# 01. Project Description

## 1.1 Project and Project Proponent

Pimpri Chinchwad Municipal Corporation, a municipal council established in 1970 was elevated to a Municipal Corporation in 1982. Major responsibilities of PCMC are to look after the civic and infrastructural needs of the citizens of the Pune.

Owner of the proposed facility - PCMC coordinates the Bio-Medical Waste treatment operation within the PCMC limits and adjoining area through its Health, Department. PCMC carries out periodic registration drives for registration of healthcare facilities (generators of Bio-Medical waste) starting from ward office level upwards in close coordination with Medical Department and Sanitary Inspectors. It carries out activities such as registration of healthcare facilities, payment collection and training on segregation of Bio-Medical waste, etc.

Operator of the proposed facility - Passco Environmental Solutions Pvt. Ltd., incorporated in 2005 is operating a common BMW treatment, storage and disposal facility of waste management having existing capacity 657 MT/year inside Yashwantrao Chavan Memorial (YCM) Hospital, Santa Tukaram Nagar, Pimpri, Pune under valid permissions of the Maharashtra Pollution Control Board. PCMC and PESPL are now proposing to shut down the YCM Hospital facility and setup a new higher-capacity better technology CBMWTSDF over a 4000 $m^2$ land within the presently operational Waste Processing Yard of PCMC near Moshi village on Gut no 458/460/461.

The proposed CBMWTSDF will cater to the entire activity-span of the Bio-Medical waste management, which includes collection, storage, transportation treatment and disposal of the Bio-Medical waste in a centralized facility.

**Table 1. Summary Technical Details of the Proposed** CBMWTSDF

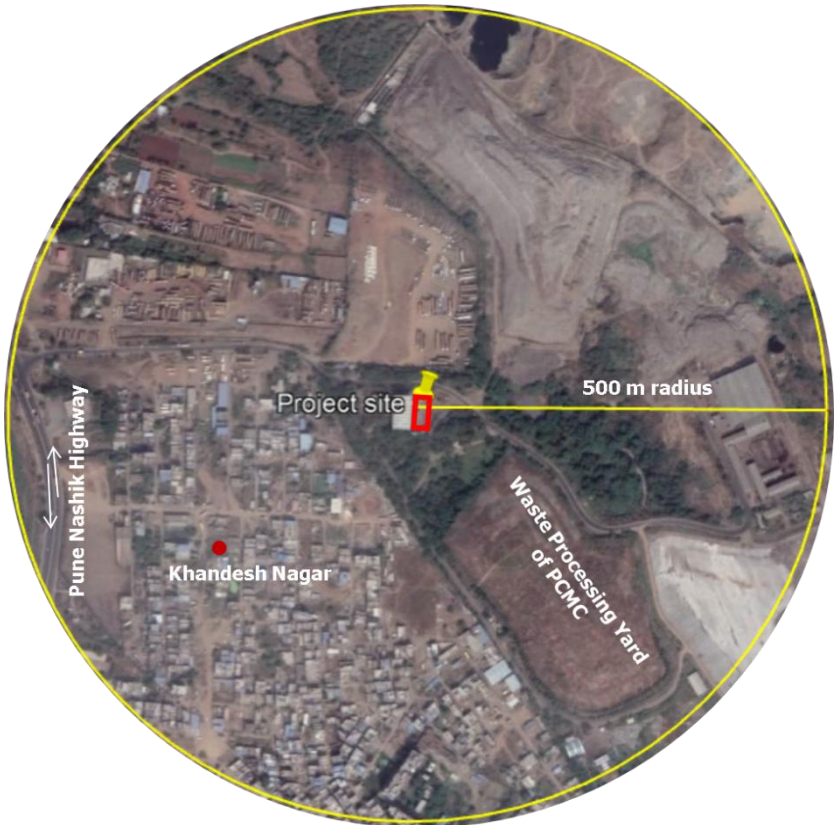
| Sr. No. | Parameters | Description |
|---|---|---|
| 1 | Project Proponent | Pimpri Chinchwad Municipal Corporation (Owner of the facility)<br>and<br>Passco Environmental Solutions Pvt. Ltd. (Operator of the facility) |
| 2 | Plot size | 4000 $m^2$ land within the Waste Processing Yard of PCMC, Moshi<br>Land leased to Passco Environmental Solutions Pvt. Ltd.<br>Site approved by MPCB for waste treatment and disposal |
| 3 | Proposed plant capacity | 985.5 MT/year for incineration<br>657 MT/year for autoclaving<br><br>Incinerator - 150 kg/hr<br>Autoclave – (Two numbers) 50 kg/hr<br>Shredder - 100 kg/hr<br>ETP - 10 $m^3$/batch |
| 4 | Water requirement | Construction phase approx. 5 KLD<br>Operation phase approx. 31 KLD |
| 5 | Source of water | Pimpri Chinchwad Municipal Corporation piped raw water supply |
| 6 | Wastewater | Waste water generated from the treatment of Bio-Medical wastes during incinerator flue gas cleaning (scrubbers), autoclaving (jacked bleed), washing of floors, vehicle cargo bed washing, etc. shall be treated in an effluent treatment plant and reused in the process (scrubber media makeup) |
| 7 | Manpower | Construction phase - 20 person from local/nearby habitations<br>operation phase - 15semiskilled/skilled local persons |
| 8 | Electricity/power requirement | During construction phase - 15 kVA, three phase power available at site<br>During operation phase – 100 kVA supply from the site, source MSEDCL<br>In case of power failure DG Set will be used (100 kVA capacity) |
| 9 | Cost of project | Approx. Rs. 3.75Crores |

## 1.2 Need for the Project

The presently operational facility at YCM Hospital compound is old and has frequent downtime for maintenance. The site does not have any room for expansion. The facility is operating at its design capacity leaving no room for management of operational contingency. In addition, newer standards of treatment and disposal as prescribed in the Bio-Medical Waste Management Rules, 2016 necessitate replacement of the old hardware with latest state-of-art equipment.

Nearest railway station – Chinchwad Station is 6.8 km from the proposed site. Pune airport is about 10 km from the site. Indrayani River is 2.5 km far from site.

**Figure 1. Site Key Location and Immediate Neighbourhood**




## 1.3 Project Activities

Bio-Medical waste will be segregated in colour coded and bar coded plastic bags and/or containers by the various Health Care Facilities (generators of Bio-Medical waste). The waste will be collected from the waste generators, will be transported in specially designed, GPS tracked, closed vehicle to the proposed CBMWTSDF for treatment and disposal in accordance. The entire process of waste segregation, collection, transportation, treatment and disposal, in addition to operation of the CBMWTSDF , operational and environmental monitoring and maintenance of records and reporting will be carried out in accordance with Bio-Medical Waste Management Rules, 2016.

## 1.4 Utility Requirement

### A. Water

Raw water to the tune of 5 kld will be required during construction phase for construction, concrete curing and dust suppression activities. Procured mineral water will be used for human consumption. About 31 kld raw water will be used during operation of CBMWTSDF. About 10 kld water will be recycled from the ETP back to the process. Raw water will be supplied by PCMC. The unit will discharge only domestic effluent. The closed loop system for process water will ensures zero discharge of effluent.

### B. Power

Power demand for construction phase is estimated at 15 kVA. Three phase power is available at the site. During operation phase about 100 kVA power will be needed. Power will be supplied by MSEDCL. A DG of 100 KVA capacity is proposed as stand by power source.

**C. Fuel**

HSD/LDO will be used as a fuel in the CBMWTSDF. Fuel requirement for this plant will be about 570 l/day (HSD basis) for incineration. Fuel consumption in the standby DG will base on actual usage. Switching over to better fuels such as natural gas will be possible in future based on availability.

### 1.5 Description of Pollution Control Measures

Pollution control systems are an integral part of the proposed CBMWTSDF. All pollution control systems will adhere to requirements of the Bio-Medical Waste Management Rules, 2016.

**A. Management of Liquid Waste**

Water discharged from the process of wet scrubbing of flue gas generated by incinerator will be collected in the seal pit and treated in a 10 m3/batch ETP based on primary treatment. The effluent will be put through screening and alkali-alum flocculation system (in a reactor cum settling tank). Clarified water will be reused for scrubber medium preparation.

**B. Air Emissions**

The incinerator will have a two stage alkali scrubbing system and a rubber lined MS stack of 30 m height. The DG set will be fitted with 8 m tall stack. Both equipment will comply with MPCB Consent to Operate.

**C. Solid Waste**

Solid waste generation during wastewater treatment (ETP sludge) and treatment of CBMWTSDF (incineration ash) will be disposed to the CHWTSDF site at Ranjangaon in accordance with Hazardous and Other Waste (Management, and Transboundary Movement) Rules, 2016. Plastic waste after treatment (disinfection and shredding) will be given to registered recyclers as prescribed in the Bio-Medical Waste Management Rules, 2016.

### 1.6 Application for Environmental Clearance

The project falls under Category "B", activity 7 (da) as per EIA Notification dated 14th September, 2006 and its subsequent amendment dated 17th April 2015 under Bio-Medical Waste Treatment Facilities. Application for EC was submitted on MoEFCC online portal on 27th April, 2016. The project was heard by the State EAC – I for ToR for EIA approval in its 127$^{th}$ meeting held on 13$^{th}$ May, 2016 at Mumbai in which additional ToRs for conducting EIA were issued. The EIA report is based on environmental baseline study conducted in summer season of 2016.

## 02. Description of Environment

### 2.1 Study Area

The study area for the Integrated Common Bio-Medical Waste Treatment Facility is taken as an area within 10 km radius from the approximate center of the project site. Baseline monitoring for environmental parameters were carried out in the summer season (March, April and May) 2016.

### 2.2 Study Components and Methodology

Following components of the environment have been scopes as valued for establishment of baseline environmental status for EIA study for the Project, and have been studied in commensurate details in accordance with nature of the project and its potential impact on the environment.

(a) Site Topography - based on SOI Toposheet, elevations and drainages
(b) Regional Geology - based on published information
(c) Land use - based on satellite imagery acquired on 4$^{th}$ December, 2016. Land use determination using GIS applications and ground truthing
(d) Weather and Climate - based on IMD data
(e) Air environment – based on AAQ monitoring for scoped parameters relevant to the project at seven locations in the within 10 km of the project site out of which three stations were in downwind direction.
(f) Noise - based on AAQ monitoring at all seven AAQ stations within 10 km of the Project site

(g) Water environment (surface and ground water) – based on grab sampling of Indrayani river located at north east of the project site and other seven water bodies in the vicinity of project site for surface water and sixlocations for ground water (borewell)
(h) Soils – based on analysis of four samples taken from site and vicinity
(i) Ecology and Biodiversity – based on qualitative survey of biological components at the site and its immediate vicinity
(j) Socio Economic status - based on Census of India and other secondary data

The environmental components considered valued and relevant in the scoping stage of the EIA have been described in detail in the Chapter 3 of the EIA Report.

## 2.3 Establishment of Baseline for Valued Environmental Components, as Identified in the Scope

The project site is about 2.5 km south of river Indrayani. Indrayani is a rain-fed river which originates in the Western Ghats at Kurvande village near Lonavla, Pune district. It follows a course mostly to north of the Pune city. The project site lies in the micro-watershed of the Indrayani with site slopes gradually leading to the river at north and west.

The land use of the impact area of the project has been presented in the form of maps prepared from IRSP6 LISS III imagery of May 2016, procured from the National Remote Sensing Agency (NRSA), Hyderabad. Major land use percentages of the 10 km impact area is Built-up Land 18.55%, Industrial Land 25.99 %, Barren/Uncultivable/Waste Lands/Scrub Land 36.10%, Forest Land 3.42%, Water body 1.76%, Agricultural Crop Land 13.42% and Mine/ Quarry 0.75%.

Pune experiences a tropical wet and dry climate. Summer, monsoon and winter are the major seasons. The summer season is experienced mostly during the months of March to May with April being the hottest month. Average annual precipitation during the monsoon is about 722 mm. More than 90% of the rain falls between June to September. Cloudiness rapidly decreases after the monsoon period and the sky is mostly clear or sparsely clouded till May. Moderate windy conditions prevail all through the year.

## 2.4 Air Environment

Air quality of larger Pune city including areas under PCMC is like of any other metro city, deteriorating, because of re-suspended dust, vehicular emissions and construction generated pollutants. The monitoring stations for Ambient Air Quality (AAQ) study were chosen based on the predominant wind directions. Habitations as most sensitive receptors of the air pollution were given priority over other receptors for the AAQ. Out of seven monitoring stations, three were selected in the downward wind direction. AAQ of the project site and selected locations was established by carrying out primary survey within the study area in summer, 2016 (March, April and May).

**Table 2. Summary of AAQ in the Study Area**

| Sampling Point | Location | | $PM_{10}$ ($\mu g/m^3$) | $PM_{2.5}$ ($\mu g/m^3$) | $SO_2$ ($\mu g/m^3$) | NOx ($\mu g/m^3$) |
|---|---|---|---|---|---|---|
| AAQ1 | Project Site | Average | 74.6 | 48.9 | 40.3 | 62.1 |
| AAQ2 | Near Pune Nasik Highway NH 50 | Average | 87.2 | 52.8 | 30.5 | 53.0 |
| AAQ3 | Near Green building products | Average | 80.0 | 47.9 | 38.0 | 51.4 |
| AAQ4 | Moshi Village | Average | 71.9 | 45.0 | 40.1 | 46.5 |
| AAQ5 | Charholi Budruk | Average | 58.5 | 46.5 | 29.4 | 52.5 |
| AAQ6 | Sayajinath Maharaj School | Average | 52.8 | 48.0 | 33.8 | 58.7 |
| AAQ7 | Near Tata Motors plant | Average | 74.6 | 49.0 | 53.1 | 47.8 |
| NAAQS, 2009 Standards | | 24 hourly avg. | 100 | 60 | 80 | 80 |

AAQ results indicate insignificant differentiation of pollutant concentration between the sampling stations. Particulate in almost all the locations are close to NAAQS limits owing to re-suspended particles, construction,

vehicular emissions, etc, which is typical of mixed use urban airshed. The concentration of $NO_x$ and $SO_2$ were also high in some station near industrial activity, for example near Tata Motors plant. All the other pollutant parameters were well below the limits or below detectable limits.

## 2.5 Noise Environment

Baseline noise monitoring studies were carried out at seven stations around the proposed project site within 10 km using a calibrated noise meter per CPCB/IS standards. Noise monitoring was carried out on a week-day on all the AAQ stations. Noise at Near Pune Nasik Highway NH 50 and Near Green Building Products were little high compared to the standards of silent zone. The higher noise levels at residential areas were mainly due to the contributions from traffic and other industrial/commercial operations. Noise readings for day and night (residential and industrial) are summarily within noise standards.

## 2.6 Surface Water

Surface water was sampled from Indrayani river and seven other surface water sources (rivers and ponds/lakes) falling within the 10 km impact area of the project. The surface water samples were collected and analyzed for pollution parameters as these are not used as drinking water sources.

**Table 3. Surface Water Monitoring Results** (summary parameters)

| Parameter | Pawana River | Mula River | Indriyani River | IS 10500, 2012 (Acceptable limit) |
|---|---|---|---|---|
| pH | 8.32 | 8.56 | 7.8 | 6.5-8.5 |
| BOD (mg/l) | 25 | 36 | 33 | NS |
| COD (mg/l) | 83 | 72 | 88 | NS |
| Total Dissolved Solids (mg/l) | 281 | 302 | 378 | 500 |
| Coliforms (/100ml) | Present, E coli positive | | | |

The river waters showed low DO and high BOD and COD, indicating untreated sewage draining into the river and getting mixed with the water. Presence of high number of coliforms also indicated the poor health of the river. The water samples from the ponds/lakes showed better condition than the river in terms of pollution parameters.

## 2.7 Ground Water

Ground water was sampled from bore wells at six locations within the 10 km impact area of the project to ascertain baseline status of the immediate project site (Project site, Bhim Nagar, St. Nagar, Kamble wada, Pimpri, Vitthalnagar). Analysis was carried out for relevant scoped parameters per IS 10500, 2012. The analyzed samples were within the limits prescribed in IS 105000:2012. Low Nitrate values and absence of coliform bacteria indicates that the samples were free from anthropogenic contamination.

## 2.8 Soil Quality

The samples were collected and analyzed for various physico-chemical parameters. The soil at the sampling stations varied from sandy silt to loamy, yellow to dark in colour. Soil pH was found to be neutral to slightly alkaline. Organic content was good in all locations. Micronutrients are found to be adequate. No heavy metal contamination (Lead, Mercury, Nickel, Boron) of soil was observed.

## 2.9 Ecology and Biodiversity

Pune city is located at 559 m from the mean sea level and is located at the confluence of Mula - Mutha Rivers. Geographical area of Pune city is 450.69 km2. Out of the total area falling in PCMC administrative boundary, 42.9 % is residential area, 0.3 % is commercial area, 18.2 % is industrial area, 21.4 is agricultural and under vegetation. (Proposed DP Post 1986, Environmental Status Report 2013-14, Town Planning Department, PCMC)

Pune district is divided into four agro-climatic zones as
Zone - 3: Western Ghat Zone
Zone - 4: Sub-Mountain Zone – Transition Zone-1 with red to reddish brown soils
Zone - 5: Western Maharashtra Plain Zone – Transition Zone-II with grayish black soils
Zone - 6: Scarcity Zone- with kharif - cum rabi cropping

Many rivulets and rivers like Mula, Mutha, Pawna originates in hill ranges on west of study area, flows east ward meeting Bhima, Krishna finally emptying into Bay of Bengal. At few places along the length of rivers, aquatic macrophytes were observed. Species observed were *Eichhorniacrassipes, Pistiastratiotes, Lemna sp., Azollapinnata, Alternantherasessilis, Persicariaglabra, Cyperuscompressus, Amaranthus tricolor,* etc. Published results of various studies and research papers on these riverine health indicates that due to various developmental activities in and around banks of Mula, Mutha and Pavana rivers the dominance of weed species are more common than natural vegetation clearly indicating the human activities influence in riverine vegetation.

Though, each above identified habitat experiences similar climatic conditions, they differ in edaphic conditions, location, use/interference of human and shows variation in floral composition. These members of flora support different kinds of common fauna associated with it. Floral and faunal species noted and observed/reported within study area are listed in the Chapter 3 of the EIA report.

### 2.10 Socio Economic Profile

The project is not likely to have any effect on the socio economic aspect of the nearby area. Summary demographic profile of the wards in the study area are given below.

**Table 4. Summary Socio Economic Properties of the Study Area** <these figures may please be looked at by PCMC>

| Details | Study Area |
|---|---|
| Municipal Corporation | PCMC |
| Area (sq.km) | 170.50 |
| Number of households | 427,356 |
| Total Population | 1,727,692 |
| Male | 942,533 (54.55%) |
| Female | 785,159 (45.4%) |
| Total literates | 1,343,658 (77.7%) |
| Total main workers (male + female) | 629,863 (36.4%) |
| Persons in cultivation occupation | 5,868 (<0.1%) |

## 03. Anticipated Environmental Impacts and Mitigation Measures

### 3.1 Environmental Impacts due to Project Location

The Moshi Waste Processing Yard site has been used as a municipal waste dumping and later processing ground for more than a decade. Several waste processing activities such as (a) Plastic to Fuel, (b) Mechanical composting, (c) Vermicomposting, (d) Sanitary landfill, etc. are being carried out at the site. The site has requisite 4000 sq.m area required for the proposed CBMWTSDF. Setting up a CBMWTSDF site in the Waste Processing Yard will eliminate need for suitable open land for a stand-alone facility within the city. Being centrally located in the PCMC area, and nearer to most Hospitals/Nursing Homes and other waste generators, the proposed site provided better transportation economics and quicker waste acquisition time which is better from operational efficiency and effectiveness of infection control point of view.

The site is away from habitation and exerts no aesthetic and minimal operational footprint with respect to incineration stack emission and operational odor. Since it is away from the town, movement of waste disposal vehicles proposed during non-peak hours will not have a significant impact on the prevailing traffic scenario.

### 3.2 Environmental Impacts due to Project Construction

The project will entail civil work comprising construction of the building, equipment foundation, structural fabrication and cladding. Civil construction will also include boundary wall, gate room, storm water drains, internal vehicular pathways, storage sheds, amenities, ETP, etc. Disposal of excess soil from equipment/building foundations, construction debris will be carried out as instructed by the PCMC at sites identified by them. Transportation of construction material amounting to two - three trucks/day, few days of the month shall be carried out in covered trucks. Construction material will be stored at site with care (with water sprinkling or geotextile cover to eliminate dusting). Good construction phase housekeeping practices will be followed.

### 3.3 Environmental Impacts due to Project Design and Operation

The proposed CBMWTSDF will be designed and operated in accordance with requirements of Bio-Medical

Waste Management Rules, 2016 with proper treatment for all streams of pollutants, namely, emissions from incinerator, wastewater from autoclave jacket condensate and incinerator flue gas scrubbing and from chemical disinfection.

The proposed 150 kg/hr incinerator will be equipped with flue gas cleaning system and will meet the emission norms as specified in the Schedule II, part B of the Bio-Medical Waste Management Rules, 2016. This incinerator will be a continuous point source of emissions created by combustion of incinerable waste and low sulphur, BS IV compliant clean fuel (HSD).

Mathematical modelling for dispersal of pollutants in the atmosphere from the incinerator stack has been carried out on Gaussian Plume Model. The mathematical dispersion modelling exercise indicates negligible/less incremental pollutant levels at the first highest concentration at 250 m east - $SO_2$ 0.05 µg/$m^3$, $NO_x$ 6.41 µg/$m^3$, PM is 0.76 µg/$m^3$ and HCL is 0.76 µg /$m^3$.

Identification and quantitative evaluation of impacts from various construction and operation activities of the project on various attributes of the environment has been carried out by a weighted matrix method. Project activities which register adverse impacts on most number of environmental attributes are dust and noise generation and increased traffic during construction phase, additional traffic volume during the operation phase and emissions and discharge from operation of CBMWTSDF treatment hardware.

It is observed that most of the negative/adverse project impacts are related to construction phase activities and are short-term in nature. All of these impacts can be mitigated by following good construction practices.

The project would have a significant overall positive, long-term impact due to infrastructure development and new job opportunities, in addition to catering to the essential requirement of scientific disposal of Bio-Medical waste. Ecology and soil will improve due to extensive landscape and plantation of large number of trees on the site.

From the evaluation of the proposed project activities, with and without mitigation measures, it is found that even though there are negative impacts concerned mainly with the construction phase with proper mitigation measures, there is a significant positive impact on environment during operation phase. Specific impacts identified, likely from construction and operation activities, and their mitigation measures have been dealt with in detail in the Chapter 4 of the EIA Report.

# 04. Environmental Monitoring Programme

## 4.1 Technical Aspects of Monitoring

Environmental Monitoring for the proposed CBMWTSDF will be carried out in accordance with the BMW Management Rules, 2016. Summary of monitoring proposed to be carried out is as follows.

**Table 5. Environmental Monitoring during Decommissioning Phase**

| Sr. | Parameter | Location | Frequency |
|---|---|---|---|
| 1 | Ambient air quality – PM10, PM2.5, NOx and $SO_2$ | One ambient air quality monitoring station near the present facility gate | Minimum of 2 measurements in a month taken twice a week, 24 hourly |
| 2 | Noise | Above location | One, 24 hourly readings once on the day of AAQ monitoring |

**Table 6. Environmental Monitoring during Construction Phase**

| Sr. | Parameter | Location | Frequency |
|---|---|---|---|
| 1 | Ambient air quality – PM10, PM2.5, NOx and $SO_2$ | One ambient air quality monitoring station near the present facility gate | Minimum of 2 measurements in a month taken twice a week, 24 hourly |
| 2 | Noise | Above location | One, 24 hourly readings once on the day of AAQ monitoring |

**Table 7. Environmental Monitoring during Operation Phase**

| Sr. No. | Area of Monitoring | Sampling Locations | Parameters to be Analyzed | Frequency of Sampling |
|---|---|---|---|---|
| **Air Pollution Monitoring** (Ref: Bio-Medical Waste Management Rules, 2016, Schedule II, 1, B, and Note, (h)) | | | | |
| 1. | Stack Emission | Each stack | PM, $SO_2$, NOx, HCl, Hg and its compounds | Once in three months |
| 1a. | Stack Emission | Each stack | Total Dioxins and Furans | Once in an year |
| **Water Pollution Monitoring** (Ref: Bio-Medical Waste Management Rules, 2016, Schedule II, 8) | | | | |
| 4. | Liquid effluent | ETP outlet | pH, Suspended solids, Oil and grease, COD and/or as per consent of MPCB | Once in three months |
| | | | Bio-assay test | Once in six months |

Procurement of environmental monitoring services will be done on an annual basis from laboratory (ies) recognized under Environmental (Protection) Act, 1986, or NABL accredited laboratory (ies).

# 05. Additional Studies

## 5.1 Risk Assessment

Incineration and autoclaving are potential hazardous operations owing to following reasons.

a. Storage, handling and treatment of infections wastes
b. High temperature operations of incinerator, potential for pressure build up in the system due to fuel surge or occlusion of flue gas path
c. High pressure operation of autoclave
d. Storage of fuels and chemicals (HSD/LDO, caustic lye, sodium hypochlorite and alum)

Safety systems are built in features of all the hardware proposed in the CBMWTSDF. Key safety systems integral to the hardware are as follows.

a. Incinerator - PLC controlled pressure/temperature sensing based fuel introduction, emergency shutdown mode, explosion flaps in the flue gas train, etc.
b. Autoclave - Pressure release valve

Incidences of offsite nature with any likelihood of adverse impact on public health are unlikely. An emergency containment protocol is in place for any event of loss of containment of infectious ~~infections~~ waste during transport of wastes. A quantitative Risk Assessment involving identification of credible loss scenarios, consequence analysis and overlapping the consequence footprints over the BMW TF site has been carried out. Loss of containment of a 200 l MS drum of HSD has been modelled for pool fire. The fire flame distance from the source is approx. 35 m. The fire can be fought with a non-protein foam type portable extinguisher.

## 5.2 Social Impacts

Proposed setting up of CBMWTF will utilize a vacant piece of land inside the Moshi Waste Processing Yard - an area earmarked in town planning exercise for setting up scientific wastes processing and disposal activities. The proposed activity will not involve any land acquisition or displacement of habitations, therefore general negative impacts associated with any green field project such as loss of land (agricultural or residential) of existing occupants is not associated with the project. Proposed expansion of CBMWTSDF will lead to added secondary and tertiary benefits due to opportunity for economic activity and employment creation during construction and operation phase of the Project.

# 06. Project Benefits

This project is aimed at treatment of Bio-Medical Waste to reduce it is adverse impact on the environment. Thus this project is project for Environmental Control. The most basic benefit of the proposed CBMWTSDF will be scientific collection, treatment and disposal of Bio-Medical waste in a scientific manner and in compliance with the recently revised, stringent BMW Management Rules, 2016. All the basis infrastructure necessary for operation of the CBMWTSDF are available in the Moshi Waste Processing Yard of PCMC – a site designated for processing and disposal of wastes. Thus, there will not be any tangible additional stress over the physical infrastructure of the site and surrounding civic infrastructure.

The site will employ 12 semi-skilled person and 3 skilled persons. The facility will continue to employ the present, trained employees working at the YCM Hospital facility for the new CBMWTSDF. Improved collection and disposal of Bio-Medical waste in the PCMC and adjoining area will be the intangible improvement in social service delivery due to the project.

The project will generate direct employment/hire opportunity for about 12 laborers and 8 technicians during eighteen to twenty-four months construction period of the facility.

## 07. Environmental Management Plan

EMP for the project will be systematically implemented by two distinct Environment Management teams during construction and operation phase. Environment Management teams for construction phase and operation phase as well as responsibilities of the various persons in the EM Team are listed in detail in Chapter 10 of the EIA Report.

Summary Environment Management actions during construction phase will comprise the following:

- Ensuring zero environment and safety incidences on the site
- Compliance of Environmental Clearance and other statutory permissions, communication of the same to statutory agencies during construction phase
- Drafting contract document with contractors, ensuring site environment and safety responsibility clearly spelt out with frequency and mode of reporting, and penalty and encouragement clauses
- Proper barricading extent for any activity in the construction zone
- Medical attention in case of any injury
- Zero environmental and safety incidences while unloading, storage, site fabrication, erection and commission of all hardware
- To ensure that all utilities (power, water, sewage evacuation, storm water, etc.) are made available in an environmentally acceptable and safe manner at the battery limit of the construction site
- To ensure good construction practices and environmental safeguards during construction activities
- Implementation of fire safety plan, working at heights plan, excavation plan, lock and tag out plan, confined space entry plan, machine guarding, power tools safety, electrical safety, ergonomics, availability of PPE, medical evacuation preparedness, availability of portable fire extinguishers stocking of first aid boxes, maintenance of labor amenities

Summary Environment Management actions during operation phase will comprise the following.

- Training of the healthcare facilities (generators of Bio-Medical waste) in proper segregation of BMW at source in accordance with BMW Management Rules, 2016
- Collection of wastes in accordance with bar coded bags, ensuring proper segregation of wastes according to color codes
- Adherence of all provision of the BMW Management Rules, 2016
- Proper SOPs for logistics operations pertaining to collecting vehicles operation, rounds to collect all wastes in most trip-economy manner
- Adherence to system for receipt of waste and incoming storage, receipt, tagging/bar code reading, storage and timely forwarding of the waste for treatment (incineration/autoclaving)
- Proper vehicle fleet maintenance and management, cleaning and upkeep
- All statutory compliances (MPCB C to O and Maharashtra EIAA EC)
- Prompt response to any offsite loss of containment of wastes (site of generation/collection and transportation) in accordance with SOP
- Statutorily compliant operation of the installed treatment hardware in the CBMWTSDF, proper maintenance, upkeep and preventive maintenance of the hardware

- Proper operation of ETP and scrubber
- Maintenances of records in accordance with BMW Management Rules, 2016
- Stocking of scrubbing medium and coagulation compounds
- Coordinate with the Incinerator and Autoclave Operator for monthly pollution monitoring from 3rd party laboratories, chemical analysis in the site laboratory to ensure proper operation of the scrubber and ETP
- Maintain greenbelt through on-contract horticulture agency
- Maintain overall site, storm water drains, municipal solid waste, rainwater recharge, and other Environment management system

**Figure 2. Environment Management Team for Construction and Operation Phase**