

# **Scope of Work for Preparation of Solid Waste Management Plan under Comprehensive Mela Plan of Simhastha 2016 at Ujjain**

## **ABOUT UJJAIN**

Ujjain stands glamorously among many other Indian sacred and holy cities. The early history of Ujjain is lost in the midst of antiquity. According to ancient Hindu scriptures it was originally called Avantika. Later King Shiva of Avanti commemorating his triumph over the demon king of Tripuri, changed it to Ujjainyini (one who conquers with pride).

Ujjain is situated on the right bank of River Shipra. It is a very holy city for the Hindus, a site for the triennial Kumbh mela. There are many great mythological legends about Ujjain city. Apart from mythological legends, the city has a long distinguished history. It was governed by the likes of Vikramaditya and Ashoka. Kalidas wrote his soul-stirring poetry here. Today, Ujjain represents an interesting blend of an age-old legacy and the modern-day lifestyle.

## **ABOUT SIMHASTHA**

Simhastha is the great bathing festival of Ujjain. It is celebrated in a cycle of twelve years when Jupiter enters the Leo sign of the zodiac, known as Simha Rashi. Ceremonial bathing in the holy waters of Shipra begins with the full moon day of Chaitra and continues in different intervals throughout the successive month of Vaishakha culminating on the full moon day. Tradition calls for ten different factors to be located for the grand festival at Ujjain. According to the Puranas, the legendary churning of the ocean by the gods (Devas) and demons (Danavas) yielded, amongst other things, a jar (Kumbha) full of nectar (Amrita). Gods did not like to share it with demons. At the instance of Indra, the master of gods, his son Jayanta tried to run away with the jar and was naturally followed by some of the demons.

## **PROJECT AREA**

Area for preparation of Solid Waste Management plan is a total area of Simhastha 2016 Mela.

## **OBJECTIVE**

Comprehensive Mela Plan of Simhastha -2016, Ujjain is being prepared by EPCO. Solid Waste Management is one of the important components of Mela Plan. The main objective of the detailed Solid Waste Management Plan of entire mela area of Simhastha 2016 in Ujjain shall be-

1. To effectively manage huge quantity of municipal solid waste generated by the masses specially pilgrims during Simhastha 2016.
2. Holistic approach to all waste streams thus maximizing synergetic benefits in collection, recycling, treatment & disposal
3. To suggest suitable technology, method and equipment for managing municipal solid waste during Simhastha 2016.
4. To ensure safe disposal of waste and treat the waste as per Municipal Waste Management and Handling Rules 2000.
5. To provide quality urban environment by the way of efficient solid waste management
6. Reduce Air pollution due to bad odor of the waste.
7. To promote public and private partnership and involvement of local stakeholders to successfully implement the management plan.

## **SCOPE OF WORK**

- Preparing for Solid Waste Management Plan for Simhastha 2016
- Data Collection and Analysis for accurate quantification and characterization of waste
- Waste quantification assessment and prediction. Analyze the existing waste management situation. Assessing the institutional framework and resources available

- Stakeholders consultation comments and input. Understanding the role of different stakeholders at different levels of solid waste management chain.
- Formulate action plan and SWM plan for the Simhastha 2016
- Selection of system, equipments, vehicles, technology keeping focus to Simhastha 2016
- Design waste management hierarchy, planning and design of systems, technology selection.
- Preparation of plan for transportation of solid waste.
- Preparation of plan for disposal on land i.e. environmentally safe and sustainable disposal in landfills.
- Implement the action plan and monitor the results.
- All necessary works related to the job of preparation of SWM plan for Simhastha 2016.

## **FLOW CHART FOR MUNICIPAL SOLID MANAGEMENT SYSTEM**

- A) Problem definition and statement of objective
- B) Inventory and data collection
- C) Development of alternatives
- D) System selection
- E) Implementation methodology

## **METHODOLOGY**

A comprehensive solid waste management plan involves storage, collection, transportation, segregation, waste characterization, processing and disposal. The detailed methodology proposed for the solid waste management plan for Simhastha 2016.

### **Baseline Information Collection**

- ❖ Study of existing literature and information about historical kumbh events and their impact assessment.
- ❖ Site analysis, land use survey and current practices.
- ❖ Studying the area map of the study region regarding:

- Classification of the areas into residential, commercial and market etc.
- Location of nallahs and their characteristics
- Location of open points / dust bins
- Location of dumpsite (s)
- ❖ Reconnaissance survey of the municipality will be conducted to assess the overall situation. The information would be a pre-requisite for finalizing location of waste collection bins, location of dustbins, and location of transfer station and route rationalization.

### **III Preparation of Design & Drawing**

The analysis of all information/data from survey, field visits and discussions with various stakeholders would be analyzed.

- ❖ Detailed design and preliminary working drawing,
- ❖ Suggestion on right type of equipment/machinery/method for purpose of better solid waste management.

### **III Waste Minimization**

Waste minimization or reduction at source is the most desirable activity, because the community does not incur expenditure for waste handling, recycling, and disposal of waste that is never created and delivered to the waste management system.

### **III Estimation of Quantity of Waste Generated and Future Projections**

The quantity of Municipal Solid Waste (MSW) generated per day on an average would be carried out by the direct and indirect method. The methodology of estimation is as follows,

- ❖ Number of collection points with their spatial distribution in the town
- ❖ Transferring points (if any) with their spatial distribution in the town
- ❖ Market yards / Vegetable markets

Total amount of waste generated and collected (by indicating the date(s) of estimating the total quantity of waste) – 5 days average MSW quantities will be projected for the next 30 years by one of the most suited methods as

indicated in the 'Manual on MSWM prepared by CPHEEO, as this will help in suitable design of processing & disposal facilities.

#### **■ Assessment of Physico-Chemical Characteristics of Municipal Solid Waste**

In order to assess the physico-chemical characteristics of MSW, samples are proposed to be collected both from the generation and disposal points. About 10 kg of MSW is collected from ten points from outside and inside of the solid waste heap. The total quantity of waste so collected is thoroughly mixed and then reduced by method of quartering till a sample of such a size is obtained which can be handled in the laboratory (minimum 5 kg. Samples collected for physical and chemical analysis will be double bagged in plastic bags, sealed and sent to the laboratory for analysis. Characterization of MSW shall be done according to the procedure outlined in the Central Pollution Control Board (CPCB) Manual 'Analysis of MSW, 2001' and MSWM prepared by CPHEEO, May, 2000'.

#### **■ Establish Current Status/Baseline of Solid Waste Management**

A detailed survey shall be undertaken to establish the existing status of waste management in the locality. The existing resources such as man power, equipment, vehicles, waste collection practices, transport facilities and disposal mechanisms will be evaluated. The results will be used to evaluate the adequacy of the existing resources. The technical adequacy as well as the resource adequacy shall be evaluated. A survey will also be conducted involving interviews with local inhabitants to understand the existing levels of waste management awareness among general public. Information will also be collected to assess the source segregation levels and community participation initiative for comprehensive waste management.

#### **■ Assessment of Solid Waste Generation Trends**

After identification of the data sources and initiating the data collection and assessment of publicly available data, the Consultant shall carry out a survey in the Mega-Fair Region and conducts an assessment of the solid waste

generation trends at the mega-fair. The primary survey shall be performed to substantiate any shortfall in publicly available data.

Additionally, the Consultant shall conduct a visit to mega-religious fair that has occurred in recent years. This is because the mega-religious fair in the region is expected to occur once in 12 years.

And, a 12-year old data shall not provide recent trends in solid waste generation trends for such massive congregations. Hence, the Consultant is proposing to visit a mega-religious fair that has occurred in the recent past and conduct a survey on the solid waste generation trends for such mega-fairs. The consultant will review the best practices adopted for solid waste management in Haridwar, Nasik and Allahabad Kumbh to suggest suitable measures and plan for Simhastha 2016.

#### **■ Assessment of Primary and Secondary Collection Mechanisms**

The objective of this task is to understand and assess the existing primary and secondary collection mechanisms of solid waste generated in the Town. Under this task the following information would be collected and analyzed.

Information on primary waste collection arrangements such as number and spacing of dustbins information on house to house collection information on other primary collection mechanisms Waste collection scheduling and techniques, Street sweeping process and mechanism and organization of sweeping activities, Details of secondary waste collection such as number and locations of transfer stations / collection points and other secondary collection arrangements, Identification of waste generating sources like households, commercial establishments, hotels, institutions, etc. Details of bulk generators such as vegetable / fish / mutton markets, big hotels & restaurants, slaughterhouses, function halls, construction waste etc

#### **■ Assessment of Infrastructure – Collection and Transportation Equipment and Vehicles**

Under this task the following information would be collected, Primary collection equipment such as push carts, wheel barrows, container carts, tricycles, brooms, metal trays. Secondary collection and transportation

equipment and vehicles like transfer station arrangements, tractor-trailer, dumper bins, dumper placers, etc. Information on daily recordings of vehicle movements as available from vehicle logbook, the infrastructure available would be assessed by their capacities and their condition and number, thus arriving at the adequacy. The suitability of present infrastructure and modification required would be assessed based on the characteristics of the town and the requirements. The performance would be assessed based on the number of trips made by each type of vehicles both to collection points and disposal points and user friendliness of the equipment.

#### **III Assessment Resource Recovery Through Material Recycling**

Material recycling can occur through sorting of waste into different streams at the source or at a centralized facility.

- Sorting at source
- Centralized sorting
- Sorting prior to waste processing or land filling

#### **III Resource Recovery Through Waste Processing**

Biological or thermal treatment of waste can result in recovery of useful products such as compost or energy.

#### **III Assessment of Man Power and Other Infrastructure**

Details of available manpower both permanent and temporary and other infrastructure such as weigh bridges, etc. will be collected as part of this task. The manpower adequacy and expertise required would also be assessed.

#### **III Preparation of Report**

Incorporate all salient points under the scope of survey. The same would be discussed with various officials and stakeholders and Final DPR would be prepared incorporating their suggestions.

The Detailed Project Report (DPR) would consist of technical feasibility, preliminary design and cost estimation, financing plan for financial feasibility, cost benefit analysis, economic analysis, social impact, environmental analysis. It will include operational cost projection and analysis, cost recovery

analysis to meet the capital cost partially. CPHEEO norms would be followed at the time of preparation of Detailed Project Report.

## **Deliverables**

The Consultant recognizes that a high-quality deliverables shall be the basis for the Client to make an informed decision on the subsequent actions to be taken for achieving the objective of improved solid waste management at the mega-religious fair. Towards this, the Consultant suggests the following three deliverables during the period of study:

- Inception Report
- Draft Detailed Project Report
- Final Detailed Project Report

The Inception Report shall contain the Data Collection and Data Assessment Procedures and the Table of Contents of the Detailed Project Report (DPR) as envisaged by the Consultant so as to enable the Client to review and suggest improvements. The Data Collection Report shall provide an overview of the data collection efforts of the Consultant team and the extent of data that has been made available by various agencies.

## **GENERAL PROVISIONS**

- a) DPR shall be a comprehensive document they shall contain all relevant information, collected and surveyed data, designs of system and components, justifying chosen system and scheme, components thereof and establishing that the cost shown is optimal, specifications, drawings. They shall be documents worked out to details to invite tenders.
- b) DPR shall be prepared on computer. Along with hard copies, a soft copy in DVD shall be submitted
- c) Salient features of the DPR shall be given at the beginning of the DPR to have an idea of the DPR at a glance.



- d) Schedule for submission, approval, implementation and completion shall be detailed.
- e) CPHED / CPHEEO / Local PWD specifications, whichever applicable, may be followed for construction of works.
- f) Cost estimates to be based on current local schedule of rates for standard items of works and market rates for proprietary equipment.
- g) Necessary escalation in costs due to inflation during project implementation period shall be incorporated on a justified rationale.

## TIME SCHEDULE

Consultant will commence the services as soon as possible but not later than 15 days after the Client has given to the consultant notice to proceed with the Services. Each stage of work will be completed as per Schedule given.

S.No.	Phase	Months							
		1	2	3	4	5			
1	Project planing and team mobilisation								
2	Data collection and survey								
3	Stakeholder consultation								
3	Development solid waste management plan								
5	Preparaion Integrated Implementation Plan								
6	Preparation of draft DPR								
7	Preparation final DPR								

### Schedule for Outputs

S.No.	Outputs	Time
1	Submission of Inception Report	30 days from date of issue of work order
2	Submission of Draft DPR	120 days from date of issue of work order
3	Submission of approved Final DPR	30 days from date of approval of draft report & comments of Client on DPR

## FINAL OUTPUT

The consultants shall furnish to the EPCO documents in hard copies along with soft Copy (DVD).

Draft Detailed Project Report:	2 hard copy,	1 Soft copy
Final Detailed Project Report	5 hard copies,	1 Soft copy