

Inspection Report
on
Solid Waste Management
at
Haridwar
and
Integrated SW Management Facility
(under construction)
at
Sarai, Haridwar

Submitted: August 2016



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**CPCB presenting this report in compliance of Chamber
Meeting Dated 8th July, 2016 held at Hon'ble NGT**

Report: 19th August, 2016

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Drawings (6 pages) and Implementation Plan (Bar Chart).

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1.0 INTRODUCTION

The present report consists of two parts namely, Part-1 and Part-2.

Part-1 of the report consists of *Inspection report of Municipal Solid Waste Management in Haridwar* and **Part-2** of the report consists of *Inspection report of Integrated Solid Waste Management Facility (under construction) at Sarai, Haridwar.*

1.1 Details of Inspection

A team of two scientists (Mr. C B Chourasia and Dr. Pankaj Kumar) from Central Pollution Control Board Delhi visited Haridwar on 04/08/2016, stayed on 05/08/2016 and observed the following :

- (I) **Municipal Solid Waste Management-** collection, secondary storage bins, segregation and transportation procedures including equipment workshops and waste transfer station, the present dumping site at Sarai and old site under reclamation at Chandi Ghat in Haridwar.

Observations & photographs were taken at multiple locations at different time.

- (II) **Inspection of new integrated Solid Waste Management Facility (Sanitary Land fill site** (under construction) at Sarai,

During inspection, the following general information was also collected from Haridwar Nagar Nigam.

S.No.	Particular	Details
1	Total Population (2011)	2.25 Lac persons
2	Floating Population (approx.)	1.65 Lac persons per day
3	Total Number of Wards	30 (thirty)
4	Number of Wards covered by PPP agency for door to door collection	16 (out of 30 wards)
5	Quantity of solid waste generation and Transported (avg.)	160 MT/day
6	Solid Waste (<i>excluding Bio-medical waste</i>) Disposal Method	Collection, Transport and Dumping at Vill.-Sarai.
7	Location of sanitary landfill site	Vill.- Sarai, Distt. Haridwar
8	Nos. and Type of Waste storage Bins in the city	181 nos. MS bins.
9	Nos. and Type of vehicles available for waste transportation to Sanitary land fill site.	Total fifty (50 nos.) - Tractor trolley, Tripping Trucks, Dumper Placer, Refuse Collector, Compactors, JCB /loader.
10	Name of the PPP agency for Solid Waste Management (<i>excluding Bio-medical waste</i>)	KRL Waste Management (Haridwar) Pvt. Ltd.
11	<i>Bio-medical waste</i> disposal method	Collection, Transport and Processing at CBWTF at Roorkee.

2.0 PART -1 of the Report :

Inspection of Solid Waste Management

Inspection of Solid Waste Management was carried out on two days, i.e., on 04th & 05th Aug.16 at Ghats of river Ganga, inside the streets & roads at various locations in the city.

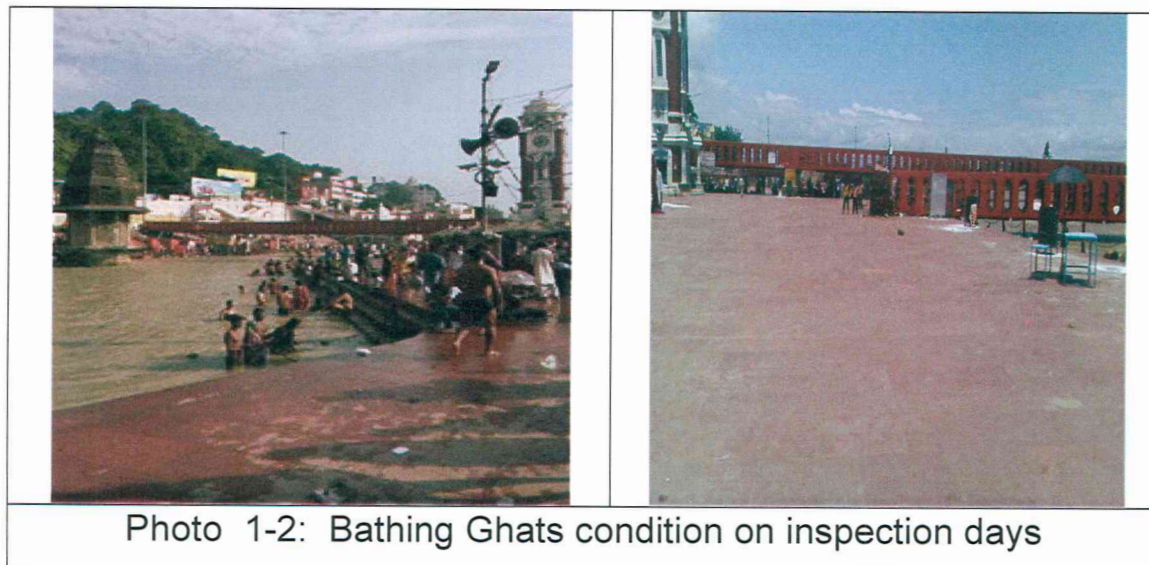
2.1 Household (domestic) Solid Waste:

The mixed waste is being collected from door to door in 16 wards (out of 30 wards) by KRL Waste Management (Haridwar) Pvt. Ltd (PPP agency). The remaining 14 ward are covered by the Nagar Nigam.

Waste is collected at in the secondary storage bins kept in all wards. The condition and numbers of secondary storage bins as observed, is satisfactory.

People in most of the localities have habit of dumping of waste into the bins & secondary bins.

The status of street sweeping carried, waste bins in various locations of the city & at bathing ghats, street cleanliness, habits of people about waste disposal, are depicted through photographs on the following pages.



Regular sweeping and sufficient collection bins were observed on all ghats. Some of the devotees left clothes on ghats, which were found collected in separate bins. *The team suggested Nagar Nigam officers to reuse the collected clothes, saris, dhotis etc.*



Photo 3-6: Waste collection bins and Sweeping carried on Ghats

The team visited many locations in the city and observed that sweeping and waste collection was carried out in bins. During afternoon, streets and roads were clean.



Photo 7- 8: Street sweeping near Bus Stand and Railway Road





Photo 9- 12: Street sweeping at other locations



Photo 13-18: Other Streets condition during day

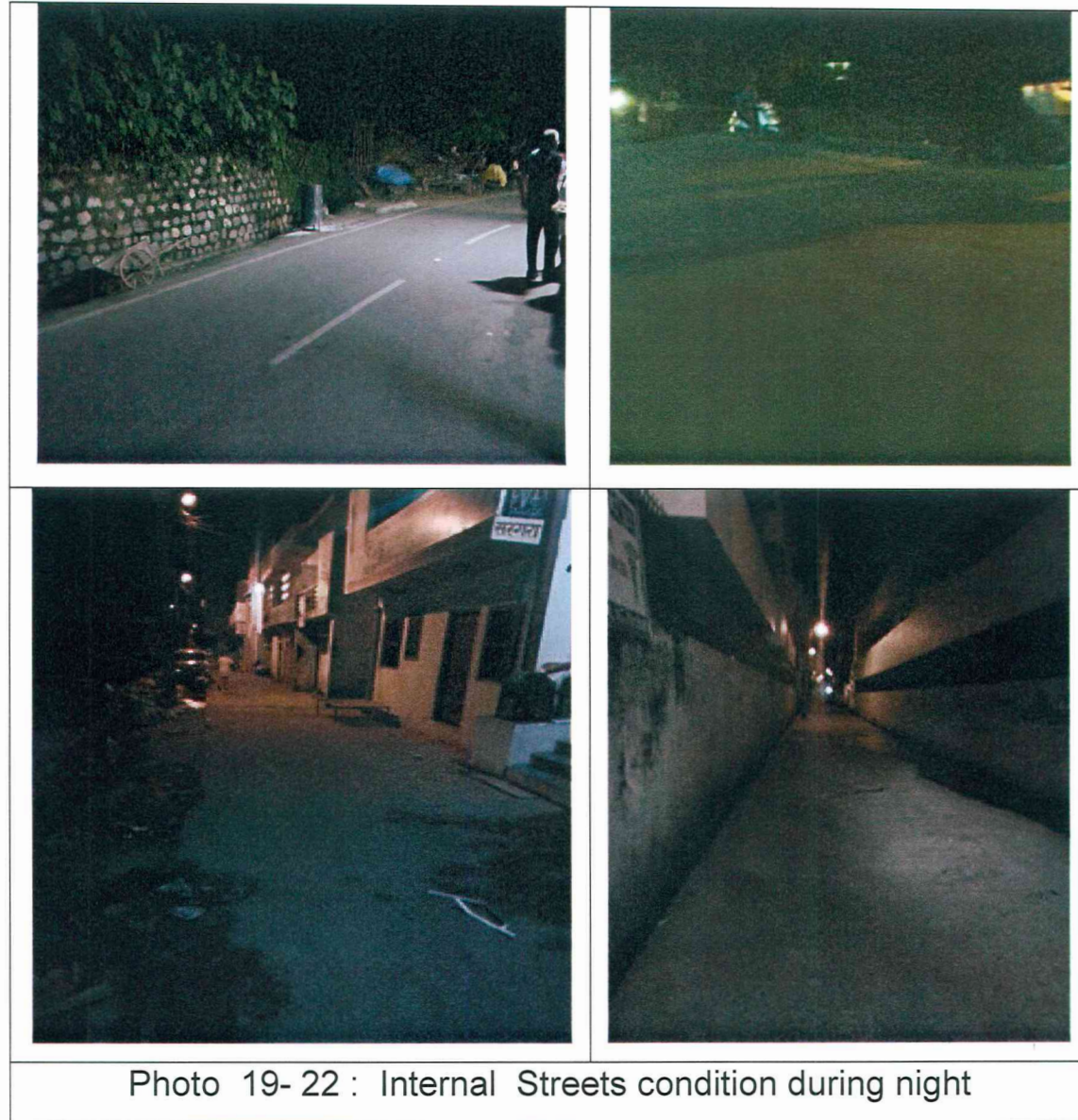


Photo 19- 22 : Internal Streets condition during night

The shopkeepers and road side traders were asked about the waste disposal process and frequency; it was informed that disposed the waste in to the municipal trolley every day in the forenoon. Most of the shopkeepers and road side vendors had kept the waste collection bins. It is shown in the following photographs.

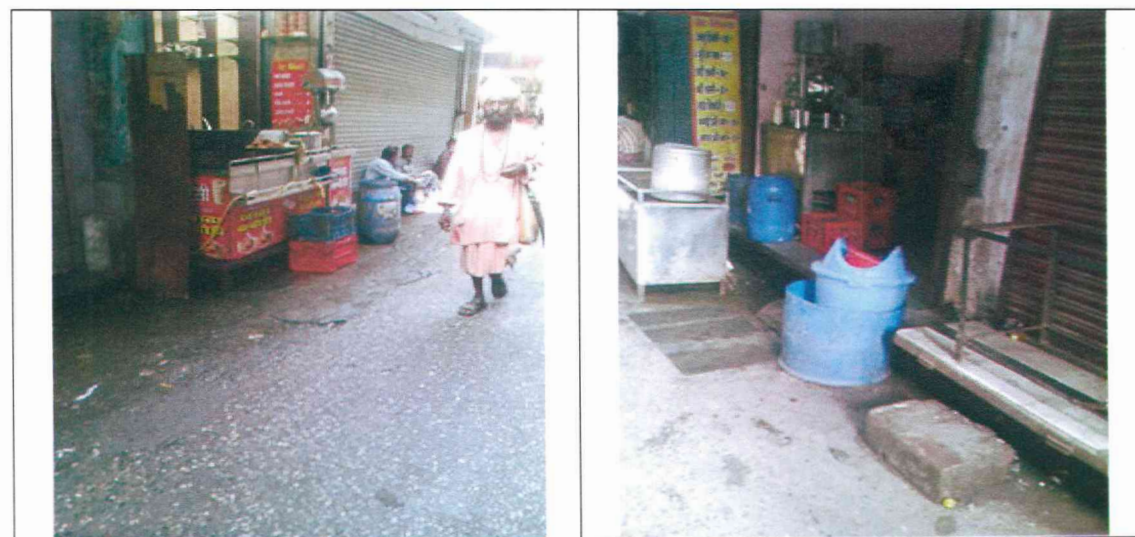




Photo 23- 26: Shopkeepers & road side vendors with Waste collection bins.

On Railway road, some food & tea vendors did not keep the waste collection bins and the waste materials was disposed into the road side drain. The drain is not approachable for cleaning, because it is confined by the Railway boundary wall and the MS barricade.



Photo 27- 30: Street food vendors on Railway road, throwing waste in to adjacent road side drain .

People in most of the localities drop waste into / around the bins & secondary bins. Many bins in the city were observed as shown in the following photographs.



Photo 31- 40 : Waste Collection Bins observed at many locations.

2.2 Equipments and Vehicles available with Nagar Nigam for Solid Waste Collection and Transport

A) For Regular street sweeping

S.No.	Equipments and Vehicles available
1	Containerized handcarts having PE containers for collection of street sweeping waste
2	Metal Tray and Plates - Street Sweeping Equipments (equals number of sweepers)



Photo 41- 42: MS Bins stock at Nagar Nigam office

B) Storage of waste at source, primary collection of waste

The type of equipments and vehicles available with Nagar Nigam Haridwar, are mentioned below.

S.No.	Equipments and Vehicles available
1	Tractors, Trolleys, JCBs, Dumper placer, Front End Loader
2	PE containers for storage of waste at source in separate manner
3	Tricycles having PE containers for door to door collection of waste
4	Wheel barrows with PE containers for door to door waste collection
5	Twin Bins Stainless Steel with MS Frame
6	MS / Tin sheet Drums at main places.
7	LLDPE- bins in remote areas and scattered places.

2.3 Workshop for Equipment Maintenance

The Nagar Nigam has a Workshop Facility for Vehicle Maintenance. The photographs taken by the inspection team are shown in the following pages.



Photo 43- 46: Equipment and vehicles at Nagar Nigam Workshop

2.4 Transfer Station

The Nagar Nigam Haridwar has a Transfer Station for solid waste in city. The photographs taken by the inspection team are shown in the following pages.



Photo 47- 48: Weigh Bridge and Control room at Transfer station

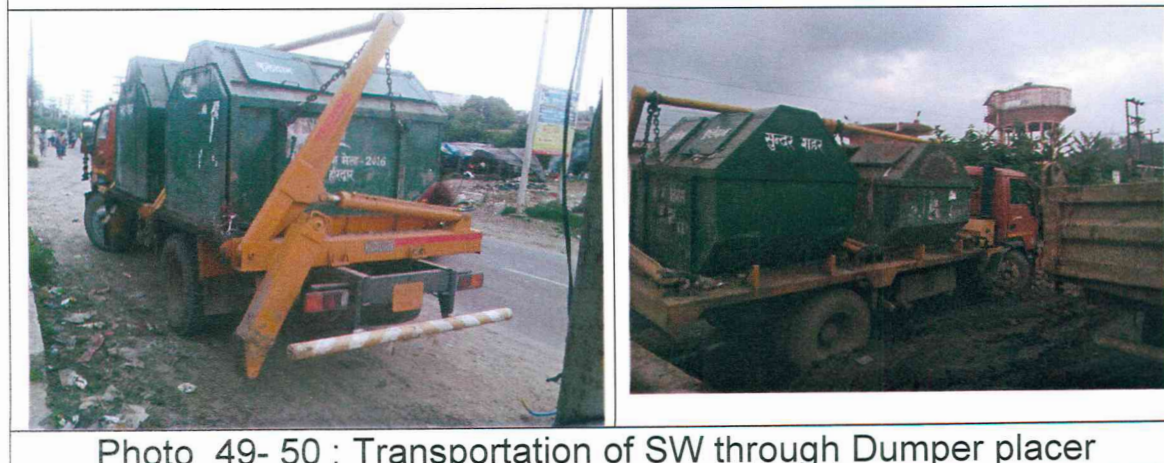


Photo 49- 50 : Transportation of SW through Dumper placer



Photo 51- 52: Transportation of Solid Waste to Dumping site

2.5 Present Dump Site for Solid Waste.

At present solid waste is being dumped at site located near the new construction site at Sarai. The photographs taken by the inspection team are shown in the following pages.



Photo 53- 54 : Present Dumping Site for Solid Waste

2.6 Old Dumping Site (capping with soil and vegetation).

Old dumping site at Chandi Ghat is being capped with soil and vegetation. The photographs taken by the inspection team are shown in the following pages.



Photo 55- 56: Old dumping site capping with soil and vegetation at Chandi Ghat

2.7 Bio-medical Solid Waste Management :

It was learnt that Collection, Transport and Processing of Bio-medical Solid Waste is being done by a separate agency. Processing is being done at CBWTF at Roorkee (distt. Haridwar).

2.8 Construction & Demolition Waste Management:

It is collected and stored in premises of Nagar Nigam Haridwar office, *for further reuse as base material* in filling the pot holes of roads and construction of approach road at waste disposal site.



Photo 57- 58 : Construction Waste at Nagar Nigam office

3.0 PART -2 of the Report :

Inspection of new Sanitary Land fill site at Sarai.

Inspection of Sanitary Land fill sites at Sarai was carried out on 04th Aug.16 to check whether new facility (site) for Solid Waste Management is being constructed as per SWM Rules 2016 or not.

The persons from executing agency M/s KRL Waste Management (Haridwar) Pvt. Ltd., Nagar Ayukt Haridwar Nagar Nigam and Dr. Ankur Kansal (UEP&PCB -RO Roorkee) were present during site inspection.

Design Capacity details for Solid Waste Management site, as mentioned in NOC (UEP & PCB letter dt.08/03/2016) are mentioned below:

- i) Engineering Sanitary Landfill for 50 MT per day.
- ii) Compost Plant- 1st Phase = 100 -150 MT per day.
- iii) Compost Plant- 2nd Phase = 150 - 200 MT per day.

During inspection visit to Landfill site at Sarai , the team observed that –

- a. *Engineering Sanitary Landfill construction work had not been started, up to date of inspection (date 04/08/2016).*
- b. Compost Plant- 1st Phase only, is under construction. RCC foundations and MS columns (for shed) were under installation (on date 04/08/2016).
- c. Only one row plantation was found during the inspection along the boundary of MSW facility. As per the Environmental clearance (given by MoEF&CC), it is required that Green belt of at least 3 rows of plantation shall be provided all along the boundary of the MSW facility.
- d. Ground water monitoring around the waste facility not yet started.
- e. The status of SWM facility components is mentioned below.

S.No.	Description	Status as on visit date
1	Transfer Station	Operational.
2	Weigh Bridge	Commissioned.
3	Workshop for Vehicles	Operational .
4	Composting Plant	Under construction
5	Engg. Sanitary Landfill Facility	Construction NOT started.

The photographs taken by the inspection team are shown below.

	
Photo-1 : Approach Road to new SW Management site	Photo-2: Inspection Team at new SW Management site
	
Photo-3 : Site Office building and plantation at new SW Management site, Sarai.	Photo-4: Status of on-going work - <u>Composting Plant</u> at new SW Management site, Sarai.

The executing agency submitted the followings drawings, the same are attached as Annexures-1 to 5.

- i) Site Plan (Landfill site & Compost Plant) and General Layout Plan of Plant Area (*Annexure-1*).
- ii) Proposed Area Layout Plan –Phase-1 (*Annexure-2*).
- iii) Proposed Layout Plan for Expansion–Phase-2 (*Annexure-3*).
- iv) Proposed Processing System (*Annexure-4*).

The executing agency informed that construction work had been started from April 2016. Target date for completion is 30th September 2016, as per the Implementation Plan submitted for Compost Plant-1st Phase only (*Annexure-5*).

Note: Construction detail / sectional drawing of Engineering Sanitary Landfill was not received, in spite of asked for it to submit to the inspection team.

4.0 CONCLUSION

- (I) Attempts are made by the Nagar Nigam Haridwar for awareness, campaigning, segregation, collection, transportation, storage, treatment of municipal solid waste, bio-medical waste and construction & demolition waste.
- (II) Requirement of **SWM Rules 2016** are partially complied. Details of some points are given below.

S.No.	Requirement of SWM Rules 2016	Status
1	Segregation of waste at source	Partially
2	Daily sweeping of streets/market places	Comply
3	Door to door collection	Partially Comply
4	Waste collection System	Comply
5	Provide designed storage containers	Comply
6	Prohibit use of open containers	Partially Comply
7	Placement of adequate storage containers	Comply
8	Public participation	Comply
9	Awareness through interactive programmers for segregation of waste and collection	Comply
10	Maintaining Daily records of MSW collection and its disposal	Comply
11	Transportation of collected waste to designated landfill	Comply
12	Collect, segregate and properly dispose plastics	Partially Comply
13	Collection of construction and demolition (C&D) waste separately	Partially Comply
14	Provisions for separate collection of slaughter house waste, domestic hazardous wastes, Horticultural waste, E- waste etc.	Partially Comply

- (III) The work progress of new SW Management site (Compost Plant under construction) at Sarai is slow, to expedite considering completion target date 30th Sept.2016.
- (IV) Major part (more than 75%) of old dumping site at Chandi Ghat, had been capped with soil & vegetation. No odour / foul smell was found.
- (V) *Sanitary land fill construction is yet to start, therefore, it could not be concluded whether new Sanitary land fill is being constructed as per SWM Rules 2016 or not.*
- (VI) In absence of Construction detail drawing of Engineering Sanitary Landfill, it is suggested that construction of engineering sanitary landfill should be carried out strictly as per the Environmental clearance granted (dated 18th May 2015) by MoEF&CC and the NOC granted (dated 08th March 2016) by UEP&PCB, Dehradun.
- (VII) Engineering Sanitary Landfill shall be designed & constructed as per CPHEEO manual / *SWM Rules 2016*. The following should be essentially provided.
 - a) Clay lining /HDPE sheet lining / other liner systems.
 - b) Filter media layer / drainage layer.
 - c) Leachate collection and treatment system.
 - d) Gas collection and disposal system.
 - e) Storm water control berm.

Annexures

Annexure-1: Site Plan (Landfill site &Compost Plant) and General Layout Plan of Plant Area.

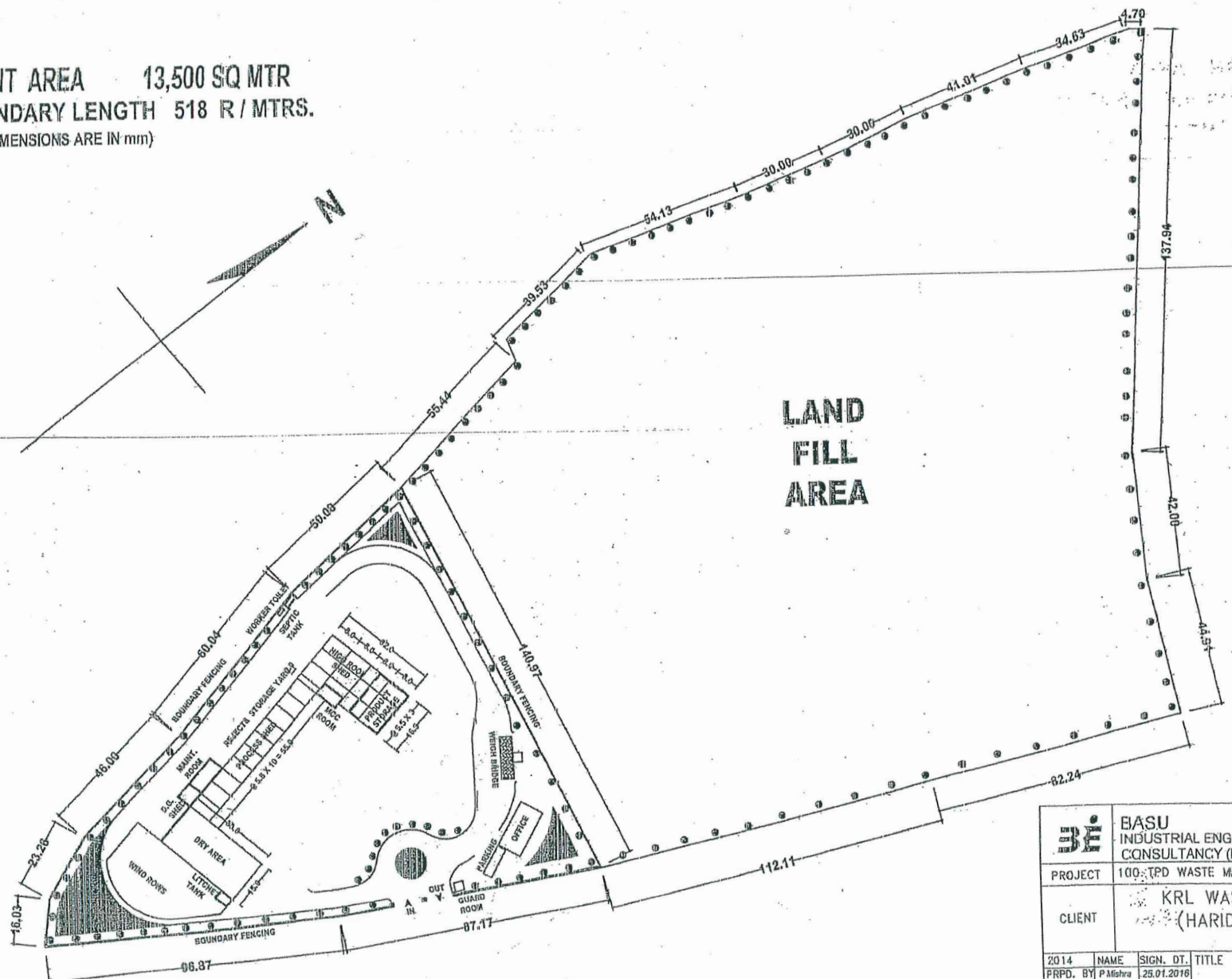
Annexure-2: Proposed Area Layout Plan –Phase-1 .

Annexure-3: Proposed Layout Plan for Expansion–Phase-2 .

Annexure-4: Proposed Processing System.

Annexure-5: Implementation Plan for Compost Plant-1st Phase only

PLANT AREA 13,500 SQ MTR
 BOUNDARY LENGTH 518 R/MTRS.
 (ALL DIMENSIONS ARE IN MM)

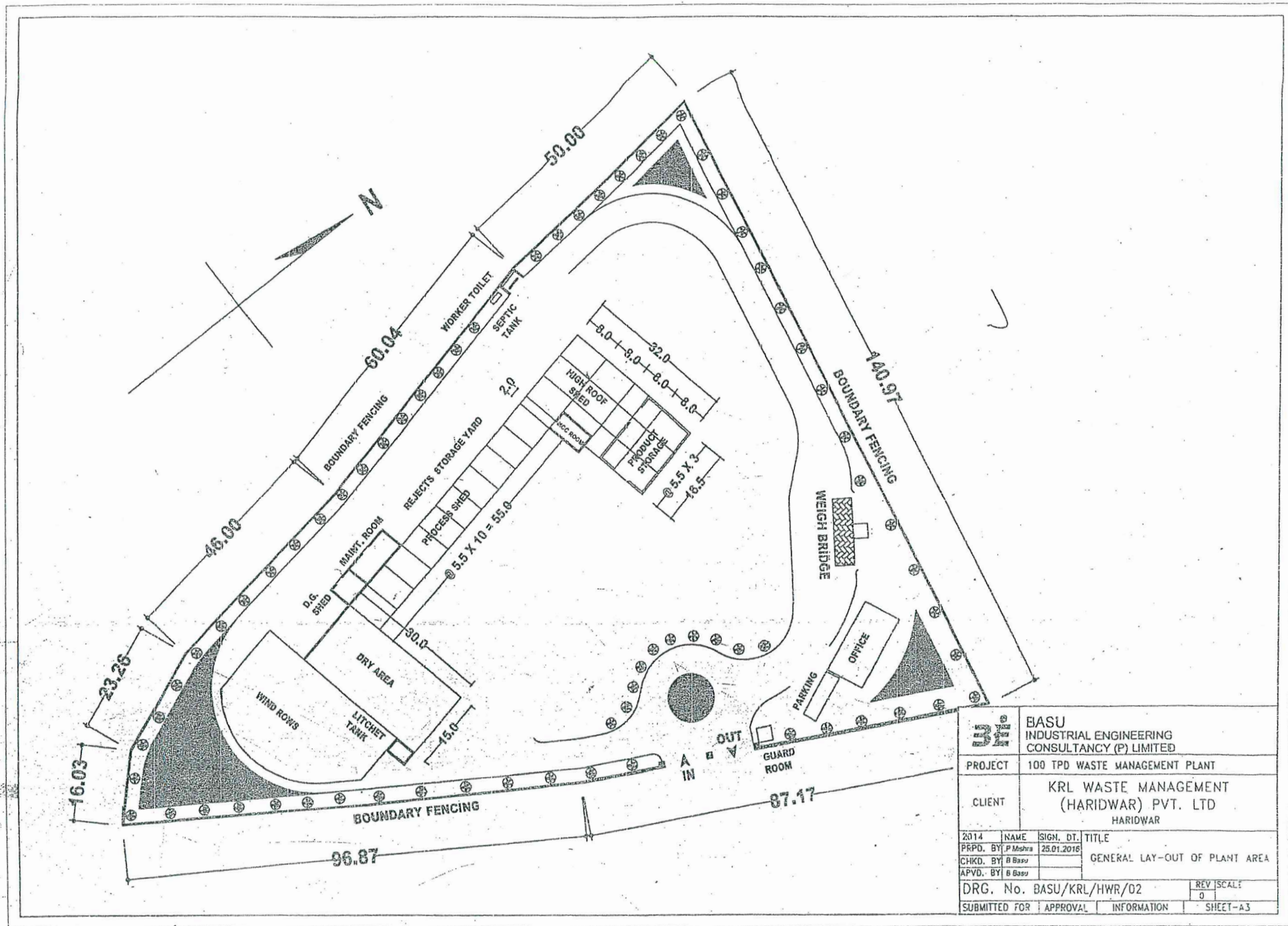


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BE		BASU INDUSTRIAL ENGINEERING CONSULTANCY (P) LIMITED	
PROJECT	100 TPD WASTE MANAGEMENT PLANT		
CLIENT	KRL WASTE MANAGEMENT (HARIDWAR) PVT. LTD HARIDWAR		
2014	NAME	SIGN. DT.	TITLE
PRPD. BY	P. Mishra	25.01.2016	SITE PLAN
CHKD. BY	B. Basu		
APVD. BY	B. Basu		
DRG. No. BASU/KRL/HWR/01		REV	SCALE
SUBMITTED FOR APPROVAL INFORMATION		0	SHEET-A3

Annexure-1 (A-1)

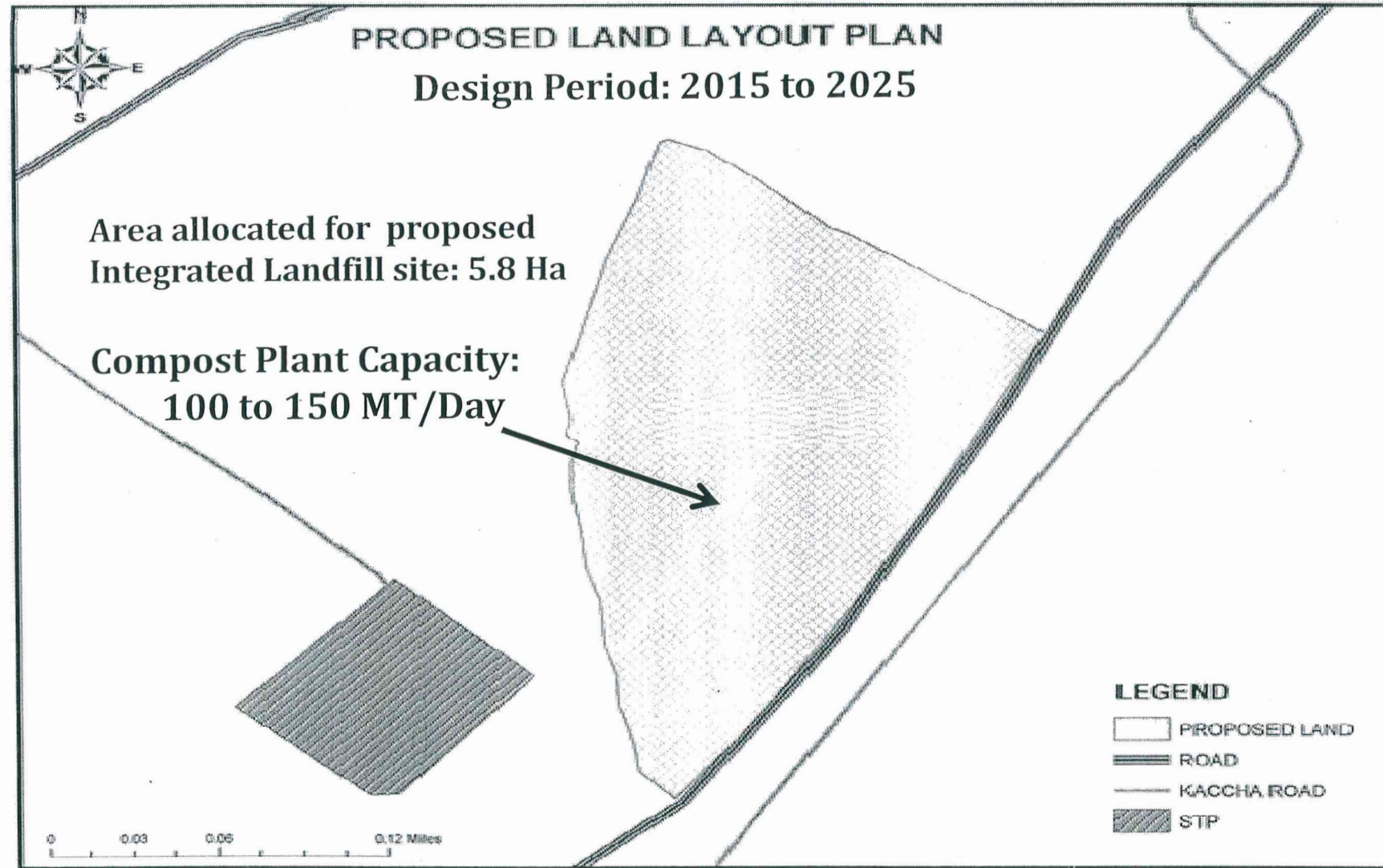
P.2 of 2



Annexure-1

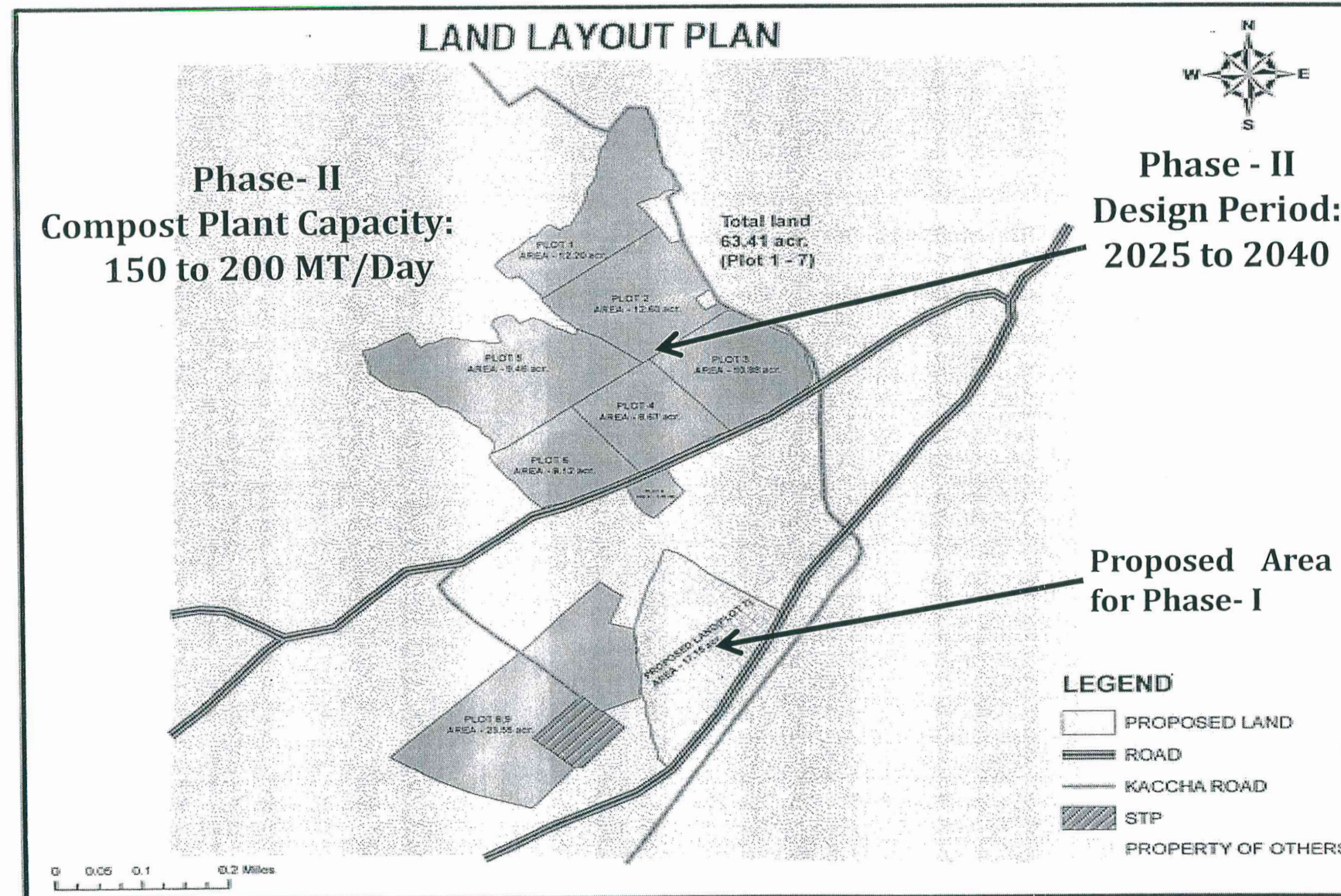
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Proposed Area Lay Out Plan (Phase- I)



Annexure-2

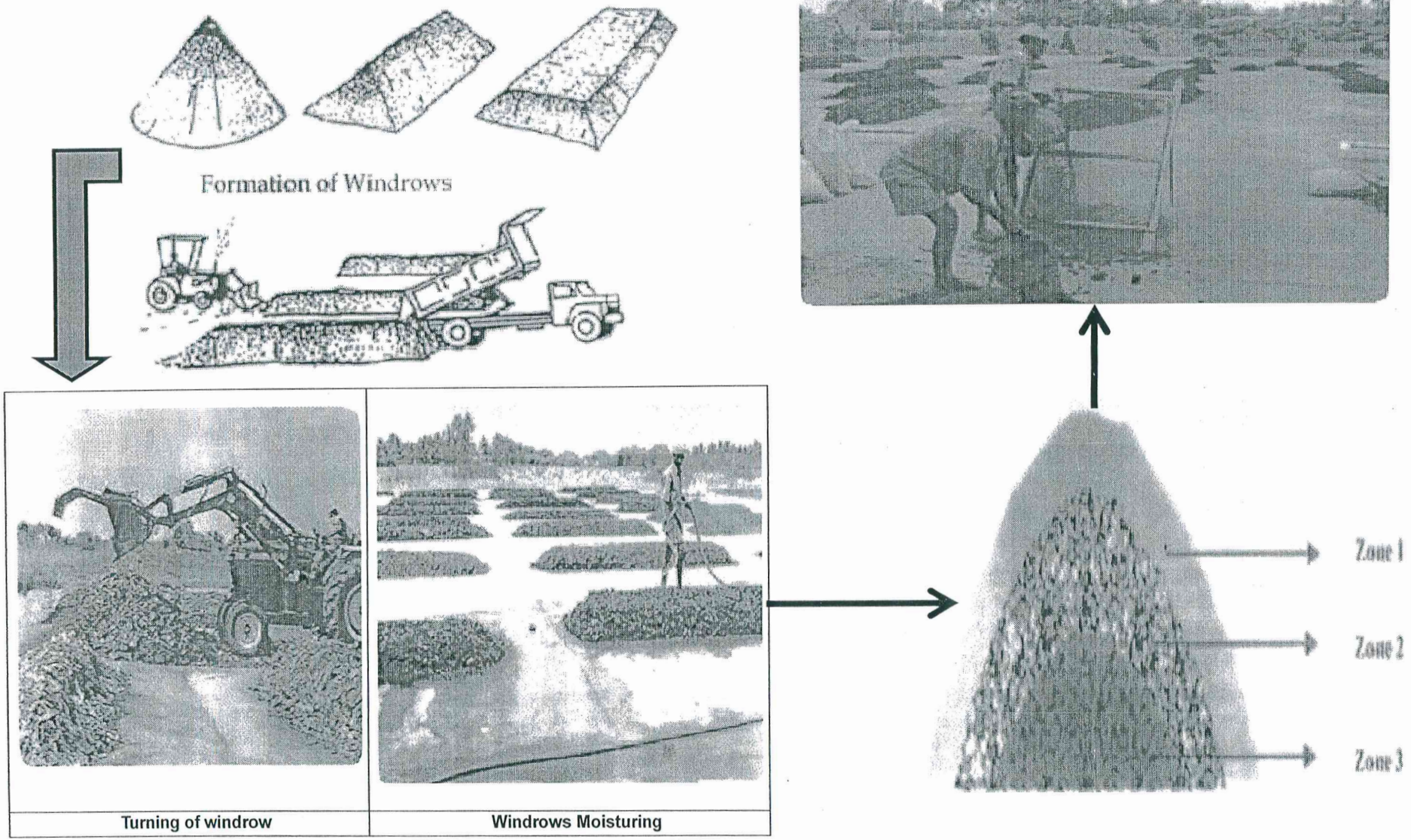
Proposed Lay Out Plan for Expansion (Phase- II)



Annexure-3

Proposed Processing System

Aerobic Composting System



Annexure - 4

Integrated Solid Waste Management in BOT mode at Haridwar - Implementation Plan for Compost Plant only

Sl. No.	Description	Time Line (in Months)					
		0	1	2	3	4	5
1	Site Development :						
	Fencing	Completed					
	Levelling of land	Completed					
	Internal Roads Plantations		█	█	█		
2	Obtaining Consent to Establish from Pollution Control Board	Completed					
3	Civil - Preliminary Engineering, calling for quotations, receipt of offers and placement of orders		█				
4	Erection of Shed at Site		█	█			
5	Compost Plant - Civil Construction			█	█	█	
6	Compost Plant - calling for quotations for machineries, receipt of offers and placement of orders		█				
7	Compost Plant - machinery delivery at site				█		
8	Compost Plant Erection & Commissioning				█	█	
9	Obtaining NOC from Pollution Control Board	Completed					
10	Recruitment of Manpower for Operations					█	
11	Trial Run & Commercial Operation of the Project Facility						█

- NOTES: 1) Above mentioned timeline is subject to timely inspection & approval of construction at site by PE & NNH.
 2) Above mentioned timeline is subject to timely & immediate release of payment of Capital Grant by NNH.
 3) Please note timeline of shed & civil construction may vary subject to onset of monsoon.
 4) Month '0' being May 2016

***** END OF THE REPORT *****