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

FEBRUARY- 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

Table of Contents

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, in particular, 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 waste water 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

S.No	Pending works as on December 2021	Status of pending work		Remarks
		Jan-22	Feb-22	
	STP			
1	Tap changer of Transformer No2 is not working due to Motor Jamming problem.	Pending	Pending	
2	Solenoid Valve is not install at air pipeline for all basin.	Pending	Pending	
3	MCCB of VFD panel for blower no 5 is damaged.	Pending	Pending	
4	34 no. of. lights are not working at SBR & PTU	Pending	Pending	
5	Plant Drain Sump Motor Erection & Pipe Connection yet to Complete	Pending	Pending	
6	DO and Temperature sensor of SBR Basin No.1 are not working Properly	Pending	Pending	
7	FRC sensor of CCT is Under maintenance. (Membrane has damaged)	Pending	Pending	
8	HMI of blower room not Integrated into Main PLC.	Pending	Pending	
9	Display of Filtrate Pump-1 (VFD) is not installed	Pending	Pending	
10	EOT yet to erect for SAS, RAS PUMP, BLOWER, TWP, CHLORINE Tonner Room, BFP.	Pending	Pending	
11	Handle of MCCB (Actuator panel) has been damaged.	Pending	Pending	
12	Design Document for OHT Dome	Completed	Completed	
13	Entrance Gate @ STP	Pending	Completed	
14	Masonry drain 340M, Internal stone pitching 200M, Pathway 100M & Fencing 1697M	Pending	Pending	
15	External Approach Road	Pending	Completed	

S.No	Pending works as on December 2021	Status of pending work		Remarks
		Jan-22	Feb-22	
16	Soak Pit for Security Building & Air blower Building	Pending	Completed	Sanitary fittings yet to be fix in Security Building
17	Chamber for Air Valve (Samneghat)	Completed	Completed	
18	Outfall pipe strengthening	Pending	Pending	
19	Rising Main Strengthening Work (Stone Pitching(60M) near Ganga Vihatori Colony)	Pending	Pending	Boulder Received 4 number of trolleys at site
	MPS			
1	RTCC Panel is not proper working due to Tap changer no.1 Motor's jamming problem.	Pending	Pending	
2	DG number 1&2 fuel is showing in percentage, but fuel is not variable. After DG start 30 minutes fuel percentage is not decrease. DG's fuel percentage is constant. DG synchronization yet to Complete	Pending	Pending	
3	Earth filling and Ground levelling	Completed	Completed	Only left in minor portions
4	Flow meter installation at Assi nala weir	Pending	Pending	
5	EOT erection yet to Complete @ Dry Well	Pending	Pending	
6	Stone Pitching @ MPS	Pending	Completed	
7	MPS outside Boundary Fencing Work	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				2	
Chemist					2				2	
Engineer-Electrical	1				1				2	
Executive-Operation		1	1	1		1	1	1	6	
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				6				8	Day 1, Night 1 for MPS & Day 3, Night 3 for STP
Total									**48**	

3.2. O &M personnel details

S.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	Engineer-Operation	Shyam Sundar	6386120763	983646764172
6	Engineer-Electrical	Javed Ahmad Ansari	9140301050	807432990304
7	Chemist	Ajeet Kumar Singh	8299662999	950103049739
8	Executive-Operation/Electrical	Sahil Singh	9455227738	737742458996
9	Executive-Mechanical/operation	Sanjay Prasad	8707525703	239864940488
10	Executive-Electrical	Rakesh Gupta	8433053644	749802436574
11	Executive-Electrical	Shiv kumar	6307251638	475389474733
12	Executive-Mechanical	Devendra Kumar Yadav	9795116989	865308171365
13	Executive-Operation	Sanjay Yadav	8858460117	357961658068
14	Executive-Electrical	Deepak Kumar	9695423741	580550119520
15	Executive-operation/electrical	Kuldeep Kumar	8874459281	888839922593
16	Senior-Technician	Raju Kumar Chauhan	9646688728	278575928253
17	Senior-Technician	Ram Parvesh	9335342644	609960423981
18	Executive-Operation/electrical	Sunil Kumar Pathak	6393856586	845719777879
19	Executive-Operation	Shashikant	7905483203	856106147874
20	Executive-Operation	Prashant Singh	6307150473	848586837420
21	Supervisor	Shubhash Yadav	9415807558	677818900707
22	Executive-Operation	Vishal Yadav	8896041234	361230345977
23	Executive-Operation	Vikas Yadav	9305815842	544638745451
24	Horticulture Incharge	Kripal Singh	9818811775	599263267279

S.No	Designation	Name of Employee	Contact no.	ID Proof (Aadhaar No.)
25	Horticulture	Ajay Yadav		251098493906
26	Horticulture	Pramod Yadav		953545698981
27	House Keeper	Sanjay yadav		322833624635
28	House Keeper	Dinesh		507141348445
29	House Keeper	Vikki		487676316868
30	House Keeper	Chandan		409091475879
31	House Keeper	Jetendra		833435558604
32	House Keeper	Deepu		409104354148
33	House Keeper	Susil Kumar		698727191085
34	House Keeper	Raj kumar		644290326829
35	House Keeper	Sonu kumar		235568756907
36	House Keeper	Prashant sharma		799988837048
37	Driver	Vinay mishra		817020662698
38	Tractor Driver(Sludge unit)-1	Mukesh Yadav		273021796561
39	Tractor Driver(Sludge unit)-2	Ram Raj Verma		994848742943
40	Tractor Driver(Sludge unit)-3	Subhas Yadav		427884522912
41	Guard STP(AESPL)	Brijendra Srivastava	9558165220	968451950213
42	Guard STP(AESPL)	Ram Singh	9455227738	435814168203
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
	MPS						
1	COD & BOD Analyser	WTW(XYLEM)	Outlet & Inlet	30-Jan-19	Not provided by VSPPL	WTW(XYLEM)	STP,02,11
2	Chlorine Analyser	WTW(XYLEM)	CCT	17-Jan-19		WTW(XYLEM)	472112
3	DO Analyser	WTW(XYLEM)	SBR Basin 1,2,3&4	30-Jan-19		WTW(XYLEM)	STP,06,07,08,09
4	TSS Analyser	WTW(XYLEM)	Inlet &Outlet	30-Jan-19		WTW(XYLEM)	STP AT 03,12
5	PH Analyser	WTW(XYLEM)	Inlet &Outlet	30-Jan-19		WTW(XYLEM)	STP AT, 01,11
6	Total Phosphorous	WTW(XYLEM)	Inlet &Outlet	30-Jan-19		WTW(XYLEM)	STP AT, 05,14
7	Total Nitrozen	WTW(XYLEM)	Inlet &Outlet	21-Aug-19		WTW(XYLEM)	STP AT 04,13
8	PH Analyser	M/s Forbes Marshall	CCT	06-Jul-21		M/s Forbes Marshall	559117857
9	Phosphorous Analyser	M/s Forbes Marshall	CCT	06-Jul-21		M/s Forbes Marshall	559117857
10	Clamp on flow meter	M/s Fuji Electric	Outlet	09-Jul-21		M/s Fuji Electric	20210709130702
11	Ultrasonic Flow Meter	M/s Siemens	Inlet	21-Jan-20		M/s Fuji Electric	N9G1560,N9G1563
12	Flow Meter SAS Line	M/s Krohne Marshall	SBR Basin 1,2,3&4	06-Jul-21		M/s Forbes Marshall	700105094
13	Flow Meter(Filtrate Pump)	M/s Krohne Marshall	Sludge Building	06-Jul-21		M/s Forbes Marshall	700105094
	STP						
1	Electromagnetic Flow Meter	M/s Krohne Marshall	MPS Outlet Line	06-Jul-21		M/s Forbes Marshall	700105094
2	Level Transmitter	M/s Siemens	MPS Wet well	25-Jan-19		M/s Siemens	A5E32282889
3	Level Switch	M/s Siemens	MPS Wet well	25-Jan-19		M/s Siemens	A5E32282888
4	Pressure Gauge	M/s Gauges Bourdon India Pvt.Ltd	MPS Drywell	02-Jul-20		M/s Gauges Bourdon India Pvt.Ltd	DFDAPG16940/07-2020
5	Pressure Transmitter	M/s Gauges Bourdon India Pvt.Ltd	MPS Drywell	27-Feb-20		M/s Gauges Bourdon India Pvt.Ltd	

*** To be confirmed by VSPPL along with copy of the calibration certificate**

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	18-03-2021	17-03-2022	AACPL	AACPL/02876F
2	HOT Air Oven	MSIW	Laboratory	18-03-2021	17-03-2022	AACPL	AACPL/02876F
3	Weighing balance	Kerro	Laboratory	18-03-2021	17-03-2022	AACPL	BBT/003/JAN/20
4	Digital RPM Meter	Remi	Laboratory	18-03-2021	17-03-2022	AACPL	C-200215-9-1/A
5	COD Reactor	MSIW	Laboratory	18-03-2021	17-03-2022	AACPL	AACPL/02876F
6	Analytical Balance	Wensae	Laboratory	18-03-2021	17-03-2022	AACPL	BBT/003/JAN/20
7	Muffle Furnace	MSIW	Laboratory	18-03-2021	17-03-2022	AACPL	AACPL/02876F
8	Conductivity /TDS Meter	Labman	Laboratory	18-03-2021	17-03-2022	AACPL	**Not Available**
9	Turbidity Meter	Lutron	Laboratory	18-03-2021	17-03-2022	AACPL	AACPL/10376F
10	Turbidity Meter	EI	Laboratory	18-03-2021	17-03-2022	AACPL	AACPL/10376F
11	Digital PH Meter	Eutech	Laboratory	18-03-2021	17-03-2022	AACPL	**Not Available**
12	Incubator	MSIW	Laboratory	18-03-2021	17-03-2022	AACPL	AACPL/02876F

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		Reason
	IN MLD	IN MLD		Hrs	Min	Unscheduled outage / power outage/Suspension of O&M services due to the reasons attributable for the Concessionaire /Emergency attributable to the Concessionaire
11-Feb-22	24.99	Flow meter not installed	Yes	11	30	Pumping was stopped due to leakage in Rising main (near Nakkha Nala) on 12:30PM dated 11.02.2022 and Pumping has been started on 15:00 PM dated 13.02.2022
12-Feb-22	0.00		Yes	24		
13-Feb-22	15.21		Yes	15		
Total				**50**	**30**	

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 MLD		Hrs	Min	Unscheduled outage / power outage/Suspension of O&M services due to the reasons attributable for the Concessionaire /Emergency attributable to the Concessionaire
11-Feb-22	29.08	Yes	11	30	Plant was Shutdown due to leakage in Rising main (near Nakkha Nala) on 12:30PM dated 11.02.2022 and Pumping has been started on 15:00 PM dated 13.02.2022
12-Feb-22	0.00	Yes	24		
13-Feb-22	20.73	Yes	15		
Total			**50**	**30**	

5.5. Scheduled Maintenance

Concessionaire has submitted the scheduled maintenance and hence availability should be 100% at all times 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 were not Available (A1)	50 Hrs 30 Min	
Number of days (B1)	28	NA
Non availability (C1) = {A1/(B1*24)}*100	={50.50/(28*24)}*100	
LD for non adherence in INR for associated infrastructures = C1 x 30000	=7.51*30000	
STP		
Sewage treatment plant		
Guaranteed Availability	100%	95%
Hours in the month for which the Facilities and/or the Associated Infrastructure were not Available (A2)	50 Hrs 30 Min	
Number of days (B2)	28	NA
Non availability (C2) = {A2/(B2*24)}*100	={50.50/(28*24)}*100	
LD for non adherence in INR for associated infrastructures = C2 x 30000	=7.51*30000	
Total LD for non adherence = C1 + C2	**450600**	

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	

Its clearly stated based on the available lab test report the influent parameters not exceeded 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 non adherence 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				

Details of notices issued by the Executing Agency (UPJN) towards Non compliance 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			

5.10. Performance Liquidated Damages

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

S.No	Parameters	Non-adherence days	Liquidated damages per day in INR	Total liquidated damages for this month in INR
1	BOD	1	10000	10000
2	TSS	1	5000	5000
3	TN	1	7000	7000
4	NH4-N	1	7000	7000
5	COD	1	5000	5000
6	TP	1	7000	7000
7	Fecal Coliform	1	10000	10000
	Total Amount			**51000**

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

S.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	1	3000	3000
2	Fecal coliform limit	1	3000	3000
	Total Amount			**6000**

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

Not provided / Reported by VSPPL

5.12. 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

5.12.1. Disposal of Treated Effluent

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

5.12.2. 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

5.12.3. 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	799.20	518.40	1317.60	
Digested sludge disposed at the waste disposal site	799.20	518.40	1317.60	
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

5.12.4. Disposal of treated effluent

Description	Value in MLD			Remarks
	Till last month	During this month	Total till date	
Treated effluent	2655.18	1391.33	4046.51	
Treated effluent disposed in the River Ganga / irrigation area	2655.18	1391.33	4046.51	
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

5.13. 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	1	20.729	2446.02	122	0	0	0	124	0	0	0	124	15	803.816	99673.184
130 to 160	130	1	29.081	3780.53	134	0	0	0	136	0	0	0	136	10	537.703	73127.608
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			49.81	6226.55			0	0			0	0			1341.52	172800.79
Overall Total Guaranteed energy consumption (A+B+C+D)																**180368.86**
Overall total flow for the month in ML																**1391.329**

Description	STP	Associated infrastructure - MPS
Total guaranteed energy consumption for the month in KWH (A)	180368.86	NA - Actual to be paid
Number of units consumed during this month (through grid power) (B)	203590.00	150550.00
Number of units consumed through DG adjusted units during this month (C)	1446.43	1327.59
Total number of units consumed during this month (B+C) = D	205036.43	151877.59
Whether power consumption liquidated damage is applicable or not (D is less than A – No, D is greater than A – yes)	Yes	NA
Grid power unit rate- E	8.30	8.30
Applicable Grid consumption after deducting DG consumption (Minmum of B-C, A-C) = F	178922.43	150550.00
Power charges towards grid power E x F = G	1485056.21	1249565.00
Fuel consumption as per DG manufacturer for the consumed units in litre – H	297.00	277.20
Fuel price per litre in Rs – I	87.63	87.63
Total DG set power consumption charges H x I = J	26026.11	24291.00
Total power consumption charges – G + J = K in Rs	1511082.32	1273856.00
Power Liquidated damages – (as per calculation) =L in Rs	204740.79	
Power charges to be paid to the Concessionaire in Rs = K-L	1306341.52	1273856.00

5.14. 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	
2	Wire Cutting Pliers	Nos	3	3			3	
3	Nose Pliers	Nos	7	7			7	
4	Combination pliers	Nos	6	6			6	
5	Temperature Gun	Nos	1	1			1	
6	Multimeter	Nos	4	4			4	
7	Digital Clamp Meter	Nos	2	2			2	
8	Screw Driver Set	Nos	1	1			1	
9	Insulation Tester (500v)	Nos	2	2			2	
10	Emery Paper	Mtr	1	1	5	2	4	
11	Thread Seal Tape	Nos	15	10		5	5	
12	PVC Tape	Nos	30	19	30	10	39	
13	Wire Stripper	Nos	4	4			4	
14	Pipe Wrench (450 mm)	Nos	1	1			1	
15	Pipe Wrench (250 mm)	Nos	1	1			1	
16	Adjustable Spanner (12 Inch)	Nos	2	2			2	
17	Adjustable Spanner (10 Inch)	Nos	1	1			1	
18	Screw Driver (Big)	Nos	6	6			6	
19	Screw Driver (Small)	Nos	2	2			2	
20	Hammer	Nos	3	3			3	
21	Taplon Hammer	Nos	1	1			1	
22	Hexa Frame	Nos	1	1			1	
23	Grease Gun (Small)	Nos	1	1			1	
24	Vacuum Cleaner (Blower)	Nos	1	1			1	
25	Ring Spanners (6-41 mm)	Nos	19	19			19	
26	D- Spanner (6-41 mm)	Nos	39	39			39	
27	Chisel	Nos	2	2			2	
28	Rope Sealing	Mtr	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
29	Hexa Frame	Nos	1	1			1	
30	Right angle	Nos	2	2			2	
31	Drill Bit(8MM)	Nos	1	1			1	
32	Grander (AG-4)	Nos	1	1			1	
33	O-Ring (5 mm)	Nos	2	2			2	
34	Cutting wheel (AG-4)	Pkt	2	2			2	
35	Barricading Tape	Pkt	1	1			1	
36	Baffing Wheel	Pkt	4	3	1	2	2	
37	Leather Gloves	Pkt	1	1	2	1	2	
38	Grinding Wheel (AG-4)	Pkt	5	4	2	3	3	
39	Welding Rod (MS)	Pkt	1	3	2	2	3	
40	Welding Rod (SS)	Pkt	1	2	2	2	2	
41	PVC Gloves	Pkt	1	1	1	1	1	
42	Valve (Half Inch)	Nos	2	2			2	
43	Lifting Belt (5 Ton)	Nos	24	24			24	
44	D-cycle (3-4 Ton)	Nos	4	4			4	
45	Rope Pulli	Nos	2	2			2	
46	Rope (Rassa)	Mtr	25	25			25	
47	Ratchet Set (Taparia) (8-32 mm)	Set	1	1			1	
48	Grease	Kg	5	10	20	10	20	
49	Oil Cuppy	Nos	2	2			2	
50	Ratchet Handle	Nos	1	1			1	
51	Ratchet Spanner (5,7,6 mm)	Nos	3	3			3	
52	Pressure Jack (hydraulic) (5 Ton)	Nos	1	1			1	
53	Welding Machine	Nos	1	1			1	
54	Grinder Machine	Nos	1	1			1	
55	Drill Machine	Nos	1	1			1	
56	Lifting belt(5 ton)	Nos	2	2			2	
57	O-ring(5mm)	Nos	1	1	5	1	5	
58	PVC Gloves	Pkt	1	1	1	1	1	
59	Sim Cutter	Nos	1	1			1	
60	Chain Block (6mtrs,2ton)	Nos	1	1			1	
61	Dial Gauge	Nos	2	2			2	
62	Hand trolley	Nos	2	2			2	
63	Tractor with trolley	Nos	1	1			1	
64	Magger(Multirange LT,HT)	Nos	1	1			1	

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
65	Toolbox	Nos	2	2			2	
66	Concrete drill bit (20mm)	Nos	1	1			1	
67	Concrete drill bit (6.5mm)	Nos	2	2			2	
68	Fastener (20mm)	Nos	5	5			5	
69	Annabond	Nos	4	4			4	
70	D-cycle (3 ton)	Nos	2	2			2	
71	D-cycle (2 ton)	Nos	2	2			2	
72	D-cycle (1 ton)	Nos	4	4			4	
73	Digital multimeter	Nos	3	3			3	
74	Extension Board	Nos	4	4			4	
75	Torch	Nos	3	3			3	
76	Tool Bag	Nos	6	6			6	
77	Cable tie	Nos	1 Pkt	1 Pkt			1 Pkt	
78	Vernier caliper	Nos	1	1			1	
79	Round file	Nos	1	1			1	
80	Half Round file	Nos	1	1			1	
81	Grease gun	Nos	2	2			2	
82	feeler Gauge	Nos	1	1			1	
83	Circlip Pliers (Inside and out-side)	Nos	2	2			2	
84	Allen Key (17mm)	Nos	2	2			2	
85	Allen Key (14mm)	Nos	2	2			2	
86	Allen Key (12mm)	Nos	2	2			2	
87	Allen Key (11mm)	Nos	2	2			2	
88	Allen Key (5mm)	Nos	2	2			2	
89	Hand Blower	Nos	1	1			1	
90	Printer& Scanner	Nos	1	1			1	
91	Laptop	Nos	1	1			1	
92	Computer System	Nos	1	1			1	

5.15. 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 -	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
	Kishore make - 15HP, 11KW							
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 Valve Ø125mm - Indian Valve Pvt. Ltd	Nos	2	2			2	

5.16. Chemicals, Dangerous Goods and Hazardous Materials storage details

Status as on 28.02.2022 and Sufficient up to March 31,2022

S.No.	Description	Unit	Storage availability till last month	Purchase during this month	Utilized during this month	Remaining available	Remark
1	Chlorine	Kg	1018	8100	6405	2713	To be procured for uninterrupted operation
2	Poly Electrolyte	Kg	260	100	211	149	To be procured for uninterrupted operation
3	Calcium Chloride	gm	470		6	464	
4	Ammonium Chloride	gm	300		40	260	
5	Ferric Chloride	gm	472		20	452	
6	Di-Sodium Hydrogen Orthophosphate	gm	420		20	400	
7	Potassium Dihydrogen Orthophosphate	gm	400		20	380	
8	Di - Potassium hydrogen Orthophosphate	gm	425		25	400	
9	Potassium Chloride	gm	250		50	200	
10	Manganous sulphate	gm	700		250	450	
11	Sodium hydroxide	gm	680		200	480	
12	Potassium dichromate	gm	375		25	350	
13	Silica gel	gm	450		10	440	
14	Starch	gm	400		20	380	
15	Ethanol	ml	400	500	300	600	
16	Sodium azid	gm	140		30	110	
17	Mercurous Sulphate	gm	70	100	36	134	
18	Ammonium ferrous sulphate	gm	580		100	480	
19	Sodium thiosulfate	gm	750		50	700	
20	Mac Conkey Borth	gm	350		150	200	

S.No.	Description	Unit	Storage availability till last month	Purchase during this month	Utilized during this month	Remaining available	Remark
21	Sulfuric acid	ltr	5	12.5	7.5	10	
22	Filter paper	no	3		1	2	
23	Silver sulphate	gm	30		10	20	
24	Magnesium sulphate	gm	700	500	400	800	
25	Ferroin indicater	ml	50	100	25	125	
26	Ammonia	vial	80	100	60	120	
27	Phosphate	vial	80	100	60	120	
28	Potassium iodide	gm	241		37	204	
29	Mercuric oxide red	gm	200	500	150	550	
30	Cupric Sulphate	gm	500	500	250	750	

6.0. PROJECT ENGINEER ACTIVITIES

Activities carried out as per TOR				
Clause as per TOR	**Scope**	**Period: February 2018 to March 2022**		
		Undertaken till previous month - January 2021	**Undertaken during this month - February 2022**	**Expected for next month - March 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 kick 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

Activities carried out as per TOR				
Clause as per TOR	**Scope**	**Period: February 2018 to March 2022**		
		Undertaken till previous month - January 2021	**Undertaken during this month - February 2022**	**Expected for next month - March 2022**
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 permissions		NA	NA
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 Article 20 of the Concession	NA	NA	NA

Activities carried out as per TOR				
Clause as per TOR	**Scope**	**Period: February 2018 to March 2022**		
		Undertaken till previous month - January 2021	**Undertaken during this month - February 2022**	**Expected for next month - March 2022**
	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
4.3(v)	Is in compliance with the technology license agreement executed by the Concessionaire for the technology,	Yes	NA	NA

Activities carried out as per TOR				
Clause as per TOR	**Scope**	**Period: February 2018 to March 2022**		
		Undertaken till previous month - January 2021	**Undertaken during this month - February 2022**	**Expected for next month - March 2022**
	processes, know-how and systems used or incorporated into the Facilities and/or the Associated Infrastructure			
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. In particular, such comments shall specify the conformity or otherwise of such Drawings with the Scope of the Project and Specifications and Standards	Yes	Yes	Yes
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"** so as to confirm to the scope as per **Schedule**	Yes	Yes	Yes

Activities carried out as per TOR				
Clause as per TOR	**Scope**	**Period: February 2018 to March 2022**		
		Undertaken till previous month - January 2021	**Undertaken during this month - February 2022**	**Expected for next month - March 2022**
	1 of the Concession Agreement.			
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 kick 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
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

Activities carried out as per TOR				
Clause as per TOR	**Scope**	**Period: February 2018 to March 2022**		
		Undertaken till previous month - January 2021	**Undertaken during this month - February 2022**	**Expected for next month - March 2022**
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 completion date	Yes	NA	NA
6.4	The Project Engineer shall review, in particular, 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	Yes	Concessionaire not yet submitted progress report. However, the report	Yes

Activities carried out as per TOR				
Clause as per TOR	**Scope**	**Period: February 2018 to March 2022**		
		Undertaken till previous month - January 2021	**Undertaken during this month - February 2022**	**Expected for next month - March 2022**
	such report		was prepared by Project Engineer	
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
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	Yes	NA	NA

Activities carried out as per TOR				
Clause as per TOR	**Scope**	**Period: February 2018 to March 2022**		
		Undertaken till previous month - January 2021	**Undertaken during this month - February 2022**	**Expected for next month - March 2022**
	a fair and efficient manner, and shall monitor and review the results thereof			
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	In the event that 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 brought the Construction Works into conformity with the Specifications and Standards, and the provisions of this Paragraph 5 shall apply to such tests	Yes	NA	NA
6.11	In the event that 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

Activities carried out as per TOR				
Clause as per TOR	**Scope**	**Period: February 2018 to March 2022**		
		Undertaken till previous month - January 2021	**Undertaken during this month - February 2022**	**Expected for next month - March 2022**
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 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.	NA	NA	
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	NA	NA	

Activities carried out as per TOR				
Clause as per TOR	**Scope**	**Period: February 2018 to March 2022**		
		Undertaken till previous month - January 2021	**Undertaken during this month - February 2022**	**Expected for next month - March 2022**
	Concessionaire			
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 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'	Yes	Yes	
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	NA	Yes	

Activities carried out as per TOR				
Clause as per TOR	**Scope**	**Period: February 2018 to March 2022**		
		Undertaken till previous month - January 2021	**Undertaken during this month - February 2022**	**Expected for next month - March 2022**
	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; 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	NA	Yes	

Activities carried out as per TOR				
Clause as per TOR	**Scope**	**Period: February 2018 to March 2022**		
		Undertaken till previous month - January 2021	**Undertaken during this month - February 2022**	**Expected for next month - March 2022**
	its quality re influent standards and monitor and record the same on regular basis			
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 Concession Agreement	NA	Yes	
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,	NA	NA	

Activities carried out as per TOR				
Clause as per TOR	**Scope**	**Period: February 2018 to March 2022**		
		Undertaken till previous month - January 2021	**Undertaken during this month - February 2022**	**Expected for next month - March 2022**
	defects or deficiencies observed by it in O&M of the Project. The Project Engineer shall send a copy of its O&M 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	In the event that 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	

Activities carried out as per TOR				
Clause as per TOR	**Scope**	**Period: February 2018 to March 2022**		
		Undertaken till previous month - January 2021	**Undertaken during this month - February 2022**	**Expected for next month - March 2022**
7.15	The Project Engineer shall undertake sewage flow sampling, as and when required by the NMCG/ Uttar Pradesh Jal Nigam, under and in accordance with the provisions of this agreement	NA	Yes	
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, so as 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 Pradesh Jal	Yes	NA	

Activities carried out as per TOR				
Clause as per TOR	**Scope**	**Period: February 2018 to March 2022**		
		Undertaken till previous month - January 2021	**Undertaken during this month - February 2022**	**Expected for next month - March 2022**
	Nigam, the Project Engineer shall provide its opinion and assessment on the events related to Emergency, Change in Law, Force Majure, 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
12.5	Wherever no period has been specified for delivery of services by the Project Engineer, the Project Engineer shall	Yes	Yes	Yes

Activities carried out as per TOR				
Clause as per TOR	**Scope**	**Period: February 2018 to March 2022**		
		Undertaken till previous month - January 2021	**Undertaken during this month - February 2022**	**Expected for next month - March 2022**
	act with the efficiency and urgency necessary for discharging its functions in accordance with Good Industry Practice.			
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 of 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 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,	Yes	Yes	Yes

Activities carried out as per TOR				
Clause as per TOR	**Scope**	**Period: February 2018 to March 2022**		
		Undertaken till previous month - January 2021	**Undertaken during this month - February 2022**	**Expected for next month - March 2022**
	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 & Tonner Room	

PLC & SCADA Room @ STP	
Maintenance work at SBR Actuator	

Receiving Chamber,MPS	
OHT	

Staff Qtrs – Type 1	
Staff Qtrs – Type 2	

MPS Wet Well and Dry Well	
Landscapping	

Laboratory @ STP	
Quality of Treated Effluent at Treated Water Collection Tank ,STP	

Site Visit- Mr.G Ashok Kumar,DG,NMCG.	
PLC & SCADA Room @ MPS	

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 consumption				Power factor	Remark
	Initial	Final	In m^3	In ML	Initial (MWH)	Final (MWH)	Total	In kwh		
1-Feb-22	12212090.93	12263659.13	51568.20	51.57	1054.53	1060.10	5.57	5570	0.98	
2-Feb-22	12263659.13	12315775.46	52116.33	52.12	1060.10	1065.99	5.89	5890	0.97	
3-Feb-22	12315775.46	12366764.81	50989.35	50.99	1065.99	1071.64	5.65	5650	0.98	
4-Feb-22	12366764.81	12419792.78	53027.97	53.03	1071.64	1077.80	6.16	6160	0.99	
5-Feb-22	12419792.78	12472461.02	52668.24	52.67	1077.80	1083.78	5.98	5980	0.98	
6-Feb-22	12472461.02	12524456.80	51995.78	52.00	1083.78	1089.62	5.84	5840	0.98	
7-Feb-22	12524456.80	12577468.89	53012.09	53.01	1089.62	1095.62	6.00	6000	0.99	
8-Feb-22	12577468.89	12630187.03	52718.14	52.72	1095.62	1101.50	5.88	5880	0.99	
9-Feb-22	12630187.03	12682934.33	52747.30	52.75	1101.50	1107.40	5.90	5900	0.98	
10-Feb-22	12682934.33	12736214.71	53280.38	53.28	1107.40	1113.24	5.84	5840	0.98	
11-Feb-22	12736214.71	12761208.71	24994.00	24.99	1113.24	1115.99	2.75	2750	0.98	Pumping was stopped due to leakage in Rising main (near Nakkha Nala) on 12:30PM dated 11.02.2022
12-Feb-22			0.00	0.00	1115.99	1116.17	0.18	180	0.97	
13-Feb-22	12761208.71	12776419.11	15210.40	15.21	1116.17	1117.82	1.65	1650	0.99	Pumping has been started on 15:00 PM dated 13.02.2022
14-Feb-22	12776419.11	12829401.77	52982.66	52.98	1117.82	1123.79	5.97	5970	0.98	
15-Feb-22	12829401.77	12881984.56	52582.79	52.58	1123.79	1129.60	5.81	5810	0.98	
16-Feb-22	12881984.56	12933646.16	51661.60	51.66	1129.60	1135.36	5.76	5760	0.99	
17-Feb-22	12933646.16	12985984.79	52338.63	52.34	1135.36	1141.13	5.77	5770	0.99	
18-Feb-22	12985984.79	13038178.22	52193.43	52.19	1141.13	1147.03	5.9	5900	0.98	
19-Feb-22	13038178.22	13090693	52514.78	52.51	1147.03	1152.91	5.88	5880	0.98	
20-Feb-22	13090693.00	13143060.92	52367.92	52.37	1152.91	1158.79	5.88	5880	0.99	
21-Feb-22	13143060.92	13194620.9	51559.98	51.56	1158.79	1164.75	5.96	5960	0.99	
22-Feb-22	13194620.90	13246118.08	51497.18	51.50	1164.75	1170.55	5.8	5800	0.98	
23-Feb-22	13246118.08	13298237.08	52119.00	52.12	1170.55	1176.64	6.09	6090	0.98	
24-Feb-22	13298237.08	13350414.01	52176.93	52.18	1176.64	1182.57	5.93	5930	0.99	

Date	Totalizer flow				Power consumption				Power factor	Remark
	Initial	Final	In m^3	In ML	Initial (MWH)	Final (MWH)	Total	In kwh		
25-Feb-22	13350414.01	13403238.26	52824.25	52.82	1182.57	1188.64	6.07	6070	0.99	
26-Feb-22	13403238.26	13456225.45	52987.19	52.99	1188.64	1194.37	5.73	5730	0.98	
27-Feb-22	13456225.45	13508372.28	52146.83	52.15	1194.37	1200	5.63	5630	0.98	
28-Feb-22	13508372.28	13560705.01	52332.73	52.33	1200.00	1205.08	5.08	5080	0.98	
Total								**150550**		

ANNEXURE - B
FLOW MEASUREMENT & POWER CONSUMPTION DETAILS AT STP

Annexure B - Flow measurement & power consumption details at STP

Date	Totalizer flow				Power consumption				Power factor	Remarks
	Initial	Final	In m^3	In ML	Initial (MWH)	Final (MWH)	Total	In kwh		
1-Feb-22	6904900	6959338	54438	54.44	1647.12	1652.65	5.53	5530	0.98	
2-Feb-22	6959338	7012785	53447	53.45	1652.65	1660.04	7.39	7390	0.97	
3-Feb-22	7012785	7066161	53376	53.38	1660.04	1666.16	6.12	6120	0.98	
4-Feb-22	7066161	7121924	55763	55.76	1666.16	1673.22	7.06	7060	0.98	
5-Feb-22	7121924	7176734	54810	54.81	1673.22	1680.86	7.64	7640	0.99	
6-Feb-22	7176734	7229727	52993	52.99	1680.86	1687.96	7.10	7100	0.98	
7-Feb-22	7229727	7284145	54418	54.42	1687.96	1695.18	7.22	7220	0.98	
8-Feb-22	7284145	7337482	53337	53.34	1695.18	1702.66	7.48	7480	0.99	
9-Feb-22	7337482	7391743	54261	54.26	1702.66	1709.47	6.81	6810	0.99	
10-Feb-22	7391743	7446285	54542	54.54	1709.47	1717.06	7.59	7590	0.98	
11-Feb-22	7446285	7475366	29081	29.08	1717.06	1725.25	8.19	8190	0.98	Plant was Shutdown due to leakage in Rising main (near Nakkha Nala) on 12:30PM dated 11.02.2022
12-Feb-22			0	0.00	1725.25	1730.91	5.66	5660	0.98	
13-Feb-22	7483830	7504559	20729	20.73	1730.91	1736.39	5.48	5480	0.99	Plant has started on 15:00 PM dated 13.02.2022 for Testing Purpose
14-Feb-22	7504559	7559523	54964	54.96	1736.39	1744.16	7.77	7770	0.99	Plant is running properly from 14.02.2022
15-Feb-22	7559523	7613983	54460	54.46	1744.16	1752.14	7.98	7980	0.99	
16-Feb-22	7613983	7667744	53761	53.76	1752.14	1759.18	7.04	7040	0.98	
17-Feb-22	7667744	7720786	53042	53.04	1759.18	1767.15	7.97	7970	0.98	

Date	Totalizer flow				Power consumption				Power factor	Remarks
	Initial	Final	In m^3	In ML	Initial (MWH)	Final (MWH)	Total	In kwh		
18-Feb-22	7720786	7774060	53274	53.27	1767.15	1775.06	7.91	7910	0.99	
19-Feb-22	7774060	7826158	52098	52.10	1775.06	1782.65	7.59	7590	0.99	
20-Feb-22	7826158	7878567	52409	52.41	1782.65	1791.11	8.46	8460	0.98	
21-Feb-22	7878567	7929681	51114	51.11	1791.11	1799.05	7.94	7940	0.98	
22-Feb-22	7929681	7981879	52198	52.20	1799.05	1806.91	7.86	7860	0.99	
23-Feb-22	7981879	8035461	53582	53.58	1806.91	1814.77	7.86	7860	0.99	
24-Feb-22	8035461	8088346	52885	52.89	1814.77	1822.62	7.85	7850	0.98	
25-Feb-22	8088346	8142708	54362	54.36	1822.62	1830.24	7.62	7620	0.98	
26-Feb-22	8142708	8197287	54579	54.58	1830.24	1837.44	7.20	7200	0.99	
27-Feb-22	8197287	8250836	53549	53.55	1837.44	1844.59	7.15	7150	0.99	
28-Feb-22	8250836	8304694	53858	53.86	1844.59	1850.71	6.12	6120	0.99	
Total								**203590**		

ANNEXURE - C
MAINTENANCE WORK AT MPS & STP

Annexure C - Unscheduled maintenance work at MPS & STP

S.No	Location	Date	Remark
	MPS		
1	Maintenance work of Gate no.2 (Jamming problem)	6-Feb-22	Done
2	Maintenance work of Knife Edge Gate valve	7-Feb-22	Done
3	By pass valve Gate no.10 maintenance work (Welding and drilling work)	9-Feb-22	Done
4	Maintenance work of submersible pump (make key and fix pipe)	19-Feb-22	Done
5	Maintenance work of Raw sewage pump no.2 (Coupling and key have been damaged)	21-Feb-22	Done
	STP		Done
1	Booster pump maintenance work (Not lifting water)	3-Feb-22	Done
2	Maintenance work of dosing pump (Pipe line has been broken - sludge unit)	3-Feb-22	Done
3	Given support in dosing pump 2 (sludge unit)	3-Feb-22	Done
4	Making of conveyer belt motor canopy	4-Feb-22	Done
5	Modification work & maintenance work organic return pump -2	4-Feb-22	Done
6	Fine screen -2 maintenance work (Spring has been damaged not pickup garbage)	6-Feb-22	Done
7	Changed the thimble of RAS pump no.1. and checked the motor winding.	7-Feb-22	Done
8	Conveyor belt maintenance work (Alignment has been disturbed)	8-Feb-22	Done
9	Changed the cable's thimble of treated water pump no.1	8-Feb-22	Done
10	VFD of blower no.3 maintenance work(lug has been burnt)	9-Feb-22	Done
11	Maintenance work of manual air selector valve	16-Feb-22	Done
12	Maintenance work of grit mechanism-1 (Oil seal has been damaged)	25-Feb-22	Done
13	Phosphorous analyzer's milliampere was not coming in PLC. Checked the analyzer and resolved the problem.	26-Feb-22	Done
14	Air Blower no.5 replacement of fan circlip (circlip has been damaged)	27-Feb-22	Done
15	Maintenance work of Injector chlorination system	28-Feb-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
			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	Residual Chlorine PPM	Fecal Coliform Effluent <100MPN/100 ml)	
1	2	3	4a	4b	4c	4d	4E	4F	5a	5b	5c	5d	5E	5F	5G	5e	5f	7
1-Feb-22	50.00	54.44	7.23	309	360	126	16.9	5.9	7.68	8	44	9	4.3	5.4	1.1	0.4	70	
2-Feb-22	50.00	53.45	7.25	300	340	120	19.2	6.3	7.72	9	36	8	4.0	5.2	0.9	0.3	80	
3-Feb-22	50.00	53.38	7.21	288	320	128	19.7	6.4	7.69	7	40	9	3.4	6.4	1	0.3	90	
4-Feb-22	50.00	55.76	7.24	294	332	140	19.5	6.1	7.64	8	48	10	3.7	6.1	1.1	0.4	70	
5-Feb-22	50.00	54.81	7.19	300	316	134	18.9	5.9	7.61	7	44	7	4.1	5.7	1.2	0.3	60	
6-Feb-22	50.00	52.99	7.13	320	300	124	18.5	5.7	7.58	9	40	8	3.7	5.4	1	0.4	70	
7-Feb-22	50.00	54.42	7.19	304	320	132	17.9	6.1	7.72	8	44	8	3.5	5.1	1.3	0.3	90	
8-Feb-22	50.00	53.34	7.23	292	312	125	17.5	6.3	7.76	7	40	7	3.2	4.9	1.1	0.3	70	
9-Feb-22	50.00	54.26	7.13	296	340	135	16.9	5.9	7.64	9	36	8	3.5	4.5	0.9	0.4	90	
10-Feb-22	50.00	54.54	7.19	290	360	142	17.3	6.1	7.69	7	44	9	3.9	4.3	1	0.3	60	
11-Feb-22	50.00	29.08	7.28	308	340	132	17.9	4.2	7.72	8	40	8	3.3	4.9	1.3	0.3	80	
12-Feb-22	50.00	0																
13-Feb-22	50.00	0	20.73															

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
			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	Residual Chlorine PPM	Fecal Coliform Effluent <100MPN/100 ml)	
1	2	3	4a	4b	4c	4d	4E	4F	5a	5b	5c	5d	5E	5F	5G	5e	5f	7
14-Feb-22	50.00	54.96	7.15	293	316	128	13.8	3.9	7.49	9	48	8	4.2	3.9	1.7	0.3	70	
15-Feb-22	50.00	54.46	7.34	310	332	136	15.7	5.2	7.54	8	40	10	3.4	4.2	0.9	0.3	80	
16-Feb-22	50.00	53.76	7.23	286	320	120	14.6	5.8	7.64	9	44	8	4.3	4.5	1.1	0.3	60	
17-Feb-22	50.00	53.04	7.19	300	340	130	15.9	6.1	7.61	7	40	10	4.5	4.7	1	0.3	70	
18-Feb-22	50.00	53.27	7.21	290	312	116	16.5	6.3	7.67	8	36	8	3.9	4.9	1.2	0.3	90	
19-Feb-22	50.00	52.1	7.23	296	320	124	15.7	5.9	7.69	9	40	7	4.1	4.5	1.1	0.3	80	
20-Feb-22	50.00	52.41	7.19	286	340	135	16.7	6.1	7.61	7	44	9	3.5	4.1	0.9	0.3	60	
21-Feb-22	50.00	51.11	7.13	316	360	140	15.9	6.3	7.54	9	48	8	3.9	4.7	1.1	0.3	70	
22-Feb-22	50.00	52.2	7.21	300	340	126	17.5	5.9	7.67	8	40	7	4.3	4.5	1	0.3	50	
23-Feb-22	50.00	53.58	7.19	290	320	122	16.9	5.7	7.64	7	32	8	4.5	3.9	0.8	0.3	70	
24-Feb-22	50.00	52.89	7.32	310	340	130	14.6	3.7	7.54	8	36	9	3.8	4.3	1.3	0.2	90	
25-Feb-22	50.00	54.36	7.21	283	312	120	18.3	4.1	7.49	7	32	7	3.3	5.6	0.7	0.3	60	
26-Feb-22	50.00	54.58	7.16	305	340	126	19.5	4.5	7.54	9	40	9	3.8	5.9	0.9	0.2	50	
27-Feb-22	50.00	53.55	7.19	300	320	120	17.9	3.9	7.51	8	36	8	3.5	5.4	1.3	0.4	80	
28-Feb-22	50.00	53.86	7.23	280	324	116	16.7	4.9	7.64	8	32	7	3.2	3.4	1.2	0.3	60	

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 (1 trolley=2.7m3)	Sludge Concentration (%)	Fecal Coliform	Remark
1-Feb-22	6	16.2	26.53	1600000	
2-Feb-22	7	18.9	24.59	1400000	
3-Feb-22	7	18.9	22.32	1700000	
4-Feb-22	8	21.6	25.24	1400000	
5-Feb-22	6	16.2	25.05	1600000	
6-Feb-22	7	18.9	24.66	1700000	
7-Feb-22	8	21.6	22.59	1600000	
8-Feb-22	8	21.6	26.18	1400000	
9-Feb-22	7	18.9	23.48	1700000	
10-Feb-22	8	21.6	24.73	1900000	
11-Feb-22	6	16.2	25.06	1700000	
12-Feb-22	6	16.2	23.16	1300000	
13-Feb-22	4	10.8	26.11	1900000	
14-Feb-22	5	13.5	25.44	1600000	
15-Feb-22	5	13.5	26.35	1900000	
16-Feb-22	6	16.2	23.16	1600000	
17-Feb-22	5	13.5	26.11	1400000	
18-Feb-22	5	13.5	25.44	1700000	
19-Feb-22	6	16.2	23.16	1600000	
20-Feb-22	7	18.9	24.66	1900000	
21-Feb-22	8	21.6	22.59	1400000	
22-Feb-22	7	18.9	26.18	1300000	
23-Feb-22	7	18.9	25.06	1200000	
24-Feb-22	7	18.9	24.56	1400000	
25-Feb-22	8	21.6	26.14	1700000	
26-Feb-22	13	35.1	24.53	1300000	
27-Feb-22	7	18.9	25.84	1400000	
28-Feb-22	8	21.6	24.84	1700000	
Total	**192.00**	**518.40**			