National Mission for Clean Ganga (NMCG)
Ministry of Water Resources, River Development & Ganga Rejuvenation, Govt. of India

The development of sewage treatment plant and associated infrastructure under Hybrid Annuity based PPP mode at Varanasi in the State of Uttar Pradesh

(LoA File Number: Rd-63014/1/2017/PPP/NMCG)

Monthly Progress Report
of
Project Engineer

August- 2022

Executing Agency	Funding Agency	Project Engineer	Concessionaire
Uttar Pradesh Jal Nigam, Varanasi - 221 005	**National Mission for Clean Ganga** MoWR, River Development & Ganga Rejuvenation, New Delhi - 110002	**Mahindra Consulting Engineers Limited** Mahindra Towers, No. 17/18, Pattullous Road, Chennai - 600 002, Tamil Nadu, India	**Varanasi STP Project Private Limited** 6th Floor, Plot No. 19, Film City, Sector 16 A, Gautam Buddha Nagar, Noida, Uttar Pradesh - 201 301

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MONTHLY PROGRESS REPORT

1.0. INTRODUCTION

The GoI, recognizing that long-term rejuvenation of the river Ganga will have significant social and economic benefits on the lives of the 500 million people living along its basin, has identified cleaning of the river Ganga as one of its priorities. For this purpose, in May 2015, the GoI approved the flagship Namami Gange programme for cleaning, rejuvenation, and protection of the river Ganga. In January 2016, the GoI approved a hybrid annuity model to implement STP projects under the Namami Gange programme on a PPP basis.

Subsequently, the MoWR issued the River Ganga (Rejuvenation, Protection and Management) Authorities Order, 2016 (Ganga 2016 Order) to constitute various authorities to assist the GoI in achieving its aim of effective abatement of pollution in the river Ganga. The Ganga 2016 Order applies to all states in the catchment of the river Ganga basin, including Uttar Pradesh. The Ganga 2016 Order revised the legal status of NMCG (which was initially constituted as a registered society under the Societies Registration Act, 1860) to an authority constituted under the Environment (Protection) Act, 1986 and designated NMCG as the nodal agency for the implementation of the Ganga 2016 Order.

Rapidly increasing population, rising standards of living and exponential growth of industrialisation and urbanisation have exposed water resources, in general, and rivers to various forms of degradation. The mighty Ganga is no exception. The deterioration in the water quality impacts the people immediately. Ganga, in some stretches, particularly during lean seasons has become unfit even for bathing. The threat of global climate change, the effect of glacial melt on Ganga flow and the impacts of infrastructural projects in the upper reaches of the river, raise issues that need a comprehensive response.

In the Ganga basin approximately 12,000 million litres per day (MLD) sewage is generated, for which presently there is a treatment capacity of only around 4,000 MLD. Approximately 3000 MLD of sewage is discharged into the mainstream of the river Ganga from the Class I & II towns located along the banks, against which treatment capacity of about 1000 MLD has been created till date.

The Uttar Pradesh Jal Nigam (Jal Nigam) is a statutory body constituted under the Uttar Pradesh Water Supply and Sewerage Act, 1975, and has the power to develop, maintain and regulate water supply and sewerage works in Uttar Pradesh. With a view to implement the Namami Gange programme and the Ganga 2016 Order, the Jal Nigam, in association with the NMCG, has decided to undertake the development of an STP with a proposed capacity of 50 MLD along with other Facilities and Associated Infrastructure at Varanasi on a PPP basis, through a hybrid annuity model. While the Jal Nigam will be the principal executing agency and bidding authority for the Project, NMCG will be responsible for making payments to the Concessionaire.

The objectives that NMCG and the UP Jal Nigam wish to achieve through the Project is mentioned in **Figure 1**.

Intercept raw sewage flowing into the river Ganga and divert the raw sewage to the Varanasi STP;

Treatment of the raw sewage at the Varanasi STP;

Implement viable technologies and international best practices for development, operation and maintenance of the Varanasi STP and other facilities and

Demonstrate large scale private sector participation and mobilisation of private sector investment to further the national aim of rejuvenation of the river Ganga.

Figure 1: Objectives of NMCG and UP JAL NIGAM

Government of India has approved the Namami Gange program as an integrated approach for effective abatement of pollution in river Ganga. As part of this and to ensure that no untreated domestic sewage flow into the river Ganga, various interventions are planned such as Interception & Diversion works and development & operation of Sewage Treatment Plants (STPs). Considering various development models in practice for the construction, operation and maintenance of Sewage Treatment Plants, Government of India has approved the Hybrid Annuity based Public Private Partnership (PPP) mode as one of the options for the development & operation of STPs. Under this model, private investor/developer will design, build, finance, operate and transfer the asset (STP) to the Project Executing Agency/Jal Nigam/Jal Sansthan / Urban Local body at the end of the Concession Period (say 15 years). 40% of the Capital cost will be paid to the developer during construction of the STP. Balance 60% along with Operation & Maintenance (O&M) cost will be paid over the Concession Period on achievement of key performance indicators as per the contract. Entire cost of development and operation of the STPs will be 100% funded by the Government of India as central sector scheme. It is also envisaged to explore the possibility of recycle/ reuse of the treated wastewater for non-potable purpose.

NMCG & UPJN appointed M/s. Mahindra Consulting Engineers Limited, Chennai as Project Engineer for this project through tendering process. Letter of Award is issued dated 5th January 2018 and agreement signed between the parties on 16th February 2018.

1.1. Project components

1.1.1. New construction units

- Inlet structure
- Grit chambers & Parshall flume
- SBR tanks
- Chlorine contact tank
- Overhead treated water tank
- Air blower room
- Belt filter press building
- Chlorination building
- Electrical building and control room
- Admin building, laboratory room
- Transformer yard, internal roads & drainage
- Treated water pump house
- Treated effluent disposal line
- Bund wall
- Staff quarters with 25KLD OHT
- Approach road

1.1.2. Rehabilitation works

- Rehabilitation of Main Pumping Station (MPS)
- Construction of Weir
- Strengthening & Pipe protection of Rising main
- Construction of Control room
- Rerouting the raising main near Samne Ghat

1.2. Executing agency

- Uttar Pradesh Jal Nigam (UPJN)

1.3. Implementation agency

- Uttar Pradesh Jal Nigam (UPJN)

1.4. Consulting services

- **Project Engineer**
  - Mahindra Consulting Engineers Ltd, Chennai

1.5. Concessionaire

- Varanasi STP Project Private Limited

2.0. STATUS OF PROJECT

STATUS	**:**	**OPERATION AND MAINTENANCE STAGE**
Concessionaire Contract Agreement No.	:	SUBIN-DLDL808403746727463415 31P
Name of the Concessionaire	:	Varanasi STP Project Pvt. Ltd.
Commencement date	:	19th February 2018
Completion date (as per contract)	:	18th November 2019
Commercial Operation Date (COD)	:	30th November 2021
O& M Commencement date	:	1st December 2021
O&M completion date (As per contract)	:	30th November 2036

Commercial Operation Date (COD) was announced by UPJN as per letter no. 2406/Namami Gange/292 dated 30th December 2021 based on the undertaking provided by the Concessionaire to complete the remaining pending works on or before 31st January 2022 and in case of failure, then the annuity and O&M payment shall be withheld until the completion of all works. Accordingly, O&M period starts from 1st December 2021.

2.1. Status of Pending works

Sl. No.	Pending Works	Jan 2022	Feb 2022	Mar 2022	Apr 2022	May 2022	June 2022	July 2022	August 2022	Remarks
1	Bund Wall at STP Premises									
a	Masonry drains	Pending	Pending	Pending	Pending	Completed	Completed	Completed	Completed	
b	Internal Stone Pitching	Pending	Pending	Pending	Pending	Completed	Completed	Completed	Completed	
c	Pathway	Pending	Pending	Pending	Pending	Completed	Completed	Completed	Completed	
d	Fencing and Lighting	Pending	Pending	Pending	Under Progress	Fencing Work Completed Lightening work yet to be Complete	Completed	Completed	Completed	
2	Earth filling and levelling at MPS	Completed	Completed	Completed	Completed	Completed	Completed	Completed	Completed	
3	EOT yet to erect for SAS, RAS PUMP, BLOWER, TWP, CHLORINE Tonner Room, BFP.	Pending	Pending	Pending	Pending	Pending	Pending	Completed	Completed	
4	Rising Main Strengthening Work (Stone Pitching(60M)	Pending	Pending	Pending	Pending	Pending	Pending	Completed	Completed	

Sl. No.	Pending Works	Jan 2022	Feb 2022	Mar 2022	Apr 2022	May 2022	June 2022	July 2022	August 2022	Remarks
	near Ganga Vihatori Colony)									
5	Outfall pipe strengthening Work	Pending	Pending	Pending	Pending	Pending	Completed	Completed	Completed	
6	Soak Pit for Security Building & Air blower Building	Pending	Completed	Completed	Completed	Completed	Completed	Completed	Completed	
7	Flow meter installation at Assi Nala weir	Pending	Pending	Pending	Pending	Pending	Completed	Completed	Completed	
8	EOT erection yet to Complete @ Dry Well	Pending	Pending	Pending	Pending	Pending	Completed	Completed	Completed	
9	The following operational issues need to be addressed on war footing basis									
a	Tap changer of Transformer No2 is not working due to	Pending	Pending	Pending	Pending	Completed	Completed	Completed	Completed	

Sl. No.	Pending Works	Jan 2022	Feb 2022	Mar 2022	Apr 2022	May 2022	June 2022	July 2022	August 2022	Remarks
	Motor Jamming problem.									
b	Solenoid Valve is not installed at air pipeline for all basins.	Pending	Pending	Pending	Pending	Completed	Completed	Completed	Completed	
c	MCCB of VFD panel for blower no 5 is damaged.	Pending	Pending	Pending	Completed	Completed	Completed	Completed	Completed	
d	34 no. of. lights are not working at SBR & PTU	Pending	Pending	Pending	Pending	Pending	Pending	Completed	Completed	
e	Plant Drain Sump Motor Erection & Pipe Connection yet to Complete	Pending	Pending	Pending	Pending	Pending	Completed	Completed	Completed	
f	DO and Temperature sensor of SBR Basin No.1 are not working Properly	Pending	Pending	Pending	Completed	Completed	Completed	Completed	Completed	
g	FRC sensor of CCT is Under maintenance.	Pending	Pending	Pending	Pending	Pending	Pending	Pending	Completed	

Sl. No.	Pending Works	Jan 2022	Feb 2022	Mar 2022	Apr 2022	May 2022	June 2022	July 2022	August 2022	Remarks
	(Membrane has damaged)									
h	HMI of blower room not Integrated into Main PLC.	Pending	Pending	Pending	Completed	Completed	Completed	Completed	Completed	
i	Display of Filtrate Pump-1 (VFD) is not installed	Pending	Pending	Pending	Pending	Pending	Completed	Completed	Completed	
j	Handle of MCCB (Actuator panel) has been damaged.	Pending	Pending	Pending	Completed	Completed	Completed	Completed	Completed	
k	RTCC Panel is not proper working due to Tap changer no.1 Motor's jamming problem.	Pending	Pending	Pending	Pending	Completed	Completed	Completed	Completed	
l	DG Number 1 & 2 fuel indicator is not working properly	Pending	Pending	Pending	Completed	Completed	Completed	Completed	Completed	

Sl. No.	Pending Works	Jan 2022	Feb 2022	Mar 2022	Apr 2022	May 2022	June 2022	July 2022	August 2022	Remarks
m	DG synchronization yet to complete	Pending	Pending	Pending	Pending	Vendor said it was not Possible for synchronization to occur because it was a very old DG set then UPJN also accepted that reason	Completed	Completed	Completed	

3.0. O&M personnel

VSPPL has deployed following O&M personnel for carrying out the obligations during Operation and Maintenance period.

3.1. O &M personnel – MPS &STP

Position	No. of O&M staff deployed									Remarks
	MPS				STP				Total	
	General shift	Shift 1	Shift 2	Shift 3	General shift	Shift 1	Shift 2	Shift 3		
Projects Manager					1				1	
Engineer-Operation					1				1	
Chemist					3				3	
Engineer-Electrical	1				1				2	
Executive-Operation		1	1	1		2	2	1	8	
Executive-Mechanical					1				1	
Executive-Electrical		1	1	1	1	1	1		6	
Senior-Technician	1				1				2	
Supervisor					1				1	
Horticulture In charge					1				1	08.00 Hrs. to 18.00 Hrs.
Horticulture					2				2	08.00 Hrs. to 18.00 Hrs.
Housekeeper		1	1	1	1	2	2	2	10	
Driver					1				1	
Tractor Driver (Sludge unit)						1	1	1	3	
Guard	2				4				6	Day 1, Night 1 for MPS & Day 2, Night 2 for STP
Total									**48**	

3.2. O &M personnel details

Sl. No.	Designation	Name of Employee	Contact no.	ID Proof (Aadhaar No.)
1	Projects Manager	Arvind Kumar Srivastava	9981829975	749053658959
2	Engineer-Operation	Umakant	9068611609	476258741370
3	Chemist	Pavan Kumar	9953957580	432514516963
4	Engineer-Electrical	Shivam Kumar	8437944064	314559925977
5	Executive Operation/Electrical	Siddarth Sinha	8292547670	650276237789
6	Engineer-Electrical	Javed Ahmad Ansari	9140301050	807432990304
7	Chemist	Ajeet Kumar Singh	8299662999	950103049739
8	Asst.Chemist	Avanish Kumar Srivastav	8543960511	740676855764
9	Executive-Operation/Electrical	Sahil Singh	9455227738	737742458996
10	Executive-Mechanical/operation	Sanjay Prasad	8707525703	239864940488
11	Executive-Electrical	Rakesh Gupta	8433053644	749802436574
12	Executive-Electrical	Shiv kumar	6307251638	475389474733
13	Executive-Mechanical	Devendra Kumar Yadav	9795116989	865308171365
14	Executive-Operation	Sanjay Yadav	8858460117	357961658068
15	Executive-Electrical	Deepak Kumar	9695423741	580550119520
16	Executive-operation/electrical	Kuldeep Kumar	8874459281	888839922593
17	Senior-Technician	Raju Kumar Chauhan	9646688728	278575928253
18	Senior-Technician	Ram Parvesh	9335342644	609960423981
19	Executive-Operation/electrical	Sunil Kumar Pathak	6393856586	845719777879
20	Executive-Operation	Shashikant	7905483203	856106147874
21	Executive-Operation	Prashant Singh	6307150473	848586837420
22	Supervisor	Shubhash Yadav	9415807558	677818900707
23	Executive-Operation	Vishal Yadav	8896041234	361230345977
24	Executive-Operation	Vikas Yadav	9305815842	544638745451

Sl. No.	Designation	Name of Employee	Contact no.	ID Proof (Aadhaar No.)
25	Executive-Operation	Rajesh Yadav	9670488468	201126311116
26	Horticulture In charge	Kripal Singh	9818811775	599263267279
27	Horticulture	Ajay Yadav		251098493906
28	Horticulture	Pramod Yadav		953545698981
29	Housekeeper	Sanjay Yadav		322833624635
30	Housekeeper	Dinesh		507141348445
31	Housekeeper	Vikki		487676316868
32	Housekeeper	Chandan		409091475879
33	Housekeeper	Jetendra		833435558604
34	Housekeeper	Deepu		409104354148
35	Housekeeper	Susil Kumar		698727191085
36	Housekeeper	Raj kumar		644290326829
37	Housekeeper	Sonu kumar		235568756907
38	Housekeeper	Prashant Sharma		799988837048
39	Driver	Vinay Mishra		817020662698
40	Tractor Driver (Sludge unit)-1	Mukesh Yadav		273021796561
41	Tractor Driver (Sludge unit)-2	Ram Raj Verma		994848742943
42	Tractor Driver (Sludge unit)-3	Subhas Yadav		427884522912
43	Guard STP (VSPPL)	Ghanshyam Gupta	8922012262	547014137846
44	Guard STP (VSPPL)	Sanjay Kumar Singh	8317041774	607044250192
45	Guard STP (VSPPL)	Anil Kumar Vishwakarma	8840401503	346736124236
46	Guard STP (VSPPL)	Ainuddin	8423713153	375435303153
47	Guard MPS (VSPPPL)	Ashok Jaiswal	8957646235	698234359797
48	Guard MPS (VSPPL)	Kanhaiya Lal		473873961078

4.0. Calibration status:

4.1. Calibration status of instruments and measuring equipments

S. no.	Instrument / Meter	Make	Location where the instrument / meter is fixed	Calibration date	Calibration validity	Calibration done by	Calibration certificate reference number
	STP						
1	COD & BOD Analyser	WTW (XYLEM)	Outlet & Inlet	10-May-22	9-May-23	N.S. TRADING	Nil
2	Chlorine Analyser	WTW (XYLEM)	CCT	Not Available		Not Available	To be calibrated
3	DO Analyser	WTW (XYLEM)	SBR Basin 1,2,3&4	10-May-22	9-May-23	N.S. TRADING	Nil
4	TSS Analyser	WTW (XYLEM)	Inlet &Outlet	10-May-22	9-May-23	N.S. TRADING	Nil
5	pH Analyser	WTW (XYLEM)	Inlet	Not Available		Not Available	To be calibrated
6	Total Phosphorous	WTW (XYLEM)	Inlet	Not Available		Not Available	To be calibrated
7	Total Nitrogen	WTW (XYLEM)	Inlet	Not Available		Not Available	To be calibrated
8	pH Analyser	M/s Forbes Marshall	CCT	Not Available		Not Available	To be calibrated
9	Phosphorous Analyser	M/s Forbes Marshall	CCT	Not Available		Not Available	To be calibrated
10	Clamp on flow meter	M/s Fuji Electric	Outlet	8-Jun-22	9-Jun-23	VGIPL	VGIPL/F/N/ 01/22-06
11	Ultrasonic Flow Meter	M/s Siemens	Inlet	8-Jun-22	9-Jun-23	VGIPL	VGIPL/F/N/ 02/22-06
12	Flow Meter SAS Line	M/s Krohne Marshall	SBR Basin 1,2,3&4	8-Jun-22	9-Jun-23	VGIPL	VGIPL/F/N/ 03/22-06
13	Flow Meter (Filtrate Pump)	M/s Krohne Marshall	Sludge Building	8-Jun-22	9-Jun-23	VGIPL	VGIPL/F/N/ 04/22-06
	MPS						
1	Electromagnetic Flow Meter	M/s Krohne Marshall	MPS Outlet Line	8-Jun-22	9-Jun-23	VGIPL	VGIPL/F/N/ 05/22-06
2	Level Transmitter	M/s Siemens	MPS Wet well	NA			To be calibrated
3	Level Switch	M/s Siemens	MPS Wet well	NA		NA	To be calibrated
4	Pressure Gauge	M/s Gauges	MPS	NA		NA	To be

S. no.	Instrument / Meter	Make	Location where the instrument / meter is fixed	Calibration date	Calibration validity	Calibration done by	Calibration certificate reference number
		Bourdon India Pvt.Ltd	Drywell				calibrated
5	Pressure Transmitter	M/s Gauges Bourdon India Pvt.Ltd	MPS Drywell	NA		NA	To be calibrated

4.2. Calibration status of laboratory instruments details

S. No.	Instrument Name	Make	Location	Calibration Date	Calibration Validity	Calibration Done by	Calibration Certificate no.
1	BOD Incubator	MSIW	Laboratory	26-04-2022	25-04-2023	AACPL	AACPL/07471F
2	HOT Air Oven	MSIW	Laboratory	26-04-2022	25-04-2023	AACPL	AACPL/07470F
3	Weighing balance	Wensor	Laboratory	26-04-2022	25-04-2023	AACPL	AACPL/07472F
4	Digital RPM Meter	Remi	Laboratory	26-04-2022	25-04-2023	AACPL	AACPL/220426.1.2
5	COD Reactor	MSIW	Laboratory	26-04-2022	25-04-2023	AACPL	AACPL/220426.1.10
6	Analytical Balance	Wensae	Laboratory	NA	NA	NA	Not available at Laboratory
7	Muffle Furnace	MSIW	Laboratory	26-04-2022	25-04-2023	AACPL	AACPL/07474F
8	Conductivity /TDS Meter	Labman	Laboratory	26-04-2022	25-04-2023	AACPL	AACPL/220426.1.3
9	Turbidity Meter	Lutron	Laboratory	26-04-2022	25-04-2023	AACPL	AACPL/220426.1.7
10	Turbidity Meter	EI	Laboratory	26-04-2022	25-04-2023	AACPL	AACPL/220426.1.3
11	Digital pH Meter	Eutech	Laboratory	26-04-2022	25-04-2023	AACPL	AACPL/220426.1.9
12	Incubator	MSIW	Laboratory	26-04-2022	25-04-2023	AACPL	AACPL/07475F

5.0. O&M Monitoring

During O&M period the following activities are being monitored on a continuous basis and the status of each activity during this month is provided below.

- Availability
- Influent Standards and Discharge Standards
- Disposal of STP By-Products and the Treated Effluent
- Power consumption

5.1. Availability

All the facilities and the Associated infrastructure to be available at 100% level during all period of O&M except the scheduled maintenance period. During scheduled maintenance period the availability of Facilities and Associated infrastructure should not be less than 95%.

5.2. Flow measurement details

Flow measurement details provided by the Concessionaire based on flowmeter readings (online monitoring) for both MPS, STP inlet, outlet, and overflow at Assi nalla weir is provided in **Annexure A & B** The below tables provides the date during which the guaranteed availability is not met by the Concessionaire based on the data acquired.

Note: - The flow meter yet to be installed at Assi nalla for measuring the overflow at the Weir. Hence no data available as on date.

5.3. Main pumping station

DATE	Cumulative flow at MPS pump outlet	Cumulative overflow on the weir at Assi Nalla	Whether non-availability liquidated damage is applicable based on cumulative flow pumped (if cumulative pumped flow is less than 50 MLD and overflow occurs at weir then yes otherwise no	Hours for which the Associated Infrastructure were		Reason
	IN ML	IN ML		Hrs.	Min	Unscheduled outage / power outage/Suspension of O&M services due to the reasons attributable for the Concessionaire /Emergency attributable to the
Not applicable for this month						

5.4. Sewage treatment plant

DATE	Cumulative flow at STP Plant Inlet	Whether non-availability liquidated damage is applicable based on cumulative flow pumped (if cumulative received flow is less than 50 MLD and overflow occurs at weir then yes otherwise no)	Hours for which the facilities were not Available		Reason for non-availability
	IN ML		Hrs.	Min	Unscheduled outage / power outage/Suspension of O&M services due to the reasons attributable for the Concessionaire /Emergency attributable to the Concessionaire
Not applicable for this month					

5.5. Scheduled Maintenance

Concessionaire has submitted the scheduled maintenance and hence availability should be always 100% during this month

Maintenance works did not take place according to the plan submitted by Concessionaire. However, the maintenance work has been carried out by the Concessionaire is given in **Annexure C**

5.6. Details of notices issued by the Executing Agency (UPJN) towards Non-Availability

Date of issue of notice	Reason for notice	Remedial action taken by VSSPL	Date of remedial action taken by VSPPL
Not issued for this month			

5.7. Maintenance and Repair of the Facilities and the Associated Infrastructure

Date	VSPPL letter ref.	Details of Maintenance and Repair	Reason
Not provided by VSPPL for this month			

5.8. Non-Availability liquidated damages

Applicable non availability liquidated damage for this month is provided below:

Parameter	Value	
	All the period other than scheduled maintenance period	During scheduled maintenance period
Associated infrastructure – MPS		
Guaranteed Availability	100%	95%
Hours in the month for which the Facilities and/or the Associated Infrastructure was not Available (A1)	-	-
Number of days (B1)	30	NA
Non availability (C1) = {A1/(B1*24)} *100	-	-
LD for nonadherence in INR for associated infrastructures = C1 x 30000	-	-
STP		
Sewage treatment plant		
Guaranteed Availability	100%	95%
Hours in the month for which the Facilities and/or the Associated Infrastructure was not Available (A2)	-	-
Number of days (B2)	30	NA
Non availability (C2) = {A2/(B2*24)} *100	-	-
LD for nonadherence in INR for associated infrastructures = C2 x 30000	-	-
Total LD for nonadherence = C1 + C2	-	

Note: Not applicable for this month

5.9. Influent & Effluent (Discharge) standards

5.9.1. Influent standards

Influent standard tested through i) the daily average of real time values of respective online instruments/analyzers ii) Daily lab test report through 24-hour composite sampling iii) At least one sample tested through National Accredited Board for testing and calibration Laboratory (NABL) recognised by CPCB/SPCB as submitted by the Concessionaire is provided in **Annexure D**

Note: - The daily average of real time values of respective online instruments/analyzers reports are not submitted in a format shared by UPJN/PE and sample tested through National Accredited Board for testing and calibration Laboratory (NABL) recognised by CPCB/SPCB are not submitted by the Concessionaire. Hence the comparison of daily average real time value vs lab test report through 24-hour composite sampling of raw sewage (influent) is not made.

Date	Online Analyser values						24-hour composite sampling values						Remarks
	Acceptable Range						Acceptable Range						
	≤ 8.5	≥ 80 & ≤ 230	≤ 450	≤ 500	≤45	≤7	≤8.5	≥80 & ≤230	≤450	≤500	≤45	≤7	
		Mg/L						Mg/L					
	pH	BOD	COD	TSS	TKN	TP	pH	BOD	COD	TSS	TKN	TP	

It's clearly stated based on the available lab test report the influent parameters did not exceed the limit specified in the Concession agreement and hence there is no exemption on the treated effluent parameters due to high concentration of raw sewage.

5.9.2. Treated effluent standards

Treated effluent standard tested through i) the daily average of real time values of respective online instruments/analyzers ii) Daily lab test report through 24-hour composite sampling iii) At least one sample tested through National Accredited Board for testing and calibration Laboratory (NABL) recognized by CPCB/SPCB as submitted by the Concessionaire is provided in **Annexure D**

Note: - The daily average of real time values of respective online instruments/analyzers are not submitted in a format shared by UPJN/PE and sample tested through National Accredited Board for testing and calibration Laboratory (NABL) recognized by CPCB/SPCB are not submitted by the Concessionaire. Hence the comparison of daily average real time value vs lab test report through 24-hour composite sampling of Treated Effluent is not made. This is because the Concessionaire did not submit the Online Analyzer Reports as per the format shared by PE/UPJN.

Date	Online Analyser values							24-hour composite sampling values							Remarks
Acceptable range	<10	<10	<10	<5	<50	<2	<100	BOD	TSS	TN	NH4-N	COD	TP	Fecal Coliform	
	Mg/L						MPN / 100 mL	Mg/L						MPN/100 mL	
	BOD	TSS	TN	NH4-N	COD	TP	Fecal Coliform	BOD	TSS	TN	NH4-N	COD	TP	Fecal Coliform	

5.9.3. Digested sludge

The sludge generated along with outlet concentration and fecal coliform during this month provided in **Annexure E**. The below table provides the details of nonadherence of KPI

Date	Quantum of digested sludge in Cum	Outlet Concentration of dewatered sludge	Fecal coliform	Remarks
		More than 20% solids	Less than 20,00,000 Most Probable Number per gram of total dry solids (20,00,000 MPN / GTS).	
Not Applicable for this month				

5.10. Details of notices issued by the Executing Agency (UPJN) towards Noncompliance of KPI

Date of issue of notice	Reason for notice	Remedial action taken by VSSPL	Date of remedial action taken by VSPPL
Not issued for this month			

5.11. Performance Liquidated Damages

The treated effluent parameters are more than the limit specified in the KPI and the liquid damages for nonadherence of KPI is given below: -

Sl. No.	Parameters	Non-adherence days	Liquidated damages per day in INR	Total liquidated damages for this month in INR
1	BOD	0	-	-
2	TSS	0	-	-
3	TN	0	-	-
4	NH4-N	0	-	-
5	COD	0	-	-
6	TP	0	-	-
7	Fecal Coliform	0	-	-
	Total Amount	0	-	-

The details of applicable liquidated damages for digester sludge given below:

Sl. No.	Parameters	Non-adherence days	Liquidated damages per day in INR	Total liquidated damages for this month in INR
1	Outlet Concentration of dewatered sludge	-	3000	-
2	Fecal coliform limit	-	3000	-
	Total Amount			**-**

Note: Not applicable for this month.

5.12. Details of reports/compliance submitted to government authority by VSPPL

Not provided / Reported by VSPPL

5.13. Disposal of STP By-Products and the Treated Effluent

The executing agency, UPJN identified the waste disposal site at the following co-ordinates which is located within 10 km radius of the STP

5.13.1. Disposal of Treated Effluent

Northing - 25°12'53.5"N
Easting - 82°59'52.7"E

5.13.2. Disposal of Residual Grit and Screenings

The Residual Grit and the Screenings are being disposed by the Concessionaire only at the waste disposal site identified by UPJN.

Northing - 25°14'29.6"N
Easting - 83°00'17.5"E
Total area: To be finalized

5.13.3. Disposal of Digested Sludge

Details of digested sludge produced by the Concessionaire and its disposal is given below:

Description	Quantity in Cum			Remarks
	Till last month	During this month	Total till date	
Digested sludge produced	5070.50	429.30	5499.80	
Digested sludge disposed at the waste disposal site	5070.50	429.30	5499.80	
Digested sludge sold by the concessionaire		-	-	
Revenue generated through selling of digested sludge in Rs		-	-	
Revenue shared to UPJN @50%		-	-	

Agency name to whom the digested sludge is being sold – Not Applicable

5.13.4. Disposal of treated effluent

Description	Value in ML			Remarks
	Till last month	During this month	Total till date	
Treated effluent	11865.38	858.78	12724.16	
Treated effluent disposed in the River Ganga / irrigation area	11865.38	858.78	12724.16	
Treated effluent sold by the concessionaire		-	-	
Revenue generated through selling of treated effluent in Rs		-	-	
Revenue shared to UPJN @50%		-	-	

Agency name to whom the treated effluent is being sold – Not Applicable

5.14. Power consumption

Guaranteed energy consumption quoted by the Concessionaire during bidding stage is given below:

BOD range in Mg/L	Flow upto 40 MLD	Flow >40 MLD and upto 45 MLD	Flow >45 MLD and upto 50 MLD	Flow >50 MLD
Less than 130	118	122	124	124
130 to 160	130	134	136	136
160 to 190	142	146	148	148
190 to 230	158	162	164	164
>230	158	162	164	165
Average guaranteed energy consumption (C)	145			

Total limit of energy consumption as per guarantee provided by the Concessionaire

BOD range in Mg/L	Flow up to 40 MLD	Number of days occurred for this month	Cumulative flow for this month in MLD	Total energy consumption as per guarantee	Flow >40 MLD and up to 45 MLD	Number of days occurred for this month	Cumulative flow for this month in MLD	Total energy consumption as per guarantee	Flow >45 MLD and up to 50 MLD	Number of days occurred for this month	Cumulative flow for this month in MLD	Total energy consumption as per guarantee	Flow >50 MLD	Number of days occurred for this month	Cumulative flow for this month in MLD	Total energy consumption as per guarantee
				A				**B**				**C**				**D**
Less than 130	118	11	296.842	35027.4	122	0	0	0	124	0	0	0	124	5	262.52	32552.728
130 to 160	130	7	193.13	25106.9	134	0	0	0	136	0	0	0	136	2	106.38	14467.816
160 to 190	142	0	0	0	146	0	0	0	148	0	0	0	148	0	0	0
190 to 230	158	0	0	0	162	0	0	0	164	0	0	0	164	0	0	0
>230	158	0	0	0	162	0	0	0	164	0	0	0	165	0	0	0
Total		18	489.972	60134.3			0	0			0	0		7	368.903	47020.544
Overall Total Guaranteed energy consumption (A+B+C+D)																**107154.8**
Overall Total Flow for the month in ML																**858.875**

Description	STP	Associated infrastructure - MPS
Total guaranteed energy consumption for the month in KWH (A)	107154.8	NA - Actual to be paid
Number of units consumed during this month (through grid power) (B)	146703.00	87710
Number of units consumed through DG adjusted units during this month (C)	359.30	0
Total number of units consumed during this month (B+C) = D	147062.30	87710
Whether power consumption liquidated damage is applicable or not (D is less than A – No, D is greater than A – yes)	No	NA
Grid power unit rate- E in Rs	7.74	7.74
Applicable Grid consumption after deducting DG consumption (Minimum of B-C, A-C) = F	146343.70	87710
Power charges towards grid power E x F = G	1132700.238	678875.4
Fuel consumption as per DG manufacturer for the consumed units in litre – H	207.90	0.00
Fuel price per litre in Rs – I	86.95	86.95
Total DG set power consumption charges H x I = J	18076.905	0
Total power consumption charges – G + J = K in Rs	1150777.143	678875.4
Power Liquidated damages – (as per calculation) =L in Rs	0	-
Power charges to be paid to the Concessionaire in Rs = K-L	1150777.143	678875.4

5.15. Tools and spare parts availability status

The inventory of tools and spare parts is given below

Sl. No	Name of Tools and Spare parts	Unit	Total numbers envisaged as inventory	Available till last month	Purchased during this month	Utilised during this month	Remaining available	Remarks
1	Allen Key Set	Set	4	4			4	Not consumable
2	Wire Cutting Pliers	Nos	3	3			3	Not consumable
3	Nose Pliers	Nos	7	7			7	Not consumable
4	Combination pliers	Nos	6	6			6	Not consumable
5	Temperature Gun	Nos	1	1			1	Not consumable
6	Multimeter	Nos	4	4			4	Not consumable
7	Digital Clamp Meter	Nos	2	2			2	Not consumable
8	Screwdriver Set	Nos	1	1			1	Not consumable
9	Insulation Tester (500v)	Nos	2	2			2	Not consumable
10	Emery Paper	Mtr	1	6	2	2	6	
11	Thread Seal Tape	Nos	15	4	3	2	5	
12	PVC Tape	Nos	30	24	30	25	29	
13	Wire Stripper	Nos	4	4			4	Not consumable
14	Pipe Wrench (450 mm)	Nos	1	1			1	Not consumable
15	Pipe Wrench (250 mm)	Nos	1	1			1	Not consumable
16	Adjustable Spanner (12 Inch)	Nos	2	2			2	Not consumable
17	Adjustable Spanner (10 Inch)	Nos	1	1			1	Not consumable
18	Screwdriver (Big)	Nos	6	6			6	Not consumable
19	Screwdriver (Small)	Nos	2	2			2	Not consumable
20	Hammer	Nos	3	3			3	Not consumable
21	Taplon Hammer	Nos	1	1			1	Not consumable
22	Hexa Frame	Nos	1	1			1	Not consumable

Sl. No	Name of Tools and Spare parts	Unit	Total numbers envisaged as inventory	Available till last month	Purchased during this month	Utilised during this month	Remaining available	Remarks
23	Grease Gun (Small)	Nos	1	1			1	Not consumable
24	Vacuum Cleaner (Blower)	Nos	1	1			1	Not consumable
25	Ring Spanners (6-41 mm)	Nos	19	19			19	Not consumable
26	D- Spanner (6-41 mm)	Nos	39	39			39	Not consumable
27	Chisel	Nos	2	2			2	Not consumable
28	Rope Sealing	Mtr	2	2			2	Not consumable
29	Hexa Frame	Nos	1	1			1	Not consumable
30	Right angle	Nos	2	2			2	Not consumable
31	Drill Bit(8MM)	Nos	1	1			1	Not consumable
32	Grander (AG-4)	Nos	1	1			1	Not consumable
33	O-Ring (5 mm)	Nos	2	2			2	Not consumable
34	Cutting wheel (AG-4)	Pkt	2	2			2	Not consumable
35	Barricading Tape	Pkt	1	1			1	Not consumable
36	Baffing Wheel	Pkt	4	5	1	4	2	
37	Leather Gloves	Pkt	1	4	2	2	4	
38	Grinding Wheel (AG-4)	Pkt	5	3	3	3	3	
39	Welding Rod (MS)	Pkt	1	6	0	2	4	
40	Welding Rod (SS)	Pkt	1	7	0	2	5	
41	PVC Gloves	Pkt	1	5	2	2	5	
42	Valve (Half Inch)	Nos	2	2			2	Not consumable
43	Lifting Belt (5 Ton)	Nos	24	24			24	Not consumable
44	D-cycle (3-4 Ton)	Nos	4	4			4	Not consumable
45	Rope Puli	Nos	2	2			2	Not consumable
46	Rope (Rassa)	Mtr	25	25			25	Not consumable
47	Ratchet Set (Taparia) (8-32	Set	1	1			1	Not consumable

Sl. No	Name of Tools and Spare parts	Unit	Total numbers envisaged as inventory	Available till last month	Purchased during this month	Utilised during this month	Remaining available	Remarks
	mm)							
48	Grease	Kg	5	30	5	10	25	
49	Oil Cuppy	Nos	2	2			2	Not consumable
50	Ratchet Handle	Nos	1	1			1	Not consumable
51	Ratchet Spanner (5,7,6 mm)	Nos	3	3			3	Not consumable
52	Pressure Jack (hydraulic) (5 Ton)	Nos	1	1			1	Not consumable
53	Welding Machine	Nos	1	1			1	Not consumable
54	Grinder Machine	Nos	1	1			1	Not consumable
55	Drill Machine	Nos	1	1			1	Not consumable
56	Lifting belt (5 ton)	Nos	2	2			2	Not consumable
57	O-ring(5mm)	Nos	1	3	3	4	2	
58	PVC Gloves	Pkt	1	3	2	1	4	
59	Sim Cutter	Nos	1	1			1	Not consumable
60	Chain Block (6mtrs,2ton)	Nos	1	1			1	Not consumable
61	Dial Gauge	Nos	2	2			2	Not consumable
62	Hand trolley	Nos	2	2			2	Not consumable
63	Tractor with trolley	Nos	1	1			1	Not consumable
64	Magger (Multirange LT, HT)	Nos	1	1			1	Not consumable
65	Toolbox	Nos	2	2			2	Not consumable
66	Concrete drill bit (20mm)	Nos	1	1			1	Not consumable
67	Concrete drill bit (6.5mm)	Nos	2	2			2	Not consumable
68	Fastener (20mm)	Nos	5	5			5	Not consumable
69	Annabond	Nos	4	4			4	Not consumable
70	D-cycle (3 ton)	Nos	2	2			2	Not consumable

Sl. No	Name of Tools and Spare parts	Unit	Total numbers envisaged as inventory	Available till last month	Purchased during this month	Utilised during this month	Remaining available	Remarks
71	D-cycle (2 ton)	Nos	2	2			2	Not consumable
72	D-cycle (1 ton)	Nos	4	4			4	Not consumable
73	Digital multimeter	Nos	3	3			3	Not consumable
74	Extension Board	Nos	4	4			4	Not consumable
75	Torch	Nos	3	3			3	Not consumable
76	Tool Bag	Nos	6	6			6	Not consumable
77	Cable tie	Nos	1	1			1	Not consumable
78	Vernier caliper	Nos	1	1			1	Not consumable
79	Round file	Nos	1	1			1	Not consumable
80	Half Round file	Nos	1	1			1	Not consumable
81	Grease gun	Nos	2	2			2	Not consumable
82	feeler Gauge	Nos	1	1			1	Not consumable
83	Circlip Pliers (Inside and out-side)	Nos	2	2			2	Not consumable
84	Allen Key (17mm)	Nos	2	2			2	Not consumable
85	Allen Key (14mm)	Nos	2	2			2	Not consumable
86	Allen Key (12mm)	Nos	2	2			2	Not consumable
87	Allen Key (11mm)	Nos	2	2			2	Not consumable
88	Allen Key (5mm)	Nos	2	2			2	Not consumable
89	Hand Blower	Nos	1	1			1	Not consumable
90	Printer& Scanner	Nos	1	1			1	Not consumable
91	Laptop	Nos	1	1			1	Not consumable
92	Computer System	Nos	1	1			1	Not consumable

5.16. Spares Details At 50 MLD STP Plant Ramna Varanasi

Sl. No	Name of Tools and Spare parts	Unit	Total numbers envisaged as inventory	Available till last month	Purchased during this month	Utilised during this month	Remaining available	Remarks
1	RAS Pump - Kishore make - 10HP, 7.5KW	Nos	2	2			2	
2	SAS Pump - Kishore make - 15HP, 11KW	Nos	2	2			2	
3	KGVØ100mm - Bray Controls	Nos	1	1			1	
4	KGVØ 250mm - Bray Controls	Nos	3	3			3	
5	Ball Valve Ø25mm - Bray Controls	Nos	1	1			1	
6	Ball Valve Ø40mm - Bray Controls	Nos	9	9			9	
7	Ball Valve Ø50mm CF8M Body - Bray Controls	Nos	5	5			5	
8	Ball Valve Ø65mm - Bray Controls	Nos	1	1			1	
9	Ball Valve Ø100mm - Bray Controls	Nos	6	6			6	
10	Check Valve/NRV Ø50mm - Indian Valve Pvt. Ltd	Nos	5	5			5	
11	Check Valve/NRV Ø65mm - Indian Valve Pvt. Ltd	Nos	1	1			1	
12	Check Valve/NRV Ø100mm - Indian Valve Pvt. Ltd	Nos	2	2			2	
13	Gate Valve/ Sluice Valve Ø100mm - Indian Valve Pvt. Ltd	Nos	2	2			2	
14	Gate Valve/ Sluice	Nos	2	2			2	

Sl. No	Name of Tools and Spare parts	Unit	Total numbers envisaged as inventory	Available till last month	Purchased during this month	Utilised during this month	Remaining available	Remarks
	Valve Ø125mm - Indian Valve Pvt. Ltd							

5.17. Chemicals, Dangerous Goods and Hazardous Materials storage details

Status as on 31.08.2022 and Sufficient up to 30.09.2022

Sl. No.	Description	Unit	Storage availability till last month	Purchase during this month	Utilized during this month	Remaining available	Remark
1	Chlorine	Kg	551	8100	4153	4498	
2	Poly Electrolyte	Kg	120	300	202	218	
3	Calcium Chloride	gm	434		5	429	
4	Ammonium Chloride	gm	60	500	33	527	
5	Ferric Chloride	gm	352		17	335	
6	Di-Sodium Hydrogen Orthophosphate	gm	332		17	315	
7	Potassium Dihydrogen Orthophosphate	gm	380		17	363	
8	Di - Potassium hydrogen Orthophosphate	gm	275		21	254	
9	Potassium Chloride	gm	450		41	409	
10	Manganous sulphate	gm	200	500	202	498	
11	Sodium hydroxide	gm	980		162	818	
12	Potassium dichromate	gm	225		21	204	
13	Silica gel	gm	390		10	380	
14	Starch	gm	280		17	263	

Sl. No.	Description	Unit	Storage availability till last month	Purchase during this month	Utilized during this month	Remaining available	Remark
15	Ethanol	ml	700		242	458	
16	Sodium azid	gm	60		25	35	
17	Mercurous Sulphate	gm	204		29	175	
18	Ammonium ferrous sulphate	gm	480		81	399	
19	Sodium thiosulfate	gm	450		41	409	
20	Mac Conkey Borth	gm	450		121	329	
21	Sulfuric acid	ltr.	7.5	10	6.1	11.4	
22	Filter paper	no.	2	1	1	2	
23	Silver sulphate	gm	35		8	27	
24	Magnesium sulphate	gm	800		325	475	
25	Ferroin indicator	ml	100		21	79	
26	Ammonia	vial	120		50	70	
27	Phosphate	vial	120		50	70	
28	Potassium iodide	gm	269		30	239	
29	Mercuric oxide red	gm	200	200	121	279	
30	Cupric Sulphate	gm	500		202	298	

6.0. PROJECT ENGINEER ACTIVITIES

Activities carried out as per TOR				
Clause as per TOR	Scope	Period: February 2018 to August 2022		
		Undertaken till previous month – July 2022	Undertaken during this month - August 2022	Expected for next month – September 2022
4.1 (i)	Review, analysis, and qualifying assessment of field investigations carried out and reported by the Concessionaire in respect of topographical surveys, hydraulic & hydrologic data verification, sub-surface investigation including laboratory testing and reports of geologists wherever applicable, investigation of construction material including lab testing.	Yes	NA	NA
4.1 (ii)	Review, analysis and qualifying assessment of design memorandums, specifications and construction drawings prepared and submitted by the concessionaire.	Yes	NA	NA
4.1 (iii)	Conduct kicks off meetings			
4.1 (iv)	Review of the submissions of the Concessionaire such as a. Work schedule b. Detailed survey report c. Basic engineering d. Detailed design and drawings for i) Civil works 1. Geo-tech reports 2. Lab testing reports 3. Third Party Inspection report ii) Mechanical & Electrical Works iii) Automation & Instrumentation works iv) Any other allied works e. QA/QC plans f. Safety plan	Yes	NA	NA
4.1 (v)	Review of the drawings and documents	Yes	NA	NA
4.1 (vi)	Identification of milestones & verifications		NA	NA
4.1 (vii)	To Assist NMCG for getting statutory		NA	NA

Activities carried out as per TOR				
Clause as per TOR	Scope	Period: February 2018 to August 2022		
		Undertaken till previous month – July 2022	Undertaken during this month - August 2022	Expected for next month – September 2022
	permissions			
4.1 (ix)	Review, inspection, supervision and monitoring of construction works conducting tests on completion of construction and issuing completion / provisional certificate	Yes	NA	NA
4.1 (x)	Review, inspection and monitoring of O&M	NA	Yes	Yes
4.1 (xi)	Determining, as required under the Concession Agreement, the costs of any works or services and/or their reasonableness	NA	NA	NA
4.1 (xii)	Determining, as required under the Concession Agreement, the period, or any extension thereof, for performing any duty or obligation	NA	NA	NA
4.1 (xiii)	Determining the events of default and guidance on consequent termination notices and payment as detailed in clauses 16.1 to 16.5 of the Concession Agreement	NA	NA	NA
4.1 (xiv)	Determine deficiencies in the commissioning & trial runs; prepare the final acceptance document for acceptance of commissioning & trial runs. Prepare & Issue Commercial Operation certificate through Uttar Pradesh Jal Nigam	NA	Yes	
4.1 (xv)	Any other matter which is not specified in ((vi), (vii), or (viii) above and which creates an obligation or liability on the Employer / NMCG beyond the provisions of the Concession Agreement	NA	NA	NA
4.1 (xvi)	The Project Engineer shall submit regular periodic reports, as specified in the Concession Agreement to Uttar Pradesh Jal Nigam & NMCG, in respect of its duties & functions under the Concession Agreement	Monthly progress report	Monthly progress report	Preparation and review of monthly progress report
4.1 (xvii)	The Project Engineer shall aid and advise the Employer on any proposal for variation under	NA	NA	NA

Activities carried out as per TOR				
Clause as per TOR	Scope	Period: February 2018 to August 2022		
		Undertaken till previous month – July 2022	Undertaken during this month - August 2022	Expected for next month – September 2022
	Article 20 of the Concession Agreement			
4.1 xviii)	Assisting the Parties in resolution of Disputes	NA	NA	NA
4.1 (xix)	Assisting the employer in the fulfilment of Hand back requirements as detailed in clause 19.3 of the Concession Agreement		NA	NA
4.1 (xx)	Undertaking all other duties and functions in accordance with this agreement	As mentioned above	As mentioned above	As mentioned above
4.2	The Project Engineer shall discharge its duties in an efficient manner, consistent with the highest standards of professionalism & Good Industry Practice	Yes	Yes	Yes
4.3(i)	The Project Engineer must function in a manner to assist & equip the employer to ascertain that the Concessionaire shall operate and maintain the Facilities and the Associated Infrastructure in a manner that: Is in compliance with the Technical Specifications, Applicable Laws, Applicable Permits and Good Industry Practice. Results in the Facilities and the Associated Infrastructure achieving the KPIs as detailed in schedule 10 of the Concession Agreement & certify within 7 days the KPI adherence Report as per clause 8.12 of the Concession Agreement:	Yes	Yes	Yes
4.3(ii)	Ensures that the Varanasi STP are capable of treating Sewage up to the Design Capacity on a daily basis;	Yes	Yes	Yes
4.3(iii)	Ensures efficient treatment of Sewage & handling and disposal of STP By- Products and the Treated Effluent	NA	NA	NA
4.3(iv)	STPs are safe and reliable, subject to normal wear and tear of the Facilities and the Associated Infrastructure;	NA	NA	NA

Activities carried out as per TOR				
Clause as per TOR	Scope	Period: February 2018 to August 2022		
		Undertaken till previous month – July 2022	Undertaken during this month - August 2022	Expected for next month – September 2022
4.3(v)	Is in compliance with the technology license agreement executed by the Concessionaire for the technology, processes, know-how and systems used or incorporated into the Facilities and/or the Associated Infrastructure	Yes	NA	NA
4.3(vi)	Maintains the safety and security of personnel, material, and property at the Site, in accordance with the approved EHS Plan, Applicable Laws and Applicable Permits.	Yes	NA	NA
4.3(vii)	Ensures that all waste materials and hazardous substances are stored and/or disposed in accordance with the EHS Plan, Applicable Laws and Applicable Permits.	Yes	NA	NA
4.4	Overall, The Project Engineer shall assist the Uttar Pradesh Jal Nigam in supervising the construction, rehabilitation, operation & maintenance of the Facilities and the Associated Infrastructure and shall work closely with the Uttar Pradesh Jal Nigam and NMCG to monitor compliance with the KPIs.	Yes	Yes	Yes
5.1	During the Development Period, the Project Engineer shall undertake a detailed review of the basic engineering Designs, furnished by the Concessionaire along with supporting data, including the geo-technical and hydrological investigations, characteristics of materials from borrow areas and quarry sites, topographical surveys, and Sewage Flow Analysis. The Project Engineer shall complete such review and send its comments / observations to the NMCG / Name of the Employer (i.e., State Institution) and the Concessionaire within 10 (ten) days of receipt of such Drawings. Such comments shall specify the conformity or otherwise of such Drawings with the Scope of the Project and	Yes	Yes	Yes

Activities carried out as per TOR				
Clause as per TOR	Scope	Period: February 2018 to August 2022		
		Undertaken till previous month – July 2022	Undertaken during this month - August 2022	Expected for next month – September 2022
	Specifications and Standards			
5.2	The Project Engineer shall review and assist the (Name of the Employer) in approval of the submissions by the concessionaire relating to the **"design and Construction Plan"** to confirm to the scope as per **Schedule 1** of the Concession Agreement.	Yes	Yes	Yes
5.3	The basic engineering drawings in the above case shall mean the designs and documents to be submitted by the Concessionaire & approved by the Uttar Pradesh Jal Nigam as a Condition Precedent & shall include but not limited to: a) Conduct kicks off meeting, scrutiny of contractor's submittals b) Process description, process calculations and hydraulic calculations. c) List of design codes and standards. d) Master drawing schedule. e) Drainage design. f) STP Facilities layout. g) Process flow diagram. h) Hydraulic flow diagram. i) Mass balance diagram. j) Process and instrumentation diagram. k) Single line diagram. l) Electrical load list; and m) General arrangement diagrams of all units of facilities and associated infrastructure	Yes	NA	NA
5.4	The project engineer shall review any modified Drawings or supporting documents sent to it by the Concessionaire and furnish its comments within 10 (ten) days of receiving such drawings or documents.	Yes	NA	NA

Activities carried out as per TOR				
Clause as per TOR	Scope	Period: February 2018 to August 2022		
		Undertaken till previous month – July 2022	Undertaken during this month - August 2022	Expected for next month – September 2022
5.5	The project engineer shall review the detailed design, construction methodology, quality assurance procedures and the procurement, engineering and construction time schedule sent to it by the Concessionaire and furnish its comments within 10 (ten) days of receipt thereof.	Yes	NA	NA
5.6	Upon reference by the NMCG/Uttar Pradesh Jal Nigam, the Project Engineer shall review and comment on the EPC Contract or any other contract for construction, operation, and maintenance of the Project, and furnish its comments within 10 (ten) days from receipt of such reference from the NMCG/Uttar Pradesh Jal Nigam.	NA	NA	NA
6.1	In respect of the designs drawing & documents received by the project engineer for its review and comments during the construction period, the provisions of paragraph 4 shall also apply, mutatis mutandis	Yes	NA	NA
6.2	The Project Engineer shall review, and assist the Uttar Pradesh Jal Nigam in reviewing the submissions by the concessionaire, the Construction plan as defined in clause 7.3 of the Concession Agreement including Phase 1 and Phase II drawings, as well as the 'As Built' drawings on completion and EHS plans as defined in clause 7.4 of the Concession Agreement	Yes	NA	NA
6.3	The Project Engineer shall assist the Uttar Pradesh Jal Nigam submit their comments on effectiveness or otherwise of the Work plan submitted for meeting the specified payment milestones and completion of the work on or before the scheduled construction	Yes	NA	NA

Activities carried out as per TOR				
Clause as per TOR	Scope	Period: February 2018 to August 2022		
		Undertaken till previous month – July 2022	Undertaken during this month - August 2022	Expected for next month – September 2022
	completion date			
6.4	The Project Engineer shall review the submissions by the Concessionaire as per Schedule 1 of the Concession Agreement, and assist Uttar Pradesh Jal Nigam in assessing the effectiveness them	Yes	NA	NA
6.5	The Project Engineer shall review the monthly progress report furnished by the Concessionaire and send its comments thereon to the NMCG / Uttar Pradesh Jal Nigam and the Concessionaire within 7 (seven) days of receipt of such report	Yes	Yes	Yes
6.6	The Project Engineer shall inspect the Construction Works and the Project as & when necessary and submit a report of such inspection (the "Inspection Report"), preferably after receipt of the monthly progress report from the Concessionaire, but before the 20th (twentieth) day of each month in any case. The report shall contain, an overview of the status, progress, quality, and safety of construction, including the work methodology adopted, the materials used and their sources, and conformity of Construction Works with the Scope of the Project and the Specifications and Standards. In a separate section of the Inspection Report, the Project Engineer shall describe in reasonable detail the lapses, defects or deficiencies observed by it in the construction of the Project. The Project Engineer shall send a copy of its Inspection Report to the NMCG/UPJN & the Concessionaire within 3 (three) days of the inspection	Yes	NA	NA

Activities carried out as per TOR				
Clause as per TOR	Scope	Period: February 2018 to August 2022		
		Undertaken till previous month – July 2022	Undertaken during this month - August 2022	Expected for next month – September 2022
6.7	However serious lapses, defects and/or deficiencies shall be reported to the Uttar Pradesh Jal Nigam/NMCG immediately without waiting for the monthly progress submissions as mentioned in the previous paragraph	Yes	NA	NA
6.8	For determining that the Construction Works conform to Specifications and Standards, the Project Engineer shall require the Concessionaire to carry out, or cause to be carried out, tests on a sample basis, to be specified by the Project Engineer in accordance with approved norms/Good Industry Practice for quality assurance. The Project Engineer shall issue necessary directions to the Concessionaire for ensuring that the tests are conducted in a fair and efficient manner, and shall monitor and review the results thereof	Yes	NA	NA
6.9	The timing of tests referred to in Paragraph 6.8, and the criteria for acceptance/ rejection of their results shall be determined by the Project Engineer in accordance with the norms /rules and Good Industry Practice. The tests shall be undertaken on a random sample basis and shall be in addition to, and independent of, the tests that may be carried out by the Concessionaire for its own quality assurance in accordance with Good Industry Practice	Yes	NA	NA
6.10	If the Concessionaire carries out any remedial works for removal or rectification of any defects or deficiencies, the Project Engineer shall require the Concessionaire to carry out, or cause to be carried out, tests to determine that such remedial works have	Yes	NA	NA

Activities carried out as per TOR				
Clause as per TOR	Scope	Period: February 2018 to August 2022		
		Undertaken till previous month – July 2022	Undertaken during this month - August 2022	Expected for next month – September 2022
	brought the Construction Works into conformity with the Specifications and Standards, and the provisions of this Paragraph 5 shall apply to such tests			
6.11	If the Concessionaire fails to achieve any of the Project Milestones, the Project Engineer shall undertake a review of the progress of construction and identify potential delays, if any. If the Project Engineer identifies that completion of the Project is not feasible within the time specified in the Concession Agreement, it shall require the Concessionaire to indicate within 15 (fifteen) days the steps proposed to be taken to expedite progress, and the period within which COD shall be achieved. Upon receipt of a report from the Concessionaire, the Project Engineer shall review the same and send its comments to the NMCG/ Uttar Pradesh Jal Nigam and the Concessionaire forthwith.	Yes	NA	NA
6.12	If at any time during the construction period, the Project Engineer determines that the Concessionaire has not made adequate arrangements for the safety of workers and common public in the zone of construction or that any work is being carried out in a manner that threatens the safety of the workers and the common public, it shall make a recommendation to the NMCG/ Uttar Pradesh Jal Nigam forthwith, identifying the whole or part of the Construction Works that should be suspended for ensuring safety in respect thereof.	NA	NA	
6.13	In the event that the Concessionaire carries out any remedial measures to secure the	NA	NA	

Activities carried out as per TOR				
Clause as per TOR	Scope	Period: February 2018 to August 2022		
		Undertaken till previous month – July 2022	Undertaken during this month - August 2022	Expected for next month – September 2022
	safety of suspended works and common public, it may, by notice in writing, require the Project Engineer to inspect such works, and within 3 (three) days of receiving such notice, the Project Engineer shall inspect the suspended works and make a report to the NMCG/ Uttar Pradesh Jal Nigam forthwith, recommending whether or not such suspension may be revoked by the NMCG/ Uttar Pradesh Jal Nigam.			
6.14	If suspension of Construction Works is for reasons not attributable to the Concessionaire, the Project Engineer shall determine the extension of dates set forth in the project completion schedule, to which the Concessionaire is reasonably entitled, and shall notify the NMCG/ Uttar Pradesh Jal Nigam and the Concessionaire of the same	NA	NA	
6.15	Upon reference from the NMCG/ Uttar Pradesh Jal Nigam, the Project Engineer shall make a fair and reasonable assessment of the costs of providing information, works and services and certify the reasonableness of such costs for payment by the NMCG/ Uttar Pradesh Jal Nigam to the Concessionaire	NA	NA	
6.16	The Project Engineer shall aid and advise the Concessionaire in preparing the Operation & Maintenance Manual	NA	Yes	
6.17	Upon reference from the NMCG/ Uttar Pradesh Jal Nigam the Project Engineer shall undertake the assessment of cost of civil works, as per applicable schedule of rates, for the reduction of Scope of work if any as per Article 20.	NA	NA	
6.18	The Project Engineer shall review the	Yes	Yes	

Activities carried out as per TOR				
Clause as per TOR	Scope	Period: February 2018 to August 2022		
		Undertaken till previous month – July 2022	Undertaken during this month - August 2022	Expected for next month – September 2022
	construction progress as per payment milestones proposed by the concessionaire and provide necessary recommendation/s to Uttar Pradesh Jal Nigam for issuance of 'Milestone Construction Certificates'			
6.19	The Project Engineer shall support the employer in ensuring that the provisions specified in Clause 7, of the Concession Agreement including those for liquidated damages and Bonus, are being complied with.	Yes	Yes	
6.20	On completion of construction and at behest of Employer, the Project Engineer may review the work done as per 'as built' drawings and identify defects and suggest changes as per clause 7.13(v) of the Concession Agreement	NA	NA	
6.21	Similarly, the Project Engineer may inspect the trial process and may point out the defects and cause changes or retrial of the process as per clause 7.14(d) of the Concession Agreement	NA	Yes	
7.1	In respect of the Designs, Drawings, and Documents received by the Project Engineer for its review and comments during the Operation Period, the provisions of Paragraph 4 shall apply, mutatis mutandis	NA	NA	
7.2	The Project Engineer shall review the O&M Manual (Clause 8.2) and the Scheduled Maintenance Programme submitted by the concessionaire and provide its recommendations on the same, including suggestions for change, if any. The O&M Manual shall cover: a) O&M Procedures. b) O&M Plan.	NA	Yes	

Activities carried out as per TOR				
Clause as per TOR	Scope	Period: February 2018 to August 2022		
		Undertaken till previous month – July 2022	Undertaken during this month - August 2022	Expected for next month – September 2022
	c) Provision of Spare Parts. d) Sampling and Testing Methodologies. e) Storage and control of Inventory. f) Arrangements for data security and Integrity. g) Procedures for recording and disposal of complaints. h) Operational Contingencies Plans. i) Human Resources Plans. j) EHS Plans. k) Emergency procedures. l) Management of Assets Plans. And m) Annual Scheduled Maintenance programme.			
7.3	The Project Engineer shall review the annual Maintenance Program furnished by the Concessionaire and send its comments thereon to the NMCG/ Uttar Pradesh Jal Nigam and the Concessionaire within 10 (ten) days of receipt of the Maintenance Program	NA	NA	
7.4	The Project Engineer shall review the reports generated from online monitoring systems to assess adherence to KPIs and submit the monthly KPI Adherence Report to Uttar Pradesh Jal Nigam	NA	Yes	
7.5	The Project Engineer shall verify the daily reports submitted by the concessionaire regarding the volume of sewage and its quality re influent standards and monitor and record the same on regular basis	NA	Yes	
7.6	The Project Engineer shall monitor, review, and advise the Uttar Pradesh Jal Nigam on the reports submitted by the concessionaire as per clause 8.8(b)(iii) (A) to (G) of the	NA	Yes	

Activities carried out as per TOR				
Clause as per TOR	Scope	Period: February 2018 to August 2022		
		Undertaken till previous month – July 2022	Undertaken during this month - August 2022	Expected for next month – September 2022
	Concession Agreement			
7.7	The Project Engineer shall regularly verify the report submitted by the concessionaire on the tests conducted at the Inlet Point, the Outlet Point or at any other point at the Varanasi STP for the Digested Sludge. Separately, the Project Engineer shall also have the right to take random samples of the incoming Sewage, the Digested Sludge, and the Treated Effluent at any time during the O&M Period to test compliance with the Influent Standards & the Discharge Standards.	NA	Yes	
7.8	The Project Engineer shall review the monthly status report furnished by the Concessionaire (as required under clause 812(c)) of the Concession Agreement) and send its comments thereon to the NMCG/ Uttar Pradesh Jal Nigam and the Concessionaire within 7 (seven) days of receipt of such report	NA	NA	
7.9	The Project Engineer shall inspect the Project once every month, preferably after receipt of the monthly status report from the Concessionaire, but before the 20th (twentieth) day of each month in any case and make out an O&M Inspection Report setting forth an overview of the status, quality and safety of O&M including its conformity with the Maintenance Requirements and Safety Requirements. In a separate section of the O&M Inspection Report, the Project Engineer shall describe in reasonable detail the lapses, defects or deficiencies observed by it in O&M of the Project. The Project Engineer shall send a copy of its O&M	NA	NA	

Activities carried out as per TOR				
Clause as per TOR	Scope	Period: February 2018 to August 2022		
		Undertaken till previous month – July 2022	Undertaken during this month - August 2022	Expected for next month – September 2022
	Inspection Report to the NMCG/ Uttar Pradesh Jal Nigam and the Concessionaire within 7 (seven) days of the inspection			
7.10	The Project Engineer may inspect the project more than once in a month, if any lapses, defects, or deficiencies require such inspections.	NA	NA	
7.11	The Project Engineer shall in its O&M Inspection Report specify the tests, if any, that the Concessionaire shall carry out, or cause to be carried out, for the purpose of determining that the project is in conformity with the Maintenance Requirements. It shall monitor and review the results of such tests & the remedial measures, if any, taken by the Concessionaire in this behalf.	NA	NA	
7.12	The Project Engineer shall determine if any delay has occurred in completion of repair or remedial works in accordance with the Concession Agreement, and shall also determine the Damages, if any, payable by the Concessionaire to the NMCG/ Uttar Pradesh Jal Nigam for such delay.	NA	Yes	
7.13	The Project Engineer shall monitor and review the curing of defects and deficiencies by the Concessionaire.	NA	NA	
7.14	If the Concessionaire notifies the Project Engineer of any modifications that it proposes to make to the project, the Project Engineer shall review the same and send its comments to the NMCG/ Uttar Pradesh Jal Nigam and the Concessionaire within 15 (fifteen) days of receiving the proposal.	NA	NA	
7.15	The Project Engineer shall undertake sewage flow sampling, as and when required by the NMCG/ Uttar Pradesh Jal Nigam,	NA	Yes	

Activities carried out as per TOR				
Clause as per TOR	Scope	Period: February 2018 to August 2022		
		Undertaken till previous month – July 2022	Undertaken during this month - August 2022	Expected for next month – September 2022
	under and in accordance with the provisions of this agreement			
7.16	The Project Engineer shall review and report to the employer on all the reports (Daily, Monthly, Quarterly and Annual), including monthly Environmental Monitoring Reports as detailed in Schedule 11(Part G) of the Concession Agreement.	NA	NA	
7.17	The Project Engineer shall provide necessary training/capacity building to the operators/ technicians of the STP, as and when required, to address the gap in skill sets of the manpower deployed by the Concessionaire	NA	Yes	
9.1	The Project Engineer shall determine the costs, and/or their reasonableness, that are required to be determined by it under the Concession Agreement	NA	NA	
9.2	The Project Engineer shall determine the period, or any extension thereof, that is required to be determined by it under the Concession Agreement	NA	NA	
10.1	When called upon by either Party in the event of any Dispute, the Project Engineer shall mediate and assist the Parties in arriving at an amicable settlement	NA	NA	
10.2	In the event of any disagreement between the Parties regarding the meaning, scope, and nature of Good Industry Practice, as set forth in any provision of the Concession Agreement, the Project Engineer shall specify such meaning, scope, and nature by issuing a reasoned written statement relying on good industry practice and authentic literature	NA	NA	
11.0	As and when requested by NMCG/ Uttar	Yes	NA	

Activities carried out as per TOR				
Clause as per TOR	Scope	Period: February 2018 to August 2022		
		Undertaken till previous month – July 2022	Undertaken during this month - August 2022	Expected for next month – September 2022
	Pradesh Jal Nigam, the Project Engineer shall provide its opinion and assessment on the events related to Emergency, Change in Law, Force Majeure, Minor or total Casualties, Variation, and unforeseen Site conditions etc.			
12.1	The Project Engineer shall notify its programme of inspection to the NMCG/ Uttar Pradesh Jal Nigam and to the Concessionaire, who may, in their discretion, depute their respective representatives to be present during the inspection.	Yes	NA	NA
12.2	A copy of all communications, comments, instructions, Drawings or Documents sent by the Project Engineer to the Concessionaire pursuant to this TOR, and a copy of all the test results with comments of the Project Engineer thereon shall be furnished to the NMCG/ Uttar Pradesh Jal Nigam forthwith.	Yes	NA	NA
12.3	The Project Engineer shall retain at least one copy each of all Drawings and Documents received by it, including 'as-built' Drawings, and keep them in its safe custody.	Yes	NA	NA
12.4	Upon completion of its assignment hereunder, the Project Engineer shall duly classify and list all Drawings, Documents, results of tests and other relevant records, and hand them over to the NMCG/ Uttar Pradesh Jal Nigam or such other person as the NMCG/ Uttar Pradesh Jal Nigam may specify and obtain written receipt thereof. Two copies of the said documents shall also be furnished in their editable digital format or in such other medium or manner as may be acceptable to the NMCG/Uttar Pradesh Jal Nigam	Yes	NA	NA

Activities carried out as per TOR				
Clause as per TOR	Scope	Period: February 2018 to August 2022		
		Undertaken till previous month – July 2022	Undertaken during this month - August 2022	Expected for next month – September 2022
12.5	Wherever no period has been specified for delivery of services by the Project Engineer, the Project Engineer shall act with the efficiency and urgency necessary for discharging its functions in accordance with Good Industry Practice.	Yes	Yes	Yes
12.6	Project Engineers shall be expected to fully comply with all the provisions of the "Terms of Reference", and shall be fully responsible for supervising the Design, Construction and maintenance and operation of the Facility in accordance with the provisions of the Concession Agreement and other schedules. Any failure of the Project Engineer in notifying to the Employer and the Concessionaire on non- compliance of the provisions of the Concession Agreement and other schedules by the Concessionaire, non-adherence to the provision of this ToR and non-adherence to the time schedule prescribed under this ToR shall amount to non-performance.	Yes	Yes	Yes
12.7	The project Engineer shall develop & maintain a project website and with the approval of NMCG/UPJN post from time to time, information (textual and Audio- Visual) on project progress on a continuous basis. On completion of services as per this RFP document, the website with all necessary technical information shall be handed over to UPJN.	Yes	Yes	Yes
14.1	Uttar Pradesh Jal Nigam may review with the Project Engineer, any or all the documents and advice forming part of the Consultancy, in meetings and conferences which will be held at the office of the Uttar Pradesh Jal	Yes	Yes	Yes

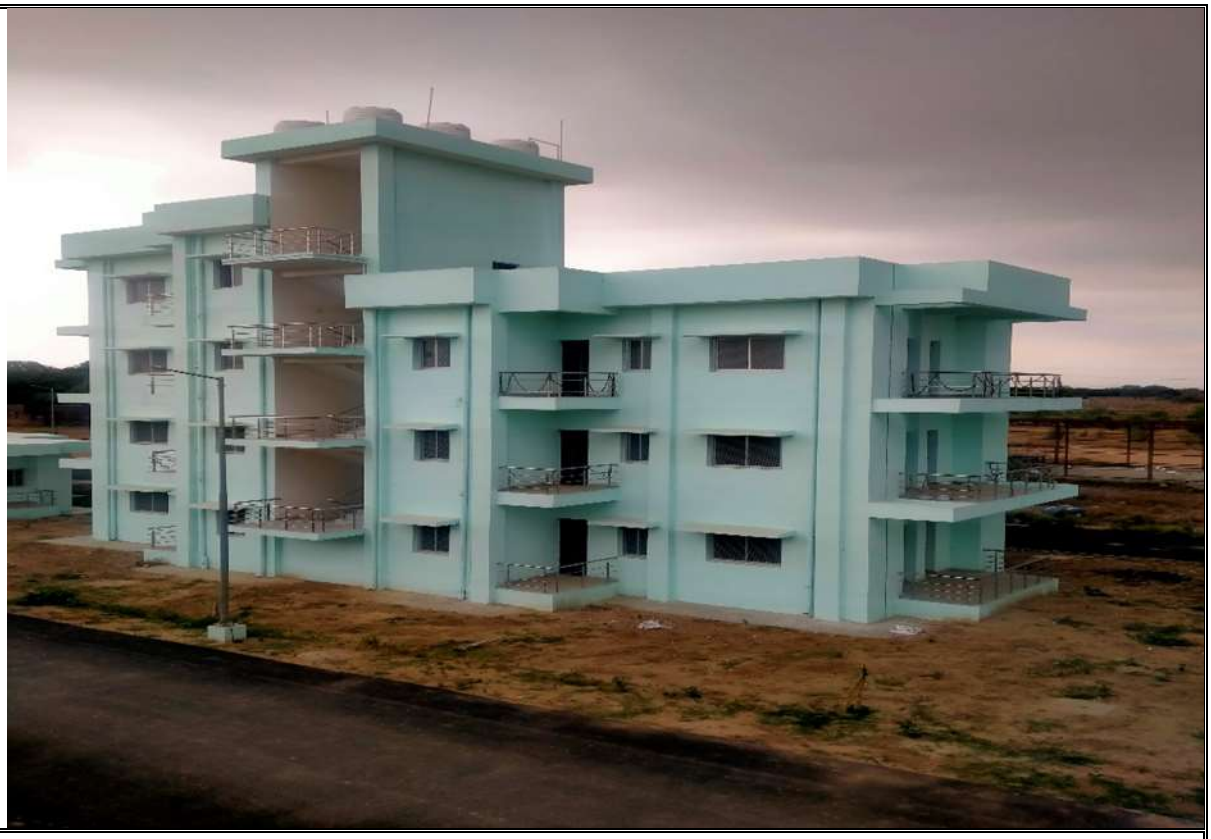
Activities carried out as per TOR				
Clause as per TOR	Scope	Period: February 2018 to August 2022		
		Undertaken till previous month – July 2022	Undertaken during this month - August 2022	Expected for next month – September 2022
	Nigam / NMCG. Uttar Pradesh Jal Nigam / NMCG may, in its discretion, require the Project Engineer to participate in extended meetings and/ or work from the offices of Uttar Pradesh Jal Nigam /NMCG and the Project Engineer shall, on a best endeavor basis and without unreasonable delay, provide such services at the offices of the Uttar Pradesh Jal Nigam/NMCG.			
15.1	The Project Engineer may prepare Issue Papers highlighting issues that could become critical for the timely completion of the Project and that require attention from Uttar Pradesh Jal Nigam/NMCG. The Project Engineer shall report to UPJN for routine activities and deliverables. All major and critical issues shall be reported to NMCG and UPJN simultaneously.	Yes	Yes	Yes
15.2	The Project Engineer will make a presentation on the inception report for discussion with the Uttar Pradesh Jal Nigam / NMCG at a meeting. This will be a working document. Regular communication with Uttar Pradesh Jal Nigam / NMCG is required in addition to all key communications. This may take the form of telephone/ teleconferencing, emails, and occasional meetings.	Yes	Yes	Yes
15.3	The Deliverables will be submitted as per schedule provided in this RFP	Yes	Yes	Yes

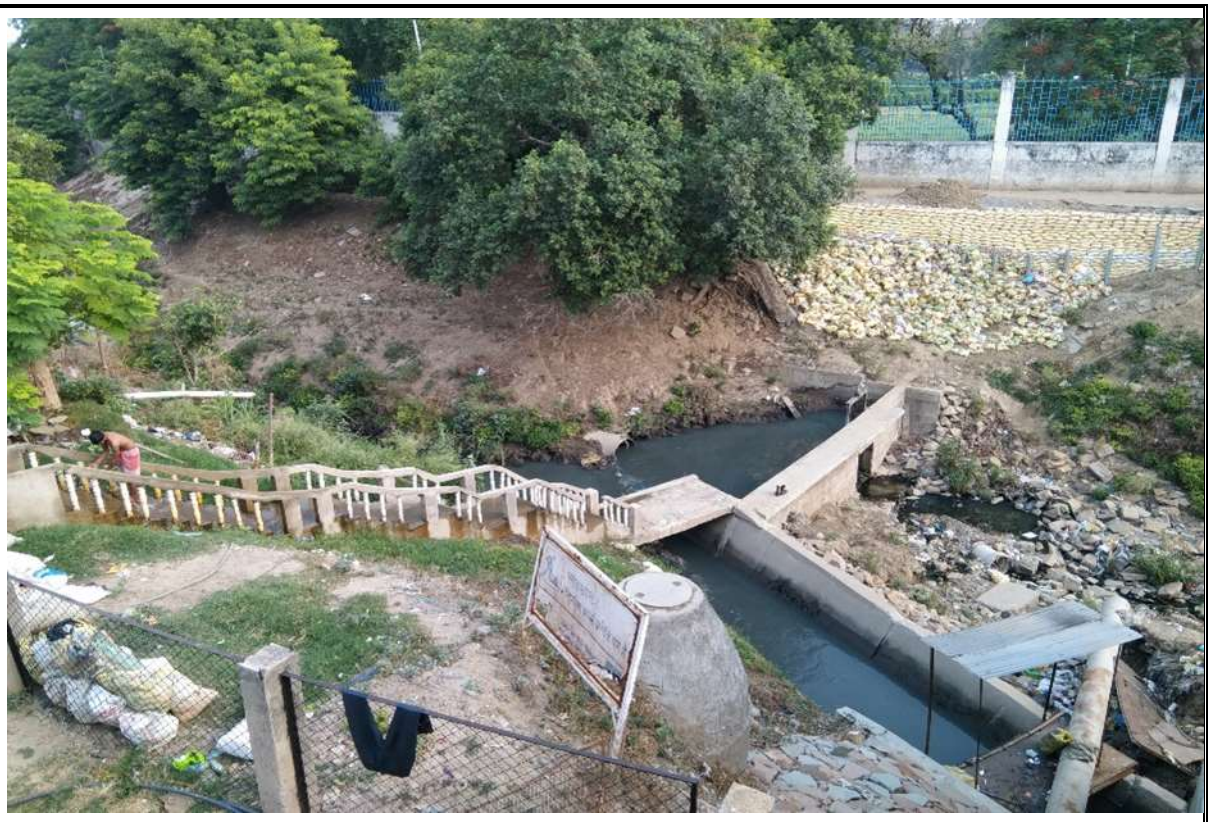
PHOTOGRAPHS

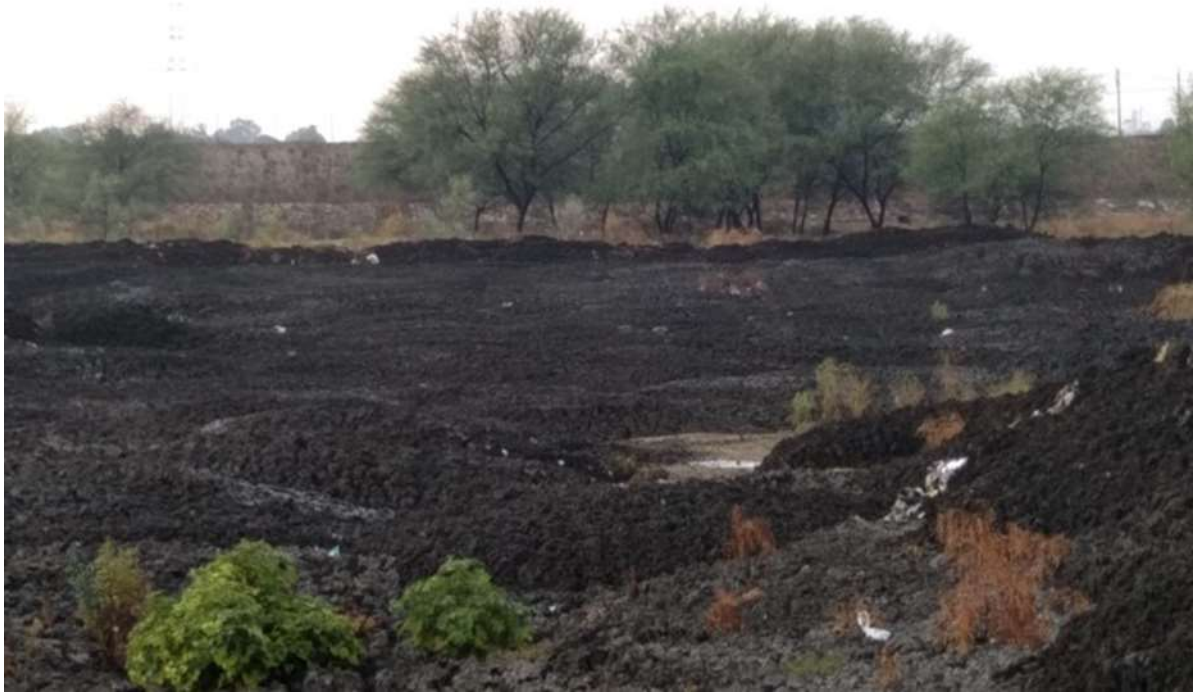
Overall site	
Admin Building	

Airblower, HT, PMCC room & DG Shed area	
CCT	

Receiving Chamber,MPS	
OHT	

Staff Qtrs – Type 2	
Staff Qtrs – Type 1	

Interceptor of Assi Nala	
Quality of Treated Effluent at Treated Water Collection Tank ,STP	

Treated effluent disposal	
Disposal of sludge	

ANNEXURE - A
FLOW MEASUREMENT & POWER CONSUMPTION DETAILS AT MPS

Annexure A - Flow measurement & power consumption details at MPS

DATE	TOTALIZER FLOW				POWER CONSUMTION				POWER FACTOR	REMARK
	INITIAL	FINAL	IN M3	IN MLD	INITIAL (MWH)	FINAL (MWH)	TOTAL	IN KWH		
1-Aug-22	21337163.14	21369490.60	32327.46	32.33	2073.05	2076.05	3.00	3000	0.99	
2-Aug-22	21369490.60	21400246.90	30756.30	30.76	2076.05	2078.91	2.86	2860	0.98	
3-Aug-22	21400246.90	21431793.99	31547.09	31.55	2078.91	2081.95	3.04	3040	0.98	
4-Aug-22	21431793.99	21459500.25	27706.26	27.71	2081.95	2084.71	2.76	2760	0.99	
5-Aug-22	21459500.25	21487774.59	28274.34	28.27	2084.71	2087.58	2.87	2870	0.99	
6-Aug-22	21487774.59	21516488.23	28713.64	28.71	2087.58	2090.43	2.85	2850	0.98	
7-Aug-22	21516488.23	21550843.41	34355.18	34.36	2090.43	2093.99	3.56	3560	0.98	
8-Aug-22	21550843.41	21580203.49	29360.08	29.36	2093.99	2097.12	3.13	3130	0.99	
9-Aug-22	21580203.49	21609585.13	29381.64	29.38	2097.12	2100.12	3.00	3000	0.97	
10-Aug-22	21609585.13	21660001.46	50416.33	50.42	2100.12	2105.85	5.73	5730	0.98	Plant is running with full capacity
11-Aug-22	21660001.46	21710295.46	50294.00	50.29	2105.85	2111.59	5.74	5740	0.98	
12-Aug-22	21710295.46	21762961.88	52666.42	52.67	2111.59	2117.42	5.83	5830	0.97	
13-Aug-22	21762961.88	21815662.18	52700.30	52.70	2117.42	2123.12	5.70	5700	0.98	
14-Aug-22	21815662.18	21868819.59	53157.41	53.16	2123.12	2128.93	5.81	5810	0.98	
15-Aug-22	21868819.59	21920681.71	51862.12	51.86	2128.93	2134.49	5.56	5560	0.99	
16-Aug-22	21920681.71	21970771.00	50089.29	50.09	2134.49	2139.57	5.08	5080	0.98	
17-Aug-22	21970771.00	22005533.18	34762.18	34.76	2139.57	2142.77	3.20	3200	0.98	
18-Aug-22	22005533.18	22038392.95	32859.77	32.86	2142.77	2145.55	2.78	2780	0.98	
19-Aug-22	22038392.95	22061319.87	22926.92	22.93	2145.55	2147.55	2.00	2000	0.99	

DATE	TOTALIZER FLOW				POWER CONSUMTION				POWER FACTOR	REMARK
	INITIAL	FINAL	IN M3	IN MLD	INITIAL (MWH)	FINAL (MWH)	TOTAL	IN KWH		
20-Aug-22	22061319.87	22079503.11	18183.24	18.18	2147.55	2149.38	1.83	1830	0.97	As per consulted with UPJN Plant is shut down mode from 20-Aug-22 (4:00 PM) because level of flood has been risen at MPS Nagwa site
21-Aug-22	22079503.11	22097482.58	17979.47	17.98	2149.38	2151.13	1.75	1750	0.98	Due maintenance work of SBR we need water so one pump is running
22-Aug-22	22097482.58	22114570.88	17088.30	17.09	2151.13	2152.87	1.74	1740	0.98	
23-Aug-22	22114570.88	22132174.31	17603.43	17.60	2152.87	2154.6	1.73	1730	0.99	
24-Aug-22	22132174.31	22150080.66	17906.35	17.91	2154.6	2156.32	1.72	1720	0.97	
25-Aug-22	22150080.66	22168009.55	17928.89	17.93	2156.32	2158.04	1.72	1720	0.97	
26-Aug-22			0.00	0.00	2158.04	2159.06	1.02	1020	0.98	Plant is shutdown

DATE	TOTALIZER FLOW				POWER CONSUMTION				POWER FACTOR	REMARK
	INITIAL	FINAL	IN M3	IN MLD	INITIAL (MWH)	FINAL (MWH)	TOTAL	IN KWH		
										mode fully. Flow transmitter removed from discharge line due to floods water increase.
27-Aug-22			0.00	0.00	2159.06	2159.28	0.22	220	0.98	
28-Aug-22			0.00	0.00	2159.28	2159.84	0.56	560	0.99	
29-Aug-22			0.00	0.00	2159.84	2160.12	0.28	280	0.98	
30-Aug-22			0.00	0.00	2160.12	2160.47	0.35	350	0.98	
31-Aug-22			0.00	0.00	2160.47	2160.76	0.29	290	0.99	
Total			**830846.41**	**830.85**			**87.42**	**87710**		

ANNEXURE - B

FLOW MEASUREMENT & POWER CONSUMPTION DETAILS AT STP

Annexure B - Flow measurement & power consumption details at STP

DATE	TOTALIZER FLOW				POWER CONSUMTION				POWER FACTOR	REMARK
	INITIAL	FINAL	IN M3	IN MLD	INITIAL(MWH)	FINAL(MWH)	TOTAL	IN KWH		
1-Aug-22	3203010	3237742	34732.00	34.73	2741.00	2746.43	5.43	5430	0.99	
2-Aug-22	3237742	3270419	32677.00	32.68	2746.43	2751.75	5.32	5320	0.98	
3-Aug-22	3270419	3303286	32867.00	32.87	2751.75	2756.19	4.44	4440	0.98	
4-Aug-22	3303286	3334222	30936.00	30.94	2756.19	2760.68	4.49	4490	0.98	
5-Aug-22	3334222	3363772	29550.00	29.55	2760.68	2766.05	5.37	5370	0.99	
6-Aug-22	3363772	3394322	30550.00	30.55	2766.05	2770.92	4.87	4870	0.99	
7-Aug-22	3394322	3430099	35777.00	35.78	2770.92	2774.88	3.96	3960	0.98	
8-Aug-22	3430099	3460780	30681.00	30.68	2774.88	2779.74	4.86	4860	0.99	
9-Aug-22	3460780	3491039	30259.00	30.26	2779.74	2785.35	5.61	5610	0.98	
10-Aug-22	3491039	3541695	50656.00	50.66	2785.35	2791.14	5.79	5790	0.98	Plant is running with full capacity
11-Aug-22	3541695	3593964	52269.00	52.27	2791.14	2796.69	5.55	5550	0.99	
12-Aug-22	3593964	3648411	54447.00	54.45	2796.69	2802.32	5.63	5630	0.99	
13-Aug-22	3648411	3701389	52978.00	52.98	2802.32	2808.18	5.86	5860	0.98	
14-Aug-22	3701389	3755501	54112.00	54.11	2808.18	2814.03	5.85	5850	0.98	
15-Aug-22	3755501	3808341	52840.00	52.84	2814.03	2819.80	5.77	5770	0.99	
16-Aug-22	3808341	3859942	51601.00	51.60	2819.80	2825.75	5.95	5950	0.98	
17-Aug-22	3859942	3895785	35843.00	35.84	2825.75	2831.47	5.72	5720	0.98	
18-Aug-22	3895785	3930422	34637.00	34.64	2831.47	2837.06	5.59	5590	0.98	
19-Aug-22	3930422	3954734	24312.00	24.31	2837.06	2841.87	4.81	4810	0.99	
20-Aug-22	3954734	3973840	19106.00	19.11	2841.87	2846.02	4.15	4153	0.98	As per consulted with UPJN Plant is shut down mode from 20-Aug-22 (4:00 PM)

DATE	TOTALIZER FLOW				POWER CONSUMTION				POWER FACTOR	REMARK
	INITIAL	FINAL	IN M3	IN MLD	INITIAL(MWH)	FINAL(MWH)	TOTAL	IN KWH		
										because level of flood has been risen at MPS Nagwa site
21-Aug-22	3973840	3992308	18468.00	18.47	2846.02	2850.46	4.44	4440	0.98	Due to maintenance work of SBR we need water so one pump is running
22-Aug-22	3992308	4010072	17764.00	17.76	2850.46	2854.29	3.83	3830	0.99	
23-Aug-22	4010072	4026713	16641.00	16.64	2854.29	2858.32	4.03	4030	0.99	
24-Aug-22	4026713	4044020	17307.00	17.31	2858.32	2862.61	4.29	4290	0.99	
25-Aug-22	4044020	4061885	17865.00	17.87	2862.61	2866.93	4.32	4320	0.99	
26-Aug-22			0.00	0.00	2866.93	2870.86	3.93	3930	0.98	Plant is shutdown mode fully.
27-Aug-22			0.00	0.00	2870.86	2873.98	3.12	3120	0.98	
28-Aug-22			0.00	0.00	2873.98	2877.68	3.70	3700	0.99	
29-Aug-22			0.00	0.00	2877.68	2881.04	3.36	3360	0.99	
30-Aug-22			0.00	0.00	2881.04	2884.41	3.37	3370	0.99	
31-Aug-22			0.00	0.00	2884.41	2887.7	3.29	3290	0.98	
Total		**Total**	**858875.00**	**858.88**			**146.7**	**146703.0**		

ANNEXURE - C
MAINTENANCE WORK AT MPS & STP

Annexure C - Unscheduled maintenance work at MPS & STP

Sl. No.	Location	Date	Remark
	MPS		
1	Maintenance of Dewater pump (Installed ball valve to control back flow)	28-Aug-2022	Done
2	Mess replacement and maintenance of air release valve at same ghat.	24-Aug-2022	Done
	STP		
1	Maintenance & Cleaning work of Filtrate tank	03-Aug-22	Done
2	Maintenance work of inlet gate valve -4(Actuator nut miss issue)	04-Aug-22	Done
3	Maintenance work SAS Pump-2 (Lifted and Reinstalled work)	08-Aug-22	Done
4	Maintenance work SAS Pump-4 (Flinch Reinstalled)	08-Aug-22	Done
5	Maintenance work RAS Pump-1(Electrical maintenance)	10-Aug-22	Done
6	Maintenance of process air valve-4 (Bush replacement)	10-Aug-22	Done
7	Maintenance of Poly tank Agitator-1(Alignment issue making abnormal sound and vibration) _	12-Aug-22	Done
8	Maintenance and cleaning SBR-2(Diffuser and membrane replacement and maintenance)	08-Aug-22 to 24-Aug-22	Done
9	Maintenance and cleaning SBR-4(Diffuser and membrane replacement and maintenance)	24-Aug-22 to 2-Sept-22	Done

ANNEXURE - D
INFLUENT & TREATED EFFLUENT STANDARD TEST REPORT

Annexure D - Influent & Treated effluent standard test report

Date	Location of STP with design discharge in MLD	Sewage received in STP on sampling date in MLD	Influent						Effluent									Reasons/Remark for less quantity of sewage received in STP
			pH	TSS in mg/L	COD in mg/L	BOD in mg/L	TKN in mg/L	TP in mg/L	pH	TSS in mg/L	COD in mg/L	BOD in mg/L	NH4N in mg/L	TN in mg/L	TP in mg/L	DO -mg/L	Fecal Coliform Effluent <100MPN/100 ml)	
1	2	3	4a	4b	4c	4d	4E	4F	5a	5b	5c	5d	5e	5F	5g	5h	5i	7
01-Jun-22	50.00	32.33	7.82	130	228	108	18.1	4.6	8.30	8	36	8	2.6	3.9	1.2	3.1	80	
02-Jun-22	50.00	30.76	7.78	167	224	106	18.5	4.6	8.27	5	32	7	3.3	4.6	1.1	2.9	70	
03-Jun-22	50.00	31.55	7.21	306	292	120	17.7	4.3	7.69	8	36	7	2.5	4.3	1.5	3.6	90	
04-Jun-22	50.00	27.71	7.44	176	280	102	18.5	5.1	7.58	9	40	7	3.5	5.2	1.5	2.8	60	
05-Jun-22	50.00	28.27	7.40	270	292	121	17.2	5.2	7.60	7	36	7	4.1	4.2	1.3	2.6	70	
06-Jun-22	50.00	28.71	7.02	290	216	111	16.9	4.5	7.59	8	32	8	3.4	4.5	0.9	3.2	60	
07-Jun-22	50.00	34.36	7.15	240	284	123	17.2	4.9	7.48	9	32	7	4.1	4.3	1.2	2.8	70	
08-Jun-22	50.00	29.36	7.21	220	244	117	17.4	4.7	7.64	8	36	9	3.9	4.4	1.0	2.7	90	
09-Jun-22	50.00	29.38	7.61	190	216	105	17.3	4.7	8.14	8	40	7	3.0	4.9	0.8	3.9	90	
10-Jun-22	50.00	50.42	7.90	230	244	114	18.1	4.5	8.34	9	36	8	2.7	4.8	0.6	2.8	90	
11-Jun-22	50.00	50.29	7.76	263	332	126	18.4	4.3	8.14	9	44	9	3.2	5.3	0.6	3.1	80	
12-Jun-22	50.00	52.67	7.89	230	232	108	19.7	4.8	8.33	8	36	8	3.6	5.9	0.9	3.5	70	
13-Jun-22	50.00	52.70	7.82	220	268	111	19.3	5.3	8.21	8	36	7	3.2	5.6	1.1	3.9	60	

Date	Location of STP with design discharge in MLD	Sewage received in STP on sampling date in MLD	Influent						Effluent									Reasons/Remark for less quantity of sewage received in STP
			pH	TSS in mg/L	COD in mg/L	BOD in mg/L	TKN in mg/L	TP in mg/L	pH	TSS in mg/L	COD in mg/L	BOD in mg/L	NH4N in mg/L	TN in mg/L	TP in mg/L	DO -mg/L	Fecal Coliform Effluent <100MPN/100 ml)	
1	2	3	4a	4b	4c	4d	4E	4F	5a	5b	5c	5d	5e	5F	5g	5h	5i	7
14-Jun-22	50.00	53.16	7.64	243	284	126	19.8	5.4	8.24	8	40	9	2.9	5.3	1.0	3.8	50	
15-Aug-22	50.00	51.86	7.43	253	248	99	18.7	5.3	8.02	7	32	6	2.5	4.8	0.9	4.2	60	
16-Aug-22	50.00	50.09	7.39	213	196	105	17.6	5.0	7.98	8	32	8	2.0	4.3	1.0	3.8	50	
17-Aug-22	50.00	34.76	7.23	150	184	83	16.8	4.8	7.84	7	28	6	1.8	4.1	0.9	4.3	40	
18-Aug-22	50.00	32.86	7.31	183	236	74	17.1	4.6	7.86	7	36	7	1.6	4.2	1	4.9	40	
19-Aug-22	50.00	22.93	7.28	253	368	58	16.2	4.4	7.74	9	40	6	1.5	3.8	0.7	4.7		
20-Aug-22	50.00	18.18	7.22	166	188	45	14.1	4.2	7.68	8	36	7	1.2	2.9	0.6	5.1	60	
21-Aug-22	50.00	17.98	7.48	218	296	39	12.8	4.1	7.81	9	32	5	1	2.7	0.6	5.8	50	
22-Aug-22	50.00	17.09	7.26	178	168	42	12.5	4	7.59	7	24	6	0.9	2.3	0.5	5.9	70	
23-Aug-22	50.00	17.6	7.21	180	156	36	12	4	7.56	8	28	4	1	2.4	0.6	6	60	
24-Aug-22	50.00	17.91	7.49	176	164	36	10.5	3.9	7.84	9	24	5	0.8	2.1	0.5	5.9	50	
25-Aug-22	50.00	17.93	7.38	170	156	45	10.7	3.3	7.72	5	28	8	0.5	1.9	0.4	6.1	60	
26-Aug-22	50.00																	
27- Aug-22	50.00																	

Date	Location of STP with design discharge in MLD	Sewage received in STP on sampling date in MLD	Influent						Effluent									Reasons/Remark for less quantity of sewage received in STP
			pH	TSS in mg/L	COD in mg/L	BOD in mg/L	TKN in mg/L	TP in mg/L	pH	TSS in mg/L	COD in mg/L	BOD in mg/L	NH4N in mg/L	TN in mg/L	TP in mg/L	DO -mg/L	Fecal Coliform Effluent <100MPN/100 ml)	
1	2	3	4a	4b	4c	4d	4E	4F	5a	5b	5c	5d	5e	5F	5g	5h	5i	7
28- Aug-22	50.00																	
29-Aug-22	50.00																	
30-Aug-22	50.00																	
31-Aug-22																		

ANNEXURE - E
THE SLUDGE GENERATED ALONG WITH OUTLET CONCENTRATION AND FECAL COLIFORM

Annexure E - The sludge generated along with outlet concentration and Fecal coliform

Date	Sludge Trolley	Sludge in m3 (1trolley=2.7m3)	Sludge Concentration (%)	Fecal Coliform	Remark
01- Aug -22	4	10.8	23.01	1700000	
02- Aug -22	4	10.8	21.8	1400000	
03- Aug -22	2	5.4	23.5	1300000	
04- Aug -22	0	0	0	1400000	
05- Aug -22	3	8.1	23.2	1600000	
06- Aug -22	1	2.7	24.81	1400000	
07- Aug -22	2	5.4	24.48	1200000	
08- Aug -22	2	5.4	22.68	1900000	
09- Aug -22	6	16.2	24.68	1600000	
10- Aug -22	6	16.2	22.03	1200000	
11- Aug -22	3	8.1	21.73	1400000	
12- Aug -22	5	13.5	21.99	1300000	
13- Aug -22	7	18.9	21.84	1600000	
14- Aug -22	9	24.3	22.63	1400000	
15- Aug -22	10	27	22.7	1300000	
16- Aug -22	11	29.7	21.4	1500000	
17- Aug -22	10	27	21.83	1200000	
18- Aug -22	10	27	21.93	1900000	
19- Aug -22	10	27	21.44	1600000	
20- Aug -22	10	27	20.8	1900000	
21- Aug -22	10	27	21.47	1900000	
22- Aug -22	8	21.6	21.38	1400000	
23- Aug -22	8	21.6	20.79	1300000	
24- Aug -22	6	16.2	21.15	1400000	
25- Aug -22	6	16.2	20.93	1600000	
26 Aug -22	6	16.2	20.84	1600000	
27- Aug -22		0		1400000	
28- Aug -22		0		1700000	
29- Aug -22		0		1900000	
30- Aug -22		0		1600000	
31 Aug -22		0			
Total	**159**	**429.3**			