



## **Sewage Treatment Plant on Hybrid Annuity-PPP Mode**

The Government of India had accorded Cabinet approval to Hybrid Annuity-PPP model in January 2016 with 100% central sector funding. Under this model, the development, operation and maintenance of the sewage treatment STPs will be undertaken by a Special Purpose Vehicle (SPV) to be created by the winning bidder at the local level. As per this model, 40% of the Capital cost quoted would be paid on completion of construction while the remaining 60% of the cost will be paid over the 15 years life of the project as annuities along with operation and maintenance cost (O&M) expenses.

One of the most important features of this model is that both the Annuity and O&M payments are linked to the performance of the STP for 15 years period. This will ensure continued performance of the assets created due to better accountability, ownership and optimal performance. Hybrid Annuity based PPP model has been adopted for the first time in the country in sewage management sector. Such a model has earlier been adopted successfully in highway sector only.

The creation and maintenance of sewage treatment infrastructure under Hybrid Annuity based PPP model has taken off with NMCG awarding work to private sector for construction and maintenance of Sewage Treatment Plants (STPs) in two major cities in Ganga river basin - Varanasi and Haridwar.

Hybrid Annuity-PPP model, many national and international players have shown interest in NMCG projects. The consultative meetings and conferences with market players attracted large number of participants. More than 30 firms showed-up for pre-bid meetings of Varanasi and Haridwar projects. The selection of firms was based on lowest bid project cost for developing and operating the treatment infrastructure for a period of 15 years.

While the work to construct, operate and maintain a 50 MLD STP in Varanasi has been awarded to a consortium led by Indian infrastructure major - Essel Infra Projects Limited at an estimated cost of Rs 153.16 crore, HNB Engineers Private Ltd. has been awarded the work to develop, operate and maintain the total sewage treatment capacity of 82 MLD (68 MLD in Jagjeetpur + 14 MLD in Sarai) STPs in Haridwar at an estimated cost of Rs 171.53 crore.

The awarded projects would ensure that no untreated sewage waste water goes into river Ganga.

### **82 MLD STP Project in Haridwar**

Under this Project 68 MLD capacity sewage treatment plant was proposed at Jagjeetpur area and 14 MLD capacity sewage treatment plant was proposed at Sarai area. The bid document for these 2 STPs were prepared at NMCG level with the help of transaction adviser M/s IFC. The combined bid for these 2 STPs were received on 16 June 2017, Which was finalised with the help of M/s IFC and concessioner agreement was signed among NMCG, Uttarakhand Peyjal Nigam (Executing agency)

and winning bidder M/s HNB Engineers Pvt. Ltd. Pune on 11 oct 2017 in the presence of Hon'ble Minister for MoWR, RD & GR, Govt. of India and other dignitaries.



The certain condition precedence (CPs) was to be fulfilled by each of 3 parties before actual start of work for which 120 days were allotted in the bid document. After Fulfillment of respective condition precedence (CPs) by each of 3 parties, Effective date (Date of Start) was assigned as 19 Feb 2018 to Concessionaire firm M/s HNB Engineers Pvt. Ltd. Pune with completion schedule as follows:-

Sl.	Description	Duration
(i)	Capital works Completion	21 months (19-02-2018 to 18-11-2019)
(ii)	Trial & testing	03 months(19-11-2019 to 18-02-2020 )
(iii)	Operation & Maintenance Period	15 Years (With effective from 19-02-2020)

The construction activities for both the STPs were divided into 4 milestone no. 1, 2, 3 & 4. Each milestone consists of approximate 25% of construction of STP work. The target completion date for each milestone as per agreement and actual completion date for each milestone for both the STPs as on 15-05-2019 are as follows:

Sl. No.	Milestone	Details	Target Completion date as per Agreement	Completion Date of milestone as per ACTUAL	
				68 MLD STP	14 MLD STP
1	Milestone No.1	Initial 25 % completion of STP Capital works.	18-07-18	18-07-18	18-07-18
2	Milestone No. 2	Upto 50 % completion of STP capital works.	18-12-18	<b>29-11-2018</b>	20-10-2018
3	Milestone No. 3	Upto 75 % completion of STP works.	18-05-19	81% Progress, Will be achieved on time	28-02-19
4	Milestone No. 4	100 % completion of STP works.	18-11-19	-	93% Progress
5	Trial & testing (Duration of trial & testing is 3 months)		w.e. f. 19-11-2019 to 18-02-2020		Construction of process units of plant completed and unit wise trial & testing started on 30-04-2019.
6	Operation & Maintenance 15 Years		w.e.f. 19-02-2020 to 18-02-2035		Shall start After successful completion of trial run.

These STP are based on SBR technology, which involves complex installation of Electro-Mechanical equipments and designed to treat sewage upto parameters:-

Parameter	Unit	Value
pH	Mg/L	6.5-9.0
BOD	Mg/L	≤10
TSS	Mg/L	≤10
TN	Mg/L	≤10
NH4-N	Mg/L	≤5
COD	Mg/L	≤50
TP	Mg/L	≤2
Fecal Coliform	MPN/100 mL	<100

The stipulated date of commissioning of the 14 MLD STP Sarai as per Concessionaire agreement is 19-02-2020. The project is already more than 5 months ahead of their schedule date. Department and contractor both are trying their best efforts to commission 14 MLD STP by 31 July 2019, much before the stipulated date 19-02-2020. In the similar fashion, department and contractor both are trying their best efforts to commission 68 MLD STP, Jagjeetpur by 31 Dec 2019, much before the stipulated date 19-02-2020.

#### Photographs of STPs:



68 MLD STP, Jagjeetpur





**14 MLD STP, Sarai**