

**GOA STATE ENVIRONMENT IMPACT ASSESSMENT AUTHORITY**

**EIA-Goa State Secretariat,**  
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No: 3 – 181 – 2010/STE-DIR/181

Date: 06<sup>th</sup> January 2020

To,

**The Managing Director,**  
Goa Waste Management Corporation,  
Saligao Plateau,  
Saligao, Bardez, Goa 403 511.

**Sub: Proposed establishment of 250 TPD +20% of the Solid Waste Management Facility at Bainguinim, Tiswadi Taluka, North Goa - Issuance of the Prior Environmental Clearance (EC) – Reg.**

**Ref:**

- (1) Your application letter dated 06/12/2017 for environmental clearance for proposed enhancement of existing capacity from 100 TPD to 250 TPD +20% of the Integrated Solid Waste Management Facility of Solid Waste Management Plant at Bainguinim, Tiswadi Taluka, North Goa .
- (2) Revised TORs dated 17/05/2018 issued to Goa Waste Management Corporation (GWMC).
- (3) Final EIA report of 15/11/2019 submitted by the Project Proponent (GWMC) including response submitted by PP to the suggestions and objections raised by public during public hearing.

Whereas the Goa Waste Management Corporations, approached this Authority (*i.e. Goa-SEIAA*), seeking prior environmental clearance (EC) for proposed establishment of **250 TPD +20%** of the Solid Waste Management Facility at survey nos. 20 Sub Division no-1-I, 3-A-1, 2-A, of village Bainginium. (Old Survey no 20/1 (P), 20/2 (P) and 20/3-A (P) Tiswadi Taluka, North, Goa.

During 93<sup>rd</sup> Goa-SEAC meeting held on 10<sup>th</sup> May 2018 the said application (*i.e. Form-I*) along with enclosed information was screened and appraised under Category 7 (i) of Common Municipal Solid Waste Management, as per the Schedule annexed to the EIA Notification, 2006 (*as amended*) and terms of reference were issued for conducting Rapid Environmental Impact Assessment study for establishing a Integrated Solid Waste Management Facility (ISWMF) for 250 + 20% TPD on 17/05/2018.

And whereas a final Environmental Impact Assessment (EIA) Report has been prepared by M/s NEERI, Nagpur and submitted before the Goa-SEAC on 15/11/2019 as well as this Authority. PP along with its 'CSIR' consultant **National Environmental Engineering Research Institute (NEERI), Nagpur** presented detailed technical presentation before Goa-

SEAC during its 108<sup>th</sup> meeting held on 1<sup>st</sup> October 2019; Accordingly Site visit/inspection was conducted by Goa-SEAC on 21<sup>st</sup> November 2019.

The Goa SEAC during its 109<sup>th</sup> meeting held on 21<sup>st</sup> November 2019 considered the matter from all necessary and relevant angles and after perusal of the Environmental Impact Assessment (EIA) report prepared by M/s NEERI, Nagpur, by taking into consideration the response submitted by PP to the suggestions and objections raised by public during public hearing the committee decided to recommended the said proposal to Goa-SEIAA for grant of Environmental clearance (EC) under the provision of (EIA) Notification 2006,*(as amended till date)*.

Proposed quantity to be handled and equipment's proposed by Project proponent is as follows:

(a) **Quality of Input Waste:**

The proposed CMSWMF has been designed for the following characteristics of waste:

Sr. No.	Type of Waste	Qty. TPD
1	Segregated Dry Waste	50
2	Segregated Wet Waste	150
3	Mixed Waste	50
	<b>Total</b>	<b>250</b>

(b) **Performance from the Facility:**

The proposed CMSWMF shall comply with **The Solid Waste Management Rules, 2016** prescribed by **Ministry of Environment, Forests and Climate Change, Government of India**. It shall be designed to be able to treat 250 + 20% TPD waste daily and shall produce the output as follows:

(c) **Quality of Input Waste:**

The proposed CMSWMF at Bainguinim has been designed for the following characteristics of waste:

Sr. No.	Type of Waste	Qty. TPD
1	Segregated Dry Waste	50
2	Segregated Wet Waste	150
3	Mixed Waste	50
	<b>Total</b>	<b>250</b>

(d) **Guaranteed Performance from the Facility:**

The proposed CMSWMF shall comply with **The Solid Waste Management Rules, 2016** prescribed by **Ministry of Environment, Forests and Climate Change, Government of India**. It shall be designed to be able to treat 250 + 20% TPD waste daily and shall produce the output as follows:

Sr. No.	Output	Utilization
1	Recyclables	Recyclables shall be recovered as much as possible and routed through appropriate recycling vendors.
2	Refused Derived Fuel (RDF)	The RDF shall be disposed in an environmentally safe and sustainable manner in the nearby Cement Plants for co-processing where it shall be combusted in Cement Kilns at a temperature >1100 °C with no residues, thus eliminating the need for a Landfill for ash disposal.
3	Electricity	<ul style="list-style-type: none"><li>• Electricity generated from Bio methanation plant shall be utilized to run the entire facility.</li><li>• Surplus electricity shall be exported to the Electricity Grid .</li></ul>
4	Compost	<ul style="list-style-type: none"><li>• Compost shall be sold to local farmers and/or nearby Fertilizer Industry or to be used for social forestry.</li><li>• Alternatively, the Dried Pallet shall be used as fuel to generate heat.</li></ul>
6	Inert	<ul style="list-style-type: none"><li>• Inert fraction shall be disposed in the Sanitary Landfill Facility (SLF) which will be less than 10% of the total waste received at site.</li><li>• Alternatively, inert fraction shall be used as a filling material in reclamation of low-lying area.</li></ul>

Whereas this Authority conducted site inspection of the proposed site on 27<sup>th</sup> December 2019 and during its 50<sup>th</sup> meeting held on 27<sup>th</sup> December 2019, has perused the entire EIA report prepared by M/s NEERI, Nagpur including site specific conditions and all other relevant and material factors including the recommendations of the Goa-SEAC, accordingly this Authority has decided to accord prior Environmental Clearance (EC) to the said project in accordance with the provisions of the Environmental Impact Assessment (EIA) Notification 2006, subject to compliance of the following **General Conditions**

1. A Centralized Integrated Solid Waste Management Facility (ISWMF) provisions for MRF Facility, Bio-methanation system along with gas engines, In-Vessel Composting system, Sanitary Landfill, Mobile vehicles, workshop, Facility centre for operators, having canteen, shower area and medical room, Administration building, laboratory, Resource centre, Car & Vehicle parks, effluent treatment and recycle plant, road network, peripheral drains, green buffer belt, site & street lighting, ESR, fire water system, bore well, ground water monitoring wells and plant fencing. The ISWM facility shall comply with the Solid Waste Management Rules, 2016.
2. Complete facility to have automatic operation and a PLC/Scada control from a central control station.
3. Centralized Material recovery facility for recovering recyclables out of the non biodegradable component of city waste with provisions for screening, manual sorting on a conveyor belt, magnetic separator, bailing, packing and storage facilities.

4. Biodegradable fraction shall be extruded, and converted into bio-gas/electricity using anaerobic bio-methanation technology. The residue/Sludge shall be composted using completely enclosed rotating in-vessel composting drums followed by storage, screening and bagging operation.
5. PP should comply with the terms and conditions as stipulated by the Goa State Pollution Control Board (GSPCB) while issuing Consent to establish under the Air and Water Acts as well as Authorization issued under the Solid Waste Management Rules, 2016.
6. PP should prioritize the issues related to health and hygiene in complying with the matters related to waste disposal & treatment / air & water pollution / waste-water management.
7. PP should not disturb the natural drainage and as far as possible maintain the original topography while designing for landscape development by planting local site-specific plant species and which are not alien to the local environment. In any case, no varieties of *acacia* be used either as avenue plantations or as live-fencing.
8. PP should also submit half-yearly compliance report(s) in hard as well as soft copy format to the Authority for the period upto project completion so as to enable project monitoring during the construction phase.
9. All waste shall be handled under closed sheds with proper lighting and ventilation arrangement.
10. A separate storage shed shall be provided to store RDF, Recyclable & Compost.
11. A separate Tree Mulcher and shredder shall be added to mulch green cuts and garden waste.
12. A proper drainage system shall be provided to convey the wash water & spillage from the existing as well as from the proposed units of the facility, to the proposed ETP. There shall be no spill over of such effluent into the Storm water drain. The Storm water drain shall be specifically for the rain water system and it shall be free from any effluent / wash water at any point of time.
13. The project proponent shall ensure that the number of trucks carrying waste from the proposed waste catchments area and reaching the MSW processing facility shall be minimum in numbers. Transportation of wastes to be undertaken in closed trucks to ensure minimum number of trucks engaged to transport the waste.

14. A Report on energy conservation measures conforming to energy conservation norms finalized by Bureau of energy Efficiency should be prepared incorporating details about building materials and technology, R & U factors etc and submit to the State Expert Appraisal Committee and a copy to GSPCB in three months time.

**2. PP to follow General Conditions during construction Phase:**

1. Water demand during construction shall be reduced by use of curing agents, super plasticizers and other best construction practices and treated water from the STPs operated by SIDGIL.
2. Project proponent shall ensure that surrounding environment shall not be affected due to construction activity.
3. Construction materials shall be covered during transportation and regular water sprinkling shall be done in vulnerable areas for controlling fugitive emission as per CPCB guidelines.
4. Project Proponent should implement Dust mitigation measures for construction activities during construction in compliance to the guidelines issued by the CPCB in this regard.
5. All required sanitary and hygienic measures shall be provided before starting the construction activities and to be maintained throughout the construction phase.
6. First Aid Box shall be complied in letter and spirit.
7. The PP shall strictly comply with the building and other construction workers (Regulation of Employment) & conditions of service Act 1996. Local bye laws of concern Authority shall be complied in letter and spirit.
8. Ambient noise levels shall conform to residential standard both during day and night. Incremental pollution load on the ambient air & noise quality shall closely be monitored during construction phase.
9. Use of Diesel Generator (DG) sets during construction phase shall be strictly equipped with acoustic enclosure and shall conform to the EPA rules for air and noise emission standards.
10. Safe disposal of sewage and municipal solid wastes generated during the construction phase shall be ensured.

11. All top soil excavated during construction activity shall be used in horticultural/ landscape development within the project site.
12. Excavated earth to be generated during the construction phase shall be utilized within the premises to the maximum extent possible and balance quality of excavated earth shall be disposed off with the approval of the competent authority after taking the necessary precautions of general safety and health aspects. Disposal of the excavated earth during construction phase shall create adverse effect on neighboring communities.
13. PP shall ensure use of eco-friendly building materials including fly ash bricks , fly ash paver blocks, ready Mix concrete (RMC) and lead free paints in the project.
14. Fly ash be used in the construction wherever applicable as per provisions of fly ash Notification under the EP Act, 1986 and its subsequent amendments from time to time, regular supervision of the above and other measures for monitoring should be in place all through the construction phase , so as to avoid disturbance to all surroundings.
15. Personal Protective equipments (PPEs) shall be provided to workers and its usage shall be ensured and supervised.
16. Adequate drinking water and sanitary facilities should be provided for construction workers at the site. Provision should be made for mobile toilets. The safe disposal of waste water and solid waste generated during the construction phase should be ensured.
17. Rain water harvesting to make maximum use of natural rain water shall have to be adopted by the Project Proponent.

#### **A. Effluent Treatment Plant (ETP)**

All the wastewater generated from various sources e.g. washing of floors/mobile machinery and centrate from sludge de-watering equipment etc. Shall be treated into the proposed Effluent Treatment Plant (ETP) comprising Ammonia Stripping System, Equalization, Physico-chemical Treatment, Biological Treatment and Filtration System. The treated effluent shall be reused for cleaning, floor washing and gardening etc and the excess treated effluent shall be disposed to nearest STP. The plant shall have zero liquid discharge.

#### **B. EMP during Operational phase**

CMSWMF are recommended as follows:

- a) Regular monitoring of scrubbing system for purification of biogas provided by the equipment vendors prior to utilize in Biogas Genset, for power generation shall be should be monitored to ascertain for absence of SO<sub>2</sub> emissions.
- b) Biogas Genset and flare (during emergency condition) shall be operated with minimum excess air (controlled combustion using low NO<sub>x</sub> burners), so that fuel

combustion is optimized and emission of NO<sub>x</sub> is minimized Ambient air quality with respect to PM<sub>10</sub>, PM<sub>2.5</sub>, SO<sub>2</sub>, NO<sub>x</sub>, Ammonia, VOCs and CO should be monitored regularly at different sampling stations selected in consultation with Goa SPCB within the impact zone.

- c) The sampling stations should be selected based on the maximum ground level concentration anticipated and keeping maximum stations in the downwind direction and at least one in the upwind direction Port holes and sampling facilities should be provided at proper location in all the stacks for monitoring of flue gas at regular intervals.
- d) A weather monitoring station shall be operated continuously and regular data logging shall be done.
- e) Proper moisture, oxygen and C:N ratio shall be maintained to minimize the odour and to maintain adequate temperature in compost plant .
- f) Green belt shall be provided along the internal roads and plant boundary.
- g) To control fugitive emissions of VOCs / Odors, over and above the inbuilt measures of Bio-Scrubbers provided by the vendor along with the plant equipment.
- h) Ground water monitoring as per SWM Rules 2016 and as per compliance to consent to operate to be issued from GSPCB.

### **C. Biological Environment**

- a) Development of green belt with carefully selected (tolerant to air pollution) plant species is of prime importance due to their capacity to reduce noise and air pollution impacts by attenuation/assimilation and for providing food and habitat for local macro and micro fauna.
- b) For developing the greenbelt in and around proposed project site care need to be taken to plant the evergreen species. The planting of evergreen species Survival rate of the planted trees should be closely monitored and the trees may have certain advantages that may reduce the environmental pollution.
- c) The rainwater harvesting shall be practiced to the maximum possible extent which could not survive should be replaced by more tolerant species.
- d) Provision of land and adequate funds for strengthening of existing as well as additional plantation to create green belt of appropriate width as per CPCB guidelines should be made in the proposed project.
- e) Social awareness programme about the importance of conservation of flora and fauna need to be conducted. The tourists should be strictly warned to avoid throwing of non-degradable waste materials in the project area, so that ecosystem should not get harmed.
- f) Existing flora at site and in the quarries to be preserved to an extent possible and fencing to be provided around the quarry. However utilities with minimum damage to existing flora and fauna may be permitted.

### **D. Socio-economic Environment**

- a) PP should undertake regular environmental awareness programs to bring forth the beneficial aspects of the projects and environmental management measures being undertaken for improving their Quality of Life.
- b) Social welfare activities should be undertaken by the project proponent in collaboration with the local bodies and the information regarding the project activity and its plans, social welfare programme etc. should be circulated in the form of booklets and shown as audio-visually.
- c) In order to improve socio-economic status in slum area, the PP should consider extending welfare measures to the local people under the community development programme.

3. Further, the Authority decided to direct the PP to comply with the following **“Specific Conditions” during post-construction phase:-**

1. In view of the close proximity of the proposed facility to the Residential project the said facility of segregation and sorting etc should be established in completely enclosed shed with double doors and exhaust system with bio filters to control the odour.
  2. The PP will ensure that there is at least one more access made available to the proposed site
  3. The PP will ensure that the transportation of waste will be in closed trucks with leachate collection facility and minimum in numbers to the extent possible.
  4. The mitigation measures for odour control. The mitigation measures proposed to minimise odour are as follows:
  5. Maintaining proper air and moisture in the compost plant area.
  6. Covering the landfill area under operation daily with layer of earth, clay or a similar material.
  7. After visual inspection of waste and weighing at Weighbridge, the waste shall be delivered to the dedicated bunkers for each type of waste. It shall be a totally enclosed structure with Entry/Exit of Garbage Compactors, Floor Washing Connections, Drainage System, Lighting, negative Ventilation and the exhaust air within the Facility is passed through bio filters for odour control.
- 2) PP shall ensure completion of ETP, solid waste disposal facility, secured landfill green belt development prior to occupation of the buildings. No physical occupation of allotment will be given unless all above said environmental infra structure is installed and made functional including water requirement prior certification from appropriate authority shall be obtained.
  - 3) A complete set of all the documents submitted to Goa-SEIAA should be forwarded local authority, GSPCB and Planning authority.



- 4) In the case of any change(s) in the scope of the project, the project would require a fresh appraisal by the Goa-SEIAA.
- 5) Separate funds shall be allocated for implementation of environmental protection measures /EMP along with item wise breaks-up. The funds earmarked for the environment protection measures shall not be diverted for other purposes.
- 6) A copy of the environmental clearance letter shall be sent by PP to the concerned Village Panchayat and planning authority as applicable, from which suggestions / representation, if any, were received while processing the proposal. The EC letter shall also be put on the company's website by PP within one week time period from date of issue of environmental clearance.
- 7) The PP shall upload the status of the compliance of the stipulated EC conditions, including results of monitoring data on their website and shall update the same periodically. It shall simultaneously be sent to the Regional Office of the MoEF & CC, the respective Zonal office, CPCB and the GSPCB. The pollutant levels in respect of SPM, RSPM, SO<sub>2</sub> and NO<sub>x</sub> (*ambient levels as well as D.G. stack emissions*) shall be monitored.
- 8) The environmental statement for each financial year ending 31<sup>st</sup> March in Form-V is to be submitted to the GSPCB as prescribed under the Environment (*Protection*) Rules 1986 (as amended) and subsequently shall also be put on the company's website along with the status of the compliance of the EC conditions and shall also be sent to the respective Regional Office of the MoEF & CC.
- 9) Consent to Operate shall be obtained from GSPCB before operation, failing which the Environmental Clearance herein shall be deemed to be withdrawn.
- 10) Utilization of Diesel power generating sets is subject to power failure condition only. The DG sets proposed as a source of power back up during operation phase should be of enclosed type, low sulphur diesel run and conform to rules made under the Environment (Protection) Act, 1986. The DG sets should be subjected to periodic noise and stack monitoring in consultation with GSPCB. Waste/used diesel should be stored and managed as per the Hazardous and other Wastes (*Management & Transboundary Movement*) Rules, 2016 as amended.

- 11) Noise should be controlled to ensure that it does not exceed the prescribed standards both during day & night time.
- 12) The ground water drawl from existing/proposed bore wells if any should be done only with the prior permission of Ground Water Board. The ground water level and its quality should also be monitored regularly both during construction and operation phase in consultation with Ground Water Board.
- 13) Traffic congestion near the entry and exit points from the roads adjoining the project site must be avoided. Parking should be fully internalized and no public space should be utilized.
- 14) E-waste should be used properly collected and disposed off/ sent for recycling as per the prevailing guidelines/rules of the regulatory authority as per E-Waste Management Rules 2016.

2. Further this EC is issued without prejudice to the action initiated in the Environment (*Protection*) Act or any court case pending in the court of law. As such, it does not mean that the PP has not violated any environmental laws in the past and whatever decision under the said Act by the Honøble Court will be binding on the PP. **Hence, this environmental clearance does not give immunity to the PP in the case complaint is filed against, if any, or action initiated under the said Act.**

3. In case of submission of false document and non-compliance to any of the stipulated conditions, this Authority will revoke or suspend the EC without any intimation and initiate appropriate legal action under the Environment (*Protection*) Act, 1986 (*as amended till date*).

4. E-waste generated in the complex should be managed as per CPCB guidelines on E-waste management.

5. The Goa-SEIAA reserves their right to add any stringent condition or to revoke the environmental clearance, if conditions stipulated above are not implemented to the satisfaction of the Authority or for that matter, for any other administrative reasons.

6. **In addition**, the following conditions shall be specifically complied with:

1. Project proponent shall advertise at least in two local newspapers widely circulated in the region around the project, one of which shall be in the Konkani or Marathi language within **seven days** of receipt of this communication, informing that the proposed project has been accorded prior Environmental Clearance (EC) and the copies of the clearance letter will be available on the PP website.

2. **Validity of the Environmental Clearance (EC) accorded shall be for a period of 07 (seven) years from the date of its issue.**

3. These stipulations would be enforced among others under the provisions of Water (*Prevention and Control of Pollution*) Act, 1974, the Air (*Prevention and Control of Pollution*) Act 1981, the Environment (Protection) Act, 1986, the Public Liability (Insurance) Act, 1991 and EIA Notification, 2006.
4. In the case of any change(s) in the scope of the project, the project would require a fresh appraisal by State Environment Impact Assessment Authority.
5. Status of compliance to the various stipulated environmental conditions and environmental safeguards will be uploaded by the project proponent in its website.
6. PP to submit CER prescribed by MoEF & CC circular dated 1.5.2018 relevant to the area and people around the project or Environment Department may direct PP to undertake CER work in identified area as identified by Environment Department, Government of Goa.
7. PP to submit CER plan to municipal Commissioner/District Collector and submit the acknowledgment to Member Secretary.
8. Any appeal against this prior environmental clearance shall lie with the National Green Tribunal (NGT), if preferred, within 30 days as prescribed under Section 16 of the National Green Tribunal Act, 2010 (*Central Act 19 of 2010*).

*Yours faithfully,*

**Sd/-**

(Johnson Fernandes)

**Director Environment &  
Member Secretary, Goa-SEIAA**

*Copy for favour of information to:*

1. **Shri. Vivekanand L. Sawkar, (Chairman, Goa-SEIAA)**, F-2 Soares Enclave, Near Basilo's Health Club, St. Inez, Panaji, Goa.
2. **Prof. Suhas Godse, (Chairman, Goa-SEAC)**, H. No. 5258, Faket, Nr. Pandurang Temple, Opp. Workshop Taleigao, Goa
3. **P. A. to Principal Secretary (Environment)**, Secretariat, Porvorim, Goa.
4. **P. S. to Additional Secretary**, Ministry of Environment & Forests (MoEF), Paryavaran Bhavan, C.G.O. Complex, Lodhi Road, New Delhi - 110 510.
5. **Addl. Director General (C)**, Ministry of Environment & Forests (MoEF), Regional office (Southern Zone), Kendriya Sadan, IV floor, E & F Wings, 17<sup>th</sup> main road, 11<sup>th</sup> Block, Koramangala, Bengaluru-560034.
6. **Member Secretary**, Goa State Pollution Control Board (GSPCB), Opp Saligao Seminary, Saligao, Bardez, Goa.