SUMMARY ENVIRONMENTAL IMPACT ASSESSMENT REPORT

For

Development of Scientific Land Fill Site (Integrated Solid Waste Management (ISWM) Project)

At
Lalpani Beet No-1, Tehsil Rishikesh
District-Dehradun, Uttrakhand-249201

(Capacity-240 TPD)
(Schedule 7(i), Category B)

Developed by

Nagar Nigam, Rishikesh,

District Dehradun, Uttrakhand

1.0 Introduction

Nagar Nigam Rishikesh is the civic body that governs the city of Rishikesh in Uttarakhand, India. This corporation consists of 40 wards and is headed by a mayor who presides over 40 other corporators representing the wards.

Govt. of Uttrakhand has plan to develop Integrated Solid Waste Management (ISWM) in all Urban Local Bodies (ULBs) using the concept of Regional level Sanitary Landfill facility. Proposed Scientific Land Fill Site is located at Lalpani Beet No-1, Tehsil Rishikesh, District-Dehradun, Uttrakhand. Waste from Muni-ki-Reti Nagar Palika Parishad, Swargashram Nagar Panchayat, Narandranagar Nagar Palika Parishad, Doiwala Nagar Palika Parishad and Rishikesh Nagar Palika Parishad will be processed at this proposed site. Total Land 10 ha. Its a Govt. Forest land. Land diversion process is under advance stage of the processing. State govt. has cleared the proposal and sent to central for further processing. No R & R issues involved with the identified land.

Because the existing municipal site is located at Govind Nagar, Rishikesh, which is in mid of the Rishikesh town and very near to the Ganga river. There are many complaints of the local people regarding this existing landfill site and due to grievance such as contaminated groundwater, fires, smoke, flies, bird menace and foul odour are very common of this site. That why local people wants to relocate this site from the main city. No treatment of the collected solid waste is being done and existing system is not in compliance with MSW rules 2016. Further NGT has also ordered for Shifting of all the existing MSW dumping zone which are located close to the Ganga river including existing land fill site located at Rishikesh.

The need of the project is to facilitate, develop a sound and complete solid waste management system and sanitary landfill site. Rishikesh city along with Swargashram, Muni Ki Reti, Narendranagar and Doiwala ULB will generates approximately 140 TPD of municipal solid waste (MSW) by 2020 and 240 by year 2045 and for treatment and safe disposal of the municipal solid waste the landfill facility will be developed. It will also improve the level, quality and sustainability of basic urban services, contributing to improved quality of life among the people who are likely to reside

The Common Municipal Solid Waste Management Facility (CMSWMF) projects are categorized under Item 7(i) in the EIA Notification, dated September 14, 2006 and thus, need a prior Environmental Clearance. The proposed project will fall under Category ‘B’; hence it will be appraised by the State Environmental Appraisal Committee (SEAC), Uttrakhand.

2.0 Nature, size and Location of the Project

The proposed landfill and compost facility will be located Lalpani Beet No-1, Tehsil Rishikesh, District-Dehradun, Uttrakhand and spread over an area of 10 Ha. The project facilities will include waste segregation and transportation, composting and

sanitary land filling. The project involves installation of compost plant and an engineering sanitary landfill site.

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Rishikesh is a pilgrimage town in Dehradun District of the Indian State Uttrakhand, about 45 km from Dehradun in the southeast part of the State. Rishikesh is one of the important religious places. It is the gateway to the upper Garhwal region and the starting point for the Char Dham pilgrimage (Gangotri, Yamunotri, Badrinath and Kedarnath) and an ideal destination not only for pilgrims but also for the people who are interested in adventure, meditation, yoga and other aspects of Hinduism.

Proposed site is well connected to Rishikesh-Haridwar bypass through a 500 m long Junglat road. Dehradun is located about 45 km from the proposed site. Nearest rail station is Rishikesh city located about 4 km from the site. salient environmental feature of the proposed project is presented in Table 1.

Table 1 : Salient Features of the proposed site

Sl. No	**Description**	**Project Details**
1	Road Connectivity	SLF site is well connected from Rishikesh-Delhi bypass road
2	Rail Connectivity	Railway Station : Rishikesh-2.0 km, East
3	Wildlife Sanctuary / National Park/ Biosphere reserve	Rajaji National Park The nearest ESZ of the national park is located about 3.0 km, E from proposed site
9	Reserve and Protected Forest	Barkot Reserved Forest (0.9 km, N), Rishikesh Reserved Forest (1.20 km, NE), Bibiwala Reserved Forest (3.50 km, N), 7 Reserved Forests (4.00 to 5.00 km, S), Dudhia R.F (9.89 km, S), Chandanawa Reserved forest (6.55km, N), Muni-ki-Reti Reserved forest (6.24km, NE)
10	Water Bodies	Kalapani River (2.70 km, E), Ganga River (3.94 km, E) Bengali Khala River (4.33 km, S), Golpani Rao River (2.75 km, W), Teenpani River (3.02 km, W), Suswa Rive (6.17 km, SW), Songi river (4.75 km, SW), Chandharbhaga river (4.87 km, N), Binj Rao River (6.00 km, SE), Motichor

		Rao River (9.57 km, SW) Dogadda Sot River (9.0 km, S)
11	Seismic Zone	Seismic Zone-IV' indicating High damage risk zone.
12	Archaeological Monuments	None within 300 m of the site
13	State, National Boundaries	There are no state or National boundaries
14	Defence Installations	There are no defence installations

3.0 Project Description

The capacity of the landfill site is 240 TPD by year 2045. the total cost of the project is estimated as Rs. 5030.89 Lakh. Total 10 ha Land has been Identified for the proposed Land fill site. The infrastructure proposed for proposed project is primary waste collection, segregation and followed by separate collection and transportation system. Proposed Integrated solid waste management system comprises of followings

- Segregation and storage
- Primary Storage & Collection System
- Segregation Centres
- Secondary Storage, Collection & Transportation System
- Integrated Solid Waste Management (ISWM) Facility on Cluster & Regional Landfill Approach at Rishikesh

Salient features of the project is presented in following table

Table 3 : Salient Feature of the Project

Sl. No.	Description	Project Details
1	Name of the Project	"Development of Scientific Landfill Site"
2	Project Location	At Lalpani Beet No-1, Rishikesh, District Dehradun, Uttrakhand-249201.
3	Project developed by	Nagar Nigam Rishikesh
4	S. No. in the Schedule	7 (i), Category 'B'
5	Project Cost	5030.89 Lakh
6	Treatment for Waste	RDF, Composting & Secured Landfill
7	Plot Area	10 ha (100000 Sq. m or 24.71 Acres)
8	Composting Area	9600 Sq. m, (2.372 Acres)
9	Green Area	10500 Sq. m (2.594 Acres)
	SLF Area	25000 Sq. m (6.177 Acres)
10	Other area	54900 sq. m. (13.566 Acres)
11	Capacity of Plant	Waste handling capacity: 240 TPD

		(by year 2045)
12	Composting Plant	120 TPD
13	Manpower	Permanent Staff -20 Contractual Labor =70
14	Total Water Requirement	Construction period- 10 KLD Operation period -20 KLD (Total)
15	Water Source	Municipal Supply water / Ground water
16	Water Use	Gardening :15 KLD Domestic : 4 KLD Sprinkling/ Washing : 1 KLD
17	Waste Water Generation	Leachate and other waste : 45+8.8 KLD Domestic : 3.2 KLD
18	Total Waste Water Generation	3.2 KLD
19	Leachate Treatment plant	100 KLD
20	Domestic waste Treatment Facility	Septic Tank Soak Pit
21	Solid Waste Generation	MSW from Labors : 15 kg/day
22	Method of Collection of Waste	DTDC (Through Nagar Nigam Rishikesh)
23	Solid Waste Projection (by year 2045)	Approx. 240 TPD (Biodegradables 49.85%, Dry Waste : 41.74 % and Inert waste : 8.41%)
24	Electrical Load	11.0 KV Feeder shall be bought up to the two pole structures at the site
25	Power Backup	1 x 500 KVA

4.0 Description of Environment

Primary baseline data has been collected as per the TOR prescribed by SEAC Uttrakhand. Baseline data has been generated during 1st October 2019 to 31st December 2019 for one complete season. The 10-km radius area around the proposed site was considered as study area. The data was generated by following the standard procedures of the Ministry of Environment & Forests and the Central Pollution Control Board.

Meteorology: Meteorological station was setup near project site. Wind speed, wind direction, temperature and humidity levels were recorded. During the study period daily mean minimum temperature was 4.6^{0}C and daily mean maximum temperature was 32.1 ^{0}C. The maximum humidity during study period was 81 % and minimum was 26 %. The wind speed ranges between 0.5 to >3.0 m/s during study period except calm conditions. Most of the time wind speed ranges between 1.0 to 2.5 m/s. The predominant wind direction at site is from NW and NE direction. Percentage calm periods during study period was 26.86%.

.**Air Environment:** $PM_{2.5}$, PM_{10}, SO_2, NO_2, H2S and CH_4 were monitored at five locations in the study area. The locations were selected as per CPCB guidelines. Monitoring was done at upwind direction and various downwind directions of the project. The conc. of $PM_{2.5}$ in all location ranges between 21-42 µg/m^3 conc. of PM_{10} in all location ranges between 45-84 µg/m^3 Conc. of SO_2 in all location ranges between 5.0 to 9.0 µg/m3. Conc. of NO_2 in all location ranges between 9.8-19.6 µg/m^3. H2S and CH_4 were found in very low

concentration. Over all the ambient air quality of the study area is meeting the prescribed National Ambient Air Quality Standard at all locations.

Noise Environment: Ambient noise level were monitored at five (5) locations in the study area. The ambient noise quality of the study area is within the prescribed National Ambient Noise Quality Standards prescribed for industrial (Standards - 75 dBA during day time and 70 dBA during night time) residential area (Standards - 55 dBA during day time and 45 dBA during night time) and commercial area (Standards - 65 dBA during day time and 55 dBA during night time).

Water Quality: Five ground water samples and two surface water sample were collected from different locations around the site during study period. Groundwater samples were collected from hand pumps and tube wells of settlements around the project site. The water samples examined for physico-chemical parameters and bacteriological parameters. The samples collected and analysed as per the procedures specified in Standard Methods. Samples for chemical analyses collected in polyethylene carboys. Samples for bacteriological analyses collected in sterilized bottles. Overall the parameters in ground water sample were well within the desired limit of Indian Standard IS: 10500-2012 all location, where the hardness values are slightly above the permissible limit but well within the desirable limit. No metallic and bacterial contamination was found in the ground water samples.

Bacterial and metallic contamination was observed in the surface water sample. However, the surface water was found to meet the Best Designated Use – 'D' Criteria of CPCB (i.e fit for fish propagation)

Soil Quality: Four soil samples were collected from the agriculture fields around the project area and analyzed for relevant physico-chemical parameters. . Texturally the soils of study area are observed as Sandy loam. The soil pH ranges from 7.44 to 7.85 thereby indicating the soils are slightly alkaline in nature. The organic matter, nitrogen, potassium and phosphorus content of the soil are found to be in low to moderate amount. Overall the soil is found moderately fertile.

Sensitive Ecosystem: No national park, wildlife sanctuary, biosphere reserve is present within 10 km area of the proposed project site except Rajaji National park. The proposed project site is located outside the Eco sensitive zone of the Rajaji National park. The nearest ESZ of the Rajaji national park is located about 3.0 km east of the proposed project site. No rare and endangered plant species was observed in the study area. Due to presence of Raja ji national park there is diverse flora and fauna reported from the study area. Among the mammals Indian Gazelle, Asian elephant and Indian panther are scheduled-I faunal species and among the birds *Gyps indicus* is schedule-I species recorded from the study area

5.0 Environmental Impact and Mitigation Measures

Environmental Impact Assessment helps in identifying the likely impacts due to the project activities for all stages of the project viz, design, construction and operation stage. Impacts are quantified using established practices, tools and mathematical models followed by identification of mitigation measures to mitigate the impacts to acceptable levels. The proposed project activities would create impact on the environment in two distinct phases i.e., Construction and Operation Phases. The impacts during the construction phase will be

temporary in nature. This summary details the pollution sources and mitigation measures proposed for the project is summarised in following table:

S.N.	Component	Potential Impacts Identified	Suggested Management Plan/ Mitigation Measures
Construction Stage Impacts and Mitigation Measures			
1.	Land Use & Soil Quality	• Change in the topography • Increased run off during monsoons • Soil erosion and compaction • Soil contamination	• Minimum filling and cutting works to be undertaken during site clearance activities; • Excavated topsoil to be preserved in stockpiles for further use in greenbelt development • No site grading, excavation and backfilling works during monsoons. • Retention wall or bund to be provided around the storage areas for excavated soil and other construction material; • Restrict movement of heavy machinery to limited areas • All chemical wastes to be stored on paved surfaces and provided with covered sheds.
2.	Ambient Air Quality	• Fugitive emissions due to site preparation • Dust generation during movement of vehicles • Emissions from construction equipments, vehicles	• water sprinkling on dusty area • Limited vehicular movement will be permitted on disturbed soils • Contractors will be required to maintain valid Pollution under Control certificates issued by Transport Department and proper maintenance records for their fleet; • Periodic maintenance of construction equipment will be undertaken to minimize exhaust emissions; • Proper housekeeping of the area to be maintained to remove dirt/debris from the site on daily basis.
3.	Ambient Noise Quality	• Noise due to Construction activities (such as excavation, grading, erecting equipment, piling, etc) • Movement of vehicles • Occupational noise hazard	• The construction areas to be provided with sheet barriers or temporary walls along the boundary close to any habitations; • Rubber padding to be provided in the construction machinery • Provide acoustic enclosures and noise barriers in areas of high noise generating sources; • High noise generating activity will be permitted during day time only; • Regular maintenance of its vehicles and repair of its equipment/ machinery will be undertaken; • Personal protecting equipments will be provided to workers.

5.	Water Resources and Quality	• Potential run-off from site • Disposal of sewage from labour toilets • Contamination of surface and ground water resources	• Excavation will be avoided during monsoon season; • Garland drains will be constructed to prevent the runoff • Vehicle Maintenance and related activities will not be undertaken at site to avoid any oil spill/leaks; • Arrangements for septic tank-soak pits for domestic sewage.
6.	Ecology	• Removal of vegetation • Disturbance to wild fauna • illegal hunting of wild animals	• Project layout design shall be in a way to minimize tree cutting • Top soil shall be stacked and used for greenbelt development. • Dense greenbelt shall be developed • Compensatory plantation shall be done in 20 ha land • Minimum levels of noise during construction activities shall be maintained. Illumination and night operations will be restricted to avoid adverse impacts on habitat of fauna. • No illegal hunting and poaching activities to be allowed in the study area;
7.	Traffic and transport	Traffic congestion on road connecting site from main highway Deterioration of road conditions	• Movement of traffic entering the site shall be properly managed to ensure minimum disturbance to community; • Dedicated entry and exit points to be provided within the Site. • Dedicated parking area will be provided in the project site for parking of vehicles. • The speed of vehicles will be restricted to 25 km/hr. • Roads damaged due to project vehicle, if any will be repaired and maintained at regular intervals during the construction period.
8.	Socio-economics	• impact due to construction noise, dust and increased traffic • Employment	• proper water sprinkling in dust generating areas; • All high noise generating activity will be permitted during daytime only • Workers from nearby villages will be engaged in construction activities • Proper fencing and proper signage will be provided around construction site;
Operation Stage Impacts & Mitigation Measures			
1	Ambient Air Quality	• Vehicular emissions • Dust and particulates emissions • Emissions from DG set and Odour nuisance	• Stack height for DG sets will be maintained as per CPCB norms • Internal roads will be concreted / asphalted to reduce dust emissions; • All the trucks bringing waste to the site will be covered • RNN to ensure that all vehicles

			maintain valid (PUC) certificates; • Thick green belt will be provided along the internal roads and plant boundary which will limit the spread of dust and odour; • Post closure monitoring of ambient air quality at site should be undertaken • 2Maintaining proper air and moisture in the compost plant and windrow area
2	Soil Quality	• Contamination of soil due to leachate percolation • Spillage from vehicles and used oil from DG set	• Design parameters for facility already include impermeable concrete windrow pad, drainage network, leachate collection and treatment system. • Ensure that the surface runoff from paved areas are collected in storm water drains and does not flow to landscaped areas; • Provisions for HDPE Liner beneath it to check leachate percolation into soil and ground water
3	Ambient Noise Quality	• Increase in noise levels in adjoining areas due operating equipments such as shredders of the RDF block, compactors, balers, DG sets, any rotating equipment • Impact on faunal species due to increased noise	• Acoustic enclosures, rubber paddings and linings will be provided for all noise producing equipments • Trees with heavy foliage and dense green belt of 3 rows shall be provided to serve as acoustic barriers; • Proper maintenance of machineries such as diesel and exhausts silencers, lubrication of conveyer trolleys, etc. • PPE will be provided to worker working in high noise areas. • Periodic noise monitoring
4	Water Resources and Quality	• Fresh water demand of the project • Disposal of domestic sewage • Management of storm water • Leachate generation	• Recycling and reuse of leachate will be carried out to minimize fresh water requirement • The domestic waste water will be sent to septic tank followed by soak pit. • Storm water drainage and garland canal will be fitted with screens and filters • Leachate from the waste tipping areas will be collected separately and conveyed via leachate collection drain up to leachate collection sump and treated in Leachate treatment Plant • Quality of groundwater should be monitored and analyzed against IS 10500 standards for drinking water prior to use.

5	Traffic and Transport	• Increase in traffic volume congestion	• Traffic movement on road connecting the site should be planned and restricted to the early morning or late evening hours only. • A proper traffic management plan. All routes for waste carrying vehicles/ trucks will be planned to cause minimal disturbance to local community.
6	Ecology	• Impact on Surrounding RF and PF • Impact on Rajaji National Park • Disturbance to wild fauna in study area	• 10500 m2 land area of this project shall be converted in to greenbelt which will act as a conservation buffer zone between the Rajaji national park and proposed project. • Environmental & social baseline studies, as well as long term monitoring programs will be used to assess and minimize impacts • Native species and healthy seedlings will be planted • Compensatory plantation shall be done in 20 ha area
7	Socio-economic aspect	• Disturbance to community due to increased noise levels, odour, air emissions and traffic • Employment opportunities • Formalization of rag pickers • Participatory role of residents • Improve aesthetics of area	• Good Waste Handling practices will be implemented which will greatly reduce foul smell and reduce impact from odours. • Vehicles/ trucks moving through community roads will be covered and the operations will be restricted to day time. • Maximum efforts will be made to provide job opportunities to local residents during construction and operation phase. • To implement effective waste management, RNN shall organize trainings for rag pickers operating in the nearby areas emphasizing on the importance of segregation and safe handling of waste. • Awareness campaigns to be organized emphasizing the need of sorting at source, waste collection and participatory role of residents in waste management in an area.

6.0 Risk Mitigation Measures

Fire fighting system with fire extinguishers, hydrant system, sprinkler system, pumps and pipeline network will be provided as per the recommendation.

7.0 Project Benefit

Compliance to the Municipal Solid Waste (Handling and Management) Rules, 2000 and further amendments thereof; with respect to biological processing and maximum recycling. After commissioning of this project the existing municipal site is located at Govind Nagar, Rishikesh, will be shifted and many complaints of the local people regarding this existing landfill site will be shorted out. Municipal Solid Waste dumping in open will progressively stop as the waste will be processed and converted into compost & RDF and inert will be disposed off in secured land fill.

Beside above facility will create more jobs in the area both in construction and operation phase and also present the opportunity to provide improved products or services to people in the area.

8.0 Environmental Management Plan (EMP)

EMP for effective management of environmental impacts and ensuring overall protection of the environment through appropriate management procedures has been recommended in the EIA report. The capital cost for environmental management of the proposed project is estimated to be Rs. 9,95 crores. Budget allocation of Rs. 9.62 lac is required every year to meet the annual recurring expenditure for implementing the environmental control and improvement measures suggested in EMP

9.0 Conclusion

Municipal Solid Waste dumping in open will progressively stop as the waste will be processed and converted into compost & RDF and inert will be disposed off in secured land fill.

All aspects of environment have been adequately assessed and necessary control measures have been provided to meet statutory requirements. Implementing this project will not have any appreciable negative impacts. Moreover, the landfill area requirement at project site will progressively be available for processing of MSW and disposal of inert thus reducing significantly environmental hazards of air and water contamination, as the solid waste will be converted to stable form (inert) before being sent for disposal at landfill site. This would save upon the future requirements of area for land filling.