



## ಕರ್ನಾಟಕ ರಾಜ್ಯ ಮಾಲಿನ್ಯ ನಿಯಂತ್ರಣ ಮಂಡಳಿ Karnataka State Pollution Control Board

“ಪರಿಸರ ಭವನ”, 1 ರಿಂದ 5ನೇ ಮಹಡಿಗಳು, ನಂ. 49, ಚರ್ಚ್ ಸ್ಟ್ರೀಟ್, ಬೆಂಗಳೂರು - 560 001, ಕರ್ನಾಟಕ ರಾಜ್ಯ, ಭಾರತ  
“Parisara Bhavan”, 1st to 5th Floor, # 49, Church Street, Bangalore - 560 001, Karnataka State, India

No.KSPCB/SEO-INFRA/STP-GUIDELINES/2020-21/ 5446

Date:

01 MAR 2021

### OFFICE MEMORANDUM ON STPs

Sub: Guidelines for Design and location of Sewage Treatment Plants (STPs)- Reg

- Ref: 1. Proceedings of the Technical Committee meeting held on 19/09/2020.  
2. IISc letter dated 12/10/2020  
3. The Government of Karnataka Notification No FEE 316 EPC 2015 on STPs dt. 19/01/2016

~~~~~

The Responsibility prescribed under the Section 24 and Section 25 of Water (Prevention and Control of Pollution) Act, 1974, indicates the wholesomeness water to be maintained in all the water bodies like River, Well, Lake, etc. Therefore, regulatory agency viz. Karnataka State Pollution Control Board (KSPCB), in exercise of its power has specified the mandatory condition to provide the Sewage Treatment Plants (STP) for a) Apartments with 20 Units and above or having a total built up area of 2,000 square meter including basement, b) Commercial constructions Projects (Commercials Complexes, office, IT related activities etc.) with total built up area of 2000 Square meter and above, c) Educational Institutions with or without Hostel facility having total built up area of 5.000 square meter and above and d) Townships and Area Development Projects with an area of 10 acres and above shall install STP.

The location of these STPs is equally important besides its Operation & Maintenance. It is observed that majority of STP's mainly of the Residential apartments are either not provided in the proper location leading to the frequent complaints by the residents about noise and odor nuisance. Also in many cases, the unit operations are not properly designed and the treatment technology is not properly adopted leading to non conformity to the standards prescribed by the Board. The Plant operators may not be aware of the functioning of various unit operations and this may result in discharge of untreated sewage which ultimately joins the water bodies and may also lead to seepage of water from the tanks thereby contaminating the ground water.



The violations observed in many instances indicated improper location leading to Noise, Smell, unapproachable passage entry etc. and attracted neighboring complaints, spillages/ illegal Cross connection of such sewage entering into the Groundwater.

In view of the above, general guidelines are framed considering various Environmental aspects and field conditions and are enclosed as Annexure-1. However, it is to be made clear that the guidelines are general in nature & may require certain modifications/ stringent practices to be adopted depending on the specific field conditions.

Hence ROs are hereby directed to advise the Project Proponents and also insist for best appropriate available technologies for implementation.

### **I. Sewage Treatment Plant Technologies**

The approved Technologies are:

- A) Activated Sludge Process(ASP) only in the case where the Sewage generated is 500 KL and above.
- B) Sequential Batch Reactor(SBR)
- C) Membrane Bio Reactor (MBR)
- D) Moving Bed Bio Reactor (MBBR) / Fluidized Aerobic Bed reactor (FAB)

Note: As and when new technologies are brought to the notice of the Board, the Technical committee review and decide if it can be adopted.



## II. Unit operation details for the above Technologies

| No. | Unit                                      | Activated Sludge Process(ASP)                                                                                                                                                                                                                                                 | Sequential Batch Reactor(SBR)                                                                                                                                                                 | Membrane Bio Reactor (MBR)                                                                                | Moving Bed Bio Reactor (MBBR) / Fluidized Aerobic Bed reactor (FAB)                                       |
|-----|-------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|
| 1   | Equalization Tank                         | Shall have a Minimum Holding Period of 8 hours                                                                                                                                                                                                                                | Shall have a Minimum Holding Period of 8 hours                                                                                                                                                | Shall have a Minimum Holding Period of 8 hours                                                            | Shall have a Minimum Holding Period of 8 hours                                                            |
| 2   | Anoxic Tank - To Achieve De-Nitrification | Return Activated sludge shall be pumped into the Anoxic Tank to achieve De-Nitrification                                                                                                                                                                                      | Sludge Recirculation Not required, however if the same is done by pumping the contents of the SBR Reactor back to the Pre-Aeration Tank, a better control on De-Nitrification can be achieved | Return Activated sludge shall be pumped into the Anoxic Tank to achieve De-Nitrification                  | Return Activated sludge shall be pumped into the Anoxic Tank to achieve De-Nitrification                  |
| 3   | Aeration Tank                             | Adequate care to be taken to ensure that higher DO is maintained in the Aeration Tank in excess of 4 mg/L                                                                                                                                                                     | Adequate care to be taken to ensure that higher DO is maintained in the Aeration Tank in excess of 4 mg/L                                                                                     | Adequate care to be taken to ensure that higher DO is maintained in the Aeration Tank in excess of 4 mg/L | Adequate care to be taken to ensure that higher DO is maintained in the Aeration Tank in excess of 4 mg/L |
| 4   | Membrane Tank                             | Not Required                                                                                                                                                                                                                                                                  | Not Required                                                                                                                                                                                  | The Membranes shall be replaced periodically as per the Manufacturers specifications                      | Not Required                                                                                              |
| 5   | Sludge Holding Tank                       | This tank shall be mandatorily provided, to hold the excess sludge prior to dewatering                                                                                                                                                                                        |                                                                                                                                                                                               |                                                                                                           |                                                                                                           |
| 6   | Final Treated Water Holding Tank          | A minimum of 2 days capacity (Design Capacity of STP) shall be provided to store and use the water in case of rainy seasons.                                                                                                                                                  |                                                                                                                                                                                               |                                                                                                           |                                                                                                           |
| 7   | Sludge Drying                             | The sludge drying beds and filter press shall not be used due to the operational issues. Horizontal centrifuge system shall be used for the STP of more than 500 KLD and Vertical centrifuge / Belt Press / Screw Press system shall be used for the STP of less than 500 KLD |                                                                                                                                                                                               |                                                                                                           |                                                                                                           |

