**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

## July- 2022

| Executing Agency | Funding Agency | Project Engineer | Concessionaire |
|---|---|---|---|
| **Uttar Pradesh Jal Nigam,**<br>Varanasi - 221 005 | **National Mission for Clean Ganga**<br>MoWR, River Development & Ganga Rejuvenation,<br>New Delhi - 110002 | **Mahindra Consulting Engineers Limited**<br>Mahindra Towers, No. 17/18, Pattullous Road, Chennai - 600 002, Tamil Nadu, India | **Varanasi STP Project Private Limited**<br>6th Floor, Plot No. 19, Film City, Sector 16 A, Gautam Buddha Nagar, Noida,<br>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 5$^{th}$ January 2018 and agreement signed between the parties on 16$^{th}$ 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-DLDL80840374672746341531P |
| Name of the Concessionaire | : | Varanasi STP Project Pvt. Ltd. |
| Commencement date | : | $19^{th}$ February 2018 |
| Completion date (as per contract) | : | $18^{th}$ November 2019 |
| Commercial Operation Date (COD) | : | $30^{th}$ November 2021 |
| O& M Commencement date | : | $1^{st}$ December 2021 |
| O&M completion date (As per contract) | : | $30^{th}$ November 2036 |

Commercial Operation Date (COD) was announced by UPJN as per letter no. 2406/Namami Gange/292 dated $30^{th}$ December 2021 based on the undertaking provided by the Concessionaire to complete the remaining pending works on or before $31^{st}$ 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 $1^{st}$ 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 | Remarks |
|---|---|---|---|---|---|---|---|---|---|
| 1 | Bund Wall at STP Premises | | | | | | | | |
| a | Masonry drains | Pending | Pending | Pending | Pending | Completed | Completed | Completed | |
| b | Internal Stone Pitching | Pending | Pending | Pending | Pending | Completed | Completed | Completed | |
| c | Pathway | Pending | Pending | Pending | Pending | Completed | Completed | Completed | |
| d | Fencing and Lighting | Pending | Pending | Pending | Under Progress | Fencing Work Completed Lightening work yet to be Complete | Completed | Completed | |
| 2 | Earth filling and levelling at MPS | Completed | Completed | Completed | Completed | Completed | Completed | Completed | Only left in minor portions |
| 3 | EOT yet to erect for SAS, RAS PUMP, BLOWER, TWP, CHLORINE Tonner Room, BFP. | Pending | Pending | Pending | Pending | Pending | Pending | Completed | |
| 4 | Rising Main Strengthening Work (Stone Pitching(60M) near Ganga | 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 | Remarks |
|---|---|---|---|---|---|---|---|---|---|
| | Vihatori Colony) | | | | | | | | |
| 5 | Outfall pipe strengthening Work | Pending | Pending | Pending | Pending | Pending | Completed | Completed | |
| 6 | Soak Pit for Security Building & Air blower Building | Pending | Completed | Completed | Completed | Completed | Completed | Completed | Sanitary fittings yet to be fix in Security Building |
| 7 | Flow meter installation at Assi Nala weir | Pending | Pending | Pending | Pending | Pending | Completed | Completed | |
| 8 | EOT erection yet to Complete @ Dry Well | Pending | Pending | Pending | Pending | Pending | 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 Motor Jamming problem. | Pending | Pending | Pending | Pending | Completed | Completed | Completed | |

| Sl. No. | Pending Works | Jan 2022 | Feb 2022 | Mar 2022 | Apr 2022 | May 2022 | June 2022 | July 2022 | Remarks |
|---|---|---|---|---|---|---|---|---|---|
| b | Solenoid Valve is not installed at air pipeline for all basins. | Pending | Pending | Pending | Pending | Completed | Completed | Completed | |
| c | MCCB of VFD panel for blower no 5 is damaged. | Pending | Pending | Pending | Completed | Completed | Completed | Completed | |
| d | 34 no. of. lights are not working at SBR & PTU | Pending | Pending | Pending | Pending | Pending | Pending | Completed | |
| e | Plant Drain Sump Motor Erection & Pipe Connection yet to Complete | Pending | Pending | Pending | Pending | Pending | Completed | Completed | Approx. 12 M Pipe shortage so that work was pending |
| f | DO and Temperature sensor of SBR Basin No.1 are not working Properly | Pending | Pending | Pending | Completed | Completed | Completed | Completed | |
| g | FRC sensor of CCT is Under maintenance. (Membrane has damaged) | Pending | Pending | Pending | Pending | Pending | Pending | Pending | Concessionaire ordered but the supplier sent the wrong item |

| Sl. No. | Pending Works | Jan 2022 | Feb 2022 | Mar 2022 | Apr 2022 | May 2022 | June 2022 | July 2022 | Remarks |
|---|---|---|---|---|---|---|---|---|---|
| h | HMI of blower room not Integrated into Main PLC. | Pending | Pending | Pending | Completed | Completed | Completed | Completed | |
| i | Display of Filtrate Pump-1 (VFD) is not installed | Pending | Pending | Pending | Pending | Pending | Completed | Completed | |
| j | Handle of MCCB (Actuator panel) has been damaged. | Pending | Pending | Pending | 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 | |
| l | DG Number 1 & 2 fuel indicator is not working properly | 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 | 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 | |

**Note:** The pipe protection work for the Effluent disposal line at the outfall was completed as per scope of work and damaged due to monsoon and water level variation. The same need to be rectified with proper protection to avoid further damage during subsequent flooding by VSPPL.

## 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 not Available | | 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 Concessionaire |
| 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 | - | - |

| Parameter | Value | |
|---|---|---|
| | All the period other than scheduled maintenance period | During scheduled maintenance period |
| (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** | | | | |



Mahindra Consulting Engineers

### 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

## 5.14. Disposal of Treated Effluent

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

### 5.14.1. 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

### 5.14.2. 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 | 4236.2 | 834.3 | 5070.50 | |
| Digested sludge disposed at the waste disposal site | 4236.2 | 834.3 | 5070.50 | |
| 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

### 5.14.3. Disposal of treated effluent

| Description | Value in ML | | | Remarks |
|---|---|---|---|---|
| | Till last month | During this month | Total till date | |
| Treated effluent | 10262.58 | 1602.80 | 11865.38 | |
| Treated effluent disposed in the River Ganga / irrigation area | 10262.58 | 1602.80 | 11865.38 | |
| 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

### 5.15. 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 | 32.992 | 3893.06 | 122 | 1 | 44.845 | 5471.09 | 124 | 0 | 0 | 0 | 124 | 18 | 960.34 | 119082.28 |
| 130 to 160 | 130 | 0 | 0 | 0 | 134 | 0 | 0 | 0 | 136 | 0 | 0 | 0 | 136 | 10 | 533.12 | 72503.64 |
| 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** | | 1 | 32.992 | 3893.06 | | | 44.845 | 5471.09 | | | 0 | 0 | | 28 | 1493.456 | 191585.92 |
| **Overall Total Guaranteed energy consumption (A+B+C+D)** | | | | | | | | | | | | | | | | **200950.07** |
| **Overall Total Flow for the month in ML** | | | | | | | | | | | | | | | | **1571.29** |

| Description | STP | Associated infrastructure - MPS |
|---|---|---|
| Total guaranteed energy consumption for the month in KWH (A) | 200950.07 | NA - Actual to be paid |
| Number of units consumed during this month (through grid power) (B) | 176870.00 | 174370 |
| Number of units consumed through DG adjusted units during this month (C) | 496.50 | 108.7 |
| Total number of units consumed during this month (B+C) = D | 177366.50 | 174478.7 |
| 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 | 176373.50 | 174370 |
| Power charges towards grid power E x F = G | 1365130.89 | 1447271 |
| Fuel consumption as per DG manufacturer for the consumed units in litre – H | 287.10 | 39.60 |
| Fuel price per litre in Rs – I | 89.9 | 89.9 |
| Total DG set power consumption charges H x I = J | 25810.29 | 3560.04 |
| Total power consumption charges – G + J = K in Rs | 1390941.18 | 1450831.04 |
| Power Liquidated damages – (as per calculation) =L in Rs | 0 | - |
| Power charges to be paid to the Concessionaire in Rs = K-L | 1390941.18 | 1450831.04 |

## 5.16. 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 | Screwdriver Set | Nos | 1 | 1 | | | 1 | |
| 9 | Insulation Tester (500v) | Nos | 2 | 2 | | | 2 | |
| 10 | Emery Paper | Mtr | 1 | 5 | 3 | 2 | 6 | |
| 11 | Thread Seal Tape | Nos | 15 | 4 | 5 | 5 | 4 | |
| 12 | PVC Tape | Nos | 30 | 29 | 20 | 25 | 24 | |
| 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 | Screwdriver (Big) | Nos | 6 | 6 | | | 6 | |
| 19 | Screwdriver (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 | 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 |
|---|---|---|---|---|---|---|---|---|
| | Cleaner (Blower) | | | | | | | |
| 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 | |
| 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 | 7 | 2 | 4 | 5 | |
| 37 | Leather Gloves | Pkt | 1 | 5 | 3 | 4 | 4 | |
| 38 | Grinding Wheel (AG-4) | Pkt | 5 | 1 | 5 | 3 | 3 | |
| 39 | Welding Rod (MS) | Pkt | 1 | 8 | 0 | 2 | 6 | |
| 40 | Welding Rod (SS) | Pkt | 1 | 9 | 0 | 2 | 7 | |
| 41 | PVC Gloves | Pkt | 1 | 6 | 1 | 2 | 5 | |
| 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 Puli | 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 | 30 | 10 | 10 | 30 | |
| 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 | 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 |
|---|---|---|---|---|---|---|---|---|
| | (hydraulic) (5 Ton) | | | | | | | |
| 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 | 3 | 3 | 4 | 2 | |
| 58 | PVC Gloves | Pkt | 1 | 3 | 2 | 1 | 4 | |
| 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 | |
| 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 | 1 | | | 1 | |
| 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 | |

| 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 |
|---|---|---|---|---|---|---|---|---|
| 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 | |

### 5.17. 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 | 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 |
|---|---|---|---|---|---|---|---|---|
| | - Bray Controls | | | | | | | |
| 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 | |

### 5.18. Chemicals, Dangerous Goods and Hazardous Materials storage details

**Status as on 30.07.2022 and Sufficient up to 31.08.2022**

| Sl. No. | Description | Unit | Storage availability till last month | Purchase during this month | Utilized during this month | Remaining available | Remark |
|---|---|---|---|---|---|---|---|
| 1 | Chlorine | Kg | 2694 | 5400 | 7541 | 553 | To be Purchase |
| 2 | Poly Electrolyte | Kg | 121 | 300 | 301 | 120 | To be Purchase |
| 3 | Calcium Chloride | gm | 440 | | 6 | 434 | |
| 4 | Ammonium Chloride | gm | 100 | | 40 | 60 | |
| 5 | Ferric Chloride | gm | 372 | | 20 | 352 | |
| 6 | Di-Sodium Hydrogen Orthophosphate | gm | 352 | | 20 | 332 | |
| 7 | Potassium Dihydrogen | gm | 300 | | 20 | 280 | |

| Sl. No. | Description | Unit | Storage availability till last month | Purchase during this month | Utilized during this month | Remaining available | Remark |
|---|---|---|---|---|---|---|---|
| | Orthophosphate | | | | | | |
| 8 | Di - Potassium hydrogen Orthophosphate | gm | 300 | | 25 | 275 | |
| 9 | Potassium Chloride | gm | 500 | | 50 | 450 | |
| 10 | Manganous sulphate | gm | 450 | | 250 | 200 | To be Purchase |
| 11 | Sodium hydroxide | gm | 180 | 1000 | 200 | 980 | |
| 12 | Potassium dichromate | gm | 250 | | 25 | 225 | |
| 13 | Silica gel | gm | 400 | | 10 | 390 | |
| 14 | Starch | gm | 300 | | 20 | 280 | |
| 15 | Ethanol | ml | 500 | 500 | 300 | 700 | |
| 16 | Sodium azid | gm | 90 | | 30 | 60 | |
| 17 | Mercurous Sulphate | gm | 240 | | 36 | 204 | |
| 18 | Ammonium ferrous sulphate | gm | 80 | 500 | 100 | 480 | |
| 19 | Sodium thiosulfate | gm | 500 | | 50 | 450 | |
| 20 | Mac Conkey Borth | gm | 600 | | 150 | 450 | |
| 21 | Sulfuric acid | ltr. | 5 | 10 | 7.5 | 7.5 | |
| 22 | Filter paper | no. | 2 | 1 | 1 | 2 | |
| 23 | Silver sulphate | gm | 45 | | 10 | 35 | |
| 24 | Magnesium sulphate | gm | 700 | 500 | 400 | 800 | |
| 25 | Ferroin indicator | ml | 125 | | 25 | 100 | |
| 26 | Ammonia | vial | 180 | | 60 | 120 | |
| 27 | Phosphate | vial | 180 | | 60 | 120 | |
| 28 | Potassium iodide | gm | 56 | 250 | 37 | 269 | |
| 29 | Mercuric oxide red | gm | 150 | 200 | 150 | 200 | |
| 30 | Cupric Sulphate | gm | 250 | 500 | 250 | 500 | |

## 6.0. PROJECT ENGINEER ACTIVITIES

| Activities carried out as per TOR | | | | |
|---|---|---|---|---|
| Clause as per TOR | Scope | Period: February 2018 to June 2022 | | |
| | | Undertaken till previous month - June 2022 | Undertaken during this month - July 2022 | Expected for next month – August 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<br>a. Work schedule<br>b. Detailed survey report<br>c. Basic engineering<br>d. Detailed design and drawings for<br>i) Civil works<br>1. Geo-tech reports<br>2. Lab testing reports<br>3. Third Party Inspection report<br>ii) Mechanical & Electrical Works<br>iii) Automation & Instrumentation works<br>iv) Any other allied works<br>e. QA/QC plans<br>f. Safety plan | Yes | NA | NA |

| Activities carried out as per TOR | | | | |
|---|---|---|---|---|
| Clause as per TOR | Scope | Period: February 2018 to June 2022 | | |
| | | Undertaken till previous month - June 2022 | Undertaken during this month - July 2022 | Expected for next month – August 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 | The Project Engineer shall submit regular | Monthly | Monthly | Preparation |

| Activities carried out as per TOR | | | | |
|---|---|---|---|---|
| **Clause as per TOR** | **Scope** | **Period: February 2018 to June 2022** | | |
| | | **Undertaken till previous month - June 2022** | **Undertaken during this month - July 2022** | **Expected for next month – August 2022** |
| (xvi) | periodic reports, as specified in the Concession Agreement to Uttar Pradesh Jal Nigam & NMCG, in respect of its duties & functions under the Concession Agreement | progress report | progress report | 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 Agreement | NA | NA | NA |
| 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:<br>Is in compliance with the Technical Specifications, Applicable Laws, Applicable Permits and Good Industry Practice.<br>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 | Yes | Yes | Yes |

| Activities carried out as per TOR | | | | |
|---|---|---|---|---|
| Clause as per TOR | Scope | Period: February 2018 to June 2022 | | |
| | | Undertaken till previous month - June 2022 | Undertaken during this month - July 2022 | Expected for next month – August 2022 |
| | Agreement: | | | |
| 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, 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 | Yes | Yes | Yes |

| Activities carried out as per TOR | | | | |
|---|---|---|---|---|
| **Clause as per TOR** | **Scope** | **Period: February 2018 to June 2022** | | |
| | | **Undertaken till previous month - June 2022** | **Undertaken during this month - July 2022** | **Expected for next month – August 2022** |
| | 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 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:<br>a) Conduct kicks off meeting, scrutiny of contractor's submittals<br>b) Process description, process calculations and hydraulic calculations. | Yes | NA | NA |

| Activities carried out as per TOR | | | | |
|---|---|---|---|---|
| Clause as per TOR | Scope | Period: February 2018 to June 2022 | | |
| | | Undertaken till previous month - June 2022 | Undertaken during this month - July 2022 | Expected for next month – August 2022 |
| | c) List of design codes and standards.<br>d) Master drawing schedule.<br>e) Drainage design.<br>f) STP Facilities layout.<br>g) Process flow diagram.<br>h) Hydraulic flow diagram.<br>i) Mass balance diagram.<br>j) Process and instrumentation diagram.<br>k) Single line diagram.<br>l) Electrical load list; and<br>m) General arrangement diagrams of all units of facilities and associated infrastructure | | | |
| 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 |
| 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 |

| Activities carried out as per TOR | | | | |
|---|---|---|---|---|
| | | Period: February 2018 to June 2022 | | |
| Clause as per TOR | Scope | Undertaken till previous month - June 2022 | Undertaken during this month - July 2022 | Expected for next month – August 2022 |
| 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 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 | Yes | | Yes |

| Activities carried out as per TOR | | | | |
|---|---|---|---|---|
| **Clause as per TOR** | **Scope** | **Period: February 2018 to June 2022** | | |
| | | **Undertaken till previous month - June 2022** | **Undertaken during this month - July 2022** | **Expected for next month – August 2022** |
| | (seven) days of receipt of such report | | | |
| 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 |

| Activities carried out as per TOR | | | | |
|---|---|---|---|---|
| Clause as per TOR | Scope | Period: February 2018 to June 2022 | | |
| | | Undertaken till previous month - June 2022 | Undertaken during this month - July 2022 | Expected for next month – August 2022 |
| 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 there of | 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 brought the Construction Works into conformity with the Specifications and Standards, and the | Yes | NA | NA |

| Activities carried out as per TOR | | | | |
|---|---|---|---|---|
| | | Period: February 2018 to June 2022 | | |
| Clause as per TOR | Scope | Undertaken till previous month - June 2022 | Undertaken during this month - July 2022 | Expected for next month – August 2022 |
| | 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 | |

| Activities carried out as per TOR | | | | |
|---|---|---|---|---|
| Clause as per TOR | Scope | Period: February 2018 to June 2022 | | |
| | | Undertaken till previous month - June 2022 | Undertaken during this month - July 2022 | Expected for next month – August 2022 |
| 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 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 | NA | NA | |

| Activities carried out as per TOR | | | | |
|---|---|---|---|---|
| Clause as per TOR | Scope | Period: February 2018 to June 2022 | | |
| | | Undertaken till previous month - June 2022 | Undertaken during this month - July 2022 | Expected for next month – August 2022 |
| | 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. | | | |
| 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 | |

| Activities carried out as per TOR | | | | |
|---|---|---|---|---|
| **Clause as per TOR** | **Scope** | **Period: February 2018 to June 2022** | | |
| | | **Undertaken till previous month - June 2022** | **Undertaken during this month - July 2022** | **Expected for next month – August 2022** |
| 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.<br>The O&M Manual shall cover:<br>a) O&M Procedures.<br>b) O&M Plan.<br>c) Provision of Spare Parts.<br>d) Sampling and Testing Methodologies.<br>e) Storage and control of Inventory.<br>f) Arrangements for data security and Integrity.<br>g) Procedures for recording and disposal of complaints.<br>h) Operational Contingencies Plans.<br>i) Human Resources Plans.<br>j) EHS Plans.<br>k) Emergency procedures.<br>l) Management of Assets Plans. And<br>m) Annual Scheduled Maintenance programme. | NA | Yes | |
| 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 | NA | Yes | |

| Activities carried out as per TOR | | | | |
|---|---|---|---|---|
| | | Period: February 2018 to June 2022 | | |
| Clause as per TOR | Scope | Undertaken till previous month - June 2022 | Undertaken during this month - July 2022 | Expected for next month – August 2022 |
| | monthly KPI Adherence Report to Uttar Pradesh Jal Nigam | | | |
| 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 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 | NA | NA | |

| Activities carried out as per TOR | | | | |
|---|---|---|---|---|
| | | Period: February 2018 to June 2022 | | |
| Clause as per TOR | Scope | Undertaken till previous month - June 2022 | Undertaken during this month - July 2022 | Expected for next month – August 2022 |
| | 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 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 | NA | Yes | |

| Activities carried out as per TOR | | | | |
|---|---|---|---|---|
| Clause as per TOR | Scope | Period: February 2018 to June 2022 | | |
| | | Undertaken till previous month - June 2022 | Undertaken during this month - July 2022 | Expected for next month – August 2022 |
| | Concession Agreement, and shall also determine the Damages, if any, payable by the Concessionaire to the NMCG/ Uttar Pradesh Jal Nigam for such delay. | | | |
| 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, 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, to address the gap in skill sets of the manpower deployed by the Concessionaire | NA | Yes | |

| Activities carried out as per TOR | | | | |
|---|---|---|---|---|
| Clause as per TOR | Scope | Period: February 2018 to June 2022 | | |
| | | Undertaken till previous month - June 2022 | Undertaken during this month - July 2022 | Expected for next month – August 2022 |
| 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 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. | Yes | NA | |
| 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 |

| Activities carried out as per TOR | | | | |
|---|---|---|---|---|
| | | Period: February 2018 to June 2022 | | |
| **Clause as per TOR** | **Scope** | **Undertaken till previous month - June 2022** | **Undertaken during this month - July 2022** | **Expected for next month – August 2022** |
| 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 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 | Yes | Yes | Yes |

| Activities carried out as per TOR | | | | |
|---|---|---|---|---|
| Clause as per TOR | Scope | Period: February 2018 to June 2022 | | |
| | | Undertaken till previous month - June 2022 | Undertaken during this month - July 2022 | Expected for next month – August 2022 |
| | 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. | | | |
| 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 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 | Yes | Yes | Yes |

| Activities carried out as per TOR | | | | |
|---|---|---|---|---|
| Clause as per TOR | Scope | Period: February 2018 to June 2022 | | |
| | | Undertaken till previous month - June 2022 | Undertaken during this month - July 2022 | Expected for next month – August 2022 |
| | 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** |  |

| | |
|---|---|
| **Air blower, 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-Jul-22 | 19760199.85 | 19812057.37 | 51857.52 | 51.86 | 1898.68 | 1904.55 | 5.87 | 5870 | 0.98 | |
| 2-Jul-22 | 19812057.37 | 19864023.29 | 51965.92 | 51.97 | 1904.55 | 1910.50 | 5.95 | 5950 | 0.98 | |
| 3-Jul-22 | 19864023.29 | 19918350.18 | 54326.89 | 54.33 | 1910.50 | 1916.39 | 5.89 | 5890 | 0.99 | |
| 4-Jul-22 | 19918350.18 | 19969924.07 | 51573.89 | 51.57 | 1916.39 | 1922.23 | 5.84 | 5840 | 0.99 | |
| 5-Jul-22 | 19969924.07 | 20023492.69 | 53568.62 | 53.57 | 1922.23 | 1928.24 | 6.01 | 6010 | 0.99 | |
| 6-Jul-22 | 20023492.69 | 20076707.71 | 53215.02 | 53.22 | 1928.24 | 1934.16 | 5.92 | 5920 | 0.98 | |
| 7-Jul-22 | 20076707.71 | 20129987.74 | 53280.03 | 53.28 | 1934.16 | 1939.97 | 5.81 | 5810 | 0.98 | |
| 8-Jul-22 | 20129987.74 | 20183030.24 | 53042.50 | 53.04 | 1939.97 | 1945.83 | 5.86 | 5860 | 0.99 | |
| 9-Jul-22 | 20183030.24 | 20235544.85 | 52514.61 | 52.51 | 1945.83 | 1951.53 | 5.70 | 6020 | 0.99 | |
| 10-Jul-22 | 20235544.85 | 20290196.74 | 54651.89 | 54.65 | 1951.53 | 1957.60 | 6.07 | 5890 | 0.99 | |
| 11-Jul-22 | 20290196.74 | 20343817.85 | 53621.11 | 53.62 | 1957.60 | 1963.44 | 5.84 | 5840 | 0.98 | |
| 12-Jul-22 | 20343817.85 | 20397171.99 | 53354.14 | 53.35 | 1963.44 | 1969.24 | 5.80 | 5800 | 0.98 | |
| 13-Jul-22 | 20397171.99 | 20449916.87 | 52744.88 | 52.74 | 1969.24 | 1975.05 | 5.81 | 5810 | 0.99 | |
| 14-Jul-22 | 20449916.87 | 20502183.91 | 52267.04 | 52.27 | 1975.05 | 1980.94 | 5.89 | 5890 | 0.99 | |
| 15-Jul-22 | 20502183.91 | 20552239.01 | 50055.10 | 50.06 | 1980.94 | 1987.18 | 6.24 | 6240 | 0.99 | |
| 16-Jul-22 | 20552239.01 | 20602707.79 | 50468.78 | 50.47 | 1987.18 | 1993.35 | 6.17 | 6170 | 0.98 | |
| 17-Jul-22 | 20602707.79 | 20655888.97 | 53181.18 | 53.18 | 1993.35 | 1999.26 | 5.91 | 5910 | 0.99 | |
| 18-Jul-22 | 20655888.97 | 20709539.74 | 53650.77 | 53.65 | 1999.26 | 2005.24 | 5.98 | 5980 | 0.99 | |
| 19-Jul-22 | 20709539.74 | 20763169.82 | 53630.08 | 53.63 | 2005.24 | 2011.15 | 5.91 | 5910 | 0.98 | |
| 20-Jul-22 | 20763169.82 | 20815712.74 | 52542.92 | 52.54 | 2011.15 | 2016.82 | 5.67 | 5670 | 0.98 | |
| 21-Jul-22 | 20815712.74 | 20868096.11 | 52383.37 | 52.38 | 2016.82 | 2022.71 | 5.89 | 5890 | 0.99 | |
| 22-Jul-22 | 20868096.11 | 20920198.15 | 52102.04 | 52.10 | 2022.71 | 2028.52 | 5.81 | 5810 | 0.99 | |
| 23-Jul-22 | 20920198.15 | 20970950.66 | 50752.51 | 50.75 | 2028.52 | 2034.08 | 5.56 | 5560 | 0.98 | |

| DATE | TOTALIZER FLOW | | | | POWER CONSUMTION | | | | POWER FACTOR | REMARK |
|---|---|---|---|---|---|---|---|---|---|---|
| | INITIAL | FINAL | IN M3 | IN MLD | INITIAL (MWH) | FINAL (MWH) | TOTAL | IN KWH | | |
| 24-Jul-22 | 20970950.66 | 21024940.78 | 53990.12 | 53.99 | 2034.08 | 2040.02 | 5.94 | 5940 | 0.99 | |
| 25-Jul-22 | 21024940.78 | 21076082.43 | 51141.65 | 51.14 | 2040.02 | 2045.93 | 5.91 | 5910 | 0.99 | |
| 26-Jul-22 | 21076082.43 | 21129331.49 | 53249.06 | 53.25 | 2045.93 | 2051.79 | 5.86 | 5860 | 0.99 | |
| 27-Jul-22 | 21129331.49 | 21182651.45 | 53319.96 | 53.32 | 2051.79 | 2057.63 | 5.84 | 5840 | 0.97 | |
| 28-Jul-22 | 21182651.45 | 21235258.99 | 52607.54 | 52.61 | 2057.63 | 2063.29 | 5.66 | 5660 | 0.97 | |
| 29-Jul-22 | 21235258.99 | 21278607.00 | 43348.01 | 43.35 | 2063.29 | 2067.74 | 4.45 | 4450 | 0.97 | "After Consultation with UP Jal Nigam the flow was reduced as lots of sand, slit and plant machinery damage causing material entering SBR." |
| 30-Jul-22 | 21278607.00 | 21309190.37 | 30583.37 | 30.58 | 2067.74 | 2070.45 | 2.71 | 2710 | 0.97 | |
| 31-Jul-22 | 21309190.37 | 21337163.14 | 27972.77 | 27.97 | 2070.45 | 2073.05 | 2.60 | 2600 | 0.99 | |
| **Total** | | | | | | | | **174370** | | |

# 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-Jul-22 | 1600926 | 1653796 | 52870.00 | 52.87 | 2564.13 | 2569.92 | 5.79 | 5790 | 0.98 | |
| 2-Jul-22 | 1653796 | 1706727 | 52931.00 | 52.93 | 2569.92 | 2575.50 | 5.58 | 5580 | 0.98 | |
| 3-Jul-22 | 1706727 | 1761848 | 55121.00 | 55.12 | 2575.50 | 2580.95 | 5.45 | 5450 | 0.99 | |
| 4-Jul-22 | 1761848 | 1814266 | 52418.00 | 52.42 | 2580.95 | 2586.55 | 5.60 | 5600 | 0.99 | |
| 5-Jul-22 | 1814266 | 1867671 | 53405.00 | 53.41 | 2586.55 | 2592.25 | 5.70 | 5700 | 0.99 | |
| 6-Jul-22 | 1867671 | 1921086 | 53415.00 | 53.42 | 2592.25 | 2597.94 | 5.69 | 5690 | 0.98 | |
| 7-Jul-22 | 1921086 | 1974605 | 53519.00 | 53.52 | 2597.94 | 2603.68 | 5.74 | 5740 | 0.98 | |
| 8-Jul-22 | 1974605 | 2028170 | 53565.00 | 53.57 | 2603.68 | 2609.41 | 5.73 | 5730 | 0.99 | |
| 9-Jul-22 | 2028170 | 2081576 | 53406.00 | 53.41 | 2609.41 | 2615.15 | 5.74 | 5740 | 0.99 | |
| 10-Jul-22 | 2081576 | 2137245 | 55669.00 | 55.67 | 2615.15 | 2620.76 | 5.61 | 5610 | 0.99 | |
| 11-Jul-22 | 2137245 | 2190412 | 53167.00 | 53.17 | 2620.76 | 2626.40 | 5.64 | 5640 | 0.98 | |
| 12-Jul-22 | 2190412 | 2244206 | 53794.00 | 53.79 | 2626.40 | 2632.03 | 5.63 | 5630 | 0.98 | |
| 13-Jul-22 | 2244206 | 2297564 | 53358.00 | 53.36 | 2632.03 | 2637.67 | 5.64 | 5640 | 0.99 | |
| 14-Jul-22 | 2297564 | 2350982 | 53418.00 | 53.42 | 2637.67 | 2643.61 | 5.94 | 5940 | 0.99 | |
| 15-Jul-22 | 2350982 | 2401624 | 50642.00 | 50.64 | 2643.61 | 2649.46 | 5.85 | 5850 | 0.99 | |
| 16-Jul-22 | 2401624 | 2453192 | 51568.00 | 51.57 | 2649.46 | 2655.22 | 5.76 | 5760 | 0.98 | |
| 17-Jul-22 | 2453192 | 2506731 | 53539.00 | 53.54 | 2655.22 | 2661.03 | 5.81 | 5810 | 0.99 | |
| 18-Jul-22 | 2506731 | 2560785 | 54054.00 | 54.05 | 2661.03 | 2666.65 | 5.62 | 5620 | 0.99 | |
| 19-Jul-22 | 2560785 | 2614195 | 53410.00 | 53.41 | 2666.65 | 2672.55 | 5.90 | 5900 | 0.98 | |
| 20-Jul-22 | 2614195 | 2667398 | 53203.00 | 53.20 | 2672.55 | 2678.34 | 5.79 | 5790 | 0.98 | |
| 21-Jul-22 | 2667398 | 2720999 | 53601.00 | 53.60 | 2678.34 | 2684.14 | 5.80 | 5800 | 0.99 | |
| 22-Jul-22 | 2720999 | 2774416 | 53417.00 | 53.42 | 2684.14 | 2690.07 | 5.93 | 5930 | 0.98 | |
| 23-Jul-22 | 2774416 | 2826165 | 51749.00 | 51.75 | 2690.07 | 2695.94 | 5.87 | 5870 | 0.99 | |
| 24-Jul-22 | 2826165 | 2879776 | 53611.00 | 53.61 | 2695.94 | 2701.90 | 5.96 | 5960 | 0.99 | |
| 25-Jul-22 | 2879776 | 2933685 | 53909.00 | 53.91 | 2701.90 | 2707.58 | 5.68 | 5680 | 0.99 | |

| DATE | TOTALIZER FLOW | | | | POWER CONSUMTION | | | | POWER FACTOR | REMARK |
|---|---|---|---|---|---|---|---|---|---|---|
| | INITIAL | FINAL | IN M3 | IN MLD | INITIAL (MWH) | FINAL( MWH) | TOTAL | IN KWH | | |
| 26-Jul-22 | 2933685 | 2986344 | 52659.00 | 52.66 | 2707.58 | 2713.35 | 5.77 | 5770 | 0.98 | |
| 27-Jul-22 | 2986344 | 3040848 | 54504.00 | 54.50 | 2713.35 | 2718.83 | 5.48 | 5480 | 0.99 | |
| 28-Jul-22 | 3040848 | 3094382 | 53534.00 | 53.53 | 2718.83 | 2724.64 | 5.81 | 5810 | 0.99 | |
| 29-Jul-22 | 3094382 | 3139227 | 44845.00 | 44.85 | 2724.64 | 2730.41 | 5.77 | 5770 | 0.99 | "After Consultation with UP Jal Nigam the flow was reduced as lots of sand, slit and plant machinery damage causing material entering SBR." |
| 30-Jul-22 | 3139227 | 3172219 | 32992.00 | 32.99 | 2730.41 | 2735.93 | 5.52 | 5520 | 0.98 | |
| 31-Jul-22 | 3172219 | 3203010 | 30791.00 | 30.79 | 2735.93 | 2741 | 5.07 | 5070 | 0.99 | |
| **Total** | | | | | | | | **176870** | | |

# ANNEXURE - C
# MAINTENANCE WORK AT MPS & STP

## Annexure C - Unscheduled maintenance work at MPS & STP

| Sl. No. | Location | Date | Remark |
|---|---|---|---|
| | **MPS** | | |
| 1 | Maintenance work of Raw sewage pump no.3(Alignment of coupling) | 12-Jul-22 | Done |
| 2 | Maintenance work of Raw sewage pump no.1(Lifting and checking) | 20-Jul-22 | Done |
| 3 | Alignment and Maintenance of Belt conveyor (Vibration and abnormal Sound problem) | 27-Jul-22 | Done |
| | **STP** | | |
| 1 | Maintenance work of screw conveyor (bush has been damaged) | 01-Jul-22 | Done |
| 2 | Maintenance work of grit mechanism no.2(bush has been damaged) | 06-Jul-22 | Done |
| 3 | Maintenance work of poly dosing pump no.1 (check gear and top-up the oil) | 19-Jul-22 | Done |
| 4 | Alignment of belt conveyor | 31-Jul-22 | Done |
| 5 | Maintenance work of SBR 1 (for change the membrane) | 31-Jul -22 | Done |
| 6 | Maintenance of diffuser for SBR-1 st | 31-Jul -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-July-22 | 50.00 | 51.86 | 7.06 | 360 | 260 | 128 | 16.8 | 5.1 | 8.31 | 7 | 32 | 7 | 3.2 | 4.4 | 0.9 | 4.1 | 80 | |
| 02-July-22 | 50.00 | 51.97 | 7.04 | 286 | 268 | 134 | 17.4 | 5.7 | 8.24 | 6 | 40 | 8 | 3.9 | 4.3 | 1.4 | 3.7 | 70 | |
| 03-July-22 | 50.00 | 54.33 | 7.05 | 311 | 272 | 126 | 16.9 | 5.4 | 8.30 | 7 | 28 | 8 | 3.3 | 4.1 | 1.2 | 3.7 | 60 | |
| 04-July-22 | 50.00 | 51.57 | 7.04 | 254 | 296 | 136 | 16.3 | 5.4 | 8.30 | 7 | 32 | 9 | 2.9 | 4.5 | 1.1 | 2.9 | 90 | |
| 05-July-22 | 50.00 | 53.57 | 7.03 | 263 | 312 | 144 | 17.3 | 5.7 | 8.36 | 8 | 32 | 8 | 3.1 | 4.1 | 1.1 | 3.6 | 90 | |
| 06-July-22 | 50.00 | 53.22 | 7.03 | 296 | 304 | 132 | 16.8 | 5.4 | 8.37 | 7 | 32 | 7 | 3.4 | 4.6 | 1 | 4.1 | 80 | |
| 07-July-22 | 50.00 | 53.28 | 7.04 | 312 | 300 | 138 | 18.1 | 5.2 | 8.41 | 8 | 28 | 8 | 3.7 | 4 | 1 | 2.8 | 70 | |
| 08-July-22 | 50.00 | 53.04 | 7.02 | 280 | 284 | 165 | 17.4 | 5.3 | 8.24 | 7 | 32 | 9 | 3.1 | 4.2 | 1.1 | 3.3 | 80 | |
| 09-July-22 | 50.00 | 52.51 | 7.19 | 300 | 312 | 156 | 18.5 | 5.6 | 8.04 | 7 | 40 | 8 | 4.3 | 4.2 | 1.4 | 3.8 | 90 | |
| 10-July-22 | 50.00 | 54.65 | 7.04 | 246 | 324 | 171 | 19.2 | 5.4 | 8.32 | 6 | 40 | 8 | 3.9 | 4.1 | 1.2 | 2.9 | 80 | |
| 11-July-22 | 50.00 | 53.62 | 7.04 | 210 | 288 | 126 | 17.3 | 5.4 | 8.32 | 8 | 32 | 8 | 3.5 | 4.2 | 1 | 2.5 | 80 | |
| 12-July-22 | 50.00 | 53.35 | 7.08 | 273 | 292 | 136 | 18.1 | 5.7 | 8.2 | 8 | 40 | 9 | 3.8 | 4.6 | 1.1 | 1.9 | 90 | |
| 13-July-22 | 50.00 | 52.74 | 7.01 | 383 | 360 | 130 | 17.8 | 5.2 | 8.09 | 9 | 32 | 9 | 2.8 | 3.9 | 1.2 | 2 | 70 | |
| 14-July-22 | 50.00 | 52.27 | 6.87 | 210 | 344 | 124 | 16.2 | 6 | 7.84 | 8 | 44 | 9 | 3.3 | 4.7 | 1.3 | 3.2 | 80 | |
| 15-July-22 | 50.00 | 50.06 | 6.98 | 246 | 280 | 156 | 19.3 | 5.8 | 8.1 | 8 | 32 | 9 | 2.9 | 4.9 | 1.3 | 4.1 | 60 | |
| 16-July-22 | 50.00 | 50.47 | 7.38 | 273 | 292 | 138 | 19.5 | 3.9 | 7.38 | 7 | 36 | 8 | 4.2 | 5.5 | 1 | 3.8 | 70 | |
| 17-July-22 | 50.00 | 53.18 | 7.18 | 284 | 320 | 144 | 18.2 | 5.5 | 7.18 | 7 | 40 | 8 | 4.3 | 4.1 | 1.2 | 2.9 | 70 | |

| 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 |
| 18-July-22 | 50.00 | 53.65 | 7.15 | 250 | 292 | 129 | 17.5 | 6.2 | 7.38 | 9 | 36 | 7 | 3.2 | 4.3 | 1.4 | 3.7 | 80 | |
| 19-July-22 | 50.00 | 53.63 | 7.12 | 290 | 328 | 134 | 19.2 | 5.7 | 7.19 | 8 | 44 | 9 | 3.9 | 5.4 | 1.3 | 3.8 | 60 | |
| 20-July-22 | 50.00 | 52.54 | 6.88 | 417 | 344 | 153 | 21.4 | 5.3 | 7.09 | 8 | 36 | 8 | 4.1 | 6.4 | 0.9 | 2.6 | 80 | |
| 21-July-22 | 50.00 | 52.38 | 7.06 | 430 | 284 | 147 | 17.8 | 4.8 | 8.64 | 8 | 32 | 8 | 3.6 | 5.7 | 0.6 | 1.3 | 60 | |
| 22-July-22 | 50.00 | 52.10 | 6.99 | 150 | 260 | 114 | 16.7 | 4.7 | 6.87 | 6 | 32 | 8 | 2.7 | 4.8 | 0.8 | 3.1 | 80 | |
| 23-July-22 | 50.00 | 50.75 | 7.4 | 173 | 272 | 145 | 18.4 | 5 | 7.96 | 7 | 28 | 8 | 2.5 | 4.6 | 0.9 | 2.7 | 70 | |
| 24-July-22 | 50.00 | 53.99 | 7.13 | 260 | 264 | 117 | 17.4 | 5.2 | 7.64 | 9 | 32 | 6 | 2.4 | 3.9 | 1 | 3.2 | 60 | |
| 25-July-22 | 50.00 | 51.14 | 7.34 | 286 | 276 | 103 | 16.8 | 5.3 | 8.01 | 9 | 28 | 8 | 2.6 | 3.7 | 0.8 | 2.8 | 60 | |
| 26-July-22 | 50.00 | 53.25 | 7.29 | 197 | 284 | 121 | 18.5 | 5.1 | 7.91 | 8 | 40 | 7 | 2.9 | 4 | 1.2 | 2.6 | 70 | |
| 27-July-22 | 50.00 | 53.32 | 7.41 | 158 | 228 | 118 | 19.6 | 4.3 | 8.12 | 8 | 36 | 8 | 2.5 | 4.6 | 1.1 | 1.9 | 60 | |
| 28-July-22 | 50.00 | 52.61 | 8.4 | 200 | 244 | 117 | 19.4 | 4.3 | 7.85 | 8 | 36 | 8 | 2.7 | 4.8 | 1.1 | 3.6 | 50 | |
| 29-July-22 | 50.00 | 43.35 | 8.37 | 170 | 220 | 128 | 16.9 | 4.3 | 8.02 | 6 | 36 | 7 | 2.1 | 3.5 | 1.2 | 3.9 | 70 | |
| 30-July-22 | 50.00 | 30.58 | 7.76 | 140 | 216 | 184 | 16.6 | 4.3 | 6.27 | 7 | 32 | 9 | 2 | 3.3 | 1 | 3.7 | 80 | |
| 30-July-22 | 50.00 | 27.97 | 8.4 | 153 | 256 | 138 | 18.3 | 4.6 | 8.41 | 9 | 36 | 8 | 2.8 | 4.2 | 1.5 | 3.7 | 70 | |

# 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- July-22 | 10 | 27 | 24.00 | 1700000 | |
| 02- July-22 | 10 | 27 | 23.52 | 1400000 | |
| 03-July -22 | 10 | 27 | 23.67 | 1300000 | |
| 04-Ju/y-22 | 10 | 27 | 21.82 | 1400000 | |
| 05-July-22 | 10 | 27 | 22.34 | 1600000 | |
| 06-July-22 | 10 | 27 | 24.49 | 1400000 | |
| 07-July-22 | 10 | 27 | 24.04 | 1200000 | |
| 08-July-22 | 10 | 27 | 24.15 | 1900000 | |
| 09-July-22 | 10 | 27 | 21.73 | 1600000 | |
| 10-July-22 | 10 | 27 | 24.38 | 1200000 | |
| 11-July-22 | 10 | 27 | 22.54 | 1400000 | |
| 12-July-22 | 10 | 27 | 24.55 | 1300000 | |
| 13-July-22 | 10 | 27 | 26.58 | 1600000 | |
| 14-July-22 | 10 | 27 | 23.89 | 1400000 | |
| 15-July-22 | 13 | 35.1 | 22.24 | 1300000 | |
| 16-July-22 | 12 | 32.4 | 22.29 | 1500000 | |
| 17-July-22 | 13 | 35.1 | 23.14 | 1200000 | |
| 18-July-22 | 10 | 27 | 22.01 | 1900000 | |
| 19-July-22 | 10 | 27 | 23.19 | 1600000 | |
| 20-July-22 | 11 | 29.7 | 23.85 | 1900000 | |
| 21-July-22 | 10 | 27 | 21.94 | 1900000 | |
| 22-July-22 | 9 | 24.3 | 22.91 | 1400000 | |
| 23-July-22 | 11 | 29.7 | 22.43 | 1300000 | |
| 24-July-22 | 11 | 29.7 | 22.74 | 1400000 | |
| 25-July-22 | 11 | 29.7 | 22.88 | 1600000 | |
| 26-July-22 | 11 | 29.7 | 21.78 | 1600000 | |
| 27-July-22 | 10 | 27 | 20.03 | 1400000 | |
| 28-July-22 | 10 | 27 | 21.83 | 1700000 | |
| 29-July-22 | 11 | 29.7 | 21.24 | 1900000 | |
| 30-July-22 | 6 | 16.2 | 21.48 | 1600000 | |
| 31- July -22 | 4 | 10.81 | 22.93 | | |
| **Total** | **313** | **845.1** | **710.61** | | |