

# Action Plan for Restoration of Illegal Municipal Dumping Site at Mandideep

## In the Matter of

Original Application No.87/2022 (CZ)  
'Sarthak Tomar V/s Government of M.P. & Ors.

w.r.to

Hon`ble National Green Tribunal Central Bench order dated  
03.08.2023

Date of Visit: 15<sup>th</sup> September 2023

Location: Municipal solid waste dump site Mandideep  
District - Raisen

## LIST OF CONTENT

<b>S.No.</b>	<b>Title</b>	<b>Page No.</b>
1.	<b>Identification of Problem.</b>	<b>1</b>
2.	<b>The main issues raised in the petition by the Applicant.</b>	<b>1-2</b>
3.	<b>Meeting of the joint Committee.</b>	<b>2-3</b>
4.	<b>Factual Status.</b>	<b>3-4</b>
5.	<b>Proposed plan for Remediation/ Restoration/ Recovery of site dispute.</b>	<b>5-8</b>
6.	<b>The following recommendations may be implemented during the bio-mining and bio-remediation of MSW dumpsite at Mandideep for restoring the environment in total.</b>	<b>9</b>
7.	<b>Annexure I</b>	<b>11-24</b>
8.	<b>Annexure II</b>	<b>25-27</b>
9.	<b>Annexure III</b>	<b>28-30</b>
10.	<b>Annexure IV</b>	<b>31</b>
11.	<b>Annexure V</b>	<b>32-105</b>
12.	<b>Annexure VI</b>	<b>106</b>
13.	<b>Annexure VII</b>	<b>107-109</b>
14.	<b>Annexure VIII</b>	<b>110-111</b>
15.	<b>Annexure IX</b>	<b>112-113</b>

# Action Plan for Restoration of Illegal Municipal Dumping Site at Mandideep

## **Identification of Problem**

Hon'ble NGT (CZ), Bhopal vide its order dated 17<sup>th</sup> November, 2022 in the OA no. 87/2022 "Sarthak Tomar Vs Government of M.P. & Ors" directed in para 1, 2 and 6 as under:

1. *Issue raised in this application are absence of sanitary landfill for municipal waste generated and collected from Mandideep is in violation of the Solid Waste Management Rules, 2016. Namely, the State Urban Development Department has not fulfilled its obligations under Rule 11(1); the local authority, i.e. Mandideep Municipal Council has not fulfilled its obligations under Rule 15 and Rule 11(d) of ensuring implementation of provision of the rules; the State Directorate of Town and Country Planning has not fulfilled its obligations under Rule 11(e), 11(f) of identification and allocation of suitable land to the local body and, Rules 11(g) of ensuring separate space for segregation, storage and processing of the waste; the District Collector of Raisen has not fulfilled its obligations under Rule 12 of review, identification and allotment and; the MP Pollution Control Board has not fulfilled its obligations under Rule 16. The absence of mechanisms for protection and improvement of environment and preventing hazards to people, workers, living creatures and plants near and around the dump-site and affected area resulting from hazardous waste (including methane and other chemical emission, leaching and polluting of ground and surface water and infestation) is in violation of Section 8 of The Environment (Protection) Act, 1986. The facts mentioned above are curtailing the of right of people and workers of Mandideep of enjoyment of pollution free atmosphere hence, in violation of Article 21 of the Constitution of India.*

## **The main issues raised in the petition by the Applicant**

As contended by the Applicant the potential environmental and health risks posed by this non-treated waste and the dump-site in Mandideep are as under:

- *Leaching of rainwater polluting the ground and surface water. Runoff contamination of surface and ground water of adjoining farms and River Kaliyasot and River Betwa downhill. Gradual and steady Methane emissions.*
- *Emission of NO<sub>2</sub>, SO<sub>2</sub>, CO, H<sub>2</sub>S, NH<sub>3</sub> and Volatile Organic Compounds (VOCs) from unregulated burning of the dumped waste.*
- *Insect, animal vectors and pest infestation in and around the trenching area. Increasing the likelihood of fly-breeding and rodent infestation.*
- *In the absence of fences and fire safety mechanisms there is a risk of accidental fire and which could affect or/& be affected by the GAIL gasline underneath.*

Hon'ble NGT constituted a joint committee consisting of District Collector, Raisen or his representative, Chief Municipal Officer, Mandideep Municipal Council, Mandideep or his representative and One representative from Madhya Pradesh Pollution Control Board, vide order dated 17.11.2022 for the proper investigation and to know the factual status. In compliance of the order, the joint committee conducted inspection of the Municipal solid waste dumpsite on 15.12.2022 and submitted report.

Hon'ble NGT (CZ), Bhopal vide its order dated 03<sup>rd</sup> August 2023, imposed Environmental compensation of Rs. 60 lakhs on Municipal Council of Mandideep. Vide the same order directed in para 29 as under:

*The amount of compensation as directed above shall be utilized for remediation/restoration/recovery of site in dispute which is causing damage to the environment as also for remediation of damaged environment, in accordance with the plan which shall be prepared by a Joint Committee comprising MPPCB, CPCB and Integrated Regional Officer, MoEF & CC, Bhopal which shall be prepared within two months and thereafter be executed in next three months.*

Copy of the Order is enclosed at **Annexure I**

**Meeting of the joint Committee:**

In compliance of the above order, the nomination received from IRO MoEF& CC, CPCB and MPPCB are enclosed at **Annexure-II**. A meeting of all members of Joint Committee and Chief Municipal Office, Municipal Council Mandideep District Raisen was conducted on 15/09/2023 in the office of Regional Officer, M.P. Pollution Control Board, Mandideep to discuss the direction given by Hon'ble NGT in para no. 29 & deliberation were made to finalize the steps to taken on the compliances in the order followed by visit of the municipal solid waste dumping site, Mandideep district Raisen was inspected on dated 15/09/2023 by the following Joint Committee members. The photographs taken during the meeting and site visit are enclosed as **Annexure III**.

1. *Shri P. Jagan, Regional Director, Central Pollution Control Board, Regional Directorate (Central), Bhopal (M.P.)*
2. *Shri Vishwabandhu Meena, Scientist-D, Regional Office, MoEF & CC, Bhopal (M.P.)*
3. *Shri Abhya Saraf, Regional Officer, Regional Office, M.P. Pollution Control Board, Mandideep, District - Raisen*

*The following officers were also present during the visit :*

- 1- *Dr. Poulami C. Patil, Scientist-B, Central Pollution Control Board, Regional Directorate (Central), Bhopal (M.P.)*
- 2- *Ms. Aswathy Bhaskaran, Research Officer, (Environment) Regional Office, MoEF & CC, Bhopal (M.P.)*
- 3- *Shri Sudhir Upadhyay, Chief Municipal Officer, Municipal Council Mandideep, District- Raisen*
- 4- *Dr. Praveen Kothari, Jr. Scientist, Regional Office, M.P. Pollution Control Board, Mandideep, District - Raisen*

- 5- *Shri Ravishankar Bharti, Jr. Scientist, Regional Office, M.P. Pollution Control Board, Mandideep, District - Raisen*
- 6- *Shri Rajesh Patidar, Sub, Engineer, Regional Office, M.P. Pollution Control Board, Mandideep, District - Raisen*
- 7- *Shri Abhishek Batham, Sub, Engineer, Municipal Council Mandideep, District- Raisen*

## **Factual Status**

- i. At the site municipal solid waste was found to be dumped in an un-scientific manner without any fencing/ boundary wall, storm water drain, leachate collection system, approach road to reach the end point, fire safety system and security arrangement. The google map showing the illegal MSW dumpsite is enclosed at **Annexure IV**.
- ii. As per DPR, the waste spread area to be reclaimed is 5.5828 ha land of M.P. Government (as per column no. 12 of khasra) and total quantity of waste is about 83617 metric ton. Copy of the DPR collected from the Municipal Council, Mandideep is enclosed as **Annexure V**. As informed by the Sanitary inspector of Municipal Council Mandideep that total generation of municipal solid waste from 26 wards is about 31 MT/day.
- iii. The deposited waste also was not covered or compacted and most cases in these open dump sites waste remains susceptible to open burning.
- iv. The existing dump site pose significant health hazards both to the people involved in the operations and to the general public living in the neighbourhood, as there was no arrangements to control odour nuisance and pest infestation in disputed site.
- v. The Municipal Council Mandideep has stopped the dumping/ disposing/ storing of municipal solid waste at disputed land from 16/08/2023.
- vi. CMO Municipal Council Mandideep informed that, the DPR for processing and disposal of legacy waste has already prepared & tendering process has been completed and awarded the work to M/s Ecostan Infra Pvt. Ltd. Copy of the work order issued by the Municipal Council, Mandideep is enclosed as **Annexure VI**.
- vii. During inspection it was also observed that to meet out with the requirement of per day waste generation, the Municipal Council started dumping the waste illegally in a different site nearby the office of MPPCB at Mandideep.
- viii. As per the Municipal Council Mandideep, new site has been identified at survey no.- 203, area- 6.07 Ha. in village- Gurariya The-Goharganj District- Raisen for

disposing of municipal solid waste collected from Mandideep City. Copy of land allotment letter enclosed as **Annexure VII**.

- ix. At the time of inspection burning of solid was not observed at the site by the committee members as it was a rainy day. However, CMO of Municipal Council Mandideep has informed that during the summer season some instances of fire are reported.
- x. The Municipal Council Mandideep has provided material recovery facility and compost pits at the dumping site but not in operational during visit. As per RO MPPCB, Mandideep the material recovery facility stopped functioning after the Hon'ble NGT order. The compost pits were observed without any waste.
- xi. There is no mechanism of fire safety arrangement at the MSW site but municipal council has fire fighting vehicles which are used at the time of fire dumping site. The ambient air quality monitored around the MSW dumpsite at two locations i.e. at upwind and downwind directions by MPPCB. The copy of the monitoring report is enclosed as **Annexure VIII**.
- xii. At present there is no storm water & leachate was found accumulated at the site. MPPCB has carried out ground water sampling from two locations (tube wells) one at the left side and right side of the MSW dumpsite and analyzed for the relevant parameters. The copy of the monitoring report is enclosed as **Annexure IX**.
- xiii. The site is affected by foul odour and several animal and pests were observed in and around which can further act as vectors to the surrounding people. Dead bodies of animals were also observed being disposed.

## Proposed plan for Remediation/ Restoration/ Recovery of site dispute

Identification of Problem	Adverse effect on environment	Proposed Action	Responsible Agency	Impact
<b>Very Short-Term Action Plan</b>				
<b>Insect, animal vectors and pest infestation in and around the trenching area and odour nuisance due to accumulation of legacy waste.</b>	Increasing the likelihood of fly-breeding and rodent infestation.	The site must be covered with proper but temporary fencing.	Municipal Council, Mandideep	Further scattering of waste, unauthorised entry of rag pickers and entry of cattle and other animals which may act as vectors of diseases and pest infestation, will be avoided.
	Unhealthy atmosphere due to generation of foul odour.	To adopt latest control measures for abatement of odour nuisance/ pollution at the dumping site during treatment of waste. If felt necessary, herbal/ biological sanitizers may be used for control of odour.	Municipal Council, Mandideep	The problem of foul odour will be minimized.

<p><b>Oozing out of leachate</b></p>	<p>Contamination of air, surface &amp; ground water and soil of adjoining farms and River Kaliyasot and River Betwa downhill.</p>	<p>Pre- monitoring of pollution Air, water (ground &amp; surface)) and Soil quality, of Bio- Mining &amp; Bio- remediation and submit the monitoring reports to ROMPPCB.</p> <p>During preparation of wind rows, if any dead animals is found will be send for incineration for proper disposal.</p>	<p>Municipal council, Mandideep</p>	<p>The level of contamination may be determined properly and based on the outcomes of the monitoring reports if required further remediation/ restoration plan may be revised and implemented accordingly.</p>
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**Short-Term Action Plan**

<p><b>Accumulation of legacy waste in the site:</b></p> <p>As per DPR prepared by Municipal Council, Mandideep, around 83617 metric tons of legacy waste is dumped illegally and in unscientific manner in an area of about 5.5828 ha.</p>	<p>Produces leachate (liquid generated by anaerobic environment) which pollutes groundwater.</p> <p>Generated Methane etc. which may cause frequent outbreaks of fire at the dumpsites may lead to air</p>	<p><b><u>First Phase</u></b> of restoration:</p> <ol style="list-style-type: none"> <li>1. To conduct survey or drone mapping of disputed dump site.</li> <li>2. It is needed to stop further disposal and dumping of waste in the illegal site.</li> <li>4. Site environment parameters such as baseline study of heavy metals in surface and subsurface soils and water, rainfall, soil type, surface hydrology,</li> </ol>	<p>Municipal Council, Mandideep</p>	<p>Reduction of all the waste dumped in volume by bio-remediation and bio-mining and waste processing.</p>
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	<p>pollution.</p> <p>Odour nuisance and pest infestation at the dumping site.</p>	<p>topography, wind direction etc. must be studied prior to the bio-remediation and bio-mining process.</p> <p>6. The legacy waste need to be loosen and make windrows (Proper gap to make small heaps of waste) so as the leachate can be dried of through solar exposure and all the entrapped methane is removed from the heap. Air drying of the waste also reduces the volume upto 30 to 40%.</p>		
<p>Inadequate fire safety mechanisms.</p>	<p>Occasional outburst of fire incidents due to anaerobic condition or public nuisance resulting to burning of combustible plastics, cloth and oily rags.</p> <p>Sometimes digging into the dump during bio-mining also awakens</p>	<p>Adequate arrangements of fire-fighting system/ fire extinguisher may be made instead of using water for fire-fighting, which may increase the generation of both methane and leachate. Using of soil cover to control the flames is also not suggested as soil will increase the material to a heap.</p>	<p>Municipal Council, Mandideep</p>	

	<p>hidden fires.</p> <p>There is a risk of accidental fire which could affect the GAIL gas line which is passing through the underneath of the dumpsite.</p>			
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<p><b><u>Pollution of water bodies due to leachate and surface runoff.</u></b></p> <p>Contamination of surface and ground water of adjoining farms and River Kaliyasot and River Betwa downhill.</p>	<p>Probable contamination of ground water in agriculture field and drain joining to river Kaliyasot.</p>	<p>The probability of leachate generation is very less as the waste is spread in a wide area rather than formation of heap. However, during treatment the waste proper leachate collection and treatment system must be installed.</p> <p>In case of generation of Leachate it must be treated in collection ponds by underwater composting.</p> <p>Intermittent aeration is very necessary using small compressor pumps or aerators or airlift aeration or even simple manual or mechanical agitation.</p>	<p>Municipal Council, Mandideep</p>	<p>After treatment leachate can be used as bio-cultures and can be sprinkled onto the leachate pools.</p>
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**Long-Term Action Plan**

<p><b>Emission of Methane, NO<sub>2</sub>, SO<sub>2</sub>, CO, H<sub>2</sub>S, NH<sub>3</sub> and Volatile Organic Compounds (VOCs) from unregulated burning of the dumped waste.</b></p>	<p>Air quality of the area and around the area will degrade resulting in health risk of workers and residents around the site.</p>	<p>Proper precautions like wind breaking sheets should be used while processing/ treatment/ handling/ transportation of waste at the site to prevent the fugitive emissions/ air pollution.</p> <p>An onsite emergency plan should be prepared and made available on site prior to commencement of dumpsite bio-remediation &amp; bio-mining.</p> <p>Assessment of soil quality in and around dumpsite must be done.</p>	<p>Municipal Council, Mandideep</p>	<p>Following these steps pollution load on air may be reduced which may generate from the treatment process.</p>
<p><b>Accumulation of legacy waste in the site:</b></p> <p>As per DPR prepared by Municipal Council, Mandideep, around 83617 metric tons of legacy waste is dumped illegally and in unscientific manner in an area of about 5.5828 ha.</p>		<p><b><u>Second Phase</u></b> of restoration:</p> <p>Stabilized waste must be screened out according to different size fractions that can be usefully used off-site or disposed of scientifically following the guidelines of CPCB without affecting the environment. Commonly 150 mm, 80 to 100 mm, 24 to 50mm, 12- 16 mm and 4-6 mm screen sizes are used.</p>	<p>Municipal Council, Mandideep</p>	<p>After completion of this step complete waste can be get rid of and the space can completely be cleaned up.</p>

**The following recommendations may be implemented during the bio-mining and bio-remediation of MSW dumpsite at Mandideep for restoring the environment in total:**

1. Further disposal of the waste collected must be done only in the newly allotted landfill site after taking necessary statutory permissions and the disposal of waste in other illegal sites must be restricted.
2. The materials recovered from the bio-mining process i.e. RDF, C&D waste, inert material, Bio-compost and other recyclable materials should be disposed as per the CPCB guidelines.
3. The recovered earthy fines (bio-earth) shall preferably be used for landscaping or gardening or road medians etc.
4. The bio-mining/ bio-remediation work may be done under the supervision of Municipal Council, Mandideep with intimation to RO, MPPCB, Mandideep. The work may be completed within three months' time as per order passed by Hon'ble NGT.
5. The Municipal Council Mandideep shall also carry out environmental pollution (Air, water (ground & surface)) and Soil quality Pre, during and Post duration of Bio- Mining & Bio- remediation and submit the monitoring reports to ROMPPCB. Based on the outcomes of the monitoring reports if required further remediation/ restoration plan may be revised and implemented.
6. The Municipal Council Mandideep shall carried out thick plantation towards downward of dumping site.



(Vishwabandhu Meena)  
Scientist-D  
Regional Office, MoEF & CC,  
Bhopal



(Abhay Saraf)  
Regional Officer  
M.P. Pollution Control  
Board, Mandideep



(P. Jagan)  
Regional Director  
Central Pollution Control  
Board, Regional Directorate  
(Central), Bhopal (M.P.)

Item No.01

**BEFORE THE NATIONAL GREEN TRIBUNAL  
CENTRAL ZONAL BENCH, BHOPAL**

(By Virtual Mode)

Original Application No.87/2022(CZ)

Dr. Sarthak Tomar

Applicant(s)

Versus

Govt. of M.P. & Ors.

Respondent(s)

Date of hearing: 03.08.2023

**CORAM: HON'BLE MR. JUSTICE SUDHIR AGARWAL, JUDICIAL MEMBER  
HON'BLE DR. AFROZ AHMAD, EXPERT MEMBER**

For Applicant(s) : Mr. Sarthak Tomar, Applicant

For Respondent(s): Mr. Sachin K. Verma, Standing Counsel for State  
of M.P.  
Mr. Rajendra Giri, Advocate for R-2  
Ms. Parul Bhadoria, Advocate for MPPCB  
Mr. Abhay Saraf, RO, MPPCB, Mandideep

**ORDER**

1. This Original Application (hereinafter referred to as '**OA**') under Section 14 and 15 of National Green Tribunal Act, 2010 (hereinafter referred to as '**NGT Act, 2010**') has been filed by Mr. Sarthak Tomar, an advocate and an environmentalist who is concerned with protection of environment alleging that in Mandideep Industrial area, District Raisen in the State of Madhya Pradesh huge quantity of municipal solid waste has been dumped in an unscientific, illegal manner in utter violation of the provisions of Solid Waste Management Rules, 2016 (hereinafter referred to as '**SWM Rules, 2016**') by Mandideep Municipal Council who is a local body responsible for its management, processing and disposal. The said solid waste comprises plastic and glass fiber, electronic waste, commercial and vegetable waste, industrial waste and processing products, dead bodies of animals and residential solid waste including

hazardous domestic waste. It has potential to cause environmental and health risk causing Micro-plastics emissions; Leaching of rainwater polluting the ground and surface water; Runoff contamination of surface and ground water of adjoining farms and River Kaliyasot and River Betwa downhill; gradual and steady Methane emissions; emissions of NO<sub>2</sub>, SO<sub>2</sub>, CO, H<sub>2</sub>S, NH<sub>3</sub> and volatile organic compounds (VOCs) from unregulated burning of the dumped waste; insect, animal vectors and pest infestation in and around the trenching area; increasing likelihood of fly-breeding and rodent infestation and in absence of fences and fire safety mechanisms there is a risk of accidental fire which may affect even the gas pipeline underneath.

2. Earlier also this issue was brought to the notice of this Tribunal in OA 162 of 2014(CZ), Dr. Subhash C. Pandey Vs. Union of India & Ors. which was disposed of finally by order dated 17.10.2016. Tribunal considered pleadings filed before it wherein it was shown that the issue of municipal solid waste would be taken up by authorities concerned after finalization of allotment of land for land fill site to deal with municipal solid waste at Mandideep as also for checking the pollution in River Betwa and Kaliyasot at Mandideep.

3. It was also said that construction of five STPs has started. Tribunal, in the above circumstances observed that no further order is required to be issued. OA was disposed of by above order dated 17.10.2016.

4. It appears that concerned authorities relived themselves by above disposal of OA without any further direction and did not take any further action in the matter showing no progress at all. Even today, the

municipal waste is being dumped in similar manner causing pollution as complained by applicant in OA.

5. Tribunal considered the complaint in its order dated 17.11.2022 and found it appropriate to obtain a factual report by constituting a Joint Committee comprising District Collector, Raisen or his representative; Chief Municipal Officer, Mandideep Municipal Council, Mandideep or his representative and one representative from Madhya Pradesh Pollution Control Board (hereinafter referred to as '**MPPCB**').

6. Committee visited site on 15.12.2022 and submitted report to the Tribunal on 18.12.2022 confirming complaint of applicant that solid waste of Mandideep industrial area is continuously being dumped unscientifically in an open land and even arrangement for segregation of waste and sanitary landfills are not adequate. Chief Municipal Officer, Municipal Council Mandideep sent a letter dated 28.11.2022 to Collector, Raisen for allotment of land for making it an authorized land fill but no such land was made available. The observation, conclusions and recommendations of Joint Committee, mentioned in report, are as under:

**“Observations:**

- 1. GPS location of the dumping site of Municipal Council Mandideep, District Raisen has been recorded using a mobile-based OPs application. The google map of the site and photographs taken during the inspection are enclosed as Annexure-01. The geographical coordinates of dumping site Mandideep are 23.10252 N, 77.529602 E and marked on google map. The dumping site is located near the industrial area Mandideep.*
- 2. As informed, the site was around 18-20 years old dumping site existing in an area of more than 10.0 acres land of M.P. forest department but in column no. 12 of khasra AKVN where the complete municipal solid\* wastes generating from the Mandideep city as well as industrial area is being dumped unscientifically manner. Approximate 1000 Tons of Municipal waste has been dumped at this site.*
- 3. As inform by the Sanitary inspector of Municipal Council Mandideep that total generation of municipal solid waste from 26 wards is about 31MT/day. Municipal council has adopted door to door collection mechanism. Whole quantity is being dumped at the existing dumped*

site with about 65% segregation at source and about 200 Kg/day plastic & other waste is being segregated at the site.

4. During the inspection it has been observed that Municipal Council Mandideep is not comply with the Solid Waste Management Rules, 2010 and dumping through Auto-Tipper. At the dumping site no barbed fencing around the site has been provided.
5. At the time of inspection burning of solid was not observed at the site by the committee members. However CMO of Municipal Council Mandideep has inform that during the summer season some anti-social elements/Rag pickers burned the solid waste which may causes the environmental issues in the area.
6. The Municipal Council Mandideep has provided material recovery facility and composing facility at the dumping site which was found operational during the inspection. This facilities is being operated by Ms Sarthak Samudayik Vikas avm Jankalyan Sansthan, Bhopal. The copy of agreement enclosed as a Annexure-02
7. Present site land is not in the possession of Municipal Council Mandideep for the scientifically disposal of municipal solid waste so that CMO Mandideep has requested to Collector Raisen for allotment of suitable site for the same. The copy of request letter is enclosed as Annexure-03.
8. There is no mechanism of fire safety arrangement at the MSW site but municipal council has fire fighting vehicles which are used at the time of fire dumping site. At the time of visit no burning of dumped waste was found. The ambient air quality of MSW site is being carried out by MPPCB and monitoring result are within limit as per prescribed norms. The monitoring report is enclosed as a Annexure-04.
9. During the inspection there is no observation regarding micro plastic emission. At present there is no any storm water drain & leachate collection system for the rainy season. Hence due to runoff in rainy season contamination of surface and ground water of nearby areas cannot be denied. The nearby ground water samples is being analyzed by MPPCB and monitoring report is enclosed as Annexure-05.
10. The odour nuisance is observed but not animal vectors and pest in infestation observed around the trenching area, as informed by the CMO Mandideep, dead body of animals including cows are being disposed in proper manner by using deep burial method and during the inspection no dead animals were found at the site.

#### **Conclusion:-**

The solid waste of the Mandideep city is continuously being dumped unscientifically in the open land and the arrangements for segregation, processing of waste and sanitary landfills are not adequate and effective available at the site for the disposal of solid waste as mentioned in the SWM Rule 2016.

#### **Recommendations:**

1. According to the Solid Waste Management Rules 2016, the responsibility of collection, segregation, storage, transportation, treatment and disposal of Municipal solid waste lies with the local body hence Municipal Council, Mandideep should comply with the Solid Waste Management Rules 2016.
2. District administration should instruct to MP Forest department to permit the Municipal Council Mandideep regarding immediately

*fencing of the present site to restrict the movement of animals, anti social elements at the dumping site and to develop necessary arrangement of MSW site as per the Solid Waste Management Rule, 2016 till the allotment & development of land.*

*3. Municipal council, Mandideep should take immediate initiation with District administration for the allotment of new landfill site & shall comply with all provisions of Solid Waste Management Rules 2016.*

*4. Municipal Council Mandideep take immediate action to prevent any unregulated burning of dumping waste at any point of time.*

*5. Municipal Council Mandideep shall do dense plantation all around the dumping site to prevent the odour nuisance.”*

7. Applicant filed objections dated 02.01.2023 to Committee's report stating that there is no observation regarding micro plastic emission; observation that no animal vectors or dead body was found is not correct since evidence of decomposed animal dead body was presented alongwith OA vide annexure 11; and, water analysis report submitted by MPPCB was misleading in as much as prescribed standards taken by Committee are as per IS 10500 of 1991 though revised standards were made available vide IS 10500 of 2012 and those should have been applied; air analysis report is also inconclusive and misleading; Committee has not noted that dump site is at a hilltop and no recommendation has been made regarding cleaning up and restitution of hazardous dump site.

8. Report was considered by Tribunal on 10.01.2023. It directed MPPCB to visit the site, verify compliance of Environment Rules and in case there is non-compliance or violation of Environment Rules, take necessary remedial action in addition to imposing and realization of environmental compensation, in accordance with Rules.

9. Pursuant to order dated 10.01.2023, MPPCB, through its Regional Officer, Mandideep has submitted an inspection report after visiting the site on 25.01.2023 wherein observations regarding non-compliance of SWM Rules, 2016 by local body of Mandideep are reiterated as contained in earlier Joint Committee's Report. It is also said that for non-

compliance of SWM Rules, 2016, environmental compensation to the extent of Rs. 66 lakhs may be imposed upon local body. The observations and recommendations made in the above inspection report filed by MPPCB are as under:

**“Observations of the inspection team are as follows:**

- *GPS location of the dumping site of Municipal Council Mandideep, Distic Raisen has been recorded using a mobile-based GPS application. The google map of the site and photographs taken during the inspection are enclosed as Annexure-01. The geographical coordinates of dumping site Mandideep are 23.102628 N, 77.529574 E and marked on google map. The dumping site is located near the industrial area Mandideep.*
- *As per Solid Waste Management Rule 2016 "Tentification of suitable sites for setting up solid waste processing facilities within 1 year from the date of notification of rules" but not complied till now. Present land is not in possession of Municipal Council Mandideep for the scientifically disposal of municipal solid waste.*
- *There is no common or standalone scientific sanitary landfill for disposal of residual waste from processing facilities as well as inert waste as per rules.*
- *At present there is no storm water drain & leachate collection system for the rainy season. Hence due to runoff in rainy season contamination of surface and ground water of nearby areas cannot be denied.*
- *The odour & fly nuisance is observed at the site.*
- *Around the dump site no barbed fencing or boundary wall is provided to restrict unwanted animals and human being from entering the dump site.*
- *The Municipal Council Mandideep has provided material recovery facility and composting facility at the dumping site which was found operational during the inspection. This facilities is being operated by M/s Sarthak Samudayik Vikas am Jankalyan Sansthan, Bhopal. Material recovery facility provided at the site does not have adequate capacity for the handling generated waste and needs up-gradation.*
- *At the time of inspection burning of solid was observed at the site. There is no fire fighting arrangement/ facility at the MSW site but municipal council has fire fighting vehicles which are used at the time of fire at dumping site.*
- *The Municipal Council has not established waste deposition centers for domestic hazardous waste as per rule.*
- *Municipal solid wastes generating from the Mandideep city as well as industrial area is being dumped unscientifically manner, Approximate 1000 Tons of Municipal waste has been dumped at this site. No activities observed at the site for the bio-remediation of the dumped waste.*
- *As per Solid Waste Management Rule 2016 ULBs are required to make an application in Form-I for grant of authorisation for setting up waste processing, treatment or disposal facility, if the volume of waste is exceeding five metric tones per day including sanitary landfills from the State Pollution Control Board or the Pollution Control Committee" But Municipal Council Mandideep has failed to comply.*

**Recommendation:-**

Based on the above observation it is stated that Municipal Council Mandideep is not fully complying provisions of Solid Waste Management Rule 2016. So Municipal Council Mandideep should be directed to comply the provisions of Solid Waste Management Rule 2016 and also Environmental Compensation should be levied as per Hon'ble NGT order dated 14/12/2020 in OA No. 606/2018 i.e.

“41. In view of above, consistent with the directions referred to in Para 29 issued on 10.01.2020 in the case of UP, Punjab and Chandigarh which have also been repeated for other States in matters already dealt with, we direct.

a. In view of the fact that most of the statutory timelines have expired and directions of the Hon'ble Supreme Court and this Tribunal to comply with Solid Waste Management Rules, 2016 remain unexecuted, **interim compensation scale is hereby laid down for continued failure after 31.03.2020. The compliance of the Rules requires taking of several steps mentioned in Rule 22 from Serial No. 1 to 10 (mentioned in para 12 above). Any such continued failure will result in liability of every Local Body to pay compensation at the rate of Rs. 10 lakh per month per Local Body for population of above 10 lakhs, Rs. 5 lakh per month per Local Body for population between 5 lakhs and 10 lakhs and Rs. 1 lakh per month per other Local Body from 01.04.2020 till compliance. If the Local Bodies are unable to bear financial burden, the liability will be of the State Governments with liberty to take remedial action against the erring Local Bodies. Apart from compensation, adverse entries must be made in the ACRs of the CEO of the said Local Bodies and other senior functionaries in Department of Urban Development etc. who are responsible for compliance of order of this Tribunal. Final compensation may be assessed and recovered by the State PCBs/PCCs in the light of Para 33 above within six months from today. CPCB may prepare a template and issue an appropriate direction to the State PCBs/PCCs for undertaking such an assessment in the light thereof within one month.**

b. **Legacy waste remediation was to 'commence' from 01.11.2019 in terms of order of this Tribunal dated 17.07.2019 in O.A. No. 519/2019 para 282 even though statutory timeline for 'completing' the said step is till 07.04.2021 (as per serial no. 11 in Rule 22), which direction remains unexecuted at most of the places and delay in clearing legacy waste is causing huge damage to environment in monetary terms as noted in para 33 above, pending assessment and recovery of such damage by the concerned State PCB within four months from today, continued failure of every Local Body on the subject of commencing the work of legacy waste sites remediation from 01.04.2020 till compliance will result in liability to pay compensation at the rate of Rs. 10 lakh per month per Local Body for population of above 10 lakhs, Rs. 5 lakh per month per Local Body for population between 5 lakhs and 10 lakhs and Rs. 1 lakh per month per other Local Body. If the Local Bodies are unable to bear financial burden, the liability will be of the State**

***Governments with liberty to take remedial action against the erring Local Bodies. Apart from compensation, adverse entries must be made in the ACRs of the CEO of the said Local Bodies and other senior functionaries in Department of Urban Development etc, who are responsible for compliance of order of this Tribunal. Final compensation may be assessed and recovered by the State PCBs/PCCs in the light of Para 33 above within six months from today."***

*Since the population of Municipal Council Mandideep is less than 5 lakhs. hence on the basis of the order passed by Hon'ble NGT in OA no. 606/2018. following Environmental Compensation may be imposed from 01704/2020 to till date:-*

<b>S. No</b>	<b>Point of Non-Compliance</b>	<b>Penalty/Month in Rs.</b>	<b>Duration in Month</b>	<b>Total Penalty</b>
1.	<i>Failure to comply with Solid Waste Management Rules, 2016</i>	<i>1.0 Lakh</i>	<i>33</i>	<i>33.0 Lakh</i>
2.	<i>Non remediation of legacy waste</i>	<i>1.0 Lakh</i>	<i>33</i>	<i>33.0 Lakh</i>
<b>Total Penalty</b>				<b>Rs. 66.0 Lakh</b>

10. The matter was examined by Tribunal again on 13.02.2023. It considered complaint made by Applicant that no action has been taken by concerned authorities for proper disposal of solid waste in accordance with SWM Rules, 2016. Tribunal also considered the defense of local body that land was not made available by State. However, Tribunal did not agree with this defence and observed that it is an internal matter between the State and Municipal Corporation. Tribunal as also MPPCB are bound to enforce environment laws and take appropriate punitive and other action against the violator. Tribunal, therefore directed MPPCB to submit a further progress report.

11. An Action Taken Report dated 10.03.2023 has been submitted by MPPCB stating that it has issued a notice dated 06.03.2023 to Chief Municipal Officer, Nagar Palika Parishad, Mandideep directing it to pay

environmental compensation of Rs. 60 lakhs within 15 days from the date of notice.

12. Tribunal examined Action Taken Report dated 10.03.2023 on 13.03.2023 and directed MPPCB to finalize the matter of imposition of environmental compensation in accordance with law after giving opportunity of hearing to concerned parties.

13. Pursuant to said order dated 13.03.2023, today i.e. 03.08.2023 a status report has been filed by MPPCB stating that opportunity of hearing was granted to Chief Municipal Officer, Municipal Council, Mandideep. On the request of officials of local body, two months time was granted for payment of Rs. 60 lakhs of environment compensation. The copy of minutes of meeting dated 17.04.2023 is on record as annexure 2 to the Status report dated 03.08.2023 which shows that as per the statement of Municipal Council Officer, requisite funds for legacy waste and its management were sanctioned, tender proceedings were going on and land for solid waste management was also allotted.

14. In view of decision taken in meeting dated 17.04.2023, a letter dated 25.04.2023, annexure 3 to status report filed on 03.08.2023, was issued to Chief Municipal Officer, Nagar Palika Parishad, Mandideep.

15. However, fact remains, as we are also informed today that nothing has progressed further and dumping of solid waste is continuing in the same manner as had been done earlier. Applicant who is appearing in person stated that this dumping of solid waste in an illegal manner is going on for the last almost two decades. It is a continuous and day to day cause of action. Earlier, when Municipal Solid Wastes (Management and Handling) Rules, 2000 were applicable they were being breached with impunity by Municipal Council Mandideep by dumping and

unscientifically managing solid waste at hilltop at Mandideep Industrial Area and same violation is continuing till date and SWM Rules, 2016 are being violated without any remorse and hesitation.

16. Learned counsel appearing for Municipal Council stated that since land has not been allotted for setting up an authorized Land Fill, therefore dumping of solid waste in illegal manner is continuing. He said that responsibility of making the land available is of State and for this purpose up sought to rely on Rules 16 of SWM Rules, 2016 but we find that Rules 16 nowhere says what has been contended by learned counsel for Municipal Council Mandideep. On the contrary, Rules 16 prescribes duties of State Pollution Control Board or Pollution Control Committee and categorically says that enforcement of SWM Rules, 2016 is the responsibility of State Pollution Control Board or Pollution Control Committee which has to be enforced through local bodies in their respective jurisdiction. Further, implementation of SWM Rules, 2016 has to be reviewed at least twice a year in close coordination with concerned Directorate of Municipal Administration or Secretary in-charge of State Urban Development Department. There are other provisions in Rules 16 which emphasize more on implementation and enforcement of Rules 2016 in an effective manner by State Pollution Control Board through concerned local bodies.

17. Here we find that even State Pollution Control Board has failed in its performance of statutory duty, contemplated under Rules 16. Local body has miserably failed to act in accordance with provisions of SWM Rules, 2016 and the same are being breached with adamant attitude of not reforming the action by complying with said rules. The facts discussed above also show that earlier OA 162 of 2014 was disposed in October, 2016 when a stand was taken before Tribunal that steps for

allotment for land are being taken and Rules shall be implemented expeditiously but nothing was done and the first letter which has been placed before us issued by Municipal Council to Collector for allotment of land is dated 28.11.2022 which shows that for six years nothing was done despite a specific stand taken by this Tribunal and even that was violated.

18. Municipal Council, Mandideep is clearly guilty of violation of SWM Rules, 2016 which have been framed in exercise of powers under 3, 6 and 25 of Environment (Protection) Act, 1986 (hereinafter referred to as '**EP Act, 1986**'). Section 15 of EP Act, 1986 says that whoever fails to comply with or contravenes any of the provisions of this Act or the rules made or orders for directions issued there under, shall, in respect of each such failure of contravention, be punishable with imprisonment for a term which may extend to five years or with fine which may extend to 1 lakh rupees or with both and in case the failure or contravention continues, with additional fine which may extend to 5,000 rupees for everyday during which such failure or contravention continues after conviction for first such failure or contravention.

19. Sub Section 2 of Section 15 provides, if the contravention continues beyond a period of one year after the date of conviction, offender shall be punishable with imprisonment for a term which may extend to for a period of seven years.

20. Section 16 deals with offences by companies and Section 17 deals with offences by Government Department.

21. Company means any body corporate and include a firm or other association or other individual and every person who is directly incharge and responsible to the company for conduct of its business is liable to be

prosecuted and punished for committing offence under Section 15 of EP Act, 1986.

22. Section 19 provides procedure for cognizance of an offence and says that no court shall take cognizance unless a complaint is made by Central Government or any authority or officer authorized on his behalf by that Government or any person who has given notice of not less than 60 days in the manner prescribed of the alleged offence and of his intention to make a complaint to the Central Government or the authority or officer authorized as aforesaid.

23. Learned counsel appearing for MPPCB informed that Central Government has authorized MPPCB officials to lodge complaint for taking cognizance of the offences under Water (Prevention & Control of Pollution) Act, 1974, Air (Prevention and Control Of Pollution) Act, 1981 and EP Act, 1986.

24. In the present case, Chief Municipal Officer, Municipal Council Mandideep is the officer responsible for business of corporate body and also head of department, hence he is liable for prosecution for committing an offence under Section 15 of EP Act, 1986. Moreover, we find that this offence is continuing for last more than a decade and hence now there is no reason as to why appropriate criminal and other proceeding should not be initiated against all defaulters/violators/offenders of Environmental Laws, and in particular EP Act, 1986.

25. In these circumstances, we direct Member Secretary, MPPCB to lodge a complaint before competent Court under Section 15 read with 19 of EP Act, 1986 against Chief Municipal Officer, Municipal Council Mandideep, District Raisen for his prosecution for committing offence under Section 15 of EP Act, 1986.

26. Besides, for committing continues violation of SWM Rues, 2016 and causing pollution, damaging environment, Municipal Council, Mandideep is also liable to pay environmental compensation on the principle of **'Polluters Pay'**. MPPCB has imposed compensation of 60 lakhs upon Municipal Council, Mandideep but said amount has not been deposited till date. For the time being, we are confining quantum of computation of environmental compensation to the amount assessed by MPPCB but direct Member Secretary, MPPCB to immediately initiate proceedings for recovery of the said amount by taking all coersive measures, in accordance with law and ensure recovery of said amount within two months.

27. Municipal Council, Mandideep is further restrained from dumping/disposing/collecting/storing any solid waste/municipal solid waste in open land including the offending site in dispute, on and after 16.08.2023, and compliance of this order shall be ensured by Regional Officer, MPPCB, Mandideep and Collector, Raisen.

28. If they find any violation of above direction, besides other action as permissible under EP Act, 1986, they shall also initiate criminal prosecution against the offending persons and officers by taking steps for prosecution of concerned person(s) under Section 26 of NGT Act, 2010 read with Section 30 by filing complaint before concerned Magistrate without any further delay.

29. The amount of compensation as directed above shall be utilized for remediation/restoration/recovery of site in dispute which is causing damage to the environment as also for remediation of damaged environment, in accordance with the plan which shall be prepared by a Joint Committee comprising MPPCB, CPCB and Integrated Regional

Officer, MoEF&CC, Bhopal which shall be prepared within two months and thereafter be executed in next three months.

30. Compliance report of above directions shall be submitted by Member Secretary, MPPCB with Registrar of Central Zone, Bhopal Bench by 15.12.2023 who shall place the matter before the Bench, if any further order is required.

31. With aforesaid directions, this OA is disposed of.

32. Copy of this order be forwarded to Member Secretary, MPPCB, RO, Mandideep, Chief Municipal Officer, Municipal Council Mandideep, District Raisen, Collector and District Magistrate, Raisen, Secretary, Urban Development Department, State of Madhya Pradesh and Chief Secretary, State of Madhya Pradesh by e-mail for compliance.

Sudhir Agarwal, JM

Dr. Afroz Ahmad, EM

August 03, 2023  
Original Application No.87/2022(CZ)  
N

क्षे.नि.भो./एन.जी.टी. ओ.ए.- 87/2022(CZ)/9/19

दिनांक 18 अगस्त, 2023

प्रति,

सदस्य सचिव  
मध्यप्रदेश प्रदूषण नियंत्रण बोर्ड  
पर्यावरण परिसर, ई-5 अरेरा कालोनी  
भोपाल - 462 016

**Most urgent**  
NGT Case

विषय: NGT OA No. 87/2022(CZ) "Dr. Sarthak Tomar Vs. Govt. of M.P. & Ors." में अधिकारी के नामांकन बाबत।

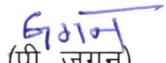
संदर्भ: 1. माननीय एन.जी.टी. द्वारा पारित आदेश दिनांक 03.08.2023  
2. म.प्र.प्र.नि.बो. से प्राप्त पत्र क्र. 2394/विधि/NGT(CZ)/प्रनिबो/23  
दिनांक: 11.08.2023

महोदय,

कृपया माननीय एन.जी.टी. द्वारा दिनांक 03.08.2023 को विषयांकित प्रकरण में पारित आदेश का अवलोकन करने का कष्ट करें। विषयांकित प्रकरण में माननीय एन.जी.टी. द्वारा संयुक्त समिति का गठन किया गया है, जिसमें मध्यप्रदेश प्रदूषण नियंत्रण बोर्ड, केन्द्रीय प्रदूषण नियंत्रण बोर्ड तथा एकीकृत क्षेत्रीय कार्यालय-पर्यावरण, वन एवं जलवायु परिवर्तन मंत्रालय, भोपाल शामिल है। आदेश में उक्त समिति द्वारा पुर्नस्थापना योजना (Restoration Plan) तैयार करने के पश्चात् दो माह के भीतर प्रतिवेदन माननीय एन.जी.टी. के समक्ष प्रस्तुत करना होगा।

उक्त कार्य हेतु इस कार्यालय से अधोहस्ताक्षरकर्ता (मोबाइल नं. 9755559745, ईमेल-[cpcb.bhopal@gov.in](mailto:cpcb.bhopal@gov.in)) को नामित किया गया है। अनुरोध है कि उपरोक्त कार्य हेतु आपके कार्यालय से समिति सदस्य का नामांकन प्राप्त हुआ है अतः उपरोक्त संदर्भित पत्र के क्रमानुसार उचित तिथि निर्धारित कर इस कार्यालय को सूचित करने का कष्ट करें ताकि माननीय एन.जी.टी. द्वारा नियत तिथि के पूर्व पुर्नस्थापना योजना माननीय एन.जी.टी. के समक्ष प्रस्तुत किया जा सके।

भवदीय,

  
(पी. जगन)  
क्षेत्रीय निदेशक

संलग्नक: उपरोक्तानुसार।

प्रतिलिपि:

- |  |   |   |
|--|---|---|
| (1) डिविजनल हेड, विधि अनुभाग, के.प्र.नि.बोर्ड, दिल्ली                          | } | की ओर कृपया सूचनाथ।                           |
| (2) एकीकृत क्षेत्रीय कार्यालय-पर्यावरण, वन एवं जलवायु परिवर्तन मंत्रालय, भोपाल |   | की ओर कृपया सूचनाथ एवं आवश्यक कार्यवाही हेतु। |
| (3) क्षेत्रीय अधिकारी, म.प्र.प्र.नि.बो., मण्डीदीप                              |   |   |

  
क्षेत्रीय निदेशक

“राजभाषा हिन्दी में पत्र व्यवहार का स्वागत है”

पता: “परिवेश भवन”  
पर्यावरण परिसर, ई-5, अरेरा कालोनी, भोपाल-462016  
ईपीएबीएक्स : 0755-2775385, 2775386  
क्षेत्रीय निदेशक डायरेक्ट : 0755-2775384

मुख्यालय:  
परिवेश भवन  
पूर्वी अर्जुन नगर, दिल्ली-110032  
दूरभाष क्र : 011-43102030

ई-मेल: [cpcb.bhopal@gov.in](mailto:cpcb.bhopal@gov.in), वेबसाइट: [www.cpcb.nic.in](http://www.cpcb.nic.in)

PB

“सिंगल यूज प्लास्टिक” का करें बहिष्कार

**Fwd: माननीय राष्ट्रीय हरित अधिकरण भोपाल बेंच द्वारा प्रकरण क्रमांक 87 2022 (सार्थक तोमर विरुद्ध मध्यप्रदेश शासन व अन्य) में दिनांक 3 अगस्त 2023 पारित आदेश के अनुपालन बाबत**

1 message

HVC Chary Guntupalli &lt;rowz.bpl-mef@nic.in&gt;

Mon, Aug 28, 2023 at 12:29 PM

To: romppcbmandideep@gmail.com, Pentani Jagan &lt;cpcb.bhopal@gov.in&gt;, it mppcb &lt;it\_mppcb@rediffmail.com&gt;

महोदय,

नई आवती दिनांक 17.8.2023 की प्राप्ति क्षेत्रीय कार्यालय, मध्य प्रदेश प्रदूषण नियंत्रण बोर्ड, मण्डीदीप जिला-रायसेन (म.प्र.) (romppcbmandideep@gmail.com) के ई-मेल द्वारा हुई है जिसमें OA NO.87/2022(CZ) के सन्दर्भ में आदेश दिनांक 03.08.2023 का पालन किये जाने बावत् आदेश की प्रति को संलग्नकर प्रेषित किया गया है।

उपर्युक्त विषय एवं सन्दर्भित पत्र के संबंध में माननीय अधिकरण द्वारा परित आदेश के अनुपालन हेतु इस कार्यालय से श्री विश्वबन्धु मीणा, वैज्ञानिक "डी" को कमेटी हेतु नामांकित किया जाता है। उन्हें निम्न जानकारी पर संपर्क किया जा सकता है -

मोबाइल क्र-8527202235

ई-मेल आई डी - vishwabandhu.meena@gov.in

**Regional Office****Ministry of Environment, Forest & Climate Change,****Bhopal, Madhya Pradesh****(O) 0755-2466525****(F) 0755-2463102****From:** romppcbmandideep@gmail.com**To:** "Pentani Jagan" <cpcb.bhopal@gov.in>, "HVC Chary Guntupalli" <rowz.bpl-mef@nic.in>**Sent:** Thursday, August 17, 2023 8:45:23 PM**Subject:** माननीय राष्ट्रीय हरित अधिकरण भोपाल बेंच द्वारा प्रकरण क्रमांक 87 2022 (सार्थक तोमर विरुद्ध मध्यप्रदेश शासन व अन्य) में दिनांक 3 अगस्त 2023 पारित आदेश के अनुपालन बाबत

Please Find the Attachments.

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**Regional Officer,**  
**Regional Office,**  
**M.P. Pollution Control Board, Mandideep**  
**District - Raisen (M.P.)**



LettertoRDEVNT.pdf

1013K



**मध्यप्रदेश प्रदूषण नियंत्रण बोर्ड,**  
**पर्यावरण परिसर, ई-5, अरेरा कॉलोनी, भोपाल-462016**



Fax No : +91-755-2463742 E-mail : it\_mppcb@rediffmail.com

कमांक 2394 /विधि/ NGT(CZ)/प्रनिबो/23  
प्रति

भोपाल, दिनांक

11 AUG 2023

- 1 क्षेत्रीय निर्देशक  
पर्यावरण, वन एवं जलवायु परिवर्तन मंत्रालय,  
केन्द्रीय पर्यावरण भवन, ई-5, अरेरा कॉलोनी  
रविशंकर नगर, भोपाल-462016
- 2 क्षेत्रीय निर्देशक,  
केन्द्रीय प्रदूषण नियंत्रण बोर्ड,  
क्षेत्रीय निर्देशालय (मध्य),  
परिवेश भवन, पर्यावरण परिसर  
ई-5, अरेरा कॉलोनी, भोपाल -462016



विषय :- माननीय एनजीटी भोपाल बेंच द्वारा प्र.क. 87/2022 (सार्यक तोमर विरुद्ध मध्यप्रदेश शासन व अन्य) में दिनांक 03.08.23 पारित आदेश के अनुपालन बाबत।

उपरोक्त विषयान्तर्गत माननीय एनजीटी द्वारा प्र.क. 87/2022 (सार्यक तोमर विरुद्ध मध्यप्रदेश शासन व अन्य) में दिनांक 03.08.23 को पारित आदेश का अनुपालन हो, जिसके मुख्य अंश निम्नानुसार है।

*"The amount of compensation as directed above shall be utilized for remediation/restoration/recovery of site in dispute which is causing damage to the environment as also for remediation of damaged environment, in accordance with the plan which shall be prepared by a Joint Committee comprising MPPCB, CPCB and Integrated Regional Officer, MoEF&CC, Bhopal which shall be prepared within two months and thereafter be executed in next three months."*

माननीय अधिकरण द्वारा उक्त आदेशानुसार पर्यावरण, वन एवं जलवायु परिवर्तन मंत्रालय, भोपाल, केन्द्रीय प्रदूषण नियंत्रण बोर्ड, भोपाल एवं मध्य प्रदेश प्रदूषण नियंत्रण बोर्ड की संयुक्त समिति का गठन कर समिति को कार्ययोजना को 02 माह में बनाये जाने हेतु निर्देशित किया गया है, जिसका अनुपालन 03 माह में किया जाना है। उक्त के संबंध में आवश्यक कार्यवाही किये जाने का अनुसंध है।

संलग्न :- उपरोक्तानुसार

(चन्द्र मोहन ठाकुर)  
सदस्य सचिव

प्रतिलिपि :-

1. क्षेत्रीय अधिकारी, क्षेत्रीय कार्यालय, मध्य प्रदेश प्रदूषण नियंत्रण बोर्ड, मंडीदीप की ओर सूचनार्थ एवं आपको निर्देशित किया जाता है कि उक्त आदेश में दिये गये निर्देशों का पालन सुनिश्चित करें।

AE

17/8/23

Legal-NGT



Meeting of Joint Committee members at ROMPPCB Mandideep  
on dated 15.09.2023.



Visit of Joint Committee members at illegal MSW dumpsite of Municipal Council Mandideep on dated 15.09.2023.



Photographs of illegal MSW dumpsite of Municipal Council Mandideep



Illegal MSW Dumping Site Municipal Council Mandideep

Google map showing the illegal MSW dumpsite

# Detailed Project Report (DPR)

## for

### Processing & Disposal of Legacy Waste in Mandideep

[Division Bhopal, District Raisen]

### (Final Stage)

#### Submitted To

#### Nagar Palika Mandideep

M-84, Indra Nagar, Ward Number 21,  
Mandideep, Bhopal,  
Madhya Pradesh 462046



#### Submitted By

#### MaRS Planning & Engineering Services Pvt. Ltd. In consortium with Pivotal Planning Services

#309, "ARISTA", Sindhu Bhavan Road,  
Off SG Highway, Bodakdev,  
Ahmedabad - 380 059. Gujarat (INDIA)



Unnamed Road, Industrial Area, Mandideep, Bhopal, Madhya Pradesh  
462046, India

Latitude  
23.1036983°

Local 02:01:40 PM  
GMT 08:31:40 AM

Longitude  
77.5273671°

Altitude 0 meters  
Sunday, 28 Aug 2022

Note : Mars Green Tech Infra Ventures

September 2022 / REVISION 1 /Slot 0

## Detailed Project Report (DPR)

<b>Name of Project</b>	<b>:- Processing &amp; Disposal of Legacy Waste at an existing dumpsite in Mandideep</b> [Division Bhopal, District Raisen]
<b>Estimated Legacy Waste</b>	<b>:- ~0.83 Lakh MT</b>
<b>Estimated Time of Completion</b>	<b>:- ~ 4 Months</b>
<b>Estimated Project Cost</b>	<b>:- ₹ 4,59,89,350.00</b> <b>(~Rs. 459.89 Lakhs)</b>



GPS Map  
Camera Lite

4G2H+4F2, Industrial Area, Bhopal, Madhya Pradesh 462046, India

Latitude  
23.10145377°

Longitude  
77.5306227°

Local 02:27:28 PM  
GMT 08:57:28 AM

Altitude 418.83 meters  
Sunday, 28 Aug 2022

Note : Mars Green Tech Infra Ventures

### Technical support



### Disclaimer

This report is prepared on the basic data produced, analysed and obtained from the secondary sources like CDP, DPR, site visit and consultation with the stakeholder & ULB Officials. Every effort has been taken to check the accuracy of the data source however this cannot be construed as fully reliable. The objective of the report is to firm up the policy level decision making for the project. However, Consultants cannot be held responsible for the decision taken solely based on this report.

## Contents

A.	PROJECT BACKGROUND .....	5
1.	<i>Introduction</i> .....	5
2.	<i>Project formulation Justification (need for the project)</i> .....	5
3.	<i>Project Objective</i> .....	6
4.	<i>Consultant Scope of Work</i> .....	7
B.	DETAILS OF EXISTING DUMPSITE AND ITS SURROUNDINGS .....	8
1.	<i>City profile</i> .....	8
2.	<i>Details of existing Waste Dumpsite</i> .....	9
3.	<i>Historical Imagery of Existing Dumpsite</i> .....	10
4.	<i>Land Records</i> .....	11
5.	<i>Existing Situation of Dumpsite and its surrounding</i> .....	12
C.	WASTE QUANTITY ESTIMATES & FIELD INVESTIGATIONS .....	14
1.	<i>Adopted Approach and Methodology</i> .....	14
2.	<i>Estimation of Quantity of Legacy Waste</i> .....	19
3.	<i>Waste Characterisation and Resource Recovery Estimations</i> .....	23
D.	PROPOSED APPROACH FOR DUMPSITE REMEDIATION .....	24
1.	<i>Options available for Dumpsite Remediation</i> .....	24
2.	<i>Proposed Approach for Dumpsite Remediation</i> .....	27
3.	<i>Material Balance &amp; Disposal Strategies</i> .....	28
4.	<i>Proposed Outputs to be achieved in the project</i> .....	28
E.	REQUIREMENTS FOR BIOREMEDIATION .....	31
1.	<i>Proposed Approach</i> .....	31
2.	<i>Proposed Requirements for Bioremediation</i> .....	33
F.	COST ESTIMATES & IMPLEMENTATION PLAN FOR DUMPSITE REMEDIATIONS .....	39
1.	<i>Unit Rates Adopted for Costing</i> .....	39
2.	<i>Cost Estimates</i> .....	39
3.	<i>Proposed Implementation Plan</i> .....	40
4.	<i>Proposed Funding Mechanism</i> .....	41
5.	<i>Benefits from the Proposed Project:</i> .....	42
G.	ENVIRONMENT MITIGATION MEASURES .....	43
<b>GLOSSARY OF TERMS</b> .....		<b>45</b>
<b>DRAWINGS &amp; L SECTIONS</b> .....		<b>49</b>

## List of Tables

<b>Table 1: Location Map</b>	8
<b>Table 2: Location of Existing Waste Dumpsite</b>	9
<b>Table 3: Surrounding Site Environment around Existing Dumpsite</b>	9
<b>Table 4: Historical imagery of the existing dumpsite</b>	10
<b>Table 5: Status of Infrastructure at the existing Dumpsite</b>	13
<b>Table 6: Step by step Activities undertaken for Estimation of Quantity of Legacy Waste</b>	14
<b>Table 7: Step by step Activities undertaken for Waste Characterisation study</b>	17
<b>Table 8: Step by step Activities undertaken for Resource Recovery Estimations</b>	18
<b>Table 9: Locations of samples collected</b>	18
<b>Table 10: Area and Volume Calculation for Each Chainage</b>	22
<b>Table 11: Summary of Legacy Waste Quantity Estimates</b>	23
<b>Table 12: Findings for Waste Characterisation study</b>	23
<b>Table 13: Findings for Resource Recovery estimations</b>	24
<b>Table 14: Advantages &amp; Disadvantages for Capping Model without Land Recovery</b>	25
<b>Table 15: Advantages &amp; Disadvantages for Bioremediation and Capping model with part Land recovery</b>	25
<b>Table 16: Advantages &amp; Disadvantages of Reclamation with complete Land recovery</b>	26
<b>Table 17: Material Balance and disposal strategies for fractions recovered</b>	28
<b>Table 18: Output proposed to be achieved</b>	28
<b>Table 19: Proposed Milestones to be achieved</b>	29
<b>Table 20: Step by step proposed activities for Bioremediations</b>	31
<b>Table 21: Detailed Calculation of Infrastructure Requirements for Bioremediation</b>	33
<b>Table 22: Summary of Infrastructure Requirements for Bioremediation</b>	35
<b>Table 23: Specifications for Infrastructure Requirements for Bioremediation</b>	35
<b>Table 24: Unit Rates Adopted</b>	39
<b>Table 25: Summary of Cost for Bioremediation</b>	39
<b>Table 26: Comparison and selection of appropriate models for dumpsite reclamation</b>	40
<b>Table 27: Comparison and selection of appropriate models for dumpsite reclamation</b>	40
<b>Table 28: Proposed Implementation timeframes</b>	41
<b>Table 29: Proposed Financial Structure &amp; Funding Mechanism</b>	41
<b>Table 30: Reclaimed land benefits</b>	42

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## A. Project Background

### 1. Introduction

1. The most prevalent method of disposal of Municipal Solid Waste has been open dumping, for most of India's history. The accelerated growth of urban population and increasing economic activities rule out the viability of this method any longer.
2. Swachh Bharat Mission since 2014 has introduced several scientific methods in MSWM. Environmental adjudication has also mandated the scientific remediation of dumpsites. The fact that many old dumpsites and landfills in the country pose threat to public health and the environment necessitates action to remediate dumpsites and reclaim the land being degraded.
3. After decades of use, the open dumps have grown larger and higher, becoming huge point sources of pollution. Waste rotting in these dumps produces leachate, a foul dark liquid concentrate that kills vegetation in its path and irreversibly pollutes groundwater. The heaps of garbage also produce methane, a greenhouse gas that causes 21 times more global warming than carbon dioxide. Methane often auto-ignites, causing fires in the dumpsites, generating smoke and emissions thereby severe air pollution.
4. It is estimated that more than 10,000 hectares of urban land is locked in these dumpsites in India. In the absence of exposure to air, these dumpsites in the absence of oxygen generate methane (a greenhouse gas) and other landfill gases, which contribute to global warming. They also produce leachate (liquid generated by dumped) waste) which pollutes groundwater. Frequent outbreaks of fire at the dumpsites lead to air pollution. The presence of these dumps encourages further dumping at these sites, even though they are filled beyond capacity to take any more waste.
5. The Directorate, Urban Administration and Development (UADD) has appointed MaRS Planning & Engineering Services Pvt. Ltd. in consortium with Pivotal Planning Services for Preparation of Detailed Project Report (DPR), Transaction Advisory and Provide Supervision & Monitoring Services for Implementation of Solid Waste Management Projects for ULBs in the State of Madhya Pradesh for **Bhopal Division under SBM-Urban 2.0 vide Letter of Empanelment (LoE) No. 7615 Dated 22/04/2022 for Bhopal Division.**
6. The Consultant has undertaken the field survey and data collection on 28/08/2022. This report outlines the survey data, analysis, methodology and finally gives the quantity of waste which needs to be cleared through bioremediation / capping.

### 2. Project formulation Justification (need for the project)

7. The Government of India has notified the Solid Waste Management Rules (SWM) Rules, 2016 for proper and effective management of municipal solid waste (MSW). Under the SWM Rules, 2016, following provisions have been made to manage old dumps of MSW.

**Rule 15 - Duties and responsibilities of local authorities and village Panchayats of census towns and urban agglomerations.** - *The local authorities and Panchayats shall,*

- *investigate and analyze all old open dumpsites and existing operational dumpsites for their potential for bio-mining and bio-remediation and wherever feasible, take necessary actions to bio-mine or bioremediate the sites;*
- *in absence of potential of bio-mining and bioremediation of dumpsites, they shall be scientifically capped as per landfill capping norms to prevent further damage to the environment.*

**Further, provisions under Schedule I (j) are given below:**

- **Schedule-I (j)** – Closure and Rehabilitation of Old Dumps-Solid waste dumps which have reached their full capacity or those which will not receive additional waste after setting up of new and properly designed landfills should be closed and rehabilitated by examining the following options:
  - *i. Reduction of waste by bio-mining and waste processing followed by placement of residues in new landfills or capping as in (ii) below.*
  - *ii. Capping with solid waste cover or solid waste cover enhanced with geomembrane to enable collection and flaring / utilization of greenhouse gases.*
  - *iii. Capping as in (ii) above with additional measures (in alluvial and other coarse-grained soils) such as cut-off walls and extraction wells for pumping and treating contaminated ground water.*
  - *iv. Any other method suitable for reducing environmental impact to acceptable level.*

8. The Advisory on Landfill Reclamation released by Central Public Health and Environmental Engineering Organization (CPHEEO) in June 2020 clearly suggest to undertake a total station survey or drone mapping of all dumping site for estimating the quantity of Dump prior to start of the project.

9. The major deficiencies associated with the dumpsite in **ULB** are as under.

- The current dumpsite is growing in size, becoming an eyesore for these cities, causing considerable social, economic and environmental losses to surroundings.
- The Municipal administration will soon have to deal with the fact that these dumpsites will soon be unable to take in any more waste, and it is imperative that they are proactive in tackling this issue.
- The current dumpsite has neither a lining nor a daily covering and receive mixed and untreated waste which has a large organic fraction. The open dumpsites pose serious health risks such as groundwater pollution caused by leachate seeping into the ground, air pollution, vector-borne diseases, hazardous landfill fires, and unaesthetic appearance. in addition to the environmental losses, the dump site causes social and economic losses to the nearby people due to the stigma around dumpsites.

### 3. **Project Objective**

10. The following are the project objectives-

- To study the existing legacy dump and its surroundings and delineate the area for undertaking a topography survey in consultation with ULB Officials.

- To take a sample of waste and undertake waste characterization.
- To undertake a Topographical and Contour Survey at the delineated site.
- To Generate Contour Maps and Relevant Drawings
- To undertake required analysis for estimating the Quantity of Legacy Waste
- To clear legacy waste dumps in as per Government guidelines and to reclaim the land for other infrastructure creation.

#### **4. *Consultant Scope of Work***

11. The following are the scope of work for the assignment-

a) Preparation of Detailed Project Report (DPR)

- Quantifying the complete waste at the legacy site
- Description/ estimates of volume, area, average heights, type of waste
- Carryout total station survey of complete project site including area earmarked in which reclamation is to be done.
- Take relevant sample of waste and undertake waste characterization for resource recovery estimations
- Prepare preliminary assessment of dumpsite on the basis of the data obtained from survey
- Provide maps, calculations of legacy waste at site
- Present technical solutions for the reclamation of Land.
- Prepare Detailed Project Report (DPR) for chosen technology option with timelines, steps, Engineering Design, Requirements, detailed costs and implementation models etc.
- Guide the ULB on the future course of action

b) Tender Preparation, Evaluation and Awarding of work Contracts

- Prepare Tender Document in consultation with the official in charge.
- Prepare & assist in finalization of Bid Documents for Uploading on e-procurement portal of Government of Madhya Pradesh (GoMP) or GeM portal.
- Answering the technical queries raised by the contractors in the pre bid meeting.
- Preparing all the pre bid questionnaire and clarifications.
- Assisting in evaluation of bids received by ULB.
- Recommendation for award of work contracts.
- Issue of letter of intent, preparation and signing of contract for appointment of contractors for goods and services.

c) PMC services for Project Monitoring and Supervision during Implementation period

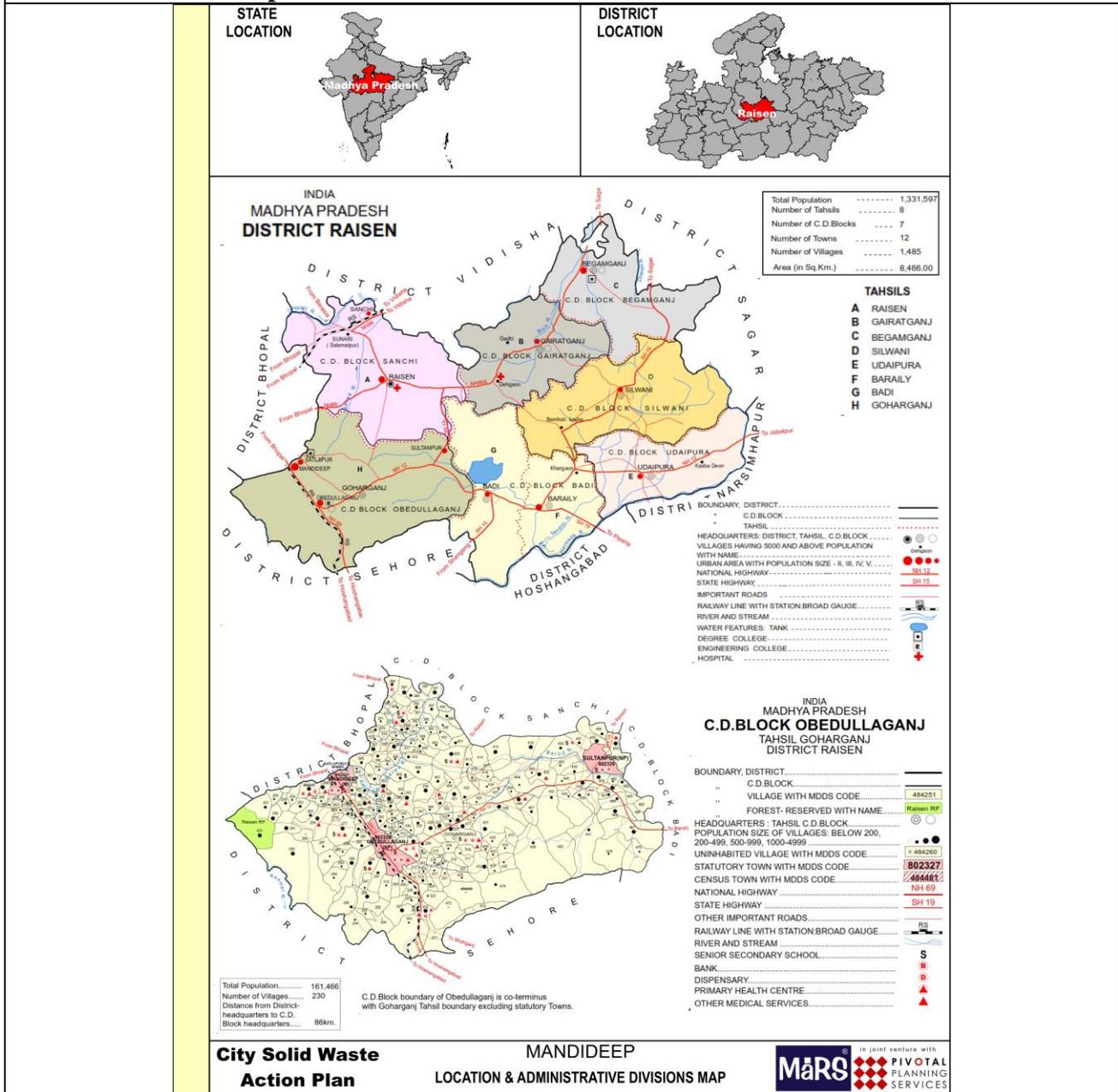
- Review and approve all the Contractor's design, drawings and implementation schedules.
- Visit the site of works, at intervals and as instructed, and collect information with photographs related to physical progress of implementation.
- Undertake Proof checking of designs or completed works with scrutiny of supporting documentations etc. in order to make a compliance report and grant approval on completed works.
- Prepare and submit progress report on progress of works.

**B. Details of Existing Dumpsite and its surroundings**

**1. City profile**

12. Mandideep is a Town in Mandideep Tehsil in Raisen District of Madhya Pradesh State, India. It belongs to Bhopal Division. It is located 44 KM towards west from District headquarters Raisen. It is a Tehsil head quarter. Pipliya Gajju (1 KM), New Satlapur (3 KM), Old Satlapur (3 KM), Satlapur (3 KM), Industrial Area (4 KM) are the nearby Villages to Mandideep.

**Table 1: Location Map**



13. Mandideep city has 14330 households and town is divided into 18 wards. Mandideep city elections are held of every 5 years to elect representative of each ward. As per the Census India 2011, Mandideep city has population of 59654 of which 32390 are males and 27264 are females. The population of children between age 0-6 is 9002 which is 15.09% of total population.

2. *Details of existing Waste Dumpsite*

14. The following is the location details of the existing Waste Dumpsite-

**Table 2: Location of Existing Waste Dumpsite**



Site Name	Location	Area	Revenue Details	Ownership	Current Dumping
Dumpsite	23° 6'7.01"N 77°31'49.35"E	5.5828ha	Not Available	-	Yes

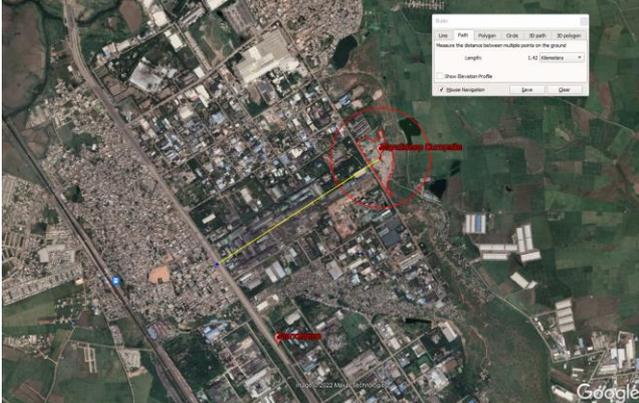
Source: ULB

15. The following are the details of site surrounding and its distances to the existing dumpsite.

**Table 3: Surrounding Site Environment around Existing Dumpsite**

Nearest Residential Settlement @0.70 Km	Nearest Village @ 6 Km

**Table 3: Surrounding Site Environment around Existing Dumpsite**

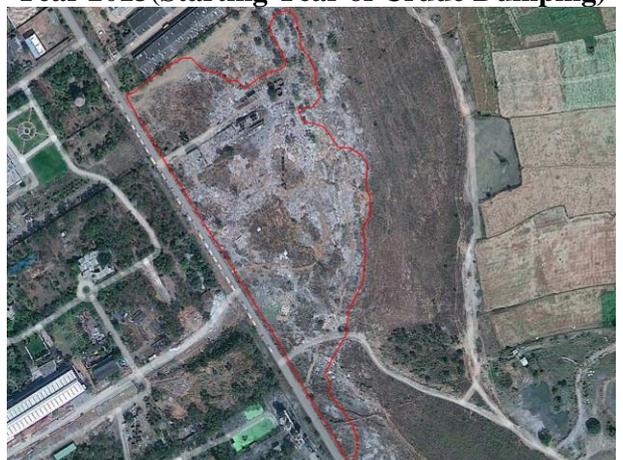
<p style="text-align: center;"><b>Nearest Highway @ 1.5 Km</b></p> 	<p style="text-align: center;"><b>Nearest Waterbody/Canal @ ~ 3.1 Km</b></p> 
<p style="text-align: center;"><b>Nearest Railway Line @ ~ 1.5 Km</b></p> 	

Source:- Consultant

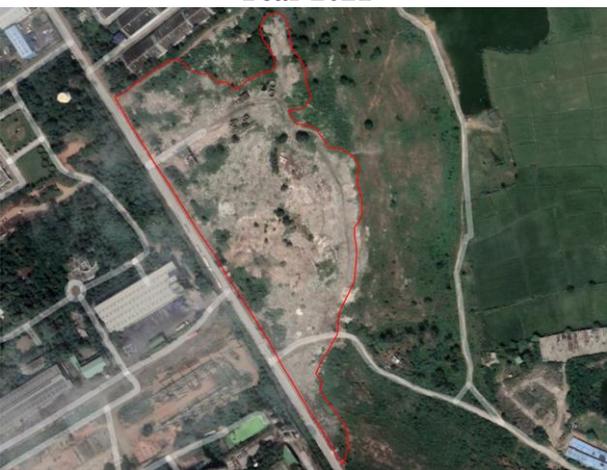
**3. Historical Imagery of Existing Dumpsite**

16. The following are the details of details of Historical imagery of the existing dumpsite.

**Table 4: Historical imagery of the existing dumpsite**

<p style="text-align: center;"><b>Year 2013(Starting Year of Crude Dumping)</b></p> 	<p style="text-align: center;"><b>Year 2014</b></p> 
---	--

**Table 4: Historical imagery of the existing dumpsite**

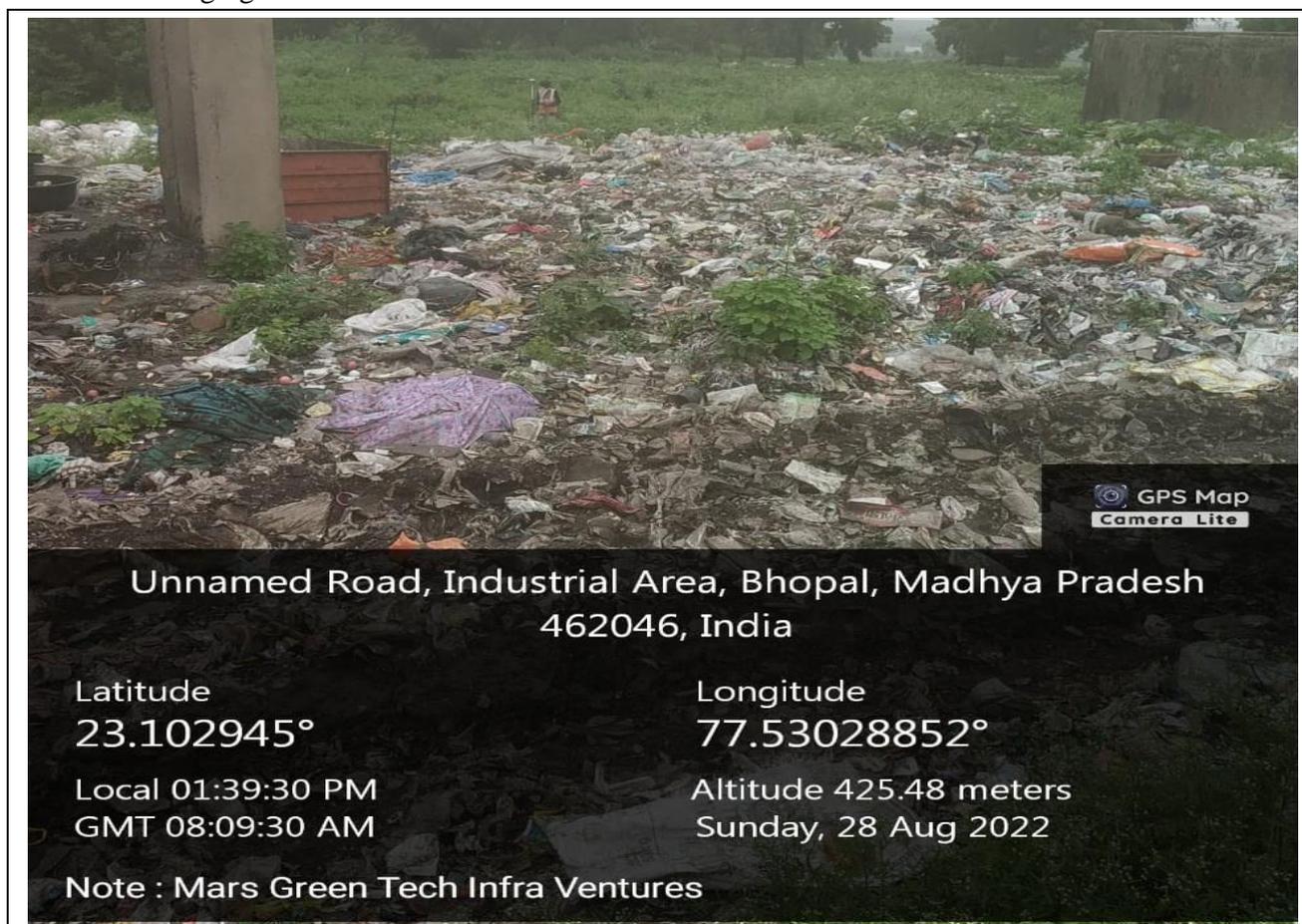
<p style="text-align: center;"><b>Year 2015</b></p> 	<p style="text-align: center;"><b>Year 2016</b></p> 
<p style="text-align: center;"><b>Year 2017</b></p> 	<p style="text-align: center;"><b>Year 2018</b></p> 
<p style="text-align: center;"><b>Year 2019</b></p> 	<p style="text-align: center;"><b>Year 2021</b></p> 
<p>Source: Consultant</p>	

#### 4. Land Records

17. The details of Land records are not available with the ULB.

## 5. Existing Situation of Dumpsite and its surrounding

18. The general field observations made during the site visit are as under-
- Present open dumpsite consists of waste from several sources.
  - The waste deposited is also not covered or compacted and in most cases in these open dumpsites, waste remains susceptible to open burning.
  - The existing dumpsite pose significant health threats both to the people involved in the operations and to the general public living in the neighborhood.
  - Large number of animals are attracted around the dumpsite, many times purposefully by their owners, in order to have access to food, for free. That usually results in food-chain pollution.
  - Fauna, plants or vegetation are impacted directly from the direct contamination by waste or leachate, the migration of gases, or as a result of burning or smoke.
  - The dumped waste is not engineered at all, with no leachate management and no landfill gas (LFG) collection. in Addition, they are poorly managed without any controls on accepting incoming materials or record keeping. Exposed wastes are open to all weathers and needless to say are often not engineered at all, with no leachate management and no landfill gas (LFG) collection.
  - The site permits scavengers or waste pickers for collecting recyclables without any protection measures and in most cases allowing even living within dump sites or sometimes even scavenging for food leftovers.





19. The following is the status of infrastructure available at the existing dumpsite-

**Table 5: Status of Infrastructure at the existing Dumpsite**

No.	Details	Available	Functional	Remarks
1	Electricity Connections	Yes	Yes	
2	Water Connection	No	No	
3	Processing Infrastructure	No	No	
4	Boundary Wall	No	No	
5	Office cum Security Cabin	No	No	
6	Gate	No	No	
7	Faecal Sludge Treatment Plant	No	No	
8	Composting Pit	No	No	

Source: Field Survey by Consultant

**C. Waste Quantity Estimates & Field Investigations**

**1. Adopted Approach and Methodology**

20. Two major activities were undertaken during field investigations i.e. (1) Estimations of Quantity of Legacy Waste and (2) Waste Characterisation and Resource Recovery Estimations. The following are the step-by-step approach and methodology adopted for both the activity.

a) Approach for Estimation of Quantity of Legacy Waste

21. The following step by step approach and methodology adopted for volume estimation of the legacy waste by DGPS Survey.

<b>Table 6: Step by step Activities undertaken for Estimation of Quantity of Legacy Waste</b>	
<b>Original Ground Contour Map Generation</b>	
The first step is to derive the original ground level (OGL) profile of the identified area before the beginning of dumping of waste. This is done by preparing a contour map using DEM (Digital Elevation Model) derived from SRTM-3 data available as open access. After the Generation of Contour Map Natural Ground Profile of the site is prepared. UTM Projection used are [a]. Code Type- EPSG; [b]. Category- UTM, WGS84 Datum; [c]. Code- UTM84-44N; [d]. Categories-UTM, WGS84 Datum; [e]. Unit -Meter; f. Description-UTM-WGS 1984 datum, Zone 43 North, M cent. Meridian 81d E. The existing contour drawings are attached in the report.	
<b>Existing Ground Contour Map Generation</b>	
The second step is to derive Existing Ground Level Profile of the identified area. This is done by undertaking a <b>Differential Global Positioning System (DGPS) survey</b> on field by using the same UTM projections which were used to derive Natural Ground Profile.	
<b>(I) Instrument Set Up</b>	<b>(II) TBM Marking</b>
 <p>4G2H+4F2, Industrial Area, Bhopal, Madhya Pradesh 462046, India</p> <p>Latitude 23.10135957° Longitude 77.53007473°</p> <p>Local 01:04:57 PM Altitude 422.03 meters</p> <p>GMT 07:34:57 AM Sunday, 28 Aug 2022</p> <p>Note : Mars Green Tech Infra Ventures</p> <p>Differential Global Positioning System (DGPS) Instrument called Base with an accuracy of 3 mm + 0.6 ppm for long lines long observations was set on field for receiving data from receiver instrument called Rover.</p>	 <p>4G2H+4F2, Industrial Area, Bhopal, Madhya Pradesh 462046, India</p> <p>Latitude 23.10134985° Longitude 77.5301924°</p> <p>Local 01:12:28 PM Altitude 414.96 meters</p> <p>GMT 07:42:28 AM Sunday, 28 Aug 2022</p> <p>Note : Mars Green Tech Infra Ventures</p> <p>Fixed the TBM on permanent stone for continue survey and will consider during the time of next survey work in future.</p>

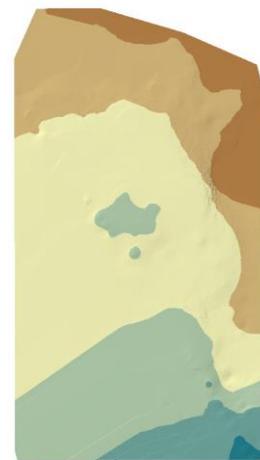
**Table 6: Step by step Activities undertaken for Estimation of Quantity of Legacy Waste**

**(III) Taking Level**



Level was taken at different height of existing dump heap with the Rover. Around 500 **levels** were taken from various location of dump site.

**(IV) Existing Ground Contour Map Generation**



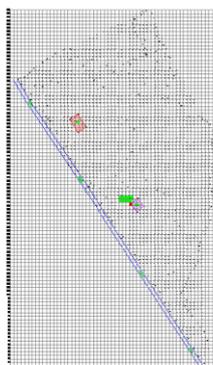
After the field survey, contour map and 3d Model of existing site was generated with **0.5-meter** interval

**Deriving Original Ground & Existing Ground Profile of Site**

The next step is to derive the following

- a. Original Ground Profile (OGP): Contours from DEM Based on SRTM 3 data.
- b. Existing Ground Profile (EGP): Contours from Survey Data.

**(I) Grid and Spot Map Generation**



Using contour line extract 5m x 5m spot level and finalize the Grid with respect to chainage.

**(II) Level data sheet**

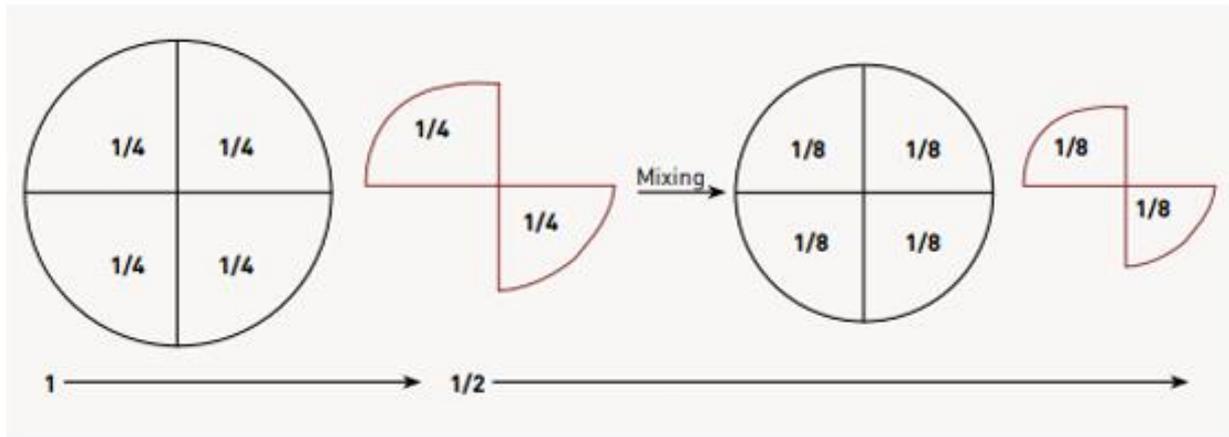
Ch.	130	G.L.	F.L.	Length	Ch.	135	G.L.	F.L.	Length	Ch.	140	G.L.	F.L.	Length
Itarsi	80	358.484	358.933	0.449	Itarsi	80	358.484	359.07	0.586	Itarsi	80	358.484	359.207	0.723
	85	358.484	359.887	1.403		85	358.484	359.37	0.886		85	358.484	359.719	1.235
	90	358.484	361.197	2.713		90	358.484	360.953	2.469		90	358.484	360.817	2.333
	95	358.484	361.938	3.454		95	358.484	362.369	3.885		95	358.484	362.308	3.824
	100	358.484	362.094	3.61		100	358.484	362.586	4.102		100	358.484	362.544	4.06
	105	358.484	362.311	3.827		105	358.484	362.833	4.319		105	358.484	362.770	4.285
	110	358.484	362.528	4.044		110	358.484	363.02	4.536		110	358.484	362.929	4.445
	115	358.484	362.6	4.116		115	358.484	363.074	4.59		115	358.484	362.832	4.548
	120	358.484	362.606	4.122		120	358.484	363.081	4.597		120	358.484	362.844	4.616
	125	358.484	362.736	4.252		125	358.484	363.029	4.545		125	358.484	362.72	4.236
	130	358.484	362.214	3.73		130	358.484	362.281	3.797		130	358.484	362.165	3.681
	135	358.484	361.692	3.208		135	358.484	361.484	2.997		135	358.484	361.385	2.901
	140	358.484	360.966	2.482		140	358.484	360.684	2.2		140	358.484	360.314	1.83
	145	358.484	360.42	1.936		145	358.484	360.063	1.579		145	358.484	359.663	1.179
	150	358.484	359.906	1.422		150	358.484	359.607	1.123		150	358.484	359.476	0.992
	155	358.484	359.6	1.116		155	358.484	359.492	1.008		155	358.484	359.423	0.939
	160	358.484	359.388	1.004		160	358.484	359.488	1.004		160	358.484	359.29	0.865
	165	358.484	359.49	1.006		165	358.484	359.46	0.976		165	358.484	359.462	0.921
	170	358.484	359.372	0.888		170	358.484	359.466	0.982		170	358.484	359.752	1.268
	175	358.484	359.657	1.173		175	358.484	359.59	1.466		175	358.484	360.237	1.753
	180	358.484	360.169	1.665		180	358.484	360.435	1.951		180	358.484	360.435	1.951
				100					100					95

The Level data sheet was generated for preparing L sections for each chainage

<b>Table 6: Step by step Activities undertaken for Estimation of Quantity of Legacy Waste</b>	
<b>(III) L Section Generation</b>	
<b>FRL</b> (Waste Heap Level)	504.579 504.910 505.241 505.486 505.541 505.397 505.343 505.237 505.103 504.970 504.831 504.662 504.603 504.514 504.421 504.329 504.249 504.111 503.942 503.774 503.606 503.998 504.481
<b>OGL</b> (Original Ground Level)	503.000 503.000 504.000 504.000 504.000 504.000 504.000 504.000 504.000 504.000 502.000 502.000 502.000 502.000 502.000 502.000 502.000 502.000 501.000 501.000 501.000 501.000 501.000 502.000
<b>DISTANCE</b>	25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100 105 110 115 120 125 130 135
<b>L SECTION (FROM CH:105 )</b>	
<p><b>Around 30 L sections</b> were prepared from the data with OGL, FRL level data with respect to various distance. Grid elevations were generated using Interpolation Method.</p>	
<b>Waste Volume Calculation</b>	
<p>The final step is to calculate the Waste Volume on the following approach-</p> <ul style="list-style-type: none"> <li>- Area comprising Old dumped waste is demarcated and corresponding data is selected for further process.</li> <li>- Considering Original Ground Profile (OGP) as baseline and Overlaying Existing Ground Profile (EGP) as stacked, each projected UTM grid in the corresponding area of waste spread is considered as section for Area and Volume calculation.</li> <li>- Cumulative calculation of Volume is done based on Tripezoidal Rule's i.e. <math>V=L/2[A1+A2]</math> Where L is Distance in meters &amp; A1 and A2 are area in Square meters</li> </ul>	
Source: - Consultant	

b) Approach for Waste Characterisation and Resource Recovery Estimations

22. Two activities were undertaken for resource recovering estimations i.e. one Physical and chemical characteristic of waste and second grain size distributions.
23. Quartering and coning method is one of the best techniques for determining the composition and characteristic of municipal waste. The sample is reduced to a more manageable size as the actual classification is carried out by hand. Selection of sampling sites is a critical first step in this process.



24. The following aspects shall be considered: Take 10 kg of municipal waste mixed from outside and inside of the waste pile, sourced from random entities in an identified sampling location at dump site. Samples from all heterogeneous sampling points shall be mixed thoroughly. The sample is placed as a uniform heap. The heap is divided into four portions using straight lines perpendicular to each other. Waste from opposing corners of the divided heap is removed to leave half of the original sample. The remaining portions are again thoroughly mixed and the quartering process is repeated until a desired size is obtained (10 kg of waste can be handled or segregated efficiently). The last remaining opposing fractions of waste shall be mixed and analysed for identifying physical and chemical properties of the waste. Chemical analysis of the waste sample follows the physical constituent analysis and shall be performed in a laboratory accredited by the Ministry of Environment, Forests and Climate Change (MoEFCC).

**Table 7: Step by step Activities undertaken for Waste Characterisation study**

<p align="center"><b>(I) Sample collection</b></p>  <p>3 sample was taken at dumpsite from different location (Near about 10 kg of waste sample was taken)</p>	<p align="center"><b>(II) Sample Preparation</b></p>  <p>Quartering and coning method was done</p>
<p align="center"><b>(III) Fraction Segregations</b></p>  <p>All the waste were segregated into various fractions and weighments were done for each of the fractions</p>	<p align="center"><b>(IV) Fraction Weighing</b></p>  <p>All the segregated fractions were weighed for each samples for physical and chemical composition</p>
<p>Source: Consultant</p>	

25. Step by step activity undertaken for Resource Recovery estimation is as given in below table.

<b>Table 8: Step by step Activities undertaken for Resource Recovery Estimations</b>		
<b>(I) Sample collection</b> 	<b>(II) Sieve Analysis</b> 	<b>(III) Weighing of fractions from sieves</b> 
<p>3 sample was taken at dumpsite from different location (Near about 10 kg of waste sample was taken)</p>	<p>Sieve Analysis was done for various sizes of sieves for 3 samples of 10 KG each</p>	<p>All the fractions were weighed above and below from each size of sieve.</p>
<p>Source: Consultant</p>		

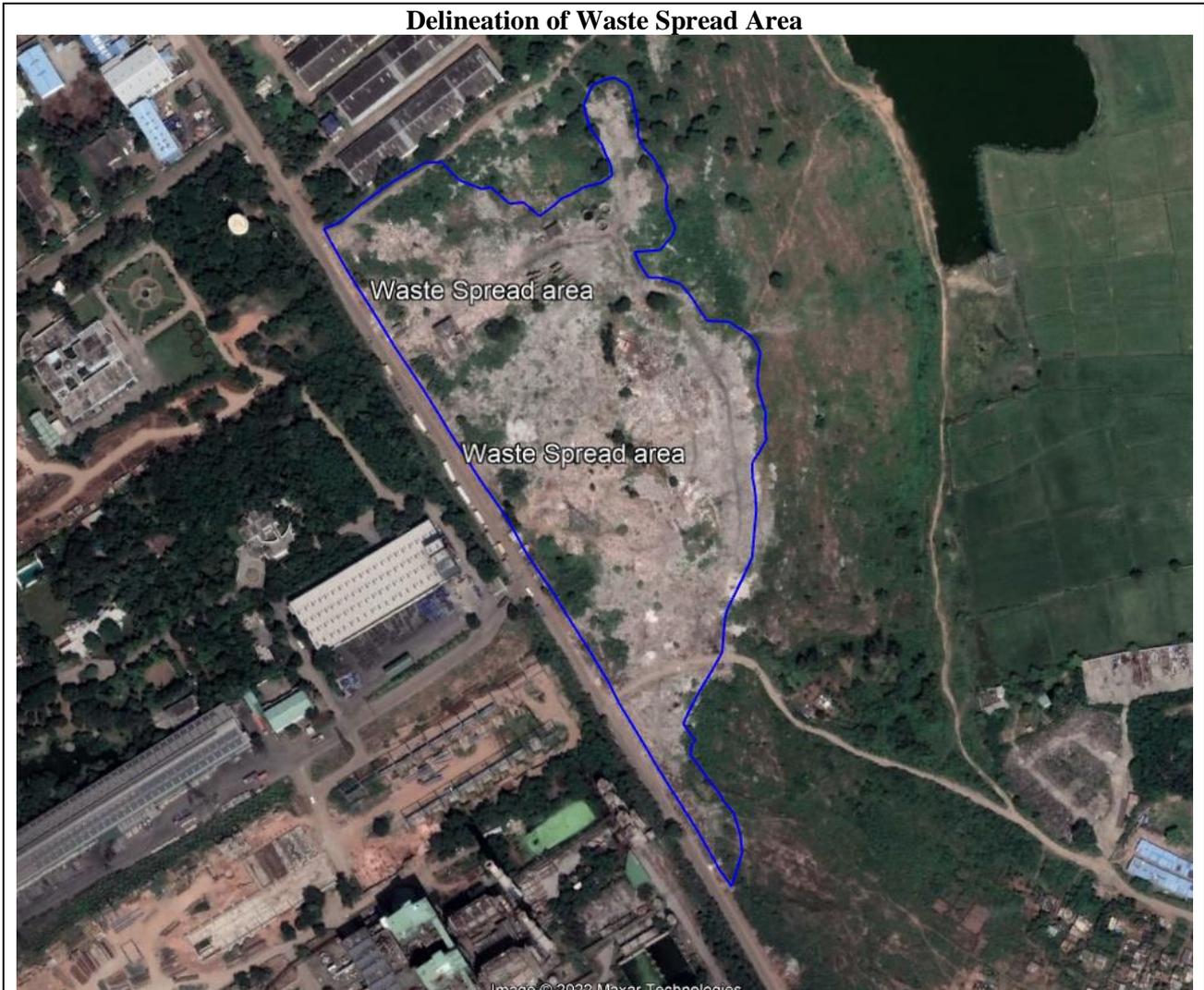
26. The following are locations of samples taken for the study.

<b>Table 9: Locations of samples collected</b>		
		
<p><b>Sample 1 Location</b> 23° 6'8.54"N 77°31'46.21"E</p>	<p><b>Sample 2 Location</b> 23° 6'5.64"N 77°31'49.81"E</p>	<p><b>Sample 3 Location</b> 23° 6'2.25"N 77°31'50.89"E</p>

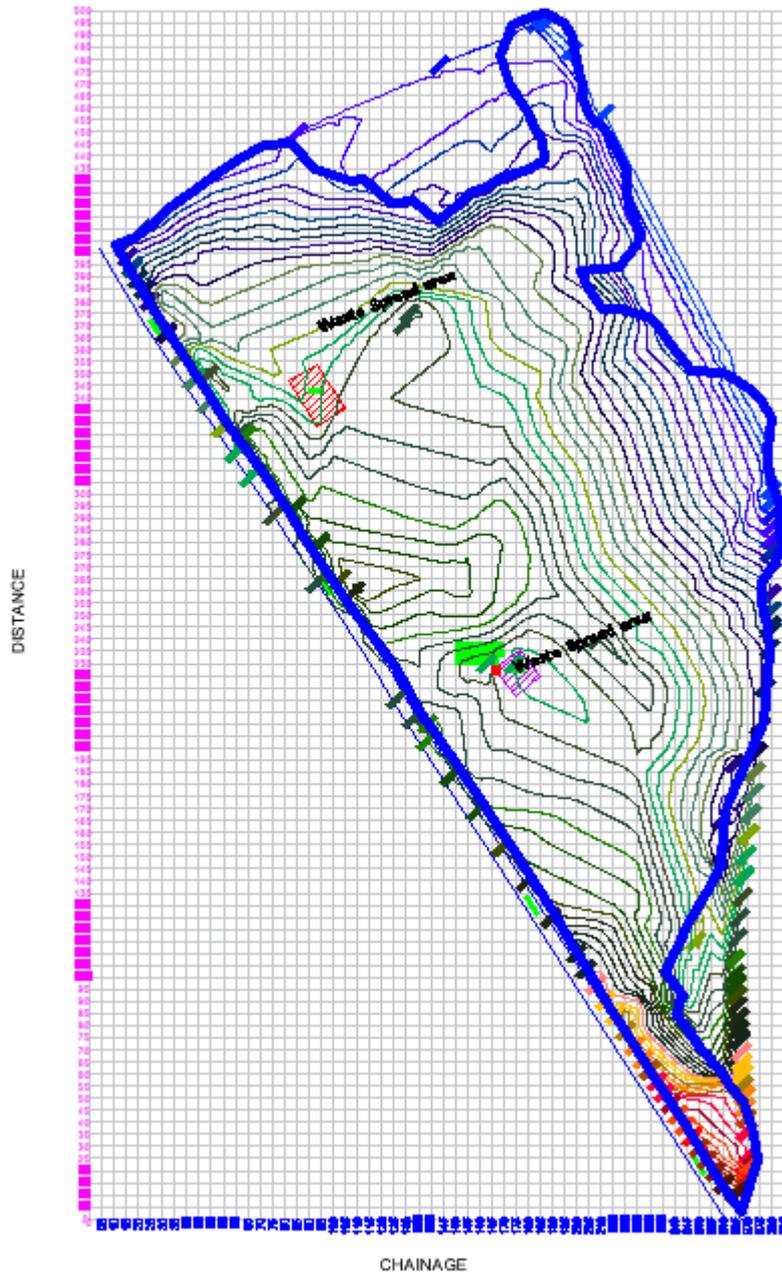
## 2. *Estimation of Quantity of Legacy Waste*

27. The present site has started receiving crude waste **since 2013** as per the discussion with officials of Shivpuri. However, Shivpuri don't have data on the amount of waste dump at site.
28. The density of the legacy waste is required to be derived or assumed for calculating the weight of the legacy waste in terms of Metric Ton. Based on the field observations and the height of the heap, it is presumed that most of the waste is highly compacted and higher density is assumed for calculating the Weight of the Legacy Waste. Further, the density is assumed with average moisture content during dry season except monsoon season.

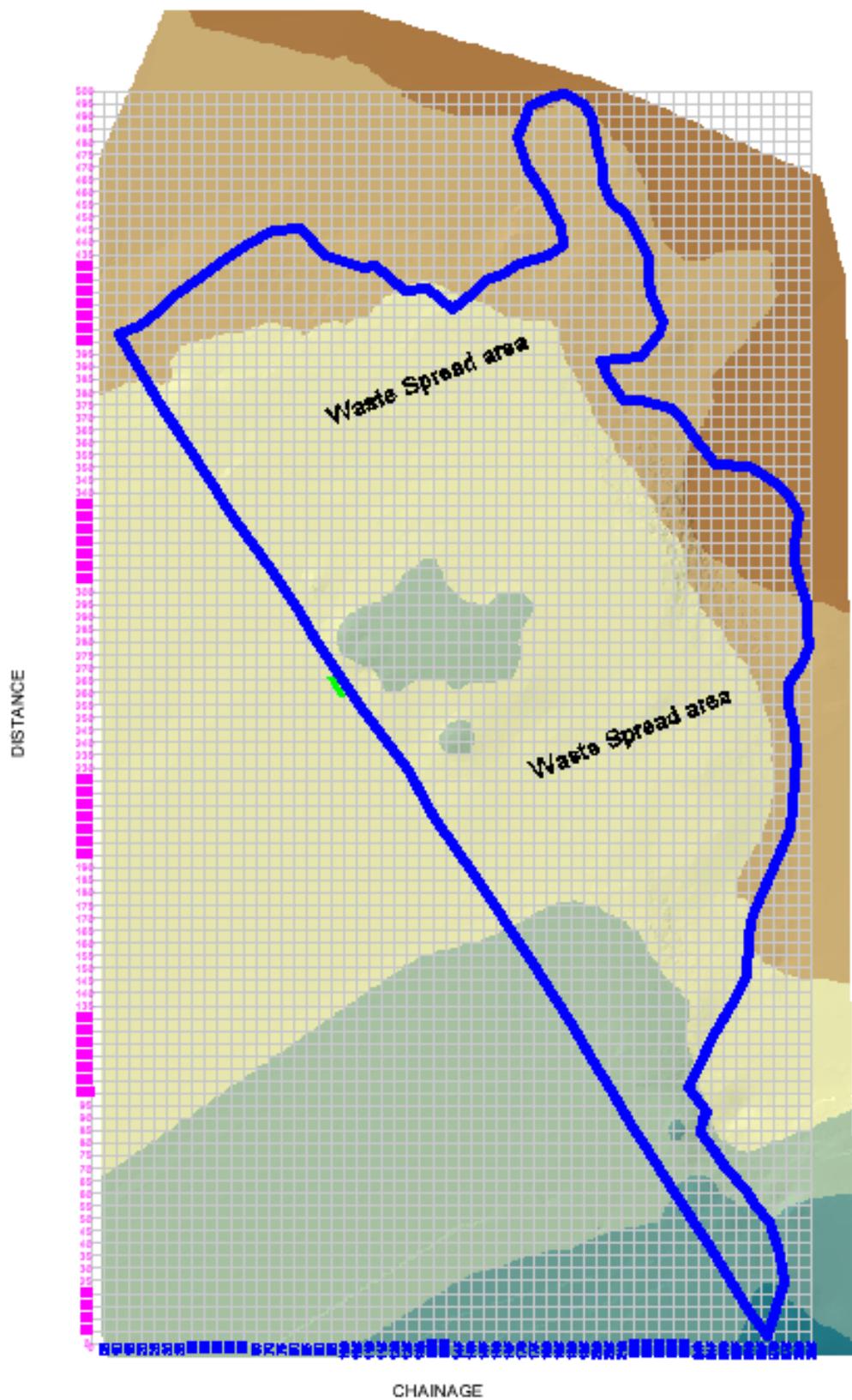
**Delineation of Waste Spread Area**



Drawings of Survey conducted on 28 August 2022



### 3d Imagery Generated



29. The following is the overall Area and Volume Calculation for each chainage (Refer Drawings for each Chainage L section) as per undertaking the Field Investigations and Survey.

<b>Table 10: Area and Volume Calculation for Each Chainage</b>										
Sr No	Chainage	Previous Chainage	Difference	Width	Area in Sqm	Previous Area in Sqm	Average area in Sqm	Volume in Cum	Density	Quantity in Metric Ton
A	B	C	D	E	F	G	H F+G/2	I (H X D)	J	K (I X J)
1	15	10	5	10	10.26	0.00	5.13	25.65	0.84	22
2	20	15	5	25	30.71	10.26	20.49	102.43	0.84	86
3	25	20	5	35	50.28	30.71	40.50	202.48	0.84	170
4	30	25	5	50	87.46	50.28	68.87	344.35	0.84	289
5	35	30	5	60	120.53	87.46	104.00	519.98	0.84	437
6	40	35	5	70	145.97	120.53	133.25	666.25	0.84	560
7	45	40	5	85	190.09	145.97	168.03	840.15	0.84	706
8	50	45	5	95	175.04	190.09	182.57	912.83	0.84	767
9	55	50	5	105	208.54	175.04	191.79	958.95	0.84	806
10	60	55	5	115	230.04	208.54	219.29	1096.45	0.84	921
11	65	60	5	130	273.05	230.04	251.55	1257.73	0.84	1056
12	70	65	5	135	197.45	273.05	235.25	1176.25	0.84	988
13	75	70	5	145	230.65	197.45	214.05	1070.25	0.84	899
14	80	75	5	150	246.98	230.65	238.82	1194.08	0.84	1003
15	85	80	5	160	275.10	246.98	261.04	1305.20	0.84	1096
16	90	85	5	160	287.24	275.10	281.17	1405.85	0.84	1181
17	95	90	5	160	314.55	287.24	300.90	1504.48	0.84	1264
18	100	95	5	170	363.92	314.55	339.24	1696.18	0.84	1425
19	105	100	5	175	410.25	363.92	387.09	1935.43	0.84	1626
20	110	105	5	180	407.46	410.25	408.86	2044.28	0.84	1717
21	115	110	5	190	442.46	407.46	424.96	2124.80	0.84	1785
22	120	115	5	190	457.56	442.46	450.01	2250.05	0.84	1890
23	125	120	5	190	466.87	457.56	462.22	2311.08	0.84	1941
24	130	125	5	200	486.40	466.87	476.64	2383.18	0.84	2002
25	135	130	5	210	494.90	486.40	490.65	2453.25	0.84	2061
26	140	135	5	210	497.99	494.90	496.45	2482.23	0.84	2085
27	145	140	5	220	520.60	497.99	509.30	2546.48	0.84	2139
28	150	145	5	230	474.27	520.60	497.44	2487.18	0.84	2089
29	155	150	5	245	488.54	474.27	481.41	2407.03	0.84	2022
30	160	155	5	250	488.92	488.54	488.73	2443.65	0.84	2053
31	165	160	5	365	569.34	488.92	529.13	2645.65	0.84	2222
32	170	165	5	270	571.31	569.34	570.33	2851.63	0.84	2395
33	175	170	5	340	594.68	571.31	583.00	2914.98	0.84	2449
34	180	175	5	350	590.67	594.68	592.68	2963.38	0.84	2489
35	185	180	5	360	612.49	590.67	601.58	3007.90	0.84	2527
36	190	185	5	370	659.03	612.49	635.76	3178.80	0.84	2670
37	195	190	5	370	633.32	659.03	646.18	3230.88	0.84	2714
38	200	195	5	370	626.18	633.32	629.75	3148.75	0.84	2645
39	205	200	5	295	487.26	626.18	556.72	2783.60	0.84	2338
40	210	205	5	305	490.87	487.26	489.07	2445.33	0.84	2054
41	215	210	5	360	514.89	490.87	502.88	2514.40	0.84	2112
42	220	215	5	360	483.97	514.89	499.43	2497.15	0.84	2098
43	225	220	5	340	483.60	483.97	483.79	2418.93	0.84	2032
44	230	225	5	315	604.17	483.60	543.89	2719.43	0.84	2284
45	235	230	5	315	529.53	604.17	566.85	2834.25	0.84	2381

Sr No	Chainage	Previous Chainage	Difference	Width	Area in Sqm	Previous Area in Sqm	Average area in Sqm	Volume in Cum	Density	Quantity in Metric Ton
A	B	C	D	E	F	G	H F+G/2	I (H X D)	J	K (I X J)
46	240	235	5	315	431.54	529.53	480.54	2402.68	0.84	2018
47	245	240	5	320	401.03	431.54	416.29	2081.43	0.84	1748
48	250	245	5	320	351.86	401.03	376.45	1882.23	0.84	1581
49	255	250	5	330	289.34	351.86	320.60	1603.00	0.84	1347
50	260	255	5	335	236.72	289.34	263.03	1315.15	0.84	1105
51	265	260	5	340	215.08	236.72	225.90	1129.50	0.84	949
52	270	265	5	330	232.69	215.08	223.89	1119.43	0.84	940
53	275	270	5	140	207.61	232.69	220.15	1100.75	0.84	925
54	280	275	5	55	34.17	207.61	120.89	604.45	0.84	508
							<b>Total</b>	<b>99,542</b>		<b>83,617</b>

Source: Field Survey  
\*- The above Volume are for the Heaps only

30. The following is the summary of Legacy Waste Dump Quantity Estimates at the presented site based on the Topographical and contour Survey. The presented waste in Metric Ton is calculated based on densities analyzed as per Legacy waste sampling during field survey. Due to high height of the heap, it is difficult to measure the density in the inner core. Further, the densities also vary based on weathering effect. Hence, it is recommended to consider the volume of the heap for any actions to be taken through this survey. The following estimates are presented just for an understanding based on certain assumptions.

Volume (in CuM)	Quantity (in Metric Ton)	Waste Spread Area (in SQM)
<b>99,542</b>	<b>83,617</b>	<b>55828</b>

Source: Consultant Derived through testing of samples

### 3. Waste Characterisation and Resource Recovery Estimations

31. The following are the finding of waste Characterization study conducted on site.

Type		Sample 1	Sample 2	Sample 3	Average at Dumpsite	
<b>Organic Fractions</b>	Biodegraded Fraction	18.02%	16.67%	21.49%	18.73%	<b>18.73%</b>
	Plastic, Polythene, Tetra Packs Etc	2.76%	6.95%	6.05%	5.26%	
<b>Combustible</b>	Paper and Card Board	4.96%	1.52%	2.11%	2.86%	<b>10.75%</b>
	Horticulture Waste & Wooden Piece	1.24%	4.55%	2.11%	2.63%	
<b>Recyclables</b>	Metal	0.67%	0.42%	0.51%	0.53%	<b>12.06%</b>
	Textiles	1.43%	5.17%	6.05%	4.22%	

Type		Sample 1	Sample 2	Sample 3	Average at Dumpsite	
	Glass	4.96%	1.60%	4.65%	3.74%	
	Leather, Rubber Etc	5.05%	3.48%	2.19%	3.57%	
<b>Stone/Silt/ Debris etc.</b>	Heavy Fractions	24.50%	25.23%	23.07%	24.27%	<b>58.46%</b>
	Coarser fraction	15.54%	12.04%	15.70%	14.43%	
	Fine Fractions/ Balance Material	20.88%	22.38%	16.06%	19.77%	
<b>Total</b>		<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>

Source: - Consultant

32. The following are the findings of Resource Recovery estimations.

Sample Number	Sample 1	Sample 2	Sample 3	Average
<b>Total Sample Weight (in kg.)</b>	10.50	11.22	11.40	<b>11.04</b>
> 100 mm	3.37	2.82	2.49	<b>3.15</b>
	32.11%	25.13%	21.84%	<b>26.36%</b>
Below 100 mm & Above 35 mm	2.004	2.32	2.44	<b>2.25</b>
	19.09%	20.68%	21.40%	<b>20.39%</b>
Below 35 mm & Above 16 mm	1.001	1.09	1.33	<b>1.14</b>
	9.54%	9.71%	11.67%	<b>10.31%</b>
Below 16 mm & Above 4 mm	1.05	1.34	2.21	<b>1.34</b>
	10.00%	11.94%	13.45%	<b>11.80%</b>
< 4 mm	3.07	3.65	2.93	<b>3.22</b>
	29.25%	32.53%	25.70%	<b>29.16%</b>

Source: - Consultant

#### **D. Proposed Approach for Dumpsite Remediation**

33. The remediation of dumpsites leads to the following advantages:

- Elimination of foul odour to benefit the citizen living nearby
- Decline in vector borne diseases arising out of the dumpsite
- Significant Reduction in Air pollution of the entire area
- Elimination of dump fires and leachate generation
- Uplifting of the environmental, aesthetic and social parameters of entire area
- Reduction in Green House Gas Emissions, soil pollution and Ground water contamination
- Increase in nearby real state value and rental values.
- Dumpsite land becomes available for other use

##### **1. Options available for Dumpsite Remediation**

a) Capping Model without Land Recovery

34. The dumpsite is profiled, covered with soil, surface drainage system, leachate management and

gas collection systems and capped. The land becomes a green space. Has environmental monitoring systems. This is adopted in absence of viable reclamation options.

<b>Advantages</b>	<b>Disadvantages</b>
<ul style="list-style-type: none"> <li>- Can be completed fast</li> <li>- Process requires less environmental clearances</li> <li>- Relatively cheaper</li> <li>- Land capped can be developed into parks /recreational areas</li> </ul>	<ul style="list-style-type: none"> <li>- No land recovery, no financial benefit from land capped (except parks/ recreation)</li> <li>- Regular operation and maintenance required, thus recurring expenditure.</li> <li>- Problems with leachate collection and gas generation</li> <li>- Post closure O&amp;M</li> </ul>

Before	After
	

Partial land reclamation and capping project carried out at Nashik, Maharashtra.  
 Source: Advisory on Landfill Reclamation issued by CPHEEO, Ministry of Housing and Urban Affairs Government of India

35. Although capping is mentioned as a method in this advisory, it must be noted that SWM Rules 2016 and NGT have mandated that for remediation of legacy waste dumpsites Bioremediation is preferred over Capping.

b) Bioremediation and Capping model with part Land recovery

36. In this process, approximately **50- 60 % waste is excavated**, which is then processed as per CPCB guidelines. The useful fractions derived from this process can be sold to relevant buyers and the inert material with rest of the dumpsite will be capped to prevent further degradation of the environment.

<b>Advantages</b>	<b>Disadvantages</b>
<ul style="list-style-type: none"> <li>- Cheaper than 100% reclamation &amp; Can be faster than 100% reclamation</li> <li>- Waste segregated is utilized onsite</li> <li>- Disposal of segregated portions becomes easy</li> <li>- Land capped can be developed into parks /recreational areas</li> </ul>	<ul style="list-style-type: none"> <li>- No 100% land recovery</li> <li>- Difficult to quantify the waste</li> <li>- Less Post closure O&amp;M compared to 100% capping</li> </ul>

Source: Advisory on Landfill Reclamation issued by CPHEEO, Ministry of Housing and Urban Affairs Government of India

c) Reclamation with complete Land recovery

37. This refers to the excavation of old dumped waste and making windrow of legacy waste to stabilize of the waste through bio-remediation i.e. exposure of all the waste to air along with use of composting bio-cultures, followed by screening of the stabilized waste to recover all valuable resources (like organic fines, bricks, stones, plastics, metals, clothes, rags etc.) followed by sustainable management through recycling, co-processing, road construction etc.

<b>Table 16: Advantages &amp; Disadvantages of Reclamation with complete Land recovery</b>	
<b>Advantages</b>	<b>Disadvantages</b>
<ul style="list-style-type: none"> <li>- 100% Land recovery</li> <li>- Volume of waste is reduced</li> <li>- Waste segregated is utilized onsite</li> <li>- End to Environmental management (air, water, soil) and Compliance to SWM Rules &amp; NGT orders</li> </ul>	<ul style="list-style-type: none"> <li>- Expensive, requires heavy machinery</li> <li>- Methodology is time taking, extensive work</li> <li>- Disposal of segregated portions is a challenge (transportation etc.)</li> <li>- Difficult to quantify the waste. Expensive to weigh all recovered fractions</li> </ul>
<div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>Before</p>  </div> <div style="text-align: center;"> <p>After</p>  </div> </div> <p>Complete land recovery project at Poonamallee, Tamil Nadu</p>	
<p>Source: Advisory on Landfill Reclamation issued by CPHEEO, Ministry of Housing and Urban Affairs Government of India</p>	

38. The SWM Rules 2016 and NGT clearly mandate clearing of sites as a first option, by bio-mining and bio-remediation. Still, capping is often proposed or considered an option in India merely because it is done in the West. But clearing a dumpsite almost to ground level rather than capping is a far better option for permanent pollution prevention, as well as for the following additional reasons:

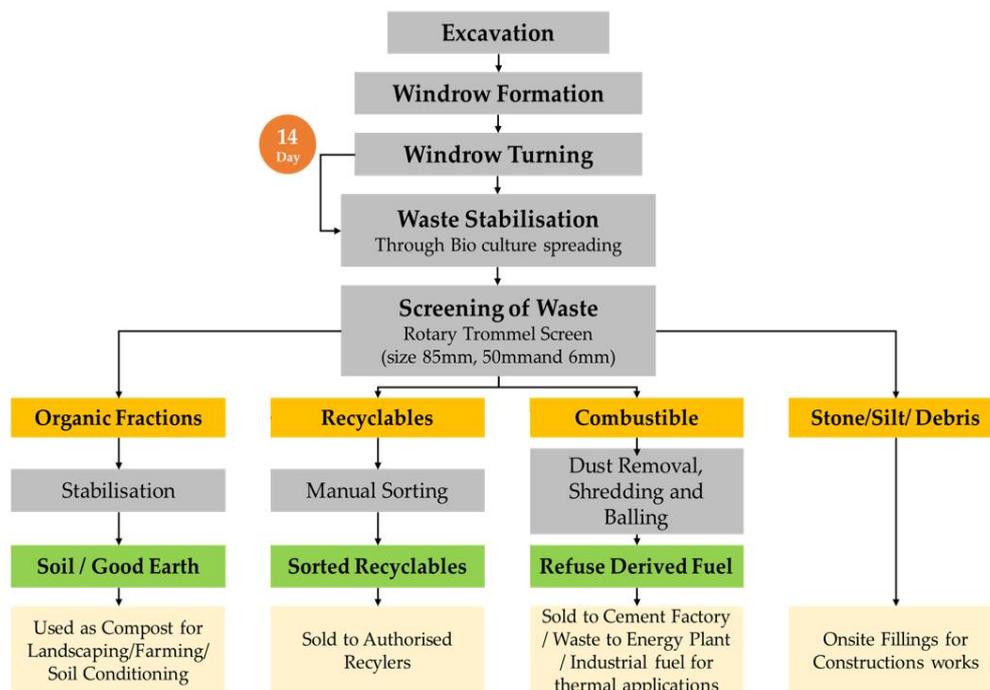
- Clearing by bio-mining recovers the entire base area of a dump at almost ground level. Capping gives only one-third of the base area as usable area at an inconvenient height for future use.
- Cleared sites require no after-care. Capping requires at least 15 years of continuous leachate pump-out and treatment in a dedicated effluent treatment plant nearby. Gas extraction is very difficult and inefficient when attempts are made to insert suction pipes into dumped waste instead of before dumping begins.
- Capping of open dumps (wrongly called SLFs or Sanitary Landfills) requires intake of fresh waste to be stopped and permanently diverted to a fresh site before capping begins. With increasing protests against fresh waste disposal sites, getting started elsewhere can often delay capping plans indefinitely. Bio-remediation and Bio-mining to clear a site can start immediately at one part of an actively used dump while fresh waste continues to be received and stabilized at another part. Clearing can be done in phases to match available

funds.

- Bioremediation and reclamation of part of land by utilizing part of retrieved fractions and the leftovers heaped in stable profile and capped appropriately. In this process, approximately 50- 60 % waste is excavated, which is then processed as per CPCB guidelines. The useful fractions derived from this process can be sold to relevant buyers and the inert material with rest of the dumpsite will be capped to prevent further degradation of the environment.

**2. Proposed Approach for Dumpsite Remediation**

39. 100% Bioremediations and resource recovery and its utilization is possible. Henceforth it is proposed to undertake a Bioremediation. Bioremediations of the waste needs to be done for the entire quantity of waste. Efforts should more be focussed to recover maximum resources from the legacy waste and utilise them for various purpose.
40. The proposed project adopts an integrated approach (Bioremediation) with the following objective-
  - Valuable land (**100%**) of the waste spreader on site shall be reclaimed through the approach.
  - **Lowest Natural** Ground Level is proposed to be reached.
  - Raking of garbage layer through long spike harrow operating in cross directions shall be done regularly to pull out rags, plastic, rubber, textiles etc.
  - Legacy waste shall be screened through rotary/ horizontal screens. The recovered fractions shall be put to use onsite only to the maximum extent possible.
41. Below is the indicative overview of dumpsite remediation process.



### 3. *Material Balance & Disposal Strategies*

42. A materials balance is prepared for each fraction required for to be managed for dumpsite reclamation is given in the following table.

<b>Table 17: Material Balance and disposal strategies for fractions recovered</b>						
<b>Type</b>		<b>Average at Dumpsite</b>		<b>Estimated Quantity of Products (in MT)</b>		<b>Disposal Strategy</b>
<b>Organic Fractions</b>	Biodegraded Fraction	18.73%	<b>18.73%</b>	15660.00	<b>15660.00</b>	Soil / Good Earth: - To be used for Landscaping/ Farming / Soil Conditioner On site
	Plastic, Polythene, Tetra Packs Etc	5.26%	<b>10.75%</b>	4396.00	<b>8987.00</b>	Combustible: - RDF Preparation or to be sent to Cement Factory for Co-processing
<b>Combustible</b>	Paper and Card Board	2.86%		2391.00		
	Horticulture Waste & Wooden Piece	2.63%		2200.00		
<b>Recyclables</b>	Metal	0.53%	<b>12.06%</b>	445.00	<b>3455.00</b>	Recyclables: - To be Directly sent to authorize recyclers
	Textiles	4.22%		3527.00		
	Glass	3.74%		3125.00		
	Leather, Rubber Etc	3.57%		2989.00		
<b>Stone/Silt/ Debris etc.</b>	Heavy Fractions	24.27%	<b>58.46%</b>	20292.00	<b>48886.00</b>	Used for Onsite Construction plinth filling
	Coarser fraction	14.43%		12063.00		To be Used as filling Material
	Fine Fractions / Balance Material	19.77%		16531.00		To be Used as filling Material
<b>Total</b>		<b>100.00%</b>	<b>100.00%</b>	<b>83617.00</b>	<b>83617.00</b>	

Source: Consultant

### 4. *Proposed Outputs to be achieved in the project*

43. The following are the output to be achieved through the proposed project-

<b>Table 18: Output proposed to be achieved</b>			
<b>No.</b>	<b>Details</b>	<b>Output</b>	<b>Remarks</b>
1	Total Area of Dump Site	55828	
2	Waste Spread Area	55828 Sqm	~ 100% of the total site area
3	Area to be Reclaimed	55828 Sqm	~ 100% of the Waste Spread Area
4	Proposed area to be Capped	NA	NA

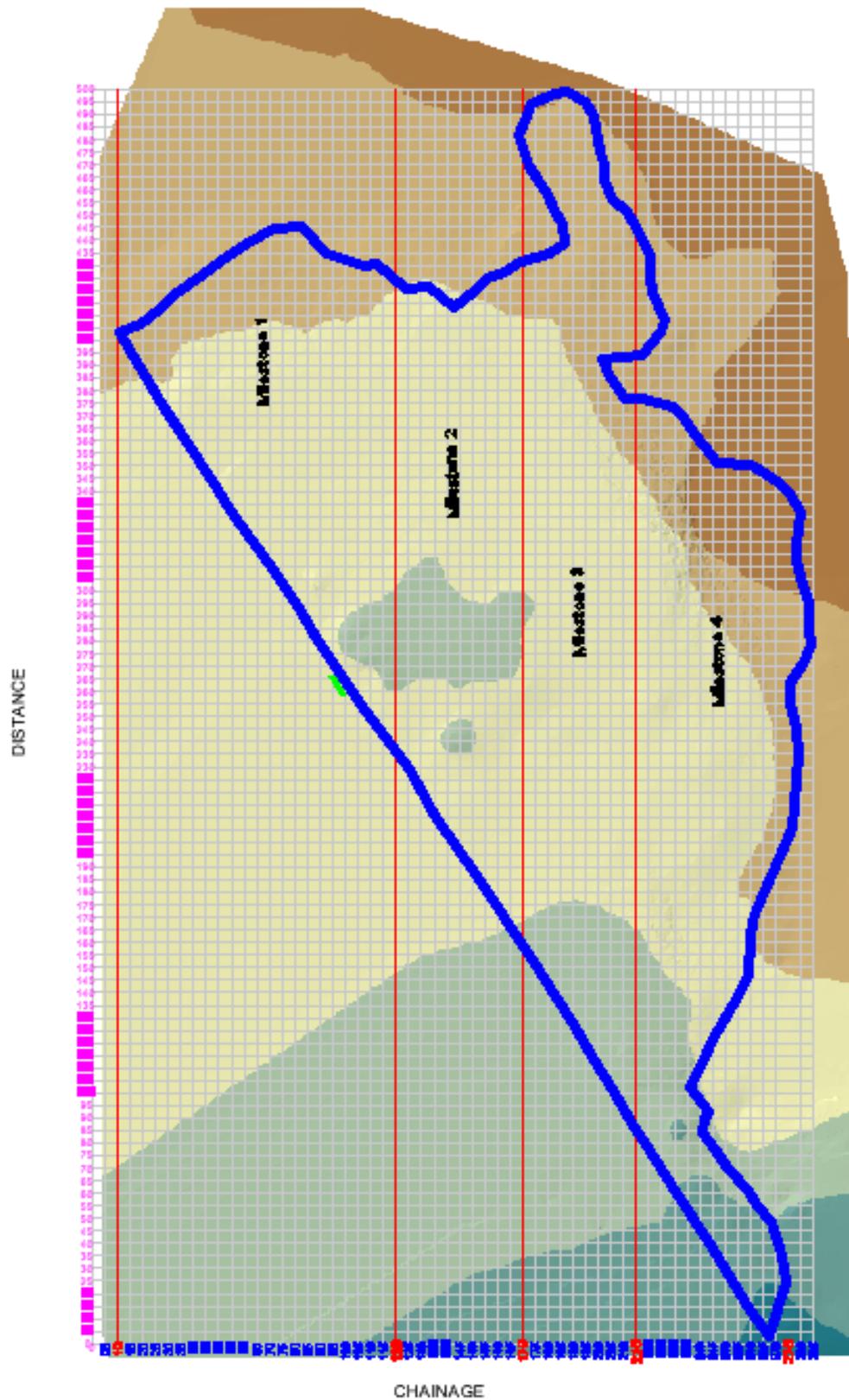
No.	Details	Output	Remarks
5	Maximum quantity of Inert/Rejects to be Scientifically capped	NA	NA

Source: Consultant

44. The dumpsite reclamation is divided into **4 Milestone** as under-

Milestone No.	Chainage Nos.		Quantity of Waste		Area to be Cleared through Bioremediation*	
	From	To	In CuM	%age of total	In SQM	%age of total
1	10	115	24634	24.75	12236	21.92
2	120	165	25011	25.13	11229	20.11
3	170	210	26188	26.31	15915	28.51
4	215	275	23709	23.82	16448	29.46
<b>Total</b>			<b>99542</b>	<b>100.00%</b>	<b>55828</b>	<b>100.00%</b>

\*- includes open areas within delineated area. And not the capping area.  
Source: Consultant



Phases of Land Reclamations

## E. Requirements for Bioremediation

### 1. Proposed Approach

45. The step-by-step activities for Bioremediation is shown below:

Table 20: Step by step proposed activities for Bioremediations	
<p><b>Excavation</b></p> 	<p>The first step is to excavate legacy waste, loosen it and make windrows so as the leachate can be dried of through solar exposure and all the entrapped methane is removed from the heap.</p>
<p><b>Windrow Formation</b></p> 	<p>All biodegradable waste, like discarded food, fruit, flower and garden waste, needs air to decompose it in an odourless way without producing leachate. So, the first step in stabilizing and bringing down airless legacy waste is to expose as much of it as possible to air.</p>
<p><b>Spreading Bio culture</b></p> 	<p>Addition of composting bio-cultures speeds up decomposition and rapidly creates biological heat within the waste that helps to dry it out and reduce its volume by 35-40%. This happens through loss of moisture and by decomposition of some of the aerated waste to carbon dioxide and water vapour. This is called bio-remediation and makes the waste dry enough for screening. Waste is called stabilized when there is no more generation of heat or landfill gas or leachate, and seeds are able to germinate in it.</p>
<p><b>Windrow Turning</b></p> 	<p>i. <i>Sprinkle the newly exposed surfaces with a composting bio culture solution or a dilute solution of 5% fresh cow dung in water. This will control smell and speed up decomposition. With the help of Back Hoe loader, the waste in the demarcated area should be loosened up.</i></p> <p>ii. <i>Usually, the top layer has several materials in the active biological state. This layer shall be stabilised through composting bio-cultures, as well as herbal/biological sanitizers if found necessary for odour control.</i></p>
<p><b>Waste Stabilisation</b></p> 	<p>iii. <i>Raking of garbage layers by a long spike harrow operating in cross directions may be done as needed to pull out large rags, plastic, rubber, textiles etc.</i></p> <p>iv. <i>Waste pickers or labour will manually pick out bulky waste like coconut shells, banana stems, tyres and rocks prior to screening for bio-mining. Store in separate heaps for sale or use.</i></p> <p>v. <i>Turn the windrow heaps once a week until no more volume reduction is observed in the heaps and no more heat is generated. If the garbage is stabilized, there will be no smell or leachate formation and the material will be dry enough for sieving.</i></p>

<b>Table 20: Step by step proposed activities for Bioremediations</b>	
<p><b>Waste Screening</b></p> 	<p>It means the screening of such stabilized waste into different size fractions that can be usefully used off-site or disposed of without affecting the environment. Screen sizes commonly used are one or more of the following: 150 mm, 80 to 100 mm, 24 to 50mm, 12-16 mm and 4-6. The finest fraction is called bio-earth or good earth. It contains a mixture of humus-rich organics which improve soil fertility along with a high proportion of soil or sand, which is why it cannot meet FCO standards for compost. The coarsest fraction contains bricks, stones, coconut shells, footwear, cloth and larger plastics.</p> <p>vi. <i>Deploy Trommels and/or Horizontal Screens or other types of screens for the purpose of screening. Screen the stabilized waste in a rotary screen or gravity screens of different size openings, preferably 25 mm. A fan can blow out the plastic fraction for use by recyclers.</i></p>
<p><b>Use of Screened Fraction (Bio Earth / Good Soil / Good Earth)</b></p> 	<p>vii. <i>Usually, the finest fraction will be organic matter plus fine soil, called 'bio-earth', which can be used as soil improver, especially for restoring alkaline or saline soils to fertility, or to grow some vegetation for erosion control. It is also useful to develop green areas or by farmers.</i></p> <p>viii. <i>In very old garbage layers with high debris content, most of the organic matter may have already been decomposed. Do a seed germination test to ensure it is stabilised. Add bio culture to fully stabilise it if heat is still generated in windrow heaps or volume reduction is observed.</i></p>
<p><b>Use of Screened Fraction (Combustible to RDF)</b></p> 	<p>ix. <i>The recyclables like plastic, glass, metals, rags and cloth recovered from the waste during screening shall be sorted out and preferably cleaned before sending to recycling industries or as RDF. The recyclables shall also be randomly sampled by an NABL lab and tested for heavy metals, salinity/electrical conductivity and leachability to ensure no environmental harm during use. FCO standards for pH and contaminants will be provisionally used as a benchmark.</i></p> <p>x. <i>The coarser fraction will have a lot of combustibles (cloth etc.) which can be baled and supplied as Alternate Fuel Resources in cement kilns or boilers.</i></p> <p>xi. <i>Recyclable waste is sent to authorize recyclers.</i></p> <p>xii. <i>Bio-medical waste, hazardous waste, e-waste, construction and debris waste, etc. should be sent to respective authorized disposal sites.</i></p>
<p><b>Use of Screened Fraction (Rejects from above)</b></p> 	<p>xiii. <i>The coarser fraction will be gravel and coarse organics, which can be used for road and railway embankments the coarsest fraction may have a lot of combustibles (cloth etc.) which can be baled and supplied as Alternate Fuel Resources in cement kilns or boilers.</i></p> <p>xiv. <i>The heavy fractions may be sand and gravel usable for road shoulders or for plinth filling. Stones and concrete if any can be used for road sub-grade, or for crushing, recycling and reuse for construction industry.</i></p>
<p>Source: Proposed by the Consultant</p>	

## 2. Proposed Requirements for Bioremediation

46. The following are the detailed calculation for requirements of infrastructure for Bioremediation.

<b>Table 21: Detailed Calculation of Infrastructure Requirements for Bioremediation</b>			
<b>1   Excavation &amp; Loading / Excavator</b>			
<b>Purpose</b> Excavation and Windrow Formations ,Windrow Turning & Loading of material into Dumpers for transportation to screening unit	<b>Assumption &amp; Calculations</b>		
	Quantity of Crude Waste	99,542.00	CuM
	Capacity Proposed	<b>30.00</b>	CuM/Hour
	<b>Total Requirement</b>	<b>3,318.00</b>	<b>Hours</b>
		27.00	Hours/Day
	<b>Nos. of Units Proposed @ 12 Hours/Day / Unit</b>	<b>2.00</b>	<b>Nos.</b>
<b>2   Transportation / Dumper</b>			
<b>Purpose</b> Transportation of material to screening unit with lead of 0.5 to 1.5 Kms	<b>Assumption &amp; Calculations</b>		
	Material Transport (Before Screening)	83,617.00	MT
	Material Transport (After Screening)	-	MT
	<b>Total</b>	<b>83,617.00</b>	<b>MT</b>
	Capacity Proposed	<b>18.00</b>	MT/Hour
	<b>Total Requirement</b>	<b>4,645.00</b>	<b>Hours</b>
		37.00	Hours/Day
	<b>Nos. of Units Proposed @ 10 Hours/Day / Unit</b>	<b>4.00</b>	<b>Nos.</b>
<b>3   Stabilization / Bioculture Preparation &amp; Spraying</b>			
<b>Purpose</b> Preparation & Spraying on the Crude waste for stablisation and soil enrichment	<b>Assumption &amp; Calculations</b>		
	Material of Waste to be screened	75,256.00	MT
	Solution Quantity Required	<b>1.00</b>	Liter/MT
	<b>Total Requirement</b>	<b>75,256.00</b>	<b>Liter</b>
	Water @85%	63,968.00	Liter
	Bioculture @15%	11,288.00	Liter
<b>4   Screening / Rotary Trommels with Vibrating Screen</b>			
<b>Purpose</b> Separate the soil material, Combustibles and inerts	<b>Assumption &amp; Calculations</b>		
	Material (After Stabilisation / Screening)	75,256.00	MT
	Capacity Proposed	<b>300.00</b>	MT/Day/Unit
	Total Operational Requirement @ 25 Days per Month	125.00	Days
		5.00	Month
	<b>Total Requirement</b>	<b>5.00</b>	<b>Months</b>
	<b>No. of Units Proposed</b>	<b>2.00</b>	<b>Nos.</b>
<b>Each Trommel sets consist of Screens of sizes 85 MM, 50 MM and 8 MM</b>			
<b>5   Loading / Backhoe Loader</b>			
<b>Purpose</b> Loading of material in Screening Unit and after screening material in Dumper	<b>Assumption &amp; Calculations</b>		
	Material Transport (Before Screening)	83,617.00	MT
	Material Transport (After Screening @ 90%)	75,255.00	MT
	<b>Total</b>	<b>1,58,872.00</b>	<b>MT</b>
	Capacity Proposed	<b>27.00</b>	MT/Hour
	<b>Total Requirement</b>	<b>5,884.00</b>	<b>Hours</b>
		47.00	Hours/Day
	<b>Nos. of Units Proposed @ 10 Hours/Day / Unit</b>	<b>4.00</b>	<b>Nos.</b>
<b>6   Transportation / Dumper</b>			
<b>Purpose</b> Transportation of Screened	<b>Assumption &amp; Calculations</b>		
	Inert Material (After Stabilisation / Screening)	14,878.00	MT

<b>Table 21: Detailed Calculation of Infrastructure Requirements for Bioremediation</b>			
<b>1   Excavation &amp; Loading / Excavator</b>			
material with lead of 1 to 1.5 Kms & Inert to Dumping site	Balance Material (After Stabilisation / Screening)	51,301.00	MT
	<b>Total</b>	<b>66,179.00</b>	<b>MT</b>
	Capacity Proposed	<b>18.00</b>	MT/Hour
	<b>Total Requirement</b>	<b>3,677.00</b>	<b>Hours</b>
		29.00	Hours/Day
	<b>Nos. of Units Proposed @ 10 Hours/Day / Unit</b>	<b>3.00</b>	<b>Nos.</b>
<b>7   Manpower/ Site Supervisor</b>			
<b>Purpose</b> For Supervision Trips/ operations	<b>Assumption &amp; Calculations</b>		
	Person Required @1 Per Screening Unit	<b>4.00</b>	Nos.
	<b>Total Requirement</b>	<b>1,000.00</b>	<b>Mandays</b>
<b>8   Manpower/ Labour</b>			
<b>Purpose</b> For Mannual segregation of Recyclables	<b>Assumption &amp; Calculations</b>		
	Recyclable Material (Before Sabilisation/ Screening)	9,077.00	MT
	Total recyclable per day	72.62	MT
	Person Required @ 2 MT per person per day	36.00	Nos.
	<b>Total Requirement</b>	<b>4,500.00</b>	<b>Mandays</b>
<b>9   Recyclable Processing /Plastic Dusting Machine</b>			
<b>Purpose</b> Removal of dust from the combustible Material like plastic , paper ,rubber , etc.	<b>Assumption &amp; Calculations</b>		
	Plastic, Polythene, Tetra Packs Etc	4,396.00	MT
	Paper and Card Board	2,391.00	MT
	Textiles	2,200.00	MT
	Total Combustible Material Excluding Horticulture Waste & Wooden Pices (Before Stabilisation/Screening)	8,987.00	MT
	Capacity Proposed	<b>12.00</b>	TPH
	<b>Total Requirement</b>	<b>749.00</b>	<b>Hours</b>
	<b>Total Requirement @ 8 Hours per day</b>	<b>94.00</b>	<b>Days</b>
	<b>Total Machine Requirement</b>	<b>1.00</b>	<b>Nos.</b>
<b>10   Recyclable Processing /Shredding Machine</b>			
<b>Purpose</b> Shreeding of Material like plastic , paper ,rubber , etc.	<b>Assumption &amp; Calculations</b>		
	Plastic, Polythene, Tetra Packs Etc	4,396.00	MT
	Paper and Card Board	2,391.00	MT
	Textiles	2,200.00	MT
	Total Combustible Material Excluding Horticulture Waste & Wooden Pices (Before Stabilisation/Screening)	8,987.00	MT
	Capacity Proposed	<b>12.00</b>	TPH
	<b>Total Requirement</b>	<b>749.00</b>	<b>Hours</b>
	<b>Total Requirement @ 8 Hours per day</b>	<b>94.00</b>	<b>Days</b>
	<b>Total Machine Requirement</b>	<b>1.00</b>	<b>Nos.</b>
<b>11   Recyclable Processing /Bailing Machine</b>			
<b>Purpose</b> formating Balls of Material like plastic , paper ,rubber , etc.	<b>Assumption &amp; Calculations</b>		
	Plastic, Polythene, Tetra Packs Etc	4,396.00	MT
	Paper and Card Board	2,391.00	MT
	Textiles	2,200.00	MT
	Total Combustible Material Excluding Horticulture Waste & Wooden Pices (Before	8,987.00	MT

<b>Table 21: Detailed Calculation of Infrastructure Requirements for Bioremediation</b>			
<b>1</b>	<b>Excavation &amp; Loading / Excavator</b>		
		Stabilisation/Screening)	
		Capacity Proposed	<b>12.00</b> TPH
		<b>Total Requirement</b>	<b>749.00</b> Hours
		<b>Total Requirement @ 8 Hours per day</b>	<b>94.00</b> Days
		<b>Total Machine Requirement</b>	<b>1.00</b> Nos.
Source: Proposed by the Consultant			

54. The following are the minimum requirements of infrastructure for Bioremediation.

<b>Table 22: Summary of Infrastructure Requirements for Bioremediation</b>			
No.	Details	Infrastructure	Minimum Requirements
1	<b>Excavation &amp; Loading</b>	Excavator	2 Nos.
2	<b>Transportation</b>	Dumper	4 Nos.
3	<b>Stabilization</b>	Bio culture Preparation & Spraying	75256 Liter
4	<b>Screening</b>	Rotary Trommels with Vibrating Screen	2 Nos. of Sets
5	<b>Loading</b>	Backhoe Loader	4 Nos.
6	<b>Transportation</b>	Dumper	3 Nos.
7	<b>Manpower</b>	Site Supervisor	4 Nos.
8	<b>Manpower</b>	Labour	36 Nos.
9	<b>Recyclable Processing</b>	Plastic Dusting Machine	1 Nos.
10	<b>Recyclable Processing</b>	Shredding Machine	1 Nos.
11	<b>Recyclable Processing</b>	Bailing Machine	1 Nos.
12	<b>Other</b>	Electricity Connection	110 HP
Source: Proposed by the Consultant			

47. The following are the specifications for the required infrastructure for Bioremediation.

<b>Table 23: Specifications for Infrastructure Requirements for Bioremediation</b>			
<b>Specifications for Excavator</b>			
<b>Make-</b> Tata Hitachi / Hyundai / JCB / equivalent		<b>Dimensions</b>	
<b>Engine</b>		Shoe Width	500 mm
Maximum Engine Power	133 hp	<b>Working Range</b>	
No. of Cylinder	6	Max digging depth	5580 mm
Max. Torque	537.588 Nm/min-1	Maximum dumping height	6480 mm
<b>Weight</b>		Boom Length	5.68 m
Maximum Operating Weight	20000 kg	Arm Length	2.85 m
<b>Performance</b>		<b>Bucket</b>	
Maximum Bucket Capacity	1.5 cum	Bucket tearout with boost	16400 Kgf
Gradeability	70 % (35 deg)	<b>Refiling Capacity</b>	
Swing Speed	13.7 rpm	Fuel Tank	310 L
Travel Speed	4.2 km / h	Engine Oil	221 L
<b>Specifications for Dumper</b>			

**Table 23: Specifications for Infrastructure Requirements for Bioremediation**

<b>Make</b>	TATA / Bharat Benz / Ashok Leyland/ Equivalent	<b>Clutch</b>	380 mm Dia Push type Single Plate Dry Friction Organic Lining
<b>Engine</b>	Cummins ISBe 5.6 BS6	<b>Gearbox</b>	G1150 9 speed Gearbox with crawler & one reverse
<b>Engine Norm</b>	BS-VI	<b>Steering</b>	Power Steering
<b>Power</b>	219 HP	<b>Transmission</b>	Manual
<b>Max Torque</b>	850 NM	<b>Power Steering</b>	Yes
<b>No. of Tyre</b>	10	<b>Body Option</b>	Customizable
<b>Fuel Tank</b>	300 Ltr.	<b>Chassis Type</b>	Chassis with Cabin
<b>GVW</b>	28000 KG	<b>Cabin Type</b>	Day Cabin
<b>Wheelbase</b>	3880 MM	<b>Arm Rest</b>	No
<b>Front Axle</b>	Forged I beam reverse elliot type - drop beam	<b>Tilttable Steering</b>	Yes
<b>Rear Axle</b>	Single reduction, extra heavy duty, hypoid gears, fully floating axle shaft	<b>Front Tyre</b>	295/95 D20
<b>Front Suspension</b>	Semi elliptical leaf spring suspension	<b>Rear Tyre</b>	295/95 D20
<b>Rear Suspension</b>	TML bogie suspension with anti roll bar	<b>Seating Capacity</b>	D+1

**Specifications for Bio Culture Preparation & Spraying**

As per Market Availability

**Specifications for Rotary Trommels with Vibrating Screen**



**Table 23: Specifications for Infrastructure Requirements for Bioremediation**

Sr. No.	DESCRIPTION	CAP./SIZE	ELE. POWER (HP)
1	FEED HOPER	2.5M <sup>3</sup>	-
1:2	VIBRATORY MOTOR	318x2 CFF	0.25x2
1:3	CONVEYOR BELT (CHEVRON)	650Wx12600L	-
1:4	DRIVE	GEAR+MOTOR	5
2	VIBRATOR SCREEN	90x90mm	-
2:2	VIBRATORY MOTOR	2600x2 CFF	3x2
3	1st REJECT CONVEYOR	ABOVE 90mm	-
3:2	CONVEYOR BELT (CHEVRON)	500Wx16600L	-
3:3	DRIVE	GEAR+MOTOR	5
3:4	BLOWER OUTLET (152mm)	7600M <sup>3</sup> /hr	7.5
4	SLINGER CONVEYOR BELT	800Wx20600L	-
4:2	DRIVE	GEAR+MOTOR	7.5
5	ROTARY SCREEN (6mm)	Ø2000x7500Lmm	-
5:2	SCREEN Ø25mm	33M <sup>2</sup> (GROSS)	-
5:3	DRIVE	GEAR+MOTORx2	10x2
6	PROCESSED CONVEYOR	600Wx26300L	-
6:2	DRIVE	GEAR+MOTOR	5
7	2nd REJECT CONVEYOR	ABOVE 25mm	-
7:2	DRIVE	GEAR+MOTOR	5
7:3	BLOWER OUTLET (100mm)	3400M <sup>3</sup> /hr	2
8	CONTROL PANEL BOARD	WITH CHANGEOVER SWITCH	TOTAL HP = 63.5
9	REQUIRED AREA FOR PLANT INSTALLATION	10Wx30L mtr.	

**Specifications for Backhoe Loader**

<b>Make</b>	JCB/ Escort / Mahindra/ Equivalent	<b>AXLES</b>	
<b>ENGINE</b>		<b>Front</b>	Drive axle rigidly mounted, incorporates JCB Max – Trac torque proportioning differential, driven by short prop shaft from gear box.
<b>Engine Model</b>	KOEL 4R81 0, NA, water cooled, BS III diesel engine.	<b>Rear</b>	2WD steer axle, centrally pivoted, with oscillation angle of 16
<b>Gross Torque</b>	182 nm @ 1500 RPM	<b>BRAKES</b>	
<b>Gross Power</b>	49.5 HP @ 2200 RPM	<b>ELECTRICAL</b>	
<b>No of Cylinders</b>	4	<b>Electrical</b>	100 Ah 12 Volts battery system with alternator and full road lighting.
<b>TRANSMISSION</b>		<b>WEIGHT</b>	
<b>Torque converter stall ratio is</b>	2.61: 1	<b>Shipping Weight</b>	4530 Kgs
<b>STEERING</b>		<b>6 in 1 clam shovel bucket</b>	Yes
<b>A* Outside Loader Bucket</b>	9.70 m	<b>Cabin</b>	Yes
<b>A** Outside Loader Bucket</b>	11.00 m	<b>Dozer Blade</b>	Yes
<b>B Outside Wheels</b>	7.44 m	<b>Auger</b>	Yes
<b>B** Outside Wheels</b>	7.90 m	<b>Canopy</b>	Yes
<b>HYDRAULIC SYSTEM</b>		<b>High Dump Bucket</b>	3.1 M
<b>Combined Pump Flow</b>	691 pm @ 2200 RPM	<b>TYRES</b>	
<b>System Pressure</b>	2610 PSI	<b>Standard Front</b>	7.5 x 16 – 16 PR
<b>Pump Type</b>	Gear, Double pump	<b>Standard Rear</b>	14.9 x 24 – 12 PR

**Specifications for Plastic Dusting Machine**

<b>Table 23: Specifications for Infrastructure Requirements for Bioremediation</b>			
<b>Power</b>	15 HP	<b>Wash Capacity</b>	1 TPH
<b>Phase</b>	3 phase	<b>Motor Power</b>	15 HP
<b>Voltage</b>	415 V	<b>Power Source</b>	Electric
<b>Operating System</b>	Automatic		
<b>Specifications for Shredding Machine</b>			
<b>Shredding Machine Type</b>	Double Shaft	<b>Forward / Reverse</b>	Yes
<b>Shredding Material</b>	Rubber, Paper, Waste, Plastic	<b>App. Dimensions</b>	57 inch L x 24 inch W x 53 inch H
<b>Motor Capacity</b>	10 HP	<b>Floor Space</b>	22 sq. Ft
<b>Electric Type</b>	3 PH	<b>Gear Box</b>	130-20(2 Nos.)
<b>No. of Motors</b>	2	<b>Wheels</b>	With Wheel
<b>Stage Size</b>	600 mm	<b>Forward / Reverse Facility</b>	Yes
<b>Capacity</b>	2 to 2.5 Ton / hour	<b>Output Size</b>	5 to 10mm
<b>Blades</b>	WPS / OHNS	<b>Electric Consumption</b>	15.00 KW = 15 units / hr
<b>Safety Pack</b>	Optional		
<b>Specifications Bailing Machine</b>			
<b>Capacity</b>	15 Ton	<b>Working Fluid</b>	Hydro Enklo 63
<b>Brand</b>	AIM	<b>Hydraulic Pressure</b>	2700 Psi
<b>Phase</b>	3 Phase	<b>Power</b>	3 HP
<b>Voltage</b>	220-380V	<b>Power Source</b>	Electric
Source: Consultant			

## F. Cost Estimates & Implementation Plan for Dumpsite Remediations

### 1. Unit Rates Adopted for Costing

48. The following are the unit Rates adopted deriving Cost for Bioremediation Works.

No.	Details	Unit Rates Adopted	Source of Rates
1	Clearing Dumping site using Bio-remediation of Old Dumped waste	Rs. 550/- Per MT	Directorate, Urban Administration & Development Madhya Pradesh

Source: Consultant

### 2. Cost Estimates

49. The following are the summary of Cost Estimates **for Bioremediation** for Dumpsite Reclamation –

No.	Description of Work	Quantity		Unit Rate	Total Estimated Project Cost
1	Dumpsite Reclamation which includes following works-				
	The works for scientific dump site reclamation through <b>Bioremediation</b> of legacy waste/ unprocessed municipal solid waste, Resource Recovery and Rejects Disposal which includes following activities-	<b>83617.00</b>	<b>In MT</b>	<b>₹ 550.00</b>	<b>₹ 4,59,89,350.00</b>
	(i) Biomining/ Excavation of complete mixed MSW from the dumpsite which underwent biological and physical degradation.				
	(ii) Resource recovery by using suitable mechanical sieving machine or any other suitable equipment / method, segregating, sorting, retrieving recoverable materials, storing, selling, diverting for recycling etc.				
	(iii) Rejects disposal / Backfilling of reject at Suitable area within 10 Kilometres from the site or Staking				
<b>Total Project Cost :</b>					<b>₹ 4,59,89,350.00*</b>

Source: Consultant  
\*- Applicable Taxes EXTRA

3. **Proposed Implementation Plan**

a) Comparison of various Implementation Model for Dumpsite Reclamation

50. The following are the Comparison of various Implementation Model for Dumpsite Reclamation adopted in India-

Details	Telangana & J & K	Bhopal	Maharashtra
<b>Project Structure</b>	<b>Cluster basis</b> Invitation of Single Tender for Nine Cluster  Work Execution at individual ULB level (contract shall be executed by each ULB separately)	<b>Standalone</b>	<b>Standalone</b>
<b>Bidding Parameter</b>	Per Ton (MT) Basis	<b>A.</b> Cost of the portion of the reclaimed land in area ..... (in excess of min. land area of 15 acres). cost of the excess land @ Rs 5.26 Cr per acre)  <b>B.</b> Lumpsum Quote of Bidder for Bio-remediation & Capping L1 bid = Lowest (B-A) value	Lumpsum basis on land to be reclaimed (Min.80%)
<b>Payment Milestone-Comparison Matrix</b>	1. Project to be completed in 6 Months 2. Payment on Monthly Legacy Waste Processed (Prorated Basis)	Construction Phase: 80 % Contract Value  DPR: 5%; Committed Land Handover 48 % (In Six Milestone of 6% each); Capping: 27% (In two stage 12% & 15%)  O & M: 20% (In 10 Milestone of 2% every 6 Months)	40% of proposed Land Reclaimed: 40%  Cumulative 70% of Proposed Land reclamation: 30%  Cumulative 100% of Proposed Land reclamation: 100%
Source: Consultant			

51. From the above analysis, it can be established that the works of Bioremediation and scientific capping for smaller ULBs can be done for cluster of ULBs at the division level. The following is the model proposed for the project.

Details	Proposed Model for M.P.
<b>Project Structure</b>	<b>Cluster basis</b> Invitation of Tender at Division Level

<b>Table 27: Comparison and selection of appropriate models for dumpsite reclamation</b>	
<b>Details</b>	<b>Proposed Model for M.P.</b>
	Work Execution at individual ULB level (contract shall be executed by each ULB separately) Proportionate (of Lumpsum Quote) payment by individual level
<b>Bidding Parameter</b>	Lumpsum basis on land to be reclaimed ( <b>Min. 80%</b> ) The bidder quoting the lowest price will be selected to execute the works.
<b>Payment Milestone-Comparison Matrix</b>	Land Reclamation (Min 80%): - <b>100% of Contract Value (20%, 20%, 15%, 20%,25%)</b> against completion of Bioremediation Works
Source: Consultant	

b) Proposed Implementation timeframe

52. The following are the proposed timeframe for implementation

<b>Table 28: Proposed Implementation timeframes</b>		
<b>No</b>	<b>Activity</b>	<b>Minimum Required Months</b>
1	Construction & Commissioning Period	1
2	Completion of Bioremediation Works	3
<b>Total Time Duration</b>		<b>4</b>
Source: Consultant		

#### 4. Proposed Funding Mechanism

53. As per direction of Urban Administration and Development Department, Govt. of Madhya Pradesh, the following is the fund sharing mechanism under for all the infrastructure to be financed under Swachh Bharat Mission (Urban) 2.0.

<b>Table 29: Proposed Financial Structure &amp; Funding Mechanism</b>			
<b>Population Range</b>	<b>Govt. of India (GoI) Share</b>	<b>Govt. of Madhya Pradesh Share</b>	<b>Urban Local Body Share</b>
<b>More than 10 Lakh</b>	25%	25%	50%
<b>1 Lakh to 10 Lakh</b>	33%	33%	34%
<b>Less than 1 Lakh</b>	<b>50%</b>	<b>40%</b>	<b>10%</b>
<b>“Mandideep”</b>	<b>₹ 2,29,94,675</b>	<b>₹ 1,83,95,740</b>	<b>₹ 45,98,935</b>
Source: Urban Administration & Development Department, Govt. of Madhya Pradesh			

54. The remainder (10%) has to be brought in by ULB which in case can be covered under the grant of 15<sup>th</sup> Finance Commission (Proposed amount under grant as per the Budget year 2022-2023).

**5. Benefits from the Proposed Project:**

55. Land is the most valuable asset that will be recovered as output of this Proposed Project, considering the revenue guidelines for the site land value can be assessed as shown in table below.

No.	Details	Benefit	Remarks
1	Waste Spread Area	55828 Sqm	Area to be reclaimed
2	Cost of Land	900 Rs./Sqm	As per ULB or Current Market rate
3	Total cost of Land to be reclaimed (Rs.)	₹ 5,02,45,200.00	

Source: Consultant

56. In addition, the Successful Concessioner can generate the revenue from selling the material recovered from bio remediation process.

57. The remediation of dumpsites leads to the following Benefits:

- Elimination of foul odour to benefit the citizen living nearby
- Decline in vector borne diseases arising out of the dumpsite
- Significant Reduction in Air pollution of the entire area
- Elimination of dump fires and leachate generation
- Uplifting of the environmental, aesthetic and social parameters of entire area
- Reduction in Green House Gas Emissions, soil pollution and Ground water contamination
- Increase in nearby real state value and rental values.
- Dumpsite land becomes available for other use

## G. Environment Mitigation Measures

58. There are several factors that must be kept in mind during implementation of the project.

- **Fresh Waste:** The issue of dumping of fresh waste generated by ULB will be resolved onsite as the remediation work cannot be carried out on any section of the dump site receiving fresh waste.
- **Space Management:** Availability of space is a constant challenge as each of aeration, stabilization, and screening need to be done within the boundaries of the dumpsite, and the solution to this problem varies on a case-to-case basis. Safety will be ensured when trying to manage space.
- **Leachate Management:** Most high heaps of legacy waste are water-logged with leachate even near the topmost layers and all the way to the bottom. This is not just from rainwater entering the heap but is produced by airless rotting within the entire waste heap. So when legacy waste heaps are opened up, some leachate almost always trickles out. This is not produced by the formation of wind-rows or cones, which in fact help to dry out the waste by aerated decomposition. Aeration of the waste leads to reduction in leachate. Channels will be created to lead the oozing leachate rivulets to a lined depression or pond for treatment or for leachate recirculation onto wind-rows as a type of bio culture. Bio-cultures that have been proved successful at other locations will be sprinkled onto the leachate pools.
- **Fire Control and Safety:** Most large dumpsites are smouldering from hidden fires. Methane itself is flammable with a blue flame, and supports the yellow-flame burning of combustible plastics, cloth and oily rags. Sometimes flammable industrial waste finds its way onto dumpsites, aggravating the problem. There is a better way, again requiring creative common-sense and experience and training of earth-mover drivers. Most fires within heaps have a point source – a bag of textile discards or plastic waste or a ball of oily rags. Earthmover drivers must learn to dig in and pluck out these burning balls of fire. These should be laid nearby on the surface of the dump and then rubbed out with the back of the excavator shovel to extinguish the flames and smoke. Wet soil should be kept handy to immediately plug the excavated hole. Adding composting bio-cultures can be tried, to counter the anaerobic conditions around the burning spots. Smoking points must be tackled patiently and systematically, one by one, till the dump is smoke-free to begin stabilizing operations by bio-remediation.
- **Other Measures-** The following general measures should be considered:
  - ***Vector and vermin control:*** *The site might attract vectors and vermin because of the presence of organic waste. To avoid or reduce vectors and vermin, the filling area should be minimised and the waste covered at regular intervals.*
  - ***Litter control:*** *Offsite litter should be picked up on a regular basis.*
  - ***Noise control:*** *Noise in the site arises from operations and waste vehicles entering and leaving the site. During operations, equipment with faulty or worn-out exhaust systems can cause high noise levels. Hence, they need to be repaired.*

- **Dust control:** *The combination of vehicle movements and winds on temporary and un-surfaced roads can create dust. Dust within and around a landfill site can be a source of annoyance, harm, and physical discomfort to landfill staff and neighbourhood. Therefore, all precautions have to be taken to avoid dust generation.*
- **Odour control:** *The landfill should be operated in a manner that will minimise the odour from waste or associated items. Operational procedures include placing suitable cover material over the waste in a timely manner.*

**\*\*End of Report\*\***

## Glossary of Terms

1. **“aerobic composting”** means a controlled process involving microbial decomposition of organic matter in the presence of oxygen;
2. **“anaerobic digestion”** means a controlled process involving microbial decomposition of organic matter in absence of oxygen;
3. **“authorisation”** means the permission given by the State Pollution Control Board or Pollution Control Committee, as the case may be, to the operator of a facility or urban local authority, or any other agency responsible for processing and disposal of solid waste;
4. **“biodegradable waste ”** means any organic material that can be degraded by micro-organisms into simpler stable compounds;
5. **“bio-methanation”** means a process which entails enzymatic decomposition of the organic matter by microbial action to produce methane rich biogas;
6. **“brand owner”** means a person or company who sells any commodity under a registered brand label.
7. **“buffer zone”** means zone of no development to be maintained around solid waste processing and disposal facility, exceeding 5 TPD of installed capacity. This will be maintained within total and area allotted for the solid waste processing and disposal facility.
8. **“bulk waste generator”** means and includes buildings occupied by the Central government departments or undertakings, State government departments or undertakings, local bodies, public sector undertakings or private companies, hospitals, nursing homes, schools, colleges, universities, other educational institutions, hostels, hotels, commercial establishments, markets, places of worship, stadia and sports complexes having an average waste generation rate exceeding 100kg per day;
9. **“bye-laws”** means regulatory framework notified by local body, census town and notified area townships for facilitating the implementation of these rules effectively in their jurisdiction.
10. **“census town”** means an urban area as defined by the Registrar General and Census Commissioner of India;
11. **“combustible waste”** means non-biodegradable, non-recyclable, non-reusable, non-hazardous solid waste having minimum calorific value exceeding 1500 kcal/kg and excluding chlorinated materials like plastic, wood pulp, etc;
12. **“composting”** means a controlled process involving microbial decomposition of organic matter;
13. **“contractor”** means a person or firm that undertakes a contract to provide materials or labour to perform a service or do a job for service providing authority;
14. **“co-processing”** means use of non-biodegradable and non-recyclable solid waste having calorific value exceeding 1500k/cal as raw material or as a source of energy or both to replace or supplement the natural mineral resources and fossil fuels in industrial processes;

15. **“decentralised processing”** means establishment of dispersed facilities for maximizing the processing of biodegradable waste and recovery of recyclables closest to the source of generation so as to minimize transportation of waste for processing or disposal;
16. **"disposal"** means the final and safe disposal of post processed residual solid waste and inert street sweepings and silt from surface drains on land as specified in Schedule I to prevent contamination of ground water, surface water, ambient air and attraction of animals or birds;
17. **“domestic hazardous waste”** means discarded paint drums, pesticide cans, CFL bulbs, tube lights, expired medicines, broken mercury thermometers, used batteries, used needles and syringes and contaminated gauge, etc., generated at the household level;
18. **"door to door collection"** means collection of solid waste from the door step of households, shops, commercial establishments, offices, institutional or any other non-residential premises and includes collection of such waste from entry gate or a designated location on the ground floor in a housing society, multi storied building or apartments, large residential, commercial or institutional complex or premises;
19. **“dry waste”** means waste other than bio-degradable waste and inert street sweepings and includes recyclable and non-recyclable waste, combustible waste and sanitary napkin and diapers, etc;
20. **“dump sites”** means a land utilised by local body for disposal of solid waste without following the principles of sanitary land filling;
21. **“extended producer responsibility” (EPR)** means responsibility of any producer of packaging products such as plastic, tin, glass and corrugated boxes, etc., for environmentally sound management, till end-of-life of the packaging products;
22. **“facility”** means any establishment wherein the solid waste management processes namely segregation, recovery, storage, collection, recycling, processing, treatment or safe disposal are carried out;
23. **"fine"** means penalty imposed on waste generators or operators of waste processing and disposal facilities under the bye-laws for non-compliance of the directions contained in these rules and/or bye- laws
24. **"Form"** means a F8orm appended to these rules;
25. **“handling”** includes all activities relating to sorting, segregation, material recovery, collection, secondary storage, shredding, baling, crushing, loading, unloading, transportation, processing and disposal of solid wastes;
26. **“inerts”** means wastes which are not bio-degradable, recyclable or combustible street sweeping or dust and silt removed from the surface drains;
27. **“incineration”** means an engineered process involving burning or combustion of solid waste to thermally degrade waste materials at high temperatures;
28. **“informal waste collector”** includes individuals, associations or waste traders who are involved in sorting, sale and purchase of recyclable materials;
29. **"leachate"** means the liquid that seeps through solid waste or other medium and has extracts of dissolved or suspended material from it;

30. "**local body**" for the purpose of these rules means and includes the municipal corporation, nagar nigam, municipal council, nagarpalika, nagarpalika parishad, municipal board, nagar panchayat and town panchayat, census towns, notified areas and notified industrial townships with whatever name they are called in different States and union territories in India;

31. "**materials recovery facility**" (MRF) means a facility where non-compostable solid waste can be temporarily stored by the local body or any other entity mentioned in rule 2 or any person or agency authorised by any of them to facilitate segregation, sorting and recovery of recyclables from various components of waste by authorised informal sector of waste pickers, informal recyclers or any other work force engaged by the local body or entity mentioned in rule 2 for the purpose before the waste is delivered or taken up for its processing or disposal;

32. "**non-biodegradable waste**" means any waste that cannot be degraded by microorganisms into simpler stable compounds;

33. "**operator of a facility**" means a person or entity, who owns or operates a facility for handling solid waste which includes the local body and any other entity or agency appointed by the local body;

34. "**primary collection**" means collecting, lifting and removal of segregated solid waste from source of its generation including households, shops, offices and any other non-residential premises or from any collection points or any other location specified by the local body;

35. "**processing**" means any scientific process by which segregated solid waste is handled for the purpose of reuse, recycling or transformation into new products;

36. "**recycling**" means the process of transforming segregated non-biodegradable solid waste into new material or product or as raw material for producing new products which may or may not be similar to the original products;

37. "**redevelopment**" means rebuilding of old residential or commercial buildings at the same site, where the existing buildings and other infrastructures have become dilapidated;

38. "**refused derived fuel**" (RDF) means fuel derived from combustible waste fraction of solid waste like plastic, wood, pulp or organic waste, other than chlorinated materials, in the form of pellets or fluff produced by drying, shredding, dehydrating and compacting of solid waste;

39. "**residual solid waste**" means and includes the waste and rejects from the solid waste processing facilities which are not suitable for recycling or further processing;

40. "**sanitary land filling**" means the final and safe disposal of residual solid waste and inert wastes on land in a facility designed with protective measures against pollution of ground water, surface water and fugitive air dust, wind-blown litter, bad odour, fire hazard, animal menace, bird menace, pests or rodents, greenhouse gas emissions, persistent organic pollutants slope instability and erosion;

41. "**sanitary waste**" means wastes comprising of used diapers, sanitary towels or napkins, tampons, condoms, incontinence sheets and any other similar waste;

42. "**Schedule**" means the Schedule appended to these rules;

43. "**secondary storage**" means the temporary containment of solid waste after collection at secondary waste storage depots or MRFs or bins for onward transportation of the waste to the processing or disposal facility;

44. "**segregation**" means sorting and separate storage of various components of solid waste namely biodegradable wastes including agriculture and dairy waste, non-biodegradable wastes including recyclable waste, nonrecyclable combustible waste, sanitary waste and non-recyclable inert waste, domestic hazardous wastes, and construction and demolition wastes;

45. "**service provider**" means an authority providing public utility services like water, sewerage, electricity, telephone, roads, drainage, etc;

46. "**solid waste**" means and includes solid or semi-solid domestic waste, sanitary waste, commercial waste, institutional waste, catering and market waste and other non-residential wastes, street sweepings, silt removed or collected from the surface drains, horticulture waste, agriculture and dairy waste, treated bio-medical waste excluding industrial waste, bio-medical waste and e-waste, battery waste, radio-active waste generated in the area under the local authorities and other entities mentioned in rule 2;

47. "**sorting**" means separating various components and categories of recyclables such as paper, plastic, cardboards, metal, glass, etc., from mixed waste as may be appropriate to facilitate recycling;

48. "**stabilising**" means the biological decomposition of biodegradable wastes to a stable state where it generates no leachate or offensive odours and is fit for application to farm land, soil erosion control and soil remediation;

49. "**street vendor**" means any person engaged in vending of articles, goods, wares, food items or merchandise of everyday use or offering services to the general public, in a street, lane, side walk, footpath, pavement, public park or any other public place or private area, from a temporary built up structure or by moving from place to place and includes hawker, peddler, squatter and all other synonymous terms which may be local or region specific; and the words "street vending" with their grammatical variations and cognate expressions, shall be construed accordingly;

50. "**tipping fee**" means a fee or support price determined by the local authorities or any state agency authorised by the State government to be paid to the concessionaire or operator of waste processing facility or for disposal of residual solid waste at the landfill;

51. "**transfer station**" means a facility created to receive solid waste from collection areas and transport in bulk in covered vehicles or containers to waste processing and, or, disposal facilities;

52. "**transportation**" means conveyance of solid waste, either treated, partly treated or untreated from a location to another location in an environmentally sound manner through specially designed and covered transport system so as to prevent the foul odour, littering and unsightly conditions;

53. "**treatment**" means the method, technique or process designed to modify physical, chemical or biological characteristics or composition of any waste so as to reduce its volume and potential to cause harm;

54. "**user fee**" means a fee imposed by the local body and any entity mentioned in rule 2 on the waste generator to cover full or part cost of providing solid waste collection, transportation, processing and disposal services.

55. "**vermi composting**" means the process of conversion of bio-degradable waste into compost using earth worms;

56. "**waste generator**" means and includes every person or group of persons, every residential premises and non-residential establishments including Indian Railways, defence establishments, which generate solid waste;

## Drawings & L Sections

# MaRS Enviro Research & Engineering Services Pvt. Ltd

[CIN- U74994GJ2010PTC062087]

NABL accredited Testing Laboratory vide Certificate No : TC-7070  
Address- Survey No.:171/1 ,Gota – Jagatpur Road, Ahmedabad-382481, Gujarat  
Email: lab@marsconsultancy.com

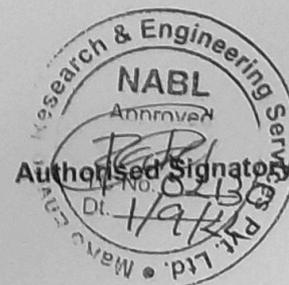
## TEST REPORT

Ref No:- 02130	Name & Address of Customer: <b>MaRS Planning &amp; Engineering Services Pvt. Ltd</b> 601, Surmount, Opp. ISCON Mega Mall SG Highway, Ahmedabad-54, Gujarat			Sample Drawn by: The Party Particulars of the Sample: Legacy Waste Sample at Mandideep										
Date of receipt of sample: 28/08/2022 Date of analysis: 01/09/2022	Sample quantity received:			<table border="1"> <tr> <td>Sample Number</td> <td>1</td> <td>2</td> <td>3</td> </tr> <tr> <td>Total Sample Weight (in kg.)</td> <td>10.49</td> <td>11.22</td> <td>11.40</td> </tr> </table>			Sample Number	1	2	3	Total Sample Weight (in kg.)	10.49	11.22	11.40
Sample Number	1	2	3											
Total Sample Weight (in kg.)	10.49	11.22	11.40											
Type of packing: Plastic Pouch	Sample Condition: Fit for Analysis													

## RESULTS

Physical & Chemical Testing of Sample						
Sr No.	Parameter	Unit	Results			Test Method
1	pH		5.0			
2	Bulk Density	MT/Cum	0.84			IS:2386(P-3):1963
Sr No.	Parameter	Unit	Results			Test Method
			Sample 1	Sample 2	Sample 3	
1	Biodegraded Fraction	% w/w	18.02%	16.67%	21.49%	On-Site Physical Verification
2	Plastic, Polythene, Tetra Packs Etc	% w/w	2.76%	6.95%	6.05%	
3	Paper and Card Board	% w/w	4.96%	1.52%	2.11%	
4	Horticulture Waste & Wooden Piece	% w/w	1.24%	4.55%	2.11%	
5	Metal	% w/w	0.67%	0.42%	0.51%	
6	Textiles	% w/w	1.43%	5.17%	6.05%	
7	Glass	% w/w	4.96%	1.60%	4.65%	
8	Leather, Rubber Etc	% w/w	5.05%	3.48%	2.19%	
9	Heavy Fractions	% w/w	24.50%	25.23%	23.07%	
10	Coarser fraction	% w/w	15.54%	12.04%	15.70%	
11	Fine Fractions	% w/w	20.88%	22.38%	16.06%	
	Total		100.00%	100.00%	100.00%	
Sr No.	Parameter	Unit	Results			Test Method
1	Moisture	% w/w	22.43			ASTM D 3173-87 (1996)
2	Ash Content	% w/w	27.23			ASTM D 3174-97
3	Total volatile content (LOI)	% w/w	23.06			ASTM D 3175-89a (1997)
4	Total Organic Carbon (TOC)	% w/w	27.06			IS: 228 (P-1): 1987
5	Calorific value	Cal/Kg	883.45			Bomb Calorimeter
6	C/N ratio		14.02			Computation
7	Total Nitrogen	mg/kg	1.89			ASTM D 3179-89 (1997)
8	Total Phosphates as P2O5	% w/w	2.09			IS: 228 (P-3): 1987
9	Total Potassium as K2o	% w/w	1.79			USEPA 6010C :2007

Checked by



Note-

- The Test results relate purely to the sample submitted by customer for analysis. No Liability will be accepted by us regarding any false information or samples drawn by the customer. Perishable sample will be destroyed after testing.
- Information of submitted samples as provided by Customer.
- The Report shall not be reproduced in full or part for any purpose and can't be used as evidence in a court of Law without our the written approval and special permissions.
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**Project Name**  
**Preparation of Detailed Project Report for Solid Waste Management in Madhya Pradesh**

**Sub Project**  
**Bioremediation for Disposal of Legacy Waste**

Division BHOPAL	District RAISEN	Urban Local Body MANDIDEEP
--------------------	--------------------	-------------------------------

- NOTES:**
1. The information must solely and only be used for the coordination and/or approval of the project. And it should not be used for construction or execution purpose.
  2. The consultant does not warrant or take responsibility for the accuracy of the information issued.
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Drawing No. <b>C-00 R0</b>	Scale <b>NTS</b>	Drawing Status Issued for DPR Approval
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**Drawing Name**  
 Terrain Profile

Revision History

DATE	NO.	REVISION	DRAWN	CHECKED	APPROVED

Drawn by Draftsmen (CS/ NT/ NR)	Designed by Subject Expert	Checked by SWM Expert (HP / RB / MS)	Approved by Team Leader (JNP / SP / JS)
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**Client**

**Authority**  
 Directorate, Urban Administration & Development, Government of MP

**Nodal Authority**- Urban Local Body

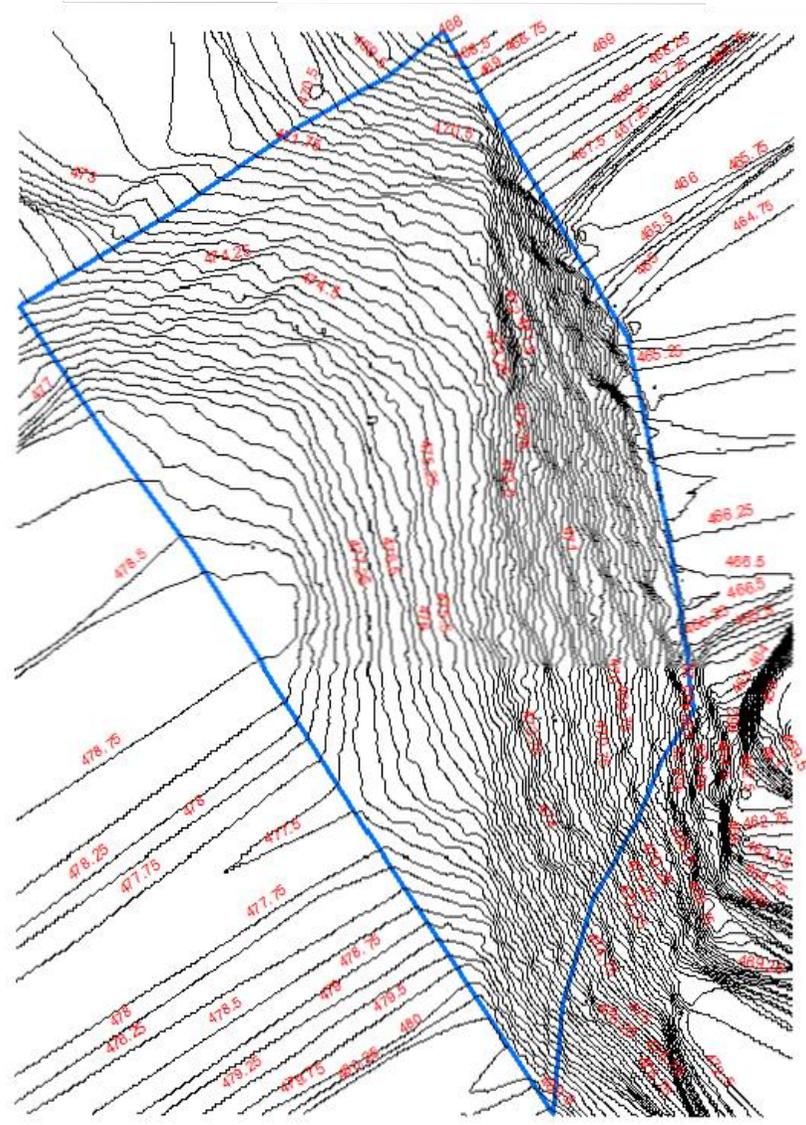
**Consultant**

**MARS PIVOTAL PLANNING SERVICES**

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Size **A4**



**LEGENDS :-**

0.25	INTERVAL
	CONTOUR LINE
	DUMP AREA BOUNDARY

**INFORMATION :-**

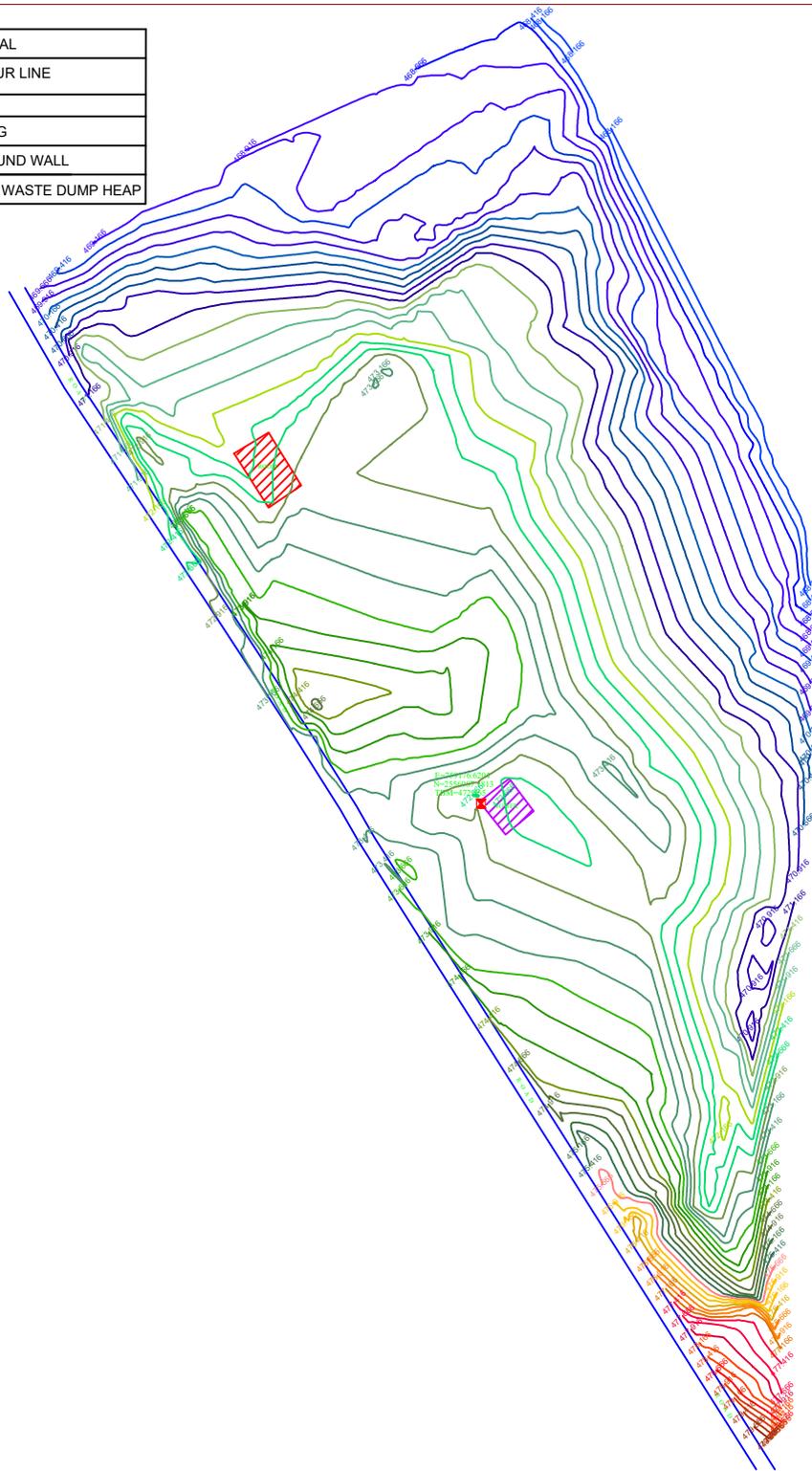
2013	TERRAIN PROFILE DETAIL
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**INFORMATION :-**

468.916 Mt	TBM LEVEL*
479.166 Mt	HIGHEST CONTOUR LINE LEVEL*
468.916 Mt	LOWEST CONTOUR LINE LEVEL*
1.7 Mt**	AVERAGE HEIGHT OF DUMP HEAP
55828 SQM	LAND AREA UNDER LEGACY WASTE
55828 SQM	TOTAL AREA

**LEGENDS :-**

0.25	INTERVAL
	CONTOUR LINE
	SHED
	BUILDING
	COMPOUND WALL
	LEGACY WASTE DUMP HEAP



**Project Name**  
**Preparation of Detailed Project Report for Solid Waste Management in Madhya Pradesh**

**Sub Project**  
**Bioremediation for Disposal of Legacy Waste**

Division BHOPAL	District RAISEN	Urban Local Body MANDIDEEP
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**Drawing Name**  
**CONTOUR MAP**

**Revision History**

NO.	DATE	REVISION	DRAWN	CHECKED	APPROVED

Drawn by Draftsmen (CS/ NT/ NR)	Designed by Subject Expert	Checked by SWM Expert (HP / RB / MS)	Approved by Team Leader (JNP / SP / JS)
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**Client**



**Authority**  
 Directorate, Urban Administration & Development, Government of MP

**Nodal Authority- Urban Local Body**

**Consultant**



**MaRS PIVOTAL PLANNING SERVICES**

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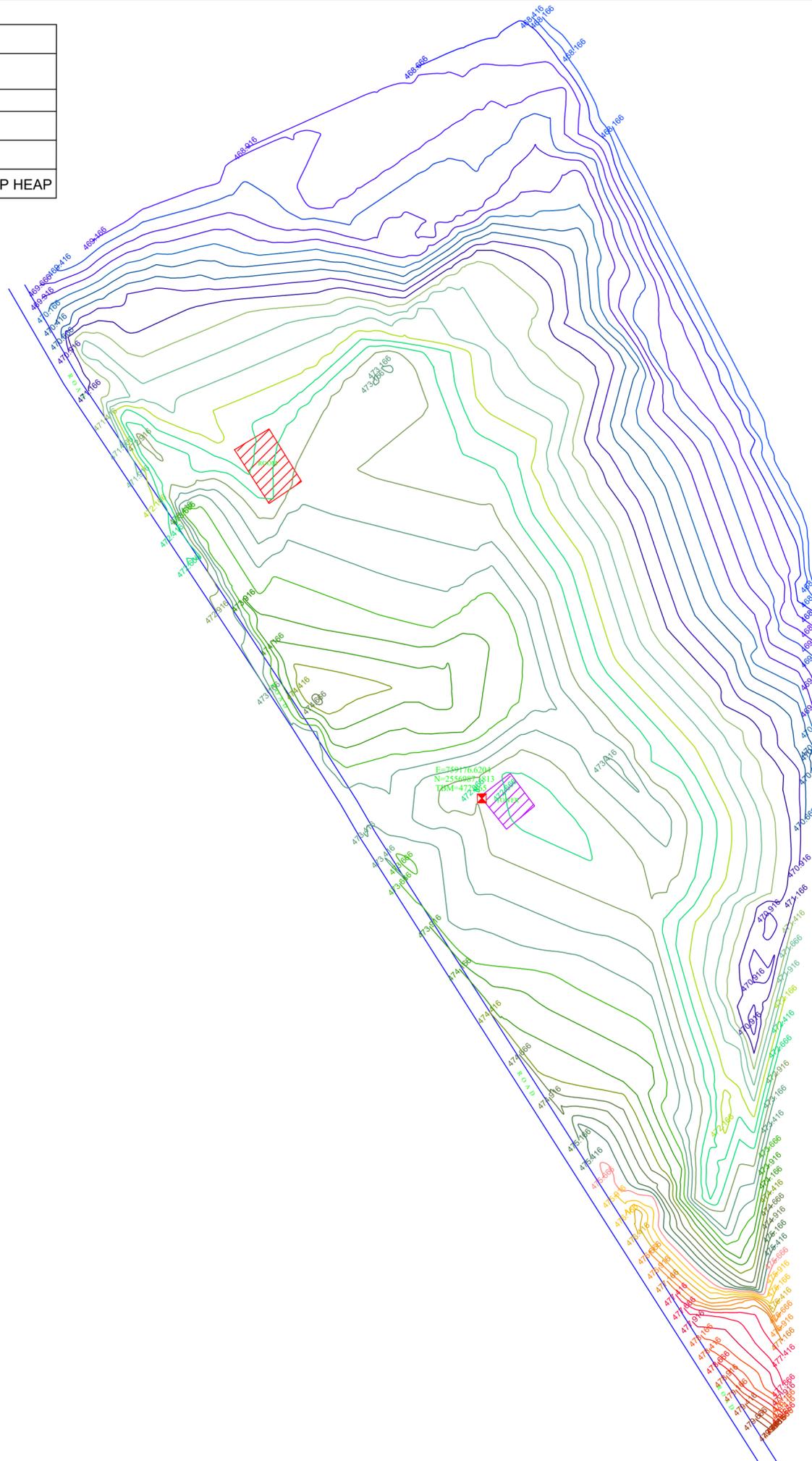
Size **A4**

**INFORMATION:-**

468.916 Mt	TBM LEVEL*
479.166 Mt	HIGHEST CONTOUR LINE LEVEL*
468.916 Mt	LOWEST CONTOUR LINE LEVEL*
3.7 Mt**	AVERAGE HEIGHT OF DUMP HEAP
55828 SQM	LAND AREA UNDER LEGACY WASTE
55828 SQM	TOTAL AREA

**LEGENDS:-**

0.25	INTERVAL
	CONTOUR LINE
	SHED
	BUILDING
	COMPOUND WALL
	LEGACY WASTE DUMP HEAP



**Project Name**  
**Preparation of Detailed Project Report for Solid Waste Management in Madhya Pradesh**

**Sub Project**  
**Bioremediation for Disposal of Legacy Waste**

Division BHOPAL	District RAISEN	Urban Local Body MANDIDEEP
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**Drawing Name**  
**CONTOUR MAP**

**Revision History**

DATE	NO.	REVISION	DRAWN	CHECKED	APPROVED

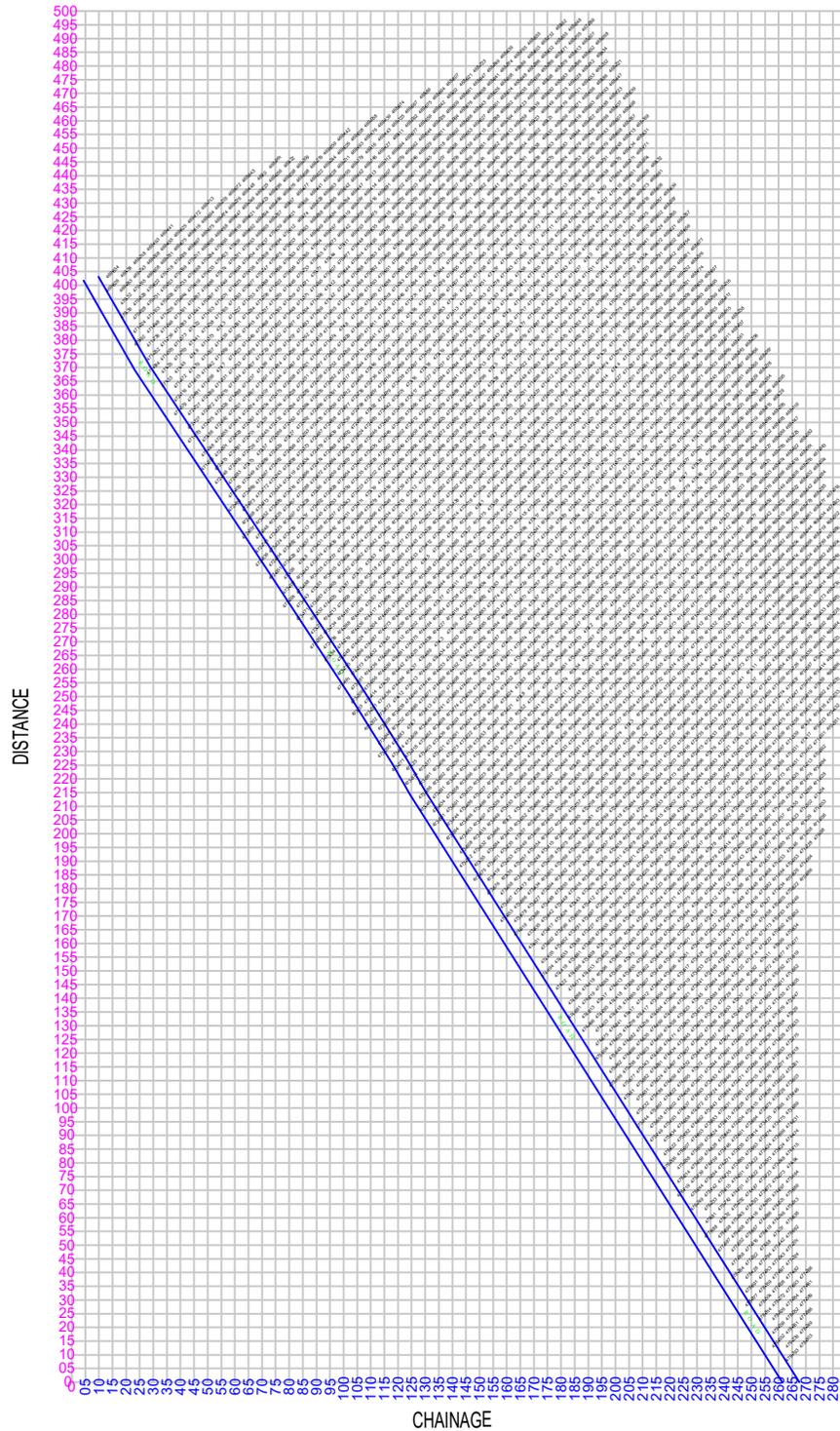
<b>Drawn by</b> Draftsman (CS/ NT/ NR)	<b>Designed by</b> Subject Expert	<b>Checked by</b> SWM Expert (HP / RB / MS)	<b>Approved by</b> Team Leader (JNP / SP / JS)
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**Client**  
  
**Authority**  
 Directorate, Urban Administration & Development, Government of MP  
**Nodal Authority-** Urban Local Body

**Consultant**  
  
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LEGENDS :-

—	GRID 0.5 X 0.5	—	SHED
0.25	INTERVAL	—	BUILDING
XXX.XXX	SPOT LEVELS	—	COMPOUND WALL



**Project Name**  
**Preparation of Detailed Project Report for Solid Waste Management in Madhya Pradesh**

**Sub Project**  
**Bioremediation for Disposal of Legacy Waste**

Division BHOPAL	District RAISEN	Urban Local Body MANDIDEEP
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Drawing No. <b>C-003 R0</b>	Scale <b>NTS</b>	Drawing Status <b>Issued for DPR Approval</b>
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**Drawing Name**  
**5m X 5m Spot Level**

Revision History

DATE	NO.	REVISION	DRAWN	CHECKED	APPROVED

Drawn by Draftsmen (CS/ NT/ NR)	Designed by Subject Expert	Checked by SWM Expert (HP / RB / MS)	Approved by Team Leader (JNP / SP / JS)
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**Client**



**Authority**  
 Directorate, Urban Administration & Development, Government of MP

**Nodal Authority-** Urban Local Body

**Consultant**



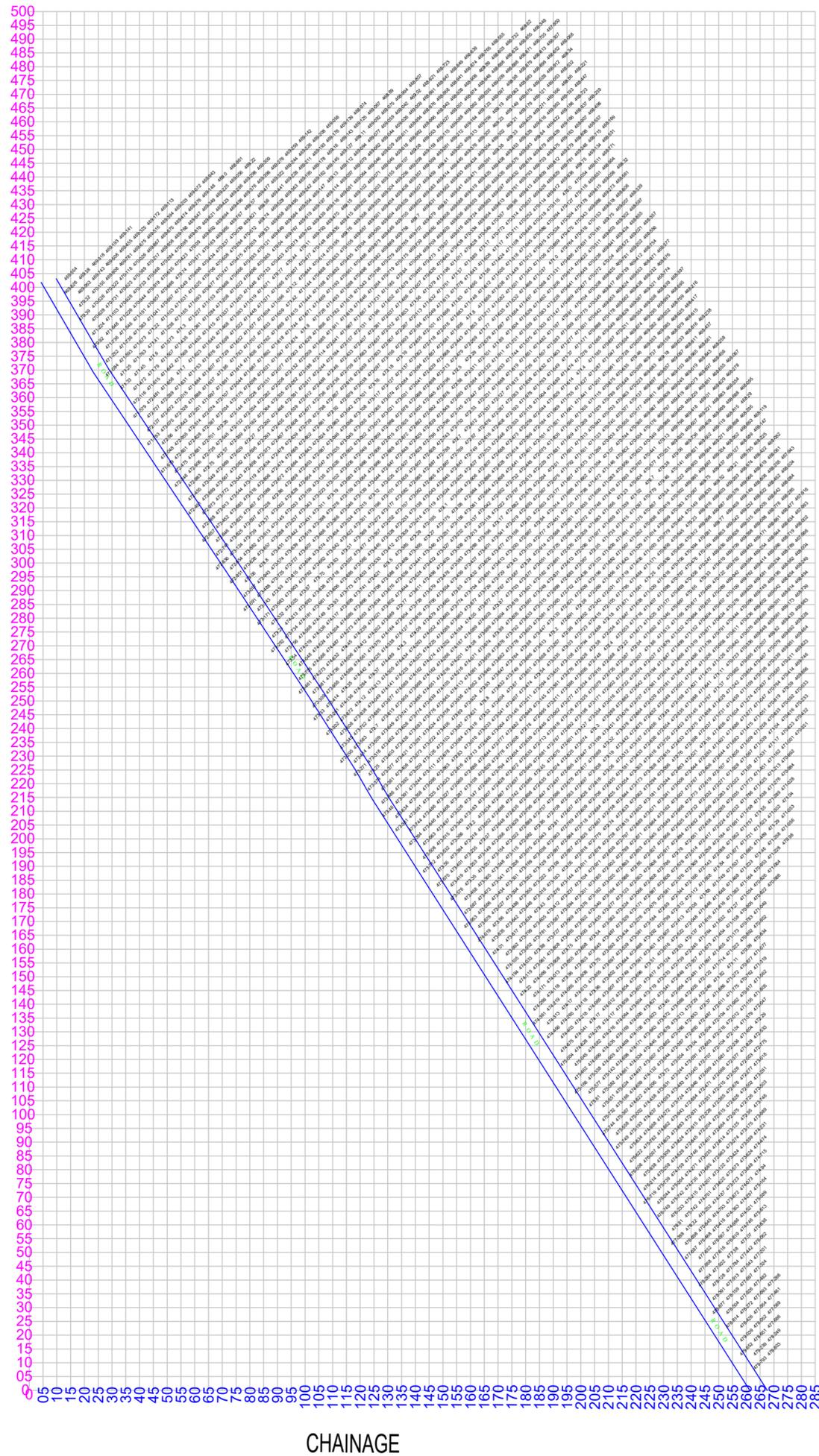
309, ARISTA, Sindhu Bhavan Rd, Off S.G. Highway, Bodakdev, Ahmedabad - 380 059. Gujarat (India) T: (+) 91-79-2970 2258  
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Size  
**A4**

DISTANCE



**LEGENDS :-**

—	GRID 0.5 X 0.5	—	SHED
0.25	INTERVAL	—	BUILDING
XXX.XXX	SPOT LEVELS	—	COMPOUND WALL



**Project Name**  
**Preparation of Detailed Project Report for Solid Waste Management in Madhya Pradesh**

**Sub Project**  
**Bioremediation for Disposal of Legacy Waste**

<b>Division</b> BHOPAL	<b>District</b> RAISEN	<b>Urban Local Body</b> MANDIDEEP
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<b>Drawing No.</b> C-004 R0	<b>Scale</b> NTS	<b>Drawing Status</b> Issued for DPR Approval
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**Drawing Name**  
5m X 5m Spot Level

**Revision History**

DATE	NO.	REVISION	DRAWN	CHECKED	APPROVED

<b>Drawn by</b> Draftsmen (CS/ NT/ NR)	<b>Designed by</b> Subject Expert	<b>Checked by</b> SWM Expert (HP / RB / MS)	<b>Approved by</b> Team Leader (JNP / SP / JS)
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**Client**



**Authority**  
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**Nodal Authority-** Urban Local Body

**Consultant**



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**Size**  
A2



<b>FRL</b> (Waste Heap Level)	470.100	469.826	469.554
----------------------------------	---------	---------	---------

<b>OGL</b> (Original Ground Level)	468.800	468.800	468.800
---------------------------------------	---------	---------	---------

<b>DISTANCE</b>	395	400	405
-----------------	-----	-----	-----

**L SECTION (FROM CH:15 )**



<b>FRL</b> (Waste Heap Level)	470.400	470.390	470.320	469.953	469.580	469.400
----------------------------------	---------	---------	---------	---------	---------	---------

<b>OGL</b> (Original Ground Level)	468.800	468.800	468.800	468.800	468.800	468.800
---------------------------------------	---------	---------	---------	---------	---------	---------

<b>DISTANCE</b>	385	390	395	400	405	410
-----------------	-----	-----	-----	-----	-----	-----

**L SECTION (FROM CH:20 )**



<b>FRL</b> (Waste Heap Level)	470.920	471.224	470.628	470.528	470.155	469.743	469.318	469.200
----------------------------------	---------	---------	---------	---------	---------	---------	---------	---------

<b>OGL</b> (Original Ground Level)	468.800	468.800	468.800	468.800	468.800	468.800	468.800	468.800
---------------------------------------	---------	---------	---------	---------	---------	---------	---------	---------

<b>DISTANCE</b>	380	385	390	395	400	405	410	415
-----------------	-----	-----	-----	-----	-----	-----	-----	-----

**L SECTION (FROM CH:25 )**

**Project Name**  
**Preparation of Detailed Project Report for Solid Waste Management in Madhya Pradesh**

**Sub Project**  
**Bioremediation for Disposal of Legacy Waste**

<b>Division</b> BHOPAL	<b>District</b> RAISEN	<b>Urban Local Body</b> MANDIDEEP
---------------------------	---------------------------	--------------------------------------

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<b>Drawing No.</b> C-05 R0	<b>Scale</b> NTS	<b>Drawing Status</b> Issued for DPR Approval
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**Drawing Name**  
 Longitudinal Section  
 (Chainage no: 015,020,025)

**Revision History**

NO.	DATE	REVISION	DRAWN	CHECKED	APPROVED

<b>Drawn by</b> Draftsmen (CS/ NT/ NR)	<b>Designed by</b> Subject Expert	<b>Checked by</b> SWM Expert (HP/ RB/ MS)	<b>Approved by</b> Team Leader (JNP/ SP/ JS)
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**Client**

**Authority**  
 Directorate, Urban Administration & Development, Government of MP

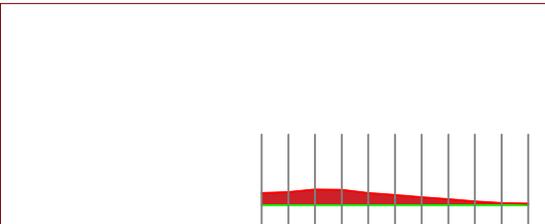
**Nodal Authority**- Urban Local Body

**Consultant**

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W N E S  
 Size **A4**



<b>FRL</b> (Waste Heap Level)	471.084	471.252	471.736	471.648	471.103	470.731	470.322	469.908	469.508	469.193	469.100
----------------------------------	---------	---------	---------	---------	---------	---------	---------	---------	---------	---------	---------

<b>OGL</b> (Original Ground Level)	468.800	468.800	468.800	468.800	468.800	468.800	468.800	468.800	468.800	468.800	468.800
---------------------------------------	---------	---------	---------	---------	---------	---------	---------	---------	---------	---------	---------

<b>DISTANCE</b>	370	375	380	385	390	395	400	405	410	415	420
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L SECTION (FROM CH:30 )

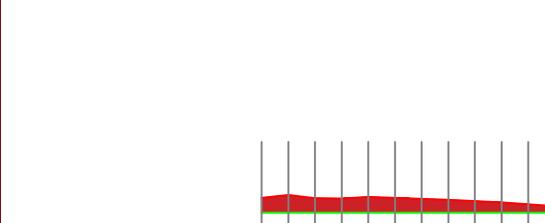


<b>FRL</b> (Waste Heap Level)	471.300	471.330	471.250	471.593	471.736	471.546	470.928	470.523	470.118	469.781	469.455	469.141
----------------------------------	---------	---------	---------	---------	---------	---------	---------	---------	---------	---------	---------	---------

<b>OGL</b> (Original Ground Level)	468.800	468.800	468.800	468.800	468.800	468.800	468.800	468.800	468.800	468.800	468.800	468.800
---------------------------------------	---------	---------	---------	---------	---------	---------	---------	---------	---------	---------	---------	---------

<b>DISTANCE</b>	360	365	370	375	380	385	390	395	400	405	410	415	420
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L SECTION (FROM CH:35 )



<b>FRL</b> (Waste Heap Level)	471.579	472.116	471.472	471.450	471.763	471.573	471.383	471.191	470.944	470.733	470.369	470.026	469.675	469.325	469.172
----------------------------------	---------	---------	---------	---------	---------	---------	---------	---------	---------	---------	---------	---------	---------	---------	---------

<b>OGL</b> (Original Ground Level)	468.800	468.800	468.800	468.800	468.800	468.800	468.800	468.800	468.800	468.800	468.800	468.800	468.800	468.800	468.800
---------------------------------------	---------	---------	---------	---------	---------	---------	---------	---------	---------	---------	---------	---------	---------	---------	---------

<b>DISTANCE</b>	355	360	365	370	375	380	385	390	395	400	405	410	415	420	425
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L SECTION (FROM CH:40 )

**Project Name**  
Preparation of Detailed Project Report for Solid Waste Management in Madhya Pradesh

**Sub Project**  
Bioremediation for Disposal of Legacy Waste

<b>Division</b> BHOPAL	<b>District</b> RAISEN	<b>Urban Local Body</b> MANDIDEEP
---------------------------	---------------------------	--------------------------------------

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<b>Drawing No.</b> C-06 R0	<b>Scale</b> NTS	<b>Drawing Status</b> Issued for DPR Approval
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**Drawing Name**  
Longitudinal Section  
(Chainage no: 030,035,040)

Revision History

NO.	DATE	REVISION	DRAWN	CHECKED	APPROVED

<b>Drawn by</b> Draftsmen (CS/ NT/ NR)	<b>Designed by</b> Subject Expert	<b>Checked by</b> SWM Expert (HP / RB / MS)	<b>Approved by</b> Team Leader (JNP / SP / JS)
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**Client**

**Authority**  
Directorate, Urban Administration & Development, Government of MP

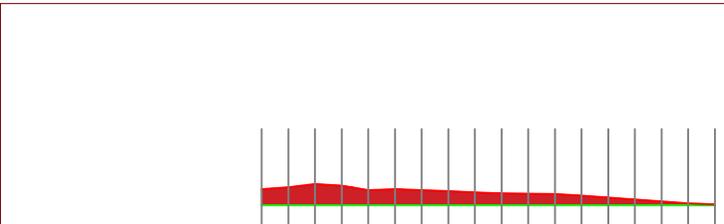
**Nodal Authority-** Urban Local Body

**Consultant**

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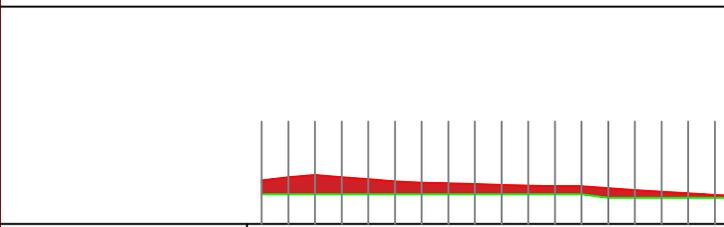
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Scale **A4**



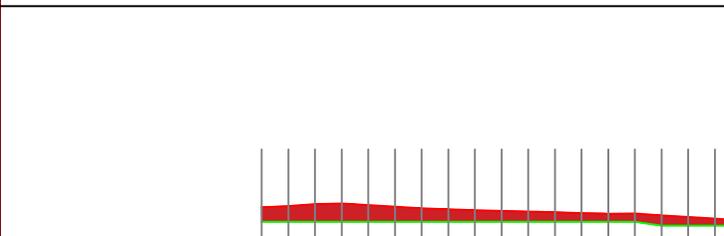
<b>FRL</b> (Waste Heap Level)	471.783	472.127	472.727	472.481	471.615	471.790	471.600	471.410	471.220	471.041	470.957	470.919	470.568	470.217	469.867	469.516	469.172	469.000
<b>OGI</b> (Original Ground Level)	468.800	468.800	468.800	468.800	468.800	468.800	468.800	468.800	468.800	468.800	468.800	468.800	468.800	468.800	468.800	468.800	468.800	468.800
<b>DISTANCE</b>	345	350	355	360	365	370	375	380	385	390	395	400	405	410	415	420	425	430

**L SECTION (FROM CH:45 )**



<b>FRL</b> (Waste Heap Level)	472.048	472.660	473.075	472.672	472.269	471.856	471.642	471.507	471.373	471.238	471.103	470.997	470.986	470.635	470.284	469.956	469.675	469.394	469.113	469.000
<b>OGI</b> (Original Ground Level)	469.500	469.500	469.500	469.500	469.500	469.500	469.500	469.500	469.500	469.500	469.500	469.500	469.500	468.800	468.800	468.800	468.800	468.800	468.800	468.800
<b>DISTANCE</b>	340	345	350	355	360	365	370	375	380	385	390	395	400	405	410	415	420	425	430	435

**L SECTION (FROM CH:50 )**



<b>FRL</b> (Waste Heap Level)	472.246	472.475	472.801	472.955	472.642	472.328	472.015	471.831	471.700	471.569	471.435	471.300	471.165	470.740	470.423	470.095	469.768	469.474	469.203	469.072		
<b>OGI</b> (Original Ground Level)	469.500	469.500	469.500	469.500	469.500	469.500	469.500	469.500	469.500	469.500	469.500	469.500	469.500	468.800	468.800	468.800	468.800	468.800	468.800	468.800		
<b>DISTANCE</b>	330	335	340	345	350	355	360	365	370	375	380	385	390	395	400	405	410	415	420	425	430	435

**L SECTION (FROM CH:55 )**

**Project Name**  
**Preparation of Detailed Project Report for Solid Waste Management in Madhya Pradesh**

**Sub Project**  
**Bioremediation for Disposal of Legacy Waste**

<b>Division</b> BHOPAL	<b>District</b> RAISEN	<b>Urban Local Body</b> MANDIDEEP
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<b>Drawing No.</b> C-07 R0	<b>Scale</b> NTS	<b>Drawing Status</b> Issued for DPR Approval
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**Drawing Name**  
 Longitudinal Section  
 (Chainage no: 045,050,055)

**Revision History**

NO.	DATE	REVISION	DRAWN	CHECKED	APPROVED

<b>Drawn by</b> Draftsmen (CS/ NT/ NR)	<b>Designed by</b> Subject Expert	<b>Checked by</b> SWM Expert (HP/ RB/ MS)	<b>Approved by</b> Team Leader (JNP/ SP/ JS)
---	--------------------------------------	--	---

**Client**

**Authority**  
 Directorate, Urban Administration & Development, Government of MP

**Nodal Authority-** Urban Local Body

**Consultant**

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Size **A4**

















**Project Name**  
**Preparation of Detailed Project Report for Solid Waste Management in Madhya Pradesh**

**Sub Project**  
**Bioremediation for Disposal of Legacy Waste**

<b>Division</b> BHOPAL	<b>District</b> RAISEN	<b>Urban Local Body</b> MANDIDEEP
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<b>Drawing No.</b> <b>C-16 R0</b>	<b>Scale</b> <b>NTS</b>	<b>Drawing Status</b> <b>Issued for DPR Approval</b>
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**Drawing Name**  
**Longitudinal Section**  
**(Chainage no: 180,185,190)**

**Revision History**

NO.	DATE	REVISION	DRAWN	CHECKED	APPROVED

<b>Drawn by</b> Draftsmen (CS/ NT/ NR)	<b>Designed by</b> Subject Expert	<b>Checked by</b> SWM Expert (HP / RB / MS)	<b>Approved by</b> Team Leader (JNP / SP / JS)
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**Client**



**Authority**  
 Directorate, Urban Administration & Development, Government of MP

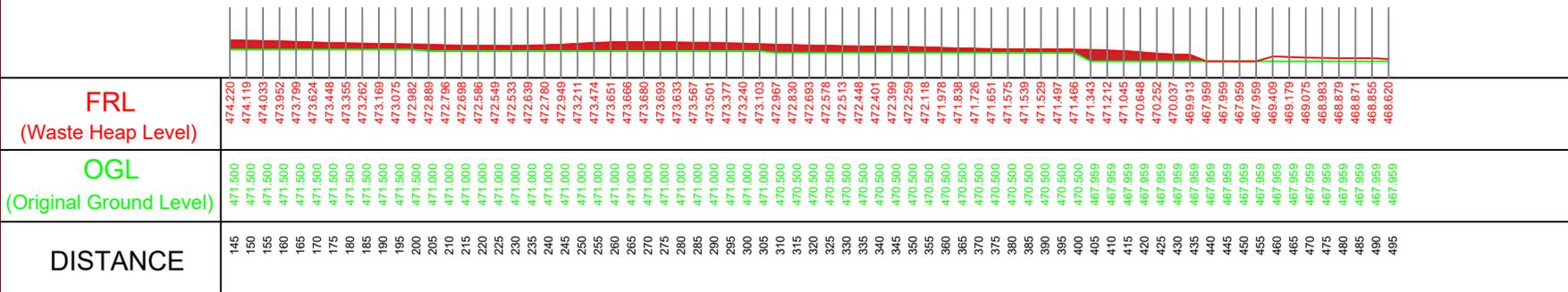
**Nodal Authority- Urban Local Body**

**Consultant**

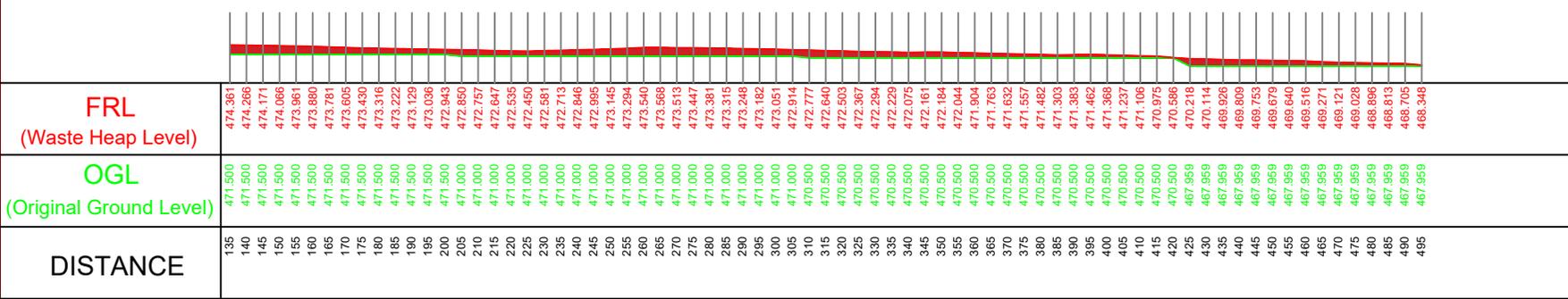


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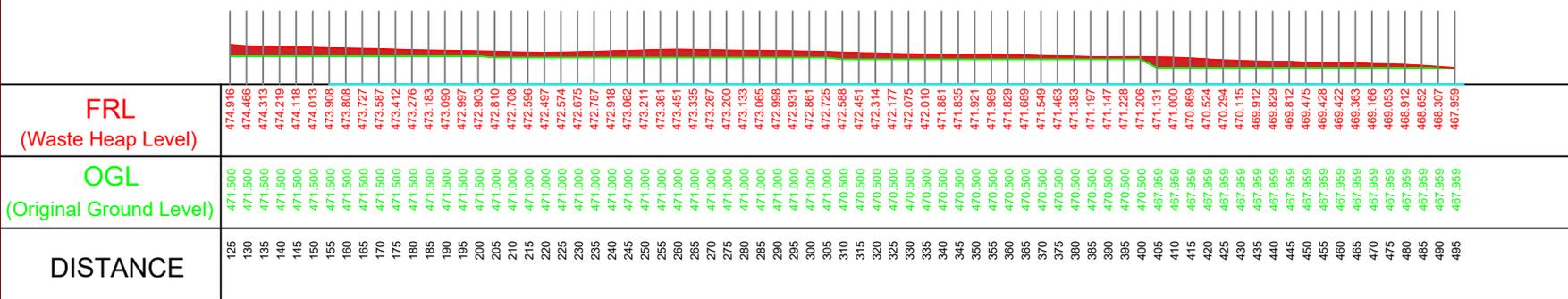
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**L SECTION (FROM CH:180)**



**L SECTION (FROM CH:185)**



**L SECTION (FROM CH:190)**





**Project Name**  
**Preparation of Detailed Project Report for Solid Waste Management in Madhya Pradesh**

**Sub Project**  
**Bioremediation for Disposal of Legacy Waste**

<b>Division</b> BHOPAL	<b>District</b> RAISEN	<b>Urban Local Body</b> MANDIDEEP
---------------------------	---------------------------	--------------------------------------

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<b>Drawing No.</b> C-19 R0	<b>Scale</b> NTS	<b>Drawing Status</b> Issued for DPR Approval
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**Drawing Name**  
 Longitudinal Section  
 (Chainage no: 225,230,235)

**Revision History**

NO.	DATE	REVISION	DRAWN	CHECKED	APPROVED

<b>Drawn by</b> Draftsmen (CS/ NT/ NR)	<b>Designed by</b> Subject Expert	<b>Checked by</b> SWM Expert (HP/ RB/ MS)	<b>Approved by</b> Team Leader (JNP/ SP/ JS)
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**Client**



**Authority**  
 Directorate, Urban Administration & Development, Government of MP

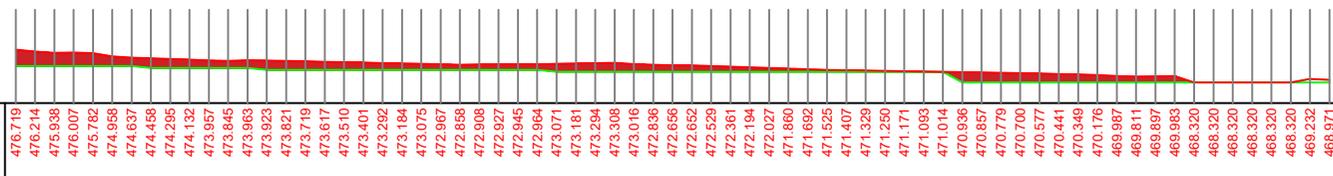
**Nodal Authority- Urban Local Body**

**Consultant**



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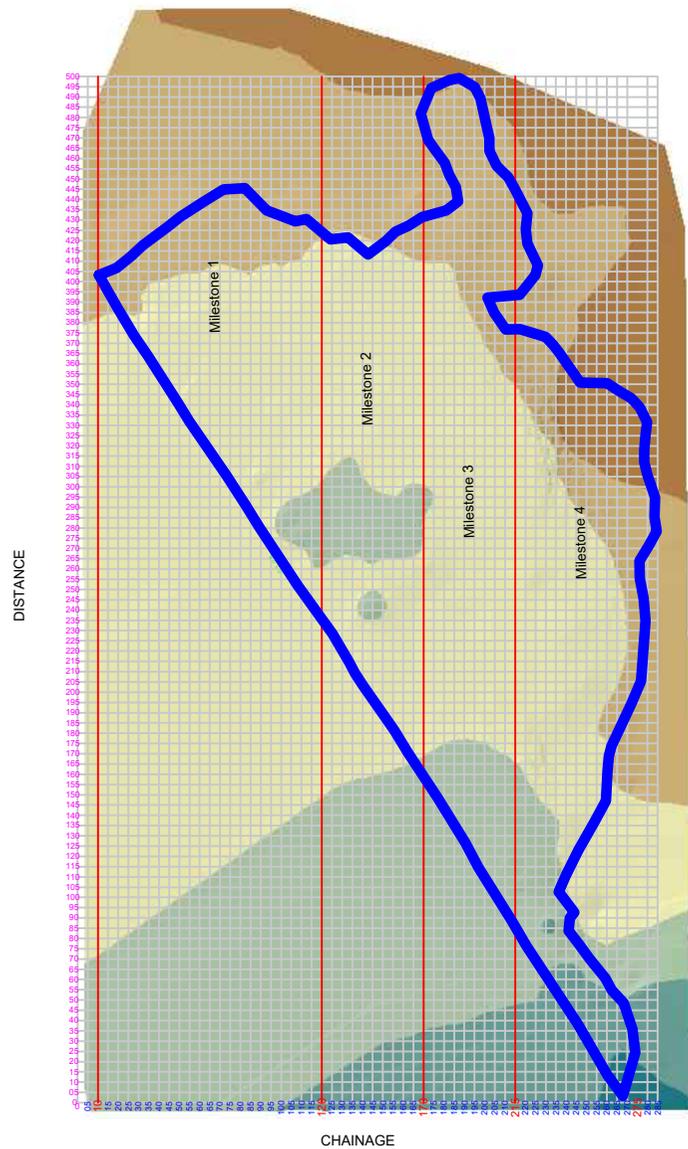
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**Project Name**  
**Preparation of Detailed Project Report for Solid Waste Management in Madhya Pradesh**

**Sub Project**  
**Bioremediation for Disposal of Legacy Waste**

Division BHOPAL	District RAISEN	Urban Local Body MANDIDEEP
--------------------	--------------------	-------------------------------

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Drawing No. <b>C-023 R0</b>	Scale <b>NTS</b>	Drawing Status <b>Issued for DPR Approval</b>
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**Drawing Name**  
**Land Reclamation Plan**

**Revision History**

DATE	NO.	REVISION	DRAWN	CHECKED	APPROVED

Drawn by Craftsmen (CS/ NT/ NR)	Designed by Subject Expert	Checked by SWM Expert (HP / RB / MS)	Approved by Team Leader (JNP / SP / JS)
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**Client**



**Authority**  
 Directorate, Urban Administration & Development, Government of MP

**Nodal Authority-** Urban Local Body

**Consultant**



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**Size**  
**A4**

## कार्यालय नगर पालिका परिषद मंडीदीप, जिला-रायसेन (म0प्र0)

क्र0 / 4225 / तक.शा / न.पा.प. / 2023-24

मंडीदीप, दिनांक 6.10.2023

## कार्य आदेश

प्रति,

M/S ECOSTAN INFRA PRIVATE LIMITED,  
906 A, 9th floor I-Thum Tower A, Plot No. 40,  
Sec- 62 Noida, Utter Pradesh-201301  
Mobile no. 9311266721

विषय :- Selection of contractor for the work of Legacy waste Dumpsite Remediation through Bioremediation, Biomining and disposal of Residual Waste

संदर्भ :- अनुबंध दिनांक 06.10.2023

उपरोक्त विषय एवं संदर्भित अनुबंध के अनुक्रम में लेख है, कि निम्नानुसार निर्माण कार्य का ले-आउट प्राप्त कर निर्धारित समयसीमा में निर्धारित प्राक्कलन एवं मापदण्ड अनुसार मानक गुणवत्ता से कार्य पूर्ण करें एवं पर्याप्त सुरक्षा व्यवस्था करना भी सुनिश्चित करें, जिससे कि किसी भी प्रकार की दुर्घटना न हो सकें।

क्र	Tender No. & Date	कार्य का विवरण	कार्य की कुल अनुमानित लागत	कार्य की स्वीकृत दर	कार्य की कुल लागत	कार्य करने की निर्धारित समयावधि
1	2023_UAD_280343_1/ 31.05.2023	Selecton of contractor for the work of Legacy waste Dumpsite Remediation through Bioremediation, Biomining and disposal of Residual Waste at Proposed dumpsite behind H.E.G. industries Near 40 Block Area mandideep	4,59,89,350 /-	17.78% Below SOR	3,78,12,443.57 /- + 18% GST	04 माह

अतएव संविदाकार M/S Ecostan Infra private limited को स्वीकृत कार्य का नगर पालिका उपयंत्री के निर्देश में प्रारम्भ कर लक्ष्य दिनांक तक निर्धारित मापदण्ड एवं D.P.R. तथा निविदा प्रारूप के स्पेशिफिकेशन एवं शर्तों अनुसार कार्य पूर्ण करें। साथ ही कार्य निष्पादन हेतु Time schedule program तथा Detailed Implementation Plan निकाय में अतिशीघ्र प्रस्तुत कर कार्य प्रारंभ करें।

मुख्य नगर पालिका अधिकारी,  
नगर पालिका परिषद मंडीदीप  
जिला - रायसेन (म0प्र0)  
मंडीदीप दिनांक 6.10.2023

पृ0क्र0 / 4226 / तक.शा. / 2023-24  
प्रतिलिपि:

1. अध्यक्ष महोदया, न.पा.प. मंडीदीप, जिला-रायसेन म.प्र. की ओर सादर सूचनार्थ प्रेषित।
2. सहायक यंत्री, न.पा.प. मंडीदीप, जिला-रायसेन म.प्र. की ओर सादर सूचनार्थ प्रेषित।

o/c

मुख्य नगर पालिका अधिकारी,  
नगर पालिका परिषद मंडीदीप  
जिला - रायसेन (म0प्र0)

## न्यायालय कलेक्टर, जिला रायसेन (म.प्र.)

14/03/23  
E

प्र.क.11/अ-20(5)/कले./2022-23

म.प्र.शासन,जरिये-मुख्य.नगर पालिका  
अधिकारी,नगर पालिका परिषद  
मण्डीदीप, जिला रायसेन ।

विरुद्ध

सर्व साधारण

ग्राम गुरारिया, तहसील गौहरगंज  
जिला रायसेन ।

आदेश

(पारित दिनांक 26/5/2023)

मुख्य नगरपालिका अधिकारी, नगर पालिका परिषद, मण्डीदीप तहसील गौहरगंज जिला रायसेन के द्वारा निर्धारित प्ररूप एक पर ऑनलाईन आवेदन पत्र प्रस्तुत कर ग्राम गुरारिया तहसील गौहरगंज जिला रायसेन स्थित भूमि सर्वे क्रमांक 203 रकवा 35.997 हेक्टेयर भूमि में रकवा 6.070 हेक्टेयर भूमि ठोस अपशिष्ट प्रबंधन हेतु हस्तांतरित/आवंटित किये जाने का निवेदन किया है।

प्रस्तुत आवेदन पत्र ऑनलाईन प्राप्त होने पर म.प्र.नजूल भूमि निर्वर्तन निर्देश 2020 के तहत प्रकरण पंजीबद्ध किया जाकर निर्धारित प्ररूप पर जांच कर प्रतिवेदन प्रस्तुत करने हेतु ऑनलाईन एवं मूलतः प्रकरण अनुविभागीय अधिकारी, गौहरगंज को अग्रेषित कर म.प्र.नजूल भूमि निर्वर्तन निर्देश-2020 में विहित प्रक्रिया के अनुसार निर्धारित प्ररूप पर जांच कराई जाकर प्रतिवेदन प्रस्तुत करने हेतु निर्देशित किया गया।

2- प्रकरण में अनुविभागीय अधिकारी, गौहरगंज ने उनके प्रकरण क्रमांक 0002/अ-20(5)/2022-23 ग्राम गुरारिया तहसील गौहरगंज जिला रायसेन के संलग्न निर्धारित प्रपत्र पर भूमि आवंटित किये जाने का प्रतिवेदन प्रस्तुत किया है। प्रतिवेदन के संलग्न पटवारी प्रतिवेदन, पंचनामा अक्स, खसरा, एवं इश्तेहार की प्रति सहित ग्राम गुरारिया तहसील गौहरगंज जिला रायसेन स्थित भूमि सर्वे क्रमांक 203 रकवा 35.997 हेक्टेयर भूमि में रकवा 6.070 हेक्टेयर भूमि ठोस अपशिष्ट प्रबंधन हेतु नगरपालिका परिषद मण्डीदीप आवंटित किये जाने के प्रस्ताव अनुशंसा सहित इस न्यायालय को प्रेषित किये है।

अनुविभागीय अधिकारी, गौहरगंज की ओर से प्रतिवेदन प्राप्त होने पर प्रकरण म.प्र.नजूल भूमि निर्वर्तन निर्देश-2020 में विहित प्रावधानों एवं प्रक्रिया के तहत प्रकरण जिला नजूल निर्वर्तन समिति के समक्ष विचारार्थ प्रस्तुत किये जाने पर समिति के द्वारा ग्राम गुरारिया तहसील गौहरगंज जिला रायसेन स्थित भूमि सर्वे क्रमांक 203 रकवा 35.997 हेक्टेयर भूमि में रकवा 6.070 हेक्टेयर भूमि ठोस अपशिष्ट



कलेक्टर

पृ.क्रमांक /2177/ न0पा0प0 / 2023  
प्रतिलिपी :-

मंडीदीप, दिनांक .....

1. आयुक्त महोदय, संचालनालय, नगरीय प्रशासन एवं विकास, म.प्र. भोपाल की ओर सादर सूचनार्थ प्रेषित ।
2. कलेक्टर महोदय, जिला रायसेन की ओर सादर सूचनार्थ प्रेषित ।
3. संयुक्त संचालक महोदय, नगरीय प्रशासन एवं विकास, भोपाल संभाग भोपाल की ओर सादर सूचनार्थ प्रेषित ।
4. अध्यक्ष महोदय, नगर पालिका परिषद मण्डीदीप, जिला रायसेन की ओर सादर सूचनार्थ प्रेषित ।
5. अनुविभागीय अधिकारी महोदय, अनुविभाग गौहरगंज, की ओर सादर सूचनार्थ प्रेषित ।
6. क्षेत्रीय अधिकारी, क्षेत्रीय कार्यालय, म.प्र. प्रदूषण नियंत्रण बोर्ड, प्लाट नं. 28, सी-सेक्टर, न्यू औद्योगिक क्षेत्र, मण्डीदीप की ओर सादर सूचनार्थ प्रेषित ।

मुख्य नगरपालिका अधिकारी  
नगर पालिका परिषद मंडीदीप  
A जिला-रायसेन (म0प्र0)

कार्यालय नायब तहसीलदार औबेदुल्लागंज जिला रायसेन म.प्र.

क्रमांक 182/रीडर/2023

दिनांक 08/08/2023

प्रति,

✓ मुख्य नगर पालिका अधिकारी  
नगर पालिका मण्डीदीप

11.08.23

विषय:— ग्राम गुरारिया स्थित ट्रांचिंग ग्राउंड का सीमांकन करने बाबत।

विषयांतगत लेख है कि कलेक्टर महोदय रायसेन के प्रकरण क्रमांक 0011/अ-20(5)/2022-23 में पारित आदेश दिनांक 26/05/2023 के पालन में ग्राम गुरारिया स्थित भूमि खसरा क्रमांक 203 रकबा 35.997 हे० भूमि में से 6.070 हे० भूमि ठोस अपशिष्ट प्रबंधन पर राजस्व निरीक्षक मण्डीदीप के द्वारा दिनांक 07/08/2023 को नगर पालिका मण्डीदीप के कर्मचारी श्री आशीष कानूनगो, स्वास्थ्य शाखा प्रभारी श्री अभिषेक बाथम, उपयंत्री श्री दीपक शर्मा, राईट कीपर की उपस्थिति में सीमांकन किया जाकर मौके पर कब्जा सौंप दिया गया है।

अतः आवश्यक कार्यवाही हेतु जानकारी प्रेषित है।

नायब तहसीलदार  
औबेदुल्लागंज

प्रतिलिपि:—

1. अनुविभागीय अधिकारी महोदय गौहरगंज की ओर सूचनार्थ।

✓ 2. तहसीलदार महोदय गौहरगंज की ओर सूचनार्थ।



नायब तहसीलदार  
औबेदुल्लागंज

**REGIONAL OFFICE,  
M.P. POLLUTION CONTROL BOARD,  
Plot No.28 C Sector New Industrial Area Mandideep District - Raissen  
[Phone No. 07480-292564 E-mail :- [romppcbmandideep@gmail.com](mailto:romppcbmandideep@gmail.com)]**

**AMBIENT AIR ANALYSIS REPORT**

Report No. 51/2023

Sample From: - MSW Site, Nagar Parishad, Mandideep

Analysed By: Dr P.Kothari, Jr.Scientist

S. No.	Description of sample	Date of collection	Collected by	Date of receipt	Date of analysis
1.	Ambient Air Monitoring Windward Direction	25.09.2023	Anil Masatkar, JLA	25.09.2023	26.09.2023
2	Ambient Air Monitoring Leaward Direction	25.09.2023	Anil Masatkar, JLA	25.09.2023	26.09.2023

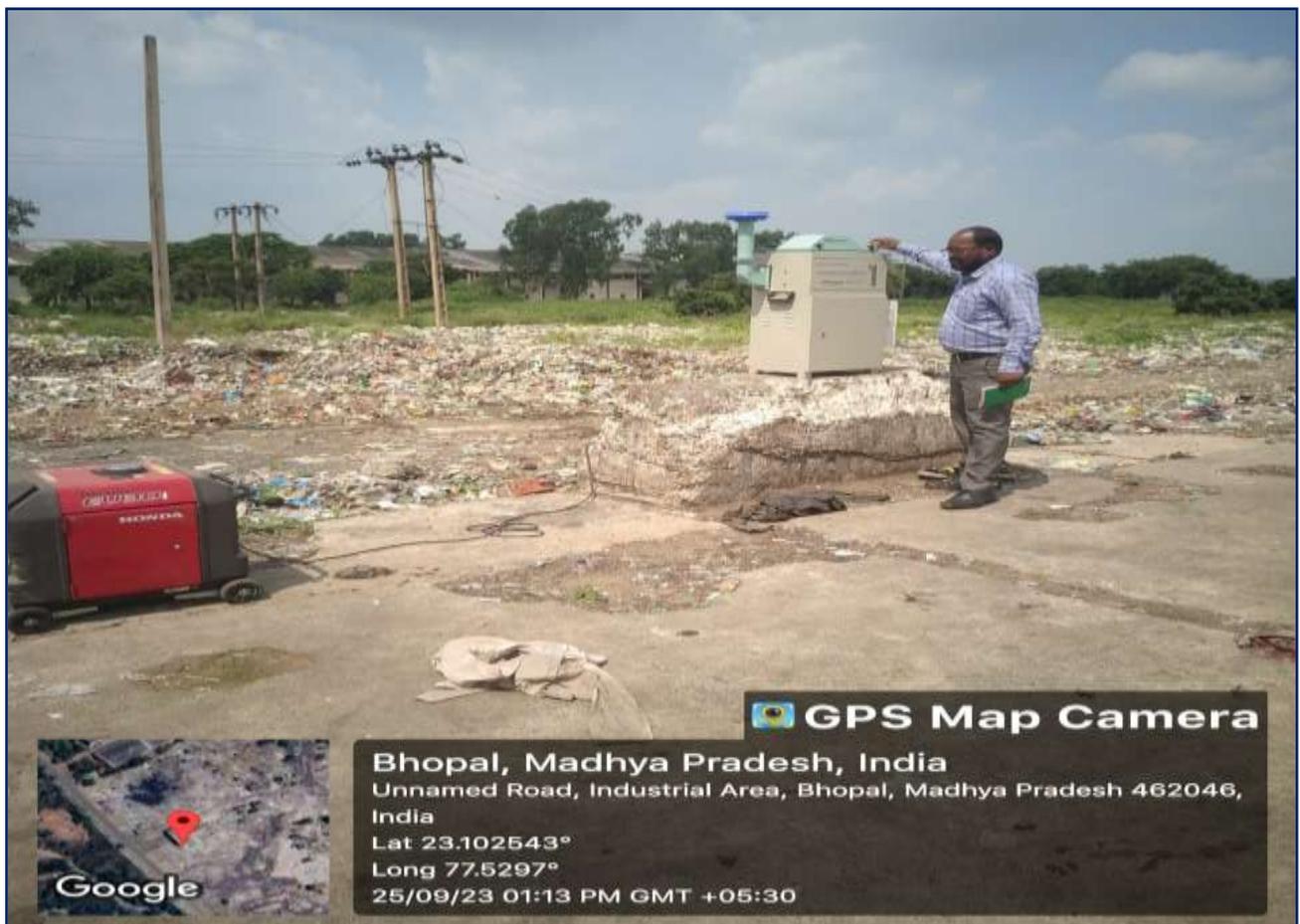
**AMBIENT AIR MONITORING**

S. No.	Analyte Tested	Unit	Result 1	Result 2
1.	Respirable Suspended Particulate Matter [PM <sub>10</sub> ]	µg/m <sup>3</sup>	138.88	90.0
2.	SO <sub>2</sub>	µg/m <sup>3</sup>	26.64	22.89
3.	NO <sub>x</sub>	µg/m <sup>3</sup>	22.86	17.78

1. Remark  Show that the parameter exceeds the prescribed limit.

Analysed By 

Lab Incharge 



Ambient Air Quality Monitored around the MSW dumpsite at two locations



REGIONAL OFFICE,  
M.P. POLLUTION CONTROL BOARD,  
Plot No. 28 C, Sector New Ind. Area, Mandideep Dist. Raisen  
Ph. 07480-232803, E-mail :- romppcbmandideep@gmail.com

## Annexure IX

### WATER ANALYSIS REPORT

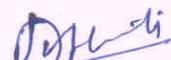
Report No. :- 260(A-B)

Sample From:- MSW Site, Nagar Palika Parishad, Mandideep,  
Distt- Raisen.

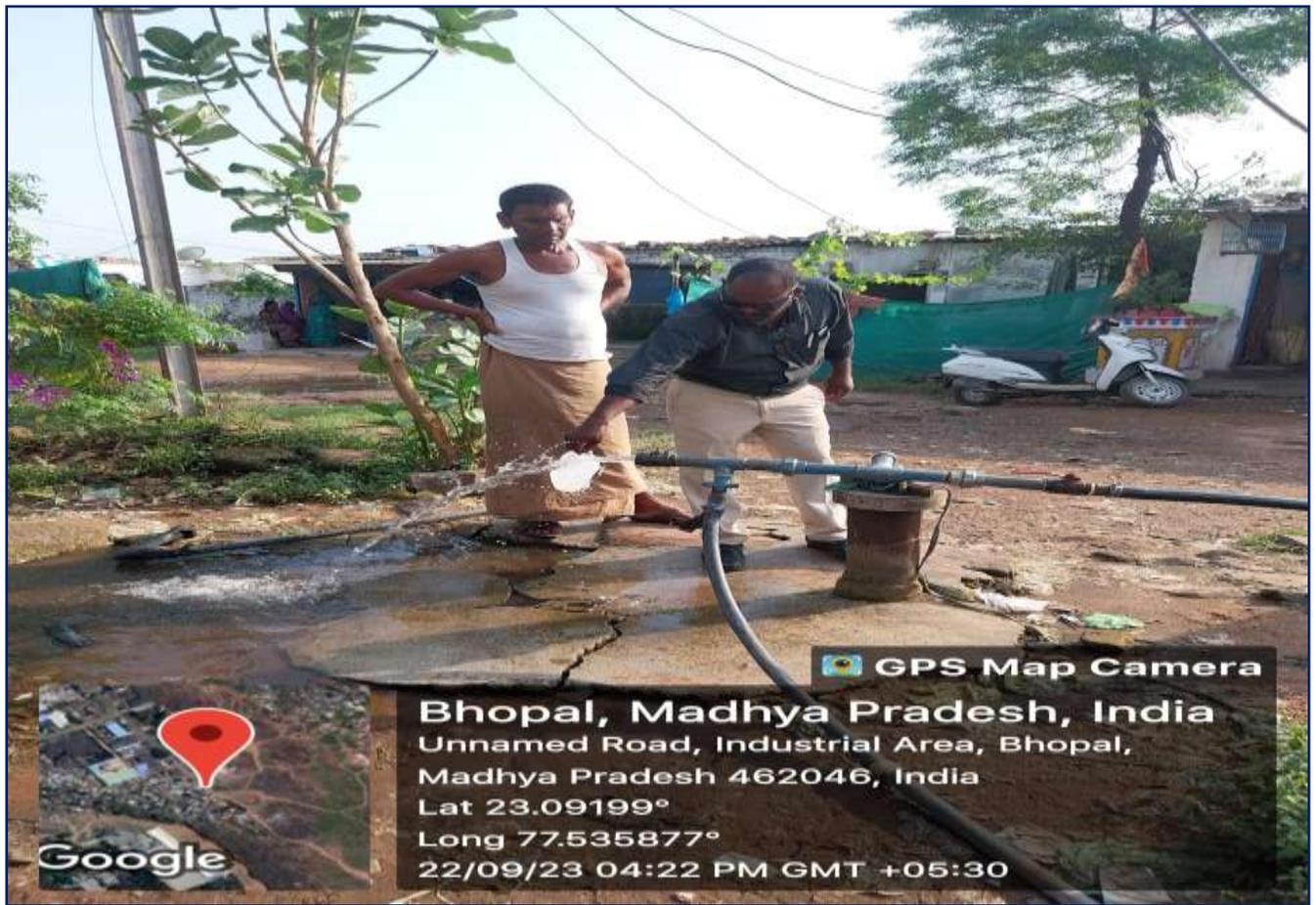
Analyzed by:- R. S. Bharti (Jr. Scientist)

S.N.	Description of Sample	Coordinate	Date of Collection	Collected by	Date of Receipt	Date of Analysis
1.	Right Side of MSW Site, Tube Well Water Sample Near Block No.40, Word No.18, Mandideep, Distt- Raisen.	Lat- 23.10832° Long- 77.5266°	22.09.2023	R. S. Bharti, (Jr. Scientist) & Anil Masatkar (J.L.A.)	22.09.2023	22.09.2023
2.	Left Side of MSW Site, Tube Well Water Sample Rambabu House, Word No. 14, Satlapur Mandideep, Distt- Raisen.	Lat- 23.09199° Long- 77.5358°				

S.No.	Parameters	Unit	Results	
			1.	2.
1.	Appearance	-	Clear	Clear
2.	Temperature	°C	23	23
3.	Colour	-	Colourless	Colourless
4.	Odour	-	Odourless	Odourless
5.	pH	pH Unit	7.84	7.62
6.	Sp. Conductivity	µMhos/cm	437	590
7.	Total Solids	mg/l	316	412
8.	Total Dissolved Solids	mg/l	294	384
9.	Suspended Solids	mg/l	22	28
10.	Chlorides	mg/l	64.05	60.11
11.	Total Alkalinity	mg/l	384	234
12.	Total Hardness	mg/l	348	228
13.	Calcium Hardness	mg/l	270	184
14.	Mg. Hardness	mg/l	78	44
15.	BOD (3 days at 27°C)	mg/l	1.1	0.8
16.	COD	mg/l	19.2	9.6
17.	Sodium	mg/l	22.0	18
18.	Potassium	mg/l	2.2	1.8
19.	Calcium	mg/2	108.12	73.68
20.	Magnesium	mg/3	18.98	10.68
21.	Sulphate	mg/l	32.5	26.8
22.	Nitrate Nitrogen	mg/l	12.4	9.7

  
(Analyzed by)

  
(Lab In-charge)



Ground Water Sampling from two locations around the MSW dumpsite locations