the diverse geological condition. The western part of the district constitutes pediplain, composed of weathered, unconsolidated medium to coarse grained material having gentle to moderate slope. The area occupied by the quartzite has an undulating topography where as phyllite and mica schist occupy broad intermontane valley. The southern border of the district is marked by a hill range with roughly east – west and forms a surface water divide particularly between Narmada and Mahi basin.

3.11.1 Drainage

As shown in **Figure 3-14***,* the study area is sub-tropical climate with moderately low humidity and drained by an perennial river *"Mahi"* and other rivers more active during monsoon period.

The Mahi is a perennial river, enters the district from north west near Khedapa and departs near Timba in the western part. Almost other rivers are namely Panam, Hadap, Goma, Kharad, Mesari, Chikni, Kun, Anas, Kali, Machchhan Chibata and Suki River are tributary of the mahi river. Out of these, only Panam and Hadaf are perennial. All the rivers originate in the eastern highland and flow towards west direction to the Arabian Sea. The flow of the water in the rivers is more during the rainy season. The drainage is dendrite to sub-dendrite type. **Figure 3-14** shows Drainage map of study area of 5 km radius.

Figure 3-14: Drainage Map of 10 Km radius of study area

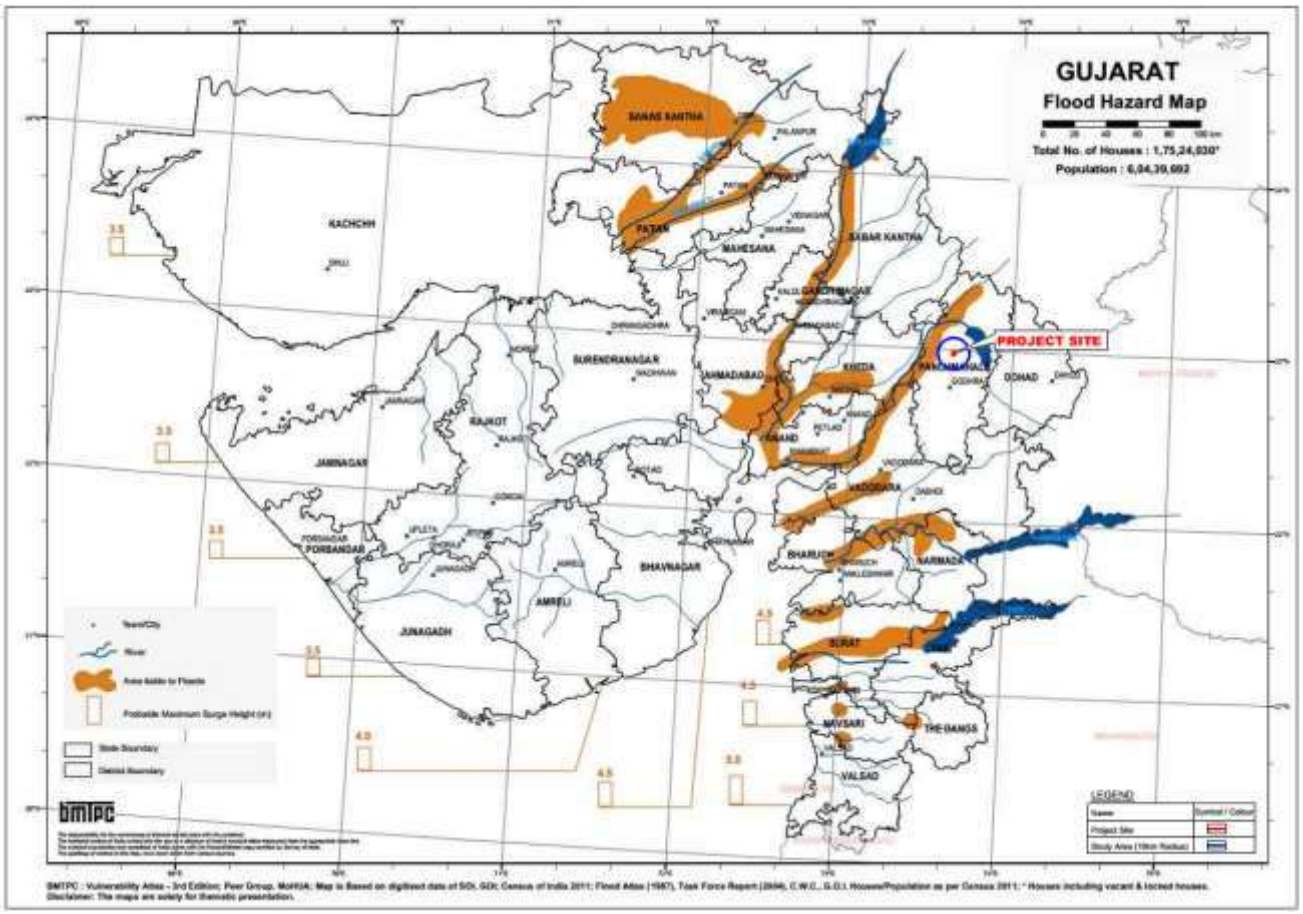


3.12 Flood Hazard in Study area

3.12.1 Flood Hazard

The topography & drainage pattern shows that the project site and study area does not fall in any flood plains as shown in ***Figure 3-15*** as under:

Figure 3-15: Flood Hazard Map



3.12.2 Geology

Geologically, Panchamahal district is the manifestation of diverse geological extension from Lower Proterozoic to Holocene with different rock types such as granitic to basalt and limestone to alluvium. The study area is predominantly covered by phyllite, mica schist, metasubgraywacke and chlorite Schist, quartzite and phyllitic quartzite, quartz mica schist, protoquartzite & dolomite of Lunavad group of Aravalli Supergroup from Lower Proterozoic Age and Granite/Granodiorite of Godhra Granite from Upper Proterozoic Age [4] as presented in **Figure 3-16.**

3.13 Hydrogeology

The groundwater in Panchmahal district occurs under confined and unconfined condition. Unconsolidated shallow alluvium and weathered, jointed and fractured rock support unconfined aquifers whereas interflow zones of basalts, inter trappean beds, encountered at depth, deep seated fractures and shear zones give rise to confined conditions.

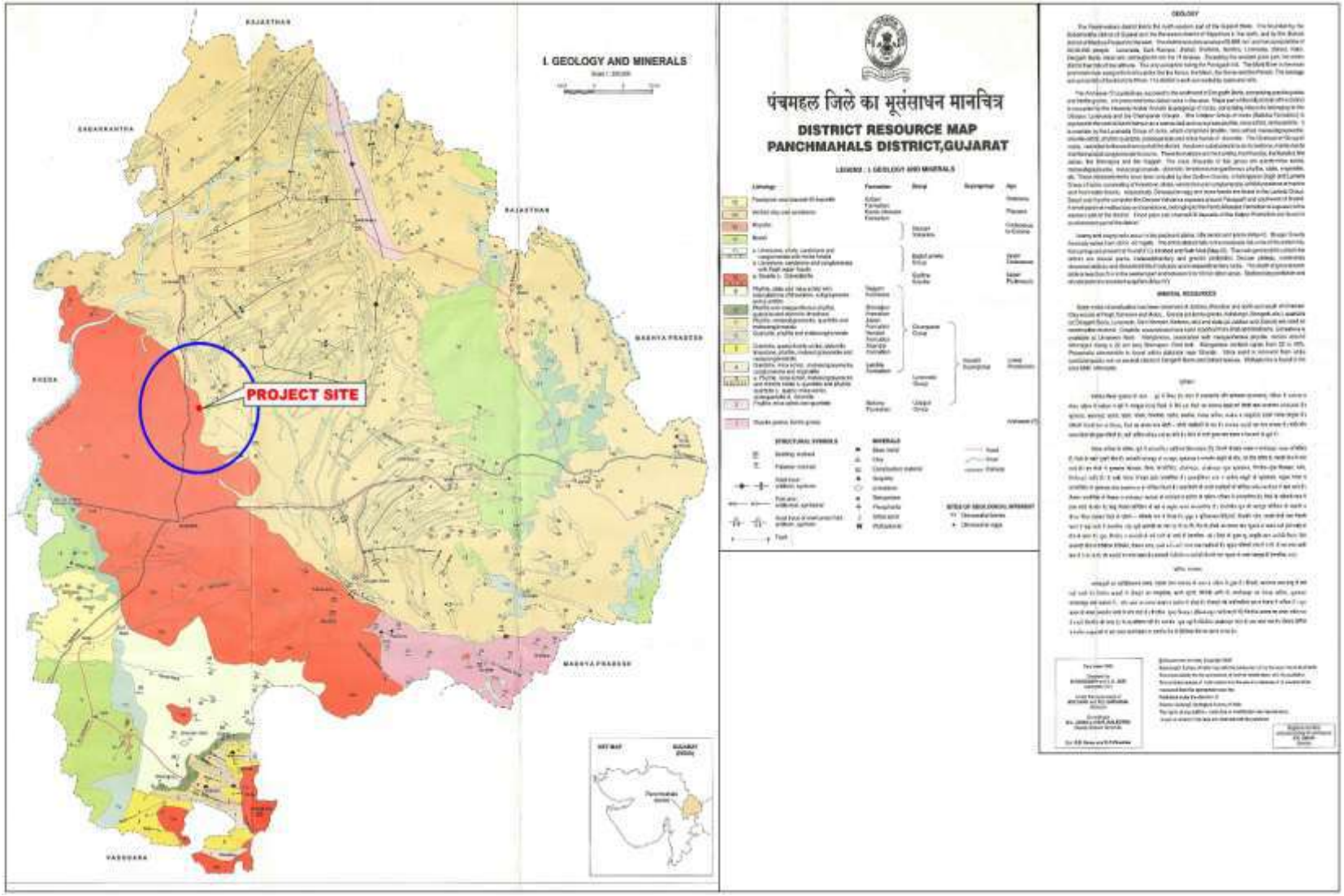
As part of the hard rock, phyllites, quartzite, schists, basalts, sandstone and limestone are forming aquifers. Alluvium and valley fill materials form potential aquifers in the vicinity of rivers and piedmont zone but their distribution is patchy with limited extension, rarely exceeding a few square kilometre in area.

Phyllites, schists and quartzites as aquifers: Groundwater occurs under unconfined conditions. The ground water is restricted to weathered mantle and fractured/sheared zones. Quartz veins act as good barriers and prevent ground water subsurface outflow. The depth to weathering normally does not extend below 10 m. The fractures and joints are wide near surface or just below the weathered mantle and are effective as groundwater conduits only for 0 to 20 m below which they tend to be only like hair cracks unable to allow passage for groundwater movement.

Granite & Gneisses as aquifer: Groundwater occurs under unconfined to confined condition. The aquifer materials are weathered/fractured granite. The thickness of weathered zone varies from 0 to 20 m. The weathering of granite produces porous granular materials as quartz and feldspar being major constituents.

[4] District resource map Kachchh District, Gujarat

Figure 3-16: District Resource Map



3.14 Ground Water Environment

3.14.1 Selection basis for Groundwater Sampling location

In selection of ground water sampling location under the monitoring program, the local geology and hydrogeology are the significant basis. The occurrence, distribution and movement of aquifers plays a vital role. The reference point which allows to ascertain the hydrogeological condition, is fixed (i.e. project site), which further lead to select the location in upstream and downstream based on the local geomorphology. Avoid the areas of turbulence and weirs and always collect the samples from ground water abstracting structures which are in continuous use

On the basis of standard ToR, the Nos. of ground water samples collected within 10 km of study area from the project site are presented in **Table 3-26** as below:

Table 3-26: Ground Water Sampling Locations

Sample ID	Dates	Co-ordinates	Sampling Locations	Aerial Distance from Project Site (in km)	Aerial Direction from Project Site	Source
GW 1	27/01/2025	22°18'49.80"N 71°15'35.60"E	Salampur Village	~ 1.78	N	Dug-well
GW 2	28/01/2025	22°20'40.95"N 71°13'12.42"E	Shehera Village	~ 0.28	ENE	Dug-well
GW 3	28/01/2025	22°21'1.92"N 71°17'5.30"E	Bhensal Village	~ 2.66	ESE	Dug-well
GW 4	25/01/2025	22°19'44.07"N 71°17'49.24"E	Zoz Village	~ 1.56	S	Hand Pump
GW 5	07/02/2025	22°17'59.11"N 71°17'55.72"E	Sadisamdi Village	~ 0.34	SW	Bore-well
GW 6	07/02/2025	22°18'18.57"N 71°13'52.13"E	Village Bamroli Bujarg	~ 4.80	WSW	Dug-well
GW 7	28/01/2025	22°22'25.62"N 71°14'25.24"E	Village Akediya	~ 2.21	WNW	Dug-well
GW 8	07/02/2025	22°23'36.74"N 71°15'48.26"E	Smt. S.J.Dave High School, Shehera Town	~ 1.40	NW	Hand Pump
GW-09	07/02/2025	22°56'17.02"N 73°38'5.25"E	Waghjipur Village	~ 0.23	WNW	Dug-well

3.14.2 Methodology of Ground Water Sampling

The purpose of ground water monitoring program and the collections of samples within that program is to obtain representative portions of the aquifer and to obtain in situ measurements at a selected time and place.

The collection of water sample from ground water abstraction structures occur in five (05) steps

- Sampling preparation,
- Accessing the well before sampling & securing the well after sampling,
- Measuring water level,
- Purging the well, and
- Collecting & delivering the water sample

Sampling Preparation

The ground water sampling is carried out for analysing suitability of water for drinking purpose. And hence, the field sampling equipment is cleaned and calibrated before sampling. The filed investigator must carry following things:

- Clean water containers from Laboratory
- Container sample labels, markers/pen/pencil
- Field sheets for well-inventory data
- Measuring tape for dimension of borehole i.e. diameter of borehole/casing/outlet, measuring level, etc.
- Pumping equipment such as bailer/peristaltic pump.
- Water level measuring instrument.
- Test kits for measuring field parameters such as pH/TDS.
- Personal protective equipment's, first aid

Accessing the Well before sampling & securing the Well after sampling

In general, the casing of bore-wells/tube-wells are usually packed and occasionally it is more difficult to identify the discharge pipe which is away from the located structures for collecting sample. In case of open-well, sampling is comparatively convenient. Ideally, when testing for ground water, the water sample shall not be collected from the tap.

Sampling is done immediately by direct filling bottles from the tubing outlet of a submersible pump of bore-wells/tube-wells. The location details and reference points must be noted in field data sheet using hand GPS machine and photographs must be taken with reference identification number.

Measuring Water-level

After accessing the ground water structure, the first step is to measure the total depth to the water table using water level measuring instrument. Water-level information is important which may be directly linked to ground water quality changes. Considerable care is taken to avoid tangling or wedging the sampling equipment. The measuring details is noted down in field data sheet with date and time.

Purging the Borehole

As a thumb rule, the standing water within the borehole is exposed to atmospheric conditions and can undergo changes to its physical and chemical characteristics and is not representative of the water in the aquifer, for this reason the borehole is purged before sampling. Also, purging is to reduce the turbidity to the point that the sample will represent the dissolved concentration of contaminants (metals and many organics).

Collecting and Delivering the Samples

The water samples are collected after completion of purging. Before the sample containers are filled, sampling bottles is properly labelled and details is recorded. The field test is completed such as field pH, TDS, etc. Since water samples are not immediately analysed fully in the field, they typically required preservations which ensure the quality of the sample does not change between the time of collection in field and time of analysis in the laboratory. Preservation includes cooling the samples to maintaining the temperature as per required standards by laboratory. If a water sample is analysed for multiple parameters, it requires different preservation methods and to take more than a single sample. The sample is deliver to the laboratory within 2-3 of sampling. If samples are shipped, the sealed sample containers are put into ice box, are then packed with ice coolants and transported to the analytical laboratory by express delivery service. At the laboratory, the samples are logged in given sample ID numbers, and kept cool until they can be analysed.

Ground Water Quality Testing Methodology

The below describes analytical methodology for the parameters to be analysed and with minimum detection limit of the instruments available at KEC Laboratory. The parameters to be analysed are mentioned in **Table 3-27** and analysis results are shown in **Table 3-29*.***

Table 3-27: Ground Water Quality Testing Methodology

S. No	Parameters	Methodology	Minimum Detection Limit
1	pH	APHA: 4500-H+ B(24th Edition), Electrometric method	2
2	Temperature	APHA: 2550 B (24th Edition), Standard Thermometer	0.5 Deg C
3	Turbidity	APHA: 2130 B (24th Edition), Nephelometric Method	0.1 NTU
4	Colour	APHA: 2120 B (24th Edition), Visual comparison Method	1 Pt-Co
5	TDS	APHA: 2540C (24th Edition), Gravimetric	3 mg/l
6	Electrical conductivity	APHA: 2510 B (24th Edition), Conductivity meter	1µmoh/cm
7	COD	APHA: 5220 B(24th Edition), Open reflux method	5 mg/l
8	BOD	IS: 3025(part-44):1993 (RA 2014) Iodometric	2mg/l
9	Chlorides	APHA:4500-Cl- B (24th Edition), Argentometric method	1.0 mg/l
10	Phenol	APHA: 5530-D (24th Edition), Direct photometric Method	0.001 mg/l
11	Sulphates	APHA:4500-E as SO4 2-(24th Edition), Turbidimetric method	1 mg/l
12	Total Hardness	APHA: 2340-C (24th Edition), EDTA Titrimetric method	2 mg/l
13	Ca++ Hardness	APHA: 3500-Ca-B (24th Edition) EDTA Titrimetric method	2 mg/l
14	Mg++ Hardness	APHA: 3500-Mg-B (24th Edition), By calculation	2 mg/l
15	Total Alkalinity	APHA: 2320 B (24th Edition), Titration method	5 mg/l
16	Nitrate	IS:3025 (part-34)1988 (RA 2014), 3.3 colorimetric method	0.1 mg/l
17	Fluoride	APHA:4500 F-D(24th Edition),SPANDS method	0.05 mg/l
18	Sodium	APHA:3500 Na-B (24th Edition), Flame emission Photometric method	1 mg/l
19	Potassium	APHA: 3500 K-B (24th Edition) Flame emission Photometric method	1 mg/l
20	Calcium	APHA: 3500-Ca-B (24th Edition) EDTA Titrimetric method	2 mg/l
21	Magnesium	APHA: 3500-Mg-B (24th dition), Calculation method	2 mg/l
22	Salinity	APHA: 2520 B (24th Edition), Electrical Conductivity method	-
23	Total Nitrogen	APHA: 4500 N Org-B, (24th Edition), Macro Kjeldahl method	0.05 mg/l
24	Total Phosphorous	APHA: 4500 P-C (24th Edition), Colorimetric method	0.02 mg/l
25	Dissolved Oxygen	APHA: 4500 O-C(24th Edition), Iodometric method	0.2 mg/l
26	Ammonical Nitrogen	IS:3025(part-34), 1988 (RA 2014), Distillation & colorimetric	0.05 mg/l
27	SAR	Flamephotmetric & EDTA method	-
28	Heavy Metals	-	-
a	Arsenic (as As)	APHA: 3500-As-B (24th Edition) Silver diethyldithiocarbamate method/APHA: 3114-B (23rd Edition) AAS	0.01 mg/l
b	Cadmium (as Cd)	APHA: 3111-B(24th Edition) AAS	0.003 mg/l
c	Chromium (as Cr)	APHA: 3500-Cr-B(24th Edition), colorimetric method	0.02 mg/l
d	Copper (as Cu)	APHA: 3500-Cu-B (24th Edition) Neocuproine method/ APHA: 3111- B (23rd Edition) AAS	0.03 mg/l
e	Cyanide (as CN)	APHA: 4500 CN- D & E(24th Edition)	0.03 mg/l
f	Iron (as Fe)	APHA: 3500-Fe-B (24th Edition), Phenanthroline method/APHA: 3111-B(23rd Edition) AAS	0.05 mg/l
g	Lead (as Pb)	APHA: 3111-B(24th Edition) AAS	0.01 mg/l
h	Mercury (as Hg)	IS 3025 (P-48): 1994 (RA 2014))/ APHA: 3112-B (24th Edition) Cold vapour AAS method	0.001 mg/l
i	Manganese (as Mn)	APHA: 3500-Mn-B (24th Edition) Persulphate method/ APHA: 3111-B(24th Edition) AAS	0.02 mg/l

S. No	Parameters	Methodology	Minimum Detection Limit
j	Nickel (as Ni)	APHA: 3111-B(24th Edition) AAS	0.02 mg/l
k	Zinc (as Zn)	APHA: 3111-B(24th Edition) AAS	0.03 mg/
l	Boron (as B)	APHA: 4500 B-C (24th Edition), Carmine method	0.05 mg/l
29	Total Coliform	APHA: 9221-B (24th Edition), Multiple Tube Fermentation	Absent
30	Fecal Coliform	APHA: 9221-E (24th Edition), Multiple Tube Fermentation	Absent

3.14.3 Quality of Ground water

Analytical results of the ground water samples are presented in

Photographs of ground water sampling locations are given in photo documentation as **Figure 3-17**

Figure 3-17: Ground Water Sampling Locations

<table>
<tr><td> 
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<tr><td>GW01 - Salampur Village</td><td>GW02 - Shehera Village</td><td>GW03 - Bhensal Village</td></tr>
<tr><td> 
</td><td>  </td><td> 
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<tr><td>GW04 - Zoz Village</td><td>GW05 - Village Bamroli Bujarg</td><td>GW06 - Village Bamroli Bujarg</td></tr>
<tr><td> 
</td><td>  </td><td>  </td></tr>
<tr><td>GW07 - Village Akediya</td><td>GW08 - Smt. S.J.Dave High School, Shehera Town</td><td>GW09 - Waghjipur Village</td></tr>
</table>

Figure 3-18: Ground Water Sampling Map

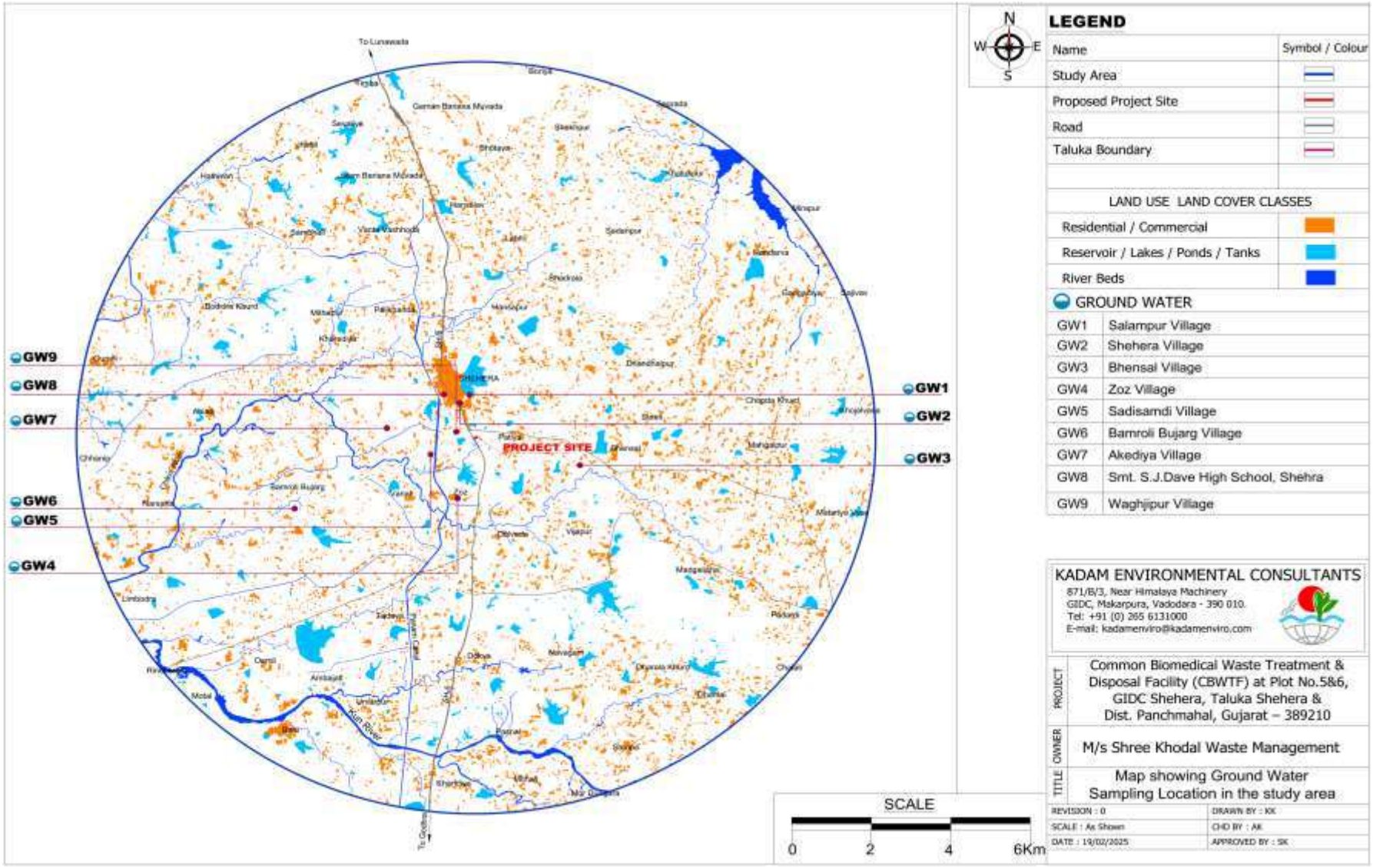


Table 3-28: Ground Water Analysis Results

Sampling Location					GW1 Village Salampur	GW2 GIDC Shehera	GW3 Village Bhensal	GW4 Village Zoz	GW5 Village Sadisamdi	GW6 Village Bamroli	GW7 Village Akediya	GW8 Smt. S.J.Dave High School, Shehera Town	GW9 Vaghjipura
Sampling ID													
S. No.	Parameters	Unit	IS 10500 Standard Limits for drinking water										
			Acceptable limit	Permissible limit (In the Absence of alternate source)									
1	pH	pH scale	6.5-8.5	No Relaxation	7.36	7.49	7.19	6.81	7.14	6.94	7.18	6.77	7.35
2	Temperature	°C	NS	NS	25.2	25.4	25.7	24.9	25.8	25.9	25.7	25.2	25.1
3	Turbidity	NTU	1	5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
4	TDS	mg/lit	500	2000	736	429	644	386	592	612	469	814	992
5	Electrical conductivity	µmhos/cm	NS	NS	1223	756	1089	708	1044	1032	751	1476	1661
6	COD	mg/lit	NS	NS	<5	<5	<5	<5	<5	<5	<5	<5	<5
7	BOD	mg/lit	NS	NS	<2	<2	<2	<2	<2	<2	<2	<2	<2
8	Phenol	mg/lit	0.001	0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
9	Chlorides	mg/lit	250	1000	133	71	105	81	76	81	57	157	356
10	Sulphates	mg/lit	200	400	89	29	49	31	38	39	43	73	142
11	Total Hardness	mg/lit	200	600	470	290	380	230	330	440	330	490	330
12	Ca++ Hardness	mg/lit	NS	NS	210	104	164	116	86	154	94	136	104
13	Mg++ Hardness	mg/lit	NS	NS	260	186	216	114	244	286	236	354	226
14	Total Alkalinity	mg/lit	200	600	110	140	80	30	70	30	80	30	110
15	Nitrate	mg/lit	45	NR	8.45	10.83	11.11	41.43	14.50	9.27	8.54	14.14	11.84
16	Fluoride	mg/lit	1	1.5	1.47	1.86	1.50	1.01	1.32	1.26	1.36	2.50	2.20
17	Sodium	mg/lit	NS	NS	53.1	27.9	41.7	33.1	29.8	31.5	22.3	61.9	141

Sampling Location					GW1 Village Salampur	GW2 GIDC Shehera	GW3 Village Bhensal	GW4 Village Zoz	GW5 Village Sadisamdi	GW6 Village Bamroli	GW7 Village Akediya	GW8 Smt. S.J.Dave High School, Shehera Town	GW9 Vaghjipura
Sampling ID													
S. No.	Parameters	Unit	IS 10500 Standard Limits for drinking water										
			Acceptable limit	Permissible limit (In the Absence of alternate source)									
18	Potassium	mg/lit	NS	NS	2	1.1	1.5	1.43	1.2	1.25	0.9	2.1	5.5
19	Calcium	mg/lit	75	200	84	42	66	46	34	62	38	55	42
20	Magnesium	mg/lit	30	100	63	45	52	28	59	69	57	55	55
21	Salinity	mg/lit	NS	NS		128	188	145	137	145	103	282	642
22	Total Nitrogen	mg/lit	0.5	NR	239	10.83	11.11	41.43	14.50	9.27	8.54	14.14	11.84
23	Total Phosphorous	mg/lit	NS	NS	1.95	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
24	Dissolved Oxygen	mg/lit	NS	NS	2.4	2.2	2.6	2.7	2.8	2.1	2.5	2.7	2.3
25	Ammonical Nitrogen	mg/lit	NS	NS	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
26	SAR	-	NS	NS	0.38	0.25	0.33	4.18	0.25	0.23	0.19	0.43	1.19
27	**Heavy Metals**												
a	Arsenic (as As)	mg/l	0.01	0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
b	Cadmium (as Cd)	mg/l	0.003	NR	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
c	Chromium (as Cr)	mg/l	0.05	NR	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
d	Copper (as Cu)	mg/l	0.05	1.5	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
e	Cyanide (as CN)	mg/l	0.05	NR	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
f	Iron (as Fe)	mg/l	0.3	NR	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05

Sampling Location					GW1 Village Salampur	GW2 GIDC Shehera	GW3 Village Bhensal	GW4 Village Zoz	GW5 Village Sadisamdi	GW6 Village Bamroli	GW7 Village Akediya	GW8 Smt. S.J.Dave High School, Shehera Town	GW9 Vaghjipura
Sampling ID													
S. No.	Parameters	Unit	IS 10500 Standard Limits for drinking water										
			Acceptable limit	Permissible limit (In the Absence of alternate source)									
g	Lead (as Pb)	mg/l	0.01	NR	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
h	Mercury (as Hg)	mg/l	0.001	NR	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
i	Manganese (as Mn)	mg/l	0.1	0.3	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
j	Nickel (as Ni)	mg/l	0.02	NR	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
k	Zinc (as Zn)	mg/l	5	15	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
28	Total Coliform	MPN	Shall not be detectable	Shall not be detectable	N.D(<1.8)	N.D(<1.8)	N.D(<1.8)	N.D(<1.8)	N.D(<1.8)	N.D(<1.8)	N.D(<1.8)	N.D(<1.8)	N.D(<1.8)
29	Faecal Coliforms	MPN	Shall not be detectable	Shall not be detectable	N.D(<1.8)	N.D(<1.8)	N.D(<1.8)	N.D(<1.8)	N.D(<1.8)	N.D(<1.8)	N.D(<1.8)	N.D(<1.8)	N.D(<1.8)

Interpretation of Groundwater results

The chemical analysis shows that the PH is ranging from 6.77-7.49. TDS is ranging from 386-992 mg/lit in all samples which are in Acceptable & Permissible limit.

Chlorides is ranging from 57-356 mg/lit, sulphates 29-142 mg/lit, Total Hardness 230-490 mg/lit, sodium 22.3-141 mg/lit, potassium 0.9- 5.5 mg/lit, calcium 34-84 mg/lit which shows all the values are in acceptable & permissible limit in all samples.

The area shows high fluoride values ranging from 1.01 – 2.50 mg/lit the values are more than desirable limit but in permissible limit, except in GW-2 (GIDC Shehera), GW-8 (Shehera Town) & GW-9 (Waghjipura) were values are more than acceptable & permissible limit having values 2.5-2.2-1.86 mg/lit.

Total Hardness, Ca++ Hardness & Mg++ Hardness are observed in permissible & acceptable limit in all samples. Sodium, Potassium, Calcium & Magnesium in all samples are observed in permissible & acceptable limit.

Heavy Metals, Total coliform & Feacal coliform are below the detectable limit.

Overall the groundwater quality in the study area is fit for potable use. The weathered aquifer and Fractured aquifer, potable and fit for domestic, drinking, irrigation and other uses. The groundwater depth was observed 20 to 80 feet below GL.

The stage of ground water extraction of Shehera taluka is 27.45%. The Shehera Taluka is under "Safe" category according to CGWA.

3.15 Soil

3.15.1 General Soil Classification

The project area falls under Middle Gujarat Agro-climatic Zone (GJ-3) and Agro-ecological region-5.2, the annual average rain fall is 753 mm. The soils are sandy loam shallow (26.0%), medium black shallow (20.82%) and hilly light soils (8.1%). The soils are having sandy loam to clay loam texture, poor in organic carbon, available phosphorous, but rich in available potassium. The main source of irrigation is open wells (35.0 %), canals (10.0 %) and bore wells (45.0 %). The cropping intensity of the area is 125 %. The crops grown are maize, paddy, pigeon pea, wheat and castor. The fruit crops grown are mango, citrus, aonla and sapota. The vegetable crops are okra, brinjal, chilli, tomato, garlic and onion.

3.15.2 Methodology of Soil Sampling

A field visit conducted to study site-specific soil quality and condition includes soil colour, texture mineralogical content, plasticity and any possible impact to the environmental setting due to project.

The locations for soil sample collection were randomly selected from the surrounding areas namely Soil-1 to Soil-9. The soil samples from 0-15 cm depth were collected by using post-hole auger or spade and pawada, wherever required. The samples were homogenized and about 1 Kg soil sample was collected in the polyethylene bag, labelled with sample ID which includes site numbers and project name. The samples were brought to the laboratory for analysis of physical (porosity, water holding capacity, permeability, particle size distribution) and chemical properties (cation exchange, electrical conductivity, sodium adsorption ratio, pH, Ca, Mg, Na, K) and organic carbon, available P and K status of soils.

Table 3-29: Details of soil sampling locations

Sr. No.	Code No.	Location Name	Coordinates	Area /Source	Dist. from Site (km)	Dir. from Site	Date of sampling
1	ST01	Village Salampur	22°18'46.58"N 71°15'11.74"E	Agriculture	1.78	NE	28.01.2025

Sr. No.	Code No.	Location Name	Coordinates	Area /Source	Dist. from Site (km)	Dir. from Site	Date of sampling
2	ST02	GIDC Shehera	22°56'18.75"N 73°38'26.28"E	Agriculture	~ 0.28	ENE	11.02.2025
3	ST03	Village Bhensal	22°21'1.92"N 71°17'5.30"E	Agriculture	~ 2.66	ESE	28.01.2025
4	ST04	Village Dalwada	22°19'43.90"N 71°17'48.43"E	Agriculture	~ 1.56	South	30.01.2025
5	ST05	Village Sadisamdi	22°18'1.25"N, 71°17'55.43"E	Agriculture	~ 0.34	SW	23.01.2025
6	ST06	Village Bamroli Bujarg	22°55'2.96"N, 73°35'33.87" E	Agriculture	~ 4.80	WSW	11.02.2025
7	ST07	Village Akediya	22°22'22.34"N 71°14'26.28"E	Agriculture	~ 2.21	WNW	28.01.2025
8	ST08	Nr. Smt. S.J.Dave High School, Shehera Town	22°56'47.73"N 73°37'36.09"E	Agriculture	~ 1.40	NW	11.02.2025
9	ST09	Village Sadisamdi	22°56'15.22"N 73°38'8.31"E	Habitation	~ 0.10	West	23.01.2025

Methodology of Soil Analysis

Methodology of soil sample analysis is presented in **Table 3-30** , the soil sampling analysis results are presented in **Table 3-32** and Map of Soil Sampling Locations is presented in **.**

Table 3-30: Methodology of soil sample Monitoring

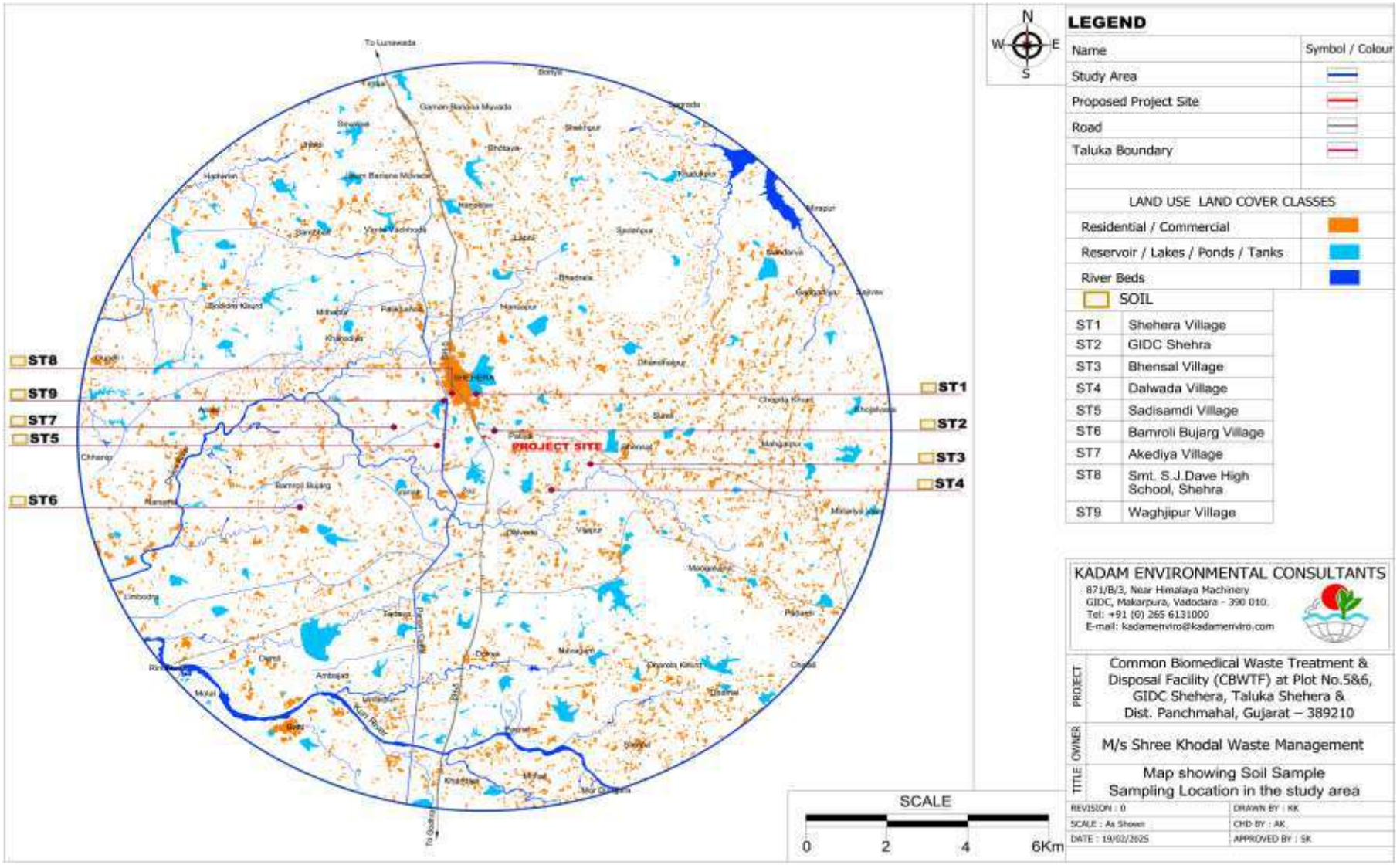
Sampling Parameters	Sample collection	Analytical Equipment	Methodology	Remarks
Porosity	Manual sample collection using auger and container tube for collecting undisturbed top soil.	-	IS: 2720 Part 7	Trial pit method for topsoil sample collection; disturbed samples
Water holding capacity		Keen Apparatus	HMSO, UK	
Permeability		-	IS: 2720 Part 17	
Moisture content		Electronic Balance	IS: 2720 Part 2	
Texture		-	IS: 2720 Part 4	
Particle size Distribution		Glass wares	IS: 2720 Part 4	5% Leachate to be made and analysed as per APHA, "Standard Methods" All method numbers are as per APHA "Standard Methods" (21st edition, 2005)
Cation Exchange Capacity		Centrifuge	IS: 2720 Part 24 (1976)	
SAR		F. Photometer (Na, K) Titration (Ca & Mg)	Calculation	
pH		pH Meter	4500 H+B	
Electrical Conductivity		Conductivity Meter	As per IS 14767 -2000	
Calcium		Glass wares	3500 Ca B	
Magnesium		Glass Wares	3500 Mg B	
Sodium (Na)		F.Photometer	3500 Na B	
Potassium		F.Photometer	3500 K B	
Organic carbon		Volumetric method	IS 2720 (part22)-RA-2010	
Available phosphorus		Spectrophotometric	0.5M NaHCO3 pH-8.5	Olsen et al. (1952) from Jackson (1973)
Available potassium		Flame Photometer	LAB SOP 128	Neutral Normal Ammonium acetate; Jackson (1973)

Photographs of Soil sampling locations are given in photo documentation as **Figure 3-19**Figure 3-17Figure 3-12**.**

Figure 3-19: Ground Water Sampling

		
ST01 - Village Salampur	ST02 – GIDC Shehera	ST03 – Village Bhensal
		
ST04 – village Dalwada	ST05 – Village Sadisamdi	ST06 – Village Bamroli Bujarg
		
ST07 – Village Akediya	ST08 – Nr Smt SJ Dave High School, Shehera Town	ST09 – Village Sadisamdi

Figure 3-20: Soil Sampling Map



3.15.3 Secondary data collection

Soils of Shehera taluka of Panchmahal district are sandy loam to shallow black. The soil EC, pH, OC, available phosphorus and available potassium varied from 0.21 to 1.02 dS/m, 7.06 to 7.90, 0.20 to 0.60 %, 19 to 63 kg/ha and 21 to 245 kg/ha, respectively.

(Ref: Patel, K. P. (2015). Indian Journal of Applied Research. Vol.5(9), pp466-68.**)**

Table 3-31: Soil Analysis Results

Sr. No	Parameter	Unit	S1	S2	S3	S4	S5	S6	S7	S8	S9
1	Porosity	%	54	52	51	54	52	53	57	56	48
2	Water Holding Capacity	%	44.52	43.12	41.66	47.54	48.46	46.95	52.28	50.80	40.25
3	Permeability	mm/hr	20.16	21.13	23.90	19.22	19.69	18.79	16.74	17.53	25.16
4	**Particle Size Distribution**										
a	Sand	%	60	63	63	54	53	47	57	60	70
b	Clay	%	27	24	17	27	28	27	33	30	17
c	Silt	%	13	13	20	19	19	26	10	10	13
5	Texture	-	sandy Clay loam	sandy Clay loam	sandy loam	sandy Clay loam	sandy Clay loam	sandy Clay loam	sandy Clay loam	sandy Clay loam	sandy loam
6	Cation Exchange Capacity	meq/100gm	24.67	23.93	20.96	25.64	25.79	26.80	28.76	27.30	19.74
7	Electrical Conductivity	dS/m	0.610	0.525	0.074	0.54	0.409	0.422	0.522	0.618	1.567
8	Exchangeable Sodium	%	1.35	1.13	1.21	1.30	1.43	1.43	1.35	1.47	1.04
9	SAR		0.25	0.21	0.24	0.24	0.26	0.20	0.23	0.26	0.21
10	pH		7.38	7.90	6.84	7.24	7.35	7.28	6.96	7.43	9.23
11	Calcium	mg/kg	2044	2024	1783	2044	2184	2104	2104	2004	1603
12	Magnesium	mg/kg	1555	1506	1287	1676	1591	1761	2004	188	1275
13	Sodium	g/kg	0.31	0.26	0.28	0.30	0.33	0.33	0.31	0.34	0.24
14	Potassium	g/kg	0.06	0.05	0.04	0.05	0.07	0.06	0.06	0.05	0.02
15	Organic carbon	%	0.41	0.39	0.38	0.42	0.43	0.47	0.49	0.45	0.36
16	Total nitrogen	%	0.035	0.034	0.033	0.036	0.037	0.041	0.042	0.038	0.031
17	Available phosphorus	kg/ha	16.7	21.8	20.5	16.8	15.5	23.5	24.5	18.5	17.6
18	Available potassium	kg/ha	134.4	112.0	89.6	112.0	156.8	134.4	134.4	112.0	44.8

Observation on Soil Quality:

The analysis of physicochemical properties of soil samples collected from surrounding area indicated that porosity ranged from 48 - 57 % and WHC varied from 40.25 – 52.28 %, while permeability ranged from 16.74 – 25.16 mm/hr. Moderate WHC and porosity are on account of sandy to loam to sandy clay loam texture of soils and permeability was good as texture of soils varied from sandy loam to sandy clay loam. The CEC ranged from 16.74 – 25.16 meq/100 g soil, which is moderate looking to the texture of soils. The EC (0.074 - 1.567 dS/m) was below prescribed safe limit of 0.08 dS/m in all the samples except S9 (Shehera Sadisamdi West), which was moderate (<1.60 dS/m0 and ESP (1.04 to 1.47) was well within the safe limit of <15.0. The pH ranged from 6.84 – 9.23, indicating that soils are alkaline (pH 7.81 to <8.5) to sodic (pH >8.5). Among water soluble cations predominance of Ca (1603 - 2184 mg/kg) was seen followed by Mg (188 – 2004 mg/kg), Na (0.24 – 0.34 g/kg), and K (0.02 - 0.07 g/kg). The organic carbon status (0.36 to 0.49 %) was low (<0.50 %), which indicate that total nitrogen was also low. Available phosphorus (15.5 to 24.5 kg/ha) was in low category (< 28 kg/ha), whereas potassium (44.8 to 156.8 kg/ha) was in low (<140 kg/ha) to medium range (140 to 280 kg/ha).

Interpretation:

Soil texture varied from sandy loam to sandy clay loam. The soils are normal to sodic. The soil fertility data indicate that soils are low in nitrogen and available phosphorus, while low to medium in available potassium Similar results with respect soil EC, pH, organic carbon, available phosphorus and available potassium were reported by Patel (2015).

3.16 Ecology and Biodiversity

3.16.1 Introduction

Study of biological environment is one of the most important components for Environmental Impact Assessment, in view of the need for conservation of environmental quality and biodiversity. Ecological systems show complex inter-relationships between biotic and abiotic components including dependence, competition and mutualism. Biotic components comprise of both plant and animal communities which interact not only within and between themselves but also with the abiotic components viz. Physical and chemical components of the environment.

Generally, biological communities are good indicators of climatic and edaphic factors. Studies on biological aspects of ecosystems are important in Environmental Impact Assessment for safety of natural flora and fauna. Information on the impact of environmental stress on the community structure serves as an inexpensive and efficient early warning system to check the damage to a particular ecosystem. The biological environment includes mainly terrestrial ecosystem and aquatic ecosystem

3.16.2 Scope, Aim and Objectives

- To inventories floral and faunal components of project area (project site or core zone and 10 km. radius / buffer zone).
- To locate / demarcate and understand ecological setting of the project area in terms of national parks / wildlife sanctuary / reserve forests / tiger reserve / Eco-sensitive Areas / wetlands etc. within 10 km. radius from project site (if any).
- To identify Schedule-I, rare, endemic and endangered species within the project study area and prepare conservation plan for same.
- To identify impact zone and evaluate the likely impact of the proposed project on flora and fauna components of the project study area.
- To suggest / prepare action plan to mitigate likely impacts on the biodiversity of the project area through plantation around project area to reduce / mitigate likely impacts.

3.16.3 Methodology

Secondary data Collection/ Literature Review

- Based on the project area information; compilation and study of available scientific literatures prior to field survey for better insight on species level identification, understanding their current status, and the distribution of species at local & regional level.
- In order to acquire project area information, Open series map (OSM), drawn Landuse/ Land cover map (LU/LC), and study area map were used for habitat assessment.
- Detailed Checklist of Flora and fauna from Regional/District Forest Department.
- Local interventions/public surveys are also carried to acquire information pertaining to certain species.
- Secondary information available on websites of Botanical Survey of India (BSI), Zoological Survey of India (ZSI), published literature, research papers and reports were also consulted.

Primary / Field Data Collection

Sampling with standard methods was carried out to understand different floral and faunal components of the project site.

Primary/ Field Data Collection (Fauna):

- Primary information pertaining to the existing fauna from the study area were recorded through field surveys using standard methodologies. For birds, and mammals, the standard methodology adopted for survey consist of visual encounters (Using Binoculars) during Line transects, Vehicular transects, Point counts, and Vocal encounters. Standard field identification guides were used for identification purpose.
- The primary data acquired from the field surveys were recorded. Indirect sightings/records such as Footprints, Scats, and Vocal encounters were also recorded along with primary data during the field surveys.
- For identification (till Species Level) and validation of Primary data; Photographic documentation of recorded individual species were carried out using camera.

Primary/ Field Data Collection (Flora):

- The project site falls in the notified industrial area and no natural vegetation exists at site, efforts have been made to enlist existing species from the plantation area/greenbelt. For trees, herbs and shrubs in the buffer zone, the standard methodology adopted for survey consist of visual encounters during line transects and vehicular transects. Existing Land use of the project is industrial area and does not evolve diversion of any forestland, hence quantification of vegetation is not required. For Identification (Species Level) and validation of Primary data; Photographic documentation of individual species is carried out using field camera.

Data Analysis:

- The acquired information/filled field datasheets are compiled along with the field photographs.
- Based on photographic records, vocals, and pugmarks; the identification of recorded individuals till species level were carried out using scientific literatures, field guides, regional checklists, Forest Working Plan and species database.
- In order to understand the current status of the recorded species, review on the past records of species distribution from the study area and the conservation status of the species as per IUCN Red List and Indian Wildlife (Protection) Amendment Act, 2022 were assessed.

Threatened Biodiversity Assessment Criteria: Wildlife (Protection) Amendment Act, 2022, ENVIS Database, IUCN Red List of threatened species (IUCN, 2024), Botanical Survey of India (BSI) and Zoological Survey of India (ZSI).

3.16.4 Delineation of the study area

Project Site / Core Zone & Buffer Zone

Project site is considered as core zone and surrounding area up to 10 km radius from the project boundary is considered as buffer zone for biodiversity assessment.

3.16.5 Ecological Sensitivity / Habitats of the study area

The buffer zone encompasses heterogeneity of ecologically important habitats within 10 Km radius from the proposed site. The list of habitat are as follows:

Forest/ National Park/ Sanctuary

There is no Wildlife Sanctuary, Biosphere Reserve, Tiger / Elephant Reserve, Migratory Corridors and Ramsar Sites/National Wetland falls in the project study area of 10 km radius.

Eco Sensitive Areas

Study area encompasses industrial areas, urban areas, agriculture land, water bodies and rivers. Details of sensitive ecological attributes are presented in **Table 3-33.**

Table 3-32 Sensitive Ecological Features of the Study Area

Sr. No.	Sensitive Ecological Features	Name of feature / Location	Distance (km)	Direction	Reason of Significance
1	Ramsar wetland (Ramsar Convention)	--	--	--	Not applicable
2	Wetlands as per National Wetlands Atlas	--	--	--	Not applicable
3	National park	--	--	--	Not applicable
4	Wildlife sanctuary	--	--	--	Not applicable
5	Tiger reserve	--	--	--	Not applicable
6	Biosphere reserve	--	--	--	Not applicable
7	Elephant reserve	--	--	--	Not applicable
8	Important Bird Areas (IBAs)	--	--	--	Not applicable
9	Eco-sensitive zone (EP Act)	--	--	--	Not applicable
10	Forest (Forest Conservation Act) (including protected forests and reserved forests)	R.F between Zoz and Patiya	0.25	SSE	Reserved Forest
		R.F near Dokaliya	1.4	E	Reserved Forest
		R.F near Akediya village	2.56	W	Reserved Forest
		RF between Bamroli and Varial Village	2.87	W	Reserved Forest
		R.F near Vijapur Village	3.0	ESE	Reserved Forest
		R.F near Bhadrala	4.53	NE	Reserved Forest
		R.F. between Palikhanda & Hanselav	3.46	N	Reserved Forest
		R.F near Chopda khurd village	8.02	E	Reserved Forest
		R.F near Mithapur village	4.10	WNW	Reserved Forest
		R.F near Panam Resevior	8.82	NE	Reserved Forest
		R.F near Khatakpur Village	9.35	NE	Reserved Forest
		R.F between Khatakpur and Sagrada Village	8.01	NNE	Reserved Forest
		R.F between Sh-05 road & Bhotwa village	6.60	N	Reserved Forest
		R.F between Sh-05 road & Bhotwa village	6.43	N	Reserved Forest
		R.F between Sh-05 road & Bhotwa village	7.20	N	Reserved Forest
		R.F between Sh-05 road & Bhotwa village	7.34	N	Reserved Forest
		R.F near Gamanbariya na Muwada	5.92	NNW	Reserved Forest
		R.F near Jhardi	7	NNW	Reserved Forest
		R.F near Jhepdi	8.95	NW	Reserved Forest

Sr. No.	Sensitive Ecological Features	Name of feature / Location	Distance (km)	Direction	Reason of Significance
		R.F near Mithali Village	8.23	S	Reserved Forest
		R.F near Shekhpur Village	6.8	NNE	Reserved Forest
		R.F between Palikhanda & Hanselav village	3.36	NNW	Reserved Forest
11	Wildlife corridor	--	--	--	Not applicable
12	Coastal zones	-	-	-	--
13	Areas used by protected, important or sensitive species of flora or fauna for breeding, nesting, foraging, resting, over wintering, migration	R.F between Zoz and Patiya	0.25	SSE	Reserved Forest
		R.F near Dokaliya	1.4	E	Reserved Forest
		RF between Bamroli and Varial Village	2.87	W	Reserved Forest
		R.F near Vijapur Village	3.0	ESE	Reserved Forest
		R.F near Bhadrala	4.41	NE	Reserved Forest
		R.F. between Palikhanda & Hanselav	3.46	N	Reserved Forest
		Waghjipura Pond	0.13	W	Nearest pond west of project site
		Zoz Pond	0.65	SSW	Pond Downstream of project site
		Dodiyani (Dalwada)	1.37	SE	Pond within study area – cross stream
		Shehera Pond	1.18	N	North of project site having major habitation within study area.
		Patiya Village Pond	0.76	ENE	Pond Upstream of project site
		Panam Canal	0.95	W	Water Supply Canal for Irrigation purpose in study area
		Panam Dam (Surface Water Source)	9.18	NE	North East within study area
		Kun River	8.26	S	2nd river in study area south of project site within 10 km of study area
		Chikni River	1.72	WSW	River downstream of project site within study area
14	Endemic species, if any	--	--	--	Not applicable
15	Mangroves	--	--	--	Not applicable

Referred Source: *OSM, LU/LC map, Field Surveys and Investigation.*

3.16.6 Site Visit for Ecology and Biodiversity study

A field visit was carried out on 12th February 2025, covering all habitats of the study area. Details regarding study area is mentioned as under:

3.16.7 Baseline Status of Terrestrial Floral Species

Core Zone

The proposed site is located at Plot No. 5 & 6, non-notified GIDC Shehera, Taluka & district-Panchmahal, Gujarat-389210. Total area of the site is 5678.68 sq. m., out of which 1964 sq.m. (34.58%) is proposed as green belt.

Overall 14 species of common flora including 1 tree, 5 shrubs, 6 herbs & 2 grass species were recorded from the core zone of the study area during the survey.

All species are arranged in alphabetical order. Species names are followed by vernacular names/local names and families are given in the following table:

Table 3-33: Floral species reported from the Core zone

Sr. No.	Scientific Name	Local/Common Name	Family
Trees			
1.	*Eucalyptus globulus*	Nilgiri	Myrtaceae
Shrubs			
2.	*Calotropis gigantean*	Aak	Asclepiadaceae
3.	*Jatropha gossypiifolia*	Jatropha	Euphorbiaceae
4.	*Lantana camara*	Ban tulsi	Verbenaceae
5.	*Mesosphaerum suaveolens*	Bush Mint	Lemiaceae
6.	*Neltuma juliflora*	Gandobaval	Fabaceae
Herbs			
7.	*Achyranthes aspera*	Chir chita	Amranthaceae
8.	*Cassia tora*	Panwar	Fabaceae
9.	*Euphorbia hirta*	Duddhi	Euphorbiaceae
10.	*Parthenium hysterophorus*	Congress Grass	Asteraceae
11.	*Sphaeranthus indicus*	Globe thistle	Asteraceae
12.	*Tephrosia purpurea*	Wild indigo	Fabaceae
Grasses			
13.	*Cyndon dactylon*	Duv	Poaceae
14.	*Dichanthium annulatum*	Jinjavo	Poaceae
Source: All the above species were observed during the survey.			

Buffer Zone

Total 183 species of flora were reported from the study area. Trees were dominant life form and reported with maximum 103 species, followed by 28 species of shrubs, 22 species of herbs, 16 species of grasses and 14 species of climbers.

All species are arranged in alphabetical order. Species names are followed by vernacular names/local names and families are given in **Table 3-34**.

Table 3-34: Floral species reported from the Buffer Zone

Sr. No.	Scientific Name	Local/Common Name	Family
Trees			
1.	*Acacia ferruginea*	Kagar	Fabaceae
2.	*Acacia auriculiformis*	Bengali Bawal	Fabaceae
3.	*Acacia leucophloea**	Aniyar or Rijiado	Fabaceae
4.	*Acacia nilotica **	Baval	Fabaceae
5.	*Acacia Senegal*	Gorad	Fabaceae
6.	*Adina cordifolia**	Haldu, Karma	Rubiaceae

Sr. No.	Scientific Name	Local/Common Name	Family
7.	*Aegle marmelos**	Bili	Rutaceae
8.	*Ailanthus excelsa**	Arduso	Simarubaceae
9.	*Albizia lebbeck**	Balck Siris	Fabaceae
10.	*Albizia procera**	White Siris	Fabaceae
11.	*Alstonia scholaris**	Saptaparni	Apocynaceae
12.	*Analgium salvifolium*	Ankol	Alangiaceae
13.	*Anogeissus latifolia**	Dhavdo	Combretaceae
14.	*Anona squamosa**	Sitafal	Anonaceae
15.	*Anthocephalus cadamba**	Kadam	Rubiaceae
16.	*Azadirachta indica**	Limdo	Meliaceae
17.	*Balanites roxburghii*	Hingor	Simarubaceae
18.	*Balanites aegyptiaca*	Ingoriyo	Simarubaceae
19.	*Bauhinia variegata**	Kachnar	Fabaceae
20.	*Bauhinia racemosa**	Asitro	Fabaceae
21.	*Bauhinia purpurea**	Purple Bauhinia	Fabaceae
22.	*Bismarckia nobilis*	Bismarck Palm	Araucariaceae
23.	*Bombex ceiba**	Sembal	Bonnbacaceae
24.	*Borassus flabellifer**	Tad	Arecaceae
25.	*Boswellia serrata*	Gugal	Burseraceae
26.	*Bridelia retusa**	Tretashing	Euphorbiaceae
27.	*Buchanania lanzan*	Charoli	Anacardiaceae
28.	*Butea monosperma**	Khakhro	Fabaceae
29.	*Cassia fistula**	Amaltas	Fabaceae
30.	*Catunaregam spinosa*	Mindhal	Rubiaceae
31.	*Ceriscoides turgida*	Gangedi	Rubiaceae
32.	*Casuarina equisetifolia*	Saru	Casurianaceae
33.	*Cochlospermum religiosum*	Ganiyari	Bixinaceae
34.	*Cocos nucifera **	Narial	Arecaceae
35.	*Cordia dichotoma**	Gundo	Boraginaceae
36.	*Cordia sinensis*	Gundi	Boraginaceae
37.	*Dalbergia lanceolaria*	Pahi/Patrali	Fabaceae
38.	*Dalbergia latifolia*	Sissam	Fabaceae
39.	*Dalbergia sisoo**	Sissoo	Fabaceae
40.	*Delonix regia**	Gulmohar	Fabaceae
41.	*Dichrostachys cinerea**	Khairi	Fabaceae
42.	*Diospyros melanoxylon*	Timru	Ebenaceae
43.	*Dolichandrone falcata*	Matarsing/Netarsing	Bignoniaceae
44.	*Ehretia laevis*	Tamburiyo/ Tambolio	Ehretiaceae
45.	*Elacodendron glaucum*	Alan	Celastraceae
46.	*Emblica offcinalis**	Amla	Euphorbiaceae
47.	*Erythrina suberosa*	Dhaul Dhak/ Indian Coral Tree	Fabaceae
48.	*Eriolaena candollei*	Botho	Sterculiaceae
49.	*Eucalyptus citridora**	Nilgiri	Myrtaceae
50.	*Eucalyptus globulus**	Nilgiri	Myrtaceae
51.	*Ficus benghalensis**	Vad	Moraceae
52.	*Ficus carica**	Gular	Moraceae
53.	*Ficus elastic**	Rubber Plant	Moraceae
54.	*Ficus hispida*	Dhedumro	Moraceae
55.	*Ficus racemosa*	Umarado	Moraceae

Sr. No.	Scientific Name	Local/Common Name	Family
56.	*Ficus religiosa**	Pipalo	Moraceae
57.	*Flacourtia indica*	Lodri	Flacourtiaceae
58.	*Grewia tiliaefolia*	Dhaman	Tiliaceae
59.	*Garuga pinnata*	Kankod	Burseraceae
60.	*Gmelina arborea*	Sevan	Verbenaceae
61.	*Hardwickia binata*	Anjan	Fabaceae
62.	*Holoptelea integrifolia**	Kanju	Ulmaceae
63.	*Hymenodictyon orixense*	Kuda/ Bhurkur	Rubiaceae
64.	*Lagerstroemia parviflora*	Kakadio	Lythraceae
65.	*Lannea coromandalica*	Mohin	Anacardiaceae
66.	*Leucaena leucocephala*	Su.bawal	Mimosaceae
67.	*Limonia acidissima*	Kaith bel	Rutaceae
68.	*Mangifera indica**	Aam	Anacardiaceae
69.	*Meyna laxiflora*	Fendi/ Fedarkhi /Matakalu	Rubiaceae
70.	*Miliusa tomentosa*	Hoom	Anonaceae
71.	*Mimusops elengi**	Molshri	Sapotaceae
72.	*Mitragyna parvifolia*	Kalam/Ganthodiyo	Rubiaceae
73.	*Morinda pubescens*	Aal	Rubiaceae
74.	*Moringa oleifera**	Sehjan	Moringaceae
75.	*Moringa concanensis*	Saragvo (Kadvo)	Moringaceae
76.	*Morus alba**	Shahtoot	Moraceae
77.	*Murraya koenigii**	Mitha Neem	Rutaceae
78.	*Murraya paniculata*	Kamini	Rutaceae
79.	*Nytanthus arbortristis**	Harsingar/Parijat	Oleaceae
80.	*Peltophorum pterocarpum**	Copper pod	Fabaceae
81.	*Petrocarpus marsupium*	Bija	Fabaceae
82.	*Phoenix sylvestris**	Wild Date Palm	Arecaceae
83.	*Pithecellobium dulce**	Gorasamli	Fabaceae
84.	*Plumeria rubra**	Champa	Apocynaceae
85.	*Polyalthia longifolia**	Ashoka	Annonaceae
86.	*Pongamia pinnata**	Karanj	Fabaceae
87.	*Prosopis cineraria**	Khejri	Fabaceae
88.	*Salvadora oleoides*	Bada Pilu	Salvadoraceae
89.	*Schleichera oleosa*	Kusum	Sapindaceae
90.	*Soymida febrifuga*	Rohan	Meliaceae
91.	*Sterculia urens*	Kulu	Sterculiaceae
92.	*Syzygium cumini**	Jamun	Myrtaceae
93.	*Tamarindus indica**	Amli	Fabaceae
94.	*Tecoma stans**	Yellow bells	Bignoniaceae
95.	*Tectona grandis**	Teak	Verbenaceae
96.	*Terminalia bellirica*	Baheda	Combretaceae
97.	*Terminalia catappa**	Badam	Combretaceae
98.	*Thespesia populnea**	Paras Pipal	Malvaceae
99.	*Thevetia peruviana*	Pilikaran	Apocynaceae
100.	*Trema orientalis*	Gol	Urticaceae
101.	*Wrightia arborea*	Dudhi	Apocynaceae
102.	*Zizyphus glabrata**	Wild Bor	Rhamnaceae
103.	*Zizyphus mauritiana**	Bor	Rhamnaceae
Shrubs			

Sr. No.	Scientific Name	Local/Common Name	Family
104.	*Abutilon indicum**	Kanski	Malvaceae
105.	*Adhatoda vasica**	Adusa	Acanthaceae
106.	*Cadaba fruiticosa*	Kadhab	Capparaceae
107.	*Calotropis gigantean**	Aak	Asclepiadaceae
108.	*Capparis deciduas*	Karel	Capparaceae
109.	*Capparis sepiaria**	Kanthari	Capparaceae
110.	*Carissa carandas**	Karonda	Apocynaceae
111.	*Carvia callosa*	Karvi	Acanthaceae
112.	*Cassia auriculata**	Awala	Fabaceae
113.	*Datura inoxia*	Dhatura	Solanaceae
114.	*Euphorbia nerifolia**	Danda Thor	Euphorbiaceae
115.	*Euphorbia caducifolia**	Thor	Euphorbiaceae
116.	*Gymnosporia montana*	Mountain Spike Thorn /Vico	Celastraceae
117.	*Helicteres isora**	Maror phali	Sterculiaceae
118.	*Holarrhena antidysenterica*	Kuda	Apocynaceae
119.	*Indigofera oblongifolia**	Jhil	Fabaceae
120.	*Indigofera tinctoria **	Gali	Fabaceae
121.	*Ipomoea carnea**	Besharam	Convolvulaceae
122.	*Jatropha gossypiifolia**	Jatropha	Euphorbiaceae
123.	*Lantana camara**	Ban tulsi	Verbenaceae
124.	*Mesosphaerum suaveolens**	Bush Mint	Lemiaceae
125.	*Nerium indicum**	Kaner	Apocynaceae
126.	*Prosopis juliflora**	Gandobaval	Fabaceae
127.	*Racinus communis**	Arand	Euphorbiaceae
128.	*Suaeda nudiflora**	Seep weed	Amranthaceae
129.	*Urena lobata*	Vanbhindi	Malvaceae
130.	*Vitex negundo*	Nirgundi	Verbenaceae
131.	*Zizyphus nummularia**	Jhar ber	Rhamnaceae
		Herbs	
132.	*Achyranthes aspera**	Chir chita	Amranthaceae
133.	*Alternanthera sessilis*	Dwarf copperleaf	Amranthaceae
134.	*Amaranthus spinosus**	Kanta chaulai	Amranthaceae
135.	*Amaranthus viridis**	Jangali chaulai	Amranthaceae
136.	*Argemone mexicana**	Darudi	Papavaraceae
137.	*Blumea lacera*	Jangli Muli	Asteraceae
138.	*Cassia tora**	Panwar	Fabaceae
139.	*Cassia angustifolia*	Hind Sana	Fabaceae
140.	*Commelina diffusa**	Kanchara	Commelinaceae
141.	*Convolvulus prostratus**	Sankhpushpi	Convolvulaceae
142.	*Euphorbia hirta**	Duddhi	Euphorbiaceae
143.	*Indigofera cordifolia*	Bhakho	Fabaceae
144.	*Ipomoea aquatica**	Nali ni Bhaji	Convolvulaceae
145.	*Martynia annua**	Vinchhudo	Myrtyniaceae
146.	*Parthenium hysterophorus*	Congress Grass	Asteraceae
147.	*Solanum surattense*	Kantakari	Solanaceae
148.	*Sphaeranthus indicus**	Globe thistle	Asteraceae
149.	*Tephrosia purpurea**	Wild indigo	Fabaceae
150.	*Tribulus terrestris**	Mitha Gokharu	Tiliaceae
151.	*Tridex procumbens**	Tridaksha	Asteraceae

Sr. No.	Scientific Name	Local/Common Name	Family
152.	*Typha angustifolia**	Ramban	Typhaceae
153.	*Xanthium strumarium**	Chhota Gokhru	Solanaceae
Climbers			
154.	*Abrus precatorius**	Ratti	Fabaceae
155.	*Bogainvelillea spectabilis**	Bogainvelillea	Nyctaginaceae
156.	*Celastrus paniculata*	Malkakani	Celastraceae
157.	*Cocculus hirsutus**	Asan	Menispermaceae
158.	*Cocculus labea*	Arun	Menispermaceae
159.	*Combretum ovalifolium*	Moti kakani	Combertaceae
160.	*Cressa cretica*	Rudravanti	Convoivulanceae
161.	*Cuscuta reflexa**	Amarvel	Convolvulaceae
162.	*Demia extensa*	Utaran	Asclepiadaceae
163.	*Dioscoria oppositifolia*	Cinnamon Vine /Chairo	Dioscoreaceae
164.	*Ipomoea indica**	Blue Morning Glorry	Convolvulaceae
165.	*Leptadenia reticulate*	Dori/Jhumka	Asclepidanceae
166.	*Mucuna pruriens**	Kuvech	Fabaceae
167.	*Tinospora cordifolia**	Giloy	Menispermaceae
Grasses			
168.	*Apluda mutica**	Bhangoru/Karedi	Poaceae
169.	*Aristida funiculata*	Lapdu	Poaceae
170.	*Aristida hystrix*	Kadi Khasli	Poaceae
171.	*Arundinella pumila*	Dhudu	Poaceae
172.	*Bambusa arundinacea**	Kanta Bans	Poaceae
173.	*Cenchrus ciliaris**	Dhaman	Poaceae
174.	*Cyndon dactylon**	Duv	Poaceae
175.	*Dendrocalamus strictus**	Bamboo	Poaceae
176.	*Dichanthium annulatum*	Jinjavo	Poaceae
177.	*Heteropogon contortus*	Shulki/Kusal	Poaceae
178.	*Panicum antidotale*	Shulki	Poaceae
179.	*Saccharum spontaneum**	Kakudu	Poaceae
180.	*Setaria glaucia*	Kunchi/Pajala	Poaceae
181.	*Sorghum halepense*	Barua	Poaceae
182.	*Themeda quadrivalvis*	Rathedu	Poaceae
183.	*Themeda triandra*	Bhathdu	Gramineae
Source (*) Species observed during the survey and rest of the information obtained from secondary evidence and consultation with Forest officials of Shehera Forest Division, District Panchmahal, Gujarat*; Research Article published in IJRSR Vol 5(11), Pp 2089-2094, 2014 by Patel, Y.B. et al and website of ENVIS Centre, Gujarat and Draft Forest Working Plan of District Panchmahal.*			

3.16.8 Endemic Fauna of the study area

None of the documented fauna from the study area can be assigned endemic status.

3.16.9 Agricultural Crops

The principal agriculture crops in the study area are Makai, Jowar, Bajra, Wheat, Tuver, Rice, Gram, Ground nut, Seasam, Rapes, Cotton and Mustard. The vegetables grown in the study area are Bhindi and Rigan. Moreover, some fruit trees like Sapodilla (Chickoo), Banana, Pomegranate and Mango are also grown in this area.

3.16.10 Baseline Status of Terrestrial Fauna Species

Core Zone

No herpetofauna and mammals were observed from the project site during the survey. Total 03 avifaunal species were reported from the project site which includes i.e. Blue rock pigeon, Green bee eater, and Red-vented lapwing. Details of avifauna of core zone /project site are presented in **Table 3-35**.

Table 3-35: Birds reported from Core zone / Project site

Sr. No.	Scientific Name	Common Name	Conservation status	
			As per IUCN	As per Wildlife (Protection) Amendment Act, 2022
Birds				
1.	*Columba livia*	Blue rock pigeon	LC	-
2.	*Merops orientalis*	Green bee eater	LC	II
3.	*Vanellus indicus*	Red wattled lapwing	LC	II

Note: II is Schedules of Wildlife (Protection) Amendment Act, 2022; LC: Least Concern is the status assigned by IUCN.
Source: All the above species were observed during the survey

Buffer Zone

The existing fauna from the study area was documented during the field survey. Identification of faunal species was carried out using standard literatures, field guides, species database and public interventions. The conservation status of existing faunal species was determined using IUCN red list and Wildlife (Protection) Amendment Act, 2022. Indirect sighting of fauna was documented based on signs such as pug marks, scats, and vocals.

A total of 130 species were reported based on field observations, literature survey and consultation with forest officials including 17 species of mammals, 05 species of reptiles, 93 species of birds, 05 species of butterflies and 10 species of fishes.

A faunal enlisting of mammals, birds, reptiles, fishes and butterflies with their scientific names, common names and the schedule as per Wildlife (Protection) Amendment Act, 2022 to which they belong are arranged in alphabetical order and presented in ***Table 3-36*** **&** ***Table 3-37***.

Table 3-36: Faunal Groups of Mammals, Reptiles, Birds and Butterflies present in Buffer Zone of Proposed site

S. No.	Scientific Name	Common Name	Conservation status	
			As per IUCN	As per Wildlife (Protection) Amendment Act, 2022
MAMMALS				
1.	*Bandicota bengalensis*	Indian Mole Rat	LC	-
2.	*Boselaphus tragocamelus**	Blue Bull	LC	II
3.	*Canis aureus*	Golden Jackal	LC	I
4.	*Hystrix indica*	Indian crested Porcupines	LC	I
5.	*Felius chaus*	Jungle Cat	LC	I
6.	*Funambulus pennantii**	Indian Five Striped squirrel	LC	-
7.	*Herpeste edwardsii**	Indian Grey Mongoose	LC	I
8.	*Hyaena hyaena*	Indian Striped Hyaena	NT	I
9.	*Lepus nigricollis**	Indian Hare	LC	II
10.	*Macaca mulatta**	Monkey	LC	-

S. No.	Scientific Name	Common Name	Conservation status	
			As per IUCN	As per Wildlife (Protection) Amendment Act, 2022
11.	*Melursus ursinus*	Sloth Bear	VU	I
12.	*Panthera pardus*	Common Indian Leopard	VU	I
13.	*Paraechinus micropus*	Indian Pale Hedgehog	LC	II
14.	*Pteropus giganteus*	Indian Flying Fox	EN	II
15.	*Semnopithecus entellus**	Northern Plain gray Langur	VU	II
16.	*Sus scrofa*	Wild boar	LC	II
17.	*Vulpes bengalensis*	Indian Fox	LC	I
REPTILES				
1.	*Bungarus caeruleus*	Common Indian Krait	LC	II
2.	*Calotes vesicolor**	Garden lizard	LC	-
3.	*Naja naja*	Cobra	LC	I
4.	*Fowlea piscator*	Checkered keel back	LC	I
5.	*Ptyas mucosa*	Rat Snake	LC	I
BIRDS				
1.	*Acridotheres tristis**	Common Myna	LC	II
2.	*Acridotheres ginginianus**	Bank Myna	LC	II
3.	*Actitis hypoleucos**	Common Sandpiper	LC	II
4.	*Amaurornis phoenicurus**	White-breasted Waterhen	LC	II
5.	*Anastomus oscitans*	Asian Openbill	LC	II
6.	*Alcedo atthis**	Common Kingfisher	LC	II
7.	*Ardeola grayii**	Indian Pond Heron	LC	II
8.	*Athene brama*	Spotted Owlet	LC	II
9.	*Bulbucus ibis**	Cattle Egret	LC	II
10.	*Butastur teesa*	White-eyed Buzzard	LC	I
11.	*Calidris minuta**	Little Stint	LC	II
12.	*Caprimulgus asiaticus**	Indian Nightjar	LC	II
13.	*Caprimulgus indicus*	Jungle Nightjar	LC	II
14.	*Centropus sinensis**	Common Crow Pheasant	LC	II
15.	*Ceryle rudis*	Pied Kingfisher	LC	II
16.	*Ciconia episcopus*	Woolly-necked stork	NR	II
17.	*Clamator jacobinus*	Jacobin Cuckoo	LC	II
18.	*Columba livia**	Blue rock pigeon	LC	-
19.	*Copsychus saularis*	Oriental magpie robin	LC	II
20.	*Copsychus fulicatus**	Indian Robin	LC	II
21.	*Coracias benghalensis*	Indian Roller	LC	II
22.	*Coracias garrulus*	European roller	LC	II
23.	*Corvus splendens**	Common Crow	LC	-
24.	*Coturnix coromandelica*	Rain Quail	LC	II
25.	*Coturnix coturnix*	Common Quail or European quail	LC	II

S. No.	Scientific Name	Common Name	Conservation status	
			As per IUCN	As per Wildlife (Protection) Amendment Act, 2022
26.	*Cyornis tickelliae*	Tickell's Blue Flycatcher	LC	II
27.	*Cypsiurus balasiensis**	Asian Palm swift	LC	II
28.	*Corvus macrorhynchos**	Jungle Crow	LC	II
29.	*Dendrocopos nanus*	Brown-capped pygmy woodpecker	LC	II
30.	*Dendrocygna javanica**	Lesser Whistling Teal	LC	II
31.	*Dendrocitta vagabunda**	Rofous Tree pie	LC	II
32.	*Dinopium benghalense*	Blacked-rumped Flameback	LC	II
33.	*Dicaeum erythrorhynchos*	Pale Billed Flower pecker	LC	II
34.	*Dicrurus macrocercus**	Black Drongo	LC	II
35.	*Dicrurus caerulescens*	White bellied Drongo	LC	II
36.	*Dicrurus paradiseus*	Greater Racket tailed Drongo	LC	II
37.	*Eremopterix griseus**	Ashy-crowned Sparrow-lark	LC	II
38.	*Eudymamys scolopacea**	Koel	LC	II
39.	*Euodice malabarica**	Indian Silverbill	LC	II
40.	*Falco tinnunculus*	Common Kestrel	LC	II
41.	*Francolinus pondicerianus*	Grey Partridge	LC	II
42.	*Gallinula chloropus**	Eurasian Moorhen	LC	II
43.	*Gyps bengalensis*	White-rumped vulture	CR	I
44.	*Halcyon smyrensis **	White Breasted Kingfisher	LC	II
45.	*Hieraaetus pennatus*	Booted Eagle	LC	I
46.	*Himantopus himantopus**	Black-winged stilt	LC	II
47.	*Hirundo rustica **	Common Swallow	LC	II
48.	*Lanius excubitor*	Great Grey Shrike	LC	II
49.	*Leiopicus mahrattensis*	Yellow-crowned woodpecker	LC	I
50.	*Merops orientalis**	Green bee eater	LC	II
51.	*Merops superciliosus*	Blue-cheeked bee-eater	LC	II
52.	*Merops philippinus*	Blue-tailed Bee-eater	LC	II
53.	*Milvus migrans**	Pariah Kite	LC	II
54.	*Psilopogon haemacephalus*	Coppersmith barbet	LC	II
55.	*Metopidius indicus*	Bronze-winged Jacana	LC	II
56.	*Motacilla maderaspatensis **	Large Pied Wagtail	LC	II
57.	*Nectarinia asiatica**	Purple sunbird	LC	II
58.	*Oriolus xanthornus*	Black hooded Oriole	LC	II
59.	*Oriolus kundoo*	Indian Golden Oriole	LC	II
60.	*Ortnotomus sutorius*	Tailor Bird	LC	II
61.	*Ortygornis pondicerianus*	Grey Francolin	LC	II
62.	*Fulica atra**	Common Coot	LC	II
63.	*Passer domesticus**	House sparrow	LC	II

S. No.	Scientific Name	Common Name	Conservation status	
			As per IUCN	As per Wildlife (Protection) Amendment Act, 2022
64.	*Pavo cristatus**	Indian Peafowl	LC	I
65.	*Phalacrocorax niger**	Little cormorant	LC	II
66.	*Phoenicurus ochruros*	Black Red start	LC	II
67.	*Pycnonotus cafer**	Red-vented Bulbul	LC	II
68.	*Leptocoma zeylonica*	Purple-rumped Sunbird	LC	II
69.	*Luscinia svecica*	Bluethroat	LC	II
70.	*Ploceus philippinus**	Weaver bird ,Baya	LC	II
71.	*Threskiornis melanocephalus*	Black-headed Ibis	NT	II
72.	*Prinia socialis**	Ashy Prinia	LC	II
73.	*Pseudibis papillosa**	Red-naped Ibis	LC	II
74.	*Psittacula krameri**	Rose ringed parakeet	LC	II
75.	*Psittacula cyanocephala*	Plum-headed parakeet	LC	II
76.	*Psittacula eupatria*	Alexandrine parakeet	LC	I
77.	*Pterocles exustus*	Chestnut-bellied sandgrouse	LC	II
78.	*Pycnonotus cafer**	Red vented bulbul	LC	II
79.	*Rhipidura aureola*	White-browed Fantail	LC	II
80.	*Copsychus fulicatus*	Indian Robin	LC	II
81.	*Spilornis cheela*	Crested Serpent Eagle	LC	I
82.	*Streptopelia chinensis **	Spotted Dove	LC	II
83.	*Streptopelia decaocto**	Eurasian collared dove	LC	II
84.	*Streptopelia senegalensis**	Laughing dove	LC	II
85.	*Sturnia pagodarum*	Brahminy Starling	LC	II
86.	*Tachybaptus ruficollis**	Little Grebe	LC	II
87.	*Terpsiphone paradisi*	Indian Paradise Flycatcher	LC	II
88.	*Ocyceros birostris*	Common Grey hornbill	LC	II
89.	*Treron phoenicopterus*	Yellow-footed green pigeon	LC	II
90.	*Turdoides caudatus**	Eurasian Babbler	LC	II
91.	*Turdoides straiatus **	Jungle Babbler	LC	II
92.	*Upupa epops **	Hoopoe	LC	II
93.	*Vanellus indicus**	Red wattled lapwing	LC	II
BUTTERFLIES				
94.	*Catopsilia pomona**	*Common Emigrant*	-	-
95.	*Catopsilia pyranthe*	*Mottled Emigrant*	-	-
96.	*Danaus genutia**	*Common Tiger*	-	-
97.	*Eurema hecabe**	*Common Grass Yellow*	*LC*	-
98.	*Hypolimnas misippus*	*Danaid Egg fly*	*LC*	*II*

Note: *I, II, & IV are Schedules of Wildlife (Protection) Amendment Act, 2022.*
LC: Least Concern, NT: Near Threatened & VU: Vulnerable, EN: Endangered are the status assigned by IUCN.
Source: (*) Species observed during survey and rest of the information obtained from local Forest officials of Shehera Forest Division, District Panchmahal, Gujarat and scientific literatures, *Draft Forest Working Plan of District Panchmahal,*

S. No.	Scientific Name	Common Name	Conservation status	
			As per IUCN	As per Wildlife (Protection) Amendment Act, 2022
***https://ebird.org/region/IN-GJ-PM/bird-list**. Wildlife (Protection) Amendment Act, 2022 and IUCN red list (https://www.iucnredlist.org) were referred to verify species conservation status.*				

Table 3-37: Fish species in Buffer Zone of Project site

Sr. No.	Scientific Name	Common Name	Conservation status as per IUCN
1.	*Catla catla**	Catla/ Bawas	LC
2.	*Cirrhinus mrigala*	Mrigal/Nagari	LC
3.	*Cyprinus carpio*	Common Carp	VU
4.	*Labeo calbasu*	Kalbasu/ Bagado/Kalavat	LC
5.	*Labeo fimbriatus*	Fringe-Lipped Carp/ Begado/Bilgi	LC
6.	*Labeo rohita**	Rohu	LC
7.	*Sperata seenghala*	Singala/Katiya	LC
8.	*Channa striata*	Snake headed Murrel	LC
9.	*Wallago attu*	Fresh Water Shark/ Magara /Mulley	VU
10.	*Ophiocephalus striatus*	Snakehead murrel	LC
***Note:** LC: Least Concern and VU: Vulnerable are the status assigned by IUCN.* **Source:** (*) Species observed during survey and rest of the information obtained from local interventions and *Forest Working Plan of Panchmahal District, IUCN red list (https://www.iucnredlist.org) was referred to verify species conservation status.*			

Mangrove

No mangrove species are reported within the study area based on secondary information gathered and neither observed during study visit.

3.16.11 Status of Threatened and Endemic Biodiversity

The Wildlife (protection) Amendment Act (2022) is an Act that provides protection to wild animals, birds, plants, ichthyofauna and for matters connected therewith or ancillary or incidental thereto with a view to ensuring the ecological and environmental security of the country.

Some of the sighted fauna as well as flora was given protection under this Act by including them in different schedules. The faunal species classified under the Schedule-I of Wildlife (Protection) Amendment Act (2022) from the study area are presented in **Table 3-38**. Among floral and faunal species, none of the species has found as an endemic during the site visit.

Table 3-38: List of recorded faunal species classified under Schedule I of Wildlife (Protection) Amendment Act, 2022.

Sr. No.	Scientific Name	Common Name	Conservation status	
			As per IUCN	As per Wildlife (Protection) Amendment Act, 2022
MAMMALS				
1.	*Canis aureus*	Golden Jackal	LC	I
2.	*Felius chaus*	Jungle Cat	LC	I
3.	*Herpeste edwardsii*	Common Mongoose	LC	I
4.	*Hyaena hyaena*	Indian Striped Hyaena	NT	I
5.	*Melursus ursinus*	Sloth Bear	VU	I

Sr. No.	Scientific Name	Common Name	Conservation status	
			As per IUCN	As per Wildlife (Protection) Amendment Act, 2022
6.	*Muntiacus vaginalis*	Northern Red Muntjac	LC	I
7.	*Panthera pardus*	Common Indian Leopard	VU	I
REPTILES				
1.	*Naja naja*	Cobra	LC	I
2.	*Fowlea piscator*	Checkered keel back	LC	I
3.	*Ptyas mucosa*	Rat Snake	LC	I
BIRDS				
1.	*Butastur teesa*	White-eyed Buzzard	LC	I
2.	*Accipiter badius*	Shikra	LC	I
3.	*Pavo cristatus*	Indian Peafowl	LC	I
4.	*Leiopicus mahrattensis*	Yellow-crowned woodpecker	LC	I
5.	*Spilornis cheela*	Crested Serpent Eagle	LC	I

Source: (*) Species observed during survey and rest of the information obtained from local interventions and, *Forest Working Plan of Panchmahal District. Wildlife (Protection) Amendment Act, 2022 was referred to verify species conservation status.*

The relevant tables above **(Table 3-38)** list each species threat status according to the IUCN red list and Schedules of Wild Life (Protection) Amendment Act, 2022.

Based on the literature survey and Draft Forest working Plan, 14 Schedule I species have been documented from the study area, comprising 06 species of Mammal, 03 species of reptiles and 05 species of birds.

Although every attempt has been made to document Schedule I species from the project study area, but the presence of more species cannot be ruled out. **Separate Forest conservation plan for Schedule I species** present in the project study area is prepared along with budgetary provisions and enclosed herewith at ***Annexure 17***.

3.16.12 Endemic Plants of the study area

None of the documented flora from the study area can be assigned endemic status.

3.16.13 Observed Flora and Fauna

Figure 3-21: Some floral & faunal species reported from Study Area



Expert at project site



Jatropha gossypiifolia at project site



Dendrocalamus strictus and Eucalyptus plantation in project study area

		
Lantana camara observed at project site	*Calotropis gigantea reported at project site*	*Ipomoea carnea reported in project study area*
		
Visit at Shehra Forest Department	*Tephrosia purpurea* reported in the study area	*Mesosphaerum suaveolens in Buffer Zone*
		
Fulica atra (Common coot) in project study area	*Phalacrocorax niger (*Little cormorant*) & Vanellus indicus (*Red wattled lapwing*) observed in project study area*	

3.17 SOCIO-ECONOMICS

3.17.1 Aim of Study

The study aims to provide the following:

- Need based assessment from community development in the study area and their responses in relation to the project.
- Social assessment of the study area and views of community - Direct due to project footprints & indirect due to other issues related to air, water, solid, social, ecological and biological environmental attributes.
- Propose a CER plan covering the above for social upliftment in the area.
- The result of the study area presented in the EIA report in relation to socio-economic angle.

The field studies and relevant analysis have been carried out by the Socio-Economics team of Kadam Environmental Consultants, consisting of:

- Mr. Sangram A. Kadam, FAE (SE, Category A)
- Mr. Hitendrasinh Parmar (FAA, SE)

Site visit dates: Mr. Sangram A. Kadam: 07.02.25
Mr. Hitendrasinh Parmar: 05.02.25 to 07.02.25

3.17.2 Approach and Methodology

For understanding of the socio economics status of study area, following methodology has been adopted:

Desktop study

Villages and habitations were identified from the land use map, Atlas and population and demography details regarding villages were abstracted from the available Census 2011 which has been further extrapolated to 2022.

Field Survey

On the basis of desktop study, field survey was conducted in the villages covering focused group discussion with the officials of villages such as Sarpanch, Principal and teachers of school, anganwadi, health officials at the health centre etc. Having interactions with them and identifying their social status and also needs to have upgradation in their social status, responses to the upcoming project / concerns if any. These all are properly recorded in form of fact sheets during the group discussions.

Outcome of the focussed group discussions generates suggested activities for social and infrastructural upliftment of the villages in the area and are further suggested as per of CSR / CER requirements to be met with in the project developments.

The overall approach and methodology for conducting the socio economic study has been presented in **Table 3-40** as below:

Table 3-39: Approach and Methodology for Conducting the Socio-economic study

S. No.	Aim / Objective	Area		Methodology
		Study Area	Core Area Only	
1	**To Identify and Assess**			
1.1.	**Social status of society in the focused area. To do this it is required to get reliable information with regards to:**			
1.1.1	People residing in the study area along with key demographic figures as per the secondary data (mainly Census of India) giving information on: population, literacy, gender and occupation	√		Secondary data collection and collation from Census of India
1.1.2	Main sub-communities dwelling in the core zone by caste and religion		√	From interviews with PRI representatives
1.1.3	People who are vulnerable classes such as: Below Poverty Line (BPL), Scheduled Castes (SC) and Scheduled Tribes (ST)		√	From interviews with PRI representatives and census
1.2	**Economic status of society in the study area. To do this it is required to get reliable information with regards to:**			
1.2.1	Occupational pattern from secondary data (mainly Census of India) giving information on: main workers / marginal workers / non-working population	√		Secondary data collection and collation from Census of India
1.2.2	Sources of revenue available to Panchayati Raj Institutions (PRIs)		√	From interviews with PRI representatives
1.2.3	Economic well-being of different classes by gaining an understanding of: prevailing daily wage rates for labor (male / female), status of land holding across different classes / landless households, major crops and farmer support, livestock and animal husbandry		√	From interviews with PRI representatives
1.3	**Status of physical and social infrastructure within the core and buffer areas. To do this, it is required to get reliable information with regards to**			**-**
1.3.1	Physical infrastructure - reliable information on availability and adequacy with respect to: educational facilities, road infrastructure, power, water for drinking and irrigation, sanitation, garbage / MSW, banking facilities	√		From interviews with PRI representatives
1.3.2	Social infrastructure – reliable information on availability and adequacy with respect to infrastructure associated with: sports, community events and community self-help / support group		√	From interviews with PRI representatives
1.3.3	Cultural heritage of the area	√		From published literature and site visits

S. No.	Aim / Objective	Area		Methodology
		Study Area	Core Area Only	
1.4	**Effects of**			**-**
1.4.1	Ongoing impacts of other developments in the vicinity of the subject development on people and their lifestyle within the core impact zones, as determined by the EIAC in interaction with FAE (WP / AP&AQ / SHW / RH & NV)		√	From focus group discussions
1.4.2	Likely impacts of proposed operations (if a greenfield project) on people and their lifestyle within the core impact zones mentioned above		√	From focus group discussions
2.0	**To Determine**			-
2.1	Needs of different communities based on the work done in identification and assessment mentioned above		√	From data analysis, internal / client discussions
3.0	**To Propose**			-
3.1	A Social Management Plan with budgets, timelines and actionable items to achieve the expected outcomes		√	From data analysis, internal / client discussions

3.17.3 Demographic Profile of project district and sub district

The demographic profile of the project area project district and sub district Demographic is presented in **Table 3-40.**

Table 3-40: Demographic Profile of Project District and Sub-District

Sr. No	Particulars	Panchmahal (District)	Shehera (Sub - District)	Lunawada (Sub - District)	Godhra (Sub - District)
1	No of Household	4,46,611	50,976	51,552	87,300
2	Total Population	23,90,776	2,77,559	2,57,228	4,62,516
3	Male Population	12,26,961	1,42,512	1,32,444	2,37,238
4	% of Male Population	51	51	51	51
5	Female Population	11,63,815	1,35,047	1,24,784	2,25,278
6	% of Female Population	49	49	49	49
7	Gender Ratio	949	948	942	950
8	Total Schedule caste Population	1,00,446	11,741	16,530	24,559
9	% Schedule caste Population	4	4	6	5
10	Total Schedule tribe Population	7,21,604	43,350	19,306	61,851
11	% Schedule tribe Population	30	16	8	13
12	Average Household Size	5	5	5	5

Source: Primary census Abstract 2011

The project falls under Gujarat state, Panchmahal district. Social Profile

3.17.4 Profile of the Study area

The study area of 10 km radius from project site consists of Shehera, Lunawada and Godhra sub districts for which Census details are available for 2011.

Baseline demography of the existing village habitations in the sub districts have been extracted from the following:

- From the land use map, the villages lying in the study area were first identified based on OSM Maps of SOI.
- Then the list of sub-districts lying under Panchmahals district were identified through the census details of 2011.
- The village data was then extracted by referring the census data for the village habitations from the appropriate sub-districts.

The overview of the statistics regarding the human population and the number of dwelling units of villages in the study area indicates that there are **65 village habitations in Shehera, Lunawada and Godhra sub district** of Panchmahals district and 01 Municipal Corporation of Shehera in the study area.

The entire area consists of rural population. The list of villages within 3, 3 – 5, 5 – 7 & 7 – 10 km radius from project site covering the study area are presented in **Table 3-41.**

Table 3-41: Villages in Study Area with Households and Population

Sr. No.	District	Sub- district	Distance (Km)	Habitation	Households	Population
1	Panch Mahals	Shehera	0-3	Shehera (M)	3,176	19,175
2	Panch Mahals	Shehera	0-3	Zoz	306	1,568
3	Panch Mahals	Shehera	0-3	Varial	213	1,181
4	Panch Mahals	Shehera	0-3	Dalvada	883	4,721
Sub - Total					**4,578**	**26,645**
5	Panch Mahals	Shehera	3-5	Mithapur	198	1,143
6	Panch Mahals	Shehera	3-5	Kharediya	127	747
7	Panch Mahals	Shehera	3-5	Palikhanda	379	2,210
8	Panch Mahals	Shehera	3-5	Hansapur	206	1,102
9	Panch Mahals	Shehera	3-5	Bhadrala	391	2,051
10	Panch Mahals	Shehera	3-5	Dhandhalpur	638	3,660
11	Panch Mahals	Shehera	3-5	Sureli	1,328	7,006
12	Panch Mahals	Shehera	3-5	Bhensal	618	3,122
13	Panch Mahals	Shehera	3-5	Bamroli Bujarg	589	3,309
14	Panch Mahals	Shehera	3-5	Vijapur	270	1,469
Sub - Total					**4,744**	**25,819**
15	Panch Mahals	Shehera	5-7	Sambhali	346	1,835
16	Panch Mahals	Shehera	5-7	Hanselav	168	950
17	Panch Mahals	Shehera	5-7	Vanta Vachhoda	343	1,858
18	Panch Mahals	Shehera	5-7	Labhi	400	2,306
19	Panch Mahals	Shehera	5-7	Sadanpur	361	2,054
20	Panch Mahals	Shehera	5-7	Mangaliana	1,112	5,685
21	Panch Mahals	Shehera	5-7	Navagam	340	1,797
22	Panch Mahals	Shehera	5-7	Dokva	242	1,360
23	Panch Mahals	Shehera	5-7	Tadava	732	4,091
24	Panch Mahals	Shehera	5-7	Aniad	1,623	8,976
Sub - Total					**5,667**	**30,912**
25	Panch Mahals	Shehera	7-10	Chhogala	323	1714
26	Panch Mahals	Shehera	7-10	Bhotava	315	1,667
27	Panch Mahals	Shehera	7-10	Boriya	1,031	5,942
28	Panch Mahals	Shehera	7-10	Shekhpur	566	3,459
29	Panch Mahals	Shehera	7-10	Khatukpur	562	3,062
30	Panch Mahals	Shehera	7-10	Sagrada	451	2,603
31	Panch Mahals	Shehera	7-10	Sajivav	1,089	6,366
32	Panch Mahals	Shehera	7-10	Mirapur	263	1,361
33	Panch Mahals	Shehera	7-10	Gangadiya	647	3,460

Sr. No.	District	Sub- district	Distance (Km)	Habitation	Households	Population
34	Panch Mahals	Shehera	7-10	Nandarva	1,414	7,702
35	Panch Mahals	Shehera	7-10	Mangalpur	427	2,207
36	Panch Mahals	Shehera	7-10	Khojalvasa	887	5,066
37	Panch Mahals	Shehera	7-10	Matariya Vyas	1,006	5,405
38	Panch Mahals	Shehera	7-10	Padardi	950	5,200
39	Panch Mahals	Shehera	7-10	Chopda Khurd	249	1,339
40	Panch Mahals	Shehera	7-10	Umarpur	448	2,253
41	Panch Mahals	Shehera	7-10	Ambajati	120	507
42	Panch Mahals	Shehera	7-10	Bahi	835	3,942
43	Panch Mahals	Shehera	7-10	Khandiya	572	3,028
44	Panch Mahals	Shehera	7-10	Mithali	542	2,945
45	Panch Mahals	Shehera	7-10	Pasnal	189	1,084
46	Panch Mahals	Shehera	7-10	Dharola Khurd	332	1,817
47	Panch Mahals	Shehera	7-10	Dhamai	413	2,303
48	Panch Mahals	Shehera	7-10	Chalali	561	3,203
49	Panch Mahals	Shehera	7-10	Narsana	706	3,687
50	Panch Mahals	Shehera	7-10	Chhanip	163	820
51	Panch Mahals	Shehera	7-10	Limbodra	441	2,405
52	Panch Mahals	Shehera	7-10	Demli	710	4,072
53	Panch Mahals	Shehera	7-10	Guneli	1,659	8,885
54	Panch Mahals	Shehera	7-10	Bodidra khurd	767	4,488
55	Panch Mahals	Shehera	7-10	Jalam Bariana Muvada	164	948
56	Panch Mahals	Shehera	7-10	Gaman Bariana Muvada	320	1,628
57	Panch Mahals	Lunawada	7-10	Gadh	66	413
58	Panch Mahals	Lunawada	7-10	Timba	194	1,141
59	Panch Mahals	Lunawada	7-10	Hathivan	599	3,093
60	Panch Mahals	Lunawada	7-10	Jhaidi	126	738
61	Panch Mahals	Lunawada	7-10	Sevaliya	86	457
62	Panch Mahals	Godhra	7-10	Rinchhrota	248	1,257
63	Panch Mahals	Godhra	7-10	Motal	226	1,076
64	Panch Mahals	Godhra	7-10	Sampa	1,961	11,235
65	Panch Mahals	Godhra	7-10	Mor Dungara	509	3,074
Sub - Total					**23,137**	**1,27,052**
Grand -Total					**38,126**	**2,10,428**

Source: Primary Census Abstract 2011

The villages in the study area are shown in Land use and Land cover map as placed at **Figure 3-2**.

Population and Gender Ratio details

The statistics regarding the gender ratio in the study area is presented in ***Table 3-42.***

Table 3-42: Population and Gender ratio details

Distance (km)	Population as per Gender		Gender Ratio
	Male	Female	
0 - 3	13,805	12,840	930
3 - 5	13,248	12,571	949
5 - 7	15,989	14,923	933
7 - 10	65,190	61,862	949
Total	**1,08,232**	**1,02,196**	**944**

Source: Primary census abstract 2011

The above table shows that the total population of male is 1,08,232 (51.43%), and the female population is 1,02,196 (48.57%), and the gender ratio is 944 females per 1,000 males in the study area. The national sex ratio in India is 940, as per the latest reports of Census 2011; this indicates good gender equality than nationwide averages.

3.17.5 Social Characteristics

The study area is predominantly Hindu. Most of the people belong to the General, Muslims and OBC. There is very small amount of population of Scheduled tribe in the study area. The statistics regarding the Social Characteristics of villages in the study area is presented in ***Table 3-43.***

Table 3-43: Schedule Caste and Schedule Tribe Population Distribution in Study Area

Distance(km)	2011					
	% Scheduled Caste			% Scheduled Tribe		
	Total	Male	Female	Total	Male	Female
0 - 3	3.57	49.79	50.21	1.45	53.63	46.37
3 - 5	3.56	49.29	50.71	17.77	51.46	48.54
5 - 7	2.18	50.96	49.04	17.57	51.03	48.97
7 - 10	4.12	50.81	49.19	20.37	50.76	49.24
Total	**3.70**	**50.52**	**49.48**	**17.24**	**50.92**	**49.08**

Source: Primary census abstract 2011

As per census 2011 average scheduled caste population in Study area is 3.70% of the total population. Out of the total scheduled caste population, males are 50.52% and female population is 49.48%. Tribal population is more as compared to scheduled caste in the study area, total scheduled tribe population is 17.24%, males are 50.92% and female population is 49.08%.

3.17.6 Literacy Rate

The statics regarding the literacy rate in the study area is presented in ***Table 3-44.***

Table 3-44: Literacy Rate in Study Area

Distance (km)	% Literacy		
	Total	Male	Female
0-3	64.57	73.79	54.66
3-5	57.03	69.13	44.28
5-7	54.23	65.03	42.66
7-10	57.61	68.89	45.71
Total	**57.92**	**68.97**	**46.22**

Source: Primary census abstract 2011

According to Census of India 2011, it is calculated that average literacy rate in the study area is 57.92%. Which is less as compared to the State literacy rate i.e. 79.31%. Out of total literate population male literacy is 68.97% and female literacy is 46.22% of total population.

3.17.7 Basic Infrastructure Facility

Education facility

In the study area it was observed that each village has school up to primary level. For further education students have to travel to nearby villages. The basic infrastructure of school in some places fairly well constructed. School gets the electricity regularly and water. The education facilities that are prevailing in the study area is presented in ***Table 3-45.***

Table 3-45: Education Facility

Distance (km)	Government						Private					
	Pre- Primary School	Primary School	Middle School	Secondary School	Senior Secondary School	College	Pre- Primary School	Primary School	Middle School	Secondary School	Senior Secondary School	College
0- 3	-	10	-	1	1	-	-	-	-	0	0	0
3 - 5	-	19	-	3	1	-	-	-	-	0	0	0
5 - 7	-	29	-	4	1	-	-	-	-	1	0	1
7 - 10	-	120	-	18	5	-	-	-	-	5	1	0
Total	**-**	**178**	**-**	**26**	**8**	**-**	**-**	**-**	**-**	**6**	**1**	**1**

Source: Primary census abstract 2011

Medical and Health facility

The medical facilities available in the study area are shown in ***Table 3-46.***

Table 3-46: Medical Facility

Distance (km)	Community Health Centre	Primary Health Centre	Primary Health Sub Centre	Maternity And Child Welfare Centre	TB Clinic	Hospital Allopathic	Hospital Alternative Medicine	Dispensary	Veterinary Hospital	Mobile Health Clinic	Family Welfare Centre	Non-Government Medical facilities Out Patient
0 - 3	-	0	1	1	-	-	-	0	0	0	-	0
3 - 5	-	0	3	0	-	-	-	0	0	0	-	1
5 - 7	-	0	4	0	-	-	-	0	1	3	-	1
7 - 10	-	5	23	0	-	-	-	2	1	7	-	11
Total	**-**	**5**	**31**	**1**	**-**	**-**	**-**	**2**	**2**	**10**	**-**	**13**

Source: Primary census abstract 2011

Source of water

Main source of drinking water is tap water. Other water resources such as bore wells, lakes etc. are there as shown in **Table 3-47.**

Table 3-47: Water Facilities

Distance (km)	Tap Water-Treated	Tap Water Untreated	Covered Well	Uncovered Well	Hand Pump	Tube Wells /Borehole	Spring	River/Canal	Tank/Pond/Lake	Others
0-3	NA	A	NA	A	A	A	A	NA	A	NA
3-5	NA	A	NA	A	A	NA	NA	A	A	NA
5-7	NA	A	NA	A	A	NA	NA	A	A	NA
7-10	NA	A	A	A	A	A	NA	A	A	NA

Source: Primary census abstract 2011

NA – Not Available, A - Available

Means of communication

The changing trends in technology have massively affected the people in the study area. The most important means of communication is mobile phones which are possessed by most of the individuals in the locality. All other means of communication seem to be used less after the advent of mobile technology, details are presented in ***Table 3-48.***

Table 3-48: Communication Facilities

Distance (km)	Post Office	Sub- Post office	Telephone (landlines)	Public Call Office /Mobile (PCO)	Mobile Phone Coverage	Internet Cafes / Common Service Centre (CSC)	Private Courier Facility
0-3	NA	A	A	A	A	A	NA
3-5	NA	A	A	A	A	A	NA
5-7	A	A	A	A	A	A	NA
7-10	A	A	A	A	A	A	NA

Source: Primary Census Abstract 2011

NA – Not Available, A - Available

Transportation facility

The study area is well connected with road. The nearest railway station is Godhra which is approximately 20 km away. All the means of transportation like bus, Auto-rickshaw etc. are available in the study area. Details are given in **Table 3-49*.***

Table 3-49: Transportation facility

Distance (km)	Bus Service		Railway Station	Auto-rickshaw	Taxi
	Government	Private			
0-3	NA	NA	NA	NA	NA
3-5	NA	NA	NA	NA	NA
5-7	NA	NA	NA	NA	NA
7-10	NA	NA	NA	NA	NA

Note: A – Available, NA – Not Available

Source: Primary Census Abstract 2011

3.17.8 Economic Profile

Agriculture in study area

Agriculture is totally dependent on monsoons in the study area. The major crops grown are maize, paddy and wheat. Agriculture provides employment in the form of daily wage labour during the harvesting season. People who have less or no land do labour in others field on daily wage basis. The average wage for the male is Rs. 350 per day and for the female is Rs 300/- per day.

Animal husbandry

Livestock rearing is common among the people of this region. Most of the animals reared by them are cows and buffaloes. Private veterinary doctors' visits on the basis of the requirement of the local people. Regular medical check-up of animals is carried out by the doctors. Milk produced is used for personal consumption and selling to cooperative dairies.

Occupational pattern

The statistics regarding the Occupational Pattern in the study area is presented in **Table 3-50.**

Table 3-50: Occupational Pattern

Distance(km)	% Occupational Status (2011)					
	Total Working Population	**Cultivators**	**Agricultural Labour**	**Household Workers**	**Others**	**Marginal Workers**
0 - 3	35.92	36.18	6.72	0.51	28.71	27.88
3 – 5	51.89	38.99	7.08	0.08	3.71	50.13
5 - 7	52.30	36.32	15.61	1.14	4.69	42.23
7 - 10	51.82	36.37	8.55	0.26	7.81	47.00
Total	**49.89**	**36.68**	**9.28**	**0.40**	**8.72**	**44.93**

Source: Primary Census Abstract 2011

As per the available Census Data 2011, there are total 49.89 % working population. Out of the total working population there are 36.68% are cultivators, 9.28 % Agricultural labour, 0.40 % household workers, others 8.72 % and 44.93% marginal workers in the study area.

3.17.9 Historical and Cultural profile

Places given protection under the ASI Ancient Monuments Act (List of monuments of National Importance)

There is no ASI monuments available in the study area.

Places given protection under the Gujarat State protected monuments

There is no state protected monuments available in the study area.

Places of tourist importance

There is no tourist importance place in the study area.

4 ANTICIPATED ENVIRONMENTAL IMPACTS & MITIGATION MEASURES

4.1 Introduction

The overall objective of EIA study is as under:

- Identifying project activities & aspects that could beneficially or adversely impact the environment.
- Predict and assess the environmental impacts of the such activities / aspects.
- Identify possible mitigation measures for impacts identified and selection of appropriate mitigation measure, which can reduce the impact and practicality possible in implementation.

4.2 Methodology of Identification and Assessment of Environmental Impacts

Key Definitions

Environment

Surroundings in which a facility operates, including air, water, land, natural resources, flora, fauna, humans, and their interrelation.

Environmental Aspect

Element of facility activities (including those activities that occur during normal, abnormal, emergency and final decommissioning operations) or raw materials or products or services that can interact with the environment.

Environmental aspects selected for study are practical and small enough to be easily understood.

Environmental Impact

Any change to the environment, whether adverse or beneficial, wholly or partially resulting from an organization's environmental aspect.

Environmental Components

The environment includes surroundings in which the facility operates such as air, water, land, natural resources, flora, fauna, humans and their interrelation.

The environmental components (or parts of the receiving environment on which impacts are being assessed) include: Land use/land cover, air quality, noise quality, surface water environment, ground water environment, soil, ecology and bio diversity, socio economics, occupational health, community health and safety.

After the identification of impacting activities, impacts are assessed based on subjective / objective criteria. This is done in the following steps:

Identification of Impacts

This entails employing a simple checklist method requiring:

- Listing of facility activities, raw materials, products and services.
- Listing of environmental aspects (i.e. elements of the facility activities or raw materials, products or services that can cause environmental impacts)

- Identifying applicable components of the environment on which the environmental aspects can cause an environmental impact
- Making notes of the reason / possible inter-relationships that lead to environmental impact creation.
- Listing the environmental components likely to receive impacts, along with the key impacting activities on each component.

4.3 Identification of Impacts

Any activity in its wake will bring about some impacts associated with its origin, which can be broadly classified as reversible, irreversible, long and short-term impacts. The chapter identifies various environmental impacts associated with the operation of facility and other activities wherein, there may be a chance of pollution. Based on the possible worst case emissions and waste generation from the proposed project and also taking into consideration the baseline environmental status at the proposed project site, the environmental factors that are likely to be affected (impacted) are identified, quantified and assessed. Both instrumental (positive) and detrimental (negative) impacts are accounted for this purpose. The prediction of aspect-impact sheet helps in the preparation of environmental management plan which has to be executed during the on-going activities for the proposed project to minimize the adverse impacts on the environmental quality.

4.4 Potential Impacts due to proposed project

The potential significant environmental impacts associated with the proposed project are highlighted as below:

- Air Environment: Impacts on ambient air quality due to emissions from Incinerator and DG sets (during power failure only) & odour generation.
- Water Environment: Impacts on surface and ground water quality during acidental effluent / waste water is being let outside the site premises
- Land Environment: Impacts on soil during development of site
- Socio Economics: Impacts on surrounding infrastructure and employment
- Ecology and Biodiversity: Impacts on surrounding environment due to proposed project operational activities.

4.5 Mitigation Measures

Mitigation measures require being formulated for all impacting activities. Programmes to implement all mitigation measures are then prepared and presented as an Environmental Management Programme.

4.6 Identification of Impacting Activities and Aspects for the Proposed Project

As discussed earlier, environmental impacts have been identified based on an assessment of environmental aspects / activities associated with the project. The symbol '●' indicates an adverse (negative) impact and 'o' indicates a beneficial (positive) impact. Identified Environmental Impacts have been listed in **Table 4-1.**

Table 4-1: Aspects and Impacting activities due to proposed project

Sr. No.	Project Activity	Aspects (Type: O, N, A, E; Duration: T, P)	Potential Receiving Environment Attributes											Environmental Aspects Identified which will cause impact
			LU/LC	AP/AQ	NV	SW	GW	S	EB	SE	RH	SHW	OH / OHS	
1	**Construction Phase**													
1.1	Existing land use, Site Clearing and Levelling, removal of vegetation, excavation of soil	(O & N,T)	•	•				•	•					LU: Identified land use of site, Change in topography & drainage due to site grading & levelling work; LC & S: Removal of top layer of soil / vegetative layer, EB: Cutting of shrubs and vegetation, disturbances / effect to ground dwelling faunas such as insects, reptiles; AQ: Dust generation (particulate matter) due to excavation and removal / transporting the excavated soil / removal of vegetation.
1.2	Construction Material and waste transportation, storage and handling	(O & N,T)		•					•	o, •			•	AQ: Change on air quality due to fugitive emission from transportation vehicles, OH/OHS: Material handling can pose risk to the workers while handling and can lead to accidents due to improper handling; SHW: generated waste from construction materials / debris and its disposal, EB: affect road side flora and immediate site surroundings, SE: Temporary employment on account of construction material transportation system, distress to the local community nearby due to movements of construction vehicles.
1.3	Excavation, construction & fabrication of works on site for the project. Use of water by construction workers, concreting work,	(O & N,T)		•		•							•	SW: Utilization of water for construction purpose from outside source OH/OHS: Construction works on site can pose potential risk to the workers onsite and can lead to accidents due to improper management. AQ: Change on air quality due to dust emissions due to construction activities carried out on site

Sr. No.	Project Activity	Aspects (Type: O, N, A, E; Duration: T, P)	Potential Receiving Environment Attributes											Environmental Aspects Identified which will cause impact
			LU/LC	AP/AQ	NV	SW	GW	S	EB	SE	RH	SHW	OH / OHS	
	curing of the structures etc.													
1.4	Generation & Disposal of waste water	(O & N,T)				•	•	•						SW & GW : Generation of temporary waste water from labour camps
1.5	Generation & Disposal of construction waste	(O & N,T)	•					•				•		S & SHW: Spillages / improper disposal of construction waste, LU: Improper Disposal of construction waste outside the site will have impact on surroundings
1.6	Noise from construction sites and vehicle movement	(O & N,T)			•				•					NV: Noise from the construction machinery and operation of vehicles, EB: effect on local fauna in nearby areas
1.7	Temporary Employment of Manpower for construction and development	(O & N,T)								o				SE: Temporary employment to local manpower nearby for the construction works
2	**Operation Phase**													
2.1	Handling and Transportation of Biomedical Waste from members upto the site, Operation of Incineration Plant, Autoclave and Shredder System	(O & N,P)		•	•	•	•		•	o	•	•	•	SW & GW: Spillages of wastes during handling and transportation to the site. SE: Temporary manpower employment for collection vehicles, AP/AQ: Odour problems & fugitive emissions due to operations and waste handling, increase in traffic due to movement of collection vehicles; SHW: Generation of ash, waste materials for appropriate treatment & disposal; RH: Fire / Explosion in case of improper operation of incineration system, NV: Noise from equipment operation, OH/OHS: Potential risk to the workers in processing of wastes if not properly handled onsite.
2.2	Fugitive emissions during handling of	(O & N,P)		•					•	•				AP/AQ: Flue gas emissions and fugitive emissions from site premises will have an

Sr. No.	Project Activity	Aspects (Type: O, N, A, E; Duration: T, P)	Potential Receiving Environment Attributes											Environmental Aspects Identified which will cause impact
			LU/LC	AP/AQ	NV	SW	GW	S	EB	SE	RH	SHW	OH / OHS	
	wastes, Air emissions from Incinerator Stack and DG Set stack (during power shutdown operation)													effect on surrounding land parcels, EB: Increase in emissions will affect nearby surroundings flora and fauna, human settlements and local community nearby.
2.3	Water consumption & Generation of Waste Water from the project site	(O & N,P)				•	•							SW: Water consumption in plant will effect surface water source, GW: Deterioration of soil & ground water quality due to spillages & leakage within unit as well as leakage during wastewater handling.
2.4	Noise generation due to Machinery operations	(O & N,P)			•				•					NV: Noise generation due to operation of equipment's, ETP equipment's and machinery, EB: Temporary impact on local flora and fauna nearby due to noise generation.
2.5	Green Belt Area Development	(O & N,P)	o	o	o			o	o	o				LU: Part of land will be used for green belt development creating positive impact in sustainable manner, AP/AQ, NV: Thick greenbelt, including trees having dust/gaseous emissions capturing and noise absorbing properties, S: Soil fertility improvements, EB: Will have positive impact as plantation will occur, SE: Green Belt development will help to make the area less polluted.
3	**End of Life cycle and Decommissioning Phase**													
3.1	Emptying out the waste and materials from tanks and equipments / works on site	(O & N,T)		•		•	•	•		o •			•	S & SW & GW: Spillages of wastes during decommissioning phase will affect soil and further ground water, surface water: SE: Temporary manpower employment during decommissioning and permanent employment will be relieved. OH/OHS: Improper decommissioning can cause

Sr. No.	Project Activity	Aspects (Type: O, N, A, E; Duration: T, P)	Potential Receiving Environment Attributes											Environmental Aspects Identified which will cause impact
			LU/LC	AP/AQ	NV	SW	GW	S	EB	SE	RH	SHW	OH / OHS	
														accidents and safety issues to workers. AP/AQ: Emission during emptying out of tanks and equipment's
3.2	Decommissioning of the Incinerator, Autoclave and Shredder systems	(O & N,T)		•						o •		•	•	SHW: Generation of liquid and solid waste which needs proper disposal system, SE: Temporary manpower employment during decommissioning and permanent employment will be relieved. OH/OHS: Improper decommissioning can cause accidents and safety issues to workers, AP/AQ: Emission during decommissioning of plants and equipment's removal
3.3	Dismentaling of the sheds for storage and handling of wastes	(O & N,T)		•						o •		•	•	SHW: Generation of scrap and metal waste, other solid wastes which needs proper disposal / recycle system, SE: Temporary manpower employment during decommissioning and permanent employment will be relieved. OH/OHS: Improper decommissioning can cause accidents and safety issues to workers, AP/AQ: Dust generation during dismantling of sheds and structures and its removal
3.4	Cleaning and Clearing of site after decommissioning	(O & N,T)	o	•				•						AP/AQ: Dust generation during final cleaning and clearing of overall site, LU/LC: Land cover and land use will be free to regain back to original condition and can be used for other industrial use, S: Soil condition will be improved by cleaning and clearing of site
Type of Impact – O:One Time; N: Normal; A: Abnormal; E: Emergency; Duration of Impact –T: Temporary; P: Long-Term/ Permanent														
LU/LC: Landuse/ Landcover; AQ: Air Quality; NV: Noise and Vibration; SW: Surface Water; GW: Ground Water; S: Soil; EB: Ecology & Bio-diversity; SE: Socio-Economic; RH: Risk & Hazard; SHW: Solid &Hazardous waste generation; OH/CH&S: Occupational Health, Community Health & Safety														

Based on the above listing of aspects of propsed project; which will lead to potential impacts on the receiving environment attributes, have been further elaborated in further sections below along with their mitigation measures proposed.

4.7 Land use and Land Cover

The aspects / impacting activities, their potential impacts and mitigation measures on land use and land cover are elaborated as under:

4.7.1 Impacting activities, Impacts & Mitigation measures on land use and land cover

The aspects / impacting activities identified on land use and land cover, their impacts (type and duration) and mitigation measures in order to minimize the impacts have been presented in ***Table 4-2*** as below:

Table 4-2: Aspects / Impacting activities and impact on Land use and Land cover – Construction & Operation Phase, Decommissioning Phase

Sr. No.	Project Activity	Identified Aspect	Impact	Impact (Type: O, N, A, E; Duration: T, P)	Operation Controls/Mitigation Measures
C1	*C2*	*C3*	*C4*	*C5*	*C6*
1	**Construction Phase**				
1.1	Existing land use, Site Clearing and Levelling, removal of vegetation, excavation of soil	LC: Identified land use of site, Change in topography & drainage due to site grading & levelling work, LC : Removal of top layer of soil / vegetative layer	Change in land cover from scrub to industrial land of 5600 sq.m and loss of top vegetative soil layer of 2,800 cu.m of volume – 5600 x 0.5 m = 2,800 cu.m	O & N,T	1. The site area is scrub land which is already acquired by GIDC and site land use is converted to Industrial use. 2. Site topography to have a levelled land development and having gentle slope towards outside drainage. 3. Top soil of around 1500 cu.m will be stored and utilized in green belt. Rest will be utilized in plinth filling purposes. Any excess soil will be disposed elsewhere in low lying filling works as per legal regulations by Contractor. 4. Provision of Greenbelt area of 34.6% of plot area.
1.5	Generation & disposal of construction waste	LU: disposal of construction waste outside will cause change in LU	Improper Disposal of construction waste outside the site will have impact on land use in surrounding	O & N,T	1. All construction wastes will be handled carefully by Contractor and the waste materials will be suitably disposed of as per Construction & Demolition waste management rules to authorized facility / utilized in area filling elsewhere by contractor
2	**Operation Phase**				
2.5	Green Belt Area Development	LU: Part of land will be used for green belt development creating	Green belt cover will be provided within the site of 33% which will create barrier for	O & N,P	33% of site area is proposed with green belt cover. Local species of trees will be

		positive impact in sustainable manner	containment of pollution levels reducing the impact to the environment in surroundings		developed as per CPCB guidelines.
End of Life cycle and Decommissioning Phase					
3.4	Cleaning and Clearing of site after decommissioning	Land cover and land use will be free to regain back to original condition and can be used for other industrial use	Post closure and decommissioning phase of the project the site area of 5600 sq.m area will be thoroughly cleaned up and be available for any future developmental use.	O & N,P	On completion of dismantling works, all wastes will be completely removed and site cleanup activities will be taken up to make the site available for future developmental use.

4.7.2 Mitigation Measures

The following mitigation measures are suggested to manage the anticipated environmental impacts:

- Conversion of scrub land parcel of 5678 sq.m for industrial use as GIDC has already acquired land for development of industrial purpose.
- Utilization of top soil layer to the tune of 1500 cu.m in green belt. Rest will be utilized in plinth filling purposes. Any excess soil will be disposed elsewhere in low lying filling works as per legal regulations by Contractor
- 34.58% of site area (1964 sq.m) will be developed as green belt.
- Excavated earth will be stored in stockpiles and covered with high graded tarpaulin sheet and reused for landscape environment, for greenbelt and backfilling.
- The development activities will be properly planned in a timely manner so that impacts to the environment are minimal
- Site area land will be restored after decommissioning of plant for future developmental use.

4.8 Air Environment

In the proposed project, following activities will contribute as part of air emissions:

- Vehicular movements will create dust and air emissions.
- Incinerator Stack emissions and DG Set operation emissions.
- Dust & Odour generation due to site operations.

The aspects / impacting activities, their potential impacts and mitigation measures on air environment are elaborated as under:

4.8.1 Impacting activities, Impacts & Mitigation measures on Air Environment

The aspects / impacting activities identified on air environment, their impacts (type and duration) and mitigation measures in order to minimize the impacts have been presented in ***Table 4-3*** as below:

Table 4-3: Aspects / Impacting activities and impact on Air Environment – Construction & Operation Phase, Decommissioning Phase

Sr. No.	Project Activity	Identified Aspect	Impact	Impact (Type: O, N, A, E; Duration: T, P)	Operation Controls/Mitigation Measures
C1	*C2*	*C3*	*C4*	*C5*	*C6*
1	**Construction Phase**				
1.1	Site Clearing and Levelling, removal of vegetation, excavation of soil	AQ: Dust generation (particulate matter) due to excavation and removal / transporting the excavated soil / removal of vegetation.	Temporary increase in PM 10 and PM 2.5 levels in air quality due to dust emissions on account of construction activities which will impact locally around the site.	O & N,T	Water sprinkling and Smog guns will be provided around the site and construction activity in order to suppress dust emissions. Vertical curtains will be installed for containment for release of dust in surroundings.
1.2	Construction Material and waste transportation, storage and handling	AQ: Change on air quality due to dust and fugitive emission from transportation vehicles.	Temporary increase in PM 10, PM 2.5, SO2 and NOx levels in air quality due to transportation vehicles use.	O & N,T	All vehicles will be PUC verified from time to time to control emissions. All vehicles delivering construction materials to the site will be covered to avoid spillage of materials and maintain cleanliness of the roads
1.3	Excavation, construction & fabrication of works on site for the project. Use of water by construction workers, concreting work, curing of the structures etc.	AQ: Change on air quality due to dust emissions due to construction activities carried out on site	Temporary increase in PM 10 and PM 2.5 levels in air quality due to dust emissions on account of construction activities.	O & N,T	Water sprinkling and Smog guns will be provided around the site and construction activity in order to suppress dust emissions
2	**Operation Phase**				
2.1	Handling and Transportation of Biomedical Waste from members up to the site, Operation of Incineration Plant, Autoclave and Shredder System	AP/AQ: Odor problems & fugitive emissions due to operations and waste handling, increase in traffic due to movement of collection vehicles	The air quality modelling has been carried out for Incinerator and flue gas stack (as stationary source) along with movement of vehicles (line source) and minor increase in overall ambient air quality is observed. Incremental increase is observed to PM10 as 0.1713 µg/m^3, SO2 as 0.378 µg/m^3, NOx as 2.29 µg/m^3, HC as 0.389 µg/m^3, CO as 4.134 mg/m^3. The maximum incremental increase impacting distance is found to be maximum of 250 majorly in WSW direction from the site where no village habitation is present.	O & N,P	All flue gas stacks and process exhausts from plant areas will be provided with proper APCM control measures thereby control of emissions to environment. Odour and Fugutive emissions will be controlled by handling of waste in closed containers, general cleaning and housekeeping, daily washing of collecting vehicles and storage areas, spray of deodorants etc.
2.2	Fugitive emissions during handling of wastes, Air emissions	AP/AQ: Flue gas emissions and fugitive emissions from site	The air quality modelling has been carried out for Incinerator and flue gas	O & N,P	All flue gas stacks and process exhausts from plant areas will be provided with

	from Incinerator Stack and DG Set stack (during power shutdown operation)	premises will have an effect on surrounding.	stack (as stationary source) along with movement of vehicles (line source) and minor increase in overall ambient air quality is observed. Incremental increase is observed to PM10 as 0.1713 µg/m^3, SO2 as 0.378 µg/m^3, NOx as 2.29 µg/m^3, HC as 0.389 µg/m^3, CO as 4.134 mg/m^3. The maximum incremental increase impacting distance is found to be maximum of 250 majorly in WSW direction from the site where no village habitation is present.		proper APCM control measures thereby control of emissions to environment. Odour and Fugutive emissions will be controlled by handling of waste in closed containers, general cleaning and housekeeping, daily washing of collecting vehicles and storage areas, spray of deodorants etc. Moreover, green belt is being developed along the centre and boundary of project site in order to adsorb and contain the emission levels and odour control.
2.5	Green Belt Development	AP/AQ: Thick greenbelt, including trees having gaseous emissions capturing properties	Gaseous emission will be controlled by specific trees developed in green belt	O & N,P	Green belt is proposed of 34.6 % of site area.
End of Life cycle and Decommissioning Phase					
3.1	Emptying out the waste and materials from tanks and equipment's / works on site	AP/AQ: Emission during emptying out of tanks and equipment's	Temporary increase in PM 10, PM 2.5, SO2 and NOx levels in air quality due to decommissioning activities on site.	O & N,T	Water sprinkling and Smog guns will be provided around the site during decommissioning activity in order to suppress dust and vehicular emissions
3.2	Decommissioning of the Incinerator, Autoclave and Shredder systems	AP/AQ: dust and fugitive emission during decommissioning of plants and equipment's removal	Temporary increase in PM 10, PM 2.5, SO2 and NOx levels in air quality due to decommissioning activities on site.	O & N,T	Water sprinkling and Smog guns will be provided around the site during decommissioning activity in order to suppress dust and vehicular emissions
3.3	Dismantling of the sheds for storage and handling of wastes	AP/AQ: Dust generation during dismantling of sheds and structures and its removal	Temporary increase in PM 10, PM 2.5 levels in air quality due to decommissioning activities on site.	O & N,T	Water sprinkling and Smog guns will be provided around the site during decommissioning activity in order to suppress dust and vehicular emissions
3.4	Cleaning and Clearing of site after decommissioning	AP/AQ: Dust generation during final cleaning and clearing of overall site	Temporary increase in PM 10, PM 2.5 levels in air quality due to decommissioning activities on site.	O & N,T	Water sprinkling and Smog guns will be provided around the site during decommissioning activity in order to suppress dust and vehicular emissions

4.8.2 Air Dispersion Modelling

For the purpose of impact prediction on air environment, emission sources can be classified as point source and line source. Emission from these sources will be predicted for its impacts on the Ground Level Concentration (GLC) at various distances using the dispersion modelling guidelines given by the Central Pollution Control Board, New Delhi and by using AERMOD view software.

About Air Dispersion Modelling

Emissions from the stacks were analysed for their impacts on the GLC for various distances using the dispersion modelling guidelines of AERMOD, developed by the AERMIC (American Meteorological Society/ Environmental Protection Agency Regulatory Model Improvement Committee) a directed by CPCB.

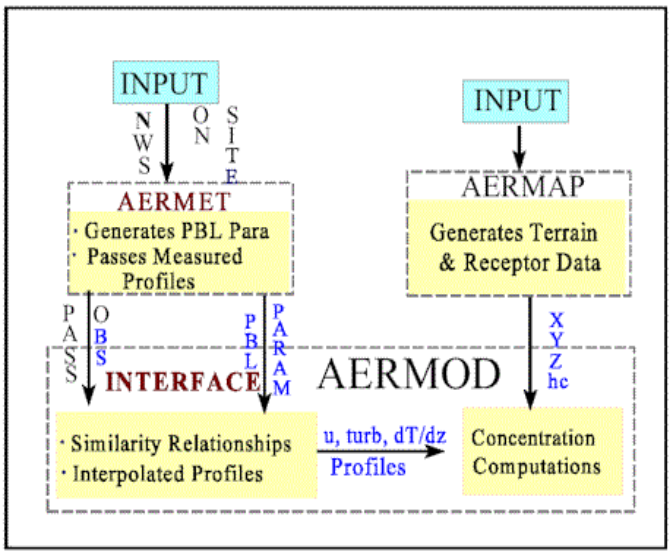
About the software – AERMOD

AMS/EPA Regulatory Model (AERMOD) is a steady-state plume model. It is designed to apply to source releases and meteorological conditions that can be assumed to be steady over individual modelling periods (typically one hour or less). AERMOD has been designed to handle the computation of pollutant impacts in both flat and complex terrain within the same modelling framework.

The American Meteorological Society/Environmental Protection Agency Regulatory Model Improvement Committee (AERMIC) was formed to introduce state-of–the-art modelling concepts into the EPA's air quality models. Through AERMIC, a modelling system, AERMOD, was introduced that incorporated air dispersion bases on planetary boundary layer turbulence structure and scaling concepts, including treatment of both surface and elevated sources, and both simple and complex terrain.

AERMET is an input data processor that is one of the regulatory components of the AERMOD modelling system. It incorporates air dispersion based on planetary boundary layer turbulence structure and scaling concepts. Data flow in AERMOD modelling system is shown in ***Figure 4-1.***

Figure 4-1: Data flow in AERMOD modelling system



Metrological Parameters considered for dispersion modelling

The hourly meteorological data considered were wind speed, wind direction, ambient atmospheric temperature, cloud cover, relative humidity & rainfall.

Other Considerations

The dispersion modelling assumption considered are as follow:

- The terrain of the study area was considered as FLAT;
- Stability class and atmospheric inversion level is based on software's database.

Point source emissions parameters considered for dispersion modelling

- Quantity of fuel;
- Emission rate of pollutants;
- Stack:
  - Internal diameter at top of stack;
  - Height of stack;
  - Exit gas velocity.

Line source emissions parameters considered for dispersion modelling

- Length of road
- Width of road
- Truck trip/day

Sources of Air Emission considered for Air dispersion modelling

Air Emission sources can be classified as point sources and line sources. Impact on ambient air during operation phase would be due to;

- Point source emission of Pollutants PM $_{10}$, SO_2 and NO_X due to operation of DG set (used during power failure only) where HSD will be used as fuel and Incinerator Stack with additional parameter of HC and CO.
- Line source emission of Pollutants PM_{10}, $PM_{2.5}$, HC, CO, NO_X, due to transportation of waste collection trucks plying to and fro from the site.

Point source emission due to burning of fuel HSD for proposed DG set and Incinerator Stack Emission

Details of flue gas Stacks & Emission rates considered for Air Dispersion modelling for pollutants PM_{10}, SO_2 and NO_X due to operation of DG set, Incinerator stack where HSD will be used as fuel is presented in ***Table 4-4.***

Table 4-4: Stack details & Emission rates of pollutants from burning of fuel HSD for proposed DG set

S. No.	Description	Unit	Stack 1	Stack 2
1	Source / stack attached to	-	DG set	Incinerator
2	Capacity of source	-	60 KVA	100 Kgs per hr
3	Type of Fuel	-	HSD	HSD
4	Fuel Consumption Rate	-	15 Lit./Hr.	32 Lit./Hr.
5	Stack Height	m	12	30
6	Stack Diameter (Top)	m	0.15	0.6
7	Gas Exit Velocity	m/s	7	8.5
8	Gas Exit Temperature	°K	493	393
10	Emission of SO_2	gm/sec	0.01	0.09
11	Emission of PM	gm/sec	0.04	0.09
12	Emission of NO_X	gm/sec	0.05	0.72

For DG Set Stack, GPCB emission standards have been considered for New Diesel Engines, 2022.

For Incinerator, Standards as per CPCB Green Book's (April, 2021) norms for process vents of Industry, considering norms of PM: 50 mg/Nm^3, SOx: 50 mg/Nm^3, NOx: 400 mg/ Nm^3

For Line source emissions, the emission estimate and their reference are presented in ***Table 4-5*** as below:

Table 4-5: Estimated Emission rates for Line Source

Parameter			PM	PM	CO	CO	HC	HC	NOx	NOx
S. No.	**Descriptor**	**Unit**	**Route-1-Towards Godhra Village road**	**Route-2-Towards Shehera Village road**	**Route-1-Towards Godhra Village road**	**Route-2-Towards Shehera Village road**	**Route-1-Towards Godhra Village road**	**Route-2-Towards Shehera Village road**	**Route-1-Towards Godhra Village road**	**Route-2-Towards Shehera Village road**
1	Type of road		Paved	Paved	Paved	Paved	Paved	Paved	Paved	Paved
2	Vehicle Type		Truck	Truck	Truck	Truck	Truck	Truck	Truck	Truck
3	No. of Vehicles Return Trips on Stretch	*Nos.*	8	8	8	8	8	8	8	8
4	Total Time of Vehicular move-ment, Hr	*Nos.*	12	12	12	12	12	12	12	12
5	Number of Vehicles per Hour	*Nos.*	0.667	0.667	0.667	0.667	0.667	0.667	0.667	0.667
6	Length of Road within study area	*(km)*	0.500	0.500	0.500	0.500	0.500	0.500	0.500	0.500
7		*(mtr)*	500	500	500.0	500.0	500	500	500	500
8	Width of Road, m	*(mtr)*	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5
9	Area of Vehicle Movement	*(m^2)*	3750.0	3750.0	3750.0	3750.0	3750.0	3750.0	3750.0	3750.0
10	Speed of Vehicle,	*(km/hr)*	30	30	30	30	30	30	30	30
11	*Weight of Tanker (W)*	*(Tons)*	1	1	1	1	1	1	1	1
12	Capacity of Tanker KW	*(KW)*	25	25	25	25	25	25	25	25
13	Emission Factor	*gm/kWhr*	0.01	0.01	1.5	1.5	0.13	0.13	0.4	0.4
14	Emission from one truck	*gm/hr*	0.25	0.25	37.5	37.5	3.25	3.25	10	10
15	Emission from total trucks/hr	*gm/hr*	0.167	0.167	25.000	25.000	2.167	2.167	6.667	6.667
16	Emission from trucks	*gm/hr-m2*	4.44E-05	4.44E-05	6.67E-03	6.67E-03	5.78E-04	5.78E-04	1.78E-03	1.78E-03

Parameter			PM	PM	CO	CO	HC	HC	NOx	NOx
S. No.	**Descriptor**	**Unit**	**Route-1-Towards Godhra Village road**	**Route-2-Towards Shehera Village road**	**Route-1-Towards Godhra Village road**	**Route-2-Towards Shehera Village road**	**Route-1-Towards Godhra Village road**	**Route-2-Towards Shehera Village road**	**Route-1-Towards Godhra Village road**	**Route-2-Towards Shehera Village road**
17	Emission from trucks	*gm/s-m²*	1.2E-08	1.2E-08	1.9E-06	1.9E-06	1.6E-07	1.6E-07	4.9E-07	4.9E-07

Note:

- *Norms considered for dispersion modelling of line source from BS VI by ARAI i.e. PM_{10}: 0.01 gm/kWhr, NO_x: 0.4 gm/kWhr, HC: 0.13 gm/kWhr and CO: 1.5 gm/kWhr.*
- *The emission rate of vehicular exhausts pollutants PM, NO_X, HC & CO has been calculated based on Bharat Stage VI emission standards for heavy duty vehicles.*
- *The terrain of the study area was considered as FLAT.*

4.8.3 Results of Air Quality Dispersion Modelling

Isopleths & GLC reports from Air dispersion modelling of all the parameters of air emission sources from proposed project are presented in ***Annexure 5***. Detailed AAQM results are presented in ***Annexure 4.***

Maximum 24 hourly GLC's for pollutants emission form point & line sources are tabulated in ***Table 4-6.***

Table 4-6: Summary of Air Dispersion Modelling results from Point Sources & Line Sources of Proposed Project

Sr. No.	Parameters	Incremental Maximum GLC Concentration, µg/m³	Direction (Degree)	Direction	Distance (m)
Point & Line Sources					
1	PM10	**0.17133**	250	WSW	250
2	SO2	**0.37808**	250	WSW	250
3	NOx	**2.29013**	240	WSW	250
4	HC	**0.38913**	210	SSW	250
5	CO	**4.13399**	210	SSW	250

Based on the above, it can be seen that maximum GLC Concentration for different parameters have been observed 250 m downstream of the site in majorly WSW direction. At this distance no village habitation is present in baseline area.

4.8.4 Prediction of Incremental GLC in Ambient Air due to proposed project

The worst case scenario of air emissions, for point source from flue gas stacks attached to proposed DG set is predicted as the sum of average monitored value of a parameter and incremental GLC at the monitoring locations. This is a conservative estimate and probability of such occurrence is unlikely. The resultant values at selected sampling locations are presented in ***Table 4-7*** as below:

Table 4-7: Predicted incremental GLC due to proposed project

Sr. No.	Name of AAQM location (Distance in km/ Direction from Site)	Pollutant	Unit	CPCB Limit (24 hour basis unless mentioned) Concentration (µg/m3)	Average Pollutant Concentration in µg/m3 except CO in mg/m3	Incremental GLC in µg/m3 except CO in mg/m3	Total Predictive GLC (µg/m3)	Remarks (compared with National Ambient Air Quality Standards 2009)
C1	C2	C3	C4	C5	C6	C7	C8 = C6+C7	C9
1	AAQ1 - At Project Site (0.14 Km in SSE)	PM_{10}	µg/m³	*100*	83	0.00524	83.00524	Within Limit
		SO_2	µg/m³	*80*	7.4	0.00774	7.40774	Within Limit
		NO_x	µg/m³	*80*	15.8	0.08715	15.88715	Within Limit
		HC	µg/m³	*NS*	925	0.02068	925.02068	-
		CO*	mg/m³	*4*	1.12	0.27766	1.39766	Within Limit
2	AAQ2 - Shehera village (2.11 Km in NNW)	PM_{10}	µg/m³	*100*	75	0.00241	75.00241	Within Limit
		SO_2	µg/m³	*80*	6.5	0.01053	6.51053	Within Limit
		NO_x	µg/m³	*80*	12.6	0.02881	12.62881	Within Limit
		HC	µg/m³	*NS*	912	0.00287	912.0029	-
		CO*	mg/m³	*4*	1.08	0.01374	1.09374	Within Limit
3	AAQ3 - Dodiyani Village (1.96 km in SE)	PM_{10}	µg/m³	*100*	81	0.0048	81.0048	Within Limit
		SO_2	µg/m³	*80*	6.2	0.00998	6.20998	Within Limit
		NO_x	µg/m³	*80*	13.3	0.05444	13.35444	Within Limit
		HC	µg/m³	*NS*	892	0.00342	892.0034	-
		CO*	mg/m³	*4*	1.05	0.00898	1.05898	Within Limit
4	AAQ4 – Sadisamdi Village (1.19 km in WSW)	PM_{10}	µg/m³	*100*	72	0.00454	72.00454	Within Limit
		SO_2	µg/m³	*80*	6.7	0.11367	6.81367	Within Limit
		NO_x	µg/m³	*80*	13.9	0.71082	14.61082	Within Limit

Sr. No.	Name of AAQM location (Distance in km/ Direction from Site)	Pollutant	Unit	CPCB Limit (24 hour basis unless mentioned) Concentration (µg/m3)	Average Pollutant Concentration in µg/m3 except CO in mg/m3	Incremental GLC in µg/m3 except CO in mg/m3	Total Predictive GLC (µg/m3)	Remarks (compared with National Ambient Air Quality Standards 2009)
C1	C2	C3	C4	C5	C6	C7	C8 = C6+C7	C9
		HC	µg/m^3	*NS*	884	0.13807	884.1381	-
		CO*	mg/m³	*4*	1.09	1.28094	2.37094	Within Limit
5	AAQ5 – Palikhanda Village (3.18 km in NNW)	PM_{10}	µg/m^3	*100*	84	0.0021	84.0021	Within Limit
		SO_2	µg/m^3	*80*	6.3	0.00449	6.30449	Within Limit
		NO_x	µg/m^3	*80*	14.3	0.01973	14.31973	Within Limit
		HC	µg/m^3	*NS*	897	0.00174	897.0017	-
		CO*	mg/m³	*4*	0.99	0.00675	0.99675	Within Limit
6	AAQ6 – Zoz Village (2.16 km in South)	PM_{10}	µg/m^3	*100*	88	0.00403	88.00403	Within Limit
		SO_2	µg/m^3	*80*	6.7	0.00845	6.70845	Within Limit
		NO_x	µg/m^3	*80*	14.3	0.0401	14.3401	Within Limit
		HC	µg/m^3	*NS*	853	0.00282	853.0028	-
		CO*	mg/m³	*4*	1.08	0.02522	1.10522	Within Limit
7	AAQ7 – Patiya Village (1.13 km in East)	PM_{10}	µg/m^3	*100*	82	0.0084	82.0084	Within Limit
		SO_2	µg/m^3	*80*	6.6	0.02999	6.62999	Within Limit
		NO_x	µg/m^3	*80*	12.4	0.13025	12.53025	Within Limit
		HC	µg/m^3	*NS*	832	0.0113	832.0113	-
		CO*	mg/m³	*4*	1.09	0.0434	1.1334	Within Limit
8		PM_{10}	µg/m^3	*100*	82	0.00962	82.00962	Within Limit

Sr. No.	Name of AAQM location (Distance in km/ Direction from Site)	Pollutant	Unit	CPCB Limit (24 hour basis unless mentioned) Concentration (µg/m3)	Average Pollutant Concentration in µg/m3 except CO in mg/m3	Incremental GLC in µg/m3 except CO in mg/m3	Total Predictive GLC (µg/m3)	Remarks (compared with National Ambient Air Quality Standards 2009)
C1	C2	C3	C4	C5	C6	C7	C8 = C6+C7	C9
	AAQ8 - Varial Village (2.26 km in SW)	SO_2	µg/m^3	*80*	7.0	0.02092	7.02092	Within Limit
		NO_x	µg/m^3	*80*	11.5	0.11457	11.61457	Within Limit
		HC	µg/m^3	*NS*	896	0.01974	896.01974	-
		CO*	mg/m³	*4*	0.99	0.15476	1.14476	Within Limit
9	AAQ9 - Dhandhalpur Village (2.84 Km in NE)	PM_{10}	µg/m^3	*100*	49	0.00153	49.00153	Within Limit
		SO_2	µg/m^3	*80*	7.6	0.00283	7.60283	Within Limit
		NO_x	µg/m^3	*80*	6.1	0.01508	6.11508	Within Limit
		HC	µg/m^3	*NS*	895	0.00142	895.0014	-
		CO*	mg/m³	*4*	0.99	0.00562	0.99562	Within Limit

Comparing the incremental ground level concentrations of pollutants with the ambient air quality limits prescribed by CPCB, it can be concluded the following:

Thus even after establishment of proposed project the concentrations of various air pollutants are found to be below the permissible NAAQS 2009 standards. Thus the proposed project will not have any adverse impact on the air environment.

4.8.5 Air Pollution Control Measures

Stack emission from D.G. Set

The control of air pollution from stacks of diesel generators is proposed by providing adequate stack height to attain maximum dispersion of flue gases containing SPM, SO_2, NOx and CO.

Gas and dust emission from Incinerator

In the incineration system Quencher followed by Venturi Scrubber with adequate stack height will be installed to trap the particulate matter and gaseous emissions including dioxin control system thus allowing only clean air to be discharged into the atmosphere.

4.8.6 Dioxin & Furans Generation & its Control

The incineration facility will be equipped with an adequate Air pollution control system (Quenching) to control release of dioxins and furans in the environment. A dioxin control system is installed in the incineration plant. Regular monitoring of Dioxin and Furans will be done to check its emissions.

4.8.7 Mitigation measures for Air Environment

To reduce the impact of Air environment, below listed measures will be followed in the CBWMF project:

Dust Control Measures

To mitigate the impact caused due to dust pollution, following steps are to be taken:

- Regular water sprinkling on haulage roads to deliver continuous moisture to suppress dust in dust prone areas.
- Regulate speed of vehicles areas to reduce fugitive dust created and control dust emissions to a large extent.
- Trees will be planted all around the project boundary. The green belt will act as a barrier not only to control dust but also odours.

Odour emissions Management

The goal for effective odour Emissions management is to eliminate objectionable odours by reducing the frequency, intensity, duration and offensiveness of odours that people might experience. Following are some specific odour emission causing conditions that can arise during waste handling:

- **Waste transportation**

Odour emissions from waste transportation can vary greatly depend on the type of waste and the method of transport. The odours can be controlled by closed and covered transportation of wastes.

- **Storage facility**

The primary objective of storage is to store the waste temporarily before sending it to Incineration or Autoclave system and Shredder. It is important that waste be kept relatively cool in an enclosed container and be removed and disposed quickly. It is also important that the container be adequately cleaned after the waste is removed so that residues do not remain to decompose and generate odour.

Odour / fugitive emission Control Measures

Suitable control measures will be taken to control the odours / fugitive emission during loading/unloading, storage and handling, disposal of waste as follows:

- De-odorants will be sprayed in the areas of operation of wastes handling, transportation and disposal on regular basis;
- Plantation / Green Belt development will be carried with selection of odour suppressing / absorbing plant species around the plant area.
- Proper Segregation & storage of wastes & treatment of wastes in timely manner will provide effective fugitive emission control.
- Cleaning and removing spilled debris from storage areas and transport trucks immediately.
- Keeping the operations always clean devoid of any exposed wastes.

4.9 Incremental Traffic & Impact on Transportation

The site is accepting Segregated Waste Fractions generated member units. A total of 2.5 MT per day is being received at the site. The following vehicular traffic is envisaged as an incremental traffic to the site:

- 0.5 Tonnes of wastes each - 8 trucks.

Proposed PCU/day as per incremental traffic due to the proposed project is summarised in ***Table 4-8.***

Table 4-8: Proposed PCU/day as per Incremental traffic due to the proposed project

Sr. No.	Vehicle Type	Equivalent PCU Factors**	No. of Vehicle count	Share %	Calculated PCU/day
1	Motor cycle or Scooter etc.	0.50	4	22.2	2
2	Passanger Car, Pick-up Van, Auto-rickshaw	1.00	1	5.6	1
3	Agricultural Tractor, Light Commercial vehicles	1.50	0	0.0	0
4	Truck	3.00	8	44.4	24
5	Truck-trailer, Agricultural Tractor-Trailer	4.50	0	0.0	0
6	Cycle	0.50	2	11.1	1
7	Cycle-Rickshaw	2.00	3	16.7	6
8	Hand Cart	3.00	0	0.0	0
9	Horse-drawn vehicle	4.00	0	0.0	0
10	Bullock Cart	8.00	0	0.0	0
Total			**18**	**100.0**	**34**

*****To calculate PCU-Passenger Car Unit, for proposed trucks, Equivalent PCU Factors considered from Guidelines for Capacity of Roads IRC, Table 1: Recommended PCU (Passenger Car Unit) factor for various types of vehicles on Rural Areas.***

Detail of resultant combined final scenario of incremental traffic due to the project is presented in ***Table 4-9*** as below:

Table 4-9: Final Scenario of incremental traffic due to the proposed project & capacity of roads

Road name	Width (m)	Existing		Proposed		Total Service Volume (PCU/ day)	*Total design Service Volume (PCU/ day) and Type of Carriage Way
		Vehicle Count Per Day	Vehicles Count in PCU/Day as per IRC	Vehicle Count per day	Vehicles Count in PCU/Day as per IRC		
C1	C2	C3	C4	C5	C6	C7 = C4 + C6	C8
Towards Godhra Highway SH-05	7.5 m with median	6246	9407	18	34	9441	35,000 Four Lane (Two Way) with Divider
Towards Modasa Highway SH-05	7.5 m with median	6711	10557	18	34	10591	35,000 Four Lane (Two Way) with Divider

*Note: *Design service volume & Type of carriage way, as per IRC 64 - 1990 – Guidelines for Capacity of Roads in Rural areas, The Indian Roads Congress, Chapter 11, Recommended design services volumes for Multi Lane Road for four lane divided carriageway.*

4.9.1 Observations on Traffic PCU Counts with existing and proposed increase in traffic

Based on the analysis of existing traffic and proposed increase due to project it can be seen:

1. Total PCUs per day on SH - 05 for traffic flow towards Modasa is observed as 10591 PCU/day which is Less than 35000 PCU/day (Design PCU per day as per IRC guideline for Multi Lane Road for four lane divided carriageway).
2. The PCUs per day on road towards Godhra via SH-05 is observed as 9407 PCU/day; which is Less than the 35000 PCU/day (Design PCU per day as per IRC guideline for Multi Lane Road for four lane divided carriageway).

Thus it can be concluded that the carrying capacity of both the roads is sufficient to cater for existing as well as additional traffic due to proposed project.

4.9.2 Impacts due to transportation

The proposed project will have very minimal impact on vehicular load of existing traffic.

4.9.3 Mitigation Measures

- Traffic shall be regulated through proper signage, instruction & parking spaces.
- Adequate parking spaces are provided on site for storage.
- Signboard shall be provided for smooth traffic flow and also inculcate trucks, other employees & workers to follow traffic rules.

4.10 Noise Environment

The aspects / impacting activities, their potential impacts and mitigation measures on noise environment are elaborated as under:

4.10.1 Impacting activities, Impacts & Mitigation measures on Noise Environment

The potential impacts on noise level are as follows:

- The plant machinery from Incineration plant will be operational during daytime and will emit noise.
- Vehicle movement for transportation of materials and work force to the site will cause minor noise emission as the frequency of vehicular movement is few times in a day.

The aspects / impacting activities identified on noise environment, their impacts (type and duration) and mitigation measures in order to minimize the impacts have been presented in ***Table 4-10*** as below:

Table 4-10: Aspects / Impacting activities and impact on Noise Environment – Construction & Operation Phase, Decommissioning Phase

Sr. No.	Project Activity	Identified Aspect	Impact	Impact (Type: O, N, A, E; Duration: T, P)	Operation Controls/Mitigation Measures
C1	*C2*	*C3*	*C4*	*C5*	*C6*
1					
1.1	Noise from construction sites and vehicle movement	NV: Noise from the construction machinery and operation of vehicles	Temporary noise generation due to vehicular movement for construction activities	O & N,T	All workers should were ear plugs along with other PPEs in noisy areas of construction activity
2	**Operation Phase**				
2.1	Handling and Transportation of Biomedical Waste from members up to the site, Operation of Incineration Plant, Autoclave and Shredder System	NV: Noise from equipment operation & due to vehicular movement during transportation.	The generated incremental noise due to operation of activities have been modelled in sound plan software which result in incremental increase of 0.1 to 2 dBA and the impact in restricted to site area. Long term exposure to noise will have impact on the workers woking in the site premises which results in impared hearing abilities	N & P	Noise can be controlled by having noise barriers in high noisy areas. Workers and operators in incineration plant need to wear PPEs and ear plugs for control due to continuous exposure of high noisy areas. All equipments in continuous operation will be regularly serviced and maintained in order to control their noise generation levels.
2.2	Noise generation due to Machinery operations	NV: Noise generation due to operation of equipment's and machinery	Long term exposure to noise will have impact on the workers woking in the site premises which results in impared hearing abilities	N, P	Workers and operators in incineration plant need to wear PPEs and ear plugs for control due to continuous exposure of high noisy areas
2.5	Green Belt Development	NV: Green belt Development will help not to	Green belt development will have positive impact on	N, P	Green belt development suppresses the noise levels in the area

		transmit noise to surroundings	suppressing noise levels		

4.10.2 Assessment of Noise using Sound Plan

Noise modelling study was done using the Software tool called "SoundPLAN" which predicts the Noise Map generated due to the sources present at the project site, and predicts the Noise Levels at various receiver points due to the sources present at the project site.

To analyse the Noise Map of the project site, first, the geometrically coordinated Google Earth images of the Project site were imported into the software. Various sources of noise were added with their approximate Sound Pressure Levels, and the "Receiver points" were added at various locations where Noise Monitoring was conducted.

"SoundPLAN" generates the Noise Map with coloured pattern isopleths, which indicate whether the SPL in that particular region is above the limits mentioned by CPCB or not. If the Limit for Sound Pressure Level indicated by CPCB for that particular area is 75 dB during the day, and if the predicted SPL is below that, the Noise Map will show Green colour for that area. But if the SPL is above the "user set" allowable limit, the same will be shown in Red colour depending upon the Difference between then Predicted SPL and the Allowable SPL, and the "Conflict" in SPL is mentioned in the table if any conflict is predicted.

Consideration during the analysis

The sources considered at the project site for the analysis with their approximate Sound Pressure Levels are considered slightly on the higher side for more critical analysis. The sources of noise considered are as ***Table 4-11.***

Table 4-11: Sources of noise with their sound pressure levels

Sr. No.	Sources	Levels dB(A)
1	DG Set	85
2	Incinerator	90
3	Autoclave	80
4	Shredder	80
5	Pump	85
6	Vehicular Movement	67

Note: The above noise readings were taken based on the database generated from various site visits conducted for the similar equipment's

Using above consideration the isopleths generated during daytime and night-time is presented in ***Figure 4-2*** and ***Figure 4-3.***

Figure 4-2: Isopleths for Predicted Cumulative noise during day time

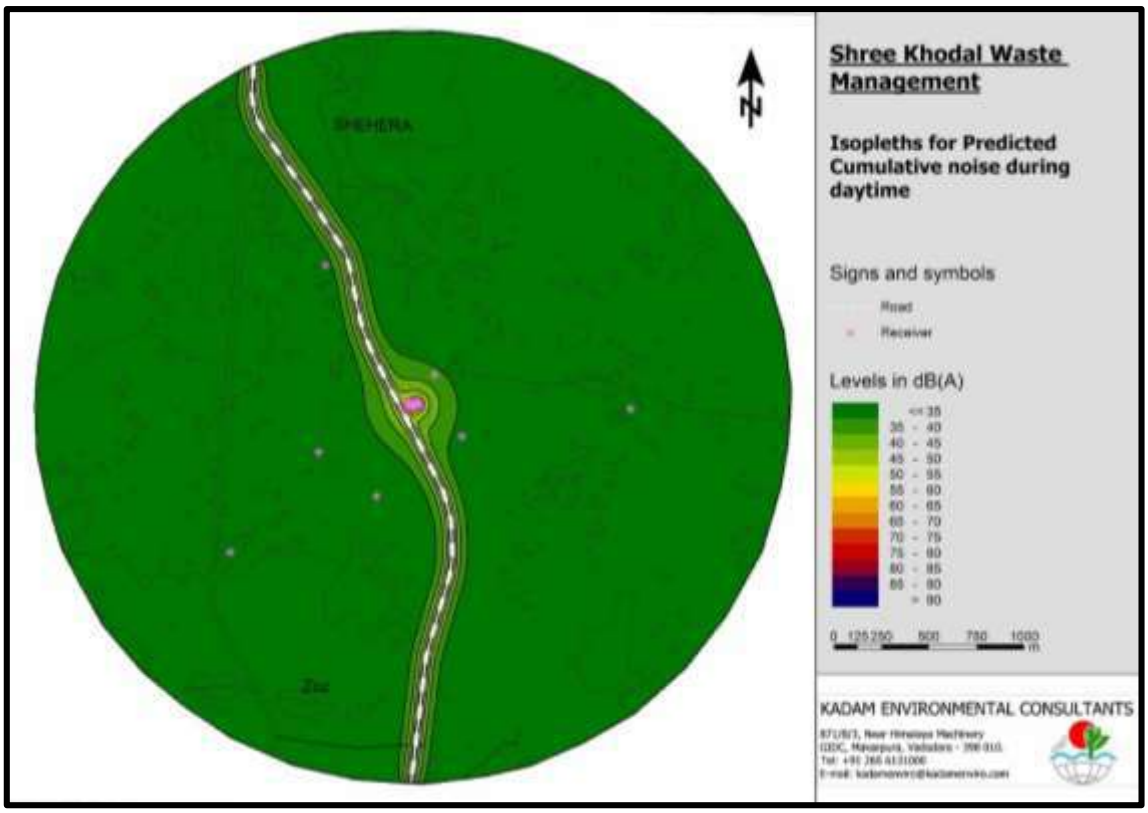
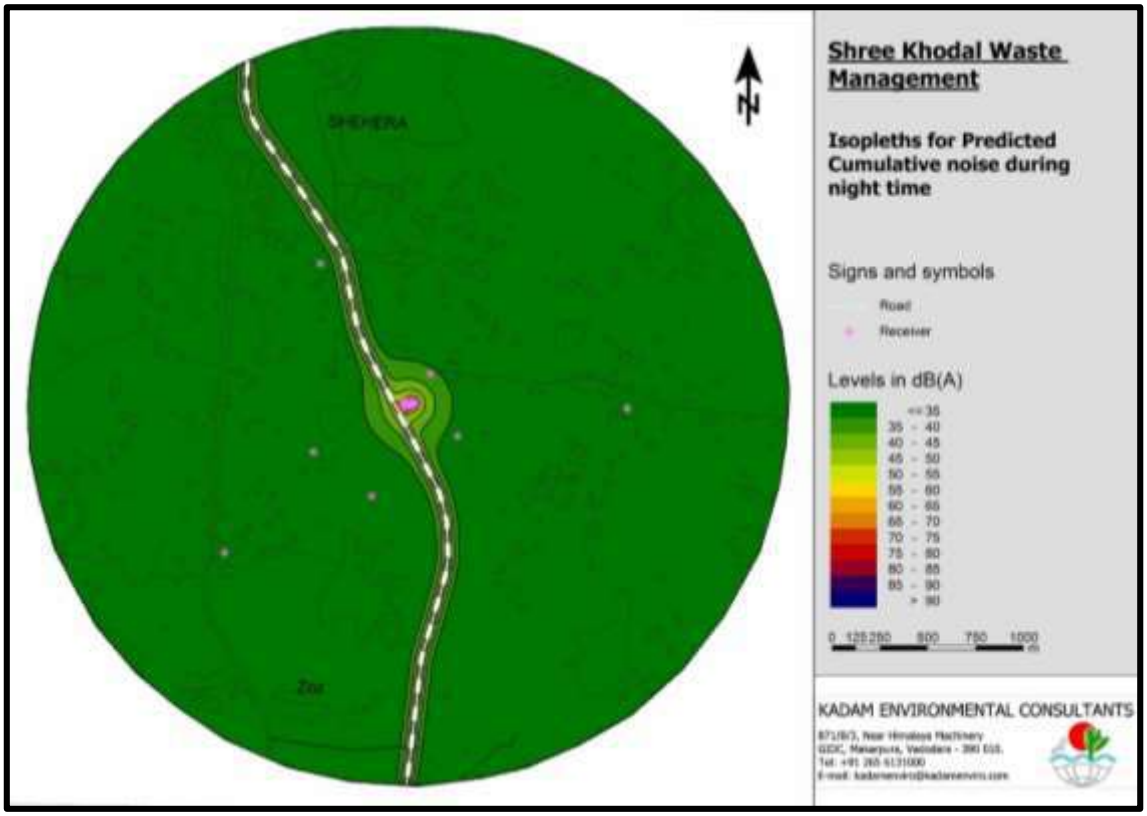


Figure 4-3: Isopleths for Predicted Cumulative noise during night time



4.10.3 Observations on incremental noise level generation due to proposed project

The incremental noise levels generation as determined based on SoundpLan are:

1. The project site is located in a designated industrial area, where the CPCB limits defined for Ambient Noise Level is 75 dB (A) during the daytime and 70 dB (A) during the night time. However, sound pressure levels are considering on higher side for more critical analysis.
2. Since the sources of noise are present within the project site premises, the boundary wall of the project site being present, increase beyond 75 dB (A) will not bet observed.
3. **Figure 4-2** & **Figure 4-3***,* observed / predicted ambient noise level is 57.2 dB (A) during day time and 53.8 dB (A) during night time at site which is within the standard specified for industrial area category.
4. In commercial areas, predicted ambient noise level are observed to be 62.6 dB (A) in daytime and 53.6 dB (A) during night time, which are also within specified limit, 65.0 dB (A) daytime and 55.0 dB (A) for night time.
5. Ambient noise levels are found to be in range of 54.4 dB (A) to maximum 55.0 dB (A) in daytime and and minimum 44.0 dB (A) to maximum 44.8 dB (A) in night time, which are also within the standard limit specified for residential area.
6. In silence zone it is predicted 49.4 dB (A) in daytime and 39.4 dB (A) in night time which is within specified limit, 50.0 dB (A) for daytime and 40.0 dB (A) night time.

The predicted cumulative increase in noise levels at various locations are presented in ***Table 4-12*****.**

Table 4-12: Noise Level at receptor Location

Sr. No.	Receiver Name	Category			Baseline Average Noise levels in dB (A)		Predicted Cumulative incremental increase in Noise level dB (A)		Incremental increase in Noise level dB (A)	
			Day	Night	Day	Night	Day	Night	Day	Night
			A		B		C		D	
							Algorithmic Calculation		C = B - A	
NL01	At Project Site	Industrial	75.0	70.0	55.2	47.5	57.2	53.8	2.0	0.1
NL02	Along road to Patiya Village	Residential	55.0	45.0	54.9	44.3	55.0	45.0	0.1	0.7
NL03	Nr MGVCL Sub Station office	Residential	55.0	45.0	54.2	43.5	54.4	44.0	0.2	0.5
NL04	Nr. Reserved Forest boundary of Zoz and Patiya Village	Silence	50	40	49.3	39	49.4	39.4	0.1	0.4
NL05	Sadisamdi village	Residential	55.0	45.0	54.3	43.4	54.4	43.6	0.1	0.2
NL06	Shehera Village	Commercial	65.0	45.0	62.6	53.6	62.6	53.6	0.0	0.0
NL07	Patiya village	Residential	55.0	45.0	54.5	44.7	54.5	44.7	0.0	0.0
NL08	Zoz village	Residential	55.0	45.0	54.5	44.8	54.5	44.8	0.0	0.0

From above, during the day time and night time only 2.0 dB to 0.1 dB increase are noticed in the Industrial area and in Residential area during the day time and night time 0.1 dB to 0.7 dB increase noticed which is nominal.

SoundPLAN analysis is carry out assuming that there are no obstructions (such as trees, buildings, walls etc.) in between the receiver locations and the sources of sound, which is not true in real conditions. Therefore, the actual ambient noise levels will be much lower than that predicted by SoundPLAN as presented in above table. Thus, it is predicted that there will be a negligible impact on the ambient noise levels in the surrounding areas of site due to proposed project activities.

4.10.4 Mitigation Measures on Noise Environment

Necessary control measures will be adoped for control of noise levels in the operations of project as under:

- Provision of acoustic enclosures on DG Sets and stationary equipments in the plant as feasible.
- Provision of personal protective equipment (PPE) such as earmuffs and earplugs to workers exposed to high noise generating operations/area and marking with display board for warni.
- Development of Green belt within the plant premises and along project boundary to screen noise.
- Periodic monitoring of ambient noise levels in the plant premises and Noise Exposure levels for workers deputed in different sections in the plant. Adoption of preventive maintenance measures in high and persistence noise areas.

4.11 Surface Water Environment

The aspects / impacting activities, their potential impacts and mitigation measures on surface environment are elaborated as under:

4.11.1 Impacting activities, Impacts & Mitigation measures on Surface Environment

The aspects / impacting activities identified on surface environment, their impacts and mitigation measures in order to minimize the impacts have been presented in ***Table 4-13*** as below:

Table 4-13: Aspects / Impacting activities and impact on Surface Water Environment – Construction & Operation Phase, Decommissioning Phase

Sr. No.	Project Activity	Identified Aspect	Impact	Impact (Type: O, N, A, E; Duration: T, P)	Operation Controls/Mitigation Measures
C1	***C2***	***C3***	***C4***	***C5***	***C6***
1	**Construction Phase**				
1.1	Excavation, Construction & Fabrication of works on site for the project. Use of water by construction workers, concreting work, curing of the structures etc.	SW: Utilization of water for construction purpose from outside source	Temporary use of water for construction purpose to the tune of 5 KL per day. This is a minor impact on water source	O & N, T	The water utilized for construction purposes will be sourced by contractor from GIDC / nearby water supply source of canal waters
2	**Operation Phase**				
2.1	Handling & Transportation of Biomedical Waste from members up to the site, Operation of Incineration Plant, Autoclave and Shredder System	SW & GW: Spillages of wastes during handling and transportation to the site	Any untreated waste water discharged outside the site premises will have impact on drainage stream downstream of the site.	O & N, P	All vehicles carrying waste will be covered to avoid spillage of materials and site cleanliness of roads will be maintained. All material handling areas will be provided with bunds to control any accidental spillages entering into storm water network.

2.3	Water consumption & Generation of Waste Water from the project site	SW: Water consumption in plant will effect surface water source	Impact on GIDC source of water to the tune of 11.2 KLD fresh water utilization by site	O & N, P	Zero Liquid discharge from ETP will be envisaged and water consumption will be reduced by 2.6 KLD, 19.5 % recycle.
End of Life cycle and Decommissioning Phase					
3.1	Emptying out the waste and materials from tanks and equipment's / works on site	SW & GW: Spillages of wastes during decommissioning phase will affect, surface water	Impact on natural drainage system due to any spillages entering storm water	O & N, T	Care will be taken to avoid spillage of materials and site cleanliness of roads will be maintained. Entire site will be cleaned once plants are decomissioned.

4.11.2 Mitigation measures for Surface Water Environment

- All waste waters (industrial and domestic) generated will be taken to ETP and treated in ETP and then recycled and reused leading to ZLD concept.
- No waste water will be discharged outside the site.
- Proper operation and maintenance of effluent treatment plant will be done and no discharge of the waste water outside the plant premises will be carried out.
- All chemical, hazardous waste storage and fuel storage and handling areas will be provided with proper bunds to avoid run-off contamination.
- All storage areas will be enclosed and provided with bunds to collect any runoff waters and divert it to ETP.
- Storm water drainage will be provided separate with interceptor's design in order to ensure that no contamination will go out of the site premises.
- Roads to be kept clean along with storm water drainages so that any surface water contamination is avoided.
- Drip irrigation system will be proposed to reduce water demand for gardening / green belt development.

4.12 Geology, Hydrogeology & Ground water Environment

Impact on Geology

The study area falls in Seismic zone III Moderate damage risk zone. There will be no impact on geological formations in study area due to project activity. The local topography & Geomorphology of project site which is presently scrub land will be converted to build up land due to the proposed project.

Impact on hydrogeology

There is no abstraction of ground water in this project and hence no impact on ground water abstraction. The ground water levels are high in the region and water quality is good in the area. People use hand pumps for utilization of water as source. Since the project does not have high ground excavations there will be no impact on local hydrogeology.

Mitigation Measures on geology and hydrogeology

The site will be properly constructed with no major excavations and maintained with normal slopes so that local geology is maintained.

No ground water abstraction is done. However, piezometric wells will be drilled and maintained for monitoring purposes.

The aspects / impacting activities, their potential impacts and mitigation measures on ground environment are elaborated as under:

4.12.1 Impacting activities, Impacts & Mitigation measures on Ground Environment

The aspects / impacting activities identified on surface environment, their impacts and mitigation measures in order to minimize the impacts have been presented in ***Table 4-14*** as below:

Table 4-14: Aspects / Impacting activities and impact on Ground Water Environment – Construction & Operation Phase, Decommissioning Phase

Sr. No.	Project Activity	Identified Aspect	Impact	Impact (Type: O, N, A, E; Duration: T, P)	Operation Controls/Mitigation Measures
C1	*C2*	*C3*	*C4*	*C5*	*C6*
1	**Construction Phase**				
1.4	Generation & Disposal of waste water	GW: Disposal of sewage in soak pit	Disposal of waste water on land will impact on ground water	O & N, T	The sewage generated during construction phase will be treated in mobile STP and reused for sprinkling / green belt nearby areas
2	**Operation Phase**				
2.1	Handling and Transportation of Biomedical Waste from members up to the site, Operation of Incineration Plant, Autoclave and Shredder System	GW: Spillages of wastes during handling and transportation to the site	Any untreated waste water discharged on ground or soil will have an impact on soil and ground water through percolation	O & N, P	All vehicles carrying waste will be covered to avoid spillage of materials and site cleanliness of roads will be maintained. All material handling areas will be provided with bunds to now allow any accidental spillages entering into soil and further ground water
2.3	Water consumption & Generation of Waste Water from the project site	GW: No utilization of ground water for the industrial purpose.	No impact on depeletion of ground water resources since there will not be any abstraction of ground water in the proposed project.	O & N, P	Rain Water Harvesting system can be installed and roof top rain water can be utilized in order to conserve water. All waste waters will be treated in ETP leading to ZLD concept
End of Life cycle and Decommissioning Phase					
3.1	Emptying out the waste and materials from tanks and equipment's / works on site	SW & GW: Spillages of wastes during decommissioning phase will affect ground water	Any untreated waste water discharged outside the site premises will impact on ground water by penetrating through soil	O & N, P	During decommissioning special care will be taken to avoid any leakage or spillage of hazardous materials or wastes onto ground.

4.12.2 Mitigation Measure for Ground Water Environment

- The storage area for wastes, products and Hazardous and Solid Waste and ETP areas will be constructed with RCC floorings and bunding in order to prevent any leakages / spillages to contaminate soil in surroundings and further ground water sources.
- All waste waters and spillages will be arrested and sent to ETP for treatment and reused in ZLD system after treatment.

- Transportation of waste/materials will be done in covered trucks avoiding any spillages and care will be taken that no waste water or wastes will contaminate soil or ground water.
- Two piezometer wells will be constructed around site and periodic monitoring of groundwater will be done to record and analyse any contamination.
- Rainwater harvesting will be carried out on site for conserving the surface water resources to the tune of 8 KLD.
- Rain Water storage and utilization is proposed of 40 KLD.

4.13 Soil Environment

The aspects / impacting activities, their potential impacts and mitigation measures on soil environment are elaborated as under:

4.13.1 Impacting activities, Impacts & Mitigation measures on Soil Environment

The aspects / impacting activities identified on soil environment, their impacts and mitigation measures in order to minimize the impacts have been presented in ***Table 4-15*** as below:

Table 4-15: Aspects / Impacting Activities and Impact on Soil Environment – Construction & Operation Phase, Decommissioning Phase

Sr. No.	Project Activity	Identified Aspect	Impact	Impact (Type: O, N, A, E; Duration: T, P)	Operation Controls/Mitigation Measures
1	**Construction Phase**				
1.1	Excavation of soil	S: Removal of top layer of soil / vegetative layer	Loss of top vegetative soil layer of 2,800 cu.m of volume – 5600 x 0.5 m = 2,800 cu.m	O & N, T	Top soil of around 1500 cu.m will be stored and utilized in green belt. Rest will be utilized in plinth filling purposes.
1.4	Generation & Disposal of waste water	S: Generation of temporary waste water from labour camps	The waste water from base camps is temporary in nature and will have impact on soil if not treated and disposed	O & N, T	Treatment in mobile STPs will be arranged by Contractor for treatment of temporary generation of waste water from Labour camps
1.5	Generation & Disposal of construction waste	S : Spillages / improper disposal of construction waste on soil	Improper disposal of wastes on ground will contaminate soil within or outside the site	O & N, T	All construction wastes will be handled carefully by Contractor and the waste materials will be suitably disposed of as per Construction & Demolition waste management rules to authorized facility / utilized in area filling elsewhere by contractor
2	**Operation Phase**				
2.5	Green Belt Development	S: Soil Fertility improvements	Positive impact on soil by development of greenbelt	O & N, P	Regular addition of fertilizers and also development of green belt to 34.6% in the site area

					will have positive impact on soil and improve its fertility
3	**End of Life cycle and Decommissioning Phase**				
3.1	Emptying out the waste and materials from tanks and equipment's / works on site	S & SW & GW: Spillages of wastes during decommissioning phase will affect soil	Improper spillages of wastes on soil will impact on soil quality	O & N, P	During decommissioning special care will be taken to avoid any leakage or spillage of hazardous materials or wastes onto ground.
3.4	Cleaning and Clearing of site after decommissioning	S: Soil condition will be improved by cleaning and clearing of site	Positive impact on soil after plant is decommissioned due to cleaning and clearing of site	O & N, P	The site after decommissioning will be cleaned thouroughly so that it can be again used for other developmental use.

4.13.2 Mitigation Measures on Soil environment

- Top soil of around 1500 cu.m will be stored and utilized in green belt. Rest will be utilized in plinth filling purposes.
- Care should be taken to avoid any spillages / leakages on soil in the plant areas which will have an impact on soil quality.
- Regular water sprinking and use of fertilizers will improve the fertility of soil and maintain proper green belt for control of soil erosion and also improve quality of soil.

4.14 Ecology and Biodiversity Environment

4.14.1 Ecological Impact Assessment Methodology

Impacts on ecological components were identified by following various steps which are explained in detail in following sections.

4.14.2 Determination of Activities Likely Impacting Ecological Components

Broader level determination of ecological components like Terrestrial Flora (TFL), Terrestrial Fauna (TFA) etc has been performed on the basis of activities and associated activities involved at the different phases of project.

4.14.3 Impacting activities, Impacts & Mitigation measures on Ecology & Biodiversity

The aspects / impacting activities identified on ecology and biodiversity environment, their impacts and mitigation measures in order to minimize the impacts have been presented in ***Table 4-16*** as below:

Table 4-16: Aspects / Impacting Activities and Impact on Ecology and Biodiversity Environment – Construction & Operation Phase, Decommissioning Phase

Sr. No.	Project Activity	Identified Aspect	Impact Consequence - Description / Justification	N/ AN/ E situations	Operation Controls / Mitigation Measures
C1	C2	C3	*C4*	C5	C6
1.	**Construction Phase**				
1.1	Site Clearing and Levelling, removal of vegetation, excavation of soil	Clearance of shrubs & bushes/grasses, Loss of green cover	Site is located under non-notified industrial area (GIDC Shehra). There are no trees present at site except some small vegetation. The site does not have any special species of flora habitat so there is no threat of habitat loss on site.	O & N, T	Reclamation of site and surrounding area (within 1 km) with recommended tree species.
1.2	Construction Material and waste transportation, storage and handling	Generation of noise and vibration Generation of dust and emission of PM HC, CO, SO2, NOx and VOC	Impacts on the surrounding habitats/ vegetation due to dust deposition / gaseous emissions. Description: Generation of dust and emission of HC and CO will take place during construction phase. It will be for shorter duration and impacts will be minor and site specific only. No negative impact on surrounding ecosystem functioning or habitat ecology are expected.	O & N,T	To minimize the impact of noise and vibration on fauna, thick greenbelt containing trees with noise absorbing property will be developed. Water sprinkling will be done for dust suppression. Thick greenbelt, including trees having dust/gaseous emissions capturing properties, will be developed. Some of the dust and gaseous emission absorbing species having good pollutant absorbing capacity proposed in the greenbelt are: *Mangifera indica, Azardirchta indica, Tectona grandis etc.*
1.3	Excavation, construction & fabrication of works on site for the project.	Generation of noise and vibration	Disturbance to the normal fauna/ faunal movement	O & N,T	To minimize the impact of noise and vibration on fauna, thick greenbelt containing trees with noise absorbing property will be developed.
1.4	Noise from construction sites and vehicle movement	Generation of noise and vibration Generation of dust and emission of HC & CO	Disturbance to the fauna/ faunal movement Impacts on the surrounding habitats/ vegetation due to dust deposition / gaseous emissions.	O & N,T	To minimize the impact of noise and vibration on fauna, thick greenbelt containing trees with noise absorbing property will be developed. Water sprinkling will be done for suppression of dust and gaseous emission.
2.	**Operation Phase**				

Sr. No.	Project Activity	Identified Aspect	Impact Consequence - Description / Justification	N/ AN/ E situations	Operation Controls / Mitigation Measures
C1	C2	C3	*C4*	C5	C6
2.1	Handling and Transportation of Biomedical Waste from members up to the site, Operation of Incineration Plant, Autoclave and Shredder System and ETP	Emissions of PM10, PM2.5, Sox, NOx, VOCs. Generation of Ash Generation of Noise and vibration Generation of hazardous waste Generation of Odor	Emissions of PM10, PM2.5, SOx, NOx, VOCs from operation may inhibit the growth of plants and pre-mature leaves senescence. Ash filled void doesn't suit to all plant as in all it doesn't support plants health due to poor root system development which in turn result in uprooting of trees even by winds of low velocity. Increased noise and vibration will cause disturbance to existing fauna. Untreated water may deteriorate the plan/tree health. Impact to faunal health and impact on aesthetics of nearby area due to bad odour.	O & N,P	Although the findings of the air modeling indicate that the proposed project would not have a significant influence on the air quality, appropriate mitigation measures will be taken to protect the surrounding agriculture and other vegetation from any potential negative effects. To suppress dust, water sprinklers will be provided. Thick greenbelt, including trees having dust/gaseous emissions capturing and noise absorbing properties, will be developed. Some of the dust and gaseous emission absorbing species having good pollutant absorbing capacity proposed in the greenbelt are: *Mangifera indica, Azardirchta indica, Tectona grandis etc..* Certain trees that are known to tolerate fly ash and specific soil conditions can be planted. Appropriate quantity of soil to be added with the fly ash to minimize the negative effect of the fly ash. Ambient air quality will be monitored regularly to ensure that the ambient air quality standards limits will be met. Stack height of incinerator will be kept at 30m to achieve maximum efficiency of air pollution control system.
2.2	Fugitive emissions during handling of wastes, Air emissions from	Release of Sox, NOx, CO, TOC, Dioxins, Furans, SPM	Release of fugitive emissions Sox, NOx, CO, TOC, Dioxins, Furans, SPM from Incinerator Stack and DG		Although the findings of the air modeling indicate that the proposed project would not have a significant influence on the air quality,

Sr. No.	Project Activity	Identified Aspect	Impact Consequence - Description / Justification	N/ AN/ E situations	Operation Controls / Mitigation Measures
C1	C2	C3	*C4*	C5	C6
	Incinerator Stack and DG Set stack (during power shutdown operation) operation of Incinerator and DG sets		Set stack, inhibit the growth of plants and pre-mature leaves senescence.		appropriate mitigation measures will be taken to protect the surrounding agriculture and other vegetation from any potential negative effects. Ambient air quality will be monitored regularly to ensure that the ambient air quality standards limits will be met. Stack height of incinerator will be kept at 30m to achieve maximum efficiency of air pollution control system. Thick greenbelt will be developed including the plants/trees having dust /gaseous emissions capturing and noise absorbing capacities.
2.3	Noise generation due to Machinery operations	Generation of noise and vibration	Disturbance to the fauna/ faunal movement Description: The project site is located in a designated industrial area, where the CPCB limits defined for Ambient Noise Level is 75 dB (A) during the daytime and 70 dB (A) during the nighttime. Average noise level recorded at site is 55.2 dB(A) during daytime and 47.5 dB (A) during the nighttime. Predicted ambient noise level is 57.2 dB (A) during day time and 53.8 dB (A) during nighttime. However, sound pressure levels are considered on higher side for more critical analysis. Since the sources of noise are present within the project site premises, the boundary wall of the project site being present, increase beyond 75 dB (A) will not be observed.	O & N,P	To minimize the impact of noise and vibration on flora and fauna, thick greenbelt containing trees with noise absorbing property will be developed.
3	**End of Life cycle and Decommissioning Phase**				

Sr. No.	Project Activity	Identified Aspect	Impact Consequence - Description / Justification	N/ AN/ E situations	Operation Controls / Mitigation Measures
C1	C2	C3	*C4*	C5	C6
3.1	Emptying out the waste and materials from tanks and equipment's / works on site	Generation od dust and particulate matter Spillage /leakage of biomedical waste Generation of noise Generation of odor	Vehicular emissions can inhibit plant growth and may cause pre-mature leaves senescence. Spillage and leakage of waste on soil may cause pre-mature leaves senescence. Generation of noise may cause disturbance to the fauna/ faunal movement Impact to faunal health and impact on aesthetics of nearby area due to bad odor. Description: Bad odor will mainly be evolved due to the sludge storage and handling. However, dried sludge from ETP will be used as manure in horticulture.	O & N,P	Thick greenbelt will be developed including the plants/trees having dust /gaseous emissions capturing and noise absorbing capacities. All measures will be taken to prevent spillage and leakage of waste and chemicals on soil. No untreated water will be used for green area. Dried sludge from ETP will be used as manure in horticulture. Apart from operational control, odor absorbing plants will also be included in the greenbelt.

Mitigation Measures

- Thick greenbelt, including trees having dust/gaseous emissions capturing properties, will be developed. Some of the dust and gaseous emission absorbing species having good pollutant absorbing capacity proposed in the greenbelt.
- The green belt will act as a barrier between site operations and surrounding environment. Total 300 Nos of trees / shrubs will be developed on site with native species.
- As part of conservation plan also green belt in surrounding is proposed to be developed in consultation with forest department upto 1000 tree / shrub species.

4.15 Solid and Hazardous Waste Management

The aspects / impacting activities, their potential impacts and mitigation measures on solid and hazardous waste management are elaborated as under:

4.15.1 Impacting activities, Impacts & Mitigation measures on Solid & Hazardous Waste Management

The aspects / impacting activities identified on soil environment, their impacts and mitigation measures in order to minimize the impacts have been presented in ***Table 4-17*** as below:

Table 4-17: Aspects / Impacting Activities and Impact on Solid & Hazardous Waste Management – FConstruction & Operation Phase, Decommissioning Phase

Sr. No.	Project Activity	Identified Aspect	Impact	Impact (Type: O, N, A, E; Duration: T, P)	Operation Controls/Mitigation Measures
C1	*C2*	*C3*	*C4*	*C5*	*C6*
1	**Construction Phase**				
1.5	Generation & Disposal of construction waste	Spillages / improper disposal of construction waste	Loss of construction waste materials which can be reused	O & N, T	All construction wastes will be handled carefully by Contractor and the waste materials will be suitably disposed of as per Construction & Demolition waste management rules to authorized facility / properly segregated and utilized in area filling elsewhere by contractor
2	**Operation Phase**				
2.5	Handling and Transportation of Biomedical Waste from members upto the site, Operation of Incineration Plant, Autoclave and Shredder System	Generation of ash, other wastes and its appropriate collection, storage, treatment & disposal	Impact of Solid & hazardous generation from proposed operations	O & N, P	All solid waste will be properly handled and managed on site. The wastes will be collected, stored in solid and hazardous waste storage areas dedicated on site. The wastes will be periodically disposed for treatment and disposal to authorized facility outside the site with proper permissions
End of Life cycle and Decommissioning Phase					
3.1	Emptying out the waste and materials from tanks and equipment's / works on site	S & SW & GW: Spillages of wastes during decommissioning phase will affect soil	Improper spillages of wastes on soil will impact on soil quality	O & N, P	During decommissioning special care will be taken to avoid any leakage or spillage of hazardous materials or wastes onto ground.
3.4	Cleaning and Clearing of site after decommissioning	S: Soil condition will be improved by cleaning and clearing of site	Positive impact on soil after plant is decommissioned due to cleaning and clearing of site	O & N, P	The site after decommissioning will be cleaned thouroughly so that it can be again used for other developmental use.

4.15.2 Mitigation Measures on Solid and Hazardous Waste

The mitigation measures on solid and hazardous waste management are as under:

- All solid waste will be properly handled and managed on site. The wastes will be collected, stored in solid and hazardous waste storage areas dedicated on site.
- The wastes will be periodically disposed for treatment and disposal to authorized facility outside the site with proper permissions.
- Adequate capacity of Hazardous Waste Storage and Scrap Yard will be constructed on site to temporarily store hazardous and other solid waste with HDPE liner system.

4.16 Socio Economic Environment

Critical analysis of the existing socio-economic profile of the area vis-à-vis its scenario with proposed project activities identifies the following impacts:

- The proposed activities will generate indirect employment in the region due to the requirement of workers, supply of raw material, auxiliary and ancillary works, which would marginally improve the economic status of the people.
- The activities would result in an increase in local skill levels through exposure to activities.
- Infrastructure upgradation to facilitate the movement of the vehicles and traffic.
- The project in turn would lead to improvement in transport facilities

4.16.1 Mitigation Measures

- Shree Khodal will contribute to development of CER activities in surrounding villages.
- Shree Khodal will contribute for development and welfare of the surrounding community.
- Shree Khodal will provide employment opportunities to the local people of the villages.

Considering the above mitigation measures as well as the other conditions, the impact scores on socio economic environment are likely to be as mentioned in ***Table 4-18.***

Table 4-18: Aspects / Impacting Activities and Impact on Socio Economic – Construction & Operation Phase, Decommissioning Phase

Sr. No.	Project Activity	Identified Aspect	Impact	Impact (Type: O, N, A, E; Duration: T, P)	Operation Controls/Mitigation Measures
C1	***C2***	***C3***	***C4***	***C5***	***C6***
1					
1.2	Construction Material and waste transportation, storage and handling	SE: Temporary employment on account of construction material transportation system, distress to the local community nearby due to movements of construction vehicles.	Surrounding people will get affected with traffic and noise of construction activity of the proposed project	O & N, T	Proposed activities shall generate indirect employment in the region due to the requirement of workers, supply of raw material, auxiliary and ancillary works, which would marginally improve the economic status of the people. Regularly serviced vehicles will be used.
2	**Operation Phase**				

2.2	Handling and Transportation of Biomedical Waste from members upto the site, Operation of Incineration Plant, Autoclave and Shredder System	SE: Temporary manpower employment for collection vehicles	Positive impact on the nearby people will occur	O & N, P	Activities would result in an increase in local skill levels through exposure to activities
2.2	Fugitive emissions during handling of wastes, Air emissions from Incinerator Stack and DG Set stack (during power shutdown operation)	SE: Fugitive Emission can arise breathing problem for surrounding people	If the Emission will liberated in air from the equipment it can cause breathing Disease to the surrounding people	O & N, P	Proper APCM will be provided and Green Belt Development.
End of Life cycle and Decommissioning Phase					
3.1	Emptying out the waste and materials from tanks and equipment's / works on site	SE: Temporary manpower employment during decommissioning and permanent employment will be relieved.	Temporary employment will help to improve economic status but decommissioning will lead to unemployment.	O & N, P	Project proponent will provide educational aid to local villages based on need and request from the village Panchayat and school which will lead to education growth.
3.2	Decommissioning of the Incinerator, Autoclave and Shredder systems	SE: Temporary manpower employment during decommissioning and permanent employment will be relieved.	Temporary employment will help to improve economic status but decommissioning will lead to unemployment.	O & N, P	Project proponent will provide educational aid to local villages based on need and request from the village Panchayat and school which will lead to education growth.

4.17 Occupational Health and Safety

4.17.1 Impacts

The following are the impacts on OH and Safety

- Improper operational of Incineration system will have an impact to site and surroundings
- Improper handling of wastes on site will have an impact on people working on site.
- Improper storage of chemicals and hazardous and infectious wastes on site will have an impact on people working on site and surroundings.

4.17.2 General Safety Measures

Considering the various chemicals handled and stored at site; following safety measures will be provided at the site.

- Requisite personnel protective equipment will be used on site in various areas depending on seriousness and safety precautions to be taken. Instruction/Notice to wear the same will be displayed. Further, it will be insisted to use the same while at work.
- Provision of safety shower with eye washer.
- MSDS of all hazardous chemicals will be available and displayed at the place of work.
- Regular training programme for safety awareness.
- Provisions of First Aid Box and OHC (as per Factory Act) and trained staff will be maintained.
- Work area will be monitored to maintain it free from any dust/chemicals-fumes/vapors and to keep clean.
- Provision of adequate Fire Extinguishers and fire fighting system at site and impart training to the workers to smooth and trouble free operations
- Availability of Self Breathing Apparatus at site.

- Provisions of immediate accident/incident reporting and investigation.
- Instructions on Emergency/Disaster will be displayed.
- Safety Posters and slogans will be exhibited at conspicuous places.
- Arrangement of Periodical Training to workers and supervisors for safety and health.
- Work permit systems will be strictly followed.
- Medical checkup would be carried to all employees and worker staff on site at periodic intervals
- Appropriate personnel protective clothing to be used to prevent skin contact.
- Safety Goggles will be used to prevent eye contact.
- Hand gloves of natural rubber, neoprene, and polyvinyl chloride will be used.

5 ANALYSIS OF ALTERNATIVES (TECHNOLOGY & SITE)

5.1 Gap Analysis

There is a CBWTF of **M/s Samvedna BMW Incinerator (NE side of Dahod) at ~ 68 km aerial distance (**within 75 km radius) E from the proposed project site of Shree Khodal Waste Management.

The other site covers areas of Halol, Dahod and Mahisagar Districts. Due to one site available within 75 km, the GAP analysis was reviewed as under:

As per the GEMI Report, the analysis of data on CBWTF Consent quantity, actual generation in present scenario, BMW collection and Worst Case Scenario of BMW generation are presented in ***Table 5-1*** and ***Table 5-2*** as below:

Table 5-1: CBWTF Consent quantity, actual generation in present scenario, BMW collection and Worst Case Scenario of BMW generation as per GEMI report

District	No of Beds	CBWTF Consent as per GPCB (kg/Month)	Total BMW Generation Present Scenario (kg/Month)	Total BMW Collection (kg/Month)	Total BMW Worst Case Scenario (kg/Month)
Dahod	5076	24546	25728	22696	69235
Panchmahal	4326	16465	15949	15224	31806
Mahisagar	2472	7663	9104	7530	19380

Source: GEMI Report for Dahod, Panchmahal and Mahisagar Districts

The identified gaps between BMW Generation, Consents given and actual present collection scenario is presented in Table as below:

Table 5-2: Identified Gaps in the BMW generation Vs. present scenario of collection system and Consent status as per GEMI report

District	GAP Present Scenario Generation Vs. Collection	GAP Present Scenario Collection Vs. Consent	GAP Present Scenario Vs. Consent	GAP Worst Case Scenario Vs. Consent
Dahod	(25728 – 22696 = 3032) -3032 (-13.3%)	(24546 – 22696 = 1850) -1850 (-8.1%)	(25728 – 24546 = 1182) -1182 (-4.8%)	(69235 – 24546 = 44689) -44689 (-182%)
Panchmahal	(15949 – 15224 = 3032) -725 (-4.76%)	(16465 – 15224 = 3032) -1241 (-8.1%)	(16465 – 15949 = 516) -516 (-3.2%)	(31806 – 16465 = 15341) -15341 (-93.17%)
Mahisagar	(9104 – 7530 = 3032) -- 1574 (-20.9%)	(7530 - 7663 = 133) -133 (-1.7%)	(9104 – 7663 = 1441) -1441 (-18.8%)	(19380 – 7663 = 1441) -11717 (-152.9%)

Source: GEMI Report for Dahod, Panchmahal and Mahisagar Districts

Based on discussions and TOR Presentation, the SEAC Committee agreed and accepted the Gap analysis and granted us TOR to develop the BMW facility at 2.5 Tonnes per day capacity.

5.2 Evaluation of Site Alternative for development of proposed facility

M/s. Shree Khodal Bio Medical Waste Management have identified a plot within a non-notified GIDC Shehera, Taluka & District. Panchmahal and proposed to develop the CBWMF at this location. This site is centrally located covering the areas of Panchmahal, Dahod and Mahisagar districts.

Based on the Gap Analysis, it was found that there is a need of having a second facility for BMW in the above areas and also the present plot of land is located within a GIDC industrial area and thereby meeting the siting criteria of BMW facility setup (as per CPCB). Hence no other site alternative has been evaluated.

The facility will collect bio-medical from various Healthcare units like hospitals, Clinics, PHC, CHC, First aid centre, dispensary etc. from Panchmahal, Dahod and Mahisagar districts.

GIDC Shehera is a non-notified GIDC area, **hence public hearing will be conducted.** The compliance to revised CPCB Guidelines for Treatment and Disposal facilities for BMW have been elaborated in ***Section 2.10*** in ***Chapter 2*** of this EIA report.

5.3 Process Technology Alternative

Following are the technologies available for the disposal of Incinerable Bio-medical waste:

1. Incineration
2. Pyrolysis
3. Plasma Gasification

5.3.1 Description of each technology alternative

1. Incineration

Incineration is a waste treatment process that involves the combustion of organic substances contained in waste materials & converts the waste into ash, flue gas, and heat.

2. Pyrolysis

Pyrolysis is a partial combustion process which takes place in a closed container in the absence of oxygen. Because wastes treated by pyrolysis are imperfectly oxidised they still exhibit a Latent Heat Value (LHV). The manufacture of charcoal is one example of a pyrolysis process.

3. Plasma Gasification

Plasma gasification is an extreme thermal process using plasma torch, which converts organic matter into slag and a syngas (synthesis gas) which is primarily made up of hydrogen and carbon monoxide.

5.3.2 Selection of technology

- Pyrolysis is not feasible to treat large quantity of Bio-medical waste. In pyrolysis, operating temperature depends on nature of waste. If characteristics of waste change significantly, inner temperature of the reactor will differ. A temperature which is too low can cause unstable reactions and as a result treatment of waste is difficult. Setting the temperature too high can result in complete combustion, which cancels the advantages of incomplete combustion. Due to the variation of Biomedical waste characteristics, pyrolysis is not suitable.
- Plasma gasification on the other hand is high energy consuming technology, requires large electrical energy input if waste stream does not contain a large fraction of unoxidized hydrocarbons. Capital cost along with operation & maintenance cost is very high. Slag management is difficult and resulted as a major drawback.
- On the other hand, Incineration requires the use of a minimal amount of land, can be conducted in any weather, and produces stable and odorless residue. The reduction in the original volume and weight would be 95% and

75% respectively. It provides better control over odor and noise. Moreover, capital cost of incineration is lower compare to pyrolysis & plasma gasification hence, disposal cost of the Bio-medical waste will automatically reduce.

- Moreover, Incineration consumes less fuel then pyrolysis because in incinerator, after achieving desired temperature, temperature will be maintained by the combustion of hazardous waste itself.
- From the above mentioned technologies, Incineration is most feasible technology after considering Environmental, Technical & Economical aspects.
- Further, incinerator is also recommended as per the CPCB guideline.

5.4 Justification of Selection of Technology and Site alternative

It is proposed to have the facility located within a GIDC industrial area then having facility outside as a green field project. GIDC area will have advantages of getting power and water made available by GIDC itself along with development of infrastructure and roads network,

The technology of Incineration and Autoclaving for BMW treatment and disposal are adopted as widely suited and generally implemented everywhere for treatment and disposal of biomedical wastes

Autoclaving Advantages:

- Effective Sterilization: Autoclaves effectively kill pathogens, ensuring the treated waste is safe for routine disposal.
- Environmental Friendliness: Autoclaves do not produce harmful emissions making them a more sustainable choice.
- Cost-Effective: Autoclaves are generally less expensive than Hydroclave and can be more easily integrated into existing waste management systems.
- Versatile: Autoclaves can also be used for sterilizing medical instruments and equipment, reducing the need for single-use items.

Incineration Advantages:

- Complete Destruction: Incineration completely destroys the waste, effectively reducing volume and eliminating pathogens.
- The tail gas cleaning system installed in an incinerator along with quenching will keep all air emissions within the specified limits of CPCB air emission standards and also effectively eliminates formation dioxins and furans.
- Volume Reduction: Incineration significantly reduces waste volume, minimizing landfill requirements.

6 ENVIRONMENTAL MONITORING PROGRAM

6.1 Environmental Monitoring Plan

Regular monitoring of environmental parameters is very important to assess the status of environment during project operations. With the knowledge of baseline conditions, the monitoring program will serve as an indicator for any deterioration in environmental conditions due to operation of the proposed project. This shall enable taking up timely measures to mitigate any adverse impacts on the environment. Based on the predicted & assessed impacts as well as the baseline environmental status of the project area, an environmental monitoring program is suggested for implementation during various stages of the project cycle. The proposed monitoring program for the proposed project has three interrelated objectives:

- To check implementation & management of the various aspects required for Impact mitigation
- To check how effective are the measures for mitigation & control of pollution
- In case of non - compliance further measures for rectification

All monitoring strategies & programs have reasons & justifications which are often designed to establish the current status of an environment or to establish trends in environmental parameters. In all cases, the results of monitoring will be reviewed, analysed statistically & submitted to concerned authorities. The project proponent shall implement the environment monitoring program in line with the planned schedule. The proponent shall ensure that necessary requisite facilities are made available & budgetary provision is made as & when required to ensure regular efficient environmental monitoring activities.

Detailed Monitoring plan has been prepared for effective monitoring for various environmental and social attributes is made as under:

- Air emissions due to project operations, DG set, Incineration Plant
- Waste Water
- Soil quality
- Noise levels (Trucks, occupational exposures & ambient noise)
- Green Belt Development.
- Ecological Conservation.
- Corporate Environmental Responsibility

The monitoring program will have three phases:

- Construction phase – That will be taken care of by the Contractor during construction phase of the project
- Operational phase – Taken care by project proponent during the operation time cycle of the project.

6.2 Scope of Environmental Monitoring Program

The main objective of environmental monitoring program is aimed such that there is not much of time lack between commencements of damage to environment mitigation measures to various environmental parameters that are being affected. The environmental monitoring program involves the following:

- Planning a survey & sampling program for systematic data/information collection
- Conducting survey & sampling program
- Analysis of samples & data/information collected, and interpretation of data & information
- Preparation of reports for submitting to management & statutory authorities
- Environmental monitoring is carried throughout project operation to detect changes in the key environmental quality parameters, which can be attributed to the project

The results of the monitoring program used to evaluate the following:

- Extent & severity of the environmental impacts against the predicted impacts
- Performance of the environmental protection measures or compliance with pertinent rules & regulations
- Trends in impacts & overall effectiveness of the project Environment Management Plan (EMP)

Environmental Monitoring Program has been prepared for the proposed project for assessing the efficiency of implementation of Environment Management Plan & to take corrective measures in case of any degradation in the surrounding environment.

6.3 Post Project Monitoring Plan

6.3.1 Construction Phase

The major construction activities involved are as follows:

- Incineration Plant,
- Autoclave and Shredder facility area
- Independent storage areas of incoming waste and processed waste.
- Construction of other buildings and infrastructure facilities
- Construction of internal roads
- Installation of mechanical, electrical and instrumentation works.

The construction phase monitoring plan will be implemented by the Contractor and is in the scope of the cost put to the project. The generic environmental measures that need to be addressed during project construction stage are presented in ***Table 6-1*** .

Table 6-1: Environmental Monitoring Plan during Construction Phase

Sr.No	Potential Impact	Detailed Action to be followed as per EMP	Parameters for Monitoring	Frequency of Monitoring
1	Air Emission	All equipment's are operated within specified design Parameters	Random checks of equipment logs/ manuals	Periodic
		Vehicle trips to be minimized to the extent possible.	Vehicle logs	Periodic during site clearance & construction activities
		Any dry, dusty materials stored in sealed containers or prevented from blowing	Stockpiles or open containers of dusty Materials.	Periodic during construction Activities.
		Compaction of soil during various construction activities	Construction logs	
		Maintenance of Construction DG set emissions to meet stipulated standards.	Gaseous emissions (SOx, HC, CO, NOx)	Periodic emission monitoring
		Ambient air quality within the premises & adjacent villages of the proposed site to be monitored.	PM10, PM2.5, SOx, NOx, and CO	As per CPCB/ SPCB Requirement.
2	Noise	List of all noise generating machinery onsite along with age to be prepared.	Equipment logs, noise reading	Regular during construction activities
		Night working is to be avoided.	Working hour records	
		Generation of vehicular activities noise	Maintenance of records of vehicles	
		Implement good working practices (equipment selection and siting) to minimize noise and also reduce its impacts on human health (ear muffs, safe Distances and enclosures).	Site working practices records, noise reading	

Sr.No	Potential Impact	Detailed Action to be followed as per EMP	Parameters for Monitoring	Frequency of Monitoring
		Acoustic mufflers/enclosures to be provided in large engines	Mufflers/enclosure shall be in place	Prior to use of equipment
		Noise to be monitored in ambient air within the plant premises.	Instant Noise Recording	As per CPCB/SPCB requirement
		The noise level will not exceed the permissible limit both during day and night times		
		All equipment operated within specified design parameters.	Random checks of equipment logs/ manuals	Periodic during Construction activities
		Vehicle trips to be minimized to the extent possible	Vehicle logs	
3	Soil Erosion	Minimize area extent of site clearance, by staying within the defined boundaries. Protect topsoil stockpile.	Site boundaries not extended /breached as per plan document, Effective cover in place.	Periodic during construction activities
4	Wastewater discharge	No direct discharge of Wastewater to be made to surface water, groundwater or soil.	No discharge hoses shall be in vicinity of water courses	Periodic during Construction activities
		The discharge point would be selected properly and sampling and analysis would be undertaken prior to discharge.	Permits to treat the polluted waters at an authorized facility	
		Take care in disposal of wastewater generated such that soil and groundwater resources are protected.	Permits to treat the polluted waters at an authorized facility or treat at site itself e.g. sewage from base camps	
5	Drainage & Effluent management	Ensure drainage system and specific design measures are working effectively. The design to incorporate existing drainage pattern and avoid disturbing the same.	Visual inspection of drainage and records thereof	Periodic during construction activities
6	Waste Management	Implement waste management plan that identifies and characterizes every waste arising associated with proposed activities and which identifies the procedures for collection, handling & disposal of each waste arising.	Comprehensive Waste Management Plan should be in place and available for Inspection onsite. Compliance with BMW Rules, 2016.	Periodic check during construction activities
7	Non-Routine events & accidental releases	Plan will be drawn, considering likely emergencies and steps required to prevent / Limit consequences.	Mock drills & records of the same	Periodic during construction activities
8	Health	Employees and migrant labour health check-ups	All relevant health check-ups with required parameters Including HIV.	Regular check-ups as per Factories Act

6.3.2 Operation Phase

During operational phase air emissions from DG set, emissions from Incinerator, wastewater characteristics, soil, ground water, ambient air, noise etc. would be monitored by MoEF&CC/NABL approved third party. The details are presented in ***Table 6-2***. The following attributes which are subjected to regular monitoring based on the environmental setting & nature of project activities are listed below:

- Point Source emissions & ambient air quality
- Ground water Level & its quality
- Water & wastewater & Soil quality etc.
- Noise levels (machinery, occupational exposures & ambient noise)
- Ecological preservation & afforestation.

Table 6-2: Environmental Monitoring Plan during Operation Phase

Location	Parameters	Measurement methodology	Frequency	Data analysis	Reporting Schedules	Budget, INR		Procurem-nt Schedule
						Capital (in Lacs)	Recurring (per annum)	
C1	C2	C3	C4	C5	C6	C7	C8	C9
Air Environment								
Flue Gas Stack – DG and Incinerator	Stack monitoring of parameters specified by SPCB/GPCB in their consents from time to time (Temperature, O_2, CO_2, CO, PM, NOx, NH_3, SO_2, HC and Dioxins and Furans) for 1 No. of Stack attached to Incinerator and (PM_{10}, $PM_{2.5}$, SO_2, NOx) for 1 No. of Stack attached to DG Set	Stack monitoring by Isokinetic sampling IS: 11255.	Once in two months	Comparison with specified limits in SPCB/GPCB consents	Compliance report of EC to MoEF&CC on every 6 month and Compliance report of CTE/CTO to SPCB/GPCB as per requirement	**Rs 20 Lacs**	**Rs. 1,20,000/-** (for monitoring: 10,000/- x 2 stack x 6 times a year)	During Operation phase
Ambient Air Quality Monitoring - Minimum 3 stations (including Project Site, Upwind direction, one near incinerator stack and one downwind.)	All the parameters listed in National Ambient Air Quality Standards (PM10, PM2.5, SO2, NOx, O3, CO, NH3, C6H6, Pb, Ni, As, Benzo-a-Pyrene	IS: 5182 & CPCB Guidelines Vol. 1 (Gravimetric Method)	Once in two months	Comparison with specified limits and previous baseline data of the area if available	Report in Compliance report of EC to MOEF&CC on 6 monthly basis	-	**Rs. 1,80,000/-** (for monitoring: 10,000/- x 3 locations x 6 times a year except monsoon)	
	Total Volatile Organic Compounds (VOCs), Polycyclic Aromatic Hydrocarbons (PAH)		Once in two months					
Water Environment								
Waste Water at Inlet and Outlet of ETP	Maintain records of water consumption and waste water generation including leachates. Analysis of leachates generated interims of their parameters of pH, COD, BOD, TDS, Sulphates, Chlorides, Ammonical	APHA methods for water and waste water quality monitoring	Water Consumption & Waste Water Generation records to be maintained daily. Waste	Comparative data of waste water generation	Report in Compliance report of EC to MOEF&CC on 6 monthly basis	ETP Costs **– 50 Lacs**	Cost of analysis through a NABL approved Lab – Rs 10,000/- per sample x 2 samples x 1 a month x 12	During operation phase

Location	Parameters	Measurement methodology	Frequency	Data analysis	Reporting Schedules	Budget, INR		Procurem-nt Schedule
						Capital (in Lacs)	Recurring (per annum)	
C1	C2	C3	C4	C5	C6	C7	C8	C9
	Nitrogen, TKN, TN, Sulphides, Oil and grease etc.		Water inlet and outlet analysis maintained once in a month – Inlet and Outlet				Months = Rs **2,40,000/-**	
Groundwater Environment								
Sampling of Piezo metric wells – Total 2 Nos	Drinking water standard ISO 10500 - 2012	Analysed as per APHA Standard Methods (23th Edition, 2017)	6 times a year	Comparison with Drinking water standard ISO 10500 - 2012	Annually submission to GPCB	**INR 1.8 Lacs** (for 02 wells @ INR 90,000/-)	Analytical Costs – Rs 15,000 x 2 x 6 times in a year = INR Rs 1,80,000/- – **Rs 1.8 Lacs**	During operation phase (After getting EC and Consent)
Soil Environment								
Soil Quality – Total 4 samples to be tested from the site area	Check the quality by soil sample analysis – physio chemical analysis with NPK and heavy metals etc.	APHA Methods	Twice a year (Pre and post monsoon)	Comparison with specified limits	Compliance report of EC to MOEF&CC on 6 monthly and Compliance report of CTO to GPCB	-	Sampling and testing – 4 Nos x Rs 7500/- x 2 **= Rs 60,000/-**	During operation phase
Noise & Vibration Environment								
4 Locations at site	Ambient noise level	4 locations at Site	Once in a quarter	Comparison with specified limits	Compliance report of EC to MOEF&CC on 6 monthly and Compliance report of CTO to GPCB	DG Set is already purchased with acoustic enclosure and Provision of noise barriers in Incinerator Area – **Rs 8 Lacs**	Rs 500 Per Quarter x 4 x 3 = Rs 6,000/- per Annum	During Operation Phase
Odour Control System								

Location	Parameters	Measurement methodology	Frequency	Data analysis	Reporting Schedules	Budget, INR		Procurem-nt Schedule
						Capital (in Lacs)	Recurring (per annum)	
C1	C2	C3	C4	C5	C6	C7	C8	C9
Installation of odour control system	Monitoring of VOCs and PAH at 5 locations	APHA Methods	Once in two month	Comparison with specified limits	Compliance report of EC to MOEF&CC on 6 monthly and Compliance report of CTO to GPCB	Odour control devices and equipment's – **Rs 1.5 Lacs**	Covered in Air Environment	During construct-ion phase
Storm Water Management								
Storm water testing – 2 Samples	Drinking water standard ISO 10500 - 2012	Analysed as per APHA Standard Methods (23th Edition, 2017)	Four Times in a year	Comparison with Drinking water standard ISO 10500 - 2012	Compliance report of EC to MOEF&CC on 6 monthly and Compliance report of CTO to GPCB	Storm water drainage with interceptors **- Rs 5 Lacs**	Sampling and testing – 2 Nos x Rs 5,000 x 4 = Rs **40,000**/-, Maintenance costs for storm water drainage system – **Rs 0.5 Lacs per year**	During operation phase
Occupational Health and Safety								
All employees	Health Parameters + Safety equipment's with system. Conducting Mock Drills for safety and effectiveness of emergency procedures	-	Health check-ups twice a year	Records of accidents + health to be maintained	Compliance report of EC to MoEF&CC on 6 monthly & Compliance report of CTO to GPCB	OHC establishment, medical facilities, PPEs and fire safety equipment's – **Rs 15 Lacs**	O & M costs including health check-ups – **Rs 1.5 Lacs per annum**	During operation phase
Total Capex Investments on monitoring plan during operational phase Rs 101.3 Lacs. Recurring Costs will be Rs 10.26 Lacs per annum								

6.4 Environmental Management Cell

The Environmental Cell will be headed by the Partners followed by other officers and technicians. The department is the nodal agency to co-ordinate and provides necessary services on environmental issues during operation of the project. This environmental group is responsible for implementation of environmental management plan, interaction with the environmental regulatory agencies, reviewing draft policy and planning. This department interacts with State Pollution Control Board and other environment regulatory agencies. The department also interacts with local people to understand their problems and to formulate appropriate community development plan. The cell will also be responsible for monitoring of the plant safety and safety related systems which include:

- Checking of safety related operating conditions.
- Visual inspection of safety equipment.
- Preparation of a maintenance plan and documentation of maintenance work specifying different maintenance intervals and the type of work to be performed.

Other responsibilities of the cell will include:

- Conduct and submit the annual environmental Audit. A GPCB registered agency will be retained to generate the data in respect of air, water, noise, soil and meteorological data and prepare the Environmental Audit report. Timely renewal of Consolidated Consents & Authorization (CC&A) will also be taken care of.
- Submitting environmental monitoring report to GPCB. Data monitored by the cell will be submitted to the Board regularly and as per the requirement of GPCB/CPCB. The cell will also take mitigative or corrective measures as required or suggested by the Board.
- Keeping the management updated on regular basis about the conclusions / results of monitoring activities and proposes measures to improve environment preservation and protection.
- Conducting regular safety drills and training programs to educate employees on safety practices. A qualified and experienced safety officer will be responsible for the identification of the hazardous conditions and unsafe acts of workers and advise on corrective actions, organize training programs and provide professional expert advice on various issues related to occupational safety and health.
- Conducting safety and health audits to ensure that recommended safety and health measures are followed.
- The environmental department shall also look after preparation and submission of Environmental statement, EC Compliance and Consolidated Consent & Authorization application/ renewal under water (Prevention and Control of Pollution) Act, 1974, Air (Prevention and Control of Pollution) Act, 1981, and Hazardous & Other Wastes (Management and Transboundary Movement) Rules, 2016 under Environment Protection Act, 1986.

6.5 Reporting Procedure

Unit has to submit various reports to respective authorities for smooth operation and transparency between unit and regulatory authority. Details of reports to be submitted along with Frequency and submission to regulatory authority is presented in ***Table 6-3*** below:

Table 6-3: Reporting procedure for GPCB Compliances

Sr. No	Report	Data to be incorporated as per Monitoring Schedule	Regulatory Authority	Frequency of data to be submitted to Authority	Compliance Status
1	Environment Clearance compliance report	• Stack monitoring • Ambient Air Quality • Work Zone Monitoring • Water Consumption • Waste water generation • Waste water quality • Noise Monitoring • Details of BMW Quantity, Quality and Its Disposal • CER & CSR Details • Green Belt Details • Medical Check-up report • Compliance of all the remaining conditions given in Environment Clearance	State Environment Impact Assessment Authority (SEIAA), Gujarat MoEF&CC Regional Office, Bhopal Gujarat pollution Control Board, Gandhinagar	Half yearly	Unit will Submit EC Compliance report half yearly to the regulatory authorities.
2	Monthly Patrak	• Water consumption • Waste water details • Solid & hazardous waste disposal (Manifest) • Stack Monitoring	Gujarat pollution Control Board, Gandhinagar	Monthly	Unit will submit data on XGN portal on monthly basis.

6.5.1 LABORATORY FACILITY

The company will develop laboratory which will be equipped with sophisticated equipment like Spectrophotometer, pH meter, TDS meter, Oven, BOD incubator, COD apparatus, etc. to monitor and analysis of environment parameters. Company will do regular monitoring in in-house laboratory and shall do analysis of basic parameter of raw effluent as well as effluent quality at various treatment stages. Third party sampling and analysis will be carried out by National Accreditation Board for Testing & Calibration Laboratory (NABL) Accreditation Laboratory as per MoEF / CPCB / GPCB guidelines.

6.5.2 CONTINUOUS EMISSION MONITORING SYSTEM (CEMS)

As per the CPCB guideline and common practice of CBWTF, CEMS will be installed at proposed incinerator for listed parameters viz. Temperature (primary and secondary combustion chamber), O_2, CO, CO_2 and PM.

7 ADDITIONAL STUDIES

7.1 Public Consultation

The public consultation for this project was required since the project is located in non-notified industrial area / estate. This draft EIA and EMP report was submitted for public hearing process.

7.1.1 Application for Public Hearing

An application for conducting Public Hearing was made in May 2025 to Gujarat Pollution Control Board (GPCB), Gandhinagar based on the Draft EIA and EMP report prepared for the project. The following documents were submitted to GPCB for public hearing:

- Draft EIA/EMP report
- Executive summary in English and in local vernacular language (Gujarati)

Soft copies containing Draft EIA report and Executive Summaries (in English and Gujarati) were also submitted to GPCB.

7.1.2 Notice of Public Hearing

On processing the application for Public Hearing, GPCB in consultation with district administration fixed 09th July 2025 at 12:00 noon to conduct the Public Hearing at Plot No. 5 & 6, GIDC Shehera, Taluka Shehera & District Panchmahal. An advertisement for conducting the Public Hearing was published in Gujarati Newspapers "Divya Bhaskar" & in English newspaper "The Indian Express" on dated 04th June, 2025. Advertisement copies are attached as ***Figure 7-2.***

Draft Environmental Impact Assessment report & the Executive Summary of Draft Environmental Impact Assessment report of the project in both English & Gujarati (local language) were sent to the following authorities or offices to make available for inspection by the public during normal office hours, till the date when Public Hearing was conducted:

- The District Collector Office, Dist. Panchmahal
- District Development Office, Dist. Panchmahal
- District Industries Centre, Dist. Panchmahal
- Taluka Development Office, Ta. Shehera & Dist. Panchmahal
- Regional Officer, Integrated Regional Office, Ministry of Environment, Forests & Climate Change, Karmayogi Bhawan, Block- 3, F-2 Wing, 5th Floor, Near CH-3 Circle, Sector 10-A, Gandhinagar, Gujarat-382010
- Regional Office, Gujarat Pollution Control Board, Godhra, Plot No. 1403, Opp. GIDC Office, GIDC Halol, Ta. Panchmahal, Dist. Panchmahal- 389350

In addition to the above, the draft EIA reports and the executive summary in English and Gujarati (Local language) were also made available electronically at the website of GPCB. (**www.gpcb.gov.in**).

7.1.3 Publicity of Public Hearing

For publicity of the public hearing following activities were carried out:

- Advertisement published in the newspapers in English and local (Gujarati) language.
- Distribution of the executive summaries in both the languages (English and Gujarati) to the Talati/ Sarpanch of the villages covered in the study area.
- Two days before the Public Hearing, advertisment was made in the villages within the study area using auto-rickshaws to inform residents about the project, as well as the date, time and venue of the hearing.

Some of the photographs of the Autorickshaw movement is presented in ***Figure 7-1*** and the public hearing advertisements in newspaper in English and Gujarati language are presented in ***Figure 7-2.***

Figure 7-1: Photographs of Public Hearing Publicity

Advertisement through Auto Rickshaw dated 07th & 08th July, 2025

<table>
<tr><td>  </td><td>  </td></tr>
<tr><td>Shekhpur Village</td><td>Narsana village</td></tr>
<tr><td>  </td><td>  </td></tr>
<tr><td>Tadva Village</td><td>Dokva Village</td></tr>
<tr><td>  </td><td>  </td></tr>
<tr><td>Dalwada Village</td><td>Navagam Village</td></tr>
<tr><td>  </td><td>  </td></tr>
<tr><td>Dhamai village</td><td>Matriya Vyas village</td></tr>
</table>

	
Wariyal Village	Khandiya Village

Advertisement of the Public Hearing:

Figure 7-2: **Advertisement Copies**

"The Indian Express" English newspaper dated 04/06/2025

Gujarat Pollution Control Board

Paryavaran Bhavan, Sector 10 A, Gandhinagar 382 010
Tel 079-23232152 Fax 079-23222784, www.gpcb.gujarat.gov.in.

GPCB

PUBLIC NOTICE

It is hereby to inform that as per Ministry of Environment, Forest & Climate Change, Government of India, New Delhi vide its Notification no. S.O. 1533 (E) dated September 14, 2006; Public Hearing has been fixed for **M/s Shree Khodal Waste Management for Setting up of manufacturing plant of "Common Biomedical Waste Treatment Facility" – (1) Incinerator – 2 MT/Day, (2) Autoclave – 0.5 MT/Day and (3) Shredder – 0.5 MT/Day, at Plot No. 5+6, GIDC Shehra, Ta. Panchmahal, Dist. Panchmahal,** covered under project Category "B" as mentioned in their request application.

All local affected persons of the project are requested to remain present in the public hearing or send their response in writing to Member Secretary, Gujarat Pollution Control Board before the hearing date.

Other concerned persons having a plausible stake in environment aspects of the project or activity can submit their responses to Member Secretary, Gujarat Pollution Control Board in writing before the hearing date.

It may be noted that draft Environment Impact Assessment Report and Executive Summary of the Environment Impact Assessment Report of the project has been sent to the following authorities or offices to make it available for inspection to the public during normal office hours, till the Public Hearing is over.

1. District Collector Office, **Dist. Panchmahal.**
2. District Development Office, **Dist. Panchmahal.**
3. District Industry Centre, **Dist. Panchmahal.**
4. Taluka Development Office, **Ta. Panchmahal, Dist. Panchmahal.**
5. Regional Officer, Integrated Regional Office, Ministry of Environment, Forests and Climate Change, Karmayogi Bhawan, Block-3, F-2 Wing, 5th Floor, Near CH-3 Circle, Sector – 10A, Gandhinagar, Gujarat – 382010.
6. **Regional Office, Gujarat Pollution Control Board, Godhara, Plot No. 1403, Opp. GIDC Office, GIDC Halol, Ta. Panchmahal, Dist. Panchmahal - 389350.**

The District Magistrate /District Collector / Deputy Commissioner or his/her representative not below the rank of an Additional District Magistrate or any other District Level Officer authorized by him/her in this behalf shall supervise and preside over the entire public hearing process.

(Note:- If a project or activity is confined to the territorial jurisdiction of one sub-division, the District Magistrate/District Collector/Deputy Commissioner may alternatively authorize any officer not below the rank of SubDivisional Magistrate to supervise and preside over the entire public hearing process).

The Public Hearing is scheduled to be held on **09/07/2025 at 12:00 Hrs, Venue: At Plot No. 5 & 6, GIDC Shehra, Ta. Shehra, Dist. Panchmahal.**

Considering the present situation of pandemic of Covid-19 all concerned are hereby informed to follow Government guidelines regarding Covid-19 pandemic.

Place : Gandhinagar
Date: 29/05/2025

D. M. Thaker
Member Secretary

"Divya Bhaskar" Gujarati newspaper dated 04/06/2025.

ગુજરાત પ્રદૂષણ નિયંત્રણ બોર્ડ

પર્યાવરણ ભવન, સેક્ટર ૧૦ એ, ગાંધીનગર ૩૮૨૦૧૦
ટેલી. ૦૭૯-૨૩૨ ૩૨૧૫૨ ફેક્સ ૦૭૯-૨૩૨૨૨૭૮૪ www.gpcb.gujarat.gov.in.

જાહેર સૂચના

ભારત સરકારના પર્યાવરણ, વન અને જળવાયુ પરિવર્તન મંત્રાલય, નવી દિલ્હીના જાહેરનામા ક્રમાંક: એસ.ઓ. ૧૫૩૩ (ઈ) તારીખ ૧૪.૯.૨૦૦૬ અન્વયે જણાવવાનું કે મેસર્સ શ્રી ખોડલ વેસ્ટ મેનેજમેન્ટ દ્વારા પ્લોટ નં. ૫ + ૬, જીઆઈડીસી શેહેરા, તા. પંચમહાલ, જી. પંચમહાલ ખાતે પ્રસ્તાવિત "કોમન બાયોમેડિકલ વેસ્ટ ટ્રીટમેન્ટ ફેસિલિટી" - (૧) ઈન્સિનેરેટર - ૨ મેટ્રીક્ટન/દિવસ, (૨) ઓટોક્લેવ ૦.૫ મેટ્રીક્ટન/દિવસ અને (૩) શ્રેડર ૦.૫ મેટ્રીક્ટન/દિવસ માટેની પરિયોજના પ્રોજેક્ટ કેટેગરી "બી" અંતર્ગત તેઓની અરજી અન્વયે પર્યાવરણીય લોકસુનાવણી આયોજિત કરવામાં આવે છે.

લોકસુનાવણીની પ્રક્રિયાના ભાગરૂપે સ્થાનિક અસરગ્રસ્ત લોકોનું ધ્યાન દોરીને સદર લોકસુનાવણી દરમિયાન હાજર રહેવા અથવા તેમની દીઠા-દિવસની લેખિતમાં પર્યાવરણીય સુનાવણીની તારીખ પહેલા સભ્ય સચિવશ્રી, ગુજરાત પ્રદૂષણ નિયંત્રણ બોર્ડને મોકલવા વિનંતી છે.

રસ ધરાવતી અન્ય વ્યક્તિઓને પણ તેમની દીઠા-દિવસની પર્યાવરણીય સુનાવણીની તારીખ પહેલા લેખિતમાં સભ્ય સચિવશ્રી, ગુજરાત પ્રદૂષણ નિયંત્રણ બોર્ડને મોકલી આપવા વિનંતી છે.

અત્રે ઉલ્લેખનીય છે કે પ્રોજેક્ટના ઈઆઈએ (એન્વાયરમેન્ટ ઈમ્પેક્ટ એસેસમેન્ટ) અહેવાલના મુખ્તારની પ્રત તથા એન્વાયરમેન્ટ ઈમ્પેક્ટ એસેસમેન્ટનો સંક્ષિપ્ત અહેવાલની પ્રત નીચે દર્શાવેલ ઓથોરિટી/કચેરીઓ ખાતે કામકાજના દિવસો દરમિયાન લોકસુનાવણીના દિન સુધી નિહાળી શકાશે.

૧. જિલ્લા કલેક્ટરશ્રીની કચેરી, જી. પંચમહાલ.
૨. જિલ્લા વિકાસ અધિકારીની કચેરી, જી. પંચમહાલ.
૩. જિલ્લા ઉદ્યોગ કેન્દ્ર, જી. પંચમહાલ.
૪. તાલુકા વિકાસ અધિકારીની કચેરી, તા. પંચમહાલ, જી. પંચમહાલ.
૫. પ્રાદેશિક અધિકારીશ્રી, ઈન્ટીગ્રેટેડ પ્રાદેશિક કચેરી, પર્યાવરણ, વન અને જળવાયુ પરિવર્તન મંત્રાલય, કર્મયોગી ભવન, બ્લોક- ૩, એફ- ૨ વિંગ, ત્રીજો માળ, ચ- ૩ સર્કલ નજીક, સેક્ટર - ૧૦ એ, ગાંધીનગર, ગુજરાત - ૩૮૨૦૧૦.
૬. ગુજરાત પ્રદૂષણ નિયંત્રણ બોર્ડ, પ્રાદેશિક કચેરી, પ્લોટ નં. ૧૪૦૩,જીઆઈડીસી ઓફિસની સામે, જીઆઈડીસી હાલોલ, તા. હાલોલ, જિ. પંચમહાલ-૩૮૯૩૫૦.

જિલ્લા કલેક્ટર/જિલ્લા મેજીસ્ટ્રેટ/ડેપ્યુટી કમિશ્નર અથવા તેઓના/તેણીના પ્રતિનિધિ કે જેઓ અધિક જિલ્લા મેજિસ્ટ્રેટની નીચેના હોદ્દાના ના હોય અથવા આ બાબતે તેઓ/તેણી દ્વારા અધિકૃત કોઈ અન્ય જિલ્લા કક્ષાના અધિકારીશ્રી સદર લોકસુનાવણીની પ્રક્રિયાની દેખરેખ અને અધ્યક્ષતા કરશે.

(નોંધ:- જો કોઈ પરિયોજના કે પ્રવૃત્તિ એક પેટા વિભાગના પ્રાદેશિક અધિકારક્ષેત્ર સુધી મર્યાદિત હોય તો, જિલ્લા કલેક્ટર/જિલ્લા મેજીસ્ટ્રેટ/ડેપ્યુટી કમિશ્નર સદર લોકસુનાવણીની પ્રક્રિયાની દેખરેખ અને અધ્યક્ષતા માટે સબ-ડિવિઝનલ મેજિસ્ટ્રેટના દરજ્જાથી નીચેના ના હોય તેવા કોઈ પણ અધિકારીને વૈકલ્પિક રીતે અધિકૃત કરી શકશે).

લોકસુનાવણીની તા. ૦૯/૦૭/૨૦૨૫ ના રોજ ૧૨:૦૦ કલાકે, ખાતે: પ્લોટ નં. ૫ અને ૬, જીઆઈડીસી શેહેરા, તા. શેહેરા, જી. પંચમહાલ ખાતે આયોજિત કરવામાં આવે છે.

કોરોના વાયરસની વૈશ્વિક મહામારીને ધ્યાને રાખી સરકાર દ્વારા આપવામાં આવેલ સૂચિ:-૨૯ માર્ગદર્શિકાનું પાલન કરવા વગતા તમામને જણાવવામાં આવે છે.

સ્થળ: ગાંધીનગર
તારીખ: ૨૯/૦૫/૨૦૨૫

ડી. એમ. ઠાકર
સભ્ય સચિવ

7.1.4 Public Hearing Proceedings

The Public Hearing for the proposed Common Biomedical Waste Treatment & Disposal Facility at Plot No. 5 & 6, GIDC Shehera, Taluka Shehera & District Panchmahal was conducted on **09th July, 2025 at Plot No. 5 & 6, GIDC Shehera, Taluka Shehera & District Panchmahal**.

Dr. Bhargav Dangar, Sub District Magistrate- Shehera, as a representative of District Collector & District Magistrate, Panchmahal supervised & presided over the entire Public Hearing proceedings & Dr. Pradeep Dave, Regional Officer, GPCB Godhra as a representative of Member Secretary, Gujarat Pollution Control Board, supported to conduct of the entire public hearing proceedings.

A detailed presentation of Common Biomedical Waste Treatment Facility at Plot No. 5 & 6, GIDC Shehera, Taluka Shehera & District Panchmahal by Shree khodal Waste Management; comprising of location of the site, its map, process of the treatment and disposal, summary of the project, water balance diagram, details of baseline monitoring, water environment, air environment, noise environment, soil environment, health & safety measures, biological environment, socio & economic environment, CSR budget, benefits of the project, was presented in Gujarati (language) by Consultants on behalf of Shree Khodal Waste Management. The photographs of Public hearing proceedings are presented in ***Figure 7-3.***

In all total 30 people attended the public hearing procedings on 09th July 2025. The proceedings of the Public Hearing with the list of attendees are available electronically at the website of GPCB (www.gpcb.gov.in) and placed at ***Annexure 19.***

Figure 7-3: Photographs of Public Hearing





The issues/suggestions/objections/opinions raised by the participants were responded by the project proponent Shree Khodal Waste Management and the Consultants. The verbal as well as the written representations were made and submitted by local villagers / people, various gram Panchayats & concerned persons within the study area; which were also duly responded by Project proponent.

The summary of concerns raised by verbal & written communication during the Public Hearing are summarized in ***Table 7-1.***

Table 7-1: Summary of Verbal & Written Concerns Raised in Public Hearing

Sr. No.	Speaker & Name of Village	Timeline for Implementation of the Project	Employment Opportunities	About Consultants & General Information	Conflict with Existing BMW facility	Gap Analysis	Support to the the project
C1	C2	C3	C4	C5	C6	C7	C8
(A) Concerns of Local Affected Peoples: Verbal							
1.	Shri Dalpatbhai Shivabhai Pagi, Village : Bhensal, Tal.: Shehera, Dist.: Panchmahal	√					
2.	Shri Himmatsinh Jaisingbhai Pagi, Village: Palikhanda, Tal.: Shehera, Dist.: Panchmahal		√				
3.	Shri Kiransinh Raghunathsinh Makwana, Village: Khandiya, Tal.: Shehera, Dist.: Panchmahal						√
(B) Concern of Other Persons: Written							
4.	Dhamesh Mistry Narmada Apartment, Bharuch			√			
5.	Samvedna B.M.W. Incinerator-Halol				√	√	

Answers to these concerns raised during public hearing proceedings have been addressed vide – Public Hearing Minutes placed at ***Annexure 19*** are presented in below ***Table 7-2***:

Table 7-2: Overall Key Concerns of Public Hearing

Sr. No	Environmental Concerns	Response from SKWM	Schedule / Responsibility	Reference in EIA Report
1	Timeline & Implementation of the Project	The project will start as soon as we receive Environmental Clearance for the proposed project. We need about a year to complete the construction works.	Shree Khodal Waste Management	***Chapter 1, Section 1.3.3***
2	Employment Opportunities	It is envisaged that total of 20 people will get employment in this project during operation phase.	Shree Khodal Waste Management	***Chapter 2 , Section 2.11.2***
3	Conflict with Existing Biomedical Waste Facility	Client has given an undertaking that their areas of operation will not affect the existing customers of existing biomedical waste facility and there will be no conflict of business interests of each other.	Shree Khodal Waste Management	***Undertaking presented at Annexure 14***
4	Gap Analysis	Based on Gap Analysis study prepared by GEMI, SEAC has revivewed the gap between Existing & Worst Case BMW generation Vrs Consented Quantity and Actual Quantity of waste received at existing BMW sites in Dists of Dahod, Panchmahal and Mahisagar. Based on the same, SEAC has granted TOR to the project	M/s. Shree Khodal Waste Management	***Chapter 5 , Section 5.1, Table 10-12***

7.2 Introduction to Risk Assessment & Disaster Management Plan

The main aim of this study is to identify major risks in the activities carried out by the CBWTF and to evaluate On-site & Off-site consequences of identified hazard scenarios. To give effective mitigation of hazards in terms of suggestions for effective disaster management, suggesting minimum preventive and protective measures & change of practices to ensure Occupational Health and Safety.

7.2.1 Scope of Study

a) Hazard Identification
b) Risk Management
c) Disaster management Plan
d) Occupational Health Safety

7.2.2 Methodology

The steps involved in risk assessment methodology are as follows:

- Hazard identification by studying the information of plant location, layout of the equipment & process condition;
- Hazard assessment by qualitative risk assessment and quantitative risk assessment.
- Quantification of Hazard involves selection of most credible scenario or worst case scenario;
- Estimate consequences scenarios in the plant such as fire, explosion;
- Estimate frequency of occurrence of any incident is to be found out by reliability analysis;
- Prioritize and Reduce Risk by providing control / mitigation measures;
- Preparing disaster management plan to face any accident and disaster caused by the project operations;

7.2.3 Hazard Identification

Identification of causes and types of hazards is the primary task for planning for risk assessment. Hazard can happen because of the nature of the chemicals handled and also the nature of process involved.

The methods employed for hazard identification in this study are:

- Identification of major hazards based on Manufacture, Storage and Import of Hazardous Chemicals
- Identification of hazardous units and segments of plants and units based on relative ranking technique

7.2.4 Storage of hazardous substances

List of hazardous/infectious materials with classification, state and storage details are presented in ***Table 7-3*** as below:

Table 7-3: Storage Details of Hazardous Substances

Sr. No	Name of the Hazardous substance	Place of storage	State and operating pressure & Temp.	Type of hazards possible	Mitigation Measures
1	Yellow Category waste (Human anatomical waste, animal waste, soiled waste and etc.)	Yellow waste storage room	Ambient Condition	Fire, Infection	• No unauthorized entry • Flame proof electrical fitings • Designated storage area designed as per the BMW rule and guidelines. • Waste will be stored and handled as per the BMW rule and guidelines. • Fire Hydrant System • DCP & Foam Type fire Extinguishers Safety Signboards
2	Red category waste (microbiology & Biotechnology waste, tubing, catheters, intravenous sets etc.)	Red storage room	Ambient Condition	Fire, Infection	
3	Blue category (Glasswear, metallic body implants) and white category (waste sharps)	Blue, White storage room	Ambient Condition	Infection	

Sr. No	Name of the Hazardous substance	Place of storage	State and operating pressure & Temp.	Type of hazards possible	Mitigation Measures
4	Diesel (Storage Tank of 1 KL)	Utility area	Ambient Condition	Fire,	• Dyke wall, Separate storage, DCP & Foam Type fire extinguisher • No unauthorized entry • Safety Signboards

7.2.5 Regulatory Permission Required for Storage of Chemicals

PESO Permission

Regulatory permission is required for storage of fuel. Diesel falls in Class B category as per the Petroleum Act 1934. As the storage quantity of Diesel (1000 Liters) is less than the threshold quantity i.e. 2,500 liters, PESO license is not applicable.

Applicability of MSIHC Rules

The following activities are covered under MSIHC Rules;

A. An operation or process listed in Schedule 4 carried out in an industrial installation involving one or more hazardous chemicals.
B. An isolated storage involving one or more hazardous chemicals listed in Schedule 2, and
C. Pipeline for conveyance of a hazardous chemical other than the flammable gas at a pressure of less than 8 bars absolute.

Only activity (A) is applicable to the project.

7.2.6 Major Hazards and Its Control Measures

Facility would collect and dispose infectious bio-medical waste through incineration and autoclaving followed by shredding. A hazardous material is any item or agent (biological, chemical, physical) which has the potential to cause harm to humans, animals, or the environment either by virtue of its intrinsic property or through interaction with other factors.

The potential hazards associated with the industry are:

1. Biological Hazard
2. Fire
3. Noise
4. Musculoskeletal Disorders (MSD)
5. Electrical hazard

Major process hazards and storage hazards along with control measures are listed in ***Table 7-4, Table 7-5, Table 7-6*** as below:

Table 7-4: Process Hazards and Its Controls

S. No.	Name of Plant	Hazardous Process and Operation	Materials in the Process / Operation with their Quantity	Name of the Vessel and its Location	Operating Parameters	Type of Hazards Possible	Control Measures to be Provided
1.	Incineration plant	Incineration, Thermal Oxidation	Yellow category waste	Primary chamber and secondary chamber, Incineration area	Temperature 850 + 50 Deg C – Primary chamber and 1050 + 50 Deg C –	Fire, Health Hazard	• Fully Automatic PLC & SCADA Control • Emergency Local Stop • Fire Extinguisher (CO_2)

S. No.	Name of Plant	Hazardous Process and Operation	Materials in the Process / Operation with their Quantity	Name of the Vessel and its Location	Operating Parameters	Type of Hazards Possible	Control Measures to be Provided
					secondary chamber		• Fire Hydrant System • PPE • Emergency provision for fire brigade from outside source
2	Autoclave Plant	Sterilization	Red, Blue Category waste	Autoclave	Temp. around 121.5 Deg C & pressurized condition	Fire, Health Hazard	• Fully automatic Computer based automation • Emergency Local Stop • Fire Extinguisher (CO_2) • Fire Hydrant System • PPE
3	Shredder Plant	Shredding	Red, Blue Category waste	Shredder	Cutting chamber	Health Hazard	• Locked hopper with a lid • PPE

Table 7-5: Storage Hazards and Its Controls

S. No.	Name of the Hazardous Substance mention concentration (if any)	Quantity		Place of Storage	Safe operating Pressure & Temp	Type of Hazards Possible	Control Measures to be Provided
		Maximum Storage	Actual Storage				
1	Diesel Tank	1 KL (1 Nos.)	800 Litres	Utility area	Atmospheric condition	Fire	• Separate dedicated storage area & Dyke wall • Fire Extinguisher & Hydrant System • Ventilation
2	Yellow Category waste (Human anatomical waste, animal waste, soiled waste and etc.)	36 sq.m	36 sq.m	Storage area	Atmospheric condition	Fire, Health Hazard	• Separate storage Area • Keep away from static charge • Fire Extinguisher & Hydrant System • Ventilation • PPEs
3	Red category waste (microbiology & Biotechnology waste, tubing, catheters,	36 sq.m	36 sq.m	Storage area	Atmospheric condition	Fire, Health Hazard	• Separate storage Area • Keep away from static charge

S. No.	Name of the Hazardous Substance mention concentration (if any)	Quantity		Place of Storage	Safe operating Pressure & Temp	Type of Hazards Possible	Control Measures to be Provided
		Maximum Storage	Actual Storage				
	intravenous sets etc.)						• Fire Extinguisher & Hydrant System • Ventilation • PPEs
4	Blue category waste (Glass wares, metal body implants)	36 sq.m	24 sq.m	Storage area	Atmospheric condition	Health Hazard	• Separate storage Area • Ventilation • PPEs

Table 7-6: Other Hazards and its Control

S. No.	Name of The Possible Hazard or Emergency	It's Source & Reason	It's Effects on Persons, Property & Environment	Place of Effect	Control Measures to be Provided
1	Transformer Blast/Fire	Electrical Short circuit/Power Fluctuation	Burning, Personnel injury Fire	Within transformer yard & substation	• Regular inspection electrical equipment • PPE • Emergency provision of Fire Extinguisher (CO2) and Fire Hydrant System. • First aid facilities within premises.
2	Building/ Structure collapse	Corrosion/ Erosion	Personnel injury, material damage	Within premises	• Regular inspection to check corrosion /erosion in the steel structure. • Regular maintenance of building and structure
3	Earthquake	Natural	Personnel injury, material damage	Operating plant	• Earthquake proof plant
4	Cyclone	Natural	Personnel injury, material damage	Operating plant	• Design of plant with consideration of wind speed
5	Flood	Natural	Personnel injury, material damage	Operating plant	• Drainage system to make way for water

7.3 QUALITATIVE RISK ASSESSMENT

Many a times Risk involved in various processes / process equipment's cannot be addressed completely by Consequence Analysis. As a conservative approach, these risks have been considered separately under this topic. The approach is to identify hazards associated in operation of equipment as well as in processes, assessing its impacts, ranking the risk posed by it and finally to propose remedial actions/mitigation measures such that the risk is minimized to tolerable level.

Qualitative Risk Assessment has been carried out for the following areas:

- Hazard involving during Pre-Construction Phase and Construction Phase;
- Storage and Handling of Flammable Chemicals;
- Storage and Handling of Infectious Bio medical waste;

7.4 QUANTITATIVE RISK ASSESSMENT

Quantitative Risk Assessment (QRA) is a structured approach to identifying and understanding the hazards and risks associated with Storage and Handling of flammable chemicals. The assessment starts by taking into account an inventory of hazardous chemicals stored, likelihood of leakage/ spillage associated with it and selecting the worst case scenario for consequence estimation. Finally, suggesting the measures to minimize or mitigate risks to meet appropriate acceptability criteria. The planning for emergency evacuation shall be borne in mind whilst interpreting the results.

7.4.1 Damage Criteria

In consequence analysis, use is made of a number of calculation models to estimate the physical effects of an accident (spill of hazardous material) and to predict the damage (lethality, injury, material destruction) of the effects. The calculations can roughly be divided in three major groups:

a) Determination of the source strength parameters;
b) Determination of the consequential effects;
c) Determination of the damage or damage distances. The basic physical effect models consist of the following:

Source strength parameters

- Calculation of the outflow of liquid, vapour or gas out of a vessel or a pipe, in case of rupture. Also two-phase outflow can be calculated.
- Calculation, in case of liquid outflow, of the instantaneous flash evaporation and of the dimensions of the remaining liquid pool.
- Calculation of the evaporation rate, as a function of volatility of the material, pool dimensions and wind velocity.
- Source strength equals pump capacities, etc. in some cases.

Consequential effects

- Dispersion of gaseous material in the atmosphere as a function of source strength, relative density of the gas, weather conditions and topographical situation of the surrounding area.
- Intensity of heat radiation [in kW/ m^2] due to a fire or a BLEVE, as a function of the distance to the source.
- Energy of vapour cloud explosions [in N/m^2], as a function of the distance of the exploding cloud.
- Concentration of gaseous material in the atmosphere, due to the dispersion of evaporated chemical. The latter can be either explosive or toxic.

It may be obvious, that the types of models that must be used in a specific risk study strongly depend upon the type of material involved:

- Gas, vapour, liquid, solid
- Inflammable, explosive combustion products
- Stored at high/low temperatures or pressure
- Controlled outflow (pump capacity) or catastrophic failure

7.4.2 Selection of Damage Criteria

The damage criteria give the relation between extent of the physical effects (exposure) and the percentage of the people that will be killed or injured due to those effects. The knowledge about these relations depends strongly on the nature of the exposure. For instance, much more is known about the damage caused by heat radiation, than about the damage due to toxic exposure, and for these toxic effects, the knowledge differs strongly between different materials.

Table 7-7: Effects due to incident radiation intensity

Radiation (kW/m2)	Damage to Equipment	Damage to People
4.0	-	Causes pain if duration is longer than 20 sec. But blistering is unlikely.
12.5	Minimum energy to ignite wood with a flame; melts plastic tubing.	1% lethality in one minute. First degree burns in 10 sec.
37.5	Severe damage to plant	100% lethality in 1 min. 50% lethality in 20 sec. 1% lethality in 10 sec.

7.4.3 Consequence Analysis study of Diesel fuel

Identification of risks is done qualitatively and quantitatively through the selection of hazardous substances and by studying the manufacturing process, to arrive at possible failures and their inherent causes. Probability of risk occurrence is also ascertained in order to determine the Worst Case Scenario.

Selection of Maximum Credible Loss Scenarios (MCLs')

Diesel is used as a fuel in this plant and it's falls in Class B category as per the Petroleum Act 1934. Diesel is flammable chemical hence it has been considered for consequence analysis study.

The scenarios considered for consequence analysis of Diesel is presented in ***Table 7-8*** as below:

Table 7-8: Credible Scenarios considered for Consequence Analysis

S. No.	Material	Storage Details	Maximum Credible Scenarios *
1	Diesel	Tank, Capacity 1 KL	5 mm hole leak
			10 mm hole leak
			Catastrophic failure

***** *as per UK_HSE Risk assessment data directory_2017 edition*

Meteorology

Atmospheric stability plays an important role in the dispersion of the chemicals. "Stability means, its ability to suppress existing turbulence or to resist vertical motion".

Variations in thermal, mechanical turbulence and in wind speed are greatest in the atmospheric layer in contact with the surface. The air temperature has influenced these turbulences greatly & air temperature decreases with the height. The rate at which the temperature of air decreases with height is called Environment Lapse Rate (ELR). It will vary from time to time & from place to place. The atmosphere is said to be stable, neutral or unstable according to ELR less than, equal to or greater than Dry Adiabatic Lapse Rate (DALR), which is a constant value of 0.98 ºC per 100 meters. When the atmosphere is unstable & wind speeds are moderate or high or gusty, rapid dispersion of vapors will occur. Under these conditions, air concentrations will be moderate or low and the material will be dispersed rapidly. When the atmosphere is stable and wind speed is low, dispersion of material will be limited and air concentration will be high.

Weather parameter

Weather parameters play a significant role in dispersion analysis. The notable parameters for assessing the atmosphere are wind speed, atmospheric stability, ambient temperature, humidity and topographic parameters. Atmospheric stability represents the vertical turbulence in the air due to temperature differentials caused by heating of the earth by solar radiation. Atmospheric stability effects are represented through Pasquill parameters as follows presented in **Table 7-9** as below:

Table 7-9: Pasquill Parameters, Stability Class and Atomospheric Conditions

Stability Class	Atmospheric Condition
A	Very Unstable
B	Unstable
C	Slightly Unstable

Stability Class	Atmospheric Condition
D	Neutral
E	Stable
F	Very Stable

The relationship between wind speed & atmospheric stability is presented in ***Table 7-10***.

Table 7-10: Relationship between Wind Speed & Atmospheric Stability

Surface wind speed	Daytime incoming solar radiation			Night-time cloud cover	
m/s	Strong	Moderate	Slight	> 50%	< 50%
< 2	A	A – B	B	E	F
2 – 3	A – B	B	C	E	F
3 – 5	B	B – C	C	D	E
5 – 6	C	C – D	D	D	D
> 6	C	D	D	D	D
Note: Class D applies to heavily overcast skies, at any wind speed day or night					

Weather Conditions:

Below mentioned weather categories are selected for consequence analysis of Diesel:

Table 7-11: Weather Condition Selected

Time	Remarks	Weather Condition		
		Temperature in Deg C	Wind speed m/s	Stability Class
Night Time	Prevalent during the night, most times of the year	19.3	2	E
Day Time	Prevalent during the day, most times of the year	24.7	2	B
Monsoon	Prevalent during the monsoon months	22	5	D

Simulation of Release & Development of Contours

The consequence analysis results of Diesel storage is presented in ***Table 7-12*** as below:

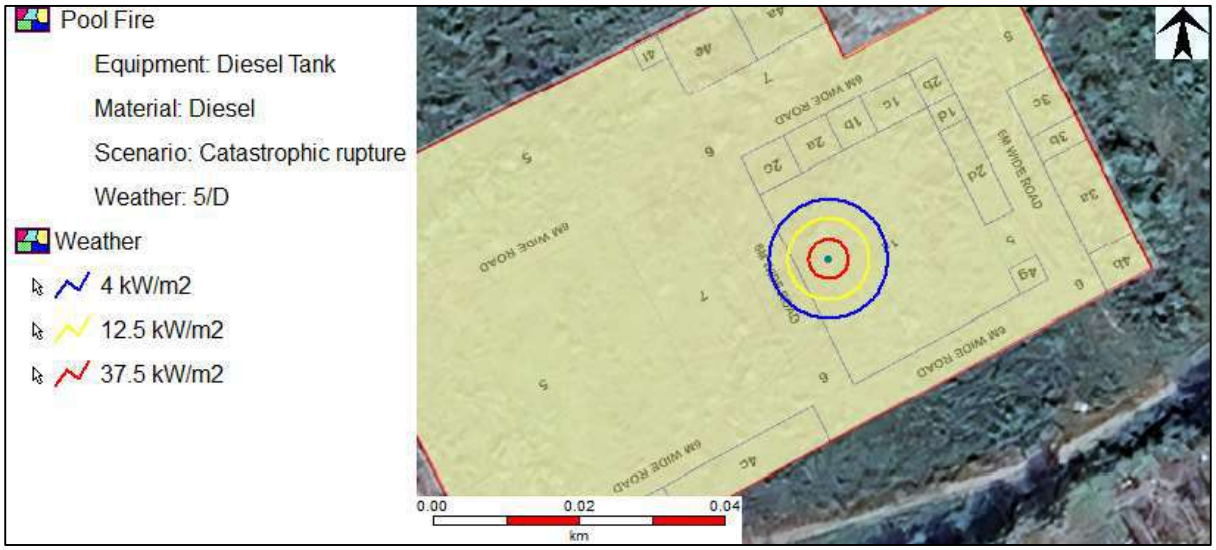
Table 7-12: Consequence Analysis results for Diesel storage

Chemical	Scenario	Weather Condition	Radiation Level Effective distance (meter)					
			Jet Fire			Pool fire		
			4 kW/m²	12.5 kW/m²	37.5 kW/m²	4 kW/m²	12.5 kW/m²	37.5 kW/m²
Diesel (Tank, 1 KL)	5 mm leak	2/E	NR	NR	NR	8	5	2
		2/B	NR	NR	NR	8	5	2
		5/D	NR	NR	NR	8	6	3
	10 mm leak	2/E	NR	NR	NR	8	5	2
		2/B	NR	NR	NR	8	5	2
		5/D	NR	NR	NR	8	6	3
	Catastrophic rupture	2/E	-	-	-	8	5	2
		2/B	-	-	-	8	5	2
		5/D	-	-	-	8	6	3

NR- Not Reached

Only Pool fire scenario considered for consequence as Diesel is in liquid form at atmospheric condition and pool fire might be happen due leak from tank. The contour for Pool fire effect distance of Diesel due to rupture of Tank is shown in ***Figure 7-4*** as below:

Figure 7-4: Pool fire effective distance of Diesel due to rupture of Tank



The plotted contours of risk assessment and consequence analysis area well within the boundaries of site and no damage will be caused offsite.

However general Hazard Identification and Risk Assessment is carried out for various operational activities in the project as elaborated below.

7.5 Hazard Identification and Risk Assessment

The hazard identification and risk assessment with control / mitigation measures to minimize the risks for all processs activities in the site are presented in ***Table 7-13*** as below:

Table 7-13: HIRA Worksheet

Sr. No.	Process / Activity	Hazards Associated with /Cause (Aspect)	Effect (Impact)	Initial Risk			Control/Mitigation Measures	Residual Risk		
				Likeli--hood	Seve--rity	Risk		Likeli--hood	Seve--rity	Risk
A.	**Construction Phase**									
1.	Vehicle movement for transportation of material and waste	Accident	Injury	2	2	4	Regular Maintenance of Vehicles Speed control of the vehicles Proper Road	1	2	2
2.	Civil Construction	Fall from height, Collapse of scaffold	Injuries	2	2	4	Barricaded construction area Safety net provision Proper PPE's to workers	1	1	1
3.	Heavy fabrication work include metal cutting (Gas welding)	Fire due to welding Fall from height Struck with objects Noise/Vibration	Injury/cuts Burns	2	2	4	Regular Training Good House Keeping Proper illumination and Adequate ventilation Use of PPE	2	1	2
B.	**Operation Phase**									
1	Transportation, Storage and Handling of Hazardous/ Infectious Bio Medical Waste	Exposure of infectious Blood/ fluid (HIV/other pathogens), if bags rupture or spillage/leakage Exposure of needle or other sharp object Fire due to electrical short-circuit Vehicle Accident during Transportation	Injuries Skin/Eye irritation Asphyxiation Burns	2	2	4	Prohibition of Unauthorized entry BMW stored as per CPCB guideline Decontamination of Floor area Adequate Illumination & Ventilation Proper Housekeeping Adequate PPEs like Apron, gloves, boots, masks Course of Hepatitis B (HBV) vaccine to all employees Provision of CO2 Type Fire Extinguishers Provision of GPS system in Vehicles Dedicated vehicles designed as per the BMW rule and guidelines. Provision of First Aid Kit provision Medical Examination Provision of SOP, Policy, Procedure, Training	1	1	1

Sr. No.	Process / Activity	Hazards Associated with /Cause (Aspect)	Effect (Impact)	Initial Risk			Control/Mitigation Measures	Residual Risk		
				Likeli--hood	Seve--rity	Risk		Likeli--hood	Seve--rity	Risk
							Waste should dispose in 48 hrs. Tie up with nearest BMW facility if plant break down/shut down			
2	Storage Handling and Transportation of LDO/Diesel	Fire due to leakage/ spillage from pipe/Drum/ valve Fire due to Static charge availability Fire due to electrical short-circuit	Burn Injury Damage to facilities Loss of containment	3	2	6	Spill containment provision No hot work nearby Ignition sources Fire extinguishers & Hydrant system provision Static Bonding provision PPEs Sand Bucket provision	2	1	2
3	Storage Handling and Transportation of Hazardous/ Infectious	Exposure of infectious waste if bags rupture or spillage/leakage, Exposure of needle or other sharp object Vehicle Accident during Transportation Fire during sanitization if spark receive	Fever, Dry cough, Tiredness, Aches and pains, Sore throat, Diarrhoea, Conjunctivitis, Headache, Loss of taste or smell, Rash on skin, or toes Burns	2	3	6	Proper sanitization of Waste/ vehicles Sanitizer facility PPEs Kit, N95 mask Immunity Booster/Medicine Medical Examination Hot drinking water Provision of CO2 Type Fire Extinguishers Immediately disposed waste once received it Training to workers and provision of SOP	2	1	2
4	Treatment of bio-medical waste and its corelated activities	Incineration can lead to: Mechanical hazards e.g. utility failure. Environmental hazards such as air pollution (Dioxin & Furan), odor problems Fire Heat Stress	Burn Injury Damage to equipments and facilities Crimp, Skin itching	2	3	6	Incinerator is designed as per the CPCB guideline Fully Automatic Control Emergency Local Stop Pressure gauge and Safety Control valve. Provision of adequate Air Pollution Control Devices like quencher, ventury scrubber, mist eliminator Fire Extinguisher Skilled workers Proper MOC PPEs & First Aid Kit Adequate Ventilation & Illumination Proper disposal of Incinerated Ash Regular preventive maintenance work Training to workers and provision of SOP	2	1	2
		Operation of autoclave may lead to: Ergonomic (including manual handling) Fire hazard due to	Musculoskeletal Disorders Burns Steam Burns	2	2	4	Adequate PPEs like gloves, Apron, Goggles Proper MOC Provision of CO2 Type Fire Extinguishers	1	1	1

Sr. No.	Process / Activity	Hazards Associated with /Cause (Aspect)	Effect (Impact)	Initial Risk			Control/Mitigation Measures	Residual Risk		
				Likeli--hood	Seve--rity	Risk		Likeli--hood	Seve--rity	Risk
		Electrical short- circuit Broken glassware (handling whilst removing from autoclave, handling after removal) Broken or loose sharps	Injuries				Training to workers and provision of SOP Skilled workers First Aid Kit Regular preventive maintenance work			
		Operation of shredder may lead to: Noise hazard Fire due to electrical short-circuit Dust Slips, trips and falls Contact with knives. Contact or impact from ejecting bottles	Cuts Injuries Burns	2	2	4	PPEs like goggles, mask, Apron, Gloves Machine Guarding Proper MOC of Blade Regular preventive maintenance work Training to workers and provision of SOP	1	1	1
		Fire/Explosion during DG set operation or storage of HSD	Burns Generator damage Damage property Power Failure Smoke inhalation while Fire fighting.	2	2	4	Good Housekeeping maintained Spillage/leak attended Level indicator on Diesel tank in DG Room No smoking in area Fire Extinguisher & Hydrant system	1	1	1
		Usage of electricity and Operation & Maintenance of Electrical Appliances can cause: due to over heating of HSD Fire due to lose contact of wires Weak earthing Short Circuit Improper Insulation Person fall at height while working at height Exposure of Live Wires Fire in Waste Oil Struck with objects	Burns Death Damage Property Injuries	2	2	4	Regular inspection of electrical fitting, flame proof fitting provided in flammable area, proper earthing. Regular measurement of earth pit resistance. Use of proper PPEs LOTO System should be followed. Trained and Experience Staff Work Permit System	2	1	2
		Operationand Maintenance of ETP: Moving part/machinery Fall, Slip, struck with object Biological hazard due to direct exposure with untreated effluent	Injuries/Cuts Illness	2	2	4	Avoid manual handling Trained and Experience Staff Good Practices to be follow Use proper PPEs Proper disposal of ETP sludge Provide impervious flooring near ETP area	2	1	2

7.6 Risks associated with handling of Biomedical Wastes and their mitigation measures

7.6.1 Risk Associated with Biomedical Waste & Its Mitigation Measures

Workers handling and disposing biomedical waste are at potential risk of exposure to infection from sharps-related accidents or when containers of waste burst, open and leak, or spills of specific waste materials.

Exposure to a needle or other sharp object contaminated with the blood of an infectious person presents the greatest potential risk for transmission of HBV, HIV, and other blood borne pathogens to the health-care worker and waste handler.

Mitigation measures:

1. Company will take reasonable steps to reduce the risk of exposure to infection by establishing written policies and procedures based upon the most currently accepted clinical and occupational health and safety information in consultation with workers, handling and disposing of biomedical waste. These policies and procedures will be reviewed and updated regularly, with compliance to their requirements verified as necessary.
2. Regular instruction, information's and training will be given to employees like,
   - Personal hygiene, especially washing hands, wearing apron;
   - The facility's procedures for the reduction, segregation, collection, packaging, colour-coding, labelling, storage, and in-house movement of waste
   - Methods for preventing the transmission of infections related to waste-handling procedures;
   - The hazards of those materials to which workers may be exposed; and
   - The actions to be taken and which supervisory staff should be notified in the event of an accident.
3. Mitigation measures to minimize the occupational health risks associated with the handling and disposal of biomedical waste are:
   - Include a regular assessment of waste management procedures to assure compliance with applicable standards and all applicable federal, territorial and municipal regulations and legislation;
   - Use of personal protective equipment and hand washing facilities for workers involved in various stages of waste handling and disposal;
   - A written procedure to handle and report needle stick injuries and other waste-handling incidents. Injuries caused by needle sticks and sharp instruments will be documented, reviewed, and changes implemented to prevent similar incidents in the future.
   - Emphasize the need for point of generation segregation so that waste is placed within an appropriate waste container;
   - Type and quality of waste containers will be review regularly, if necessary it will be upgraded to more suitable container;
   - Handling practices will be reviewed regularly to determine problems of inappropriate handling. If so, modify the handling techniques
4. Make sure that waste haulers and handlers will always be proper clothed and wear personal protective equipment so that harmful agents, whether physical, chemical, or infectious, are prevented from gaining access to open wounds, cuts, or by absorption through the skin. Personal protective equipment may include cut proof gloves, gowns, safety glasses, protective footwear, etc.
5. A course of Hepatitis B (HBV) vaccine will be offered to all employees dealing with handling and disposing of biomedical waste who are at risk of exposure to human blood, blood products, or body secretions.
6. Two-handed recapping of needles will be avoided.
7. Appropriate protective equipment, including dust masks, heavy gloves and safety shoes with puncture- proof toes and soles to avoid injury to Staff responsible for loading and cleaning out incinerators.
8. Mitigation measures to minimize risk in case of spillage of infectious fluid are
   - Visible material will be first removed with disposable towels or other appropriate means that prevents direct contact with blood. If splashing is anticipated, both protective eyewear and clothing will be worn.
   - The area will be decontaminated with an appropriate germicide.
   - Hands will be washed after gloves are removed.
   - Soiled cleaning equipment will be cleaned and decontaminated or placed in an appropriate container for disposal.

- Plastic waste-holding bags will be made available for removing contaminated items from the site of the spill.
- Shoes and boots can sometimes become contaminated with blood. If there is massive blood contamination on floors, the use of disposable, impervious shoe coverings will be considered.

9. Bio Medical Waste will be stored as per the CPCB guideline.
10. Unauthorized entry will be prohibited
11. Training will be provided to workers and employee periodically.

7.6.2 Fire Fighting System

A fire fighting system with hydrant valves will be provided on site as required. The fire-fighting devices like Portable fire extinguishers (DCP Type, Foam Type, CO2 Type etc.), sand buckets etc. will also be provided in required quantity. Necessary fire pumps and jockey pumps will be installed. Further, provision of fire alarm will be made within the site to prompt the workers in the event of any fire hazard.

7.6.3 Personal Protective Equipment

During construction and operational phase, for the safety of the workers, personal protective equipments like hand gloves, helmets, safety shoes, goggles, aprons etc., & Ear protecting devices like earplugs/earmuffs will be provided. Nose mask will be provided at places, where there is possibility of dust generation. Adequate PPEs to be used at all times by every employee working on the site.

7.6.4 Do's and Don'ts

Suitable notices / boards are displayed at several locations indicating appropriate hazards warning as well as DOs and DON'T for ensuring operational and personal Safety for information of workers / staff and visitors.

Do's:

→ Check for proper manpower available till the entire operation in over.
→ Time schedule should prepare for autoclavable waste treatment.
→ Monitor the temperature and pressure during the process.
→ Familiarize the worker about what is the job on hand.
→ The worker or operator should have sufficient knowledge of the BMW handling.
→ Visual instructions should properly display for characteristics of the waste
→ Ensure proper training of personnel.
→ Ensure sufficient numbers of safety devices are available.
→ Ensure the workers wear proper PPE of adequate grade.
→ Demarcation of the BMW storage area as per the guideline.
→ Prepare and follow the safe work instruction.
→ Record every incident that led to an accident irrespective of the seriousness of the accident and analyze the same to improvise the system continuously.
→ Always check the fire water availability.
→ Never work bare foot or without safety shoes.
→ Never use mobile phones in work zones.
→ Use only proper grade PPEs and use them properly.
→ Verify the label with the instruction before use.
→ Participate wholeheartedly in all safety related exercises an keep yourself updated.

Don'ts:

→ Don't work without enough and proper man power.
→ Don't use the equipment which are not in operable condition.
→ Don't use the material without Prepare time schedule.
→ Don't perform without Monitoring the temperature and pressure during process.
→ Don't handle BMW with open hands where manual handling is a must.
→ Don't keep the workers under wraps about what is the job on hand.

→ Don't let the worker / operator do the work having lack of sufficient knowledge of the BMW handled.
→ Don't let the personnel do the work without giving proper training.
→ Don't work without sufficient numbers of safety devices.
→ Don't let the workers do work without wearing proper PPE of adequate grade.
→ Don't breach the safe work instruction.
→ Don't try to conceal information regarding missed accidents or small injuries. Remember every and any mishap can be fatal if not for yourself for others.
→ Don't work bare foot or without safety shoes.
→ Don't use mobile phones in work zones.
→ Do not use PPEs which are not relevant to the operational aspect that has been identified.
→ Don't work without Verifying the label with the instruction before use.
→ Don't ever even thinking of evading safety instructions.

7.6.5 Safety Training

SOP for training will be prepared which are applicable to all the employee/operational Staff of the company. The main objective is to identify training need and its evaluation.

Planning and co-ordination all type of Training/Gap Analysis of the Employees in the company and also to maintaining training records and also to initiate Induction Training for all new employees and is imparted respective department where employee is going to work. While departmental head ensures that each employee in his department has been imparted required Training which is relevant to the activities performed by the employees, as per SOP. They are responsible to send training records to Head.

Training is divided in to two major categories as mentioned below:

- Internal Safety Training
- External Safety Training

Internal Safety Training

Internal Training is the Training which conducted within the organization by in house faculty only. It is divided in to 3 main categories as mentioned below:

a. Induction Training
b. On the Job Training
c. Refresher Training – Regular Base Training

Induction Training

- This training covers the overview of organization, company policies and departments, basic rules and system called induction Training.
- The induction Training will be imparted to every new employee as well as visitors. It will be extended to Driver/ Contract employees on later stage.

On the Job & Class Room Training

- Class Room training will have provided to all employees on various subjects by concerned internal and external faculty as per the Schedule prepared by HRD.
- On the job Training will impart to all new joiners by the concerned HOD or his/her designee related to the area of operation. This Training program includes the Training related to the specific aspects of an employee's role including use of equipment, unit operations, and safety norms to be followed.
- If any employee is transferred from one area of operation to other area of operation within the department, Training on related SOPs will imparted to the employees.

Refresher Safety Training

- All employees will undergo refresher Training on the procedures of their respective functions and related or cross functional department processes, whenever needs identified.

- Refresher Training will be carried out as per ongoing calendar, and whenever there is a procedural change or revision in the SOP.

External Training

- Persons from another sites, locations and persons from outside of organizations will be called to give training as and when required for specialized subjects.
- The external Safety training will be conducted for Mandatory safety training as required under Section 111-A ii of the Factories Act 1948 to all employees and contract employees through DISH Approved Safety Training Institute.

7.6.6 Safety Audits and Inspections

EHS officer will be responsible to conduct safety audit. Two types of safety audit will be conducted:

1. Internal Audit
2. External Audit

Internal Audit

As per GFR 68-J(9)(2)(a), internal audit will be conducted once in a year by a team of cross functional team for on-site operations by EHS officer based on checklist.

External Audit

It is recommended to conduct external audit at least once in a year by a competent agency accredited by authority.

7.6.7 Standard Operating Procedures

Various SOP's like for Training, Storage & handling of Bio-medical Waste and for Work permit are prepared and followed for the safe operation of the plant. These SOP's includes objective, scope responsibility and procedure steps. Following SOP's have been prepared in current unit:

- SOP on receipt, storage and handling of Bio Medical Waste
- SOP on storage and handling of Diesel
- Safety work permit for hot work
- Safety work permit for confined space entry
- Safety work permit for work at height
- Safety work permit for general work
- Operation of effluent treatment plant
- On Job training
- Operation and handling of firefighting equipment

7.7 OCCUPATIONAL HEALTH AND SAFETY

Unit will prepare the Occupational Health Surveillance Program which will be followed right from the project construction & erection phase and the same will be updated for the upcoming new facility, if required. The details of the same are described in the following sections.

7.7.1 Occupational Health

Occupational health needs attention both during construction & erection and operation & maintenance phases. However, the problem varies both in magnitude and variety in the above phases.

7.7.2 Hospital Facilities /Factory Medical Officer

Company will make formal agreements with nearby Hospital having facilities to attend fire cases, emergency cases, attending the affected persons in the emergency arising out of accidents, if any, etc. A qualified doctor will be

appointed as Factory Medical Officer. Apart from him, required medical facilities applicable as per Gujarat Factories Rules and Factories Act will also be made available. All types of first aid related accessories, Medicines & Antidotes as prescribed by FMO, etc. will be made available at conspicuous locations.

7.7.3 Medical Examination

Occupational health surveillance of the workers (Pre-Employment, Periodic Checkup and Post -checkup) will be carry out on a regular basis.

All precautions will be taken to avoid foreseeable accident like spillage, fire and explosion hazards and to minimize the effect of any such accident and to combat the emergency at site level in case of emergency. Hepatitis and Tetanus shots will be given to employee as and when required. Risk control preventive & mitigate measures are discussed in previous section. Medical checkup will be conducted regularly.

7.7.4 Provision of Occupational Health Centers, Ambulance Van & First Aid

Direct employment will be less hence OHC is not applicable but facility will provide. As per Gujarat Factory Rule 68-U it is recommended to provide:

i. The services of a Factory Medical Officer on retainer-ship basis, in his clinic to be notified by the occupier. He will carry out the pre-employment and periodical medical examination as stipulated in Rule 68-T and render medical assistance during any emergency.
ii. A minimum of 5 persons trained in first-aid procedures amongst whom at least one shall always be available during the working period;
iii. A fully equipped first-aid box.

First Aid boxes will be provided in the Security Office, Plant and OHC. Additional first aid boxes will be provided. First Aid Boxes shall be checked time to time to replenished first aid material immediately Mutual aids with nearby hospital for ambulance van for emergency.

7.8 DISASTER MANAGEMENT PLAN

Unit will prepare Disaster Management Plan which is linked with District Disaster Management Plan. This plan is prepared based on risk contours plotted on the plant layout map clearly showing the facilities that would be affected, in case an accident take place.

Disaster is a catastrophic situation in which the day-to-day patterns of life are, in many instances, suddenly disrupted and people are plunged into helplessness and suffering and as a result need protection, clothing, shelter, medical and social care and other, necessities of life.

Advance emergency planning and proper training of every employee in the emergency function is very essential to make emergency control measures more effective. It is not possible to completely eliminate emergency situations, but it is definitely possible to control them. An emergency, if uncontrolled may cause a disaster which in turn may create a catastrophe.

There are two types of emergency control plans

1. On site emergency plan
2. Off site emergency or disaster plan

7.8.1 Objectives of the Plan

→ To protect persons and properly of your factory in case of all kinds of accidents, dangerous occurrences (Rule 103, Gujarat Factories Rules), emergencies and disasters happening in or affecting your plant at any time.
→ To inform people and surroundings about above happening if it is likely to adversely affect them.
→ To inform authorities including helping agencies (doctors, hospitals, fire, police, transport etc.) in advance, and also at the lime of actual happening.

→ To identify, assess, foresee and work out various kinds of possible hazards, their places, potential and damaging capacity and area in case of above happenings. Review, revise, redesign, replace or reconstruct the process, plant, vessels and control measures if so assessed.

→ To work out a plan with detailed instructions to cope up with above happenings, based on your personnel, equipment and records. Necessary requirements shall be added if not already available. Levels of hazardous substances shall be minimized to the extent possible. Establish machinery for rescue and recuperation operations, total loss control and prevention of harms and recurrence of above happenings. Ensure that absolute safety and security is achieved within the shortest time.

7.8.2 Types of Overall Emergencies

The risk assessment study has described all type of hazards are listed along with its causes in or near plant. Fire (small and big), explosion, strike, storm, flood and other hazardous possible situations are described with reasons. A source of hazard from outside or neighboring plants, tanks, structure etc. is mentioned. From the consequence analysis for storage area and drums following emergency situation can be arising:

Table 7-14: Types of Overall Emergencies

Sr. No.	Type of Emergency Including Disaster	Source	Place	Affected Persons
1	Fire	Spillage or leakages of flammable liquid i.e. Diesel Electrical lines	Storage area of Fuel, Plant Area	Plant Operator, Labors, Admin staff
2	Rapture of infectious waste bags	Bio Medical waste from member units	Storage Area	
3	Deliberate Sabotage, Terrorism, Air Raid etc.	-	Town/ villages	Public living in that area
4	Natural Calamities - Lightening, Storm, Earthquake, Flood , epidemic diseases etc.	-		

7.8.3 Onsite Emergency Plan

Preparation of On-site Emergency Plan is mandatory for each industrial unit. On-site Emergency plan containing details how major accidents will be dealt with on the site on which the industrial activity will be carried on and that plan shall include the name of the persons who is responsible for safety on the site and names of those who are authorized to take action in accordance with the plan in case of emergency. Mock drill of the onsite emergency plan is conducted at least one in every six months.

Main Elements of On-site Emergency Plan

The main elements of on-site emergency plans are: -

- Leadership and Administration.
- Role and Responsibilities of Key Personnel.
- Emergency action.
- Light and Power.
- Source of energy control.
- Protective and rescue equipment.
- Communication.
- Medical care.
- Mutual Aid.
- Public relation.
- Protection of vital records.
- Training.
- Periodical revision of plan.

On-site Emergency Plan should contain:

1. Site plan and topographic plan.
2. Plan showing the firefighting facilities.
3. Plan showing hazardous material storage area.
4. Material safety data sheets for hazardous chemicals.
5. Facilities available in main control center.
6. List of emergency equipment.
7. List of Safety Equipment.
8. List of important telephone numbers and addresses.
   - Nearest hospitals and ambulance service center.
   - Nearest fire station.
   - Govt. Officials.
   - Transport provider.
9. Names and address & contact telephone number of Key Personnel.

The onsite emergency plan so prepared shall be documented in a printed form in sufficient copies to give all concerned for knowledge, study and easy follow up. The emergency plan shall be rehearsed and practiced at regular intervals to test efficiency of personnel, equipment coordinated efforts and to increase confidence and experience to operate such plan. The plan so prepared should be updated annually.

Emergency Action Plan for On-Site Emergency Plan

The Action Plan should consist of the following:

- Designated Emergency Control Centre/Room
- Key Personnel.

Emergency Control Centre:

This is the main center from where the operations to handle the emergency are directed and co-ordinate. Facilities to be made available in the emergency control are: -

- Internal and external communication
- Computer and other essential records
- Daily attendance of workmen employed
- Storage of hazardous material records and manufacturing records
- Pollution records
- Telephone directory
- Company Directory
- List of Important phone numbers
- Mobile phone
- Plan of the plant showing Storage area of hazardous materials, Storage of safety equipment, Firefighting system and additional source of water, Site entrance, roadway and emergency exist, Assembly points, surrounding location
- List of Key Personnel with addresses, telephone number etc.

Members of above teams will be available during all shifts and holidays. Protective equipment, lifting gears, fire control points etc.; will be provided in sufficient numbers and their locations will be well informed. Necessary vehicles will be kept ready to shift persons in case of emergency.

Details of Antidotes, PPE's, Medical facilities and Firefighting system are provided. Minimum two persons qualified as Incident Controller must be present anytime during plant operation. If this condition is not met, temporary suspension of chemical operations must be initiated.

The Key Personnel for Onsite Emergency:

1. Site Main Controller
2. Incident Controller
3. Other Key Officers

a. Communication Officer
b. Security and Fire Officer
c. Telephone Operators
d. Medical Officer
e. Personnel/Administrative Officer

Site Main Controller (SMC)

His task will be to co-ordinate all internal and external activities from the Emergency Control Centre at Main Security Gate from where all operations will be directed. He shall:

- Assess the magnitude of the situation and decide whether the evacuation of staff from the plant is needed.
- Exercise and direct operational control over areas other than those affected.
- Maintain a continuous review of possible development and assess in consultation with work incident controller and other Key Personnel.
- Liaison with Police, Fire Service, Medical Services, and other Govt. Agencies.
- Direct and control rehabilitation of affected area after emergency.
- Ensure that evidence is preserved for enquiries to be conducted by statutory authorities.

The Site Main Controller will declare the emergency and he will instruct gate office to operate the emergency siren after assessing the gravity of the situation.

Incident Controller (IC)

He is the next responsible officer after the Site Main Controller. In case of emergency he will rush to the place of occurrence and take overall charge and report to the Site Main Controller by personnel communication system like cell phones or walky-talky and inform about the magnitude of emergency.

He will assess the situation and considering the magnitude of emergency he will take decision and inform Communication Officer to communicate the news of emergency to different agencies. He will give direction to stop all operations within the affected area. He will take the charge of Main Controller till the Main Controller arrives. He will order for shutdown and evacuation of workers and staffs from affected area. He will inform all Key Personnel and all outside agency for help. He will inform security and fire officers and State Fire Services. He will ensure that all non-essential workers/staff are evacuated to assembly point and areas searched for casualties. He will report all significant development to Communication Officer. Moreover, he will advise to preserve evidence of emergency into the cause of emergency.

Other Key Personnel and Their Duties

Communication Officer - On hearing the emergency siren/alarm he will proceed to the control center and communicate to Incident Controller. He will collect information from the emergency affected area and send correct message to Site main controller for declaration of emergency. He will maintain a log book of incident. He will contact all essential departments. He will take stock of the meteorological condition from local meteorological Department. He will communicate all information as directed by Works Main Controller.

Security and Fire Officer - The Security or Fire officer will be responsible for the firefighting. On hearing the emergency alarm/siren, he will reach the incident area with fire and security staff. Immediately after arrival to the emergency area, he will inform through telephone or walky-talky to the communication officer. He will inform to the Incident Controller about the situation and requirement of outside help like State Fire Service and other mutual aid members. At the site, the entire fire squad member will respond to the advice and information given by the incident controller. The security will control the visitors and the vehicle entry.

Telephone Operator - In case of fire is discovered but no emergency siren is operated, he shall ensure the information about the location of the fire/emergency incident from the persons discovered/notices the above and communicate to different Key Personnel immediately with clear message.

Medical Officer - Medical Officer with his team will report to the Incident Controller on hearing the fire/emergency siren immediately. The ambulance will be parked nearest to the site of incident. Name of injured and other casualties carried to the Hospital will be recorded and handed over to Incident Controller. The ambulance will carry the injured to the nearest hospital for treatment.

Personnel/Administrative Officer - He should work as a liaison officer liaisoning with site main controller and other essential departments such as Police, Press and Statutory authorities. His responsibilities shall include: -

- To ensure that casualties receive adequate attention to arrange additional help if required and inform relatives.
- To control traffic movement into the site and ensure that alternative transport is available when needed.
- When emergency is prolonged, arrange for the relief of personnel and organize refreshment and catering facilities.
- Arrange for finance for the expenditure to handle the emergency.

Essential Works and Team Leaders - In the area immediately affected, it may be possible to isolate equipment from which flammable material is leaking. This work must be immediately carried out by plant supervisors and essential operators. Workers/staff need to be nominated to carry out the following essential works at the time of emergency: -

- Extra first aid personnel to deal with casualties.
- Emergency engineering works, provision of extra or replacement of light, isolation of equipment, temporary bypass electrical lines etc.
- Moving tankers or other vehicles from area of risk.
- To carry out tests on ambient air quality.
- To act as runner in case of communication system fails.
- The Site Main Controller will require a task force of suitable trained people for the following works: -
  - → Manning of assembly points to record the arrival of evacuated people.
  - → Assistance of casualty arrival areas to record details of casualties.
  - → Manning the site entrance in liaison with security to direct emergency vehicle containing the gate e.g. ambulance, fire tenders etc.

For these essential jobs designated teams should be made available. The responsibilities of the team and the leader should be given. The essential work teams are;

1. Task Force and repair team.
2. Firefighting team.
3. Communication team.
4. Security Team.
5. Transport Team.
6. First aid and medical team.
7. Safety team.

Communication System:

Communication is a key component to control an emergency. The following communication system may be provided in the plant-

- Telephone (internal & external)
- Cell phone
- Intercom/paging

First Aider

First aid training time to time provide by approved agency & at lease minimum first aider available in all shift.

Assembly Points

A safe place far away from the plant should be pre-determined as assembly point where in case of emergency personnel evacuated from the affected areas are to be assembled. The plant workers, contract workers and visitors

should assemble in assembly point in case of emergency and the time office clerk should take their attendance so as to assess the missing persons during emergency

Assembly point will be located inside the site of the plant. Normally assembly points are away from the bulk storage locations, near to the plant main security gate, and located in upward side of the predominant wind direction. The wind sock will be installed on the top of the plant building for instantly knowing the current wind direction and clearly see from the assembly points. One assembly point will be providing near gate.

Alarm System:

Suitable alarms require to be made for each of emergencies. The alarm should be audible in every part of the site. In areas of high noise levels, an alternative to an audible alarm, such as flashing lights may be installed.

There are three levels of emergencies;

- First level: Confined to a particular unit of the entire site,
- Second level: A spreading emergency, that requires outside help, and
- Third level: A major emergency requiring neighboring population to be alerted.

Raising the First Level Emergency Alarm:

Any person noticing an emergency should be able to raise or cause to be raised, the First Level Emergency Alarm. All employees must be trained to operate such emergency alarms. There should be adequate places within the site, where provision to raise an alarm is available. This could be an audible warning, individual signal or message to a manned location.

Raising the Second and Third Level Emergency Alarms:

In case there is a risk of the event spreading beyond the original unit and / or outside the site premises, then a second level emergency alarm can be raised. This could be across the entire site, as opposed to the first which could be at a part of the site.

In case a third level or (major) emergency is to be declared, telephonic information to members of the local crisis group, or in case of failure of power and formal communication systems, and non-availability of mobile phone signals, a big bell or a messenger can be deployed.

Declaring a Major Emergency:

Declaration of a major emergency should never be done on whims, immature judgment or without proper thought. Further, because of the scale of activity that will commence due to declaration of a major emergency, it is advisable to restrict the authority to declare it, and a limited number of persons may be invested the authority to declare such an emergency, although care should be taken to ensure that at least one such person is always at site.

Identifying the Type of Emergency through an Alarm:

Alarm systems vary and will depend upon the size of individual sites. The person noticing the incident should warn all those in the site vicinity to either evacuate or take other immediate action according to a predetermined plan. Automatic alarms may be considered. Audible alarms include sirens or other alarms over public address systems.

Alarms for a particular type of emergency (fire) can be raised separately enabling different emergency plans to be put in motion. However, this must be done after giving due thought about avoiding confusion in the minds of the site personnel.

Use of alarms can be carried out to communicate different information such as:

- Declaration of a first level emergency by an alarm in a particular area
- Declaration of an advanced emergency situation by sounding of an alarm in the entire site

- Declaration of a major emergency by sounding of a hooter, alarm or by communication through phone, bell or messenger.

Escape Route:

The escape route from each and every plant should be clearly marked. The escape route is the shortest route to reach out of the plant area to open area, which leads to assembly point. This route should be indicated on the layout plan attached to the On-site Emergency Plan.

Evacuation/Emergency Shutdown Procedure

All non-essential staff should be evacuated from the emergency site. As soon as the emergency siren rings the workers have to shut down the plant and move to the assembly point. The plant shut down procedure in case of emergency should be prepared and kept ready and responsible persons should be nominated for the purpose.

Whenever the concerned Incident Controller declare an emergency and instruct for evacuation of the specified areas / plants, the concerned employees working in the above specified area will evacuate the plant/ area following the prescribed procedure as given below:

- Stop addition of reactants and transfers if any.
- Stop Heating
- Stop all other activities in the plant.
- For switching off the Electrical Power totally or start cooling in the reactors follow instruction from Incident Controller / Shift In-charge.
- Evacuate the Plant / Building via the emergency exits only.
- Assemble at the appropriate Assembly Point.
- During the Emergency – as per the instruction of the Incident Controller – only trained fire fighters and first aiders will enter the building and carry out their duties.
- Report back at the work place, only after all-clear signal will give.
- Restart the operation, only after obtaining clearance from Site Controller

Counting of Personnel:

All personnel working in the plant should be counted. Time office persons should collect the details of personnel arriving at the assembly point. These should be checked with the attendances of regular workers; contract workers present in the site on the day of emergency. The accident control should be informed and arrangement should be made for searching missing persons in the emergency affected area. The employees" address, contact number of next to kin should be maintained in the time office so that during emergency relatives of those affected due to emergency may be informed accordingly. Information in respect of emergency should be given to the media and other agency.

All Clear Signal: After control of emergency the Work Incident Controller will communicate to the works main controller about the cessation of emergency. The main controller can declare all clear by instructing the time office to sound "All Clear Sirens".

Mutual Aid System:

Mutual aid scheme should be introduced among industries so that in case of emergency necessary help from mutual aid partner may be extended.

Mock drills on emergency planning should be conducted once in 6 months and sequence of events should be recorded for improvement of the exercise. Exercises on On-site Emergency Planning should be monitored by the high officials of the organization and the plan is reviewed every year.

Emergency facilities:

The following facilities should be provided in any unit to tackle any emergency at any time.

- Fire protection and firefighting facilities.
- Emergency lighting and standby power.
- Emergency equipment and rescue equipment.
- Safety Equipment like Respirators, Gum boots, Safety helmets, Asbestos Rubber hand gloves, Goggles and face shield, Explosive meter, Oxygen measuring instruments, Wind direction indicator.

7.8.4 Declaration of Off-Site Emergency

If the site main controller feels that the emergency situation is not controlled by available resources within the factory premises, he will assess the situation and declare the emergency as Off-Site Emergency. He will immediately arrange to inform to the following authorities in the below given order and seek required help from District Emergency Control Centre.

- Local Fire Brigade department
- Police Station
- Medical Officer
- District Collector
- Sr. Inspector of Factories
- Deputy Superintendent of Police
- Gujarat Pollution Control Board
- Voluntary Organizations

After declaration of Off-Site Emergency, the district contingency plan i.e. Off Site Emergency Plan of relevant District will automatically come in operation. The overall controller of the situation will be District Collector. The details of sequence of action are given in the district contingency plan. The Site Controller / Incident Controller will work in close liaison with the District Emergency Commander (Collector) and render necessary help / assistance required.

7.8.5 Rehearsal and Up-dation of Plan

- Regular mock drills will be organized. Short falls in actions observed during drill will explain to participants and will correct accordingly.
- Any shortcomings regarding On–Site Emergency Plan observed during such drills will correct and incorporated in On-Site Emergency Plan and same will communicate to all.
- The On-Site Emergency Plan is updated after any significant development in factory or change in the law.

7.8.6 Offsite Emergency Preparedness Plan

No major hazardous chemical will be stored at the facility. Further, no major accidents will occur from this kind of the project. Hence, off-site emergency plan is not required. However, the same is prepared. Offsite emergency plan follows the onsite emergency plan. When the consequences of an emergency situation go beyond the plant boundaries, it becomes an offsite emergency. As the off-site emergency plan is to be prepared by the Government, a Central Control Committee or Group is formed under the Chairmanship of the area head.

7.9 Specific safety measure to be taken for general public living in the vicinity

Safety Policy as per Rule 12-C and Rule 68-P of Gujarat Factories Rule 1963 is prepared & displayed / given to all interested parties. Safety Manual is prepared in line with requirement of the Rule 68-P & 68-J of Gujarat Factories Rule 1963 consisting of list of Hazardous Chemicals, its hazards and precautions taken and in case of Emergency situation what actions to be taken by General Public is be prepared in Local language and given to all Stake holders.

Detailed On-Site Emergency Plan is prepared and further it will be modified as per Schedule 8-A of Sub rule 68-J-(12) (1) of Gujarat Factories Rule – 1963. The plan will be rehearsed on regular basis at stipulated frequency. Unit will take PLI policy as per applicability.

7.10 Social Impact Assessment, R&R Action Plans

7.10.1 Identification of Focused Area

The main impact of BMW site is through air, water and biomedical waste collection, storage, handling and transportation. Considering the impact due to water, soil and air the focus area for social studies were carried out within 10 km of the proposed site.

Detailed description of the focused area with reference to the socio economic study was carried out based on focus group discussions with the stakeholders. Community consultation results in identification of relevant issues identified by local residents, and a lack of it can result in missed data, in addition to missed opportunities to share experiences and identify solutions to resolve concerns / issues.

7.10.2 Focused Group Discussions and their findings

Focused group discussions (FGD's) were carried out at Gram Panchayat, Anganwadi, School and Primary Health Centres within the core zone (0 - 3 km and 3 – 5 km (of buffer zone) for understanding the socio economic status of the villages and study area and to understand their socio-economic and infrastructural needs for overall development and elevating the socio economic status and their livelihoods.

The outcome of the focused group discussions carried out in various villages is presented in the subsection as under:

Zoz Village

FGD at Panchayat

The FGD was conducted with the villagers as there was no Sarpanch presently elected. Following points came out of the discussions:

- Source of income of gram panchayat is mainly on government grant.
- Mostly people earn their livelihood by farming and labour work in farm.
- Panchayat supplies water to the entire village through pipeline system developed under government scheme.
- For healthcare facility villagers have to travel to Shehera CHC centre @ 05 km away.
- There is no solid waste collection facility in the village.
- During the conversation they highlighted needs of having Paver blocks, solar street lights in the village.

FGD at School

Focused group discussion was conducted at government primary school with principal and teachers. Following points came out of the discussions:

- Primary school is Gujarati medium government school consisting of 189 students and 08 teachers. All the teachers come from nearby villages and are having average 10 years of experience in teaching.
- Mid-day meal is provided to the students in the school.
- They are having the provision of separate toilets for girls and boys, library, playground etc.
- Text books are provided by state government.
- During the conversation with the principal it was observed that they are having requirement of RO plant with cooler, solar panel, bore well and strengthening / rehabilitation of classrooms.

Variyel Village

FGD at Panchayat

The discussions were conducted with Sarpanch. Following points were highlighted during the discussion:

- Source of income of gram panchayat is mainly on government grant, house tax and water tax.

- Mostly people earn their livelihood by farming and labour work in farm.
- Panchayat supplies water to the entire village through pipeline system developed under government scheme.
- For healthcare facility villagers have to travel to Shehera CHC centre @ 07 km away.
- There is no waste collection facility in the village.
- During the conversation they highlighted needs of having Paver blocks, solar street lights in the village, Solar System at panchayat office and construction of water tank of 50,000 litres capacity.

FGD at School

Focused group discussion was conducted at government primary school with principal and teachers. Following points emerged during the discussion:

- Primary school is Gujarati medium government school consisting of 120 students and 06 teachers. All the teachers come from nearby villages and are having average 10 years of experience in teaching. The student teacher ratio is 1:20.
- All the teachers come from nearby villages and are having average 10 years of experience in teaching.
- Mid-day meal is provided to the students in the school.
- They are having the provision of separate toilets for girls and boys, library, playground etc.
- Text books are provided by state government.
- During the conversation they highlighted needs of having solar panel, rain water harvesting, toilet block, dishes and utensils stand for providing mid-day meal.

Dalwada Village

FGD at Panchayat

The discussion was conducted with Sarpanch. Following points were highlighted during the discussion:

- Source of income of gram panchayat is mainly on government grant, house tax and water tax.
- Mostly people earn their livelihood by farming and labour work in farm.
- Panchayat supplies water to the entire village through pipeline system developed under government scheme.
- For healthcare facility villagers have to travel to Shehera CHC centre @ 05 km away.
- There is no waste collection facility in the village.
- During the conversation they highlighted needs of having solar street and solar system.

FGD at School (Dodiyani) in Dalvada Village

Focused group discussion was conducted at government primary school with principal and teachers. Following points emerged during the discussion:

- Primary school is Gujarati medium government school consisting of 169 students and 07 teachers. All the teachers come from nearby villages and are having average 17 years of experience in teaching. The student teacher ratio is 1:24.
- Mid-day meal is provided to the students in the school.
- They are having the provision of separate toilets for girls and boys, library, playground etc.
- Text books are provided by state government.
- During the conversation they highlighted needs of toilet, RO with water cooler, solar panel and rain water harvesting system.

Palikhanda (Part of Shehera Seva Sadan)

FGD at School

Focused group discussion was conducted at government primary school with principal and teachers. Following points emerged during the discussion.

- Primary school is Gujarati medium government school consisting of 357 students and 09 teachers. The student teacher ratio is 1:40. All the teachers come from nearby villages and are having average 15 years of experience in teaching.
- Mid-day meal is provided to the students in the school.
- They are having the provision of separate toilets for girls and boys, library, playground etc.
- Text books are provided by state government.
- During the conversation they highlighted needs of RO plant with cooler, solar panel, projector with screen and rain water harvesting system.

Hasanpur (Part of Shehera Seva Sadan)

FGD at School

Focused group discussion was conducted at government primary school with principal and teachers. Following points emerged during the discussion.

- Primary school is Gujarati medium government school consisting of 100 students and 04 teachers. The student teacher ratio is 1:25. All the teachers come from nearby villages and are having average 20 years of experience in teaching.
- Mid-day meal is provided to the students in the school.
- They are having the provision of separate toilets for girls and boys, library, playground etc.
- Text books are provided by state government.
- During the conversation they highlighted needs of RO plant with cooler, solar panel, projector with screen, rain water harvesting.

Salampura (Part of Shehera Seva Sadan)

FGD at School

Focused group discussion was conducted at government primary school with principal and teachers. Following points emerged during the discussion:

- Primary school is Gujarati medium government school consisting of 265 students and 10 teachers. The student teacher ratio is 1:27. All the teachers come from nearby villages and are having average 10 years of experience in teaching.
- Mid-day meal is provided to the students in the school.
- They are having the provision of separate toilets for girls and boys, library, playground etc.
- Text books are provided by state government.
- During the conversation they highlighted needs of RO plant with cooler, solar panel, shed for Mid-day meal, and smart class.

Vijapur Village

FGD at School

Focused group discussion was conducted at government primary school with principal and teachers. Following points emerged during the discussion:

- Primary school is Gujarati medium government school consisting of 221 students and 09 teachers. The student teacher ratio is 1:25. All the teachers come from nearby villages and are having average 20 years of experience in teaching.
- Mid-day meal is provided to the students in the school.
- They are having the provision of separate toilets for girls and boys, library, playground etc.
- Text books are provided by state government.
- During the conversation they highlighted needs of Benches, RO plant with cooler, solar panel, bore well and rainwater harvesting.

Bhensal Village

FGD at Panchayat

The FGD was conducted with Sarpanch. Following points were highlighted during the discussion:

- Source of income of gram panchayat is mainly on government grant, house tax and water ta.
- Mostly people earn their livelihood by farming and labour work in farm.
- Panchayat supplies water to the entire village through pipeline system developed under government scheme.
- For healthcare facility villagers have to travel to Shehera CHC centre @ 07 km away.
- There is no waste collection facility in the village.
- During the conversation they highlighted needs of Paver blocks, solar street lights, rain water harvesting system etc.

FGD at School

Focused group discussion was conducted at government primary school with principal and teachers. Following points emerged during the discussion:

- Primary school is Gujarati medium government school consisting of 211 students and 08 teachers. The student teacher ratio is 1:26. All the teachers come from nearby villages and are having average 10 years of experience in teaching.
- Mid-day meal is provided to the students in the school.
- They are having the provision of separate toilets for girls and boys, library, playground etc.
- Text books are provided by state government.
- During the conversation they highlighted needs of RO plant with cooler, solar panel and rain water harvesting.

7.10.3 Overall Summary of Social Assessment in study area

The statistics regarding the human population and the number of dwelling units of villages in the study area indicates that there are 65 villages, and 01 Municipal Corporation in the study area.

There are a total of 38,126 households covering 2,10,428 persons in the study aArea, with male population of 1,08,232 and female population of 1,02,196, indicating a gender ratio of 944 and a household size of an average 5 members. The national sex ratio in India is 940, as per latest reports of Census 2011, this indicates good gender equality, then nationwide averages.

According to Census 2011 data, it is revealed that 17.24% of the study area population belongs to Schedule Tribe communities, 3.70% population belongs to Schedule caste and rest other communities.

The literacy rate in the study area, as per the Census of India 2011 is about 57.92% which is less as compared to the State literacy rate i.e. 79.31%. Wherein male literacy rate is 68.97% and 46.22% women are literate in the study area.

Primary health centre and sub centre is available in surveyed villages. Most of the households in the study area have sufficient sanitation facilities. In study area water is supplied through pipeline system developed under government scheme.

The people from the villages in the study area earn mostly their livelihood by farming.

The project will not affect the local community and no R & R will be required. In turn, as part of CER, the need based assessment will facilitate the client to carryout CER activities as highlighted in Chapter 7 of this report.

7.10.4 Suggested Community Upliftment activities

Table 7-15 : Suggested activities as part of CER / CSR

Sr. No.	Name of Village	Suggested activities
1	**Zoz**	**Gram Panchayat** • Pawer blocks • Solar street lights • Pawer block in the village **Govt Primary School** • RO plant with cooler, • Solar panel • Bore well and class room.
2	**Variyel**	**Gram Panchayat** • Solar System at Panchayat Office • Solar Street Light • Pawer blocks • Water tank 50 thousand litter capacity **Govt Primary School** • Solar panel • Rain water harvesting • Toilet block • Dishes and utensils stand for MDM
3	**Dalwada**	**Gram Panchayat** • Solar System at Panchayat Office • Solar Street Light **Govt Primary School** • Toilet, • RO with water cooler • Solar panel • Rain water harvesting.
4	**Hansapur**	**Govt Primary School** • RO plant with cooler • Solar panel • Projector with screen • Rain water harvesting
5	**Palikhanda**	**Govt Primary School** • RO plant with cooler, • Solar panel, • Projector with screen • Rain water harvesting
6	**Vijapur**	**Govt Primary School** • Benches, • RO plant with cooler,

Sr. No.	Name of Village	Suggested activities
		• Solar panel • Bore well and rainwater harvesting at school building
7	**Salampur**	**Govt Primary School** • RO plant with cooler • Solar panel • Shed for Mid-day meal, • Smart class
8	**Bhensal**	**Gram Panchayat** • Solar System at Panchayat Office • Solar Street Light • Drinking water facility • Pawer blocks • Rain water harvesting at government building **Govt Primary School** • RO plant with cooler • Solar panel, • Rain water harvesting

Photographs of focused group discussions carried out in villages is presented in ***Figure 7-5*** as under:

Figure 7-5: Photographs of SE Expert & Team of Kadam carrying out focused group discussion



FGD with **Salampur** Primary School Principal



FGD with **Zoz** Village Sarpanch



FGD with **Variyel** Primary School Principal



FGD with **Ajapar** Primary School Principal



FGD with **Bhensal** Primary School Principal



Visit at Shehera Nagar Seva Sadan



FGD with **Hasanpur** Primary School Principal



FGD with **Dalvada** viilage sarpanch

8 PROJECT BENEFITS

8.1 Social Benefits

8.1.1 Physical Infrastructure

Opportunities for the fulfillment of the community's requirements will get strengthened mainly related to management of Biomedical wastes in an environmental friendly manner from healthcare units & living standards of local communities will also get improved.

8.1.2 Social Infrastructure

For improvement of local area Shree Khodal will carry out:

1. Corporate Social Responsibility (CSR) Rules under Companies Act
2. Corporate Environment Responsibility (CER) Guidelines under Environment Protection Act (EPA)

Based on the FGD's conducted in the area, CER activities have been identified and fund allocation for CER activity in nearby villages has been considered.

8.2 Employment potential – skilled; semi-skilled and unskilled

Temporary and permanent employment direct and indirect will be created due to proposed project at local level due to contractual and permanent staff. The other related employment opportunities due to transportation requirement and other community services will also be generated. 20 persons will get direct employment in the proposed project.

9 ENVIRONMENTAL COST BENEFIT ANALYSIS

9.1 Capex and Opex in the proposed project

For the establishment of a Common Bio-Medical Waste Treatment Facility, an investment of Rs. 4.87 crores is anticipated.

The costs earmarked for environmental monitoring is INR 101.3 Lacs as Capex and INR 10.26 Lacs per annum is operation & maintenance of facilities.

9.2 Environmental / Health and Safety Benefits

This analysis assesses the pros and cons of the project from an environmental perspective. The facility has outlined comprehensive mitigation strategies contributing to overall environmental benefits. Key aspects include:

- **Handling and Treatment of Bio-Medical Waste:** The facility will utilize incineration, shredding, and autoclaving methods to manage waste, adhering to Central Pollution Control Board (CPCB) guidelines for Bio-Medical Waste (BMW) Rules.
- **Compliance with Regulations:** All equipment will be designed according to CPCB standards, ensuring the facility operates within legal frameworks.
- **Waste Disposal:** Incineration ash and Effluent Treatment Plant (ETP) sludge will be disposed of at a Treatment, Storage, and Disposal Facility (TSDF) site, while treated BMW will be sent to authorized recyclers.

Environmental Conservation Measures:

- **Green Belt Development:** 33% of the project site will be provided with green belt.
- **Zero Liquid Discharge (ZLD) System:** The facility will implement a complete ZLD system, ensuring no liquid waste is discharged into the environment.
- **Effluent Treatment Plant (ETP):** A comprehensive ETP with primary, secondary, and tertiary treatment will be established.
- **Water Conservation:** 2.6 KLD of treated wastewater will be reused, accounting for 23.2% of the fresh water requirement.
- **Rainwater Harvesting:** A rainwater harvesting system will be implemented to collect and reuse rainwater.
- **Social Responsibility:** A separate fund has been allocated for social development activities under Corporate Environmental Responsibility (CER) guidelines which is Rs 10 Lacs i.e. 0.2 % of project cost INR 487 Lacs.
- **Environmental Costs:** Overall cost on Environmental Matters proposed in the project is Rs 124.55 Lacs Capex and Rs 22.11 Lacs O & M including monitoring costs has been allocated for the project.

10 ENVIRONMENTAL MANAGEMENT PLAN (EMP)

10.1 Introduction

The EIA study for the proposed project has identified impacts that are likely to arise during different phases of the project. The study has also examined the extent to which the adverse impacts identified can be controlled through the adoption of mitigation measures. An EMP, presented in the following sections, describes generic good practice measures as well as site-specific measures, the implementation of which is aimed at mitigating potential impacts associated with the proposed activities.

To formulate and monitor Environmental Protection measures during and after commissioning of project, preparation of Environmental Management Plan (EMP) is required.

10.2 Objectives of EMP

The objectives of EMP are elaborated as under:

- To limit/reduce the degree, extent, magnitude or duration of adverse impacts.
- To treat all the pollutants i.e. liquid effluent, air emissions and hazardous waste with adoption of adequate and efficient technology.
- To comply with all the norms and standards stipulated by Gujarat Pollution Control Board/Central Pollution Control Board.
- To create good working conditions.
- To reduce any risk hazards and design the disaster management plan.
- Continuous development and search for innovative technologies for a cleaner and better environment.

10.3 Components of EMP

The components of implementation of EMP is as under:

- Conceptualization: Preliminary Environmental Assessment
- Planning: Detailed studies of environmental Impacts and design of safe guards
- Execution: Implementation of Environmental safety measures
- Operation: Monitoring of effectiveness of built in safe guards

10.4 Environmental Management Plan

The EMP for the proposed project has been prepared for the attributes like Air, Water, Land, Soil, Solid and Hazardous Waste, Ecology & Biodiversity, Water, Socio-Economic etc. as affected and to be implemented during construction & operation phase.

Construction Phase

Concern

- Construction activity can deteriorate air quality, change land use pattern
- Disturbance to flora and fauna
- Disposal of excess soil & soil pollution due to waste spillages
- Health & Safety of construction workers

Benefits of EMP

- Reduced air pollution and protection of health of workers and local community
- Restoration of flora and fauna
- Restoration of landuse pattern by developing green belt in surroundings
- Avoiding any impact on soil, maximum reuse of excavated soil
- Protection of health of construction workers

10.5 Environmental Management Plan

The Environmental Management plan for different environmental attrubutes are elaborated in this section as under:

10.5.1 Air Quality Management Plan

Environment management plan for Air Quality due to proposed project is as described in ***Table 10-1*** as below:

Table 10-1: Environment Management Plan for Air Quality

Impacting Activities	Mitigation Measures and Rationale	Implementation and Management					Remarks
		Loca-tion	Timing	Respon-sibility	Moni-toring/ Data Analysis	Records	
Construction Phase							
Site Clearing and Levelling, removal of vegetation, excavation of soil	Regular water sprinkling shall be done to suppress dust in all dust prone areas, provision of Smog guns around the site to reduce fugitive dust created. Vertical curtains will be installed for containment for release of dust in surroundings. PUC certified & well maintained vehicles shall be used. Regulate speed of vehicles in unpaved areas to reduce fugitive dust created. All material storages to be adequately covered so that it may not be exposed to winds.	At project site, wherever site clearance & levelling activity is going on	Continuous basis during site clearance & preparation works wherever activity is in operation	Contractor, Supervision by Khodal	Ambient air quality monitoring for particulate matter and gaseous monitoring will be done on periodic random checks	Records of Water usage for dust supper-ssion & monitoring data on air quality.	Impact is Temporary in nature and will be minimized by implementation of this EMP
Construction Material and waste transportation, storage and handling	All vehicles will be PUC verified from time to time to control emissions. All vehicles delivering construction materials to the site will be covered to avoid spillage of materials. Maintain cleanliness of the roads and water sprinkling on roads	At project site	Periodic basis during construction works	Contractor, Supervision by Khodal	Random checks of water sprinkling, PUC Certification of vehicles	Records of water usage and PUC Certificates	Impact is Temporary in nature and will be minimized by implementation of this EMP
Excavation, construction & fabrication of works on site for the project. Use of water by construction workers,	All vehicles will be PUC verified from time to time to control emissions. All vehicles delivering construction materials to the site will be covered to avoid spillage of materials. Maintain cleanliness of the roads and water sprinkling	At project site	Continuous basis during construction works	Contractor, Supervision by Khodal	Random checks of water sprinkling, PUC Certification of vehicles, water utilization	Records of water usage and PUC Certificates	Impact is Temporary in nature and will be minimized by implementation of this EMP

Impacting Activities	Mitigation Measures and Rationale	Implementation and Management					Remarks
		Location	Timing	Responsibility	Monitoring/ Data Analysis	Records	
concreting work, curing of the structures etc	on roads. Good quality of construction water to be arranged by Contractor. Water Utilization in concreting works to be recorded and maintained				for construction purposes		
Operation Phase							
Handling and Transportation of Biomedical Waste from members up to the site, Operation of Incineration Plant, Autoclave and Shredder System	All flue gas stacks and process exhausts from plant areas will be provided with proper APCM control measures thereby control of emissions to environment. Odour and Fugutive emissions will be controlled by handling of waste in closed containers, general cleaning and housekeeping, daily washing of collecting vehicles and storage areas, spray of deodorants etc.	At project site	During operation of Phase	EHS Supervision by Khodal	Continuous check by EHS Department of Khodal. Third party ambient air quality monitoring	Records of third party monitoring results of ambient air and inhouse Work place monitoring will be done	Onsite control of emissions from site
Fugitive emissions during handling of wastes, Air emissions from Incinerator	All flue gas stacks and process exhausts from plant areas will be provided with proper APCM control measures thereby control of emissions to environment. Odour and Fugutive emissions will be controlled by handling of waste in closed containers, general cleaning and housekeeping, daily washing of collecting vehicles and storage areas, spray of deodorants etc.	At site	During Operation Phase	EHS Supervision by Khodal	Periodic check by EHS Department of Khodal. Third party ambient air quality monitoring	Records of third party monitoring results of ambient air and inhouse Work place monitoring will be done	Onsite control of emissions from site
Green Belt Development	Green belt is proposed of 34.6 % of site area.	At Site (as per layout plan	During Operation Phase as per green belt developmen t plan	EHS Supervision by Khodal	Green Belt to be maintained by Operations depart of site staff of Khodal	Regular watering, fertilizer application and maiten-ance of green belt	Onsite control of emissions from site
End of Life Cycle and Decommissioning phase							
Emptying out the waste and materials from tanks and equipment's / works on site	Water sprinkling and Smog guns will be provided around the site during decommissioning activity in order to suppress dust and vehicular emissions. Odour and Fugutive emissions will be controlled by handling of waste in closed containers, general cleaning and housekeeping, daily washing of collecting	At Site	During cosure and decommissi oning of site	EHS Supervision by Khodal	Periodic ambient air quality monitoring & work place monitoring	Records of monitoring data to be maintained	Proper PPEs to be worn by workers at all times

Impacting Activities	Mitigation Measures and Rationale	Implementation and Management					Remarks
		Location	Timing	Responsibility	Monitoring/ Data Analysis	Records	
	vehicles and storage areas, spray of deodorants etc						
Decommissioning of the Incinerator, Autoclave and Shredder systems	Water sprinkling and Smog guns will be provided around the site during decommissioning activity in order to suppress dust and vehicular emissions. Odour and Fugutive emissions will be controlled by handling of waste in closed containers, general cleaning and housekeeping, daily washing of collecting vehicles and storage areas, spray of deodorants etc	At Site	During cosure and decommissioning of site	EHS Supervision by Khodal	Periodic ambient air quality monitoring & work place monitoring	Records of monitoring data to be maintained	Proper PPEs to be worn by workers at all times
Dismantling of the sheds for storage and handling of wastes	Water sprinkling and Smog guns will be provided around the site and construction activity in order to suppress dust emissions	At Site	During cosure and decommissioning of site	EHS Supervision by Khodal	Periodic ambient air quality monitoring & work place monitoring	Records of monitoring data to be maintained	Proper PPEs to be worn by workers at all times
Cleaning and Clearing of site after decommissioning	Water sprinkling and Smog guns will be provided around the site and construction activity in order to suppress dust emissions	At Site	During cosure and decommissioning of site	EHS Supervision by Khodal	Periodic ambient air quality monitoring & work place monitoring	Records of monitoring data to be maintained	Proper PPEs to be worn by workers at all times

10.5.2 Traffic Management Plan

Traffic management plan at project site is proposed as per ***Table 10-2.***

Table 10-2: Traffic Management plan

Impacting Activities	Mitigation Measures and Rationale	Implementation and Management					Remarks
		Location	Timing	Responsibility	Monitoring/ Data Analysis	Records	
Construction Phase							
Movement of vehicles throughout the construction phase	PUC Certified vehicles will be used. Smooth & slow Traffic movements will be ensured so that dust emissions are minimal.	At site	During construction phase	Contractor/ Site-supervisor/ Security Guard present at entry-exit gate	Random check by Security officer/ site engineer	PUC Certificate of records to be maintained	-
Operation Phase							

Impacting Activities	Mitigation Measures and Rationale	Implementation and Management					Remarks
		Location	Timing	Responsibility	Monitoring/ Data Analysis	Records	
Movement of vehicles throughout the operation phase	Traffic will be regulated through proper signage, instruction & parking spaces. Internal roads with 6 m width for movement of vehicles and also for fire tender (in case of emergency) will be provided. Adequate parking spaces will be provided.	At site	During operation phase	Site Management / Security Staff	Random check by Security officer/ site engineer	Vehicle Log record register	-

10.5.3 Water Quality Management Plan

The environment Management plan for water (surface and ground) environment are presented in ***Table 10-3*** as below:

Table 10-3: Environment Management Plan for Water (Surface and Ground Water)

Impacting Activities	Mitigation Measures and Rationale	Implementation and Management					Remarks
		Location	Timing	Responsibility	Monitoring	Records	
Water use during Construction phase	Utilized water to be treated before disposal to outside	At site	Daily	Contractor / supervision	Quantity of water used	Treatment system to be established and records to be maintained	-
Water use during Construction phase	Domestic water to be sent to septic tank and soak pit system	At site	Daily	Contractor / supervision	Quantity of water used	Treatment system to be established and records to be maintained	
Water utilization during Operation Phase	Wash water from trucks, other waste waters will be treated in ETP and treated water from ETP will be sent for reuse in quenching	At site	Daily	Site Incharge	Water utilization and waste water generation quantity to be monitored	ETP will be established on site. Records of inlet and outlet will be maintained	
Handling and storage of raw material and products	Collection of spillages and treatment in ETP, Avoiding any contact of spillages with soil / ground water	At site	Daily	Site Incharge	Waste water generation quantity to be monitored	Waste water / wash water records to be maintained	
Rain Water Conservation	Rain water harvesting system will be provided on site	At site	Monsoon Season	Site Incharge	Rain Water tank level	Water quality monitoring records	-
Piezometric wells monitoring	Piezometric wells will be established on site for ground water	Around the site	Periodic monitoring of wells	Site Incharge / EHS Team	Depth and Water quality	Once every two months	-

Impacting Activities	Mitigation Measures and Rationale	Implementation and Management					Remarks
		Location	Timing	Responsibility	Monitoring	Records	
	quality monitoring around the proposed development				monitoring of ground water from piezometric wells		

10.5.4 Noise Management Plan

The environmental management plan for noise generated due to the proposed project is as presented in ***Table 10-4*** as below:

Table 10-4: Environmental Management Plan for Noise

Objective	**To reduce noise level due to the proposed project**								
Benefit of EMP	**Noise environment of the area will not be impacted by the proposed activity**								
Impacting Activity	**Mitigation Measures**	**Implementation and Management**							**Remark**
		Data Analysis	**Measurement Methodology**	**Frequency**	**Location**	**Reporting Schedule/ Responsibility**	**Emergency Procedure**	**Procurement Schedule**	
C1	**C2**	**C3**	**C4**	**C5**	**C6**	**C7**	**C8**	**C11**	**C12**
Transportation, Handling, Storage, Treatment and Disposal of Bio Medical Waste & other hazardous/solid waste.	Vehicles trips during daytime only fixing route by avoiding populated area	Vehicle movement And ambient noise level records	Manual and SLM	Daily & Periodic	At material gate	Security officer	Route for safe exit will be in place.	During construction and operation phase	PUC certified vehicles shall be used within the premises
Operational Machineries like Shredders, pumps	Appropriate Placement / fixing of motors, shredders	Noise Levels	SLM	Periodic	Plant boundary & within Plant	Plant in charge & Third Party/Contractor	Regular Maintenance.	During operation phase	Ear plugs/Ear muffs to be wear by workers at all times.
Use of DG sets	Acoustic enclosures will be provided	Noise Levels	SLM	Periodic	Inside plants	Plant in charge & Third Party/Contractor	Regular Maintenance.	During operation phase	Ear plugs/Ear muffs to be wear by workers at all times.

10.5.5 Land Use Management Plan

The Environment Management Plan focusing on land use and land cover related impacts due to the project are listed in ***Table 10-5*** as below:

Table 10-5: Environment Management Plan for Land use and Land cover

Objective	**To ensure that negative impacts on land use are minimized**						
Concern	**Land Cover at site will change from agricultural land, scrub land and open vegetation to Industrial.**						
Benefit of EMP	**Impacts on land use/ land cover due to project will be moderate**						
Impacting Activities	**Mitigation Measures and Actions**	**Implementation and Management**					**Rem-arks**
		Location	**Timing**	**Respon-sibility**	**Monitor-ing**	**Records**	
Clearance of Vegetation	Clearance of scrub shall only be done on which construction is to take place. Top soil will be stored separately and will be used for greenbelt within the site	At Proposed Project Site	For Construction / Establishment Phase	Project Proponent	Random checks by site supervisor & project head	Periodic records in form of photographs, documents, etc.	-
Excavation Work	Excavated earth / debris to be stored in stockpiles and covered with high graded tarpaulin sheet and reused for landscape environment, greenbelt and backfilling	At Proposed Site	For Construction / Establishment Phase	Project Proponent	Random checks by site supervisor & project head	Periodic records in form of photographs, documents, etc.	-
Building of structures including temporary structures	Removal of top soil and change in local land surface topography The depth of ground water table must be consider before planning of building structures	At Proposed Site	For Construction / Establishment Phase	Project Proponent	Random checks by site supervisor & project head	Periodic records in form of photographs, documents, etc.	-
Greenbelt development	Implementation of 34.6% greenbelt area Improvement in effective area infiltration rate with retention in top soil	At Proposed Site	For the Operation & Maintenance Phase	Project Proponent	Random checks by site supervisor & project head	Periodic records in form of photographs, documents, etc.	-
Decommiss-ioning of plant	On completion of dismantling works, all wastes will be completely removed till 1-2 m below the surface.	At Proposed Site	For the Operation & Maintenance Phase	Project Proponent	Random checks by site supervisor & project head	Periodic records in form of photographs, documents, etc.	-

10.5.6 Soil Management Plan

The Soil Management Plan focusing on land use and land cover related impacts due to the project is presented in ***Table 10-6*** as below:

Table 10-6: Environmental Management Plan for Soil

Sr. No.	Impact	Actions to be taken	Monitoring Parameters	Duration
1	Top Soil Loss	Top soil will be stored separately and used back for area filling purpose	-	During construction phase
2	Soil Erosion	Native soil loss due to area grading and levelling work, removal of excavated soil	Porosity, Water Holding Capacity, texture	During construction phase
3	Soil contamination due to spillage of construction material/solid and hazardous wastes	Check the soil quality	EC, pH and ESP	During construction and operation of the project – at selected locations

10.5.7 Ecology & Biodiversity

As a part of ecology and biodiversity mitigation measure it is proposed:

- To develop green belt on site and in surroundings (within the study area) considering local and native tree species
- Conservation plan and budget

Selection of plants for Green Belt

The selection of plants species for green belt mainly depends on air pollutant and their emission, sensitivity to pollutants, climatic conditions & soil characteristics. While making choice of plants species for cultivation in green belts, due consideration has to be given to the natural factor of bio climate. Xerophytes plants are not necessarily good for greenbelts; they with their sunken stomata can withstand pollution by avoidance but are poor absorber of pollutants.

Character of plants mainly considered for affecting absorption of pollutant gases and removal of dust particle are as follows:

For removal of Suspended Particular and absorption of pollutant gases matter:

- Height & spread of crown.
- Leaves supported on firm petiole
- Abundance of surface on bark & foliage
- Roughness of bark
- Abundance of axillary hairs
- Hairs or scales on laminar surface
- Protected Stomata

Recommended Plants for Greenbelt Development

Greenbelts are an effective mode of control of air pollution, where green plants form a surface capable of absorbing air pollutants & forming a sink of pollutants. Leaves with their vast area in a tree crown, sorbs pollutants on their surface, thus effectively reduce pollutant concentration in the ambient air. Often the adsorbed pollutants are incorporated in the metabolic pathway & the air is purified. Plants grown to function as pollution sink are collectively referred as greenbelts.

An important aspect of a greenbelt is that the plants are living organism with their varied tolerance limit towards the air pollutants. A green belt is effective as a pollutant sink only within the tolerance limit of constituent plants. Planting

few, known pollutant sensitive species along with the tolerant species within a green belt however, do carry out an important function of indicator species.

Apart from function as pollution sink, greenbelt would provide other benefit like aesthetic improvement of the area & providing suitable habitats for birds & animals.

Likely impacts due to gaseous pollutants can be reduced by growing three layers of greenbelt around the project boundary. The proposed facility will develop green belt in 1964 sq.m (34.6% of total plot area) consisting of ~ 300 Nos of trees/large shrubs of native species considering 1500 trees per hectare.

Greenbelt includes suggested species for within the site plantation, internal road side plantation and plantation around various buildings, as presented in ***Table 10-7***.

Table 10-7: Details of suggested species to be developed in Greenbelt / Plantation within the site premises

Plant Species	Local/Hindi Name	Height (m)	Type	Ecological and Environmental Performances of Plant Species	No. of trees to be planted
Bauhinia varigata	Kachnar	5	Tree	T, DC, NC	300 Nos + 80% survival rate = 300 + 60 = 360 Nos
Emblica officinalis	Amla	5	Tree	T, DC, NC	
Saraca asoka	Asoka	5	Tree	T, DC, NC	
Butea monosperma	Palas	10	Tree	NC, OGE, DC	
Polyalthia longifolia	Ashoka	15	Tree	DC, OGE, NC, AG.	
Albizia lebbeck	Siris	20	Tree	DC, NC, AG, DR, SR, FR.	
Azardirachta *indica*	Neem	20	Tree	DC, OGE, NC, AG, DR, SR, FR.	
Derris indica	Karanj			NC, DR, SR, FR.	
Ficus bengalensis	Banyan	20	Tree	NC, DC	
Ficus religiosa	Peepal	20	Tree	NC, OGE, DC	
Mangifera indica	Aam	15	Tree	DC	
Syzygium cumini	Jamun, Jambu	20	Tree	NC, DC	
Tectona grandis	Teak	20	Tree	DC	
Ecological performance: CN –Control Noise level, OGE – Absorb Gas emission (Sexena 1991)[5] and (Abbasi & Khan 2000)[6], DC - Dust Controller (CPCB 2007)[7], Environmental Adaptation (DR - Drought resistance, SR - Salinity resistance, FR - Fire Resistance, T- Tolerant to Air Pollution).					

Tree Plantation Outside the site premises

Apart from inside the site area, green belt development is also suggested to be developed outside the site premises in consultation with local Forest Department. Total number of trees / plants that are proposed to be developed outsite the site premises as part of conservation plan (in consultation with local Forest Department) are 1000 trees. This will be done with mutual agreement with local forest department within a period of five years.

The details of suggested tree species are presented in ***Table 10-8***.

5 Saxena, V.S. 1991. Afforestation as a tool for environmental improvement. In: Executive development program on greening the townships. Vaniki Prashikshan Sansthan, Jaipur. Pp 13-44.

6 Greenbelts for Pollution Control: Concepts, Design, Applications. 2000. Abbasi, S.A. and F.I. Khan. Discovery Publishing House, New Delhi.

7 Phytoremediation of particulate matter from ambient environment through dust capturing plant species. Published 2007 by Central Pollution Control Board, Ministry of Environment & Forests, Govt. of India in Delhi.

Table 10-8: Details of tree plantation outside the project premises

Plant Species	Local/Hindi Name	Height (m)	Type	No. of trees to be planted
Acacia catechu	Khair	3 m	Tree	1000 Nos
Acacia nilotica	Babul	8 m	Tree	
Adina cordifolia	Haldu	20 m	Tree	
Aegle marmelos	Bael	12 m	Tree	
Albizia procera	White Siris	20 m	Tree	
Alianthus excelsa	Maharakha	20 m	Tree	
Anogeissus latofolia	Dhavdo/ Dhaura	20-30 m	Tree	
Bombax ceiba	Semul	20 m	Tree	
Boswellia serrota	Salai	9-18 m	Tree	
Bridelia retusa	Kaji/ Kuhir	20 m	Tree	
Buchanania lanzan	Charoli	13 m	Tree	
Butea monosperma	Palas	10	Tree	
Cassia fistula	Amaltas	12 m	Tree	
Diospyros melanoxylon	Tendu	10 m	Tree	
Ficus bengalensis	Banyan	20	Tree	
Ficus religiosa	Peepal	20	Tree	
Gmelina arborea	Shevan / Ghumar	10-30 m	Tree	
Heterophragma quadriloculare	Waras	5-15 m	Tree	
Holoptelea integrifolia	Khanjho / Kanju	20-25 m	Tree	
Lagerstroemia parviflora	Phurush	20 m	Tree	
Lannea coromondilica	Mavedi /Mohin	14 m	Tree	
Limonia acidissima	Kothi /kaith	9 m	Tree	
Madhuca indica	Mahua	20 m	Tree	
Mangifera indica	Aam	15	Tree	
Manikara hexandra	Khirni	12-25 m	Tree	
Miliusa tomentosa	Umbh	15-20 m	Tree	
Mitragyna parvifolia	Kalam/ Kaim	20-50 m	Tree	
Moringa concanensis	Moringa	6-12 m	Tree	
Oroxylum indicum	Manduk	18 m	Tree	
Ouginia oogeinensis	Tanach / Sandan	12 m	Tree	
Pterocarpus marsupium	Bigasal	20 m	Tree	
Sapindus emarginatus	Ritha	10 m	Tree	
Schleichera oleosa	Kusum	15-20 m	Tree	
Semecarpus anacardium	Bhilawa	15 m	Tree	
Sterculia urens	Kogdol / Gulu	15-20 m	Tree	
Sterospermum suaveolens	Kalagari	10-25 m	Tree	
Tamarindus indica	Imli	20 m	Tree	
Tectona grandis	Teak	20 m	Tree	
Terminalia arjuna	Arjun	15 m	Tree	
Terminalia bellerica	Bahera	15 m	Tree	
Terminalia chebula	Harda	15 m	Tree	
Terminalia crenulata	Aina	5 m	Tree	

Budget allocation for greenbelt within project site

The proposed facility of green belt will be developed in 1964 sq.m (34.58% of total plot area) using 300 trees/large shrubs + 80% survival rate = 360 Trees of various species considering 1500 trees per hectare.

Detailed budget break-up is presented in ***Table 10-9.***

Table 10-9: Budget for Proposed Greenbelt Development within Project Site

Sr. No	Work or Activity	1st year	2nd year	3rd year	Capital cost (INR)	Recurring cost/year (INR) (considering 20% mortality rate)
1	Proposed plantation within Project boundary, totally 300 saplings will be planted (Approx. Cost @ INR 1250/- per sapling) – Rs 4.5 Lacs Capex Investments					
Saplings Required		100	100	100	3,75,000/-	75,000/-
	Amount	1,25,000/-	1,25,000/-	1,25,000/-		
Total Budget					**3,75,000/-**	**75,000/-**
					4,50,000/-	

Plantation* Technique *& Care:

Following basic procedures need to be followed for greening the area.

- Since the project area fall under semi-arid condition & having poor soil quality, plantation of tree species required approx. $1m^3$ pit for soil enrichment
- Pit should be filled with imported soil with 3:1:1 the ratio of sand, silt & form yard manure.
- Procure well grown saplings of recommended species from the nearby Forest Department nursery.
- Make 1m diameter ring bund around the planted saplings for water retention.
- Watering of sapling is species specific, therefore watering need to be done once in 2 or 3 days for a period of two years.
- Soil wok & weeding need to be done once in a two months.

Monitoring Protocol

- The plantations need to be managed by regular watering, soil enrichment work, applying manure, weeding and provide proper protection.
- Replacement of sapling (replanting) required whenever mortality occurs in the plantation during the growth stage.
- Plantation requires after care for a period of minimum five years till the saplings attain matured tree stage.
- Any damage to the developed greenbelt due to any natural or cattle activity should be redeveloped and maintained by the agency.

Biodiversity*/ Ecological Monitoring*

Project site encompasses common species of plants so clearing of these species will not have significant impact on the floral diversity and associated faunal diversity at ecosystem level. Moreover, floral and faunal species reported during this survey are common and generally found in many habitats in the project study area.

So, it can be stated that the proposed project and associated activities are unlikely to influence any floral and faunal components significantly provided that the suggestions / recommendations in this report are implemented. Strict implementations of EMP / mitigation measures are required to ensure that the biodiversity of the study area should not impacted negatively.

10.5.8 Rainwater Harvesting

Rainwater Collecting & Harvesting Scheme

Rainwater harvesting is a mechanism involved in collecting, storing and using rainwater as a part of water conservation measure. All the rain water from the terraces will be brought at ground level through vertical down-take pipes and through closed pipe network it will be collected in surface/sub surface tank.

For rainwater collection and storage calculations, areas like Autoclave, Shredder and Control room, administrative building, parking area, incoming waste storage rooms etc are considered. All processing areas are excluded due to having chances of contamination.

Separate water collection from Roof top of Non-Plant building are generally used for water conservation.

As per IMD data, total rainfall in the wettest months (June to September) of Vadodara is 971.6 mm in four months[8] and total no of rainy days are 37. So rainfall intensity is calculated as 26.25 mm/day. The estimated runoff quantum using run off coefficient applicable for roof top, Green belt and roads is presented in ***Table 10-10*** as below:

Table 10-10: Land Area Breakup and Estimation of Runoff / Harvesting Water

Sr. No.	Particulars	Area, sq.m	Rainfall Intensity (m)	Runoff Coefficient	Runoff generated from clean areas (cu.m/day)
1	Roof Top areas of general buildings	379	0.02625	0.85	8.45
Total					**~ 8.5 cu.m/day**

From the above calculations, the maximum rain water available for harvesting on daily basis will be 8.5 cu.m per day from roof top. These waters will be conserved.

It is proposed to have 40 cu.m of rain water storage tank for utilization of rain water; which will get filled up in 5 days of rainfall. The water from this tank will be utilised for at least 3.5 consecutive days during non monsoon period, once the tank is full; at 11.2 KL per day consumption in plant.

The rain water tank dimensions that will be provided are 4.5 x 3 x 3 m SWD = 40 cu.m of rain water storage (harvested). Surface drainages will be let out o fsite premises through storm water interceptors.

Filtration Chamber

It is proposed to have a a filtration chamber prior to the rain water collection tank to filter out the rainwater before storage in rainwater collection tank. In plant premises, necessary infrastructure will be created to divert run-off water into storage tank using conduits or pipes. Overflow from the RWH tank will be drained to storm water drainage system.

10.5.9 Social management Plan

The social management plan proposes to improve the quality of life of inhabitants of potentially affected villages directly. The goal is "a pollution free area with improved quality of life and empowered community "and the three key pillars on which this would be developed are – social, health, infrastructure improvements with efforts on minimal disruptions present life style and any ensuing negative impacts.

Social – Awareness on project benefits, gender empowerment, increases livelihood opportunities during implementation of technical and social remediation plans and generating community participation.

Health - Awareness on health, hygiene, environmental sanitation and generic issues related to improving quality of life with specific emphasis on potable drinking water, HIV/AIDS/STI mitigation)

Infrastructure - Developing prioritized infrastructure facilities which are related to the continuum of project benefits to the local communities and area.

Implementation Arrangement

The social management plan and its activities will be implemented by NGO under the close supervision and monitoring of the CER division of the company.

[8] Source: Long Term Climatological Tables 1991 – 2020, Published by IMD for Vadodara Station

Monitoring & Evaluation

Two-time (Mid-term and after completion of the work) monitoring will be done by the third party appointed by the company.

Corporate Environment Responsibility

According to the CER office memorandum dated 1st May, 2018 of MoEF&CC the CER budget for 3 year comes to INR 10.0 lacs i.e. 0.2 % of project cost INR 4.87 Crore.

Table 10-11 : Budget for CER Activities for 3 years

Sr. No.	Activity	Amount INR (Lakhs)	%
Environment			
1	Rooftop Solar panel (At Anganwadi, Primary schools, Panchayat and health centres)	10.0	100
Sub- Total		**10.0**	

Additionally, social management plan can also focus on mitigation of perceived impacts during the running of project. The plan emphasizes on health, hygiene, drinking water, Public infrastructure like (Community hall, Toilets) and girl's education issues and includes awareness generation amongst the community on fire hazard and leakage of chemicals during the running of project.

The SMP encourages community participation through formation of a Grievance Redressal Group to minimize and mitigate any grievance that may arise during the period of CER projects implementation. An NGO or Consultancy would be appointed by the company to ensure community participation, mitigate potential adverse impacts and help in resolving any disputes and grievances that may arise. It would also engage in awareness programs with community and encourage selected community members specifically the poorer sections and women to get employed in the Contractor's activities. This is expected to accrue several benefits - the Contractor would gain from local wisdom and knowledge and nuances that need to be taken care of and the community would get access to gainful employment closer to home. Overall, the project would not have any adverse impact to the surrounding villages in study area.

10.5.10 Expenditure on Environmental Matters

Over and above the capital investments for project developments the following is the Breakup of expenditure to be incurred by Shree Khodal Waste Management on overall operations and management on Environmental matters as presented in ***Table 10-12.***

Table 10-12: Expenditure on Environmental Matters

S. No.	Particulars	Approximate Capital cost (INR in Lacs)	Approximate Recurring cost per Annum (INR in Lacs)	Basis for Cost Estimates
1	Air Pollution Monitoring	20	1.2 (stack) + 1.8 (ambient air) + 2 (O & M) = 5	Capital cost: Online Monitoring system for DG and Incinerator Stacks Recurring cost: Annual cost for repairs/maintenance of air quality monitoring equipments.
2	Noise Pollution Control	7 + 8 = 15	0.06 (monitoring) + 1 (O & M) = 1.06	Capital cost: Provision of acoustic enclosures to DG sets and noise generating equipment barriers in Incineration Plant Recurring cost: Monitoring cost of regular Noise measurements + Maintenance costs
3	Water Pollution Control	50	Analytical Costs Rs 2.4 Lacs + O & M of ETP 2.6	Capital cost: Cost for construction of ETP and recycling System.

S. No.	Particulars	Approximate Capital cost (INR in Lacs)	Approximate Recurring cost per Annum (INR in Lacs)	Basis for Cost Estimates
			cu.m per day x 150 x 365 = ~ Rs 1.45 Lacs = Total Rs 3.85 Lacs per annum	Recurring cost: O & M for ETP + Analytical Costs for Surface + ground water piezometric wells
4	Ground Water Monitoring	1.8	1.8	Capital Cost: Piezometric well construction Recurring Costs: Sampling and monitoring of wells
5	Soil Monitoring	-	0.6	Recurring cost: Soil Sampling and analysis
6	Storm Water Management	5	0.4 lacs (monitoring) + 0.5 (O & M) = 0.9 Lacs	Capital cost: Construction of storm water drains, storm water interceptors at the outlets. Recurring cost: Maintenance costs for the storm water interceptors – 10% + Analysis costs of storm water monitoring
7	Health and Safety	15	1.5 (monitoring) + 1.5 (O & M) = 3	Capital Cost: Occupational Health Centre in Administration Block, PPEs and fire safety equipments including fire fighting system. Opex Cost: For health checkups + 10% on recurring costs of fire fighting equipments and works
8	Green Belt Development	3.75	0.75	Capital cost: Cost of development of green belt in entire site premises. Recurring cost: Maintenance of green belt.
9	Conservation Plan for Schedule I Species	10	-	Conservation Plan costs for Schedule 1
10	Odour Control	2	0.15 (O & M)	Capex cost: Deodorant spraying system, sprinklers. Recurring cost: Maintenance Costs for the system - 10% of capex
11	Miscellaneous	2	5	Capex Costs: Training programme, Safety Audits Recurring Costs: Environmental Audits and Compliances.
Total		**124.55**	**22.11**	

Based on the above, Shree Khodal Waste Management will have incurred a total cost allocation towards Environmental matters in the proposed project of **Rs. 124.55 Lacs Capital Investment and Rs. 22.11 Lacs per annum** on recurring expenditure.

11 SUMMARY AND CONCLUSIONS

11.1 Introduction

Proposed project is for development of Common Bio-medical Waste Treatment Facility (CBWTF) developed at Plot No. 5 & 6, GIDC Shehera, Taluka & District Panchmahal, Gujarat – 389210 for treatment and safe disposal of Bio medical wastes generated from medical and health care facilities within 75 km area of the proposed site location at Shehera.

The facility includes an Incineration Plant, Autoclave & Shredder facility including ancillary facilities like Storage of incoming wastes, recyclables and solid / hazardous wastes etc. The facility will be developed following all respective guidelines issued by MOEF&CC and CPCB for development of Incinerator and BMW facility from time to time.

The facility is being developed by **M/s. Shree Khodal Waste Management** company.

Environmental Impact Assessment study and EIA Report has been prepared to comply with the Terms of Reference (Vide Letter No. SEIAA/GUJ/TOR/7(da)/57/2025 dated 21st January, 2025) issued by SEIAA, MoEF&CC for seeking Environmental Clearance for the project.

11.1.1 Project Components

The nature and size of project components as presented in ***Table 11-1*** as below:

Table 11-1: Nature and Size of Project Components

Sr. No.	Facility	Capacity	Working Hrs. per day and no. of days per year	Waste to be handled (MT per day)	Waste to be handled (MTPA)
1	Incinerator	100 Kg/hr	20 hrs. x 360 days	2.0	720
2	Autoclave	50 Kg	10 cycle per day x 360 days	0.5	180
3	Shredder	50 Kg	10 cycle per day x 360 days	0.5	180
Total				**2.5**	**900**

11.1.2 Importance of the project to the country and region

Proposed project will be providing services to all hospitals/clinics/health care units of Panchmahal, Mahisagar and Dahod Districts within 75 km radius of the site.

The proposed facility will involve activities such as collection of segregated wastes, safe transportation to CBWTF, operation of treatment facilities and processing of the biomedical waste for safe disposal.

11.2 Project Description

11.2.1 Cost of the Project

The proposed project cost ~ INR 4.87 Crores.

11.2.2 Project Area

Total plot area is 5678 sq. m., which include mainly 826 sq. m. for Waste Processing area, 583 sq. m. of Ancillary Facility Areas, 1479 sq. m. of internal roads, 156 sq. m. of incoming and treated waste Storage, 176 sq. m. waste management area, 496 sq. m. open space & 1964 sq. m. greenbelt area; which is 34.58% of the total plot area.

11.2.3 Power Requirement

Proposed unit at full capacity will demand 60 KVA of power, which is being supplied through Madhya Gujarat Vij Company Ltd. The company proposes to install D.G. set of capacity 60 KVA (1 No.) to serve as an alternative source of power supply (for essential services) to this unit during emergency in case of power failure.

11.2.4 Manpower

20 persons will be required during project operation phase. During construction phase, temporary manpower will be employed during construction purposes.

11.2.5 Water Management

Source of Water

Source of fresh water is GIDC water Supply.

Water Consumption, Waste Water Generation, Treatment and Disposal

Total water requirement for proposed project is 13.8 KLD (11.2 KLD fresh + 2.6 KLD recycled), which will be sourced from GIDC water supply source.

The total waste water generation (domestic + industrial) from the proposed project is 3.4 KLD which will send to ETP for treatment. Sewage of 0.8 KLD will be treated in septic tank and soak pit system, while industrial waste water will be treated and recycled for Quenching in Incinerator. The waste water treatment system achieves Zero Liquid Discharge.

ETP sludge will be send for disposal to authorised TSDF site.

11.2.6 Air Management

There will be two stacks in proposed developments:

Sr. No.	Stack attached to	Capacity	Fuel	Stack Diameter and Height above GL (m)
1	DG	1 No – 60 KVA	HSD	12
2	Incinerator	1 No Chimney attached to Incineration Plant of 100 Kgs/hr	HSD	30

11.2.7 Hazardous Waste Generation and Management

- Used / Waste / Spent Oil generated will be sent to Oil recyclers.
- Incineration Ash, ETP sludge, encapsulated waste will be send for disposal to authorised TSDF site.
- Shredded Materials will be send to Authorised Recyclers.

11.2.8 Employment Generation

20 persons will be required during project operation phase. During construction phase, temporary manpower will be employed during construction purposes.

11.3 Baseline Monitoring Period

Baseline Environmental Monitoring is carried out during period of December 2024 to February 2025.

11.3.1 Study Area

The study area was considered to be 10 km radius from the project site.

11.3.2 Landuse of Study Area

Landuse within 10 km radius of study area has been determined with the help of satellite imagery. As per Landuse and Land cover map the Built up area is 4.80%, agricultural land is 60.72%, land with vegetation cover is 11.37%, Reserved Forest is 14.83%, Waste land is 0.59%, Water body is 7.60% & others is 0.08%.

The proposed site is located in a non-notified industrial area of GIDC industrial estate and the scrub land parcel has already been earmarked for industrial purpose utilization. Hence change in land use is already done as it is taken over by GIDC for industrial development.

11.3.3 Climate

Baseline meteorological data has been collected hourly by installing automatic meteorological station in the study area. Average temperature recorded was 22.0°C, averagerelative humidity was 56.4% & average wind speed was 1.9 m/sec;

As per monitoring season, Wind - 1st predominant wind direction was E, 2nd predominant wind direction was NE. Calm condition is ~ 20.09%.

11.3.4 Ambient Air Quality

Ambient monitoring was carried out at 9 locations within 10 km of study area. The results of the air quality indicators are as below;

- Average concentration of PM_{10} was recorded in range from minimum 49 µg/m^3 to maximum 88 µg/m^3;
- Average concentration of $PM_{2.5}$ was recorded in range from minimum 21 µg/m^3 to maximum 29 µg/m^3;
- Average concentration of SO_2 was recorded in range from minimum 6.2 µg/m^3 to maximum 7.6 µg/m^3;
- Average concentration of NO_X was recorded in range from minimum 6.1 µg/m^3 to maximum 15.8 µg/m^3;
- Average concentration of HCL, Hg & VOC was recorded < 1.
- CO levels were recorded in range of 0.99 mg/m^3 to 1.12 mg/m^3 at various locations which is within the specified limit of CPCB.
- HC levels were recorded in range of 925 µg/m^3 to 1017 µg/m^3 at various locations which is within the specified limit of CPCB.

It is observed that average results of all the parameters at all the locations were within the specified limits of CPCB.

11.3.5 Noise Levels

Noise monitoring was carried out at 8 locations within the study area. The results are presented ***Table 11-2*** as below:

Table 11-2: Noise Monitoring Locations with results

Sr. No.	Location	Category	CPCB Limits in dB (A)		Average Noise levels in dB (A)	
			Day Time	Night Time	Day Time	Night Time
NL01	At Project Site	Industrial	75.0	70.0	55.2	47.5
NL02	Along road to Patiya Village (other end of Shehera GIDC plots)	Residential	55.0	45.0	54.9	44.3

Sr. No.	Location	Category	CPCB Limits in dB (A)		Average Noise levels in dB (A)	
			Day Time	Night Time	Day Time	Night Time
NL03	Nr MGVCL Substation	Residential	55.0	45.0	54.2	43.5
NL04	Nr Reserved Forest boundary of Zoz and Patiya	Silence	50.0	40.0	49.3	39.0
NL05	Sadisamdi village	Residential	55.0	45.0	54.3	43.4
NL06	Shehera Town	Commercial	65.0	55.0	62.6	53.6
NL07	Patiya village	Residential	55.0	45.0	54.5	44.7
NL08	Zoz village	Residential	55.0	45.0	54.5	44.8

Noise level during daytime & nighttime, in Industrial area & Residential area was observed within CPCB standards i.e. Industrial area (75 dBA (d) & 70 dBA (n)), commercial area (65 dB A (d) & 55 dB A (n)), residential area (55 dB A (d) & 45 dB A (n)) and silence area (50 dB A (d) & 40 dB A (n)).

11.3.6 Surface Water Quality

Surface water samples were collected at 10 locations within the study area as shown in following ***Table 11-3***:

Table 11-3: Surface Water Quality Monitoring Locations

Nomenclature	Location	Source
SW01	Waghjipur Village Pond	Pond
SW02	Pond on road towards Patiya Village	Pond
SW03	Shehera Village Pond	Pond
SW04	Zoz Village Pond	Pond
SW05	Chikni River Downstream	Stream
SW06	Bhensal Village Pond	Pond
SW07	Dodiyani (Dalvada) Village Pond	Pond
SW08	Panam Canal	Stream
SW09	Chikni River Upstream	Stream
SW10	Kun River	Stream

Observations

River/Stream water: Quality of SW05 & SW08 can be compared with class B or C as per classification of Inland surface water and can be used for outdoor bathing or for drinking after treatment, while SW09 & SW10 can be compared with class D or E as per classification of Inland surface water and can be used for Propagation of wildlife & fisheries or for irrigation & industrial use.

Pond water: Quality of SW3, SW6 & SW7 can be compared with class B as per Inland surface water and can be used for outdoor bathing. The Quality of SW1, SW2 & SW4 can be compared with class D or E as per Inland surface water classification and can be used for Propagation of wild life, fisheries or for Irrigation and Industrial use.

11.3.7 Ground Water Quality

Ground water samples were collected at 9 locations within the study area as presented in following ***Table 11-4***:

Table 11-4: Ground Water Quality Monitoring Locations

Sample Id	Sampling Locations	Source
GW 1	Shehera Village	Dug-well
GW 2	GIDC Shehera	Dug-well

Sample Id	Sampling Locations	Source
GW 3	Village Bhensal	Dug-well
GW 4	Village Zoz	Hand Pump
GW 5	Village Sadisamdi	Bore-well
GW 6	Village Bamroli Bujarg	Dug-well
GW 7	Village Akediya	Dug-well
GW 8	Smt. S.J.Dave High School, Shehera Town	Hand Pump
GW-09	Waghjipur Village	Dug-well

Observations

Overall the groundwater quality in the study area is fit for potable use, irrigation and other uses. The groundwater depth was observed 20 to 80 feet below GL.

11.3.8 Soil Quality

Surface soil samples were taken from 9 locations within the study area as mentioned in following ***Table 11-5***;

Table 11-5: Soil Quality Monitoring Locations

Sr. No.	Code No.	Location Name	Area /Source
1	ST01	Village Salampur	Agriculture
2	ST02	GIDC Shehera	Agriculture
3	ST03	Village Bhensal	Agriculture
4	ST04	Village Dalwada	Agriculture
5	ST05	Village Sadisamdi	Agriculture
6	ST06	Village Bamroli Bujarg	Agriculture
7	ST07	Village Akediya	Agriculture
8	ST08	Nr. Smt. S.J.Dave High School, Shehera Town	Agriculture
9	ST09	Shehera, Village Sadisamdi	Habitation

Observations:

- Porosity ranges from 48 - 57 %
- WHC ranges from 40.25 – 52.28 %,
- Permeability from 16.74 – 25.16 mm/hr.
- EC ranges from 0.074 - 1.567 dS/m and ESP ranges from 1.04 to 1.47, which indicate that the soils are normal to sodic.
- Soil texture varied from sandy loam to sandy clay loam.

11.3.9 Biological Environment

The principal agriculture crops in the study area are Makai, Jowar, Bajra, Wheat, Tuver, Rice, Gram, Ground nut, Seasam, Rapes, Cotton and Mustard. The vegetables grown in the study area are Bhindi and Rigan. Moreover, some fruit trees like Sapodilla (Chickoo), Banana, Pomegranate and Mango are also grown in the study area.

Overall 14 species of common flora including 1 tree, 5 shrubs, 6 herbs & 2 grass species were recorded from the core zone of the study area. While in buffer zone, total 183 species of flora were reported from the study area. Trees were dominant life form and reported with maximum 103 species, followed by 28 species of shrubs, 22 species of herbs, 16 species of grasses and 14 species of climbers.

Among faunal species, no herpetofauna and mammals was observed in the core zone. Total 03 avifaunal species were reported from the core zone which includes i.e. Blue rock pigeon, Green bee eater, and Red-vented lawing.

In the buffer zone, a total of 130 species were reported including 18 species of mammals, 06 species of reptiles, 96 species of birds, 05 species of butterflies and 10 species of fishes.

There is no Wildlife Sanctuary, Biosphere Reserve, Tiger / Elephant Reserve, Migratory Corridors and Ramsar Sites/National Wetland falls in the study area of 10 km radius of project site except reserved forests.

In core zone / project site, no Schedule I species were observed. However, from the buffer zone, total 14 Schedule I species have been reported comprising 09 species of Mammals, 03 species of reptiles and 07 species of birds (from in the study area. A Conservation plan is proposed to conserve these species in the study area.

None of the documented flora from the study area can be assigned endemic status.

11.3.10 Socio-Economics

The statistics regarding the human population and the number of dwelling units of villages in the study area indicates that there are 65 villages, and 01 Municipal Corporation in the study area.

There are a total of 38,126 households covering 2,10,428 persons in the Study Area, with male population of 1,08,232 and female population of 1,02,196, indicating a gender ratio of 944 and a household size of an average 5 members.

According to Census 2011 data, it is revealed that 17.24% of the study area population belongs to Schedule Tribe communities, 3.70% population belongs to Schedule caste and rest other communities.

The literacy rate in the study area, as per the Census of India 2011 is about 57.92%.

Primary health centre and sub centre is available in surveyed villages. Most of the households in the study area have sufficient sanitation facilities. The people from the villages in the study area earn their livelihood majorly by farming and agriculture.

11.3.11 Traffic Survey

Traffic survey was carried out for the selected two roads at a location on main approach roads to the project site as below;

- On Highway SH 05 towards Modasa – Location 22°56'5.74"N 73°38'16.49"E
- On Highway SH 05 towards Godhra – Location 22°56'2.50"N, 73°38'17.36"E

Based on the analysis of existing traffic and proposed increase due to project it can be seen:

3. Total PCUs per day on SH - 05 for traffic flow towards Modasa is observed as 10591 PCU/day which is Less than 35000 PCU/day (Design PCU per day as per IRC guideline for Multi Lane Road for four lane divided carriageway).
4. The PCUs per day on road towards Godhra via SH-05 is observed as 9407 PCU/day; which is Less than the 35000 PCU/day (Design PCU per day as per IRC guideline for Multi Lane Road for four lane divided carriageway).

Thus it can be concluded that the carrying capacity of both the roads is sufficient to cater for existing as well as additional traffic due to proposed project.

11.4 Impacts and Mitigation Measures

11.4.1 Land Environment

Impact Identification

- Change in land cover from scrub to industrial land of 5600 sq.m and loss of top vegetative soil layer of 2,800 cu.m of volume – 5600 x 0.5 m = 2,800 cu.m.
- Improper Disposal of construction waste outside the site will have impact on land use in surrounding.
- Post closure and decommissioning phase of the project the site area of 5600 sq.m area will be thoroughly cleaned up and be available for any future developmental use.

Mitigation measures

The following mitigation measures are suggested to manage the anticipated environmental impacts:

- Conversion of scrub land parcel of 5678 sq.m for industrial use and GIDC has already acquired land for development of industrial purpose.
- Utilization of top soil layer to the tune of 1500 cu.m in green belt. Rest will be utilized in plinth filling purposes. Any excess soil will be disposed elsewhere in low lying filling works as per legal regulations by Contractor
- 34.58% of site area (1964 sq.m) will be developed as green belt.
- Excavated earth will be stored in stockpiles and covered with high graded tarpaulin sheet and reused for landscape environment, for greenbelt and backfilling.
- The development activities will be properly planned in a timely manner so that impacts to the environment are minimal
- Site area land will be restored after Decommissioning of plant for future developmental use.

11.4.2 Air Environment

Impact Identification

The air quality modelling has been carried out for Incinerator and flue gas stack (as stationary source) along with movement of vehicles (line source) and it is found based on modelling study that there is an incremental increase in overall ambient air quality as observed for PM10 as 0.1713 µg/m^3, SO2 as 0.378 µg/m^3, NOx as 2.29 µg/m^3, HC as 0.389 µg/m^3, CO as 4.134 mg/m^3

The maximum incremental increase impacting distance is found to be maximum of 250 majorly in WSW direction from the site where no village habitation is present in the study area.

Mitigation measures

To reduce the impact of Air environment, following are the mitigation measures:

- The control of air pollution from stacks of diesel generators is proposed by providing adequate stack height to attain maximum dispersion of flue gases containing SPM, SO_2, NOx and CO.
- The gases coming out of the incinerator stack are passed through Quencher & Venturi Scrubber including dioxin control system for removal of all air pollutants.
- For proper dispersion of SO_2 and NOx emissions into atmosphere, Incinerator stack height of 30 m minimum will be provided.
- Regular water sprinkling on haulage roads to deliver continuous moisture to suppress dust in dust prone areas.
- Regulate speed of vehicles areas to reduce fugitive dust created and control dust emissions to a large extent.
- Trees will be planted all around the project boundary. The green belt will act as a barrier not only to control dust but also odours.

Odour / Fugitive emission control measures

- De-odorants will be sprayed in the areas of operation of wastes handling, transportation and disposal on regular basis;
- Plantation / Green Belt development will be carried with selection of odour suppressing / absorbing plant species around the plant area.
- Proper Segregation & storage of wastes & treatment of wastes in timely manner will provide effective fugitive emission control.
- Cleaning and removing spilled debris from storage areas and transport trucks immediately.
- Keeping the operations always clean devoid of any exposed wastesDG set will be used only in case of power failure.

11.4.3 Traffic and Transportation

Impact Identification

Incremental increase in traffic is observed to be 34 PCUs per day over and above the baseline results. The proposed project will have minimal impact on vehicular load of existing traffic.

Mitigation measures

- Traffic shall be regulated through proper signage, instruction & parking spaces.
- Adequate parking spaces are provided on site for storage.
- Signboard shall be provided for smooth traffic flow and also inculcate trucks, other employees & workers to follow traffic rules

11.4.4 Noise Environment

Impact Identification

Based on the noise modelling results the proposed incremental increase in noise levels are observed to be 0.1 to 2 dBA around the site and the area is industrial use.

Mitigation Measures

Necessary control measures will be adoped for control of noise levels in the operations of project as under:

- Provision of acoustic enclosures on DG Sets and stationary equipments in the plant as feasible.
- Provision of personal protective equipment (PPE) such as earmuffs and earplugs to workers exposed to high noise generating operations/area and marking with display board for warning.
- Development of Green belt within the plant premises and along project boundary to screen noise.
- Periodic monitoring of ambient noise levels in the plant premises and Noise Exposure levels for workers deputed in different sections in the plant. Adoption of preventive maintenance measures in high and persistence noise areas.

11.4.5 Surface Water Environment

Impact Identification

- Impact on GIDC source of water to the tune of 11.2 KLD fresh water utilization by site
- Any untreated waste water discharged outside the site premises will have impact to the drainage stream downstream of the site.
- Impact on natural drainage system due to any spillages entering storm water.

Mitigation Measures

- All waste waters (industrial and domestic) generated will be taken to ETP and treated in ETP and then recycled and reused leading to ZLD concept.
- No waste water will be discharged outside the site.
- Proper operation and maintenance of effluent treatment plant will be done and no discharge of the waste water outside the plant premises will be carried out.
- All chemical, hazardous waste storage and fuel storage and handling areas will be provided with proper bunds to avoid run-off contamination.
- All storage areas will be enclosed and provided with bunds to collect any runoff waters and divert it to ETP.
- Storm water drainage will be provided separate with interceptor's design in order to ensure that no contamination will go out of the site premises.
- Roads to be kept clean along with storm water drainages so that any surface water contamination is avoided.

- Drip irrigation system will be proposed to reduce water demand for gardening / green belt development.

11.4.6 Geology, Hydrogeology

Impact Identification

The study area falls in Seismic zone III Moderate damage risk zone. There will be no impact on geological formations in study area due to project activity.

The local topography & Geomorphology of project site which is presently scrub land will be converted to build up land due to the proposed project.

There is no abstraction of ground water in this project and hence on impact on ground water abstraction.

Mitigation Measures

The site will be properly constructed with no major excavations and maintained with normal slopes so that local geology is maintained.

No ground water abstraction is done. However, piezometric wells will be drilled and maintained for monitoring purposes.

11.4.7 Ground Water Environment

Impact Identification

- Any untreated waste water discharged on ground or soil will have an impact on soil and ground water through percolation.
- No impact on depeletion of ground water resources since there will not be any abstraction of ground water in the proposed project.

Mitigation Measures

- The storage area for wastes, products and Hazardous and Solid Waste and ETP areas will be constructed with RCC floorings and bunding in order to prevent any leakages / spillages to contaminate soil in surroundings and further ground water sources.
- All waste waters and spillages will be arrested and sent to ETP for treatment and reused in ZLD system after treatment.
- Transportation of waste/materials will be done in covered trucks avoiding any spillages and care will be taken that no waste water or wastes will contaminate soil or ground water.
- Two piezometer wells will be constructed around site and periodic monitoring of groundwater will be done to record and analyse any contamination.
- Rainwater harvesting will be carried out on site for conserving the surface water resources to the tune of 8 KLD.
- Rain Water storage and utilization is proposed of 40 KLD.

11.4.8 Soil Environment

Impact

- Loss of top vegetative soil layer of 2,800 cu.m of volume – 5600 x 0.5 m = 2,800 cu.m.
- Improper disposal of wastes on ground will contaminate soil within or outside the site.

Mitigation Measures

- Top soil of around 1500 cu.m will be stored and utilized in green belt. Rest will be utilized in plinth filling purposes.
- Care should be taken to avoid any spillages / leakages on soil in the plant areas which will have an impact on soil quality.

- Regular water sprinking and use of fertilizers will improve the fertility of soil and maintain proper green belt for control of soil erosion and also improve quality of soil.

11.4.9 Ecology and Biodiversity Environment

Impact Identification

- The site does not have any special species of flora habitat so there is no threat of habitat loss on site.
- Impacts on the surrounding habitats/vegetation due to dust deposition / gaseous emissions.
- Increased noise and vibration will cause disturbance to existing fauna

Mitigation Measures

- Thick greenbelt, including trees having dust/gaseous emissions capturing properties, will be developed. Some of the dust and gaseous emission absorbing species having good pollutant absorbing capacity proposed in the greenbelt.
- The green belt will act as a barrier between site operations and surrounding environment. Total 300 Nos of trees / shrubs will be developed on site with native species.
- As part of conservation plan also green belt in surrounding is proposed to be developed in consultation with forest department upto 1000 tree / shrub species.

11.4.10 Solid / Hazardous Environment

Impacts on Solid / Hazardous Waste

- Generation and mishandling of solid and hazardous waste will have an impact on soil and ground water.
- Unauthorized disposal of solid / hazardous waste will have an impact on the surroundings.

Mitigation measures for Solid / Hazardous Wastes

- All solid waste will be properly handled and managed on site. The wastes will be collected, stored in solid and hazardous waste storage areas dedicated on site.
- The wastes will be periodically disposed for treatment and disposal to authorized facility outside the site with proper permissions.
- Adequate capacity of Hazardous Waste Storage and Scrap Yard will be constructed on site to temporarily store hazardous and other solid waste with HDPE liner system.

11.4.11 Socio-Economic Environment

Impact

- The proposed activities will generate indirect employment in the region due to the requirement of workers, supply of raw material, auxiliary and ancillary works, which would marginally improve the economic status of the people.
- The activities would result in an increase in local skill levels through exposure to activities.
- Infrastructure upgradation to facilitate the movement of the vehicles and traffic.
- The project in turn would lead to improvement in transport facilities
- The project will not affect the local community and no R & R will be required.

Mitigation Measures

- Shree Khodal will contribute to development of CER activities in surrounding villages.
- Shree Khodal will contribute for development and welfare of the surrounding community.
- Shree Khodal will provide employment opportunities to the local people of the villages.

11.4.12 Occupational Health & Risk

Impacts

- Improper operational of Incineration system will have an impact to site and surroundings
- Improper handling of wastes on site will have an impact on people working on site.
- Improper storage of chemicals and hazardous and infectious wastes on site will have an impact on people working on site and surroundings.

General Safety Measures

- Requisite personnel protective equipment will be used on site in various areas depending on seriousness and safety precautions to be taken. Instruction/Notice to wear the same will be displayed. Further, it will be insisted to use the same while at work.
- Provision of safety shower with eye washer.
- MSDS of all hazardous chemicals will be available and displayed at the place of work.
- Regular training programme for safety awareness.
- Provisions of First Aid Box and OHC (as per Factory Act) and trained staff will be maintained.
- Work area will be monitored to maintain it free from any dust/chemicals-fumes/vapors and to keep clean.
- Provision of adequate Fire Extinguishers and fire fighting system at site and impart training to the workers to smooth and trouble free operations
- Availability of Self Breathing Apparatus at site.
- Provisions of immediate accident/incident reporting and investigation.
- Instructions on Emergency/Disaster will be displayed.
- Safety Posters and slogans will be exhibited at conspicuous places.
- Arrangement of Periodical Training to workers and supervisors for safety and health.
- Work permit systems will be strictly followed.
- Medical checkup would be carried to all employees and worker staff on site at periodic intervals
- Appropriate personnel protective clothing to be used to prevent skin contact.
- Safety Goggles will be used to prevent eye contact.
- Hand gloves of natural rubber, neoprene, and polyvinyl chloride will be used.

11.5 Environmental Monitoring Plan

Detailed Monitoring plan has been prepared for effective monitoring for various environmental and social attributes is made as under:

- Air emissions due to project operations, DG set, Incineration Plant
- Waste Water
- Soil quality
- Noise levels (Trucks, occupational exposures & ambient noise)
- Green Belt Development.
- Ecological Conservation.
- Corporate Environmental Responsibility

A total cost allocated towards Environmental monitoring in the proposed project is Rs. 101.3 Lakhs Capital and Rs. 10.26 Lakhs per annum on recurring costs.

11.6 Risk and Safety

- Consequence analysis study is carried out for HSD fuel. HSD is in liquid form in atmospheric condition & stored in small storage tank having capacity 1 KL. Hence, Pool fire radiation effect is determined for consequence analysis.
- Based on consequence analysis study HSD, the maximum pool fire effect distance due to Radiation level is 8 m in case of leak HSD from tank/ rupture of tank. The threat zone will be within the premises or no impact to off-site.
- Dyke wall will be provided to prevent spread of HSD due to leak from tank. So maximum effective distance shall be very low.
- It can be concluded from the HIRA that after providing mitigation measure of general and specific safety in operational activities, risk probability will be negligible.

A fire fighting system with hydrant valves will be provided on site as required. The fire-fighting devices like Portable fire extinguishers (DCP Type, Foam Type, CO2 Type etc.), sand buckets etc. will also be provided in required quantity. Necessary fire pumps and jockey pumps will be installed. Further, provision of fire alarm will be made within the site to prompt the workers in the event of any fire hazard. Adequate PPEs to be used at all times by every employee working on the site.

First Aid boxes will be provided in the Security Office, Plant and OHC. Site onsite and offsite emergency plan will be in place and upgraded from time to time.

11.7 Project Benefits

Opportunities for the fulfillment of the community's requirements will get strengthened mainly related to management of Biomedical wastes in an environmental friendly manner from healthcare units & living standards of local communities will also get improved.

Temporary and permanent employment direct and indirect will be created due to proposed project at local level due to contractual and permanent staff. The other related employment opportunities due to transportation requirement and other community services will also be generated. 20 persons will get direct employment in the proposed project.

11.8 Environmental Management Plan (EMP)

The Environmental Management plan is prepared with a view of effective environmental management of project.

EMP would cover a mechanism of monitoring and reporting during various stages of the project as under:

- Conceptualization: Environmental Assessment need in different areas of plant site.
- Planning: Define SOPs for assessment and compliance in different areas of site.
- Execution: Implementation of environmental safety measures and mechanism of reporting with periodicity
- Operation: Monitoring of effectiveness of built-in safeguards and reporting to higher management.

Shree Khodal Waste Management will incur a total cost allocation towards Environmental matters of Rs. 124.55 Lacs Capital and Rs. 22.11 Lacs per annum on recurring expenditure.

11.9 Conclusion

It can be concluded on a positive note that after implementation of all mitigation measures and Environmental management and monitoring plan, the project activities during construction and operation phase would largely have reversible impacts on the environment. The project will provide employment and improve on social infrastructure in the study area.

12 DISCLOSURE OF CONSULTANTS

12.1 Overview to Kadam Environmental Consultants

Kadam Environmental Consultants (KEC) was established in 1981 and has four decades of varied experience in the field of environment. The mission of the company is to provide sustainable solutions in the field of Environmental Consultancy and allied fields with the firm belief on "Environment for Development".

Headquartered at Vadodara, India, Kadam group of companies (including Kadam Pollution Control Pvt. Ltd. and Kadam Enviro Projects LLP in addition to Kadam Environmental Consultants), have a total office and site staff strength of ~350 persons covering the entire gamut of specializations in the Environment, Health and Safety spheres.

KEC has been servicing its clients, including several multinationals, government institutions, public and private sector Indian enterprises across several sectors for four decades, now.

KEC is certified to ISO 9001:2015 and OHSAS 18001:2007 by BSI. KEC has been recognized as Environmental Auditors with Gujarat Pollution Control Board (GPCB) since inception of the Environmental Audit Scheme. KEC is also empanelled with Gujarat Industrial Development Corporation (GIDC), Ministry of Housing and Urban Affairs (MHUF) and Gujarat Infrastructure Development Board (GIDB) as Consultants.

Customer services provided by KEC are mainly categorized into:

- Consultancy Services: Environmental Impact assessment, Environmental Site Assessment and Due Diligence, Enviro-Legal Services, Statutory Environmental Audits/ Environmental Statements/Compliance, Risk assessments and HAZOP, Energy Audit, Environmental, Health and Safety Management Systems, Deep Sea Pipeline Projects and Waste Management Systems.
- Engineering Services: Collection and Conveyance of liquid and solid wastes, designing and executing effluent and sewage treatment plants, municipal solid waste studies and solid waste management systems, bio gas plants, rain water harvesting systems and deep sea marine disposal systems.
- Laboratory Services: Chemical and waste testing, microbiology, soil testing and field sampling. The company has a well-equipped laboratory with modern instruments and experienced staff catering to the need of statutory and advisory environmental testing of water, wastewater and hazardous solid waste. KEC's widely-acclaimed laboratory is accredited by National Accreditation Board for Testing and Calibration Laboratories (NABL), a Constituent Board of Quality Council of India. The laboratory is capable of monitoring of ambient air and air emissions, water, including surface waters (marine as well as sweet water including ecological parameters), groundwater, soil, solid and hazardous wastes. The laboratory is staffed by more than 25 full time scientists supported by an equal number of field staff engaged in sampling and collection of environmental samples.

KEC has a team comprising of environmental planners and engineers, chemical, civil, structural and electrical engineers, geologists and hydrogeologists, enviro-legal experts, socio-economic experts, microbiologists, zoologists, botanists, industrial hygienists and industrial / analytical chemists.

For Environmental Impact Assessment Studies, the company's strength lies in project management, performing risk assessment, HAZOP/HAZID studies, formulating environmental disaster plans, use of satellite imagery in impact assessment, use of mathematical models for air / surface water / ground water / marine studies / solid waste / hazardous waste and soil assessment, and expertise in public consultation.

KEC is an accredited EIA Consultant Organization (ACO) by NABET, Quality Council of India under EIA accreditation scheme as per mandatory requirement of the MOEF&CC, Govt. of India for carrying out Environmental Impact Assessment studies. It has accredited EIA coordinators and Functional Area Experts for undertaking Environmental Impact Assessment and related studies in all approved functional areas.

12.2 EIA Team Members

The EIA report is prepared based by team of KEC with active co-operation from M/s Shree Khodal Waste Management. The team members involved in the project along with their roles are presented in ***Table 12-1*** as below:

Table 12-1: EIA Team Members

Name	Team Member	Involvement	
		Task	Under Guidance of FAE
Anand Kunte	EIA Coordinator	Site visit, Data collection from client, coordination with Functional Area Experts, EIA report compilation	-
Margi Dhimar	Project Coordinator		Anand Kunte
Megha Oza	TM- LU	Preparation of land use maps of study area using Google image / related tools, ground truth survey, finalization of land use maps, identification of impacts, suggestion of mitigation measures related to land use and land utilization in the proposed project and contribution to EIA documentation	Sangram Kadam
Anup Ojha	TM- Noise and Vibration (NV)	Noise sampling and analysis of data, identification of impacts and mitigation measures and contribution to EIA documentation	Mahendra Jadav
Aarti Sharma	Socio-Economics (SE)	Secondary Data Collection, evaluation of Socio–Economic status of the study area, socio economic impacts arising out of the proposed project activity, contribution to the EIA documentation	Sangram Kadam
Kushal Chavare	Hydrogeology, ground water and Water Conservation (HG)	data collection, sampling and monitoring of groundwater, supervision of groundwater sampling locations, finalization of survey findings, identification of impacts, suggestion of mitigation measures and contribution to EIA documentation	Nilkanth Kavlanekar
	Geology (GEO)	Geology and geomorphologic analysis based on secondary data, analysis of data collected, contribution to EIA documentation	Nilkanth Kavlanekar
Pratik Panchal	TM- Risk Assessment & Hazard Management (RH)	Identification of impacts and mitigation measures, HIRA assessment, contribution to EIA documentation	Parul Patel
Hitendra Shing	TM-SE	Secondary data collection and compilation of data in SE report	Sangram Kadam
Kunal	Draftsman	Preparation of various maps like as mentioned above along with specific maps required by the FAE that are used as base map to run the required software.	Jayesh Gajjar & All FAEs

Kadam NABET Certificate is presented at ***Annexure 7*** and NABL accredition Certificate for Kadam Labs is presented at ***Annexure 8.***

ANNEXURES

Annexure 1: TOR Letter issued by SEIAA

Ms. MAULIKA SHAH
MEMBER SECRETARY
SEIAA (GUJARAT)

GOVERNMENT OF INDIA
MOEF & CC
STATE ENVIRONMENT IMPACT ASSESSMENT AUTHORITY
GUJARAT

No. SEIAA/GUJ/TOR/7(da)/ 57 /2025 Date: 21 JAN 2025

Sub: Terms of Reference [ToR] to M/s. Shree Khodal Waste Management for setting up of manufacturing plant of "Common Biomedical Treatment Facility" at Plot No. 5+6, GIDC Shehra, Taluka & District - Panchmahal, Gujarat-389210.

Ref: Your Proposal No: SIA/GJ/INFRA2/432576/2023.

Dear Sir,

This has reference to your online application dated 07/06/2023 along with Fom-I. The project activity is covered in 7(da) and is of 'B' Category.

The SEAC, Gujarat vide their letter dated 06/08/2024 had recommended to the SEIAA, Gujarat, to grant the Terms Of Reference for the above-mentioned project based on its meeting held on 20/11/2024

The proposal was considered by SEIAA, Gujarat in its meeting held on 06/01/2025 at Gandhinagar. After careful consideration, **SEIAA hereby accords Terms Of Reference (ToR) to above project under provisions of EIA Notification dated 14th September, 2006 and its amendment. ToR is Granted with conduction of Public hearing & preparing of draft EIA report with other conditions are as under.**

Terms of Reference [TOR] to M/s. Shree Khodal Waste Management for setting up of manufacturing plant of "Common Biomedical Treatment Facility" at Plot No. 5+6, GIDC Shehra, Taluka & District - Panchmahal, Gujarat-389210

Category of the unit: **7(da) – B1**
Project status: **ToR – New**
Project located either in CEPI or non CEPI: **Non CEPI**
In context to above subject matter finds below the recommendation of SEAC for your perusal.

1	**DETAILS OF APPLICATION:**	
	Type of application:	ToR Application (New Project)
	Proposal no.	SIA/GJ/INFRA2/432576/2023
	Category of Project :	Category 'B'
	Date of application:	07th June, 2023.
	Date of EDS by SEIAA a) EDS Raised b) Reply by PP	a) EDS Raised: 22/06/2023 b) Reply by PP: 16/01/2024
	Date of EDS by SEAC a) EDS Raised b) Reply by PP c) Accepted by SEAC	a) 16/01/2024
	TOR No. & Date :	Not issued yet, as ToR Application is in process.
	Date and place of Public Hearing	-
	Name of accredited Environmental Consultant & address along with Accreditation No. & Validity	Kadam Environmental Consultants
	SEAC Meeting No. and Date:	State Expert Appraisal Committee (SEAC) Gujarat 897th Part-B meeting of SEAC to be held on 29th August 2024 [IND].
	ADS raised by SEAC meeting No & date :	897th SEAC Meeting dated 29th August 2024.
	Reply Submitted by PP dated:	03rd October, 2024
	Revised Consideration SEAC Meeting No. and Date:	a) ADS Raised: 897th meeting of SEAC, Gujarat, held on 29th August, 2024.

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SEIAA

	b) Reply by PP: 03rd October, 2024. c) Accepted by SEAC: in 975th meeting SEAC Meeting dated 20.11.2024.

2 **DELIBERATIONS OF SEAC**

1) This office has received an application vide their online proposal no. SIA/GJ/INFRA2/432576/2023 dated 07.06.2023 made by project proponent (PP) regarding grant of Terms of Reference [ToR] for preparation of EIA/EMP report.
2) Project proponent (PP) has submitted Form-1, PFR and relevant details/information.
3) This is a greenfiled project proposed for establishment of common Bio-Medical Waste Treatment Facility (CBWTF) as mentioned in product profile.
4) The project falls under B1 category of project activity 7(da) as per the schedule of EIA Notification 2006.
5) The proposal was considered in the SEAC video conference meeting dated **29.08.2024.**
6) Project proponent (PP) and their Technical Expert M/s Kadam Environmental Consultants remain present during video conference meeting.
7) During the meeting dated: 29.08.2024, the project was appraised based on the information furnished in Form – 1, Pre-Feasibility Report, Environment Management Plan and details submitted by e-mail.
8) Committee deliberated on the proposed project, Capacity, technology, location of the project, siting Criteria (As per GPCB Guidelines), Ownership of the plot, design of Incinerator, Autoclave, Shredder, Layout plan, water balance, management of waste water, Air emission and Hazardous wastes, EMP, CER, Green Belt, fire safety, etc.
9) During meeting, PP presented and Committee noted the following details/ documents:
   - ✓ Authority letter of Consultant dated: 27.08.2024 in the name of M/s Kadam Environmental Consultants.
   - ✓ **Need of the project:**
     - o With a rapid urbanization and expansion in Panchmahal, Mahisagar & Dahod Districts, there is a need of a modern and latest state of art technology for the treatment and disposal of Bio Medical Waste generated by health care facilities.
     - o As per the Bio- medical Waste Management Rules 2016 (BMWM Rules), there must be a CBWTF within 75 km range so as to dispose or treat such biomedical and hazardous wastes within 48 hrs. Hence, a CBWTF is required to cater to the needs of Panchmahal, Mahisagar and Dahod District.
     - o Proposed project will be providing services to all the health care units of Panchamal, Mahisagar and Dahod District. Increase in hospital beds by 10,000, is clear criteria for another CBWTF, even if there is little, or no GAP in BMW generation-treatment capacity, in 75 km area or within that district, the location of new CBWTF, gets justified.
     - o This will save the time of waste disposal which is 48 hours as per CPCB guideline and subsequent amendments and also save the transportation cost.
     - o The proposed facility will involve activities as envisaged in CBWTF rules, 2016, 2018 and 2019, such as collection of segregated wastes, safe transportation, operation of processing / treatment facilities of biomedical wastes for its safe disposal to landfill site.
   - ✓ PP has presented details of two existing facilities wrt collection of wastes, covered HCFs and number of beds from Panchmahal, Mahisagar and Dahod districts.
   - ✓ GAP Analysis of Dahod, Mahisagar and Panchmahal districts including details of number of beds, CBWTF consent as per GPCB (kg/ Month), total BMW generation (kg/ Month), total BMW collection (kg/ Month), total BMW worst case scenario (kg/ Month) and prediction of BMW generation of year 2023, 2028, 2030 and 2032.
   - ✓ Committee noted that GIDC has issued Plot allotment letter No: GIDC/ALT/Seh1/RM/18 dated: 06.05.2023 in the name of Shri Jethabhai Ghelabhai Bharwad for Plot No: 5 & 6, GIDC Sehra Industrial Estate mentioning purpose as processing and treatment of biomedical waste. Committee noted that Shri Jethabhai Ghelabhai (Ahir) is partner of M/s Shree Khodal Waste Management.
   - ✓ PP has submitted Partnership Deed of M/s Shree Khodal Waste Management dated: 11.02.2023.
10) During meeting, Committee asked to submit following details:
   - ✓ Satellite image showing existing facilities within 75 Km radial distance.
   - ✓ Details of siting criteria as per CPCB guidelines for CBWTF.
   - ✓ Power of Attorney of M/s Shree Khodal Waste Management.
   - ✓ Copy of Notification of GIDC Sehra.
   - ✓ Copy of permission of GIDC for allowing borewell within GIDC area.
   - ✓ Revised details of treatment of domestic effluent in ETP/STP instead of disposal through soak pit/ septic tank.
11) Later on PP vide email dated: 31.08.2024 submitted the following details:

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- ✓ Notarized undertaking dated: 30.08.2024 stating "*Smt Hetal Jethabhai Ahir (Partner) of M/s Shree Khodal Waste Management as authorized representative to deal with all the matter related to EC and also that we have no objection if EC, for the proposed project will be issued in the name of the company and / or applicant.*"
- ✓ GIDC Sehra is non-notified GIDC area, hence we agree to conduct public hearing.
- ✓ We herewith clarify and undertake that we don't construct borewell as GIDC agrees to supply water in GIDC plot allotment letter No: GIDC/ALT/Seh1/RM/18 dated: 06.05.2023.
- ✓ We herewith changed the domestic wastewater disposal mode with treatment in ETP and revised water balance diagram and revised hazardous waste matrix (due to increase in ETP sludge) are submitted.

12) **Committee noted that as the GIDC Plot allotment letter is of dated: 06.05.2023 which is after EIA Notification 2006 and PP has mentioned that the GIDC Sehra is non-notified GIDC, public hearing is applicable.**

13) SEAC reviewed the GAP of Panchmahal district as per GAP Analysis report of Gujarat State received from GPCB in January 2024 and later on revised GAP Analysis report received from GPCB on 06-04-2024 and GEMI letter No. GEMI/828(1)/822/2024-25 dated 08-04-2024 received from GPCB is as under:

Panchmahal:

- ➢ Consent of GPCB issued to CBWTFs (as per CBWTF coverage area) is 16465 kg/month and CBWTF treatment capacity is 21729 kg/month, BMW generation from present 28691 kg/ month is predicted to reach 47289 kg/month in 2028, is expected to reach 54731 in 2030 and is expected to reach 62174 kg/ month by 2032. Thus GAP is -12226 kg/month (present), -30824 kg/month (2028), -38266 kg/month (2030) and -45709 kg/month (2032) {*Refer table no. 20, 21& GEMI letter dated 08-04-2024}.
- ➢ At present, there are 678 HCFs with 4220 beds. While the total BMW generation is 1027 kg/day, existing treatment capacity is 724 kg/ day. (Incineration + autoclaving). However, in worst case scenario (higher bed occupancy), total BMW generation is expected to be 1060 kg/day {*Refer table no. 25,26}.
- ➢ With 1 operational CBWTFs (Existing CBWTF Coverage) in Panchmahal area and district, against the present 4300 hospital beds, the number is predicted to reach to 6883 in 2028, 7916 in 2030 and then to 8950 in 2032, hence there is no need of CBWTF. {*Refer table no. 18 & 19).

14) Committee deliberated that looking to above details regarding GAP Analysis report, it is noted that there is GAP of -12226 kg/month (present), -30824 kg/month (2028), -38266 kg/month (2030) and -45709 kg/month (2032). However as per GAP Analysis report based on numbers of beds, there is no need of new CBWTF.

15) Hence Committee is of the opinion that as per GAP Analysis report, till year 2032 there is a GAP of -45709 Kg/month (1.828 MT/Day) wrt consented capacity issued to CBWTF and BMW generation.

16) SEAC has on the basis of elaborate discussions and prevailing guidelines, decided that three criteria are to be considered while considering new CBWTF. First is, gap in BMW treatment over a period of next 6-8 years as well as, worst case scenario situation. Second is, number of increases in hospital beds, over a period of next 6-8 years, with added consideration of occupancy. And third is the presence or absence of CBWTF in the district. All or any of the three conditions should be fulfilled but first condition, i.e GAP in BMW, is the priority consideration. In this case, BMW GAP is existing, wrt consented capacity and BMW generation, as on 2032, hence SEAC recommends one new CBWTF but with capacity as per the projected GAP.

17) **After detailed deliberation, Committee unanimously decided to consider the project in one of the upcoming meeting only after satisfactory submission of the following:**
    1. Satellite image showing existing facilities within 75 Km radial distance from proposed project.
    2. Details of siting criteria as per CPCB guidelines for CBWTF.
    3. Justification for proposing common biomedical waste treatment facilities of 3.5 MT/Day though the GAP considering consented capacity issued to CBWTF and BMW generation is 1.828 MT/Day.
    4. Details of management of mercury waste

18) PP has submitted reply of above query generated on SEAC VC meeting, through Parivesh portal.

19) This proposal is reconsidered in SEAC VC meeting dated: **20.11.2024.**

20) PP along with their technical expert/consultant, M/s. Kadam Environmental Consultants remains present in the meeting and made presentation before Committee.

21) During meeting, Committee noted that PP submitted following details:
    - ✓ Satellite image showing there is only one BMW facility "Samvedna BMW Incinerator" at Halol at an aerial distance of ~ 48.6 km SW within 75 km radial distance from proposed project.
    - ✓ Compliance of siting criteria as per CPCB guidelines for CBWTF.
    - ✓ Revised details of treatment capacity of proposed common biomedical waste treatment facility is 1.8 MT/Day as per GAP analysis which is as under:

Sr. No.	Name of Products	Capacity (kgs/hr)	Working Hrs per day and no of days per year	Waste to be handled	Waste to be handled

				(MT/day)	(MTPA)
1.	Incinerator	125	8 hrs x 360 days	1	360
2.	Autoclave	100	4 hrs x 360 days	0.4	144
3.	Shredder	150	4 hrs x 360 days	0.4	144
Total				1.8	648

- ✓ Details of management of mercury wastes.

22) During meeting committee asked for following details:
- ✓ Notarized undertaking for not catering and overlapping the existing facility i.e M/s Samvedna Biomedical Waste Management Pvt Ltd.
- ✓ SOP for handling of mercury waste as per CPCB guidelines.

23) Later on PP has submitted following details through email: 25.11.2024:
- ✓ Undertaking on letter head dated: 25.11.2024 mentioning that *"We are well aware that another biomedical waste management facility M/s Samvedna Biomedical Waste Management Pvt Ltd, Dahod is present within 75 Kms of our radius. We hereby undertake that our areas of operation will not affect with the existing customers of M/s Samvedna Biomedical Waste Management Pvt Ltd, Dahod and we will not conflict into business interests of each other. On a mutual understanding and approach, we will cater to the areas of Panchmahal, Godhra, Mahisagar and Dahod districts."*
- ✓ SOP for handling of mercury waste.

24) While deliberating the GAPs of various districts as per GAP Analysis report of Gujarat State, it has come to the notice that the GAP is coming very less (i.e less than 1 MT/Day). During various presentations, this point was highlighted that incinerators, available in the market have minimum capacity which is well higher than the GAP being provided or available indifferent disricts / coverage areas for different proposals. Because incinerators of smallest capacity to large range, is not available to allow the project proponent to pick and choose the incinerator with capacity closest to the GAP available, he is required to compulsorily make higher investment in minimum capacity incinerators though the GAP available will be less, hence the project becomes financially non feasible, owing to this technical limitation. SEAC discussed this and felt that it is an issue which required consideration. Committee felt that when technical limitation of incinerator capacity is governing the financial viability for the project, the minimum GAP to be permitted, must be at least equal to the minimum capacity of incinerators. Committee felt that for facilitation of well spread CBWTF and BMW treatment in the state, this needs to be provisioned for. Moreover, while inquiring regarding the minimum capacity of Incinerator available in market, it came to SEAC notice that minimum capacity of Incinerator is 100 Kg/Hr and accordingly the needed Autoclave facility is minimum 50 Kg/Batch.

25) Committee is of the opinion that in those project/ proposal where GAP is less than 1 MT/Day and not more than 2.5 MT/Day, then the minimum capacity of CBWTF can be permitted as 2.5 MT/day, so that financial feasibility arising out of technical limitation is addressed. Further, where GAP is coming more than 2.5 MT/day, in those projects, the capacity to be given as per available GAP.

26) Committee noted that in the said case the GAP is 1.828 MT/Day (i.e less than 2.5 MT/Day) considering the above rationale, Committee is of the opinion that capacity of CBWTF to be considered as 2.5 MT/Day (Incinerator+ Autoclave). So, Committee asked PP to submit the proposal wrt the total plant capacity of 2.5 MT/day (incinerator + autoclave).

27) Accordingly PP has submitted revised proposal of plant incinerator capacity: 2 MT/day and Autoclave capacity: 0.5 MT/day on 12.12.2024 is as under:

Sr. No.	Name of Products	Capacity	Working Hrs per day and no of days per year	Waste to be handled (MT/day)	Waste to be handled (MTPA)
1.	Incinerator	100 (Kg/hr)	20 hrs x 360 days	2.0	720
2.	Autoclave	50 Kg	10 cycle per day x 360 days	0.5	180
3.	Shredder	50 Kg	10 cycle per day x 360 days	0.5	180
Total				**2.5**	**900**

 # Brief Note of Product Profile:

1. No of Manufacturing Plants: 01 Nos.
2. Brief Note regarding number of Products to be manufactured considering plant capacity: Bio-medical Waste Treatment As per Above Table Capacity

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28) Committee found presentation and reply submitted by PP was satisfactory.

3 **EIA REPORT (BASELINE STUDIES AND RISK ANALYSIS): Not Applicable as it is ToR.**

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4 **RISK ANALYSIS & ITS MITIGATION MEASURES IN GENERAL AS GIVEN IN EIA REPORT**

Details will be provided, during EIA Report submission.

5 **PRODUCT PROFILE AND BRIEF NOTE OF PRODUCT PROFILE**

This is Green field project:

Sr. No.	Name of Products	Capacity	Working Hrs per day and no of days per year	Waste to be handled (MT/day)	Waste to be handled (MTPA)
1.	Incinerator	100 (Kg/hr)	20 hrs x 360 days	2.0	720
2.	Autoclave	50 Kg	10 cycle per day x 360 days	0.5	180
3.	Shredder	50 Kg	10 cycle per day x 360 days	0.5	180
Total				**2.5**	**900**

 # Brief Note of Product Profile:

1. No of Manufacturing Plants: 01 Nos.
2. Brief Note regarding number of Products to be manufactured considering plant capacity: Bio-medical Waste Treatment As per Above Table Capacity

6 **PROJECT DETAILS (COST/LAND OWNERSHIP/NA PERMISSION ETC.)**

a) Total **cost of Proposed** Project (Rs. in Crores):

Existing	Proposed	Total
Not Applicable as it is greenfield project	4.87 Cr.	4.87 Cr.

Break-up of proposed project Cost:

Details	Existing (Rs. In Crores)	Proposed (Rs. In Crores)	Total (Rs. In Crores)
Land	Not Applicable as it is greenfield project	1.7	1.7
Building		1.17	1.17
Plant & Machinery		2.0	2.0
EMP		-	-
Total	-	4.87	4.87

b) **Details of Land / Plot ownership details:** (Linking between Land ownership and PP is required.)

i. **Total Plot area (sq mt):** 5678.68 Sqm
ii. **GIDC Plot Allotment letter/ NA documents:** Yes, GIDC Plot allotment letter is obtained.
iii. **Rent agreement, if any:** Not Applicable
iv. **Other Land Possession documents, if any:** -

7 **IF IT IS EXPANSION WHETHER CCR/EARLIER EC COMPLIANCE GIVEN: Not Applicable**

8 **PUBLIC HEARING APPLICABILITY AND ITS COMPLIANCE: will be carried out after obtaining ToR.**

Comments: **Committee noted that as the GIDC Plot allotment letter is of dated: 06.05.2023 which is after EIA Notification 2006 and PP has mentioned that the GIDC Sehra is non-notified GIDC, public hearing will be applicable.**

9 **SITING CRITERIA DETAILS (OTHER THAN GIDC):**

Sr. no.	Environmental Sensitivity	Name/Specific details	Siting criteria as per GPCB guidelines dated: 05.06.2022 & its amendment	Aerial Distance in Km
1	Habitat (Residential Area)	Shahera Village	0.5 km (500 Meter)	0.8 km
2	Water Bodies			
	River	Mahi River	0.5 km	19.50 km

			(500 Meter)	
	Natural Nallah/Drain	Shahera Natural Nallah	0.5 km (500 Meter)	1.80 km
	Lake/Pond/Wetlands	Vacchesar lake	0.5 km (500 Meter)	1.30 km
	Water supply Tanks/Reservoirs	Panam Reservoir	0.5 km (500 Meter)	9.0 km
	Canal	Narmada Canal	0.5 km (500 Meter)	25.0 km
3	Protected Monuments/Heritage sites/Public Buildings i.e School, colleges, etc.	Sarvoday High School Shahera	1 km (1000 meter)	1.60 km
4	National/State Highway OR Express way	N. H. No – 47, S. H. No – 5	0.2 km (200 Meter)	15 km, 2 km
5	Coastal Regulation Zone (CRZ) (In case of Coastal area projects)	Gulf of Khambhat	0.5 km (500 meter from High Tide Line)	170 km

Details of siting criteria as per CPCB guidelines for Proposed BMW Facility

Particulars	CPCB Criteria	Proposed Biomedical waste management Site	Criteria Complied (Yes/No)
Location	A CBWTF shall preferably be developed in a notified industrial area without any requirement of buffer zone A CBWTF can be located at a place reasonably far away from notified residential and sensitive areas and should have buffer distance of preferably 500m so that it shall have minimal impact on these areas. In case of non-availability of such a land, the buffer zone distance from the notified residential area may be reduced to less than 500 m by SPCB/PCC without referring the matter to CPCB by prescribing additional control measures such as 1. Adoption of best available technologies (BAT) by the proponent of CBWTF 2. Prescribing stringent standards for operation of the CBWTF by the SPCB/PCC. 3. Adoption of zero liquid discharge by the CBWTF and 4. In case of any complaints from the public, then CBWTF should prove that the facility is not causing any adverse impact on	• GIDC has issued Plot allotment letter No: GIDC/ALT/Seh1/ RM/18 dated: 06.05.2023 in the name of Shri Jethabhai Ghelabhai Bharwad for Plot No: 5 & 6, GIDC Sehera Industrial Estate mentioning purpose as processing and treatment of biomedical waste. Shri Jethabhai Ghelabhai (Ahir) is partner of M/s Shree Khodal Waste Management. • GIDC Shehera is non-notified GIDC area, **hence public hearing will be conducted.** • Nearest Village Shehera is more than 500 m from the site boundary. • Compliance to control measures: 1. We will adopt best available technology for Incineration and Autoclaving system 2. The emissions standards for incinerator will comply to stringent standards of air emissions for an Incinerator system as per CPCB 3. The site will comply with Zero Liquid discharge. Sewage will be treated in Septic Tank followed by STP. ETP will follow an Evaporator system and the condensates from	Yes with public hearing

	environment and habitation in the vicinity.	Evaporator will be reused back for in plant purposes. 4. We assure that there will be no complaints from public regarding CBWTF facility causing any adverse impacts on environment and habitation.	
	The CBWTF can also be developed as an integral part of the Hazardous Waste Treatment Storage and Disposal Facility (TSDF) subject to obtaining of necessary approvals from the authorities concerned including 'environmental clearance' as per Environmental Impact Assessment 2006 and further amendments notified under the Environment (Protection) Act, 1986, provided there is no CBWTF exist within 150 KM distance from the existing TSDF.	The site is being developed as a **standalone CBWTF only.** Under Category 7(d) a as per EIA Notification, the application for EC Clearance for the standalone CBWTF site is being made to SEAC, SEIAA Gujarat	Yes
Land Requirement	A CBWTF shall be set up on a plot size of not less than 1 Acre in all the areas	Site area is 5678.68 sq.m i.e. > 1 acre.	Yes
	In case of upcoming or new CBWTFs (both in municipal limits with population more than 25 Lakhs or in rural areas), land area requirement may be relaxed (but in any case not less than 0.5 Acre) by SPCB/PCC		
Coverage Area	A CBWTF located within the respective State/UT shall be allowed to cater healthcare units situated at a radial distance of 75 km. In a radial distance of 75 km, where 10,000 beds are not available, existing CBWTF in the locality may be allowed to cater the healthcare units situated up to 150 km radius w.r.t. to its location provided the bio-medical waste generated is collected, treated and disposed of within 48 hours as stipulated under BMWM Rules.	The site will cover medical and healthcare facilities within 75 km radius of the site and will cater to the needs of Panchmahal, Mahisagar and Dahod District.	Yes
	In case, number of beds exceed 10,000 in a locality and existing treatment capacity is not adequate, in such a case, a new CBWTF may be allowed in such a locality in compliance to various provisions notified under the Environment (Protection) Act, 1986, to cater services only to such additional bed strength of the HCFs located.	The site will cover medical and healthcare facilities within 75 km radius of the site and will cater to the needs of Panchmahal, Mahisagar and Dahod District.	Yes

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	In case of hilly areas, considering the geography, only one CBWTF with adequate treatment capacity may be developed covering at least two district to cater treatment services to HCFs located in respective districts.	NA	-

Comments:

This unit is located in GIDC area, so siting criteria is not applicable and also siting criteria as mentioned in CPCB guidelines of CBWTF is submitted and found satisfactory.

1 **A. APPLICABILITY OF GENERAL CONDITIONS AND COMMENTS WITH SPECIFIC CLARIFICATION OF MOEF&CC GUIDELINES: Not Applicable**

Sr No	Particulars	Aerial Distance in Km
1.	Protected Areas notified under the Wildlife (Protection) Act 1972 (53 of 1972)	Jambughoda Wildlife Sanctuary – 64.60 km
2.	CPA/SPA (Critically Polluted Area/Severely Polluted Area) as identified by the CPCB	Ankleshwar – 155.50 km
3	Eco sensitive areas as notified under sub-section (2) of section 3 of EPA-1986	Kevadiya- Statue of Unity – 122 km
4	Interstate boundaries and international boundaries	Interstate Boundaries – (Maharastra & Madhyapradesh) – 72 km International Boundaries – 308 km

Comments:

As per MoEF&CC's notification dated: 25.06.2014 and as per details submitted by PP, General condition is not applicable.

B. Ensure compliance of category as defined in the amendment to EIA Notification, 2006 vide SO 1599 (E) dated 25/06/2014. i.e.
Conditions of small units: (in case of 5 (f) category units and outside the GIDC):

Sr no.	Condition	Compliance with justification
1	Water consumption less than 25 M3/day;	Not Applicable as The Project falls in GIDC Shehra, Taluka & District - Panchmahal, Gujarat-389210.
2	Fuel consumption less than 25 TPD;	
3	Not covered in the category of MAH units as per the Management, Storage, Import of Hazardous Chemical Rules (MSIHC Rules), 1989 as per the legal undertaking submitted with EIA report.	

Comments:

As per MoEF&CC's notification dated: 25.06.2014, this condition is not applicable as it is category 7(da) project.

1 **AREA ADEQUACY AND COMMENTS**

Total Land area: 5678.68 sq. m

Floor-wise land area break-up table
Area Adequacy table:

Sr. No	Description	Dimension (m)	Proposed Area (sq m)	Percentage (%)
1	Admin building	10 x 10	100	1.76
2	Incineration Plant and Processing Areas	28 x 36.5	1022	18.00
a	Autoclave Area	5 x 6	30	

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b	Shredder room	7 x 6	42	
c	Incoming waste storage			
d	Yellow	6 x 6	36	
e	Blue	4 x 6	24	
f	Red	6 x 6	36	
g	Underground fire water tank	4 x 4	16	
h	Control Room	4 x 4	16	
3	Sharp pit	6.5 x 4	26	0.46
4	Hazardous waste Storage	6.5 x 8	52	0.92
5	ETP	15 x 6.5	97.5	1.72
6	Green Belt Area	1063+760.32+100.56	1923.88	33.88
7	Internal Road		1479.99	26.06
8	Vehicle washing	6.5 x 6.5	42.25	0.74
9	Vehicle Parking	21 x 6	126	2.22
10	Driver Rest Room	6 x 6	36	0.63
11	Visitor staff parking	10 x 10	100	1.76
12	Canteen	8 x 6	48	0.85
13	OHC	7 x 6	42	0.74
14	Security Cabin			0.00
a	Security room 1	4 x 6	24	0.42
b	Security room 2	4 x 4	16	0.28
15	Rain water harvesting	3.5 x 3.5	12.25	0.22
16	Electric Room	4 x 4	16	0.28
17	Open area	31.16 x 12.30 + 111.40 + 20.142	514.81	9.07
	Total	-	**5678.68**	**100.00**

Comments:

SEAC has examined it w.r.t.to total monthly production, maximum products, manufactured per month, the total raw material required, weekly storage requirement of each raw material, their mode of storage, their compatibility (flammability, corrosive, toxic), area needed by each raw material, one week storage of finished goods. Area adequacy, from overall safety perspective, has been provided in proposal and is satisfactory.

1 **GREEN BELT CONDITIONS AND MEASURES ALONG WITH AREA:**

Total Plot area (Sq meter)	Total Green belt area (Sq meter)	% of Greenbelt
5678.68 sq. m	**Inside:** 1923.7 sq. m **Outside:** -	33.88 %

Details of copy of permission letter of concern GIDC/ Panchayat/etc. for greenbelt development (in case

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of greenbelt development outside the premises: Not Applicable

Comments:

- The PP shall develop green belt within premises (1,923.7 Sq. m i.e. 33.88 % of the total plot area) as submitted before SEAC. Green belt shall be developed with native plant species that are significant and used for the pollution abatement as per the CPCB guidelines. It shall be implemented within 3 years of operation phase in consultation with GPCB.

1 **EMPLOYMENT GENERATION:**

Permanent	Contractual	Total
The total man power for the proposed project is about 20 Nos.		

1 **SOURCE OF WATER SUPPLY WITH QUANTITY AND PERMISSION (DETAILS OF CGWA IF BOREWELL**

a) **Source of water supply:** GIDC Water Supply
b) **Total Fresh water quantity (KLD):** 11.2 KLD.
c) **Permission of concerned authority (Name and quantity (in KLD):** 11.2 KLD from GIDC Water Supply System. Permission will be obtained after obtaining EC.

1 **WATER CONSUMPTION RELATED DETAILS WITH COMMENTS**

Category	Existing (KLD)	Proposed (KLD)	Total (KLD)	Remarks
(A) Domestic	**0**	**1.0**	**1.0**	Fresh – 1.0 KLD
(B) Gardening	**0**	**4.7**	**4.7**	Fresh – 4.7 KLD
(C) Industrial				
Incinerator	0	2.4	5.0	**Total 5 KLD (Fresh 2.4 KLD & Recycle - 2.6 KLD will be ETP treated water reused back in Incinerator system**
Autoclave	0	1.1	1.1	Fresh – 1.1 KLD
Washing	0	2.0	2.0	Fresh – 2.0 KLD
Industrial Total	**0**	**5.5**	**8.1**	Fresh – 5.5 KLD Recycle – 2.6 KL
Grand Total Fresh water requirement (A+B+C)	**0**	**11.2**	**13.8**	**Source of water will be GIDC water supply**

Comments:

PP has submitted the above water consumption which is calculated considering the worst case scenario and in no case the water requirement shall not exceed the same which is found satisfactory.

1 **WASTE WATER GENERATION AND DISPOSAL**

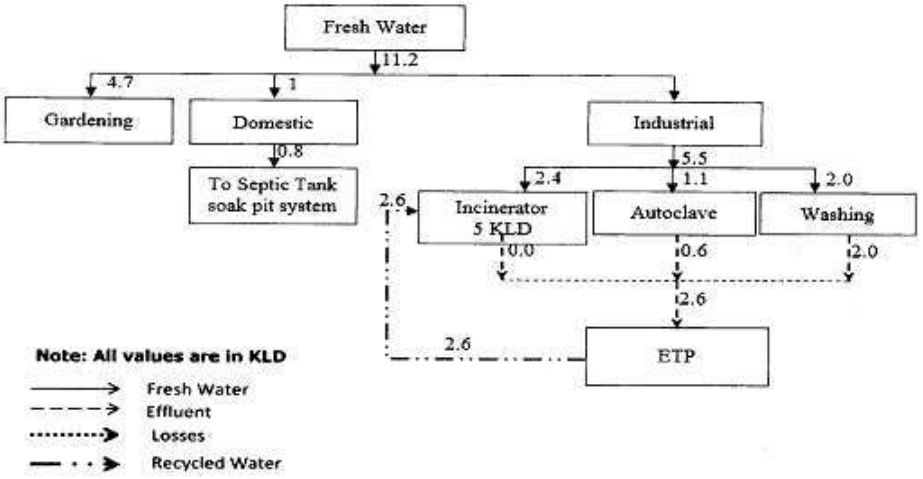
Category	Existing (KLD)	Proposed (KLD)	Total (KLD)	Remarks
(A) Domestic	0	0.8	0.8	0.8 KLD of Sewage water will be disposed of in Septic tank soak pit.
(B) Industrial				
Incinerator	0	0	0	**2.6 KLD, industrial waste water will be treated in ETP and treated water will be reused back in Incinerator system for Quenching.**
Autoclave	0	0.6	0.6	
Washing	0	2.0	2.0	
Total Industrial waste water	**0**	**2.6**	**2.6**	
Total [A + B]	**0**	**3.4**	**3.4**	

Justification in case of increase/ drastic reduction in wastewater generation than water Consumption:
5.5 KLD will be evaporation loss.

Comments:

PP has submitted the above wastewater generation which is calculated considering the worst case scenario and in no case the wastewater generation shall not exceed the same which is found satisfactory.

1 **SIMPLIFIED WATER BALANCE DIAGRAM**



Note: All units are in KLD.

1 **BREAKUP OF WASTE WATER DISPOSAL (DOMESTIC & INDUSTRIAL BOTH)**

Sr. no.	Quantity KLD	Facility
1	0.8	Sewage generated will be treated in septic tank & soak pit
2	2.6	2.6 KLD, industrial waste water will be treated in ETP and treated water will be reused back in Incinerator system for Quenching.
Total	**3.4**	

Comments for Industrial Effluent:

1. Management of Industrial effluent shall be as under:
   - Total 2.6 KLD industrial effluent shall be treated in ETP and reused back in quenching of Incinerator and shall maintain Zero Liquid Discharge (ZLD).

1 **MECHANISM AND METHODOLOGY OF STREAM SEGREGATION**

- Sewage generated will be treated in septic tank and soak pit.
- Industrial waste water will be treated in ETP and reused back in Incinerator.

2 **STP AND/OR ETP SPECIFICATION AND DESIGN AND ITS CAPACITY**

- The detail of ETP will be provided in EIA.

2 **TREATABILITY OF WATER**

- Detail will be provided in EIA report.

2 **SUMMARY OF WATER USE AND REQUIREMENT OF FRESH/REUSED WATER**

Summary of water requirement	Quantity KLD	Remarks
Total water requirement for the project **(A)**	13.8	-
Quantity to be **recycled (B)**	2.6	2.6 KLD, industrial waste water will be treated in ETP and treated water will be reused back in Incinerator system for Quenching.
Total **fresh water** requirement **(C)**	11.2	Source of water supply will be GIDC water supply.
Ensure **Total water requirement = Recycled water + Fresh water**		

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i.e. A = B + C

2 **REUSE, REDUCE, RECYCLE RECOVERY MEASURES ADOPTED**

a) Reduce

Sr. No.	Item	Quantity	% percentage
-	-	-	-

b) Reuse

Sr. No.	Item	Quantity	% percentage
1	Incinerator	2.6	18.8 %

c) Recycle

Sr. No.	Item	Quantity	% percentage
-	-	-	-

-

2 **FLUE GAS EMISSION**

Sr. no.	Source of emission With Capacity	Stack Height (meter)	Type of Fuel	Quantity of Fuel	Type of emissions i.e. Air Pollutants	Air Pollution Control Measures (APCM)
1	DG – 60 KVA (1 No)	12	HSD	15 Lit/hr	Particulate Matter - 150 mg/Nm3, SO2: 100 ppm, NOx: 50 ppm Particulate Matter-150 mg/Nm3, SO2: 100 ppm, NOx. 50 ppm	Acoustic Enclosure will be provided. Adequate Stack Height will be provided as per capacity
2	Incinerator (100 Kgs/hr)	30	HSD	32 Lit/hr	Particulate Matter - 50 mg/Nm3, SO2: 200 mg/Nm3, HCl: 50 mg/Nm3, CO: 100 mg/Nm3, TOC: 20 mg/Nm3, NOx (NO and NO2 expressed as NO2): 400 mg/Nm3, HF: 4 mg/Nm3, Dioxins and Furans: 0.1 ng TEQ/ Nm3	Lime Slurry Reactor with adequate stack height will be provided

Comments:

- The proposed fuel to be used is approved fuel for the requirement of the heat energy and proposed the Air pollution Control measures and stack height so as to achieve the emission norms prescribed by the competent authorities are found satisfactory.

2 **PROCESS GAS EMISSION**

Not Applicable

Sr No	Specific Source of emission (Name of the Product & Process)	Type of Emission	Stack/Vent Height (meter)	Air Pollution Control Measures (APCM)
-	-	-	-	-

Comments:

- There shall be no process gas emission.

2 **FUGITIVE GAS EMISSION**

Dust will be generated from transportation activity. For which paved road will be constructed and only

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PUC certified vehicles will be used for transportation activity.

2 **HAZARDOUS PROCESSES AND ITS SAFETY MEASURES : Not Applicable**

Types of process	Safety measures including Automation
Amination	Not Applicable
Bromination	Not Applicable
Chlorination	Not Applicable
Hydrogenation	Not Applicable
Nitration	Not Applicable
Sulphonation	Not Applicable
Others, if any	Not Applicable

-Mercury waste will be stored in a dedicated area in closed room having exhausts connected to a carbon filter. Dedicated containers will be used of hard plastic to store mercury waste. Safe removal of elemental mercury from the damaged and end of life mercury bearing instruments. Final disposal of all mercury bearing waste and equipment's to nearby TSDF site.

2 **SOLVENT MANAGEMENT (For example) Not Applicable**

2 **VOC EMISSION AND MITIGATION MEASURES FOR ACHIEVING MAXIMUM SOLVENT RECOVERY AND MINIMUM VOC GENERATION: Not Applicable**

3 **LDAR PROPOSED: Not Applicable**

3 **LDAR FOR SPECIFIC SOLVENT (For example): Not Applicable**

3 **HAZARDOUS WASTE MANAGEMENT MATRIX**

Sr. no.	Type/Name of Hazardous waste	Specific Source of generation (Name of the Activity, Product etc.)	Category and Schedule as per HW Rules.	Quantity (MT/Annum)	Management of HW
1	Used / Spent Oil	Process areas and equipment's	5.1	25 Litres	Pre-Processing facility / Co-processing of waste / Sent to Oil Recyclers
2	Incineration Ash	Incinerator	37.2	22 MT	TSDF / Landfilling
3	ETP Sludge	ETP	35.3	16.2 MT	TSDF / Landfilling
4	Shredded Materials	Shredder	-	180 MT	Sale to Authorized recycler
5	Encapsulated Waste	Process areas	-	1.5 MT	Sent to authorized TSDF for final disposal / Disposal to in-house sharp pit

Comments:

- Hazardous waste management includes collection, storage, transportation and disposal at TSDF, captive/ common incineration, co-processing/ pre-processing, sold to authorized actual users having Rule-9 permission and recycle/ reuse of waste. SEAC examined the details provided and found it as per requirement.

3 **NON-HAZARDOUS WASTE MANAGEMENT MATRIX –** Not Applicable

Sr. no.	Type/Name of non-hazardous waste	Specific Source of generation (Name of the Activity, Product etc.)	Quantity (MT/Annum)	Management of HW
1	Not Applicable			

3 **STORAGE SAFETY MEASURES: Not Applicable**

a) **Storage of Hazardous chemicals in Tanks**

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Sr. no	Name of Chemical	Capacity of Tank	Number of Tanks	Hazardous Characteristics of Chemical
1	Not Applicable	-	-	-

Safety Measures for PESO Underground storage tank farm:

b) Storage of Hazardous chemicals other than Tanks i.e. Drum, Barrels, Carboys, Bags etc.

Sr. no	Name of Chemical	Capacity of Drum/Bag/ Cylinder/ Glass Bottle	Number of Drum/Bag Cylinder/ Glass Bottle	Hazardous Characteristics of Chemical
	Not Applicable	-	-	-

Safety measures for Hazardous Chemicals:

Type of Hazardous Chemicals	Safety measures
FLAMMABLE & EXPLOSIVE CHEMICALS	Not Applicable
CORROSIVE CHEMICALS	Not Applicable
TOXIC CHEMICALS	Not Applicable
REACTIVE CHEMICALS	Not Applicable
Others, if any	Not Applicable

3 **FIRE LOAD CALCULATION**

Total Plot Area:	Details will be provided during EIA Report submission
Area utilized for plant activity:	
Area utilized for Hazardous Chemicals Storage:	
Number of Floors:	
Water requirement for firefighting in KLD:	
Water storage tank provided for firefighting in KL:	
Details of Hydrant Pumps:	
Nearest Fire Station :	
Applicability of Off Site Emergency Plan:	

3 **WORKERS SAFETY AND OCCUPATIONAL HEALTH MANAGEMENT**

Details will be provided during EIA Report submission

3 **DETAILS OF MEMBERSHIP OF COMMON FACILITIES:**

Sr. No.	Membership for Common Facility	Membership Certificate issuing agency along with Date of Issue and validity of membership
01	CETP	Not Applicable as the ETP treated water will be reused back in for solution preparation in incinerator.
02	TSDF site	Details will be provided during EIA Report submission
03	Common Hazardous Waste Incineration Facility	-
04	Common Spray Drying Facility	-
05	Common MEE Facility	-

06	Common Conveyance System	-
07	PESO permission	-
08	FIRE permission	-
09	Health Certificate	-

-

3 EMERGENCY MEASURES PROPOSED AND PREPAREDNESS ACTION PLAN

Details will be provided during in EIA Report submission

3 CER ACTIVITIES PROPOSED YEAR WISE/ IN CASE OF EXPANSION ANY ADDITIONALITY SUGGESTED AND ITS COMPLIANCE (AS PER THE MOEF & CC GUIDELINES)

Total cost of Project (Rs in Crores)	Total Cost of CER (Rs in Crores or Lakhs)	Percentage (%)
Details will be provided during EIA Report submission	9.74 Lakh	2%

Sr No	Activities	Name of Villages	Cost (Rs in Lakhs or Crores)
	Details will be provided during EIA Report submission	Details will be provided during EIA Report submission	Details will be provided during EIA Report submission

Comments:

As per MoEF&CC's OM dated: 01.05.2018 and 30.09.2020, SEAC examined that the proposed cost of CER i.e 2% (Rs 9.74 Lakhs) which is as per the requirement.

4 ENVIRONMENT MANAGEMENT PLAN (ESPECIALLY WITH CEPI AND NON CEPI GUIDELINES, AS MAY BE APPLICABLE)

Sr. No	Unit	Detail	Capital Cost (Rs. In Lakhs or Crores)	Total Recurring Cost (Rs. In Lakhs or Crores per Annum)
1	Wastewater	ETP/STP/MEE/Stripper/etc. (mention individual cost whichever applicable)	Details will be provided during EIA Report submission	
2	Air	APCM, utility, D G Set, etc. (mention individual cost whichever applicable)		
3	Hazardous Management			
4.	Fire & Safety	Fire Hydrant, Fire Safety & fire water storage tank, Trailer Driven Pump, PPEs; Proximity Suit, DCS + Flame proof electrical fittings, Fire Extinguishers; Foam Type Trolley, automatic control system, mock drills, etc. (mention individual cost whichever applicable)		
5	Green Belt Development			
6.	Occupational Health	O.H.C, OHS Training of staff, Miscellaneous, etc. (mention individual cost, mock drills, whichever applicable)		

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7.	Noise Control	Acoustic enclosure; Silencer ; Vibration pads; Noise PPEs, etc. (mention individual cost whichever applicable)		
8.	VOC Control & LDAR	-		
9	Environment Monitoring Program	Risk analysis, safety audit, maintenance expenses details, etc.		
10	CER Activity	-		
11	Cost of conservation plan of Schedule-I species, if any	-		
Total				

Comments:

The overall environment management plan (EMP) provided for capital and recurring cost for wastewater treatment, air emission control, noise control, hazardous waste disposal, fire & safety, occupational health, environment monitoring program, green belt and corporate environmental responsibility was deliberated and found satisfactory.

4 **RECOMMENDATIONS OF SEAC**

"On the basis of information provided to SEAC on project, its location, technical, physical and environmental infrastructure, BMW treatment facility, bio medical waste storage, waste disposal, water treatment, safety measures, green belt development planning, regulatory compliance assured of related statutory provisions, necessary documents of requisite permissions provided from concerned departments and overall environmental management planning for the project, along with financial resources committed for operation and maintenance, and on the basis of presentation made before SEAC, modification suggested by SEAC and incorporated by project proponent, SEAC finds the project as per the requirement and **unanimously** recommends the same to SEIAA for grant of Terms of Reference"

Considering the above project details, after detailed discussion, the following additional/ specific terms of reference (ToR) were prescribed in addition to the standard TORs/ model TORs available in the MoEFCC's sector specific EIA Manual for the "Bio-Medical Waste Treatment Facilities" projects shall be considered as generic TORs for EIA study in addition to all the relevant information as per the generic structure of EIA given in Appendix III in the EIA Notification, 2006 to be done covering 10 Km radial distance from the project boundary of the proposed site including public hearing.

1. **All conditions mentioned in TOR recommendation of SEAC vide letter dated 27.12.2024 shall be strictly adhere to.**
2. **PP shall Carry out Public Hearing for their proposed project as per provision of EIA Notification.**
3. **With reference to Gap analysis, proposed treatment capacity of BMW waste shall be 28691 Kg/ Month, where proponent shall operate all machineries in such a way that overall BMW shall be incinerated / autoclaved / shredded, that total BMW waste shall not be exceed of 28691 Kg/ Month, predicted to reach 47,289 Kg/Month in 2028.**
4. **Total 2.6 KLD of effluent generated shall be treated in ETP and treated effluent shall be reused backed in quenching of incinerator within premises, there shall be no discharge of any industrial effluent and maintain Zero Liquid Discharge (ZLD).**
5. **Proponent shall have to obtain EC before installation of project after conduction of Public hearing.**
6. **Proponent shall strictly comply siting criteria of GPCB.**
7. **PP shall carry out CER (Corporate Environment Responsibility) activity of their project cost, as per their submission vide OM of MoEF & CC dated 1.5.2018 of Rs 9.74 Lakh**
8. **PP shall give undertaking with NOC of agency of Samvedna BMW management as there area of operation will not effect the existing customer of Samvedna BMW management, Dahod will not conflict into business interest of each other. No conflict agreement and certificate shall be given at**

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the time of EC.

9. **Proponent shall provide all fire prevention and safety measures for fire control, even though fire NOC is not mandatory by labor and skilled department.**
10. **PP shall submit detail of STP with capacity at the time of EC application**
11. **PP shall provide detail of incinerator including primary & secondary chamber including capacity at the time of EC application.**
12. **PP shall submit TSDF membership at the time of EC application.**
13. **PP shall submit detail of ETP with capacity at the time of EC application**
14. **PP shall provide total green area of 33.88 % as per their submission.**
15. **Proponent shall obtain Environment Clearance from Competent authority before operation of their plant.**
16. **Proponent shall strictly comply revised CPCB Guidelines for common biomedical waste treatment facilities.**
17. **CBMWTF shall comply all conditions/Amendments of BMW Rules and guidelines issued by the CPCB from time to time.**
18. **The CBWTF shall setup technology system as per CPCB guideline strictly comply, design criteria for incinerator, autoclave and shredder as per the CPCB guidelines.**
19. **The entire activities proposed under CER shall be submitted to the regional office of MoEF & CC as a part of half –yearly compliance report and to district collector. The monitoring report shall be posted on the website of PP.**
20. **The CBWTF shall strictly ensure mercury waste management at health care facility as per the Bio-Medical Waste Management Rules 2016.**
21. **The CBWTF shall establish Standard Operating Procedure for waste collection, handling, transportation, treatment and disposal as per Bio-Medical Waste Management Rules 2016 and amended time to time.**
22. **Consent to operate shall be obtained from GPCB under Air (Prevention & Control of Pollution) Act, 1974 and Water (Prevention & Control of pollution) Act,1974 before operation, failing which the Environmental Clearance herein shall be deemed to be withdrawn.**
23. **The CBWTF shall provide continuous emission monitoring system (CEMS) and an arrangement shall also be done for reflecting the online monitoring results on the company's server, which can be assessable by the GPCB on real time basis.**
24. **Authorization from Gujarat Pollution Control Board shall be obtained as applicable under Bio-Medical Waste Management Rules 2016.**
25. **The proponent shall comply with Environmental standards notified by Ministry of Environment, Forest & Climate Change for incinerators along with the technology/guidelines.**
26. **There shall not be any spillage from the transportation vehicles.**
27. **The project proponents shall set up separate Environment Management Cell for effective implementation of stipulated environmental safeguards under the supervision of Senior Executive.**
28. **All measures shall be taken to prevent soil and ground water contamination.**
29. **Complete Zero liquid discharge (ZLD) status shall be maintained all the time and there shall be no any discharge wastewater from plant premises.**
30. **This shall be subject to concurrence of GPCB and approval of CPCB on the report submitted by GPCB and its recommendation for special and difficult area, where norms could not be strictly followed.**
31. Executive summary of the project – giving a prima facie idea of the objectives of the proposal, use of resources, justification, etc. In addition, it should provide a compilation of EIA report, including EMP and post project monitoring plan in brief.
32. Need for the proposed expansion should be justified in detail and Justification for selecting the proposed unit size.
33. Submit details of nearest biomedical waste treatment facilities.
34. Submit the details of districts and talukas to be covered by proposed facility within coverage area of 75 Kms.
35. Submit Notarized undertaking regarding the proposed facility will not interfere with the coverage area of the existing CBWTF and beds covered by existing CBWTF.
36. Submit Notarized undertaking for installation of online monitoring system for parameters like Total dioxins and furans with stack attached to incinerator.
37. Submit details of measures to be taken for control of air pollution including measures to control emission of Dioxin and Furan.
38. Details of vehicle washing facility and OHC.
39. Status of all the applicable Rules, Acts, Regulation, Clearances in a tabular form.
40. Provision of STP for treatment and disposal of domestic effluent.

41. Details of generation and mode of disposal of STP sludge.
42. Adoption of automization process like DCS/PLC including emergency response to eliminate risk associated with the hazardous processes, fire safety certificate / Fire No-Objection certificate (NOC) from the concern authority as per the prevailing Rules / Gujarat Fire Prevention and Life Safety Measures Act, 2016 and provision of Occupational health Centre(OHC) within premises.
43. Details of mechanism for monitoring of chlorine content in the biomedical waste.
44. Details with respect to justification for proposed expansion: (1) To address proportionate availability of space for production plant. (2) To address proportionate availability of storage area for raw materials finished goods, utilities considering fire-safety norms & PESO standards and goods carrier movement within premises. (3) To address proportionate captive/common infrastructure available to accommodate additional load due to proposed expansion. (4) Environment impact and its mitigation measures for common/ captive infrastructure due to proposed production.
45. Compliance of MoEFCC's OM dated 01/05/2018 regarding "Corporate Environment Responsibility" (CER). Fund allocation for Corporate Environment Responsibility (CER) shall be made as per MoEFCC's O.M. No 22-65/2017-IA.III dated 01/05/2018 for various activities therein. The details of fund allocation and activities for CER shall be incorporated in EIA/EMP report as per MoEF&CC's OM dated: 30.09.2020.
46. Explore the use of renewable energy to the maximum extent possible. Details of provisions to make the project energy-efficient through energy efficient devices and adoption of modes of alternative eco-friendly sources of energy like solar water heater, solar lighting etc. Measures proposed for energy conservation.
47. A tabular chart with index for point-wise compliance of below mentioned TORs.
48. Gap analysis of biomedical waste being generated by the, proposed members with regard to Proposed common biomedical waste incineration facility in the region of 75 km including your CBMWF.
49. Submit the criteria for assessing waste generation and area to be catered by the proposed project along with documentary evidence.
50. Land possession documents and NA permission for the proposed project site.
51. Details of proposed layout clearly demarcating peripheral open path for unobstructed movement of fire tender as well as various activities such as security, weighbridge, laboratory facility, temporary BMW storage area, vehicle parking area, and others such as admin building, canteen, worker's room, health centers, vehicle cleaning areas/ maintenance areas, 33% greenbelt, internal roads, etc.
52. Present land use pattern of the study area shall be given based on recent satellite imagery as well as field investigation clearly indicating, residential area, industries, vegetation (agricultural land, irrigated/ irrigated, un-cultivable land-as per the revenue records, forest land- as per the records) grazing and waste land.
53. Point wise compliance prevailing of guidelines published by MoEF&CC& CPCB for sitting and designing the proposed CBWTF.
54. Details of handling of mercury waste from the member units with quantity, its handling methodology, transportation, storage, stabilization process and final disposal to TSDF. How it will be ensured that the mercury will be segregated from the biomedical waste before it is received from the HCUs. Action plan in this regard shall be incorporated in EIA report.
55. Compliance of Revised Guidelines for Common Bio-medical Waste Treatment and Disposal Facilities published by CPCB vide dated 21/12/2016. Action plan for compliance of BMW Rules through continuous vigilant monitoring of member HCUs, guidance & training programmes.
56. Ensure that design of Incinerator, Autoclave, Shredder and storage facilities shall be as per the CPCB guidelines.
57. Compliance of odor control guideline published by CPCB.
58. Water requirement for the project and permission from the concern authority. Submit detailed water balance diagram.
59. Quality and quantity of waste water to be generated from the proposed project.
60. Action plan for 'Zero' discharge of effluent (ZLD) shall be included. Notarized undertaking for assuring that underground drainage connection will not be taken in the unit and there shall be no effluent discharge outside the plant premises.
61. Economical and technical viability of the effluent treatment system to achieve Zero Liquid Discharge (ZLD).
62. Stream wise qualitative & quantitative analysis of each waste stream to be generated. Characteristics of untreated and treated wastewater. A detailed effluent treat ability study vis-à-vis the adequacy and efficacy of the treatment facilities proposed for the wastewater to be generated. The characteristic on which treatability is based shall also be stated.
63. Details of the ETP units including its capacity, size of each unit, retention time and other technical parameters.
64. Undertaking stating that a separate electric meter will be provided for the proposed ETP and Incinerator & logbook for operation of ETP &incinerator will be maintained.
65. Plans for management, collection and disposal of waste streams to be generated from spillage, leakages,

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washing etc. Measures proposed for preventing effluent discharge during unforeseen circumstances.

66. One season Site-specific micro-meteorological data using temperature, relative humidity, hourly wind speed and direction and rainfall should be incorporated.
67. Anticipated environmental impacts due to the proposed project/production may be evaluated for significance and based on corresponding likely impacts VECs (Valued Environmental Components) may be identified. Baseline studies may be conducted within the study area of 5 km for all the concerned/identified VECs and likely impacts will have to be assessed for their magnitude in order to identify mitigation measures.
68. One complete season base line ambient air quality data (except monsoon) to be given along with the dates of monitoring. The parameters to be covered shall be in accordance with the revised National Ambient Air Quality Standards as well as project specific parameters. Locations of the monitoring stations should be so decided so as to take into consideration the pre-dominant downwind direction, population zone and sensitive receptors. There should be at least one monitoring station in the upwind direction. There should be at least one monitoring station in the pre dominant downwind direction at a location where maximum ground level concentration is likely to occur.
69. Modelling indicating the likely impact on ambient air quality due to proposed activities. The details of model used and input parameters used for modelling should be provided. The air quality contours may be shown on location map clearly indicating the location of sensitive receptors, if any, and the habitation. The wind rose showing pre-dominant wind direction should also be indicated on the map. Impact due to vehicular movement shall also be included into the prediction using suitable model. Results of Air dispersion modelling should be superimposed on satellite image / geographical area map.
70. Baseline status of the noise environment, impact of noise on present environment dueto the project and proposed measures for noise reduction including engineering controls.
71. Specific details of (i) Process gas emission from each unit process with its quantification, (ii) Air pollution Control Measures proposed for process gas emission, (iii) Adequacy of the air pollution control measures for process gas emission, measures to achieve the GPCB norms (iv) Details of the utilities required (v) Type and quantity of fuel to be used for each utility (vi) Flue gas emission rate from each utility (vii) Air Pollution Control Measures proposed to each of the utility along with its adequacy (viii) List the sources of fugitive emission along with its quantification and proposed measures to control it.
72. Technical details of APCM along with its adequacy as per CPCB guideline for proposed Incinerator, details of its operational controls with DCS, system for online monitoring of the pollutants from the stack etc. Details of provisions to be kept in APCM to ensure that in any case the air emission does not cross the GPCB norms, preventive maintenance, failure / tripping control system, guarantee from the APCM supplier, alternative arrangements in case of the failure of the APCM etc.
73. Examine and submit the details of on line pollutant monitoring and Provision of CEMS (Continuous Emission Monitoring system).
74. Occupational health impacts on the workers and mitigation measures proposed to avoid the human health hazards along with the personal protective equipment to be provided to the workers. Plan for pre-employment and periodical medical checkup of the workers.
75. Details of the proposed overall safety and health protection measures during the project design, construction and operation phases.
76. Details on surface/storm water management.
77. Risk assessment including prediction of the worst-case scenario and maximum credible accident scenario. The worst-case scenario should take into account the maximum inventory of storage at site at any point in time. The risk contours should be plotted on the plant layout map clearly showing which of the activities would be affected in case of an accident taking place. Measures to guard against fire hazards including details of fire detection and control system and fire control plan showing hydrant pipeline network, provision of DG Sets, fire pumps, jockey pump, toxic gas detectors etc.
78. Membership of Common Environmental Infrastructure including TSDF, CHWIF etc. (Whichever is applicable)
79. (a) Does the company have a well laid down Environment Policy approved by its Board of Directors? If so, it may be detailed in the EIA report. (b). Does the Environment Policy prescribe for standard operating process / procedures to bring into focus any infringement / deviation / violation of the environmental or forest norms / conditions? If so, it may be detailed in the EIA.
80. What is the hierarchical system or administrative order of the company to deal with the environmental issues and for ensuring compliance with the EC conditions. Details of this system may be given.
81. Does the company have a system of reporting of non-compliances / violations of environmental norms to the Board of Directors of the company and / or shareholders or stakeholders at large? This reporting mechanism should be detailed in the EIA Report.
82. Certificate of accreditation issued by the NABET, QCI to the environmental consultant should be incorporated in the EIA Report.

83. A tabular chart for the issues raised and addressed during public hearing/consultation and commitment of the project proponent on the same should be provided. An action plan to address the issues raised during public hearing and the necessary allocation of funds for the same should be provided.
84. PP shall ensure participation of people during Public Hearing with equality in gender so as to encourage woman participation in Public hearing & at the same time their issues shall also be given weightage. PP shall made adequate efforts in this regard and shall submit the relevant documents
85. Details of three year greenbelt development program including annual budget, types &number of trees to be planted, area under green belt development [with map], budgetary outlay; along with commitment of the management to carry out the tree plantation activities outside the premises at appropriate places in surrounding area. Notarised undertaking regarding development of green belt within premises as per the commitment before SEAC. Green belt shall be developed with native plant species that are significant and used for the pollution abatement as per the CPCB guidelines.

1) The draft EIA report shall be submitted to the Gujarat Pollution Control Board for conducting the public consultation process as per the provisions of the EIA Notification, 2006.
2) Further Project Proponent may be advised to submit final EIA Report with EC application within 10 days from the date of issuance of this ToR to expedite processing of Environment Clearance application.
3) The project proponent shall have to apply for Environmental clearance through online portal http://environmentclearance.nic.in/ along with final EIA report.

Validity of ToR:
The ToRs prescribed for the project will be valid for a period of four years for submission of EIA & EMP report. ToR will lapse after 4 years from the date of issue.

(Ms. Maulika Shah)
Member Secretary

Encl: As Above

Issued to:
M/s. Shree Khodal Waste Management
Plot No. 5+6, GIDC Shehra, Taluka & District - Panchmahal,
Gujarat-389210

Copy to:-
The Secretary, SEAC, C/O. G.P.C.B. Gandhinagar - 382010.

State Level Environment Impact Assessment Authority • Gujarat •
SEIAA

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Annexure 2: Plot Allotment Letter by GIDC to Shree Khodal Waste Management

Gujarat Industrial Development Corporation
(Govt. of Gujarat Undertaking) OFFICE OF REGIONAL MANAGER
5th Floor, Unique Trade Centre, Sayajigunj, Vadodara Telephone No.
(0265) 2363845, Email-Id: rmbrd@gidcgujarat.org

GUJARAT INDUSTRIAL DEVELOPMENT CORPORATION

Azadi Ka Amrit Mahotsav

GIDC/ALT/Seh1/RM/18

Date :06/05/2023

By R.P.A.D.

General

To,

Jethabhai Ghelabhai Bharwad
619 FORTUNE BUSINESS HUB, NEAR
SHELL PETROL
PUMP,SOLA,AHMEDABAD 380060
City: AHMEDABAD,
Pincode: 380060

Sub : Offer-Cum-Allotment of Plot No 5+6 at Sehra Industrial Estate

Ref :Your Online Application dated : 17/03/2023

Dear Sir,

Gujarat Industrial Development Corporation (GIDC) would like to welcome Jethabhai Ghelabhai Bharwad, a Individual as under with their respective percentage of profit sharing/shareholding, in its Sehra industrial Estate.

Sr.No.	Name of the Share holder/Partner/Proprietor	Percentage of shareholding/ profit-sharing
1	JETHABHAI GHELABHAI BHARWAD	100.00 %

Accordingly, we are sending this Offer-cum-Allotment (OCA) letter to you. Please find enclosed the form of agreement in triplicate, which is to be duly executed and returned within 60 days from the date of this OCA letter. It is not necessary to execute this agreement in our presence; the same can be executed at your end and can be sent by post.

A	Plot Details	
[01]	Plot Number	5+6

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Date: 2023.05.06 16:53:37 IST
Reason: D G PANELIA , Regional Manager
Location: Baroda

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[02]	Area of Plot in square meters	5678.68
B . Price of Land		
Allotment Price @ Rs. 3,000.00 per sq.mtr.		₹ 17036040
Capital Cost of Water Supply @ Rs. 0.00/- Sq.mtrs.		₹ 0
Frontage Charges (@ 5% of Allotment Price for the first 50,000 sq. mt.		₹ 851802
Frontage Charges (Rs.15/- per sq. mt. above 50000 Sqmt. area)		₹ 0
Cost of Shed		₹ 0.00
Total Allotment Price		₹ 17887842
Less Amount Concession of SC/ST/Lady_____%		₹ 0
After the Less Amount.		₹ 17887842
Net Allotment Price		₹ 17887842

Procedure for obtaining possession:

A . Mode of Payment :

[a] The payment can be made through two options, as below:-

[i]. Upfront Payment

[i] Upfront PaymentThe allotee can make an upfront payment of the full **Net Allotment Price + Development Charges + PCPIR charges + fund for education and innovation + Chemical/Nonchemical Charges + N.A.A Charges + L.R. Charges + LRC Charges. = Rs.18,535,562.00**

[ii]. Installment Payment

The allottee can make payment of **30%** of the net allotment price, i.e.Rs. **5,366,353.00** The balance amount of Rs.**12521489/-** (**Rs. One Crore Twenty-Five Lakhs Twenty-One Thousand Four Hundred Eighty-Nine Only**), being 'balance capital', shall be payable in **32** equal quarterly installments with **10.5%** rate of interest by post dated cheques (PDCs).

You shall have to pay only interest on balance capital for first 2 years in 8 quarterly installments .So you shall have to produce 40 PDC cheques.

Other Charges if applicable except allotment price is to be paid 100% upfront.

You shall have to furnish initial DD of Rs. **6,161,828.00/-** in favour of GIDC, payable at **Baroda** towards

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30% Down Payment	₹ 5366353.00
Welfare Fund For Land Looser Rs.15/- per Sq. mtr.	₹ 85180
Adjoining Charges	₹ 0.00
0.00% SGST for Adjoining Charges	₹ 0.00
0.00% CGST for Adjoining Charges	₹ 0.00
1 % Adm. Charges on Balance 70% Capital	₹ 125215
9.00% SGST for Admin Charges	₹ 11270.00
9.00% CGST for Admin Charges	₹ 11270.00
Development Charges Rs. 2/- per sq.mtr.	₹ 11357
9.00% SGST for Development Charges	₹ 1023.00
9.00% CGST for DevelopmentCharges	₹ 1023.00
Chemical / Non- Chemical Charges.	₹ 5000
9.00% SGST for Chemical / Non- Chemical Charges	₹ 450.00
9.00% CGST for Chemical / Non- Chemical Charges	₹ 450.00
Participative Charge on 3% of allotment price	₹ 511081
0.00% SGST for Participative Charges	₹ 0.00
0.00% CGST for Participative Charges	₹ 0.00
N.A.A For Current Year	₹ 3180
9.00% SGST for N.A.A For Current Year Charges	₹ 287.00
9.00% CGST for N.A.A For Current Year Charges	₹ 287.00
LR For Current Year	₹ 7
9.00% SGST for LR For Current Year Charges	₹ 1.00
9.00% CGST for LR For Current Year Charges	₹ 1.00
0.00% Additional Charge of Premium Price	₹ 0
Research & Innovation Fund for education @ Rs. 5/- sq.mtrs	₹ 28393.00
PCPIR Charges	₹ 0.00

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LRC Charges for LCR Rate 0.00	₹ 0.00
Total	**₹ 6161828.00**

[iii]. Installment Payment

The allottee can make payment of **50%** of the net allotment price, i.e.Rs. **8,943,921.00** The balance amount of Rs.**8,943,921.00**/- **(Rs. Eighty-Nine Lakhs Forty-Three Thousand Nine Hundred Twenty-One Only)**, being 'balance capital', shall be payable in **80** equal quarterly installments (for the period of 20 years) with **10.5%** rate of interest by post dated cheques (PDCs).

Other Charges if applicable except allotment price is to be paid 100% upfront.

You shall have to furnish initial DD of Rs. **9,697,180.00**/- in favour of GIDC, payable at **Baroda** towards

50% Down Payment	₹ 8,943,921.0000
Welfare Fund For Land Looser Rs.15/- per Sq. mtr.	₹ 85180.00
Adjoining Charges	₹ 0.00
0.00% SGST for Adjoining Charges	₹ 0.00
0.00% CGST for Adjoining Charges	₹ 0.00
1 % Adm. Charges on Balance 50% Capital	₹ 89439.00
9.00% SGST for Admin Charges	₹ 8050.00
9.00% CGST for Admin Charges	₹ 8050.00
Development Charges Rs. 2/- per sq.mtr.	₹ 11357.00
9.00% SGST for Development Charges	₹ 1023.00
9.00% CGST for DevelopmentCharges	₹ 1023.00
Chemical / Non- Chemical Charges.	₹ 5000.00
9.00% SGST for Chemical / Non- Chemical Charges	₹ 450.00

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9.00% CGST for Chemical / Non- Chemical Charges	₹ 450.00
Participative Charge on 3% of allotment price	₹ 511081.00
0.00% SGST for Participative Charges	₹ 0.00
0.00% CGST for Participative Charges	₹ 0.00
N.A.A For Current Year	₹ 3180.00
9.00% SGST for N.A.A For Current Year Charges	₹ 287.00
9.00% CGST for N.A.A For Current Year Charges	₹ 287.00
LR For Current Year	₹ 7.00
9.00% SGST for LR For Current Year Charges	₹1.00
9.00% CGST for LR For Current Year Charges	₹ 1.00
0.00% Additional Charge of Premium Price	₹ 0.00
Research & Innovation Fund for education @ Rs. 5/- sq.mtrs	₹ 28393
PCPIR Charges	₹ 0.00
LRC Charges for LCR Rate 0.00	₹ 0.00
Total	**₹ 9697180.00**

- **Rate of Interest:** The rate of interest mentioned above is subject to revision from time to time at the discretion of the Corporation and the interest would be payable at such revised rates and from such dates as may be specified by the Corporation from time to time.
- **Rate of interest on delayed payment:** In case of default in payment of scheduled installments, the Corporation levies penal interest at the rate of 3% p.a. over and above the normal interest.

[b] Revenue Charges/Contribution towards Infrastructure Development Fund, as applicable, will be charged separately every year.

[c] Allotee shall have to pay the development charges, if applicable.

[d] Prior permission of the Corporation is required to be taken by the allottee, bank, financial institution or any other person for creating a lien on the property. If prior permission of the Corporation is not obtained, the concerned person/institution will not have any kind of lien on the property allotted.

B. Conditions for Utilization of Property:

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Reason: D G PANELIA , Regional Manager
Location: Baroda

[a] **In case of Shed:** Allotee shall put the shed to industrial use for manufacturing the products mentioned in the application within a period of 6 months from the date of possession, failing which Corporation is entitled to take back the possession.

[b] **In case of other built-up properties:** Allotee shall put to use the shops/ godown/ canteen/ housing quarter etc., as per application, within a period of 6 months from the date of possession, failing which Corporation is entitled to take back the possession.

[c] **In case of plot:** Allotee is required to get the building plans approved from GIDC/ Competent Authority.Allotte is required to commence commercial production as under:

Area (in sq. mtr.)	Time limit given for commencement of commercial production	Non-Utilisation Charge
Upto 1,00,000 sq.mtr	4 years form Date of possession if possession is taken within 30 days from date of possession advise.	2% of prevailing Allotment price per square meter per year presently. (As per the policy from time to time)
100001 & above	5 years form Date of possession if possession is taken within 30 days from date of possession advise.	

- Allotee is required to intimate the date of production to the Corporation, failing which the Corporation is entitled to take back the possession of the plot, unless extension is given by the Corporation.
- Allotee is required to construct minimum 20% of the plot area on ground floor for considering utilization of plot.
- **Power Supply:**

  Your power demand is 60.000 KW as per application.

  Therefore you shall draw power as per below mentioned norms:

  (a) Up to 100 kW/ 125 HP - LT connection - three phase @ 440 V source and

  (b) above 125 HP/ 100 kW & upto 500 kVA HT connection at his own cost from the nearest 11 kV network within the estate.

- **Water Supply:**

  Permissible water supply is 2.69 KLD/day for every 2000 sq.mtr. area.Water requirement as per your application is 1.000 KLD/day for Domestic purpose and 8.500 KLD/day for Industrial purpose.

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Water will be provided as per norms only. (a) Excess Water will be supplied by GIDC if available & you shall have to pay necessary charges as levied by GIDC. (b) You shall have to make own arrangement for treatment & disposal of the effluent. (c) You shall have to become member of approved TSDF site for the solid waste disposal, if applicable

► Under Ground Drainage System:

1. The drainage connection shall be given considering lower of the following:
(a) The quantity as per the design norms of underground drainage collection line (for chemical units 44 KLD per hectare).
(b) The quantity for disposal of effluent approved by GPCB.
2. Your demanded water effluent discharge is 5.000 KL/Day and Solid waste quantity is 0.000 KG/Day.
3. The drainage connection of quantity for disposal of effluent beyond minimum quantity shall be provided to the allottee at his own cost subject to (a) capacity of underground drainage collection line.
4. For the expenditure incurred by GIDC over and above the provision in allotment price for collection and disposal pipeline and its related works, the time of release of underground connection.
5. The pro-rata cost shall be recovered along with the interest from the allottee for actual expenditure incurred by GIDC for effluent treatment and final disposal pipe line works at the time of release of underground drainage connection.
6. The underground drainage connection shall be released by GIDC to the allottee as per the provision Drainage Regulation 1990.

C. General Conditions:

[01] Allotee is required to produce registered Partnership Deed/ Memorandum and Articles of Association/Certificate of Incorporation, whichever is applicable.

[02] The plot is offered on as-is-where-is basis for the purpose of manufacturing of PROCESSING AND TREATMENT OF BIO MEDICAL WASTE. The allotee shall inspect the property and execute undertaking in the enclosed Performa.

[03] The agreement forms are required to be signed by all the partners of partnership firm on each page. In case of Private/Public Limited Company, it is necessary to attach a copy of the Board Resolution authorizing the Director/Officer who is to sign the agreement.

[04] Allotee is required to fill up at least 85% of posts in the unit built on this land by local persons. For managerial and supervisory cadres, at least 65% posts shall have to be filled by the local persons; however, the total posts of the unit filled by local persons shall not be less than 85%. Preference shall have to be given in employment to land losers of Sehra Industrial Estate. 'Local Person' means a person domiciled in Gujarat State for the last 15 years.

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[05] Allotee is required to produce Udhyog Aadhar/ IEM Registration, project report, certificate indicating authorized, subscribed and paid up capital of the company, name of directors / shareholders and their holding in the Company, as applicable.

[06] Allotee shall grow at least **3 trees** per 200 sq. Mtrs. in the allotted plot.

[07] You shall have to abide all the prevailing norms of the corporation applicable for plot.

[08] Change of use of the plot is prohibited.

[09] On receipt of payment and duly executed License agreement corporation shall issue a possession advice and accordingly the allottee shall have to take possession from deputy Engineer of the said estate within a period of 20 days from the date of possession advice, without fail.

if the possession is not taken by the allottee within time limit then the OCA shall be cancelled as per policy.

[10] The allottee is required to make payment from two options of mode of payment , within 60 days from the date of OCA. In case the payment is not made within 60 days of the OCA and there is a revision of AP, then the applicant shall have to pay original AP with interest or revised AP (Whichever is higher) as per prevalent policy.

[11] Subletting/subleasing of any part/full part of Non-utilized/unutilized plot is not permitted.

[12] Subletting/subleasing of any part/full part of utilized plot is permitted only with prior permission.

[13] Subdivision/transfer of utilized plot without permission of the Corporation is prohibited. In case found, necessary action will be taken against the allottee.

[14] All the present and future liabilities arising out of Land Reference cases, shall be borne by the allottee as and when arises.

[15] Applicant can Make the online/offline payment through IFP portal compulsory.

[A] In case of online payment through IFP portal applicant have to make payment through E-payment only.

[B] In case of offline payment through DD.applicant will have to scan the DD and upload the DD in IFP portal only.

[16] You shall have to produce NOC from GPCB.

[17] Transfer of non utilized plot will be governed as per policy from time to time.

- Applicant may apply online for time limit extension from 45th day upto 60th day from the date of issued OCA through online system. No further offline representation will be consider for time limit extension after 60th day from issued OCA.

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If 1) Offer Amount 2) Form of Agreement 3) PDCs 4) Acceptance-cum-Undertaking of this OCA letter are not received by Corporation within a period of 60 days from the date of this letter, the offer will stand automatically cancelled. The allottee will not be entitled to get the land at the offered price, he will also loose priority, and the application shall be automatically treated as closed.

Other Condition:

[1] If the allottee want to send D.D of offer amount via courier or registered A.D,he/she must have to upload D.D. on IFP portal within time limit of the O.C.A

Special Condition:

[1] You shall have to submit Noterized undertaking stating that plant should be zero liquid discharge.

[2] You shall have to submit GPCB NOC before starting the plant.

[3] You shall have to take necessary permission from relevant authorities.

[4] You shall have to take approval from Central Ground Water Authority for Ground Water Extraction.

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Reason: D G PANELIA , Regional Manager
Location: Baroda

Offer-Cum-Allotment of Plot No 5+6 (5,678.68 Sq.m) at Sehra Industrial Estate.

Sr. No.	Name of Authorized Person / Director/ Partners	Photograph of Authorized Person / Director/ Partners	Signature
1	JETHABHAI GHELABHAI BHARWAD		

Yours faithfully

Regional Manager
GIDC, Baroda

Enclosures:

[01] Agreement Forms (in triplicate)

[02] Acceptance of OCA in the form of undertaking

Copy to:

[01] The Executive Director(Pre-Allotment), GIDC,Gandhinagar.

[02] Executive Engineer, GIDC, Baroda.

[03] Executive Engineer (Elect./Mech.), GIDC, Gandhinagar.

[04] Dy. Ex. Engineer, GIDC,Sehra ESTATE.

[05] Accounts Officer, GIDC, Baroda.

This document has been digitally signed, no physical signature is required

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ESTATE BOUNDARY
ESTATE BOUNDARY
ESTATE BOUNDARY
14 M WIDE ROAD
14 M WIDE ROAD
14 M WIDE ROAD
14 M WIDE ROAD
30.00 WIDE ROAD
TO GODHARA
TO SHERA
VILLAGE ROAD
VEJPUR
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Annexure 3: Long Term Climatological Data for Vadodara Station – IMD Pune – 1991 – 2020

जलवायवी सारणी १९९१-२०२० CLIMATOLOGICAL TABLE 1991-2020

स्टेशन : वडोदरा (A) अक्षांश 22° 20' देशांतर 73° 16' माध्य समुद्र तल से ऊंचाई 37.84 मीटर प्रेक्षणों पर आधारित 1991-2020

STATION : VADODARA (A) LAT. LONG. HEIGHT ABOVE M.S.L. METRES BASED ON OBSERVATIONS

माह / MONTH		स्टेशन का सतह दाब / STATION LEVEL PRESSURE	वायु तापमान माध्य / AIR TEMPERATURE MEAN: शुष्क बल्ब / DRY BULB	नम बल्ब / WET BULB	दैनिक अधिकतम / DAILY MAX	दैनिक न्यूनतम / DAILY MIN	माह में उच्चतम / HIGHEST IN THE MONTH	माह में निम्नतम / LOWEST IN THE MONTH	चरम / EXTREMES: उच्चतम / HIGHEST	दिनांक और वर्ष / DATE AND YEAR	निम्नतम / LOWEST	दिनांक और वर्ष / DATE AND YEAR	आर्द्रता / HUMIDITY: सापेक्ष आर्द्रता / RELATIVE HUMIDITY	वाष्प दाब / VAPOUR PRESSURE	मेघ की मात्रा / CLOUD AMOUNTS: समस्त मेघ / ALL CLOUDS	निम्न मेघ / LOW CLOUDS	मासिक योग / MONTHLY TOTAL	वर्षा के दिनों की संख्या / NO. OF DAYS	वर्षासहित सबसे नम महीने का योग / TOTAL IN WETTEST MONTH WITH YEAR	सबसे शुष्क महीने का योग / TOTAL IN DRIEST MONTH WITH YEAR	24 घंटे की सबसे भारी वर्षा / HEAVIEST FALL IN 24 HOURS	दिनांक और वर्ष / DATE AND YEAR	माध्य पवन गति / MEAN WIND SPEED
		एच.पी.ए hPa	डि. सें. °C	डि. सें. °C	डि. सें. °C	डि. सें. °C	डि. सें. °C	डि. सें. °C	डि. सें. °C		डि. सें. °C		प्रतिशत %	एच.पी.ए. hPa	आकाश के अष्टमांश Oktas of sky		मि.मी. mm		मि.मी. mm	मि.मी. mm	मि.मी. mm		कि.मी.प्र.घ. Kmph
जनवरी JAN	I	1011.6	15.4	12.6	29.4	13.2	33.7	9.0	37.4	28	2.8	22	70	12.5	0.9	0.1	4.4	0.3	39.2	0.0	35.4	22	7.9
	II	1008.4	27.1	18.2						1991		1962	38	13.8	0.8	0.1			2014			2014	
फरवरी FEB	I	1010.2	18.2	14.4	32.1	15.4	36.6	10.8	40.6	28	3.9	10	64	13.6	0.9	0.1	0.0	0.0	50.4	0.0	50.4	19	7.7
	II	1006.7	30.3	19.3						1953		1950	31	13.7	0.8	0.1			2003			2003	
मार्च MAR	I	1008.1	23.4	17.7	36.5	19.7	41.1	15.3	44.2	30	9.3	8	55	15.9	0.9	0.1	0.1	0.0	21.4	0.0	11.5	25	7.5
	II	1004.1	34.7	21.2						1991		1979	26	14.6	0.9	0.1			1967			1967	
अप्रैल APR	I	1005.6	27.9	21.7	39.3	24.2	42.7	20.5	45.9	29	14.4	15	56	21.2	1.0	0.3	1.3	0.1	30.0	0.0	30.0	2	8.4
	II	1001.3	38.0	23.0						1979		1955	24	16.4	1.0	0.2			1985			1985	
मई MAY	I	1003.0	30.3	25.3	40.1	27.4	43.2	25.1	46.2	5	19.4	27	65	28.2	1.7	1.3	3.6	0.2	73.0	0.0	52.0	20	12.2
	II	998.3	38.9	25.5						2004		1974	32	22.1	0.7	0.3			2000			2000	
जून JUN	I	999.1	29.9	26.3	37.3	27.6	41.6	24.2	45.6	6	21.2	5	75	31.4	4.5	2.9	128.8	4.2	618.2	0.0	187.3	6	13.1
	II	995.1	35.4	27.0						1979		1957	52	28.8	3.8	2.6			2005			1976	
जुलाई JUL	I	998.0	27.7	26.0	32.6	26.1	36.5	23.9	40.1	6	22.2	29	86	32.3	6.4	4.0	363.7	13.8	899.9	38.5	297.4	1	11.5
	II	995.2	30.7	26.8						2009		1988	74	32.2	6.1	4.1			1950	1986		2005	
अगस्त AUG	I	1000.0	27.0	25.4	31.7	25.5	34.5	24.0	37.7	26	21.7	16	88	31.3	6.4	3.9	316.1	12.2	1155.3	20.1	556.8	1	10.4
	II	997.2	30.1	26.4						2000		1956	74	31.5	6.2	4.1			2019	1993		2019	
सितम्बर SEP	I	1003.4	27.1	25.1	33.2	25.2	36.7	23.5	41.1	29	18.1	25	84	30.2	4.5	2.4	163.0	6.8	508.6	0.0	233.2	24	8.2
	II	1000.0	31.5	26.2						1951		1972	65	29.7	4.5	3.1			2013			2013	
अक्तूबर OCT	I	1007.2	26.0	22.4	35.8	22.7	38.2	18.5	41.4	3	12.8	27	72	24.5	1.7	0.5	20.5	1.2	198.6	0.0	180.4	8	6.1
	II	1003.8	33.2	24.2						1987		1960	46	23.2	1.8	0.9			1985			1985	
नवम्बर NOV	I	1009.9	21.5	17.7	33.8	18.0	36.2	14.2	39.4	1	6.0	26	67	17.5	1.1	0.2	3.7	0.3	190.1	0.0	61.4	4	6.5
	II	1006.6	30.6	21.4						1980		1968	41	18.2	1.2	0.3			1979			1962	
दिसम्बर DEC	I	1011.5	17.0	14.1	30.8	14.3	33.9	10.5	37.2	6	5.5	28	70	13.9	1.1	0.1	2.0	0.2	34.2	0.0	34.2	1	7.3
	II	1008.2	27.8	19.3						1968		1983	42	15.8	1.2	0.1			1978			1978	
वार्षिक योग या माध्य	I	1005.6	24.3	20.7	34.4	21.6	43.5	8.6	46.2	5	2.8	22	71	22.7	2.6	1.3	1007.1	39.4	1983.0	262.6	556.8	1	8.9
ANNUAL TOTAL OR MEAN	II	1002.1	32.4	23.2					5	2004	1	1962	45	21.7	2.4	1.3			2005	1986	8	2019	

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जलवायवी सारणी १९९१-२०२० CLIMATOLOGICAL TABLE 1991-2020

स्टेशन : वडोदरा (A) राज्य : गुजरात सूचकांक : 42748
STATION : VADODARA (A) STATE : GUJARAT INDEX NO. :

	मौसम परिघटना						पवन											मेघ										दृश्यता				
	के साथ दिनों की संख्या						पवन की गति (कि.मी.प्र.घं.) का माह में दिनों की संख्या				पवन की दिशा के दिनों की संख्या का प्रतिशत									मेघ मात्रा (सभी मेघ) सहित दिनों की संख्या – अहमांश					निम्न स्तरी मेघ मात्रा सहित दिनों की संख्या – अहमांश						दृश्यता सहित दिनों की संख्या				
माह	वर्षण 0.3 मि.मी.या अधिक	ओले	गर्जन	कुहरा	धूल भरी आँधी	चंड वात	62 या अधिक	20-61	1-19	0	उ	उपू	पू	दपू	द	दप	प	उप	शांत	0	1-2	3-5	6-7	8	0	1-2	3-5	6-7	8	कुहरा 8	1 कि.मी. तक	1-4 कि.मी.	4-10 कि.मी.	10-20 कि.मी.	20 कि.मी. से अधिक
	WEATHER PHENOMENA						WIND											CLOUD										VISIBILITY				
	No. OF DAYS WITH						NO. OF DAYS WITH WIND SPEED (Kmph)				PERCENTAGE NO. OF DAYS WIND FROM									NO. OF DAYS WITH CLOUD AMOUNT (ALL CLOUDS) OKTAS					NO. OF DAYS WITH LOW CLOUD AMOUNT OKTAS						NO. OF DAYS WITH VISIBILITY				
MONTH	PPT 0.3 mm OR MORE	HAIL	THUN DER	FOG	DUST STORM	SQUALL	62 OR MORE	20-61	1-19	0	N	NE	E	SE	S	SW	W	NW	CALM	0	1-2	3-5	6-7	8	0	1-2	3-5	6-7	8	FOG 8	UPTO 1 Km.	1-4 Kms.	4-10 Kms.	10-21 Kms.	OVER 20 Kms.
जनवरी I	0.4	0	0.1	0.7	0	0	0	0	20	11	28	23	3	3	1	1	1	4	36	21	4	5	1	0	30	0	1	0	0	0	0.4	18.5	12.1	0	0
JAN II							0	0	28	3	24	24	3	1	0	1	8	30	9	23	3	4	1	0	29	1	1	0	0	0	0	0.3	29.7	1	0
फरवरी I	0.1	0	0	0	0	0	0	0	16	12	18	18	3	3	2	4	4	5	43	19	3	5	1	0	26	1	1	0	0	0	0.2	13.3	14.4	0	0
FEB II							0	0	27	1	19	15	4	0	0	4	19	35	4	20	3	4	1	0	26	1	1	0	0	0	0	0.1	26.7	1.2	0
मार्च I	0.1	0	0.1	0.1	0	0	0	0	19	12	10	11	4	2	8	12	5	7	41	22	3	5	1	0	30	0	1	0	0	0	0	7.6	23.4	0.1	0
MAR II							0	1	29	1	9	10	2	0	1	10	31	34	3	23	3	4	1	0	28	2	1	0	0	0	0	0.1	29.4	1.5	0
अप्रेल I	0.2	0	0.1	0	0	0	0	1	24	5	4	4	1	2	14	32	12	14	17	21	4	4	1	0	27	1	2	0	0	0	0	2.2	27.6	0.1	0
APR II							0	1	28	1	4	2	0	0	1	19	43	28	3	20	4	5	1	0	27	2	1	0	0	0	0	0.1	28.3	1.6	0
मई I	0.4	0	0.2	0	0.1	0	0	4	26	1	1	1	0	0	7	57	24	6	4	14	5	10	2	0	17	5	8	1	0	0	0	0.9	30.1	0	0
MAY II							0	6	25	0	1	0	0	0	3	40	41	14	1	23	4	3	1	0	26	3	2	0	0	0	0	0.2	29.2	1.5	0
जून I	6.8	0	2.6	0	0	0	0	3	26	1	0	0	0	2	17	57	18	3	3	3	3	12	9	3	5	7	16	2	0	0	0	1.7	28.3	0	0
JUN II							0	11	19	0	1	1	1	0	13	56	23	4	1	5	4	12	7	2	7	6	15	2	0	0	0.1	0.7	28.9	0.3	0
जुलाई I	17.6	0	3.6	0	0	0	0	2	27	2	0	0	0	1	17	59	15	1	7	0	1	6	16	8	1	4	22	4	0	0	0.1	6.2	24.7	0	0
JUL II							0	8	22	1	1	1	0	1	16	61	14	2	4	0	1	8	15	7	0	3	24	4	0	0	0.1	3.3	27.6	0	0
अगस्त I	16.5	0	2	0	0	0	0	1	28	2	0	0	0	0	12	57	21	2	8	0	0	6	17	8	1	5	22	3	0	0	0	6.4	24.6	0	0
AUG II							0	4	25	2	1	1	0	1	11	53	24	4	5	0	0	8	17	6	0	3	24	4	0	0	0.1	3.2	27.7	0	0
सितम्बर I	9.1	0	3	0.1	0.1	0	0	0	25	5	3	3	2	2	13	31	21	8	17	3	4	11	9	3	8	8	12	2	0	0	0.1	6.1	23.8	0	0
SEP II							0	2	25	3	4	5	2	1	6	27	31	15	9	1	5	12	10	2	2	7	20	1	0	0	0	1.8	28.1	0.1	0
अक्तूबर I	1.9	0	0.9	0.4	0	0	0	0	15	16	5	12	7	7	6	6	3	2	52	15	5	7	3	1	26	2	3	0	0	0	0.1	9.4	21.3	0.2	0
OCT II							0	0	24	7	13	19	9	2	2	5	10	15	25	16	6	7	2	0	20	6	5	0	0	0	0	0.4	30	0.6	0
नवम्बर I	0.4	0	0.3	0.3	0	0	0	0	14	16	14	22	4	4	1	1	0	1	53	21	3	5	1	0	28	1	1	0	0	0	0.1	14.6	15.3	0	0
NOV II							0	0	22	8	16	25	10	1	0	2	2	15	29	19	5	5	1	0	25	3	2	0	0	0	0	0.3	28.9	0.8	0
दिसम्बर I	0.3	0	0	0.9	0	0	0	0	18	13	25	24	3	1	0	0	0	2	45	20	4	6	1	0	29	1	1	0	0	0	0.3	19.2	11.5	0	0
DEC II							0	0	24	7	22	24	6	0	0	1	3	22	22	21	3	6	1	0	29	1	1	0	0	0	0	0.6	30.4	0	0
वार्षिक योग या माध्य I	54	0	12.9	2.5	0.2	0	0	11	258	96	9	10	2	2	8	27	10	5	27	162	38	82	60	23	228	35	90	12	0	0	1.4	105.7	257.5	0.4	0
ANNUAL TOTAL OR MEAN II							0	33	298	34	9	11	3	1	4	24	21	18	9	170	42	79	57	17	222	38	94	11	0	0	0.3	11.1	345	8.6	0

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Annexure 4: Datewise Ambient Air Quality Monitoring (Winter Season) Results

Sr. No.	Sampling Date	Sampling Location	Area / Category	Pollutant Concentration TWA in µg/m³							mg/m3	µg/m3
				PM_{10} (24 hr)	$PM_{2.5}$ (24 hr)	SO_2 (24 hr)	NO_x (24 hr)	Hcl (24 hr)	Hg (8hr)	HC (8 Hr)	CO (8 Hr)	VOC (24 hr)
Industrial, Residential, Rural and Other Area				**100**	**60**	**80**	**80**	**NS**	**NS**	**NS**	**2**	**NS**
Ecologically Sensitive Area (Notified by Central Govt.)				**100**	**60**	**80**	**80**	**NS**	**NS**	**NS**	**2**	**NS**
AA01 (Project Site)												
1.	01.12.2024	Project Site	Industrial	95	41	7.1	14.0	<1	<1	984	1.24	<1
2.	05.12.2024	Project Site	Industrial	88	32	6.4	15.0	<1	<1			
3.	09.12.2024	Project Site	Industrial	86	26	6.1	18.0	<1	<1			
4.	13.12.2024	Project Site	Industrial	89	42	6.9	13.2	<1	<1			
5.	17.12.2024	Project Site	Industrial	83	35	6.5	20.1	<1	<1	916	1.15	<1
6.	21.12.2024	Project Site	Industrial	84	27	11.2	18.0	<1	<1			
7.	25.12.2024	Project Site	Industrial	90	38	6.8	16.6	<1	<1			
8.	29.12.2024	Project Site	Industrial	81	31	7.6	18.0	<1	<1			
9.	02.01.2025	Project Site	Industrial	83	30	8.5	22.2	<1	<1	891	1.11	<1
10.	06.01.2025	Project Site	Industrial	73	18	6.1	15.9	<1	<1			
11.	10.01.2025	Project Site	Industrial	79	33	8.3	21.8	<1	<1			
12.	14.01.2025	Project Site	Industrial	66	23	7.4	11.1	<1	<1			
13.	18.01.2025	Project Site	Industrial	82	25	7.9	12.3	<1	<1	916	1.06	<1
14.	22.01.2025	Project Site	Industrial	76	23	3.8	16.7	<1	<1			
15.	26.01.2025	Project Site	Industrial	89	34	6.8	10.5	<1	<1			
16.	30.01.2025	Project Site	Industrial	73	18	8.7	10.3	<1	<1			
17.	03.02.2025	Project Site	Industrial	82	26	5.8	13.5	<1	<1	918	1.05	<1
18.	07.02.2025	Project Site	Industrial	69	11	9.1	14.4	<1	<1			
19.	11.02.2025	Project Site	Industrial	102	39	9.2	18.0	<1	<1			
20.	15.02.2025	Project Site	Industrial	90	30	11.2	22.2	<1	<1			
21.	18.02.2025	Project Site	Industrial	86	29	3.8	10.3	<1	<1	891	0.98	<1
22.	21.02.2025	Project Site	Industrial	79	26	7.6	16.0	<1	<1			
23.	24.02.2025	Project Site	Industrial	90	30	10.9	22.0	<1	<1			
24.	27.02.2025	Project Site	Industrial	67	22	9.8	19.5	<1	<1			

Sr. No.	Sampling Date	Sampling Location	Area / Category	Pollutant Concentration TWA in µg/m³							mg/m3	µg/m3
				PM_{10} (24 hr)	$PM_{2.5}$ (24 hr)	SO_2 (24 hr)	NO_x (24 hr)	Hcl (24 hr)	Hg (8hr)	HC (8 Hr)	CO (8 Hr)	VOC (24 hr)
Industrial, Residential, Rural and Other Area				**100**	**60**	**80**	**80**	**NS**	**NS**	**NS**	**2**	**NS**
Ecologically Sensitive Area (Notified by Central Govt.)				**100**	**60**	**80**	**80**	**NS**	**NS**	**NS**	**2**	**NS**
AA02 (Shehera)												
1.	01.12.2024	Shehera	Rural	85	28	6.2	16.0	<1	<1			
2.	05.12.2024	Shehera	Rural	41	28	5.3	8.0	<1	<1	915	1.28	<1
3.	09.12.2024	Shehera	Rural	52	31	6.9	12.6	<1	<1			
4.	13.12.2024	Shehera	Rural	68	17	9.2	12.0	<1	<1			
5.	17.12.2024	Shehera	Rural	85	36	5.1	7.4	<1	<1			
6.	21.12.2024	Shehera	Rural	85	48	4.7	10.3	<1	<1	997	1.06	<1
7.	25.12.2024	Shehera	Rural	65	28	3.8	6.0	<1	<1			
8.	29.12.2024	Shehera	Rural	85	30	8.0	16.6	<1	<1			
9.	02.01.2025	Shehera	Rural	93	38	5.6	11.6	<1	<1			
10.	06.01.2025	Shehera	Rural	75	18	6.5	13.5	<1	<1	847	1.08	<1
11.	10.01.2025	Shehera	Rural	59	33	7.1	14.7	<1	<1			
12.	14.01.2025	Shehera	Rural	88	23	3.9	8.0	<1	<1			
13.	18.01.2025	Shehera	Rural	65	22	4.9	10.1	<1	<1			
14.	22.01.2025	Shehera	Rural	56	12	8.3	17.2	<1	<1	903	0.88	<1
15.	26.01.2025	Shehera	Rural	86	26	6.4	13.3	<1	<1			
16.	30.01.2025	Shehera	Rural	75	20	5.8	12.0	<1	<1			
17.	03.02.2025	Shehera	Rural	92	26	7.0	14.5	<1	<1			
18.	07.02.2025	Shehera	Rural	79	18	6.9	13.5	<1	<1	896	1.10	<1
19.	11.02.2025	Shehera	Rural	76	17	6.5	12.8	<1	<1			
20.	15.02.2025	Shehera	Rural	81	21	11.2	22.0	<1	<1			
21.	18.02.2025	Shehera	Rural	76	25	11.2	22.0	<1	<1			
22.	21.02.2025	Shehera	Rural	91	30	3.8	6.0	<1	<1	906	0.94	<1
23.	24.02.2025	Shehera	Rural	87	29	6.9	13.6	<1	<1			
24.	27.02.2025	Shehera	Rural	67	22	10.5	20.8	<1	<1			
AA03 (Dodiyani Village)												

Sr. No.	Sampling Date	Sampling Location	Area / Category	Pollutant Concentration TWA in µg/m³							mg/m3	µg/m3
				PM_{10}	$PM_{2.5}$	SO_2	NO_x	Hcl	Hg	HC	CO	VOC
				(24 hr)	(24 hr)	(24 hr)	(24 hr)	(24 hr)	(8hr)	(8 Hr)	(8 Hr)	(24 hr)
Industrial, Residential, Rural and Other Area				**100**	**60**	**80**	**80**	**NS**	**NS**	**NS**	**2**	**NS**
Ecologically Sensitive Area (Notified by Central Govt.)				**100**	**60**	**80**	**80**	**NS**	**NS**	**NS**	**2**	**NS**
1.	02.12.2024	Dodiyani Village	Rural	85	31	6.9	14.7	<1	<1	958	0.87	<1
2.	06.12.2024	Dodiyani Village	Rural	58	18	7.1	13.7	<1	<1			
3.	10.12.2024	Dodiyani Village	Rural	83	51	5.2	11.2	<1	<1			
4.	14.12.2024	Dodiyani Village	Rural	87	9	6.2	23.5	<1	<1			
5.	18.12.2024	Dodiyani Village	Rural	66	30	5.8	12.0	<1	<1	875	0.97	<1
6.	22.12.2024	Dodiyani Village	Rural	75	38	8.0	16.6	<1	<1			
7.	26.12.2024	Dodiyani Village	Rural	92	23	3.8	6.0	<1	<1			
8.	30.12.2024	Dodiyani Village	Rural	60	22	5.8	12.0	<1	<1			
9.	03.01.2025	Dodiyani Village	Rural	81	26	7.1	14.7	<1	<1	922	1.23	<1
10.	07.01.2025	Dodiyani Village	Rural	61	17	4.3	8.8	<1	<1			
11.	11.01.2025	Dodiyani Village	Rural	75	25	5.7	11.8	<1	<1			
12.	15.01.2025	Dodiyani Village	Rural	89	29	9.0	18.7	<1	<1			
13.	19.01.2025	Dodiyani Village	Rural	66	21	3.8	6.0	<1	<1	831	0.97	<1
14.	23.01.2025	Dodiyani Village	Rural	82	26	6.1	12.6	<1	<1			
15.	27.01.2025	Dodiyani Village	Rural	95	30	5.6	11.6	<1	<1			
16.	31.01.2025	Dodiyani Village	Rural	104	42	8.0	15.7	<1	<1			
17.	04.02.2025	Dodiyani Village	Rural	98	37	7.6	14.9	<1	<1	872	1.21	<1
18.	08.02.2025	Dodiyani Village	Rural	90	30	9.6	23.5	<1	<1			
19.	12.02.2025	Dodiyani Village	Rural	86	29	3.8	6.0	<1	<1			
20.	15.02.2025	Dodiyani Village	Rural	67	22	6.7	14.1	<1	<1			
21.	18.02.2025	Dodiyani Village	Rural	85	31	6.9	14.7	<1	<1	921	1.02	<1
22.	21.02.2025	Dodiyani Village	Rural	58	18	7.1	13.7	<1	<1			
AA04 (Sadisamdi Village)												
1.	02.12.2024	Sadisamdi Village	Rural	71	31	8.2	16.9	<1	<1	904	1.16	<1
2.	06.12.2024	Sadisamdi Village	Rural	44	20	6.1	15.8	<1	<1			
3.	10.12.2024	Sadisamdi Village	Rural	50	34	7.7	16.5	<1	<1			

Sr. No.	Sampling Date	Sampling Location	Area / Category	Pollutant Concentration TWA in µg/m³							mg/m3	µg/m3
				PM_{10} (24 hr)	$PM_{2.5}$ (24 hr)	SO_2 (24 hr)	NO_x (24 hr)	Hcl (24 hr)	Hg (8hr)	HC (8 Hr)	CO (8 Hr)	VOC (24 hr)
Industrial, Residential, Rural and Other Area				**100**	**60**	**80**	**80**	**NS**	**NS**	**NS**	**2**	**NS**
Ecologically Sensitive Area (Notified by Central Govt.)				**100**	**60**	**80**	**80**	**NS**	**NS**	**NS**	**2**	**NS**
4.	14.12.2024	Sadisamdi Village	Rural	62	41	6.3	13.9	<1	<1			
5.	18.12.2024	Sadisamdi Village	Rural	66	33	7.4	17.0	<1	<1	943	1.09	<1
6.	22.12.2024	Sadisamdi Village	Rural	54	28	6.6	13.9	<1	<1			
7.	26.12.2024	Sadisamdi Village	Rural	93	29	8.0	12.1	<1	<1			
8.	30.12.2024	Sadisamdi Village	Rural	77	20	7.3	12.8	<1	<1			
9.	03.01.2025	Sadisamdi Village	Rural	57	19	6.9	14.2	<1	<1	801	0.95	<1
10.	07.01.2025	Sadisamdi Village	Rural	66	23	5.8	12.0	<1	<1			
11.	11.01.2025	Sadisamdi Village	Rural	86	26	8.6	17.9	<1	<1			
12.	15.01.2025	Sadisamdi Village	Rural	69	22	7.1	14.7	<1	<1			
13.	19.01.2025	Sadisamdi Village	Rural	84	36	4.3	8.8	<1	<1	895	1.03	<1
14.	23.01.2025	Sadisamdi Village	Rural	93	30	4.9	10.1	<1	<1			
15.	27.01.2025	Sadisamdi Village	Rural	81	29	4.8	9.9	<1	<1			
16.	31.01.2025	Sadisamdi Village	Rural	76	26	5.6	11.6	<1	<1			
17.	04.02.2025	Sadisamdi Village	Rural	80	18	7.8	16.2	<1	<1	875	1.24	<1
18.	08.02.2025	Sadisamdi Village	Rural	71	24	5.8	12.0	<1	<1			
19.	12.02.2025	Sadisamdi Village	Rural	84	23	8.7	17.1	<1	<1			
20.	16.02.2025	Sadisamdi Village	Rural	90	30	9.4	18.8	<1	<1			
21.	19.02.2025	Sadisamdi Village	Rural	76	25	4.3	8.8	<1	<1	904	1.12	<1
22.	22.02.2025	Sadisamdi Village	Rural	57	19	7.1	14.5	<1	<1			
23.	25.02.2025	Sadisamdi Village	Rural	89	30	9.3	18.6	<1	<1			
24.	28.02.2025	Sadisamdi Village	Rural	76	25	9.5	18.5	<1	<1			
AA05 (Palikhanda Village)												
1.	03.12.2024	Palikhanda Village	Rural	86	25	6.3	14.2	<1	<1			
2.	07.12.2024	Palikhanda Village	Rural	93	24	6.4	14.6	<1	<1	911	0.95	<1
3.	11.12.2024	Palikhanda Village	Rural	85	21	6.8	14.8	<1	<1			
4.	15.12.2024	Palikhanda Village	Rural	73	28	5.5	14.2	<1	<1			

Sr. No.	Sampling Date	Sampling Location	Area / Category	Pollutant Concentration TWA in µg/m³							mg/m3	µg/m3
				PM_{10} (24 hr)	$PM_{2.5}$ (24 hr)	SO_2 (24 hr)	NO_x (24 hr)	Hcl (24 hr)	Hg (8hr)	HC (8 Hr)	CO (8 Hr)	VOC (24 hr)
Industrial, Residential, Rural and Other Area				**100**	**60**	**80**	**80**	**NS**	**NS**	**NS**	**2**	**NS**
Ecologically Sensitive Area (Notified by Central Govt.)				**100**	**60**	**80**	**80**	**NS**	**NS**	**NS**	**2**	**NS**
5.	19.12.2024	Palikhanda Village	Rural	88	27	6.2	16.4	<1	<1			
6.	23.12.2024	Palikhanda Village	Rural	84	30	6.0	16.0	<1	<1	910	0.91	<1
7.	27.12.2024	Palikhanda Village	Rural	77	31	5.1	13.6	<1	<1			
8.	31.12.2024	Palikhanda Village	Rural	93	35	5.5	12.9	<1	<1			
9.	04.01.2025	Palikhanda Village	Rural	89	34	4.6	14.7	<1	<1			
10.	08.01.2025	Palikhanda Village	Rural	93	38	8.2	17.0	<1	<1	887	1.28	<1
11.	12.01.2025	Palikhanda Village	Rural	79	23	6.7	13.9	<1	<1			
12.	16.01.2025	Palikhanda Village	Rural	60	20	8.5	17.7	<1	<1			
13.	20.01.2025	Palikhanda Village	Rural	94	26	5.3	10.9	<1	<1			
14.	24.01.2025	Palikhanda Village	Rural	81	24	7.1	14.7	<1	<1	897	0.85	<1
15.	28.01.2025	Palikhanda Village	Rural	79	23	5.4	11.2	<1	<1			
16.	01.02.2025	Palikhanda Village	Rural	93	36	6.2	12.8	<1	<1			
17.	05.02.2025	Palikhanda Village	Rural	84	25	8.3	17.2	<1	<1			
18.	09.02.2025	Palikhanda Village	Rural	70	23	5.4	11.2	<1	<1	882	0.96	<1
19.	13.02.2025	Palikhanda Village	Rural	90	28	9.4	18.5	<1	<1			
20.	16.02.2025	Palikhanda Village	Rural	87	29	10.4	20.8	<1	<1			
21.	19.02.2025	Palikhanda Village	Rural	93	31	4.6	10.9	<1	<1			
22.	22.02.2025	Palikhanda Village	Rural	67	22	6.9	15.1	<1	<1	905	0.89	<1
23.	25.02.2025	Palikhanda Village	Rural	72	24	10.0	20.0	<1	<1			
24.	28.02.2025	Palikhanda Village	Rural	84	28	9.4	18.4	<1	<1			
AA06 (Zoz Villager)												
1.	03.12.2024	Zoz Village	Rural	92	18	8.3	13.2	<1	<1			
2.	07.12.2024	Zoz Village	Rural	68	30	7.8	15.6	<1	<1	943	1.06	<1
3.	11.12.2024	Zoz Village	Rural	61	38	6.3	12.4	<1	<1			
4.	15.12.2024	Zoz Village	Rural	92	24	7.1	16.2	<1	<1			
5.	19.12.2024	Zoz Village	Rural	90	26	6.0	14.7	<1	<1			

Sr. No.	Sampling Date	Sampling Location	Area / Category	Pollutant Concentration TWA in µg/m³							mg/m3	µg/m3
				PM_{10} (24 hr)	$PM_{2.5}$ (24 hr)	SO_2 (24 hr)	NO_x (24 hr)	Hcl (24 hr)	Hg (8hr)	HC (8 Hr)	CO (8 Hr)	VOC (24 hr)
Industrial, Residential, Rural and Other Area				**100**	**60**	**80**	**80**	**NS**	**NS**	**NS**	**2**	**NS**
Ecologically Sensitive Area (Notified by Central Govt.)				**100**	**60**	**80**	**80**	**NS**	**NS**	**NS**	**2**	**NS**
6.	23.12.2024	Zoz Village	Rural	85	38	5.0	13.1	<1	<1	752	0.89	<1
7.	27.12.2024	Zoz Village	Rural	64	29	5.1	14.4	<1	<1			
8.	31.12.2024	Zoz Village	Rural	87	34	5.8	15.1	<1	<1			
9.	04.01.2025	Zoz Village	Rural	86	26	8.2	17.0	<1	<1			
10.	08.01.2025	Zoz Village	Rural	104	20	7.1	14.7	<1	<1	872	1.20	<1
11.	12.01.2025	Zoz Village	Rural	101	25	5.0	10.3	<1	<1			
12.	16.01.2025	Zoz Village	Rural	98	18	7.2	14.9	<1	<1			
13.	20.01.2025	Zoz Village	Rural	90	36	8.0	16.6	<1	<1			
14.	24.01.2025	Zoz Village	Rural	95	21	6.2	12.8	<1	<1	859	1.17	<1
15.	28.01.2025	Zoz Village	Rural	102	16	7.1	14.7	<1	<1			
16.	01.02.2025	Zoz Village	Rural	94	15	5.3	10.9	<1	<1			
17.	05.02.2025	Zoz Village	Rural	80	23	7.1	14.7	<1	<1			
18.	09.02.2025	Zoz Village	Rural	75	20	8.0	16.6	<1	<1	838	1.08	<1
19.	13.02.2025	Zoz Village	Rural	100	39	8.6	16.9	<1	<1			
20.	16.02.2025	Zoz Village	Rural	72	24	9.8	19.6	<1	<1			
21.	19.02.2025	Zoz Village	Rural	97	32	5.0	10.3	<1	<1			
22.	22.02.2025	Zoz Village	Rural	86	29	7.3	15.3	<1	<1			
AA07 (Patiya Village)												
1.	04.12.2024	Patiya Village	Rural	70	27	8.2	13.4	<1	<1	774	0.88	<1
2.	08.12.2024	Patiya Village	Rural	86	29	7.5	10.1	<1	<1			
3.	12.12.2024	Patiya Village	Rural	60	32	6.5	15.2	<1	<1			
4.	16.12.2024	Patiya Village	Rural	64	28	6.2	6.6	<1	<1			
5.	20.12.2024	Patiya Village	Rural	92	52	3.8	6.0	<1	<1	858	1.12	<1
6.	24.12.2024	Patiya Village	Rural	55	19	8.8	18.8	<1	<1			
7.	28.12.2024	Patiya Village	Rural	102	40	7.7	9.6	<1	<1			
8.	01.01.2025	Patiya Village	Rural	94	29	5.8	12.0	<1	<1			

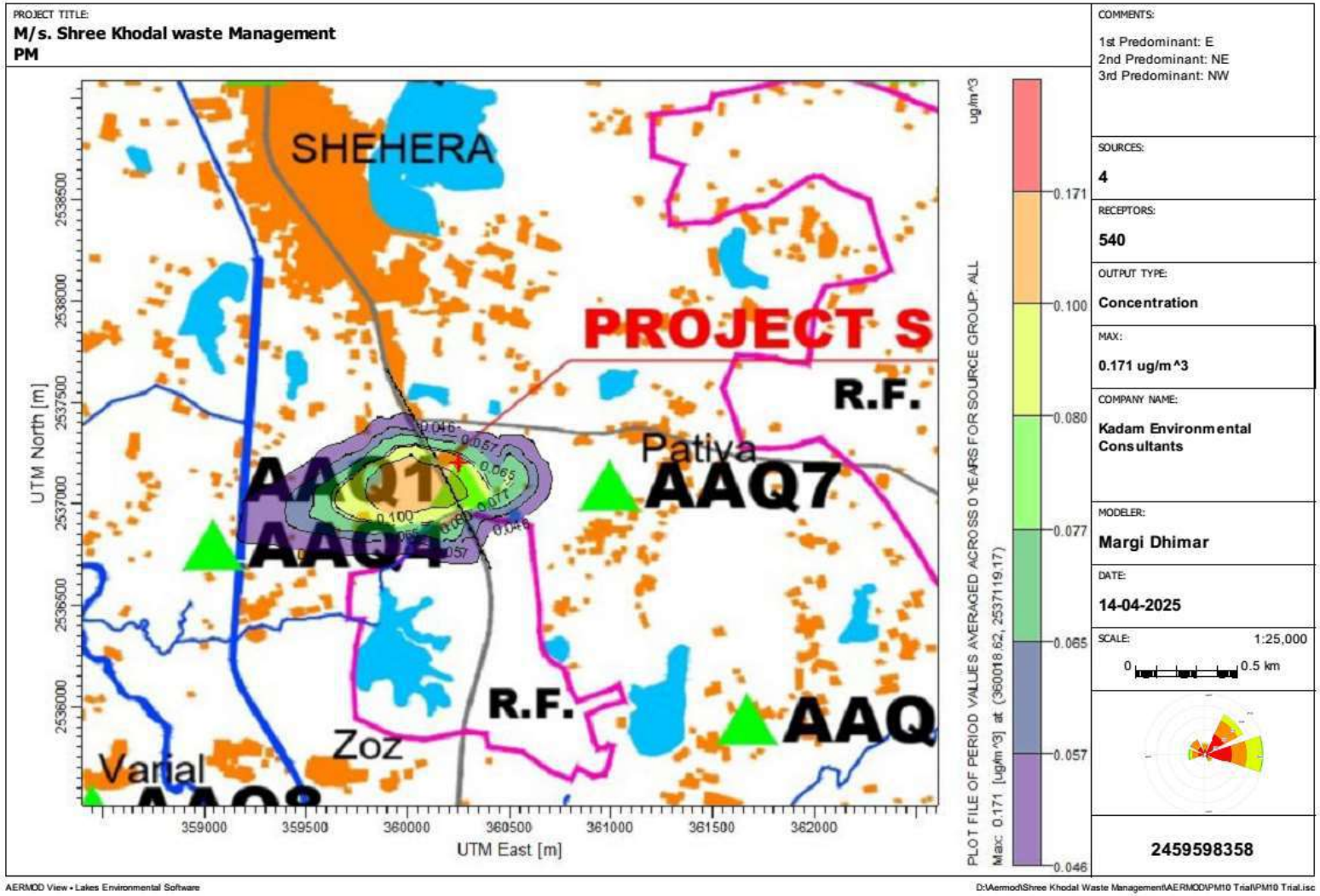
Sr. No.	Sampling Date	Sampling Location	Area / Category	Pollutant Concentration TWA in µg/m³							mg/m3	µg/m3
				PM_{10}	$PM_{2.5}$	SO_2	NO_x	Hcl	Hg	HC	CO	VOC
				(24 hr)	(24 hr)	(24 hr)	(24 hr)	(24 hr)	(8hr)	(8 Hr)	(8 Hr)	(24 hr)
Industrial, Residential, Rural and Other Area				**100**	**60**	**80**	**80**	**NS**	**NS**	**NS**	**2**	**NS**
Ecologically Sensitive Area (Notified by Central Govt.)				**100**	**60**	**80**	**80**	**NS**	**NS**	**NS**	**2**	**NS**
9.	05.01.2025	Patiya Village	Rural	82	25	7.2	14.9	<1	<1	837	1.20	<1
10.	09.01.2025	Patiya Village	Rural	60	18	6.1	12.6	<1	<1			
11.	13.01.2025	Patiya Village	Rural	81	25	5.0	10.3	<1	<1			
12.	17.01.205	Patiya Village	Rural	94	29	6.9	14.3	<1	<1			
13.	21.01.2025	Patiya Village	Rural	92	29	3.9	8.0	<1	<1	841	1.01	<1
14.	25.01.2025	Patiya Village	Rural	81	25	4.9	10.1	<1	<1			
15.	29.01.2025	Patiya Village	Rural	64	19	7.9	16.4	<1	<1			
16.	02.02.2025	Patiya Village	Rural	92	29	7.2	14.9	<1	<1			
17.	06.02.2025	Patiya Village	Rural	92	24	6.5	13.5	<1	<1	849	1.24	<1
18.	10.02.2025	Patiya Village	Rural	85	16	8.3	17.2	<1	<1			
19.	14.02.2025	Patiya Village	Rural	98	37	8.6	16.9	<1	<1			
20.	17.02.2025	Patiya Village	Rural	92	31	8.8	18.8	<1	<1			
21.	20.02.2025	Patiya Village	Rural	89	30	3.8	6.0	<1	<1	967	1.05	<1
22.	23.02.2025	Patiya Village	Rural	67	22	6.8	12.9	<1	<1			
23.	26.02.2025	Patiya Village	Rural	84	28	8.7	18.1	<1	<1			
AA08 (Varial Village)												
1.	04.12.2024	Varial Village	Rural	82	22	6.3	9.2	<1	<1			
2.	08.12.2024	Varial Village	Rural	93	19	7.7	6.0	<1	<1	911	0.87	<1
3.	12.12.2024	Varial Village	Rural	85	24	7.6	6.1	<1	<1			
4.	16.12.2024	Varial Village	Rural	75	28	6.1	10.4	<1	<1			
5.	20.12.2024	Varial Village	Rural	90	17	6.6	6.0	<1	<1			
6.	24.12.2024	Varial Village	Rural	79	12	7.5	6.6	<1	<1	987	1.00	<1
7.	28.12.2024	Varial Village	Rural	74	8	6.6	12.5	<1	<1			
8.	01.01.2025	Varial Village	Rural	93	30	5.7	6.0	<1	<1			
9.	05.01.2025	Varial Village	Rural	66	20	8.2	17.0	<1	<1			
10.	09.01.2025	Varial Village	Rural	84	26	8.3	17.2	<1	<1	829	1.27	<1

Sr. No.	Sampling Date	Sampling Location	Area / Category	Pollutant Concentration TWA in µg/m³							mg/m3	µg/m3
				PM_{10} (24 hr)	$PM_{2.5}$ (24 hr)	SO_2 (24 hr)	NO_x (24 hr)	Hcl (24 hr)	Hg (8hr)	HC (8 Hr)	CO (8 Hr)	VOC (24 hr)
Industrial, Residential, Rural and Other Area				**100**	**60**	**80**	**80**	**NS**	**NS**	**NS**	**2**	**NS**
Ecologically Sensitive Area (Notified by Central Govt.)				**100**	**60**	**80**	**80**	**NS**	**NS**	**NS**	**2**	**NS**
11.	13.01.2025	Varial Village	Rural	82	25	5.4	11.2	<1	<1			
12.	17.01.2025	Varial Village	Rural	84	15	8.6	17.9	<1	<1			
13.	21.01.2025	Varial Village	Rural	76	13	6.9	14.3	<1	<1			
14.	25.01.2025	Varial Village	Rural	81	25	8.0	16.6	<1	<1	924	0.87	<1
15.	29.01.2025	Varial Village	Rural	72	22	5.9	12.2	<1	<1			
16.	02.02.2025	Varial Village	Rural	93	29	7.6	15.8	<1	<1			
17.	06.02.2025	Varial Village	Rural	82	25	5.3	10.9	<1	<1			
18.	10.02.2025	Varial Village	Rural	93	29	8.1	15.9	<1	<1	831	0.96	<1
19.	14.02.2025	Varial Village	Rural	76	18	5.7	11.1	<1	<1			
20.	17.02.2025	Varial Village	Rural	84	21	9.6	19.2	<1	<1			
21.	20.02.2025	Varial Village	Rural	69	17	5.3	6.0	<1	<1			
22.	23.02.2025	Varial Village	Rural	91	30	7.1	12.5	<1	<1	892	0.91	<1
23.	26.02.2025	Varial Village	Rural	72	21	9.5	18.9	<1	<1			
AA09 (Dhandhalpur Village)												
1.	04.12.2024	Dhandhalpur Village	Rural	82	38	6.3	9.2	<1	<1	913	0.87	<1
2.	08.12.2024	Dhandhalpur Village	Rural	38	29	7.7	6.0	<1	<1			
3.	12.12.2024	Dhandhalpur Village	Rural	49	23	7.6	6.1	<1	<1			
4.	16.12.2024	Dhandhalpur Village	Rural	65	39	6.1	10.4	<1	<1			
5.	20.12.2024	Dhandhalpur Village	Rural	82	32	6.6	6.0	<1	<1	982	0.99	<1
6.	24.12.2024	Dhandhalpur Village	Rural	82	24	7.5	6.6	<1	<1			
7.	28.12.2024	Dhandhalpur Village	Rural	62	35	6.6	12.5	<1	<1			
8.	01.01.2025	Dhandhalpur Village	Rural	82	28	5.7	6.0	<1	<1			
9.	05.01.2025	Dhandhalpur Village	Rural	90	27	8.2	17.0	<1	<1	829	1.27	<1
10.	09.01.2025	Dhandhalpur Village	Rural	72	15	8.3	17.2	<1	<1			
11.	13.01.2025	Dhandhalpur Village	Rural	56	30	5.4	11.2	<1	<1			
12.	17.01.205	Dhandhalpur Village	Rural	85	20	8.6	17.9	<1	<1			

Sr. No.	Sampling Date	Sampling Location	Area / Category	Pollutant Concentration TWA in								
				µg/m³							mg/m3	µg/m3
				PM_{10}	$PM_{2.5}$	SO_2	NO_x	Hcl	Hg	HC	CO	VOC
				(24 hr)	(24 hr)	(24 hr)	(24 hr)	(24 hr)	(8hr)	(8 Hr)	(8 Hr)	(24 hr)
Industrial, Residential, Rural and Other Area				**100**	**60**	**80**	**80**	**NS**	**NS**	**NS**	**2**	**NS**
Ecologically Sensitive Area (Notified by Central Govt.)				**100**	**60**	**80**	**80**	**NS**	**NS**	**NS**	**2**	**NS**
13.	21.01.2025	Dhandhalpur Village	Rural	62	22	6.9	14.3	<1	<1	922	0.88	<1
14.	25.01.2025	Dhandhalpur Village	Rural	53	20	8.0	16.6	<1	<1			
15.	29.01.2025	Dhandhalpur Village	Rural	83	31	5.9	12.2	<1	<1			
16.	02.02.2025	Dhandhalpur Village	Rural	72	15	7.6	15.8	<1	<1			
17.	06.02.2025	Dhandhalpur Village	Rural	89	23	5.3	10.9	<1	<1	830	0.96	<1
18.	10.02.2025	Dhandhalpur Village	Rural	76	8	8.1	15.9	<1	<1			
19.	14.02.2025	Dhandhalpur Village	Rural	73	36	5.7	11.1	<1	<1			
20.	17.02.2025	Dhandhalpur Village	Rural	82	22	9.5	19.0	<1	<1			
21.	20.02.2025	Dhandhalpur Village	Rural	72	19	5.3	6.0	<1	<1	984	1.12	<1
22.	23.02.2025	Dhandhalpur Village	Rural	69	18	7.3	12.8	<1	<1			
23.	26.02.2025	Dhandhalpur Village	Rural	93	33	9.4	18.8	<1	<1			

Annexure 5: Air Dispersion Modelling Results with Isopleths from AERMOD Software

Isopleths for PM_{10} emission from proposed project

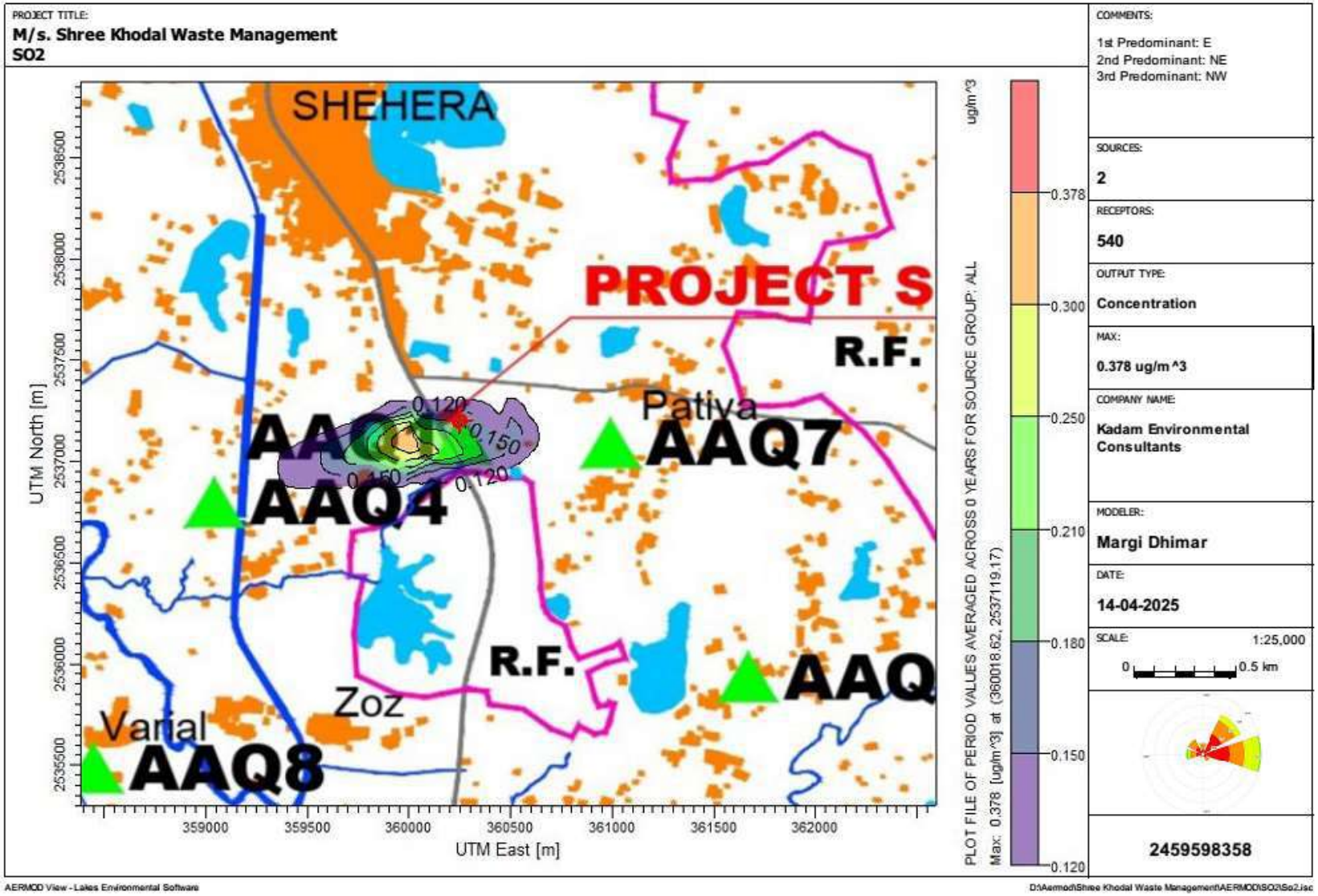


Incremental GLC's of Particulate Matter (PM_{10}) in µg/m³

DIRECTION	DISTANCE (m)														
(DEGREES)	250	500	750	1000	1500	2000	2500	3000	4000	5000	6000	7000	8000	9000	10000
10	0.03239	0.01166	0.00644	0.0045	0.00298	0.00227	0.00185	0.00157	0.00122	0.00102	0.00089	0.00081	0.00075	0.0007	0.00066
20	0.03219	0.01142	0.00617	0.00416	0.00256	0.00189	0.00153	0.0013	0.00102	0.00086	0.00077	0.0007	0.00064	0.0006	0.00056
30	0.03298	0.01182	0.00633	0.00419	0.00247	0.00179	0.00142	0.0012	0.00092	0.00075	0.00065	0.00058	0.00053	0.00049	0.00046
40	0.03583	0.01349	0.0073	0.00476	0.00278	0.00198	0.00155	0.00129	0.00098	0.0008	0.00069	0.00062	0.00056	0.00052	0.00049
50	0.04018	0.01582	0.00865	0.0057	0.00329	0.00234	0.00184	0.00153	0.00118	0.00099	0.00087	0.00079	0.00072	0.00066	0.00061
60	0.04784	0.02007	0.01142	0.00793	0.00513	0.00393	0.00323	0.00275	0.00211	0.00173	0.00147	0.00128	0.00113	0.00102	0.00093
70	0.05841	0.02666	0.01602	0.01141	0.00731	0.00544	0.00435	0.00364	0.00277	0.00226	0.00191	0.00165	0.00146	0.0013	0.00119
80	0.06537	0.03089	0.01831	0.01271	0.0079	0.00597	0.00495	0.00429	0.00342	0.00282	0.00238	0.00204	0.00179	0.00159	0.00144
90	0.07267	0.03531	0.02078	0.01416	0.0084	0.00601	0.00476	0.004	0.00308	0.0025	0.00211	0.00183	0.00162	0.00145	0.00132
100	0.08031	0.04034	0.0242	0.01654	0.00957	0.00658	0.00502	0.00409	0.00299	0.0023	0.00187	0.00158	0.00138	0.00123	0.00111
110	0.08291	0.04107	0.02474	0.01694	0.0099	0.00691	0.00538	0.00445	0.00334	0.00261	0.00214	0.00182	0.00159	0.00141	0.00128
120	0.08015	0.03659	0.02109	0.01399	0.00796	0.00544	0.00412	0.00333	0.00242	0.00189	0.00157	0.00134	0.00117	0.00104	0.00094
130	0.07653	0.03185	0.01733	0.01131	0.00656	0.0048	0.00388	0.0033	0.00256	0.00205	0.00171	0.00146	0.00128	0.00113	0.00102
140	0.07287	0.02952	0.01609	0.01103	0.00731	0.00577	0.00479	0.00411	0.00319	0.00258	0.00216	0.00187	0.00166	0.00151	0.00139
150	0.06856	0.02798	0.01524	0.0102	0.0059	0.00425	0.00335	0.00283	0.00224	0.00188	0.0016	0.0014	0.00125	0.00113	0.00104
160	0.06565	0.02938	0.01535	0.00985	0.00524	0.00345	0.00255	0.00204	0.0015	0.00125	0.0011	0.001	0.00094	0.00088	0.00084
170	0.06811	0.04645	0.01446	0.00906	0.00484	0.00319	0.00236	0.00189	0.00139	0.00114	0.00098	0.00088	0.00081	0.00076	0.00072
180	0.08174	0.04629	0.0157	0.00996	0.00578	0.00403	0.00309	0.00253	0.0019	0.00156	0.00132	0.00115	0.00101	0.00091	0.00083
190	0.08807	0.04619	0.01882	0.01213	0.00703	0.00489	0.00377	0.00312	0.00241	0.00202	0.00173	0.00149	0.00132	0.00118	0.00107
200	0.09291	0.04541	0.02035	0.01216	0.00675	0.00454	0.00343	0.00277	0.00209	0.00176	0.00156	0.00142	0.00131	0.00121	0.00113
210	0.10156	0.04744	0.02367	0.01314	0.00691	0.00468	0.00351	0.0028	0.00205	0.00169	0.00151	0.0014	0.00132	0.00126	0.0012
220	0.11663	0.05514	0.02946	0.01768	0.00887	0.00599	0.00459	0.00374	0.00279	0.0023	0.00201	0.00182	0.00167	0.00154	0.00144
230	0.1416	0.07135	0.04135	0.02755	0.01551	0.01129	0.00962	0.0087	0.00731	0.00623	0.00542	0.00476	0.00421	0.00377	0.0034
240	0.16656	0.08822	0.05442	0.0381	0.02373	0.01778	0.01472	0.01283	0.01056	0.00921	0.00832	0.0076	0.00696	0.00634	0.00582
250	**0.17133**	0.09893	0.06716	0.05087	0.03618	0.03001	0.0263	0.02365	0.01993	0.01738	0.01552	0.01397	0.01261	0.01137	0.01034

DIRECTION	DISTANCE (m)														
(DEGREES)	250	500	750	1000	1500	2000	2500	3000	4000	5000	6000	7000	8000	9000	10000
260	0.14528	0.08711	0.06157	0.04829	0.03491	0.02926	0.02591	0.0232	0.01904	0.01607	0.01386	0.01209	0.01067	0.0095	0.00856
270	0.11555	0.06531	0.04557	0.03562	0.02442	0.01893	0.01597	0.01405	0.01133	0.00948	0.00814	0.00706	0.00622	0.00553	0.00499
280	0.09234	0.05077	0.03553	0.02713	0.01711	0.01308	0.01099	0.00956	0.00759	0.00635	0.00548	0.00475	0.00419	0.00375	0.0034
290	0.07766	0.04463	0.0303	0.01973	0.01242	0.00949	0.00787	0.00684	0.00554	0.00471	0.0041	0.00361	0.00322	0.00289	0.00262
300	0.066	0.04045	0.02259	0.01287	0.00762	0.00611	0.00533	0.00482	0.00409	0.00361	0.00325	0.00294	0.00267	0.00241	0.0022
310	0.05464	0.03812	0.01339	0.0073	0.00524	0.00471	0.00448	0.00415	0.00357	0.00315	0.00282	0.00256	0.00234	0.00215	0.00201
320	0.04002	0.02915	0.00879	0.00608	0.00409	0.00323	0.00272	0.00239	0.00191	0.00159	0.00137	0.00121	0.00109	0.00099	0.00091
330	0.03681	0.01494	0.00829	0.00592	0.00402	0.00326	0.00285	0.0026	0.00221	0.00193	0.00172	0.00156	0.00142	0.0013	0.00121
340	0.03489	0.0135	0.00764	0.0054	0.0036	0.00284	0.00241	0.0021	0.00166	0.00138	0.00119	0.00105	0.00095	0.00087	0.0008
350	0.03278	0.01205	0.00676	0.00482	0.00304	0.00226	0.00182	0.00154	0.00118	0.00097	0.00083	0.00074	0.00067	0.00061	0.00057
360	0.03217	0.01167	0.0066	0.00472	0.00304	0.00223	0.0018	0.00153	0.00121	0.00104	0.00092	0.00083	0.00076	0.0007	0.00066

Isopheths for SO_2 emission from proposed project

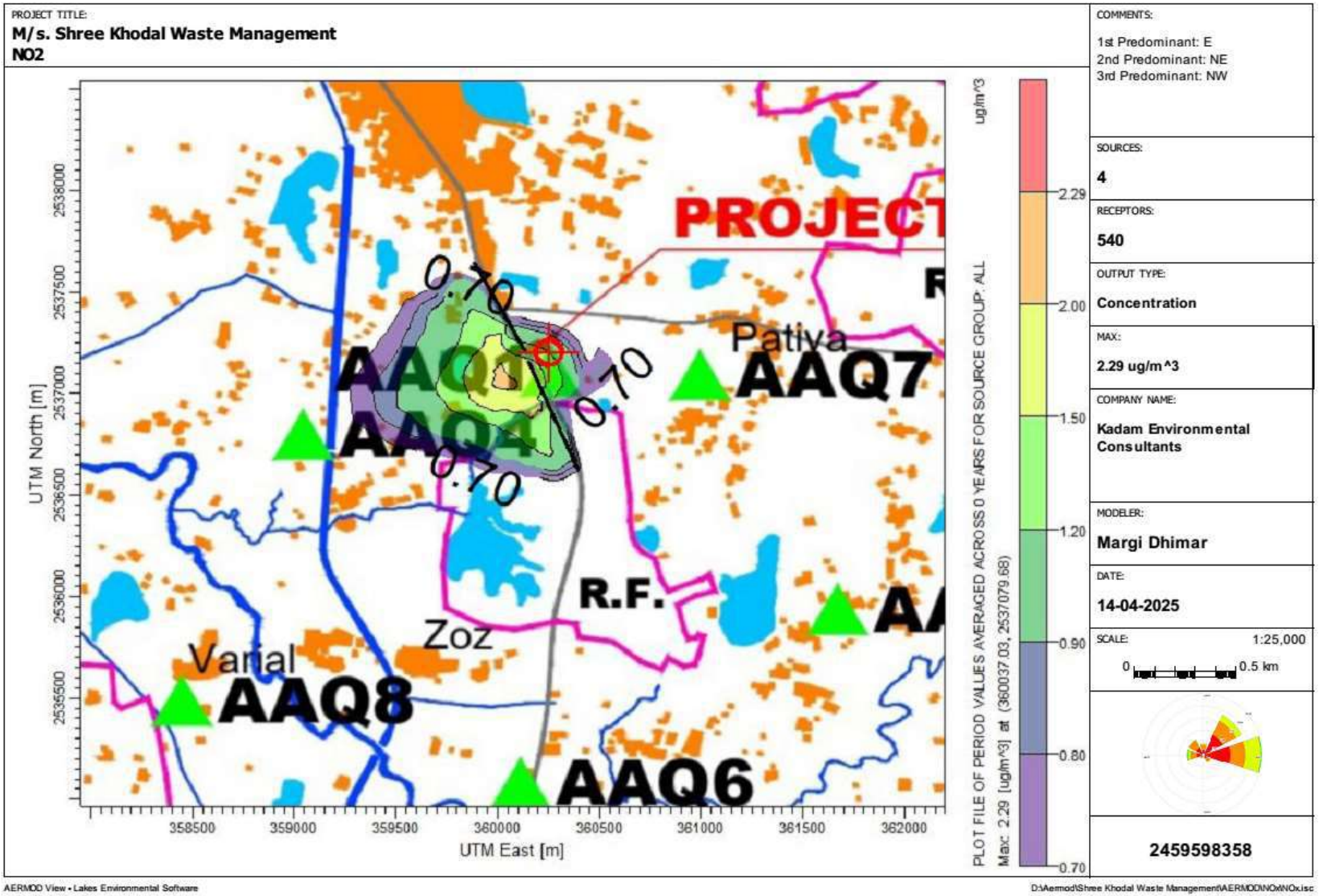


Incremental GLC's of Sulphur Dioxide (SO_2) in µg/m³

DIRECTION	DISTANCE(m)														
(DEGREES)	250	500	750	1000	1500	2000	2500	3000	4000	5000	6000	7000	8000	9000	10000
10	0.06865	0.02244	0.01232	0.00865	0.00591	0.00457	0.00377	0.00324	0.00258	0.00219	0.00196	0.0018	0.0017	0.00161	0.00153
20	0.06789	0.0216	0.01145	0.00766	0.0047	0.00345	0.00279	0.00238	0.00193	0.00169	0.00155	0.00146	0.00141	0.00134	0.00127
30	0.06951	0.02206	0.01147	0.00755	0.00453	0.00329	0.00263	0.00223	0.00175	0.00147	0.00128	0.00116	0.00108	0.00102	0.00097
40	0.07703	0.02547	0.01323	0.00859	0.00503	0.00359	0.00284	0.00239	0.00186	0.00155	0.00136	0.00123	0.00114	0.00107	0.00102
50	0.0881	0.03109	0.01642	0.01064	0.00613	0.00432	0.00338	0.00283	0.00228	0.00199	0.00183	0.00172	0.00163	0.00153	0.00144
60	0.10754	0.04221	0.02379	0.01627	0.01019	0.00767	0.0063	0.0054	0.00424	0.00353	0.00308	0.00273	0.00248	0.00227	0.0021
70	0.13246	0.05721	0.03415	0.02395	0.01492	0.01087	0.00863	0.00721	0.00555	0.00457	0.0039	0.00339	0.00301	0.00271	0.00248
80	0.14272	0.06587	0.03978	0.02774	0.01743	0.01338	0.01141	0.0101	0.00815	0.00675	0.00573	0.00494	0.00434	0.00386	0.00349
90	0.15396	0.07247	0.04327	0.02999	0.01848	0.01373	0.01122	0.00958	0.00736	0.00595	0.00498	0.00426	0.0037	0.00327	0.00292
100	0.16925	0.0815	0.04942	0.03437	0.02047	0.01433	0.01107	0.00903	0.00642	0.00491	0.00398	0.00335	0.00289	0.00254	0.00228
110	0.17395	0.08283	0.05028	0.03507	0.02103	0.01494	0.01173	0.00972	0.00709	0.00553	0.00453	0.00384	0.00333	0.00294	0.00264
120	0.16588	0.07248	0.04162	0.02793	0.016	0.01102	0.00851	0.00703	0.00526	0.00412	0.00336	0.00285	0.00247	0.00219	0.00197
130	0.15758	0.06265	0.03429	0.02238	0.01318	0.00998	0.00843	0.0074	0.00582	0.0047	0.00391	0.00335	0.00292	0.0026	0.00235
140	0.15059	0.05764	0.03233	0.02255	0.0158	0.0131	0.01123	0.00986	0.00789	0.00645	0.00544	0.00472	0.0042	0.0038	0.0035
150	0.14167	0.05237	0.02911	0.01968	0.01222	0.00907	0.00728	0.00618	0.00493	0.00407	0.00345	0.00301	0.00269	0.00245	0.00226
160	0.13407	0.04615	0.02338	0.01443	0.00774	0.00526	0.00403	0.00334	0.0027	0.00243	0.00229	0.0022	0.00215	0.0021	0.00203
170	0.13056	0.04596	0.02334	0.01454	0.00793	0.00535	0.00405	0.00333	0.00262	0.00228	0.00205	0.00189	0.00179	0.00173	0.00167
180	0.13148	0.05123	0.02811	0.01887	0.0116	0.00845	0.00665	0.00553	0.00422	0.0034	0.00286	0.00249	0.00222	0.00202	0.00186
190	0.13732	0.05772	0.03405	0.0238	0.0148	0.0106	0.00831	0.00691	0.00531	0.00427	0.00358	0.00309	0.00273	0.00246	0.00224
200	0.14749	0.0575	0.03196	0.0214	0.01262	0.00877	0.00673	0.00551	0.00424	0.00366	0.00339	0.00323	0.00309	0.00296	0.00283
210	0.17137	0.06238	0.03197	0.02036	0.01153	0.00797	0.00609	0.00497	0.00381	0.00333	0.00314	0.00307	0.00301	0.00295	0.00289
220	0.21091	0.07861	0.04057	0.02598	0.01478	0.01047	0.00823	0.00685	0.00526	0.00449	0.00409	0.00389	0.00373	0.00357	0.00343
230	0.27707	0.11727	0.0674	0.04621	0.02867	0.02294	0.02092	0.01993	0.01784	0.01559	0.01367	0.01211	0.01083	0.00976	0.00885
240	0.34782	0.16149	0.09984	0.0715	0.04601	0.03569	0.03035	0.02703	0.02306	0.02067	0.01912	0.01799	0.01705	0.01596	0.01484
250	**0.37808**	0.20716	0.14578	0.11367	0.08063	0.06487	0.05559	0.04941	0.04148	0.03638	0.03279	0.03009	0.02791	0.02568	0.02361

DIRECTION	DISTANCE(m)														
(DEGREES)	250	500	750	1000	1500	2000	2500	3000	4000	5000	6000	7000	8000	9000	10000
260	0.32158	0.18492	0.13626	0.10816	0.07794	0.0645	0.0566	0.05056	0.04095	0.03439	0.02957	0.02598	0.02322	0.02089	0.01897
270	0.23554	0.12094	0.08718	0.06904	0.04843	0.03928	0.03445	0.0311	0.02558	0.02142	0.01827	0.01587	0.01405	0.01256	0.01136
280	0.16834	0.0816	0.05987	0.04871	0.03497	0.02788	0.02374	0.0207	0.01618	0.01326	0.01113	0.00956	0.00841	0.00752	0.00684
290	0.1258	0.06086	0.04479	0.03587	0.02551	0.02003	0.01695	0.01498	0.01228	0.01034	0.00893	0.00788	0.00708	0.00639	0.00582
300	0.09797	0.04287	0.0302	0.0238	0.01706	0.01386	0.01213	0.01096	0.00925	0.00817	0.00742	0.00685	0.00636	0.00586	0.00539
310	0.08267	0.03004	0.01884	0.01438	0.01131	0.01108	0.01136	0.01104	0.00985	0.00878	0.00792	0.00724	0.0067	0.00621	0.00579
320	0.0775	0.02846	0.0171	0.01246	0.00831	0.0065	0.00556	0.00499	0.00422	0.0036	0.00317	0.00286	0.00262	0.00242	0.00225
330	0.07577	0.02774	0.0167	0.01215	0.00825	0.00679	0.00615	0.00582	0.0052	0.00461	0.00417	0.00384	0.00357	0.00331	0.00308
340	0.07344	0.02604	0.01499	0.01053	0.00701	0.0057	0.00504	0.00449	0.00367	0.00311	0.00272	0.00245	0.00225	0.00208	0.00195
350	0.06872	0.02315	0.01321	0.0092	0.0058	0.00431	0.0035	0.003	0.00236	0.00195	0.00169	0.00151	0.00139	0.0013	0.00122
360	0.06764	0.02265	0.01317	0.00932	0.00597	0.00444	0.00359	0.00306	0.00246	0.00211	0.0019	0.00176	0.00166	0.00158	0.00149

Isopleths for NO_x emission from proposed project

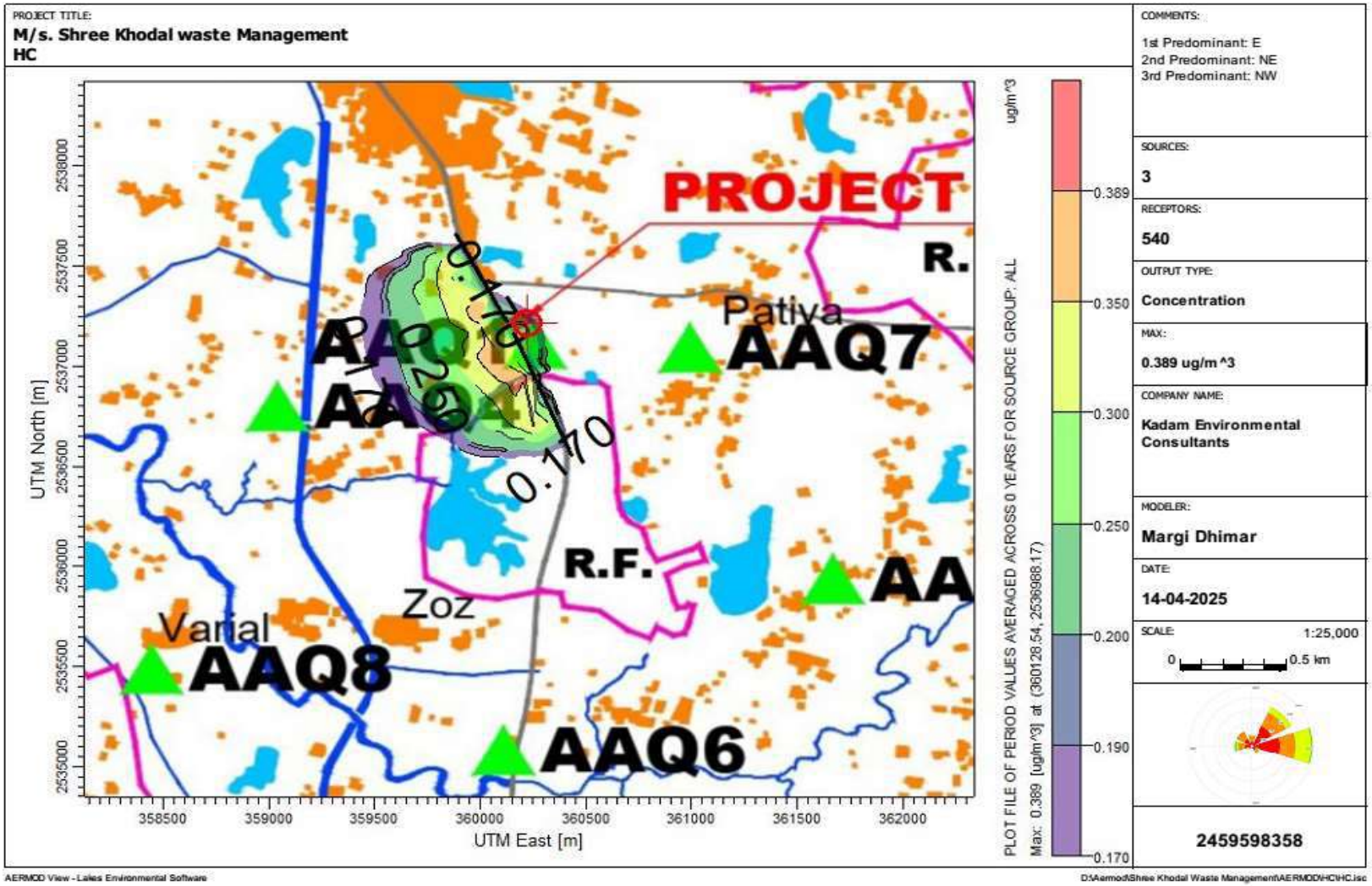


Incremental GLC's of Oxides of Nitrogen (NO_x) in µg/m³

DIRECTION	DISTANCE (m)														
(DEGREES)	250	500	750	1000	1500	2000	2500	3000	4000	5000	6000	7000	8000	9000	10000
10	0.3505	0.13487	0.07142	0.04771	0.03071	0.02293	0.01825	0.01532	0.01165	0.00953	0.00822	0.00736	0.00678	0.00633	0.00596
20	0.34759	0.13081	0.06903	0.04494	0.02693	0.01978	0.01573	0.01311	0.00999	0.00818	0.00699	0.00615	0.00552	0.00502	0.00461
30	0.35383	0.13347	0.07056	0.0453	0.02491	0.01747	0.01375	0.01141	0.0086	0.00697	0.00592	0.0052	0.00467	0.00426	0.00394
40	0.37766	0.14906	0.081	0.05059	0.02841	0.01957	0.01485	0.01211	0.00911	0.00742	0.00632	0.00556	0.005	0.00456	0.00422
50	0.41534	0.16844	0.09266	0.0606	0.03393	0.02399	0.01848	0.01508	0.01123	0.00904	0.00764	0.00667	0.00595	0.00538	0.00492
60	0.48238	0.2044	0.11793	0.08317	0.05426	0.04043	0.03229	0.02704	0.02024	0.01605	0.01327	0.01129	0.00984	0.00873	0.00786
70	0.57906	0.26445	0.16111	0.11572	0.07497	0.05563	0.04413	0.03652	0.02726	0.02184	0.01811	0.01543	0.01344	0.01192	0.01073
80	0.65205	0.29689	0.17409	0.12003	0.0738	0.05557	0.04617	0.04027	0.03167	0.0258	0.02147	0.01828	0.01584	0.014	0.01261
90	0.74017	0.34045	0.1957	0.13025	0.07567	0.05534	0.04497	0.03858	0.02984	0.02464	0.02101	0.01823	0.01589	0.01403	0.01253
100	0.8263	0.39217	0.22996	0.15405	0.08756	0.06031	0.04743	0.0396	0.02878	0.0226	0.0187	0.01595	0.01377	0.01211	0.0108
110	0.85572	0.40615	0.23777	0.15957	0.0904	0.06446	0.05157	0.0436	0.03229	0.02564	0.02135	0.01831	0.01586	0.01397	0.0125
120	0.82939	0.37109	0.20788	0.13249	0.07303	0.04934	0.03762	0.031	0.02297	0.01819	0.01498	0.01277	0.01106	0.00974	0.00871
130	0.79592	0.33055	0.17451	0.10925	0.06107	0.04373	0.03547	0.03037	0.02303	0.01838	0.01514	0.01284	0.01114	0.00984	0.00883
140	0.77235	0.32016	0.16896	0.11359	0.07177	0.05444	0.04447	0.03783	0.02877	0.02296	0.01916	0.0166	0.01482	0.01354	0.01258
150	0.75231	0.32391	0.17299	0.11841	0.0644	0.0434	0.03401	0.02875	0.02274	0.01852	0.01557	0.01345	0.01187	0.01065	0.00969
160	0.74441	0.39176	0.22581	0.14963	0.08715	0.05549	0.03897	0.02947	0.01949	0.01458	0.01176	0.00998	0.00875	0.00786	0.00716
170	0.8185	1.06045	0.2371	0.13524	0.06558	0.04075	0.02877	0.02202	0.01504	0.01159	0.00954	0.00818	0.00723	0.00654	0.00599
180	1.25344	1.25265	0.22291	0.11252	0.0597	0.0401	0.02992	0.0242	0.01814	0.01437	0.01189	0.01015	0.00887	0.00789	0.00711
190	1.55522	1.16547	0.30472	0.14393	0.06942	0.04645	0.03539	0.02969	0.02372	0.01939	0.0163	0.01407	0.01239	0.01106	0.01
200	1.69101	1.07871	0.42594	0.17164	0.08098	0.05011	0.03663	0.02883	0.02111	0.01713	0.01465	0.01293	0.01163	0.0106	0.00975
210	1.79397	1.0416	0.53116	0.23485	0.09892	0.06407	0.04616	0.03536	0.02422	0.01867	0.01572	0.0139	0.01254	0.01147	0.0106
220	1.92583	1.07332	0.60375	0.35352	0.14009	0.08629	0.06166	0.04847	0.03434	0.02702	0.02233	0.01907	0.01666	0.01477	0.01329
230	2.12995	1.19995	0.73112	0.48408	0.24763	0.15494	0.11457	0.09597	0.07284	0.0587	0.04868	0.04134	0.0359	0.03171	0.02843
240	**2.29013**	1.32949	0.86587	0.59845	0.36235	0.25491	0.1952	0.16034	0.12014	0.09572	0.07977	0.06886	0.06096	0.05457	0.04926
250	2.12096	1.34773	0.94127	0.71082	0.48975	0.39449	0.33261	0.28855	0.22921	0.19045	0.1619	0.14002	0.12283	0.10857	0.09676

DIRECTION	DISTANCE (m)														
(DEGREES)	250	500	750	1000	1500	2000	2500	3000	4000	5000	6000	7000	8000	9000	10000
260	1.92098	1.25213	0.89719	0.69837	0.48863	0.38986	0.32463	0.27773	0.21547	0.17528	0.14544	0.12336	0.10672	0.09371	0.08339
270	1.75958	1.12314	0.79416	0.60666	0.38363	0.27219	0.2076	0.17104	0.12817	0.10284	0.08478	0.07158	0.06176	0.05421	0.0483
280	1.67614	1.05908	0.72969	0.50633	0.25648	0.17915	0.14405	0.12183	0.09431	0.07764	0.06471	0.05475	0.04716	0.04118	0.03643
290	1.51658	1.07693	0.70009	0.35776	0.17949	0.12284	0.09465	0.07709	0.0577	0.04725	0.03993	0.03449	0.03027	0.02684	0.02404
300	1.32842	1.11956	0.50406	0.21183	0.08929	0.06626	0.0549	0.04835	0.03934	0.03353	0.02902	0.02553	0.02276	0.0204	0.01841
310	0.77813	1.11837	0.22876	0.09651	0.05913	0.04728	0.04114	0.03666	0.03029	0.02597	0.02275	0.02038	0.01867	0.01739	0.01646
320	0.50583	0.4824	0.11543	0.07254	0.04503	0.03393	0.0274	0.02312	0.01767	0.01425	0.01193	0.01028	0.00906	0.00811	0.00736
330	0.42864	0.20166	0.09827	0.06547	0.04257	0.03353	0.02819	0.02476	0.02019	0.01707	0.01479	0.0131	0.0118	0.01072	0.00985
340	0.39276	0.16812	0.09058	0.06064	0.03878	0.02881	0.02332	0.01973	0.01511	0.01225	0.01033	0.009	0.00806	0.00737	0.00685
350	0.36202	0.14414	0.0771	0.05413	0.03195	0.02335	0.01839	0.01526	0.01159	0.00942	0.00798	0.00695	0.0062	0.00561	0.00514
360	0.35108	0.13584	0.07224	0.05114	0.03202	0.0226	0.01789	0.01518	0.01189	0.00979	0.0084	0.0074	0.00664	0.00603	0.00552

Isopleths for Hydrocarbon (HC) emission from proposed project

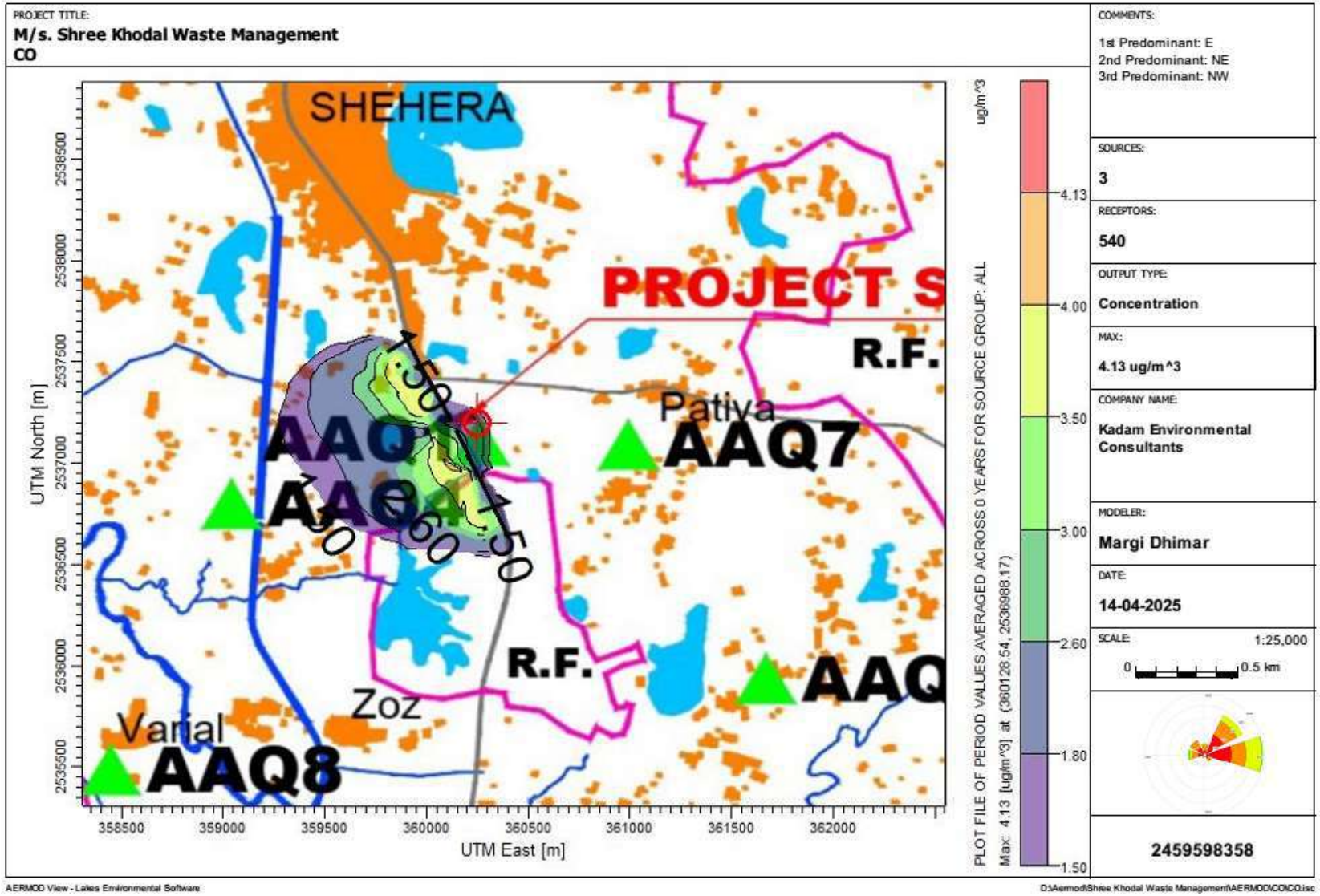


Incremental GLC's of Hydrocarbon (HC) in µg/m³

DIRECTION	DISTANCE (m)														
(DEGREES)	250	500	750	1000	1500	2000	2500	3000	4000	5000	6000	7000	8000	9000	10000
10	0.03607	0.01623	0.0078	0.00475	0.00311	0.00235	0.00183	0.00152	0.00111	0.00085	0.00069	0.00058	0.00051	0.00046	0.00042
20	0.03476	0.01539	0.00774	0.00478	0.00271	0.00204	0.00163	0.00134	0.00096	0.00075	0.0006	0.0005	0.00043	0.00037	0.00033
30	0.03464	0.01544	0.00827	0.00513	0.00237	0.00149	0.00115	0.00094	0.00068	0.00053	0.00043	0.00037	0.00033	0.00029	0.00027
40	0.035	0.01622	0.00946	0.00536	0.00279	0.00175	0.00121	0.00092	0.00067	0.00054	0.00045	0.00039	0.00035	0.00032	0.00029
50	0.03711	0.01684	0.00967	0.00651	0.00334	0.00236	0.00178	0.00142	0.00101	0.00077	0.00061	0.0005	0.00043	0.00037	0.00033
60	0.04191	0.01908	0.01148	0.00834	0.00551	0.00387	0.00295	0.00244	0.0018	0.00139	0.00112	0.00092	0.00078	0.00067	0.00059
70	0.04655	0.0222	0.01398	0.01041	0.00706	0.00536	0.00421	0.0034	0.00242	0.00186	0.00149	0.00123	0.00104	0.0009	0.0008
80	0.05124	0.02351	0.01422	0.01017	0.00644	0.00477	0.00387	0.00332	0.00257	0.00208	0.00172	0.00145	0.00123	0.00107	0.00095
90	0.05844	0.02719	0.01637	0.0113	0.00644	0.00464	0.00369	0.00302	0.00217	0.00176	0.0015	0.0013	0.00113	0.001	0.00089
100	0.06364	0.03073	0.01901	0.01276	0.00722	0.00455	0.00351	0.00293	0.00212	0.00167	0.00139	0.00118	0.00102	0.0009	0.0008
110	0.06536	0.03197	0.01968	0.01298	0.00665	0.0047	0.00377	0.00319	0.00237	0.00189	0.00158	0.00136	0.00117	0.00103	0.00092
120	0.06497	0.03076	0.01803	0.01088	0.00552	0.0037	0.0028	0.00229	0.00167	0.00132	0.00108	0.00092	0.0008	0.0007	0.00062
130	0.06574	0.03044	0.01697	0.00926	0.00498	0.00342	0.00267	0.00224	0.00165	0.0013	0.00106	0.00089	0.00077	0.00068	0.0006
140	0.06941	0.03449	0.01936	0.01224	0.00777	0.00584	0.00472	0.00395	0.00287	0.0022	0.00176	0.00147	0.00128	0.00114	0.00104
150	0.07537	0.04273	0.0235	0.01694	0.00897	0.00525	0.00392	0.00321	0.00239	0.00187	0.00152	0.00128	0.0011	0.00096	0.00085
160	0.08634	0.07337	0.05547	0.03554	0.02068	0.01246	0.0083	0.00595	0.00354	0.00238	0.00173	0.00134	0.00108	0.00089	0.00076
170	0.11944	0.29976	0.05201	0.02603	0.01209	0.00708	0.0047	0.00337	0.00204	0.00142	0.00108	0.00087	0.00072	0.00061	0.00053
180	0.28543	0.35285	0.07377	0.01698	0.00672	0.00416	0.00282	0.00212	0.00147	0.00113	0.00092	0.00078	0.00067	0.00059	0.00052
190	0.35263	0.31653	0.11884	0.02702	0.00783	0.00466	0.00306	0.00233	0.00178	0.00144	0.0012	0.00103	0.0009	0.0008	0.00072
200	0.38207	0.28415	0.14404	0.04217	0.01407	0.00732	0.00488	0.0036	0.00234	0.00182	0.00152	0.00131	0.00115	0.00102	0.00092
210	**0*.38913***	0.26119	0.15111	0.07125	0.02068	0.01198	0.00834	0.006	0.00379	0.00266	0.00203	0.00166	0.00142	0.00124	0.0011
220	0.38602	0.24932	0.15793	0.09874	0.0338	0.01821	0.01171	0.00853	0.00559	0.00417	0.00326	0.00263	0.00216	0.00181	0.00155
230	0.38478	0.24842	0.17047	0.11486	0.05939	0.03293	0.01974	0.01458	0.00944	0.00678	0.00514	0.00405	0.00331	0.00279	0.00241
240	0.38418	0.25102	0.17989	0.1281	0.07668	0.05153	0.03659	0.0276	0.01827	0.01303	0.00959	0.00745	0.0061	0.00517	0.0045
250	0.34082	0.24158	0.1777	0.13807	0.08865	0.06653	0.05311	0.04361	0.03182	0.02485	0.02003	0.01655	0.0139	0.01184	0.01021

DIRECTION	DISTANCE (m)														
(DEGREES)	250	500	750	1000	1500	2000	2500	3000	4000	5000	6000	7000	8000	9000	10000
260	0.31791	0.24094	0.1787	0.13943	0.09472	0.06882	0.05284	0.04165	0.02925	0.02231	0.01769	0.01444	0.01208	0.01031	0.00894
270	0.34797	0.25149	0.1808	0.13828	0.08376	0.05479	0.03805	0.02824	0.01852	0.01359	0.01055	0.0085	0.00705	0.006	0.00522
280	0.37965	0.26327	0.18382	0.12537	0.05478	0.03417	0.02575	0.02061	0.01482	0.01166	0.00941	0.00773	0.00647	0.00548	0.00471
290	0.36908	0.29036	0.18982	0.08913	0.0359	0.02131	0.01462	0.01046	0.00629	0.00461	0.00371	0.00311	0.00268	0.00234	0.00206
300	0.3323	0.31946	0.14974	0.05063	0.01328	0.00827	0.00596	0.00481	0.00359	0.0029	0.00241	0.00204	0.00176	0.00154	0.00136
310	0.1803	0.33312	0.06849	0.01659	0.00789	0.00557	0.00438	0.00364	0.00277	0.00225	0.00189	0.00163	0.00145	0.00132	0.00123
320	0.08419	0.18988	0.01927	0.00968	0.00509	0.00355	0.00271	0.00217	0.00154	0.00118	0.00095	0.00079	0.00068	0.00059	0.00052
330	0.05837	0.03582	0.01357	0.00781	0.0048	0.00367	0.00292	0.00242	0.00181	0.00145	0.0012	0.00102	0.00089	0.00079	0.00071
340	0.04725	0.02513	0.01172	0.00705	0.00427	0.00287	0.00215	0.00174	0.00127	0.00099	0.00081	0.00068	0.00059	0.00053	0.00048
350	0.04095	0.01987	0.00905	0.00645	0.00337	0.00242	0.00182	0.00145	0.00107	0.00086	0.00072	0.00062	0.00054	0.00048	0.00043
360	0.03802	0.01727	0.0078	0.00559	0.00349	0.00222	0.00165	0.00137	0.001	0.00079	0.00065	0.00055	0.00048	0.00043	0.00038

Isopleths for Carbon Monoxide (CO) emission from proposed project



Incremental GLC's of Carbon Monoxide (CO) in mg/m³

DIRECTION	DISTANCE (m)														
(DEGREES)	250	500	750	1000	1500	2000	2500	3000	4000	5000	6000	7000	8000	9000	10000
10	0.17103	0.09714	0.03948	0.02072	0.0153	0.01217	0.00916	0.00758	0.0052	0.00362	0.00254	0.0018	0.00131	0.00101	0.00081
20	0.15866	0.09126	0.04277	0.02352	0.01233	0.00936	0.00717	0.00562	0.00384	0.00285	0.00215	0.00162	0.00122	0.00095	0.00075
30	0.14633	0.08628	0.04607	0.02556	0.00787	0.00391	0.00285	0.00211	0.00117	0.00074	0.00055	0.00045	0.00039	0.00035	0.00032
40	0.133	0.08172	0.05026	0.02495	0.01104	0.00592	0.00287	0.00154	0.00086	0.00067	0.00056	0.00048	0.00043	0.00039	0.00035
50	0.13146	0.07159	0.04649	0.0324	0.01428	0.0101	0.00734	0.00562	0.00387	0.00278	0.00201	0.00149	0.00116	0.00094	0.00078
60	0.1355	0.07115	0.04841	0.03844	0.02592	0.01623	0.01149	0.00944	0.00681	0.00505	0.00385	0.00304	0.00247	0.00205	0.00175
70	0.13516	0.07276	0.05319	0.04322	0.03147	0.02319	0.01759	0.01368	0.00852	0.00587	0.00417	0.00305	0.00232	0.00186	0.00155
80	0.14271	0.07372	0.05368	0.04266	0.02637	0.01911	0.01494	0.01255	0.00967	0.00768	0.00606	0.00485	0.00401	0.00343	0.00303
90	0.16619	0.08824	0.0629	0.0434	0.02529	0.0177	0.01149	0.00773	0.0043	0.00323	0.00262	0.0022	0.00188	0.00163	0.00143
100	0.18237	0.09853	0.06577	0.04304	0.01969	0.00965	0.00696	0.00546	0.00367	0.00274	0.00218	0.00181	0.00153	0.00132	0.00116
110	0.19772	0.10743	0.06457	0.03833	0.01435	0.00946	0.0072	0.00588	0.00419	0.00323	0.00263	0.00221	0.00188	0.00163	0.00144
120	0.21873	0.11684	0.06202	0.02562	0.01256	0.00807	0.00579	0.00449	0.00301	0.00223	0.00175	0.00143	0.0012	0.00103	0.0009
130	0.25796	0.14203	0.05413	0.02905	0.01443	0.00898	0.00651	0.00515	0.00357	0.0027	0.00213	0.00175	0.00147	0.00127	0.00111
140	0.32102	0.20606	0.0926	0.06772	0.04724	0.03712	0.03018	0.0248	0.0171	0.01233	0.00932	0.00734	0.00597	0.00501	0.00428
150	0.40808	0.30074	0.15918	0.12814	0.05432	0.03124	0.02299	0.01822	0.01258	0.00921	0.00711	0.00567	0.00463	0.00388	0.00332
160	0.53401	0.61371	0.36172	0.27766	0.17662	0.11039	0.07398	0.05261	0.03025	0.01955	0.01364	0.01007	0.00773	0.00612	0.00499
170	0.87328	3.34293	0.43024	0.22301	0.09694	0.05507	0.03512	0.02408	0.01329	0.00856	0.00611	0.00464	0.00368	0.003	0.00248
180	2.47991	3.83525	0.28772	0.09552	0.04322	0.02522	0.01481	0.00954	0.00528	0.00365	0.00283	0.00232	0.00196	0.00169	0.00148
190	3.66441	3.35538	0.47321	0.14374	0.03751	0.01616	0.00782	0.00511	0.00332	0.00247	0.00195	0.0016	0.00136	0.00117	0.00103
200	4.04019	3.01455	0.8589	0.24573	0.0871	0.04272	0.02707	0.01872	0.0126	0.01026	0.00876	0.00762	0.00671	0.00596	0.00533
210	**4.13399**	2.7979	1.29487	0.44229	0.15341	0.09503	0.06344	0.04492	0.02577	0.01707	0.01306	0.01076	0.00919	0.00801	0.00705
220	4.06012	2.64396	1.49795	0.80265	0.25747	0.13917	0.09284	0.06877	0.04468	0.03278	0.02526	0.01994	0.01596	0.01297	0.01075
230	3.9001	2.53731	1.63684	1.09665	0.49262	0.24888	0.15476	0.11203	0.06583	0.04276	0.02983	0.02218	0.01738	0.01416	0.01189
240	3.63881	2.44024	1.73474	1.21686	0.71012	0.44447	0.29933	0.21988	0.13331	0.08527	0.05965	0.04528	0.03629	0.03011	0.02557
250	2.79666	2.21767	1.71284	1.28094	0.79816	0.57883	0.43572	0.3403	0.23096	0.16942	0.13191	0.10575	0.0862	0.07128	0.05978

DIRECTION	DISTANCE (m)														
(DEGREES)	250	500	750	1000	1500	2000	2500	3000	4000	5000	6000	7000	8000	9000	10000
260	2.44007	2.27391	1.78066	1.40265	0.88926	0.61933	0.4481	0.33228	0.21741	0.15599	0.11762	0.09228	0.0747	0.06182	0.05205
270	3.20746	2.59046	1.91525	1.46433	0.86099	0.52567	0.33438	0.23687	0.14277	0.09673	0.07079	0.05458	0.04378	0.03624	0.03076
280	3.91552	2.91031	2.02102	1.35666	0.55092	0.33014	0.24004	0.18596	0.12681	0.09387	0.07177	0.0564	0.04531	0.03714	0.03091
290	3.81558	3.3275	2.15334	0.94081	0.35097	0.19283	0.11955	0.0751	0.03567	0.02244	0.01661	0.01327	0.011	0.00935	0.00809
300	3.2559	3.71359	1.6372	0.51167	0.10602	0.05473	0.03395	0.0247	0.01624	0.01206	0.00942	0.00762	0.00634	0.00539	0.00466
310	1.18323	3.73546	0.63487	0.14051	0.0595	0.04007	0.03056	0.02476	0.01788	0.01383	0.01113	0.00925	0.00784	0.00681	0.006
320	0.57419	1.11681	0.16891	0.06961	0.02898	0.01779	0.0124	0.00927	0.00597	0.00434	0.00337	0.00272	0.00225	0.00191	0.00165
330	0.34978	0.28754	0.09389	0.04767	0.026	0.0201	0.01563	0.01242	0.00847	0.00628	0.00493	0.004	0.00335	0.00287	0.0025
340	0.26118	0.18279	0.0763	0.03998	0.02311	0.01374	0.00902	0.00675	0.00461	0.00346	0.0027	0.00217	0.00178	0.0015	0.00129
350	0.20696	0.1335	0.05148	0.03802	0.01627	0.01138	0.00797	0.00576	0.00393	0.00314	0.00263	0.00225	0.00196	0.00172	0.00154
360	0.18386	0.10482	0.03923	0.02998	0.01915	0.0102	0.0064	0.00499	0.00304	0.00202	0.00151	0.00121	0.00102	0.00087	0.00076

Annexure 6: Traffic Survey Data Sheets

Name of the Road - Godhra-Modasa State Highway SH – 5 – Traffic Flow towards Godhra

	Mechanized Vehicles									Non-Mechanized Vehicles				Sub Total
	2- Wheelers			3-Wheelers	4-Wheelers									
Time	Scooters	Motor Cycles	Total	Auto	Cars/Jeep & Vans	Buses	Trucks	Tractors	Total	Bicycles	Carts	Cycle Rickshaw	Total	
8:00-8:15	26	27	**53**	9	32	21	14	8	**75**	4	-	-	**4**	
8:15-8:30	28	23	**51**	11	30	19	17	7	**73**	5	-	-	**5**	
8:30-8:45	23	21	**44**	9	29	16	20	9	**74**	9	-	-	**9**	
8:45-9:00	24	20	**44**	7	30	18	21	10	**79**	5	-	-	**5**	
9:00-9:15	28	18	**46**	11	29	18	17	9	**73**	7	-	-	**7**	
9:15-9:30	29	27	**56**	12	26	15	19	8	**68**	5	-	-	**5**	
9:30-9:45	29	21	**50**	10	29	17	18	7	**71**	8	-	-	**8**	
9:45-10:00	20	21	**41**	12	31	17	15	9	**72**	7	-	-	**7**	
10:00-10:15	23	27	**50**	11	32	18	16	8	**74**	6	-	-	**6**	
10:15-10:30	29	17	**46**	16	29	16	15	7	**67**	5	-	-	**5**	
10:30-10:45	27	18	**45**	19	30	13	17	6	**66**	9	-	-	**9**	
10:45-11:00	19	17	**36**	14	28	11	16	8	**63**	7	-	-	**7**	
11:00-11:15	20	15	**35**	16	31	13	18	10	**72**	6	-	-	**6**	
11:15-11:30	19	23	**42**	17	30	15	21	8	**74**	8	-	-	**8**	
11:30-11:45	16	23	**39**	19	28	12	18	6	**64**	5	-	-	**5**	
11:45-12:00	21	26	**47**	17	30	16	17	8	**71**	8	-	-	**8**	
Morning	**381**	**344**	**725**	**174**	**474**	**255**	**279**	**128**	**1136**	**104**	**0**	**0**	**104**	**2139**
12:00-12:15	21	18	**39**	18	21	18	16	7	**62**	7	-	-	**7**	
12:15-12:30	19	23	**42**	19	28	17	15	9	**69**	6	-	-	**6**	
12:30-12:45	17	21	**38**	21	30	12	14	7	**63**	7	-	-	**7**	
12:45-13:00	22	18	**40**	20	31	13	12	5	**61**	8	-	-	**8**	
13:00-13:15	19	23	**42**	18	29	17	16	8	**70**	6	-	-	**6**	
13:15-13:30	17	21	**38**	17	30	16	19	7	**72**	5	-	-	**5**	

13:30-13:45	20	16	**36**	19	31	15	14	6	**66**		-	-	**0**	
13:45-14:00	18	22	**40**	20	29	17	19	8	**73**	4	-	-	**4**	
14:00-14:15	17	19	**36**	23	32	16	17	6	**71**	6	-	-	**6**	
14:15-14:30	10	16	**26**	27	32	16	14	8	**70**	3	-	-	**3**	
14:30-14:45	19	24	**43**	24	30	17	12	5	**64**	2	-	-	**2**	
14:45-15:00	21	22	**43**	29	32	16	11	7	**66**	6	-	-	**6**	
15:00-15:15	16	24	**40**	28	30	14	15	5	**64**	3	-	-	**3**	
15:15-15:30	21	23	**44**	30	32	12	17	7	**68**	2	-	-	**2**	
15:30-15:45	22	16	**38**	28	29	22	12	8	**71**	6	-	-	**6**	
15:45-16:00	21	13	**34**	22	30	19	15	7	**71**	4	-	-	**4**	
Noon	**300**	**319**	**619**	**363**	**476**	**257**	**238**	**110**	**1081**	**75**	**0**	**0**	**75**	**2138**
16:00-16:15	21	18	**39**	24	32	11	13	9	**65**	7	-	-	**7**	
16:15-16:30	18	20	**38**	22	28	10	12	7	**57**	3	-	-	**3**	
16:30-16:45	22	17	**39**	23	24	15	13	5	**57**	8	-	-	**8**	
16:45-17:00	20	18	**38**	26	22	18	15	7	**62**	9	-	-	**9**	
17:00-17:15	18	14	**32**	21	27	16	13	8	**64**	3	-	-	**3**	
17:15-17:30	19	22	**41**	20	24	13	15	5	**57**	6	-	-	**6**	
17:30-17:45	20	17	**37**	19	27	17	15	8	**67**	2	-	-	**2**	
17:45-18:00	21	14	**35**	20	25	13	17	6	**61**	4	-	-	**4**	
18:00-18:15	19	16	**35**	21	23	12	14	9	**58**	8	-	-	**8**	
18:15-18:30	20	14	**34**	20	21	14	11	6	**52**	4	-	-	**4**	
18:30-18:45	15	25	**40**	19	28	12	13	7	**60**	3	-	-	**3**	
18:45-19:00	27	17	**44**	17	26	14	11	5	**56**	4	-	-	**4**	
19:00-19:15	21	16	**37**	18	22	15	10	6	**53**	9	-	-	**9**	
19:15-19:30	24	17	**41**	17	30	13	12	7	**62**	5	-	-	**5**	
19:30-19:45	19	22	**41**	15	31	11	14	6	**62**	8	-	-	**8**	
19:45-20:00	23	13	**36**	17	28	13	15	8	**64**	3	-	-	**3**	
Evening	**327**	**280**	**607**	**319**	**418**	**217**	**213**	**109**	**957**	**86**	**0**	**0**	**86**	**1969**
Total	**1008**	**943**	**1951**	**856**	**1368**	**729**	**730**	**347**	**3174**	**265**	**0**	**0**	**265**	**6246**

Name of the Road Godhra-Modasa State Highway SH – 5 – Traffic Flow Towards Modasa

	Mechanized Vehicles									Non-mechenized Vehicles				
	2- Wheelers			3-Wheelers	4-Wheelers									
Time	Scooters	Motor Cycles	Total	Auto	Cars/Jeep & Vans	Buses	Trucks	Tractors	Total	Bycles	Carts	Cycle Rickshaw	Total	
8:00-8:15	**20**	**17**	**37**	**9**	32	12	14	8	**66**	9	-	-	**9**	
8:15-8:30	**17**	**19**	**36**	**12**	31	15	16	7	**69**	10	-	-	**10**	
8:30-8:45	**18**	**16**	**34**	**10**	30	18	12	6	**66**	7	-	-	**7**	
8:45-9:00	**19**	**21**	**40**	**8**	33	21	16	8	**78**	7	-	-	**7**	
9:00-9:15	**21**	**20**	**41**	**12**	31	22	17	9	**79**	6	-	-	**6**	
9:15-9:30	**18**	**21**	**39**	**14**	34	21	18	7	**80**	5	-	-	**5**	
9:30-9:45	**21**	**15**	**36**	**16**	32	20	15	8	**75**	8	-	-	**8**	
9:45-10:00	**18**	**16**	**34**	**17**	33	21	18	9	**81**	4	-	-	**4**	
10:00-10:15	**21**	**23**	**44**	**15**	31	18	16	7	**72**	9	-	-	**9**	
10:15-10:30	**21**	**17**	**38**	**15**	29	18	17	9	**73**	5	-	-	**5**	
10:30-10:45	**20**	**22**	**42**	**19**	31	20	18	8	**77**	6	-	-	**6**	
10:45-11:00	**15**	**19**	**34**	**21**	34	18	16	9	**77**	3	-	-	**3**	
11:00-11:15	**16**	**21**	**37**	**19**	33	17	18	8	**76**	2	-	-	**2**	
11:15-11:30	**17**	**22**	**39**	**20**	34	16	18	9	**77**	9	-	-	**9**	
11:30-11:45	**16**	**21**	**37**	**12**	33	17	16	10	**76**	6	-	-	**6**	
11:45-12:00	**18**	**20**	**38**	**18**	34	19	15	9	**77**	5	-	-	**5**	
Morning	**296**	**310**	**606**	**237**	**515**	**293**	**260**	**131**	**1199**	**101**	**0**	**0**	**101**	**2143**
12:00-12:15	19	19	**38**	**19**	30	19	17	10	**76**	10	-	-	**10**	
12:15-12:30	18	21	**39**	**17**	32	20	16	8	**76**	7	-	-	**7**	
12:30-12:45	20	16	**36**	**16**	33	21	19	7	**80**	9	-	-	**9**	
12:45-13:00	20	18	**38**	**21**	32	19	17	9	**77**	5	-	-	**5**	
13:00-13:15	21	16	**37**	**19**	34	20	19	10	**83**	7	-	-	**7**	
13:15-13:30	17	22	**39**	**22**	32	22	16	7	**77**	8	-	-	**8**	
13:30-13:45	21	18	**39**	**21**	34	21	16	9	**80**	7	-	-	**7**	

13:45-14:00	18	20	**38**	**21**	35	18	15	6	**74**	5	-	-	**5**	
14:00-14:15	17	21	**38**	**19**	32	19	16	8	**75**	6	-	-	**6**	
14:15-14:30	21	16	**37**	**17**	33	21	17	6	**77**	9	-	-	**9**	
14:30-14:45	18	20	**38**	**20**	35	20	15	8	**78**	3	-	-	**3**	
14:45-15:00	22	14	**36**	**18**	32	23	19	6	**80**	7	-	-	**7**	
15:00-15:15	17	22	**39**	**20**	34	20	21	5	**80**	8	-	-	**8**	
15:15-15:30	23	11	**34**	**21**	32	18	20	7	**77**	6	-	-	**6**	
15:30-15:45	18	22	**40**	**19**	34	16	17	9	**76**	3	-	-	**3**	
15:45-16:00	17	21	**38**	**17**	30	17	19	8	**74**	6	-	-	**6**	
Noon	**307**	**297**	**604**	**307**	**524**	**314**	**279**	**123**	**1240**	**106**	**0**	**0**	**106**	**2257**
16:00-16:15	22	19	**41**	**20**	33	17	18	10	**78**	19	-	-	**19**	
16:15-16:30	21	19	**40**	**19**	32	18	20	9	**79**	8	-	-	**8**	
16:30-16:45	18	23	**41**	**22**	34	18	17	7	**76**	7	-	-	**7**	
16:45-17:00	17	21	**38**	**21**	35	17	16	8	**76**	5	-	-	**5**	
17:00-17:15	19	14	**33**	**23**	33	18	19	9	**79**	8	-	-	**8**	
17:15-17:30	17	26	**43**	**21**	35	17	16	7	**75**	5	-	-	**5**	
17:30-17:45	21	20	**41**	**20**	34	20	21	6	**81**	9	-	-	**9**	
17:45-18:00	23	18	**41**	**19**	36	17	16	8	**77**	4	-	-	**4**	
18:00-18:15	21	19	**40**	**17**	32	18	15	9	**74**	6	-	-	**6**	
18:15-18:30	18	22	**40**	**21**	36	15	19	7	**77**	9	-	-	**9**	
18:30-18:45	16	21	**37**	**20**	34	18	16	9	**77**	7	-	-	**7**	
18:45-19:00	18	22	**40**	**21**	32	21	19	8	**80**	4	-	-	**4**	
19:00-19:15	17	20	**37**	**18**	34	19	20	5	**78**	9	-	-	**9**	
19:15-19:30	21	16	**37**	**21**	33	21	18	8	**80**	7	-	-	**7**	
19:30-19:45	23	19	**42**	**17**	37	20	16	7	**80**	8	-	-	**8**	
19:45-20:00	20	18	**38**	**19**	35	19	15	9	**78**	3	-	-	**3**	
Evening	**312**	**317**	**629**	**319**	**545**	**293**	**281**	**126**	**1245**	**118**	**0**	**0**	**118**	**2311**
Total	**915**	**924**	**1839**	**863**	**1584**	**900**	**820**	**380**	**3684**	**325**	**0**	**0**	**325**	**6711**

Annexure 7: NABET Certificate of M/s Kadam Environmental Consultants

QUALITY COUNCIL® OF INDIA
Creating an Ecosystem for Quality

NABET

National Accreditation Board for Education and Training

NABET

Certificate of Accreditation

Kadam Environmental Consultants, Vadodara
871/B/3, GIDC Makarpura, Makarpura, Vadodara, Gujarat- 390010

*The organization is accredited as **Category-A** under the QCI-NABET Scheme for Accreditation of EIA Consultant Organization, Version 3: for preparing EIA-EMP reports in the following Sectors –*

S.No	Sector Description	Sector (as per)		Cat.
		NABET	MoEFCC	
1	Mining of minerals including Open cast/ Underground mining	1	1 (a) (i)	A
2	Offshore and onshore oil and gas exploration, development & production	2	1 (b)	A
3	Thermal power plants	4	1 (d)	A
4	Coal Washeries	6	2 (a)	A
5	Mineral beneficiation including pelletisation	7	2 (b)	A
6	Metallurgical industries	8	3 (a)	A
7	Petroleum refining industry	10	4 (a)	A
8	Coke oven plants	11	4(b)	A
9	Chlor-alkali industry	13	4 (d)	A
10	Soda ash Industry	14	4 (e)	A
11	Chemical Fertilizers	16	5 (a)	A
12	Pesticides industry and pesticide specific intermediates	17	5 (b)	A
13	Petro-chemical complexes	18	5 (c)	A
14	Manmade fibers manufacturing	19	5 (d)	A
15	Petrochemical based processing	20	5 (e)	A
16	Synthetic organic chemicals industry	21	5 (f)	A
17	Distilleries	22	5 (g)	A
18	Integrated paint industry	23	5 (h)	B
19	Pulp & paper industry	24	5 (i)	A
20	Oil & gas transportation pipeline	27	6 (a)	A
21	Isolated storage & handling of Hazardous chemicals	28	-	B
22	Airports	29	7(a)	A
23	All ship breaking yards including ship breaking units	30	7 (b)	A
24	Industrial estates/ parks/ complexes/ Areas, export processing zones, Special economic zones, Biotech parks, Leather complexes	31	7 (c)	A
25	Common hazardous waste treatment, storage, and disposal facilities	32	7 (d)	A
26	Bio-medical waste treatment facilities	32A	7 (da)	B
27	Ports, harbours, break waters and dredging	33	7 (e)	A
28	Highways	34	7 (f)	A
29	Common effluent treatment plants (CETPs)	36	7 (h)	B
30	Common Municipal Solid Waste Management Facility (CMSWMF)	37	7 (i)	B
31	Building and construction projects	38	8 (a)	B
32	Townships and Area Development projects	39	8 (b)	B

Note: Names of approved EIA Coordinators and Functional Area Experts are mentioned in RAAC minutes dated August 29, 2023 posted on QCI-NABET website.

The Accreditation shall remain in force subject to continued compliance to the terms and conditions mentioned in QCI-NABET's letter of accreditation bearing no QCI/NABET/ENV/ACO/23/2941 dated Oct 11, 2023. The accreditation needs to be renewed before the expiry date by Kadam Environmental Consultants, Vadodara following due process of assessment.

Sr. Director, NABET
Dated: Oct 11, 2023

Certificate No.
NABET/EIA/2326/RA 0303

Valid up to
March 19, 2026

For the updated List of Accredited EIA Consultant Organizations with approved Sectors please refer to the QCI-NABET website.

Annexure 8: NABL Certificate of M/s Kadam Labs Pvt Ltd

National Accreditation Board for Testing and Calibration Laboratories

NABL

CERTIFICATE OF ACCREDITATION

KADAM LABS PRIVATE LIMITED

has been assessed and accredited in accordance with the standard

ISO/IEC 17025:2017

"General Requirements for the Competence of Testing & Calibration Laboratories"

for its facilities at

871/B/3, GIDC MAKARPURA, VADODARA, GUJARAT, INDIA

in the field of

TESTING

Certificate Number: TC-13450

Issue Date: 09/04/2024 **Valid Until:** 08/04/2026

This certificate remains valid for the Scope of Accreditation as specified in the annexure subject to continued satisfactory compliance to the above standard & the relevant requirements of NABL.

(To see the scope of accreditation of thislaboratory, you may also visit NABL website www.nabl-india.org)

Name of Legal Entity: KADAM LABS PRIVATE LIMITED

Signed for and on behalf of NABL

N. Venkateswaran
Chief Executive Officer

Annexure 9: Undertaking by Project Proponent

Shree Khodal Waste Management

620, 6th Floor, Fortune Business Hub, Near Shell Petrol Pump,
Science City Road, Sola, Ahmedabad, Gujarat- 380060.

Date:21st June, 2025

TO WHOMSOEVER IT MAY CONCERN

We, Shree Khodal Waste Management, are proposing a new Common Biomedical Waste Treatment and Disposal Facilities (CBWTF) At Plot No.5 & 6, GIDC Shehera, Taluka Shehera, Dist. Panchmahal, Gujarat.

The proposed project is classified as Category B1 project and falls under Activity 7(da); Common Bio-medical Treatment Facility as specified in the EIA Notification, 2006, and its subsequent amendment dated 17th April, 2015.

We have appointed Kadam Environmental Consultants, an EIA Consultancy Organization, duly accredited for the Sector(s) 32 (A), Common Bio-medical Treatment Facility Category B1 by NABET, for conducting the EIA study.

We hereby give an undertaking that the data and the information given in the EIA Report and its relevant enclosures, prepared by Kadam Environmental Consultants, are factually correct to the best of our knowledge and belief.

Thanking You

Yours truly,

For, SHREE KHODAL WASTE MANAGEMENT

PARTNER

Abhishek Joshi

(Partner)

Annexure 10: Undertaking by EIA Consultant

KADAM ENVIRONMENTAL CONSULTANTS
(An ISO 9001:2015 Certified Company)

871 / B / 3, NEAR HIMALAYA MACHINERY,
GIDC MAKARPURA, VADODARA-390010.
PHONE : (0265) - 6131000/6131001
E-MAIL: kadamenviro@kadamenviro.com
www.kadmenviro.com

Ref. No. KEC/BMWKODAL/01 Date: 15th April, 2025

TO WHOMSOEVER IT MAY CONCERN

We, Kadam Environmental Consultants, have been engaged by M/s. Shree Khodal Waste Management conducting an EIA Study for the project of **"Common Biomedical Waste Treatment and Disposal Facilities (CBWTF) at Plot No.5 & 6, GIDC Shehera, Taluka & Dist. Panchmahal, Gujarat"** in compliance with the EIA Notification dated September 14, 2006 and subsequent amendment dated 17th April, 2015 and the prescribed Terms of reference (ToR) issued by SEIAA, Ministry of Environment, Forest & Climate Change- MoEF&CC. (Letter No. SEIAA/GUJ/TOR/7(da)/57/2025 dated 21st January,2025).

We hereby give an undertaking that the data and the information given in the EIA Report and its relevant enclosures, are factually correct to the best of our knowledge and belief and that the prescribed ToR issued by SEIAA, Ministry of Environment, Forest & Climate Change- MoEF&CC. (Letter No. SEIAA/GUJ/TOR/7(da)/57/2025 dated 21st January,2025) have been complied with.

Thanking You

Yours truly,

Authorised signatory

Mr. Sangram Kadam
Director,
Kadam Environmental Consultants,
871/B/3, GIDC Makarpura,
Vadodara, Gujarat, India- 390010.

Annexure 11: CPCB National Ambient Air Quality Standards

NATIONAL AMBIENT AIR QUALITY STANDARDS
CENTRAL POLLUTION CONTROL BOARD
NOTIFICATION

New Delhi, the 18th November, 2009

No. B-29016/20/90/PCI-L—In exercise of the powers conferred by Sub-section (2) (h) of section 16 of the Air (Prevention and Control of Pollution) Act, 1981 (Act No.14 of 1981), and in supersession of the Notification No(s). S.O. 384(E), dated 11th April, 1994 and S.O. 935(E), dated 14th October, 1998, the Central Pollution Control Board hereby notify the National Ambient Air Quality Standards with immediate effect, namely:-

NATIONAL AMBIENT AIR QUALITY STANDARDS

S. No.	Pollutant	Time Weighted Average	Concentration in Ambient Air		
			Industrial, Residential, Rural and Other Area	Ecologically Sensitive Area (notified by Central Government)	Methods of Measurement
(1)	(2)	(3)	(4)	(5)	(6)
1	Sulphur Dioxide (SO_2), $\mu g/m^3$	Annual*	50	20	- Improved West and Gaeke
		24 hours**	80	80	-Ultraviolet fluorescence
2	Nitrogen Dioxide (NO_2), $\mu g/m^3$	Annual*	40	30	- Modified Jacob & Hochheiser (Na-Arsenite)
		24 hours**	80	80	- Chemiluminescence
3	Particulate Matter (size less than 10µm) or PM_{10} $\mu g/m^3$	Annual*	60	60	- Gravimetric - TOEM
		24 hours**	100	100	- Beta attenuation
4	Particulate Matter (size less than 2.5µm) or $PM_{2.5}$ $\mu g/m^3$	Annual*	40	40	- Gravimetric - TOEM
		24 hours**	60	60	- Beta attenuation
5	Ozone (O_3) $\mu g/m^3$	8 hours**	100	100	- UV photometric - Chemilminescence
		1 hour**	180	180	- Chemical Method
6	Lead (Pb) $\mu g/m^3$	Annual*	0.50	0.50	- AAS /ICP method after sampling on EPM 2000 or equivalent filter paper - ED-XRF using Teflon filter
		24 hours**	1.0	1.0	
7	Carbon Monoxide (CO) mg/m^3	8 hours**	02	02	- Non Dispersive Infra Red (NDIR) spectroscopy
		1 hour**	04	04	
8	Ammonia (NH_3) $\mu g/m^3$	Annual*	100	100	-Chemiluminescence -Indophenol blue method
		24 hours**	400	400	

(1)	(2)	(3)	(4)	(5)	(6)
9	Benzene (C_6H_6) $\mu g/m^3$	Annual*	05	05	- Gas chromatography based continuous analyzer - Adsorption and Desorption followed by GC analysis
10	Benzo(a)Pyrene (BaP) - particulate phase only, ng/m^3	Annual*	01	01	- Solvent extraction followed by HPLC/GC analysis
11	Arsenic (As), ng/m^3	Annual*	06	06	- AAS /ICP method after sampling on EPM 2000 or equivalent filter paper
12	Nickel (Ni), ng/m^3	Annual*	20	20	- AAS /ICP method after sampling on EPM 2000 or equivalent filter paper

* Annual arithmetic mean of minimum 104 measurements in a year at a particular site taken twice a week 24 hourly at uniform intervals.

** 24 hourly or 08 hourly or 01 hourly monitored values, as applicable, shall be complied with 98% of the time in a year. 2% of the time, they may exceed the limits but not on two consecutive days of monitoring.

Note. — Whenever and wherever monitoring results on two consecutive days of monitoring exceed the limits specified above for the respective category, it shall be considered adequate reason to institute regular or continuous monitoring and further investigation.

SANT PRASAD GAUTAM, Chairman
[ADVT-III/4/184/09/Extv.]

Note: The notifications on National Ambient Air Quality Standards were published by the Central Pollution Control Board in the Gazette of India, Extraordinary vide notification No(s). S.O. 384(E), dated 11th April, 1994 and S.O. 935(E), dated 14th October, 1998.

Printed by the Manager, Government of India Press, Ring Road, Mayapuri, New Delhi-110064
and Published by the Controller of Publications, Delhi-110054.

Annexure 12: Willingness Letter for Disposal of Hazardous Waste to TSDF facility

Varni Enviro Care Pvt Ltd

F.F. Aarohi, Nr. Nikky Ford, Opp. Karnavati Club S.G. Highway Road Ahmedabad - 380015
Email: varnienvirocare@gmail.com

Reference: VECPL/001/BMW/Khodal **Date: 17/04/2025**

Subject: Willingness letter to accept the hazardous waste generated from the M/s. Shree Khodal Waste Management, Shehera for their proposed Greenfield project of Common Bio-medical waste Treatment and Disposal facility at Plot. No.5 & 6, GIDC Shehera, Taluka & Dist. Panchmahal, Gujarat

Dear Sir,

With reference to the above subject matter, we M/s. Varni Enviro Care Private Limited located at Survey No. 283, village Surai, Taluka chotila, District Surendranagar having Corporate office at F.F. Aarohi, Nr. Nikki Ford, Opp. Karnavati Club, S.G Highway road, Ahmedabad – 380015 hereby showing our willingness to accept the Incineration Ash, ETP Sludge, Encapsulated waste generated from proposed Greenfield project of Common Bio-medical waste Treatment and Disposal facility at Plot. No. 5 & 6, GIDC Shehera, Taluka & Dist. Panchmahal, Gujarat

Sr. No.	Name	Source of generation	Category and Schedule as per HW Rules	Quantity (MT/Annum)
1	Incineration Ash	Incinerator	37.2	10
2	ETP Sludge	ETP	35.3	3
3	Encapsulated Waste	Process areas	35.3	3

As soon as our TSDF site facility namely M/s. Metabolt Energy Private Limited located at Survey/Block No. 47, Village Siludi, Taluka Valia, District Bharuch, Gujarat comes into operation, which is also nearby to your proposed project site, we immediately shift your membership to M/s. Metabolt Energy Private Limited.

Thanks for the co-operation,
Thank You,
Yours Faithfully,

For, **M/s. Varni Enviro Care Private Limited**

(Authorized Signatory)
Director

***Annexure 13*: CARBON FOOT PRINT**

INTRODUCTION

The Carbon Footprint (CF) is a parameter that represents the total emissions of CO2 and other greenhouse gases (GHG), expressed in mass of CO2 equivalent, caused directly or indirectly by a product, organization, service or event. The carbon footprint is important to try to quantify the main emission sources and to have a complete picture of the impact of an organization on climate change. It is also the first step to carry out a plan to reduce GHG emissions. The carbon footprint of an organization intends to quantify the GHG emissions implied by the activity flows of an interconnected entity or group of entities.

The calculation of the carbon footprint is more than GHG emissions data; it allows to identify the main GHG emission sources of an organization and to have a global image of its impact on climate change. Furthermore, it constitutes a necessary base to address and continue over time actions to reduce this impact. Therefore, although the calculation of the carbon footprintm by an organization is voluntary, its assessment has an important strategic aspect and involves a large number of environmental, economic and reputational benefits:

- Knowledge about the environmental impact of an organization and its contribution to climate change is enriched.
- It is an advance to future regulations and policies on climate change.
- It means more transparent communication about the company's commitments to sustainable development and, more specifically, the reduction of GHG emissions.

Types of Carbon Footprint

Organizational Carbon Footprint: Organizational Assessments involve quantifying the direct and indirect emissions associated with an organization. Direct emissions are those from the combustion of fossil fuels in equipment or vehicles owned by the organization, and also escaped greenhouse gases from the organization's facilities (e.g. refrigerant gas losses from air conditioning systems). Indirect emissions are all emissions which are the result of an organization's activities, but which are emitted from facilities or vehicles owned by third parties (e.g. an organization's electricity consumption indirectly causes emissions at the electricity generating plant, which is owned by a third party).

Other types of Carbon Footprints: Assessments can be undertaken for events, services, web sites, journeys, or even, for example, comparing the emissions from sending a letter by post with those associated with sending the letter by email. To quantify such activities, the principles are the same: inclusion of the direct and indirect emissions for a defined scope of activity.

Intended user

The client is intended user of this report. The first step towards managing GHG emissions is to measure them. This report provides essential quantitative information on GHG emissions of M/s. En-Cler Bio-Medical Waste Pvt. Ltd. This report helps organization to enhance the environmental impacts of GHG quantification/removal which further helps to reduce the GHG emissions as measurement leads to management.

Standards/ guidelines used This report is prepared in accordance with the principles set out by GHG Protocol for the quantification and reporting of GHG emissions and removals. GHG protocol establishes comprehensive global standardized frameworks to measure and manage greenhouse gas (GHG) emissions from private and public sector operations, value chains and mitigation actions. These standard details the principles and requirements for the design, development and management of GHG inventories for companies and organizations, and for the reporting of these inventories. It also includes the requirements to determine the GHG emission limits, quantify the emissions and removals of the organization's gases and identify the activities or specific actions of the company in order to improve the management of these gases. GHG Protocol focuses mainly on the facilities and activities subject to the entire organization, conducting a study of GHG emissions associated with the processes carried out by the company, leaving open the possibility of including scope 3 sources.

GHG Protocol

GHG Protocol establishes comprehensive global standardized frameworks to measure and manage GHG emissions from public and private sector operations, value chains and mitigation actions. The emissions are associated with the company's

operations and are categorized as direct and indirect emissions. These direct and indirect emissions are further sub divided into three scopes which are described below:

Scope 1- Direct GHG emissions It includes sources that are owned or controlled by the company, for example, emissions from combustion in owned or controlled boilers, furnaces, vehicles, etc.; emissions from chemical production in owned or controlled process equipment. It also includes emissions from sources such as refrigerant gas and CO2 fire extinguishers.

Scope 2- Indirect GHG emissions It includes GHG emissions from the generation of purchased electricity consumed by the company. Purchased electricity is defined as electricity that is purchased or brought into the organizational boundary of the company.

Scope 3- Indirect GHG emissions Scope 3 is an optional reporting category that allows for the treatment of all other indirect emissions. Scope 3 emissions are a consequence of the activities of the company, but occur from sources not owned or controlled by the company. Some examples of scope 3 activities are extraction and production of purchased materials; transportation of purchased fuels; and use of sold products and services, disposal of wastes, employee commuting, etc.

Objectives of Carbon Footprint Study

- To identify the main GHG emission sources of an organization.
- To quantify the emissions in each stage of the process due to fuel consumption, electricity consumption, water consumption, waste water generation and solid waste generation, etc.
- To identify the hotspots of environmental emissions and suggest the reduction measures for the same.
- To find out carbon sequestration mitigations.

Methodology

Definition of Calculation Boundaries

To start measuring GHG emissions, all the units and departments of the organization will be included in the assessment of emissions.

In setting organizational boundaries, a company selects an approach for consolidating GHG emissions and then consistently applies the selected approach to define those businesses and operations that constitute the company for the purpose of accounting and reporting GHG emissions. For corporate reporting of GHG emissions, two distinct approaches can be taken: Equity Share Approach and Control Approach. The equity shares approach accounts for emissions based on financial ownership or economic interest in an operation. The control approach accounts for emissions based on operational or financial control of an operation. The calculation boundaries are discussed below.

Selection of Conversion Factors

Conversion factors facilitate the calculation of CO2 emissions by multiplying activity data, expressed in their respective international units and converted into kilograms of carbon dioxide equivalent (Kg CO2eq.). CO2eq. is the universal unit of measurement to indicate the global warming potential (GWP) of GHGs, expressed in terms of the GWP of one unit of carbon dioxide. We consulted numerous reference sources to select the most appropriate conversion factors, considering certain selection criteria such as accessibility, consistency, and transparency in revisions and updates. Every year, during the first months of the year, conversion factors are reviewed and updated.

GHG (t CO2 eq.) = aspect quantity data x conversion factor

Application of Conversion Factors/ Emission Factors Most conversion factorswere used directly as defined in the chosen source. In certain instances, suitable factors needed to be calculated specifically, e.g. using average values when slight differences exist among the sources (e.g. hotel stays, rail travel, car trips, and the like) or using ad HOC factors that can be calculated for specific aspects and crosschecked against calculators from relevant sources (e.g. air travel).

Emission Factor: An emission factor is a coefficient which allows converting activity data into GHG emissions. It is the average emission rate of a given source, relative to units of activity or process/processes.

The carbon foot print emissions for the proposed project is estimated as under:

The project involves the following processes:

- Incineration Plant – 720 MT per annum.
- Autoclaving and Shredding – 180 MT per annum

Carbon footprint estimation for Incineration due to the release of greenhouse gases (CO2, CO, dioxins, furans) and particulate matter indicates a value of 1074 kg CO2e/ton.

Similarly Autoclaving and shredding can contribute to a carbon foot print value of 569 kg CO2e/ton.

Further carbon foot print of product Recycling has a value as low as 30 kg CO2e/ton.

The carbon foot print of the site processes and recycling of wastes is estimated as 720 x 1.074 + 180 x 0.599 = **881.1 MT CO2e per annum**

Carbon sequestration: Tree plantation - 1300 trees X 12.91 Kg CO2e per annum = 16,783 Kgs = 16.8 MT CO2e per annum.

Annexure 14: Undertaking of No conflict with M/s. Samvedna Biomedical Waste Management Facility

Shree Khodal Waste Management

620, 6th Floor, Fortune Business Hub, Near Shell Petrol Pump,
Science City Road, Sola, Ahmedabad, Gujarat- 380060.

Date:21st June, 2025

UNDERTAKING

TO WHOMSOEVER IT MAY CONCERN

We, **M/s. Shree Khodal Waste Management**, propose to establish a Common Biomedical Waste Treatment and Disposal Facility (CBWTF) at Plot No. 5 & 6, GIDC Shehera, Taluka Shehera, Dist. Panchmahal, Gujarat - 389210.

We acknowledge the presence of an existing CBWTF operated by M/s. Samvedna B.M.W. Incinerator, located at Chandrapura Industrial Estate, Taluka Halol, Dist. Panchmahal - 389350, within a 75 km radius of our proposed site. We hereby undertake that our operational areas will not overlap or conflict with those of the existing facility. On mutual understanding, our operations will cater to Panchmahal, Dahod, and Mahisagar districts.

We hereby give undertaking that the above mentioned information submitted are true and correct to the best of our knowledge and belief.

Thanking You

Yours truly,

For, SHREE KHODAL WASTE MANAGEMENT

PARTNER

Abhishek Joshi

(Partner)

Annexure 15: Undertaking for Installation of Continous Online Monitoring System

Shree Khodal Waste Management

620, 6th Floor, Fortune Business Hub, Near Shell Petrol Pump,
Science City Road, Sola, Ahmedabad, Gujarat- 380060

Date: 30th April, 2025

UNDERTAKING

To Whom So Ever It May Concern

We M/s. Shree Khodal Waste Management, do hereby undertake that our company will install, commission, and maintain an online monitoring system specifically designed to continuously measure and record parameters such as Total Dioxins and Furans from the stack attached to our incinerator. This installation will be carried out in strict adherence to the guidelines and standards prescribed by the Central Pollution Control Board (CPCB) and other relevant regulatory authorities.

We further undertake that the online monitoring system will be kept in proper working condition at all times, ensuring uninterrupted and accurate data collection. The emission data generated by the system will be transmitted in real-time to the designated regulatory portals or authorities, as mandated, for regular review and compliance verification. We also commit to conducting periodic calibration and maintenance of the monitoring equipment as per manufacturer recommendations and regulatory requirements, to ensure the reliability and integrity of the data.

For SHREE KHODAL WASTE MANAGEMENT

PARTNER

Abhishek Joshi,
Partner
Shree Khodal Waste Management

Annexure 16: Land use and Land Cover Classification System and Field Visit Photographs

The definitions for the first and second level of classification are provided in the following sections.

Built up Land or Habitation

It is defined as an area of human habitation developed due to non-agricultural use and that which has a cover of buildings, transport, communication utilities in association with water vegetation and vacant lands.

Kadam has chosen to further define this landuse category into additional categories, namely residential and industrial.

Residential / Commercial

Structures used by humans for living and working, but not including structures used exclusively for manufacturing.

Industrial

Structures used for manufacturing products.

Agricultural Land

It is defined as the land primarily used for farming and for production of food, fibre, and other commercial and horticultural crops. It includes land under crops (irrigated and un-irrigated), fallow land and plantations. These are further defined.

Crop Land

It includes those lands with standing crop (per se) as on the date of the satellite imagery. The crops may be of either Kharif (June-September) or Rabi (October – March) or Kharif Rabi seasons.

Fallow Land

It is described as agricultural land which is taken up for cultivation but is temporarily allowed to rest un-cropped for one or more seasons, but not less than one year. These lands are particularly those which are seen devoid of crops at the time when the imagery is taken during Rabi and Kharif.

Plantations

Plantations are described as an area under agricultural tree crops (for e.g. mango plantations) planted adopting certain agricultural management techniques. It includes tea, coffee, rubber, coconut, arecanut, citrus, orchards and other horticultural nurseries.

Forests

It is an area (within the notified forest boundary) bearing an association predominantly of trees and other vegetation types capable of producing timber and other forest produce. Forests can be further divided into sub-categories mentioned as follows.

Evergreen / Semi-Evergreen Forests

These are forests which comprise thick and dense canopy of tall trees, which predominantly remain green throughout the year. Such forests include both coniferous and tropical broad-leaved evergreen trees. Semi-evergreen forests are often a mixture of both deciduous and evergreen trees but the latter predominate.

Deciduous Forests

These are described as forests which predominantly comprise of deciduous species and where the trees shed their leaves once in a year.

Degraded Forest

It is described as a forest where the vegetative (crown) density is less than 20% of the canopy cover. It is the result of both biotic and abiotic influences.

Scrub (Forest)

All lands with poor tree growth mainly of small or stunted trees having canopy density less than 10 per cent. Scrub is a stunted tree or bush/shrub.

Open forest

All lands with tree cover of canopy density between 10 to 40 percent.

Dense or Close Forest

All lands with tree cover of canopy density of 10 percent and above.

Forest Blank

A forest blank is an opening amidst forests without any tree cover. It includes openings of assorted size and shapes as seen on the imagery.

Forest Plantations

It is described as an area of trees of species of forestry importance and raised on notified forest lands. It includes eucalyptus, casuarinas, bamboo, etc.

Mangroves

Mangroves are described as a dense, thicker or woody, aquatic vegetation or forest cover occurring in tidal waters near estuaries and along the confluence of delta in coastal areas. Mangroves include species of the genera Rhizophora and Aviccunia.

Wastelands

Wastelands are described as degraded lands which can be brought under vegetative cover with reasonable water and soil management or on account of natural causes. Wastelands can result from internal / imposed constraints such as by location, environment, chemical and physical prosperities of the soil or financial or management constraints.

Different types of wastelands include salt-affected lands, waterlogged lands, marshy/swampy lands, mudlands, gullied / ravenous lands, land with or without scrub, sandy areas and barren rocky / stony waste / sheet rock areas.

Salt-Affected Land

The salt-affected land is generally characterized as the land that has adverse effects on the growth of most plants due to the action or presence of excess soluble or high exchangeable sodium. Alkaline land has an exchangeable sodium percentage (ESP) of about 15, which is generally considered as the limit between normal and alkali soils. The predominant salts are carbonates and bicarbonates of sodium. Coastal saline soils may be with or without ingress or inundation by seawater.

Waterlogged Land

Waterlogged land is that land where the water is at/or near the surface and water stands for most of the year. Such lands usually occupy topographically low-lying areas. It excludes lakes, ponds and tanks or in the context of the Wetlands (Conservation and Management Rules, 2010) such areas that could be considered as 'protected wetlands'.

Marshy / Swampy Land / Mud Land Area

Marshy land is that which is permanently or periodically inundated by water and is characterized by vegetation, which includes grasses and weeds. Marshes are classified into salt/brackish or fresh water depending on the salinity of water. These exclude Mangroves.

Gullied / Ravenous Land

The 'gullies' are formed as a result of localized surface runoff affecting the friable unconsolidated material in the formation of perceptible channels resulting in undulating terrain. The gullies are the first stage of excessive land dissection followed by their networking which leads to the development of ravenous land. The word 'ravine' is usually associated not with an isolated gully but a network of deep gullies formed generally in thick alluvium and entering a nearby river, flowing much lower than the surrounding high grounds. The ravines are extensive systems of gullies developed along river courses.

Land with / without Scrub

They occupy (relatively) higher topography like uplands or high grounds with or without scrub. These lands are generally prone to degradation or erosion. These exclude hilly and mountainous terrain.

Sandy Area (Coastal and Desertic)

These are the areas, which have stabilized accumulations of sand in-site or transported in coastal riverine or inland (desert) areas. These occur either in the form of sand dunes, beaches, channel (river/stream) islands, etc.

Barren Rocky / Stony Waste / Sheet Rock Area

It is defined as the rock exposures of varying lithology often barren and devoid of soil cover and vegetation and not suitable for cultivation. They occur amidst hill forests as openings or scattered as isolated exposures or loose fragments of boulders or as sheet rocks on plateau and plains. It includes quarry or gravel pit or brick kilns.

Water Bodies

It is an area of impounded water, areal in extent and often with a regulated flow of water. It includes man-made reservoirs/lakes/tank/canals, besides natural lakes, rivers/streams and creeks.

River / Stream

It is a course of flowing water on the land along definite channels. It includes from a small stream to a big river and its branches. It may be perennial or non-perennial.

Reservoir / Lakes / Ponds / Tanks

It is a natural or man-made enclosed water body with a regulated flow of water. Reservoirs are larger than tanks/lakes and are used for generating electricity, irrigation and for flood control. Tanks are smaller in areal extent with limited use than the former. Canals are inland waterways used for irrigation and sometimes for navigation.

Others

It includes all those landuse and landcover classes which can be treated as miscellaneous because of their nature of occurrence, physical appearance and other characteristics.

Shifting Cultivation

It is the result of cyclic land use practice of felling of trees and burning of forest areas for growing crops. Such lands are also known as jhoom lands and cultivation called jhoom cultivation.

Grassland / Grazing Land

It is an area of land covered with natural grass along with other vegetation, often grown for fodder to feed cattle and other animals. Such lands are found in river beds, on uplands, hill slopes, etc. Such lands can also be called as permanent pastures or meadows. Grazing lands are those where certain pockets of land are fenced for allowing cattle to graze.

Snow Covered / Glacial Area

These are snow-covered areas defined as a solid form of water consisting of minute particles of ice. It includes permanently snow covered areas as on the Himalayas. Glacier is a mass of accumulated ice occurring amidst permanently snow-covered areas.

Ports/ Harbours

A harbour is a place where ships may shelter from the weather or are stored. Harbors can be man-made or natural. A man-made harbor will have sea walls or breakwaters and may require dredging. A natural harbor is surrounded on most sides by land.

A port is a man-made coastal or riverine facility where boats and ships can load and unload. It may consist of quays, wharfs, jetties, piers and slipways with cranes or ramps. A port may have magazine buildings or warehouses for storage of goods and a transport system, such as railway, road transport or pipeline transport facilities for relaying goods inland. In short a port is used mainly for marine trading and a harbour is used as a parking space or a storage space for ships

Vegetation Cover

It is a land area predominantly covered with vegetation and is not part of Protected / Reserved Forests. This includes scrub, open and close vegetation.

Scrub

It is described as a vegetative cover having density less than 10% of the canopy cover. Scrub is area covered by grasses or herbs and scattered tree or shrubs.

Open Vegetation

This is categorized based on the vegetation cover having density between10% to 40% of the canopy cover.

Dense or Close Vegetation

This is categorized based on the vegetation cover having density greater than 40% of the canopy cover

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EXECUTIVE SUMMARY

M/s Shree Khodal Waste Management is a Partnership firm, established in 2023, to get engaged in Biomedical Waste Management in a sustainable manner as per BMW Rules 2016 including Collection, Segregation, Transportation, Handling, Storage and Treatment, Processing and Disposal of Biomedical Waste generated in an area of 75 km radius of Panchmahal, Mahisagar and Dahod District.

Proposed project of setting up of the Common Bio-medical Waste Treatment Facility for treatment of 100 Kg per hour-based bio medical incineration project, includes Autoclave, Shredder, Storage and Effluent Treatment Facility. The proposed site is located at Plot No. 5 & 6, GIDC Shehera, Taluka & district-Panchmahal, Gujarat-389210. Total area of the project is 5678.68 sq. m.sqm. Total project cost is 4.87 Cr.

The Proposed project of CBWTF falls under Category B, schedule 7(da) as per the EIA notification 14th Sep, 2006 and subsequent amendments dated 1st December, 2009 & 17th April, 2015.

As per the Agro-Climatic Zones of India, the study area is a part of Gujarat Plains and Hills Region (XIII) and Sub Zone Middle Gujarat. The district has semi-arid climate with annual rainfall of 904 mm, and soil type is medium black.

It is observed that, there is no Wildlife Sanctuary, Biosphere Reserve, Tiger / Elephant Reserve, Migratory Corridors and Ramsar Sites/National Wetland falls in the project study area of 10 km radius., except reserved forests (06 nos).

The biological environment is an important component of the environment of any area. Areas under development have substantial impact on biodiversity. Therefore, Baseline information/data on the flora and fauna of the particular area is important for inferring the impact of a proposed project. The ultimate aim of an ecological assessment is to understand the biological environment of the project area to predict likely impacts on surrounding environment and to take mitigatory actions if needed.

Primary data on floral and faunal diversity has been collected through comprehensive field surveys. For conducting primary studies, the WCP area has been divided into two parts- The Core Zone (area within the project bundary) and the Buffer Zone (10 km radius area). The primary studies were focused on evaluating wildlife habitat (forests, water bodies, natural/ man-made vegetation areas, etc.) conditions and qualitative assessment (enumeration of species) of flora and fauna.

Overall 14 species of common flora including 1 tree, 5 shrubs, 6 herbs & 2 grass species were recorded from the core zone of the study area during the survey.

While in buffer zone, total 183 species of flora were reported from the study area. Trees were dominant life form and reported with maximum 103 species, followed by 28 species of shrubs, 22 species of herbs, 16 species of grasses and 14 species of climbers.

Among faunal species, no herpetofauna and mammals was observed from the project site during the survey. Total 03 avifaunal species were reported from the project site which includes i.e. Blue rock pigeon, Green bee eater, and Red-vented lawing.

Whereas from the buffer zone of the proposed site; a total of 130 species were reported based on field observations, literature survey and consultation with local people including 18 species of mammals, 06 species of reptiles, 96 species of birds, 05 species of butterflies and 10 species of fishes.

In core zone / project site, no Shcedule I species was reported during survey. However, from the buffer zone, total 14 schedule I species have been documented comprising 09 species of Mammal (Golden Jackal (Canis aureus), Porcupines (Hystrix indica), Jungle Cat (Felius chaus), Common Mongoose (Herpeste edwardsii), Indian Striped Hyaena (Hyaena hyaena), Sloth Bear (Melursus ursinus), Northern Red Muntjac (Muntiacus vaginalis), Common Indian Leopard (Panthera pardus), Indian Fox (Vulpes bengalensis)), 03 species of reptiles (Cobra (Naja naja), Checkered keel black (Fowlea piscator), Rat Snake (Ptyas mucosa)) and 07 species of birds (White-eyed Buzzard

(Butastur teesa), Grey Jungle Fowl (Gallus sonneratii), White-rumped vulture (Gyps bengalensis), Booted Eagle (Hieraaetus pennatus), Indian Peafowl (Pavo cristatus), Yellow-crowned woodpecker (Leiopicus mahrattensis), Crested Serpent Eagle (Spilornis cheela)) from the project study area, based on field observations, literature survey and consultation with local people and Forest officials. These species will require proper conservation measures. Among recorded faunal species, none of the species can be designated as an endemic.

Mitigation measures are suggested to minimize intensity of impacts. Thick greenbelt plantation inside and outside the project premises has suggested for mitigation of negative impacts and improving biodiversity and ecological status of the project area. Peripheral plantation with appropriate dust capturing / Gas tolerant / absorbing/ noise absorbing species is suggested before start any construction activity.

Further, under WCP, awareness programme, plantation for habitat improvement and construction of water holes are proposed to minimize the impacts of the proposed project in the surrounding area.

The total cost of this plan is **Rs.10 Laks (Rs. Ten Lakh Only)** for a period of 5 years.

INTRODUCTION

1.1 Detailed description of the project or activity and its potential impacts on the environment and wildlife in the area.

A bio-medical waste treatment and disposal facility is a set-up where biomedical waste generated from health care facilities is imparted necessary treatment to reduce adverse impacts on the human health and environment. Bio-medical waste is generated during the diagnostic procedures, treatment or immunization of human beings or animals, research activities pertaining to the production or testing biological. Biomedical waste is of hazardous category and if not managed properly, it may cause serious community health hazards. Therefore, Ministry of Health Government of India has made it mandatory for each and every health care facility to manage the waste of this category.

M/s. Shree Khodal Waste Management is a Partnership firm, established in 2023, to get engaged in Biomedical Waste Management in a sustainable manner as per BMW Rules 2016 including Collection, Segregation, Transportation, Handling, Storage and Treatment, Processing and Disposal of Biomedical Waste generated in an area of 75 km radius of Panchmahal, Mahisagar and Dahod District.

Proposed project of setting up of the Common Bio-medical Waste Treatment Facility for treatment of 100 Kg per hour-based bio medical waste management project, includes Incinerator, Autoclave, Shredder, Storage and Effluent Treatment Facility. The proposed site is located at Plot No.5 & 6, GIDC Shehera, Taluka & district-Panchmahal, Gujarat-389210. Total area of the project is 5678.68 sq. m.sqm. Total project cost is 4.87 Cr.

The Proposed project of CBWTF falls under Category B, schedule 7(da) as per the EIA notification 14th Sep, 2006 and subsequent amendments dated 17th April, 2015.

As per the Agro-Climatic Zones of India, the study area is a part of Gujarat Plains and Hills Region (XIII) and Sub Zone Middle Gujarat. The district has semi-arid climate with annual rainfall of 904 mm, and soil type is medium black (CPCB, 2000[1]).

1.1.1 Potential Impacts of the Project

The proposed project involves the construction of biomedical waste treatment facility. Inevitably, this development will lead to localized disturbances, and potential pollution affecting wildlife habitats and congregation sites, both during the construction and operational phases. Efforts must be directed toward minimizing these disturbances, particularly in ecologically habitats, scrub forests, and grasslands, which serve as habitat for resident and migratory wildlife species.
The anticipated ecological impacts of the construction and operational phases of the proposed project include:

Collision Risk and Barrier Effects:

- Infrastructure-associated hazards, particularly risks posed by power lines to avian species, especially migratory and soaring birds.

Hence, looking at the probable impacts of the proposed project on biodiversity, the further study is required to understand the status of the wildlife population in the project area, the scale of disturbances on wildlife behavior due to changes in landscape and infrastructure set-up in the project areas, changes in habitat structure and function (food resources, breeding habitat and micro-climate) and cumulative impact of barrier effect by the infra-structure set-up on migratory/soaring bird population and faunal species present in the area.

[1] Guidelines for developing geenbelts, Programme Objective Series, Published by CPCB, MoEFCC, GoI,Parivesh Bhawan, East Arjun, Delhi-110032

Thus, based on the above understanding of the probable adverse impact of proposed projects on biodiversity, mitigation measures to be developed to conserve wildlife population. The mitigation measures should be associated with two primary lines of action.

1. Measures to control pollution such as oil spilling, light, noise, and vibration.
2. Habitat-based mitigation for habitat lost due to development to address one-time "displacement impacts"
3. Improvement of breeding ground through habitat restoration for targeted wildlife populations to address the impact associated with the project operation.

1.1.2 Ecological Sensitivity/ Habitats of the Study Area

Notified/protected ecologically sensitive areas

The project study area of 10 km does not include any national parks, tiger or elephant reserves, migration corridors, except reserved forests. Thus there is no significant impact on Environment and Wildlife.

Details of sensitive ecological attributes are given in ***Table 0-1.***

Table 0-1: Sensitive Ecological Features of the Study Area

Sr. No.	Sensitive Ecological Features	Name of feature / Location	Distance (km)	Direction	Reason of Significance
1	Ramsar wetland (Ramsar Convention)	--	--	--	Not applicable
2	Wetlands as per National Wetlands Atlas	--	--	--	Not applicable
3	National park	--	--	--	Not applicable
4	Wildlife sanctuary	--	--	--	Not applicable
5	Tiger reserve	--	--	--	Not applicable
6	Biosphere reserve	--	--	--	Not applicable
7	Elephant reserve	--	--	--	Not applicable
8	Important Bird Areas (IBAs)	--	--	--	Not applicable
9	Eco-sensitive zone (EP Act)	--	--	--	Not applicable
10	Forest (Forest Conservation Act) (including protected forests and reserved forests)	R.F between Zoz and Patiya	0.25	SSE	Reserved Forest
		R.F near Dokaliya	1.4	E	Reserved Forest
		R.F near Akediya village	2.56	W	Reserved Forest
		RF between Bamroli and Varial Village	2.87	W	Reserved Forest
		R.F near Vijapur Village	3.0	ESE	Reserved Forest
		R.F near Bhadrala	4.53	NE	Reserved Forest
		R.F. between Palikhanda & Hanselav	3.46	N	Reserved Forest
		R.F near Chopda khurd village	8.02	E	Reserved Forest
		R.F near Mithapur village	4.10	WNW	Reserved Forest
		R.F near Panam Resevior	8.82	NE	Reserved Forest
		R.F near Khatakpur Village	9.35	NE	Reserved Forest

Sr. No.	Sensitive Ecological Features	Name of feature / Location	Distance (km)	Direction	Reason of Significance
		R.F between Khatakpur and Sagrada Village	8.01	NNE	Reserved Forest
		R.F between Sh-05 road & Bhotwa village	6.60	N	Reserved Forest
		R.F between Sh-05 road & Bhotwa village	6.43	N	Reserved Forest
		R.F between Sh-05 road & Bhotwa village	7.20	N	Reserved Forest
		R.F between Sh-05 road & Bhotwa village	7.34	N	Reserved Forest
		R.F near Gamanbariya na Muwada	5.92	NNW	Reserved Forest
		R.F near Jhardi	7	NNW	Reserved Forest
		R.F near Jhepdi	8.95	NW	Reserved Forest
		R.F near Mithali Village	8.23	S	Reserved Forest
		R.F near Shekhpur Village	6.8	NNE	Reserved Forest
		R.F between Palikhanda & Hanselav village	3.36	NNW	Reserved Forest
11	Wildlife corridor	--	--	--	Not applicable
12	Coastal zones	-	-	-	--
13	Areas used by protected, important or sensitive species of flora or fauna for breeding, nesting, foraging, resting, over wintering, migration	R.F between Zoz and Patiya	0.25	SSE	Reserved Forest
		R.F near Dokaliya	1.4	E	Reserved Forest
		R.F near Akediya village	2.56	W	Reserved Forest
		RF between Bamroli and Varial Village	2.87	W	Reserved Forest
		R.F near Vijapur Village	3.0	ESE	Reserved Forest
		R.F near Bhadrala	4.53	NE	Reserved Forest
		R.F. between Palikhanda & Hanselav	3.46	N	Reserved Forest
		R.F near Chopda khurd village	8.02	E	Reserved Forest
		R.F near Mithapur village	4.10	WNW	Reserved Forest
		R.F near Panam Resevior	8.82	NE	Reserved Forest
		R.F near Khatakpur Village	9.35	NE	Reserved Forest
		R.F between Khatakpur and Sagrada Village	8.01	NNE	Reserved Forest

Sr. No.	Sensitive Ecological Features	Name of feature / Location	Distance (km)	Direction	Reason of Significance
		R.F between Sh-05 road & Bhotwa village	6.60	N	Reserved Forest
		R.F between Sh-05 road & Bhotwa village	6.43	N	Reserved Forest
		R.F between Sh-05 road & Bhotwa village	7.20	N	Reserved Forest
		R.F between Sh-05 road & Bhotwa village	7.34	N	Reserved Forest
		R.F near Gamanbariya na Muwada	5.92	NNW	Reserved Forest
		R.F near Jhardi	7	NNW	Reserved Forest
		R.F near Jhepdi	8.95	NW	Reserved Forest
		R.F near Mithali Village	8.23	S	Reserved Forest
		R.F near Shekhpur Village	6.8	NNE	Reserved Forest
		R.F between Palikhanda & Hanselav village	3.36	NNW	Reserved Forest
		Waghjipura Pond	0.13	W	Nearest pond west of project site
		Zoz Pond	0.65	SSW	Pond Downstream of project site
		Dodiyani (Dalwada)	1.37	SE	Pond within study area – cross stream
		Shehera Pond	1.18	N	North of project site having major habitation within study area.
		Patiya Village Pond	0.76	ENE	Pond Upstream of project site
		Panam Canal	0.95	W	Water Supply Canal for Irrigation purpose in study area
		Panam Dam (Surface Water Source)	9.18	NE	North East within study area
		Kun River	8.26	S	2nd river in study area south of project site within 10 km of study area
		Chikni River	1.72	WSW	River downstream of project site within study area
14	Endemic species, if any	--	--	--	Not applicable
15	Mangroves	--	--	--	Not applicable

All essential Acts and Regulations provisions apply to the WCP area.

- The Indian Wildlife (Protection) Amendment Act, 2022 is applicable to the proposed study area, as 14 individuals of faunal species were classified under Schedule I.
- Environment (Protection) Act, 1986, an Umbrella legislation, supplements pollution laws
- Guidelines for processing of Conservation Plan PCCF, Gujarat State-dated 01.05.2023.
- Biological Diversity Act, 2002 and Rule, 2004
- Gujarat Biological Diversity, Rules-2010

Description of flora and fauna of the WCP area showing the details or habitat condition, Wildlife scenario of the endemic, threatened and scheduled species.

In order to assess the diversity of flora and fauna pertaining to the study area, a baseline survey in and around the proposed project site was carried out during the month of February 2025. The proposed project site is demarcated as core zone, while the surrounding area with 10Km radius is considered as buffer zone.

Forest Types:

Gujarat has rich and diverse forest coverage although limited in size of the area in relation to the geographical size of the state. The edaphic and climatic conditions and the presence of four mountain systems along the eastern side of the State, namely, the Western Ghats, the Vindhya and Satpura, and the Aravalli Mountain ranges, from south to north gives Gujarat a special geophysical setting for natural forests to grow. The India State of Forest Report 2021 produced by the Forest Survey of India, Dehradun reported 25 forest types in Gujarat. The dominant forest types present in the state are Southern dry mixed deciduous forests (12.63%), Dry teak forests (11.43%) and Desert thorn forests (7.47%).

The present project falls in the Panchmahal district. Panchmahal district has a significant portion of its land area covered by forests, with 23.26% being forested in 2011. The district is rich in forest resources, and a large percentage of the forested area, 97.80%, is classified as reserved forest. The forests are home to various trees like mahuda, teak, and khakhra.

Panchmahal district in Gujarat primarily features Tropical Dry Deciduous Forests. These forests are characterized by a monsoon climate, with rainfall between 600 mm to 1200 mm annually. In addition, there are also some Desert Thorn Scrub Forests and remnants of other forest types like Temperate deciduous forest, Moist Evergreen Forests, and Narmada Valley dry deciduous forests.

Flora

Core Zone

The proposed site /core zone area was uncultivated vacant land. During the survey, overall 14 species of common flora including 1 tree, 5 shrubs, 6 herbs & 2 grass species were recorded from the core zone of the study area during the survey.

All species are arranged in alphabetical order. Species names are followed by vernacular names/local names and families are given in the following ***Table 0-2.***

Table 0-2: Floral species reported from the proposed project site / core zone

S. No.	Scientific Name	Local/Common Name	Family
		Trees	
1.	*Eucalyptus globulus*	Nilgiri	Myrtaceae
		Shrubs	
1.	*Calotropis gigantean*	Moto Aakdo	Asclepiadaceae
2.	*Jatropha gossypiifolia*	Jatropha	Euphorbiaceae
3.	*Lantana camara*	Ban tulsi	Verbenaceae
4.	*Mesosphaerum suaveolens*	Bush Mint	Lemiaceae

S. No.	Scientific Name	Local/Common Name	Family
5.	*Neltuma juliflora*	Gandobaval	Fabaceae
	Herbs		
1.	*Achyranthes aspera*	Chir chita	Amranthaceae
2.	*Cassia tora*	Panwar	Fabaceae
3.	*Euphorbia hirta*	Duddhi	Euphorbiaceae
4.	*Parthenium hysterophorus*	Congress Grass	Asteraceae
5.	*Sphaeranthus indicus*	Globe thistle	Asteraceae
6.	*Tephrosia purpurea*	Wild indigo	Fabaceae
	Grasses		
1.	*Cyndon dactylon*	Duv	Poaceae
2.	*Dichanthium annulatum*	Jinjavo	Poaceae
Source: All the above species were observed during the survey.			

Buffer Zone

Total 183 species of flora were reported from the study area. Trees were dominant life form and reported with maximum 103 species, followed by 28 species of shrubs, 22 species of herbs, 16 species of grasses and 14 species of climbers.

All species are arranged in alphabetical order. Species names are followed by vernacular names/local names and families are given in ***Table 0-3***.

Table 0-3: Floral species reported from the Buffer Zone

S. No.	Scientific Name	Local/Common Name	Family
	Trees		
1.	*Acacia ferruginea*	Kagar	Fabaceae
2.	*Acacia auriculiformis*	Bengali Bawal	Fabaceae
3.	*Acacia leucophloea**	Aniyar or Rijiado	Fabaceae
4.	*Acacia nilotica **	Baval	Fabaceae
5.	*Acacia Senegal*	Gorad	Fabaceae
6.	*Adina cordifolia**	Haldu, Karma	Rubiaceae
7.	*Aegle marmelos**	Bili	Rutaceae
8.	*Ailanthus excelsa**	Arduso	Simarubaceae
9.	*Albizia lebbeck**	Balck Siris	Fabaceae
10.	*Albizia procera**	White Siris	Fabaceae
11.	*Alstonia scholaris**	Saptaparni	Apocynaceae
12.	*Analgium salvifolium*	Ankol	Alangiaceae
13.	*Anogeissus latifolia**	Dhavdo	Combretaceae
14.	*Anona squamosa**	Sitafal	Anonaceae
15.	*Anthocephalus cadamba**	Kadam	Rubiaceae
16.	*Azadirachta indica**	Limdo	Meliaceae
17.	*Balanites roxburghii*	Hingor	Simarubaceae
18.	*Balanites aegyptiaca*	Ingoriyo	Simarubaceae
19.	*Bauhinia variegata**	Kachnar	Fabaceae
20.	*Bauhinia racemosa**	Asitro	Fabaceae
21.	*Bauhinia purpurea**	Purple Bauhinia	Fabaceae
22.	*Bismarckia nobilis*	Bismarck Palm	Araucariaceae

S. No.	Scientific Name	Local/Common Name	Family
23.	*Bombex ceiba**	Sembal	Bonnbacaceae
24.	*Borassus flabellifer**	Tad	Arecaceae
25.	*Boswellia serrata*	Gugal	Burseraceae
26.	*Bridelia retusa**	Tretashing	Euphorbiaceae
27.	*Buchanania lanzan*	Charoli	Anacardiaceae
28.	*Butea monosperma**	Khakhro	Fabaceae
29.	*Cassia fistula**	Amaltas	Fabaceae
30.	*Catunaregam spinosa*	Mindhal	Rubiaceae
31.	*Ceriscoides turgida*	Gangedi	Rubiaceae
32.	*Casuarina equisetifolia*	Saru	Casurianaceae
33.	*Cochlospermum religiosum*	Ganiyari	Bixinaceae
34.	*Cocos nucifera **	Narial	Arecaceae
35.	*Cordia dichotoma**	Gundo	Boraginaceae
36.	*Cordia sinensis*	Gundi	Boraginaceae
37.	*Dalbergia lanceolaria*	Pahi/Patrali	Fabaceae
38.	*Dalbergia latifolia*	Sissam	Fabaceae
39.	*Dalbergia sisoo**	Sissoo	Fabaceae
40.	*Delonix regia**	Gulmohar	Fabaceae
41.	*Dichrostachys cinerea**	Khairi	Fabaceae
42.	*Diospyros melanoxylon*	Timru	Ebenaceae
43.	*Dolichandrone falcata*	Matarsing/Netarsing	Bignoniaceae
44.	*Ehretia laevis*	Tamburiyo/ Tambolio	Ehretiaceae
45.	*Elacodendron glaucum*	Alan	Celastraceae
46.	*Emblica offcinalis**	Amla	Euphorbiaceae
47.	*Erythrina suberosa*	Dhaul Dhak/ Indian Coral Tree	Fabaceae
48.	*Eriolaena candollei*	Botho	Sterculiaceae
49.	*Eucalyptus citridora**	Nilgiri	Myrtaceae
50.	*Eucalyptus globulus**	Nilgiri	Myrtaceae
51.	*Ficus benghalensis**	Vad	Moraceae
52.	*Ficus carica**	Gular	Moraceae
53.	*Ficus elastic**	Rubber Plant	Moraceae
54.	*Ficus hispida*	Dhedumro	Moraceae
55.	*Ficus racemosa*	Umarado	Moraceae
56.	*Ficus religiosa**	Pipalo	Moraceae
57.	*Flacourtia indica*	Lodri	Flacourtiaceae
58.	*Grewia tiliaefolia*	Dhaman	Tiliaceae
59.	*Garuga pinnata*	Kankod	Burseraceae
60.	*Gmelina arborea*	Sevan	Verbenaceae
61.	*Hardwickia binata*	Anjan	Fabaceae
62.	*Holoptelea integrifolia**	Kanju	Ulmaceae
63.	*Hymenodictyon orixense*	Kuda/ Bhurkur	Rubiaceae
64.	*Lagerstroemia parviflora*	Kakadio	Lythraceae
65.	*Lannea coromandalica*	Mohin	Anacardiaceae
66.	*Leucaena leucocephala*	Su.bawal	Mimosaceae
67.	*Limonia acidissima*	Kaith bel	Rutaceae

S. No.	Scientific Name	Local/Common Name	Family
68.	*Mangifera indica**	Aam	Anacardiaceae
69.	*Meyna laxiflora*	Fendi/ Fedarkhi /Matakalu	Rubiaceae
70.	*Miliusa tomentosa*	Hoom	Anonaceae
71.	*Mimusops elengi**	Molshri	Sapotaceae
72.	*Mitragyna parvifolia*	Kalam/Ganthodiyo	Rubiaceae
73.	*Morinda pubescens*	Aal	Rubiaceae
74.	*Moringa oleifera**	Sehjan	Moringaceae
75.	*Moringa concanensis*	Saragvo (Kadvo)	Moringaceae
76.	*Morus alba**	Shahtoot	Moraceae
77.	*Murraya koenigii**	Mitha Neem	Rutaceae
78.	*Murraya paniculata*	Kamini	Rutaceae
79.	*Nytanthus arbortristis**	Harsingar/Parijat	Oleaceae
80.	*Peltophorum pterocarpum**	Copper pod	Fabaceae
81.	*Petrocarpus marsupium*	Bija	Fabaceae
82.	*Phoenix sylvestris**	Wild Date Palm	Arecaceae
83.	*Pithecellobium dulce**	Gorasamli	Fabaceae
84.	*Plumeria rubra**	Champa	Apocynaceae
85.	*Polyalthia longifolia**	Ashoka	Annonaceae
86.	*Pongamia pinnata**	Karanj	Fabaceae
87.	*Prosopis cineraria**	Khejri	Fabaceae
88.	*Salvadora oleoides*	Bada Pilu	Salvadoraceae
89.	*Schleichera oleosa*	Kusum	Sapindaceae
90.	*Soymida febrifuga*	Rohan	Meliaceae
91.	*Sterculia urens*	Kulu	Sterculiaceae
92.	*Syzygium cumini**	Jamun	Myrtaceae
93.	*Tamarindus indica**	Amli	Fabaceae
94.	*Tecoma stans**	Yellow bells	Bignoniaceae
95.	*Tectona grandis**	Teak	Verbenaceae
96.	*Terminalia bellirica*	Baheda	Combretaceae
97.	*Terminalia catappa**	Badam	Combretaceae
98.	*Thespesia populnea**	Paras Pipal	Malvaceae
99.	*Thevetia peruviana*	Pilikaran	Apocynaceae
100.	*Trema orientalis*	Gol	Urticaceae
101.	*Wrightia arborea*	Dudhi	Apocynaceae
102.	*Zizyphus glabrata**	Wild Bor	Rhamnaceae
103.	*Zizyphus mauritiana**	Bor	Rhamnaceae
	Shrubs		
1.	*Abutilon indicum**	Kanski	Malvaceae
2.	*Adhatoda vasica**	Adusa	Acanthaceae
3.	*Cadaba fruiticosa*	Kadhab	Capparaceae
4.	*Calotropis gigantean**	Aak	Asclepiadaceae
5.	*Capparis deciduas*	Karel	Capparaceae
6.	*Capparis sepiaria**	Kanthari	Capparaceae
7.	*Carissa carandas**	Karonda	Apocynaceae
8.	*Carvia callosa*	Karvi	Acanthaceae

S. No.	Scientific Name	Local/Common Name	Family
9.	*Cassia auriculata**	Awala	Fabaceae
10.	*Datura inoxia*	Dhatura	Solanaceae
11.	*Euphorbia nerifolia**	Danda Thor	Euphorbiaceae
12.	*Euphorbia caducifolia**	Thor	Euphorbiaceae
13.	*Gymnosporia montana*	Mountain Spike Thorn /Vico	Celastraceae
14.	*Helicteres isora**	Maror phali	Sterculiaceae
15.	*Holarrhena antidysenterica*	Kuda	Apocynaceae
16.	*Indigofera oblongifolia**	Jhil	Fabaceae
17.	*Indigofera tinctoria **	Gali	Fabaceae
18.	*Ipomoea carnea**	Besharam	Convolvulaceae
19.	*Jatropha gossypiifolia**	Jatropha	Euphorbiaceae
20.	*Lantana camara**	Ban tulsi	Verbenaceae
21.	*Mesosphaerum suaveolens**	Bush Mint	Lemiaceae
22.	*Nerium indicum**	Kaner	Apocynaceae
23.	*Prosopis juliflora**	Gandobaval	Fabaceae
24.	*Racinus communis**	Arand	Euphorbiaceae
25.	*Suaeda nudiflora**	Seep weed	Amranthaceae
26.	*Urena lobata*	Vanbhindi	Malvaceae
27.	*Vitex negundo*	Nirgundi	Verbenaceae
28.	*Zizyphus nummularia**	Jhar ber	Rhamnaceae
Herbs			
1.	*Achyranthes aspera**	Chir chita	Amranthaceae
2.	*Alternanthera sessilis*	Dwarf copperleaf	Amranthaceae
3.	*Amaranthus spinosus**	Kanta chaulai	Amranthaceae
4.	*Amaranthus viridis**	Jangali chaulai	Amranthaceae
5.	*Argemone mexicana**	Darudi	Papavaraceae
6.	*Blumea lacera*	Jangli Muli	Asteraceae
7.	*Cassia tora**	Panwar	Fabaceae
8.	*Cassia angustifolia*	Hind Sana	Fabaceae
9.	*Commelina diffusa**	Kanchara	Commelinaceae
10.	*Convolvulus prostratus**	Sankhpushpi	Convolvulaceae
11.	*Euphorbia hirta**	Duddhi	Euphorbiaceae
12.	*Indigofera cordifolia*	Bhakho	Fabaceae
13.	*Ipomoea aquatica**	Nali ni Bhaji	Convolvulaceae
14.	*Martynia annua**	Vinchhudo	Myrtyniaceae
15.	*Parthenium hysterophorus*	Congress Grass	Asteraceae
16.	*Solanum surattense*	Kantakari	Solanaceae
17.	*Sphaeranthus indicus**	Globe thistle	Asteraceae
18.	*Tephrosia purpurea**	Wild indigo	Fabaceae
19.	*Tribulus terrestris**	Mitha Gokharu	Tiliaceae
20.	*Tridex procumbens**	Tridaksha	Asteraceae
21.	*Typha angustifolia**	Ramban	Typhaceae
22.	*Xanthium strumarium**	Chhota Gokhru	Solanaceae
Climbers			
1.	*Abrus precatorius**	Ratti	Fabaceae

S. No.	Scientific Name	Local/Common Name	Family
2.	*Bogainvelillea spectabilis**	Bogainvelillea	Nyctaginaceae
3.	*Celastrus paniculata*	Malkakani	Celastraceae
4.	*Cocculus hirsutus**	Asan	Menispermaceae
5.	*Cocculus labea*	Arun	Menispermaceae
6.	*Combretum ovalifolium*	Moti kakani	Combertaceae
7.	*Cressa cretica*	Rudravanti	Convoivulanceae
8.	*Cuscuta reflexa**	Amarvel	Convolvulaceae
9.	*Demia extensa*	Utaran	Asclepiadaceae
10.	*Dioscoria oppositifolia*	Cinnamon Vine /Chairo	Dioscoreaceae
11.	*Ipomoea indica**	Blue Morning Glorry	Convolvulaceae
12.	*Leptadenia reticulate*	Dori/Jhumka	Asclepidanceae
13.	*Mucuna pruriens**	Kuvech	Fabaceae
14.	*Tinospora cordifolia**	Giloy	Menispermaceae
	Grasses		
1.	*Apluda mutica**	Bhangoru/Karedi	Poaceae
2.	*Aristida funiculata*	Lapdu	Poaceae
3.	*Aristida hystrix*	Kadi Khasli	Poaceae
4.	*Arundinella pumila*	Dhudu	Poaceae
5.	*Bambusa arundinacea**	Kanta Bans	Poaceae
6.	*Cenchrus ciliaris**	Dhaman	Poaceae
7.	*Cyndon dactylon**	Duv	Poaceae
8.	*Dendrocalamus strictus**	Bamboo	Poaceae
9.	*Dichanthium annulatum*	Jinjavo	Poaceae
10.	*Heteropogon contortus*	Shulki/Kusal	Poaceae
11.	*Panicum antidotale*	Shulki	Poaceae
12.	*Saccharum spontaneum**	Kakudu	Poaceae
13.	*Setaria glaucia*	Kunchi/Pajala	Poaceae
14.	*Sorghum halepense*	Barua	Poaceae
15.	*Themeda quadrivalvis*	Rathedu	Poaceae
16.	*Themeda triandra*	Bhathdu	Gramineae

Source (*) Species observed during the survey and rest of the information obtained from secondary evidence, and Forest officials of Shehera Forest Division, District Panchmahal, Gujarat*; Research Article published in IJRSR Vol 5(11), Pp 2089-2094, 2014 by Patel, Y.B. et al and website of ENVIS Centre, Gujarat and Draft Forest working plan of District Panchmahal.*

Agriculture Crops

The principal agriculture crops in the study area are Makai, Jowar, Bajra, Wheat, Tuver, Rice, Gram, Ground nut, Seasam, Rapes, Cotton and Mustard. The vegetables grown in the study area are Bhindi and Rigan. Moreover, some fruit trees like Sapodilla (Chickoo), Banana, Pomegranate and Mango are also grown in this area.

Fauna

Core Zone

Only Total 03 avifaunal species were reported from the project site which includes i.e. Blue rock pigeon, Green bee eater, and Red-vented lapwing. While, no direct or indirect evidences of mammals and herpetofauna were reported from the core zone during survey.

Table 0-4: Bird species observed at the proposed site.

S. No.	Scientific Name	Common Name	Conservation status	
			As per IUCN	As per Wildlife (Protection) Amendment Act, 2022
Birds				
1.	*Columba livia*	Blue rock pigeon	LC	-
2.	*Merops orientalis*	Green bee eater	LC	II
3.	*Vanellus indicus*	Red wattled lapwing	LC	II

Note: *II is Schedules of Wildlife (Protection) Amendment Act, 2022; LC: Least Concern is the status assigned by IUCN.*
Source: All the above species were observed during the survey

Buffer Zone

A total of 130 species were reported based on field observations, literature survey and consultation with local people including 17 species of mammals, 05 species of reptiles, 93 species of birds, 05 species of butterflies and 10 species of fishes.

A faunal enlisting of mammals, birds, reptiles and amphibians with their scientific names, common names and the schedules Wildlife (Protection) Amendment Act 2022 & IUCN categoery to which they belong are arranged in alphabetical order and presented in ***Table 0-5***.

Table 0-5: Faunal species reported from the study area/ buffer zone

S. No.	Scientific Name	Common Name	Conservation status	
			As per IUCN	As per Wildlife (Protection) Amendment Act, 2022
MAMMALS				
1.	*Bandicota bengalensis*	Indian Mole Rat	LC	-
2.	*Boselaphus tragocamelus**	Blue Bull	LC	II
3.	*Canis aureus*	Golden Jackal	LC	I
4.	*Hystrix indica*	Indian crested Porcupine	LC	I
5.	*Felius chaus*	Jungle Cat	LC	I
6.	*Funambulus pennantii**	Indian Five Striped squirrel	LC	-
7.	*Herpeste edwardsii**	Indian Grey Mongoose	LC	I
8.	*Hyaena hyaena*	Indian Striped Hyaena	NT	I
9.	*Lepus nigricollis**	Indian Hare	LC	II
10.	*Macaca mulatta**	Monkey	LC	-
11.	*Melursus ursinus*	Sloth Bear	VU	I
12.	*Panthera pardus*	Common Indian Leopard	VU	I
13.	*Paraechinus micropus*	Indian Pale Hedgehog	LC	II
14.	*Pteropus giganteus*	Indian Flying Fox	EN	II
15.	*Semnopithecus entellus*	Northern Plain gray Langur	VU	II
16.	*Sus scrofa*	Wild boar	LC	II
17.	*Vulpes bengalensis*	Indian Fox	LC	I
REPTILES				
1.	*Bungarus caeruleus*	Common Indian Krait	LC	II

S. No.	Scientific Name	Common Name	Conservation status	
			As per IUCN	As per Wildlife (Protection) Amendment Act, 2022
2.	*Calotes vesicolor**	Garden lizard	LC	-
3.	*Naja naja*	Cobra	LC	I
4.	*Fowlea piscator*	Checkered keel back	LC	I
5.	*Ptyas mucosa*	Rat Snake	LC	I
		BIRDS		
1.	*Acridotheres tristis**	Common Myna	LC	II
2.	*Acridotheres ginginianus**	Bank Myna	LC	II
3.	*Actitis hypoleucos**	Common Sandpiper	LC	II
4.	*Amaurornis phoenicurus**	White-breasted Waterhen	LC	II
5.	*Anastomus oscitans*	Asian Openbill	LC	II
6.	*Alcedo atthis**	Common Kingfisher	LC	II
7.	*Ardeola grayii**	Indian Pond Heron	LC	II
8.	*Athene brama*	Spotted Owlet	LC	II
9.	*Bulbucus ibis**	Cattle Egret	LC	II
10.	*Butastur teesa*	White-eyed Buzzard	LC	I
11.	*Calidris minuta**	Little Stint	LC	II
12.	*Caprimulgus asiaticus**	Indian Nightjar	LC	II
13.	*Caprimulgus indicus*	Jungle Nightjar	LC	II
14.	*Centropus sinensis**	Common Crow Pheasant	LC	II
15.	*Ceryle rudis*	Pied Kingfisher	LC	II
16.	*Ciconia episcopus*	Woolly-necked stork	NR	II
17.	*Clamator jacobinus*	Jacobin Cuckoo	LC	II
18.	*Columba livia**	Blue rock pigeon	LC	-
19.	*Copsychus saularis*	Oriental magpie robin	LC	II
20.	*Copsychus fulicatus**	Indian Robin	LC	II
21.	*Coracias benghalensis*	Indian Roller	LC	II
22.	*Coracias garrulus*	European roller	LC	II
23.	*Corvus splendens**	Common Crow	LC	-
24.	*Coturnix coromandelica*	Rain Quail	LC	II
25.	*Coturnix coturnix*	Common Quail or European quail	LC	II
26.	*Cyornis tickelliae*	Tickell's Blue Flycatcher	LC	II
27.	*Cypsiurus balasiensis**	Asian Palm swift	LC	II
28.	*Corvus macrorhynchos**	Jungle Crow	LC	II
29.	*Dendrocopos nanus*	Brown-capped pygmy woodpecker	LC	II
30.	*Dendrocygna javanica**	Lesser Whistling Teal	LC	II
31.	*Dendrocitta vagabunda**	Rofous Tree pie	LC	II

S. No.	Scientific Name	Common Name	Conservation status	
			As per IUCN	As per Wildlife (Protection) Amendment Act, 2022
32.	*Dinopium benghalense*	Blacked-rumped Flameback	LC	II
33.	*Dicaeum erythrorhynchos*	Pale Billed Flower pecker	LC	II
34.	*Dicrurus macrocercus**	Black Drongo	LC	II
35.	*Dicrurus caerulescens*	White bellied Drongo	LC	II
36.	*Dicrurus paradiseus*	Greater Racket tailed Drongo	LC	II
37.	*Eremopterix griseus**	Ashy-crowned Sparrow-lark	LC	II
38.	*Eudymamys scolopacea**	Koel	LC	II
39.	*Euodice malabarica**	Indian Silverbill	LC	II
40.	*Falco tinnunculus*	Common Kestrel	LC	II
41.	*Francolinus pondicerianus*	Grey Partridge	LC	II
42.	*Gallinula chloropus**	Eurasian Moorhen	LC	II
43.	*Gyps bengalensis*	White-rumped vulture	CR	I
44.	*Halcyon smyrensis **	White Breasted Kingfisher	LC	II
45.	*Hieraaetus pennatus*	Booted Eagle	LC	I
46.	*Himantopus himantopus**	Black-winged stilt	LC	II
47.	*Hirundo rustica **	Common Swallow	LC	II
48.	*Lanius excubitor*	Great Grey Shrike	LC	II
49.	*Leiopicus mahrattensis*	Yellow-crowned woodpecker	LC	I
50.	*Merops orientalis**	Green bee eater	LC	II
51.	*Merops superciliosus*	Blue-cheeked bee-eater	LC	II
52.	*Merops philippinus*	Blue-tailed Bee-eater	LC	II
53.	*Milvus migrans**	Pariah Kite	LC	II
54.	*Psilopogon haemacephalus*	Coppersmith barbet	LC	II
55.	*Metopidius indicus*	Bronze-winged Jacana	LC	II
56.	*Motacilla maderaspatensis **	Large Pied Wagtail	LC	II
57.	*Nectarinia asiatica**	Purple sunbird	LC	II
58.	*Oriolus xanthornus*	Black hooded Oriole	LC	II
59.	*Oriolus kundoo*	Indian Golden Oriole	LC	II
60.	*Ortnotomus sutorius*	Tailor Bird	LC	II
61.	*Ortygornis pondicerianus*	Grey Francolin	LC	II
62.	*Fulica atra**	Common Coot	LC	II
63.	*Passer domesticus**	House sparrow	LC	II

S. No.	Scientific Name	Common Name	Conservation status	
			As per IUCN	As per Wildlife (Protection) Amendment Act, 2022
64.	*Pavo cristatus**	Indian Peafowl	LC	I
65.	*Phalacrocorax niger**	Little cormorant	LC	II
66.	*Phoenicurus ochruros*	Black Red start	LC	II
67.	*Pycnonotus cafer**	Red-vented Bulbul	LC	II
68.	*Leptocoma zeylonica*	Purple-rumped Sunbird	LC	II
69.	*Luscinia svecica*	Bluethroat	LC	II
70.	*Ploceus philippinus**	Weaver bird ,Baya	LC	II
71.	*Threskiornis melanocephalus*	Black-headed Ibis	NT	II
72.	*Prinia socialis**	Ashy Prinia	LC	II
73.	*Pseudibis papillosa**	Red-naped Ibis	LC	II
74.	*Psittacula krameri**	Rose ringed parakeet	LC	II
75.	*Psittacula cyanocephala*	Plum-headed parakeet	LC	II
76.	*Psittacula eupatria*	Alexandrine parakeet	LC	II
77.	*Pterocles exustus*	Chestnut-bellied sandgrouse	LC	II
78.	*Pycnonotus cafer**	Red vented bulbul	LC	II
79.	*Rhipidura aureola*	White-browed Fantail	LC	II
80.	*Copsychus fulicatus*	Indian Robin	LC	II
81.	*Spilornis cheela*	Crested Serpent Eagle	LC	I
82.	*Streptopelia chinensis **	Spotted Dove	LC	II
83.	*Streptopelia decaocto**	Eurasian collared dove	LC	II
84.	*Streptopelia senegalensis**	Laughing dove	LC	II
85.	*Sturnia pagodarum*	Brahminy Starling	LC	II
86.	*Tachybaptus ruficollis**	Little Grebe	LC	II
87.	*Terpsiphone paradisi*	Indian Paradise Flycatcher	LC	II
88.	*Ocyceros birostris*	Common Grey hornbill	LC	II
89.	*Treron phoenicopterus*	Yellow-footed green pigeon	LC	II
90.	*Turdoides caudatus**	Common Babbler	LC	II
91.	*Turdoides straiatus **	Jungle Babbler	LC	II
92.	*Upupa epops **	Eurasian Hoopoe	LC	II
93.	*Vanellus indicus**	Red wattled lapwing	LC	II
		Butterflies		
1.	*Catopsilia pomona**	*Common Emigrant*	-	-
2.	*Catopsilia pyranthe*	*Mottled Emigrant*	-	-
3.	*Danaus genutia**	*Common Tiger*	-	-
4.	*Eurema hecabe**	*Common Grass Yellow*	*LC*	-
5.	*Hypolimnas misippus*	*Danaid Eggfly*	*LC*	*II*

***Note:** I, II, & IV are Schedules of Wildlife (Protection) Amendment Act, 2022.*
LC: Least Concern, NT: Near Threatened & VU: Vulnerable, EN: Endangered are the status assigned by IUCN.

S. No.	Scientific Name	Common Name	Conservation status	
			As per IUCN	As per Wildlife (Protection) Amendment Act, 2022

Source: (*) Species observed during survey and Forest officials of Shehera Forest Division, District Panchmahal, Gujarat and scientific literatures, *Draft Forest Working Plan of District Panchmahal, https://ebird.org/region/IN-GJ-PM/bird-list .*
Wildlife (Protection) Amendment Act, 2022 and IUCN red list (https://www.iucnredlist.org) were referred to verify species conservation status.

Table 0-6: Fish species in Buffer Zone of Project site

S. No.	Scientific Name	Common Name	Conservation status as per IUCN
1.	*Catla catla**	Catla/ Bawas	LC
2.	*Cirrhinus mrigala*	Mrigal/Nagari	LC
3.	*Cyprinus carpio*	Common Carp	VU
4.	*Labeo calbasu*	Kalbasu/ Bagado/Kalavat	LC
5.	*Labeo fimbriatus*	Fringe-Lipped Carp/ Begado/Bilgi	LC
6.	*Labeo rohita**	Rohu	LC
7.	*Sperata seenghala*	Singala/Katiya	LC
8.	*Channa striata*	Snake headed Murrel	LC
9.	*Wallago attu*	Fresh Water Shark/ Magara /Mulley	VU
10.	*Ophiocephalus striatus*	Snakehead murrel	LC

Note: *LC: Least Concern and VU: Vulnerable are the status assigned by IUCN.*
Source: (*) Species observed during survey and rest of the the information obtained from local interventions and *Forest Working Plan of Panchmahal District,IUCN red list (https://www.iucnredlist.org) was referred to to verify species conservation status.*

Figure 0-1: Some faunal & floral species reported from Study Area



Expert at project site



Jatropha gossypiifolia at project site



Dendrocalamus strictus and Eucalyptus plantation in project study area

		
Lantana camara observed at project site	*Calotropis gigantean reported at project site*	*Ipomoea carnea reported in project study area*
		
Visit at Shehera Forest Department	*Tephrosia purpurea* reported in the study area	*Mesosphaerum suaveolens in Buffer Zone*
		
Fulica atra (Common coot) in project study area	*Phalacrocorax niger (*Little cormorant*) & Vanellus indicus (*Red wattled lapwing*) observed in project study area*	

1.2 Schedule I Species of Wildlife (Protection) Amendment Act, 2022 in the Project study area

The relevant tables above list each species' threat status according to the IUCN/ Wildlife (Protection) Amendment Act, 2022 Schedules. No threatened species were reported during the survey in the core zone or project site. However, based on the literature that is currently accessible, a total of 14 schedule I species have been documented from the study area /buffer zone, comprising 06 species of Mammal, 03 species of reptiles and 05 species of birds. Although every attempt has been made to document Schedule I species from the project study area, but the presence of more species cannot be ruled out. For these entire Schedule –I species, species conservation plan alongwith budgetary provisions have been prepared and will be submitted to the concerned State Forest Department for approval.

Table 0-7. Checklist of Schedule-I species recorded from the study area

Sr. No.	Scientific Name	Common Name	Conservation status	
			As per IUCN	As per Wildlife (Protection) Amendment Act, 2022
MAMMALS				
1.	*Canis aureus*	Golden Jackal	LC	I
2.	*Felius chaus*	Jungle Cat	LC	I
3.	*Herpeste edwardsii*	Common Mongoose	LC	I
4.	*Hyaena hyaena*	Indian Striped Hyaena	NT	I
5.	*Melursus ursinus*	Sloth Bear	VU	I
6.	*Panthera pardus*	Common Indian Leopard	VU	I
REPTILES				
1.	*Naja naja*	Cobra	LC	I
2.	*Fowlea piscator*	Checkered keel back	LC	I
3.	*Ptyas mucosa*	Rat Snake	LC	I
BIRDS				
1.	*Butastur teesa*	White-eyed Buzzard	LC	I
2.	*Accipiter badius*	Shikra	LC	I
3.	*Pavo cristatus*	Indian Peafowl	LC	I
4.	*Leiopicus mahrattensis*	Yellow-crowned woodpecker	LC	I
5.	*Spilornis cheela*	Crested Serpent Eagle	LC	I

Source: (*) Species observed during survey and rest of the information obtained from local interventions and, *Forest Working Plan of Panchmahal District. Wildlife (Protection) Amendment Act, 2022 was referred to verify species conservation status.*

1.3 WCP should have a brief note about the literature survey of Research on

i) The impact of project activities on flora and fauna

The site is located in a non-notified industrial area. There are very few literatures on the impact of project activities on the flora and fauna are known. However, Environment Impact assessment study has been carried out for the proposed project. The following impacts on the ecology are anticipated during operation phase of the project:

- Impact on surrounding habitat due to incremental pollution load from the proposed project.
- Impact on flora & fauna due to SPM generation, emission of HC and CO due to Vehicular movement for transportation of biomedical waste

- Impact on flora due to emissions of PM10, PM2.5, SOx, NOx, VOCs will result in the inhibited growth of plants.
- Generation of ash and hazardous waste will result in poor plants health.
- Increased noise and vibration will cause disturbance to exisiting fauna.
- Generation of odour during operation phase will impact the faunal health and impact on aesthetics of nearby area due to bad odour.

The predicted pollution load due to proposed project for all the parameters will be within the stipulated/ notified standards by statutory authorities. As a consequence, there will be minimum disturbance in the air, noise, soil and water quality of the area due to the proposed project. Therefore, no potential adverse effect on the ecological environment is envisaged due to these proposed project activities.

ii) Relevant research on the WCP area

A comprehensive literature survey has been carried out to understand the impact of proposed project on ecology and Biodiversity.

Following documents were reviewed to understand the biodiversity status, threats on biodiversity and impacts of development activities on biodiversity:)

- Working Plan for the Forests of Godhra Division (Panchmahal District), 2023-24 TO 2032-33
- National Wetland Atlas, Gujarat, 2010
- The State of Forest Report-2021 (Forest Survey of India)
- Oriental Bird Club's Check list of Indian Birds, Oxford University Press (2011), Birds of Indian Sub-continent Kumar, A., J.P. Sati and P.C. Tak (2003): Checklist of Indian Waterbirds. BUCEROS 8 (1): 30 pp
- Rawat, G.S. (Ed.). 2008. Special Habitats and Threatened Plants of India. ENVIS Bulletin:
- Wildlife and Protected Areas, Vol. 11(1). Wildlife Institute of India, Dehradun, India. pp. 239.
- Wildlife (Protection) Amendment Act, 2022
- Research Article: Floristic Diversity Study of Kalol Taluka, Panchmahal, Gujarat, India. by Patel, Y.B. et al. IJRSR Vol 5(11), Pp 2089-2094, 2014

QUANTITY AND QUALITY CHANGES IN THE WILDLIFE HABITAT PATTERN

A quantifiable explanation of the expected degradation as a result of the project's implementation will be given. The plan should include information on any qualitative changes in the wildlife habitat pattern in the WCP area as a result of project implementation.

As, no Wildlife Sanctuary, Biosphere Reserve, Tiger / Elephant Reserve, Migratory Corridors and Ramsar Sites/National Wetland falls in the project study area of 10 km radius. Hence, no impact of project activities on the flora and fauna are known.

However, Environment Impact assessment study has been carried out for the proposed project.

The predicted pollution load due to proposed project for all the parameters will be within the stipulated/ notified standards by statutory authorities. As a consequence, there will be minimum disturbance in the air, noise, soil and water quality of the area due to the proposed project. Therefore, no potential adverse effect on the ecological environment is envisaged due to these proposed project activities

Nature of threats to the flora and fauna on account of the project implementation and increased human presence and a probable increase in vehicular traffic and its impact.

The proposed project will be developed on the vacant plot/land. Hence, there will be no significant impact on the flora and fauna on account of the project implementation as there will be limited vehicular movement due to the remoteness and distance from the main cities. Wildlife of the area is very familiar with this limited movement of vehicles.

However, sudden change in the vehicular movement may create the indirect effects on wildlife, including displacement and road crossing ability of wildlife. The faunal species may suffer from the road kill under increased vehicular movements during operation of the project.

Impact due to clearing or modification of vegetation (If any).

i) Impact on displacement movement of fauna- territorial aquatic or aerial (such as the creation of barriers, etc.)

There is no forest area coming within the core zone of the WCP area but a modification of land use and clearing of scrubs vegetation is involved. The project area generally consists of scrub land having low ecological values. Most of the land-use of the project site is designated as vacant land and as such, there is no displacement of faunal species and no such barriers or creation envisaged which hinders the movement of Fauna- territorial aquatic or aerial.

However, the clearing of surface vegetation for the proposed activities may have various impacts on the wildlife. In the immediate vicinity, land clearing destroys and fragments habitats, endangers animals, increases soil erosion, contributes to pollution and even exacerbates the effects of climate change.

ii) Any other direct or indirect impacts on the flora and fauna of the WCP area.

No other direct or indirect impact on flora and fauna of the WCP are envisaged except described above.

Study methodologies used and observations from subject-matter specialists with information on trips, locations visited, observations, records consulted, and sampling strategies used

Methodology adopted for assessment of flora and fauna

Secondary Data Collection / Literature Review

Based on the project area information; compilation and study of available scientific literatures prior to field survey for better insight on species level identification, understanding their current status, and the distribution of species at local & regional level.
In order to acquire project area information, Open series map (OSM), drawn Landuse/ Land cover map (LU/LC), and study area map were used for habitat assessment.
Detailed Checklist of Flora and fauna from Regional/District Forest Department.
Local interventions/public surveys are also carried to acquire information pertaining to certain species. Since the proposed project surrounding environ (buffer zone) encompasses various industries, some studies have been conducted to carryout EIA projects. Secondary information on ecology and biodiversity aspect has been used from EIA reports also[2]. However, efforts have been made to verify same in the field and interaction with local people.

Primary / Field Data Collection

Primary/ Field Data Collection (Fauna):

Primary information pertaining to the existing fauna from the study area were recorded through field surveys using standard methodologies. For birds, and mammals, the standard methodology adopted for survey consist of visual encounters (Using Olympus 8-16*40 Binoculars) during Line transects, Vehicular transects, Point counts, and Vocal encounters.
Indirect sightings/records such as Footprints, Scats, and Vocal encounters were also recorded along with primary data during the field surveys.
For Identification (till Species Level) and validation of Primary data; Photographic documentation of recorded individual species were carried out using camera.

Primary/ Field Data Collection (Flora):

The project site falls in the notified industrial area and very few vegetation exists at site, efforts have been made to enlist existing species from the plantation area/greenbelt. For trees, herbs and shrubs in the buffer zone, the standard methodology adopted for survey consist of visual encounters during line transects and vehicular transects. Existing landuse of the project is industrial area and does not envolve diversion of any forestland, hence quantification of vegetation is not required.
For Identification (Species Level) and validation of Primary data; Photographic documentation of individual species is carried out using Field camera.

Data Analysis:

The acquired information/filled field datasheets are compiled along with the field photographs.
Based on photographic records, vocals, and pugmarks; the identification of recorded individuals till species level were carried out using scientific literatures, field guides, regional checklists, Forest Working Plan and species database.

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2 1. Environmental Impact Assessment Report for "Proposed installation of 2,42,182 KL capacity Isolated liquid storage terminal by M/s. Ahir Salt and Allied Products Pvt. Ltd."

2. Environmental Impact Assessment of "Jalkhau Salt Jetty".

3. EIA & EMP Manufacturing of Caustic Soda, Chlorine, Hydrogen Peroxide, Synthetic Organic, Inorganic, Specialty Chemicals & Coal based Captive Power Plant at Survey No. 169, 170, 175, 190, 191 of Village: Varsana, Taluka: Anjar, Distt. Kachchh, Gujarat, carried out in 2016.

In order to understand the current status of the recorded species, review on the past records of species distribution from the study area and the conservation status of the species as per IUCN Red List and Wildlife (Protection) Amendment Act, 2022 were assessed.

Threatened Biodiversity Assessment Criteria:

The species recorded during the survey were identified using standard taxonomic tools, literature, handbooks and pictorial guides of plants and animal species.

Wildlife (Protection) Amendment Act, 2022, ENVIS Database, IUCN Red List of threatened species (IUCN, 2024), Botanical Survey of India (BSI) and Zoological Survey of India (ZSI) were refered.

Additionally, validation of current scientific names and classification was conducted through online portals like, The Plant List, Plants of the World Online (POWO) and International Plant Name Index (IPNI).The checklists of plant and animal species were prepared, and the conservation status of each species were collated as per red list of threatened species of IUCN (2024), World Conservation Monitoring Centre (WCMC), Wildlife (Protection) Amendment Act 2022 and Rare, Endangered and Threatened (RET hereafter) Plant list of Gujarat, etc.

CHAPTER 3

It should cover the following aspect in general about the entire plan and address the issue over the project area as well as the buffer area:

a) Objectives of management to address the issues of wildlife conservation (both flora and fauna) arising out ofproject implementation,

Objectives of Management

The main objective of the plan is to reduce various stress begin due to the working of the project in the locality. The Site-Specific Wildlife Conservation Plan will suggest measures to minimize or mitigate such stress, if possible how to avoid certain activities which could reduce the negative influence of the project activity. Wildlife management consists of promoting welfare factors, arresting or reducing the impacts of decimating factors, and neutralizing harmful effects of limiting factors that keep the animal population lower than the carrying capacity of the area. It also aims at the management of human dimensions relating to the regulation of habitat use, sufferance from animal damages, livelihood issues, and taking people as partners in conservation management. Such concerns are reflected in the prescriptions.

The management of the project area will aim for the maintenance of habitat for smaller animals that used to live and share habitat with the project activity. The management of the Buffer Zone will target optimization and maintenance of wildlife habitat and biodiversity, involving local people as far as practicable, and aim to avoid/minimize or mitigate the adverse impacts of the project activity.

- The objective of management to mitigate the threats to wildlife is covering the following aspects. Undertake appropriate attentive measures in project so as to avoid/minimize or mitigate the adverse impacts on wildlife in and around the project area.
- Maintain/ enhance food and cover values in buffer habitats while counterbalancing decimating factors. Initiate studies on habitat utilization patterns of the Umbrella Species and other wildlife with a view to strengthening and securing the critical habitats.
- Control depredation by wild animals to generate public support in conservation management and build up synergy in conjunction with regular protection setup.

b) Strategies to mitigate and minimize adverse impacts

Keeping the above objectives in view, the following strategies are suggested to mitigate and minimize the adverse impacts.

Dust Control

Spreading of huge amounts of dust causes air pollution which affects more to human beings and the workers engaged in the project activity, besides creating problems for the wild animals. Therefore, dust control is a major activity. Dust generation cannot be completely eliminated, but the attempt is made to reduce the generation of dust. The steps taken for control of dust are:

- Use of sprinklers and dust suppression units at the time of loading, transportation, and handling of construction material. Mobile water sprinklers and mobile tankers will be deployed in the project area wherever necessary.
- Regular maintenance of HEMMs and P&M.
- Green belt will be provided around the periphery of project, and avenue plantation taken up along roads.

- Provision of adequate firefighting arrangements.
- Dust control measures have been proposed as compliance with the Environmental Impact Assessment and therefore special provision is not made for this.

Noise and Light Control

The following measures will be taken to keep the noise at the minimum possible level:

- Proper designing of plant & machinery by providing in-built mechanisms like silencers, mufflers, and enclosures for noise-generating parts and shock-absorbing pads at the foundation of vibrating equipment.
- Silencers provided where necessary, routine maintenance of equipment, etc.
- Rational deployment of noise-generating plant and machinery.
- Greenbelts are created around the periphery of project, and avenue plantation taken up along roads to absorb noise.
- Provision of isolation for vibrating equipment (both fixed and mobile).
- Regular monitoring of noise levels at various points.
- The project core area will be sufficiently illuminated. Such illumination detracts the animals from the core area, which would otherwise be dangerous to their lives.
- The use of vehicular headlights which disturb the animals is restricted and only dippers are allowed within the project area. These activities have been included in the project O&M, therefore special provision is not made for this.

Waste Management

Since Garbage not only creates problems for wildlife but also creates problems for activity. Particularly non-degradable materials like polythene bags etc. pose a lot of problems for the machineries as well as Wild animals. Hence proper garbage management is also an important activity in the process. Some of the steps to be taken within the area have been indicated by underwater pollution. The additional steps which are to be taken for Garbage management are as follows:

- Waste generated in the project area is regularly collected, segregated into biodegradable and non-biodegradable materials and kept in colour coded bins.
- Un-avoidable generation of hazardous materials such as used oils, parts of machineries and equipment's are promptly collected and kept at secluded places for disposal.
- The non-degradable materials if any are sent for recycling.
- The biodegradable substances are put in the Compost pits for conversion in-to manure. The manure obtained from these pits will be utilized for plantation purpose.
- Waste management is an important activity as per provisions of Environmental Management Plan. Hence no separate provision is made for this.

Conservation Plan for Zone of Influence:

Plantation of local plant species

Habitat improvement programme (plantation of local plant species) for Schedule I species in the different villages will be undertaken in the nearby area of the buffer zone of the project area. This will be achieved by plantation of locally adapted species near villages in buffer area.

Plants species / verities will be suggested by the local forest department and plant saplings will be distributed in project villages as per the above mentioned schedule (year wise). Under this programme saplings will be distributed in the nearby villages with the consultation of the local forest department. Habitat improvement programme will be undertaken through plantation of suitable tree species. Saplings of Ficus religiosa (Peepal), Mangifera indica (Aam), Tectona grandis (Sagwan), Tamarindus indica (Imli), Moringa oleifera (Sehjan) etc. will be distributed in the nearby

villages or as suggested by Forest Department. Species recommended by local forest department will also be added in the present plantation program.

A total of 1000 plants (200 trees per year) will be planted and the plantation area will be fenced by effective brush wood fencing till the establishment of the plantation. An estimate of Rs. 7.5 lakh is prescribed for this purpose.

Construction of Waterholes

Landscape will be changed in the buffer zone with the consultation of Forest Department. A total of Rs. 2.5 lakhs have been prescribed for this purpose.

Details of Endemic, Threatened and Scheduled Species

All the floral and faunal species has been reviewed for their conservation status as per IUCN and The Indian Wildlife (Protection) Amendement Act, 2022, and local endemism. No RET plant species was recorded from the WCP area.

Table 0-1: List of recorded faunal species classified under Schedule I of Wildlife (Protection) Amendement Act, 2022.

Sr. No.	Scientific Name	Common Name	Conservation status	
			As per IUCN	As per Wildlife (Protection) Amendment Act, 2022
		MAMMALS		
7.	*Canis aureus*	Golden Jackal	LC	I
8.	*Felius chaus*	Jungle Cat	LC	I
9.	*Herpeste edwardsii*	Common Mongoose	LC	I
10.	*Hyaena hyaena*	Indian Striped Hyaena	NT	I
11.	*Melursus ursinus*	Sloth Bear	VU	I
12.	*Panthera pardus*	Common Indian Leopard	VU	I
		REPTILES		
4.	*Naja naja*	Cobra	LC	I
5.	*Fowlea piscator*	Checkered keel back	LC	I
6.	*Ptyas mucosa*	Rat Snake	LC	I
		BIRDS		
6.	*Butastur teesa*	White-eyed Buzzard	LC	I
7.	*Accipiter badius*	Shikra	LC	I
8.	*Pavo cristatus*	Indian Peafowl	LC	I
9.	*Leiopicus mahrattensis*	Yellow-crowned woodpecker	LC	I
10.	*Spilornis cheela*	Crested Serpent Eagle	LC	I

Source: (*) Species observed during survey and rest of the information obtained from local interventions and, *Forest Working Plan of Panchmahal District. Wildlife (Protection) Amendment Act, 2022 was referred to verify species conservation status.*

Description of the Schedule I species

Mammals

1) Details of Golden Jackal (*Canis aureus*)

The golden jackal is a medium-sized canid, wide spread, terrestrial carnivore. It is fairly common throughout its range. Due to their tolerance of dry habitats and omnivorous diet, they can live in a wide variety of

habitats. In India, the golden jackal is found in most protected areas, open grassland habitats, and mangroves, semi-urban and rural landscapes of the country, except in the high elevation regions of the Himalaya. Certain pastoral areas in western and northern India, which have abundant livestock also support high jackal densities.

Distribution map and IUCN status of Golden Jackal (*Canis aureus*) (**Source:** IUCN, Hoffman, 2018[3])



Habitat in the study area

According to the secondary information provided by the forest department; Golden Jackal were recorded from the agricultural fields and along the fringe of human settlement from the study area.

Status of threat in the study area

The main identified threats are legal culling, deliberate illegal killing and indiscriminate poisoning. Traffic accidents are also important throughout the species range.

[3] Hoffmann, M., Arnold, J., Duckworth, J.W., Jhala, Y., Kamler, J.F. & Krofel, M. 2018. *Canis aureus* (errata version published in 2020).The IUCN Red List of Threatened Species 2018:e.T118264161A163507876. https://dx.doi.org/10.2305/IUCN.UK.2018-2.RLTS.T118264161A163507876.en

2) Details of Jungle Cat (*Felis chaus*)

It is widely distributed across India and largest of the existing species of Felis. They are solitary in nature and often active at night. They are good tree climbers.

It is the most familiar of the wild eats of India, and is found in bush-jungle, long grass, and reed-beds near rivers, lakes, and marshes, near human habitation, mostly in comparatively dry zones. It frequents alike jungles and the open country, and is very partial to long grass and reeds, sugar-cane fields, corn-fields etc.

Distribution map and IUCN status of Jungle Cat (Felis chaus) (Source: IUCN, Gray, 2021)



Habitat in the study area

According to the secondary information provided by the forest department; Jungle Cat are common and are recorded from the agricultural fields and along the fringe of human settlement from the study area.

Status of threat in the study area

Major threats to the jungle cat in the study area include habitat loss such as the destruction of dense vegetation and wetlands, environmental pollution, industrialisation and urbanisation.

3) Details of Indian Grey Mongoose (*Herpestes edwardsii*)

The Indian grey mongoose or Asian grey mongoose is a mongoose species native to the Indian subcontinent and West Asia. The grey mongoose inhabits open forests, scrublands and cultivated fields, often close to human habitation. It lives in burrows, hedgerows and thickets, among groves of trees, and takes shelter under rocks or bushes and even in drains. It is bold and inquisitive but wary, seldom venturing far from cover. It is an excellent climber and usually lives singly or in pairs. Its prey includes rodents, snakes, birds' eggs and hatchlings, lizards and a variety of invertebrates.

Distribution map and IUCN status of Indian Grey Mongoose (*Herpestes edwardsii*) (**Source:** IUCN, Mudappa & Choudhary, 2016)



Habitat in the study area

According to the secondary information provided by the forest department; Indian Grey Mongoose are common and are recorded from the agricultural fields and along the fringe of human settlement from the study area. Commonly observed along the roadsides and fewer time crossing the roads.

Status of threat in the study area

Major threats to Indian Grey Mongoose along the study area include habitat loss such as the destruction of dense vegetation and wetlands, environmental pollution, and Road collisions/Road kills.

4) Stripe Hyena (*Hyaena hyaena*)

The striped hyena (*Hyaena hyaena*), a near-threatened scavenger and hunter, inhabits arid and semi-arid landscapes in Africa, the Middle East, and India, primarily scavenging on carrion and human refuse, but also hunting small animals. Found in northern and eastern Africa, the Middle East, India, and Asia, extending north to the Caucasus and southern Siberia.

Habit & Habitat

Prefers arid, mountainous regions with scrub woodland, rocky hills, ravines, and crevices for dens. They avoid true deserts and need a water source within 6 miles (10 kilometers). Open savannas, grasslands, and scrub woodlands in arid to semi-arid environments. They can also be found in riverbanks, moist mixed and thorn forests, and open plains. Primarily solitary animals, though groups of up to seven animals are known in Libya. They are nocturnal, typically leaving their dens at the onset of total darkness and returning before sunrise.

Food & Feeding Habit

Primarily scavengers, feeding on carrion and human refuse, but also skilled hunters that can take down relatively large prey. They mainly feed on mammalian carrion, human refuse, and occasionally hunt small animals like mice, hares, reptiles, and birds.

Breeding Habit

Breeding is nonseasonal, beginning at two to three years. After a gestation period of 88 to 90 days, they give birth to one to six cubs in their den. The female is a devoted mother, while the father has not been observed playing an active role in raising the cubs. They are a facultative den-dependent species, primarily for reproduction

Conservation Status

In India, the sub-species is protected under Schedule- I of the Wildlife (Protection) Amendment Act, 2022. The species is listed as Near Threatened (NT) in the IUCN Red list (version 2021-23) based simply on the population size (none of the other criteria are met) and fully protected in India.

Threat in the study area

Loss of habitat, loss of food sources, are challenges to the population.

5) Sloth Bear (*Melursus ursinus*)

The sloth bear is endemic to the Indian subcontinent, with the majority of their population found in India, Sri Lanka, and Nepal with a preference for tropical and subtropical habitats like forests, grasslands, and areas with rocky outcrops

Habit and habitat

Sloth bears are adaptable to various habitats, including dry and moist forests, grasslands, scrublands, and areas with rocky outcrops. They prefer areas with abundant food and dense vegetation for cover. Sloth bears are mostly nocturnal, meaning they are most active at night, but they can also be seen during dawn and dusk. They are generally solitary animals, with limited social interaction except during mating season.

Food and Feeding

Sloth bears are omnivorous, with their diet heavily influenced by the availability of insects, especially termites and ants. They are considered myrmecophagous, meaning they are specialized in feeding on insects, especially termites and ants. Their diet can vary seasonally, with fruits being a more significant part of their diet during certain times of the year. They also consume fruits, honey, flowers, and occasionally small animals like rodents, birds, and even turtle eggs.

Breeding

Sloth bears typically mate during the monsoon season. Females usually give birth to one or two cubs. The cubs remain with their mother for about 2 years, learning important skills like foraging and navigating their environment.

Conservation Status

In India, the sub-species is protected under Schedule- I of the Indian Wildlife (Protection) Amendment Act, 2022of India. The subspecies is listed as Vulnerable (VU) in the IUCN Red list based simply on the population size (none of the other criteria are met) and fully protected in India.

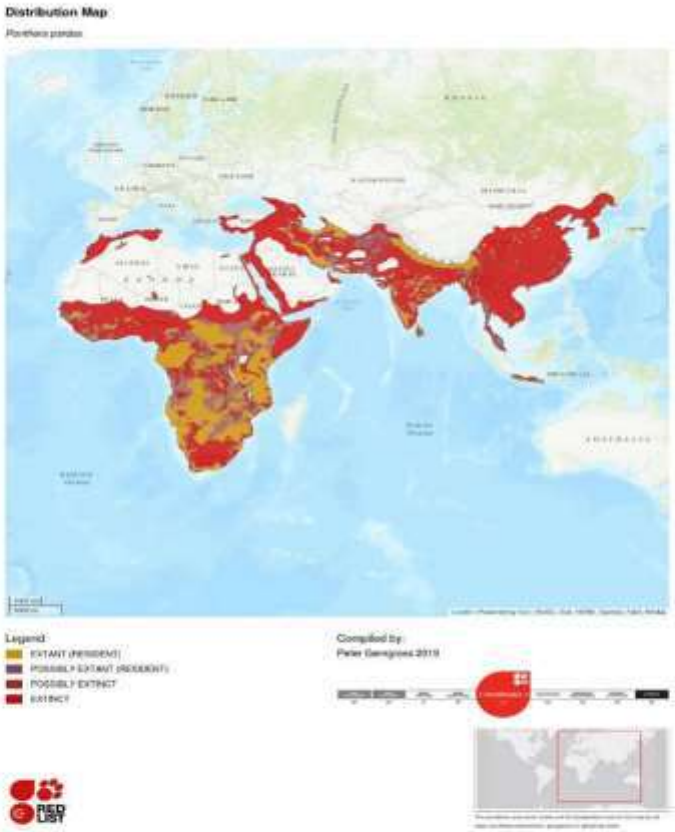
Threats in the Study Area

Habitat destruction due to deforestation, urbanization, and agriculture is a major threat to sloth bear populations. Conflicts with humans over resources and property damage can lead to the killing of sloth bears. However, in the study area, no perceptible threats to the wild animals were identified in the villages surveyed.

6) Details of Indian Leopard (*Panthera pardus fusca*)

Leopard is one of the big cats found in Gujarat state. It is also one of the most adapted animals and, therefore, its population is steadily increasing in the state. Leopard is found almost throughout the state in all the districts except Ahmedabad district. The cluster of rosettes on the golden body makes the animal one of the most attractive animals in the animal kingdom. Leopard lives for around 20 years. It is a nocturnal animal and hunts during the night. Leopard is able to climb upon a tree easily, sometimes with the carcass of its prey. Barking of the dogs in the vicinity of villages and guttural warning calls of the monkeys in the jungle often give away the presence of the carnivores. The female gives birth to 2-4 cubs in a litter after a gestation period of 84-90 days.

The population of leopard is continuously on increase. Presently, there are more than "2274" (as per 2023 census) leopards in the state (Department of forest, 2023).



Distribution map and IUCN status of Indian Leopard (*Panthera pardus fusca*) (**Source:** IUCN, Peter Gerngross, 2019)

Leopard survey

The study area (Buffer zone) have been reported as a habitat of Indian Leopard *Panthera pardus fusca* one of the most common and abundant Mammal species classified under Schedule I of Indian Wildlife (Protection) Amendment Act, 2022. A comprehensive effort was made to assess their current status in term of movements and habitat use in and around the study area. Detailed survey in the core zone and buffer zone (10 km radius from proposed project block) was carried out to understand the status on the distribution of species within the study area. Questionnaire survey was carried out to understand the current status of Leopard sightings and their movements. Overall, 15 people from three villages were interviewed randomly.

Habitat in the study area

No direct/in-direct sighting of Indian leopard were recorded from the study area. According to the secondary information provided by the forest department; leopards were recorded/rescued from the agricultural fields and human settlement from the study area.

General Food Habitats

It is a nocturnal animal and hunts during the night. It predates upon deer, monkeys, dogs, peacocks and sheep and goats. Because of its hunting habits, the carnivore often enters into conflicts with human beings.

Status of threat in the study area

The primary threats to Leopards are anthropogenic. Habitat fragmentation, reduced prey base and conflict with livestock and game farming have reduced Leopard populations throughout most of their range (Nowell and Jackson 1996, Ray et al. 2005, Hunter et al. 2013). The conversion of forest habitats and savanna systems to agriculture, livestock farming and urban sprawl have significantly reduced Leopard range. Though exceptions exist (Athreya et al. 2013), this conversion typically leads to the depletion of natural prey species through poaching thereby reducing the natural prey base in these areas.

Source:

1. Stein, A.B. et al. 2020. Panthera pardus (amended version of 2019 assessment). The IUCN Red List of Threatened Species 2020: e.T15954A163991139. https://dx.doi.org/10.2305/IUCN.UK.2020-1.RLTS.T15954A163991139.en
2. Mondal, K., Sankar, K., Qureshi, Q., Gupta, S. and Chourasia, P. 2012. Estimation of population and survivorship of leopard through photographic capture-recapture sampling in west India. World Journal of Zoology 7: 30–39.
3. Y.V.Jhala, Qamar Qureshi, and S.P.Yadav 2020. Status of leopards in India, 2018. National Tiger Conservation Authority, Government of India, New Delhi, and Wildlife Institute of India, Dehradun. Technical Report TR/2020/16.

Reptiles

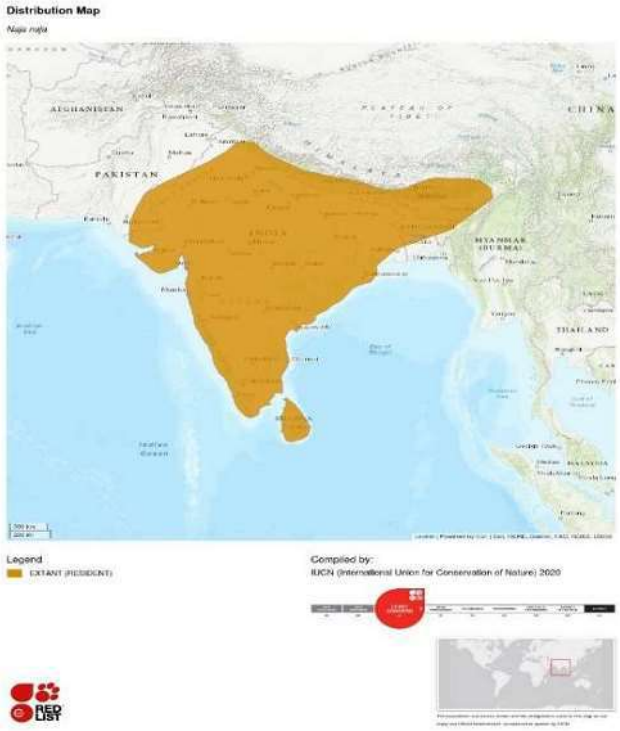
7) Details of Indian Cobra (*Naja naja*)

A Naja naja can be easily identified by the presence of hood and the spectacle mark on the back of the hood. The hood is spread only when the snake is agitated, and in some specimens the hood marks are absent too. Body slender with smooth oval shaped scales. Dorsal color includes yellow, all shades of brown, grey, reddish, black or black mixed with blue, purple, red etc. Side dorsal scales are larger and clearly oval shaped while scales on the top are narrow and become pointed. Color greatly depends on geographical region.

Distribution map and IUCN status of Indian Cobra (**Source:** IUCN, 2020[4,5])

[4] IUCN. 2021. The IUCN Red List of Threatened Species. Version 2021-2. Available at: www.iucnredlist.org. (Accessed: 04 September 2021).

[5] de Silva, A., Ukuwela, K., Shankar, G., Srinivasulu, B., Das, A., Vyas, R., Sawant, N.S., Kulkarni, N.U., Deepak, V., Thakur, S., Mohapatra, P., Srinivasulu, C. & Achyuthan, N.S. 2021. Naja naja. The IUCN Red List of Threatened Species 2021: e.T62241A3110222. https://dx.doi.org/10.2305/IUCN.UK.2021-3.RLTS.T62241A3110222.en. Accessed on 18 June 2024.



Habitat in the study area

According the locals and forest department, all the direct sightings of the indian Cobra were located along the agricultural landscapes, human habitation and along the roadsides (Roadkills). This species is well adapted to agricultural scapes, followed by human settlements, semi-dense forest scapes and along the aquatic environment.

Status of threat in the study area

Major threats are Road kill mortality, killing due to its venom potency and aggression on encounter with humans on field are two most commonly known threats.

8) Details of Oriental Rat Snake (*Ptyas mucosa*)

Oriental Rat snake or Indian rat snake is a common non-venomous species of colubrid snake found in parts of South and Southeast Asia (Reptile Database[6], Whittaker & Captain[7]). Rat Snake (Dhaman) is a commonly seen snake which is famous for its fast crawling speed and much larger size than most of the widely distributed species found in India. Very long body with dark color patterns on the whole dorsal surface are its general identification features. Apart from these it can be identifies precisely by checking posterior body reticulated with black color net like markings. Traditionally people differentiate between Cobra and Rat Snake by accepting Rat Snake to be a snake having head broader than neck or neck thinner than mid body.

[6] Uetz, P., Freed, P, Aguilar, R., Reyes, F. & Hošek, J. (eds.) (2023) The Reptile Database, http://www.reptile-database.org, Accessed on 24th August 2023.

[7] Whitaker, R. and Captain, A. 2004. Snakes of India. The Field Guide. Draco Books, Chengalpattu, Tamil Nadu, xiv+479.

Distribution map and IUCN status of Oriental Rat Snake (Source: IUCN, and Conservation International, 2016[8])



Habitat in the study area

According to the locals and forest officials, All the direct sightings of the Rat snakes was located near the human dominated and agricultural scapes. This species is well adapted to natural village environment setting. According to the villagers, Rat snake are well distributed locally along the rural landscapes, agro-forest areas, and around freshwater bodies.

Status of threat in the study area

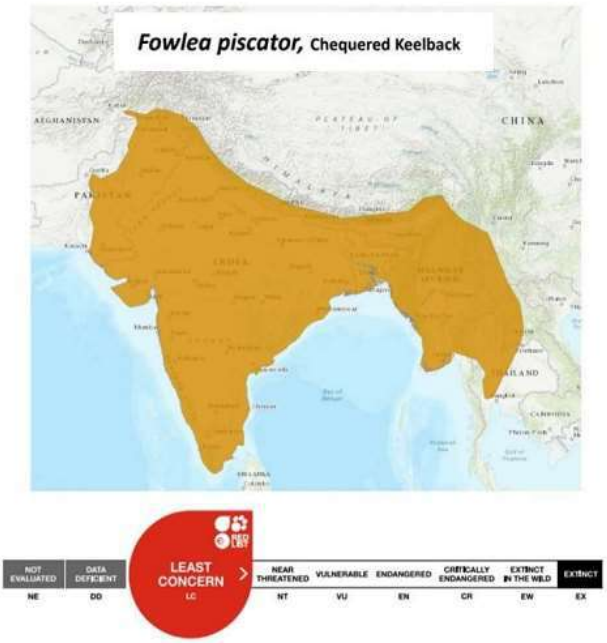
Threats includes killing due to misidentification with venomous species like Cobra. Snake charmers use this species in snake charming because of its large size and harmless to display nature. Major perceptible threats identified around the study area were roadkill.

9) Details of Chequered Keelback (*Fowlea piscator*)

Chequered Keelback is the most widespread *Fowlea* species also the most widespread fresh water snake. This is also the most common snake in and around human habitat including exclusive urban areas having no natural surrounding suitable for other snakes. Morphologically it is variable in colors and somewhat in patterns also. Overall it can be identified by carefully blackish patched dorsal surface on brown, greenish or yellow ground color. The snake has keels scales and rounded pupil. The coloration vary from region to region with a Chequered pattern all over the body. The overall body color vary from green to dark brown (Whitaker & Captain, 2004[9]

[8] Wogan, G. et al. 2021. *Ptyas mucosa*. The IUCN Red List of Threatened Species 2021: e.T164644A1063584. https://dx.doi.org/10.2305/IUCN.UK.2021-3.RLTS.T164644A1063584.en. Accessed on 24 May 2024.

[9] Whitaker, R. and Captain, A. 2004. Snakes of India. The Field Guide. Draco Books, Chengalpattu, Tamil Nadu, xiv+479.



Habitat in the study area

All the direct sightings of the Chequered keelback was located near the aquatic habitats, and open drains around human dominated scapes. This species is well adapted to aquatic habitat and sewer drains along the residential environment. According to the villagers, Chequered keelback snake are well distributed locally along the rural drains, village ponds, and around freshwater bodies.

Status of threat in the study area

Major threats are road kills and intentional killing by people because of its wide range of colours and patterns which makes its identification tough sometimes. Due to its aggressive behaviour it can be confused with Cobra. As it is well settled in urban areas, habitat destruction doesn't seem to be a serious threat for this species. In many parts of its range it is consumed by few communities.

Birds

10) White-eyed Buzzard (*Butastur teesa*)

Physical Description

This slim and small hawk is easily identified by its white iris. Adults have a white throat with a prominent dark stripe, yellow base of the bill, and rufous tail. A white spot is sometimes visible on the back of the head. When perched, the wing tip nearly reaches the tip of the tail. The ceres are distinctly yellow and the head is dark with the underside of the body darkly barred. In flight, the narrow wings appear rounded with black tips to the feathers and the wing lining appears dark.

Habitat

Inhabits dry open land, open forest and cultivated lands. This species is most often seen soaring alone in thermals or perched still. Groups of two or three may sometimes be seen. The most commonly heard call is a plaintive mewing note or falling whistle.

Feeding Habits

Preys on small birds, small mammals, reptiles, frogs, crabs and insects like locusts, grasshoppers and crickets.

Breeding Habits

The nest is built on a tree with twigs and both the parents take part in nest building. The nest may contain up to three eggs.

Distribution

This species is widely distributed in South Asia, throughout India in the plains and extending up to 1000 m in the Himalayas. It is a resident in Iran, Pakistan, Nepal, Bangladesh, and Myanmar. A form that is possibly of this species has been recorded in the Greater Sundas, Indonesia.

Population

They are numerous in some areas, but declining. A survey in the late 1950s estimated about 5000 birds in the vicinity of Delhi in an area of about 50,000 km2 giving a density of 0.1 per square kilometre.

Conservation Status

In India, White-rumped vultures are protected under Schedule- I of the Wildlife (Protection) Amendment Act, 2022. The subspecies are classified as Least Concern (LC) on the IUCN Red List of Threatened Species.

Threats in the Study Area

The primary threats to the White-eyed Buzzard include habitat loss and fluctuations in prey populations, particularly insects. The White-eyed Buzzard prefers open, dry habitats like forests and cultivated areas, and its populations are declining in some areas. Loss of these habitats due to deforestation, urbanization, or agricultural expansion can reduce the available space for nesting and foraging. Fluctuations in Prey Populations can pose a threat to the raptor population as the buzzard's diet primarily consists of insects, rodents, and small mammals. Changes in these prey populations, whether due to natural cycles, habitat alteration, or other factors, can negatively impact the buzzard's ability to find sufficient food.

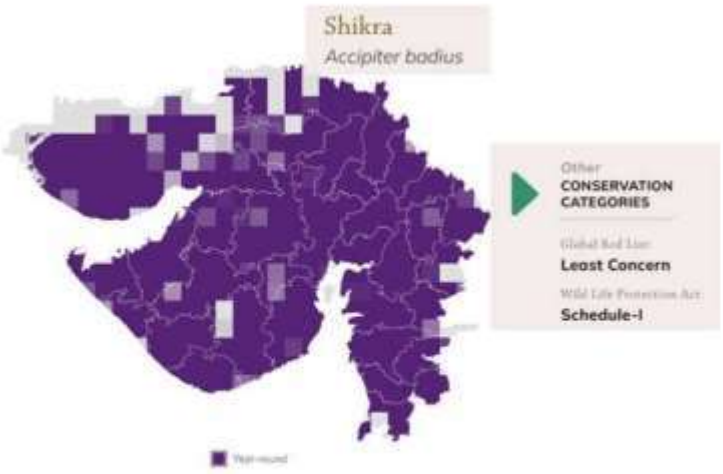
11) Details of Shikra (*Accipiter badius*)

The shikra (*Accipiter badius*) is a small bird of prey in the family Accipitridae found widely distributed in Asia and Africa where it is also called the little banded goshawk. Shikra is a small raptor (26–30 cm long) and like most other Accipiter hawks, this species has short rounded wings and a narrow and somewhat long tail. Adults are whitish on the underside with fine rufous bars while the upperparts are grey. The lower belly is less barred and the thighs are whitish. Males have a red iris while the females have a less red (yellowish orange) iris and brownish upperparts apart from heavier barring on the underparts. The females are slightly larger. The mesial stripe on the throat is dark but narrow. In flight the male seen from below shows a light wing lining (underwing coverts) and has blackish wing tips.

Distribution map of Shikra ***(Source:** IUCN[10], State of Indian Birds[11]; SOIB)*

[10] BirdLife International. 2021. *Accipiter badius. The IUCN Red List of Threatened Species* 2021: e.T22695490A1979517032. Accessed on 24 April 2023.

[11] SoIB 2023. State of India's Birds factsheet: Shikra Accipiter badius (State: Gujarat) https://stateofindiasbirds.in/species/gj-shikra1/. Accessed on 2023-08-22.



Habitat in the study area

The species inhabits a wide range of dry habitats with trees, including deciduous woodland, savanna, plantations and gardens, but avoids closed canopy or dense woodland (Ferguson-Lees and Christie 2001). Shikra were recorded from the proposed site as well as from the study area. Majority of the sightings were located near the human dominated scapes and agricultural areas. This species is well adapted to forested, plantation, and agricultural landscapes of the area. According to the villagers, Shikra (locally called as Shakro-baj) is present in both, village and agricultural/forested areas.

Status of threat in the study area

Globally there are no major threats to this species. The species has a long standing tradition of use in falconry in India and Pakistan (Ali and Arshad 2010, Ahmed 1997). However, No perceptible threats were identified in the study area surveyed. Village residents along the study area are against hunting or poaching of the Shikra.

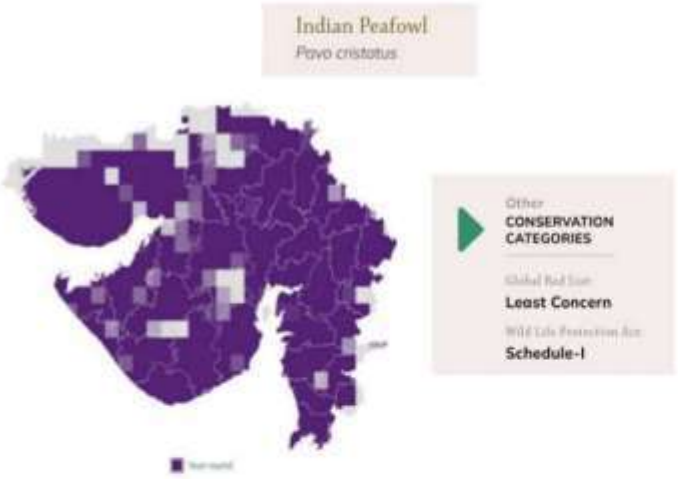
12) Details of Indian Peafowl (Pavo cristatus)

Indian Peafowl (*Pavo cristatus*) is a familiar and universally known large pheasant. It is a National Bird of India, An unmistakable, large ground bird. The male has a spectacular glossy green long tail feathers that may be more than 60 percent of the bird's total body length. These feathers have blue, golden green and copper colored celli (eyes). The long tail feathers are used for mating rituals like courtship displays. The feathers are arched into a magnificent fan shaped form across the back of the bird and almost touching the found on both sides. Females do not have these graceful tail feathers. They have the fan like crest with whitish face and throat, chestnut brown crown and hind neck, metallic green upper breast and mantle, white belly and brown back rump and tail. Their primaries are dark brown.

Distribution map of Indian Peafowl (Source: IUCN[12], State of Indian birds[13])

[12] BirdLife International. 2016. Pavo cristatus. The IUCN Red List of Threatened Species 2016: e.T22679435A92814454. http://dx.doi.org/10.2305/IUCN.UK.2016 - 3.RLTS.T22679435A92814454.en

[13] SoIB 2023. State of India's Birds factsheet: Indian Peafowl Pavo cristatus (State: Gujarat) https://stateofindiasbirds.in/species/gj-compea/. Accessed on 2023-08-22



Habitats in the Study Area

Indian Peafowl were recorded from the proposed site as well as from the study area. Majority of the sightings of Indian Peafowl were located near the human dominated scapes and agricultural areas. This species is well adapted to forested, agro-forest, and agricultural landscapes of the area. According to the villagers, Indian Peafowl is present in both, village and agricultural/forested areas. Day time they temporarily move towards the surrounding agriculture areas for feeding while during night time they roost on the giant/large trees present in and around the villages.

Status of threat in the study area

No perceptible threats were identified in the study area surveyed. Being a national bird, people in the study area are against hunting or poaching of the Indian Peafowl.

13) Yellow-crowned Woodpecker (*Leiopicus mahrattensis*)

Habit and habitat

Yellow-crowned Woodpeckers are found in dry, arid areas with relatively open foliage, including open forests, scrub, and cultivated areas. They are also seen near human habitations and in gardens. They often fly from tree to tree in a sharply bounding flight. They may join mixed-species flocks while foraging. They forage in trees, often clinging upside-down while searching for food.

Food and Feeding

They are primarily insectivorous, feeding on bark-dwelling insects and often excavating bark and dead wood to find larvae. They may also peck open pods to obtain insect larvae.

Breeding

The breeding season typically occurs between February and May. They are cavity nesters, excavating holes in dead or live trees, usually 1 to 10 meters from the ground. They usually lay 3 white, glossy eggs.

Conservation Status

In India, the sub-species is protected under Schedule- I of the Indian Wildlife Protection Act (1972) of India. The subspecies is listed as Least Concern (LC) in the IUCN Red list based simply on the population size (none of the other criteria are met) and fully protected in India.

Threats in the Study Area

In the study area, no perceptible threats to the wild animals were identified in the villages surveyed except lack of awareness among public about wildlife conservation.

14) Crested Serpent Eagle (*Spilornis cheela*)

The crested serpent eagle (Spilornis cheela) is a medium-sized bird of prey that is found in forested habitats across tropical Asia.

Description

This medium-large, dark brown eagle is stocky, with rounded wings and a short tail. Its short black and white fan-shaped nuchal crest gives it a thick-necked appearance. The bare facial skin and feet are yellow. The underside is spotted with white and yellowish-brown. When perched the wing tips do not reach until the tail tip.

Habitat

Prefers a wide variety of tropical and subtropical forests with thick vegetation both on the low hills and the plains. They hunt over forests and wet grasslands.

Feeding Habits

Feeds mainly on snakes and lizards; also prey on small mammals, birds, fish, frogs and crabs.

Breeding Habits

Breeding season starts in the late winter. The nest is a large platform made of sticks and is lined with leaves. The usual clutch is one egg.

Distribution

It found within widespread range across the Indian Subcontinent, Southeast Asia and East Asia.

Conservation Status

In India, the sub-species is protected under Schedule- I of the Wildlife Protection (Amendment) Act 2022 and also listed as Least Concern (LC) in the IUCN Red list.

Threats in the Study Area

The primary threats to the sps include habitat loss and degradation due to deforestation and land use changes. Also the specific haboitat requirement is one of the important threat to the population as they need large trees for nesting and suitable foraging areas.

Species-specific Wildlife Conservation Plan

The present species-specific wildlife conservation plan covers species-specific all four aspects of conservation efforts, viz. Habitat conservation and improvement, Keystone species protection, exsitu efforts if required, and poaching prevention. Following Schedule-I species of fauna was recorded/ reported from the WCA area. Thus, for the conservation of these wildlife species in WCP areas, a species-wise conservation plan has been formulated.

Impacts on Terrestrial Flora

Baseline status of terrestrial vegetation clearly suggests that the project sites fall in semi-arid biogeographic zone with low floral density and diversity. The proposed project construction activities may involve small vegetation removal from the project site. Since the project site does not have important plant species, the unavoidable removal of vegetation during construction activity could be considered a negligible impact on flora. However, it is recommended that minimum vegetation should be removed from the project site. There are patches of scrub forest located in buffer area, therefore, utmost precautions to be taken not to degrade these areas by constructing temporary roads, dumping materials, solid wastes, garbage, or any other form of materials within these forest areas. The fugitive emission from

the construction and operation activities shall be strictly controlled so that it does not affect the growth of vegetation in these areas. To control dust and fugitive emission, it is strongly recommended that the company should undertake shelter belts along the periphery of the project site.

Impacts on Terrestrial Fauna

Though, the impacts of proposed project and related construction activities may be on several faunal taxa, but for the present study was focused mainly on vertebrate classes i.e. reptiles, birds, and mammals for identification of impacts and future monitoring purpose. Therefore, in the present study we identified impacts on reptiles, birds, and mammals particularly important and threatened species of the landscape.

Mammals

Impacts: These all above listed species are likely to be using open scrubland areas and forest areas for their feeding and breeding purposes. They are also likely to be using waterbodies in the buffer area for their requirement of water. The impacts of project activities on these species are likely to be direct as they are primary consumers in the eco-system. Degradation of soil, vegetation and habitat due to chronic pollution loads, the species would lose its feeding ground and breeding area. Therefore, changes in overall habitat qualities in the buffer area are likely to affect these species. The direct disturbance to these species by vehicle traffic, human intrusion is also an issue of some concern.

Recommendations: It is recommended that Proponent shall take up strict pollution control measures (air, water and noise) which would take care of major issue of habitat degradation for the species. Thick green belt of local hardy species shall be created to control air pollution and also provide additional habitat for these species. Proponent shall also support forest department in conducting awareness of local people towards wildlife conservation and law reinforcement and anti-poaching activities in the study area. During construction and operational phases, Proponent shall inform their workers and staff not to engage in chase, tease or hunt of wild species as it is prohibited under the Wildlife (Protection) Amendment Act 2022.

Reptiles

Impacts: All above listed species are generally ground dwellers and likely to be using open scrubland areas and forest areas for their feeding and breeding. They are also likely to be using waterbodies in the buffer area for their requirement of water. The impacts of project activities on these species are likely direct as they are primary consumers in the ecosystem. Due to the degradation of soil, vegetation and habitat due to pollution loads, the species would lose its feeding ground and breeding area. Therefore, changes in overall habitat qualities in the buffer area are likely to affect these species. The direct disturbance to these species by vehicle traffic, human intrusion is also an issue of some concern.

Recommendations: It is recommended that the company shall take up strict pollution control measures (air, water and noise) and habitat alterations which would take care of significant issue of habitat degradation for the species. A thick green belt of local hardy species shall be created to control air pollution. The Proponent shall also support the forest department in conducting awareness of local people towards wildlife conservation and law reinforcement and anti-poaching activities in the study area. During construction and operation phases, Proponent shall inform their workers and staff not to disturb or kill these wild species as it is strictly prohibited under the Wildlife (Protection) Amendment Act 2022.

Birds

Peacock

Impacts: Field surveys conducted within a 10 km buffer zone of the project site confirmed the presence of Indian Peafowl, particularly near human settlements, villages, and agricultural landscapes. Given its confirmed presence, the likelihood of nesting in these buffer areas cannot be disregarded.

As a ground-nesting species, Indian Peafowl is highly susceptible to disturbances from project-related activities such as:

- Habitat degradation due to pollution, soil erosion, and vegetation loss.
- Direct disturbances from human and vehicular presence, noise, vibrations, and artificial lighting.

- Disruptions to nesting and roosting behavior due to construction activities.

Recommendations: To mitigate the impacts of the proposed project on Indian Peafowl, the following conservation measures should be integrated into the wildlife conservation action plan:

- Restrict vehicle movement and human activity near identified nesting areas.
- Prohibit excavation and heavy vehicle operation in proximity to known nesting sites.
- Electrical lines should be designed to minimize electrocution risks for Indian Peafowl and other large avian species.
- Project lighting should be adjusted to minimize disturbance by:
- Using low-intensity, downward-focused bulbs.
- Modifying the angle of light sources to prevent light pollution.
- Implement afforestation programs in surrounding villages and schools to create additional roosting sites.
- Develop thick green belts composed of native hardy species to mitigate air pollution.
- Preserve and protect large, mature trees that serve as natural roosting sites.
- Train construction personnel and project workers on the ecological and legal significance of Indian Peafowl as a Schedule I species under the Wildlife (Protection)Amendment Act, 2022.
- Establish a reporting protocol for accidental casualties, ensuring prompt notification of project authorities and local forest officials for appropriate action.

Raptors

Impacts: The terrestrial raptor species recorded in the study area function as apex predators, occupying the tertiary consumer level within the food chain and ecological pyramids. Consequently, any alterations in primary productivity could significantly influence their distribution, density, and overall population dynamics.

Project-related activities that contribute to air, water, and noise pollution, as well as habitat degradation, may have detrimental effects on these raptors and their associated ecosystems. Habitat disturbances, including the degradation of vegetation, can impact prey availability and nesting sites. Additionally, anthropogenic disturbances such as human presence, vehicular movement, noise, vibrations, and artificial lighting could lead to habitat displacement and a decline in raptor populations within the project area and its immediate vicinity.

Recommendations: To mitigate the potential impacts of the project on raptor populations, the following conservation measures should be implemented:

Pollution Control Measures: The project proponent must adopt advanced pollution control technologies to minimize dust emissions and fugitive pollutants during both construction and operational phases. Effective mitigation strategies should be employed to ensure minimal degradation of surrounding vegetation, forested areas, and water bodies.

Minimization of Disturbances: Vehicular movement in and around the project site should be restricted to reduce disturbances to wildlife. Additionally, all machinery should be maintained in optimal condition to minimize noise and vibrations, thereby reducing stress on raptor populations.

Lighting Management: Artificial lighting should be carefully designed to limit illumination spillover beyond the project site. Directional lighting with low-intensity bulbs should be used to prevent disruption of nocturnal behaviors in raptors and other avian species.

Habitat Conservation and Restoration: Establishment of thick green belts composed of native hardy species should be prioritized to enhance air quality and provide additional roosting and foraging opportunities for raptors.

Other Avifauna

Impacts: As carnivorous species occupying tertiary consumer positions within the food chain and ecological pyramids, these birds are highly sensitive to changes in primary productivity. Any disruption in wetland ecosystems can directly impact their distribution, population density, and overall survival. Project activities that contribute to air, water, and noise pollution, along with the degradation of wetlands, pose significant risks to these species. Habitat alterations may lead to a reduction in prey availability, nesting sites, and overall habitat quality. Additionally, anthropogenic disturbances such as human presence, vehicular movement, noise, vibrations, and artificial lighting can result in habitat displacement, forcing these aquatic species to abandon critical foraging and breeding areas within and around the project site.

Recommendations: It is recommended that Proponent shall take utmost care in controlling water pollution and put in place all types of pollution control measures during construction and operation phases which would ensure minimum degradation of surrounding waterbodies. Also, creation of ponds in suitable locations of the buffer area would provide additional habitats for wetland dependent fauna. Minimize vehicle movements around the project areas. Adjust lighting within core area and ensure minimum illuminations spreads outside the project area. Keep all the machinery maintained so that minimum noise and vibrations are generated in the surrounding area. Create and conserve waterbodies nearby the project area.

Wildlife & Ecological Mitigation Measures

Based on our field study, information collected and consultation with project proponent, we recommend following mitigation measures as self-regulatory, monitoring, and compensatory measures for protection, conservation and betterment of wildlife and ecology in the surrounding area of project site.

Regulatory Mitigation Measures & Recommendations

The development of biomedical waste treatment facility shall be done without disturbing the ecology of the surrounding area. This would ensure minimal damage, or alteration of the morphology of the habitats. Even if any alteration in the habitats caused by construction activities, movement of heavy vehicles, etc. it shall be restored.

Adjust lighting within and outside the project area in such a way so that there is less disturbance and distraction to wildlife. Lighting shall be adjusted with special care so that fauna is not affected.

Strict water/soil/air pollution control using various methods and technologies shall be carried out.

During construction, water sprinkling on roads and soil dumps shall be carried out to control dust pollution.

During operation phase Water and Air quality standards must be maintained as per GPCB/CPCB norms in and around the project site.

Ambient noise pollution and vibrations during construction and operation phases shall be within limits of the standards mentioned by the GPCB/CPCB.

Plantation of thick green belt on periphery of the project site shall be created using local and hardy species.

Ensure safe passage of runoff through drainages located nearby the project area.

Ensure no oil, gas, sediments, pollutants, or any raw materials are spilled out and flowed into nearby drainage during construction or operation phase of the project.

Proponent shall ensure that their construction workers and other workers during construction or operational phase shall not be involved in chasing, teasing, poaching and hunting activities of birds, reptiles or mammals around the project site.

All other general measures to keep environmental parameters within permissible standards.

Compensatory Measures & Recommendations

There are few ecologically important habitats and Threatened species of plants and animals are present in the study area. Therefore, Proponent should take utmost care during construction and operation phases so that these areas and the species are not affected by their activities. The following are some of the recommendations that would help in propagation, protection and conservation of such habitats and species in the study area.

Proponent shall carry out its plantation through local forest department in order to compensate for the potential degradation/alteration of important habitats in the project area.

Schedule-I species of Herpetofauna and mammals are recorded in the study area, Proponent shall carryout important habitats improvement and wetland conservation activities in the vicinity of project area for the betterment of wildlife species recorded from the study area.

Since Indian Peafowl and other Schedule-I bird species are recorded in the study area, Proponent shall carryout tree plantation in the surrounding villages, schools, roads so that these species are provided with more safer roosting places in the study area. Also, oldest tall trees present in the project area to be restored and damage to such trees should be avoided.

Monitoring Measures & Recommendations

After commencement of the project, Proponent shall carryout ecological & biodiversity monitoring at every 2 years initially and every 5 years and take necessary corrective measures accordingly. Proponent shall bear the cost of third-party monitoring. Monitoring of status of biodiversity and wildlife shall be monitored with specific emphasis on status of Schedule-I species of Herpetofauna, Birds and Mammals along with their habitats including forest areas, waterbodies in the study area.

Impact – Mitigation Matrix

Based on our observation, literature review and consultation with Forest Department, we formulated following impact vs mitigation matrix. It is advised that company shall follow the suggestions provided in the following *Table 0-2*.

Table 0-2: General Impacts vs. Mitigation Matrix & Conservation Plan

Issues		Risk Level	Reason/ Status in Relation to Project Site	Suggestions
Species	Rare/ Threatened	Medium	10 species belong to Threatened categories and 19 species belong to Schedule-I of under Wildlife (Protection) Amendment Act 2022.	• Ensure no/minimum damage or disturbance is caused to these species and their habitats due to the project activities or people involved in project. • Take up conservation and protection measures for these species in the study area. • Periodically monitor these areas for their status as part of comprehensive biodiversity monitoring plan
	Endemic Species	Nil	No endemic species of any fauna or flora were recorded during study in the core area and buffer area.	Nil
Important features	Protected areas	Nil	No protected area present in close vicinity	Nil
	Eco-sensitive Zones identified by Government	Nil	No protected area or their eco-sensitive zones are present within 10 km periphery of the proposed project site	Nil
	Important Bird Areas	Nil	No Important Bird Area (Birdlife International) is present in core or buffer area.	Nil

	Ramsar Site	Nil	No Ramsar sites present in Kachchh.	Nil
	Wetlands of National Importance	Nil	No wetlands of national importance present in the periphery of the project site	Nil
	Wetlands of International Importance	Nil	No wetlands of international importance present in the periphery of the project site	Nil
	Wildlife Corridors	Nil	No notified or officially identified wildlife corridor present in and around project site.	Nil
	Forest Area	Medium	Forests are present in the buffer area of the proposed project site.	• Ensure no/ minimum disturbance / damage is caused to forest area due to pollution, dust, movement of vehicle, people through forest areas. • Ensure shelter belt and green belt along the periphery of the project area to control pollution
	Mangroves	Nil	No Mangroves patches are reported in the study area.	Nil
	Corals	Nil	No coral reef area presents on the coast falling in the study area.	Nil
	Breeding/ Nesting Areas	Nil	No breeding/nesting area present on the coast falling in the study area.	Nil

CHAPTER 4

The following details, which will be executed by the project proponent, should be included in the description of proposed management methods for the project site (core area):

Interventions must be carried out by the project's authority inside the project area (core area) and be properly justified.

The proposed project is a green field project and it is located Plot No. 5 & 6, GIDC Shehra, Taluka & district-Panchmahal, Gujarat-389210. There is no Wildlife Sanctuary, Biosphere Reserve, Tiger / Elephant Reserve, Migratory Corridors and Ramsar Sites/National Wetland falls in the project study area of 10 km radius. The project proponent will consult with the concerned Forest Department regarding the WLCP activities/ management strategies for the same.

Total area of the project is 5678.68 sqm, out of which 1964 sqm, i.e. 0.1964 Ha (34.58%) of green belt area is proposed on the site.

Considering 1500 treen per 10,000 sq. m., the proposed roject should have a total plantation of 300 trees in green belt. Plant species suggested for Greenbelt at various locations are tabulated in ***Table 0-1.***

Locations (preferably with GPS coordinates) of the proposed interventions and maps overlaid in the proposed Land use planning.

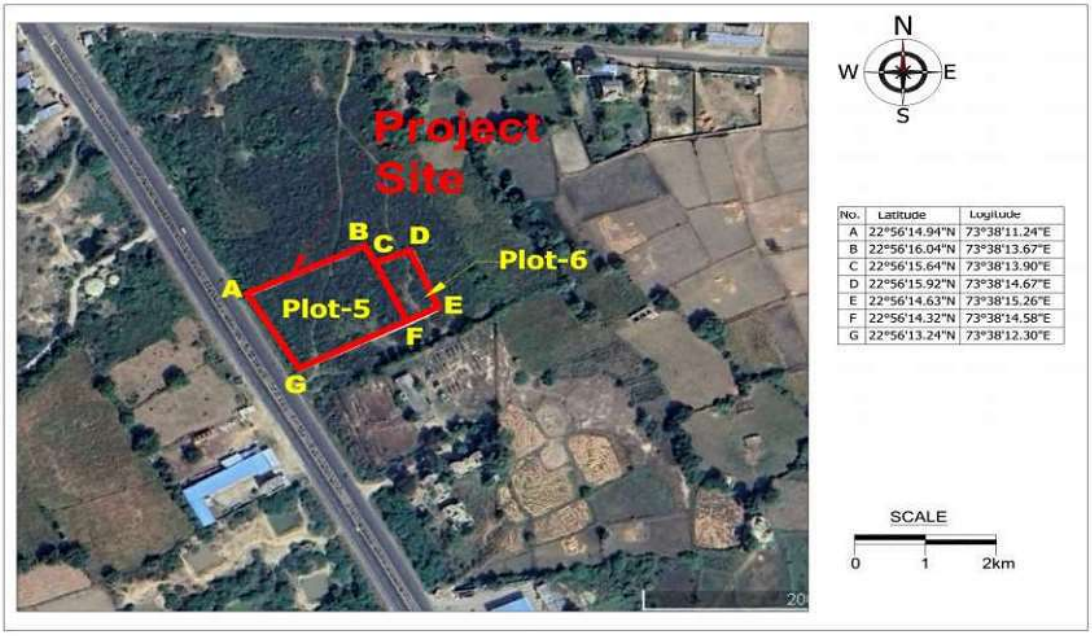
The proposed project is a green field project and it is located Plot No. 5 & 6, GIDC Shehra, Taluka & district-Panchmahal, Gujarat-389210. There is no Wildlife Sanctuary, Biosphere Reserve, Tiger / Elephant Reserve, Migratory Corridors and Ramsar Sites/National Wetland falls in the project study area of 10 km radius. The project proponent will consult with the concerned Forest Department regarding the WLCP activities/ management strategies for the same.

Greenbelt along the 0.1964 Ha will be developed within the project premises in consultation with Forest Department Considering 1500 treen per 10,000 sq. m., the proposed roject should have a total plantation of 300 trees in green belt. Greenbelt overlaid on LULC map is shown in ***Figure 0-1***.

Table 0-1: Coordinates of the proposed project site

Code	Latitude	Longitude
1	22° 56' 14.94" N	73° 38' 11.24" E
2	22° 56' 16.04" N	73° 38' 13.67" E
3	22° 56' 15.64" N	73° 38' 13.90" E
4	22° 56' 15.92" N	73° 38' 14.67" E
5	22° 56' 14.63" N	73° 38' 15.26" E
6	22° 56' 14.32" N	73° 38' 14.58" E
7	22° 56' 13.24" N	73° 38' 12.30" E

Figure 0-1: Specific Map Showing Project Boundary with Approximate Coordinates



No.	Latitude	Logitude
A	22°56'14.94"N	73°38'11.24"E
B	22°56'16.04"N	73°38'13.67"E
C	22°56'15.64"N	73°38'13.90"E
D	22°56'15.92"N	73°38'14.67"E
E	22°56'14.63"N	73°38'15.26"E
F	22°56'14.32"N	73°38'14.58"E
G	22°56'13.24"N	73°38'12.30"E

The summary of proposed interventions along with preferred locations for implementing the interventions is given below:

Table 0-2: Proposed interventions along with preferred locations

Interventions	Consideration	Preferred Locations
Dust Control	Spreading of huge amounts of dust causes air pollution which affects more to human beings and the workers engaged in the project activity, besides creating problems for the wild animals. Therefore, dust control is a major activity. Dust generation cannot be completely eliminated, but the attempt is made to reduce the generation of dust. Folowing steps shall be taken for control of dust: Use of sprinklers and dust suppression units at the time of loading, transportation, and handling of construction material. Mobile water sprinklers and mobile tankers will be deployed in the project area wherever necessary. Regular maintenance of HEMMs and P&M. Green belt will be provided around the periphery of project, and avenue plantation taken up along roads. Provision of adequate firefighting arrangements. Dust control measures have been proposed as compliance with the Environmental Impact Assessment and therefore special provision is not made for this.	All the point sources of dust emission/ Greenbelt around the periphery of project, and avenue plantation taken up along roads
Noise and Light Control	The following measures will be taken to keep the noise at the minimum possible level: Proper designing of plant & machinery by providing in-built mechanisms like silencers, mufflers, and enclosures for noise-generating parts and shock-absorbing pads at the foundation of vibrating equipment. Silencers provided where necessary, routine maintenance of equipment, etc. Rational deployment of noise-generating plant and machinery. Greenbelts are created around the periphery of project, and avenue plantation taken up along roads to absorb noise. Provision of isolation for vibrating equipment (both fixed and mobile). Regular monitoring of noise levels at various points. The project core area will be sufficiently illuminated. Such illumination detracts the animals from the core area, which would otherwise be dangerous to their lives. The use of vehicular headlights which disturb the animals is restricted and only dippers are allowed within the project area. These activities have been included in the project O&M, therefore special provision is not made for this.	All the point sources of Noise and light/ Greenbelt as a noise barrier/ installation/operation of equipment and machinery
Waste Management	Since waste not only creates problems for wildlife but also creates problems for mining activity. Particularly non-degradable materials like polythene bags etc. pose a lot of problems for the machineries as well as Wild animals. Hence proper	At the point sources of waste generation

	garbage management is also an important activity in the mining process. Some of the steps to be taken within the mining area have been indicated by underwater pollution. The additional steps which are to be taken for waste management are as follows: Waste generated in the project area is regularly collected, segregated into biodegradable and non-biodegradable materials and kept in colour coded bins. Un-avoidable generation of hazardous materials such as used oils, parts of machineries and equipment's are promptly collected and kept at secluded places for disposal. The non-degradable materials if any are sent for recycling. The biodegradable substances are put in the Compost pits for conversion in-to manure. The manure obtained from these pits will be utilized for plantation purpose.	
Plantation of local plant species	Under this programme saplings will be distributed in the nearby villages with the consultation of the local forest department. Habitat improvement programme will be undertaken through plantation of suitable tree species. Saplings of *Ficus religiosa* (Peepal), *Mangifera indica* (Aam), *Tectona grandis* (Sagwan), *Tamarindus indica* (Imli), *Moringa oleifera* (Moringa) etc. will be distributed in the nearby villages or as suggested by Forest Department. Species recommended by local forest department will also be added in the present plantation program.	Plantation will be done in consultation with Forest Department.

CHAPTER 5

It should describe proposed management strategies within the buffer area of 2.5 km identified around the project area and include the following points:

Interventions to be implemented by the project authorities inside the project area (buffer area) with suitable justifications.

The proposed project is a green field project and it is located Plot No. 5 & 6, GIDC Shehra, Taluka & district-Panchmahal, Gujarat-389210. There is no Wildlife Sanctuary, Biosphere Reserve, Tiger / Elephant Reserve, Migratory Corridors and Ramsar Sites/National Wetland falls in the project study area of 10 km radius. The project proponent will consult with the concerned Forest Department regarding the WLCP activities/ management strategies for the same.

Total area of the project is 5678.68 sqm, out of which 1964 sqm, i.e. 0.1964 Ha (34.58%) of green belt area is proposed on the site.

Considering 1500 trees per 10,000 sqm, the proposed roject should have a total plantation of 300 trees in green belt. Plantation will be carried out around periphery, near / around built-up areas and along internal roads of the project area.

Similarly, plantation of 1000 trees outside the project premises for habitat improvement in buffer zone will be carried out in consultation with the concerned Forest Department.

Plantation for Habitat Improvement in nearby area

Saplings of suggested tree species in *Table 0-2* will be distributed to the farmers/people of nearby villages for plantation on agriculture hedges/ public places or as suggested by local forest department. Totally 1000 saplings till 5 years (@200 trees per year) will be distributed to improve ecological conditions of the nearest village areas or as suggested by Forest Department. Details of plant species, location and ecological performance for each species are given in *Table 0-2*.

Locations (preferably with GPS coordinates) of the proposed interventions and maps overlaid in the proposed LULC map.

LULC Map showing proposed project site and buffer zone is placed as *Figure 0-1.*

Relevant provisions of the Environment Management Plan for the project and the interventions overlapping in nature are to be specified.

Greenbelt Development

Total area of the project is 5678.68 sqm, out of which 1964 sqm, i.e. 0.1964 Ha (34.58%) of green belt area is proposed on the site.

Considering 1500 trees per 10,000 sqm, the proposed roject should have a total plantation of 300 trees in green belt. Plantation will be carried out around periphery, near / around built-up areas and along internal roads of the project area.

Plant species suggested for Greenbelt at various locations are tabulated in ***Table 0-1.***

All species are arranged in alphabetical order. Location of species in different layers followed by species names, vernacular names/local names, height, type and sapling required is given in ***Table 0-1.***

Table 0-1: Details of Species Recommended for Proposed Greenbelt development at site

Plant Species	Local/Hindi Name	Height (m)	Type	Ecological and Environmental Performances of Plant Species	No. of trees to be planted
Bauhinia varigata	Kachnar	5m	Tree	T,DC,NC	300
Emblica officinalis	Amla	5m	Tree	T,DC,NC	
Saraca asoka	Asoka	5m	Tree	T,DC,NC	
Butea monosperma	Palas	10	Tree	NC, OGE, DC	
Polyalthia longifolia	Ashoka	15	Tree	DC, OGE, NC, AG.	
Albizia lebbeck	Siris	20	Tree	DC, NC, AG, DR, SR, FR.	
Azardirachta *indica*	Neem	20	Tree	DC, OGE, NC, AG, DR, SR, FR.	
Derris indica	Karanj			NC, DR, SR, FR.	
Ficus bengalensis	Banyan	20	Tree	NC, DC	
Ficus religiosa	Peepal	20	Tree	NC, OGE, DC	
Mangifera indica	Aam	15	Tree	DC	
Syzygium cumini	Jamun, Jambu	20	Tree	NC, DC	
Tectona grandis	Teak	20	Tree	DC	

Ecological performance: CN –Control Noise level, OGE – Absorb Gas emission (Sexena 1991)[14] and (Abbasi & Khan 2000)[15], DC - Dust Controller (CPCB 2007)[16], Environmental Adaptation (DR - Drought resistance, SR - Salinity resistance, FR - Fire Resistance, T- Tolerant to Air Pollution).

A shrub layer beneath tree layers will also be developed which will serve as an effective sieve for dust and sink for CO2 and other gaseous pollutants and hence a stratified green belt will be developed.

Tree Plantation Outside the Project Premises

Tree plantation outside the project premises will be done in consultation with the Forest Department. Details of recommended tree species are provided in ***Table 0-2***.

Table 0-2: Details of tree plantation outside the project premises

Plant Species	Local/Hindi Name	Height (m)	Type	No. of trees to be planted
Acacia catechu	Khair	3 m	Tree	1000
Acacia nilotica	Babul	8 m	Tree	
Adina cordifolia	Haldu	20 m	Tree	
Aegle marmelos	Bael	12 m	Tree	
Albizia procera	White Siris	20 m	Tree	
Alianthus excelsa	Maharakha	20 m	Tree	

14 Saxena, V.S. 1991. Afforestation as a tool for environmental improvement. In: Executive development program on greening the townships. Vaniki Prashikshan Sansthan, Jaipur. Pp 13-44.

15 Greenbelts for Pollution Control: Concepts, Design, Applications. 2000. Abbasi, S.A. and F.I. Khan. Discovery Publishing House, New Delhi.

16 Phytoremediation of particulate matter from ambient environment through dust capturing plant species. Published 2007 by Central Pollution Control Board, Ministry of Environment & Forests, Govt. of India in Delhi.

Anogeissus latofolia	Dhavdo/ Dhaura	20-30 m	Tree	
Bombax ceiba	Semul	20 m	Tree	
Boswellia serrota	Salai	9-18 m	Tree	
Bridelia retusa	Kaji/ Kuhir	20 m	Tree	
Buchanania lanzan	Charoli	13 m	Tree	
Butea monosperma	Palas	10	Tree	
Cassia fistula	Amaltas	12 m	Tree	
Diospyros melanoxylon	Tendu	10 m	Tree	
Ficus bengalensis	Banyan	20	Tree	
Ficus religiosa	Peepal	20	Tree	
Gmelina arborea	Shevan / Ghumar	10-30 m	Tree	
Heterophragma quadriloculare	Waras	5-15 m	Tree	
Holoptelea integrifolia	Khanjho / Kanju	20-25 m	Tree	
Lagerstroemia parviflora	Phurush	20 m	Tree	
Lannea coromondilica	Mavedi /Mohin	14 m	Tree	
Limonia acidissima	Kothi /kaith	9 m	Tree	
Madhuca indica	Mahua	20 m	Tree	
Mangifera indica	Aam	15	Tree	
Manikara hexandra	Khirni	12-25 m	Tree	
Miliusa tomentosa	Umbh	15-20 m	Tree	
Mitragyna parvifolia	Kalam/ Kaim	20-50 m	Tree	
Moringa concanensis	Moringa	6-12 m	Tree	
Oroxylum indicum	Manduk	18 m	Tree	
Ouginia oogeinensis	Tanach / Sandan	12 m	Tree	
Pterocarpus marsupium	Bigasal	20 m	Tree	
Sapindus emarginatus	Ritha	10 m	Tree	
Schleichera oleosa	Kusum	15-20 m	Tree	
Semecarpus anacardium	Bhilawa	15 m	Tree	
Sterculia urens	Kogdol / Gulu	15-20 m	Tree	
Sterospermum suaveolens	Kalagari	10-25 m	Tree	
Tamarindus indica	Imli	20 m	Tree	
Tectona grandis	Teak	20 m	Tree	
Terminalia arjuna	Arjun	15 m	Tree	
Terminalia bellerica	Bahera	15 m	Tree	
Terminalia chebula	Harda	15 m	Tree	
Terminalia crenulata	Aina	5 m	Tree	

Plan period preferably for initial 10 years with suitable provisions for interim reviews and suitable modifications

There are several interventions shall be carried out in the buffer zone (2.5 km around core zone) for minimizing the effect of project activities and strengthening the population of flora and fauna present in the area. The same has already discussed in the chapter-3 of this wildlife conservation plan. The summary of proposed interventions along with preferred locations for implementing the interventions is given below:

Table 0-3: Proposed management stretegies for 5 year period

Interventions	Consideration	Preferred Locations	Plan Period	Implementing Agency
Plantation of local plant species	For habitat improvement, plantation will be done in the nearby villages with the consultation of the local forest department.	Within 10 km radius of project area	5 year	Forest Department
Lanscape Change	Landscape Change will be construction in the nearby areas to provide a clear way for animals, and to support wildlife porpogation in the surrounding areas	Within 10 km radius of project area	5 year	Forest Department

CHAPTER 6

The financial forecast statement should detail the financial outlay for the interventions to be implemented by the project authorities within the WCP area (Core & Buffer separately).

Financial Projection

Previous chapters contain a comprehensive discussion of all the measures. The following table presents the financial requirement of different interventions proposed in the plan, based on current costs, for a period of 5 years. It also includes the annual cash flow for the core area of the project.

The total cost of the Conservation Plan is calculated @ 10 Lakh (fixed amount) for the projects that cost less than 5 cr or minimum 2% of the project cost whichever is more= 10 Lakh (Project cose is less than 5 Cr i.e. 4.87 Cr). (Refer to letter/dated 02.05.2024/ PCCF Wildlife-Gujarat State).

The total cost of the Wildlife Conservation Plan amounts to **Rs.10.00 lakh**.

Table 0-1: Financial Forecast

Sr. No.	Management interventions	Estimated Cost (in Lakh)
	Core Zone	
1	Dust Control	Covered under EMP
2	Noise and Light Control	Covered under EMP
3	Waste Management	Covered under EMP
4	Greenbelt Development with in the project premises	Covered under EMP
	Buffer Zone	
7	Habitat improvement through Plantation	7,50,000
8	Landscape Change	2,50,000
	Total Budget	**10,00,000**

CHAPTER 7

Plans and Cost Schedule

For below mentioned activities, a sum of Rs. 10,00,000/- have been proposed for the wildlife conservation plan under the following heads up to ten years in consultation with local forest department.

Table 0-1: Expenditure Budget for ten years under willife conservation plan

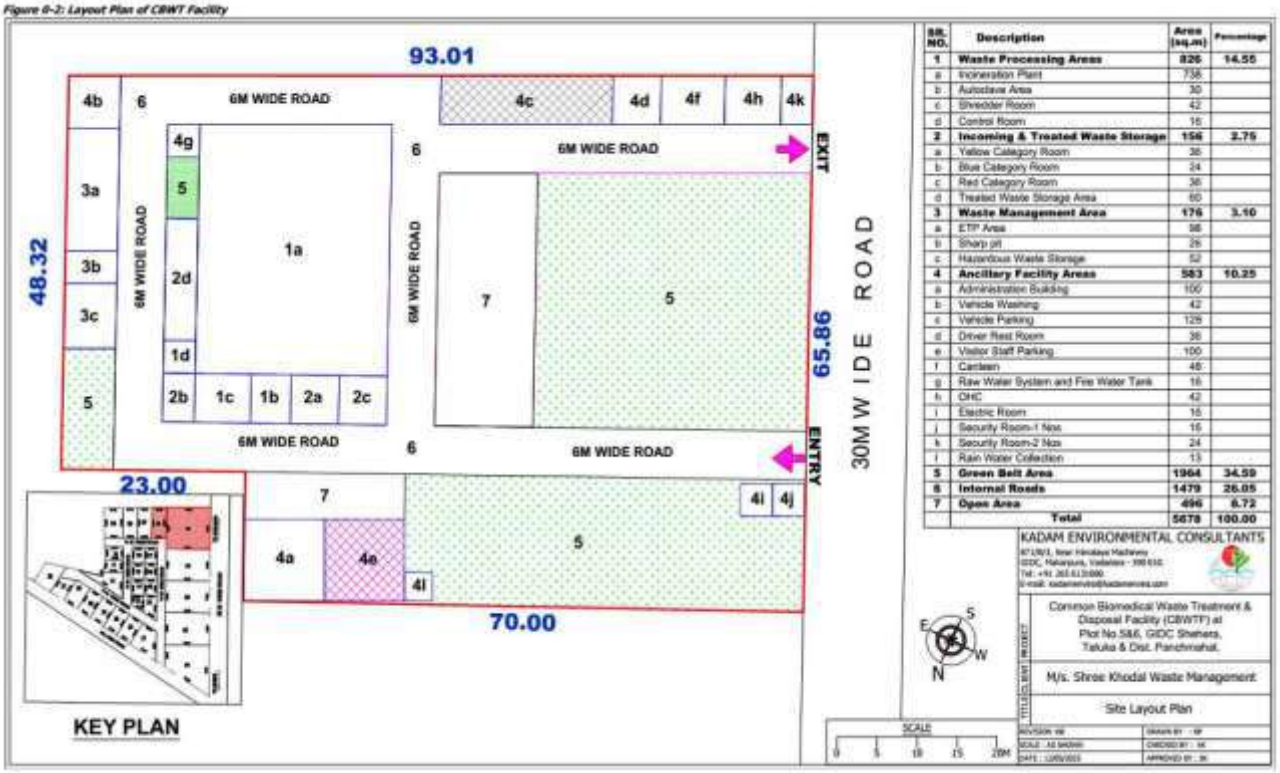
S. No	Management Interventions	Year wise projection of expenditure (Lakhs)					Capital cost (INR)
		1st year	2nd year	3rd year	4th year	5th year	
1	Plantation outside the Project premises, (totally 1000 saplings will be planted @ INR 750 per sapling)	200	200	200	200	200	7,50,000
	Amount	1,50,000	1,50,000	1,50,000	1,50,000	1,50,000	
2	Landscape Change						
	Amount	2,50,000					2,50,000
	Total Budget						**10,00,000**
Note: All other costs like soil filling dressing; irrigation etc. costs will be barred by client / proponent.							

Additionally, the project proponent will consult with the authorities of the department of Forest to carry out conservation plan activities/ management strategies for the same.

Figure 0-1: Land Use /Land Cover in the Study Area (10 km radius)



Figure 0-2: Layout Plan of CBWT Facility



SR. NO.	Description	Area (sq.m)	Percentage
1	**Waste Processing Areas**	**826**	**14.55**
a	Incineration Plant	738	
b	Autoclave Area	30	
c	Shredder Room	42	
d	Control Room	16	
2	**Incoming & Treated Waste Storage**	**156**	**2.75**
a	Yellow Category Room	36	
b	Blue Category Room	24	
c	Red Category Room	36	
d	Treated Waste Storage Area	60	
3	**Waste Management Area**	**176**	**3.10**
a	ETP Area	98	
b	Sharp pit	26	
c	Hazardous Waste Storage	52	
4	**Ancillary Facility Areas**	**583**	**10.25**
a	Administration Building	100	
b	Vehicle Washing	42	
c	Vehicle Parking	125	
d	Driver Rest Room	36	
e	Visitor Staff Parking	100	
f	Canteen	48	
g	Raw Water System and Fire Water Tank	16	
h	OHC	42	
i	Electric Room	16	
j	Security Room-1 Nos	16	
k	Security Room-2 Nos	24	
l	Rain Water Collection	13	
5	**Green Belt Area**	**1964**	**34.59**
6	**Internal Roads**	**1479**	**26.05**
7	**Open Area**	**496**	**8.72**
	Total	**5678**	**100.00**

Annexure 18: Receipt of CTE

GPCB

GUJARAT POLLUTION CONTROL BOARD
PARYAVARAN BHAVAN
Sector-10-A, **Gandhinagar** 382010
Phone : (079) 23222425
(079) 23222152
Fax : (079) 23232156
Website : www.gpcb.gov.in

Application For CTE After TOR

File No : GPCB/ **(PCB ID. - 115910)** **CTE-82981**

To,
M/s. Shree Khodal Waste Management,
, Plot No.5+6, GIDC Shehra, Taluka\r\nand District: Panchmahal, Gujarat-389210, ,
City :Shehera ,
Dist : Panchmahals ,
Taluka : Shehera

Sub: Consent to Establish (After obtaining Terms Of Rrference For Environment Clearance) under Section 25 of Water Act 1974 and Section 21 of Air Act 1981.

Ref: (1) Your online application No. 333970 dated 25/04/2025

(2) TOR issued by State Authority vide their letter no. SEIAA/GUJ/TOR/7(da)/57/2025 Dated 21/01/2025

Sir,

Without prejudice to the powers of this Board under the Water (Prevention and Control of Pollution) Act-1974, the Air Act-1981 and the Environment (Protection) Act-1986 and without reducing your responsibilities under the said Acts in any way, this is to inform you that this Board grants **Consent to Establish (After obtaining Terms Of Rrference For Environment Clearance) under Section 25 of Water Act 1974 and Section 21 of Air Act 1981** for manufacturing of products as mentioned into the application of Environment Clearance (EC) for which TOR is granted vide letter under reference no (2) above.

Consent To Establish Is Granted Subject To The Following Conditions: -

1) The validity period of this CTE shall be Seven Years from the issue of this order.
2) Applicant shall strictly comply with all conditions stipulated by competent authority in the order of Environment Clearance to be issued in reference to TOR issued vide letter under reference No. 2 above.
3) The applicant shall however, not without the prior concern of the Board, Bring into use any new or altered outlet for the discharge of effluent or gaseous emission or sewage waste from the proposed industrial plant. The applicant is required to make applications to this Board for this purpose in the prescribed forms under the provisions of the water Act - 1974, the Air - 1981 and the Environment (Protection) Act - 1986.

Outward No : 19177, 23/05/2025

For and on behalf of
Gujarat Pollution Control Board

Dr. P.S.Dave
ROH - Godhra

- This order is issued to , **Plot No.5+6, GIDC Shehra, Taluka\r\nand District: Panchmahal, Gujarat-389210, , City :Shehera, Dist : Panchmahals, Taluka : Shehera (115910)** for CTE amendment after obtaining EC

Printed On : 20/05/2025 Page 1 of 1 GPCB ID : 115910

Annexure 19: Minutes of Meeting of Public Hearing

GUJARAT POLLUTION CONTROL BOARD
REGIONAL OFFICE, GODHRA
Plot no. 1403, Opp. GIDC office, GIDC Halol, Ta. Halol, Dist.: Panchmahal
E-mail ID :ro-gpcb-godh@gujarat.gov.in

NO: GPCB/RO/GODH/PH/T-03/ 1998 /2025 Date: 16/07/25

To,
The Member Secretary,
Gujarat Pollution Control Board,
Sector 10-A "Paryavaran Bhavan"
Gandhinagar -382010

Kind Attn: M. R. Macwana, SEE and Unit Head- PH Cell.

Sub: Submission of Proceedings of Public Hearing held at: Plot No. 5 & 6, GIDC Shahera, Taluka Shahera & Dist. Panchmahal, Gujarat- 389210 on **09-07-2025 at 12:00 p.m.**, of **M/s. Shree khodal Waste Management;** Proposed Common Biomedical Waste Treatment Facility – **2.5 MT/day** under Category "B1" of Schedule 7(da): Biomedical Waste Treatment Facility

Ref: (1) H.O. Letter No. GPCB/PH/2025-26/Panchmahal-40/863557 Dtd. 22/05/2025.
(2) H.O. Letter No. GPCB/PH/2025-26/ Panchmahal-40/864253 Dtd. 31/05/2025

Respected Sir,

In connection with the subject mentioned above, please find enclosed h/w the proceedings of the Public Hearing of **M/s Shree Khodal Waste Management** for Proposed Common Biomedical Waste Treatment Facility – 2.5 MT/day under Category "B1" of Schedule 7(da): Biomedical waste treatment Facility.

This is for your kind information and further necessary action please.

Yours Sincerely,

(Dr. P. S. Dave)
Regional Officer

Encl:
1. Proceedings of Public Hearing with Annexure A, B, B1, C-Q-1 & C-Q-2 and D-A-1 & D-A-2. (03 copies).
2. Video DVD of Public Hearing (03 Nos).
3. Soft copy of proceedings in CD/DVD (03 Nos).

GUJARAT POLLUTION CONTROL BOARD

REGIONAL OFFICE, GODHRA

Plot no. 1403, Opp. GIDC office, GIDC Halol, Ta. Halol, Dist.: Panchmahal

E-mail ID :ro-gpcb-godh@gujarat.gov.in

PUBLIC HEARING PROCEEDINGS

It is hereby informed that as per the Ministry of Environment, Forests & Climate Change, Government of India, New Delhi vide Notification no. S.O. 1533(E) dated 14th September, 2006 and its subsequent amendments S.O.3067 (E) dated 1st December 2009, Public Hearing was scheduled for the proposed project of **M/s. Shree Khodal Waste Management** was scheduled on **09/07/2025, 12:00 at Plot N. 5 & 6, GIDC Shehera, Taluka Shehera, District Panchmahal** for their proposed Common Biomedical Waste Treatment Facility – 2.5 MT/day under Category "B1".

A copy of the draft Environmental Impact Assessment report and the summary of Environment Impact Assessment report in English and Gujarati were sent to the following authorities or offices to make it available for inspection to the public during normal office hours, till the Public Hearing is over.

1. District Collector Office, Dist. Panchmahal
2. District Development Office, Dist. Panchmahal
3. District Industry Centre, Dist. Panchmahal
4. Taluka Development Office, Tal: Shehera, Dist. Panchmahal
5. Regional Officer, Integrated Regional Office, Ministry of Environment, Forest and Climate Change, Karmayogi Bhawan, Block-3, F-2 Wing, 5th Floor, Near CH-3 circle, sector-10A, Gandhinagar, Gujarat- 382010.
6. Regional Office, Gujarat Pollution Control Board– Godhra, Plot no. 1403, Opp. GIDC Office GIDC Halol, Tal.: Halol, Dist: Panchmahal.

Also, Executive Summary in English & Gujarati Language was sent to Talati cum Mantri of 65 Villages for widespread publicity of public Hearing. Other concerned persons having plausible stake in Environmental aspects were requested to send their responses in writing to the concerned regulatory authorities.

The Public Hearing was held on 09/07/2025 at 12:00 Hr at Plot No. 5 & 6, GIDC Shehera, Taluka Shehera & Dist. Panchmahal, Gujarat- India.

An advertisement was published in English in "The Indian Express" dated 04.06.2025 and in Gujarati in "Divya Bhaskar" (Gujarati) dated 04.06.2025.

Dr. Bhargav Dangar, Sub Divisional Magistrate, Shehera as a representative of District Collector and District Magistrate, Panchmahal has presided over the entire Public Hearing process.

GUJARAT POLLUTION CONTROL BOARD
REGIONAL OFFICE, GODHRA
Plot no. 1403, Opp. GIDC office, GIDC Halol, Ta. Halol, Dist.: Panchmahal
E-mail ID :ro-gpcb-godh@gujarat.gov.in

A statement showing participants present during the public hearing is enclosed as **Annexure A.**

A statement highlighting issues raised by the participants and responded to by the representative of the applicant during the Public Hearing in English and Gujarati languages is enclosed as **Annexure B and B1** respectively.

The copy of responses received in written from other persons having plausible stake in environmental aspects is enclosed herewith as **Annexure C-Q-1 & C-Q-2** and the reply by applicant to the same has been enclosed herewith as **Annexure D-A-1 & D-A-2.**

Public notice regarding the public hearing published in English and Gujarati newspapers are enclosed herewith as **Annexure E.**

Place
M/s Shree Khodal Waste Management
Plot No. 5 & 6, GIDC Shahera, Taluka Shahera & Dist. Panchmahal, Gujarat-India

Date: 09.07.2025

(Dr. P. S. Dave)
Regional Officer,
GPCB, Godhra,
as Representative of the Member Secretary,
GPCB

(Dr. Bhargav Dangar),
Sub Divisional Magistrate-Shehera, as Representative of District Collector & District Magistrate,
Dist: Panchmahal

Encl: 1 Annexure A, B, B1, C-Q-1 & C-Q-1 and D-A-1 & D-A-2, E as above.
2 Video CD/DVD of public hearing.
3. Soft copy of proceedings in CD/DVD.

Annexure-A

A statement showing participant present during the Public Hearing

As per the Ministry of Environment, Forests & Climate Change, Government of India, New Delhi vide its Notification no. S.O. 1533(E), dated 14th September, 2006 and its subsequent amendment thereon, Public Hearing been scheduled for **M/s Shree Khodal Waste Management for Setting up of manufacturing plant of "Common Biomedical Waste Treatment Facility" – (1) Incinerator – 2 MT/Day, (2) Autoclave – 0.5 MT/Day and (3) Shredder – 0.5 MT/Day, at Plot No. 5+6, GIDC Shehra, Ta. Panchmahal, Dist. Panchmahal, covered under project Category "B"**. The Public Hearing is scheduled on 09/07/2025 at 12:00 hrs **at Plot No. 5+6, GIDC Shehra, Ta. Shehra, Dist. Panchmahal**.
The list showing name of participants along with signature present during the Public Hearing is as under-

ભારત સરકારના પર્યાવરણ, વન અને જળવાયુ પરિવર્તન મંત્રાલય, નવી દિલ્હીના જાહેરનામા ક્રમાંક એસ.ઓ. ૧૫૩૩(ઇ), તા. ૧૪/૦૯/૨૦૦૬ અને સંદર્ભમાં આવેલ સુધારાના અનુસંધાને **શ્રી ખોડલ વેસ્ટ મેનેજમેન્ટ દ્વારા "કોમન બાયોમેડિકલ વેસ્ટ ટ્રીટમેન્ટ અને ડીસ્પોઝલ ફેસિલિટી" જે- (૧) ઇન્સિનેરેટર – ૨.૦ મે.ટન/દિવસ, (૨) ઓટોક્લેવ – ૦.૫ મે.ટન/દિવસ અને (૩) શ્રેડર – ૦.૫ મે.ટન/દિવસ, કાર્યકારી સારાંશ પ્લોટ નં. ૫ અને ૬, જી.આઇ.ડી.સી શેહરા, તા. શહેરા, જિ. પંચમહાલ** ખાતે સુચિત પરિયોજના (પ્રોજેકટ) કેટેગરી ""**બી**"" અંતર્ગત તેઓની અરજી અન્વયે પર્યાવરણીય લોકસુનાવણી આયોજીત કરવામાં આવેલ છે. તેની **લોક સુનાવણી ૦૯/૦૭/૨૦૨૫ ના રોજ ૧૨:૦૦ કલાકે પ્લોટ નં. ૫ અને ૬, જી.આઇ.ડી.સી શહેરા, તા. શહેરા, જિ. પંચમહાલ** ખાતે રાખવામાં આવેલ.

જાહેર લોક સુનાવણી દરમ્યાન હાજર રહેલા લોકોની યાદી નીચે મુજબ છે:

Sr. No. ક્રમાંક	Name & Designation નામ અને હોદ્દો	Organization/Village સંસ્થા/ગામ	Signature or Thumb impression સહી અથવા અંગુઠાનું નિશાન
1	[illegible]	[illegible]	[signature]
2	[illegible]	[illegible]	[signature]
3	[illegible]	[illegible]	[signature]
4	[illegible]	[illegible]	[signature]
5	[illegible]	[illegible]	[signature]
6	[illegible]	[illegible]	[signature]
7	[illegible]	[illegible]	[signature]
8	[illegible]	[illegible]	[signature]
9	[illegible]	[illegible]	[signature]

	Sr. No. કમાંક	Name & Designation નામ અને હોદ્દો	Organization/Village સંસ્થા/ગામ	Signature or Thumb impression સહી અથવા અંગુઠાનું નિશાન
10	6	પટેલ હિંમતસિંહ જોરસિંગભાઈ	પાનાવડી-શહેરા	
11	6	ભાટીયા પરેશકુમાર ગોપાલભાઈ	મલેકપુરા-શહેરા	
12	6	વૈદ્ય રાજેશ્વર કુમાર	શહેરા	
13	6	ડાંગીયા રાકેશ	શહેરા	
14	6	રતીલાલ ચતુરભાઈ પરમાર	શહેરા	
15	6	પરમાર મુકેશકુમાર ગોવિંદભાઈ	શહેરા	
16	6	પટેલ અશ્વિનકુમાર	ઠક્કરવાડા	
17	6	મુકેશ કિરણકુમાર બારોટ	લાડવેલ	
18		પટેલ ઈશ્વરભાઈ	તાજપુરા	
19		પટેલ ચતુરસિંહ રામસિંહ	દાંતલીમુવાડા	
20		પટેલ સોમાભાઈ	ધોધલપુર	
21		ગોસ્વામી	ધોધલપુર	
22		પટેલ નરવત્ત	ગોધરાસી	
23		Ramesh K. Dhekar	વડોદરા	
24		ગોસ્વામી	વડોદરા	
25			ગોધરા	
26		Dr. Dipak bhanushali	Shahera	
30				

Sr. No. ક્રમાંક	Name & Designation નામ અને હોદ્દો	Organization/Village સંસ્થા/ગામ	Signature or Thumb impression સહી અથવા અંગુઠાનું નિશાન

Annexure-B (English)

A statement showing issues raised by the participants and responses by the representative of the applicant during the public hearing.

It is hereby informed that as per the Ministry of Environment, Forests and Climate Change, Government of India New Delhi, vide its notification No. S.O 1533(E) dated 14.09.2006, and its subsequent amendments, S.O. 3067 (E) dated 1st December, 2009, Public hearing is conducted for M/s. Shree Khodal Waste Management for the Proposed Common Biomedical Waste Management – 2.5 MT/Day, at Plot No. 5 & 6, GIDC Shahera, Taluka Shahera & Dist. Panchmahal, Gujarat-India, which is under Category "B1" of Schedule 7(da) with reference to that public hearing is scheduled dated 09.07.2025 at 12:00 pm at Plot No. 5 & 6, GIDC Shahera, Taluka Shahera & Dist. Panchmahal, Gujarat-India

Dr. Bhargav Dangar, Sub Divisional Magistrate, Shehra , Dist: Panchmahal supervised and presided over the entire public hearing proceedings.

Dr P. S. Dave, Regional Officer, Gujarat Pollution Control Board, Godhra and Representative of Member Secretary, Gujarat Pollution Control Board welcomed all present in the Public Hearing. He outlined the various provisions of the Notification and briefed the procedural details for conducting this Public Hearing, including actions taken by GPCB for wide publicity of this Public Hearing. Advertisement was published in local newspaper i.e. "The Indian Express" English Daily and "Divya Bhaskar" Gujarati Daily on 04.06.2025. He further announced that as per the provision of The Notification, only locally affected persons will be allowed to represent in the Public Hearing while others having plausible stake may give their representation in writing which would be included in the proceedings. He also added that the entire proceeding will be audio and video recorded and the same will be enclosed along with the Minutes. He added this forum will incorporate all representations in the proceeding and will send it to the concerned authority along with minutes.

Regional Officer, GPCB, Godhra then opened the Public Hearing after due permission from Dr. Bhargav Dangar, Sub Divisional Magistrate (Panchmahal). He invited the project proponent to give their introduction and to present the technical presentation of their project in local language.

Then after, Technical Representative of the project proponent first welcomed all present in the Public Hearing and then gave a power point presentation of the proposed Project in the Gujarati language which included introduction of the company, technical information of the company, details of project component, its impact on the environment along with proposed mitigation measures, socio-economic issues, and Environmental Management System.

After the presentation by the project proponent, Regional Officer, GPCB, Godhra with the due permission of Sub Divisional Magistrate opened the forum for representations/suggestions/ opinions/objections from the locally affected people.

The statement showing representations/issues/suggestions/objections/opinions raised by participants during the public hearing and responded by representative of the project proponent during the public hearing is as under.

Sr. no.	Name & Address	Point represented and/or Written Submission	Replies by concerned project proponent
1	Shri Dalpatbhai Shivabhai Pagi, Village: Bhensal Tal.: Shahera	• He raised the query related to time line for the operation of said project	• The representative of project proponent stated that the project will start after the issuance of environmental

Sr. no.	Name & Address	Point represented and/or Written Submission	Replies by concerned project proponent
	Dist.: Panchmahal		clearance to the project. And it will take approx. one year to start the operation once EC issued.
2	Shri Himmatsinh Jaisingbhai Pagi Village: Palikhanda, Tal.: Shahera Dist.: Panchmahal	• He welcomed the said project and asked that How many people will get employment in this project?	• The representative proponent has expressed their gratitude and stated that, according to the project's capacity, there is a possibility of 20 people getting employment in this project.
3	Shri Kiransinh Raghunathsinh Makwana Village: Khandiya, Tal.: Shahera Dist.: Panchmahal	• He said that it would be good if this project starts as soon as possible because it has been delayed a lot. The taluka needs the GIDC development, so try to start the project as soon as possible.	• The company representative welcomed the suggestion.

Regional officer, Gujarat pollution Control Board, repeatedly requested for any other representation from participants. However, no additional representation was received from the participants.

The Regional Officer, Gujarat Pollution Control Board, Godhra and the Member Secretary, Gujarat Pollution Control Board representative stated that two written submissions have been received before the public hearing from (1) Shri Dharmeshbhai Mistry and (2) Samvedna BMW Incinerator, Halol, Panchmahal, which have been attached as Annexure C-Q-1 and C-Q-2 in the said Public Hearing Minutes and the replies given by the company representatives have been attached as Annexure D-A-1 and D-A-2.

Public notice regarding the public hearing published in English and Gujarati newspapers are enclosed herewith as **ANNEXURE E**.

At last, the Regional officer, Gujarat Pollution Control Board, Godhra summarized the gist of the entire public hearing proceedings to the participants.

The Public Hearing was concluded with vote of thanks to the chair.

Place: Project Site
Plot No. 5 & 6, GIDC Shahera,
Taluka Shehera & Dist.
Panchmahal

Date: 09.07.2025

Dr. P. S. Dave
Regional Officer,
GPCB RO-Godhra,
As representative of The
Member secretary, Gujarat
Pollution Control Board

Dr. Bhargav Dangar
Sub Divisional Magistrate-
Shehera, as a Representative
of District Collector & District
Magistrate,
Dist: Panchmahal

એનેક્ષર-બી ૧ ગુજરાતી

લોક સુનાવણી દરમ્યાન હાજર રહેલ લોકો દ્વારા રજુ કરવામાં આવેલ મુદ્દાઓ અને અરજદારનાં પ્રતિનિધિ દ્વારા આપવામાં આવેલ જવાબ

ભારત સરકારનાં પર્યાવરણ, વન અને જળવાયુ પરિવર્તન મંત્રાલય નવી દિલ્હીનાં જાહેરનામા ક્રમાંકઃ એસ.ઓ. ૧૫૩૩(ઈ) તા.૧૪-૦૯-૨૦૦૬ તેમજ તેના પછીના સુધારા ક્રમાંક એસ.ઓ. ૩૦૬૭(ઇ) તા. ૦૧/૧૨/૨૦૦૯ અન્વયે જણાવવાનું કે, **મેસર્સ શ્રી ખોડલ વેસ્ટ મેનેજમેન્ટ** દ્વારા પ્લોટ નં. ૫ અને ૬, જીઆઈડીસી શેહેરા તાલુકા અને જિલ્લો પંચમહાલ ખાતે સૂચિત કોમન બાયોમેડિકલ વેસ્ટ ટ્રીટમેન્ટ અને ડિસ્પોઝલ ફેસિલિટી (ક્ષમતા- ૨.૫ મેટ્રિક ટન/દિવસ) માટે લોક સુનાવણી કરવામાં આવી છે, જે કેટેગરી "બી૧" હેઠળ આવરી લેવામાં આવી છે. જેની લોક સુનાવણી તા. ૦૯.૦૭.૨૦૨૫ ના રોજ સવારે ૧૨.૦૦ કલાકે સ્થળઃ પ્લોટ નં. પ્લોટ નં. ૫ અને ૬, જીઆઈડીસી શહેરા તાલુકા અને જિલ્લો પંચમહાલ, ગુજરાત ખાતે રાખવામાં આવેલ.

ડો. ભાર્ગવ ડાંગર, સબ ડિવિઝનલ મેજિસ્ટ્રેટશ્રી, પંચમહાલની અધ્યક્ષતામાં સદર લોક સુનાવણીનું આયોજન કરવામાં આવેલ.

ડો. પી. એસ. દવે, પ્રાદેશિક અધિકારી, ગુજરાત પ્રદુષણ નિયંત્રણ બોર્ડ, ગોધરા અને સભ્ય સચિવશ્રી, ગુજરાત પ્રદુષણ નિયંત્રણ બોર્ડનાં પ્રતિનિધિએ ઉપસ્થિત સૌને આવકારેલ. તેઓએ ઈ.આઈ.એ. નોટીફિકેશન ૨૦૦૬ અંતર્ગત વિવિધ જોગવાઈઓ અને લોકસુનાવણી બાબત સંક્ષિપ્તમાં માહિતી આપેલ. તેઓએ લોક સુનાવણીની બહોળી પ્રસિદ્ધિ અંગે ગુજરાત પ્રદુષણ નિયંત્રણ બોર્ડે કરેલ કાર્યવાહી અંગે માહિતી આપી. તેમણે લોક સુનાવણીની બહોળી પ્રસિદ્ધિ અંગે ગુજરાત પ્રદુષણ નિયંત્રણ બોર્ડ દ્વારા સ્થાનિક દૈનિક સમાચાર પત્રો અંગ્રેજી દૈનિક અખબાર "ધ ઇન્ડિયન એક્ષપ્રેસ" અને ગુજરાતી દૈનિક અખબાર "દિવ્ય ભાસ્કર" માં તા. ૦૪/૦૬/૨૦૨૫ના રોજ આપવામાં આવેલ જાહેર ખબર બાબતે જણાવેલ. વધુમાં તેઓએ જણાવેલ કે સદર નોટીફિકેશનની જોગવાઈ પ્રમાણે સ્થાનિક અસરગ્રસ્ત લોકો જ લોક સુનાવણીમાં મૌખિક/લેખીત રજૂઆત કરી શકશે જયારે અન્ય હિત ધરાવતા વ્યક્તિઓ લેખિતમાં રજૂઆત કરી શકશે. જેનો કાર્યસુચીમાં સમાવેશ કરવામાં આવશે. તેઓએ ઉમેર્યું કે સમગ્ર કાર્યવાહીનું ઓડિયો તથા વિડીયો રેકોર્ડીંગ થશે અને તે કાર્યવાહી નોંધ સાથે મોકલવામાં આવશે. તેઓ એ જણાવેલ કે આ લોક સુનાવણી દરમ્યાન મળેલ તમામ રજુઆતોને આવરી લઇ કાર્યવાહી નોંધ તૈયાર કરી સક્ષમ સત્તામંડળને મોકલવામાં આવશે.

ત્યાર બાદ તેઓએ સબ ડીવીઝનલ મેજિસ્ટ્રેટશ્રી, પંચમહાલની પરવાનગીથી લોક સુનાવણીનો પ્રારંભ કરાવેલ અને એકમના પ્રતિનિધિને તેમની સૂચિત પરિયોજના વિશે પ્રેઝન્ટેશન દ્વારા માહિતી આપવા જણાવ્યું.

ત્યાર બાદ, કંપનીનાં પ્રતિનિધિએ સૌ પ્રથમ લોક સુનાવણીમાં હાજર તમામને આવકાર્યા અને તેઓ દ્વારા સૂચિત એકમ વિશે ગુજરાતી ભાષામાં પ્રેઝન્ટેશન આપવામાં આવેલ. જેમાં કંપનીનો પરિચય અને કંપનીની ટેકનિકલ

માહિતી, ઉત્પાદન અંગેની માહિતી, પર્યાવરણ પર થનાર સંભવિત અસર, સૂચિત નિવારક પગલાઓ, પર્યાવરણીય વ્યવસ્થાપન પદ્ધતિઓ અને ઉદ્યોગ દ્વારા કરવામાં આવનાર સામાજિક પ્રવૃતિઓ વિશે જાણકારી આપવામાં આવી.

પ્રેઝેન્ટેશન પૂર્ણ થયા બાદ પ્રાદેશિક અધિકારીશ્રી, ગુજરાત પ્રદૂષણ નિયંત્રણ બોર્ડ દ્વારા સબ ડીવીઝનલ મેજીસ્ટ્રેટશ્રીની પરવાનગીથી સ્થાનિક અસરગ્રસ્ત લોકોની રજુઆતો/ વાંધાઓ/સૂચનો માટે મંચ ખુલ્લો મુકવામાં આવેલ.

લોક સુનાવણી દરમ્યાન હાજર લોકો દ્વારા મૌખિકમાં રજુ કરવામાં આવેલ પ્રશ્નો/વાંધા/સૂચનો/મંતવ્ય તેમજ કંપનીનાં પ્રતિનિધિ દ્વારા આપવામાં આવેલ જવાબો નીચે મુજબ છે.

ક્રમ	મુદ્દો રજુ કરનારનું નામ અને સરનામું	રજૂઆત કરેલ મુદ્દાઓ	કંપનીના પ્રતિનિધિ દ્વારા અપાયેલ પ્રત્યુતર
૧	શ્રી દલપતભાઇ શીવાભાઇ પગી, ગામ: ભેંસાલ તા. શહેરા જી. પંચમહાલ	• તેમણે જણાવ્યુ કે, આ પ્રોજેકટ કેટલા સમયમાં ચાલુ થશે?	• પ્રોજેક્ટના પ્રતિનિધિએ જણાવ્યું હતું કે પ્રોજેક્ટને પર્યાવરણીય મંજૂરી મળ્યા પછી પ્રોજેક્ટ શરૂ થશે. અને EC ની મંજૂરી મળ્યા પછી કામગીરી શરૂ કરવામાં લગભગ આશરે એક વર્ષનો સમય લાગશે.
૨	શ્રી હિંમતસિહ જેસીંગભાઇ પગી ગામ: પાલીખંડા, તા. શહેરા જી. પંચમહાલ	• તેમણે આ પ્રોજેક્ટ ને આવકર્યો અને પૂછ્યું કે આ પ્રોજેક્ટમાં કેટલા લોકોને રોજગાર મળશે?	• કંપનીના પ્રતિનિધિશ્રીએ આભાર વ્યક્ત કર્યો અને જણાવેલ કે, પ્રોજેકટની ક્ષમતા મુજબ આ પ્રોજેકટમાં ૨૦ માણસોને રોજગારી મળવાની શકયતાઓ છે.
3	શ્રી કિરણસિંહ રઘુનાથસિંહ મકવાણા ગામ: ખાંડીયા, તા. શહેરા જી. પંચમહાલ	• તેમણે જણાવ્યુ કે, આ પ્રોજેકટ વહેલીતકે શરૂ થાય તો બહુ સારૂ કારણ કે બહુ ડિલે થયો છે. શહેરા તાલુકાને જીઆઇડીસીની ખુબ જરૂર છે એટલે વહેલીતકે પ્રોજેકટ ચાલુ થાય તેવા પ્રયત્ન કરો.	• કંપનીના પ્રતિનિધિશ્રીએ સૂચનને આવકારેલ.

ત્યારબાદ, પ્રાદેશિક અધિકારીશ્રી, ગુજરાત પ્રદુષણ નિયંત્રણ બોર્ડ ગોધરા અને સભ્ય સચિવશ્રી, ગુજરાત પ્રદુષણ નિયંત્રણ બોર્ડનાં પ્રતિનિધિ દ્વારા વારંવાર ઉપસ્થિત સ્થાનિક અસરગ્રસ્તોને અન્ય કોઈ રજૂઆત હોય તો તે કરવા માટે જણાવવામાં આવેલ પરંતુ અન્ય વધુ કોઈ રજૂઆત મળેલ ન હતી.

પ્રાદેશિક અધિકારીશ્રી, ગુજરાત પ્રદુષણ નિયંત્રણ બોર્ડ ગોધરા અને સભ્ય સચિવશ્રી, ગુજરાત પ્રદુષણ નિયંત્રણ બોર્ડનાં પ્રતિનિધિશ્રીએ જણાવ્યું કે, લોક સુનાવણી અગાઉ બે લેખિત રજુઆત (૧) શ્રી ધર્મેશભાઇ મિસ્ત્રી અને (૨) સંવેદના બીએમડબ્લ્યુ ઇન્સિનરેટર, હાલોલ, પંચમહાલ તરફથી મળેલ છે, જેને સદર લોકસુનાવણી કાર્યનોંધમાં એનેક્ષર C-Q-1 અને C-Q-2 તરીકે બિડેલ છે અને જેના કંપનીના પ્રતિનિધિ દ્વારા આપવામાં આવેલ જવાબોને એનેક્ષર D-A-1 અને D-A-2 તરીકે બિડેલ છે.

સદર લોક સુનાવણીની બહોળી પ્રસિદ્ધિ માટે ગુજરાત પ્રદુષણ નિયંત્રણ બોર્ડ દ્વારા સ્થાનિક દૈનિક પત્રો અંગ્રેજી દૈનિક અખબાર "ધી ઇન્ડિયન એક્ષપ્રેસ" અને ગુજરાતી દૈનિક અખબાર "દિવ્ય ભાસ્કર" માં આપવામાં આવેલ જાહેર ખબર **(public notice)** સદર લોક સુનાવણીની કાર્યનોંધમાં **ANNEXURE-E** તરીકે બીડેલ છે.

પ્રાદેશિક અધિકારી, ગુજરાત પ્રદુષણ નિયંત્રણ બોર્ડ, પંચમહાલ દ્વારા લોક સુનાવણીની સમગ્ર કાર્યવાહીનો સારાંશ ઉપસ્થિત જનસમુદાયને જણાવવામાં આવેલ.

અંતમાં લોક્સુનાવણીને અધ્યક્ષશ્રીના પરવાનગી તથા આભાર સહ સમાપ્ત થયેલ જાહેર કરવામાં આવેલ.

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જીઆઈડીસી શહેરા
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જી. પંચમહાલ

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ગુજરાત પ્રદુષણ નિયંત્રણ બોર્ડનાં
પ્રતિનિધિ

ડો. ભાર્ગવ ડાંગર
સબ ડિવિઝનલ મેજીસ્ટ્રેટશ્રી,
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પ્રતિનિધિ

તા. ૦૯/૦૭/૨૦૨૫

धर्मेश मिस्त्री
शोप नं.10, ओम कोम्पलेक्ष,
डिस्ट्रीक्ट कोर्ट के सामने, भरुच।
मो : 9998609115
दिनांक : 08/07/2025

प्रतिश्री,

(1) मेम्बर सेक्रेटरी
गुजरात प्रदूषण नियंत्रण बोर्ड
गांधीनगर।

(2) रीजीयोनल ओफिसर
गुजरात प्रदूषण नियंत्रण बोर्ड
DAHOD

Sub : Shree khodal waste management (Dist. panchamahal) की पर्यावरणीय लोक सुनवाई की टीका - टीप्पणी।

(1) कंपनी कन्सल्टन्ट की QCI-NABET की तरफ से एप्रुव्ड किये हुए Functional Area Expert के नाम तथा उन्होंने कौन-कौन से एरिया के लिए काम किया है उसकी जानकारी तथा उसकी समय मर्यादा तथा उनके खुद के सही और स्टेम्प के साथ कोपी एम.ओ.एम. में लेने के लिए निवेदन।

(2) कंपनी कन्सल्टन्ट के QCI-NABET के तरफ से एप्रुव्ड किये हुए Functional Area Expert स्थायी वेतनदार अधिकारी है कि नहीं उसकी जानकारी।

(3) कंपनी कन्सल्टन्ट के QCI-NABET की और से एप्रुव्ड किये हुए Functional Area Expert जो बाहर से लिए गए हो तो उनके और कन्सल्टन्ट के बीच हुए करार की कोपी एम.ओ.एम. मे लेने के लिए निवेदन।

(4) कंपनी कन्सल्टन्ट के QCI-NABET की और से एप्रुव्ड किये हुए Functional Area Expert जो बाहर से लिए गए हो तो उनकी पर्यावरणीय लोक सुनवाई के ई.आई.ए. रिपोर्ट के लिए कौन-कौन सी कंपनीओं के लिए हस्ताक्षर दिये है और काम-किया है उसकी जानकारी।

[2]

(5) कंपनी कन्सल्टन्ट के QCI-NABET की और से एप्रुव्ड किये हुए Functional Area Expert जो बाहर से लिए हों तो उनकी फीस चुकाने में आई है उसकी जानकारी।

(6) कन्सल्टन्ट की पर्यावरणीय लोक सुनवाई और इस प्रोजेक्ट के बारे में क्या जिम्मेवारी बनती है उसकी जानकारी।

(7) कंपनी ने कन्सल्टन्ट को इस प्रोजेक्ट के लिए कितनी फीस चुकाई है उसकी जानकारी तथा कंपनी और कन्सल्टन्ट के बीच किये हुए करार की कोपी एम.ओ.एम. मे रखने का निवेदन।

(8) कंपनी के कन्सल्टन्ट ने ई.आई.ए. रीपोर्ट के अंदर जो डोक्युमेन्ट ACCREDITATION CERTIFICATE की तरह देने में आये है। वो आज की तारीख में मान्य हो तो उसकी वेरीफाई की हुई कोपी पर उतरदायी अधिकारी द्वारा हस्ताक्षर और मोहर लगाके एम.ओ.एम. मे लेने के लिए निवेदन।

(9) परियोजना प्रस्तावक द्वारा की जाने वाली लोक सुनवाई की सूचना प्रभावित क्षेत्र में आने वाले गांव के सभी लोगों तक रिक्शा या अन्य वाहन द्वारा लाउडस्पीकर और डिस्प्ले बोर्ड के माध्यम से पहुंचाई जाए और उसके वीडियो और फोटो मिनट्स ऑफ़ मीटिंग में लगाए जाएं।

(10) ई.आई.ए. रिपोर्ट का प्रेजन्टेशन करनेवाले व्यक्ति का नाम, पद तथा संस्था का नाम, पता, कंपनी का आईडी प्रुफ तथा उसके सरकारी आई.डी. प्रूफ की जेरोक्स कापी एम.ओ.एम. मे रखने का निवेदन है।

(11) कन्सल्टन्ट ने कौन-कौन सी कंपनी के लिए ड्राफ्ट ई.आई.ए. रिपोर्ट बनाई है उस कंपनी का नाम और जानकारी। (दि.01/01/2020 से दि.25/08/2025 तक)

(12) कंपनी के अन्य युनिट हो तो गुजरात प्रदुषण नियंत्रण बोर्ड की तरफ से दिये हुए सोकोझ नोटिस तथा कंपनी बंद करने की नोटिस एम.ओ.एम. मे रखने का निवेदन।

(13) गुजरात राज्य के बाहर कंपनी का कोई भी युनिट हो तो उस की प्रदूषण नियंत्रण बोर्ड द्वारा जारी की गई सोकोझ नोटिस तथा कंपनी बंद करने की नोटिस दी हुई हो तो उसकी नकल एम.ओ.एम. मे प्रस्तुत करने का निवेदन।

(14) SLEAC की और से कंपनी को दिये हुए ToR का Compliance की हकीकत 100 प्रतिशत सत्य है या नहीं उसकी जानकारी दी जाए।

[3]

(15) QCI-NABET की कन्सल्टन्टने कितनी फीस चुकाई गई है उसकी रसीद (पावती) के उपर हस्ताक्षर-मोहर करके एम.ओ.एम. मे रखने का निवेदन।

(16) QCI-NABET के नियमानुसार कन्सल्टन्ट ने लिए गये बाहर के अस्थायी Functional Area Expert ने एक वर्ष के दौरान कितने EIA रिपोर्ट में नाम लिख के हस्ताक्षर कर सकते है उसका विवरण बताने का निवेदन है।

(17) आज तक कितने वृक्ष बोये है या लगाये है उसका विवरण। वृक्षो के लिए पानी कहाँ से लिया गया उसका विवरण। पानी यदि बेचा हुआ लिया गया है तो बिल एम.ओ.एम. में रखे। रोपण किये हुए वृक्षो की जिडिटर फोटो तारीख के साथ लेना।

(18) SLEAC की और से कंपनी को दिये हुए ToR का Compliance की हकीकत 100 प्रतिशत सत्य हो तो उसकी पुष्टि कंपनी लिखित में प्रस्तुत करे।

(19) लेन्डलुजर्स के नाम, पता एम.ओ.एम. मे लेना का निवेदन।

(20) कंपनी शुरु होने के बाद सभी कर्मचारीयों के नाम बाहर गेट के उपर प्रदर्शित करने में आये तथा 85 प्रतिशत स्थानिक कर्मचारीयों को रोजगारी देने में आये।

(21) इस प्रोजेक्ट के अंतर्गत असरग्रस्त विस्तार के अलावा बाहर के कर्मचारीयों तथा कंपनी के कर्मचारी के कंपनी अकस्मात से किसी भी प्रकार का नुकसान होगा तो कंपनी की जिम्मेवारी बनेगी एसा शपथपत्र नोटरी के साथ जो आमने-सामने किया हो और कंपनी या कंपनी के किसी जिम्मेदार अधिकारी का शपथपत्र एम.ओ.एम. में प्रस्तुत करे।

(22) कंपनी के अन्य युनिट में GPCB की और से कंपनी बंद करने की नोटीस अगर दी जाती है तो कंपनी ने रीवोक कैसे प्राप्त किया उसकी जानकारी तथा रीवोक प्राप्त करने के लिए कि गई सभी कार्यवाही के कागज और डाक्युमेन्ट एम.ओ.एम. में रखने का निवेदन है।

(23) कन्सल्टन्ट ने QCI-NABET के एक्रेडिटेशन सर्टीफिकेट (प्रमाणपत्र) पाने के लिए कीया गया आवेदन और आवेदन के साथ प्रस्तुत किये गये डोक्युमेन्ट की कोपी (नकल) एम.ओ.एम. में रखने का निवेदन।

(24) ई.आई.ए. रीपोर्ट का प्रेजन्टेशन करनेवाले व्यक्तिने किस तारीख, महीने तथा वर्ष में संस्था के साथ जुडे है उसकी सारी जानकारी।

[4]

(25) पर्यावरणीय लोक सुनवाई में तथा इस प्रोजेक्ट में ई.आई.ए. रीपोर्ट का प्रेजन्टेशन करनेवाले व्यक्ति की जिम्मेदारी के विषय में सारा विवरण बताने का निवेदन।

(26) असरग्रस्त विस्तार के कुल कितने लोग अंग्रेजी भाषा के जानकार है उसकी जानकारी।

(27) असरग्रस्त विस्तार के विभिन्न गांवो पर आधारित जनसंख्या की जानकारी एम.ओ.एम. मे रखने का निवेदन।

(28) असरग्रस्त विस्तार के लोगों की शैक्षणिक लायकात कितनी है वो विभिन्न गाँव के मुताबीक जानकारी।

(29) इस प्रोजेक्ट के अंतर्गत असरग्रस्त विस्तार के लोगों को कंपनी के कर्मचारीयों को कंपनी अकस्मात से किसी भी प्रकार का नुकसान नहीं होगा एसा गारंटी शपथपत्र नोटरी के साथ कंपनी अथवा कंपनी के जिम्मेदार अधिकारी का शपथपत्र एम.ओ.एम. मे प्रस्तुत करने का निवेदन है।

(30) इस प्रोजेक्ट के अंतर्गत असरग्रस्त विस्तार के साथ साथ बाहर के लोगों तथा कंपनी के कर्मचारी के कंपनी अकस्मात से किसी भी प्रकार का नुकसान नहीं होगा एसा शपथपत्र नोटरी के साथ जो आमने-सामने किया हो और कंपनी या कंपनी के किसी जिम्मेदार अधिकारी का शपथपत्र एम.ओ.एम. मे प्रस्तुत करने का निवेदन है।

(31) इस प्रोजेक्ट से असरग्रस्त विस्तार के लोगों को तथा कंपनी के कर्मचारी को कंपनी अकस्मात से किसी भी प्रकार का नुकसान हुआ तो कन्सल्टन्ट की जिम्मेदारी बनती है या नहीं उसकी पुरी जानकारी प्रस्तुत करने का निवेदन है।

(32) आप कोर्पोरेट सोश्यल रिस्पोन्सीबिलीटी में क्या कार्य करनेवाले है?

(33) कंपनी अकस्मात के समय का आसपास के गाँव के लोगों का और असरग्रस्त लोगों का बीमा निकालनेवाली है?

(34) आसपास के गाँव के लोगों की ओफसाईट इमरजन्सी के वक्त क्या करना है उसके बारे में कैसे जानकारी देनेवाले है

(35) कंपनी कन्सल्टन्टने इस प्रोजेक्ट के इ.आई.ए. रीपोर्ट बनाने में अगर कोई गलती की हो तो उसके खिलाफ पुलीस शिकायत हो शकती है या नही?

[5]

(36) कंपनी कन्सल्टन्टने इस प्रोजेक्ट के इ.आई.ए. रीपोर्ट बनाने में अगर कोई गलती की हो तो उसके खिलाफ पुलीस शिकायत हो शकती है तो उसकी जानकारी कलम और कायदा के तद्नुसार जानकारी दे।

(37) इस प्रोजेक्ट के अंतर्गत असरग्रस्त विस्तार के लोगों को तथा कंपनी के कर्मचारीओं को कंपनी अकस्मात से किसी भी प्रकार का नुकसान होगा तो कंपनी की जिम्मेदारी बनेगी एसा गारंटी शपथपत्र नोटरी के साथ कंपनी अथवा कंपनी के जिम्मेदार अधिकारी का शपथपत्र एम.ओ.एम. में प्रस्तुत करने का निवेदन,

नोंध : इस पत्र का प्रत्युत्तर हिन्दी भाषा में देने का निवेदन है,

धर्मेश मिस्त्री

Samvedna B.M.W. Incinerator

G.P.C.B. AUTHORIZED COMMON BIO-MEDICAL WASTE TREATMENT FACILITY

Dt. / /202

Ref. No. SBMWI/JULY-2025/13 Date: 07-07-2025

To,
The Regional Officer
Gujarat Pollution Control Board (GPCB)
Halol, Panchmahal

Subject: *Humble Objection Regarding the Public Hearing Scheduled on 9th July 2025 for Proposed CBWTF at Plot No. 5-6, GIDC Shehra, Shehra, Panchmahal District by Shree Khodal Waste Management.*

Respected Sir/Madam,

With due respect and responsibility, we, **Samvedna BMW Incinerator**, would like to humbly submit our **objections** regarding the upcoming Public Hearing scheduled **for 9th July 2025**, as published on the official GPCB website. The hearing pertains to the establishment of a **new Common Bio-medical Waste Treatment Facility (CBWTF) at Plot No. 5-6, Shehra GIDC, Shehra, District Panchmahal**, by **Shree Khodal Waste Management.**

We wish to place on record the following **technical and factual points for your** kind consideration:

1. Existing Operational CBWTF in Panchmahal District:

Samvedna BMW Incinerator, **located at Halol, is a GPCB-authorized CBWTF**, operational for over two decades, diligently and successfully **catering to all government and private Healthcare Facilities (HCFs)** across Panchmahal District. We are an environmentally compliant and technically sound facility serving the district since 2003. The proposed CBWTF, **Shree Khodal Waste Management, Plot No. 5-6, Shehra GIDC, Shehra, District Panchmahal is located within our coverage area of 75 Km as per CPCB guidelines. Which will affected our viability.**

2. Spare Capacity as per GAP Analysis:

As per the **official GAP Analysis Report published by GPCB, our facility** has **sufficient spare capacity** for the treatment of Biomedical Waste (BMW), not only **for the current** demand but also projected demand over the **next 6–7 years**. According to **CPCB Guidelines**, any **decision for setting** up a new CBWTF must be based on:

- Total treatment capacity of **existing CBWTFs** within the **75 km radius.**
- Estimated BMW generation quantity in the coverage area.

Unfortunately, it appears that **SEAC has not followed the CPCB-prescribed format and guidelines** while granting ToR to the new project. The **gap analysis** should have been reviewed by considering our operational capacity and service area coverage.

3. Incorrect and Misleading Undertaking in EIA Report:

It is deeply concerning that the project proponent has submitted a **false declaration** in the **Annexure 13 of the EIA report**, wherein they have **wrongly mentioned an existing CBWTF at Dahod** instead of acknowledging **Samvedna BMW Incinerator at Halol**, which is the **actual existing CBWTF within Panchmahal District**. This misrepresentation seems intentional and misleading, and raises **serious doubts about the transparency and intent of the project proponent.** Hence the document on which this public hearing is scheduled i.e. EIA report is misleading and accordingly this public hearing is questionable?

1

Plot No. 217/1, Chandrapura Industrial Estate, Chandrapura, Ta. Halol-389 350. Panchmahal. Gujarat.
Ph. (02676) 224997 E-mail : samvednain@gmail.com www.samvednabmw.com

Samvedna B.M.W. Incinerator

G.P.C.B. AUTHORIZED COMMON BIO-MEDICAL WASTE TREATMENT FACILITY

Dt. / /202

4. Violation of CPCB Guidelines:

CPCB clearly mandates that **new CBWTFs should only be allowed** where there is a demonstrated lack of coverage and treatment capacity by existing facilities. In this case:

- **Panchmahal District is already covered** by an existing CBWTF (Samvedna BMW Incinerator).
- Our facility lies **well within the 75 km radius** as prescribed.
- Our infrastructure is capable of handling the district's biomedical waste requirements **well into the future**

Ignoring these facts undermines the **viability of existing essential environmental infrastructure**, which CPCB guidelines aim to protect.

5. Request for Technical Review and Fair Assessment:

We respectfully urge the Hon'ble Authorities to:

- Reassess the **gap analysis** as per CPCB guidelines.
- **Verify the false undertakings** submitted in the EIA report by the project proponent.
- Consider the **adverse impact on the viability** of our long-operational, compliant facility.
- Uphold the **principle of optimal use of existing infrastructure** before allowing parallel and potentially redundant setups.

In light of the above, we request your **kind intervention to withhold further** processing of the current proposal until a **detailed technical and factual review** is conducted in adherence to **CPCB norms** and in the **interest of environmental and operational integrity** of existing infrastructure.

We remain committed to continuing our compliant and transparent service to all HCFs in Panchmahal District.

Thank you for your kind attention and consideration.

Warm regards,
For Samvedna BMW Incinerator

SAMVEDNA B. M. W. INCINERATOR HALOL (PMS)

Partner
(Mr. Mukesh K. Rajgor)

CC:

1) The Hon'ble Collector
Collector Office,
Jilla Seva Sadan,
Civil Lines, Godhra,
District. Panchmahal, Gujarat- 389001

2) Member Secretary,
Gujarat Pollution Control Board,
Sector 10/A, Paryavaran Bhavan,
Gandhinagar, Gujarat -382 010

2

Plot No. 217/1, Chandrapura Industrial Estate, Chandrapura, Ta. Halol-389 350. Panchmahal. Gujarat.
Ph. (02676) 224997 E-mail : samvednain@gmail.com www.samvednabmw.com

Shree Khodal Waste Management

620, 6th Floor, Fortune Business Hub, Near Shell Petrol Pump,
Science City Road, Sola, Ahmedabad, Gujarat- 380060

Annexure-D-A-1

Date: 09.07.2025

To,
Dharmesh Mistry,
Block No. 14, House No. 1340, Narmada Apartment,
Near Mamlatdar Kacheri, Bharuch.

Subject: Objection and Suggestion regarding Public Hearing of Common Biomedical Waste Management- GIDC Shehera, Taluka Shehera, Dist. Panchmahal.

Dear Sir,

The Point wise clarification to your points are given below.

Sr.No.	Reply
1.	Kindly refer the declaration given in the EIA report on Page number 3 to 5 and Chapter number 12 of the EIA report in which the information about all the approved functional areas of the QCI-NABET has been provided.
2	All the important information of the approved functional area experts has been submitted in the QCI NABET by the company consultant.
3	No External Approved Functional Area Expert has been hired.
4	This question is not concerned with the environmental public hearing of the M/s. Shree Khodal Waste Management.
5	This question is not concerned with the environmental public hearing
6	The EIA report has been prepared according to the TOR given by MoEFCC to the company and as per EIA Notification-2006 by the company consultant. That report has been submitted by the company to GPCB for environmental hearing. It is the company's and GPCB's responsibility for the environmental public hearing.
7	The fees paid to the consultant by the company is a private matter between the consultant and us.
8	The Accreditation certificate issued by the QCI-NABET is valid till date. 19th march 2026.
9	Information about the public hearing to be conducted by the project proponent is be conveyed to all the people of the village in the affected area through loudspeakers and display boards through rickshaws or other vehicles and its video and photos and it is included in minutes of meeting.
10	The details of the person representing the EIA report in given in Page No. 3 to 5 of the EIA report.
11	This question is not concerned with the environmental public hearing
12	Not applicable as proposed project is greenfield project
13	This question is not concerned with the environmental public hearing
14	The genuineness of the compliance of TOR given by MoEFCC to the company is 100% true.
15	This question is not concerned with the environmental public hearing
16	This question is not concerned with the environmental public hearing
17	All the information related to plantation is given in Section 10.5.7 of the EIA report and information about the source of water is given in Section 2.11.3 of the EIA report.
18	The information given in the compliance of TOR is true

Shree Khodal Waste Management

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Sr.No.	Reply
19	The details are given in Annexure-2 of the EIA report.
20	Maximum opportunities will be given to the local people according to their experience and skills.
21	Company will follow their accidental policy in case of any accident or damage
22	Not applicable as proposed project is greenfield project
23	This question is not concerned with the environmental public hearing
24	The person presenting the EIA report is associated with M/s. Shree Khodal Waste Management and Kadam Environmental Consultants and all his information has been submitted to GPCB

Thanking you,

M/s Shree Khodal Waste Management



Authorized Signatory

Shree Khodal Waste Management

620, 6th Floor, Fortune Business Hub, Near Shell Petrol Pump,
Science City Road, Sola, Ahmedabad, Gujarat- 380060

Proposal No.: SIA/GJ/INFRA2/432576/2023

अनुलग्नक: डी-ए-1

दिनांक: 09.07.2025

को,
धर्मेश मिस्त्री,
ब्लॉक नंबर 14, मकान नंबर 1340, नर्मदा अपार्टमेंट,
मामलतदार कचेरी के पास, भरूच।

विषय: आपत्ति और सुझाव- जैव चिकित्सा अपशिष्ट प्रबंधन की जन सुनवाई, जीआईडीसी शेहेरा, तालुका शेहेरा, जिला पंचमहल।

प्रिय महोदय,

अपने पत्र के संदर्भ में, कृपया अपने प्रश्न का बिंदुवार उत्तर नीचे पाएं।

क्रमांक	जवाब
1	कृपया ईआईए रिपोर्ट के पृष्ठ संख्या 3 से 5 और अध्याय संख्या 12 पर दी गई घोषणा का संदर्भ लें, जिसमें QCI NABET के सभी अनुमोदित कार्यात्मक क्षेत्रों के बारे में जानकारी दी गई है।
2	अनुमोदित कार्यात्मक क्षेत्र विशेषज्ञों की सभी महत्वपूर्ण जानकारी कंपनी सलाहकार द्वारा ईआईए रिपोर्ट के पृष्ठ संख्या 3 से 5 और अध्याय संख्या 12 पर प्रस्तुत की गई है।
3	किसी भी बाहरी अनुमोदित कार्यात्मक क्षेत्र विशेषज्ञ को नियुक्त नहीं किया गया है।
4	यह प्रश्न मेसर्स श्री खोडल वेस्ट मैनेजमेंट की पर्यावरणीय जन सुनवाई से संबंधित नहीं है।
5	यह प्रश्न पर्यावरणीय जन सुनवाई से संबंधित नहीं है।
6	EIA रिपोर्ट MoEFCC द्वारा कंपनी को दिए गए TOR और कंपनी सलाहकार द्वारा EIA अधिसूचना-2006 के अनुसार तैयार की गई है। वह रिपोर्ट कंपनी ने पर्यावरण संबंधी सुनवाई के लिए जीपीसीबी को सौंप दी है। पर्यावरणीय जनसुनवाई की जिम्मेदारी कंपनी और जीपीसीबी की है।
7	कंपनी द्वारा सलाहकार को दी जाने वाली फीस सलाहकार और हमारे बीच का निजी मामला है।
8	QCI-NABET द्वारा जारी मान्यता प्रमाणपत्र दिनांक 19 मार्च 2026 तक वैध है।
9	परियोजना प्रस्तावक द्वारा की जाने वाली जन सुनवाई की सूचना प्रभावित क्षेत्र के गांव के सभी लोगों तक लाउडस्पीकर और डिस्प्ले बोर्ड के माध्यम से तथा रिक्शा या अन्य वाहनों से पहुंचाई गई है। इसकी वीडियो और फोटोग्राफ भी एम.ओ.एम. में शामिल किए गए है।
10	ईआईए रिपोर्ट का प्रतिनिधित्व करने वाले व्यक्ति का विवरण ईआईए रिपोर्ट के पृष्ठ संख्या 3 से 5 में दिया गया है।
11	यह प्रश्न पर्यावरणीय जन सुनवाई से संबंधित नहीं है।
12	यह प्रश्न लागू नहीं होता क्योंकि यह परियोजना एक ग्रीन फील्ड परियोजना है
13	यह प्रश्न पर्यावरणीय जन सुनवाई से संबंधित नहीं है।
14	कंपनी द्वारा दिया गया ToR के अनुपालन की वास्तविकता 100% सत्य है।
15	यह प्रश्न पर्यावरणीय जन सुनवाई से संबंधित नहीं है।
16	यह प्रश्न पर्यावरणीय जन सुनवाई से संबंधित नहीं है।
17	वृक्षारोपण से संबंधित सभी जानकारी ईआईए रिपोर्ट के खंड 10.5.7 में दी गई है और पानी के स्रोत के बारे में जानकारी ईआईए रिपोर्ट के खंड 2.11.3 में दी गई है।
18	ToR के अनुपालन में दी गई जानकारी सत्य है।
19	इसकी जानकारी ईआईए रिपोर्ट के अनुलग्नक-2 में दिया गया है।

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क्रमांक	जवाब
20	स्थानीय लोगों को उनके अनुभव और कौशल के अनुसार अवसर दिए जाएंगे।
21	किसी भी दुर्घटना या क्षति के मामले में कंपनी अपनी दुर्घटना नीति का पालन करेगी ।
22	यह प्रश्न लागू नहीं होता क्योंकि यह परियोजना एक ग्रीन फील्ड परियोजना है
23	यह प्रश्न पर्यावरणीय जन सुनवाई से संबंधित नहीं है।
24	ईआईए रिपोर्ट प्रस्तुत करने वाला व्यक्ति मेसर्स श्री खोडल वेस्ट मैनेजमेंट और कदम एनवायरनमेंटल कंसल्टेंट्स से जुड़ा है और उसकी सारी जानकारी जीपीसीबी को दी गई है।

धन्यवाद,

मैसर्स श्री खोडल वेस्ट मैनेजमेंट

For, SHREE KHODAL WASTE MANAGEMENT

PARTNER

अधिकृत हस्ताक्षरकर्ता

Shree Khodal Waste Management

620, 6th Floor, Fortune Business Hub, Near Shell Petrol Pump,
Science City Road, Sola, Ahmedabad, Gujarat- 380060

Proposal No.: SIA/GJ/INFRA2/432576/2023

Annexure D - A - 2

Date: 09.07.2025

To,
Samvedana Biomedical Waste Management Pvt Ltd
Plot No 217/1, Chandrapura Industrial Estate, Chandrapura,
Taluka Halol, Panchmahal District
Gujarat State

Dear Sir,

Reply 1: As per Annexure 14, M/s Shree Khodal Waste Management has given an undertaking that their areas of operation will not affect the existing customers of M/s Samvedana Biomedical Waste Management Pvt Ltd and there will be no conflict of business interests of each other.

Reply 2: Based on the Gap Analysis Study for Bio-Medical Waste Management of Gujarat State (2023) prepared by GEMI, SEAC has reviewed the gap between Existing & Worst Case BMW generation Vrs Consented Quantity & Actual Quantity of waste received at existing BMW Sites in districts of Dahod, Panchmahal and Mahisagar. Based on detailed review of the same, SEAC has granted TOR to M/s Shree Khodal Waste Management.

Reply 3: Annexure 13 relates to the Carbon Foot print and is wrongly referred.

Reply 4: As per Annexure 14, M/s Shree Khodal Waste Management has given an undertaking that their areas of operation will not affect the existing customers of M/s Samvedana Biomedical Waste Management Pvt Ltd and there will be no conflict of business interests of each other.

Reply 5:

Based on the Gap Analysis Study for Bio-Medical Waste Management of Gujarat State (2023) prepared by GEMI, SEAC has reviewed the gap between Existing & Worst Case BMW generation Vrs Consented Quantity & Actual Quantity of waste received at existing BMW Sites in districts of Dahod, Panchmahal and Mahisagar. Based on detailed review of the same, SEAC has granted TOR to M/s Shree Khodal Waste Management.

As per Annexure 14, M/s Shree Khodal Waste Management has given an undertaking that their areas of operation will not affect the existing customers of M/s Samvedana Biomedical Waste Management Pvt Ltd and there will be no conflict of business interests of each other.

Thanking you,

M/s Shree Khodal Waste Management

For, SHREE KHODAL WASTE MANAGEMENT

PARTNER

Authorized Signatory

Shree Khodal Waste Management

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Science City Road, Sola, Ahmedabad, Gujarat- 380060

Proposal No.: SIA/GJ/INFRA2/432576/2023

એનેક્ષર ડી-એ-૨

પ્રતિ,

તા. ૦૯/૦૭/૨૦૨૫

સંવેદના બાયોમેડિકલ વેસ્ટ મેનેજમેન્ટ પ્રાઇવેટ લિમિટેડ
પ્લોટ નંબર 217/1, ચંદ્રપુરા ઇન્ડસ્ટ્રીયલ એસ્ટેટ, ચંદ્રપુરા,
તાલુકો હાલોલ, પંચમહાલ જિલ્લો
ગુજરાત રાજ્ય

વિષય: મેસર્સ શ્રી ખોડલ વેસ્ટ મેનેજમેન્ટની તા. ૦૯.૦૭.૨૦૨૫ ના રોજ લોકસુનાવણીમાં વાંધો રજુ કરવા બાબત.

સંદર્ભ: આપશ્રી તરફથી મળેલ પત્ર નં. SBMWI/July-2025/13 તારીખ ૦૭.૦૭.૨૦૨૫.

માનનીય સાહેબશ્રી,

આપના મુદ્દાસર જવાબો નીચે મુજબ છે:

૧) એનેક્ષર ૧૪ મુજબ, મેસર્સ શ્રી ખોડલ વેસ્ટ મેનેજમેન્ટે બાંયધરી આપી છે કે તેમના કાર્યક્ષેત્રો મેસર્સ સંવેદના બાયોમેડિકલ વેસ્ટ મેનેજમેન્ટ પ્રાઇવેટ લિમિટેડના હાલના ગ્રાહકોને અસર કરશે નહીં અને એકબીજાના વ્યવસાયિક હિતોમાં કોઈ સંઘર્ષ થશે નહીં.

૨) GEMI દ્વારા તૈયાર કરાયેલ ગુજરાત રાજ્યના બાયો-મેડિકલ વેસ્ટ મેનેજમેન્ટ (2023) માટેના ગેપ એનાલિસિસ સ્ટડીના આધારે, SEAC એ દાહોદ, મહિસાગર અને પંચમહાલ જિલ્લાઓમાં હાલની BMW સાઇટ્સ પર પ્રાપ્ત થતો હાલનો કચરો , વર્સ્ટ કેસ માં નીકળતો બાયો મેડિકલ કચરો અને કન્સેન્ટ નો જથ્થો અને વાસ્તવિક જથ્થા વચ્ચેના તફાવતની સમીક્ષા કરી છે. તેની વિગતવાર સમીક્ષાના આધારે, SEAC એ મેસર્સ શ્રી ખોડલ વેસ્ટ મેનેજમેન્ટને TOR મંજૂર કર્યો છે.

3) એનેક્ષર ૧૩ એ કાર્બન ફૂટપ્રિન્ટ સાથે સંબંધિત છે અને તેનો તમે ખોટી રીતે ઉલ્લેખ કરેલ છે.

૪) એનેક્ષર ૧૪ મુજબ, મેસર્સ શ્રી ખોડલ વેસ્ટ મેનેજમેન્ટે બાંયધરી આપી છે કે તેમના કાર્યક્ષેત્રો મેસર્સ સંવેદના બાયોમેડિકલ વેસ્ટ મેનેજમેન્ટ પ્રાઇવેટ લિમિટેડના હાલના ગ્રાહકોને અસર કરશે નહીં અને એકબીજાના વ્યવસાયિક હિતોમાં કોઈ સંઘર્ષ થશે નહીં.

૫) GEMI દ્વારા તૈયાર કરાયેલ ગુજરાત રાજ્યના બાયો-મેડિકલ વેસ્ટ મેનેજમેન્ટ (2023) માટેના ગેપ એનાલિસિસ સ્ટડીના આધારે, SEAC એ દાહોદ, મહિસાગર અને પંચમહાલ જિલ્લાઓમાં હાલની BMW સાઇટ્સ પર પ્રાપ્ત થતો હાલનો કચરો , વર્સ્ટ કેસ માં નીકળતો બાયો મેડિકલ કચરો અને કન્સેન્ટ નો જથ્થો અને વાસ્તવિક જથ્થા વચ્ચેના તફાવતની

Shree Khodal Waste Management

620, 6th Floor, Fortune Business Hub, Near Shell Petrol Pump,
Science City Road, Sola, Ahmedabad, Gujarat- 380060

સમીક્ષા કરી છે. તેની વિગતવાર સમીક્ષાના આધારે, SEAC એ મેસર્સ શ્રી ખોડલ વેસ્ટ મેનેજમેન્ટને TOR મંજૂર કર્યો છે.

એનેક્ષર ૧૪ મુજબ, મેસર્સ શ્રી ખોડલ વેસ્ટ મેનેજમેન્ટે બાંયધરી આપી છે કે તેમના કાર્યક્ષેત્રો મેસર્સ સંવેદના બાયોમેડિકલ વેસ્ટ મેનેજમેન્ટ પ્રાઇવેટ લિમિટેડના હાલના ગ્રાહકોને અસર કરશે નહીં અને એકબીજાના વ્યવસાયિક હિતોમાં કોઈ સંઘર્ષ થશે નહીં.

આભાર સહ,

શ્રી ખોડલ વેસ્ટ મેનેજમેન્ટ

For, SHREE KHODAL WASTE MANAGEMENT

PARTNER

અધિકૃત સહિકર્તા

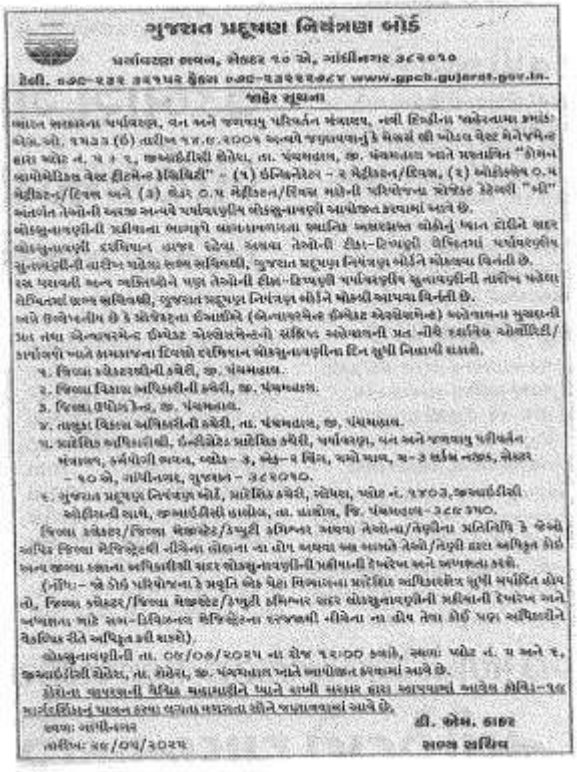
Annexure – E

A statement showing other relevant documents

M/s. Shree Khodal Waste Management for proposed Common Biomedical Waste Treatment and Disposal Facility- 2.5 MT/Day, at Plot No. 5 & 6, GIDC Shehera, Taluka Shehera, District Panchmahal.

Annexure No.	Annexure Details
1	Advertisement of the Public Hearing in "The Indian Express" English Newspaper dated 04/06/2025
2	Advertisement of the Public Hearing in "Divya Bhaskar" Gujarati Newspaper dated 04/06/2025

"Divya Bhaskar" Gujarati Newspaper dated 04/06/2025



ગુજરાત પ્રદૂષણ નિયંત્રણ બોર્ડ

પર્યાવરણ ભવન, સેક્ટર ૧૦ એ, ગાંધીનગર ૩૮૨૦૧૦

ટેલી. ૦૭૯-૨૩૨૨ ૨૧૫૨ ફેક્સ ૦૭૯-૨૩૨૨૨૭૮૪ www.gpcb.gujarat.gov.in

જાહેર સૂચના

ભારત સરકારના પર્યાવરણ, વન અને જળવાયુ પરિવર્તન મંત્રાલય, નવી દિલ્હીના જાહેરનામા ક્રમાંક: એસ.ઓ. ૧૫૩૩ (ઈ) તારીખ ૧૪.૯.૨૦૦૬ અન્વયે જણાવ્યાનુસાર કે મેસર્સ શ્રી ખોડલ વેસ્ટ મેનેજમેન્ટ દ્વારા પ્લોટ નં. ૫ + ૬, જીઆઈડીસી શેહેરા, તા. પંચમહાલ, જી. પંચમહાલ ખાતે પ્રસ્તાવિત "કોમન બાયોમેડિકલ વેસ્ટ ટ્રીટમેન્ટ ફેસિલિટી" - (૧) ઈન્સિનેરેટર - ૨ મેટ્રિકટન/દિવસ, (૨) ઓટોક્લેવ ૦.૫ મેટ્રિકટન/દિવસ અને (૩) શ્રેડર ૦.૫ મેટ્રિકટન/દિવસ માટે-ની પરિયોજના કાર્યરત કરવાની "બી" કાર્યક્રમ હેઠળની અરજી અન્વયે પર્યાવરણીય લોકસુનાવણી આયોજન કરવામાં આવે છે.

લોકસુનાવણી-ની તારીખના ત્રીસથી વધારેદિવસ અગાઉ પ્રસ્તાવિત પ્રોજેક્ટ સંબંધિત જાહેર લોકસુનાવણી દરમિયાન રજૂ કરેલ સમગ્ર તેમની દીકા-ટિપ્પણી લેખિતમાં પર્યાવરણીય સુનાવણી-ની તારીખ પહેલા કલ્પ અધિકારી, ગુજરાત પ્રદૂષણ નિયંત્રણ બોર્ડને મોકલવા વિનંતી છે.

રસ ધરાવતી અન્ય વ્યક્તિઓને પણ તેમની દીકા-ટિપ્પણી પર્યાવરણીય સુનાવણી-ની તારીખ પહેલા લેખિતમાં કલ્પ અધિકારી, ગુજરાત પ્રદૂષણ નિયંત્રણ બોર્ડને મોકલી આપવા વિનંતી છે.

અને ઉપરોક્તમાં જે કે પ્રોજેક્ટના ઈમ્પાક્ટિ (ઈન્વાયરમેન્ટ ઈમ્પેક્ટ એસેસમેન્ટ) અભ્યાસના મુખ્યારની પ્રત તથા એન્વાયરમેન્ટ ઈમ્પેક્ટ એસેસમેન્ટનો સક્ષિપ્ત અહેવાલની પ્રત નીચે દર્શાવેલ ઓફીસો/કચેરીઓ ખાતે કામકાજના દિવસો દરમિયાન લોકસુનાવણીના દિન સુધી મિલાવી શકાશે.

૧. જિલ્લા કલેક્ટરશ્રીની કચેરી, જી. પંચમહાલ.
૨. જિલ્લા વિકાસ અધિકારીની કચેરી, જી. પંચમહાલ.
૩. જિલ્લા ઉદ્યોગ કેન્દ્ર, જી. પંચમહાલ.
૪. તાલુકા વિકાસ અધિકારીની કચેરી, તા. પંચમહાલ, જી. પંચમહાલ.
૫. પ્રાદેશિક અધિકારીની, રીજીયોનલ પ્રાદેશિક કચેરી, પર્યાવરણ, વન અને જળવાયુ પરિવર્તન મંત્રાલય, કર્મયોગી ભવન, બ્લોક- ૩, સેક્ટ-૧ વિંગ, ગ્રીજો માળ, ૨-૩ સર્કલ નજીક, સેક્ટર - ૧૦ એ, ગાંધીનગર, ગુજરાત - ૩૮૨૦૧૦.
૬. ગુજરાત પ્રદૂષણ નિયંત્રણ બોર્ડ, પ્રાદેશિક કચેરી, સ્લોપેડ, પ્લોટ નં. ૧૪૦૩,જીઆઈડીસી કોલોનીની સામે, જીઆઈડીસી હાલોલ, તા. હાલોલ, જિ. પંચમહાલ - ૩૮૯ ૩૫૦.

જિલ્લા કલેક્ટર/જિલ્લા મેજીસ્ટ્રેટ/ડેપ્યુટી કમિશ્નર અથવા તેમનો/તેમની કક્ષાનો અધિકારી કે જેનો કાર્યક્ષેત્ર જિલ્લા મેજિસ્ટ્રેટથી નીચેના હોદ્દાના ના હોય અથવા આ અંગેની તેમની/તેણી વતી અધિકૃત કરેલ અન્ય સબ-ડિવિઝનલ મેજિસ્ટ્રેટના હાજરીમાં જાહેર લોકસુનાવણી-ની કાર્યવાહી દરમ્યાન અને અધ્યક્ષતા કરશે.

(નોંધ:- જો કોઈ પરિયોજના કે પ્રવૃત્તિ એક કરતા વિધાનના અધિકાર અધિકારક્ષેત્ર ધરાવે છે, જિલ્લા મેજીસ્ટ્રેટ/જિલ્લા મેજીસ્ટ્રેટ/ડેપ્યુટી કમિશ્નર વતી લોકસુનાવણી-ની કાર્યવાહી દરમ્યાન અને અધ્યક્ષતા માટે સબ-ડિવિઝનલ મેજિસ્ટ્રેટના હાજરીમાં નીચેના ના હોય તેવા કોઈ પણ અધિકારીને લેખિતમાં અધિકૃત કરી શકશે).

લોકસુનાવણી-ની તા. ૦૯/૦૭/૨૦૨૫ ના રોજ ૧૨:૦૦ કલાકે, સ્થળ: પ્લોટ નં. ૫ અને ૬, જીઆઈડીસી શેહેરા, તા. શેહેરા, જી. પંચમહાલ ખાતે આયોજન કરવામાં આવે છે.

કોરોના વાયરસની વૈશ્વિક મહામારીને ધ્યાને લઇને સરકાર દ્વારા આપવામાં આવેલ સૂચિ-૧૯ માર્ગદર્શિકાનું પાલન કરવા બાબતે તમામને જણાવવામાં આવે છે.

સ્થળ: ગાંધીનગર
તારીખ: ૨૯/૦૫/૨૦૨૫

ડી. એમ. ઠાકર
સભ્ય સચિવ

"The Indian Express" English Newspaper dated 04/06/2025



Gujarat Pollution Control Board

Paryavaran Bhavan, Sector 10 A, Gandhinagar 382 010
Tel 079-23232152 Fax 079-23222784, www.gpcb.gujarat.gov.in.

GPCB

PUBLIC NOTICE

It is hereby to inform that as per Ministry of Environment, Forest & Climate Change, Government of India, New Delhi vide its Notification no. S.O. 1533 (E) dated September 14, 2006, Public Hearing has been fixed for **M/s Shree Khodal Waste Management for Setting up of manufacturing plant of "Common Biomedical Waste Treatment Facility" – (1) Incinerator – 2 MT/Day, (2) Autoclave – 0.5 MT/Day and (3) Shredder – 0.5 MT/Day, at Plot No. 5+6, GIDC Shehra, Ta. Panchmahal, Dist. Panchmahal,** covered under project Category "B" as mentioned in their request application.

All local affected persons of the project are requested to remain present in the public hearing or send their response in writing to Member Secretary, Gujarat Pollution Control Board before the hearing date.

Other concerned persons having a plausible stake in environment aspects of the project or activity can submit their responses to Member Secretary, Gujarat Pollution Control Board in writing before the hearing date.

It may be noted that draft Environment Impact Assessment Report and Executive Summary of the Environment Impact Assessment Report of the project has been sent to the following authorities or offices to make it available for inspection to the public during normal office hours, till the Public Hearing is over.

1. District Collector Office, **Dist. Panchmahal.**
2. District Development Office, **Dist. Panchmahal.**
3. District Industry Centre, **Dist. Panchmahal.**
4. Taluka Development Office, **Ta. Panchmahal, Dist. Panchmahal.**
5. Regional Officer, Integrated Regional Office, Ministry of Environment, Forests and Climate Change, Karmayogi Bhawan, Block- 3, F-2 Wing, 5th Floor, Near CH-3 Circle, Sector – 10A, Gandhinagar, Gujarat – 382010.
6. **Regional Office, Gujarat Pollution Control Board, Godhara, Plot No. 1403, Opp. GIDC Office, GIDC Halol, Ta. Panchmahal, Dist. Panchmahal - 389350.**

The District Magistrate /District Collector / Deputy Commissioner or his/her representative not below the rank of an Additional District Magistrate or any other District Level Officer authorized by him/her in this behalf shall supervise and preside over the entire public hearing process.

(Note:- If a project or activity is confined to the territorial jurisdiction of one sub-division, the District Magistrate/District Collector/Deputy Commissioner may alternatively authorize any officer not below the rank of SubDivisional Magistrate to supervise and preside over the entire public hearing process).

The Public Hearing is scheduled to be held on **09/07/2025 at 12:00 Hrs. Venue: At Plot No. 5 & 6, GIDC Shehra, Ta. Shehra, Dist. Panchmahal.**

Considering the present situation of pandemic of Covid-19 all concerned are hereby informed to follow Government guidelines regarding Covid-19 pandemic.

Place : Gandhinagar
Date: 29/05/2025

D. M. Thaker
Member Secretary

Annexure 20: Test Reports of Analysis of Baseline monitoring done in the NABL approved Laboratory of M/s. Kadam Labs Pvt Ltd Vadodara

Ambient Air Quality Analysis Report

KADAM LABS PRIVATE LIMITED

871/B/3, Near Himalaya Machinery, GIDC Makarpura, Vadodara-10.
Phone : (O) 0265 - 6131000, 6131001

ENVIRONMENTAL MONITORING REPORT

LABORATORY TEST REPORT – AMBEINT AIR

Name of Client	M/s. Shree Khodal Waste Management
Address of Client	Plot No.5 & 6, GIDC Shehera, Taluka & Dist. Panchmahal, Gujarat
Client Representative	Mr. Abhishek Joshi
Sampling Location	At Project site

TEST RESULT

Sr. No.	Station Code		Average Pollutant Concentration in µg/m3 except CO in mg/m3						
			PM_{10} (24hr.)	$PM_{2.5}$ (24hr.)	SO_2 (24hr.)	NO_x (24hr)	HC* Grab	CO (1hr)	VOC (24hr)
National Ambient Air Quality Standards by Central pollution control Board Dtd 18th November, 2009			100	60	80	80	NS	4	NS
			100	60	80	80	NS	4	NS
1.	AAQ1	01.12.2024	95	41	7.1	14.0	984	1.24	<1
2.	AAQ1	05.12.2024	88	32	6.4	15.0			
3.	AAQ1	09.12.2024	86	26	6.1	18.0			
4.	AAQ1	13.12.2024	89	42	6.9	13.2			
5.	AAQ1	17.12.2024	83	35	6.5	20.1	916	1.15	<1
6.	AAQ1	21.12.2024	84	27	11.2	18.0			
7.	AAQ1	25.12.2024	90	38	6.8	16.6			
8.	AAQ1	29.12.2024	81	31	7.6	18.0			
9.	AAQ1	02.01.2025	83	30	8.5	22.2	891	1.11	<1
10.	AAQ1	06.01.2025	73	18	6.1	15.9			
11.	AAQ1	10.01.2025	79	33	8.3	21.8			
12.	AAQ1	14.01.2025	66	23	7.4	11.1			
13.	AAQ1	18.01.2025	82	25	7.9	12.3	916	1.06	<1
14.	AAQ1	22.01.2025	76	23	3.8	16.7			
15.	AAQ1	26.01.2025	89	34	6.8	10.5			
16.	AAQ1	30.01.2025	73	18	8.7	10.3			
17.	AAQ1	03.02.2025	82	26	5.8	13.5	918	1.05	<1
18.	AAQ1	07.02.2025	69	11	9.1	14.4			
19.	AAQ1	11.02.2025	102	39	9.2	18.0			
20.	AAQ1	15.02.2025	90	30	11.2	22.2			
21.	AAQ1	18.02.2025	86	29	3.8	10.3	891	0.98	<1
22.	AAQ1	21.02.2025	79	26	7.6	16.0			
23.	AAQ1	24.02.2025	90	30	10.9	22.0			
24.	AAQ1	27.02.2025	67	22	9.8	19.5			

Remark :
Authorised By -
Name : Sapana Amin | **Designation: Lab Incharge**

----------END OF REPORT----------

Page 1 of 1

KADAM LABS PRIVATE LIMITED

871/B/3, Near Himalaya Machinery, GIDC Makarpura, Vadodara-10.

Phone : (O) 0265 - 6131000, 6131001

TC-13450

ENVIRONMENTAL MONITORING REPORT

LABORATORY TEST REPORT – AMBEINT AIR

Name of Client	M/s. Shree Khodal Waste Management
Address of Client	Plot No. 5 & 6, GIDC Shehera, Taluka & Dist. Panchmahal, Gujarat
Client Representative	Mr. Abhishek Joshi
Sampling Location	Shehera Village

TEST RESULT

S. No.	Station Code		Average Pollutant Concentration µg/m³, except CO in mg/m³						
			PM_{10} (24hr.)	$PM_{2.5}$ (24hr.)	SO_2 (24hr.)	NO_x (24hr)	HC* Grab	CO (1hr)	VOC (24hr)
National Ambient Air Quality Standards by Central pollution control Board Dtd 18th November 2009			100	60	80	80	NS	4	NS
			100	60	80	80	NS	4	NS
1.	AAQ2	01.12.2024	85	28	6.2	16.0			
2.	AAQ2	05.12.2024	41	28	5.3	8.0	915	1.28	<1
3.	AAQ2	09.12.2024	52	31	6.9	12.6			
4.	AAQ2	13.12.2024	68	17	9.2	12.0			
5.	AAQ2	17.12.2024	85	36	5.1	7.4			
6.	AAQ2	21.12.2024	85	48	4.7	10.3	997	1.06	<1
7.	AAQ2	25.12.2024	65	28	3.8	6.0			
8.	AAQ2	29.12.2024	85	30	8.0	16.6			
9.	AAQ2	02.01.2025	93	38	5.6	11.6			
10.	AAQ2	06.01.2025	75	18	6.5	13.5	847	1.08	<1
11.	AAQ2	10.01.2025	59	33	7.1	14.7			
12.	AAQ2	14.01.2025	88	23	3.9	8.0			
13.	AAQ2	18.01.2025	65	22	4.9	10.1			
14.	AAQ2	22.01.2025	56	12	8.3	17.2	903	0.88	<1
15.	AAQ2	26.01.2025	86	26	6.4	13.3			
16.	AAQ2	30.01.2025	75	20	5.8	12.0			
17.	AAQ2	03.02.2025	92	26	7.0	14.5			
18.	AAQ2	07.02.2025	79	18	6.9	13.5	896	1.10	<1
19.	AAQ2	11.02.2025	76	17	6.5	12.8			
20.	AAQ2	15.02.2025	81	21	11.2	22.0			
21.	AAQ2	18.02.2025	76	25	11.2	22.0			
22.	AAQ2	21.02.2025	91	30	3.8	6.0	906	0.94	<1
23.	AAQ2	24.02.2025	87	29	6.9	13.6			
24.	AAQ2	27.02.2025	67	22	10.5	20.8			

Remark :

Authorised By -

Name : Sapana Amin | **Designation: Lab Incharge**

----------END OF REPORT----------

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TC-13450

KADAM LABS PRIVATE LIMITED

871/B/3, Near Himalaya Machinery, GIDC Makarpura, Vadodara-10.
Phone : (O) 0265 - 6131000, 6131001

ENVIRONMENTAL MONITORING REPORT

LABORATORY TEST REPORT – AMBEINT AIR

Name of Client	M/s. Shree Khodal Waste Management
Address of Client	Plot No. 5 & 6, GIDC Shehera, Taluka & Dist. Panchmahal, Gujarat
Client Representative	Mr. Abhishek Joshi
Sampling Location	Dodiyani Village

TEST RESULT

S. No.	Station Code		Average Pollutant Concentration µg/m³, except CO in mg/m³						
			PM_{10} (24hr.)	$PM_{2.5}$ (24hr.)	SO_2 (24hr.)	NO_x (24hr)	HC* Grab	CO (1hr)	VOC (24hr)
National Ambient Air Quality Standards by Central pollution control Board Dtd 18th November 2009			100	60	80	80	NS	4	NS
			100	60	80	80	NS	4	NS
1.	AAQ3	02.12.2024	85	31	6.9	14.7	958	0.87	<1
2.	AAQ3	06.12.2024	58	18	7.1	13.7			
3.	AAQ3	10.12.2024	83	51	5.2	11.2			
4.	AAQ3	14.12.2024	87	9	6.2	23.5			
5.	AAQ3	18.12.2024	66	30	5.8	12.0	875	0.97	<1
6.	AAQ3	22.12.2024	75	38	8.0	16.6			
7.	AAQ3	26.12.2024	92	23	3.8	6.0			
8.	AAQ3	30.12.2024	60	22	5.8	12.0			
9.	AAQ3	03.01.2025	81	26	7.1	14.7	922	1.23	<1
10.	AAQ3	07.01.2025	61	17	4.3	8.8			
11.	AAQ3	11.01.2025	75	25	5.7	11.8			
12.	AAQ3	15.01.2025	89	29	9.0	18.7			
13.	AAQ3	19.01.2025	66	21	3.8	6.0	831	0.97	<1
14.	AAQ3	23.01.205	82	26	6.1	12.6			
15.	AAQ3	27.01.2025	95	30	5.6	11.6			
16.	AAQ3	31.01.2025	104	42	8.0	15.7			
17.	AAQ3	04.02.2025	98	37	7.6	14.9	872	1.21	<1
18.	AAQ3	08.02.2025	90	30	9.6	23.5			
19.	AAQ3	12.02.2025	86	29	3.8	6.0			
20.	AAQ3	15.02.2025	67	22	6.7	14.1			
21.	AAQ3	18.02.2025	85	31	6.9	14.7	921	1.02	<1
22.	AAQ3	21.02.2025	58	18	7.1	13.7			

Remark :
Authorised By -
Name : Sapana Amin | **Designation: Lab Incharge**

----------END OF REPORT----------

Page 1 of 1

TC-13458

KADAM LABS PRIVATE LIMITED

871/B/3, Near Himalaya Machinery, GIDC Makarpura, Vadodara-10.
Phone : (O) 0265 - 6131000, 6131001

ENVIRONMENTAL MONITORING REPORT

LABORATORY TEST REPORT – AMBEINT AIR

Name of Client	M/s. Shree Khodal Waste Management
Address of Client	Plot No. 5 & 6, GIDC Shehera, Taluka & Dist. Panchmahal, Gujarat
Client Representative	Mr. Abhishek Joshi
Sampling Location	Sadisamdi Village

TEST RESULT

S. No.	Station Code		Average Pollutant Concentration µg/m³, except CO in mg/m³						
			PM_{10} (24hr.)	$PM_{2.5}$ (24hr.)	SO_2 (24hr.)	NO_x (24hr)	HC* Grab	CO (1hr)	VOC (24hr)
National Ambient Air Quality Standards by Central pollution control Board Dtd 18th November 2009			100	60	80	80	NS	4	NS
			100	60	80	80	NS	4	NS
1.	AAQ4	02.12.2024	71	31	8.2	16.9	904	1.16	<1
2.	AAQ4	06.12.2024	44	20	6.1	15.8			
3.	AAQ4	10.12.2024	50	34	7.7	16.5			
4.	AAQ4	14.12.2024	62	41	6.3	13.9			
5.	AAQ4	18.12.2024	66	33	7.4	17.0	943	1.09	<1
6.	AAQ4	22.12.2024	54	28	6.6	13.9			
7.	AAQ4	26.12.2024	93	29	8.0	12.1			
8.	AAQ4	30.12.2024	77	20	7.3	12.8			
9.	AAQ4	03.01.2025	57	19	6.9	14.2	801	0.95	<1
10.	AAQ4	07.01.2025	66	23	5.8	12.0			
11.	AAQ4	11.01.2025	86	26	8.6	17.9			
12.	AAQ4	15.01.2025	69	22	7.1	14.7			
13.	AAQ4	19.01.2025	84	36	4.3	8.8	895	1.03	<1
14.	AAQ4	23.01.205	93	30	4.9	10.1			
15.	AAQ4	27.01.2025	81	29	4.8	9.9			
16.	AAQ4	31.01.2025	76	26	5.6	11.6			
17.	AAQ4	04.02.2025	80	18	7.8	16.2	875	1.24	<1
18.	AAQ4	08.02.2025	71	24	5.8	12.0			
19.	AAQ4	12.02.2025	84	23	8.7	17.1			
20.	AAQ4	16.02.2025	90	30	9.4	18.8			
21.	AAQ4	19.02.2025	76	25	4.3	8.8	904	1.12	<1
22.	AAQ4	22.02.2025	57	19	7.1	14.5			
23.	AAQ4	25.02.2025	89	30	9.3	18.6			
24.	AAQ4	28.02.2025	76	25	9.5	18.5			

Remark :
Authorised By
Name : Sapana Amin | **Designation: Lab Incharge**

----------END OF REPORT----------

Page 1 of 1

TC-13450

KADAM LABS PRIVATE LIMITED

871/B/3, Near Himalaya Machinery, GIDC Makarpura, Vadodara-10.
Phone : (O) 0265 - 6131000, 6131001

ENVIRONMENTAL MONITORING REPORT

LABORATORY TEST REPORT – AMBEINT AIR

Name of Client	M/s. Shree Khodal Waste Management
Address of Client	Plot No. 5 & 6, GIDC Shehera, Taluka & Dist. Panchmahal, Gujarat
Client Representative	Mr. Abhishek Joshi
Sampling Location	Palikhanda Village

TEST RESULT

S. No.	Station Code		Average Pollutant Concentration µg/m³, except CO in mg/m³						
			PM_{10} (24hr.)	$PM_{2.5}$ (24hr.)	SO_2 (24hr.)	NO_x (24hr)	HC* Grab	CO (1hr)	VOC (24hr)
National Ambient Air Quality Standards by Central pollution control Board Dtd 18th November 2009			100	60	80	80	NS	4	NS
			100	60	80	80	NS	4	NS
1.	AAQ5	03.12.2024	86	25	6.3	14.2			
2.	AAQ5	07.12.2024	93	24	6.4	14.6	911	0.95	<1
3.	AAQ5	11.12.2024	85	21	6.8	14.8			
4.	AAQ5	15.12.2024	73	28	5.5	14.2			
5.	AAQ5	19.12.2024	88	27	6.2	16.4			
6.	AAQ5	23.12.2024	84	30	6.0	16.0	910	0.91	<1
7.	AAQ5	27.12.2024	77	31	5.1	13.6			
8.	AAQ5	31.12.2024	93	35	5.5	12.9			
9.	AAQ5	04.01.2025	89	34	4.6	14.7			
10.	AAQ5	08.01.2025	93	38	8.2	17.0	887	1.28	<1
11.	AAQ5	12.01.2025	79	23	6.7	13.9			
12.	AAQ5	16.01.2025	60	20	8.5	17.7			
13.	AAQ5	20.01.2025	94	26	5.3	10.9			
14.	AAQ5	24.01.2025	81	24	7.1	14.7	897	0.85	<1
15.	AAQ5	28.01.2025	79	23	5.4	11.2			
16.	AAQ5	01.02.2025	93	36	6.2	12.8			
17.	AAQ5	05.02.2025	84	25	8.3	17.2			
18.	AAQ5	09.02.2025	70	23	5.4	11.2	882	0.96	<1
19.	AAQ5	13.02.2025	90	28	9.4	18.5			
20.	AAQ5	16.02.2025	87	29	10.4	20.8			
21.	AAQ5	19.02.2025	93	31	4.6	10.9			
22.	AAQ5	22.02.2025	67	22	6.9	15.1	905	0.89	<1
23.	AAQ5	25.02.2025	72	24	10.0	20.0			
24.	AAQ5	28.02.2025	84	28	9.4	18.4			

Remark :
Authorised By
Name : Sapana Amin | **Designation: Lab Incharge**

----------END OF REPORT----------

Page 1 of 1

TC-13450

KADAM LABS PRIVATE LIMITED

871/B/3, Near Himalaya Machinery, GIDC Makarpura, Vadodara-10.
Phone : (O) 0265 - 6131000, 6131001

ENVIRONMENTAL MONITORING REPORT

LABORATORY TEST REPORT – AMBEINT AIR

Name of Client	M/s. Shree Khodal Waste Management
Address of Client	Plot No. 5 & 6, GIDC Shehera, Taluka & Dist. Panchmahal, Gujarat
Client Representative	Mr. Abhishek Joshi
Sampling Location	Zoz Village

TEST RESULT

S. No.	Station Code		Average Pollutant Concentration µg/m³, except CO in mg/m³						
			PM_{10} (24hr.)	$PM_{2.5}$ (24hr.)	SO_2 (24hr.)	NO_x (24hr)	HC* Grab	CO (1hr)	VOC (24hr)
National Ambient Air Quality Standards by Central pollution control Board Dtd 18th November 2009			100	60	80	80	NS	4	NS
			100	60	80	80	NS	4	NS
1.	AAQ6	03.12.2024	92	18	8.3	13.2			
2.	AAQ6	07.12.2024	68	30	7.8	15.6	943	1.06	<1
3.	AAQ6	11.12.2024	61	38	6.3	12.4			
4.	AAQ6	15.12.2024	92	24	7.1	16.2			
5.	AAQ6	19.12.2024	90	26	6.0	14.7			
6.	AAQ6	23.12.2024	85	38	5.0	13.1	752	0.89	<1
7.	AAQ6	27.12.2024	64	29	5.1	14.4			
8.	AAQ6	31.12.2024	87	34	5.8	15.1			
9.	AAQ6	04.01.2025	86	26	8.2	17.0			
10.	AAQ6	08.01.2025	104	20	7.1	14.7	872	1.20	<1
11.	AAQ6	12.01.2025	101	25	5.0	10.3			
12.	AAQ6	16.01.2025	98	18	7.2	14.9			
13.	AAQ6	20.01.2025	90	36	8.0	16.6			
14.	AAQ6	24.01.2025	95	21	6.2	12.8	859	1.17	<1
15.	AAQ6	28.01.2025	102	16	7.1	14.7			
16.	AAQ6	01.02.2025	94	15	5.3	10.9			
17.	AAQ6	05.02.2025	80	23	7.1	14.7			
18.	AAQ6	09.02.2025	75	20	8.0	16.6	838	1.08	<1
19.	AAQ6	13.02.2025	100	39	8.6	16.9			
20.	AAQ6	16.02.2025	72	24	9.8	19.6			
21.	AAQ6	19.02.2025	97	32	5.0	10.3			
22.	AAQ6	22.02.2025	86	29	7.3	15.3			

Remark :
Authorised By -
Name : Sapana Amin | **Designation: Lab Incharge**

----------END OF REPORT----------

Page 1 of 1

TC-13459

KADAM LABS PRIVATE LIMITED

871/B/3, Near Himalaya Machinery, GIDC Makarpura, Vadodara-10.
Phone : (O) 0265 - 6131000, 6131001

ENVIRONMENTAL MONITORING REPORT

LABORATORY TEST REPORT – AMBEINT AIR

Name of Client	M/s. Shree Khodal Waste Management
Address of Client	Plot No. 5 & 6, GIDC Shehera, Taluka & Dist. Panchmahal, Gujarat
Client Representative	Mr. Abhishek Joshi
Sampling Location	Patiya Village

TEST RESULT

S. No.	Station Code		Average Pollutant Concentration µg/m³, except CO in mg/m³						
			PM_{10} (24hr.)	$PM_{2.5}$ (24hr.)	SO_2 (24hr.)	NO_x (24hr)	HC* Grab	CO (1hr)	VOC (24hr)
National Ambient Air Quality Standards by Central pollution control Board Dtd 18th November 2009			100	60	80	80	NS	4	NS
			100	60	80	80	NS	4	NS
1.	AAQ7	04.12.2024	70	27	8.2	13.4	774	0.88	<1
2.	AAQ7	08.12.2024	86	29	7.5	10.1			
3.	AAQ7	12.12.2024	60	32	6.5	15.2			
4.	AAQ7	16.12.2024	64	28	6.2	6.6			
5.	AAQ7	20.12.2024	92	52	3.8	6.0	858	1.12	<1
6.	AAQ7	24.12.2024	55	19	8.8	18.8			
7.	AAQ7	28.12.2024	102	40	7.7	9.6			
8.	AAQ7	01.01.2025	94	29	5.8	12.0			
9.	AAQ7	05.01.2025	82	25	7.2	14.9	837	1.20	<1
10.	AAQ7	09.01.2025	60	18	6.1	12.6			
11.	AAQ7	13.01.2025	81	25	5.0	10.3			
12.	AAQ7	17.01.205	94	29	6.9	14.3			
13.	AAQ7	21.01.2025	92	29	3.9	8.0	841	1.01	<1
14.	AAQ7	25.01.2025	81	25	4.9	10.1			
15.	AAQ7	29.01.2025	64	19	7.9	16.4			
16.	AAQ7	02.02.2025	92	29	7.2	14.9			
17.	AAQ7	06.02.2025	92	24	6.5	13.5	849	1.24	<1
18.	AAQ7	10.02.2025	85	16	8.3	17.2			
19.	AAQ7	14.02.2025	98	37	8.6	16.9			
20.	AAQ7	17.02.2025	92	31	8.8	18.8			
21.	AAQ7	20.02.2025	89	30	3.8	6.0	967	1.05	<1
22.	AAQ7	23.02.2025	67	22	6.8	12.9			
23.	AAQ7	26.02.2025	84	28	8.7	18.1			

Remark :
Authorised By -
Name : Sapana Amin | **Designation: Lab Incharge**

----------END OF REPORT----------

Page 1 of 1

TC-13450

KADAM LABS PRIVATE LIMITED

871/B/3, Near Himalaya Machinery, GIDC Makarpura, Vadodara-10.
Phone : (O) 0265 - 6131000, 6131001

ENVIRONMENTAL MONITORING REPORT

LABORATORY TEST REPORT – AMBEINT AIR

Name of Client	M/s. Shree Khodal Waste Management
Address of Client	Plot No. 5 & 6, GIDC Shehera, Taluka & Dist. Panchmahal, Gujarat
Client Representative	Mr. Abhishek Joshi
Sampling Location	Varial Village

TEST RESULT

S. No.	Station Code		Average Pollutant Concentration µg/m³, except CO(in mg/m³) and Benzo(a) Pyrene (BaP), As & Ni in ng/nm3						
			PM_{10} (24hr.)	$PM_{2.5}$ (24hr.)	SO_2 (24hr.)	NO_x (24hr)	HC* Grab	CO (1hr)	VOC (24hr)
National Ambient Air Quality Standards by Central pollution control Board Dtd 16th November 2009			100	60	80	80	NS	4	NS
			100	60	80	80	NS	4	NS
1.	AAQ8	04.12.2024	111	37	10.2	15.6			
2.	AAQ8	08.12.2024	111	37	11.0	18.2	966	1.10	<1
3.	AAQ8	12.12.2024	112	37	12.6	14.6			
4.	AAQ8	16.12.2024	93	31	12.5	15.0			
5.	AAQ8	20.12.2024	89	30	10.5	12.5	995	0.97	<1
6.	AAQ8	24.12.2024	93	31	9.8	15.1			
7.	AAQ8	28.12.2024	110	37	11.4	18.5			
8.	AAQ8	01.01.2025	109	36	9.0	17.8			
9.	AAQ8	05.01.2025	96	32	11.5	10.3	923	1.02	<1
10.	AAQ8	09.01.2025	82	27	10.6	11.5			
11.	AAQ8	13.01.2025	88	29	8.9	12.8			
12.	AAQ8	17.01.205	106	35	9.5	10.7			
13.	AAQ8	21.01.2025	106	35	10.3	14.2	978	0.93	<1
14.	AAQ8	25.01.2025	112	37	11.4	12.3			
15.	AAQ8	29.01.2025	119	40	10.1	8.5			
16.	AAQ8	02.02.2025	124	41	9.6	9.9			
17.	AAQ8	06.02.2025	111	37	11.1	10.7	923	0.95	<1
18.	AAQ8	10.02.2025	89	30	8.7	11.6			
19.	AAQ8	14.02.2025	85	28	12.1	10.8			
20.	AAQ8	17.02.2025	94	31	11.4	9.9	966	1.10	<1
21.	AAQ8	20.02.2025	83	27	8.8	8.9			
22.	AAQ8	23.02.2025	86	29	10.0	8.5			
23.	AAQ8	26.02.2025	83	32	9.1	9.4			

Remark :
Authorised By :
Name : Sapana Amin | **Designation: Lab Incharge**

----------END OF REPORT----------

Page 1 of 1

TC-13460

KADAM LABS PRIVATE LIMITED

871/B/3, Near Himalaya Machinery, GIDC Makarpura, Vadodara-10.
Phone : (O) 0265 - 6131000, 6131001

ENVIRONMENTAL MONITORING REPORT

LABORATORY TEST REPORT – AMBEINT AIR

Name of Client	M/s. Shree Khodal Waste Management
Address of Client	Plot No. 5 & 6, GIDC Shehera, Taluka & Dist. Panchmahal, Gujarat
Client Representative	Mr. Abhishek Joshi
Sampling Location	Dhandhalpur Village

TEST RESULT

S. No.	Station Code		Average Pollutant Concentration µg/m³, except CO in mg/m³						
			PM_{10} (24hr.)	$PM_{2.5}$ (24hr.)	SO_2 (24hr.)	NO_x (24hr)	HC* Grab	CO (1hr)	VOC (24hr)
National Ambient Air Quality Standards by Central pollution control Board Dtd 18th November 2009			100	60	80	80	NS	4	NS
			100	60	80	80	NS	4	NS
1.	AAQ9	04.12.2024	82	38	6.3	9.2	913	0.87	<1
2.	AAQ9	08.12.2024	38	29	7.7	6.0			
3.	AAQ9	12.12.2024	49	23	7.6	6.1			
4.	AAQ9	16.12.2024	65	39	6.1	10.4			
5.	AAQ9	20.12.2024	82	32	6.6	6.0	982	0.99	<1
6.	AAQ9	24.12.2024	82	24	7.5	6.6			
7.	AAQ9	28.12.2024	62	35	6.6	12.5			
8.	AAQ9	01.01.2025	82	28	5.7	6.0			
9.	AAQ9	05.01.2025	90	27	8.2	17.0	829	1.27	<1
10.	AAQ9	09.01.2025	72	15	8.3	17.2			
11.	AAQ9	13.01.2025	56	30	5.4	11.2			
12.	AAQ9	17.01.205	85	20	8.6	17.9			
13.	AAQ9	21.01.2025	62	22	6.9	14.3	922	0.88	<1
14.	AAQ9	25.01.2025	53	20	8.0	16.6			
15.	AAQ9	29.01.2025	83	31	5.9	12.2			
16.	AAQ9	02.02.2025	72	15	7.6	15.8			
17.	AAQ9	06.02.2025	89	23	5.3	10.9	830	0.96	<1
18.	AAQ9	10.02.2025	76	8	8.1	15.9			
19.	AAQ9	14.02.2025	73	36	5.7	11.1			
20.	AAQ9	17.02.2025	82	22	9.5	19.0			
21.	AAQ9	20.02.2025	72	19	5.3	6.0	984	1.12	<1
22.	AAQ9	23.02.2025	69	18	7.3	12.8			
23.	AAQ9	26.02.2025	93	33	9.4	18.8			

Remark :
Authorised By -
Name : Sapana Amin | **Designation: Lab Incharge**

----------END OF REPORT----------

Page 1 of 1

Ambient Noise Level Report

TC-13459

KADAM LABS PRIVATE LIMITED

871/B/3, Near Himalaya Machinery, GIDC Makarpura, Vadodara-10.
Phone : (O) 0265 - 6131000, 6131001

ENVIRONMENTAL MONITORING REPORT

LABORATORY TEST REPORT - NOISE

REPORT NO.: JAN25/212/01(ULR- TC134502500011123F)

SAMPLE DETAILS

1.	Name & Address of Client: M/s. Shree khodal Waste Management, Plot No.5 & 6, GIDC Shehera Taluka & Dist. Panchmahal, Gujarat		
2.	Sample ID: 2357812106-212JA25NO1	3.	Client Representative : Mr. Abhishek Joshi
4.	Sample Date: 27.01.2025	5.	Sample Collected By: Mr. Ratan Rai
6.	Analysis Commenced on: 27.01.2025	7.	Analysis Completed on: 27.01.2025
8.	Reporting Date: 28.02.2025	9.	Sampling Location: At Site
10.	Discipline: Chemical	13.	Sample Received Date : 27.01.2025
11.	Group: Atmospheric pollution	12.	Product: Ambient Noise Levels

TEST RESULTS

S. No.	Location	Category		Day Reading dB(A)	Night reading dB(A)	Method
1.	Project Site	Industrial	:	55.2	47.5	IS 9989:1981
2.	Along road to Patiya Village (other end of Shehera GIDC plots)	Residential	:	54.9	44.3	IS 9989:1981
3.	Nr MGVCL Sub Station office	Residential	:	54.2	43.5	IS 9989:1981
4.	Reserved Forest boundary of Zoz and Patiya Village	Silence	:	49.3	39.0	IS 9989:1981
5.	Sadisamdi village	Residential	:	54.3	43.4	IS 9989:1981
6.	Shehera Village	Commercial	:	62.6	53.6	IS 9989:1981
7.	Patiya village	Residential	:	54.5	44.7	IS 9989:1981
8.	Zoz village	Residential	:	54.5	44.8	IS 9989:1981

STANDARD

Ambient Air Quality Standards in Respect of NOISE	Area Code	Category	Limits in dB(A) Leq*	
			Daytime	Nighttime
THE NOISE POLLUTION (REGULATION AND CONTROL) RULES, 2000	A	Industrial	75.0	70.0
	B	Commercial	65.0	55.0
	C	Residential	55.0	45.0
	D	Silence	50.0	40.0

Note :
Daytime 6:00 AM to 10:00 PM
Nighttime 10:00 PM to 6:00 AM
dB(A) Leq* denotes the time weighted average of the level of sound in decibels on scale A which is relatable to human hearing.

Remark :

Authorized By -

Name : Sapana Amin | **Designation: Lab Incharge**

NOTE : 1) Reports may be reproduced, if required, but only in full and only with written approval of the laboratory.
2) Re analysis of sample will be done, if requested within 7 days from the date of Reporting of sample if the samples are not consumed during analysis.
3) The results reported above relate to the sample identified under Sample Details.

----------**END OF REPORT**----------

TEST REPORT FORMAT - NOISE		
DOC. NO.: LAB-FMT-087	Issue No.: 02	Revision No.: 00
Effective Date:. 26-03-2024	Issue Date: 26-03-2024	Revision Date: --

Page 1 of 1

Surface Water Sample Analysis Report

SW01: Waghjipur Village Pond

KADAM LABS PRIVATE LIMITED

871/B/3, Near Himalaya Machinery, GIDC Makarpura, Vadodara-10.
Phone : (O) 0265 - 6131000, 6131001

ENVIRONMENTAL MONITORING REPORT

TC-13458

LABORATORY TEST REPORT – SURFACE WATER

REPORT NO.: JAN25/212/01 (ULR- TC134502500011085F)

SAMPLE DETAILS

1.	Name & Address of Client: M/s. Shree khodal Waste Management, Plot No.5 & 6, GIDC Shehera Taluka & Dist. Panchmahal, Gujarat		
2.	Sample ID: 212JA25SW01	3.	Client Representative : Mr. Abhishek Joshi
4.	Sample Date: 28.01.2025	5.	Sample Collected By: Mr. Ratan Rai
6.	Analysis commenced on: 31.01.2025	7.	Analysis Completed on: 18.02.2025
8.	Reporting Date: 28.02.2025	9.	Discipline : Chemical
10.	Packing Condition & Quantity: Sealed √	11.	Group : Water
12.	Sampling Location: Waghjipur Village pond	13.	Product: Surface Water
14.	Sampling Method: APHA 24th Edition 1060:B&C	15.	Sample Received Date : 31.01.2025

TEST RESULTS

S. No.	Parameters	Unit (SI)	Results	Classification for Inland Surface Water (CPCB)					Method Used
				A	B	C	D	E	
1.	pH		6.95	6.5 to 8.5	6.5 to 8.5	6.5 to 8.5	6.5 to 8.5	6.5 to 8.5	APHA 24th Edition 4500 H+ B
2.	DO	mg/L	5.2	6.0	5.0	4.0	4.0	N.A	APHA 24th Edition 4500 O - C
3.	Total Dissolved Solids	mg/L	288	500.0	N.A	1500.0	N.A	2100.0	APHA 24th Edition 2540 - C
4.	Conductivity	µmhos/c	530	N.A	N.A	N.A	1000.0	2250.0	APHA 24th Edition 2510 - B
5.	BOD	mg/L	6	2.0	3.0	3.0	N.A	N.A	IS 3025 (Part-44)
6.	Colour	Pt-CO	10	10	30	300	-	-	APHA 24th Edition 2120 - B
7.	Total Hardness	mg/L	120	300.0	N.A	N.A	N.A	N.A	APHA 24th Edition 2340 – C
8.	Calcium Hardness	mg/L	66	200.0	N.A	N.A	N.A	N.A	APHA 24th Edition 3500 Ca - B
9.	Magnesium Hardness	mg/L	54	100.0	N.A	N.A	N.A	N.A	APHA 24th Edition 3500 Mg - B
10.	Chlorides	mg/L	62	250	N.A	600	N.A	600	APHA 24th Edition 4500 - Cl B
11.	Sulphates	mg/L	32	400	N.A	400	N.A	1000	APHA 24th Edition 4500 -SO4 E
12.	Nitrate	mg/L	<0.1	20	N.A	50	N.A	N.A	IS 3025 (Part-34)
13.	Fluoride	mg/L	0.09	1.5	1.5	1.5	-	-	APHA 24th Edition 4500- F- D
14.	Phenolic Compound	mg/L	<0.02	0.002	0.005	0.005	N.A	N.A	APHA 24th Edition 5530 D
15.	Ammonical nitrogen	mg/L	<0.05	N.A	N.A	N.A	1.2	N.A	IS 3025 (Part-34)
16.	SAR		0.35	N.A	N.A	N.A	N.A	26	LAB-SOP-138, Issue No 01
17.	Copper	mg/L	<0.001	1.5	N.A	1.5	N.A	N.A	APHA 24th Edition 3111 B
18.	Iron	mg/L	<0.01	0.3	N.A	50	N.A	N.A	APHA 24th Edition 3111 B
19.	Manganese	mg/L	<0.001	0.5	N.A	N.A	N.A	N.A	APHA 24th Edition 3111 B
20.	Mercury	mg/L	<0.001	0.001	N.A	N.A	N.A	N.A	APHA 24th Edition 3112-B
21.	Cadmium	mg/L	<0.001	0.01	N.A	0.01	N.A	N.A	APHA 24th Edition 3111 B
22.	Arsenic	mg/L	<0.001	0.05	N.A	0.2	N.A	N.A	IS 3025 (Part-37)
23.	Lead	mg/L	<0.001	0.1	N.A	0.1	N.A	N.A	APHA 24th Edition 3111 B
24.	Zinc	mg/L	<0.01	15	N.A	15	N.A	N.A	APHA 24th Edition 3111 B
25.	Chromium	mg/L	<0.001	0.05	1	0.05	N.A	N.A	APHA 24th Edition 3500 Cr – B
26.	Boron	mg/L	<0.01	N.A	N.A	N.A	N.A	2	APHA 24th Edition 4500 - B C

Remark :

Authorised By -

Name : Sapana Amin — Designation: Lab Incharge

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2) Re analysis of sample will be done, if requested within 15 days from the date of Reporting of sample if the samples are not consumed during analysis.
3) The results reported above relate to the sample identified under **Sample Details**.

----------END OF REPORT----------

LABORATORY TEST REPORT FORMAT		
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KADAM LABS PRIVATE LIMITED

871/B/3, Near Himalaya Machinery, GIDC Makarpura, Vadodara-10.
Phone : **(O) 0265 - 6131000, 6131001**

ENVIRONMENTAL MONITORING REPORT

LABORATORY TEST REPORT – SURFACE WATER

REPORT NO.: JAN25/212/09

SAMPLE DETAILS

1.	Name & Address of Client: M/s. Shree khodal Waste Management, Plot No.5 & 6, GIDC Shehera Taluka & Dist. Panchmahal, Gujarat		
2.	Sample ID: 212JA25SW01	3.	Client Representative : Mr. Abhishek Joshi
4.	Sample Date: 28.01.2025	5.	Sample Collected By: Mr. Ratan Rai
6.	Analysis commenced on: 31.01.2025	7.	Analysis Completed on: 18.02.2025
8.	Reporting Date: 28.02.2025	9.	Discipline : Chemical
10.	Packing Condition & Quantity: Sealed √	11.	Group : Water
12.	Sampling Location: Waghjipur Village pond	13.	Product: Surface Water
14.	Sampling Method: APHA 24th Edition 1060:B&C	15.	Sample Received Date : 31.01.2025

TEST RESULTS

S. No.	Parameters	Unit (SI)	Results	Classification for Inland Surface Water (CPCB)					Method Used
				A	B	C	D	E	
1.	Cyanide	mg/L	<0.03	0.05	0.05	0.05	N.A	N.A	APHA: 24th Edition 4500 CN E

Remark :

Authorised By :

Name : Sapana Amin **Designation: Lab Incharge**

NOTE :
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3) The results reported above relate to the sample identified under **Sample Details.**

----------END OF REPORT----------

LABORATORY TEST REPORT FORMAT		
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ENVIRONMENTAL MONITORING REPORT

LABORATORY TEST REPORT - MICROBIOLOGY

REPORT NO.: JAN25/212/17(ULR- TC134502500011113F)

SAMPLE DETAILS

1.	Name & Address of Client: M/s. Shree khodal Waste Management,Plot No.5 & 6, GIDC Shehera Taluka & Dist.Panchmahal, Gujarat		
2.	Sample ID:212JA25SW-01	3.	Client Representative : Mr. Abhishek Joshi
4.	Sample Date: 28.01.2025	5.	Sample Collected By: Mr. Ratan Rai
6.	Analysis commenced on: 31.01.2025	7.	Analysis Completed on: 18.02.2025
8.	Reporting Date: 28.02.2025	9.	Discipline : Chemical
10.	Packing Condition & Quantity: Sealed √	11.	Group : Water
12.	Sampling Location: Waghjipur Village pond	13.	Product: Surface Water
14.	Sampling Method: IS:3025 (Part 1)-1987	15.	Sample Received Date : 31.01.2025

TEST RESULTS

S. No.	Parameters	Results	Unit (SI)	Specification/ SPCB Norms/ BIS Standards	Method Used
1.	Total Coliform Bacteria	N.D(<1.8)	MPN/100ml	N.A.	APHA 24th Edition 9221 B&C

Remarks:

Authorized by: Jy.chauhan

Name: Jyoti Chauhan **Designation: Sr.Microbiologist**

NOTE:
1) Reports may be reproduced, if required, but only in full and only with written approval of the laboratory.
2) Re-sampling may be done, if required, with written approval of the laboratory.
3) The results reported above relate to the sample identified under Sample Details.

----------**END OF REPORT**----------

LABORATORY TEST REPORT FORMAT		
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SW02: Pond on road towards Patiya Village

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ENVIRONMENTAL MONITORING REPORT

LABORATORY TEST REPORT – SURFACE WATER

REPORT NO.: JAN25/212/02 (ULR- TC134502500011086F)

SAMPLE DETAILS

1.	Name & Address of Client: M/s. Shree khodal Waste Management, Plot No.5 & 6, GIDC Shehera Taluka & Dist. Panchmahal, Gujarat		
2.	Sample ID: 212JA25SW02	3.	Client Representative : Mr. Abhishek Joshi
4.	Sample Date: 28.01.2025	5.	Sample Collected By: Mr. Ratan Rai
6.	Analysis commenced on: 31.01.2025	7.	Analysis Completed on: 18.01.2025
8.	Reporting Date: 28.02.2025	9.	Discipline : Chemical
10.	Packing Condition & Quantity: Sealed √	11.	Group : Water
12.	Sampling Location: Pond on road towards Patiya Village	13.	Product: Surface Water
14.	Sampling Method: APHA 24th Edition 1060:B&C	15.	Sample Received Date : 31.01.2025

TEST RESULTS

S. No.	Parameters	Unit (SI)	Results	Classification for Inland Surface Water (CPCB)					Method Used
				A	B	C	D	E	
1.	pH		7.43	6.5 to 8.5	6.5 to 8.5	6.5 to 8.5	6.5 to 8.5	6.5 to 8.5	APHA 24th Edition 4500 H+ B
2.	DO	mg/L	5.8	6.0	5.0	4.0	4.0	N.A	APHA 24th Edition 4500 O - C
3.	Total Dissolved	mg/L	456	500.0	N.A	1500.0	N.A	2100.0	APHA 24th Edition 2540 - C
4.	Conductivity	µmhos/cm	905	N.A	N.A	N.A	1000.0	2250.0	APHA 24th Edition 2510 - B
5.	BOD	mg/L	4	2.0	3.0	3.0	N.A	N.A	IS 3025 (Part-44)
6.	Colour	Pt-CO	10	10	30	300	-	-	APHA 24th Edition 2120 - B
7.	Total Hardness	mg/L	260	300.0	N.A	N.A	N.A	N.A	APHA 24th Edition 2340 – C
8.	Calcium Hardness	mg/L	112	200.0	N.A	N.A	N.A	N.A	APHA 24th Edition 3500 Ca - B
9.	Magnesium Hardness	mg/L	148	100.0	N.A	N.A	N.A	N.A	APHA 24th Edition 3500 Mg - B
10.	Chlorides	mg/L	86	250	N.A	600	N.A	600	APHA 24th Edition 4500 - Cl B
11.	Sulphates	mg/L	42	400	N.A	400	N.A	1000	APHA 24th Edition 4500 -SO4 E
12.	Nitrate	mg/L	<0.1	20	N.A	50	N.A	N.A	IS 3025 (Part-34)
13.	Fluoride	mg/L	0.79	1.5	1.5	1.5	-	-	APHA 24th Edition 4500- F- D
14.	Phenolic Compound	mg/L	<0.02	0.002	0.005	0.005	N.A	N.A	APHA 24th Edition 5530 D
15.	Ammonical nitrogen	mg/L	<0.05	N.A	N.A	N.A	1.2	N.A	IS 3025 (Part-34)
16.	SAR	-	0.33	N.A	N.A	N.A	N.A	26	LAB-SOP-138, Issue No 01
17.	Copper	mg/L	<0.001	1.5	N.A	1.5	N.A	N.A	APHA 24th Edition 3111 B
18.	Iron	mg/L	<0.01	0.3	N.A	50	N.A	N.A	APHA 24th Edition 3111 B
19.	Manganese	mg/L	<0.001	0.5	N.A	N.A	N.A	N.A	APHA 24th Edition 3111 B
20.	Mercury	mg/L	<0.001	0.001	N.A	N.A	N.A	N.A	APHA 24th Edition 3112-B
21.	Cadmium	mg/L	<0.001	0.01	N.A	0.01	N.A	N.A	APHA 24th Edition 3111 B
22.	Arsenic	mg/L	<0.001	0.05	N.A	0.2	N.A	N.A	IS 3025 (Part-37)
23.	Lead	mg/L	<0.001	0.1	N.A	0.1	N.A	N.A	APHA 24th Edition 3111 B
24.	Zinc	mg/L	<0.01	15	N.A	15	N.A	N.A	APHA 24th Edition 3111 B
25.	Chromium	mg/L	<0.001	0.05	1	0.05	N.A	N.A	APHA 24th Edition 3500 Cr – B
26.	Boron	mg/L	<0.01	N.A	N.A	N.A	N.A	2	APHA 24th Edition 4500 - B C

Remark :

Authorised By -

Name : Sapana Amin | **Designation: Lab Incharge**

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3) The results reported above relate to the sample identified under **Sample Details**.

----------END OF REPORT----------

LABORATORY TEST REPORT FORMAT		
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ENVIRONMENTAL MONITORING REPORT

LABORATORY TEST REPORT – SURFACE WATER

REPORT NO.: JAN25/212/10

SAMPLE DETAILS

1.	Name & Address of Client: M/s. Shree khodal Waste Management, Plot No.5 & 6, GIDC Shehera Taluka & Dist. Panchmahal, Gujarat		
2.	Sample ID: 212JA25SW02	3.	Client Representative : Mr. Abhishek Joshi
4.	Sample Date: 28.01.2025	5.	Sample Collected By: Mr. Ratan Rai
6.	Analysis commenced on: 31.01.2025	7.	Analysis Completed on: 18.01.2025
8.	Reporting Date: 28.02.2025	9.	Discipline : Chemical
10.	Packing Condition & Quantity: Sealed √	11.	Group : Water
12.	Sampling Location: Pond on road towards Patiya Village	13.	Product: Surface Water
14.	Sampling Method: APHA 24th Edition 1060:B&C	15.	Sample Received Date : 31.01.2025

TEST RESULTS

S. No.	Parameters	Unit (SI)		Results	Classification for Inland Surface Water (CPCB)					Method Used
					A	B	C	D	E	
1.	Cyanide	mg/L	:	<0.03	0.05	0.05	0.05	N.A	N.A	APHA: 24th Edition 4500 CN E

Remark :

Authorised By -

Name : Sapana Amin **Designation: Lab Incharge**

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----------END OF REPORT----------

LABORATORY TEST REPORT FORMAT		
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ENVIRONMENTAL MONITORING REPORT

LABORATORY TEST REPORT - MICROBIOLOGY

REPORT NO.: JAN25/212/18(ULR- TC134502500011114F)

SAMPLE DETAILS

1.	Name & Address of Client: M/s. Shree khodal Waste Management,Plot No.5 & 6, GIDC Shehera Taluka & Dist.Panchmahal, Gujarat		
2.	Sample ID:212JA25SW-02	3.	Client Representative : Mr. Abhishek Joshi
4.	Sample Date: 28.01.2025	5.	Sample Collected By: Mr. Ratan Rai
6.	Analysis commenced on: 31.01.2025	7.	Analysis Completed on: 18.01.2025
8.	Reporting Date: 28.02.2025	9.	Discipline : Chemical
10.	Packing Condition & Quantity: Sealed √	11.	Group : Water
12.	Sampling Location: Pond on road towards Patiya	13.	Product: Surface Water
14.	Sampling Method: IS:3025 (Part 1)-1987	15.	Sample Received Date : 31.01.2025

TEST RESULTS

S. No.	Parameters	Results	Unit (SI)	Specification/ SPCB Norms/ BIS Standards	Method Used
1.	Total Coliform Bacteria	N.D(<1.8)	MPN/100ml	N.A.	APHA 24th Edition 9221 B&C

Remarks:

Authorized by: J.v.chauhan

Name: Jyoti Chauhan | **Designation: Sr.Microbiologist**

NOTE: 1) Reports may be reproduced, if required, but only in full and only with written approval of the laboratory.
2) Re-sampling may be done, if required, with written approval of the laboratory.
3) The results reported above relate to the sample identified under Sample Details.

----------**END OF REPORT**----------

LABORATORY TEST REPORT FORMAT		
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SW03: Shehera Village Pond

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ENVIRONMENTAL MONITORING REPORT

LABORATORY TEST REPORT – SURFACE WATER

REPORT NO.: JAN25/212/03 (ULR- TC134502500011087F)

SAMPLE DETAILS

1.	Name & Address of Client: M/s. Shree khodal Waste Management, Plot No.5 & 6, GIDC Shehera Taluka & Dist. Panchmahal, Gujarat		
2.	Sample ID: 206JA25SW03	3.	Client Representative : Mr. Abhishek Joshi
4.	Sample Date: 22.01.2025	5.	Sample Collected By: Mr. Ratan Rai
6.	Analysis commenced on: 31.01.2025	7.	Analysis Completed on: 18.01.2025
8.	Reporting Date: 28.02.2025	9.	Discipline : Chemical
10.	Packing Condition & Quantity: Sealed √	11.	Group : Water
12.	Sampling Location: Shehera Village Pond	13.	Product: Surface Water
14.	Sampling Method: APHA 24th Edition 1060:B&C	15.	Sample Received Date : 23.01.2025

TEST RESULTS

S. No.	Parameters	Unit (SI)	Results	Classification for Inland Surface Water (CPCB)					Method Used
				A	B	C	D	E	
1.	pH		7.38	6.5 to 8.5	6.5 to 8.5	6.5 to 8.5	6.5 to 8.5	6.5 to 8.5	APHA 24th Edition 4500 H+ B
2.	DO	mg/L	5.2	6.0	5.0	4.0	4.0	N.A	APHA 24th Edition 4500 O - C
3.	Total Dissolved	mg/L	364	500.0	N.A	1500.0	N.A	2100.0	APHA 24th Edition 2540 - C
4.	Conductivity	µmhos/cm	589	N.A	N.A	N.A	1000.0	2250.0	APHA 24th Edition 2510 - B
5.	BOD	mg/L	<2	2.0	3.0	3.0	N.A	N.A	IS 3025 (Part-44)
6.	Colour	Pt-CO	10	10	30	300	-	-	APHA 24th Edition 2120 - B
7.	Total Hardness	mg/L	160	300.0	N.A	N.A	N.A	N.A	APHA 24th Edition 2340 – C
8.	Calcium Hardness	mg/L	50	200.0	N.A	N.A	N.A	N.A	APHA 24th Edition 3500 Ca - B
9.	Magnesium Hardness	mg/L	110	100.0	N.A	N.A	N.A	N.A	APHA 24th Edition 3500 Mg - B
10.	Chlorides	mg/L	128	250	N.A	600	N.A	600	APHA 24th Edition 4500 - Cl B
11.	Sulphates	mg/L	16	400	N.A	400	N.A	1000	APHA 24th Edition 4500 -SO4 E
12.	Nitrate	mg/L	<0.1	20	N.A	50	N.A	N.A	IS 3025 (Part-34)
13.	Fluoride	mg/L	<0.02	1.5	1.5	1.5	-	-	APHA 24th Edition 4500- F- D
14.	Phenolic Compound	mg/L	<0.05	0.002	0.005	0.005	N.A	N.A	APHA 24th Edition 5530 D
15.	Ammonical nitrogen	mg/L	<0.05	N.A	N.A	N.A	1.2	N.A	IS 3025 (Part-34)
16.	SAR		0.62	N.A	N.A	N.A	N.A	26	LAB-SOP-138, Issue No 01
17.	Copper	mg/L	<0.001	1.5	N.A	1.5	N.A	N.A	APHA 24th Edition 3111 B
18.	Iron	mg/L	<0.01	0.3	N.A	50	N.A	N.A	APHA 24th Edition 3111 B
19.	Manganese	mg/L	<0.001	0.5	N.A	N.A	N.A	N.A	APHA 24th Edition 3111 B
20.	Mercury	mg/L	<0.001	0.001	N.A	N.A	N.A	N.A	APHA 24th Edition 3112-B
21.	Cadmium	mg/L	<0.001	0.01	N.A	0.01	N.A	N.A	APHA 24th Edition 3111 B
22.	Arsenic	mg/L	<0.001	0.05	N.A	0.2	N.A	N.A	IS 3025 (Part-37)
23.	Lead	mg/L	<0.001	0.1	N.A	0.1	N.A	N.A	APHA 24th Edition 3111 B
24.	Zinc	mg/L	<0.01	15	N.A	15	N.A	N.A	APHA 24th Edition 3111 B
25.	Chromium	mg/L	<0.001	0.05	1	0.05	N.A	N.A	APHA 24th Edition 3500 Cr – B
26.	Boron	mg/L	<0.01	N.A	N.A	N.A	N.A	2	APHA 24th Edition 4500 - B C

Remark :

Authorised By -

Name : Sapana Amin | **Designation: Lab Incharge**

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5) The results reported above relate to the sample identified under **Sample Details**.

----------END OF REPORT----------

LABORATORY TEST REPORT FORMAT		
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ENVIRONMENTAL MONITORING REPORT

LABORATORY TEST REPORT – SURFACE WATER

REPORT NO.: JAN25/212/11

SAMPLE DETAILS

1.	Name & Address of Client: M/s. Shree khodal Waste Management, Plot No.5 & 6, GIDC Shehera Taluka & Dist. Panchmahal, Gujarat		
2.	Sample ID: 206JA25SW03	3.	Client Representative : Mr. Abhishek Joshi
4.	Sample Date: 22.01.2025	5.	Sample Collected By: Mr. Ratan Rai
6.	Analysis commenced on: 31.01.2025	7.	Analysis Completed on: 18.01.2025
8.	Reporting Date: 28.02.2025	9.	Discipline : Chemical
10.	Packing Condition & Quantity: Sealed √	11.	Group : Water
12.	Sampling Location: Shehera Village Pond	13.	Product: Surface Water
14.	Sampling Method: APHA 24th Edition 1060:B&C	15.	Sample Received Date : 23.01.2025

TEST RESULTS

S. No.	Parameters	Unit (SI)		Results	Classification for Inland Surface Water (CPCB)					Method Used
					A	B	C	D	E	
1.	Cyanide	mg/L	:	<0.03	0.05	0.05	0.05	N.A	N.A	APHA: 24th Edition 4500 CN E

Remark :

Authorised By -

Name : Sapana Amin | **Designation: Lab Incharge**

NOTE : 1) Reports may be reproduced, if required, but only in full and only with written approval of the laboratory.
4) Re analysis of sample will be done, if requested within 15 days from the date of Reporting of sample if the samples are not consumed during analysis.
5) The results reported above relate to the sample identified under **Sample Details**.

----------END OF REPORT----------

LABORATORY TEST REPORT FORMAT		
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ENVIRONMENTAL MONITORING REPORT

LABORATORY TEST REPORT - MICROBIOLOGY

REPORT NO.: JAN25/212/19(ULR- TC134502500011115F)

SAMPLE DETAILS

1.	Name & Address of Client: M/s. Shree khodal Waste Management,Plot No.5 & 6, GIDC Shehera Taluka & Dist.Panchmahal, Gujarat		
2.	Sample ID:212JA25SW-03	3.	Client Representative : Mr. Abhishek Joshi
4.	Sample Date: 22.01.2025	5.	Sample Collected By: Mr. Ratan Rai
6.	Analysis commenced on: 31.01.2025	7.	Analysis Completed on: 18.01.2025
8.	Reporting Date: 28.02.2025	9.	Discipline : Chemical
10.	Packing Condition & Quantity: Sealed √	11.	Group : Water
12.	Sampling Location: Shehera Village Pond	13.	Product: Surface Water
14.	Sampling Method: IS:3025 (Part 1)-1987	15.	Sample Received Date : 23.01.2025

TEST RESULTS

S. No.	Parameters	Results	Unit (SI)	Specification/ SPCB Norms/ BIS Standards	Method Used
1.	Total Coliform Bacteria	15	MPN/100ml	N.A.	APHA 24th Edition 9221 B&C

Remarks:

Authorized by: J.V.Chauhan

Name: Jyoti Chauhan | **Designation: Sr.Microbiologist**

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2) Re-sampling may be done, if required, with written approval of the laboratory.
3) The results reported above relate to the sample identified under Sample Details.

----------**END OF REPORT**----------

LABORATORY TEST REPORT FORMAT		
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SW04: Zoz Village Pond

KADAM LABS PRIVATE LIMITED

871/B/3, Near Himalaya Machinery, GIDC Makarpura, Vadodara-10.
Phone : (O) 0265 - 6131000, 6131001

ENVIRONMENTAL MONITORING REPORT

LABORATORY TEST REPORT – SURFACE WATER

REPORT NO.: JAN25/212/04 (ULR- TC134502500011088F)

SAMPLE DETAILS

1.	Name & Address of Client: M/s. Shree khodal Waste Management, Plot No.5 & 6, GIDC Shehera Taluka & Dist. Panchmahal, Gujarat		
2.	Sample ID: 212JA25SW04	3.	Client Representative : Mr. Abhishek Joshi
4.	Sample Date: 28.01.2025	5.	Sample Collected By: Mr. Ratan Rai
6.	Analysis commenced on: 31.01.2025	7.	Analysis Completed on: 18.01.2025
8.	Reporting Date: 28.02.2025	9.	Discipline : Chemical
10.	Packing Condition & Quantity: Sealed √	11.	Group : Water
12.	Sampling Location: Zoz Village Pond	13.	Product: Surface Water
14.	Sampling Method: APHA 24th Edition 1060:B&C	15.	Sample Received Date : 31.01.2025

TEST RESULTS

S. No.	Parameters	Unit (SI)	Results	Classification for Inland Surface Water (CPCB)					Method Used
				A	B	C	D	E	
1.	pH		6.85	6.5 to 8.5	6.5 to 8.5	6.5 to 8.5	6.5 to 8.5	6.5 to 8.5	APHA 24th Edition 4500 H+ B
2.	DO	mg/L	5.6	6.0	5.0	4.0	4.0	N.A	APHA 24th Edition 4500 O - C
3.	Total Dissolved	mg/L	208	500.0	N.A	1500.0	N.A	2100.0	APHA 24th Edition 2540 - C
4.	Conductivity	µmhos/cm	376	N.A	N.A	N.A	1000.0	2250.0	APHA 24th Edition 2510 - B
5.	BOD	mg/L	7	2.0	3.0	3.0	N.A	N.A	IS 3025 (Part-44)
6.	Colour	Pt-CO	10	10	30	300	-	-	APHA 24th Edition 2120 - B
7.	Total Hardness	mg/L	70	300.0	N.A	N.A	N.A	N.A	APHA 24th Edition 2340 – C
8.	Calcium Hardness	mg/L	30	200.0	N.A	N.A	N.A	N.A	APHA 24th Edition 3500 Ca - B
9.	Magnesium Hardness	mg/L	40	100.0	N.A	N.A	N.A	N.A	APHA 24th Edition 3500 Mg - B
10.	Chlorides	mg/L	86	250	N.A	600	N.A	600	APHA 24th Edition 4500 - Cl B
11.	Sulphates	mg/L	25	400	N.A	400	N.A	1000	APHA 24th Edition 4500 -SO4 E
12.	Nitrate	mg/L	<0.1	20	N.A	50	N.A	N.A	IS 3025 (Part-34)
13.	Fluoride	mg/L	0.63	1.5	1.5	1.5	-	-	APHA 24th Edition 4500- F- D
14.	Phenolic Compound	mg/L	<0.001	0.002	0.005	0.005	N.A	N.A	APHA 24th Edition 5530 D
15.	Ammonical nitrogen	mg/L	<0.05	N.A	N.A	N.A	1.2	N.A	IS 3025 (Part-34)
16.	SAR		0.64	N.A	N.A	N.A	N.A	26	LAB-SOP-138, Issue No 01
17.	Copper	mg/L	<0.02	1.5	N.A	1.5	N.A	N.A	APHA 24th Edition 3111 B
18.	Iron	mg/L	<0.01	0.3	N.A	50	N.A	N.A	APHA 24th Edition 3111 B
19.	Manganese	mg/L	<0.001	0.5	N.A	N.A	N.A	N.A	APHA 24th Edition 3111 B
20.	Mercury	mg/L	<0.001	0.001	N.A	N.A	N.A	N.A	APHA 24th Edition 3112-B
21.	Cadmium	mg/L	<0.001	0.01	N.A	0.01	N.A	N.A	APHA 24th Edition 3111 B
22.	Arsenic	mg/L	<0.001	0.05	N.A	0.2	N.A	N.A	IS 3025 (Part-37)
23.	Lead	mg/L	<0.001	0.1	N.A	0.1	N.A	N.A	APHA 24th Edition 3111 B
24.	Zinc	mg/L	<0.01	15	N.A	15	N.A	N.A	APHA 24th Edition 3111 B
25.	Chromium	mg/L	<0.001	0.05	1	0.05	N.A	N.A	APHA 24th Edition 3500 Cr – B
26.	Boron	mg/L	<0.01	N.A	N.A	N.A	N.A	2	APHA 24th Edition 4500 - B C

Remark :

Authorised By -

Name : Sapana Amin | **Designation: Lab Incharge**

NOTE : 1) Reports may be reproduced, if required, but only in full and only with written approval of the laboratory.
4) Re analysis of sample will be done, if requested within 15 days from the date of Reporting of sample if the samples are not consumed during analysis.
5) The results reported above relate to the sample identified under **Sample Details**.

----------END OF REPORT----------

LABORATORY TEST REPORT FORMAT		
DOC. NO.: LAB-FMT-055	Issue No.: 01	Revision No.: 00
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KADAM LABS PRIVATE LIMITED

871/B/3, Near Himalaya Machinery, GIDC Makarpura, Vadodara-10.
Phone : **(O) 0265 - 6131000, 6131001**

ENVIRONMENTAL MONITORING REPORT

LABORATORY TEST REPORT – SURFACE WATER

REPORT NO.: JAN25/212/12

SAMPLE DETAILS

1.	Name & Address of Client: M/s. Shree khodal Waste Management, Plot No.5 & 6, GIDC Shehera Taluka & Dist. Panchmahal, Gujarat		
2.	Sample ID: 212JA25SW04	3.	Client Representative : Mr. Abhishek Joshi
4.	Sample Date: 28.01.2025	5.	Sample Collected By: Mr. Ratan Rai
6.	Analysis commenced on: 31.01.2025	7.	Analysis Completed on: 18.01.2025
8.	Reporting Date: 28.02.2025	9.	Discipline : Chemical
10.	Packing Condition & Quantity: Sealed √	11.	Group : Water
12.	Sampling Location: Zoz Village Pond	13.	Product: Surface Water
14.	Sampling Method: APHA 24th Edition 1060:B&C	15.	Sample Received Date : 31.01.2025

TEST RESULTS

S. No.	Parameters	Unit (SI)		Results	Classification for Inland Surface Water (CPCB)					Method Used
					A	B	C	D	E	
1.	Cyanide	mg/L	:	<0.03	0.05	0.05	0.05	N.A	N.A	APHA: 24th Edition 4500 CN E

Remark :

Authorised By :

Name : Sapana Amin | **Designation: Lab Incharge**

NOTE : 1) Reports may be reproduced, if required, but only in full and only with written approval of the laboratory.
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5) The results reported above relate to the sample identified under **Sample Details**.

----------**END OF REPORT**----------

LABORATORY TEST REPORT FORMAT		
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KADAM LABS PRIVATE LIMITED

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ENVIRONMENTAL MONITORING REPORT

LABORATORY TEST REPORT - MICROBIOLOGY

REPORT NO.: JAN25/212/20(ULR- TC134502500011116F)

SAMPLE DETAILS

1.	Name & Address of Client: M/s. Shree khodal Waste Management,Plot No.5 & 6, GIDC Shehera Taluka & Dist.Panchmahal, Gujarat		
2.	Sample ID:212JA25SW-04	3.	Client Representative : Mr. Abhishek Joshi
4.	Sample Date: 28.01.2025	5.	Sample Collected By: Mr. Ratan Rai
6.	Analysis commenced on: 31.01.2025	7.	Analysis Completed on: 18.01.2025
8.	Reporting Date: 28.02.2025	9.	Discipline : Chemical
10.	Packing Condition & Quantity: Sealed √	11.	Group : Water
12.	Sampling Location: Zoz Village Pond	13.	Product: Surface Water
14.	Sampling Method: IS:3025 (Part 1)-1987	15.	Sample Received Date : 31.01.2025

TEST RESULTS

S. No.	Parameters	Results	Unit (SI)	Specification/ SPCB Norms/ BIS Standards	Method Used
1.	Total Coliform Bacteria	N.D(<1.8)	MPN/100ml	N.A.	APHA 24th Edition 9221 B&C

Remarks:

Authorized by: J.V.Chauhan

Name: Jyoti Chauhan | **Designation: Sr.Microbiologist**

NOTE:
1) Reports may be reproduced, if required, but only in full and only with written approval of the laboratory.
2) Re-sampling may be done, if required, with written approval of the laboratory.
3) The results reported above relate to the sample identified under Sample Details.

----------**END OF REPORT**----------

LABORATORY TEST REPORT FORMAT		
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SW05: Chikni River Upstream

TC-13450

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ENVIRONMENTAL MONITORING REPORT

LABORATORY TEST REPORT – SURFACE WATER

REPORT NO.: JAN25/212/05 (ULR- TC134502500011089F)

SAMPLE DETAILS

1.	Name & Address of Client: M/s. Shree khodal Waste Management, Plot No.5 & 6, GIDC Shehera Taluka & Dist. Panchmahal, Gujarat		
2.	Sample ID: 212JA25SW05	3.	Client Representative : Mr. Abhishek Joshi
4.	Sample Date: 28.01.2025	5.	Sample Collected By: Mr. Ratan Rai
6.	Analysis commenced on: 31.01.2025	7.	Analysis Completed on: 18.02.2025
8.	Reporting Date: 28.02.2025	9.	Discipline : Chemical
10.	Packing Condition & Quantity: Sealed √	11.	Group : Water
12.	Sampling Location: Chikni River Upstream	13.	Product: Surface Water
14.	Sampling Method: APHA 24th Edition 1060:B&C	15.	Sample Received Date : 31.01.2024

TEST RESULTS

S. No.	Parameters	Unit (SI)	Results	Classification for Inland Surface Water (CPCB)					Method Used
				A	B	C	D	E	
1.	pH		6.76	6.5 to 8.5	6.5 to 8.5	6.5 to 8.5	6.5 to 8.5	6.5 to 8.5	APHA 24th Edition 4500 H+ B
2.	DO	mg/L	4.9	6.0	5.0	4.0	4.0	N.A	APHA 24th Edition 4500 O - C
3.	Total Dissolved	mg/L	248	500.0	N.A	1500.0	N.A	2100.0	APHA 24th Edition 2540 - C
4.	Conductivity	µmhos/cm	474	N.A	N.A	N.A	1000.0	2250.0	APHA 24th Edition 2510 - B
5.	BOD	mg/L	3	2.0	3.0	3.0	N.A	N.A	IS 3025 (Part-44)
6.	Colour	Pt-CO	10	10	30	300	-	-	APHA 24th Edition 2120 - B
7.	Total Hardness	mg/L	160	300.0	N.A	N.A	N.A	N.A	APHA 24th Edition 2340 – C
8.	Calcium Hardness	mg/L	80	200.0	N.A	N.A	N.A	N.A	APHA 24th Edition 3500 Ca - B
9.	Magnesium Hardness	mg/L	80	100.0	N.A	N.A	N.A	N.A	APHA 24th Edition 3500 Mg - B
10.	Chlorides	mg/L	48	250	N.A	600	N.A	600	APHA 24th Edition 4500 - Cl B
11.	Sulphates	mg/L	10	400	N.A	400	N.A	1000	APHA 24th Edition 4500 -SO4 E
12.	Nitrate	mg/L	<0.1	20	N.A	50	N.A	N.A	IS 3025 (Part-34)
13.	Fluoride	mg/L	<0.05	1.5	1.5	1.5	-	-	APHA 24th Edition 4500- F- D
14.	Phenolic Compound	mg/L	<0.02	0.002	0.005	0.005	N.A	N.A	APHA 24th Edition 5530 D
15.	Ammonical nitrogen	mg/L	<0.05	N.A	N.A	N.A	1.2	N.A	IS 3025 (Part-34)
16.	SAR		0.23	N.A	N.A	N.A	N.A	26	LAB-SOP-138, Issue No 01
17.	Copper	mg/L	<0.001	1.5	N.A	1.5	N.A	N.A	APHA 24th Edition 3111 B
18.	Iron	mg/L	<0.01	0.3	N.A	50	N.A	N.A	APHA 24th Edition 3111 B
19.	Manganese	mg/L	<0.001	0.5	N.A	N.A	N.A	N.A	APHA 24th Edition 3111 B
20.	Mercury	mg/L	<0.001	0.001	N.A	N.A	N.A	N.A	APHA 24th Edition 3112-B
21.	Cadmium	mg/L	<0.001	0.01	N.A	0.01	N.A	N.A	APHA 24th Edition 3111 B
22.	Arsenic	mg/L	<0.001	0.05	N.A	0.2	N.A	N.A	IS 3025 (Part-37)
23.	Lead	mg/L	<0.001	0.1	N.A	0.1	N.A	N.A	APHA 24th Edition 3111 B
24.	Zinc	mg/L	<0.01	15	N.A	15	N.A	N.A	APHA 24th Edition 3111 B
25.	Chromium	mg/L	<0.001	0.05	1	0.05	N.A	N.A	APHA 24th Edition 3500 Cr – B
26.	Boron	mg/L	<0.01	N.A	N.A	N.A	N.A	2	APHA 24th Edition 4500 - B C

Remark :

Authorised By -

Name : Sapana Amin | **Designation: Lab Incharge**

NOTE : 1) Reports may be reproduced, if required, but only in full and only with written approval of the laboratory.
6) Re analysis of sample will be done, if requested within 15 days from the date of Reporting of sample if the samples are not consumed during analysis.
7) The results reported above relate to the sample identified under **Sample Details**.

----------END OF REPORT----------

LABORATORY TEST REPORT FORMAT		
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KADAM LABS PRIVATE LIMITED

871/B/3, Near Himalaya Machinery, GIDC Makarpura, Vadodara-10.
Phone : (O) 0265 - 6131000, 6131001

ENVIRONMENTAL MONITORING REPORT

LABORATORY TEST REPORT – SURFACE WATER

REPORT NO.: JAN25/212/13

SAMPLE DETAILS

1.	Name & Address of Client: M/s. Shree khodal Waste Management, Plot No.5 & 6, GIDC Shehera Taluka & Dist. Panchmahal, Gujarat		
2.	Sample ID: 212JA25SW05	3.	Client Representative : Mr. Abhishek Joshi
4.	Sample Date: 28.01.2025	5.	Sample Collected By: Mr. Ratan Rai
6.	Analysis commenced on: 31.01.2025	7.	Analysis Completed on: 18.02.2025
8.	Reporting Date: 28.02.2025	9.	Discipline : Chemical
10.	Packing Condition & Quantity: Sealed √	11.	Group : Water
12.	Sampling Location: Chikni River Upstream	13.	Product: Surface Water
14.	Sampling Method: APHA 24th Edition 1060:B&C	15.	Sample Received Date : 31.01.2024

TEST RESULTS

S. No.	Parameters	Unit (SI)	Results	Classification for Inland Surface Water (CPCB)					Method Used
				A	B	C	D	E	
1.	Cyanide	mg/L	<0.03	0.05	0.05	0.05	N.A	N.A	APHA: 24th Edition 4500 CN E

Remark :

Authorised By -

Name : Sapana Amin | **Designation: Lab Incharge**

NOTE : 1) Reports may be reproduced, if required, but only in full and only with written approval of the laboratory.
6) Re analysis of sample will be done, if requested within 15 days from the date of Reporting of sample if the samples are not consumed during analysis.
7) The results reported above relate to the sample identified under **Sample Details**.

----------END OF REPORT----------

LABORATORY TEST REPORT FORMAT		
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KADAM LABS PRIVATE LIMITED

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ENVIRONMENTAL MONITORING REPORT

LABORATORY TEST REPORT - MICROBIOLOGY

REPORT NO.: JAN25/212/21(ULR- TC134502500011117F)

SAMPLE DETAILS

1.	Name & Address of Client: M/s. Shree khodal Waste Management,Plot No.5 & 6, GIDC Shehera Taluka & Dist.Panchmahal, Gujarat		
2.	Sample ID:212JA25SW-05	3.	Client Representative : Mr. Abhishek Joshi
4.	Sample Date: 28.01.2025	5.	Sample Collected By: Mr. Ratan Rai
6.	Analysis commenced on: 31.01.2025	7.	Analysis Completed on: 18.02.2025
8.	Reporting Date: 28.02.2025	9.	Discipline : Chemical
10.	Packing Condition & Quantity: Sealed √	11.	Group : Water
12.	Sampling Location: Chikni River Upstream	13.	Product: Surface Water
14.	Sampling Method: IS:3025 (Part 1)-1987	15.	Sample Received Date : 31.01.2024

TEST RESULTS

S. No.	Parameters	Results	Unit (SI)	Specification/ SPCB Norms/ BIS Standards	Method Used
1.	Total Coliform Bacteria	N.D(<1.8)	MPN/100ml	N.A.	APHA 24th Edition 9221 B&C

Remarks:

Authorized by: J.V.chauhan

Name: Jyoti Chauhan | **Designation: Sr.Microbiologist**

NOTE:
1) Reports may be reproduced, if required, but only in full and only with written approval of the laboratory.
2) Re-sampling may be done, if required, with written approval of the laboratory.
3) The results reported above relate to the sample identified under Sample Details.

----------**END OF REPORT**----------

LABORATORY TEST REPORT FORMAT		
DOC. NO.: LAB-FMT-055	Issue No.: 01	Revision No.: 00
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SW06: Bhensal Village Pond

TC-13450

KADAM LABS PRIVATE LIMITED

871/B/3, Near Himalaya Machinery, GIDC Makarpura, Vadodara-10.
Phone : (O) 0265 - 6131000, 6131001

ENVIRONMENTAL MONITORING REPORT

LABORATORY TEST REPORT – SURFACE WATER

REPORT NO.: JAN25/212/06 (ULR- TC134502500011090F)

SAMPLE DETAILS

1.	Name & Address of Client: M/s. Shree khodal Waste Management, Plot No.5 & 6, GIDC Shehera Taluka & Dist. Panchmahal, Gujarat		
2.	Sample ID: 206JA25SW06	3.	Client Representative : Mr. Abhishek Joshi
4.	Sample Date: 22.01.2025	5.	Sample Collected By: Mr. Ratan Rai
6.	Analysis commenced on: 31.01.2025	7.	Analysis Completed on: 18.01.2025
8.	Reporting Date: 28.02.2025	9.	Discipline : Chemical
10.	Packing Condition & Quantity: Sealed √	11.	Group : Water
12.	Sampling Location: Bhensal Village Pond	13.	Product: Surface Water
14.	Sampling Method: APHA 24th Edition 1060:B&C	15.	Sample Received Date : 23.01.2024

TEST RESULTS

S. No.	Parameters	Unit (SI)	Results	Classification for Inland Surface Water (CPCB)					Method Used
				A	B	C	D	E	
1.	pH		7.50	6.5 to 8.5	6.5 to 8.5	6.5 to 8.5	6.5 to 8.5	6.5 to 8.5	APHA 24th Edition 4500 H+ B
2.	DO	mg/L	4.9	6.0	5.0	4.0	4.0	N.A	APHA 24th Edition 4500 O - C
3.	Total Dissolved	mg/L	248	500.0	N.A	1500.0	N.A	2100.0	APHA 24th Edition 2540 - C
4.	Conductivity	µmhos/cm	452	N.A	N.A	N.A	1000.0	2250.0	APHA 24th Edition 2510 - B
5.	BOD	mg/L	<2	2.0	3.0	3.0	N.A	N.A	IS 3025 (Part-44)
6.	Colour	Pt-CO	10	10	30	300	-	-	APHA 24th Edition 2120 - B
7.	Total Hardness	mg/L	150	300.0	N.A	N.A	N.A	N.A	APHA 24th Edition 2340 – C
8.	Calcium Hardness	mg/L	60	200.0	N.A	N.A	N.A	N.A	APHA 24th Edition 3500 Ca - B
9.	Magnesium Hardness	mg/L	90	100.0	N.A	N.A	N.A	N.A	APHA 24th Edition 3500 Mg - B
10.	Chlorides	mg/L	52	250	N.A	600	N.A	600	APHA 24th Edition 4500 - Cl B
11.	Sulphates	mg/L	13	400	N.A	400	N.A	1000	APHA 24th Edition 4500 -SO4 E
12.	Nitrate	mg/L	<0.1	20	N.A	50	N.A	N.A	IS 3025 (Part-34)
13.	Fluoride	mg/L	0.25	1.5	1.5	1.5	-	-	APHA 24th Edition 4500- F- D
14.	Phenolic Compound	mg/L	<0.02	0.002	0.005	0.005	N.A	N.A	APHA 24th Edition 5530 D
15.	Ammonical nitrogen	mg/L	<0.05	N.A	N.A	N.A	1.2	N.A	IS 3025 (Part-34)
16.	SAR		0.26	N.A	N.A	N.A	N.A	26	LAB-SOP-138, Issue No 01
17.	Copper	mg/L	<0.001	1.5	N.A	1.5	N.A	N.A	APHA 24th Edition 3111 B
18.	Iron	mg/L	<0.01	0.3	N.A	50	N.A	N.A	APHA 24th Edition 3111 B
19.	Manganese	mg/L	<0.001	0.5	N.A	N.A	N.A	N.A	APHA 24th Edition 3111 B
20.	Mercury	mg/L	<0.001	0.001	N.A	N.A	N.A	N.A	APHA 24th Edition 3112-B
21.	Cadmium	mg/L	<0.001	0.01	N.A	0.01	N.A	N.A	APHA 24th Edition 3111 B
22.	Arsenic	mg/L	<0.001	0.05	N.A	0.2	N.A	N.A	IS 3025 (Part-37)
23.	Lead	mg/L	<0.001	0.1	N.A	0.1	N.A	N.A	APHA 24th Edition 3111 B
24.	Zinc	mg/L	<0.01	15	N.A	15	N.A	N.A	APHA 24th Edition 3111 B
25.	Chromium	mg/L	<0.001	0.05	1	0.05	N.A	N.A	APHA 24th Edition 3500 Cr – B
26.	Boron	mg/L	<0.01	N.A	N.A	N.A	N.A	2	APHA 24th Edition 4500 - B C

Remark :

Authorised By -

Name : Sapana Amin | **Designation: Lab Incharge**

NOTE : 1) Reports may be reproduced, if required, but only in full and only with written approval of the laboratory.
6) Re analysis of sample will be done, if requested within 15 days from the date of Reporting of sample if the samples are not consumed during analysis.
7) The results reported above relate to the sample identified under **Sample Details**.

----------END OF REPORT----------

LABORATORY TEST REPORT FORMAT		
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KADAM LABS PRIVATE LIMITED

871/B/3, Near Himalaya Machinery, GIDC Makarpura, Vadodara-10.
Phone : (O) 0265 - 6131000, 6131001

ENVIRONMENTAL MONITORING REPORT

LABORATORY TEST REPORT – SURFACE WATER

REPORT NO.: JAN25/212/14

SAMPLE DETAILS

1.	Name & Address of Client: M/s. Shree khodal Waste Management, Plot No.5 & 6, GIDC Shehera Taluka & Dist. Panchmahal, Gujarat		
2.	Sample ID: 206JA25SW06	3.	Client Representative : Mr. Abhishek Joshi
4.	Sample Date: 22.01.2025	5.	Sample Collected By: Mr. Ratan Rai
6.	Analysis commenced on: 31.01.2025	7.	Analysis Completed on: 18.01.2025
8.	Reporting Date: 28.02.2025	9.	Discipline : Chemical
10.	Packing Condition & Quantity: Sealed √	11.	Group : Water
12.	Sampling Location: Bhensal Village Pond	13.	Product: Surface Water
14.	Sampling Method: APHA 24th Edition 1060:B&C	15.	Sample Received Date : 23.01.2024

TEST RESULTS

S. No.	Parameters	Unit (SI)	Results	Classification for Inland Surface Water (CPCB)					Method Used
				A	B	C	D	E	
1.	Cyanide	mg/L	<0.03	0.05	0.05	0.05	N.A	N.A	APHA: 24th Edition 4500 CN E

Remark :

Authorised By -

Name : Sapana Amin **Designation: Lab Incharge**

NOTE : 1) Reports may be reproduced, if required, but only in full and only with written approval of the laboratory.
6) Re analysis of sample will be done, if requested within 15 days from the date of Reporting of sample if the samples are not consumed during analysis.
7) The results reported above relate to the sample identified under **Sample Details.**

----------END OF REPORT----------

LABORATORY TEST REPORT FORMAT		
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KADAM LABS PRIVATE LIMITED

871/B/3, Near Himalaya Machinery, GIDC Makarpura, Vadodara-10.
Phone : (O) 0265 - 6131000, 6131001

ENVIRONMENTAL MONITORING REPORT

LABORATORY TEST REPORT - MICROBIOLOGY

REPORT NO.: JAN25/212/22(ULR- TC134502500011118F)

SAMPLE DETAILS

1.	Name & Address of Client: M/s. Shree khodal Waste Management,Plot No.5 & 6, GIDC Shehera Taluka & Dist.Panchmahal, Gujarat		
2.	Sample ID:212JA25SW-06	3.	Client Representative : Mr. Abhishek Joshi
4.	Sample Date: 22.01.2025	5.	Sample Collected By: Mr. Ratan Rai
6.	Analysis commenced on: 31.01.2025	7.	Analysis Completed on: 18.01.2025
8.	Reporting Date: 28.02.2025	9.	Discipline : Chemical
10.	Packing Condition & Quantity: Sealed √	11.	Group : Water
12.	Sampling Location: Bhensal Village Pond	13.	Product: Surface Water
14.	Sampling Method: IS:3025 (Part 1)-1987	15.	Sample Received Date : 23.01.2024

TEST RESULTS

S. No.	Parameters	Results	Unit (SI)	Specification/ SPCB Norms/ BIS Standards	Method Used
1.	Total Coliform Bacteria	10	MPN/100ml	N.A.	APHA 24th Edition 9221 B&C

Remarks:

Authorized by: J.V.Chauhan

Name: Jyoti Chauhan | **Designation: Sr.Microbiologist**

NOTE: 1) Reports may be reproduced, if required, but only in full and only with written approval of the laboratory.
2) Re-sampling may be done, if required, with written approval of the laboratory.
3) The results reported above relate to the sample identified under Sample Details.

----------**END OF REPORT**----------

LABORATORY TEST REPORT FORMAT		
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SW07: Dodhiyani Village Pond

TC-13450

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ENVIRONMENTAL MONITORING REPORT

LABORATORY TEST REPORT – SURFACE WATER

REPORT NO.: JAN25/212/07 (ULR- TC134502500011091F)

SAMPLE DETAILS

1.	Name & Address of Client: M/s. Shree khodal Waste Management, Plot No.5 & 6, GIDC Shehera Taluka & Dist. Panchmahal, Gujarat		
2.	Sample ID: 206JA25SW07	3.	Client Representative : Mr. Abhishek Joshi
4.	Sample Date: 22.01.2025	5.	Sample Collected By: Mr. Ratan Rai
6.	Analysis commenced on: 31.01.2025	7.	Analysis Completed on: 18.02.2025
8.	Reporting Date: 28.02.2025	9.	Discipline : Chemical
10.	Packing Condition & Quantity: Sealed √	11.	Group : Water
12.	Sampling Location: Dodhiyani Village Pond	13.	Product: Surface Water
14.	Sampling Method: APHA 24th Edition 1060:B&C	15.	Sample Received Date : 23.01.2024

TEST RESULTS

S. No.	Parameters	Unit (SI)	Results	Classification for Inland Surface Water (CPCB)					Method Used
				A	B	C	D	E	
1.	pH		7.39	6.5 to 8.5	6.5 to 8.5	6.5 to 8.5	6.5 to 8.5	6.5 to 8.5	APHA 24th Edition 4500 H+ B
2.	DO	mg/L	5.3	6.0	5.0	4.0	4.0	N.A	APHA 24th Edition 4500 O - C
3.	Total Dissolved	mg/L	208	500.0	N.A	1500.0	N.A	2100.0	APHA 24th Edition 2540 - C
4.	Conductivity	µmhos/cm	378	N.A	N.A	N.A	1000.0	2250.0	APHA 24th Edition 2510 - B
5.	BOD	mg/L	<2	2.0	3.0	3.0	N.A	N.A	IS 3025 (Part-44)
6.	Colour	Pt-CO	10	10	30	300	-	-	APHA 24th Edition 2120 - B
7.	Total Hardness	mg/L	120	300.0	N.A	N.A	N.A	N.A	APHA 24th Edition 2340 – C
8.	Calcium Hardness	mg/L	50	200.0	N.A	N.A	N.A	N.A	APHA 24th Edition 3500 Ca - B
9.	Magnesium Hardness	mg/L	70	100.0	N.A	N.A	N.A	N.A	APHA 24th Edition 3500 Mg - B
10.	Chlorides	mg/L	33	250	N.A	600	N.A	600	APHA 24th Edition 4500 - Cl B
11.	Sulphates	mg/L	15	400	N.A	400	N.A	1000	APHA 24th Edition 4500 -SO4 E
12.	Nitrate	mg/L	<0.1	20	N.A	50	N.A	N.A	IS 3025 (Part-34)
13.	Fluoride	mg/L	0.18	1.5	1.5	1.5	-	-	APHA 24th Edition 4500- F- D
14.	Phenolic Compound	mg/L	<0.02	0.002	0.005	0.005	N.A	N.A	APHA 24th Edition 5530 D
15.	Ammonical nitrogen	mg/L	<0.05	N.A	N.A	N.A	1.2	N.A	IS 3025 (Part-34)
16.	SAR		0.19	N.A	N.A	N.A	N.A	26	LAB-SOP-138, Issue No 01
17.	Copper	mg/L	<0.03	1.5	N.A	1.5	N.A	N.A	APHA 24th Edition 3111 B
18.	Iron	mg/L	<0.05	0.3	N.A	50	N.A	N.A	APHA 24th Edition 3111 B
19.	Manganese	mg/L	<0.02	0.5	N.A	N.A	N.A	N.A	APHA 24th Edition 3111 B
20.	Mercury	mg/L	<0.001	0.001	N.A	N.A	N.A	N.A	APHA 24th Edition 3112-B
21.	Cadmium	mg/L	<0.003	0.01	N.A	0.01	N.A	N.A	APHA 24th Edition 3111 B
22.	Arsenic	mg/L	<0.01	0.05	N.A	0.2	N.A	N.A	IS 3025 (Part-37)
23.	Lead	mg/L	<0.01	0.1	N.A	0.1	N.A	N.A	APHA 24th Edition 3111 B
24.	Zinc	mg/L	<0.03	15	N.A	15	N.A	N.A	APHA 24th Edition 3111 B
25.	Chromium	mg/L	<0.02	0.05	1	0.05	N.A	N.A	APHA 24th Edition 3500 Cr – B
26.	Boron	mg/L	<0.05	N.A	N.A	N.A	N.A	2	APHA 24th Edition 4500 - B C

Remark :

Authorised By -

Name : Sapana Amin | **Designation: Lab Incharge**

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8) Re analysis of sample will be done, if requested within 15 days from the date of Reporting of sample if the samples are not consumed during analysis.
9) The results reported above relate to the sample identified under **Sample Details**.

----------END OF REPORT----------

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ENVIRONMENTAL MONITORING REPORT

LABORATORY TEST REPORT – SURFACE WATER

REPORT NO.: JAN25/212/15

SAMPLE DETAILS

1.	Name & Address of Client: M/s. Shree khodal Waste Management, Plot No.5 & 6, GIDC Shehera Taluka & Dist. Panchmahal, Gujarat		
2.	Sample ID: 206JA25SW07	3.	Client Representative : Mr. Abhishek Joshi
4.	Sample Date: 22.01.2025	5.	Sample Collected By: Mr. Ratan Rai
6.	Analysis commenced on: 31.01.2025	7.	Analysis Completed on: 18.02.2025
8.	Reporting Date: 28.02.2025	9.	Discipline : Chemical
10.	Packing Condition & Quantity: Sealed √	11.	Group : Water
12.	Sampling Location: Dodhiyani Village Pond	13.	Product: Surface Water
14.	Sampling Method: APHA 24th Edition 1060:B&C	15.	Sample Received Date : 23.01.2024

TEST RESULTS

S. No.	Parameters	Unit (SI)		Results	Classification for Inland Surface Water (CPCB)					Method Used
					A	B	C	D	E	
1.	Cyanide	mg/L	:	<0.03	0.05	0.05	0.05	N.A	N.A	APHA: 24th Edition 4500 CN E

Remark :

Authorised By -

Name : Sapana Amin **Designation: Lab Incharge**

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9) The results reported above relate to the sample identified under **Sample Details.**

----------END OF REPORT----------

LABORATORY TEST REPORT FORMAT		
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ENVIRONMENTAL MONITORING REPORT

LABORATORY TEST REPORT - MICROBIOLOGY

REPORT NO.: JAN25/212/23(ULR- TC134502500011119F)

SAMPLE DETAILS

1.	Name & Address of Client: M/s. Shree khodal Waste Management,Plot No.5 & 6, GIDC Shehera Taluka & Dist.Panchmahal, Gujarat		
2.	Sample ID:212JA25SW-07	3.	Client Representative : Mr. Abhishek Joshi
4.	Sample Date: 22.01.2025	5.	Sample Collected By: Mr. Ratan Rai
6.	Analysis commenced on: 31.01.2025	7.	Analysis Completed on: 18.02.2025
8.	Reporting Date: 28.02.2025	9.	Discipline : Chemical
10.	Packing Condition & Quantity: Sealed √	11.	Group : Water
12.	Sampling Location: Dodhiyani Village Pond	13.	Product: Surface Water
14.	Sampling Method: IS:3025 (Part 1)-1987	15.	Sample Received Date : 23.01.2024

TEST RESULTS

S. No.	Parameters	Results	Unit (SI)	Specification/ SPCB Norms/ BIS Standards	Method Used
1.	Total Coliform Bacteria	21	MPN/100ml	N.A.	APHA 24th Edition 9221 B&C

Remarks:

Authorized by: J.V.Chauhan

Name: Jyoti Chauhan | **Designation: Sr.Microbiologist**

NOTE:
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2) Re-sampling may be done, if required, with written approval of the laboratory.
3) The results reported above relate to the sample identified under Sample Details.

----------**END OF REPORT**----------

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SW08: Panam Canal

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ENVIRONMENTAL MONITORING REPORT

LABORATORY TEST REPORT – SURFACE WATER

REPORT NO.: JAN25/212/08 (ULR- TC134502500011092F)

SAMPLE DETAILS

1.	Name & Address of Client: M/s. Shree khodal Waste Management, Plot No.5 & 6, GIDC Shehera Taluka & Dist. Panchmahal, Gujarat		
2.	Sample ID: 206JA25SW08	3.	Client Representative : Mr. Abhishek Joshi
4.	Sample Date: 22.01.2025	5.	Sample Collected By: Mr. Ratan Rai
6.	Analysis commenced on: 31.01.2025	7.	Analysis Completed on: 18.02.2025
8.	Reporting Date: 28.02.2025	9.	Discipline : Chemical
10.	Packing Condition & Quantity: Sealed √	11.	Group : Water
12.	Sampling Location: Panam Canal	13.	Product: Surface Water
14.	Sampling Method: APHA 24th Edition 1060:B&C	15.	Sample Received Date : 23.01.2025

TEST RESULTS

S. No.	Parameters	Unit (SI)	Results	Classification for Inland Surface Water (CPCB)					Method Used
				A	B	C	D	E	
1.	pH		7.42	6.5 to 8.5	6.5 to 8.5	6.5 to 8.5	6.5 to 8.5	6.5 to 8.5	APHA 24th Edition 4500 H+ B
2.	DO	mg/L	5	6.0	5.0	4.0	4.0	N.A	APHA 24th Edition 4500 O - C
3.	Total Dissolved	mg/L	232	500.0	N.A	1500.0	N.A	2100.0	APHA 24th Edition 2540 - C
4.	Conductivity	µmhos/cm	487	N.A	N.A	N.A	1000.0	2250.0	APHA 24th Edition 2510 - B
5.	BOD	mg/L	<2	2.0	3.0	3.0	N.A	N.A	IS 3025 (Part-44)
6.	Colour	Pt-CO	10	10	30	300	-	-	APHA 24th Edition 2120 - B
7.	Total Hardness	mg/L	150	300.0	N.A	N.A	N.A	N.A	APHA 24th Edition 2340 – C
8.	Calcium Hardness	mg/L	82	200.0	N.A	N.A	N.A	N.A	APHA 24th Edition 3500 Ca - B
9.	Magnesium Hardness	mg/L	68	100.0	N.A	N.A	N.A	N.A	APHA 24th Edition 3500 Mg - B
10.	Chlorides	mg/L	52	250	N.A	600	N.A	600	APHA 24th Edition 4500 - Cl B
11.	Sulphates	mg/L	17	400	N.A	400	N.A	1000	APHA 24th Edition 4500 -SO4 E
12.	Nitrate	mg/L	<0.1	20	N.A	50	N.A	N.A	IS 3025 (Part-34)
13.	Fluoride	mg/L	1.14	1.5	1.5	1.5	-	-	APHA 24th Edition 4500- F- D
14.	Phenolic Compound	mg/L	<0.02	0.002	0.005	0.005	N.A	N.A	APHA 24th Edition 5530 D
15.	Ammonical nitrogen	mg/L	<0.05	N.A	N.A	N.A	1.2	N.A	IS 3025 (Part-34)
16.	SAR	-	0.26	N.A	N.A	N.A	N.A	26	LAB-SOP-138, Issue No 01
17.	Copper	mg/L	<0.001	1.5	N.A	1.5	N.A	N.A	APHA 24th Edition 3111 B
18.	Iron	mg/L	<0.01	0.3	N.A	50	N.A	N.A	APHA 24th Edition 3111 B
19.	Manganese	mg/L	<0.001	0.5	N.A	N.A	N.A	N.A	APHA 24th Edition 3111 B
20.	Mercury	mg/L	<0.001	0.001	N.A	N.A	N.A	N.A	APHA 24th Edition 3112-B
21.	Cadmium	mg/L	<0.001	0.01	N.A	0.01	N.A	N.A	APHA 24th Edition 3111 B
22.	Arsenic	mg/L	<0.001	0.05	N.A	0.2	N.A	N.A	IS 3025 (Part-37)
23.	Lead	mg/L	<0.001	0.1	N.A	0.1	N.A	N.A	APHA 24th Edition 3111 B
24.	Zinc	mg/L	<0.01	15	N.A	15	N.A	N.A	APHA 24th Edition 3111 B
25.	Chromium	mg/L	<0.001	0.05	1	0.05	N.A	N.A	APHA 24th Edition 3500 Cr – B
26.	Boron	mg/L	<0.01	N.A	N.A	N.A	N.A	2	APHA 24th Edition 4500 – B C

Remark :

Authorised By -

Name : Sapana Amin | Designation: Lab Incharge

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9) The results reported above relate to the sample identified under **Sample Details**.

----------END OF REPORT----------

LABORATORY TEST REPORT FORMAT		
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ENVIRONMENTAL MONITORING REPORT

LABORATORY TEST REPORT – SURFACE WATER

REPORT NO.: JAN25/212/16

SAMPLE DETAILS

1.	Name & Address of Client: M/s. Shree khodal Waste Management, Plot No.5 & 6, GIDC Shehera Taluka & Dist. Panchmahal, Gujarat		
2.	Sample ID: 206JA25SW08	3.	Client Representative : Mr. Abhishek Joshi
4.	Sample Date: 22.01.2025	5.	Sample Collected By: Mr. Ratan Rai
6.	Analysis commenced on: 31.01.2025	7.	Analysis Completed on: 18.02.2025
8.	Reporting Date: 28.02.2025	9.	Discipline : Chemical
10.	Packing Condition & Quantity: Sealed √	11.	Group : Water
12.	Sampling Location: Panam Canal	13.	Product: Surface Water
14.	Sampling Method: APHA 24th Edition 1060:B&C	15.	Sample Received Date : 23.01.2025

TEST RESULTS

S. No.	Parameters	Unit (SI)		Results	Classification for Inland Surface Water (CPCB)					Method Used
					A	B	C	D	E	
1.	Cyanide	mg/L	:	<0.03	0.05	0.05	0.05	N.A	N.A	APHA: 24th Edition 4500 CN E

Remark :

Authorised By -

Name : Sapana Amin **Designation: Lab Incharge**

NOTE : 1) Reports may be reproduced, if required, but only in full and only with written approval of the laboratory.
8) Re analysis of sample will be done, if requested within 15 days from the date of Reporting of sample if the samples are not consumed during analysis.
9) The results reported above relate to the sample identified under **Sample Details.**

----------END OF REPORT----------

LABORATORY TEST REPORT FORMAT		
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ENVIRONMENTAL MONITORING REPORT

LABORATORY TEST REPORT - MICROBIOLOGY

REPORT NO.: JAN25/212/24(ULR- TC134502500011120F)

SAMPLE DETAILS

1.	Name & Address of Client: M/s. Shree khodal Waste Management,Plot No.5 & 6, GIDC Shehera Taluka & Dist.Panchmahal, Gujarat		
2.	Sample ID:212JA25SW-8	3.	Client Representative : Mr. Abhishek Joshi
4.	Sample Date: 22.01.2025	5.	Sample Collected By: Mr. Ratan Rai
6.	Analysis commenced on: 31.01.2025	7.	Analysis Completed on: 18.02.2025
8.	Reporting Date: 28.02.2025	9.	Discipline : Chemical
10.	Packing Condition & Quantity: Sealed √	11.	Group : Water
12.	Sampling Location: Panam Canal	13.	Product: Surface Water
14.	Sampling Method: IS:3025 (Part 1)-1987	15.	Sample Received Date : 23.01.2025

TEST RESULTS

S. No.	Parameters	Results	Unit (SI)	Specification/ SPCB Norms/ BIS Standards	Method Used
1.	Total Coliform Bacteria	17	MPN/100ml	N.A.	APHA 24th Edition 9221 B&C

Remarks:

Authorized by: J.V.chauhan

Name: Jyoti Chauhan | **Designation: Sr.Microbiologist**

NOTE:
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2) Re-sampling may be done, if required, with written approval of the laboratory.
3) The results reported above relate to the sample identified under Sample Details.

----------**END OF REPORT**----------

LABORATORY TEST REPORT FORMAT		
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SW09: Chikni River Downstream

KADAM LABS PRIVATE LIMITED

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ENVIRONMENTAL MONITORING REPORT

LABORATORY TEST REPORT – SURFACE WATER

REPORT NO.: JAN25/212/08 (ULR- TC134502500011093F)

SAMPLE DETAILS

1.	Name & Address of Client: M/s. Shree khodal Waste Management, Plot No.5 & 6, GIDC Shehera Taluka & Dist. Panchmahal, Gujarat		
2.	Sample ID: 212JA25SW09	3.	Client Representative : Mr. Abhishek Joshi
4.	Sample Date: 30.01.2025	5.	Sample Collected By: Mr. Ratan Rai
6.	Analysis commenced on: 31.01.2025	7.	Analysis Completed on: 18.02.2025
8.	Reporting Date: 28.02.2025	9.	Discipline : Chemical
10.	Packing Condition & Quantity: Sealed √	11.	Group : Water
12.	Sampling Location: Chikni River Downstream	13.	Product: Surface Water
14.	Sampling Method: APHA 24th Edition 1060:B&C	15.	Sample Received Date : 31.01.2025

TEST RESULTS

S. No.	Parameters	Unit (SI)	Results	Classification for Inland Surface Water (CPCB)					Method Used
				A	B	C	D	E	
1.	pH		7.18	6.5 to 8.5	6.5 to 8.5	6.5 to 8.5	6.5 to 8.5	6.5 to 8.5	APHA 24th Edition 4500 H+ B
2.	DO	mg/L	5.20	6.0	5.0	4.0	4.0	N.A	APHA 24th Edition 4500 O - C
3.	Total Dissolved	mg/L	276	500.0	N.A	1500.0	N.A	2100.0	APHA 24th Edition 2540 - C
4.	Conductivity	µmhos/cm	510	N.A	N.A	N.A	1000.0	2250.0	APHA 24th Edition 2510 - B
5.	BOD	mg/L	6	2.0	3.0	3.0	N.A	N.A	IS 3025 (Part-44)
6.	Colour	Pt-CO	10	10	30	300	-	-	APHA 24th Edition 2120 - B
7.	Total Hardness	mg/L	180	300.0	N.A	N.A	N.A	N.A	APHA 24th Edition 2340 – C
8.	Calcium Hardness	mg/L	110	200.0	N.A	N.A	N.A	N.A	APHA 24th Edition 3500 Ca - B
9.	Magnesium Hardness	mg/L	70	100.0	N.A	N.A	N.A	N.A	APHA 24th Edition 3500 Mg - B
10.	Chlorides	mg/L	48	250	N.A	600	N.A	600	APHA 24th Edition 4500 - Cl B
11.	Sulphates	mg/L	11	400	N.A	400	N.A	1000	APHA 24th Edition 4500 -SO4 E
12.	Nitrate	mg/L	<0.1	20	N.A	50	N.A	N.A	IS 3025 (Part-34)
13.	Fluoride	mg/L	0.06	1.5	1.5	1.5	-	-	APHA 24th Edition 4500- F- D
14.	Phenolic Compound	mg/L	<0.02	0.002	0.005	0.005	N.A	N.A	APHA 24th Edition 5530 D
15.	Ammonical nitrogen	mg/L	<0.05	N.A	N.A	N.A	1.2	N.A	IS 3025 (Part-34)
16.	SAR		0.21	N.A	N.A	N.A	N.A	26	LAB-SOP-138, Issue No 01
17.	Copper	mg/L	<0.001	1.5	N.A	1.5	N.A	N.A	APHA 24th Edition 3111 B
18.	Iron	mg/L	<0.01	0.3	N.A	50	N.A	N.A	APHA 24th Edition 3111 B
19.	Manganese	mg/L	<0.001	0.5	N.A	N.A	N.A	N.A	APHA 24th Edition 3111 B
20.	Mercury	mg/L	<0.001	0.001	N.A	N.A	N.A	N.A	APHA 24th Edition 3112-B
21.	Cadmium	mg/L	<0.001	0.01	N.A	0.01	N.A	N.A	APHA 24th Edition 3111 B
22.	Arsenic	mg/L	<0.001	0.05	N.A	0.2	N.A	N.A	IS 3025 (Part-37)
23.	Lead	mg/L	<0.001	0.1	N.A	0.1	N.A	N.A	APHA 24th Edition 3111 B
24.	Zinc	mg/L	<0.01	15	N.A	15	N.A	N.A	APHA 24th Edition 3111 B
25.	Chromium	mg/L	<0.001	0.05	1	0.05	N.A	N.A	APHA 24th Edition 3500 Cr – B
26.	Boron	mg/L	<0.01	N.A	N.A	N.A	N.A	2	APHA 24th Edition 4500 - B C

Remark :

Authorised By -

Name : Sapana Amin | Designation: Lab Incharge

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----------END OF REPORT----------

LABORATORY TEST REPORT FORMAT		
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KADAM LABS PRIVATE LIMITED

871/B/3, Near Himalaya Machinery, GIDC Makarpura, Vadodara-10.
Phone : **(O) 0265 - 6131000, 6131001**

ENVIRONMENTAL MONITORING REPORT

LABORATORY TEST REPORT – SURFACE WATER

REPORT NO.: JAN25/212/16

SAMPLE DETAILS

1.	Name & Address of Client: M/s. Shree khodal Waste Management, Plot No.5 & 6, GIDC Shehera Taluka & Dist. Panchmahal, Gujarat		
2.	Sample ID: 212JA25SW09	3.	Client Representative : Mr. Abhishek Joshi
4.	Sample Date: 30.01.2025	5.	Sample Collected By: Mr. Ratan Rai
6.	Analysis commenced on: 31.01.2025	7.	Analysis Completed on: 18.02.2025
8.	Reporting Date: 28.02.2025	9.	Discipline : Chemical
10.	Packing Condition & Quantity: Sealed √	11.	Group : Water
12.	Sampling Location: Chikni River Downstream	13.	Product: Surface Water
14.	Sampling Method: APHA 24th Edition 1060:B&C	15.	Sample Received Date : 31.01.2025

TEST RESULTS

S. No.	Parameters	Unit (SI)		Results	Classification for Inland Surface Water (CPCB)					Method Used
					A	B	C	D	E	
1.	Cyanide	mg/L	:	<0.03	0.05	0.05	0.05	N.A	N.A	APHA: 24th Edition 4500 CN E

Remark :

Authorised By -

Name : Sapana Amin | **Designation: Lab Incharge**

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LABORATORY TEST REPORT FORMAT		
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ENVIRONMENTAL MONITORING REPORT

LABORATORY TEST REPORT - MICROBIOLOGY

REPORT NO.: JAN25/212/24(ULR- TC134502500011121F)

SAMPLE DETAILS

1.	Name & Address of Client: M/s. Shree khodal Waste Management,Plot No.5 & 6, GIDC Shehera Taluka & Dist.Panchmahal, Gujarat		
2.	Sample ID:212JA25SW-9	3.	Client Representative : Mr. Abhishek Joshi
4.	Sample Date: 30.01.2025	5.	Sample Collected By: Mr. Ratan Rai
6.	Analysis commenced on: 31.01.2025	7.	Analysis Completed on: 18.02.2025
8.	Reporting Date: 28.02.2025	9.	Discipline : Chemical
10.	Packing Condition & Quantity: Sealed √	11.	Group : Water
12.	Sampling Location: Chikni River	13.	Product: Surface Water
14.	Sampling Method: IS:3025 (Part 1)-1987	15.	Sample Received Date : 31.01.2025

TEST RESULTS

S. No.	Parameters	Results	Unit (SI)	Specification/ SPCB Norms/ BIS Standards	Method Used
1.	Total Coliform Bacteria	N.D(<1.8)	MPN/100ml	N.A.	APHA 24th Edition 9221 B&C

Remarks:

Authorized by: J.V.Chauhan

Name: Jyoti Chauhan | **Designation: Sr.Microbiologist**

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----------**END OF REPORT**----------

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SW10: Kun River

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ENVIRONMENTAL MONITORING REPORT

LABORATORY TEST REPORT – SURFACE WATER

REPORT NO.: JAN25/212/08 (ULR- TC134502500011094F)

SAMPLE DETAILS

1.	Name & Address of Client: M/s. Shree khodal Waste Management, Plot No.5 & 6, GIDC Shehera Taluka & Dist. Panchmahal, Gujarat		
2.	Sample ID: 212JA25SW10	3.	Client Representative : Mr. Abhishek Joshi
4.	Sample Date: 11.02.2025	5.	Sample Collected By: Mr. Ratan Rai
6.	Analysis commenced on: 31.01.2025	7.	Analysis Completed on: 18.02.2025
8.	Reporting Date: 28.02.2025	9.	Discipline : Chemical
10.	Packing Condition & Quantity: Sealed √	11.	Group : Water
12.	Sampling Location: Kun River	13.	Product: Surface Water
14.	Sampling Method: APHA 24th Edition 1060:B&C	15.	Sample Received Date : 13.02.2025

TEST RESULTS

S. No.	Parameters	Unit (SI)	Results	Classification for Inland Surface Water (CPCB)					Method Used
				A	B	C	D	E	
1.	pH		7.43	6.5 to 8.5	6.5 to 8.5	6.5 to 8.5	6.5 to 8.5	6.5 to 8.5	APHA 24th Edition 4500 H+ B
2.	DO	mg/L	5.8	6.0	5.0	4.0	4.0	N.A	APHA 24th Edition 4500 O - C
3.	Total Dissolved	mg/L	456	500.0	N.A	1500.0	N.A	2100.0	APHA 24th Edition 2540 - C
4.	Conductivity	µmhos/cm	905	N.A	N.A	N.A	1000.0	2250.0	APHA 24th Edition 2510 - B
5.	BOD	mg/L	4	2.0	3.0	3.0	N.A	N.A	IS 3025 (Part-44)
6.	Colour	Pt-CO	10	10	30	300	-	-	APHA 24th Edition 2120 - B
7.	Total Hardness	mg/L	260	300.0	N.A	N.A	N.A	N.A	APHA 24th Edition 2340 – C
8.	Calcium Hardness	mg/L	112	200.0	N.A	N.A	N.A	N.A	APHA 24th Edition 3500 Ca - B
9.	Magnesium Hardness	mg/L	148	100.0	N.A	N.A	N.A	N.A	APHA 24th Edition 3500 Mg - B
10.	Chlorides	mg/L	86	250	N.A	600	N.A	600	APHA 24th Edition 4500 - Cl B
11.	Sulphates	mg/L	42	400	N.A	400	N.A	1000	APHA 24th Edition 4500 -SO4 E
12.	Nitrate	mg/L	<0.1	20	N.A	50	N.A	N.A	IS 3025 (Part-34)
13.	Fluoride	mg/L	0.79	1.5	1.5	1.5	-	-	APHA 24th Edition 4500- F- D
14.	Phenolic Compound	mg/L	<0.02	0.002	0.005	0.005	N.A	N.A	APHA 24th Edition 5530 D
15.	Ammonical nitrogen	mg/L	<0.05	N.A	N.A	N.A	1.2	N.A	IS 3025 (Part-34)
16.	SAR		0.33	N.A	N.A	N.A	N.A	26	LAB-SOP-138, Issue No 01
17.	Copper	mg/L	<0.001	1.5	N.A	1.5	N.A	N.A	APHA 24th Edition 3111 B
18.	Iron	mg/L	<0.01	0.3	N.A	50	N.A	N.A	APHA 24th Edition 3111 B
19.	Manganese	mg/L	<0.001	0.5	N.A	N.A	N.A	N.A	APHA 24th Edition 3111 B
20.	Mercury	mg/L	<0.001	0.001	N.A	N.A	N.A	N.A	APHA 24th Edition 3112-B
21.	Cadmium	mg/L	<0.001	0.01	N.A	0.01	N.A	N.A	APHA 24th Edition 3111 B
22.	Arsenic	mg/L	<0.001	0.05	N.A	0.2	N.A	N.A	IS 3025 (Part-37)
23.	Lead	mg/L	<0.001	0.1	N.A	0.1	N.A	N.A	APHA 24th Edition 3111 B
24.	Zinc	mg/L	<0.01	15	N.A	15	N.A	N.A	APHA 24th Edition 3111 B
25.	Chromium	mg/L	<0.001	0.05	1	0.05	N.A	N.A	APHA 24th Edition 3500 Cr – B
26.	Boron	mg/L	<0.01	N.A	N.A	N.A	N.A	2	APHA 24th Edition 4500 - B C

Remark :

Authorised By -

Name : Sapana Amin | **Designation: Lab Incharge**

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ENVIRONMENTAL MONITORING REPORT

LABORATORY TEST REPORT – SURFACE WATER

REPORT NO.: JAN25/212/16

SAMPLE DETAILS

1.	Name & Address of Client: M/s. Shree khodal Waste Management, Plot No.5 & 6, GIDC Shehera Taluka & Dist. Panchmahal, Gujarat		
2.	Sample ID: 212JA25SW10	3.	Client Representative : Mr. Abhishek Joshi
4.	Sample Date: 11.02.2025	5.	Sample Collected By: Mr. Ratan Rai
6.	Analysis commenced on: 31.01.2025	7.	Analysis Completed on: 18.02.2025
8.	Reporting Date: 28.02.2025	9.	Discipline : Chemical
10.	Packing Condition & Quantity: Sealed √	11.	Group : Water
12.	Sampling Location: Kun River	13.	Product: Surface Water
14.	Sampling Method: APHA 24th Edition 1060:B&C	15.	Sample Received Date : 13.02.2025

TEST RESULTS

S. No.	Parameters	Unit (SI)	Results	Classification for Inland Surface Water (CPCB)					Method Used
				A	B	C	D	E	
1.	Cyanide	mg/L	<0.03	0.05	0.05	0.05	N.A	N.A	APHA: 24th Edition 4500 CN E

Remark :

Authorised By -

Name : Sapana Amin **Designation: Lab Incharge**

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LABORATORY TEST REPORT FORMAT		
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ENVIRONMENTAL MONITORING REPORT

LABORATORY TEST REPORT - MICROBIOLOGY

REPORT NO.: JAN25/212/24(ULR- TC134502500011122F)

SAMPLE DETAILS

1.	Name & Address of Client: M/s. Shree khodal Waste Management,Plot No.5 & 6, GIDC Shehera Taluka & Dist.Panchmahal, Gujarat		
2.	Sample ID:212JA25SW-10	3.	Client Representative : Mr. Abhishek Joshi
4.	Sample Date: 11.02.2025	5.	Sample Collected By: Mr. Ratan Rai
6.	Analysis commenced on: 31.01.2025	7.	Analysis Completed on: 18.02.2025
8.	Reporting Date: 28.02.2025	9.	Discipline : Chemical
10.	Packing Condition & Quantity: Sealed √	11.	Group : Water
12.	Sampling Location: KunRiver	13.	Product: Surface Water
14.	Sampling Method: IS:3025 (Part 1)-1987	15.	Sample Received Date : 13.02.2025

TEST RESULTS

S. No.	Parameters	Results	Unit (SI)	Specification/ SPCB Norms/ BIS Standards	Method Used
1.	Total Coliform Bacteria	N.D(<1.8)	MPN/100ml	N.A.	APHA 24th Edition 9221 B&C

Remarks:

Authorized by: J.V.Chauhan

Name: Jyoti Chauhan | **Designation: Sr.Microbiologist**

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----------**END OF REPORT**----------

LABORATORY TEST REPORT FORMAT		
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Soil Sample Anaylsis Reports

ST01: Salampur Village

TC-13450

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ENVIRONMENTAL MONITORING REPORT

LABORATORY TEST REPORT - SOIL

REPORT NO.: JAN25/212/01 (ULR- TC134502500011095F)

SAMPLE DETAILS

1.	Name & Address of Client: M/s. Shree khodal Waste Management, Plot No.5 & 6, GIDC Shehera Taluka & Dist. Panchmahal, Gujarat		
2.	Sample ID: 212JA25ST01	3.	Client Representative : Mr. Abhishek Joshi
4.	Sampling Date: 27.01.2025	5.	Sampling Location: Salampur Village
6.	Analysis commenced on: 31.01.2025	7.	Analysis Completed on: 28.02.2025
8.	Reporting Date: 28.02.2025	9.	Discipline: Chemical
10.	Sample Collected By: Mr. Ratan Rai	11.	Group: Pollution and Environment
12.	Physical Status: Solid	13.	Product: Soil
14.	Color: Brown	15.	Sample Received Date: 31.01.2025
16.	Description of Sample:	Packed and sealed in polythene bags.	

PARAMETERS DETAILS

S. No.	Parameters	Unit SI		Results	Specification/ SPCB Norms/ BIS Standards	Method Used
1.	Porosity	%	:	54	N.A.	IS 2720 (Part 7):1980
2.	Water Holding Capacity	%	:	44.52	N.A.	LAB-SOP-083
3.	Cation Exchange Capacity	meq/100gm	:	24.67	N.A.	LAB-SOP-085
4.	Electrical Conductivity	dS/m	:	0.610	N.A.	IS 14767: 2000
5.	pH		:	7.38	N.A.	IS 2720 (Part 26):1987
6.	Calcium	mg/kg	:	2044	N.A.	LAB-SOP-129
7.	Magnesium	mg/kg	:	1555	N.A.	LAB-SOP-130
8.	Sodium	g/kg	:	0.31	N.A.	LAB-SOP-117
9.	Potassium	g/kg	:	0.06	N.A.	LAB-SOP-128,

Remark :

Authorised By -

Name : Sapana Amin **Designation: Lab Incharge**

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LABORATORY TEST REPORT FORMAT		
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ENVIRONMENTAL MONITORING REPORT

LABORATORY TEST REPORT - SOIL

REPORT NO.: JAN25/212/03

SAMPLE DETAILS

1.	Name & Address of Client: M/s. Shree khodal Waste Management, Plot No.5 & 6, GIDC Shehera Taluka & Dist. Panchmahal, Gujarat		
2.	Sample ID: 212JA25ST01	3.	Client Representative : Mr. Abhishek Joshi
4.	Sampling Date: 27.01.2025	5.	Sampling Location: Salampur Village
6.	Analysis commenced on: 31.01.2025	7.	Analysis Completed on: 28.02.2025
8.	Reporting Date: 28.02.2025	9.	Discipline: Chemical
10.	Sample Collected By: Mr. Ratan Rai	11.	Group: Pollution and Environment
12.	Physical Status: Solid	13.	Product: Soil
14.	Color: Brown	15.	Sample Received Date: 31.01.2025
16.	Description of Sample:	Packed and sealed in polythene bags.	

PARAMETERS DETAILS

S. No.	Parameters	Unit SI		Results	Specification/ SPCB Norms/ BIS Standards	Method Used
1.	Permeability	mm/hr	:	20.16	N.A.	IS 2720 (Part 17):1986
2.	Particle Size		:		N.A.	
a.	Sand	%	:	60	N.A.	IS 2720 IV (Hydrometer Method)
b.	Clay	%	:	27	N.A.	IS 2720 IV (Hydrometer Method)
c.	Silt	%	:	13	N.A.	IS 2720 IV (Hydrometer Method)
3.	Texture	-	:	sandy Clay loam	N.A.	IS 2720 IV (Hydrometer Method)
4.	Exchangeable Sodium	%	:	1.35	N.A.	LAB-SOP-117
5.	SAR		:	0.25	N.A.	LAB-SOP-138
6.	Total Organic Carbon	%	:	0.41	N.A.	IS 2720 (Part 22): 1972
7.	Total Nitrogen	%	:	0.035	N.A.	IS 14684:1999
8.	Available phosphorus	kg/ha	:	16.7	N.A.	IS 2720 (Part 22): 1972
9.	Available potassium	kg/ha	:	134.4	N.A.	LAB-SOP-128

Remark :

Authorised By -

Name : Sapana Amin — **Designation: Lab Incharge**

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----------**END OF REPORT**----------

LABORATORY TEST REPORT FORMAT		
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ST02:GIDC Shehera

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ENVIRONMENTAL MONITORING REPORT

LABORATORY TEST REPORT - SOIL

REPORT NO.: JAN25/212/02 (ULR- TC134502500011096F)

SAMPLE DETAILS

1.	Name & Address of Client: M/s. Shree khodal Waste Management, Plot No.5 & 6, GIDC Shehera Taluka & Dist. Panchmahal, Gujarat		
2.	Sample ID: 212JA25ST02	3.	Client Representative : Mr. Abhishek Joshi
4.	Sampling Date: 27.01.2025	5.	Sampling Location: GIDC Shehera
6.	Analysis commenced on: 31.01.2025	7.	Analysis Completed on: 28.02.2025
8.	Reporting Date: 28.02.2025	9.	Discipline: Chemical
10.	Sample Collected By: Mr. Ratan Rai	11.	Group: Pollution and Environment
12.	Physical Status: Solid	13.	Product: Soil
14.	Color: Brown	15.	Sample Received Date: 31.01.2025
16.	Description of Sample:	Packed and sealed in polythene bags.	

PARAMETERS DETAILS

S. No.	Parameters	Unit SI		Results	Specification/ SPCB Norms/ BIS Standards	Method Used
1.	Porosity	%	:	52	N.A.	IS 2720 (Part 7):1980
2.	Water Holding Capacity	%	:	43.12	N.A.	LAB-SOP-083
3.	Cation Exchange Capacity	meq/100gm	:	23.93	N.A.	LAB-SOP-085
4.	Electrical Conductivity	dS/m	:	0.525	N.A.	IS 14767: 2000
5.	pH		:	7.90	N.A.	IS 2720 (Part 26):1987
6.	Calcium	mg/kg	:	2024	N.A.	LAB-SOP-129
7.	Magnesium	mg/kg	:	1506	N.A.	LAB-SOP-130
8.	Sodium	g/kg	:	0.26	N.A.	LAB-SOP-117
9.	Potassium	g/kg	:	0.05	N.A.	LAB-SOP-128,

Remark :

Authorised By -

Name : Sapana Amin — **Designation: Lab Incharge**

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----------END OF REPORT----------

LABORATORY TEST REPORT FORMAT		
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ENVIRONMENTAL MONITORING REPORT

LABORATORY TEST REPORT - SOIL

REPORT NO.: JAN25/212/04

SAMPLE DETAILS

1.	Name & Address of Client: M/s. Shree khodal Waste Management, Plot No.5 & 6, GIDC Shehera Taluka & Dist. Panchmahal, Gujarat		
2.	Sample ID: 212JA25ST02	3.	Client Representative : Mr. Abhishek Joshi
4.	Sampling Date: 27.01.2025	5.	Sampling Location: GIDC Shehera
6.	Analysis commenced on: 31.01.2025	7.	Analysis Completed on: 28.02.2025
8.	Reporting Date: 28.02.2025	9.	Discipline: Chemical
10.	Sample Collected By: Mr. Ratan Rai	11.	Group: Pollution and Environment
12.	Physical Status: Solid	13.	Product: Soil
14.	Color: Brown	15.	Sample Received Date: 31.01.2025
16.	Description of Sample:	Packed and sealed in polythene bags.	

PARAMETERS DETAILS

S. No.	Parameters	Unit SI		Results	Specification/ SPCB Norms/ BIS Standards	Method Used
1.	Permeability	mm/hr	:	21.13	N.A.	IS 2720 (Part 17):1986
2.	Particle Size		:		N.A.	
a.	Sand	%	:	63	N.A.	IS 2720 IV (Hydrometer Method)
b.	Clay	%	:	24	N.A.	IS 2720 IV (Hydrometer Method)
c.	Silt	%	:	13	N.A.	IS 2720 IV (Hydrometer Method)
3.	Texture	-	:	sandy Clay loam	N.A.	IS 2720 IV (Hydrometer Method)
4.	Exchangeable Sodium	%	:	1.13	N.A.	LAB-SOP-117
5.	SAR		:	0.21	N.A.	LAB-SOP-138
6.	Total Organic Carbon	%	:	0.39	N.A.	IS 2720 (Part 22): 1972
7.	Total Nitrogen	%	:	0.034	N.A.	IS 14684:1999
8.	Available phosphorus	kg/ha	:	21.8	N.A.	IS 2720 (Part 22): 1972
9.	Available potassium	kg/ha	:	112.0	N.A.	LAB-SOP-128

Remark :

Authorised By -

Name : Sapana Amin — **Designation: Lab Incharge**

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----------END OF REPORT----------

LABORATORY TEST REPORT FORMAT		
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ST03: Bhensal Village

TC-13450

KADAM LABS PRIVATE LIMITED

871/B/3, Near Himalaya Machinery, GIDC Makarpura, Vadodara-10.
Phone : (O) 0265 - 6131000, 6131001

ENVIRONMENTAL MONITORING REPORT

LABORATORY TEST REPORT - SOIL

REPORT NO.: JAN25/212/03 (ULR- TC134502500011097F)

SAMPLE DETAILS

1.	Name & Address of Client: M/s. Shree khodal Waste Management, Plot No.5 & 6, GIDC Shehera Taluka & Dist. Panchmahal, Gujarat		
2.	Sample ID: 212JA25ST03	3.	Client Representative : Mr. Abhishek Joshi
4.	Sampling Date: 27.01.2025	5.	Sampling Location: Bhensal Village
6.	Analysis commenced on: 31.01.2025	7.	Analysis Completed on: 28.02.2025
8.	Reporting Date: 28.02.2025	9.	Discipline: Chemical
10.	Sample Collected By: Mr. Ratan Rai	11.	Group: Pollution and Environment
12.	Physical Status: Solid	13.	Product: Soil
14.	Color: Brown	15.	Sample Received Date: 31.01.2025
16.	Description of Sample:	Packed and sealed in polythene bags.	

PARAMETERS DETAILS

S. No.	Parameters	Unit SI		Results	Specification/ SPCB Norms/ BIS Standards	Method Used
1.	Porosity	%	:	51	N.A.	IS 2720 (Part 7):1980
2.	Water Holding Capacity	%	:	41.66	N.A.	LAB-SOP-083
3.	Cation Exchange Capacity	meq/100gm	:	20.96	N.A.	LAB-SOP-085
4.	Electrical Conductivity	dS/m	:	0.074	N.A.	IS 14767: 2000
5.	pH		:	6.84	N.A.	IS 2720 (Part 26):1987
6.	Calcium	mg/kg	:	1783	N.A.	LAB-SOP-129
7.	Magnesium	mg/kg	:	1287	N.A.	LAB-SOP-130
8.	Sodium	g/kg	:	0.28	N.A.	LAB-SOP-117
9.	Potassium	g/kg	:	0.04	N.A.	LAB-SOP-128,

Remark :

Authorised By -

Name : Sapana Amin — **Designation: Lab Incharge**

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----------**END OF REPORT**----------

LABORATORY TEST REPORT FORMAT		
DOC. NO.: LAB-FMT-055	Issue No.: 01	Revision No.: 00
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KADAM LABS PRIVATE LIMITED

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ENVIRONMENTAL MONITORING REPORT

LABORATORY TEST REPORT - SOIL

REPORT NO.: JAN25/212/05

SAMPLE DETAILS

1.	Name & Address of Client: M/s. Shree khodal Waste Management, Plot No.5 & 6, GIDC Shehera Taluka & Dist. Panchmahal, Gujarat		
2.	Sample ID: 212JA25ST03	3.	Client Representative : Mr. Abhishek Joshi
4.	Sampling Date: 27.01.2025	5.	Sampling Location: Bhensal Village
6.	Analysis commenced on: 31.01.2025	7.	Analysis Completed on: 28.02.2025
8.	Reporting Date: 28.02.2025	9.	Discipline: Chemical
10.	Sample Collected By: Mr. Ratan Rai	11.	Group: Pollution and Environment
12.	Physical Status: Solid	13.	Product: Soil
14.	Color: Brown	15.	Sample Received Date: 31.01.2025
16.	Description of Sample:	Packed and sealed in polythene bags.	

PARAMETERS DETAILS

S. No.	Parameters	Unit SI		Results	Specification/ SPCB Norms/ BIS Standards	Method Used
1.	Permeability	mm/hr	:	23.90	N.A.	IS 2720 (Part 17):1986
2.	Particle Size		:		N.A.	
a.	Sand	%	:	63	N.A.	IS 2720 IV (Hydrometer Method)
b.	Clay	%	:	17	N.A.	IS 2720 IV (Hydrometer Method)
c.	Silt	%	:	20	N.A.	IS 2720 IV (Hydrometer Method)
3.	Texture	-	:	sandy loam	N.A.	IS 2720 IV (Hydrometer Method)
4.	Exchangeable Sodium	%	:	1.21	N.A.	LAB-SOP-117
5.	SAR		:	0.24	N.A.	LAB-SOP-138
6.	Total Organic Carbon	%	:	0.38	N.A.	IS 2720 (Part 22): 1972
7.	Total Nitrogen	%	:	0.033	N.A.	IS 14684:1999
8.	Available phosphorus	kg/ha	:	20.5	N.A.	IS 2720 (Part 22): 1972
9.	Available potassium	kg/ha	:	89.6	N.A.	LAB-SOP-128

Remark :

Authorised By -

Name : Sapana Amin — **Designation: Lab Incharge**

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LABORATORY TEST REPORT FORMAT		
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ST04: Dalwada Village

TC-13450

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ENVIRONMENTAL MONITORING REPORT

LABORATORY TEST REPORT - SOIL

REPORT NO.: JAN25/212/04 (ULR- TC134502500011098F)

SAMPLE DETAILS

1.	Name & Address of Client: M/s. Shree khodal Waste Management, Plot No.5 & 6, GIDC Shehera Taluka & Dist. Panchmahal, Gujarat		
2.	Sample ID: 212JA25ST04	3.	Client Representative : Mr. Abhishek Joshi
4.	Sampling Date: 27.01.2025	5.	Sampling Location: Dalwada Village
6.	Analysis commenced on: 31.01.2025	7.	Analysis Completed on: 28.02.2025
8.	Reporting Date: 28.02.2025	9.	Discipline: Chemical
10.	Sample Collected By: Mr. Ratan Rai	11.	Group: Pollution and Environment
12.	Physical Status: Solid	13.	Product: Soil
14.	Color: Brown	15.	Sample Received Date: 31.01.2025
16.	Description of Sample:	Packed and sealed in polythene bags.	

PARAMETERS DETAILS

S. No.	Parameters	Unit SI		Results	Specification/ SPCB Norms/ BIS Standards	Method Used
1.	Porosity	%	:	54	N.A.	IS 2720 (Part 7):1980
2.	Water Holding Capacity	%	:	47.54	N.A.	LAB-SOP-083
3.	Cation Exchange Capacity	meq/100gm	:	25.64	N.A.	LAB-SOP-085
4.	Electrical Conductivity	dS/m	:	0.54	N.A.	IS 14767: 2000
5.	pH		:	7.24	N.A.	IS 2720 (Part 26):1987
6.	Calcium	mg/kg	:	2044	N.A.	LAB-SOP-129
7.	Magnesium	mg/kg	:	1676	N.A.	LAB-SOP-130
8.	Sodium	g/kg	:	0.30	N.A.	LAB-SOP-117
9.	Potassium	g/kg	:	0.05	N.A.	LAB-SOP-128,

Remark :

Authorised By -

Name : Sapana Amin — **Designation: Lab Incharge**

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----------**END OF REPORT**----------

LABORATORY TEST REPORT FORMAT		
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ENVIRONMENTAL MONITORING REPORT

LABORATORY TEST REPORT - SOIL

REPORT NO.: JAN25/212/06

SAMPLE DETAILS

1.	Name & Address of Client: M/s. Shree khodal Waste Management, Plot No.5 & 6, GIDC Shehera Taluka & Dist. Panchmahal, Gujarat		
2.	Sample ID: 212JA25ST04	3.	Client Representative : Mr. Abhishek Joshi
4.	Sampling Date: 27.01.2025	5.	Sampling Location: Dalwada Village
6.	Analysis commenced on: 31.01.2025	7.	Analysis Completed on: 28.02.2025
8.	Reporting Date: 28.02.2025	9.	Discipline: Chemical
10.	Sample Collected By: Mr. Ratan Rai	11.	Group: Pollution and Environment
12.	Physical Status: Solid	13.	Product: Soil
14.	Color: Brown	15.	Sample Received Date: 31.01.2025
16.	Description of Sample:	Packed and sealed in polythene bags.	

PARAMETERS DETAILS

S. No.	Parameters	Unit SI		Results	Specification/ SPCB Norms/ BIS Standards	Method Used
1.	Permeability	mm/hr	:	19.22	N.A.	IS 2720 (Part 17):1986
2.	Particle Size		:		N.A.	
a.	Sand	%	:	54	N.A.	IS 2720 IV (Hydrometer Method)
b.	Clay	%	:	27	N.A.	IS 2720 IV (Hydrometer Method)
c.	Silt	%	:	19	N.A.	IS 2720 IV (Hydrometer Method)
3.	Texture	-	:	sandy Clay loam	N.A.	IS 2720 IV (Hydrometer Method)
4.	Exchangeable Sodium	%	:	1.30	N.A.	LAB-SOP-117
5.	SAR		:	0.24	N.A.	LAB-SOP-138
6.	Total Organic Carbon	%	:	0.42	N.A.	IS 2720 (Part 22): 1972
7.	Total Nitrogen	%	:	0.036	N.A.	IS 14684:1999
8.	Available phosphorus	kg/ha	:	16.8	N.A.	IS 2720 (Part 22): 1972
9.	Available potassium	kg/ha	:	112.0	N.A.	LAB-SOP-128

Remark :

Authorised By -

Name : Sapana Amin — **Designation: Lab Incharge**

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----------**END OF REPORT**----------

LABORATORY TEST REPORT FORMAT		
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ST05: Sadisamdi Village

TC-13458

KADAM LABS PRIVATE LIMITED

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ENVIRONMENTAL MONITORING REPORT

LABORATORY TEST REPORT - SOIL

REPORT NO.: JAN25/212/05 (ULR- TC134502500011099F)

SAMPLE DETAILS

1.	Name & Address of Client: M/s. Shree khodal Waste Management, Plot No.5 & 6, GIDC Shehera Taluka & Dist. Panchmahal, Gujarat		
2.	Sample ID: 212JA25ST05	3.	Client Representative : Mr. Abhishek Joshi
4.	Sampling Date: 27.01.2025	5.	Sampling Location: Sadisamdi Village
6.	Analysis commenced on: 31.01.2025	7.	Analysis Completed on: 28.02.2025
8.	Reporting Date: 28.02.2025	9.	Discipline: Chemical
10.	Sample Collected By: Mr. Ratan Rai	11.	Group: Pollution and Environment
12.	Physical Status: Solid	13.	Product: Soil
14.	Color: Brown	15.	Sample Received Date: 31.01.2025
16.	Description of Sample:	Packed and sealed in polythene bags.	

PARAMETERS DETAILS

S. No.	Parameters	Unit SI		Results	Specification/ SPCB Norms/ BIS Standards	Method Used
1.	Porosity	%	:	52	N.A.	IS 2720 (Part 7):1980
2.	Water Holding Capacity	%	:	48.46	N.A.	LAB-SOP-083
3.	Cation Exchange Capacity	meq/100gm	:	25.79	N.A.	LAB-SOP-085
4.	Electrical Conductivity	dS/m	:	0.409	N.A.	IS 14767: 2000
5.	pH		:	7.35	N.A.	IS 2720 (Part 26):1987
6.	Calcium	mg/kg	:	2184	N.A.	LAB-SOP-129
7.	Magnesium	mg/kg	:	1591	N.A.	LAB-SOP-130
8.	Sodium	g/kg	:	0.33	N.A.	LAB-SOP-117
9.	Potassium	g/kg	:	0.07	N.A.	LAB-SOP-128,

Remark :

Authorised By -

Name : Sapana Amin — **Designation: Lab Incharge**

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LABORATORY TEST REPORT FORMAT		
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ENVIRONMENTAL MONITORING REPORT

LABORATORY TEST REPORT - SOIL

REPORT NO.: JAN25/212/07

SAMPLE DETAILS

1.	Name & Address of Client: M/s. Shree khodal Waste Management, Plot No.5 & 6, GIDC Shehera Taluka & Dist. Panchmahal, Gujarat		
2.	Sample ID: 212JA25ST05	3.	Client Representative : Mr. Abhishek Joshi
4.	Sampling Date: 27.01.2025	5.	Sampling Location: Sadisamdi Village
6.	Analysis commenced on: 31.01.2025	7.	Analysis Completed on: 28.02.2025
8.	Reporting Date: 28.02.2025	9.	Discipline: Chemical
10.	Sample Collected By: Mr. Ratan Rai	11.	Group: Pollution and Environment
12.	Physical Status: Solid	13.	Product: Soil
14.	Color: Brown	15.	Sample Received Date: 31.01.2025
16.	Description of Sample:	Packed and sealed in polythene bags.	

PARAMETERS DETAILS

S. No.	Parameters	Unit SI		Results	Specification/ SPCB Norms/ BIS Standards	Method Used
1.	Permeability	mm/hr	:	19.69	N.A.	IS 2720 (Part 17):1986
2.	Particle Size		:		N.A.	
a.	Sand	%	:	53	N.A.	IS 2720 IV (Hydrometer Method)
b.	Clay	%	:	28	N.A.	IS 2720 IV (Hydrometer Method)
c.	Silt	%	:	19	N.A.	IS 2720 IV (Hydrometer Method)
3.	Texture	-	:	sandy Clay loam	N.A.	IS 2720 IV (Hydrometer Method)
4.	Exchangeable Sodium	%	:	1.43	N.A.	LAB-SOP-117
5.	SAR		:	0.26	N.A.	LAB-SOP-138
6.	Total Organic Carbon	%	:	0.43	N.A.	IS 2720 (Part 22): 1972
7.	Total Nitrogen	%	:	0.037	N.A.	IS 14684:1999
8.	Available phosphorus	kg/ha	:	15.5	N.A.	IS 2720 (Part 22): 1972
9.	Available potassium	kg/ha	:	156.8	N.A.	LAB-SOP-128

Remark :

Authorised By -

Name : Sapana Amin | **Designation: Lab Incharge**

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----------**END OF REPORT**----------

LABORATORY TEST REPORT FORMAT		
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ST06: Bamroli Bujarg Village

TC-13450

KADAM LABS PRIVATE LIMITED

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ENVIRONMENTAL MONITORING REPORT

LABORATORY TEST REPORT - SOIL

REPORT NO.: JAN25/212/06 (ULR- TC134502500011100F)

SAMPLE DETAILS

1.	Name & Address of Client: M/s. Shree khodal Waste Management, Plot No.5 & 6, GIDC Shehera Taluka & Dist. Panchmahal, Gujarat		
2.	Sample ID: 212JA25ST06	3.	Client Representative : Mr. Abhishek Joshi
4.	Sampling Date: 27.01.2025	5.	Sampling Location: Bamroli Bujarg Village
6.	Analysis commenced on: 31.01.2025	7.	Analysis Completed on: 28.02.2025
8.	Reporting Date: 28.02.2025	9.	Discipline: Chemical
10.	Sample Collected By: Mr. Ratan Rai	11.	Group: Pollution and Environment
12.	Physical Status: Solid	13.	Product: Soil
14.	Color: Brown	15.	Sample Received Date: 31.01.2025
16.	Description of Sample:	Packed and sealed in polythene bags.	

PARAMETERS DETAILS

S. No.	Parameters	Unit SI		Results	Specification/ SPCB Norms/ BIS Standards	Method Used
1.	Porosity	%	:	53	N.A.	IS 2720 (Part 7):1980
2.	Water Holding Capacity	%	:	46.95	N.A.	LAB-SOP-083
3.	Cation Exchange Capacity	meq/100gm	:	26.80	N.A.	LAB-SOP-085
4.	Electrical Conductivity	dS/m	:	0.422	N.A.	IS 14767: 2000
5.	pH		:	7.28	N.A.	IS 2720 (Part 26):1987
6.	Calcium	mg/kg	:	2104	N.A.	LAB-SOP-129
7.	Magnesium	mg/kg	:	1761	N.A.	LAB-SOP-130
8.	Sodium	g/kg	:	0.33	N.A.	LAB-SOP-117
9.	Potassium	g/kg	:	0.06	N.A.	LAB-SOP-128,

Remark :

Authorised By -

Name : Sapana Amin **Designation: Lab Incharge**

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----------**END OF REPORT**----------

LABORATORY TEST REPORT FORMAT		
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ENVIRONMENTAL MONITORING REPORT

LABORATORY TEST REPORT - SOIL

REPORT NO.: JAN25/212/08

SAMPLE DETAILS

1.	Name & Address of Client: M/s. Shree khodal Waste Management, Plot No.5 & 6, GIDC Shehera Taluka & Dist. Panchmahal, Gujarat		
2.	Sample ID: 212JA25ST06	3.	Client Representative : Mr. Abhishek Joshi
4.	Sampling Date: 27.01.2025	5.	Sampling Location: Bamroli Bujarg Village
6.	Analysis commenced on: 31.01.2025	7.	Analysis Completed on: 28.02.2025
8.	Reporting Date: 28.02.2025	9.	Discipline: Chemical
10.	Sample Collected By: Mr. Ratan Rai	11.	Group: Pollution and Environment
12.	Physical Status: Solid	13.	Product: Soil
14.	Color: Brown	15.	Sample Received Date: 31.01.2025
16.	Description of Sample:	Packed and sealed in polythene bags.	

PARAMETERS DETAILS

S. No.	Parameters	Unit SI		Results	Specification/ SPCB Norms/ BIS Standards	Method Used
1.	Permeability	mm/hr	:	18.79	N.A.	IS 2720 (Part 17):1986
2.	Particle Size		:		N.A.	
a.	Sand	%	:	47	N.A.	IS 2720 IV (Hydrometer Method)
b.	Clay	%	:	27	N.A.	IS 2720 IV (Hydrometer Method)
c.	Silt	%	:	26	N.A.	IS 2720 IV (Hydrometer Method)
3.	Texture	-	:	sandy Clay loam	N.A.	IS 2720 IV (Hydrometer Method)
4.	Exchangeable Sodium	%	:	1.43	N.A.	LAB-SOP-117
5.	SAR		:	0.20	N.A.	LAB-SOP-138
6.	Total Organic Carbon	%	:	0.47	N.A.	IS 2720 (Part 22): 1972
7.	Total Nitrogen	%	:	0.041	N.A.	IS 14684:1999
8.	Available phosphorus	kg/ha	:	23.5	N.A.	IS 2720 (Part 22): 1972
9.	Available potassium	kg/ha	:	134.4	N.A.	LAB-SOP-128

Remark :

Authorised By -

Name : Sapana Amin — **Designation: Lab Incharge**

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----------END OF REPORT----------

LABORATORY TEST REPORT FORMAT		
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ST07: Akediya Village

TC-13450

KADAM LABS PRIVATE LIMITED

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ENVIRONMENTAL MONITORING REPORT

LABORATORY TEST REPORT - SOIL

REPORT NO.: JAN25/212/07 (ULR- TC134502500011101F)

SAMPLE DETAILS

1.	Name & Address of Client: M/s. Shree khodal Waste Management, Plot No.5 & 6, GIDC Shehera Taluka & Dist. Panchmahal, Gujarat		
2.	Sample ID: 212JA25ST07	3.	Client Representative : Mr. Abhishek Joshi
4.	Sampling Date: 27.01.2025	5.	Sampling Location: Akediya Village
6.	Analysis commenced on: 31.01.2025	7.	Analysis Completed on: 28.02.2025
8.	Reporting Date: 28.02.2025	9.	Discipline: Chemical
10.	Sample Collected By: Mr. Ratan Rai	11.	Group: Pollution and Environment
12.	Physical Status: Solid	13.	Product: Soil
14.	Color: Brown	15.	Sample Received Date: 31.01.2025
16.	Description of Sample:	Packed and sealed in polythene bags.	

PARAMETERS DETAILS

S. No.	Parameters	Unit SI		Results	Specification/ SPCB Norms/ BIS Standards	Method Used
1.	Porosity	%	:	57	N.A.	IS 2720 (Part 7):1980
2.	Water Holding Capacity	%	:	52.28	N.A.	LAB-SOP-083
3.	Cation Exchange Capacity	meq/100gm	:	28.76	N.A.	LAB-SOP-085
4.	Electrical Conductivity	dS/m	:	0.522	N.A.	IS 14767: 2000
5.	pH		:	6.96	N.A.	IS 2720 (Part 26):1987
6.	Calcium	mg/kg	:	2104	N.A.	LAB-SOP-129
7.	Magnesium	mg/kg	:	2004	N.A.	LAB-SOP-130
8.	Sodium	g/kg	:	0.31	N.A.	LAB-SOP-117
9.	Potassium	g/kg	:	0.06	N.A.	LAB-SOP-128,

Remark :

Authorised By -

Name : Sapana Amin **Designation: Lab Incharge**

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----------**END OF REPORT**----------

LABORATORY TEST REPORT FORMAT		
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ENVIRONMENTAL MONITORING REPORT

LABORATORY TEST REPORT - SOIL

REPORT NO.: JAN25/212/09

SAMPLE DETAILS

1.	Name & Address of Client: M/s. Shree khodal Waste Management, Plot No.5 & 6, GIDC Shehera Taluka & Dist. Panchmahal, Gujarat		
2.	Sample ID: 212JA25ST07	3.	Client Representative : Mr. Abhishek Joshi
4.	Sampling Date: 27.01.2025	5.	Sampling Location: Akediya Village
6.	Analysis commenced on: 31.01.2025	7.	Analysis Completed on: 28.02.2025
8.	Reporting Date: 28.02.2025	9.	Discipline: Chemical
10.	Sample Collected By: Mr. Ratan Rai	11.	Group: Pollution and Environment
12.	Physical Status: Solid	13.	Product: Soil
14.	Color: Brown	15.	Sample Received Date: 31.01.2025
16.	Description of Sample:	Packed and sealed in polythene bags.	

PARAMETERS DETAILS

S. No.	Parameters	Unit SI		Results	Specification/ SPCB Norms/ BIS Standards	Method Used
1.	Permeability	mm/hr	:	16.74	N.A.	IS 2720 (Part 17):1986
2.	Particle Size		:		N.A.	
a.	Sand	%	:	57	N.A.	IS 2720 IV (Hydrometer Method)
b.	Clay	%	:	33	N.A.	IS 2720 IV (Hydrometer Method)
c.	Silt	%	:	10	N.A.	IS 2720 IV (Hydrometer Method)
3.	Texture	-	:	sandy Clay loam	N.A.	IS 2720 IV (Hydrometer Method)
4.	Exchangeable Sodium	%	:	1.35	N.A.	LAB-SOP-117
5.	SAR		:	0.23	N.A.	LAB-SOP-138
6.	Total Organic Carbon	%	:	0.49	N.A.	IS 2720 (Part 22): 1972
7.	Total Nitrogen	%	:	0.042	N.A.	IS 14684:1999
8.	Available phosphorus	kg/ha	:	24.5	N.A.	IS 2720 (Part 22): 1972
9.	Available potassium	kg/ha	:	134.4	N.A.	LAB-SOP-128

Remark :

Authorised By

Name : Sapana Amin — **Designation: Lab Incharge**

NOTE :
1) Reports may be reproduced, if required, but only in full and only with written approval of the laboratory.
2) Re analysis of sample will be done, if requested within 7 days from the date of Reporting of sample if the samples are not consumed during analysis.
3) The results reported above relate to the sample identified under Sample Details.

----------**END OF REPORT**----------

LABORATORY TEST REPORT FORMAT		
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ST08: Nr. Smt. SJ Dave high School, Shehera Town

TC-13450

KADAM LABS PRIVATE LIMITED

871/B/3, Near Himalaya Machinery, GIDC Makarpura, Vadodara-10.
Phone : (O) 0265 - 6131000, 6131001

ENVIRONMENTAL MONITORING REPORT

LABORATORY TEST REPORT - SOIL

REPORT NO.: JAN25/212/07 (ULR- TC134502500011102F)

SAMPLE DETAILS

1.	Name & Address of Client: M/s. Shree khodal Waste Management, Plot No.5 & 6, GIDC Shehera Taluka & Dist. Panchmahal, Gujarat		
2.	Sample ID: 212JA25ST08	3.	Client Representative : Mr. Abhishek Joshi
4.	Sampling Date: 27.01.2025	5.	Sampling Location: Nr Smt SJ Dave High School, Shehera Town
6.	Analysis commenced on: 31.01.2025	7.	Analysis Completed on: 28.02.2025
8.	Reporting Date: 28.02.2025	9.	Discipline: Chemical
10.	Sample Collected By: Mr. Ratan Rai	11.	Group: Pollution and Environment
12.	Physical Status: Solid	13.	Product: Soil
14.	Color: Brown	15.	Sample Received Date: 31.01.2025
16.	Description of Sample: Packed and sealed in polythene bags.		

PARAMETERS DETAILS

S. No.	Parameters	Unit SI		Results	Specification/ SPCB Norms/ BIS Standards	Method Used
1.	Porosity	%	:	56	N.A.	IS 2720 (Part 7):1980
2.	Water Holding Capacity	%	:	50.80	N.A.	LAB-SOP-083
3.	Cation Exchange Capacity	meq/100gm	:	27.30	N.A.	LAB-SOP-085
4.	Electrical Conductivity	dS/m	:	0.618	N.A.	IS 14767: 2000
5.	pH		:	7.43	N.A.	IS 2720 (Part 26):1987
6.	Calcium	mg/kg	:	2004	N.A.	LAB-SOP-129
7.	Magnesium	mg/kg	:	188	N.A.	LAB SOP 130
8.	Sodium	g/kg	:	0.34	N.A.	LAB-SOP-117
9.	Potassium	g/kg	:	0.05	N.A.	LAB-SOP-128,

Remark :

Authorised By -

Name : Sapana Amin — **Designation: Lab Incharge**

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----------END OF REPORT----------

LABORATORY TEST REPORT FORMAT		
DOC. NO.: LAB-FMT-055	Issue No.: 01	Revision No.: 00
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ENVIRONMENTAL MONITORING REPORT

LABORATORY TEST REPORT - SOIL

REPORT NO.: JAN25/212/10

SAMPLE DETAILS

1.	Name & Address of Client: M/s. Shree khodal Waste Management, Plot No.5 & 6, GIDC Shehera Taluka & Dist. Panchmahal, Gujarat		
2.	Sample ID: 212JA25ST08	3.	Client Representative : Mr. Abhishek Joshi
4.	Sampling Date: 27.01.2025	5.	Sampling Location: Nr Smt SJ Dave High School, Shehera Town
6.	Analysis commenced on: 31.01.2025	7.	Analysis Completed on: 28.02.2025
8.	Reporting Date: 28.02.2025	9.	Discipline: Chemical
10.	Sample Collected By: Mr. Ratan Rai	11.	Group: Pollution and Environment
12.	Physical Status: Solid	13.	Product: Soil
14.	Color: Brown	15.	Sample Received Date: 31.01.2025
16.	Description of Sample:	Packed and sealed in polythene bags.	

PARAMETERS DETAILS

S. No.	Parameters	Unit SI		Results	Specification/ SPCB Norms/ BIS Standards	Method Used
1.	Permeability	mm/hr	:	17.53	N.A.	IS 2720 (Part 17):1986
2.	Particle Size		:		N.A.	
a.	Sand	%	:	60	N.A.	IS 2720 IV (Hydrometer Method)
b.	Clay	%	:	30	N.A.	IS 2720 IV (Hydrometer Method)
c.	Silt	%	:	10	N.A.	IS 2720 IV (Hydrometer Method)
3.	Texture	-	:	sandy Clay loam	N.A.	IS 2720 IV (Hydrometer Method)
4.	Exchangeable Sodium	%	:	1.47	N.A.	LAB-SOP-117
5.	SAR		:	0.26	N.A.	LAB-SOP-138
6.	Total Organic Carbon	%	:	0.45	N.A.	IS 2720 (Part 22): 1972
7.	Total Nitrogen	%	:	0.038	N.A.	IS 14684:1999
8.	Available phosphorus	kg/ha	:	18.5	N.A.	IS 2720 (Part 22): 1972
9.	Available potassium	kg/ha	:	112.0	N.A.	LAB-SOP-128

Remark :

Authorised By -

Name : Sapana Amin — **Designation: Lab Incharge**

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----------END OF REPORT----------

LABORATORY TEST REPORT FORMAT		
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ST09: Sadisamdi Village

TC-13459

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ENVIRONMENTAL MONITORING REPORT

LABORATORY TEST REPORT - SOIL

REPORT NO.: JAN25/212/07 (ULR- TC134502500011103F)

SAMPLE DETAILS

1.	Name & Address of Client: M/s. Shree khodal Waste Management, Plot No.5 & 6, GIDC Shehera Taluka & Dist. Panchmahal, Gujarat		
2.	Sample ID: 212JA25ST09	3.	Client Representative : Mr. Abhishek Joshi
4.	Sampling Date: 27.01.2025	5.	Sampling Location: Sadisamdi Village
6.	Analysis commenced on: 31.01.2025	7.	Analysis Completed on: 28.02.2025
8.	Reporting Date: 28.02.2025	9.	Discipline: Chemical
10.	Sample Collected By: Mr. Ratan Rai	11.	Group: Pollution and Environment
12.	Physical Status: Solid	13.	Product: Soil
14.	Color: Brown	15.	Sample Received Date: 31.01.2025
16.	Description of Sample:	Packed and sealed in polythene bags.	

PARAMETERS DETAILS

S. No.	Parameters	Unit SI		Results	Specification/ SPCB Norms/ BIS Standards	Method Used
1.	Porosity	%	:	48	N.A.	IS 2720 (Part 7):1980
2.	Water Holding Capacity	%	:	40.25	N.A.	LAB-SOP-083
3.	Cation Exchange Capacity	meq/100gm	:	19.74	N.A.	LAB-SOP-085
4.	Electrical Conductivity	dS/m	:	1.567	N.A.	IS 14767: 2000
5.	pH		:	9.23	N.A.	IS 2720 (Part 26):1987
6.	Calcium	mg/kg	:	1603	N.A.	LAB-SOP-129
7.	Magnesium	mg/kg	:	1275	N.A.	LAB-SOP-130
8.	Sodium	g/kg	:	0.24	N.A.	LAB-SOP-117
9.	Potassium	g/kg	:	0.02	N.A.	LAB-SOP-128,

Remark :

Authorised By -

Name : Sapana Amin — **Designation: Lab Incharge**

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----------END OF REPORT----------

LABORATORY TEST REPORT FORMAT		
DOC. NO.: LAB-FMT-055	Issue No.: 01	Revision No.: 00
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ENVIRONMENTAL MONITORING REPORT

LABORATORY TEST REPORT - SOIL

REPORT NO.: JAN25/212/11

SAMPLE DETAILS

1.	Name & Address of Client: M/s. Shree khodal Waste Management, Plot No.5 & 6, GIDC Shehera Taluka & Dist. Panchmahal, Gujarat		
2.	Sample ID: 212JA25ST09	3.	Client Representative : Mr. Abhishek Joshi
4.	Sampling Date: 27.01.2025	5.	Sampling Location: Sadisamdi Village
6.	Analysis commenced on: 31.01.2025	7.	Analysis Completed on: 28.02.2025
8.	Reporting Date: 28.02.2025	9.	Discipline: Chemical
10.	Sample Collected By: Mr. Ratan Rai	11.	Group: Pollution and Environment
12.	Physical Status: Solid	13.	Product: Soil
14.	Color: Brown	15.	Sample Received Date: 31.01.2025
16.	Description of Sample:	Packed and sealed in polythene bags.	

PARAMETERS DETAILS

S. No.	Parameters	Unit SI		Results	Specification/ SPCB Norms/ BIS Standards	Method Used
1.	Permeability	mm/hr	:	25.16	N.A.	IS 2720 (Part 17):1986
2.	Particle Size		:		N.A.	
a.	Sand	%	:	70	N.A.	IS 2720 IV (Hydrometer Method)
b.	Clay	%	:	17	N.A.	IS 2720 IV (Hydrometer Method)
c.	Silt	%	:	13	N.A.	IS 2720 IV (Hydrometer Method)
3.	Texture	-	:	sandy loam	N.A.	IS 2720 IV (Hydrometer Method)
4.	Exchangeable Sodium	%	:	1.04	N.A.	LAB-SOP-117
5.	SAR		:	0.21	N.A.	LAB-SOP-138
6.	Total Organic Carbon	%	:	0.36	N.A.	IS 2720 (Part 22): 1972
7.	Total Nitrogen	%	:	0.031	N.A.	IS 14684:1999
8.	Available phosphorus	kg/ha	:	17.6	N.A.	IS 2720 (Part 22): 1972
9.	Available potassium	kg/ha	:	44.8	N.A.	LAB-SOP-128

Remark :

Authorised By :

Name : Sapana Amin | **Designation: Lab Incharge**

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----------END OF REPORT----------

LABORATORY TEST REPORT FORMAT		
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Ground Water Analysis Report

GW01: Salampur Village

TC-13450

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ENVIRONMENTAL MONITORING REPORT

LABORATORY TEST REPORT – WATER

REPORT NO.: JAN25/212/01 (ULR- TC134502500011076F)

SAMPLE DETAILS

1.	Name & Address of Client: M/s. Shree khodal Waste Management, Plot No.5 & 6, GIDC Shehera Taluka & Dist. Panchmahal, Gujarat		
2.	Sample ID: 212JA25GW01	3.	Client Representative : Mr. Abhishek Joshi
4.	Sample Date: 27.01.2025	5.	Sample Collected By: Mr. Ratan Rai
6.	Analysis commenced on: 31.01.2025	7.	Analysis Completed on: 28.02.2025
8.	Reporting Date: 28.02.2025	9.	Discipline : Chemical
10.	Packing Condition & Quantity: Sealed √	11.	Group : Water
12.	Sampling Location: Salampur Village	13.	Product: Ground Water
14.	Sampling Method: APHA 24th Edition 1060:B&C	15.	Sample Received Date : 31.01.2025

TEST RESULTS

S. No.	Parameters	Unit (SI)		Results	IS 10500: 2012 Standard Limits for Drinking Water		Method Used
					Acceptable Limits	Permissible Limits	
1.	pH		:	7.36	6.5-8.5	NR	APHA 24th Edition 4500-H+ B
2.	Temperature	℃	:	25.2	NS	NS	APHA 24th Edition 2550- B
3.	Turbidity	NTU	:	<0.1	1	5	APHA 24th Edition 2130- B
4.	Total Dissolved Solids	mg/L	:	736	500	2000	APHA 24th Edition 2540 C
5.	Conductivity	µmhos/cm	:	1223	NS	NS	APHA 24th Edition 2510 B
6.	COD	mg/L	:	<5	NS	NS	APHA 24th Edition 5220 B
7.	BOD	mg/L	:	<2	NS	NS	IS 3025 (Part 44) : 1993
8.	Ammonical Nitrogen	mg/L	:	<0.05	NS	NS	IS 3025 (PP 34): 1988
9.	Phenolic Compound	mg/L	:	<0.02	0.001	0.002	APHA 24th Edition 5530 D
10.	Chlorides	mg/L	:	133	250	1000	APHA 24th Edition 4500 Cl- B
11.	Sulphates	mg/L	:	89	200	400	APHA 24th Edition 4500 SO4 E
12.	SAR		:	0.38	NS	NS	LAB-SOP-138
13.	Total Hardness	mg/L	:	470	200	600	APHA 24th Edition 2340 C
14.	Calcium Hardness	mg/L	:	210	NS	NS	APHA 24th Edition 3500 - Ca B
15.	Magnesium Hardness	mg/L	:	260	NS	NS	APHA 24th Edition 3500 - Mg B
16.	Alkalinity	mg/L	:	110	200	600	APHA 24th Edition 2320 B
17.	Nitrate	mg/L	:	8.45	45	NR	IS 3025 (Part 34) (ii): 1988
18.	Fluoride	mg/L	:	1.47	1	1.5	APHA 24th Edition 4500 F—D
19.	Sodium	mg/L	:	53.1	NS	NS	APHA 24th Edition 3500 - Na B
20.	Potassium	mg/L	:	2	NS	NS	APHA 24th Edition 3500 - K B
21.	Calcium	mg/L	:	84	75	200	APHA 24th Edition 3500 - Ca B
22.	Magnesium	mg/L	:	63	30	100	APHA 24th Edition 3500 - Mg B
23.	Total Phosphorous	mg/L	:	1.95	NS	NS	APHA 24th Edition 4500 P – C
24.	DO	mg/L	:	2.4	NS	NS	APHA 24th Edition 4500 - O C
25.	**Heavy Metals**						
a.	Arsenic	mg/L	:	<0.01	0.01	0.05	APHA 24th Edition 3500 As - B
b.	Cadmium	mg/L	:	<0.01	0.003	NR	APHA 24th Edition 3111 B
c.	Chromium	mg/L	:	<0.02	0.05	NR	APHA 24th Edition 3500 Cr - B
d.	Copper	mg/L	:	<0.03	0.05	1.5	APHA 24th Edition 3111 B
e.	Iron	mg/L	:	<0.05	0.3	NR	APHA 24th Edition 3111 B
f.	Lead	mg/L	:	<0.01	0.01	NR	APHA 24th Edition 3111 B
g.	Mercury	mg/L	:	<0.001	0.001	NR	APHA 24th Edition 3112-B
h.	Manganese	mg/L	:	<0.02	0.1	0.3	APHA 24th Edition 3111 B
i.	Nickel	mg/L	:	<0.02	0.02	NR	APHA 24th Edition 3111 B
j.	Zinc	mg/L	:	<0.03	5	15	APHA 24th Edition 3111 B

Remark :
Authorized By :-
Name : Sapana Amin — **Designation: Lab Incharge**

NOTE : 1) Reports may be reproduced, if required, but only in full and only with written approval of the laboratory.
2) Re analysis of sample will be done, if requested within 15 days from the date of Reporting of sample if the samples are not consumed during analysis.
3) The results reported above relate to the sample identified under Sample Details.

----------**END OF REPORT**----------

TEST REPORT FORMAT - WATER		
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KADAM LABS PRIVATE LIMITED

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ENVIRONMENTAL MONITORING REPORT

LABORATORY TEST REPORT – WATER

REPORT NO.: JAN25/212/09

SAMPLE DETAILS

1.	Name & Address of Client: M/s. Shree khodal Waste Management, Plot No.5 & 6, GIDC Shehera Taluka & Dist. Panchmahal, Gujarat		
2.	Sample ID: 212JA25GW01	3.	Client Representative : Mr. Abhishek Joshi
4.	Sample Date: 27.01.2025	5.	Sample Collected By: Mr. Ratan Rai
6.	Analysis commenced on: 31.01.2025	7.	Analysis Completed on: 28.02.2025
8.	Reporting Date: 28.02.2025	9.	Discipline : Chemical
10.	Packing Condition & Quantity: Sealed √	11.	Group : Water
12.	Sampling Location: Salampur Village	13.	Product: Ground Water
14.	Sampling Method: APHA 24th Edition 1060:B&C	15.	Sample Received Date : 31.01.2025

TEST RESULTS

S. No.	Parameters	Unit (SI)		Results	IS 10500 : 2012 Standard Limits for Drinking Water		Method Used
					Acceptable Limits	Permissible Limits	
1.	Salinity	mg/L	:	239	NS	NS	APHA 24th Edition 4500 Cl- B
2.	Total Nitrogen	mg/L	:	8.45	0.5	NR	IS 3025 (PP34)
3.	**Heavy Metals**						
a.	Cyanide	mg/L	:	<0.03	0.05	NR	APHA 24th Edition 4500 CN E

Remark :

Authorised By -

Name : Sapana Amin | **Designation: Lab Incharge**

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3) The results reported above relate to the sample identified under Sample Details.

----------**END OF REPORT**----------

TEST REPORT FORMAT - WATER		
DOC. NO.: LAB-FMT-055	Issue No.: 01	Revision No.: 00
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Phone : (O) 0265 - 6131000, 6131001

ENVIRONMENTAL MONITORING REPORT

LABORATORY TEST REPORT - MICROBIOLOGY

REPORT NO.:JAN25/212/17(ULR- TC134502500011104F)

SAMPLE DETAILS

1.	Name & Address of Client: M/s. Shree khodal Waste Management,Plot No.5 & 6, GIDC Shehera Taluka & Dist.Panchmahal, Gujarat		
2.	Sample ID: 212JA25GW01	3.	Client Representative : Mr. Abhishek Joshi
4.	Sample Date: 27.01.2025	5.	Sample Collected By: Mr. Ratan Rai
6.	Analysis commenced on: 31.01.2025	7.	Analysis Completed on: 28.02.2025
8.	Reporting Date: 28.02.2025	9.	Discipline : Chemical
10.	Packing Condition & Quantity: Sealed √	11.	Group : Water
12.	Sampling Location: Salampur Village	13.	Product: Ground Water
14.	Sampling Method: IS:3025 (Part 1)-1987	15.	Sample Received Date : 31.01.2025

TEST RESULTS

S. No.	Parameters	Results	Unit (SI)	Specification/ SPCB Norms/ BIS Standards	Method Used
1.	Total Coliform Bacteria	N.D.(<1.8)	MPN/100ml	N.A.	APHA 24th Edition 9221 B&C
2.	Fecal Coliform Bacteria	N.D.(<1.8)	MPN/ 100ml	N.A.	APHA 24th Edition9221 C& E

Remarks: N.D. – Not Detected.

Authorized by: J.V.chauhan

Name: Jyoti Chauhan **Designation: Sr.Microbiologist**

NOTE: 1) Reports may be reproduced, if required, but only in full and only with written approval of the laboratory.
2) Re-sampling may be done,ifrequired,with written approval of the laboratory.
3) The results reported above relate to the sample identified under Sample Details.

----------**END OF REPORT**----------

LABORATORY TEST REPORT FORMAT		
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GW02: GIDC Shehera

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ENVIRONMENTAL MONITORING REPORT

LABORATORY TEST REPORT – WATER

REPORT NO.: JAN25/212/02 (ULR- TC134502500011077F)

SAMPLE DETAILS

1.	Name & Address of Client: M/s. Shree khodal Waste Management, Plot No.5 & 6, GIDC Shehera Taluka & Dist. Panchmahal, Gujarat		
2.	Sample ID: 212JA25GW02	3.	Client Representative : Mr. Abhishek Joshi
4.	Sample Date: 28.01.2025	5.	Sample Collected By: Mr. Ratan Rai
6.	Analysis commenced on: 31.01.2025	7.	Analysis Completed on: 28.02.2025
8.	Reporting Date: 28.02.2025	9.	Discipline : Chemical
10.	Packing Condition & Quantity: Sealed √	11.	Group : Water
12.	Sampling Location: GIDC Shehera	13.	Product: Ground Water
14.	Sampling Method: APHA 24th Edition 1060:B&C	15.	Sample Received Date : 31.01.2025

TEST RESULTS

S. No.	Parameters	Unit (SI)	Results	IS 10500: 2012 Standard Limits for Drinking Water		Method Used
				Acceptable Limits	Permissible Limits	
1.	pH		7.49	6.5-8.5	NR	APHA 24th Edition 4500-H+ B
2.	Temperature	°C	25.4	NS	NS	APHA 24th Edition 2550- B
3.	Turbidity	NTU	<0.1	1	5	APHA 24th Edition 2130- B
4.	Total Dissolved Solids	mg/L	429	500	2000	APHA 24th Edition 2540 C
5.	Conductivity	µmhos/cm	756	NS	NS	APHA 24th Edition 2510 B
6.	COD	mg/L	<5	NS	NS	APHA 24th Edition 5220 B
7.	BOD	mg/L	<2	NS	NS	IS 3025 (Part 44) : 1993
8.	Ammonical Nitrogen	mg/L	<0.05	NS	NS	IS 3025 (PP 34): 1988
9.	Phenolic Compound	mg/L	<0.02	0.001	0.002	APHA 24th Edition 5530 D
10.	Chlorides	mg/L	71	250	1000	APHA 24th Edition 4500 Cl- B
11.	Sulphates	mg/L	29	200	400	APHA 24th Edition 4500 SO_4^{2-} E
12.	SAR	-	0.25	NS	NS	LAB-SOP-138
13.	Total Hardness	mg/L	290	200	600	APHA 24th Edition 2340 C
14.	Calcium Hardness	mg/L	104	NS	NS	APHA 24th Edition 3500 - Ca B
15.	Magnesium Hardness	mg/L	186	NS	NS	APHA 24th Edition 3500 - Mg B
16.	Alkalinity	mg/L	140	200	600	APHA 24th Edition 2320 B
17.	Nitrate	mg/L	10.83	45	NR	IS 3025 (Part 34) (ii): 1988
18.	Fluoride	mg/L	1.86	1	1.5	APHA 24th Edition 4500 F—D
19.	Sodium	mg/L	27.9	NS	NS	APHA 24th Edition 3500 - Na B
20.	Potassium	mg/L	1.1	NS	NS	APHA 24th Edition 3500 - K B
21.	Calcium	mg/L	42	75	200	APHA 24th Edition 3500 - Ca B
22.	Magnesium	mg/L	45	30	100	APHA 24th Edition 3500 - Mg B
23.	Total Phosphorous	mg/L	<0.02	NS	NS	APHA 24th Edition 4500 P – C
24.	DO	mg/L	2.2	NS	NS	APHA 24th Edition 4500 - O C
25.	**Heavy Metals**					
a.	Arsenic	mg/L	<0.01	0.01	0.05	APHA 24th Edition 3500 As - B
b.	Cadmium	mg/L	<0.01	0.003	NR	APHA 24th Edition 3111 B
c.	Chromium	mg/L	<0.02	0.05	NR	APHA 24th Edition 3500 Cr - B
d.	Copper	mg/L	<0.03	0.05	1.5	APHA 24th Edition 3111 B
e.	Iron	mg/L	<0.03	0.3	NR	APHA 24th Edition 3111 B
f.	Lead	mg/L	<0.05	0.01	NR	APHA 24th Edition 3111 B
g.	Mercury	mg/L	<0.01	0.001	NR	APHA 24th Edition 3112-B
h.	Manganese	mg/L	<0.001	0.1	0.3	APHA 24th Edition 3111 B
i.	Nickel	mg/L	<0.02	0.02	NR	APHA 24th Edition 3111 B
j.	Zinc	mg/L	<0.02	5	15	APHA 24th Edition 3111 B

Remark :
Authorised By -
Name : Sapana Amin — **Designation: Lab Incharge**

NOTE :
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----------**END OF REPORT**----------

TEST REPORT FORMAT - WATER		
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KADAM LABS PRIVATE LIMITED

871/B/3, Near Himalaya Machinery, GIDC Makarpura, Vadodara-10.
Phone : (O) 0265 - 6131000, 6131001
ENVIRONMENTAL MONITORING REPORT

LABORATORY TEST REPORT – WATER

REPORT NO.: JAN25/212/10

SAMPLE DETAILS

1.	Name & Address of Client: M/s. Shree khodal Waste Management, Plot No.5 & 6, GIDC Shehera, Taluka & Dist. Panchmahal, Gujarat		
2.	Sample ID: 212JA25GW02	3.	Client Representative : Mr. Abhishek Joshi
4.	Sample Date: 28.01.2025	5.	Sample Collected By: Mr. Ratan Rai
6.	Analysis commenced on: 31.01.2025	7.	Analysis Completed on: 28.02.2025
8.	Reporting Date: 28.02.2025	9.	Discipline : Chemical
10.	Packing Condition & Quantity: Sealed √	11.	Group : Water
12.	Sampling Location: GIDC Shehera	13.	Product: Ground Water
14.	Sampling Method: APHA 24th Edition 1060:B&C	15.	Sample Received Date : 31.01.2025

TEST RESULTS

S. No.	Parameters	Unit (SI)		Results	IS 10500: 2012 Standard Limits for Drinking Water		Method Used
					Acceptable Limits	Permissible Limits	
1.	Salinity	mg/L	:	128	NS	NS	APHA 24th Edition 4500 Cl- B
2.	Total Nitrogen	mg/L	:	10.83	0.5	NR	IS 3025 (PP34)
3.	**Heavy Metals**						
a.	Cyanide	mg/L	:	<0.03	0.05	NR	APHA 24th Edition 4500 CN E

Remark :

Authorised By -

Name : Sapana Amin **Designation: Lab Incharge**

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----------**END OF REPORT**----------

TEST REPORT FORMAT - WATER		
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ENVIRONMENTAL MONITORING REPORT

LABORATORY TEST REPORT - MICROBIOLOGY

REPORT NO.: JAN25/212/18 (ULR- TC134502500011105F)

SAMPLE DETAILS

1.	Name & Address of Client: M/s. Shree khodal Waste Management,Plot No.5 & 6, GIDC Shehera Taluka & Dist.Panchmahal, Gujarat		
2.	Sample ID: 212JA25GW02	3.	Client Representative : Mr. Abhishek Joshi
4.	Sample Date: 28.01.2025	5.	Sample Collected By: Mr. Ratan Rai
6.	Analysis commenced on: 31.01.2025	7.	Analysis Completed on: 28.02.2025
8.	Reporting Date: 28.02.2025	9.	Discipline : Chemical
10.	Packing Condition & Quantity: Sealed √	11.	Group : Water
12.	Sampling Location: GIDC Shehera	13.	Product: Ground Water
14.	Sampling Method: IS:3025 (Part 1)-1987	15.	Sample Received Date : 31.01.2025

TEST RESULTS

S. No.	Parameters	Results	Unit (SI)	Specification/ SPCB Norms/ BIS Standards	Method Used
1.	Total Coliform Bacteria	N.D.(<1.8)	MPN/100ml	N.A.	APHA 24th Edition 9221 B&C
2.	Fecal Coliform Bacteria	N.D.(<1.8)	MPN/ 100ml	N.A.	APHA 24th Edition9221 C& E

Remarks: N.D. – Not Detected.

Authorized by: J.V. Chauhan

Name: Jyoti Chauhan | **Designation: Sr.Microbiologist**

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2) Re-sampling may be done, if required, with written approval of the laboratory.
3) The results reported above relate to the sample identified under Sample Details.

----------**END OF REPORT**----------

LABORATORY TEST REPORT FORMAT		
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GW03: Bhensal Village

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ENVIRONMENTAL MONITORING REPORT

LABORATORY TEST REPORT – WATER

REPORT NO.: JAN25/212/03 (ULR- TC134502500011078F)

SAMPLE DETAILS

1.	Name & Address of Client: M/s. Shree khodal Waste Management, Plot No.5 & 6, GIDC Shehera Taluka & Dist. Panchmahal, Gujarat		
2.	Sample ID: 212JA25GW03	3.	Client Representative : Mr. Abhishek Joshi
4.	Sample Date: 28.01.2025	5.	Sample Collected By: Mr. Ratan Rai
6.	Analysis commenced on: 31.01.2025	7.	Analysis Completed on: 28.02.2025
8.	Reporting Date: 28.02.2025	9.	Discipline : Chemical
10.	Packing Condition & Quantity: Sealed √	11.	Group : Water
12.	Sampling Location: Bhensal Village	13.	Product: Ground Water
14.	Sampling Method: APHA 24th Edition 1060:B&C	15.	Sample Received Date : 31.01.2025

TEST RESULTS

S. No.	Parameters	Unit (SI)	Results	IS 10500: 2012 Standard Limits for Drinking Water		Method Used
				Acceptable Limits	Permissible Limits	
1.	pH		7.19	6.5-8.5	NR	APHA 24th Edition 4500-H+ B
2.	Temperature	℃	25.7	NS	NS	APHA 24th Edition 2550- B
3.	Turbidity	NTU	<0.1	1	5	APHA 24th Edition 2130- B
4.	Total Dissolved Solids	mg/L	644	500	2000	APHA 24th Edition 2540 C
5.	Conductivity	µmhos/cm	1089	NS	NS	APHA 24th Edition 2510 B
6.	COD	mg/L	<5	NS	NS	APHA 24th Edition 5220 B
7.	BOD	mg/L	<2	NS	NS	IS 3025 (Part 44) : 1993
8.	Ammonical Nitrogen	mg/L	<0.05	NS	NS	IS 3025 (PP 34): 1988
9.	Phenolic Compound	mg/L	<0.02	0.001	0.002	APHA 24th Edition 5530 D
10.	Chlorides	mg/L	105	250	1000	APHA 24th Edition 4500 Cl- B
11.	Sulphates	mg/L	49	200	400	APHA 24th Edition 4500 SO_4^{-2} E
12.	SAR		0.33	NS	NS	LAB-SOP-138
13.	Total Hardness	mg/L	380	200	600	APHA 24th Edition 2340 C
14.	Calcium Hardness	mg/L	164	NS	NS	APHA 24th Edition 3500 - Ca B
15.	Magnesium Hardness	mg/L	216	NS	NS	APHA 24th Edition 3500 - Mg B
16.	Alkalinity	mg/L	80	200	600	APHA 24th Edition 2320 B
17.	Nitrate	mg/L	11.11	45	NR	IS 3025 (Part 34) (ii): 1988
18.	Fluoride	mg/L	1.5	1	1.5	APHA 24th Edition 4500 F—D
19.	Sodium	mg/L	41.7	NS	NS	APHA 24th Edition 3500 - Na B
20.	Potassium	mg/L	1.5	NS	NS	APHA 24th Edition 3500 - K B
21.	Calcium	mg/L	66	75	200	APHA 24th Edition 3500 - Ca B
22.	Magnesium	mg/L	52	30	100	APHA 24th Edition 3500 - Mg B
23.	Total Phosphorous	mg/L	<0.02	NS	NS	APHA 24th Edition 4500 P – C
24.	DO	mg/L	2.6	NS	NS	APHA 24th Edition 4500 - O C
25.	**Heavy Metals**					
a.	Arsenic	mg/L	<0.01	0.01	0.05	APHA 24th Edition 3500 As - B
b.	Cadmium	mg/L	<0.01	0.003	NR	APHA 24th Edition 3111 B
c.	Chromium	mg/L	<0.02	0.05	NR	APHA 24th Edition 3500 Cr - B
d.	Copper	mg/L	<0.03	0.05	1.5	APHA 24th Edition 3111 B
e.	Iron	mg/L	<0.05	0.3	NR	APHA 24th Edition 3111 B
f.	Lead	mg/L	<0.01	0.01	NR	APHA 24th Edition 3111 B
g.	Mercury	mg/L	<0.001	0.001	NR	APHA 24th Edition 3112-B
h.	Manganese	mg/L	<0.02	0.1	0.3	APHA 24th Edition 3111 B
i.	Nickel	mg/L	<0.02	0.02	NR	APHA 24th Edition 3111 B
j.	Zinc	mg/L	<0.03	5	15	APHA 24th Edition 3111 B

Remark :

Authorised By -

Name : Sapana Amin **Designation: Lab Incharge**

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----------END OF REPORT----------

TEST REPORT FORMAT - WATER		
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ENVIRONMENTAL MONITORING REPORT

LABORATORY TEST REPORT – WATER

REPORT NO.: JAN25/212/11

SAMPLE DETAILS

1.	Name & Address of Client: M/s. Shree khodal Waste Management, Plot No.5 & 6, GIDC Shehera, Taluka & Dist. Panchmahal, Gujarat		
2.	Sample ID: 212JA25GW03	3.	Client Representative : Mr. Abhishek Joshi
4.	Sample Date: 28.01.2025	5.	Sample Collected By: Mr. Ratan Rai
6.	Analysis commenced on: 31.01.2025	7.	Analysis Completed on: 28.02.2025
8.	Reporting Date: 28.02.2025	9.	Discipline : Chemical
10.	Packing Condition & Quantity: Sealed √	11.	Group : Water
12.	Sampling Location: Bhensal Village	13.	Product: Ground Water
14.	Sampling Method: APHA 24th Edition 1060:B&C	15.	Sample Received Date : 31.01.2025

TEST RESULTS

S. No.	Parameters	Unit (SI)		Results	IS 10500 : 2012 Standard Limits for Drinking Water		Method Used
					Acceptable Limits	Permissible Limits	
1.	Salinity	mg/L	:	188	NS	NS	APHA 24th Edition 4500 Cl- B
2.	Total Nitrogen	mg/L	:	11.11	0.5	NR	IS 3025 (PP34)
3.	**Heavy Metals**						
a.	Cyanide	mg/L	:	<0.03	0.05	NR	APHA 24th Edition 4500 CN E

Remark :

Authorised By -

Name : Sapana Amin | **Designation: Lab Incharge**

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----------END OF REPORT----------

TEST REPORT FORMAT - WATER		
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ENVIRONMENTAL MONITORING REPORT

LABORATORY TEST REPORT - MICROBIOLOGY

REPORT NO.: JAN25/212/19(ULR- TC134502500011106F)

SAMPLE DETAILS

1.	Name & Address of Client: M/s. Shree khodal Waste Management,Plot No.5 & 6, GIDC Shehera Taluka & Dist.Panchmahal, Gujarat		
2.	Sample ID: 212JA25GW03	3.	Client Representative : Mr. Abhishek Joshi
4.	Sample Date: 28.01.2025	5.	Sample Collected By: Mr. Ratan Rai
6.	Analysis commenced on: 31.01.2025	7.	Analysis Completed on: 28.02.2025
8.	Reporting Date: 28.02.2025	9.	Discipline : Chemical
10.	Packing Condition & Quantity: Sealed √	11.	Group : Water
12.	Sampling Location: Bhensal Village	13.	Product: Ground Water
14.	Sampling Method: IS:3025 (Part 1)-1987	15.	Sample Received Date : 31.01.2025

TEST RESULTS

S. No.	Parameters	Results	Unit (SI)	Specification/ SPCB Norms/ BIS Standards	Method Used
1.	Total Coliform Bacteria	N.D.(<1.8)	MPN/100ml	N.A.	APHA 24thEdition 9221 B&C
2.	Fecal Coliform Bacteria	N.D.(<1.8)	MPN/ 100ml	N.A.	APHA 24thEdition9221 C& E

Remarks: N.D. – Not Detected.

Authorized by: J.V.chauhan

Name: Jyoti Chauhan | **Designation: Sr.Microbiologist**

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2) Re-sampling may be done, if required, with written approval of the laboratory.
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----------**END OF REPORT**----------

LABORATORY TEST REPORT FORMAT		
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GW04: Zoz Village

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ENVIRONMENTAL MONITORING REPORT

LABORATORY TEST REPORT – WATER

REPORT NO.: JAN25/212/04 (ULR- TC134502500011079F)

SAMPLE DETAILS

1.	Name & Address of Client: M/s. Shree khodal Waste Management, Plot No.5 & 6, GIDC Shehera Taluka & Dist. Panchmahal, Gujarat		
2.	Sample ID: 206JA25GW04	3.	Client Representative : Mr. Abhishek Joshi
4.	Sample Date: 25.01.2024	5.	Sample Collected By: Mr. Ratan Rai
6.	Analysis commenced on: 31.01.2025	7.	Analysis Completed on: 28.02.2025
8.	Reporting Date: 28.02.2025	9.	Discipline : Chemical
10.	Packing Condition & Quantity: Sealed √	11.	Group : Water
12.	Sampling Location: Zoz Village	13.	Product: Ground Water
14.	Sampling Method: APHA 24th Edition 1060:B&C	15.	Sample Received Date : 24.01.2025

TEST RESULTS

S. No.	Parameters	Unit (SI)	Results	IS 10500: 2012 Standard Limits for Drinking Water		Method Used
				Acceptable Limits	Permissible Limits	
1.	pH		6.81	6.5-8.5	NR	APHA 24th Edition 4500-H+ B
2.	Temperature	°C	24.9	NS	NS	APHA 24th Edition 2550- B
3.	Turbidity	NTU	<0.1	1	5	APHA 24th Edition 2130- B
4.	Total Dissolved Solids	mg/L	386	500	2000	APHA 24th Edition 2540 C
5.	Conductivity	µmhos/cm	708	NS	NS	APHA 24th Edition 2510 B
6.	COD	mg/L	<5	NS	NS	APHA 24th Edition 5220 B
7.	BOD	mg/L	<2	NS	NS	IS 3025 (Part 44) : 1993
8.	Ammonical Nitrogen	mg/L	<0.05	NS	NS	IS 3025 (PP 34): 1988
9.	Phenolic Compound	mg/L	<0.02	0.001	0.002	APHA 24th Edition 5530 D
10.	Chlorides	mg/L	81	250	1000	APHA 24th Edition 4500 Cl- B
11.	Sulphates	mg/L	31	200	400	APHA 24th Edition 4500 SO_4^{2-} E
12.	SAR		4.18	NS	NS	LAB-SOP-138
13.	Total Hardness	mg/L	230	200	600	APHA 24th Edition 2340 C
14.	Calcium Hardness	mg/L	116	NS	NS	APHA 24th Edition 3500 - Ca B
15.	Magnesium Hardness	mg/L	114	NS	NS	APHA 24th Edition 3500 - Mg B
16.	Alkalinity	mg/L	30	200	600	APHA 24th Edition 2320 B
17.	Nitrate	mg/L	41.43	45	NR	IS 3025 (Part 34) (ii): 1988
18.	Fluoride	mg/L	1.01	1	1.5	APHA 24th Edition 4500 F—D
19.	Sodium	mg/L	33.1	NS	NS	APHA 24th Edition 3500 - Na B
20.	Potassium	mg/L	1.43	NS	NS	APHA 24th Edition 3500 - K B
21.	Calcium	mg/L	46	75	200	APHA 24th Edition 3500 - Ca B
22.	Magnesium	mg/L	28	30	100	APHA 24th Edition 3500 - Mg B
23.	Total Phosphorous	mg/L	<0.02	NS	NS	APHA 24th Edition 4500 P – C
24.	DO	mg/L	2.7	NS	NS	APHA 24th Edition 4500 - O C
25.	**Heavy Metals**					
a.	Arsenic	mg/L	<0.01	0.01	0.05	APHA 24th Edition 3500 As - B
b.	Cadmium	mg/L	<0.01	0.003	NR	APHA 24th Edition 3111 B
c.	Chromium	mg/L	<0.02	0.05	NR	APHA 24th Edition 3500 Cr - B
d.	Copper	mg/L	<0.03	0.05	1.5	APHA 24th Edition 3111 B
e.	Iron	mg/L	<0.05	0.3	NR	APHA 24th Edition 3111 B
f.	Lead	mg/L	<0.01	0.01	NR	APHA 24th Edition 3111 B
g.	Mercury	mg/L	<0.001	0.001	NR	APHA 24th Edition 3112-B
h.	Manganese	mg/L	<0.02	0.1	0.3	APHA 24th Edition 3111 B
i.	Nickel	mg/L	<0.02	0.02	NR	APHA 24th Edition 3111 B
j.	Zinc	mg/L	<0.03	5	15	APHA 24th Edition 3111 B

Remark :
Authorised By -
Name : Sapana Amin **Designation: Lab Incharge**

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----------**END OF REPORT**----------

TEST REPORT FORMAT - WATER		
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ENVIRONMENTAL MONITORING REPORT

LABORATORY TEST REPORT – WATER

REPORT NO.: JAN25/212/12

SAMPLE DETAILS

1.	Name & Address of Client: M/s. Shree khodal Waste Management, Plot No.5 & 6, GIDC Shehera, Taluka & Dist. Panchmahal, Gujarat		
2.	Sample ID: 206JA25GW04	3.	Client Representative : Mr. Abhishek Joshi
4.	Sample Date: 25.01.2024	5.	Sample Collected By: Mr. Ratan Rai
6.	Analysis commenced on: 31.01.2025	7.	Analysis Completed on: 28.02.2025
8.	Reporting Date: 28.02.2025	9.	Discipline : Chemical
10.	Packing Condition & Quantity: Sealed √	11.	Group : Water
12.	Sampling Location: Zoz Village	13.	Product: Ground Water
14.	Sampling Method: APHA 24th Edition 1060:B&C	15.	Sample Received Date : 24.01.2025

TEST RESULTS

S. No.	Parameters	Unit (SI)		Results	IS 10500: 2012 Standard Limits for Drinking Water		Method Used
					Acceptable Limits	Permissible Limits	
1.	Salinity	mg/L	:	145	NS	NS	APHA 24th Edition 4500 Cl- B
2.	Total Nitrogen	mg/L	:	41.43	0.5	NR	IS 3025 (PP34)
3.	**Heavy Metals**						
a.	Cyanide	mg/L	:	<0.03	0.05	NR	APHA 24th Edition 4500 CN E

Remark :

Authorised By -

Name : Sapana Amin | **Designation: Lab Incharge**

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----------END OF REPORT----------

TEST REPORT FORMAT - WATER		
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ENVIRONMENTAL MONITORING REPORT

LABORATORY TEST REPORT - MICROBIOLOGY

REPORT NO.: JAN25/212/20(ULR- TC134502500011107F)

SAMPLE DETAILS

1.	Name & Address of Client: M/s. Shree khodal Waste Management,Plot No.5 & 6, GIDC Shehera Taluka & Dist.Panchmahal, Gujarat		
2.	Sample ID: 212JA25GW04	3.	Client Representative : Mr. Abhishek Joshi
4.	Sample Date: 25.01.2024	5.	Sample Collected By: Mr. Ratan Rai
6.	Analysis commenced on: 31.01.2025	7.	Analysis Completed on: 28.02.2025
8.	Reporting Date: 28.02.2025	9.	Discipline : Chemical
10.	Packing Condition & Quantity: Sealed √	11.	Group : Water
12.	Sampling Location: Zoz Village	13.	Product: Ground Water
14.	Sampling Method: IS:3025 (Part 1)-1987	15.	Sample Received Date : 24.01.2025

TEST RESULTS

S. No.	Parameters	Results	Unit (SI)	Specification/ SPCB Norms/ BIS Standards	Method Used
1.	Total Coliform Bacteria	N.D.(<1.8)	MPN/100ml	N.A.	APHA 24th Edition 9221 B&C
2.	Fecal Coliform Bacteria	N.D.(<1.8)	MPN/ 100ml	N.A.	APHA 24th Edition9221 C& E

Remarks: N.D. – Not Detected.

Authorized by: J.V.Chauhan

Name: Jyoti Chauhan | **Designation: Sr.Microbiologist**

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3) The results reported above relate to the sample identified under Sample Details.

----------**END OF REPORT**----------

LABORATORY TEST REPORT FORMAT		
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GW05: Sadisamdi Village

TC-13450

KADAM LABS PRIVATE LIMITED

871/B/3, Near Himalaya Machinery, GIDC Makarpura, Vadodara-10.
Phone : (O) 0265 - 6131000, 6131001

ENVIRONMENTAL MONITORING REPORT

LABORATORY TEST REPORT – WATER

REPORT NO.: JAN25/212/05 (ULR- TC134502500011080F)

SAMPLE DETAILS

1.	Name & Address of Client: M/s. Shree khodal Waste Management, Plot No.5 & 6, GIDC Shehera Taluka & Dist. Panchmahal, Gujarat		
2.	Sample ID: 212JA25GW05	3.	Client Representative : Mr. Abhishek Joshi
4.	Sample Date: 23.01.2025	5.	Sample Collected By: Mr. Ratan Rai
6.	Analysis commenced on: 31.01.2025	7.	Analysis Completed on: 28.02.2025
8.	Reporting Date: 28.02.2025	9.	Discipline : Chemical
10.	Packing Condition & Quantity: Sealed √	11.	Group : Water
12.	Sampling Location: Sadisamdi Village	13.	Product: Ground Water
14.	Sampling Method: APHA 24th Edition 1060:B&C	15.	Sample Received Date : 31.01.2025

TEST RESULTS

S. No.	Parameters	Unit (SI)	Results	IS 10500: 2012 Standard Limits for Drinking Water		Method Used
				Acceptable Limits	Permissible Limits	
1.	pH		7.14	6.5-8.5	NR	APHA 24th Edition 4500-H+ B
2.	Temperature	°C	25.8	NS	NS	APHA 24th Edition 2550- B
3.	Turbidity	NTU	<0.1	1	5	APHA 24th Edition 2130- B
4.	Total Dissolved Solids	mg/L	592	500	2000	APHA 24th Edition 2540 C
5.	Conductivity	µmhos/cm	1044	NS	NS	APHA 24th Edition 2510 B
6.	COD	mg/L	<5	NS	NS	APHA 24th Edition 5220 B
7.	BOD	mg/L	<2	NS	NS	IS 3025 (Part 44) : 1993
8.	Ammonical Nitrogen	mg/L		NS	NS	IS 3025 (PP 34): 1988
9.	Phenolic Compound	mg/L	<0.02	0.001	0.002	APHA 24th Edition 5530 D
10.	Chlorides	mg/L	76	250	1000	APHA 24th Edition 4500 Cl- B
11.	Sulphates	mg/L	38	200	400	APHA 24th Edition 4500 SO^4 E
12.	SAR		0.25	NS	NS	LAB-SOP-138
13.	Total Hardness	mg/L	330	200	600	APHA 24th Edition 2340 C
14.	Calcium Hardness	mg/L	86	NS	NS	APHA 24th Edition 3500 - Ca B
15.	Magnesium Hardness	mg/L	244	NS	NS	APHA 24th Edition 3500 - Mg B
16.	Alkalinity	mg/L	70	200	600	APHA 24th Edition 2320 B
17.	Nitrate	mg/L	14.50	45	NR	IS 3025 (Part 34) (a): 1988
18.	Fluoride	mg/L	1.32	1	1.5	APHA 24th Edition 4500 F—D
19.	Sodium	mg/L	29.8	NS	NS	APHA 24th Edition 3500 - Na B
20.	Potassium	mg/L	1.2	NS	NS	APHA 24th Edition 3500 - K B
21.	Calcium	mg/L	34	75	200	APHA 24th Edition 3500 - Ca B
22.	Magnesium	mg/L	59	30	100	APHA 24th Edition 3500 - Mg B
23.	Total Phosphorous	mg/L	<0.02	NS	NS	APHA 24th Edition 4500 P – C
24.	DO	mg/L	2.8	NS	NS	APHA 24th Edition 4500 - O C
25.	**Heavy Metals**					
a.	Arsenic	mg/L	<0.01	0.01	0.05	APHA 24th Edition 3500 As - B
b.	Cadmium	mg/L	<0.01	0.003	NR	APHA 24th Edition 3111 B
c.	Chromium	mg/L	<0.02	0.05	NR	APHA 24th Edition 3500 Cr - B
d.	Copper	mg/L	<0.03	0.05	1.5	APHA 24th Edition 3111 B
e.	Iron	mg/L	<0.05	0.3	NR	APHA 24th Edition 3111 B
f.	Lead	mg/L	<0.01	0.01	NR	APHA 24th Edition 3111 B
g.	Mercury	mg/L	<0.001	0.001	NR	APHA 24th Edition 3112-B
h.	Manganese	mg/L	<0.02	0.1	0.3	APHA 24th Edition 3111 B
i.	Nickel	mg/L	<0.02	0.02	NR	APHA 24th Edition 3111 B
j.	Zinc	mg/L	<0.03	5	15	APHA 24th Edition 3111 B

Remark :

Authorised By -

Name : Sapana Amin — **Designation: Lab Incharge**

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----------**END OF REPORT**----------

TEST REPORT FORMAT - WATER		
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KADAM LABS PRIVATE LIMITED

871/B/3, Near Himalaya Machinery, GIDC Makarpura, Vadodara-10.

Phone : **(O) 0265 - 6131000, 6131001**

ENVIRONMENTAL MONITORING REPORT

LABORATORY TEST REPORT – WATER

REPORT NO.: JAN25/212/13

SAMPLE DETAILS

1.	Name & Address of Client: M/s. Shree khodal Waste Management, Plot No.5 & 6, GIDC Shehera, Taluka & Dist. Panchmahal, Gujarat		
2.	Sample ID: 212JA25GW05	3.	Client Representative : Mr. Abhishek Joshi
4.	Sample Date: 23.01.2025	5.	Sample Collected By: Mr. Ratan Rai
6.	Analysis commenced on: 31.01.2025	7.	Analysis Completed on: 28.02.2025
8.	Reporting Date: 28.02.2025	9.	Discipline : Chemical
10.	Packing Condition & Quantity: Sealed √	11.	Group : Water
12.	Sampling Location: Sadisamdi Village	13.	Product: Ground Water
14.	Sampling Method: APHA 24th Edition 1060:B&C	15.	Sample Received Date : 31.01.2025

TEST RESULTS

S. No.	Parameters	Unit (SI)		Results	IS 10500 : 2012 Standard Limits for Drinking Water		Method Used
					Acceptable Limits	Permissible Limits	
1.	Salinity	mg/L	:	137	NS	NS	APHA 24th Edition 4500 Cl- B
2.	Total Nitrogen	mg/L	:	14.50	0.5	NR	IS 3025 (PP34)
3.	**Heavy Metals**						
a.	Cyanide	mg/L	:	<0.03	0.05	NR	APHA 24th Edition 4500 CN E

Remark :

Authorised By -

Name : Sapana Amin **Designation: Lab Incharge**

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----------**END OF REPORT**----------

TEST REPORT FORMAT - WATER		
DOC. NO.: LAB-FMT-055	Issue No.: 01	Revision No.: 00
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ENVIRONMENTAL MONITORING REPORT

LABORATORY TEST REPORT - MICROBIOLOGY

REPORT NO.: JAN25/212/21(ULR- TC134502500011108F)

SAMPLE DETAILS

1.	Name & Address of Client: M/s. Shree khodal Waste Management,Plot No.5 & 6, GIDC Shehera Taluka & Dist.Panchmahal, Gujarat		
2.	Sample ID: 212JA25GW05	3.	Client Representative : Mr. Abhishek Joshi
4.	Sample Date: 23.01.2025	5.	Sample Collected By: Mr. Ratan Rai
6.	Analysis commenced on: 31.01.2025	7.	Analysis Completed on: 28.02.2025
8.	Reporting Date: 28.02.2025	9.	Discipline : Chemical
10.	Packing Condition & Quantity: Sealed √	11.	Group : Water
12.	Sampling Location: Sadisamdi Village	13.	Product: Ground Water
14.	Sampling Method: IS:3025 (Part 1)-1987	15.	Sample Received Date : 31.01.2025

TEST RESULTS

S. No.	Parameters	Results	Unit (SI)	Specification/ SPCB Norms/ BIS Standards	Method Used
1.	Total Coliform Bacteria	N.D.(<1.8)	MPN/100ml	N.A.	APHA 24th Edition 9221 B&C
2.	Fecal Coliform Bacteria	N.D.(<1.8)	MPN/ 100ml	N.A.	APHA 24th Edition9221 C& E

Remarks: N.D. – Not Detected.

Authorized by: J.V.Chauhan

Name: Jyoti Chauhan | **Designation: Sr.Microbiologist**

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2) Re-sampling may be done, if required, with written approval of the laboratory.
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----------**END OF REPORT**----------

LABORATORY TEST REPORT FORMAT		
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GW06: Bamroli Village

TC-13459

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ENVIRONMENTAL MONITORING REPORT

LABORATORY TEST REPORT – WATER

REPORT NO.: JAN25/212/06 (ULR- TC134502500011081F)

SAMPLE DETAILS

1.	Name & Address of Client: M/s. Shree khodal Waste Management, Plot No.5 & 6, GIDC Shehera Taluka & Dist. Panchmahal, Gujarat		
2.	Sample ID: 212JA25GW06	3.	Client Representative : Mr. Abhishek Joshi
4.	Sample Date: 28.01.2025	5.	Sample Collected By: Mr. Ratan Rai
6.	Analysis commenced on: 31.01.2024	7.	Analysis Completed on: 28.02.2025
8.	Reporting Date: 28.02.2025	9.	Discipline : Chemical
10.	Packing Condition & Quantity: Sealed √	11	Group : Water
12.	Sampling Location: Bamroli Village	13	Product: Ground Water
14.	Sampling Method: APHA 24th Edition 1060:B&C	15	Sample Received Date : 31.01.2025

TEST RESULTS

S. No.	Parameters	Unit (SI)	Results	IS 10500: 2012 Standard Limits for Drinking Water		Method Used
				Acceptable Limits	Permissible Limits	
1.	pH		6.94	6.5-8.5	NR	APHA 24th Edition 4500-H+ B
2.	Temperature	°C	25.9	NS	NS	APHA 24th Edition 2550- B
3.	Turbidity	NTU	<0.1	1	5	APHA 24th Edition 2130- B
4.	Total Dissolved Solids	mg/L	612	500	2000	APHA 24th Edition 2540 C
5.	Conductivity	µmhos/cm	1032	NS	NS	APHA 24th Edition 2510 B
6.	COD	mg/L	<5	NS	NS	APHA 24th Edition 5220 B
7.	BOD	mg/L	<2	NS	NS	IS 3025 (Part 44) : 1993
8.	Ammonical Nitrogen	mg/L	<0.05	NS	NS	IS 3025 (PP 34): 1988
9.	Phenolic Compound	mg/L	<0.02	0.001	0.002	APHA 24th Edition 5530 D
10.	Chlorides	mg/L	81	250	1000	APHA 24th Edition 4500 Cl- B
11.	Sulphates	mg/L	39	200	400	APHA 24th Edition 4500 SO^4 E
12.	SAR	-	0.23	NS	NS	LAB-SOP-138
13.	Total Hardness	mg/L	440	200	600	APHA 24th Edition 2340 C
14.	Calcium Hardness	mg/L	154	NS	NS	APHA 24th Edition 3500 - Ca B
15.	Magnesium Hardness	mg/L	286	NS	NS	APHA 24th Edition 3500 - Mg B
16.	Alkalinity	mg/L	30	200	600	APHA 24th Edition 2320 B
17.	Nitrate	mg/L	9.27	45	NR	IS 3025 (Part 34) (ii): 1988
18.	Fluoride	mg/L	1.26	1	1.5	APHA 24th Edition 4500 F—D
19.	Sodium	mg/L	31.5	NS	NS	APHA 24th Edition 3500 - Na B
20.	Potassium	mg/L	1.25	NS	NS	APHA 24th Edition 3500 - K B
21.	Calcium	mg/L	62	75	200	APHA 24th Edition 3500 - Ca B
22.	Magnesium	mg/L	69	30	100	APHA 24th Edition 3500 - Mg B
23.	Total Phosphorous	mg/L	<0.02	NS	NS	APHA 24th Edition 4500 P – C
24.	DO	mg/L	2.1	NS	NS	APHA 24th Edition 4500 - O C
25.	**Heavy Metals**					
a.	Arsenic	mg/L	<0.01	0.01	0.05	APHA 24th Edition 3500 As - B
b.	Cadmium	mg/L	<0.01	0.003	NR	APHA 24th Edition 3111 B
c.	Chromium	mg/L	<0.02	0.05	NR	APHA 24th Edition 3500 Cr - B
d.	Copper	mg/L	<0.03	0.05	1.5	APHA 24th Edition 3111 B
e.	Iron	mg/L	<0.05	0.3	NR	APHA 24th Edition 3111 B
f.	Lead	mg/L	<0.01	0.01	NR	APHA 24th Edition 3111 B
g.	Mercury	mg/L	<0.001	0.001	NR	APHA 24th Edition 3112-B
h.	Manganese	mg/L	<0.02	0.1	0.3	APHA 24th Edition 3111 B
i.	Nickel	mg/L	<0.02	0.02	NR	APHA 24th Edition 3111 B
j.	Zinc	mg/L	<0.03	5	15	APHA 24th Edition 3111 B

Remark :

Authorised By -

Name : Sapana Amin **Designation: Lab Incharge**

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----------**END OF REPORT**----------

TEST REPORT FORMAT - WATER		
DOC. NO.: LAB-FMT-055	Issue No.: 01	Revision No.: 00
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KADAM LABS PRIVATE LIMITED

871/B/3, Near Himalaya Machinery, GIDC Makarpura, Vadodara-10.
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ENVIRONMENTAL MONITORING REPORT

LABORATORY TEST REPORT – WATER

REPORT NO.: JAN25/212/14

SAMPLE DETAILS

1.	Name & Address of Client: M/s. Shree khodal Waste Management, Plot No.5 & 6, GIDC Shehera, Taluka & Dist. Panchmahal, Gujarat		
2.	Sample ID: 212JA25GW06	3.	Client Representative : Mr. Abhishek Joshi
4.	Sample Date: 28.01.2025	5.	Sample Collected By: Mr. Ratan Rai
6.	Analysis commenced on: 31.01.2024	7.	Analysis Completed on: 28.02.2025
8.	Reporting Date: 28.02.2025	9.	Discipline : Chemical
10.	Packing Condition & Quantity: Sealed √	11.	Group : Water
12.	Sampling Location: Bamroli Village	13.	Product: Ground Water
14.	Sampling Method: APHA 24th Edition 1060:B&C	15.	Sample Received Date : 31.01.2025

TEST RESULTS

S. No.	Parameters	Unit (SI)		Results	IS 10500 : 2012 Standard Limits for Drinking Water		Method Used
					Acceptable Limits	Permissible Limits	
1.	Salinity	mg/L	:	145	NS	NS	APHA 24th Edition 4500 Cl- B
2.	Total Nitrogen	mg/L	:	9.27	0.5	NR	IS 3025 (PP34)
3.	**Heavy Metals**						
a.	Cyanide	mg/L	:	<0.03	0.05	NR	APHA 24th Edition 4500 CN E

Remark :

Authorised By -

Name : Sapana Amin | **Designation: Lab Incharge**

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----------**END OF REPORT**----------

TEST REPORT FORMAT - WATER		
DOC. NO.: LAB-FMT-055	Issue No.: 01	Revision No.: 00
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KADAM LABS PRIVATE LIMITED

871/B/3, Near Himalaya Machinery, GIDC Makarpura, Vadodara-10.
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ENVIRONMENTAL MONITORING REPORT

LABORATORY TEST REPORT - MICROBIOLOGY

REPORT NO.: JAN25/212/22(ULR- TC134502500011109F)

SAMPLE DETAILS

1.	Name & Address of Client: M/s. Shree khodal Waste Management,Plot No.5 & 6, GIDC Shehera Taluka & Dist.Panchmahal, Gujarat		
2.	Sample ID: 212JA25GW06	3.	Client Representative : Mr. Abhishek Joshi
4.	Sample Date: 28.01.2025	5.	Sample Collected By: Mr. Ratan Rai
6.	Analysis commenced on: 31.01.2024	7.	Analysis Completed on: 28.02.2025
8.	Reporting Date: 28.02.2025	9.	Discipline : Chemical
10.	Packing Condition & Quantity: Sealed √	11.	Group : Water
12.	Sampling Location: Bamroli Village	13.	Product: Ground Water
14.	Sampling Method: IS:3025 (Part 1)-1987	15.	Sample Received Date : 31.01.2025

TEST RESULTS

S. No.	Parameters	Results	Unit (SI)	Specification/ SPCB Norms/ BIS Standards	Method Used
1.	Total Coliform Bacteria	N.D.(<1.8)	MPN/100ml	N.A.	APHA 24th Edition 9221 B&C
2.	Fecal Coliform Bacteria	N.D.(<1.8)	MPN/ 100ml	N.A.	APHA 24th Edition9221 C& E

Remarks: N.D. – Not Detected.

Authorized by: J.V.Chauhan

Name: Jyoti Chauhan **Designation: Sr.Microbiologist**

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----------**END OF REPORT**----------

LABORATORY TEST REPORT FORMAT		
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GW07: Akediya Village

TC-13458

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ENVIRONMENTAL MONITORING REPORT

LABORATORY TEST REPORT – WATER

REPORT NO.: JAN25/212/07 (ULR- TC134502500011082F)

SAMPLE DETAILS

1.	Name & Address of Client: M/s. Shree khodal Waste Management, Plot No.5 & 6, GIDC Shehera Taluka & Dist. Panchmahal, Gujarat		
2.	Sample ID:212JA25GW07	3.	Client Representative : Mr. Abhishek Joshi
4.	Sample Date: 28.01.2025	5.	Sample Collected By: Mr. Ratan Rai
6.	Analysis commenced on: 31.01.2025	7.	Analysis Completed on: 28.02.2025
8.	Reporting Date: 28.02.2025	9.	Discipline : Chemical
10.	Packing Condition & Quantity: Sealed √	11.	Group : Water
12.	Sampling Location: Akediya	13.	Product: Ground Water
14.	Sampling Method: APHA 24th Edition 1060:B&C	15.	Sample Received Date : 31.01.2025

TEST RESULTS

S. No.	Parameters	Unit (SI)		Results	IS 10500: 2012 Standard Limits for Drinking Water		Method Used
					Acceptable Limits	Permissible Limits	
1.	pH		:	7.18	6.5-8.5	NR	APHA 24th Edition 4500-H+ B
2.	Temperature	°C	:	25.7	NS	NS	APHA 24th Edition 2550- B
3.	Turbidity	NTU	:	<0.1	1	5	APHA 24th Edition 2130- B
4.	Total Dissolved Solids	mg/L	:	469	500	2000	APHA 24th Edition 2540 C
5.	Conductivity	µmhos/cm	:	751	NS	NS	APHA 24th Edition 2510 B
6.	COD	mg/L	:	<5	NS	NS	APHA 24th Edition 5220 B
7.	BOD	mg/L	:	<2	NS	NS	IS 3025 (Part 44) : 1993
8.	Ammonical Nitrogen	mg/L	:	<0.05	NS	NS	IS 3025 (PP 34): 1988
9.	Phenolic Compound	mg/L	:	<0.02	0.001	0.002	APHA 24th Edition 5530 D
10.	Chlorides	mg/L	:	57	250	1000	APHA 24th Edition 4500 Cl- B
11.	Sulphates	mg/L	:	43	200	400	APHA 24th Edition 4500 SO^4 E
12.	SAR		:	0.19	NS	NS	LAB-SOP-138
13.	Total Hardness	mg/L	:	330	200	600	APHA 24th Edition 2340 C
14.	Calcium Hardness	mg/L	:	94	NS	NS	APHA 24th Edition 3500 - Ca B
15.	Magnesium Hardness	mg/L	:	236	NS	NS	APHA 24th Edition 3500 - Mg B
16.	Alkalinity	mg/L	:	80	200	600	APHA 24th Edition 2320 B
17.	Nitrate	mg/L	:	8.54	45	NR	IS 3025 (Part 34) (ii): 1988
18.	Fluoride	mg/L	:	1.36	1	1.5	APHA 24th Edition 4500 F—D
19.	Sodium	mg/L	:	22.3	NS	NS	APHA 24th Edition 3500 - Na B
20.	Potassium	mg/L	:	0.9	NS	NS	APHA 24th Edition 3500 - K B
21.	Calcium	mg/L	:	38	75	200	APHA 24th Edition 3500 - Ca B
22.	Magnesium	mg/L	:	57	30	100	APHA 24th Edition 3500 - Mg B
23.	Total Phosphorous	mg/L	:	<0.02	NS	NS	APHA 24th Edition 4500 P – C
24.	DO	mg/L	:	2.5	NS	NS	APHA 24th Edition 4500 - O C
25.	**Heavy Metals**						
a.	Arsenic	mg/L	:	<0.01	0.01	0.05	APHA 24th Edition 3500 As - B
b.	Cadmium	mg/L	:	<0.01	0.003	NR	APHA 24th Edition 3111 B
c.	Chromium	mg/L	:	<0.02	0.05	NR	APHA 24th Edition 3500 Cr - B
d.	Copper	mg/L	:	<0.03	0.05	1.5	APHA 24th Edition 3111 B
e.	Iron	mg/L	:	<0.05	0.3	NR	APHA 24th Edition 3111 B
f.	Lead	mg/L	:	<0.01	0.01	NR	APHA 24th Edition 3111 B
g.	Mercury	mg/L	:	<0.001	0.001	NR	APHA 24th Edition 3112-B
h.	Manganese	mg/L	:	<0.02	0.1	0.3	APHA 24th Edition 3111 B
i.	Nickel	mg/L	:	<0.02	0.02	NR	APHA 24th Edition 3111 B
j.	Zinc	mg/L	:	<0.03	5	15	APHA 24th Edition 3111 B

Remark :
Authorised By -
Name : Sapana Amin **Designation: Lab Incharge**

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2) Re analysis of sample will be done, if requested within 15 days from the date of Reporting of sample if the samples are not consumed during analysis.
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----------**END OF REPORT**----------

TEST REPORT FORMAT - WATER		
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KADAM LABS PRIVATE LIMITED

871/B/3, Near Himalaya Machinery, GIDC Makarpura, Vadodara-10.
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ENVIRONMENTAL MONITORING REPORT

LABORATORY TEST REPORT – WATER

REPORT NO.: JAN25/212/15

SAMPLE DETAILS

1.	Name & Address of Client: M/s. Shree khodal Waste Management, Plot No.5 & 6, GIDC Shehera, Taluka & Dist. Panchmahal, Gujarat		
2.	Sample ID: 212JA25GW07	3.	Client Representative : Mr. Abhishek Joshi
4.	Sample Date: 28.01.2025	5.	Sample Collected By: Mr. Ratan Rai
6.	Analysis commenced on: 31.01.2025	7.	Analysis Completed on: 28.02.2025
8.	Reporting Date: 28.02.2025	9.	Discipline : Chemical
10.	Packing Condition & Quantity: Sealed √	11.	Group : Water
12.	Sampling Location: Akediya	13.	Product: Ground Water
14.	Sampling Method: APHA 24th Edition 1060:B&C	15.	Sample Received Date : 31.01.2025

TEST RESULTS

S. No.	Parameters	Unit (SI)		Results	IS 10500 : 2012 Standard Limits for Drinking Water		Method Used
					Acceptable Limits	Permissible Limits	
1.	Salinity	mg/L	:	103	NS	NS	APHA 24th Edition 4500 Cl- B
2.	Total Nitrogen	mg/L	:	8.54	0.5	NR	IS 3025 (PP34)
3.	**Heavy Metals**						
a.	Cyanide	mg/L	:	<0.03	0.05	NR	APHA 24th Edition 4500 CN E

Remark :

Authorised By

Name : Sapana Amin | **Designation: Lab Incharge**

NOTE :
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2) Re analysis of sample will be done, if requested within 15 days from the date of Reporting of sample if the samples are not consumed during analysis.
3) The results reported above relate to the sample identified under Sample Details.

----------**END OF REPORT**----------

TEST REPORT FORMAT - WATER		
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KADAM LABS PRIVATE LIMITED

871/B/3, Near Himalaya Machinery, GIDC Makarpura, Vadodara-10.
Phone : (O) 0265 - 6131000, 6131001

ENVIRONMENTAL MONITORING REPORT

LABORATORY TEST REPORT - MICROBIOLOGY

REPORT NO.: JAN25/212/23(ULR- TC134502500011110F)

SAMPLE DETAILS

1.	Name & Address of Client: M/s. Shree khodal Waste Management,Plot No.5 & 6, GIDC Shehera Taluka & Dist.Panchmahal, Gujarat		
2.	Sample ID: 212JA25GW07	3.	Client Representative : Mr. Abhishek Joshi
4.	Sample Date: 28.01.2025	5.	Sample Collected By: Mr. Ratan Rai
6.	Analysis commenced on: 31.01.2025	7.	Analysis Completed on: 28.02.2025
8.	Reporting Date: 28.02.2025	9.	Discipline : Chemical
10.	Packing Condition & Quantity: Sealed √	11.	Group : Water
12.	Sampling Location: Akediya	13.	Product: Ground Water
14.	Sampling Method: IS:3025 (Part 1)-1987	15.	Sample Received Date : 31.01.2025

TEST RESULTS

S. No.	Parameters	Results	Unit (SI)	Specification/ SPCB Norms/ BIS Standards	Method Used
1.	Total Coliform Bacteria	N.D.(<1.8)	MPN/100ml	N.A.	APHA 24th Edition 9221 B&C
2.	Fecal Coliform Bacteria	N.D.(<1.8)	MPN/ 100ml	N.A.	APHA 24th Edition9221 C& E

Remarks: N.D. – Not Detected.

Authorized by: J.V.Chauhan

Name: Jyoti Chauhan | **Designation: Sr.Microbiologist**

NOTE: 1) Reports may be reproduced, if required, but only in full and only with written approval of the laboratory.
2) Re-sampling may be done, if required, with written approval of the laboratory.
3) The results reported above relate to the sample identified under Sample Details.

----------**END OF REPORT**----------

LABORATORY TEST REPORT FORMAT		
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GW08: Shehera town

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ENVIRONMENTAL MONITORING REPORT

LABORATORY TEST REPORT – WATER

REPORT NO.: JAN25/212/08 (ULR- TC134502500011083F)

SAMPLE DETAILS

1.	Name & Address of Client: M/s. Shree khodal Waste Management, Plot No.5 & 6, GIDC Shehera Taluka & Dist. Panchmahal, Gujarat		
2.	Sample ID: 212JA25GW08	3.	Client Representative : Mr. Abhishek Joshi
4.	Sample Date: 28.01.2025	5.	Sample Collected By: Mr. Ratan Rai
6.	Analysis commenced on: 31.01.2025	7.	Analysis Completed on: 28.02.2025
8.	Reporting Date: 28.02.2025	9.	Discipline : Chemical
10.	Packing Condition & Quantity: Sealed √	11.	Group : Water
12.	Sampling Location: Shehera Town	13.	Product: Ground Water
14.	Sampling Method: APHA 24th Edition 1060:B&C	15.	Sample Received Date : 31.01.2025

TEST RESULTS

S. No.	Parameters	Unit (SI)	Results	IS 10500: 2012 Standard Limits for Drinking Water		Method Used
				Acceptable Limits	Permissible Limits	
1.	pH		6.77	6.5-8.5	NR	APHA 24th Edition 4500-H+ B
2.	Temperature	°C	25.2	NS	NS	APHA 24th Edition 2550- B
3.	Turbidity	NTU	<0.1	1	5	APHA 24th Edition 2130- B
4.	Total Dissolved Solids	mg/L	814	500	2000	APHA 24th Edition 2540 C
5.	Conductivity	µmhos/cm	1476	NS	NS	APHA 24th Edition 2510 B
6.	COD	mg/L	<5	NS	NS	APHA 24th Edition 5220 B
7.	BOD	mg/L	<2	NS	NS	IS 3025 (Part 44) : 1993
8.	Ammonical Nitrogen	mg/L	<0.05	NS	NS	IS 3025 (PP 34): 1988
9.	Phenolic Compound	mg/L	<0.02	0.001	0.002	APHA 24th Edition 5530 D
10.	Chlorides	mg/L	157	250	1000	APHA 24th Edition 4500 Cl- B
11.	Sulphates	mg/L	73	200	400	APHA 24th Edition 4500 SO^4 E
12.	SAR	-	0.43	NS	NS	LAB-SOP-138
13.	Total Hardness	mg/L	490	200	600	APHA 24th Edition 2340 C
14.	Calcium Hardness	mg/L	136	NS	NS	APHA 24th Edition 3500 - Ca B
15.	Magnesium Hardness	mg/L	354	NS	NS	APHA 24th Edition 3500 - Mg B
16.	Alkalinity	mg/L	30	200	600	APHA 24th Edition 2320 B
17.	Nitrate	mg/L	14.14	45	NR	IS 3025 (Part 34) (ii): 1988
18.	Fluoride	mg/L	2.50	1	1.5	APHA 24th Edition 4500 F—D
19.	Sodium	mg/L	61.9	NS	NS	APHA 24th Edition 3500 - Na B
20.	Potassium	mg/L	2.1	NS	NS	APHA 24th Edition 3500 - K B
21.	Calcium	mg/L	55	75	200	APHA 24th Edition 3500 - Ca B
22.	Magnesium	mg/L	55	30	100	APHA 24th Edition 3500 - Mg B
23.	Total Phosphorous	mg/L	<0.02	NS	NS	APHA 24th Edition 4500 P – C
24.	DO	mg/L	2.7	NS	NS	APHA 24th Edition 4500 - O C
25.	**Heavy Metals**					
a.	Arsenic	mg/L	<0.01	0.01	0.05	APHA 24th Edition 3500 As - B
b.	Cadmium	mg/L	<0.01	0.003	NR	APHA 24th Edition 3111 B
c.	Chromium	mg/L	<0.02	0.05	NR	APHA 24th Edition 3500 Cr - B
d.	Copper	mg/L	<0.03	0.05	1.5	APHA 24th Edition 3111 B
e.	Iron	mg/L	<0.05	0.3	NR	APHA 24th Edition 3111 B
f.	Lead	mg/L	<0.01	0.01	NR	APHA 24th Edition 3111 B
g.	Mercury	mg/L	<0.001	0.001	NR	APHA 24th Edition 3112-B
h.	Manganese	mg/L	<0.02	0.1	0.3	APHA 24th Edition 3111 B
i.	Nickel	mg/L	<0.02	0.02	NR	APHA 24th Edition 3111 B
j.	Zinc	mg/L	<0.03	5	15	APHA 24th Edition 3111 B

Remark :
Authorised By -
Name : Sapana Amin **Designation: Lab Incharge**

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3) The results reported above relate to the sample identified under Sample Details.

----------**END OF REPORT**----------

TEST REPORT FORMAT - WATER		
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KADAM LABS PRIVATE LIMITED

871/B/3, Near Himalaya Machinery, GIDC Makarpura, Vadodara-10.

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ENVIRONMENTAL MONITORING REPORT

LABORATORY TEST REPORT – WATER

REPORT NO.: JAN25/212/16

SAMPLE DETAILS

1.	Name & Address of Client: M/s. Shree khodal Waste Management, Plot No.5 & 6, GIDC Shehera, Taluka & Dist. Panchmahal, Gujarat		
2.	Sample ID: 212JA25GW08	3.	Client Representative : Mr. Abhishek Joshi
4.	Sample Date: 28.01.2025	5.	Sample Collected By: Mr. Ratan Rai
6.	Analysis commenced on: 31.01.2025	7.	Analysis Completed on: 28.02.2025
8.	Reporting Date: 28.02.2025	9.	Discipline : Chemical
10.	Packing Condition & Quantity: Sealed √	11.	Group : Water
12.	Sampling Location: Shehera Town	13.	Product: Ground Water
14.	Sampling Method: APHA 24th Edition 1060:B&C	15.	Sample Received Date : 31.01.2025

TEST RESULTS

S. No.	Parameters	Unit (SI)		Results	IS 10500: 2012 Standard Limits for Drinking Water		Method Used
					Acceptable Limits	Permissible Limits	
1.	Salinity	mg/L	:	282	NS	NS	APHA 24th Edition 4500 Cl- B
2.	Total Nitrogen	mg/L	:	14.14	0.5	NR	IS 3025 (PP34)
3.	**Heavy Metals**						
a.	Cyanide	mg/L	:	<0.03	0.05	NR	APHA 24th Edition 4500 CN E

Remark :

Authorised By -

Name : Sapana Amin **Designation: Lab Incharge**

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3) The results reported above relate to the sample identified under Sample Details.

----------END OF REPORT----------

TEST REPORT FORMAT - WATER		
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KADAM LABS PRIVATE LIMITED

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Phone : (O) 0265 - 6131000, 6131001

ENVIRONMENTAL MONITORING REPORT

LABORATORY TEST REPORT - MICROBIOLOGY

REPORT NO.: JAN25/212/24(ULR- TC134502500011111F)

SAMPLE DETAILS

1.	Name & Address of Client: M/s. Shree khodal Waste Management,Plot No.5 & 6, GIDC Shehera Taluka & Dist.Panchmahal, Gujarat		
2.	Sample ID: 212JA25GW08	3.	Client Representative : Mr. Abhishek Joshi
4.	Sample Date: 28.01.2025	5.	Sample Collected By: Mr. Ratan Rai
6.	Analysis commenced on: 31.01.2025	7.	Analysis Completed on: 28.02.2025
8.	Reporting Date: 28.02.2025	9.	Discipline : Chemical
10.	Packing Condition & Quantity: Sealed √	11.	Group : Water
12.	Sampling Location: Shehera Town	13.	Product: Ground Water
14.	Sampling Method: IS:3025 (Part 1)-1987	15.	Sample Received Date : 31.01.2025

TEST RESULTS

S. No.	Parameters	Results	Unit (SI)	Specification/ SPCB Norms/ BIS Standards	Method Used
1.	Total Coliform Bacteria	N.D.(<1.8)	MPN/100ml	N.A.	APHA 24th Edition 9221 B&C
2.	Fecal Coliform Bacteria	N.D.(<1.8)	MPN/ 100ml	N.A.	APHA 24th Edition9221 C& E

Remarks: N.D. – Not Detected.

Authorized by: J.V.chauhan

Name: Jyoti Chauhan | **Designation: Sr.Microbiologist**

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2) Re-sampling may be done, if required, with written approval of the laboratory.
3) The results reported above relate to the sample identified under Sample Details.

----------**END OF REPORT**----------

LABORATORY TEST REPORT FORMAT		
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GW09: Waghjipur Village

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ENVIRONMENTAL MONITORING REPORT

LABORATORY TEST REPORT – WATER

REPORT NO.: JAN25/212/08 (ULR- TC134502500011084F)

SAMPLE DETAILS

1.	Name & Address of Client: M/s. Shree khodal Waste Management, Plot No.5 & 6, GIDC Shehera Taluka & Dist. Panchmahal, Gujarat		
2.	Sample ID: 212JA25GW09	3.	Client Representative : Mr. Abhishek Joshi
4.	Sample Date: 11.02.2025	5.	Sample Collected By: Mr. Ratan Rai
6.	Analysis commenced on: 31.01.2025	7.	Analysis Completed on: 28.02.2025
8.	Reporting Date: 28.02.2025	9.	Discipline : Chemical
10.	Packing Condition & Quantity: Sealed √	11.	Group : Water
12.	Sampling Location: Waghjipur Village	13.	Product: Ground Water
14.	Sampling Method: APHA 24th Edition 1060:B&C	15.	Sample Received Date : 13.02.2025

TEST RESULTS

S. No.	Parameters	Unit (SI)		Results	IS 10500: 2012 Standard Limits for Drinking Water		Method Used
					Acceptable Limits	Permissible Limits	
1.	pH		:	7.35	6.5-8.5	NR	APHA 24th Edition 4500-H+ B
2.	Temperature	°C	:	25.1	NS	NS	APHA 24th Edition 2550- B
3.	Turbidity	NTU	:	<0.1	1	5	APHA 24th Edition 2130- B
4.	Total Dissolved Solids	mg/L	:	992	500	2000	APHA 24th Edition 2540 C
5.	Conductivity	µmhos/cm	:	1661	NS	NS	APHA 24th Edition 2510 B
6.	COD	mg/L	:	<5	NS	NS	APHA 24th Edition 5220 B
7.	BOD	mg/L	:	<2	NS	NS	IS 3025 (Part 44) : 1993
8.	Ammonical Nitrogen	mg/L	:	<0.05	NS	NS	IS 3025 (PP 34): 1988
9.	Phenolic Compound	mg/L	:	<0.02	0.001	0.002	APHA 24th Edition 5530 D
10.	Chlorides	mg/L	:	356	250	1000	APHA 24th Edition 4500 Cl- B
11.	Sulphates	mg/L	:	142	200	400	APHA 24th Edition 4500 SO_4^{-2} E
12.	SAR		:	1.19	NS	NS	LAB-SOP-138
13.	Total Hardness	mg/L	:	330	200	600	APHA 24th Edition 2340 C
14.	Calcium Hardness	mg/L	:	104	NS	NS	APHA 24th Edition 3500 - Ca B
15.	Magnesium Hardness	mg/L	:	226	NS	NS	APHA 24th Edition 3500 - Mg B
16.	Alkalinity	mg/L	:	110	200	600	APHA 24th Edition 2320 B
17.	Nitrate	mg/L	:	11.84	45	NR	IS 3025 (Part 34) (ii): 1988
18.	Fluoride	mg/L	:	2.20	1	1.5	APHA 24th Edition 4500 F—D
19.	Sodium	mg/L	:	141	NS	NS	APHA 24th Edition 3500 - Na B
20.	Potassium	mg/L	:	5.5	NS	NS	APHA 24th Edition 3500 - K B
21.	Calcium	mg/L	:	42	75	200	APHA 24th Edition 3500 - Ca B
22.	Magnesium	mg/L	:	55	30	100	APHA 24th Edition 3500 - Mg B
23.	Total Phosphorous	mg/L	:	<0.02	NS	NS	APHA 24th Edition 4500 P – C
24.	DO	mg/L	:	2.3	NS	NS	APHA 24th Edition 4500 - O C
25.	**Heavy Metals**						
a.	Arsenic	mg/L	:	<0.01	0.01	0.05	APHA 24th Edition 3500 As - B
b.	Cadmium	mg/L	:	<0.01	0.003	NR	APHA 24th Edition 3111 B
c.	Chromium	mg/L	:	<0.02	0.05	NR	APHA 24th Edition 3500 Cr - B
d.	Copper	mg/L	:	<0.03	0.05	1.5	APHA 24th Edition 3111 B
e.	Iron	mg/L	:	<0.05	0.3	NR	APHA 24th Edition 3111 B
f.	Lead	mg/L	:	<0.01	0.01	NR	APHA 24th Edition 3111 B
g.	Mercury	mg/L	:	<0.001	0.001	NR	APHA 24th Edition 3112-B
h.	Manganese	mg/L	:	<0.02	0.1	0.3	APHA 24th Edition 3111 B
i.	Nickel	mg/L	:	<0.02	0.02	NR	APHA 24th Edition 3111 B
j.	Zinc	mg/L	:	<0.03	5	15	APHA 24th Edition 3111 B

Remark :
Authorised By -
Name : Sapana Amin **Designation: Lab Incharge**

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3) The results reported above relate to the sample identified under Sample Details.

----------**END OF REPORT**----------

TEST REPORT FORMAT - WATER		
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KADAM LABS PRIVATE LIMITED

871/B/3, Near Himalaya Machinery, GIDC Makarpura, Vadodara-10.
Phone : **(O) 0265 - 6131000, 6131001**

ENVIRONMENTAL MONITORING REPORT

LABORATORY TEST REPORT – WATER

REPORT NO.: JAN25/212/16

SAMPLE DETAILS

1.	Name & Address of Client: M/s. Shree khodal Waste Management, Plot No.5 & 6, GIDC Shehera, Taluka & Dist. Panchmahal, Gujarat		
2.	Sample ID: 212JA25GW09	3.	Client Representative : Mr. Abhishek Joshi
4.	Sample Date: 11.02.2025	5.	Sample Collected By: Mr. Ratan Rai
6.	Analysis commenced on: 31.01.2025	7.	Analysis Completed on: 28.02.2025
8.	Reporting Date: 28.02.2025	9.	Discipline : Chemical
10.	Packing Condition & Quantity: Sealed √	11.	Group : Water
12.	Sampling Location: Waghjipur Village	13.	Product: Ground Water
14.	Sampling Method: APHA 24th Edition 1060:B&C	15.	Sample Received Date : 13.02.2025

TEST RESULTS

S. No.	Parameters	Unit (SI)		Results	IS 10500: 2012 Standard Limits for Drinking Water		Method Used
					Acceptable Limits	Permissible Limits	
1.	Salinity	mg/L	:	642	NS	NS	APHA 24th Edition 4500 Cl- B
2.	Total Nitrogen	mg/L	:	11.84	0.5	NR	IS 3025 (PP34)
3.	**Heavy Metals**						
a.	Cyanide	mg/L	:	<0.03	0.05	NR	APHA 24th Edition 4500 CN E

Remark :

Authorised By -

Name : Sapana Amin **Designation: Lab Incharge**

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----------**END OF REPORT**----------

TEST REPORT FORMAT - WATER		
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KADAM LABS PRIVATE LIMITED

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ENVIRONMENTAL MONITORING REPORT

LABORATORY TEST REPORT - MICROBIOLOGY

REPORT NO.: JAN25/212/24(ULR- TC134502500011112F)

SAMPLE DETAILS

1.	Name & Address of Client: M/s. Shree khodal Waste Management,Plot No.5 & 6, GIDC Shehera Taluka & Dist.Panchmahal, Gujarat		
2.	Sample ID: 212JA25GW09	3.	Client Representative : Mr. Abhishek Joshi
4.	Sample Date: 11.02.2025	5.	Sample Collected By: Mr. Ratan Rai
6.	Analysis commenced on: 31.01.2025	7.	Analysis Completed on: 28.02.2025
8.	Reporting Date: 28.02.2025	9.	Discipline : Chemical
10.	Packing Condition & Quantity: Sealed √	11.	Group : Water
12.	Sampling Location: Waghjipur Village	13.	Product: Ground Water
14.	Sampling Method: IS:3025 (Part 1)-1987	15.	Sample Received Date : 13.02.2025

TEST RESULTS

S. No.	Parameters	Results	Unit (SI)	Specification/ SPCB Norms/ BIS Standards	Method Used
1.	Total Coliform Bacteria	N.D.(<1.8)	MPN/100ml	N.A.	APHA 24th Edition 9221 B&C
2.	Fecal Coliform Bacteria	N.D.(<1.8)	MPN/ 100ml	N.A.	APHA 24th Edition9221 C& E
Remarks: N.D. – Not Detected.					
Authorized by:					
Name: Jyoti Chauhan			**Designation: Sr.Microbiologist**		

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2) Re-sampling may be done, if required, with written approval of the laboratory.
3) The results reported above relate to the sample identified under Sample Details.

----------**END OF REPORT**----------

LABORATORY TEST REPORT FORMAT		
DOC. NO.: LAB-FMT-055	Issue No.: 01	Revision No.: 00
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Kadam

Environmental Consultants

www.kadamenviro.com

Environment *f*or Development

CONTACT DETAILS

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GUJARAT POLLUTION CONTROL BOARD
PARYAVARAN BHAVAN
Sector-10-A, Gandhinagar 382010
Phone : (079) 23222425
(079) 23222152
Fax : (079) 23232156
Website : www.gpcb.gov.in

GPCB

Application For CTE After TOR

File No : GPCB/ **(PCB ID. - 115910)** **CTE-82981**

To,
M/s. Shree Khodal Waste Management,
, Plot No.5+6, GIDC Shehra, Taluka\r\nand District: Panchmahal, Gujarat-389210, ,
City :Shehera ,
Dist : Panchmahals ,
Taluka : Shehera

Sub: Consent to Establish (After obtaining Terms Of Rrference For Environment Clearance) under Section 25 of Water Act 1974 and Section 21 of Air Act 1981.

Ref: (1) Your online application No. 333970 dated 25/04/2025

(2) TOR issued by State Authority vide their letter no. SEIAA/GUJ/TOR/7(da)/57/2025 Dated 21/01/2025

Sir,

Without prejudice to the powers of this Board under the Water (Prevention and Control of Pollution) Act-1974, the Air Act-1981 and the Environment (Protection) Act-1986 and without reducing your responsibilities under the said Acts in any way, this is to inform you that this Board grants **Consent to Establish (After obtaining Terms Of Rrference For Environment Clearance) under Section 25 of Water Act 1974 and Section 21 of Air Act 1981** for [illegible] of products as mentioned into the application of Environment Clearance (EC) for which TOR is given vide letter under reference no (2) above.

Consent To Establish Is Granted Subject To The Following Conditions: -

1) The validity period of this CTE shall be Seven Years from the issue of this order.

2) Applicant shall strictly comply with all conditions stipulated by competent authority in the order of Environment Clearance to be issued in reference to TOR issued vide letter under reference No. 2 above.

3) The applicant shall however , not without the prior concern of the Board, Bring into use any new or altered outlet for the discharge of effluent or gaseous emission or sewage waste from the proposed industrial plant. The applicant is required to make applications to this Board for this purpose in the prescribed forms under the provisions of the water Act - 1974, the Air - 1981 and the Environment (Protection) Act - 1986.

Outward No:19177 , 23/05/2025

For and on behalf of
Gujarat Pollution Control Board

Dr. P.S.Dave
ROH - Godhra

- This order is issued to , **Plot No.5+6, GIDC Shehra, Taluka\r\nand District: Panchmahal, Gujarat-389210, , City :Shehera, Dist : Panchmahals, Taluka : Shehera (115910)** for CTE amendment after obtaining EC

TRUE COPY

Item No. 03 Court No. 1

BEFORE THE NATIONAL GREEN TRIBUNAL
PRINCIPAL BENCH, NEW DELHI

Original Application No.900/2022
(I.A. No. 323/2022)
WITH
Caveat Application No.19/2022

M/s Rainbow Environments Pvt. Ltd. Applicant

Versus

State of Punjab & Ors. Respondent(s)

M/s. Meridian Milieu Care Pvt. Ltd. Caveator

Date of hearing: 15.12.2022

CORAM: HON'BLE MR. JUSTICE ADARSH KUMAR GOEL, CHAIRPERSON
HON'BLE MR. JUSTICE SUDHIR AGARWAL, JUDICIAL MEMBER
HON'BLE PROF. A. SENTHIL VEL, EXPERT MEMBER

Applicant: Mr. Alok Mittal, Dr. S.S. Hooda & Mr. Zulfiker Ali P.S, Advocates

Respondent: Mr. Abhijat, Mr. Nikhil Singhvi & Mr. Harkirat Singh, Advocates for Caveator (M/s Meridian Milieu Care Pvt. Ltd.)

ORDER

1. Grievance in this Application is against distribution of area of operation of six Common Bio-Medical Waste Treatment Facilities (CBMWTFs) in Punjab by the State PCB, which is the prescribed authority under the Bio Medical Waste (Management) Rules, 2016 (the Rules). Order of the State PCB is dated 22.2.2021 which has been upheld by the Appellate Authority under Rule 16 of the Rules vide order dated 04.07.2022.

2. According to the applicant, orders of the State PCB and the appellate authority are in violation of Revised CPCB Guidelines, 2016. Change of areas of operation of CBMWTFs has adversely affected the applicant who is already operating its Facility for 18 years. The applicant earlier filed a Writ Petition in the Punjab and Haryana High Court in *CWP No. 16296 of 2022 (O&M), M/s Rainbow Environments Pvt. Ltd. vs. State of Punjab & Ors.* which was disposed of on 24.11.2022 without expressing any opinion on merits with permission to take remedy before this Tribunal.

3. We have heard learned Counsel for the applicant.

4. Though strictly speaking the issue raised is not within the scope of jurisdiction under sections 14 and 15 of the NGT Act, which provide for adjudication of environmental questions necessary for directions for protection of environment at the instance of victim of violation of norms, we see nothing wrong with the impugned orders. No doubt there are guidelines under section 5 of the EP Act, limiting number of CBMWTFs in area of operation to avoid mushrooming of Facilities without adequate infrastructure, the said Guidelines are for guidance of prescribed authority under the Rules and do not prohibit redistribution of areas of operation with the object of ensuring better coverage and better compliance.

5. Impugned order dated 04.07.2022 of the Appellate Authority has found that the Facility in question - Meridian Milieu Care Pvt. Ltd. which has been allowed to operate in some of the area where the applicant was operating was set up after taking requisite EC and consent and there is no illegality in its commission. The operative part of the order is reproduced below:-

> *"6) The Counsel for respondent M/s Meridian Miliew Care Private Limited stated that the facility has been set up in pursuance of EOI*

called by the Board in the year 2014. The facility has obtained Environmental Clearance under the provisions of EIA notification dated 14.9.2006 and also the consent of the Punjab Pollution Control Board under the Water (Prevention & Control of Pollution) Act, 1974 and the Air (Prevention & Control of Pollution) Act, 1981. But the facility has not started its operation and obtained the authorization of the Board under BMW Rules as there was stay by the Hon'ble Punjab and Haryana High Court. The Counsel stated that they will start operation of the facility after obtaining the requisite authorization from the Board. It is also stated that the appellant has concealed a material fact from this Appellate Authority and also from the Hon'ble Punjab and Haryana High Court that ***the appellant himself has participated in the process of the EOI called by the Board in the year 2014 and this fact may be got confirmed from the record of the Board****. The counsel further stated that M/s Meridian Milieu Care Private Limited will comply with all the conditions imposed in the consent letter and requested for allowing the operation of the facility.*

7) The officer present on behalf of Punjab Pollution Control Board stated that the Board is prescribed authority to implement the provisions of Environmental Laws including the Bio Medial Waste Management Rules, 2016 in the State of Punjab. The Central Pollution Control Board has framed guidelines in the year 2003 and 2016 for the effective Implementation of the BMW Rules, where in bed capacity has been assigned for the operation of CBMWTFs. Order dated 22.2.2021 for demarcation of areas amongst the CBWTFs was passed u/s 5 of the Environment (Protection) Act, 1986 for regulating the implementation of the Bio Medical Waste Management Rules, 2016 in an effective manner. ***The respondent M/s Meridian Milieu Care Private Limited was allotted area of operation vide order dated 22.2.2021 as the facility was set up in the pursuance of EOI invited in the year 2014 for setting up of 2 facilities in the State, one in Bathinda Region and the 2nd in other part of the State.*** *The process of setting up the facility at Jalandhar has got delayed due to some land dispute.*

The officer further stated that the appellant has also participated in the EOI In the year 2014 for setting up of CBMWTF in the Bathinda Region, but the application of the appellant was not allowed. Thereafter the appellant in the year 2017 has also filed an application with the Board through the sister concern of M/s Rainbow Environment Pvt. Ltd., namely M/s Pacific Waste Management having its office at the same address of M/s Rainbow Environment Pvt. Ltd at # 1139, Sector 69, SAS Nagar (Mohali) for setting up of CBMWTF at Jalandhar, Kapurthala and Bathinda. Vide letter no. 816 dated 23.2.2018 the sister concern of the appellant was informed that the application dated 2.6.2017 cannot be considered. On the one hand the appellant has himself participated in the EOI called by the Board for setting up of CBMWTF, but on the other hand the appellant is opposing the setting up of other CBMWTFs claiming that there is adequate treatment capacity in the State.

The officer of the Board further stated that the Board has called EOI for setting up of two more CBMWTFs in the year 2020 in the Districts of Sangrur, SBS Nagar in view of increase in bed capacity in the State. Though the Board has not conducted gap analysis at that time, but now the gap analysis has been conducted through a committee of officers.

The calling up of E0I for setting up of two more CBMWTFs cannot be termed as illegal.

The officer of the Board further stated that, the ***clarification given by the Central Pollution Control Board vide letter dated 20.9.2019 clearly states that the State Pollution Control Board being the prescribed authority may allocate coverage area of each of the CBMWTF as outlined in the Central Pollution Control Board guidelines so as to ensure effective coverage of entire state and it is also clearly mentioned in the said letter that CBMWTF can cater upto 10,000 beds within the coverage area of radial distance of 75 Km.*** *However, if 10,000 beds are not available in a coverage of area of 75 km, existing CBMWTF may be allowed to cater to health care facilities located upto a radial distance of 150 km provided treatment and disposal of bio medical waste is conducted within 48 hours.* ***The Board has passed orders dated 22.2.2021 after considering all the aspects of the case, guidelines of the Central Pollution Control Board and prevailing practices in the States Delhi, Haryana and Madhya Pradesh.*** *The Board has also passed the area distribution orders earlier in the year 2011 and 2014 and the said orders were followed by the CBMWTFs.*

As per the provisions of Central Pollution Control Board guidelines, 2016 for CBMWTFs, in case existing CBMWTF is required to be closed for any reason, the State Pollution Control Board has to make alternate arrangement or to allow new CBMWTF in the area. The Punjab Pollution Control Board after observing violation of Bio Medical Waste Management Rules, 2016 had issued closure directions to the CBMWTF at Amritsar in the year 2018 and to the appellant facility in the year 2021. However, ***due to limited number of CBMWTFs in the State of Punjab, the Punjab Pollution Control Board has faced certain problems in dealing with the situation and to refer and transfer the Bio Medical Waste of the area to other existing CBMWTF in the nearby area.***

As per clause 6 of the Central Pollution Control Board Guidelines, 2016 the ***CBMWTF shall be located near to its area of operation in order to minimize the transportation distance in waste collection, thus enhancing its operational flexibility as well as for ensuring compliance to the time limit for treatment and disposal of the bio medical waste as stipulated under the Bio Medical Waste Management Rules, 2016*** *(i.e. within 48 hours).*

The officer of the Board also stated that ***the facility of the appellant is constantly committing violations of the Bio Medical Waste Management Rules, 2016.***

The officer of the Board concluded that the Board has rightly issued the EOI in the year 2020 for the establishment of two more CBMWTFs to effectively manage the bio medical waste of the State and the orders dated 22.2.2021 for demarcation of area amongst the 6 facilities were issued after considering all the aspects as well as the guidelines issued by the Central Pollution Control Board. Further proceedings dated 24.3.2021 for demarcation of the area were issued after hearing the objections of all the stakeholders. The officer of the Board requested to upheld the issuance of

EOI for establishment of two more CBMWTFs and the orders passed for demarcation of area amongst the CBMWTFs.

8) I have also examined the relevant documents and the provisions of Law with the assistance of the parties. After hearing all the parties, examining the relevant record and considering all the aspects of the case, I hereby record my observations and findings as under:

a) The Bio-Medical Waste (Management & Handling) Rules were notified in the year 1998 by the Central Government under the Environment (Protection) Act, 1986 vide notification no. S.0 630(E) dated 20.7.1998 and were revised as Bio Medial Waste Management Rules, 2016 vide notification no. G.S.R. 343 (E) dated 28.3.2016.

b) The Central Pollution Control Board has framed guidelines for Common Bio Medical Waste Treatment and Disposal Facilities in the year 2003 and the same were revised on December 21, 2016. The revised guidelines issued for Common Bio Medical Waste Treatment and Facilities, 2016 are said to be mandatory in nature.

c) According to Rule 3 (o) of the Bio Medical Waste Management Rules, 2016, the prescribed authority means the State Pollution Control Board in respect of a State and Pollution Control Committees In respect of Union Territory.

d) Clarification as given by the Central Pollution Control Board vide letter no. 6894 dated 20.9.2019 to the Punjab Pollution Control Board with regard to the coverage area of CBMWTFs, and bed capacity allowed to be catered by a CBMWTFs clearly states as under:

i. That CBMWTF can cater upto 10,000 beds with in coverage area of radial distaste of 75 km. However, if 10,000 beds are not available in a Coverage area of 75 km, the existing CBMWTF may be allowed to cater to health care facilities located upto a radial distance of 150 km provided treatment and disposal of bio medical waste is conducted within 48 hours.

ii. State Pollution Control Board being the prescribed authority may allocate coverage area of each of CBMWTF as outlined in the Central Pollution Control Board guidelines so as to ensure effective coverage of entire State.

e) The State Pollution Control Board is required to conduct gap analysis with regard to coverage area of bio medical waste generation and also projected over a period of next 10 years, adequacy of existing treatment capacity of the CBMWTF in each coverage area of radius 75 km as per prescribed annexure appended with the guidelines of 2016.

f) The Punjab Pollution Control Board has called EOI in the year 2020 for setting up of two CBMWTFs in the State without conducting gap analysis at that time, but has now concluded the gap analysis.

g) In case existing CBMWTF is required to be closed for any reason, the State Pollution Control Board has to make alternate arrangement or

to allow new CBMWTF in the area, as per the provisions of Central Pollution Control Board Guidelines, 2016 framed for CBMWTFs.

h) The Punjab Pollution Control Board is not having adequate arrangement for reference and transfer of Bio Medical Waste for treatment and disposal to another facility in a nearby area within the State, in case existing CBMWTF is required to be closed for violation of Bio Medical Waste Management Rules, 2016.

i) The Common Bio Medical Waste Treatment Facility of the appellant at present is operating in an area of more than 150 km. Other facilities are operating in areas ranging from more than 100 km. Hence, all the facilities are required to be adjusted for an area of 75 km in compliance to the Central Pollution Control Board revised guidelines, 2016

j) The Common Bio Medical Waste Treatment Facility of respondent number 2 namely M/s Meridian Milieu Care Private Limited has been set up at Nakodar in pursuance to the EOI called by the Board in the year 2014. Hence, gap analysis is not required.

k) M/S Meridian Milieu Care Private Limited has obtained the requisite Environmental Clearance from the State Level Environment Impact Assessment Authority, Punjab, consent to establish and operate from the Punjab Pollution Control Board under the provisions of the Water (Prevention & Control of Pollution) Act, 1974 and the Air (Prevention & Control of Pollution) Act, 1981, but has not commenced operation. The facility is required to obtain authorization under the Bio Medical Waste Management Rules, 2016 before starting operation.

l) Imposition of a condition in the Environmental Clearance and the consents granted to M/s Meridian Milieu Care Private Limited to the effect that the facility shall comply with the guidelines of 2016 does not in any manner restrain the operation of the facility. However, the facility has to make compliance of the provisions of the 2016 guidelines.

m) *The appellant facility was visited by the team of officers of the Board as disclosed by the officer of the Board and huge quantity of bio-medical waste including yellow category waste was found stored in the premises of the appellant facility beyond 48 hrs which confirms the fact that the* ***appellant has failed to treat the bio-medical waste within 48 hrs in compliance to Bio-Medical Waste Management Rules, 2016 and has violated the provisions of the law, and the position requires to be remedied.***

n) Even for the sake of arguments, if the ***area distribution of the appellant facility is considered; it is still having the bed capacity of about 16000 to its credit after redistribution of area amongst the facilities. The Punjab Pollution Control Board being the prescribed authority has to implement the Bio-Medical Waste Management Rules, 2016 with the objective to protect and preserve the environment and not to consider and allow financial profit of an individual or a firm.*** *The appellant since the inception of his facility in the year 2004 has earned profits but the appellant also has a duty*

towards the protection of environment as envisaged in the Constitution of India and the Environmental Laws.

o) The appellant has also participated in the EOI in the year 2014 for setting up of CBMWTF in the Bathinda Region, but the application was not allowed. Thereafter the appellant in the Year 2017 has also filed an application with the Board through the sister concern of M/s Rainbow Environment Pvt Ltd., namely M/s Pacific Waste Management having its office at the same address of M/s Rainbow Environment Pvt. Ltd at # 1139., Sector 69, SAS Nagar (Mohali) for setting up of CBMWTF at Jalandhar, Kapurthala and Bathinda. Vide letter no. 816 dated 23.2.2018 the sister concern of the appellant was informed by the Board that the application dated 2.6.2017 cannot be considered. On the one hand the appellant has himself participated in the EOI called by the Board for setting up of CBMWTF, but on the other hand the appellant is opposing the setting up of other CBMWTFs claiming that there is adequate treatment capacity in the State. The act and conduct of the appellant cannot be legally appreciated.

p) The orders dated 22.2.2021 passed by the Board for redistribution of area amongst the 6 CBMWTFs were passed after considering the prevalent practice in the States of Haryana, Madhya Pradesh and Delhi as well as guidelines issued by the Central Pollution Control Board in the year 2003 and 2016 and also keeping in view the fact that violation of the provisions of Bio Medical Waste Management Rules, 2016 do not take place.

*q) The j**udgment dated 1.9.2017 of the Telengana High Court cannot be made applicable in the present case as the order dated 28.5.2016 was passed by the Telengana State Pollution Control Board before the issuance of the 2016 guidelines of the Central Pollution Control Board. The fact was admitted in paragraph 58 of the Judgement.***

r) Schedule 3 appended to the Bio Medical Waste Management Rules, 2016 at serial number viii) empowers the State Pollution Control Board to perform any other function under Bio Medical Waste Management Rules, 2016 as assigned by the Ministry of Environment, Forest & Climate Change and Central Pollution Control Board from time to time. The Guidelines framed by the Central Pollution Control Board in the year 2016 and the subsequent clarification given vide letter no.6894 dated 20.09.2019 empowers the State Pollution Control Board to demarcate areas of operation of CBMWTFs.

9. In view of the observations and findings recorded above, I have arrived at the conclusion that EOI called by the Punjab Pollution Control Board in the year 2020 for setting up of two CBMWTFs in the Districts of Sangrur and SBS Nagar is violative of the revised guidelines framed by the Central Pollution Control Board in the year 2016 for Common Bio Medical Waste Treatment and Disposal Facilities and is not sustainable in the eyes of Law. Hence, I hereby set aside the E0I called by the Punjab Pollution Control Board in the year 2020 as the same was called without conducting any gap analysis at that time. However, this order will not restrain the Punjab Pollution Control Board from any further exercise with regard to the

setting up of new CBMWTFs in the State after making compliance of the 2016 guidelines. The respondent no.2 facility namely M/s Meridian Milieu Care Private Limited has been set up at Nakodar in pursuance to the E0I called in the year 2014. The facility has also obtained Environmental Clearance under the EIA notification dated 14.9.2006 and consent to establish and operate of the Board under the Water (Prevention & Control of Pollution Act, 1974 and the Air (Prevention & Control of Pollution) Act, 1981. Gap analysis qua the setting up of this facility is not required. Hence, I do not find any illegality in the commissioning of this facility after obtaining the necessary authorization from the Board under the provisions of the Bio Medical Waste Management Rules, 2016. Enabling provision to demarcate areas amongst the Common Bio Medical Treatment Facilities is available in the Bio Medical Waste Management Rules, 2016. Schedule 3 appended to the Bio Medical Waste Management Rules, 2016 at serial no. viii) empowers the State Pollution Control Board to perform any other function under the Bio Medical Waste Management Rules, 2016 as assigned by the Ministry of Environment, Forest & Climate Change and Central Pollution Control Board, from time to time. The mandatory Guidelines framed by the Central Pollution Control Board in the year 2016 and the subsequent clarification given vide letter no.6894 dated 20.9.2019 empowers the State Pollution Control Board to demarcate areas of operation of CBMWTFs and as such the orders dated 22.2.2021 and the proceedings of the hearing dated 24.03.2021 passed by the Punjab Pollution Control Board for demarcation of the areas amongst the 6 CBMWTFs in the State are just, fair and legal and as such are upheld. The board may proceed to implement the said order. The appellant M/s Rainbow Environment Pvt. Ltd, respondent no.2 namely M/s Meridian Miliue Care Private Limited and all other CBMWTFs in the State of Punjab are directed to make compliance of the order dated 22.2.2021 and proceedings of hearing dated 24.3.2021. If any legal formality is required to be performed, the same may be completed at the earliest."

6. While dealing with the status of compliance of BMW Rules, vide order of this Tribunal dated 18.1.2021 in OA 710/2017, (Sailesh Singh's case), Annexure A24 to the application, it was noted from the CPCB report that out of 614 tonnes per day generation of bio-medical waste, about 534 tonnes per day is treated through CBWTFs as well as captive treatment facilitates. Utilisation of capacity in Punjab was only 55%. Thus, there existed gap in generation and treatment of bio medical waste which was urgently required to be bridged in the interest of public health and environment. Capacity utilization of CBWTFs was not adequate which was required to be remedied. It varied depending on available infrastructure in a specific coverage area of 75Kms, number of CBWTFs, geographical distribution, population density in particular coverage area as well as

connectivity of HCFs with CBWTFs. Accordingly, the Tribunal directed the SPCBs/PCCs to relook at the available infrastructure and facilitate new CBWTFs to cover entire population and State's geographical area to bridge gap in generation and treatment of biomedical waste. Thus, pending further gap analysis, remedial action was expected from by the PCB. Order of the PCB dated 22.2.2021, Annexure A-25, shows following chart of distribution of work among six Facilities:

"

Sr. No.	***Name of the Facility***	***Area of operation with name of District***
1.	*M/s Rainbow Environments Pvt. Ltd., Village Balyail, District, Mohali*	*Mohali, Ropar, Fatehgarh Sahib, SBS Nagar, Patiala*
2.	*M/s Medicare Environmental Management Pvt. Ltd., Tajpur Road, Ludhiana*	*Ludhiana, Sangrur, Barnala, Mansa*
3.	*M/s Amritsar Envirocare Pvt. Ltd., Village Ibban Kalan, Amritsar*	*Amritsar, Tam-Taran*
4.	*M/s Bio Medical Waste Treatment Plant Pvt. Limited, Village Pangoil, District Pathankot*	*Pathankot Gurdaspur, Hoshiarpur, Kapurthala*
5.	*M/s Med-waste solutions Pvt. Ltd, Village Bidowali, Tehsil Gidderbaha, District Sri Muktsar Sahib*	*Sri Muktsar Sahib, Fazilka, Faridkot, Ferozpur, Bathinda*
6.	*M/s Meridian Milieu Care Pvt. Ltd. Village Bir Pind, Tehsil Nakodar, District Jalandhar*	*Jalandhar, Moga*

"

7. Letter of MoEF&CC dated 14.10.2022, Annexure A-36 to the application, requires the State of Punjab to undertake gap analysis in generation and treatment of bio-medical waste so that such waste does not remain untreated in the interest of environment and public health. The relevant extract from the letter are as follows:-

> *"3. May I highlight here that the Ministry often comes across media reports, and receive representation from civil society/stakeholder groups on non-compliance of BMWM Rules, 2016/CPCB Guidelines. The major issues highlighted in such complaints are related to unscientific/non-compliant functioning of Healthcare Facilities (HCFs)/CBWTFs, lack of gap-analysis studies & monitoring by SPCBs/PCCs, non-consideration of gap-analysis reports while grant of environmental clearances by SEIAA, illegal dumping of BMW by HCFs/CBWTFs, earmarking of HCFs for BMW treatment of CBWTFs*

against distance criteria etc. It is to be noted that new facilities may be allowed on the basis of gap analysis by SPCBs wherever required.

4. In light of the above, ***I would request you to intervene in the matter and ensure that gap-analysis studies and BMWM Rules, 2016/CPCB guideline provisions must become the one of the fundamental grounds of granting ECs to HCFs/CBWTFs. Further, the SPCBs/PCCs may be directed to ensure effective monitoring of CBWTFs and ensure that all CBWTFs within their jurisdiction come under the ambit of Online Continuous Emission Monitoring System and connect with CPCB server. In case of insufficient capacity, proper gap analysis be made and new facilities may be allowed. If required, the non-compliant entities can be penalized, and asked to deposit of requisite environmental compensation."***

8. In above background, guidelines on the subject are to be understood. Object of guidelines being to ensure effective treatment of bio medical waste for protection of environment and public health and not merely to advance business interest of a Facility by creating monopoly, prime concern is bridging of gap in compliance of norms for which free play in joints has to be allowed to the statutory prescribed authority under the BMW Rules to take effective measures for better compliance and coverage, including availability of a Facility close to generation of waste and efficiency of existing Facility. Arguments in the Application ignore these considerations and focus only on assumed vested right of the applicant. The impugned orders purport to have been passed to effectuate the mandate of the Rules. Further, no serious prejudice to the applicant is shown much less prejudice to the interest of protection of environment and public health. Thus, no case is made out for interference by this Tribunal in exercise of jurisdiction under Sections 14 and 15 of the NGT Act.

The application is dismissed.

We direct CPCB to issue clarification on the pattern of above observations to all PCBs/PCCs within one month so that effective measures for bridging gap in generation and effective treatment of bio

medical waste are ensured, as already directed by this Tribunal vide order dated 18.1.2021 in OA 710/2017, Shailesh Singh case.

A copy of this order be sent to CPCB and all PCBs/PCCs by email.

Adarsh Kumar Goel, CP

Sudhir Agarwal, JM

Prof. A. Senthil Vel, EM

December 15, 2022
Original Application No.900/2022
(I.A. No. 323/2022) With
Caveat Application No.19/2022
SN

2025 INSC 826

REPORTABLE

IN THE SUPREME COURT OF INDIA
CIVIL APPELLATE JURISDICTION

CIVIL APPEAL NOS. 3263-3264 OF 2025

ARUN KUMAR SHARMA & ORS ...APPELLANT(S)

VERSUS

STATE OF MADHYA PRADESH & ORS ...RESPONDENT(S)

J U D G M E N T

PAMIDIGHANTAM SRI NARASIMHA, J.

1. Access to justice is inextricably connected to maintaining integrity in the process of invocation and conduct of remedial proceedings before Courts and Tribunals. We have entertained these civil appeals after sufficient warning that, in the event we accept the objections of the respondent about the deliberate non-disclosure of parallel proceedings initiated before the High Court, and that the original application before the Tribunal is not bonafide as it is intended to subserve personal interest of appellant no. 3, conducting rival business, these civil appeals will be dismissed with exemplary costs. This approach is necessary to ensure earnest and bonafide actions before the tribunals for protecting environment and ecology.

Signature Not Verified
Digitally signed by KAPIL TANDON
Date: 2025.07.14 15:53:20 IST
Reason:

2. *Short Facts and Prayer before the Tribunal:* The short facts leading to filing of the present appeals are that the three appellants approached the National Green Tribunal[1] invoking Section 14 of the NGT Act for restraining respondents 4, 5 and 6 from setting up a Petrol Pump at Khasra No. 109/1/2 (S) situated on SH 10 Bhopal to Berasia road, Village- Intkhedi Road, Tehsil-Huzur, District-Bhopal. The prayers made in the original application are as follows:

> "*7. PRAYER*
>
> *In view of the aforesaid facts and circumstances as explained herein above, it is most respectfully prayed that Hon'ble Tribunal may graciously be pleased to allow the present Application and*
>
> *7.1 Quash the Consent letter dated 19.07.2023; and*
>
> *7.2 Quash the No-Objection Letter dated 07.02.2024 issued by Respondent No. 3; and*
>
> *7.3 Direct the Respondents not to establish petrol pump within the proximity of designated residential area.*
>
> *7.4 Allow the Applicant to add, delete, modify, substitute, amend the present Application and submit additional documents, if occasion so arises; and*
>
> *7.5 Cost of the matter may also be awarded;*
>
> *7.6 Till the pendency of the present matter ad interim relief by way of restraining the Respondent No. 4 & 5 to stop construction of petrol pump activities may also be granted in the interest of justice.*
>
> *7.7 Any other relief, which Hon'ble Tribunal may deem just and proper may also be awarded in favour of the Applicant as against the Respondents.*"

3. It is clear from the above referred prayers that the appellants have specifically challenged, (i) the consent to operate dated

[1] Hereinafter referred to as 'NGT'.

19.07.2023 issued by the Madhya Pradesh Pollution Control Board Bhopal under the Water (Prevention and Control of Pollution) Act, 1974 and the Air (Prevention and Control of Pollution) Act, 1981 and (ii) the NOC dated 07.02.2024 issued by the Collector enabling installation of the petrol pump retail outlet as per the application made by the contesting respondents.

4. Apart from other grounds, the decision of District Collector dated 07.02.2024 is challenged on the ground that he has not applied his mind while issuing the said NOC and that it is contrary to the Petroleum Rules, 2002. The relevant grounds of challenge are as follows:

> *"4.17 However, the Respondent No. 3, without looking into various aspects, issued No-Objection Certificate to the Respondent no. 4 & 5 vide NOC dated 07.02.2024.*
>
> *4.18. It is submitted that the Applicant vide Notice dated 24.12.2023 & 13.02.2024 to the Respondents requested to stay the illegal construction by the Respondent No. 4 & 5 for establishment of petrol pump at the Said Land, citing the various environmental issues.*
>
> *4.19. In the letter dated 24.12.2023 & 13.02.2024, the Applicant raised the issues that the Respondent No. 3 is required to issue No-Objection Certificate in accordance with the Rule 144 of the Petroleum Rules, 2002, in the prescribed proforma. The Rule 144 prescribes the District Authority, i.e. the Respondent No. 3 to issue license if there is no objections to the Applicant receiving a license for the site proposed. Further, the District Authority is also required to protect the interest of public, especially facility like schools, hospitals or proximity to places.*
>
> *4.20. Now, the Respondent No. 4 & 5 are establishing petrol pump at the Said Land in sheer violation of Hon'ble NGT Orders, CPCB Guidelines and PESO Guidelines.*

4.21. That establishment of petrol pump in a residential area poses multifaceted risks and hazards, both to the environment and to the health and safety of the residents. The CPCB Guidelines clearly stipulate the minimum distance requirements for setting up petrol pumps from residential areas, school, hospitals, and other sensitive establishments. It is evident that the Said Land fails to comply with these crucial safety regulations, thereby jeopardizing the lives and well-being of the residents.

4.22. Furthermore, the establishment of a petrol pump in close proximity to designated residential area raises serious concerns regarding air, water and noise pollution. The operation of fuel dispensing units, vehicular traffic, and other associated activities are known to emit harmful pollutants, including volatile organic compounds (VOCs), particulate matter, and noise, which can have detrimental effects on both the environment and public health.

4.23. Additionally, CPCB guidelines and NGT Orders, which aim to mitigate the adverse environmental impacts associated with fuel retailing activities. Failure to adhere to these guidelines not only undermines the regulatory framework put in place to safeguard the environment but also sets a dangerous precedent for füture development projects.

4.24. Considering the gravity of the situation and the potential ramifications for the environment and public health, by way of the present Application, the Applicant urge the Hon'ble National Green Tribunal to intervene expeditiously and cancel the NOC Issued by the Respondent No. 3 and Consent letter issued by Respondent No. 1 to prevent the establishment of the Respondent no. 4 & 5 petrol pump in the designated residential area and school. In the present Application, the Applicant is only bringing the environmental issues for adjudication before the Hon'ble NGT. For other procedural and substantial illegalities being committed by the Respondents, the Applicant reserves its right to approach appropriate forum, at appropriate stage."

5. While issuing notice on 21.03.2024, the NGT constituted a Joint Committee and directed it to submit a factual report within six weeks.

6. *Various permissions already obtained by the respondents:* Pending enquiry and report from the Joint Committee, the contesting respondents 4, 5 and 6 filed a detailed counter affidavit as per which the following permissions have already been obtained.

(i) Firstly, on 30.04.2024, the Ministry of Petroleum and Explosives Safety Organization (PESO) granted NOC in favour of Reliance BP Mobility Ltd.

(ii) Secondly, on 26.04.2023, the CEO of Janpad Panchayat Phanda, Bhopal, M.P. issued NOC

(iii) Thirdly, Madhya Pradesh Road Development Corporation also issued NOC on 26.05.2023

(iv) Fourthly, on 26.04.2023, Madhya Pradesh Electricity Board also issued NOC

(v) Fifthly, on 10.04.2023, the Industrial Department also issued its NOC

(vi) Sixthly, on 19.07.2023, the Madhya Pradesh Pollution Control Board issued its consent to operate under the Water and Air Act, and

(vii) Finally, on 07.02.2024, the Collector also issued the NOC in favour of the contested respondent.

7. It is an admitted fact that all the above referred NOCs as well as the consent to operate were issued prior to the filing of the original application before the NGT on 15.03.2024.

8. *Findings of the Joint Committee constituted by NGT:* The Joint Committee submitted its report on 09.07.2024. The procedure adopted for conducting the enquiry, the field observations,

information provided by the Revenue Department and the Pollution Control Board, along with the findings, are extracted herein below for ready reference.

> *"**4. Field Observations:** -*
>
> *4.1. Joint committee on dated 07/06/2024 conducted a site visit of Khasra No. 109/1/20 (S) stiuated on SH 10 Bhopal to Berasia road, Village- Intkhedi Road, Tehsil-Huzur, District-Bhopal. Apart from the Joint Committee members following officers namely Ms. Prakamya Tiwari, AE, RO, MPPCB, Bhopal, Shri Kanak Meena, Deputy Controller, PESO, Bhopal and Shri Kailash Sharwa, Patwari, Halka-Intkhedi Sadak, Gram Panchayat-Intkhedi Sadak were also present during the site visit. The Advocate of petitioner Shri Prateek Jain was informed by the nodal department about the visit of committee and he was present during the visit. Also, the representative of petrol pump Shri Aman Ahmed Khan was present. The Geographical locations, photographs and visual observations were recorded during inspection. The Photographs and Google Maps are enclosed as Annexure I.*
>
> *4.2. During inspection, Joint Committee visited the site of Petrol Pump mentioned in the petition. The details observed during the inspection are mentioned as under: -*
>
> *4.2.1. The site is located on SH 10, Intkhedi Road, Village-Intkhedi Road, Tehsil-Huzur, District-Bhopal. The geographical location of the site is latitude 23°22'20.95" N and longitude 77°23'58.41 E".*
>
> *4.2.2. The SH 10 road is situated on the East of the petrol pump. The New Government Higher Secondary School is located at a distance of approximately 120 meters away to the South-West of the petrol pump.*
>
> *4.2.3. On north side of the petrol pump there are some commercial establishments located at a distance of approximately 30 meters away, the north of the petrol pump.*
>
> *4.2.4. On south side of the petrol pump there are some commercial buildings, incomplete building structures named as Maruti Udyog, one cement shop, steel TMT bar Shop as per the sign boards placed on the shops, which are located at a distance of approximately 30 meters away.*
>
> *4.2.5. The primary development work for the establishment of Petrol Pump was found in progress.*

4.2.6. The residential colonies as mentioned in the petition are located on the west side of the petrol pump.

4.2.7. The distance from the dispensing unit to the boundary of the Petrol pump towards residential colonies on west side is approx. 38 meters.

4.2.8. During visit of the Joint Committee, no residential houses were found constructed in the above residential colonies and no habitation were observed.

4.2.9. No high tension line was found passing through the petrol pump site.

5. Information provided by the Revenue Department, Tehsil-Huzur, Bhopal

5.1. Letter vide dated 19/06/2024 was issued by MPPCB (Nodal Department) to SDM, Tehsil-Huzur to provide the information of permissions / locations of Petrol Pump, School, Hospital and Residential colony within 50 meter distance from the Petrol Pump as per revenue records. The copy is enclosed as Annexure Il.

5.2. SDM, Tehsil-Huzur, Bhopal vide letter dated 03/07/2024 provided the information. The copy of the letter is enclosed as Annexure III. The main points of the letter are mentioned as under:-

No	*Main Points*	*As per Revenue Record*
1	*Petrol Pump is proposed on Khasra No. 109/1/2 located at Village-Intekhedi Road, Tehsil-Huzur, District-Bhopal.*	*The Petrol Pump is located on part of Khasra no. 109/1/2 and on Khasra no. 109/1/2 Village-Intekhedi Road Tehsil-Huzur, District-Bhopal of area 0.19 hectares, which is registered for commercial purpose in the name of Aman Ahmed Khan S/o Jameel Ahmed Khan.*
2	*The residential colonies respectively Anjani Nandan Dham and Ramnagar are established for residential purpose at Khasra No. 108, 109/2 and 109/1/1*	*The residential colonies respectively Anjani Nandan Dham and Ramnagar established at Khasra No. 108, 109/2 and 109/1/1 are Unauthorised residential colonies.*

	near the site (Petrol Pump),	
3	*Government Higher Secondary School is located 50 meters from the petrol pump and a hospital is also located nearby.*	*No Hospital or Government/private school located within a periphery of 50 meters from the petrol pump and there is no residential activity within a periphery of 50 meters from the fuel section of the petrol pump is operated.*
4	*Information of the designated residential area, school and hospital located around the said petrol pump.*	*The designated residential area, school and hospital are not within the periphery of 50 meters from Petrol Pump. The traditional settlement/population of Village-Intkhedi Road is 600 meters away from the under construction Petrol Pump.*

6. Information of MPPCB:-

6.1 As per the application submitted by Project proponent of Petrol Pump for establishing a Petrol Pump, MPPCB vide outward No:24612 dated 19/07/2023 issued Consent to Establish under Section 25 of the Water (Prevention & Control of Pollution) Act, 1974 and Section 21 of the Air (Prevention & Control of Pollution) Act, 1981. The copy is enclosed as Annexure IV

6.2 The Consent to Establish was issued with the conditions that new petrol pump should be at least 50 meters away from school, hospital and residential areas. If Petrol pump located within 50 meters radius of any school, hospital and residential complex it must obey provisions of Petroleum Rules, 2002, administered by Petroleum and Explosive safety organization. No high-tension wire should be passed through outlet.

7. Findings of the Joint Committee:-

7.1 The committee finds that the residential colonies near the petrol pump as mentioned in the petition are unauthorized residential colonies and as per the record of Revenue department there is no designated residential colony within 50 meters distance from dispensing unit of petrol pump.

7.2 It is also found that there are no schools or hospitals exist within 50 meters distance from the petrol pump.

7.3 The nearest habitation of people around the Village is 600 meters away from the Petrol Pump that is under construction at Village- Intkhedi road.

7.4 Committee has referred the Section - H of Central Pollution Control Board Guidelines (CPCB) for setting of new Petrol Pump dated 07/01/2020. The copy is enclosed as Annexure V. The section - H is reproduced as under:

"Section - H : In case of siting criteria for petrol pumps new Retail Outlets shall not be located within a radial distance of 50 meters (from fill point/ dispensing units/ vent pipe whichever is nearest) from schools, hospitals (10 beds and above) and residential areas designated as per local laws. In case of constraints in providing 50 meters distance, the retail outlet shall implement additional safety measures as prescribed by PESO. In no case the distance between new retail outlet from schools, hospitals (10 beds and above) and residential area designated as per local laws shall be less than 30 meters. No high tension line shall pass over the retail outlet.

7.5 It is humbly submitted that Prior Approval granted to M/s Reliance B.P. Mobility, by the O/o JCCE, PESO, Bhopal, in Form-XIV of Petroleum Rules, 2002, Consent to Establish granted by MP Pollution Control Board, Bhopal and No Objection Certificate granted by the District Collector, Bhopal are issued as per the prevailing Rules and Regulations. It is also submitted that above said Approval/Consent/No-objection Certificates are issued in conformity to the Siting Criteria prescribed in the guidelines of CPCB and no valid establishment such as Residential colony, School, Hospital was found constructed within the periphery of 50 meters from the new Petroleum Retail Outlet, of M/s Reliance B. P. Mobility, proposed on part of Khasra No. 109 and Khasra No.109/1/2, Village-Intekhedi Road Tehsil-Huzur, District-Bhopal."

9. *Judgment of the NGT:* By the order impugned before us the NGT dismissed the original application. Before the NGT, apart from questioning the findings of the Joint Committee, the appellants challenged the grant of NOC by the District Collector dated 07.02.2024 on multiple grounds. The appellants have also raised

additional grounds which were considered and dismissed by the NGT order impugned before us. The relevant portion of the findings of the NGT are as follows:

> *"14. The main ground for challenge to the NOC dated 07.02.2024 is that it is in violation of Rule 144 of Petroleum Rules 2002, which issue cannot be raised before this Hon'ble Tribunal as per Section 14 read with Schedule 1 of the NGT Act The environmental and safety concerns raised are safeguarded by the conditions imposed in the PESO approval dated 22.05.2023 and Consent to Operate dated 19.07.2023 and therefore the application made is clearly frivolous and in fact premature. The said approval is testimony to the fact that the same has been granted pursuant to the Safety and Test Certificate as required under Rules 130 and 126 of the Petroleum Rules, 2002 issued by the competent person approved by CCE, Nagpur. Thus, all the safety measures as prescribed by PESO have been adhered to.*
>
> *15. Notices were also sent to respondent no. 6, who in compliance of the order filed a reply, which is on record. Learned Counsel for the respondent no. 6, Mr. Rohit Sharma has argued that the Petroleum Rules are not covered under the scheduled Act of National Green Tribunal and the allegations regarding blatant violation of CPCB Guidelines remained unsubstantiated even as per the observations furnished by the Joint Committee Members comprising of Members from District Administration, Bhopal, PESO & Madhya Pradesh Pollution Control Board. The Answering Respondent No.6 is the rightful owner of a land forming part of Khasa No. 109/1/2 where a Petrol Pump belonging to Reliance BP Mobility is being established after procuring all the valid permissions from the competent departments.*
>
> *16. It is further argued that the google map, which has been placed on record by the petitioner shows incorrect measurement and the joint committee has submitted the exact map, which clarifies that the distance between the retail outlet of the answering respondent no. 6 and the nearest government school is approximately 135 meters. Further contention of the respondents are that the Petroleum Rules, 2002 are not falling within the schedule of National Green Tribunal Act, 2010 and any objection with respect to The Petroleum Rules, 2002 cannot be entertained under the NGT Act, 2010.*
>
> *17. Learned counsel for the applicant has filed the objection against the findings of the joint inspection report and submitted that Collector has wrongly issued NOC or the diagram prepared*

by the joint committee is not as per guidelines for setting up new petrol pumps or that the committee is not as per guidelines for setting up new petrol pumps or that the committee has misinterpreted the guidelines.

18. It is further argued that the entries in plot no. 109/2 and 108 are transferred of land to private owners which discloses that it is for the residential purposes. The applicant has further challenged the authority of the revenue officials to convert the residential land into the commercial plots and that the provisions contained in Section 172 of the Madhya Pradesh Land Revenue Code, 1959 and Madhya Pradesh Gram Panchayat (Development of Colonies) Rule, 2014 has not been properly followed. Rejoinder to reply filed by the respondent no. 6 and rejoinder reply filed by the respondent nos. 4 and 5 have also been filed.

19. During the course of hearing learned counsel for the State Mr. Prashant M. Harne and Mr. Rohit Sharma learned counsel for the respondent have submitted that the crux of the matter is distance from the hospital, private school etc. and it is clearly mentioned that no hospital or school is located within 50 meters from the periphery of the petrol pump and there is no residential activity within the periphery of 50 meters from the section/ petrol pump. The findings of the committee 7.3 says that the nearest habitation, pupil around the village is 600 meters away from the petrol pump.

20. Learned counsel for the applicant has submitted that the perusal of the land records reveals that several persons have purchased the land and their names are mutated. The revenue entries shows the mutation of the year 2023-24. The contention of the respondents / project proponent and the State counsel are that the application was entertained in the year 2022 dated 14.04.2022 and after comprehensive scrutiny and documentation the M/s Reliance B. P. Mobility granted the dealership vide intend letter dated 30.11.2022 and consent to establish and NOC was issued accordingly.

21. We are of the view that the matter with regard to change of user of land or validity of the colony or construction of the houses are within the domain of revenue authorities. Only thing which is required to be considered is compliance of the guidelines issued by the CPCB for establishment of petrol pump and this application has been filed on the ground of distance which was found to be not in violation of any guidelines and thus this application is not maintainable and not tenable.

22. In view of the above facts, argument and records submitted by the parties, this application is devoid of any merit and deserves to be dismissed and dismissed accordingly."

10. *Order in the review petition:* The review petition filed by the appellants on the ground that the Joint Committee has not given sufficient notice and opportunity was considered and dismissed by the NGT on 17.10.2024.

11. *Civil Appeals before this Court and Preliminary objections of the respondents:* The appellants filed the present civil appeals challenging the judgment of NGT dated 09.08.2024 and also the order in review dated 17.10.2024. Pursuant to issuance of notice, when the respondents appeared and raised objections about the bonafides of the appellants and also alleged that the appellants have suppressed the initiation of parallel proceedings before the High Court, this Court directed the appellants to respond to the said allegations and also cautioned that in the event respondent's contentions were accepted by this Court then the civil appeals will be dismissed with costs.

12. The appellants responded to the preliminary objections by filing their reply. In the said reply, the appellants have, for the first time, brought to the notice of this Court the filing of writ petition no. 41030 of 2024 by appellant no. 3. The appellants sought to justify their action of not informing this Court about filing of the

subsequent writ petition by contending that the scope of proceedings arising out of original application before NGT on the one hand and proceedings arising out of writ petition before High Court are distinct and also that the said fact could not be mentioned in the civil appeals as the writ petition was filed after the institution of the civil appeals.

13. *Analysis:* The appellants want this Court to believe that the scope of the original application before the NGT is confined only to violation of *"Siting Criteria of Retail Outlets"* as mentioned in the office memorandum dated 07.01.2020 issued by the Central Pollution Control Board. It is then submitted that the subsequently filed writ petition is confined to challenging the NOC dated 07.02.2024 on the ground that it is violative of the M.P. Nagar Tatha Gram Nivesh Adhiniyam, 1973 as the contesting respondents did not take the necessary permission from the Director, Town and Country Planning for constructing the Petrol Pump. This justification, as formulated in the affidavit in reply is as follows:

> *"11. That on 18.12.2024 that is during the pendency of the present Civil Appeal a Writ Petition No. 41030 of 2024 (Ram Kumar Singh Vs Collector Bhopal & Ors) was preferred by the Appellant No.3 on a completely different ground and Question of Law as, Petrol Pump was being illegally constructed without 'Development Permissions' as per the due process as envisaged*

under Madhya Pradesh Nagar Tatha Gram Nivesh Adhiniyam 1973 and as the Respondent No. 4 & 5 required to take 'Development Permission' from the Director Town and Country Planning for starting construction of the Petrol Pump."

14. We have examined the matter in detail. Having considered grounds of challenge, the prayers in the original application and submissions as recorded by the NGT and having contrasted them with the grounds and prayers in the writ petition before the High Court, we are of the opinion that this contention is an afterthought and also lacks candour. The following references clearly demonstrate the fact.

15. At the outset, it is not correct to say that the original application was confined only to *"Siting Criteria of Retail Outlets".* We have already reproduced the grounds taken in the original application and it is apparent that while challenging the NOC dated 07.02.2024, the appellants have specifically pleaded that the NOC is contrary to Rule 144 of the Petroleum Rules, 2002. In the original application, the appellants have alleged that the district collector has not applied his mind while granting the NOC. Further, in the civil appeals filed before this Court, they specifically raised questions of law and impugned the NOC dated 07.02.2024 on various other grounds, which are as follows:

"(X). That however, without inquiring into the issues raised by the Appellants and in ignorance of the orders / directions given by the Hon'ble Tribunal is various cases prohibiting setting up of petrol pump outlets near the residential areas, Respondent no. 3 issued a No Objection Certificate dated 07.02.2024 to Respondent no. 4 and 5."

.....

K. BECAUSE impugned orders and judgments are liable to be set aside for the reason that the proposed retail outlet is being constructed without complying with the terms and conditions laid down in the NOC dated 07.02.2024 granted by Respondent no. 3.

L. BECAUSE the Respondent No. 2 failed to ensure the implementation of additional safety measures as prescribed by the Petroleum and Explosives Safety Organization (PESO) in cases where the stipulated distance requirement is not met."

16. The appellants have specifically challenged the grant of NOC dated 07.02.2024 on the ground that the respondents have not obtained development permission from the town and country planning authority. The relevant portion of the ground is as follows:

"N. BECAUSE the Joint Committee report is silent about the illegal construction being carried out by the Respondent on the proposed site of Petrol Pump, without obtaining Development Permission from the Town and Country Planning, which is mandated in the Collector's NOC dated 07.02.2024."

17. Having extracted hereinabove the specific ground in the civil appeals challenging the NOC on the ground that it is granted without obtaining the development permission from the town and country planning authority, which requirement arises under the

M.P. Nagar Tatha Gram Nivesh Adhiniyam, 1973, the submission that the proceedings before NGT were confined only to *"Siting Criteria of Retail Outlets"* is false and is hereby rejected.

18. We will now refer to the grounds taken in the writ petition to examine whether the said writ petition is really confined to challenging the NOC dated 07.02.2024 on the grounds that the said respondents have not obtained the development permission under the M.P. Nagar Tatha Gram Nivesh Adhiniyam, 1973. The following grounds in the writ petition evidence that the writ petition is not confined to that ground:

> *"5.7 It is submitted that before setting up the petrol pump, the Respondent No. 4 & 5 had also granted Prior Approval from the Respondent No. 3 i.e. PESO vide Prior Approval dated 22.05.2023, which prescribes for safety as well as other norms. Clause 5 of the prior approval clearly prescribes that necessary approval including NOC from Respondent No. 1 under Rule 144 of the Petroleum Rules, 2002 is required to be obtain."*
>
> *5.10 On receipt of the letter dated 30.01.2024, the Respondent No. 1 without considering the actual and factual aspect of the Said Land issued the NOC dated 07.02.2024 ('Impugned NOC) to the Respondent No. 4 & 5 for establishment of petrol pump on the Side Land with various conditions attached.*
>
> *5.12 It is submitted that the Impugned NOC was also not issued in accordance with the Petroleum Rules, 2002, which is blatant ignorance and violation of the Petroleum Rules, 2002."*

19. In view of the specific challenge to the NOC dated 07.02.2024 on grounds that it is violative of M.P. Nagar Tatha Gram Nivesh

Adhiniyam, 1973 in the civil appeal, which arises out of proceedings before the NGT, and also challenge to the NOC on grounds that it is violative of Petroleum Rules, which challenge is also taken in the writ petition filed before the High Court, we are of the opinion that the appellants have initiated identical and parallel proceedings. Having extracted the grounds raised in the original application before the NGT, as well as in the writ petition filed subsequently, when the present civil appeals were pending it is clearly discernible from the pleadings that there is an overlap and parallel challenges to the same NOC dated 07.02.2024. In the original application, though the primary challenge is based on the 2020 Guidelines issued by CPCB, the appellants have raised additional grounds with respect to Petroleum Rules and of violation of municipal norms in the civil appeals. In the writ petition before the High Court, though the appellants have taken the stand that their grievance is limited only to violation of provisions of the municipal laws, the Adhiniyam, 1973, grounds relating to Petroleum Rules, 2002, which have anyway been raised before the NGT are also taken. Even assuming that the scope and ambit of challenge is distinct, which we have demonstrated that they are not, the appellants should have taken the permission of this Court

for initiating the writ petition. The minimum that the appellants could have done and infact should have done is to inform this Court about initiation of the fresh proceeding challenging the NOC dated 07.02.2024 before the High Court, particularly when the civil appeals are pending consideration.

20. In the context of the above-referred facts, the submission of the contesting respondents that this litigation is not bonafide and that it is to subserve the personal interest of appellant no. 3, running a parallel business, cannot be brushed aside easily.

21. *Conclusion and directions*: In view of the above, having considered the grounds and relief sought in the original application filed before the NGT and having contrasted it with the grounds and prayers in the writ petition, we are of the opinion that the:

(a) appellants have suppressed the necessary facts and there is reason to believe that the proceedings before NGT were initiated to subserve business interest of appellant no. 3. In this view of the matter, the civil appeals are dismissed with costs quantified at Rs.50,000/- payable to the Supreme Court Advocates on Record Association within four weeks from today.

(b) We also clarify that we have not examined the issue relating to violation of M.P. Nagar Tatha Gram Nivesh Adhiniyam, 1973 raised in the writ petition pending before the High Court. Said writ petition will be heard and disposed of on its own merits and without being influenced by observations made by this Court in the present case.

.....J.
[PAMIDIGHANTAM SRI NARASIMHA]

.....J.
[JOYMALYA BAGCHI]

NEW DELHI;
JULY 14, 2025

TRUE COPY

BEFORE THE NATIONAL GREEN TRIBUNAL

Appeal No.- 631 of 2025 (WZ)

In re:

M/s Samvedna Biomedical Waste Incinerator Appellant

VERSUS

SEIAA Gujarat and Ors. Defendant/Respondent

KNOW ALL to whom these present shall come that I/We M/s Shree Khodal Waste Management the above named Respondent No. 3 do hereby appoint (herein after called the advocate/s) to be my/our Advocate in the above noted case authorized him :-

Maitreya Prithwiraj Ghorpade (MAH/7771/2019), Aundh, Pune - 411067

To act, appear and plead in the above-noted case in this Court or in any other Court in which the same may be tried or heard and also in the appellate Court including High Court subject to payment of fees separately for each Court by me/ us. To sign, file verify and present pleadings, appeals cross objections or petitions for execution review, revision, withdrawal, compromise or other petitions or affidavits or other documents as may be deemed necessary or proper for the prosecution of the said case in all its stages.

To file and take back documents to admit and/or deny the documents of opposite party.

To withdraw or compromise the said case or submit to arbitration any differences or disputes that may arise touching or in any manner relating to the said case. To take execution proceedings. The deposit, draw and receive money, cheques, cash and grant receipts thereof and to do all other acts and things which may be necessary to be done for the progress and in the course of the prosecution of the said case. To appoint and instruct any other Legal Practioner, authorizing him to exercise the power and authority hereby conferred upon the Advocate whenever he may think it to do so and to sign the Power of Attorney on our behalf.

And I/We the undersigned do hereby agree to ratify and confirm all acts done by the Advocate or his substitute in the matter as my/our own acts, as if done by me/us to all intents and purposes.

And I/We undertake that I / we or my /our duly authorized agent would appear in the Court on all hearings and will inform the Advocates for appearance when the case is called.

And I /we undersigned do hereby agree not to hold the advocate or his substitute responsible for the result of the said case. The adjournment costs whenever ordered by the Court shall be of the Advocate, which he shall receive and retain himself.

And I /we the undersigned do hereby agree that in the event of the whole or part of the fee agreed by me/us to be paid to the Advocate remaining unpaid he shall be entitled to withdraw from the prosecution of the said case until the same is paid up. The fee settled is only for the above case and above Court. I/We hereby agree that once the fee is paid. I /we will not be entitled for the refund of the same in any case whatsoever. If the case lasts for more than three years, the advocate shall be entitled for additional fee equivalent to half of the agreed fee for every addition three years or part thereof.

IN WITNESS WHEREOF I/We do hereunto set my /our hand to these presents the contents of which have been understood by me/us on this _____day of _____2026.

Accepted subject to the terms of fees.

SHREE KHODAL WASTE MANAGEMENT

PARTNER

Advocate Client Client Client

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