# National Mission for Clean Ganga (NMCG)
# Ministry of Jal Shakti,
# River Development & Ganga Rejuvenation
# Government of India

# Development and Rehabilitation of Sewage Treatment Plants and Associated Infrastructure Under Hybrid Annuity Based PPP Mode at Prayagraj, Uttar Pradesh

## (LOA File Number: 50123/447/121, dated 10/11/2018)

# Monthly Progress Report
# of
# Project Engineer
## September 2022

| Executing Agency | Funding Agency | Project Engineer | Concessionaire |
|---|---|---|---|
| GPCU, Uttar Pradesh Jal Nigam, Prayagraj, Uttar Pradesh 211008 | National Mission for Clean Ganga, Ministry of Water Resources, New Delhi 110002 | AECOM India Pvt. Ltd., 19/F, Bldg. 5-C, DLF Cyber City, DLF Phase-III, Gurgaon, Haryana-122002 | Prayagraj Water Pvt. Ltd., (SPV of ADANI Enterprise Ltd. and Organica Technologiak ZRT) Adani House, 56 Shri Mall, Society, Navrangpura, Ahmedabad. |

# Table of Contents

# 1. Introduction

The GoI (Government of India), recognizing that the long-term rejuvenation of the river Ganga will have significant social and economic benefits on the lives of 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 Government of India approved the flagship Namami Gange Program for cleaning rejuvenation and protection of river Ganga and its tributaries. In january-2016, The Government of India approved a Hybrid annuity model to implement the STP project under the Namami Gange program on a PPP basis.

Subsequently, the MoWR (Ministry of Water Resources) issued the river Ganga (Rejuvenation, Protection and Management) Authorities Order, 2016 (Ganga 2016 Order) to constitute various authorities to assist the Government of India in achieving its aim of effective abatement of pollution in the river Ganga. The Ganga 2016 order designated NMCG as the nodal agency for implementation of the Ganga 2016 order.

Rapidly increasing population, rising standards of living and exponential growth of industrialization 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 Project;

- Development and Rehabilitation of Sewage Treatment Plants (STPs) and Associated Infrastructure at Prayagraj under Hybrid Annuity based PPP mode in State of Uttar Pradesh.

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 and Project Engineer.

## 2. Hybrid Annuity Model (HAM)

Government of India has approved the Namami Gange program as an integrated approach for effective abatement of pollution in river Ganga and Yamuna. As part of this and to ensure that no untreated domestic sewage flow into the river Ganga and Yamuna, 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, construct, rehabilitate, renovate, operate and maintain the asset (STPs, IPS, and MPS) to the Project Executing Agency/Jal Nigam at the end of the Concession Period (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.

National Mission for Clean Ganga (NMCG) and Uttar Pradesh Jal Nigam (UPJN) appointed M/s. AECOM India Pvt. Ltd., as Project Engineer for this project through tendering process. Letter of Award is issued dated 4th February 2019 and agreement signed between the parties on 5$^{th}$ April 2019.

## 3. Objectives

Objectives to achieve effective Development of Sewage Treatment Plants (STPs) at Jhunsi, Naini and Phaphamau, rehabilitation of existing STPs & associated Infrastructure and operation and maintenance of all assets for 15 years in Prayagraj, Uttar Pradesh, under Hybrid Annuity based PPP mode are proposed under this project.

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

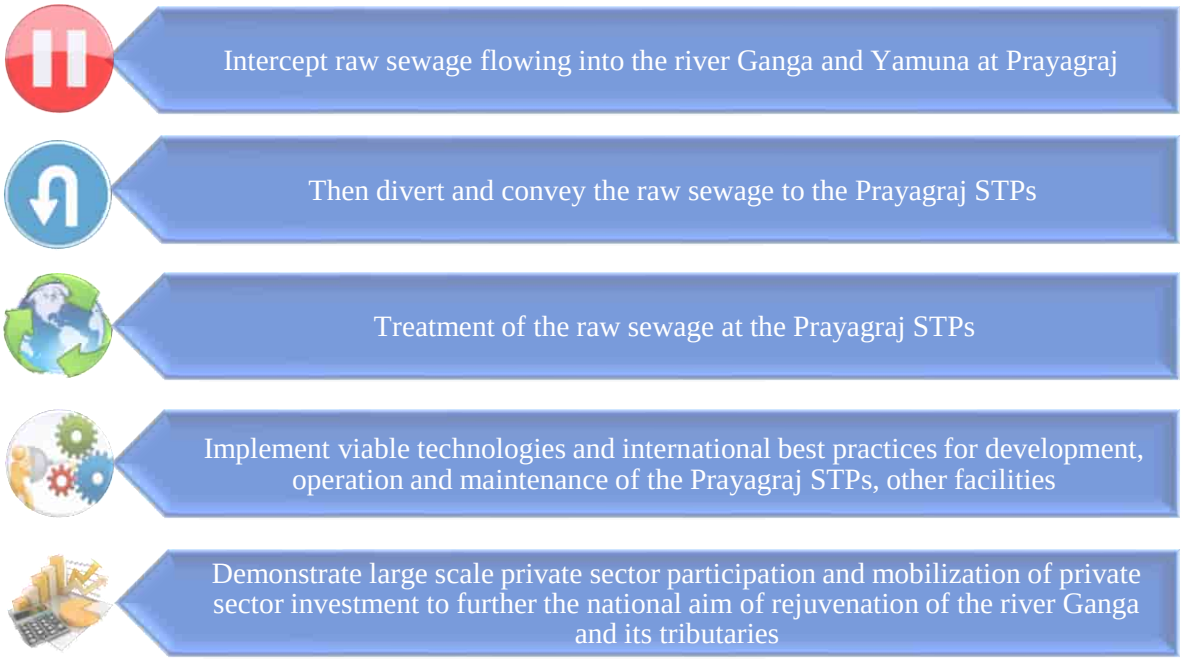



**Figure 1 : Objectives of NMCG and UP JAL NIGAM**

Government of India has approved the Namami Gange program as an integrated approach for effective abatement of pollution in river Ganga and Yamuna. As part of this and to ensure that no untreated domestic sewage flow into the river Ganga and Yamuna, 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, construct, rehabilitate, renovate, operate and maintain the asset (STPs and Associate Infrastructure) to the Project Executing Agency/Jal Nigam/ 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.

National Mission for Clean Ganga (NMCG) appointed M/s. AECOM India Pvt. Ltd., Gurgaon as Project Engineer for this project through tendering process. Letter of Award is issued dated 4th February 2019 and agreement signed between the parties on 5th April 2019.

## 4. Project at Glance

The Project components details of each Facility, their grouping in each Package is presented below.

| Sr. No. | Particulars | Description |
|---|---|---|
| **1.0** | **Name of Project** | **Development and Rehabilitation of Sewage Treatment Plants and Associated Infrastructure under HAM based PPP mode at Prayagraj, Uttar Pradesh** |
| | Client | National Mission for Clean Ganga (NMCG) and Uttar Pradesh Jal Nigam (UPJN) |
| **2.0** | Executing Agency | Uttar Pradesh Jal Nigam, Ganga Pollution Control Unit, Prayagraj, Uttar Pradesh |
| **3.0** | Project Engineer | AECOM India Pvt. Ltd. |
| **4.0** | Concessionaire | Prayagraj Water Pvt. Ltd. (SPV of ADANI Enterprise Ltd. JV Organica Technologiak ZRT) |
| **5.0** | Contract Value<br>(Capex + Opex) | INR 908.3 Crore |
| **6.0** | Effective Date | 16th September 2019 |
| **7.0** | Construction Completion Date | Package-I; 24 months from effective date<br>Package-II; 12 months from effective date<br>Package-III; 6 months from effective date |
| **6.0** | Operation & Maintenance | Package-I; 15 years from commercial operation date<br>Package-II; 16 years from commercial operation date<br>Package-III; 16.5 years from commercial operation date |

## 5. Site Location


Entire work has been divided/ distributed in the following 3 packages.

- Package-I: Construction of 03 Nos. new STP's with Associated Infrastructure (Naini-II (42 MLD), Jhunsi (16 MLD) & Phaphamau (14 MLD)). Setup rooftop Solar Power Plant of capacity 930kW (110kW at Phaphamau, 800kW at Naini-II and 20kW at Jhunsi).

- Package II: Rehabilitate and Restore 02 Nos. STP's with Associated Infrastructure (Rajapur (60 MLD) & Naini-I (60+20 MLD).

- Package III: Rehabilitate and Restore 04 Nos. STP's with Associated Infrastructure Numayadahi (50 MLD), Ponghat (10 MLD), Kodra (25 MLD) & Salori (29 MLD).

## 6. Project Components

The Project components details of each Facility, their grouping in each Package is presented below

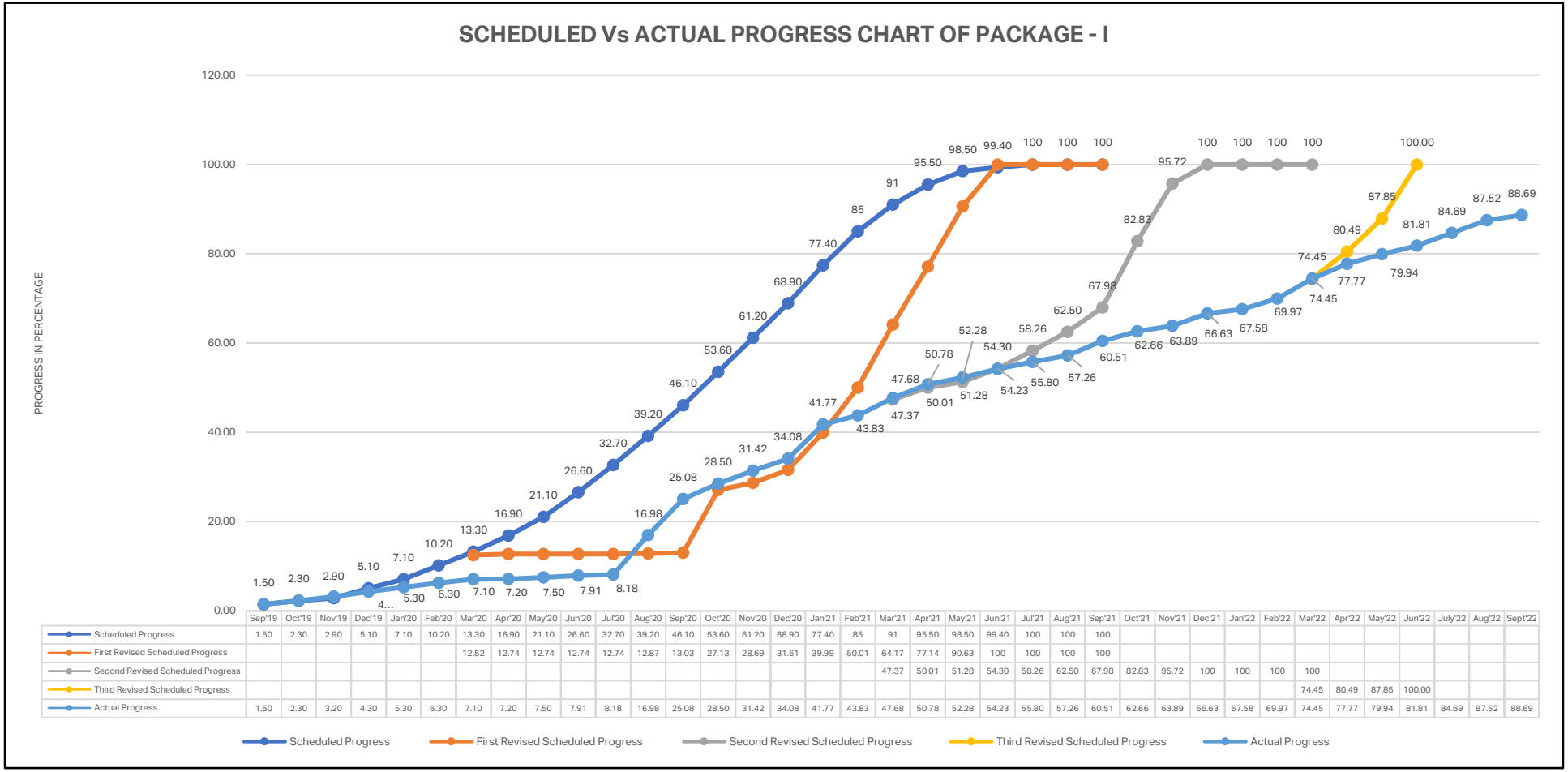
| **Package Number - I** | | | | |
|---|---|---|---|---|
| **Nature of work** | **Facilities** | | | |
| **New construction** | Design, develop, finance, construct, operate and maintain, and transfer the Package-I Facilities including three STP facilities with a proposed capacity of 42 MLD at Naini (District G), 14 MLD at Phaphamau (District F), and 16 MLD at Jhunsi along with their Associated Infrastructure, as per the provisions of the Concession Agreement, and in adherence to the applicable Key Performance Indicators | | | |
| Sr. No. | **Facility Name** | **Part Of** | **Details** | **Capacity (Average)** |
| **1** | Phaphamau Facilities (District -F) | Phaphamau STP Facilities | Phaphamau STP Plant | 14 MLD |
| | | | Solar Power Plant | 110 Kw |
| | | Phaphamau Associated Infrastructure | Basna Nalla SPS | 5.53 MLD |
| | | | Nalla Tapping and Trunk Sewer | 2 Nos. Tapping |
| | | | Shantipuram Main Pumping Station | 14 MLD |
| **2** | Naini Facilities (District - G) | Naini – II STP Facilities | Naini –II STP | 42 MLD |
| | | | Solar Power Plant | 800 Kw |
| | | Naini -II Associated Infrastructure | Mawaiya Drain SPS | 35.85 MLD |
| | | | Mawaiya Drain Tapping and Trunk Sewer | 3 Nos. Tapping |
| | | | Mahewaghat Drain SPS | 2.15 MLD |
| | | | Mahewaghat Drain a nd Trunk Sewer | 3 Nos. Of Tapping |
| | | | Main Pumping Station | 43.5 MLD |
| **3** | Jhunsi Facilities | Jhunsi STP Facilities | Jhunsi STP | 16 MLD |
| | | | Solar Power Plant | 20 Kw |
| | | Jhunsi Associated Infrastructure | Shastri Bridge SPS | 16 MLD |
| | | | Nalla Tapping a nd Trunk Sewer | 13 Nos. Tapping |
| | | | Main Pumping Station | 16 MLD |

| **Package Number - II** | | | | |
|---|---|---|---|---|
| **Nature of work** | **Facilities** | | | |
| **Rehabilitation** | Design (wherever necessary), rehabilitate, restore, finance, operate and transfer two existing STP Facilities, one of capacity 80 MLD at Naini (District A) and other of capacity 60 MLD at Rajapur (District D) along with their Associated Infrastructure as per the provisions of the Concession Agreement, and in adherence to the applicable Key Performance Indicators. | | | |
| **Sr. No.** | **Facility Name** | **Part Of** | **Details** | **Capacity (Average)** |
| **1** | Naini -I Facilities (District A) | Naini–I STP Facilities | Naini –I STP (60 MLD) STP Technology: ASP | 60 MLD |
| | | | Naini –I STP (20 MLD) STP Technology: ASP | 20 MLD |
| | | | Naini- I Biogas Plant | 600 KW |
| | | Naini–I Associated Infrastructure | Chachar Nalla SPS | 35 MLD with 2 Nos. Tapping |
| | | | Gaughat MPS | 80 MLD |
| **2** | Rajapur Facilities (District D) | Rajapur STP Facilities | Rajapur STP STP Technology: UASB | 60 MLD |
| | | Rajapur Associated Infrastructure | Mumfordgunj SPS | 55 MLD with 1 Nos. Tapping |
| | | | Rajapur SPS | 25 MLD with 1 Nos. Tapping |

| **Package Number - III** | | | | |
|---|---|---|---|---|
| **Nature of work** | **Facilities** | | | |
| **Rehabilitation** | Design (wherever necessary), rehabilitate, restore, finance, operate and transfer four existing STP Facilities, one of capacity 50 MLD at Numayadahi (District B), one of capacity 29 MLD at Salori (District C), one of capacity 25 MLD at Kodra (District E) and another of capacity 10 MLD at Ponghat (District E), along with their Associated Infrastructure, as per the provisions of the Concession Agreement, and in adherence to the applicable Key Performance Indicators. | | | |
| Sr. No. | **Facility Name** | **Part Of** | **Details** | **Capacity (Average)** |
| **1** | Salori Facilities (District - C) | Salori STP Facilities | Salori STP (29 MLD)<br>STP Technology: FAB | 29 MLD |
| | | Salori Associated Infrastructure | Salori MPS | 29 MLD with 1 Nos. Tapping |
| **2** | Numayadahi Facilities (District B) | Numayadahi STP Facilities | Numayadahi STP<br>STP Technology: Bio tower + ASP | 50 MLD |
| | | Numayadahi Associated Infrastructure | Ghaggar Nalla SPS | 50 MLD with 1 Nos. Tapping |
| | | | Sasur Kadheri SPS | 15 MLD with 1 Nos. Tapping |
| | | | Lukarganj SPS | 16.5 MLD with 1 Nos. Tapping |
| **3** | Kodra Facilities (District E) | Kodra STP Facilities | Kodra STP<br>STP Technology:Bio tower + ASP | 25 MLD |
| | | Kodra Associated Infrastructure | Kodra MPS | 25 MLD with 1 Nos. Tapping |
| **4** | Ponghat Facilities (District E) | Ponghat STP Facilities | Ponghat STP<br>STP Technology: Bio tower + ASP | 10 MLD |
| | | Ponghat Associated Infrastructure | Ponghat MPS | 10 MLD with 1 Nos. Tapping |

# 7. Status of project

## 7.1 Package-I Overall progress status




| | Sep'19 | Oct'19 | Nov'19 | Dec'19 | Jan'20 | Feb'20 | Mar'20 | Apr'20 | May'20 | Jun'20 | Jul'20 | Aug'20 | Sep'20 | Oct'20 | Nov'20 | Dec'20 | Jan'21 | Feb'21 | Mar'21 | Apr'21 | May'21 | Jun'21 | Jul'21 | Aug'21 | Sep'21 | Oct'21 | Nov'21 | Dec'21 | Jan'22 | Feb'22 | Mar'22 | Apr'22 | May'22 | Jun'22 | July'22 | Aug'22 | Sept'22 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Scheduled Progress | 1.50 | 2.30 | 2.90 | 5.10 | 7.10 | 10.20 | 13.30 | 16.90 | 21.10 | 26.60 | 32.70 | 39.20 | 46.10 | 53.60 | 61.20 | 68.90 | 77.40 | 85 | 91 | 95.50 | 98.50 | 99.40 | 100 | 100 | 100 | | | | | | | | | | | | |
| First Revised Scheduled Progress | | | | | | | 12.52 | 12.74 | 12.74 | 12.74 | 12.74 | 12.87 | 13.03 | 27.13 | 28.69 | 31.61 | 39.99 | 50.01 | 64.17 | 77.14 | 90.63 | 100 | 100 | 100 | 100 | | | | | | | | | | | | |
| Second Revised Scheduled Progress | | | | | | | | | | | | | | | | | | | 47.37 | 50.01 | 51.28 | 54.30 | 58.26 | 62.50 | 67.98 | 82.83 | 95.72 | 100 | 100 | 100 | 100 | | | | | | |
| Third Revised Scheduled Progress | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 74.45 | 80.49 | 87.85 | 100.00 | | | |
| Actual Progress | 1.50 | 2.30 | 3.20 | 4.30 | 5.30 | 6.30 | 7.10 | 7.20 | 7.50 | 7.91 | 8.18 | 16.98 | 25.08 | 28.50 | 31.42 | 34.08 | 41.77 | 43.83 | 47.68 | 50.78 | 52.28 | 54.23 | 55.80 | 57.26 | 60.51 | 62.66 | 63.89 | 66.63 | 67.58 | 69.97 | 74.45 | 77.77 | 79.94 | 81.81 | 84.69 | 87.52 | 88.69 |

- **Project Engineer has provided observation on Concessionaire September'22-month MPR vide letter number AIPL/NMCG/PRAYAG/1505 on dated 14.10.2022 Therefore, status may be change after observation incorporated by Concessionaire.**

### 7.1.7 Physical construction Activities in August'22 month

# PHYSICAL CONSTRUCTION ACTIVITIES, PROJECT ENGINEER INSPECTION REPORT AND RECOMMENDATION FOR PACKAGE-I IS MENTIONED IN

# ANNEXURE - I

## 7.2 Package-II status

OFFICE OF THE GENERAL MANAGER,
कार्यालय महाप्रबन्धक,
GANGA POLLUTION CONTROL UNIT,
गंगा प्रदूषण नियंत्रण इकाई,
U.P. JAL NIGAM, PRAYAGRAJ
उ० प्र० जल निगम, प्रयागराज
**Email-** ***gmganga.allahabad@gmail.com***

Letter no. 2484 /PWPL (Adani) / 496 Dated: 20/ 09 / 2021

To,

General Manger-Project
M/s. Prayagraj Water Private Limited,
"Adani House", 56, Shrimali Society,
Near Mithakhali Six Road,
Navrangpura, Ahmedabad 380006
Gujarat, India.

**Name of Work:** Development and Rehabilitation of Sewage Treatment Plants and Associated Infrastructure under Hybrid Annuity Based PPP Mode at Prayagraj, Uttar Pradesh.

**Sub:- Concession Agreement no. 31/GM/2018-19:Issuance of Commercial Operations Date of Package-II.**

**Ref :-** 1. Our office Letter No 2474/PWPL(Adani)/486 dated 18.09.2021
2. Our office Letter No. 2483/PWPL(Adani)/495 dated 20.09.2021

Sir,

With reference to the above mentioned subject, it is to be noted that we have issued the 4th Milestone completion certificate vide Letter No. 2474/PWPL(Adani)/486 dated 18.09.2021 & Rehabilitation Completion Certificate vide Letter No. 2483/PWPL(Adani)/495 dated 20.09.2021 after the detailed assessment of the documents provided by the concessionaire.

In view of the same, we are hereby issuing the COD certificate to the concessionaire. Details of the same is mentioned below-

| Sl. No. | Description | Commercial Operations Date (COD) |
|---|---|---|
| 1 | Rehabilitation works under Pkg-II | 01.06.2021 |

(M.C. Srivastava)
**General Manager**

**End No & date: As above.**
**Copy to following for information and necessary action**
1- Executive Director(Projects), NMCG, New Delhi.
2- Chief Engineer (Ganga), U.P. Jal Nigam Lucknow.
3- Chief Engineer (Prayagraj Zone), U.P. Jal Nigam, Prayagraj.
4- Mr. Rajat Gupta, Sr. Specialist, NMCG, New Delhi.
5- Project Manager (I/E&M), Ganga Pollution Control Unit, U.P. Jal Nigam, Prayagraj.
6- AECOM India Pvt. Ltd. (Project Engineer), Gurgaon.

20/9/21
**General Manager**

***Commercial Operations Date was announced on 01.06.2021 vide letter no. 2484/PWPL (Adani)/496***

# KPI REPORT'S OF PACKAGE - II

# AND

# PROJECT ENGINEER INSPECTION REPORT AND RECOMMENDATION IS MENTIONED IN

# ANNEXURE - II

## 7.3 Package-III status

OFFICE OF THE GENERAL MANAGER,
कार्यालय महाप्रबन्धक,
GANGA POLLUTION CONTROL UNIT,
गंगा प्रदूषण नियंत्रण इकाई,
U.P. JAL NIGAM, PRAYAGRAJ
उ0 प्र0 जल निगम प्रयागराज,
दूरभाष : 0532-2684329, 2684691, फैक्स 0532-2684699

Letter No. 2336/PWPL(Adani)/423 Dated: 02/11/2020

To,

M/s. Prayagraj Water Private Limited,
"Adani House", 56, Shrimali Society,
Near Mithakhali Six Road,
Navrangpura, Ahmedabad-380006
Gujrat, India.

Name of Work: Development and Rehabilitation of Sewage Treatment Plants and Associated Infrastructure under Hybrid Annuity Based PPP Mode at Prayagraj, Uttar Pradesh.

Subject: **Concession Agreement no. 31/GM/2018-19:** Issuance of Commercial Operations Date of Package-III.

Sir,

With reference to the above mentioned subject, it is to be noted that we have issued the 2nd Milestone completion certificate vide Letter No. 2328/PWPL(Adani)/415 dated 31.10.2020 & Rehabilitation Completion Certificate vide Letter No. 2330/PWPL(Adani)/417 dated 31.10.2020 and LD Waiver Letter No. 2331/PWPL(Adani)/418 dated 31.10.2020 after the detailed assessment of the documents provided by the concessionaire.

In view of the same, we are hereby issuing the COD certificate to the concessionaire. Details of the same is mentioned below-

| Sl. No. | Description | COD Commencement Date |
|---|---|---|
| 1 | Rehabilitation works under Pkg-III | 01.11.2020 |

Yours faithfully

General Manager

Endt No. & and date as above:

**Copy to following:**

1- E.D.(Projects), NMCG, New Delhi.
2- MD, UPIN Lucknow.
3- Chief Engineer (Ganga), U.P. Jal Nigam Lucknow.
4- Chief Engineer (Prayagraj Zone), U.P. Jal Nigam Prayagraj.
5- Shri. Madav Kumar, Sr. Economics and Financial Expert, NMCG, New Delhi.
6- Project Manager (I/E&M), GPCU, U.P. Jal Nigam Prayagraj.
7- AECOM India Pvt. Ltd. (Project Engineer), Gurgaon.

***Commercial Operations Date was announced on 02.11.2020 vide letter no. 2336/PWPL (Adani)/423***

# KPI REPORT'S OF PACKAGE - III

# AND

# PROJECT ENGINEER INSPECTION REPORT AND RECOMMENDATION IS MENTIONED IN

# ANNEXURE - III

## 8. Meetings, Discussions and Site Visits:

Regular progress review meetings are being held at UPJN office & sites. Following meetings were held during the month of September' 2022.

| Sr. No. | Site Visit & Meeting with UPJN / NMCG / PWPL | Date | Attendees | Description |
|---|---|---|---|---|
| 1. | Site inspection of Phaphmau STP | 1-Sep-22 | Mr. Gaurav Pandey | Inspection, supervision and monitoring of ongoing E&M activities |
| 2. | Site inspection of Phaphmau STP | 1-Sep-22 | Mr. Amit Ranjan | Inspection, supervision and monitoring of ongoing Civil activities |
| 3. | Site inspection of Rajapur STP | 6-Sep-22 | Mr. Gaurav Gupta | Inspection, supervision and monitoring of ongoing Operation & Maintenance |
| 4. | Site inspection of Phaphmau STP | 6-Sep-22 | Mr. Gaurav Pandey | Inspection, supervision and monitoring of ongoing E&M activities |
| 5. | Site inspection of Phaphmau STP | 6-Sep-22 | Mr. Amit Ranjan | Inspection, supervision and monitoring of ongoing Civil activities |
| 6. | Site inspection of Phaphmau STP | 7-Sep-22 | Mr. Gaurav Pandey | Inspection, supervision and monitoring of ongoing E&M activities |
| 7. | Site inspection of Phaphmau STP | 7-Sep-22 | Mr. Amit Ranjan | Inspection, supervision and monitoring of ongoing Civil activities |
| 8. | Site inspection of Naini-II STP | 8-Sep-22 | Mr. Amit Ranjan | Inspection, supervision and monitoring of ongoing Civil activities |
| 9. | Site inspection of Naini-II STP | 8-Sep-22 | Mr. Gaurav Pandey | Inspection, supervision and monitoring of ongoing E&M activities |
| 10. | Site inspection of Numayadahi STP | 9-Sep-22 | Mr. Gaurav Gupta | Inspection, supervision and monitoring of ongoing Operation & Maintenance |
| 11. | Site inspection of Naini-II STP | 9-Sep-22 | Mr. Amit Ranjan | Inspection, supervision and monitoring of ongoing Civil activities |
| 12. | Site inspection of Naini-II STP | 9-Sep-22 | Mr. Gaurav Pandey | Inspection, supervision and monitoring of ongoing E&M activities |
| 13. | Site inspection of Jhunsi STP | 10-Sep-22 | Mr. Gaurav Pandey | Inspection, supervision and monitoring of ongoing E&M activities |

| Sr. No. | Site Visit & Meeting with UPJN / NMCG / PWPL | Date | Attendees | Description |
|---|---|---|---|---|
| 14. | Site inspection of Jhunsi STP | 10-Sep-22 | Mr. Amit Ranjan | Inspection, supervision and monitoring of ongoing Civil activities |
| 15. | Site inspection of Naini-II STP | 13-Sep-22 | Mr. Gaurav Pandey | Inspection, supervision and monitoring of ongoing E&M activities |
| 16. | Site inspection of Phaphmau STP | 14-Sep-22 | Mr. Gaurav Pandey | Inspection, supervision and monitoring of ongoing E&M activities |
| 17. | Site inspection of Phaphmau STP | 14-Sep-22 | Mr. Amit Ranjan | Inspection, supervision and monitoring of ongoing Civil activities |
| 18. | Site inspection of Kodra STP | 16-Sep-22 | Mr. Gaurav Gupta | Inspection, supervision and monitoring of ongoing Operation & Maintenance |
| 19. | Site inspection of Jhunsi STP | 16-Sep-22 | Mr. Gaurav Pandey | Inspection, supervision and monitoring of ongoing E&M activities |
| 20. | Site inspection of Naini-II STP | 16-Sep-22 | Mr. Gaurav Pandey | Inspection, supervision and monitoring of ongoing E&M activities |
| 21. | Site inspection of Jhunsi STP | 17-Sep-22 | Mr. Gaurav Pandey | Inspection, supervision and monitoring of ongoing E&M activities |
| 22. | Site inspection of Jhunsi STP | 17-Sep-22 | Mr. Amit Ranjan | Inspection, supervision and monitoring of ongoing Civil activities |
| 23. | Site inspection of Naini-II STP | 19-Sep-22 | Mr. Gaurav Pandey | Inspection, supervision and monitoring of ongoing E&M activities |
| 24. | Site inspection of Naini-II STP | 19-Sep-22 | Mr. Amit Ranjan | Inspection, supervision and monitoring of ongoing Civil activities |
| 25. | Site inspection of Rajapur STP | 23-Sep-22 | Mr. Gaurav Gupta | Inspection, supervision and monitoring of ongoing Operation & Maintenance |
| 26. | Site inspection of Naini-II STP | 23-Sep-22 | Mr. Gaurav Pandey | Inspection, supervision and monitoring of ongoing E&M activities |
| 27. | Site inspection of Naini-II STP | 23-Sep-22 | Mr. Amit Ranjan | Inspection, supervision and monitoring of ongoing Civil activities |
| 28. | Site inspection of Phaphmau STP | 24-Sep-22 | Mr. Gaurav Pandey | Inspection, supervision and monitoring of ongoing E&M activities |

| Sr. No. | Site Visit & Meeting with UPJN / NMCG / PWPL | Date | Attendees | Description |
|---|---|---|---|---|
| 29. | Site inspection of Phaphmau STP | 24-Sep-22 | Mr. Amit Ranjan | Inspection, supervision and monitoring of ongoing Civil activities |
| 30. | Site inspection of Numayadahi STP | 26-Sep-22 | Mr. Gaurav Gupta | Inspection, supervision and monitoring of ongoing Operation & Maintenance |
| 31. | Site inspection of Naini-II STP | 26-Sep-22 | Mr. Gaurav Pandey | Inspection, supervision and monitoring of ongoing E&M activities |
| 32. | Site inspection of Naini-II STP | 26-Sep-22 | Mr. Amit Ranjan | Inspection, supervision and monitoring of ongoing Civil activities |
| 33. | Site inspection of Jhunsi STP | 29-Sep-22 | Mr. Gaurav Pandey | Inspection, supervision and monitoring of ongoing E&M activities |
| 34. | Site inspection of Jhunsi STP | 29-Sep-22 | Mr. Amit Ranjan | Inspection, supervision and monitoring of ongoing Civil activities |
| 35. | Site inspection of Naini-II STP | 30-Sep-22 | Mr. Amit Ranjan | Inspection, supervision and monitoring of ongoing Civil activities |

## 10. Photos of Meetings / Site Visits and Activities

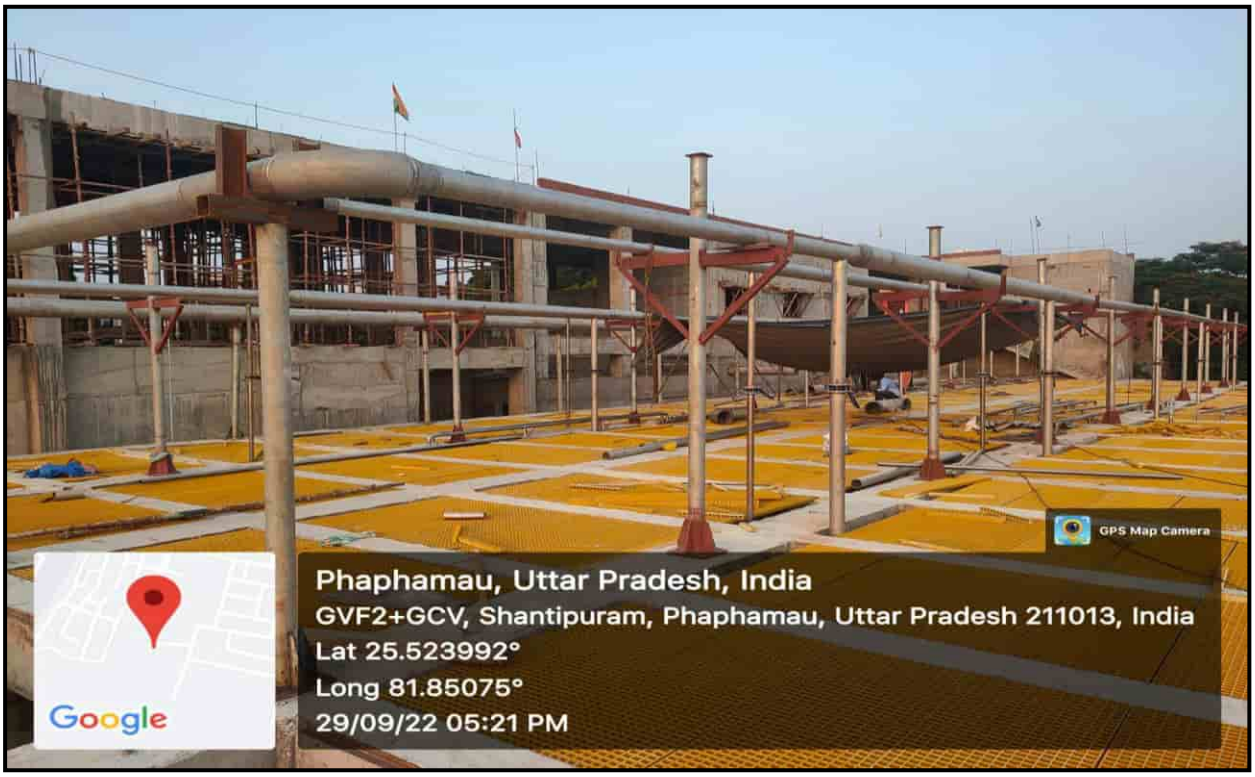
**PACKAGE - I**

**PHAPHAMAU FACILITY**



**Basna Nalla SPS: Column casting work in progress**

## PHAPHAMAU FACILITY




**FCR (STP): Air diffuser piping erection work under progress for FCR module**

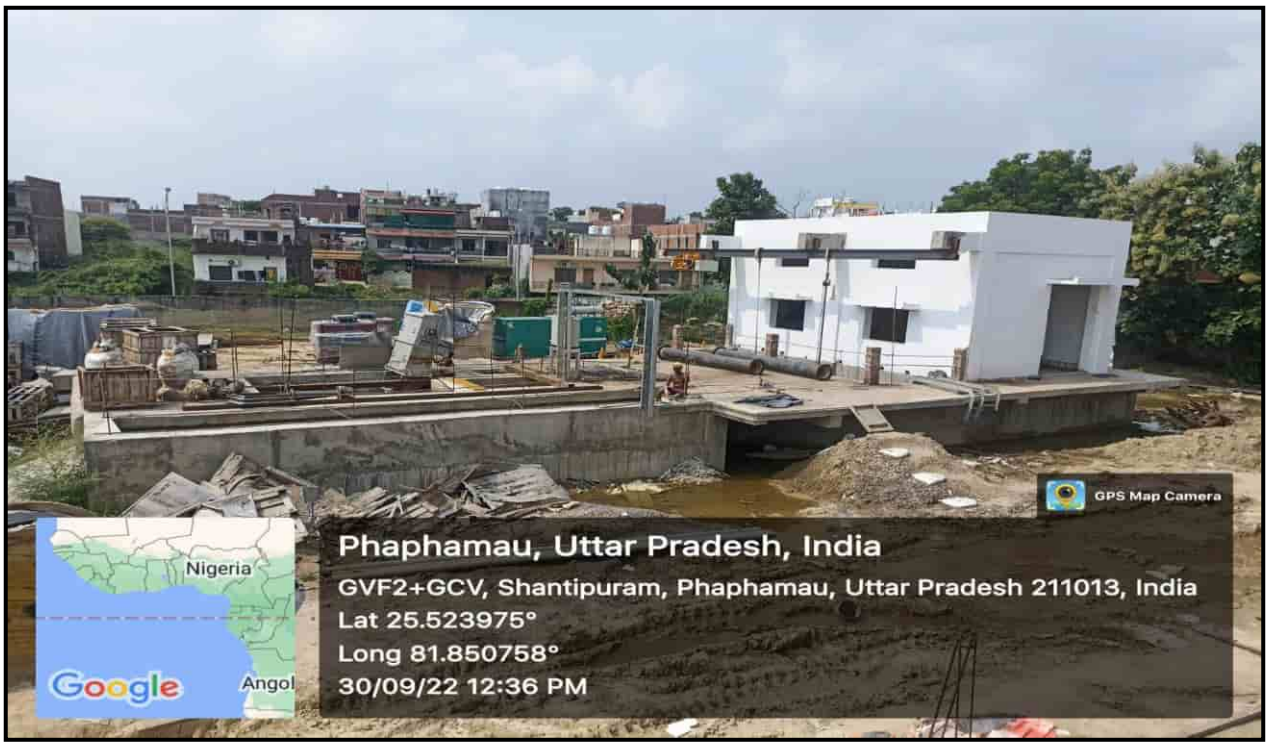

**Tube Settler (STP) – E&M work under progress**

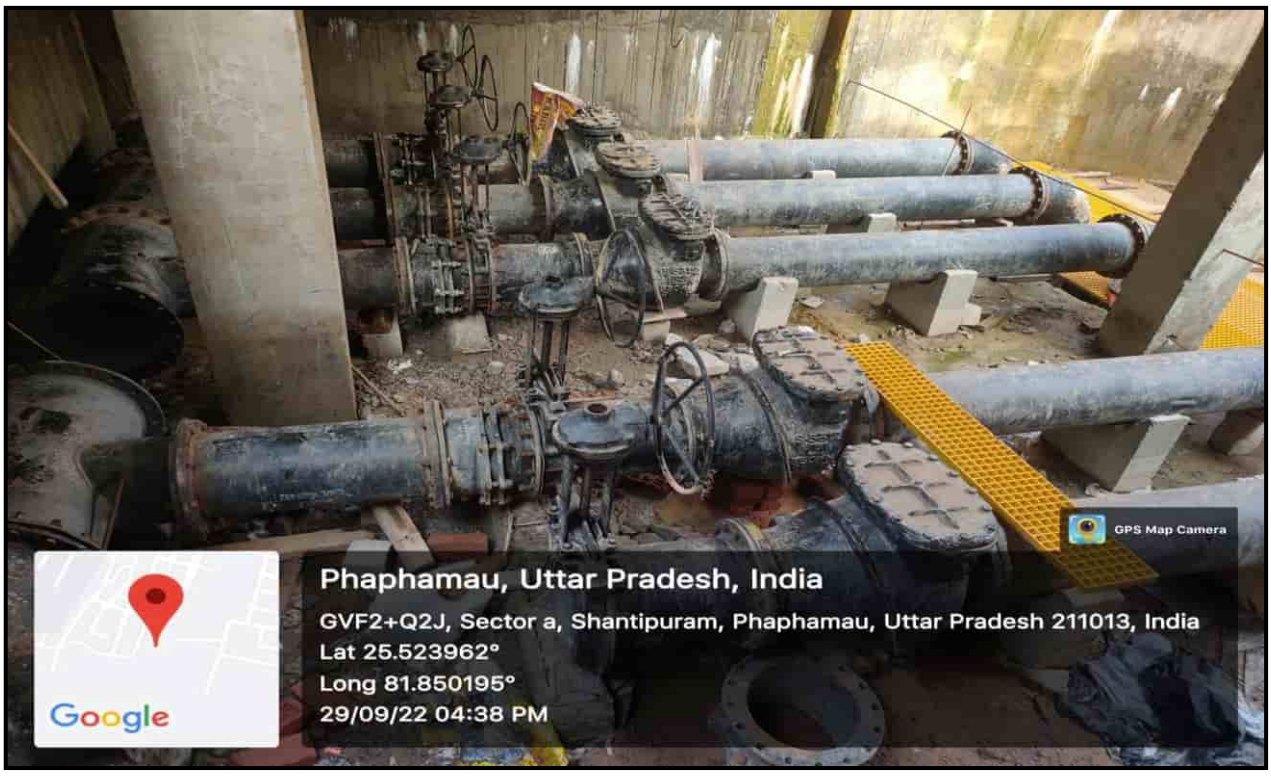
## PHAPHAMAU FACILITY


**Staff Quarter (STP)– Finishing work under progress**


**Process Building (STP) – Construction as well as E&M work under progress**

## PHAPHAMAU FACILITY



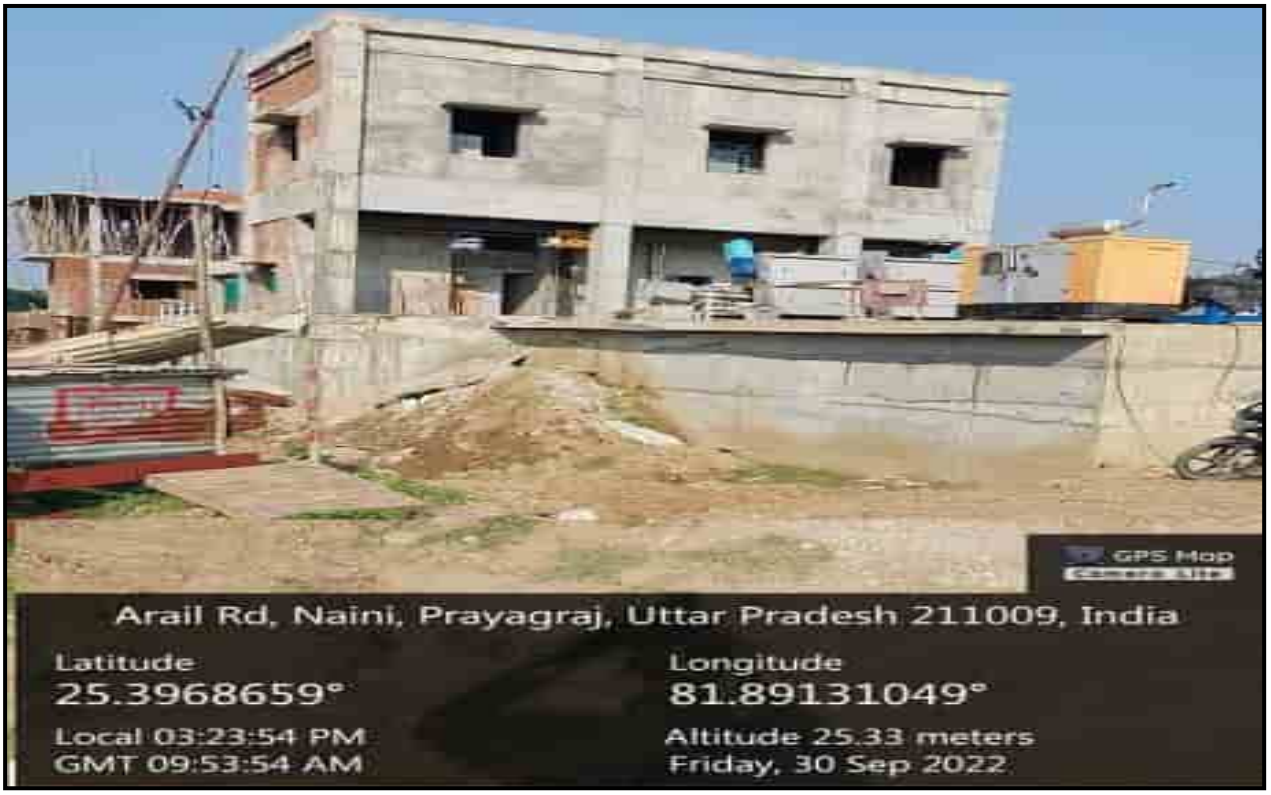

**MPS – Finishing and E&M work under progress**

**NAINI-II FACILITY**


**Mahewaghat SPS – Mechanical & Finishing Work status**


**Mahewaghat SPS – Panel room finishing work status**

**NAINI-II FACILITY**




**Mawaiya SPS – Plaster & E&M work under progress**

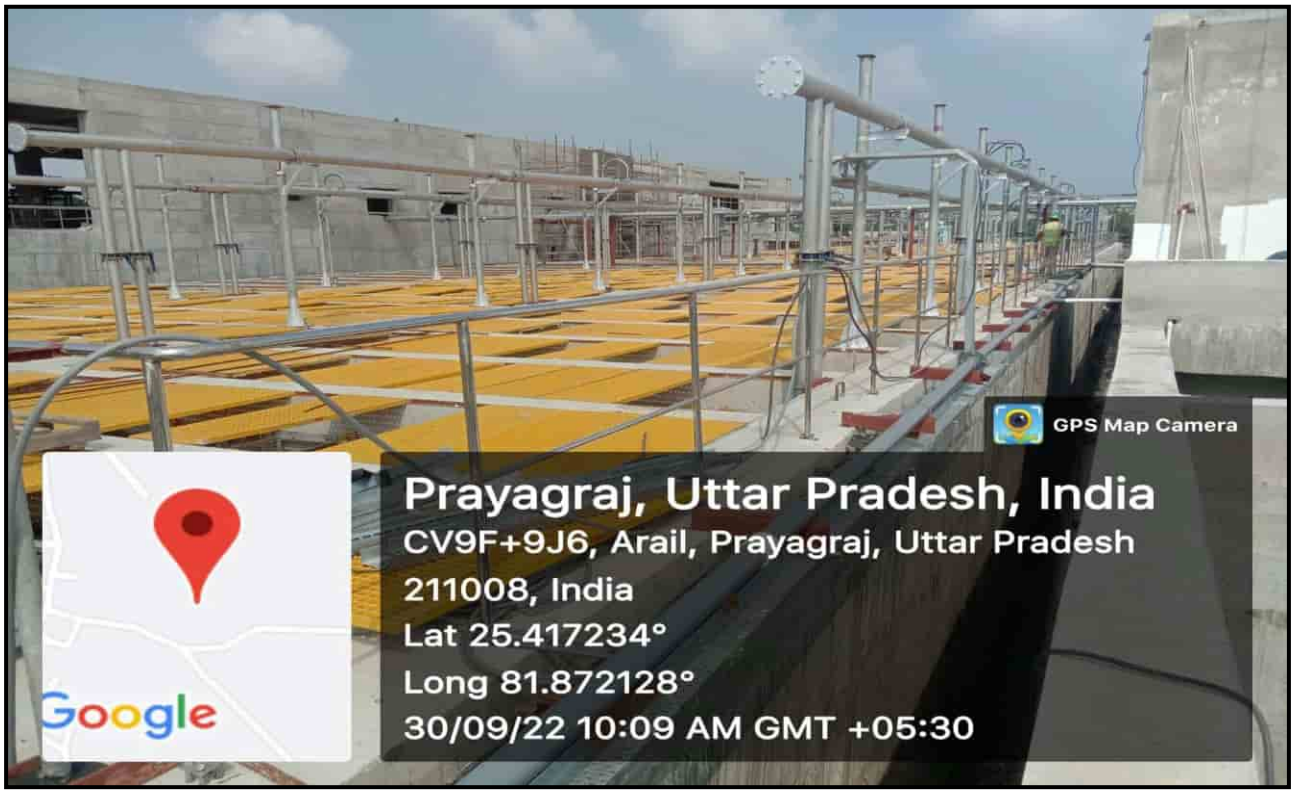

**Mawaiya SPS (Staff Quarter) – Slab casting work under progress**

## NAINI-II FACILITY


**Process Building – E&M work status as well as finishing work status**


**Process Building – Window and Door fixing work under progress**

**NAINI-II FACILITY**

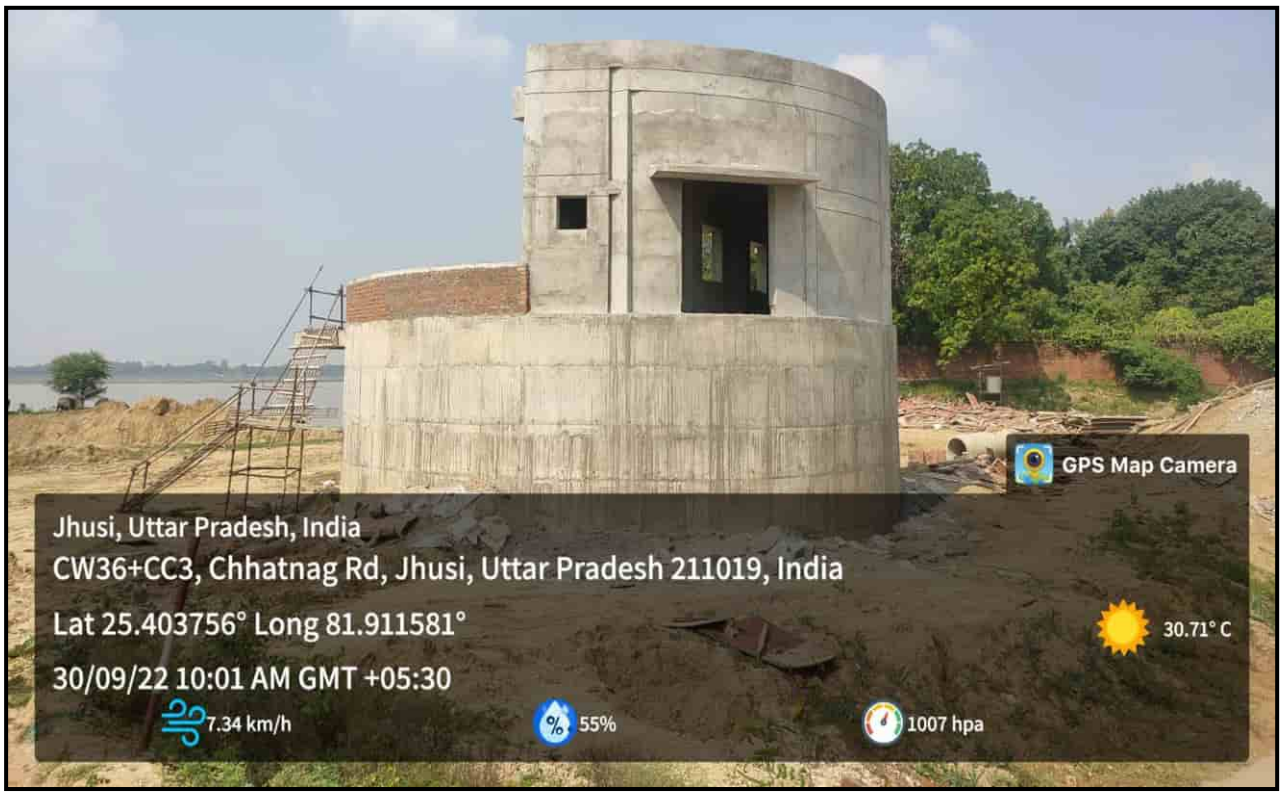



**FCR – E&M work under progress**


**Naini-II MPS – E&M work under progress as well as finishing work**

## JHUNSI FACILITY


**Shastri Bridge SPS – Wet well submerged in Flood water**




**Jhunsi MPS – Plaster work under progress**

## JHUNSI FACILITY


**Process Building – Construction work under progress**


**FCR –E&M work under progress**

## JHUNSI FACILITY


**Tube settler – E&M work under progress**


**Staff Quarter – Painting work under progress**

## 11. Outward Register

List of key design & documents were reviewed by Project Engineer during this period as below.

| Sr. No. | PE Transmittal/ Ref No | Description | Outward Date | To (Organization) | Copies To |
|---|---|---|---|---|---|
| 1. | AIPL/NMCG/PRAYAG/1481 | Regarding rectification of issues related to online monitoring system and SCADA system of all facilities under Package-II & Package-III | 8-Sep-22 | S.E.-2 Circle - UPJN | 1. NMCG, New Delhi 2. M/s PWPL, Prayagraj 3. PM-E&M - UPJN, Prayagraj |
| 2. | AIPL/NMCG/PRAYAG/1482 | Regarding non-operation of Naini-I STP due to flood in river Yamuna | 8-Sep-22 | S.E.-2 Circle - UPJN | 1. NMCG, New Delhi 2. M/s PWPL, Prayagraj 3. PM-E&M - UPJN, Prayagraj |
| 3. | AIPL/NMCG/PRAYAG/1483 | Site Visit Report_ Phaphamau facilities under Package-I. | 8-Sep-22 | S.E.-2 Circle - UPJN | 1. NMCG, New Delhi 2. M/s PWPL, Prayagraj 3. PM-E&M - UPJN, Prayagraj |
| 4. | AIPL/NMCG/PRAYAG/1484 | Regarding the Observation on MPR of August'22. | 16-Sep-22 | S.E.-2 Circle - UPJN | 1. NMCG, New Delhi 2. M/s PWPL, Prayagraj 3. PM- |

| Sr. No. | PE Transmittal/ Ref No | Description | Outward Date | To (Organization) | Copies To |
|---|---|---|---|---|---|
| | | | | | E&M - UPJN, Prayagraj |
| 5. | AIPL/NMCG/PRAYAG/1485 | Observation on O & M Monthly Progress report for the month of June, 2022 of Package - III | 16-Sep-22 | S.E.-2 Circle - UPJN | 1. NMCG, New Delhi 2. M/s PWPL, Prayagraj 3. PM-E&M - UPJN, Prayagraj |
| 6. | AIPL/NMCG/PRAYAG/1486 | Regarding operation of Gas Engine at Naini-I STP | 17-Sep-22 | S.E.-2 Circle - UPJN | 1. NMCG, New Delhi 2. M/s PWPL, Prayagraj 3. PM-E&M - UPJN, Prayagraj |
| 7. | AIPL/NMCG/PRAYAG/1487 | Observation on O & M Monthly Progress report for the month of August, 2022 of Package – II | 20-Sep-22 | S.E.-2 Circle - UPJN | 1. NMCG, New Delhi 2. M/s PWPL, Prayagraj 3. PM-E&M - UPJN, Prayagraj |
| 8. | AIPL/NMCG/PRAYAG/1488 | Observation on O & M Monthly Progress report for the month of July, 2022 of Package -III. | 20-Sep-22 | S.E.-2 Circle - UPJN | 1. NMCG, New Delhi 2. M/s PWPL, Prayagraj 3. PM-E&M - UPJN, Prayagraj |

| Sr. No. | PE Transmittal/ Ref No | Description | Outward Date | To (Organization) | Copies To |
|---|---|---|---|---|---|
| 9. | AIPL/NMCG/PRAYAG/1489 | Observation on O & M Monthly Progress report for the month of August, 2022 of Package - III. | 21-Sep-22 | S.E.-2 Circle - UPJN | 1. NMCG, New Delhi 2. M/s PWPL, Prayagraj 3. PM-E&M - UPJN, Prayagraj |
| 10. | AIPL/NMCG/PRAYAG/1490 | Regarding claim for Naini-II STP Facility for Package-I. | 26-Sep-22 | S.E.-2 Circle - UPJN | 1. NMCG, New Delhi 2. M/s PWPL, Prayagraj 3. PM-E&M - UPJN, Prayagraj |
| 11. | AIPL/NMCG/PRAYAG/1491 | Regarding Notice for 07th Milestone Completion of Package-I. | 26-Sep-22 | S.E.-2 Circle - UPJN | 1. NMCG, New Delhi 2. M/s PWPL, Prayagraj 3. PM-E&M - UPJN, Prayagraj |
| 12. | AIPL/NMCG/PRAYAG/1492 | Regarding rectification of leakage from inlet gate of Naini- II MPS under Package-I | 29-Sep-22 | S.E.-2 Circle - UPJN | 1. NMCG, New Delhi 2. M/s PWPL, Prayagraj 3. PM-E&M - UPJN, Prayagraj |
| 13. | AIPL/NMCG/PRAYAG/1493 | Inspection Reports of Package-II facilities | 29-Sep-22 | S.E.-2 Circle - UPJN | 1. NMCG, New Delhi 2. M/s PWPL, Prayagraj 3. PM- |

| Sr. No. | PE Transmittal/ Ref No | Description | Outward Date | To (Organization) | Copies To |
|---|---|---|---|---|---|
| | | | | | E&M - UPJN, Prayagraj |
| 14. | AIPL/NMCG/PRAYAG/1494 | Inspection Reports of Jhunsi facility, Naini-II facility and Phaphamau facility under Package-I | 30-Sep-22 | S.E.-2 Circle - UPJN | 1. NMCG, New Delhi 2. M/s PWPL, Prayagraj 3. PM-E&M - UPJN, Prayagraj |
| 15. | AIPL/NMCG/PRAYAG/1495 | Inspection reports of Package-III facilities | 30-Sep-22 | S.E.-2 Circle - UPJN | 1. NMCG, New Delhi 2. M/s PWPL, Prayagraj 3. PM-E&M - UPJN, Prayagraj |

## 12. Inward Register

List of key design & documents were received by Project Engineer during this period as below.

| Sr. No. | PWPL Transmittal reference number | Description | Date | From |
|---|---|---|---|---|
| 1. | PWPL/UPJN/PRAYAGRAJ/SITE /839 | Regarding shifting of Staff Quarter for Shastri Bridge SPS to Jhunsi STP under Package-I. | 3-Sep-22 | Prayagraj water private limited |
| 2. | PWPL/UPJN/PRAYAGRAJ/SITE /840 | Regarding Inspection call note for Rotary Air Blower of Jhunsi STP under Package-I. | 5-Sep-22 | Prayagraj water private limited |
| 3. | PWPL/UPJN/PRAYAGRAJ/SITE /841 | Regarding the submission of MPR of Aug'2022. | 7-Sep-22 | Prayagraj water private limited |
| 4. | 1066/PWPL/(PRAYAGRAJ)/290 | Regarding slow progress of work under Package-I | 5-Sep-22 | PM-I - UPJN |
| 5. | 1067/PWPL/(PRAYAGRAJ)/291 | Regarding Notice for 7th Milestone Completion of Package-I | 5-Sep-22 | PM-I - UPJN |
| 6. | 1068/PWPL/(PRAYAGRAJ)/292 | Regarding maintenance works in various facilities under Package-II and III | 5-Sep-22 | PM-I - UPJN |
| 7. | PWPL/UPJN/PRAYAGRAJ/SITE /842 | Regarding Hand railing in Package-I STP Facility | 12-Sep-22 | Prayagraj water private limited |
| 8. | PWPL/UPJN/PRAYAGRAJ/SITE /843 | Regarding Notice for 07 th Milestone Completion of Package-I. | 12-Sep-22 | Prayagraj water private limited |
| 9. | PWPL/UPJN/PRAYAGRAJ/SITE /844 | Commissioning for Naini-II STP under Package-I | 20-Sep-22 | Prayagraj water private limited |
| 10. | 1157/PWPL/(PRAYAGRAJ)/299 | Regarding maintenance old rising main from Ghagharnala MPS to Numayadahi STP under package-III | 17-Sep-22 | PM-I - UPJN |
| 11. | 1148/PWPL/(PRAYAGRAJ)/298 | Regarding balance work of Naini-II STP and associated structure under Package-I | 16-Sep-22 | PM-I - UPJN |

| Sr. No. | PWPL Transmittal reference number | Description | Date | From |
|---|---|---|---|---|
| 12. | 1128/PWPL/(PRAYAGRAJ)/297 | Regarding rectification of issues related to online monitoring system and SCADA system of all facilities under Package-II & III | 13-Sep-22 | PM-I - UPJN |
| 13. | 1125/PWPL/(PRAYAGRAJ)/297 | Regarding preparation and submission of physical model under package-I | 13-Sep-22 | PM-I - UPJN |
| 14. | 1127/PWPL/(PRAYAGRAJ)/296 | Regarding non operation of Naini-I STP due to flood in river Yamuna | 13-Sep-22 | PM-I - UPJN |
| 15. | 1167/PWPL/(PRAYAGRAJ)/301 | Regarding Monthly progress report of June 2022 for all facilities under package-III of HAM Project on PPP Basis. | 19-Sep-22 | PM-I - UPJN |
| 16. | PWPL/UPJN/PRAYAGRAJ/SITE /845 | Regarding balance work for Mahewaghat I&D No. 03 for Naini-II STP Facility under Package-I. | 20-Sep-22 | Prayagraj water private limited |
| 17. | 1184/PWPL/(PRAYAGRAJ)/307 | Regarding submission of Technical & Financial proposal for tapping of five drain in Naini-II STP(Sewerage District-G) and one drainunder phaphamau STP (sewerage district-F) Under package-I | 22-Sep-22 | PM-I - UPJN |
| 18. | 1192/PWPL/(PRAYAGRAJ)/310 | Regarding Financial & Technical Proposal to achieve the NGT Norms in Package-II &III | 26-Sep-22 | PM-I - UPJN |
| 19. | PWPL/UPJN/PMCG/072/22 | Submission of Data Sheet & Catalogs of Lab Instruments for Package-I | 27-Sep-22 | Prayagraj water private limited |
| 20. | PWPL/UPJN/PRAYAGRAJ/SITE /846 | Regarding submission of revise construction schedule & activity breakup for Package-I | 27-Sep-22 | Prayagraj water private limited |
| 21. | PWPL/UPJN/PRAYAGRAJ/SITE /847 | Regarding Inspection call note for Transformer under Package-I | 29-Sep-22 | Prayagraj water private limited |

| Sr. No. | PWPL Transmittal reference number | Description | Date | From |
|---|---|---|---|---|
| 22. | 1213/PWPL/(PRAYAGRAJ)/310 | Regarding Slow progress of 14 MLD Phaphamau STP Basna SPS | 28-Sep-22 | PM-I - UPJN |
| 23. | PWPL/UPJN/PRAYAGRAJ/SITE /847 | Regarding operation of Naini-II STP Plant. under Package-I. | 30-Sep-22 | Prayagraj water private limited |

## 13. EHS targets, Achievement & compliance report for the month of September' 2022

| Sr. No. | Goals | Target of the month | Achievement of this Month | Previous Month achievement | Remark |
|---|---|---|---|---|---|
| 1 | Zero total recordable injuries | 100% | 100% | 100% | |
| 2 | All personnel Health and Safety inducted | 100% | 100% | 100% | |
| 3 | 100% incident reporting and investigation | 100% | 100% | 100% | |
| 4 | 100% adherence of usage of appropriate PPE's at work | 100% | 100% | 100% | |

## 14. Status of statutory permits:

| Sr. No. | Applicable Permit | Authority | Quantity | Remarks |
|---|---|---|---|---|
| | **Phaphamau Facility (Package - I)** | | | |
| 1 | Power connection (During commissioning Period) | Electricity Board | 2 No. | Approved by NMCG vide letter no-Pr-12012/6/ 2018 /PPP / NMCG Dated 24.06.2022<br>Pole and wire erection work under |
| 2 | Consent to Establish | State Pollution Control Board (SPCB) | 1 No. | Received |
| 3 | Tree cutting | Forest Department | 88 No. | Received NOC From Forest Dept for Cutting 88 Nos. of trees. |
| 4 | Road cutting & crossing | Public Works Department | NA | Not Required |
| 5 | Railway Crossing | Commissioner Railway Safety | NA | Not Required |
| 6 | National Highway cutting & crossing | National Highway Authority of India | 1 No. | Permission Received from NH PWD vide letter no. 70/NH-96/330 dated 12th Jan 2022. |
| 7 | Revenue Road cutting & crossing | Panchayat/Local Authority | NA | Not Required |

| Sr. No. | Applicable Permit | Authority | Quantity | Remarks |
|---|---|---|---|---|
| 8 | Obtaining No Objection Certificate for various sewerage facilities under the ULB for handing them over to JN | ULB/District Administration | NA | Not Required |
| 9 | Construction of Weirs/pipeline crossings | Irrigation department/ULB | 2 No. | Received |
| 10 | Approach Road to new Facilities | Forest Department/ Panchayat/Local Authority/Irrigation Department | NA | Not Required |
| 11 | Consent to operate for Existing Facilities | ULB and SPCB | NA | NA |
| | **Naini-II Facility (Package - I)** | | | |
| 1 | Power connection (During commissioning Period) | Electricity Board | 3 No. | • Approved by NMCG vide letter no-Pr-12012/6/ 2018 /PPP / NMCG Dated 24.06.2022<br>• Power connection at STP is completed.<br>• Pole and wire erection work under Progress at Mawayiya and Mahewaghat SPS.<br>• Electrical safety officer NOC is received |
| 2 | Consent to Establish | State Pollution Control Board (SPCB) | 1 No. | Received |
| 3 | Tree cutting | Forest Department | - | Will be applied as and when required, presently not required. |
| 4 | Road cutting & crossing | Public Works Department | 1 No. | Applied on dated 19.10.2020 for STP main line.<br>NOC received from Mahewaghat SPS to Naini-II MPS on 08th Dec'2020 from Provincial Division. |

| Sr. No. | Applicable Permit | Authority | Quantity | Remarks |
|---|---|---|---|---|
| | | | | NOC received from PDA on 03.02.2021. |
| 5 | Railway Crossing | Commissioner Railway Safety | 1 No. | Permission received from Railway vide Letter No. 86-W/KM/821/L-PRYJ-NYN Dated:16.07.2021 |
| 6 | National Highway cutting & crossing | National Highway Authority of India | NA | NA |
| 7 | Revenue Road cutting & crossing | Panchayat/Local Authority | 1 No. | Total 01 nos. NOC received from PDA on 03.02.2021 |
| 8 | Obtaining No Objection Certificate for various sewerage facilities under the ULB for handing them over to JN | ULB/District Administration | NA | Not Required |
| 9 | Construction of Weirs/pipeline crossings | Irrigation department/ULB | 6 No. | Received |
| 10 | Approach Road to new Facilities | Forest Department/ Panchayat/Local Authority/Irrigation Department | NA | Not Required |
| 11 | Consent to operate for Existing Facilities | ULB and SPCB | 1 No. | NA |
| | **Jhunsi Facility (Package - I)** | | | |
| 1 | Power connection (During commissioning Period) | Electricity Board | 2 No. | Approved by NMCG vide letter no-Pr-12012/6/ 2018 /PPP / NMCG Dated 24.06.2022 |
| 2 | Consent to Establish | State Pollution | 1 No. | Received |

| Sr. No. | Applicable Permit | Authority | Quantity | Remarks |
|---|---|---|---|---|
| | | Control Board (SPCB) | | |
| 3 | Tree cutting | Forest Department | NA | Not Required |
| 4 | Road cutting & crossing | Public Works Department | NA | NA |
| 5 | Railway Crossing | Commissioner Railway Safety | 1 No. | Permission received from railway vide letter No W/98-13/2020/71/W- DATED 29/03/2022 |
| w | National Highway cutting & crossing | National Highway | NA | NA |
| 7 | Revenue Road cutting & crossing | Panchayat/Local Authority | 1 No. | Permission received |
| 8 | Obtaining No Objection Certificate for various sewerage facilities under the ULB for handing them over to UPJN | ULB/District Administration | NA | Not Required |
| 9 | Construction of Weirs/pipeline crossings | Irrigation department/ULB | 13 No | Received |
| 10 | Approach Road to new Facilities | Forest Department/ Panchayat/Local Authority/Irrigation Depar4ent | NA | Not Required |
| 11 | consent to operate for Existing Facilities | ULB and SPCB | NA | NA |

## 15. Plant & Machinery Status

| Sr. No. | Machinery | Phaphamau 14 MLD | Naini II 42 MLD | Jhunsi 16 MLD | Total |
|---|---|---|---|---|---|
| 1. | Dumper | 1 | 2 | 2 | 5 |
| 2. | Proclaim | | | | |
| 3. | Ajax | 1 | 2 | 2 | 5 |
| 4. | Hydra | 1 | 3 | 2 | 6 |
| 5. | Roller | | 1 | 1 | 2 |
| 6. | Submersible Pump 2HP | | 1 | | 1 |
| 7. | Diesel Pump 5 HP | 3 | 1 | 7 | 11 |
| 8. | 5KV generator | 1 | | | 1 |
| 9. | Total Station | 4 | 3 | 3 | 10 |
| 10. | Water tanker | | 1 | | 1 |
| 11. | Auto level | 1 | 1 | 1 | 3 |
| 12. | Mixing machine | 1 | 2 | 2 | 5 |
| 13. | Vibrator | 1 | 4 | 1 | 6 |
| 14. | Tractor | 4 | 10 | 6 | 20 |
| 15. | Concrete Chipping Machine | 3 | 3 | 1 | 7 |
| 16. | Welding Machine | | | 2 | 2 |
| 17. | Grinding Machine | 2 | 14 | 2 | 18 |
| 18. | Gas cutting set | 1 | 23 | 2 | 26 |
| 19. | Chain saw machine | | 6 | 1 | 7 |
| 20. | Chain Block | | | 1 | 1 |
| 21. | RM 800 | | 3 | | 3 |
| 22. | Plywood cutting machine | | | | |
| 23. | Steel cutting machine | 3 | 9 | 2 | 14 |

# 16. ANNEXURE'S

**Annexure- I:** **PROJECT ENGINEER INSPECTION REPORT AND RECOMMENDATION FOR PACKAGE-I**

**Annexure- II:** **KPI REPORTS OF PACKAGE -II AND PROJECT ENGINEER INSPECTION REPORT AND RECOMMENDATION**

**Annexure- III:** **KPI REPORTS OF PACKAGE -III AND PROJECT ENGINEER INSPECTION REPORT AND RECOMMENDATION**

**Annexure- IV:** **PROJECT ENGINEER ACTIVITY AS PER TOR**

**Annexure- V:** **QUALITY CONTROL / QUALITY ASSURANCE**

# ANNEXURE-I

## *PROJECT ENGINEER INSPECTION REPORT AND RECOMMENDATION FOR PACKAGE-I*

# Table of Contents

# 1. JHUNSI STP AND ASSOCIATE INFRASTRUCTURE

## 1.1 Inspection Report

| | |
|---|---|
| **Date of site visit** | 8th & 17th & 20th Sept 2022 |
| **Site Visitor** | 1. Mr. Santosh Kumar, UPJN<br>2. Mr. Tauseef Ahmed, UPJN<br>3. Mr. Satwant Singh, UPJN<br>4. Mr. Amit Ranjan, AECOM<br>5. Mr Gaurav Pandey, AECOM<br>6. Mr. Sharad, PWPL. |
| **Name of Facility** | 16 MLD Jhunsi STP & Associated Infrastructure, Prayagraj. |

**A. FCR Tank-**

- RCC work at FCR tank along with Hydrotesting is completed.
- Erection of all the structural steel member must adhere **clause 1.21.2 a & B of schedule 10 Part-B of Concession Agreement.**

**1.21.2 Painting on structural steel work**

Primer and finish paints shall be compatible with each other to avoid cracking and wrinkling and shall be from the same manufacturer for each painting system.

**a. Primer**

Two coats of primer shall be applied on the steel structures. First coat of lead-free, oil-based, high-quality, corrosive resistant steel primers such as Red Oxide/ Zinc Chromate as specified shall be applied before any member of steel structure are placed in position or taken out of workshop. Second coat of primer shall be applied after the erection is completed and before painting commences.

**b. Paint**

Two coat of epoxy paint shall be applied on all structural steel members. Paint delivered to the fabrication shop/site shall be ready mixed, in original sealed containers, as packed by the manufacturer. The application of paint shall be as per manufacturer's instructions. The coating thickness shall consist of the following minimum dry film thickness, or as recommended by the manufacturer, if thicker:

First coating : 100 µm

Second coating : 100 µm

- Concessionaire is required to finalize the framing arrangement of solar system along with base plate & railing at the top of FCR at earliest.

**1.21.3 Galvanizing of structural steel**

Galvanising of structural member shall conform to IS 4759, 209, 2629, 2633 and 6745.

- Painting work of FCR tank is not started yet. It is suggested to start the painting work at the earliest. Painting should be done as per clause 1.4.1, schedule 10 PART-B of concession agreement & as per approved Drawing of FCR tank.
- "C" profile installation completed for FCR module arrangement.
- "I" nut installation completed for diffuser grid frame.
- Diffuser grid frame installation completed in FCR tank.
- Air diffuser piping work is under progress.
- FCR module basket installation work is Completed.
- Installation of FCR module work and plant rack is completed.

**B. Staff Quarter –**

- RCC work of Staff Quarter is completed.
- Brick work, Plumbing & Lighting work is completed.
- At Staff quarter Plaster work of inside & outside wall is completed & putty work is under progress.
- Painting & Flooring of staff quarter should be done as per approved Drawing.

| SCHEDULE OF FINISHING | |
|---|---|
| DESCRIPTION | |
| EXTERNAL PLASTER | 20 MM THICK SMOOTH FINISHED PLASTER IN TWO LAYER IN C.M 1:4 |
| INTERNAL PLASTER | 12 MM THICK IN CM 1:4 FOR SINGLE BRICK THICK WALL<br>12 MM THICK IN CM 1:3 FOR HALF BRICK THICK WALL |
| CEILING PLASTER | 6 MM THICK CEILING PLASTER IN CM 1:3 |
| SCHEDULE OF FLOORING | |
| ROOM | DESCRIPTION |
| LIVING ROOM, BED ROOMS | 600 X 600 VITRIFIED TILES FLOORING<br>100mm HEIGHT VITRIFIED TILES SKIRTING |
| KITCHEN PLATFORM | CERAMIC TILES (300x300) ANTI SKID TILES<br>JET BLACK GRANITE SLAB |
| TOILET AND WASH AREA | 300x300 ANTI SKID CERAMIC TILES FLOORING<br>AND CERAMIC TILE DADO ON WALL UPTO DOOR HEIGHT |
| STAIR STEPS | KOTA STONE FLOORING (30MM) |
| BALCONY | CERAMIC FLOORING |
| SCHEDULE OF PAINTING | |
| ROOM | DESCRIPTION |
| INSIDE | OIL BOUND WASHABLE DISTEMPER |
| OUTSIDE | ACRYLIC EMULSION PAINT |

**C. Process Building-**

- RCC work is completed. Brick work & plaster work is under progress
- Installation of EOT at Blower room and SDU is completed.
- 400 mm dia DI K9pipelaying under progress.
- Cable trench work under progress
- Installation of HT & LT panel is completed.

**D. Tube Settler-**

- Civil work of Tube settler is competed.
- Painting work is not started yet. It is suggested to start the painting work at the earliest. Painting should be done as per clause 1.4.1, schedule 10 PART-B of concession agreement & as per approved Drawing
- Tube settler media, launder, poppet valve installation and installation of EOT at Tonner room is completed.
- Chlorinator erection work is under progress.
- Screw pump installation is not started yet.

**E. Security Cabin-**

- Excavation work is completed.
- PCC work is completed.
- Footing work is completed.
- RCC (23.75 cum) work of security cabin is completed.
- Brick Work at tube Settler is completed.
- Plaster work at security cabin is completed.
- Putty of security cabin is completed.
- Concessionaire is required to finish all the Remaining work of security cabin without any further delay.

**F. Main Pumping Station-**

- RCC work along with hydrotesting is completed.
- Painting work is not started yet. It is suggested to start the painting work at the earliest. Painting should be done as per clause 1.4.1, schedule 10 PART-B of concession agreement & as per approved Drawing.
- Concessionaire is suggested to start the E & M work with additional manpower & Resources as execution of MPS is lagging far behind construction plan.

**G. Shastri bridge SPS-**

- 9th lift of wall is completed and 10th Lift of wall shuttering and reinforcement is under progress. Work is stopped due to flood.
- Provide GI sheet barricading around plot area.

**H. Rising Main from Shastri bridge SPS to Jhunsi MPS:**

- Total 2965-meter (DI 700 mm Día) laying is completed out of 3875 m.
- During the visit, the bedding is not found as per specification. It is instructed to concessionaire strictly follow the specification.
- It is suggested to provide hard Barricades (Pipe & Pipe) around excavated trench & GI sheet at the end of daily work around open Trench to avoid any inconvenience to Local Public.
- Concessionaire is suggested to take approval of Design/Drawing of Thrust Block/Anchor Block/Pedestal for Rising main so that laying of rising main can be done in Continuity without unnecessary gaps.

**I. Trunk Main & I & D works**

- Total 389 m laying of Trunk Main (700 mm Dia) from Ulta Quila-I to Haveliya Nalla is completed.
- Total 535 m laying of Trunk Main (500 mm Dia) from Lakkar Nalla to Haveliya Nalla is completed.
- Total 692 m laying of Trunk Main (300mm Dia) from Gangoli Shivalay to Bhola Mandir is completed.
- Total 155 M laying of dia. 200 mm completed.
- Total 1055 m laying of dia. 800 mm completed.
- Total 52 m laying of outfall completed.
- During the visit, the bedding is not found as per specification. It is instructed to concessionaire strictly follow the specification.
- Execution work of I & D structures are under progress at 9 nalla locations.

| Sl. No. | I&D Name | Work Status |
|---|---|---|
| 1 | Augharwa Nalla | RCC work is completed and fixing of gates and Screen is not started |
| 2 | Bhola Mandir Nalla | RCC work is completed and fixing of gates and Screen is not started |
| 3 | Gangoli Shivalla Nalla-I | RCC work is completed and fixing of gates and Screen is not started |
| 4 | Gangoli Shivalla Nalla-II | RCC work is completed and fixing of gates and Screen is not started |
| 5 | Savitri Nagar Nalla | RCC work is completed and fixing of gates and Screen is not started |
| 6 | Dham Nalla | RCC work is completed and fixing of gates and Screen is not started |
| 7 | Shastri Bridge Nalla | RCC work is completed and fixing of gates and Screen is not started |
| 8 | Triveni Marg Nalla-I | RCC work is completed and fixing of gates and Screen is not started |
| 9 | Triveni Marg Nalla-II | RCC work is completed and fixing of gates and Screen is not started |

| | | |
|---|---|---|
| 10 | Ulta Quila Nalla -I | RCC work is completed and fixing of gates and Screen is not started |
| 11 | Ulta Quila Nalla-II | RCC work is completed and fixing of gates and Screen is not started |
| 12 | Havelia Nalla | RCC work is completed and fixing of gates and Screen is not started |
| 13 | Lakkar Nala | RCC work is completed and fixing of gates and Screen is not started |

**J. Applicable Permits:**

- Concessionaire is suggested to update The Status of Applicable Permit to UPJN/Project Engineer on Weekly Basis. Also, it is suggested to check, identify & apply for all the applicable permits required for whole Jhunsi Facility as no hindrance will be accepted in future due to new applicable permit issue.

**K. Other miscellaneous activities-**

- Concessionaire is suggested to take all the precaution during execution & follow all the standard safety Norms to avoid any causality during work.
- Concessionaire is required to provide proper Hard barricading (Pipe & pipe with G.I sheet) around Deep excavated area to avoid any casualty at site during construction.
- It is suggested to avoid direct placing of steel on ground & also cement slurry should be sprayed on steel to protect from corrosion due to moisture.
- Concessionaire is required to start the construction of Retaining wall & boundary wall at earliest.

## 1.2 Recommendation's-

- Concessionaire is suggested to execute the construction work with proper planning & prior information (or RFI) should be given for all the activities.
- Proper Finishing is required at Joint of RCC Wall /Column by grouting method.
- It is suggested to maintain all the Safety & Quality measures at site & carry out works with good engineering practice.
- Concessionaire should also strictly follow schedule 10 PART-B of concession agreement & relevant IS Standard for all civil execution works.
- Concessionaire is suggested to improve the workmanship quality to achieve the desired outcome.
- Approved Designs/Drawings/document should be kept at site during construction work.
- Concessionaire shall submit the micro level plan day wise for current milestone for better monitoring and project schedule completion controls.
- Concessionaire is suggested to deploy enough manpower during the day and night shifts to expedite the Electrical and mechanical work to avoid further delay where civil construction work is completed.
- It is suggested to Concessionaire tix the Top Level of Manhole at HFL.
- Concessionaire is suggested to start the HT cable laying and Interconnecting pipeline within Sewage treatment plant.
- Concessionaire is suggested to maintain all the necessary safety at the time of electrical and mechanical work as per schedule 8 of Concession agreement.
- It is suggested to start the painting work at the earliest. Painting should be done as per clause 1.4.1, schedule 10 PART-B of concession agreement & as per approved Drawing.

# 2. NAINI-II STP AND ASSOCIATE INFRASTRUCTURE

## 2.1 Inspection Report

| | |
|---|---|
| Name of Facility | 42 MLD Naini – II STP & Associated Infrastructure, Prayagraj. |
| Date of visit | 7th ,9th,12th ,19th, and 22nd Sept 2022 |
| Site Visitors | 1. Mr. Santosh Kumar, PM-I, UPJN.<br>2. Mr. Tauseef Ahmed, UPJN<br>3. Mr. Amit Ranjan AECOM.<br>4. Mr Gaurav Pandey, AECOM<br>5. Mr. Pushpender, PWPL. |

**A. FCR unit**:

- FCR Civil construction completed - 100 %
- Tank A – Hydrotesting Completed.
- Tank B – Hydrotesting Completed
- It is instructed to concessionaire to complete repairing of joints with special materials & grinding of internal & external surface otherwise Milestone certification would not be possible by UPJN and Project Engineer.
- Painting work of FCR tank is not started yet. It is suggested to start the painting work at the earliest. Painting should be done as per clause 1.4.1, schedule 10 PART-B of concession agreement & as per approved Drawing of FCR tank.
- It is suggested to concessionaire proper repairing & grinding shall be done for outer wall wherever required.
- Erection of all the structural steel member must adhere clause 1.21.2 a & B of schedule 10 Part-B of Concession Agreement.

**1.21.2 Painting on structural steel work**

Primer and finish paints shall be compatible with each other to avoid cracking and wrinkling and shall be from the same manufacturer for each painting system.

**a. Primer**

Two coats of primer shall be applied on the steel structures. First coat of lead-free, oil-based, high-quality, corrosive resistant steel primers such as Red Oxide/ Zinc Chromate as specified shall be applied before any member of steel structure are placed in position or taken out of workshop. Second coat of primer shall be applied after the erection is completed and before painting commences.

**b. Paint**

Two coat of epoxy paint shall be applied on all structural steel members. Paint delivered to the fabrication shop/site shall be ready mixed, in original sealed containers, as packed by the manufacturer. The application of paint shall be as per manufacturer's instructions. The coating thickness shall consist of the following minimum dry film thickness, or as recommended by the manufacturer, if thicker:

First coating :100 µm

Second coating : 100 µm

- At Tank A, C" profile installation is completed. Diffuser grid frame installation work is completed.
- At Tank B, "C" profile and diffuser grid frame installation is completed in three sections out of nine. Wall Grinding work is under progress for installation of "C" profile.

- Air blower installation work and header pipe erection work completed.
- Installation of Plant rack in FCR tank is 90% completed and remaining under progress.
- Air diffuser piping work is under progress
- DI pipe (lean, average and peak) laying work is completed from grit chamber to FCR tank
- Grating installation work is under progress on FCR tank.
- FCR module basket installation work is under progress

**B. Tube-Settler Unit:**

- The RCC work of this unit has been completed but its internal and external finishing work, joint filling and painting work is still pending.
- It is instructed to concessionaire to complete repairing of joints with special materials & grinding of internal & external surface otherwise the completion of this unit is considered as incomplete.
- The slab casting of CCT portion is completed.
- Start the painting work of tank after completion of finishing work. Painting works should be done as per clause 1.4.1, schedule 10 PART-B of concession agreement & as per approved drawing of Tube Settler tank.
- The 8 nos. out of 8 Chamber is completed.
- Concessionaire is suggested to expedite the work of frame arrangement for tube settler media.
- Launder support installation work is completed in 7 sections out of 8 sections.

**C. Process Building unit:**

- Part A:
  - Excavation & PCC is completed. RCC work of raft is completed.
  - Slab casting completed at Level 92.5
  - At Level + 98.85 slab casting completed.
  - Grit Chamber final lift wall RCC work is completed.
  - Grit channel at 94.25 walkway slab RCC work is completed
  - Foundation and flooring work under progress.
- The RCC work has been completed in PTU. The brick masonry work, wall electrification, plumping and other misc. works are under progress. The current progress of this unit not as per approved construction plan.
- Part B:
  1. Ground floor:
     - VFD panel installation work is completed.
     - Harmonic panel installation work completed.
     - HT panel installation work completed.
     - HT cable laying completed from metering panel to HT panel.
     - HT cable laying completed from HT panel to transformer foundation.
     - 6 No. FCR air blower installation work is completed.

- FCR air blower header erection work is completed
- Cable trench work in metering room, VFD panel room, HT panel room, DG room, APFCR panel room, PMCC panel room, transformer room completed
- DG installation work completed.
- 02 no. transformer installation work completed
- 02 no. APFC panel installation work completed.
- Bypass pipe line (DI) from grit chamber to Parshall flumes completed.

2. First floor:
   - PLC panel installation is under progress.
   - 01 no. Grit mechanism installation work is completed out of 2 no. under progress
   - 02 no. Mechanical screen installation work completed.
   - 01 no. Manual screen installation work completed.
   - Installation of gates are completed at inlet and outlet of screens.
   - Installation of gates are completed at inlet and outlet of grit chamber.

**D. Boundary Wall:**

- RCC for boundary wall columns, Brick work, plastering work are in progress,
- 80% RCC & Brick work Completed.
- Work is very slow. It is suggested Concessionaire work should be expedite by increasing manpower.

**E. Naini-II MPS and I&D works:**

- RCC work is completed.
- It is instructed to concessionaire to complete repairing of joints with special materials & grinding of internal & external surface otherwise Mile stone certification would not be possible by UPJN and Project Engineer.
- LT panel installation work completed.
- 02 No. mechanical screen installation work completed.
- 01 No. manual screen installation work completed
- Submersible pump Branch pipeline and header pipeline work is completed.
- 02 no. submersible pump installation work completed out of 5.
- All gates installation are completed.
- I&D works Status

| Sl. No | I&D Name | Work Status |
|---|---|---|
| 1 | Mawaiya Nalla | Work under progress |
| 2 | Sachha Baba | Work not started |
| 3 | Khakhrauni Nalla | Work is under progress |
| 4 | Mahewaghat-I Nalla | Work under progress |

| | | |
|---|---|---|
| 5 | Mahewaghat -II Nalla | Work under progress |
| 6 | Mahewaghat-III Nalla | Work under progress |

**F. Mahewaghat SPS:**

- Wet well and Inlet channel is completed.
- For battery & panel room, RCC slab at level 93 is completed and brickwork is under progress.
- Painting work is not started yet. It is suggested to start the painting work at the earliest. Painting should be done as per clause 1.4.1, schedule 10 PART-B of concession agreement & as per approved Drawing.
- Boundary wall work is under progress.
- It is suggested to concessionaire, gradation of construction material (Aggregate and sand) must be done before RCC work. At the start of concrete pouring, Slump Cone, Cube moulds & admixture measuring jar must be available at site.
- At one side SPS wall was out of plumb, it is suggested to concessionaire kindly take necessary action to rectify.
- Concessionaire has not provided safety barricades as per standard norms, it is suggested that construction site should be properly barricaded with Pipe & Pipe along with GI Sheet to avoid any incident or unauthored access at site.
- E&M erection work almost completed some leakages are rectifying in DI lines.

**G. Mawaiya Nalla SPS:**

- RCC work is completed
- Painting work is not started yet. It is suggested to start the painting work at the earliest. Painting should be done as per clause 1.4.1, schedule 10 PART-B of concession agreement & as per approved Drawing.
- Staff quarter work is under progress.
- During site inspection it is observed that 25 labors were deployed at site.
- During site inspection it is observed that, concessionaire has not provided safety barricades as per standard norms, it is suggested that construction site should be properly barricaded with Pipe & Pipe along with GI Sheet to avoid any incident or unauthored access at site.
- It was observed that steel reinforcement was directly placed on ground surface. steel reinforcement should not be stacked direct on ground, that can be stacked on wooden batten, Steel reinforcement shall ordinarily be stored in such a way as to avoid distortion and to prevent deterioration and corrosion.
- Site instruction register was not available at site, concessionaire is suggested to keep instruction register at site on regular basis.
- Mechanical & manual screen erection work is completed.

- Air valve installation is not started as on date.
- Hydro-Testing of laid pipes has not been started till date.
- The concessionaire is requested to carry-out all pending works and Hydro-Testing earliest.
- 02 no. pump installation completed out of 5.

**H. Trunk Sewer pipeline:**

- **Rising main:**
- MPS: 900 mm dia - 120 m laid out of 187
- Mawaiya SPS: 800 mm dia - 683.50 m Laid out of 700m
- Mahewaghat SPS : 350 mm dia - 687.00 m laid out of 700m
- **Gravity Main** - (Proposed Length/Laid Length)
- Mawaiya SPS: 1400 mm dia - 2962.50 m laid out of 3082.50 m
  1600 mm dia - 997.50 m laid out of 997.50 m
- .Mahewaghat SPS:
  600 dia - 4077.50 m laid out of 4077.50 m
- Effluent Pipeline: 1600 mm dia - 685.0 m laid out of 730

**I. Staff Quarter:**

- The individual building, staff quarter is not completed as on date. Electrical, plumbing & finishing work is balance in staff quarter.
- It is noticed that the work in Staff quarter started in Feb-March'20 and still work is balance, it is showing the progress of work is very poor.
- The concessionaire is requested to increase the manpower and expedite the work to meet the progress & follow all the safety norms at site.

**J. Other miscellaneous activities:**

- The Progress at site is very slow. Availability of manpower is less at site.
- The trenchless pushing work is very slow at Arail Ghat due unavailability of adequate resource.
- The work of Brick work, Flooring, Plaster and fixing of door & window in Process Building is very slow.
- Finishing and Grouting work is required in MPS .
- The construction work of flow meter chamber of MPS is very slow and its raft casting is still pending. Rainfall is also started and its would not be possible if its work is immediately not taken.
- In MPS, the levelling is also required at the bottom of wet well.
- At tube settler, the hydrotesting in three numbers of compartment is pending since long time and due to delay in hydrotesting, it may also delay in completion of electro-mechanical work.
- The quality of hand railing is not good and any accident may happen in future.
- The painting work of all treatment unit is still pending since long time for which

we are continuously requesting for more than two months but this work is still pending.

- Toilets are not operational at site due to unavailability of water and absence of cleaning, which violate the sanitation guidelines and involves health risk for workers. It suggested to concessionaire resolve this issue earliest and make all toilets operational at site.
- There is regular issue in availability of concrete from batching plant.
- Availability of concrete pump is not adequate.
- Concessionaire is required to provide proper hard barricading (Pipe & pipe with G.I sheet) around Deep excavated area to avoid any casualty at site during construction.
- Proper Stacking of Steel should be done at site & cement slurry should be sprayed on steel to protect from corrosion due to moisture.
- It is found that the cement stacked and covered, but it is too close to the wall, also proper height to be provided. It is suggested provided to close all the openings of shed to protect it from rainwater and moistures. SRC Cement stack also checked at RMC Plant and same observations provided for compliance.
- Approach road is still pending at Naini -II STP after several verbal & written instructions, no action taken by you till date. It is pertinent to mention that monsoon may arrive in Prayagraj by 17-19 June by this month and without approach road, it is impossible to move any vehicle inside the plant.

## 2.2 Recommendation's

- It suggested to concessionaire, Exposed surfaces of concrete shall be kept continuously in a damp of wet condition by ponding or by covering with a layer of sacking, canvas, hessian or similar materials and kept constantly wet for at least seven days from the date of concrete
- It is suggested to concessionaire, Expedite the work by deploying additional manpower and machinery & pipes should be made available at site.
- It is suggested to concessionaire make alternate batching plant arrangement. So that work will not be delay due to unavailability of concrete.
- It is already suggested to concessionaire; hindrance register must be maintained at all the facilities.
- Proper Finishing is required at Joint of RCC Wall /Column by grouting method.
- Work quality should be maintained & proper arrangement should be made for curing of structure.
- Copy of all approved design and drawing should be available at site.
- The concessionaire is suggested to implement all ESHS norms at site.
- The concessionaire is requested to follow 'Schedule-10 Part-B' of the concessionaire agreement and IS-456 and other relevant IS codes for all the site execution activities and works as and when required.
- The concessionaire is suggested to take necessary action to incorporate all the observation otherwise timely completion of milestones will not be possible and any delay will be attributed at the concessionaire's end.
- Concessionaire is suggested to deploy enough manpower during the day and night shifts to expedite the Electrical and mechanical work to avoid further delay where civil construction work is completed.
- Concessionaire is suggested to check the inlet gate leakage at Naini-II MPS as per IS code.
- Concessionaire is suggested to please provide the support in all gates spindle.
- Concessionaire is suggested to maintain all the necessary safety at the time of electrical and mechanical work as per schedule 8 of Concession agreement.
- Concessionaire is suggested please rectify the cable trench support as per PE observation in Air blower room.

# 3. PHAPHAMAU STP AND ASSOCIATE INFRASTRUCTURE

## 3.1 Inspection Report

| | |
|---|---|
| Date of site visit | 9th, 13th and 20th Sept 2022 |
| Site Visitor | 1. Mr. Santosh Kumar, PM-I, UPJN.<br>2. Mr. Tauseef Ahmed, UPJN<br>3. Mr. Amit Ranjan, AECOM<br>4. Mr Gaurav Panday,AECOM<br>5. Mr. Ashish Singhai, PWPL<br>6. Mr. Rahul Sharma PWPL |
| Name of Facility | 14 MLD Phaphamau STP & Associated Infrastructure |

**A. FCR Tank-**

- FCR Civil Construction work completed. Hydrotesting work also completed.
- It is informed to concessionaire proper finishing must be done at all the grouting points.
- Painting work of FCR tank is not started yet. It is suggested to start the painting work at the earliest. Painting should be done as per clause 1.4.1, schedule 10 PART-B of concession agreement & as per approved Drawing of FCR tank.
- Erection of all the structural steel member must adhere clause 1.21.2 a & B of schedule 10 Part-B of Concession Agreement.

**1.21.2 Painting on structural steel work**

Primer and finish paints shall be compatible with each other to avoid cracking and wrinkling and shall be from the same manufacturer for each painting system.

**a. Primer**

Two coats of primer shall be applied on the steel structures. First coat of lead-free, oil-based, high-quality, corrosive resistant steel primers such as Red Oxide/ Zinc Chromate as specified shall be applied before any member of steel structure are placed in position or taken out of workshop. Second coat of primer shall be applied after the erection is completed and before painting commences.

**b. Paint**

Two coat of epoxy paint shall be applied on all structural steel members. Paint delivered to the fabrication shop/site shall be ready mixed, in original sealed containers, as packed by the manufacturer. The application of paint shall be as per manufacturer's instructions. The coating thickness shall consist of the following minimum dry film thickness, or as recommended by the manufacturer, if thicker:

First coating :100 µm

Second coating : 100 µm

- Concessionaire is required to finalize the framing arrangement of solar system along with base plate & railing at the top of FCR at earliest.

**1.21.3 Galvanizing of structural steel**

Galvanising of structural member shall conform to IS 4759, 209, 2629, 2633 and 6745.

- Painting work of FCR tank is not started yet. It is suggested to start the painting work at the earliest. Painting should be done as per clause 1.4.1, schedule 10 PART-B of concession agreement & as per approved Drawing of FCR tank
- . "C" profile installation completed for FCR module arrangement.
- "I" nut installation completed for diffuser grid frame.
- Diffuser grid frame installation is under progress.

- Air diffuser piping work is under progress.
- FCR module basket installation work is under progress.
- Installation of FCR module work and plant rack is under progress.
- Installation of 500*700 partition gate is under progress.

**B. Staff Quarter –**

- Staff Quarter structure work is completed. Finishing, electrification and plumbing work is balance.
- It is informed to Concessionaire door & window must be install as per concessionaire agreement & specification.
- Painting & Flooring of staff quarter should be done as per approved Drawing.

| SCHEDULE OF FINISHING | |
|---|---|
| DESCRIPTION | |
| EXTERNAL PLASTER | 20 MM THICK SMOOTH FINISHED PLASTER IN TWO LAYER IN C.M 1:4 |
| INTERNAL PLASTER | 12 MM THICK IN CM 1:4 FOR SINGLE BRICK THICK WALL<br>12 MM THICK IN CM 1:3 FOR HALF BRICK THICK WALL |
| CEILING PLASTER | 6 MM THICK CEILING PLASTER IN CM 1:3 |
| SCHEDULE OF FLOORING | |
| ROOM | DESCRIPTION |
| LIVING ROOM, BED ROOMS | 600 X 600 VITRIFIED TILES FLOORING<br>100mm HEIGHT VITRIFIED TILES SKIRTING |
| KITCHEN PLATFORM | CERAMIC TILES (300x300) ANTI SKID TILES<br>JET BLACK GRANITE SLAB |
| TOILET AND WASH AREA | 300x300 ANTI SKID CERAMIC TILES FLOORING<br>AND CERAMIC TILE DADO ON WALL UPTO DOOR HEIGHT |
| STAIR STEPS | KOTA STONE FLOORING (30MM) |
| BALCONY | CERAMIC FLOORING |
| SCHEDULE OF PAINTING | |
| ROOM | DESCRIPTION |
| INSIDE | OIL BOUND WASHABLE DISTEMPER |
| OUTSIDE | ACRYLIC EMULSION PAINT |

**C. Process Building-**

- RCC work is completed, and Brick work and plaster work is under progress.
- It is suggested to concessionaire, speed up the work of process building as the work progress is very slow. It is suggested to concessionaire provide shear key at construction joint.
- DG, LT Panel, HT panel, APFC panel and air blower installation is completed.
- It is informed to concessionaire all site observation given by UPJN & Project engineer must be closed at the earliest
- Concessionaire is suggested to expedite the work with additional manpower & Resources as Execution of Process Building is lagging far behind construction plan.

**D. Tube Settler-**

- RCC work along with hydrotesting is completed.
- Media and launder Installation work is completed in two tank out of 4.
- Screw pump and sludge line erection is not started yet.
- Chlorinator installation work is under progress.

**E. Security Cabin-**

- Execution work at Security Cabin is not started yet.

**F. Main Pumping Station-**

- RCC work of MPS is completed. Finishing work is under progress.
- MPS installation work is under progress.
- Mechanical and manual screen Inlet and outlet gates installation is in under progress.
- Mechanical fine screen installation work is under progress.
- Installation of LT Panel, DG and EOT is completed.

**G. Basna Nalla SPS-**

- It is observed that no significant progress at Basna Nalla SPS . The raft casting of Basna Nala SPS had been completed on December 2022. RCC work of final lift (9th) of Sump Wall had been completed on 03.08.2022. Still RCC work of slabs at 94m level and 99m level is pending.
- Work is very slow.It is informed to concessionaire increase manpower and speed up work progress.

**H. Trunk Sewer & I & D works**

- Total laying of 800 dia. RCC pipe along NH 845 m completed with 11 nos manhole out of 845 m
- Execution work of I & D structures are under progress at 2 nalla locations.

| Sl No | I&D Name | Work Status |
|---|---|---|
| 1 | Basna Nalla | Work under progress |
| 2 | Shantipuram Nalla | Work under progress |

**I. Applicable Permits:**

- Concessionaire is suggested to update The Status of Applicable Permit to UPJN/Project Engineer on Weekly Basis. Also, it is suggested to check, identify & apply for all the applicable permits required for whole Prathama Facility as no hindrance will be accepted in future due to new applicable permit issue.

**J. Other miscellaneous activities-**

- Concessionaire is suggested to take all the precaution during execution & follow all the standard safety Norms to avoid any causality during work.
- Concessionaire is required to provide proper Hard barricading (Pipe & pipe with G.I sheet) around Deep excavated area to avoid any casualty at site during construction.
- It is suggested to avoid direct placing of steel on ground & also cement slurry should be sprayed on steel to protect from corrosion due to moisture.

## 3.2 Recommendation's

- It is observed that work progress is very slow which may impact the scheduled-on time completion of this project. Concessionaire is suggested to increase the manpower, material and machinery and expedite the work without any further delay and complete the work within the timelines of Approved Construction Plan.
- Concessionaire is suggested to execute the construction work with proper planning & prior information (or RFI) should be given for all the activities.
- Proper Finishing is required at Joint of RCC Wall /Column by grouting method.
- It is suggested to provide enough manpower & resources to expedite the work.
- resolve all above-mentioned shortcomings so that in future, work can be executed smoothly.
- It is suggested to maintain all the Safety & Quality measures at site & carry out works with good engineering practice.
- Concessionaire should also strictly follow schedule 10 PART-B of concession agreement & relevant IS Standard for all civil execution works.
- Concessionaire is suggested to improve the workmanship quality to achieve the desired outcome.
- Approved Designs/Drawings/document should be kept at site during construction work.
- Concessionaire is suggested to provide the balance material at site as earliest to avoid the further delay.
- Concessionaire shall submit the micro level plan day wise for current milestone for better monitoring and project schedule completion controls.

# ANNEXURE-II

## *KPI REPORTS OF PACKAGE -II, PROJECT ENGINEER INSPECTION REPORT AND RECOMMENDATION*

# Table of Contents

# Naini-I STP, 80 MLD STP at Prayagraj
## INLET FLOW & QUALITY REPORT

| Date | Daily Feed Quantity MLD (Design-80 MLD) | | pH | | BOD (mg/l) | | COD (mg/l) | | TSS (mg/l) | | FECAL COLIFORM | | FRC | DEWATERED SLUDGE | | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | M3 | MLD | Inlet pH (Design-<9) | Final pH (Design-6.5 to 9.0) | Inlet BOD (Design-<250 mg/l) | Final BOD (Design -<30 mg/l) | Inlet COD (Design-<500 mg/l) | Final COD (Design-<50 mg/l) | Inlet TSS (Design-<500 mg/l) | FinalTSS (Design -<50 mg/l) | Inlet (Design - NA) | Final (Design <1000 MPN/100 ml) | Final (Design - 0.2 mg/l) | Outlet Concentration (>20%) | Fecal Coliform (20,00,000 MPN/gTS) | |
| 1-Sep-22 | 0 | – | – | – | – | – | – | – | – | – | NA | – | – | – | – | Plant is shutdown due to flood |
| 2-Sep-22 | 0 | – | – | – | – | – | – | – | – | – | NA | – | – | – | – | |
| 3-Sep-22 | 0 | – | – | – | – | – | – | – | – | – | NA | – | – | – | – | |
| 4-Sep-22 | 102910 | 102.92 | 7.28 | 7.32 | 119 | 75 | 308 | 144 | 280 | 132 | NA | – | – | – | – | |
| 5-Sep-22 | 115660 | 115.66 | 7.29 | 7.35 | 123 | 55 | 316 | 88 | 292 | 78 | NA | – | – | 25.4 | 1400000 | Plant availability is 100% |
| 6-Sep-22 | 124520 | 124.52 | 7.33 | 7.36 | 126 | 50 | 328 | 68 | 294 | 64 | NA | 800 | 0.2 | 25.2 | 1700000 | Plant availability is 100% |
| 7-Sep-22 | 112500 | 112.50 | 7.28 | 7.38 | 129 | 40 | 320 | 52 | 298 | 52 | NA | 700 | 0.4 | 25.2 | 1300000 | Plant availability is 100% |
| 8-Sep-22 | 110350 | 110.35 | 7.31 | 7.37 | 136 | 33 | 332 | 48 | 296 | 46 | NA | 600 | 0.4 | 25.5 | 1200000 | Plant availability is 100% |
| 9-Sep-22 | 110900 | 110.90 | 7.28 | 7.33 | 139 | 29 | 344 | 44 | 288 | 42 | NA | 500 | 0.3 | 25.2 | 1200000 | Plant availability is 100% |
| 10-Sep-22 | 107210 | 107.21 | 7.33 | 7.37 | 129 | 26 | 332 | 40 | 296 | 35 | NA | 400 | 0.3 | 25.3 | 1400000 | Plant availability is 100% |
| 11-Sep-22 | 108110 | 108.11 | 7.28 | 7.35 | 126 | 22 | 320 | 36 | 312 | 37 | NA | 600 | 0.3 | 25.14 | 1300000 | Plant availability is 100% |
| 12-Sep-22 | 107920 | 107.94 | 7.33 | 7.39 | 129 | 20 | 328 | 40 | 303 | 34 | NA | 700 | 0.4 | 25.3 | 1200000 | Plant availability is 100% |
| 13-Sep-22 | 111990 | 111.99 | 7.31 | 7.36 | 126 | 23 | 304 | 44 | 294 | 36 | NA | 500 | 0.4 | 25.2 | 1400000 | Plant availability is 100% |
| 14-Sep-22 | 128170 | 128.17 | 7.34 | 7.39 | 119 | 20 | 296 | 40 | 296 | 35 | NA | 400 | 0.3 | 25.4 | 1700000 | Plant availability is 100% |
| 15-Sep-22 | 122610 | 122.61 | 7.58 | 7.48 | 123 | 23 | 304 | 48 | 302 | 34 | NA | 500 | 0.3 | 25.4 | 1300000 | Plant availability is 100% |
| 16-Sep-22 | 126740 | 126.74 | 7.28 | 7.35 | 119 | 22 | 308 | 40 | 294 | 32 | NA | 700 | 0.3 | 25.2 | 1400000 | Plant availability is 100% |
| 17-Sep-22 | 112520 | 112.52 | 7.33 | 7.38 | 126 | 23 | 312 | 44 | 303 | 35 | NA | 800 | 0.2 | 25.3 | 1700000 | Plant availability is 100% |
| 18-Sep-22 | 125510 | 125.51 | 7.28 | 7.35 | 123 | 22 | 324 | 48 | 308 | 33 | NA | 600 | 0.3 | 25.6 | 1300000 | Plant availability is 100% |
| 19-Sep-22 | 117210 | 117.21 | 7.36 | 7.39 | 126 | 21 | 308 | 44 | 304 | 36 | NA | 500 | 0.3 | 25.6 | 1200000 | Plant availability is 100% |
| 20-Sep-22 | 146410 | 146.41 | 7.34 | 7.42 | 123 | 20 | 304 | 40 | 286 | 34 | NA | 400 | 0.3 | 25.1 | 1700000 | Plant availability is 100% |
| 21-Sep-22 | 120480 | 120.48 | 7.39 | 7.48 | 119 | 23 | 292 | 44 | 288 | 27 | NA | 600 | 0.4 | 25.6 | 1400000 | Plant availability is 100% |
| 22-Sep-22 | 119610 | 119.61 | 7.44 | 7.52 | 126 | 24 | 308 | 48 | 288 | 30 | NA | 500 | 0.3 | 25.4 | 1300000 | Plant availability is 100% |
| 23-Sep-22 | 118580 | 118.58 | 7.36 | 7.39 | 129 | 22 | 324 | 44 | 303 | 33 | NA | 700 | 0.3 | 24.9 | 1200000 | Plant availability is 100% |
| 24-Sep-22 | 120320 | 120.32 | 7.33 | 7.41 | 136 | 20 | 340 | 40 | 301 | 30 | NA | 800 | 0.2 | 25.2 | 1400000 | Plant availability is 100% |
| 25-Sep-22 | 125130 | 125.13 | 7.36 | 7.46 | 136 | 23 | 344 | 48 | 296 | 32 | NA | 500 | 0.3 | 25.4 | 1100000 | Plant availability is 100% |
| 26-Sep-22 | 121540 | 121.54 | 7.33 | 7.44 | 139 | 20 | 348 | 40 | 304 | 31 | NA | 700 | 0.4 | 25.3 | 1700000 | Plant availability is 100% |
| 27-Sep-22 | 116860 | 116.86 | 7.28 | 7.38 | 133 | 24 | 336 | 44 | 306 | 32 | NA | 600 | 0.3 | 25.2 | 1300000 | Plant availability is 100% |
| 28-Sep-22 | 121270 | 121.27 | 7.29 | 7.34 | 139 | 20 | 344 | 40 | 308 | 30 | NA | 400 | 0.2 | 25.3 | 1400000 | Plant availability is 100% |
| 29-Sep-22 | 121150 | 121.15 | 7.28 | 7.36 | 129 | 22 | 336 | 44 | 306 | 28 | NA | 500 | 0.3 | 25.0 | 1200000 | Plant availability is 100% |
| 30-Sep-22 | 126010 | 126.01 | 7.31 | 7.34 | 136 | 24 | 348 | 48 | 309 | 32 | NA | 700 | 0.2 | 25.6 | 1300000 | Plant availability is 100% |
| | | | | | | | | | | | | | | | | |
| **Average** | **106753.00** | **118.62** | **7.33** | **7.39** | **128.26** | **27.63** | **322.52** | **49.93** | **298.33** | **40.74** | **NA** | **588.00** | **0.30** | **25.31** | **1373076.92** | |

**Source: Logbook of Laboratory at Sewage Treatment Plant**

## 1.2 Inspection Report

| | |
|---|---|
| **Month of Site Inspection** | Sep 2022 |
| **Site Inspectors** | 1. Mr. Santosh Kumar, PM-I, UPJN<br>2. Mr. Tauseef Ahmed, AE, UPJN<br>3. Mr. Rahul Paswan, JE, UPJN.<br>4. Mr. Gaurav Gupta, AECOM.<br>5. Mr. Sudhir Kumar Tomar, AECOM.<br>6. Mr. Rahul Azaad, PWPL.<br>7. Mr. Rahul Chaudhary, PWPL.<br>8. Mr. Prashant, PWPL |
| **Place(s) of Inspection** | • 80 MLD STP at Naini-i, Prayagraj<br>• 80 MLD MPS at Gaughat, Prayagraj<br>• 35 MLD SPS at Chacharnalla, Prayagraj |

Visit was done on 26th Aug 2022, 6th Sep 2022, 16th Sep 2022, 21st Sep 2022, 26th Sep 2022 and following observations were made:

- **Status of Availability:**

| S. No. | Facility Name | Actual Flow Pumped /Received at Facility (MLD) |
|---|---|---|
| 1 | Naini-I STP | 0.00 to 146.41 |
| 2 | Gaughat MPS | 86.65 to 142.51 |
| 3 | Chacharnalla SPS | 36.19 to 63.00 |

Note: 1) Source for above data is Site record for flow of STP/MPS/SPS.

- **Status of KPIs:**

| S. No. | Parameter Name | Design Value | Parameter Value |
|---|---|---|---|
| 1 | BOD – Effluent | < 30 mg/l | 0.00 to 75 mg/l |
| 2 | TSS – Effluent | < 50 mg/l | 0.00 to 132 mg/l |
| 3 | pH – Effluent | 6.5 – 9.0 | 0.00 to 7.48 |
| 4 | Fecal coliform – Effluent | <= 1000 MPN/100 ml | 0.00 to 800 MPN/100 ml |
| 5 | Consistency – Sludge | > 20 % | 0.00 to 25.60 % |
| 6 | Fecal Coliform – Sludge | < 20,00,000 MPN/gTS | 0.00 to 1700000 MPN/gTS |

Note: 1) Source for above data is Site record for Laboratory of STP.

- **Status of Energy Consumption:**

| S. No. | Facility Name | Actual Energy Consumption (KWH/MLD) |
|---|---|---|
| 1 | Naini I STP | 0.00 to 48.27 |
| 2 | Naini I Associated Infrastructure | 68.65 to 92.91 |

Note: 1) Source for above data is site record for Power Consumption of STP.

- **Status of various units & records at site:**

1. Due to flood, Naini-I STP was stopped on 25th Aug 2022 and raw sewage from Gaughat MPS and Chacharnalla SPS were bypassed. Now, when level of water in river Yamuna has gone down then raw sewage was taken into the STP and 100% treatment started on 06th Sep 2022.
2. Online analyzer at inlet is working but it is not showing correct values of parameters as compared to lab reports. As per current situation, inlet analyzer requires calibration every day for showing correct values of inlet parameters which is not a correct working condition. Also, KPI reports of this Multiparameter analyzer generated through SCADA system were studied and it was found that variation can be seen in between recorded values of KPIs in laboratory and recorded values of KPIs in reports generated by multiparameter analyzers through SCADA system which is more than prescribed limit given in 'Guidelines for Online Continuous Effluent Monitoring Systems (OCEMS)' by Central Pollution Control Board.
3. Online analyzer at outlet is replaced by new analyzer on 05th Aug 2022 which is currently working. KPI reports of this Multiparameter analyzer generated through SCADA system were studied and it was found that variation can be seen in between recorded values of KPIs in laboratory and recorded values of KPIs in reports generated by multiparameter analyzers through SCADA system which is more than prescribed limit given in 'Guidelines for Online Continuous Effluent Monitoring Systems (OCEMS)' by Central Pollution Control Board. Also, it is observed that errors are coming 7-8 times a day in these SCADA reports for values of BOD, COD and TSS of effluent. Concessionaire is required to rectify the discrepancies as mentioned above and check the working/calibration of Multiparameter Analyzers and get it verified by UPJN/Project Engineer at the earliest.
4. Data transfer from online analyzer at the outlet of STP to CPCB servers is in progress. By studying the graph of Sep-22 available at the online portal, it is found that graph is breaking at several points during the month which may be due to breakage in transmission of data from online analyzers to CPCP servers or some other problem. Also, sudden spikes/drops can be seen in the graphs available at the online portal which is fundamentally not correct. These types of incidents have been observed in past also. Concessionaire is required to rectify these problems.
5. Communication of data from PLC system of Chacharnalla SPS has started coming to SCADA system of STP but the same is not started for Gaughat MPS due to problem in router fitted at PLC system of Gaughat MPS for which Concessionaire has committed to rectify the problem by 30th July 2022 but the same has not been completed yet. Also, report generation regarding raw sewage pumped, level of sump and running hour of equipment is not started yet.
   Furthermore, there is problem in receiving signals at PLC/SCADA control system from some equipment/instruments and it is also not possible to control some of the equipment (mainly mechanical screens) from PLC/SCADA control system. Also, mechanical screens have provisions in PLC system for being remotely operated and differential level sensors were also installed for the same. Therefore, the system is available, but it is not working due to lack of wiring, etc., hence provision must be made for operating mechanical screens through SCADA which in turn can be operated manually or remotely as per requirement.

6. Flowmeters at inlet of STP is working.

7. Outlet flowmeter is not working. This is a long-term pending issue hence Concessionaire to please rectify the problem at the earliest. Also, RCC chamber for the flowmeter is not constructed.
8. In Naini-I STP, main MCC panel doesn't have provision for taking power from secondary sources like DG, Solar power generation system and Biogas power generation system simultaneously. Also, it is observed that Biogas engine is operated in daytime due to which power generated from solar system is wasted during daytime. Therefore, it is suggested to operate Biogas engine in nighttime so that solar power generation system can be operated at full efficiency and full power generated from the same can be used to run equipment.

   It is true that Guaranteed Power Consumption of the facility is within limit as per CA but since increase in operation of gas engine will increase the power generation from renewable resources and decrease the power requirement from grid resulting in lowering of electricity bill of the facility which is borne by UPJN.
9. Gas engine is working. Currently, Biogas engine is operated for 9 hours only during the day but as per clause no. 1.1. of Part-G in Schedule-10, the facilities shall run 24 hours every day. Hence, Concessionaire is requested to do the needful as the biogas generated from digesters is wasted by flaring due to improper operation of gas engine.

   Also, reply for Concessionaire's letter PWPL/UPJN/PRAYAGRAJ/O&M/352 dated 5$^{th}$ Feb 2022 is given vide our letter no. AIPL/NMCG/PRAYAG/1367 dated 04$^{th}$ March 2022 for which their response is awaited.
10. All three mechanical screens of 60 MLD part are working. Though the screens are running in auto mode through timer, differential level sensors must also be made operational for running mechanical screens more efficiently through level difference during peak and lean period.
11. In mechanical screens of 60 MLD, rectification of problem for misplaced bars was completed but during recent visit it was found that bars have got loose again. Concessionaire is required to rectify the problem and provide a permanent solution.
12. All two mechanical screens of 60 MLD part are working. Though the screens are running in auto mode through timer, differential level sensors must also be made operational for running mechanical screens more efficiently through level difference during peak and lean period.
13. For 60 MLD, all grit removal units are working. Grit scrapper of Grit removal unit no. 3 is making abnormal noise, problem must be rectified for the same.
14. For 20 MLD, all grit removal units are working.
15. All Primary Settling Tanks are working. Scum removal is done manually but it is not efficient as good amount of scum can be seen floating on the surface. Since, Scum removing arrangement is installed, modification are required for the same so that scum collection and removal can be done automatically.
16. In all PSTs, it is observed that lumps of sludge are coming to the top in some parts due to which outlet quality of PSTs is deteriorating.

    It is observed that supernatant coming from digesters is very thick and this supernatant is mixed into main process through filtrate pumps. Now, this supernatant is coming from digesters containing dead mass completely which in turn decreases efficiency of the process and increases load on PSTs. Earlier it was suggested to either improve the quality of supernatant from digester or avoid mixing of this supernatant into main process so that efficiency of treatment process in PSTs can be increased. For this, pipeline laying work is in progress for taking supernatant from sludge digester to sludge drying beds, Concessionaire is required to expedite the work.
17. Telescopic valves of Primary Settling Tanks are not working.

18. Installation of actuators is pending for drain valves of Primary Settling Tanks. Concessionaire has told that installation of actuators is not feasible in existing valve arrangement. Existing drain valves were replaced during rehab period and at the same time actuators were also purchased for installation, if these two were not matching then the problem must have been resolved during rehab period itself but since the same is not being done, Concessionaire is required to do necessary modification/replacement work done so that installation work can be completed.
19. All surface aerators are in working condition. It is recommended to install DO analyzer in this tank also for better monitoring.
20. For Aeration tank of 60 MLD, it is observed that DO is maintained around 1.0 mg/l only which means that aeration process is not performed efficiently in the aeration tanks. Also, the appearance of sewage in the same is blackish in color which must be brownish in appearance in ideal conditions. Effect of the same can be seen in effluent quality also as the clarity of the same is not up to the mark. Concessionaire has told that this problem can only be rectified by installing diffused aeration system in place of surface aerators hence Concessionaire is suggested to submit proposal regarding the same.
21. Aeration tank of 20 MLD is in operation. Air is coming out vigorously from 3-4 points due to which air distribution is not proper in the tank which could affect the quality of treatment in aeration tanks. Commissioning of DO analyzer is not completed yet.
22. All Aeration blowers are working.
23. All Final Settling Tanks are working.
24. It is suggested to install torque switches in all clarifiers for having better protection against excessive load on scrapper.
25. Installation of actuators is pending for drain valves of Final Settling Tanks. Concessionaire has told that installation of actuators is not feasible in existing valve arrangement. Existing drain valves were replaced during rehab period and at the same time actuators were also purchased for installation, if these two were not matching then the problem must have been resolved during rehab period itself but since the same is not being done, Concessionaire is required to do necessary modification/replacement work done so that installation work can be completed.
26. In RSPH unit of 60 MLD, 3 out of 4 pumps are working, one pump is under maintenance. Hence, only one pump is in stand-by.
27. In RSPH unit of 20 MLD, 2 out of 2 pumps are working.
28. Both chlorinators are in working condition. Both booster pumps are working. One out of two vacuum injectors are not in working condition and hence none is in stand-by.
29. Commissioning of Leak absorption system is completed. Checklist forthe same must be prepared and recorded properly every month.
30. Chlorine analyzer at outlet is not working. Concessionaire have told that it is not required as per CA but clause no. 1.2.1 and clause no. 1.3.1 in Part-E of Schedule-10 in CA clearly states that "Online residual chlorine measuring system" is to be installed.
31. Both thickeners are in working condition. Installation of actuators for drain valves is pending. Installation of flowmeter in one out of two lines from blending tank to thickener is pending.
32. All thickened sludge transfer pumps are working.
33. In TEPH, all pumps are OK for operation for Dandi and Naini Area.
34. For TEPH panel, modification of room is in progress for fulfilling the electrical norms due to installation of new double front panel in old room.
35. Both DGs are in operation. Installation work of chimney for DGs as per CPCB norms is pending.
36. Sludge dewatering unit is in operation. Installation of various instruments like flowmeter (in poly dosing line), pressure gauge, etc., as per approved drawing are pending.

37. Currently, three sludge drying beds are empty. Concessionaire is suggested to keep at least 10 sludge drying beds empty for ensuring proper withdrawal of sludge from the system in all conditions.
38. All filtrate pumps are working.
39. In SCADA system, flow variation can be seen in recorded values of daily and monthly flow as per site records. Also, there is variation in between flow recorded in SCADA reports and flow recorded in logbooks. This problem must be rectified.
40. There is variation in recorded values of flow from inlet flowmeter at Naini-I STP and outlet flowmeters of Gaughat MPS, please rectify the problem.
41. Both dewatering feed pumps are working.
42. All Digesters are working.
43. Heat exchangers, sludge recirculation pumps for all digesters are working.
44. In compressor room, all six compressors are working.
45. Both Gas holders are working.
46. Gas flare is working.
47. H2S scrubber unit is working. Analyzers fitted at inlet & outlet unit are working.
48. Installation of service water pumps is pending. It is observed that ground water is being used as service water in whole STP which is a violation of environmental norms. Hence, to stop this installation of service water pumps and laying of required pipeline must be completed at the earliest. Concessionaire has committed to start the work in Aug 2022.
49. Rehabilitation works for storm water pump house are pending. Discussions regarding the feasibility of same has already been done during rehab period and hence the work must be done accordingly.
50. As already decided, repairing/construction of retaining wall is in progress and must be completed at the earliest for neutralizing the effect of floods to maintain availability of the facility as per clause no. 9.12(a) of Concession Agreement.
51. Rehabilitation works for tube well unit are pending.
52. Landscaping work of the plant must be improved.
53. Construction of storm water drains is in progress.
54. As per Clause no. 1.6 & 1.7.1 of Concession Agreement, Computer Maintenance Management System (CMMS) must be implemented at all Sites. This is not completed yet, Concessionaire to pleasedo the needful.
55. As already discussed, painting of all units from inside and outside is not completed yet. Concessionaire to please do the needful.
56. CCTV camera at the outlet point of STP is not working.
57. As already discussed, all the waste material obtained during Rehabilitation Works must be removed from the site as per point (h) in clause 8.8 of Concession Agreement or it must be properly stacked at one place after taking proper consent from UPJN. Concessionaire have told that this is out of their jurisdiction for which Concessionaire is required to go through the mentioned clause and plan for the same accordingly.
58. For Gaughat MPS, following observations were made during visit:

    a) Replacement of NRV in header line of HNC pumps in Gaughat MPS is required for reducing the effect of water hammering on the pumps. Concessionaire to please do the needful.
    b) All HNC pumps are working.
    c) Two submersible pumps are in working condition and one is under maintenance.

d) Both mechanical screens of HNC pumps are working. Currently sensor of one screen which provides overload protection is broken, it must be replaced at the earliest as excessive wear and tear can be caused in screen due to overload.
Though the screens are running in auto mode through timer, differential level sensors must also be made operational for running mechanical screens more efficiently through level difference during peak and lean period.
e) Both mechanical screens for submersible pumps are working.
Though the screens are running in auto mode through timer, differential level sensors must also be made operational for running mechanical screens more efficiently through level difference during peak and lean period.
f) DG set of 1000 KVA and DG sets of submersible pumps are working. Repairing work of 11 KV DG synchronization panel is pending. Repairing work of 500 KVA/11KV DG set is pending. Concessionaire to please complete all pending works.
g) It is suggested to install manual screen in receiving chamber of SPS for reducing load on mechanical screens.
h) Painting for all units in the MPS is not started yet. Concessionaire to please do the needful.
i) In PLC panels, indication for ON/OFF of mechanical screens, belt/screw conveyor is not coming.

59. For Chacharnalla SPS, following observations were made during visit:

a) Currently all VNC pumps are working.
b) One out of two mechanical screens are working. One mechanical screen and belt conveyor are under maintenance.
c) Both DG sets are OK for operation.
d) Old DG set is working.
e) Installation of pressure transmitter on header line of VNC pumps is pending.
f) Painting for all units in the MPS is not started yet. Concessionaire to please do the needful.
g) In PLC panels, indication for ON/OFF of mechanical screens, belt conveyor is not coming.

60. Since COD is announced for all Package – II facilities hence Concessionaire is required to implement following documents as per Clause no. 9 & Part-G in Schedule – 10 of Concession Agreement at the earliest:

a) Portable samplers must be provided to collect composite samples for monitoring from inlet and outlet of STP as per clause no. 1.3.1 in Part-E of Schedule-10 of CA. Also, all the instruments as mentioned in Table-3 given in clause no. 1.3.1 in Part-E of Schedule-10 of CA must be maintained in the laboratory.
b) Calibration certificates of all the instruments must be submitted as per clause no. 9.8(a)(viii) of Concession Agreement.
c) Testing of TN, NH4-N, TP for composite samples of influent must be performed each day as per Part-G in Schedule-10 of CA.
d) Site Diary as per Clause no. 1.7.2 of Part-G in Schedule – 10 of Concession Agreement.
e) Quarterly report as per Part-G in Schedule-10 of CA.
f) Monthly Environmental Monitoring Report as per Part-G in Schedule-10 of CA.
g) Procedure for recording & disposal of complaints.
h) Safety & Health Records. Incident reports must also be submitted along with action

plan.

i) Periodic reports from all facilities must be uploaded on Central Pollution Control Board's Website.
j) Scheduled Maintenance Program specifying the impact of Scheduled Maintenance Periods on the Availability of each facility.

## 1.3 Recommendation's

- Some of the issues mentioned above are pending since long time and hence must be rectified at the earliest for enhancing the efficiency of the STP.
- Concessionaire must ensure satisfactory working of Online monitoring system & transmit the data as per requirement.
- All the maintenance jobs required for the observations made above must be done as soon as possible to increase the efficiency of plant.
- Permits must be used for all kind of maintenance jobs whether it is Preventive or Corrective. Concessionaire to please ensure the same.
- All the records must be provided as per the observations made above.
- All logbooks must be filled timely and accurately.
- Testing of samples must be done from outlet of PSTs also for checking the efficiency of PSTs.
- Concessionaire to please ensure that all the testing must be done as per the clause no. 1.7.9 of Part-G in Concession Agreement.
- All the old material obtained due to rehabilitation works in various units must be stacked properly at the identified part of the site and proper record must be maintained.
- It is recommended to follow proper safety measures during O&M, and it must be ensured that workers must wear proper PPEs while doing work at Site.
- More awareness trainings for workers must be given for encouraging them to use PPEs.

# Rajapur STP, 60 MLD STP at Prayagraj
## INLET FLOW & QUALITY REPORT

| Date | Daily Feed Quantity MLD (Design- 60 MLD) | | pH | | BOD (mg/l) | | COD (mg/l) | | TSS (mg/l) | | FECAL COLIFORM | | FRC | DEWATERED SLUDGE | | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | M3 | MLD | Inlet pH (Design- <9) | Final pH (Design 6.5 to 9.0) | Inlet BOD (Design- <250 mg/l) | Final BOD (Design - <30 mg/l) | Inlet COD (Design- <500 mg/l) | Final COD (Design <50 mg/l) | Inlet TSS (Design- <500 mg/l) | FinalTSS (Design <50 mg/l) | Inlet (Design - NA) | Final (Design - <1000 MPN/100 ml) | Final (Design - 0.2 mg/l) | Outlet Concentration (>20%) | Fecal Coliform (20,00,000 MPN/gTS) | |
| 1-Sep-22 | 13570 | 13.57 | 7.39 | 7.75 | 65 | 10 | 108 | 20 | 79 | 15 | NA | — | — | — | — | Plant availability is 100% |
| 2-Sep-22 | 7630 | 7.63 | 7.28 | 7.73 | 60 | 12 | 96 | 24 | 76 | 14 | NA | — | — | — | — | Plant availability is 100% |
| 3-Sep-22 | 53560 | 53.56 | 7.35 | 7.69 | 125 | 16 | 316 | 36 | 275 | 23 | NA | 700 | 0.2 | — | — | Plant availability is 100% |
| 4-Sep-22 | 71220 | 71.22 | 7.43 | 7.77 | 130 | 18 | 324 | 40 | 286 | 25 | NA | 800 | 0.2 | — | — | Plant availability is 100% |
| 5-Sep-22 | 72090 | 72.09 | 7.39 | 7.78 | 140 | 16 | 332 | 36 | 292 | 27 | NA | 600 | 0.3 | — | — | Plant availability is 100% |
| 6-Sep-22 | 72960 | 72.96 | 7.42 | 7.75 | 135 | 18 | 340 | 44 | 305 | 26 | NA | 700 | 0.2 | — | — | Plant availability is 100% |
| 7-Sep-22 | 70650 | 70.65 | 7.39 | 7.67 | 130 | 17 | 360 | 36 | 298 | 28 | NA | 600 | 0.3 | 24.97 | 1700000 | Plant availability is 100% |
| 8-Sep-22 | 72370 | 72.37 | 7.35 | 7.71 | 140 | 16 | 344 | 40 | 295 | 25 | NA | 700 | 0.2 | 23.45 | 1400000 | Plant availability is 100% |
| 9-Sep-22 | 73160 | 73.16 | 7.28 | 7.65 | 135 | 17 | 348 | 44 | 287 | 27 | NA | 700 | 0.2 | 24.53 | 1400000 | Plant availability is 100% |
| 10-Sep-22 | 74090 | 74.09 | 7.35 | 7.68 | 120 | 15 | 340 | 40 | 293 | 24 | NA | 600 | 0.3 | 25.37 | 1700000 | Plant availability is 100% |
| 11-Sep-22 | 76850 | 76.85 | 7.32 | 7.71 | 130 | 16 | 320 | 36 | 306 | 23 | NA | 500 | 0.2 | 24.63 | 1400000 | Plant availability is 100% |
| 12-Sep-22 | 83950 | 83.95 | 7.35 | 7.73 | 125 | 18 | 344 | 40 | 298 | 26 | NA | 700 | 0.3 | 24.57 | 1700000 | Plant availability is 100% |
| 13-Sep-22 | 81180 | 81.18 | 7.37 | 7.75 | 135 | 17 | 340 | 36 | 287 | 25 | NA | 600 | 0.2 | 25.15 | 1200000 | Plant availability is 100% |
| 14-Sep-22 | 83370 | 83.37 | 7.34 | 7.72 | 140 | 18 | 332 | 40 | 285 | 24 | NA | 500 | 0.2 | 23.78 | 1400000 | Plant availability is 100% |
| 15-Sep-22 | 82950 | 82.95 | 7.13 | 7.76 | 130 | 15 | 320 | 36 | 294 | 25 | NA | 600 | 0.3 | 22.57 | 1700000 | Plant availability is 100% |
| 16-Sep-22 | 84550 | 84.55 | 7.25 | 7.69 | 130 | 16 | 336 | 44 | 276 | 23 | NA | 500 | 0.2 | 24.28 | 1400000 | Plant availability is 100% |
| 17-Sep-22 | 79840 | 79.84 | 7.29 | 7.77 | 135 | 18 | 328 | 40 | 281 | 26 | NA | 700 | 0.2 | 25.32 | 1700000 | Plant availability is 100% |
| 18-Sep-22 | 80020 | 80.02 | 7.32 | 7.76 | 125 | 16 | 332 | 36 | 293 | 25 | NA | 600 | 0.2 | 22.87 | 1400000 | Plant availability is 100% |
| 19-Sep-22 | 79110 | 79.11 | 7.37 | 7.75 | 130 | 17 | 324 | 44 | 272 | 23 | NA | 600 | 0.3 | 23.96 | 1300000 | Plant availability is 100% |
| 20-Sep-22 | 75820 | 75.82 | 7.28 | 7.69 | 135 | 16 | 332 | 40 | 287 | 25 | NA | 500 | 0.3 | 22.35 | 1400000 | Plant availability is 100% |
| 21-Sep-22 | 80740 | 80.74 | 7.35 | 7.77 | 140 | 17 | 328 | 36 | 276 | 24 | NA | 400 | 0.2 | 24.37 | 1300000 | Plant availability is 100% |
| 22-Sep-22 | 76830 | 76.83 | 7.29 | 7.72 | 125 | 16 | 336 | 40 | 296 | 27 | NA | 700 | 0.2 | 23.21 | 1700000 | Plant availability is 100% |
| 23-Sep-22 | 76320 | 76.32 | 7.33 | 7.68 | 130 | 18 | 324 | 44 | 281 | 26 | NA | 600 | 0.3 | 22.85 | 1400000 | Plant availability is 100% |
| 24-Sep-22 | 79090 | 79.09 | 7.27 | 7.73 | 135 | 16 | 332 | 40 | 279 | 25 | NA | 500 | 0.2 | 23.63 | 1300000 | Plant availability is 100% |
| 25-Sep-22 | 75340 | 75.34 | 7.32 | 7.76 | 140 | 17 | 320 | 36 | 297 | 24 | NA | 400 | 0.2 | 23.21 | 1200000 | Plant availability is 100% |
| 26-Sep-22 | 76260 | 76.26 | 7.28 | 7.72 | 125 | 15 | 336 | 40 | 283 | 28 | NA | 600 | 0.2 | 23.65 | 1400000 | Plant availability is 100% |
| 27-Sep-22 | 72850 | 72.85 | 7.23 | 7.68 | 120 | 16 | 332 | 44 | 311 | 25 | NA | 500 | 0.3 | 23.3 | 1700000 | Plant availability is 100% |
| 28-Sep-22 | 75910 | 75.91 | 7.35 | 7.73 | 130 | 18 | 328 | 40 | 293 | 26 | NA | 700 | 0.2 | 23.6 | 1400000 | Plant availability is 100% |
| 29-Sep-22 | 74710 | 74.71 | 7.27 | 7.65 | 125 | 16 | 324 | 36 | 285 | 24 | NA | 600 | 0.3 | 24.17 | 1700000 | Plant availability is 100% |
| 30-Sep-22 | 77520 | 77.52 | 7.33 | 7.76 | 130 | 17 | 336 | 36 | 298 | 25 | NA | 500 | 0.3 | 23.73 | 1300000 | Plant availability is 100% |
| | | | | | | | | | | | | | | | | |
| Average | 71843.67 | 71.84 | 7.32 | 7.72 | 126.50 | 16.27 | 317.07 | 38.13 | 275.80 | 24.47 | NA | 596.43 | 0.24 | 23.90 | 1466666.67 | |

**Source: Logbook of Laboratory at Sewage Treatment Plant**

## 2.2 Inspection Report

| | |
|---|---|
| **Month of Site Inspection** | Sep 2022 |
| **Site Inspectors** | 1. Mr. Santosh Kumar, PM-I, UPJN.<br>2. Mr. Tauseef Ahmed, AE, UPJN.<br>3. Mr. Manish Srivastava, JE, UPJN<br>4. Mr. Gaurav Gupta, AECOM.<br>5. Mr. Sudhir Kumar Tomar, AECOM.<br>6. Mr. Rahul Azaad, PWPL.<br>7. Mr. Girijesh, PWPL.<br>8. Mr. Saurabh, PWPL |
| **Place(s) of Inspection** | • 60 MLD STP at Rajapur, Prayagraj<br>• 25 MLD SPS at Rajapur, Prayagraj<br>• 55 MLD MPS at Mumfodganj Prayagraj |

Visit was done on 1st Sep 2022, 9th Sep 2022, 15th Sep 2022, 19th Sep 2022, 27th Sep 2022 and following observations were made:

- **Status of Availability:**

| S. No. | Facility Name | Actual Flow Pumped /Received at Facility (MLD) |
|---|---|---|
| 1 | Rajapur STP | 7.63 to 84.95 |
| 2 | Rajapur SPS | 4.66 to 13.97 |
| 3 | Mumfodganj MPS | 65.31 to 78.28 |

Note: 1) Source for above data is Register for flow record of STP & MPS.

- **Status of KPIs:**

| S. No. | Parameter Name | Design Value | Parameter Value |
|---|---|---|---|
| 1 | BOD – Effluent | < 20 mg/l | 10 to 18 mg/l |
| 2 | TSS – Effluent | < 30 mg/l | 14 to 28 mg/l |
| 3 | pH – Effluent | 6.5 – 9.0 | 7.65 to 7.78 |
| 4 | Fecal coliform – Effluent | <= 1000 MPN/100 ml | 500 to 800 MPN/100 ml |
| 5 | Consistency – Sludge | > 20 % | 22.35 to 25.37 % |
| 6 | Fecal Coliform – Sludge | < 20,00,000 MPN/gTS | 1200000 to 1700000 MPN/gTS |

Note: 1) Source for above data is Register for Laboratory of STP.

- **Status of Energy Consumption:**

| S. No. | Facility Name | Actual Energy Consumption (KWH/MLD) |
|---|---|---|
| 1 | Rajapur STP | 9.17 to 165.14 |
| 2 | Rajapur Associated Infrastructure | 44.16 to 60.70 |

Note: 1) Source for above data is Register for Power Consumption Record of STP.

- **Status of various units & records at site:**

1. Due to flood, inlet gate of Rajapur SPS is closed at 01:00 PM on 18th Aug 2022 as tapping point has got submerged in the river water. Now, when level of water in river Ganga has gone down, inlet gate is opened on 3rd Sep 2022 but complete flow started coming in on 12th Sep 2022 when sand-bags were removed.
2. Due to flood, outlet gate of Rajapur STP is closed at 10:30 PM on 18th Aug 2022 as it got submerged in the river water. Currently, effluent is being pump from treated effluent pump house (TEPH). Now, when level of water in river Ganga has gone down, outlet gate is opened on 3rd Sep 2022
3. Online analyzer at inlet is working but it is not showing correct values of parameters as compared to lab reports. As per current situation, inlet analyzer requires calibration every day for showing correct values of inlet parameters which is not a correct working condition. Also, KPI reports of this Multiparameter analyzer generated through SCADA system were studied and it was found that variation can be seen in between recorded values of KPIs in laboratory and recorded values of KPIs in reports generated by multiparameter analyzers through SCADA system which is more than prescribed limit given in 'Guidelines for Online Continuous Effluent Monitoring Systems (OCEMS)' by Central Pollution Control Board.
4. Online analyzer at outlet is replaced by new analyzer on 04th Sep 2022 which is currently working. KPI reports of this Multiparameter analyzer generated through SCADA system were studied and it was found that variation can be seen in between recorded values of KPIs in laboratory and recorded values of KPIs in reports generated by multiparameter analyzers through SCADA system which is more than prescribed limit given in 'Guidelines for Online Continuous Effluent Monitoring Systems (OCEMS)' by Central Pollution Control Board. Also, it is observed that errors are coming 7-8 times a day in these SCADA reports for values of BOD, COD and TSS of effluent. Concessionaire is required to rectify the discrepancies as mentioned above and check the working/calibration of Multiparameter Analyzers and get it verified by UPJN/Project Engineer at the earliest.
5. Data transfer from online analyzer at the outlet of STP to CPCB servers is in progress. By studying the graph of Sep-22 available at the online portal, it is found that graph is breaking at several points during the month which may be due to breakage in transmission of data from online analyzers to CPCP servers or some other problem. Also, sudden spikes/drops can be seen in the graphs available at the online portal which is fundamentally not correct. These types of incidents have been observed in past also. Concessionaire is required to rectify these problems.
6. Communication of data from PLC system of Mumfordganj SPS has started coming to SCADA system of STP but report generation regarding raw sewage pumped, level of sump and running hour of equipment is not started yet. All the data coming from instruments installed in pumping stations must be recorded in report format similar to the way it has been done for STP.

   Furthermore, there is problem in receiving signals at PLC/SCADA control system from some equipment/instruments and it is also not possible to control some of the equipment (mainly mechanical screens) from PLC/SCADA control system. Also, mechanical screens have provisions in PLC system for being remotely operated and differential level sensors were also installed for the same. Therefore, the system is available, but it is not working due to lack of wiring, etc., hence provision must be made for operating mechanical screens through SCADA which in turn can be operated manually or remotely as per requirement.

7. Flowmeters at inlet of STP is working.

8. Flowmeter at outlet is working. Calibration of flowmeter is completed by site team, Concessionaire is required to get the calibration of flowmeter verified by OEM and submit calibration certificates.
9. Both Grit removal units are working.
10. Both Mechanical Fine screens at PTU are working. Though the screens are running in auto mode through timer, differential level sensors must also be made operational for running mechanical screens more efficiently through level difference during peak and lean period.
11. Both UASBs were working satisfactorily. Cleaning of launders and scum from top must be done regularly. Also, several distribution cells were found in choked condition, cleaning for the same must be done on regular basis for avoiding such kind of situations. If it is required to increase the manpower, then same must be done at the earliest.
12. Rectification of problem for leakage from HDP pipes of UASB reactors was in progress. It is observed that problem of leakage from HDP inlet pipes is very frequent. For minimizing this problem, it was suggested to give proper supports under the pipes. Concessionaire to please do the needful.
13. 12 surface aerators were found running, all 15 surface aerators are in working condition. It is recommended to install DO analyzer in this tank also for better monitoring.
14. Both DG sets are working. It is suggested to increase the height of chimney of DG sets as per CPCB norms.
15. All sludge transfer pumps are in working condition.
16. Sludge dewatering unit is working.
17. Chlorination system is working.
18. Chlorine analyzer at outlet of STP is not working. Concessionaire have told that it is not required as per CA but clause no. 1.2.1 and clause no. 1.3.1 in Part-E of Schedule-10 in CA clearly states that "Online residual chlorine measuring system" is to be installed.
19. At flood pumping station, all pumps are working.
20. It is continuously observed that dewatered sludge is being dumped inside the plant. Concessionaire is required to dump the dewatered sludge in the place given by UPJN.
21. Calibration of flowmeter in outlet line of effluent pumps is pending. Concessionaire to please do the needful and submit calibration reports.
22. In SCADA system, flow variation can be seen in recorded values of daily and monthly flow as per site records. Also, there is variation in between flow recorded in SCADA reports and flow recorded in logbooks. This problem must be rectified.
23. There is variation in recorded values of flow from inlet flowmeter at Rajapur STP and outlet flowmeter of Mumfordganj SPS, please rectify the problem.
24. There is variation in recorded values of flow from inlet flowmeters at Rajapur STP and outlet flowmeter of Rajapur STP, please rectify the problem.
25. Gas holder and gas flare are not in operation. It is part of STP facility hence must be made operational. Also, amount of Gas generation also indicates the performance level of UASBs. Concessionaire is requested to complete the maintenance works and take both into operation as follow-up for the same is being done since rehab period.
26. As already discussed, all the waste material obtained during Rehabilitation Works must be removed from the site as per point (h) in clause 8.8 of Concession Agreement or it must be properly stacked at one place after taking proper consent from UPJN. Concessionaire have told that this is out of their jurisdiction for which Concessionaire is required to go through the mentioned clause and plan for the same accordingly.
27. As per Clause no. 1.6 & 1.7.1 of Concession Agreement, Computer Maintenance Management System (CMMS) must be implemented at all Sites. This is not started yet, Concessionaire to please do the needful.

28. At Rajapur SPS following observations were made:

a) Temporary Bund at tapping pint is damaged due to the rain. It is not repaired yet. Most of the Raw Sewage from nearby nalla is going directly into the Ganga River. Concessionaire is suggested to rectify on urgent basis.
b) Mechanical coarse Screens at SPS is working. Though the screens are running in auto mode through timer, differential level sensors must also be made operational for running mechanical screens more efficiently through level difference during peak and lean period.
c) Operation of mechanical screen at SPS is not possible from SCADA.
d) All submersible pumps are in working condition. Pressure transmitter is not installed in common header line of pumps yet. Also, pumps must be kept in auto mode so that pump can start & stop on the basis of level in the sump.

29. At Mumfodganj MPS following observations were made:

a) After flood, scour valve in rising main from Mumfordganj SPS to Rajapur STP is closed at 12:30 PM on 03rd Sep 2022. Currently, complete sewage is being pumped from Mumfordganj SPS to Rajapur STP.
b) At tapping point of SPS, manual screen is broken from bottom side, maintenance for the same is required as lot of waste is going inside SPS which can in turn will choke the pumps.
c) Civil maintenance is required for the floor below bypass gate at tapping point for stopping the leakage from bypass gate.
d) Both Mechanical coarse screens at MPS are working. Though the screens are running in auto mode through timer, differential level sensors must also be made operational for running mechanical screens more efficiently through level difference during peak and lean period.
e) At Mumfodganj MPS, all 6 pumps are OK for operation. Pressure transmitter is not installed in common header line of pumps yet. Also, pumps must be kept in auto mode so that pump can start & stop on the basis of level in the sump.
f) Dismantling joint must be provided along with flowmeter for ease in maintenance.
g) NRV must be provided in common header to reduce the effect of water hammering.
h) Site house Keeping & landscaping must be improved. Concessionaire is suggested to keep the Old material Properly.
i) Painting for all units in the MPS is not started yet. Concessionaire to please do the needful.

30. Since COD is announced for all Package – II facilities hence Concessionaire is required to implement following documents as per Clause no. 9 & Part-G in Schedule – 10 of Concession Agreement at the earliest:

a) Portable samplers must be provided to collect composite samples for monitoring from inlet and outlet of STP as per clause no. 1.3.1 in Part-E of Schedule-10 of CA. Also, all the instruments as mentioned in Table-3 given in clause no. 1.3.1 in Part-E of Schedule-10 of CA must be maintained in the laboratory.
b) Calibration certificates of all the instruments must be submitted as per clause no. 9.8(a)(viii) of Concession Agreement. Concessionaire have told to submit it by 5th July but the same is not done yet.

c) Testing of TN, NH4-N, TP for composite samples of influent must be performed each day as per Part-G in Schedule-10 of CA.
d) Site Diary as per Clause no. 1.7.2 of Part-G in Schedule – 10 of Concession Agreement.
e) Quarterly report as per Part-G in Schedule-10 of CA.
f) Monthly Environmental Monitoring Report as per Part-G in Schedule-10 of CA.
g) Procedure for recording & disposal of complaints.
h) Safety & Health Records. Incident reports must also be submitted along with action plan.
i) Periodic reports from all facilities must be uploaded on Central Pollution Control Board's Website.
j) Scheduled Maintenance Program specifying the impact of Scheduled Maintenance Periods on the Availability of each facility.

## 2.3 Recommendation's

- Some of the issues mentioned above are pending since long time and hence must be rectified at the earliest for enhancing the efficiency of the STP.
- Concessionaire must ensure satisfactory working of Online monitoring system & transmit the data as per requirement.
- All the maintenance jobs required for the observations made above must be done as soon as possible to increase the efficiency of plant.
- Permits must be used for all kind of maintenance jobs whether it is Preventive or Corrective. Concessionaire to please ensure the same.
- All the records must be provided as per the observations made above.
- All logbooks must be filled timely and accurately.
- Testing of samples must be done from outlet of UASBs also for checking the efficiency of UASBs.
- Concessionaire to please ensure that all the testing must be done as per the clause no. 1.7.9 of Part-G in Concession Agreement.
- All the old material obtained due to rehabilitation works in various units must be stacked properly at the identified part of the site and proper record must be maintained.
- It is recommended to follow proper safety measures during O&M, and it must be ensured that workers must wear proper PPEs while doing work at Site.
- More awareness trainings for workers must be given for encouraging them to use PPEs.

# ANNEXURE-III

## *KPI REPORTS OF PACKAGE -III, PROJECT ENGINEER INSPECTION REPORT AND RECOMMENDATION*

# Table of Contents

# Numayadahi STP, 50 MLD STP at Prayagr
## INLET FLOW & QUALITY REPORT

| Date | Daily Feed Quantity MLD (Design- 50 MLD) | | pH | | BOD (mg/l) | | COD (mg/l) | | TSS (mg/l) | | FECAL COLIFORM | | FRC | DEWATERED SLUDGE | | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | M3 | MLD | Inlet pH (Design- <9) | Final pH (Design- 6.5 to 8.0) | Inlet BOD (Design- <250 mg/l) | Final BOD (Design - <20 mg/l) | Inlet COD (Design- <500 mg/l) | Final COD (Design <50 mg/l) | Inlet TSS (Design- <500 mg/l) | Final TSS (Design <30 mg/l) | Inlet (Design - NA) | Final (Design - <1000 MPN/100 ml) | Final (Design - 0.2 mg/l) | Outlet Concentration (>20%) | Fecal Coliform (20,00,000 MPN/gTS) | |
| 1-Sep-22 | 29280 | 29.28 | 7.34 | 7.63 | 130 | 16 | 292 | 36 | 266 | 25 | NA | 400 | 0.2 | 24.16 | 1200000 | Plant availability is 100% |
| 2-Sep-22 | 25530 | 25.53 | 7.28 | 7.72 | 135 | 14 | 288 | 32 | 258 | 22 | NA | 600 | 0.3 | 22.76 | 1300000 | Plant availability is 100% |
| 3-Sep-22 | 31600 | 31.6 | 7.24 | 7.68 | 130 | 15 | 308 | 36 | 264 | 22 | NA | 500 | 0.3 | 23.45 | 1700000 | Plant availability is 100% |
| 4-Sep-22 | 45400 | 45.4 | 7.36 | 7.74 | 140 | 16 | 300 | 40 | 272 | 24 | NA | 900 | 0.2 | 24.54 | 1400000 | Plant availability is 100% |
| 5-Sep-22 | 61660 | 61.66 | 7.28 | 7.67 | 135 | 13 | 292 | 36 | 276 | 21 | NA | 700 | 0.3 | 22.49 | 1300000 | Plant availability is 100% |
| 6-Sep-22 | 65940 | 65.94 | 7.33 | 7.72 | 140 | 15 | 288 | 32 | 254 | 23 | NA | 400 | 0.3 | 22.58 | 1200000 | Plant availability is 100% |
| 7-Sep-22 | 65360 | 65.36 | 7.27 | 7.6 | 130 | 15 | 304 | 40 | 268 | 25 | NA | 600 | 0.2 | 24.31 | 1400000 | Plant availability is 100% |
| 8-Sep-22 | 58900 | 58.9 | 7.23 | 7.68 | 125 | 12 | 312 | 36 | 272 | 24 | NA | 500 | 0.3 | 23.43 | 1200000 | Plant availability is 100% |
| 9-Sep-22 | 59230 | 59.23 | 7.28 | 7.73 | 135 | 14 | 304 | 40 | 276 | 26 | NA | 600 | 0.2 | 24.34 | 1400000 | Plant availability is 100% |
| 10-Sep-22 | 67840 | 67.84 | 7.34 | 7.76 | 130 | 12 | 296 | 32 | 268 | 23 | NA | 400 | 0.3 | 24.15 | 1300000 | Plant availability is 100% |
| 11-Sep-22 | 62540 | 62.54 | 7.17 | 7.56 | 135 | 15 | 308 | 40 | 240 | 22 | NA | 700 | 0.3 | 23.8 | 1700000 | Plant availability is 100% |
| 12-Sep-22 | 60480 | 60.48 | 7.22 | 7.72 | 125 | 13 | 312 | 36 | 258 | 24 | NA | 500 | 0.2 | 24.37 | 1400000 | Plant availability is 100% |
| 13-Sep-22 | 61610 | 61.61 | 7.36 | 7.64 | 130 | 16 | 304 | 44 | 268 | 26 | NA | 600 | 0.3 | 23.51 | 1200000 | Plant availability is 100% |
| 14-Sep-22 | 66570 | 66.57 | 7.34 | 7.6 | 125 | 14 | 276 | 36 | 247 | 22 | NA | 400 | 0.3 | 23.99 | 1700000 | Plant availability is 100% |
| 15-Sep-22 | 68760 | 68.76 | 7.37 | 7.74 | 135 | 17 | 292 | 40 | 263 | 24 | NA | 700 | 0.2 | 22.85 | 1400000 | Plant availability is 100% |
| 16-Sep-22 | 54620 | 54.62 | 7.28 | 7.67 | 130 | 15 | 304 | 36 | 274 | 26 | NA | 500 | 0.3 | 24.1 | 1300000 | Plant availability is 100% |
| 17-Sep-22 | 0 | – | – | – | – | – | – | – | – | – | NA | – | – | 23.5 | 1700000 | Plant is shutdown due to main rising main pipe line is damage on date 16/09/22 at 7.00 PM. |
| 18-Sep-22 | 0 | – | – | – | – | – | – | – | – | – | NA | – | – | 21.99 | 1400000 | |
| 19-Sep-22 | 0 | – | – | – | – | – | – | – | – | – | NA | – | – | – | – | |
| 20-Sep-22 | 0 | – | – | – | – | – | – | – | – | – | NA | – | – | – | – | |
| 21-Sep-22 | 0 | – | – | – | – | – | – | – | – | – | NA | – | – | – | – | |
| 22-Sep-22 | 0 | – | – | – | – | – | – | – | – | – | NA | – | – | – | – | |
| 23-Sep-22 | 0 | – | – | – | – | – | – | – | – | – | NA | – | – | – | – | |
| 24-Sep-22 | 12400 | 12.4 | 7.14 | 7.18 | 130 | 14 | 304 | 40 | 268 | 25 | NA | 600 | 0.2 | 22.33 | 1200000 | Plant availability is 100% |
| 25-Sep-22 | 53510 | 53.51 | 7.26 | 7.72 | 125 | 16 | 300 | 44 | 258 | 23 | NA | 400 | 0.3 | 24.47 | 1700000 | Plant availability is 100% |
| 26-Sep-22 | 53190 | 53.19 | 7.32 | 7.69 | 130 | 15 | 292 | 36 | 264 | 24 | NA | 700 | 0.2 | 23.22 | 1400000 | Plant availability is 100% |
| 27-Sep-22 | 55380 | 55.38 | 7.27 | 7.54 | 125 | 14 | 308 | 40 | 272 | 26 | NA | 500 | 0.3 | 22.41 | 1300000 | Plant availability is 100% |
| 28-Sep-22 | 56350 | 56.35 | 7.19 | 7.66 | 145 | 17 | 312 | 36 | 292 | 23 | NA | 400 | 0.3 | 22.49 | 1200000 | Plant availability is 100% |
| 29-Sep-22 | 55720 | 55.72 | 7.33 | 7.78 | 140 | 15 | 296 | 32 | 278 | 25 | NA | 600 | 0.2 | 24.47 | 1700000 | Plant availability is 100% |
| 30-Sep-22 | 61970 | 61.97 | 7.28 | 7.67 | 130 | 14 | 304 | 36 | 247 | 22 | NA | 500 | 0.3 | 24.09 | 1400000 | Plant availability is 100% |
| | | | | | | | | | | | | | | | | |
| Average | 41128.00 | 53.65 | 7.28 | 7.66 | 131.96 | 14.65 | 299.33 | 37.22 | 265.35 | 23.78 | NA | 552.17 | 0.26 | 23.51 | 1484000.00 | |

**Source: Logbook of Laboratory at Sewage Treatment Plant**

## 1.2 Inspection Report

| | |
|---|---|
| **Month of Site Inspection** | September 2022 |
| **Site Inspectors** | 1. Mr. Santosh Kumar, PM-I, UPJN.<br>2. Mr. Tauseef Ahmed, AE, UPJN.<br>3. Mr. Satwant, JE, UPJN.<br>4. Mr. Gaurav Gupta, AECOM.<br>5. Mr. Rahul Kumar Azaad, PWPL.<br>6. Mr. Vijay Dwivedi, PWPL.<br>7. Mr. Jitender, PWPL. |
| **Place(s) of Inspection** | • 50 MLD STP at Numayadahi, Prayagraj<br>• 50 MLD MPS at Ghagharnalla, Prayagraj<br>• 15 MLD SPS at Sasur Kadheri, Prayagraj<br>• 16.5 MLD SPS at Lukarganj, Prayagraj |

Visit was done on 5th Sep 2022, 17th Sep 2022, 20th Sep 2022, 24th Sep 2022 and following observations were made:

- **Status of Availability:**

| S. No. | Facility Name | Actual Flow Pumped /Received at Facility (MLD) |
|---|---|---|
| 1 | Numayadahi STP | 0.00 to 68.76 |
| 2 | Ghagharnalla MPS | 0.00 to 70.72 |
| 3 | Sasur Kadheri SPS | 0.00 to 36.40 |
| 4 | Lukerganj SPS | 5.27 to 14.35 |

Note: 1) Source for above data is Site record for flow of STP/MPS/SPS.

- **Status of KPIs:**

| S. No. | Parameter Name | Design Value | Parameter Value |
|---|---|---|---|
| 1 | BOD – Effluent | < 20 mg/l | 12 to 17 mg/l |
| 2 | TSS – Effluent | < 30 mg/l | 21 to 26 mg/l |
| 3 | pH – Effluent | 6.5 – 9.0 | 7.56 to 7.76 |
| 4 | Fecal coliform – Effluent | <= 1000 MPN/100 ml | 400 to 900 MPN/100 ml |
| 5 | Consistency – Sludge | > 20 % | 21.99 to 24.54 % |
| 6 | Fecal Coliform – Sludge | < 20,00,000 MPN/gTS | 1200000 to 1700000 MPN/gTS |

Note: 1) Source for above data is Site record for Laboratory of STP.

- **Status of Energy Consumption:**

| S. No. | Facility Name | Actual Energy Consumption (KWH/MLD) |
|---|---|---|
| 1 | Numayadahi STP | 64.12 to 108.11 |
| 2 | Numayadahi Associated Infrastructure | 72.89 to 109.25 |

Note: 1) Source for above data is Site record for Power Consumption of STP.

- **Status of various units & records at site:**

1. Due to flood, pumping from Sasur Kadheri SPS was completely stopped at 05:10 PM on 16th Aug 2022 as tapping point has got submerged in the river water. Now, when level of water in river Yamuna has gone down then the SPS is started, and raw sewage was being pumped to Ghaghanalla MPS at 3:30 PM on 04th Sep 2022.
2. Due to flood, pumping from Ghagharnalla MPS was reduced at 10:30 AM on 18th Aug 2022 as tapping point has got submerged in the river water. As a result, inlet gate of receiving chamber is closed by 70% for taking raw sewage from Lukerganj SPS and house connections. Now, when level of water in river Yamuna has gone down then the inlet gate is 100% opened and complete raw sewage was being pumped to Numayadahi STP at 11:00 AM on 03rd Sep 2022.
3. Sewage was not received at STP because Ghagharnalla MPS and Sasur Kadheri SPS were in shutdown as rising main from Ghagharnalla MPS to STP is damaged at 6:30 PM on 16th Sep 2022. However, maintenance work for the rising main was completed at 4 PM on 23rd Sep 2022 and all the related facilities were normalized soon after.
4. Online analyzer at inlet is working but it is not showing correct values of parameters as compared to lab reports. As per current situation, inlet analyzer requires calibration every day for showing correct values of inlet parameters which is not a correct working condition. Also, KPI reports of this Multiparameter analyzer generated through SCADA system were studied and it was found that variation can be seen in between recorded values of KPIs in laboratory and recorded values of KPIs in reports generated by multiparameter analyzers through SCADA system which is more than prescribed limit given in 'Guidelines for Online Continuous Effluent Monitoring Systems (OCEMS)' by Central Pollution Control Board.
5. Online analyzer at outlet is working. Validation of Calibration was done in presence of representatives of Aaxis Nano Technologies (OEM of Multiparameter analyzer) along with UPJN officials with the help of stock solutions of pH, COD, TSS on 14th July 2022. Since then, reports generated through SCADA system were studied and it was found that still variation can be seen in between recorded values of KPIs in laboratory and recorded values of KPIs in reports generated by multiparameter analyzers through SCADA system which is more than prescribed limit given in 'Guidelines for Online Continuous Effluent Monitoring Systems (OCEMS)' by Central Pollution Control Board. Also, it is observed that errors are coming 7-8 times a day in these SCADA reports for values of BOD, COD and TSS of effluent and sudden spikes can be seen in the values of parameters given in the report which is fundamentally not correct. Concessionaire is required to rectify the discrepancies as mentioned above and check the working/calibration of Multiparameter Analyzers and get it verified by UPJN/Project Engineer at the earliest.
6. Data transfer from online analyzer at the outlet of STP to CPCB servers is in progress. By studying the graph for the month of Sep-2022 available at the online portal, data was not available from 8:00 PM on 16th Sep 2022 to 05:30 PM on 24th Sep 2022 which may be due to breakage in transmission of data from online analyzers to CPCP servers or some other problem. Also, sudden spikes/drops can be seen in the graphs available at the online portal which is fundamentally not correct. These types of incidents have been observed in past also. Concessionaire is required to rectify these problems.
7. Communication of data from PLC system of Ghagharnalla MPS, Sasur Kadheri SPS and Lukerganj SPS has started coming to SCADA system of STP but report generation regarding raw sewage pumped, level of sump and running hour of equipment is not started yet. All the data coming from instruments installed in pumping stations must be recorded in report format similar to the way it has been done for STP.

Furthermore, there is problem in receiving signals at PLC/SCADA control system from some equipment/instruments and it is also not possible to control some of the equipment (mainly mechanical screens) from PLC/SCADA control system. Also, mechanical screens have provisions in PLC system for being remotely operated and differential level sensors were also installed for the same. Therefore, the system is available, but it is not working due to lack of wiring, etc., hence provision must be made for operating mechanical screens through SCADA which in turn can be operated manually or remotely as per requirement.

8. Flowmeter at inlet of STP is working.
9. Flowmeter at outlet of STP is working but it is not showing correct readings as compared to that of inlet flowmeter.
10. Both grit removal units were in operation.
11. Both Mechanical Screens are working. Differential level sensors are not synchronized with mechanical screens hence screens cannot run in auto mode.
12. All Biotowers were in operation. Replacement of net is required for all biotowers.
13. Though overhauling of mechanical screens is completed in rehabilitation period but still considerable amount of plastic waste is reaching the biotowers hence the gap must be checked around mechanical screens or otherwise this plastic waste can choke up the media which will ultimately lower the efficiency of Biotowers.
14. All Aeration tanks are working.
15. In aeration tank no. 1 & 2, air is coming out vigorously from 3-4 points due to which air distribution is not proper in the tank which could affect the quality of treatment in aeration tanks. Maintenance for these tanks must be completed.
16. All Aeration blowers are in working condition & two blowers were found running. Ammeters of blower no. 3 & 4 are not working, please rectify the problem.
17. DO analyzer at the outlet of Aeration tank no. 2 is not working properly, please check & rectify the problem.
18. Pressure transmitter & temperature transmitter are not installed yet on header line of Aeration blowers.
19. All Centrifuges are working along with Sludge Feed pumps and Poly dosing pumps. Sludge generation is 6-7 trolleys per day.
20. All Sludge Recirculation Pumps are in working condition.
21. Both Secondary clarifiers were found in operation.
22. Both booster pumps & both chlorinators are in working condition & chlorine dosing was found to be running at 3 Kg/hr. Residual chlorine was checked & found to be around 0.2 – 0.3 mg/l.
23. Rehabilitation of Leak absorption system is completed. Testing of system for working in auto modewas checked and it was found that air blower & caustic pump start running at 3 ppm, but it must be set around 1 ppm for providing better safety measures. Concessionaire is requested to do the needful.
24. Chlorine analyzer for the effluent is not giving correct values.
25. Minor Seepages from Biotowers & some other units can be seen, and this must be rectified.
26. As per Clause no. 1.6 & 1.7.1 of Concession Agreement, Computer Maintenance Management System (CMMS) must be implemented at all Sites. This is not started yet, Concessionaire to pleasedo the needful.
27. Painting of units in the STP is completed from outside. It is suggested to start the painting work for all units from inside also.

28. All CCTV cameras are working. It is suggested to change the position of CCTV camera at outlet so that it can show the free fall area of effluent at CCT.
29. In SCADA system, flow variation can be seen in recorded values of daily and monthly flow as per site records. Also, there is variation in between flow recorded in SCADA reports and flow recorded in logbooks. This problem must be rectified.
30. There is variation in recorded values of flow from inlet flowmeter at Numayadahi STP and outlet flowmeter of Ghagharnalla MPS, please rectify the problem.
31. There is variation in recorded values of flow from inlet flowmeter at Numayadahi STP and outlet flowmeter of Numayadahi STP, please rectify the problem.
32. At Ghagharnalla MPS,

    a) Generally, it was observed that overflow occurs sometimes during peak time due to deposition of sludge in the path of nalla towards tapping point even after running MPS at full capacity. Hence, UPJN is requested to please look into the matter and do the needful.
    b) Repairing of wall of pump house towards sump is required so that no sewage can go inside the pump house in any situation.
    c) Currently, all HNC pumps (5 new + 1 old) are in working condition.
    d) Currently, there was minor leakage of sewage from the retaining wall at the tapping point of MPS, this must be rectified as raw sewage is going directly into the river.
    e) Both Mechanical screens are working.
    f) Both DG sets are working.
    g) During the shutdown taken in the month of May-21, NRV was taken out from the main header line for maintenance purpose but it is not reinstalled till date. Concessionaire to please do the needful so that effect of back hammering on the pumps can be reduced.
    h) Painting for all units in the MPS is not started yet. Concessionaire to please do the needful.

33. At Sasur Kadheri SPS,

    a) Generally, it was found that raw sewage keeps overflowing from the retaining wall even when the pumping from this SPS is around 25-30 MLD which is around 170 – 200% of the total capacity of SPS i.e., 15 MLD. Due to the amount of overloading on the SPS, overflow of the sewage from retaining wall cannot be stopped. Hence, UPJN is requested to please look into the matter and do the needful.
    b) Currently all submersible pumps in the SPS are OK for operations.
    c) Both Mechanical screens are working.
    d) Both DG sets are OK for operation.
    e) Painting for all units in SPS is in progress.

34. At Lukerganj SPS,
    a) All 6 pumps are OK for operation. It is suggested to complete repairing of old pumps also so that they can be used during emergency situation.
    b) Calibration for the outlet flowmeter is completed.
    c) One mechanical screen is working and one is in maintenance.
    d) Painting for units is in progress
    e) Both DG sets are working.

35. Since COD is announced on 01.11.2020 for all Package – III facilities hence Concessionaire is required to implement following documents as per Clause no. 9 & Part-G in Schedule – 10 of Concession Agreement at the earliest:

    a) Portable samplers must be provided to collect composite samples for monitoring from inlet and outlet of STP as per clause no. 1.3.1 in Part-E of Schedule-10 of CA. Also, all the instruments as mentioned in Table-3 given in clause no. 1.3.1 in Part-E of Schedule-10 of CA must be maintained in the laboratory.
    b) Calibration certificates of all the instruments must be submitted as per clause no. 9.8(a)(viii) of Concession Agreement.
    c) Testing of TN, NH4-N, TP for composite samples each day as per Part-G in Schedule-10 of CA.
    d) Site Diary as per Clause no. 1.7.2 of Part-G in Schedule – 10 of Concession Agreement.
    e) Quarterly report as per Part-G in Schedule-10 of CA.
    f) Monthly Environmental Monitoring Report as per Part-G in Schedule-10 of CA.
    g) Procedure for recording & disposal of complaints.
    h) Safety & Health Records. Incident reports must also be submitted along with action plan.
    i) Periodic reports from all facilities must be uploaded on Central Pollution Control Board's Website.
    j) Scheduled Maintenance Program specifying the impact of Scheduled Maintenance Periods on the Availability of each facility.

## 1.3 Recommendation's

- Some of the issues mentioned above are pending since long time and hence must be rectified at the earliest for enhancing the efficiency of the STP.
- Concessionaire must ensure satisfactory working of Online monitoring system & transmit the data as per requirement.
- All the maintenance jobs required for the observations made above must be done as soon as possible to increase the efficiency of plant.
- Permits must be used for all kind of maintenance jobs whether it is Preventive or Corrective. Concessionaire to please ensure the same.
- All the records must be provided as per the observations made above.
- All logbooks must be filled timely and accurately.
- Testing of samples must be done from outlet of PSTs also for checking the efficiency of PSTs.
- Concessionaire to please ensure that all the testing must be done as per the clause no. 1.7.9 of Part-G in Concession Agreement.
- All the old material obtained due to rehabilitation works in various units must be stacked properly at the identified part of the site and proper record must be maintained.
- It is recommended to follow proper safety measures during O&M, and it must be ensured that workers must wear proper PPEs while doing work at Site.
- More awareness trainings for workers must be given for encouraging them to use PPEs.

# Salori STP, 29 MLD STP at Prayagraj
## INLET FLOW & QUALITY REPORT

| Date | Daily Feed Quantity MLD (Design-29 MLD) | | pH | | BOD (mg/l) | | COD (mg/l) | | TSS (mg/l) | | FECAL COLIFORM | | FRC | DEWATERED SLUDGE | | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | M3 | MLD | Inlet pH (Design-<9) | Final pH (Design-6.5 to 9.0) | Inlet BOD (Design-<250 mg/l) | Final BOD (Design -<20 mg/l) | Inlet COD (Design -<500 mg/l) | Final COD (Design -<50 mg/l) | Inlet TSS (Design-<500 mg/l) | Final TSS (Design -<30 mg/l) | Inlet (Design - NA) | Final (Design - <1000 MPN/100 ml) | Final (Design - 0.2 mg/l) | Outlet Concentration (>20%) | Fecal Coliform (20,00,000 MPN/gTS) | |
| 1-Sep-22 | 12320 | 12.32 | 7.59 | 7.72 | 153 | 16 | 356 | 28 | 317 | 24 | NA | 600 | 0.2 | 24.6 | 1400000 | Plant availability is 100% |
| 2-Sep-22 | 10540 | 10.54 | 7.40 | 7.45 | 156 | 15 | 348 | 24 | 314 | 23 | NA | 500 | 0.3 | 25.4 | 1200000 | Plant availability is 100% |
| 3-Sep-22 | 13020 | 13.0 | 7.52 | 7.64 | 153 | 17 | 356 | 28 | 309 | 24 | NA | 600 | 0.2 | 24.9 | 1300000 | Plant availability is 100% |
| 4-Sep-22 | 20130 | 20.13 | 7.39 | 7.42 | 159 | 18 | 352 | 32 | 305 | 21 | NA | 400 | 0.3 | 24.6 | 1100000 | Plant availability is 100% |
| 5-Sep-22 | 22870 | 22.87 | 7.37 | 7.51 | 159 | 21 | 356 | 28 | 318 | 22 | NA | 500 | 0.2 | 25.4 | 1400000 | Plant availability is 100% |
| 6-Sep-22 | 31630 | 31.63 | 7.41 | 7.60 | 156 | 22 | 352 | 32 | 325 | 26 | NA | 600 | 0.2 | 24.9 | 1200000 | Plant availability is 100% |
| 7-Sep-22 | 33820 | 33.82 | 7.35 | 7.52 | 153 | 24 | 356 | 36 | 310 | 28 | NA | 400 | 0.3 | 25.2 | 1400000 | Plant availability is 100% |
| 8-Sep-22 | 34580 | 34.58 | 7.37 | 7.57 | 156 | 22 | 352 | 40 | 329 | 30 | NA | 700 | 0.2 | 24.6 | 1200000 | Plant availability is 100% |
| 9-Sep-22 | 36760 | 36.76 | 7.39 | 7.54 | 153 | 24 | 356 | 40 | 317 | 33 | NA | 600 | 0.3 | 24.9 | 1300000 | Plant availability is 100% |
| 10-Sep-22 | 32290 | 32.29 | 7.35 | 7.55 | 156 | 21 | 352 | 36 | 325 | 35 | NA | 500 | 0.2 | 25.1 | 1100000 | Plant availability is 100% |
| 11-Sep-22 | 33390 | 33.39 | 7.41 | 7.59 | 156 | 23 | 360 | 40 | 332 | 32 | NA | 400 | 0.2 | 24.7 | 1200000 | Plant availability is 100% |
| 12-Sep-22 | 33830 | 33.83 | 7.39 | 7.48 | 153 | 22 | 356 | 44 | 309 | 35 | NA | 600 | 0.3 | 24.3 | 1400000 | Plant availability is 100% |
| 13-Sep-22 | 34040 | 34.0 | 7.45 | 7.58 | 159 | 24 | 352 | 40 | 316 | 34 | NA | 700 | 0.3 | 25.0 | 1300000 | Plant availability is 100% |
| 14-Sep-22 | 34620 | 34.62 | 7.35 | 7.47 | 156 | 25 | 356 | 44 | 308 | 36 | NA | 500 | 0.2 | 25.2 | 1200000 | Plant availability is 100% |
| 15-Sep-22 | 34020 | 34.0 | 7.42 | 7.59 | 153 | 23 | 352 | 36 | 323 | 33 | NA | 400 | 0.2 | 24.6 | 1100000 | Plant availability is 100% |
| 16-Sep-22 | 32500 | 32.50 | 7.29 | 7.47 | 156 | 27 | 356 | 40 | 302 | 31 | NA | 600 | 0.3 | 24.5 | 1300000 | Plant availability is 100% |
| 17-Sep-22 | 34650 | 34.65 | 7.33 | 7.49 | 153 | 22 | 352 | 44 | 314 | 34 | NA | 500 | 0.2 | 25.1 | 1200000 | Plant availability is 100% |
| 18-Sep-22 | 34680 | 34.68 | 7.35 | 7.48 | 156 | 21 | 360 | 40 | 310 | 36 | NA | 400 | 0.2 | 24.7 | 1400000 | Plant availability is 100% |
| 19-Sep-22 | 32760 | 33.05 | 7.44 | 7.53 | 147 | 20 | 356 | 36 | 333 | 38 | NA | 600 | 0.3 | 24.2 | 1100000 | Plant availability is 100% |
| 20-Sep-22 | 34630 | 35.16 | 7.22 | 7.35 | 153 | 23 | 352 | 40 | 317 | 34 | NA | 500 | 0.2 | 24.6 | 1300000 | Plant availability is 100% |
| 21-Sep-22 | 32620 | 32.62 | 7.45 | 7.59 | 150 | 19 | 356 | 32 | 312 | 27 | NA | 800 | 0.3 | 25.2 | 1700000 | Plant availability is 100% |
| 22-Sep-22 | 34120 | 34.12 | 7.29 | 7.36 | 156 | 20 | 356 | 36 | 310 | 31 | NA | 400 | 0.2 | 24.0 | 1400000 | Plant availability is 100% |
| 23-Sep-22 | 33110 | 33.11 | 7.27 | 7.39 | 162 | 22 | 352 | 32 | 305 | 27 | NA | 500 | 0.3 | 24.2 | 1300000 | Plant availability is 100% |
| 24-Sep-22 | 20130 | 20.13 | 7.39 | 7.48 | 159 | 20 | 348 | 36 | 293 | 25 | NA | 400 | 0.3 | 25.4 | 1100000 | Plant availability is 100% |
| 25-Sep-22 | 21170 | 21.17 | 7.41 | 7.53 | 156 | 21 | 356 | 28 | 295 | 23 | NA | 600 | 0.2 | 25.1 | 1400000 | Plant availability is 100% |
| 26-Sep-22 | 31680 | 31.68 | 7.12 | 7.22 | 153 | 23 | 352 | 32 | 304 | 25 | NA | 700 | 0.3 | 24.2 | 1200000 | Plant availability is 100% |
| 27-Sep-22 | 32570 | 32.57 | 7.31 | 7.39 | 159 | 22 | 360 | 28 | 300 | 27 | NA | 500 | 0.2 | 24.0 | 1300000 | Plant availability is 100% |
| 28-Sep-22 | 33310 | 33.31 | 7.35 | 7.42 | 156 | 20 | 356 | 36 | 315 | 28 | NA | 800 | 0.3 | 24.5 | 1400000 | Plant availability is 100% |
| 29-Sep-22 | 33480 | 33.48 | 6.80 | 7.12 | 162 | 23 | 364 | 36 | 312 | 26 | NA | 700 | 0.3 | 23.7 | 1700000 | Plant availability is 100% |
| 30-Sep-22 | 32550 | 32.55 | 7.29 | 7.37 | 159 | 21 | 360 | 40 | 307 | 29 | NA | 400 | 0.2 | 24.3 | 1300000 | Plant availability is 100% |
| | | | | | | | | | | | | | | | | |
| Average | 29727.33 | 29.75 | 7.35 | 7.48 | 155.60 | 21.37 | 354.93 | 35.47 | 312.70 | 29.23 | NA | 546.67 | 0.25 | 24.70 | 1296666.67 | |

**Source: Logbook of Laboratory at Sewage Treatment Plant**

## 2.2 Inspection Report

| | |
|---|---|
| **Month of Site Inspection** | Sep 2022 |
| **Site Inspectors** | 1. Mr. Santosh Kumar, PM-I, UPJN.<br>2. Mr. Tauseef Ahmed, AE, UPJN.<br>3. Ms. Shilpa, JE, UPJN.<br>4. Mr. Gaurav Gupta, AECOM.<br>5. Mr. Sudhir Kumar Tomar, AECOM.<br>6. Mr. Rahul Kumar Azaad, PWPL.<br>7. Mr. Vaibhav, PWPL |
| **Place(s) of Inspection** | • 29 MLD STP at Salori, Prayagraj.<br>• 29 MLD MPS at Salori, Prayagraj. |

Visit was done on 7th Sep 2022, 15th Sep 2022, 22nd Sep 2022 and following observations were made:

- **Status of Availability:**

| S. No. | Facility Name | Actual Flow Pumped /Received at Facility (MLD) |
|---|---|---|
| 1 | Salori STP | 10.54 to 36.76 |
| 2 | Salori MPS | 10.54 to 36.76 |

Note: 1) Source for above data is site record for flow of STP & MPS.

- **Status of KPIs:**

| S. No. | Parameter Name | Design Value | Parameter Value |
|---|---|---|---|
| 1 | BOD – Effluent | < 30 mg/l | 15 to 25 mg/l |
| 2 | TSS – Effluent | < 50 mg/l | 21 to 38 mg/l |
| 3 | pH – Effluent | 6.5 – 9.0 | 7.35 to 7.72 |
| 4 | Fecal coliform – Effluent | <= 1000 MPN/100 ml | 400 to 700 MPN/100 ml |
| 5 | Consistency – Sludge | > 20 % | 24.20 to 25.90 % |
| 6 | Fecal Coliform – Sludge | < 20,00,000 MPN/gTS | 1100000 to 1400000 MPN/gTS |

Note: 1) Source for above data is site record for Laboratory of STP.

- **Status of Energy Consumption:**

| S. No. | Facility Name | Actual Energy Consumption (KWH/MLD) |
|---|---|---|
| 1 | Salori STP | 66.58 to 156.48 |
| 2 | Salori Associated Infrastructure | 48.35 to 56.47 |

Note: 1) Source for above data is site record for Power Consumption of STP.

- **Status of various units & records at site:**

1. Due to flood, flood department has closed open channel gates of Allahpur drain at 10:15 AM on 16th Aug 2022. Also, tapping point at Amitabh Bachchan Culvert was completely submerged in river water therefore isolation gate for tapping point was closed at 4:15 PM on 16th Aug 2022. Now, when level of water in river Ganga has gone down, flood department has opened gate on 04th Sep 2022 at 3:30 PM and inlet gate at Amitabh Bachchan culvert was opened on 06th Sep 2022 at 6:30 PM.
2. Online analyzer at inlet is working but it is not showing correct values of parameters as compared to lab reports. As per current situation, inlet analyzer requires calibration every day for showing correct values of inlet parameters which is not a correct working condition. Also, KPI reports of this Multiparameter analyzer generated through SCADA system were studied and it was found that variation can be seen in between recorded values of KPIs in laboratory and recorded values of KPIs in reports generated by multiparameter analyzers through SCADA system which is more than prescribed limit given in 'Guidelines for Online Continuous Effluent Monitoring Systems (OCEMS)' by Central Pollution Control Board.
3. Online analyzer at outlet is replaced by new analyzer on 14th Sep 2022 which is currently working. KPI reports of this Multiparameter analyzer generated through SCADA system were studied and it was found that variation can be seen in between recorded values of KPIs in laboratory and recorded values of KPIs in reports generated by multiparameter analyzers through SCADA system which is more than prescribed limit given in 'Guidelines for Online Continuous Effluent Monitoring Systems (OCEMS)' by Central Pollution Control Board. Also, it is observed that errors are coming 7-8 times a day in these SCADA reports for values of BOD, COD and TSS of effluent. Concessionaire is required to rectify the discrepancies as mentioned above and check the working/calibration of Multiparameter Analyzers and get it verified by UPJN/Project Engineer at the earliest.
4. Data transfer from online analyzer at the outlet of STP to CPCB servers is in progress. By studying the graph for the month of Sep-2022 available at the online portal, data was not available from 1:45 PM on 8th Sep 2022 to 4:45 PM on 14th Sep 2022, 9:15 AM on 19th Sep 2022 to 10:45 AM on 19th Sep 2022 and 5:30 PM on 21st Sep 2022 to 5:15 PM on 21st Sep 2022 which may be due to breakage in transmission of data from online analyzers to CPCP servers or some other problem. Also, sudden spikes/drops can be seen in the graphs available at the online portal which is fundamentally not correct. These types of incidents have been observed in past also. Concessionaire is required to rectify these problems.
5. Chlorine analyzer at outlet is removed, Concessionaire is required to install the same per CA but clause no. 1.2.1 and clause no. 1.3.1 in Part-E of Schedule-10 in CA which clearly states that "Online residual chlorine measuring system" is to be installed.
6. Generally, it is found that raw sewage keeps overflowing from the retaining wall at the tapping point of Amitabh Bachchan culvert even when the pumping from this SPS is around 32 - 35 MLD which is around 110 – 120 % of the total capacity of SPS i.e., 29 MLD. Due to the amount of overloading on the SPS and STP and to maintain the quality of effluent as per conditions given in CA, overflow of the sewage from retaining wall cannot be stopped. Hence, UPJN is requested to please look into the matter and do the needful.
7. Flowmeter at inlet of STP is working.
8. Flowmeter at outlet of STP is working but it is not showing correct readings as compared to that of inlet flowmeter.
9. All Grit Removal Units are working.
10. Both Mechanical Screens are working but mechanical screen no.2 is not lifting screenings efficiently. Though the screens are running in auto mode through timer, differential level

sensors must also be made operational for running mechanical screens more efficiently through level difference during peak and lean period. Concessionaire is required to rectify the problem.

11. Both FAB units are working.
12. DO analyzers for both FAB units are not working, please rectify the problem.
13. All Aeration blowers are working.
14. Both clarisettlers are working. In Clarisettler no. 1, levelling of outlet launders must be checked as supernatant is not coming equally in all outlet lauders & this can affect the quality of effluent. Concessionaire to please look into the matter & rectify the problem at the earliest.
15. In clarisettlers it is observed that when agitators are operated, sludge starts coming to the top due to which quality deteriorates. Hence, it is suggested to do necessary modifications in agitators so that the problem can be rectified.
16. Quality of effluent is satisfactory.
17. For Sludge dewatering unit, installation of instruments (flowmeter for poly dosing line, etc.) is pending, Concessionaire to please do the needful.
18. Both Sludge transfer pumps for Clarisettler are working.
19. Both Filtrate pumps are working.
20. Both chlorinators and chlorine booster pumps are working.
21. Leak absorption system was checked in auto mode, but it was not working. Concessionaire is required to rectify the problem. Also, as instructed earlier also, checklist forthe same must be prepared and recorded properly every month.
22. Thickener unit is working.
23. It was found that sludge is being dumped within the STP. Concessionaire to please look into the matter and dump sludge only in the land which is being allotted by UPJN for sludge disposal.
24. At Salori MPS, all pumps are OK for operation. Since the programming for running pumps in auto mode is completed, it is suggested to operate them in auto mode for optimum performance.
25. At Salori MPS, it is suggested to rectify problems in old pumps also so that they be used in emergency situation. Currently, all old pumps are not in working condition.
26. At Salori MPS, one coarse screen is working, and one coarse screen is in maintenance before sump due to which lot of waste is passing and pumps are getting choked and lot of wear and tear is happening in the pumps. Hence, UPJN is requested to instruct M/s Passavant to rectify the problem.
27. As already discussed, all the waste material obtained during Rehabilitation Works must be removed from the site as per point (h) in clause 8.8 of Concession Agreement.
28. As per Clause no. 1.6 & 1.7.1 of Concession Agreement, Computer Maintenance Management System (CMMS) must be implemented at all Sites. This must be implemented from day 1 of O&M period but the same is not completed till date, Concessionaire to please do the needful.
29. Installation & commissioning of Public Address System is not completed yet.
30. Installation of FeCl3 dosing system is completed but it is not made operational yet. Concessionaire to please complete the work at the earliest so that the quality of effluent can be improved further.
31. In SCADA system, flow variation can be seen in recorded values of daily and monthly flow as per site records. Also, there is variation in between flow recorded in SCADA reports and flow recorded in logbooks. This problem must be rectified.
32. There is variation in recorded values of flow from inlet flowmeter at Salori STP and outlet flowmeter of Salori STP, please rectify the problem.

33. Housekeeping in dewatering area must be improved, lot of sludge can be seen scattered in this area.
34. All CCTV cameras are working
35. Since COD is announced on 01.11.2020 for all Package – III facilities hence Concessionaire is required to implement following documents as per Clause no. 9 & Part-G in Schedule – 10 of Concession Agreement at the earliest:

    a) Portable samplers must be provided to collect composite samples for monitoring from inlet and outlet of STP as per clause no. 1.3.1 in Part-E of Schedule-10 of CA. Also, all the instruments as mentioned in Table-3 given in clause no. 1.3.1 in Part-E of Schedule-10 of CA must be maintained in the laboratory.
    b) Calibration certificates of all the instruments must be submitted as per clause no. 9.8(a)(viii) of Concession Agreement.
    c) Testing of TN, NH4-N, TP for composite samples each day as per Part-G in Schedule-10 of CA.
    d) Site Diary as per Clause no. 1.7.2 of Part-G in Schedule – 10 of Concession Agreement.
    e) Quarterly report as per Part-G in Schedule-10 of CA.
    f) Monthly Environmental Monitoring Report as per Part-G in Schedule-10 of CA.
    g) Procedure for recording & disposal of complaints.
    h) Safety & Health Records. Incident reports must also be submitted along with action plan.

## 2.3 Recommendation's

- Concessionaire must ensure satisfactory working of Online monitoring system & transmit the data as per requirement.
- All the maintenance jobs required for the observations made above must be done as soon as possible to increase the efficiency of plant.
- Permits must be used for all kind of maintenance jobs whether it is Preventive or Corrective. Concessionaire to please ensure the same.
- All the records must be provided as per the observations made above.
- All logbooks must be filled timely and accurately.
- Testing of samples must be done from outlet of PSTs also for checking the efficiency of PSTs.
- Concessionaire to please ensure that all the testing must be done as per the clause no. 1.7.9 of Part-G in Concession Agreement.
- All the old material obtained due to rehabilitation works in various units must be stacked properly at the identified part of the site and proper record must be maintained.
- It is recommended to follow proper safety measures during O&M, and it must be ensured that workers must wear proper PPEs while doing work at Site.
- More awareness trainings for workers must be given for encouraging them to use PPEs.

# Kodra STP, 25 MLD STP at Prayagraj
## INLET FLOW & QUALITY REPORT

| Date | Daily Feed Quantity MLD (Design- 25 MLD) | | pH | | BOD (mg/l) | | COD (mg/l) | | TSS (mg/l) | | FECAL COLIFORM | | FRC | DEWATERED SLUDGE | | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | M3 | MLD | Inlet pH (Design <9) | Final pH (Design- 6.5 to 9.0) | Inlet BOD (Design- <250 mg/l) | Final BOD (Design - <20 mg/l) | Inlet COD (Design- <500 mg/l) | Final COD (Design <50 mg/l) | Inlet TSS (Design- <500 mg/l) | Final TSS (Design - <30 mg/l) | Inlet (Design - NA) | Final (Design - <1000 MPN/100 ml) | Final (Design - 0.2 mg/l) | Outlet Concentration (>20%) | Fecal Coliform (20,00,000 MPN/gTS) | |
| 1-Sep-22 | 26140 | 26.14 | 7.39 | 7.3 | 116 | 12 | 272 | 36 | 245 | 22 | NA | 500 | 0.3 | 24.14 | 1200000 | Plant availability is 100% |
| 2-Sep-22 | 25810 | 25.81 | 7.36 | 7.27 | 123 | 14 | 296 | 40 | 258 | 19 | NA | 700 | 0.2 | 23.67 | 1400000 | Plant availability is 100% |
| 3-Sep-22 | 28530 | 28.53 | 7.58 | 7.48 | 130 | 15 | 288 | 36 | 265 | 20 | NA | 600 | 0.3 | 24.28 | 1700000 | Plant availability is 100% |
| 4-Sep-22 | 25900 | 25.9 | 7.31 | 7.54 | 126 | 13 | 304 | 32 | 276 | 22 | NA | 500 | 0.3 | 23.43 | 1300000 | Plant availability is 100% |
| 5-Sep-22 | 25280 | 25.28 | 7.41 | 7.5 | 133 | 16 | 312 | 40 | 268 | 19 | NA | 700 | 0.2 | 23.84 | 1400000 | Plant availability is 100% |
| 6-Sep-22 | 25780 | 25.78 | 7.27 | 7.43 | 130 | 14 | 300 | 32 | 282 | 21 | NA | 400 | 0.3 | 22.78 | 1200000 | Plant availability is 100% |
| 7-Sep-22 | 26960 | 26.96 | 7.36 | 7.54 | 136 | 15 | 336 | 44 | 331 | 19 | NA | 600 | 0.3 | 24.12 | 1400000 | Plant availability is 100% |
| 8-Sep-22 | 27070 | 27.07 | 7.18 | 7.37 | 133 | 13 | 328 | 40 | 310 | 22 | NA | 500 | 0.2 | 23.38 | 1300000 | Plant availability is 100% |
| 9-Sep-22 | 27790 | 27.79 | 7.45 | 7.31 | 140 | 14 | 320 | 36 | 295 | 20 | NA | 700 | 0.3 | 23.89 | 1400000 | Plant availability is 100% |
| 10-Sep-22 | 25600 | 25.6 | 7.28 | 7.39 | 133 | 12 | 324 | 40 | 286 | 21 | NA | 400 | 0.2 | 24.12 | 1700000 | Plant availability is 100% |
| 11-Sep-22 | 28310 | 28.31 | 7.34 | 7.46 | 143 | 15 | 316 | 32 | 301 | 18 | NA | 600 | 0.3 | 22.86 | 1300000 | Plant availability is 100% |
| 12-Sep-22 | 28530 | 28.53 | 7.24 | 7.36 | 136 | 13 | 328 | 40 | 289 | 22 | NA | 500 | 0.2 | 23.95 | 1200000 | Plant availability is 100% |
| 13-Sep-22 | 22480 | 22.48 | 7.41 | 7.53 | 140 | 14 | 324 | 36 | 308 | 20 | NA | 700 | 0.3 | 24.23 | 1400000 | Plant availability is 100% |
| 14-Sep-22 | 27800 | 27.8 | 7.34 | 7.47 | 133 | 12 | 312 | 40 | 278 | 21 | NA | 500 | 0.3 | 23.48 | 1700000 | Plant availability is 100% |
| 15-Sep-22 | 19870 | 19.87 | 7.29 | 7.41 | 143 | 15 | 320 | 32 | 285 | 19 | NA | 600 | 0.2 | 22.67 | 1300000 | Plant availability is 100% |
| 16-Sep-22 | 19820 | 19.82 | 7.39 | 7.58 | 136 | 13 | 328 | 40 | 292 | 22 | NA | 400 | 0.3 | 23.89 | 1200000 | Plant availability is 100% |
| 17-Sep-22 | 18980 | 18.98 | 7.45 | 7.66 | 130 | 14 | 316 | 32 | 274 | 19 | NA | 700 | 0.2 | 22.94 | 1300000 | Plant availability is 100% |
| 18-Sep-22 | 22760 | 22.76 | 7.21 | 7.54 | 140 | 13 | 304 | 36 | 280 | 21 | NA | 500 | 0.3 | 23.58 | 1700000 | Plant availability is 100% |
| 19-Sep-22 | 28150 | 28.15 | 7.34 | 7.48 | 133 | 12 | 320 | 40 | 268 | 18 | NA | 600 | 0.2 | 23.91 | 1400000 | Plant availability is 100% |
| 20-Sep-22 | 30060 | 30.06 | 7.41 | 7.58 | 136 | 14 | 316 | 44 | 288 | 20 | NA | 400 | 0.3 | 24.41 | 1200000 | Plant availability is 100% |
| 21-Sep-22 | 23640 | 23.64 | 7.47 | 7.31 | 130 | 15 | 296 | 40 | 277 | 18 | NA | 500 | 0.3 | 22.86 | 1400000 | Plant availability is 100% |
| 22-Sep-22 | 22390 | 22.39 | 7.36 | 7.48 | 133 | 13 | 288 | 36 | 259 | 21 | NA | 700 | 0.2 | 23.67 | 1300000 | Plant availability is 100% |
| 23-Sep-22 | 27570 | 27.57 | 7.3 | 7.43 | 126 | 12 | 300 | 32 | 267 | 19 | NA | 600 | 0.3 | 24.08 | 1400000 | Plant availability is 100% |
| 24-Sep-22 | 26230 | 26.23 | 7.42 | 7.59 | 130 | 14 | 292 | 36 | 255 | 20 | NA | 400 | 0.3 | 23.38 | 1700000 | Plant availability is 100% |
| 25-Sep-22 | 27340 | 27.34 | 7.36 | 7.48 | 136 | 15 | 284 | 40 | 239 | 19 | NA | 500 | 0.2 | 23.87 | 1200000 | Plant availability is 100% |
| 26-Sep-22 | 27460 | 27.46 | 7.29 | 7.49 | 140 | 12 | 296 | 36 | 259 | 21 | NA | 700 | 0.3 | 22.74 | 1300000 | Plant availability is 100% |
| 27-Sep-22 | 27510 | 27.51 | 7.24 | 7.38 | 133 | 14 | 308 | 32 | 276 | 20 | NA | 600 | 0.2 | 22.18 | 1200000 | Plant availability is 100% |
| 28-Sep-22 | 26900 | 26.9 | 7.42 | 7.03 | 143 | 16 | 320 | 36 | 268 | 18 | NA | 800 | 0.3 | 23.12 | 1400000 | Plant availability is 100% |
| 29-Sep-22 | 26430 | 26.43 | 7.35 | 7.47 | 136 | 13 | 328 | 40 | 286 | 22 | NA | 500 | 0.2 | 23.41 | 1700000 | Plant availability is 100% |
| 30-Sep-22 | 25670 | 25.67 | 7.28 | 7.54 | 140 | 15 | 316 | 32 | 279 | 19 | NA | 700 | 0.3 | 24.08 | 1400000 | Plant availability is 100% |
| | | | | | | | | | | | | | | | | |
| Average | 25758.67 | 25.76 | 7.35 | 7.45 | 133.90 | 13.73 | 309.73 | 36.93 | 278.13 | 20.07 | NA | 570.00 | 0.26 | 23.57 | 1390000.00 | |

**Source: Logbook of Laboratory at Sewage Treatment Plant**

## 3.2 Inspection Report

| | |
|---|---|
| **Month of Site Inspection** | September 2022 |
| **Site Inspectors** | 1. Mr. Santosh Kumar PM-I, UPJN.<br>2. Mr. Tauseef Ahmed, AE, UPJN.<br>3. Mr. Narendra, JE, UPJN.<br>4. Mr. Gaurav Gupta, AECOM.<br>5. Mr. Sudhir Kumar Tomar, AECOM.<br>6. Mr. Rahul Azaad, PWPL.<br>7. Mr. Rajan, PWPL. |
| **Place(s) of Inspection** | • 25 MLD STP at Kodra, Prayagraj<br>• 25 MLD MPS at Kodra, Prayagraj |

Visit was done on 3rd Sep 2022, 13th Sep 2022, 21st Sep 2022, and following observations were made:

- **Status of Availability:**

| S. No. | Facility Name | Actual Flow Pumped /Received at Facility (MLD) |
|---|---|---|
| 1 | Kodra STP | 18.98 to 30.06 |
| 2 | Kodra MPS | 18.98 to 30.06 |

Note: 1) Source for above data is Register for flow record of STP & MPS.

- **Status of KPIs:**

| S. No. | Parameter Name | Design Value | Parameter Value |
|---|---|---|---|
| 1 | BOD – Effluent | < 20 mg/l | 12 to 16 mg/l |
| 2 | TSS – Effluent | < 30 mg/l | 18 to 22 mg/l |
| 3 | pH – Effluent | 6.5 – 9.0 | 7.27 to 7.66 |
| 4 | Fecal coliform – Effluent | <= 1000 MPN/100 ml | 400 to 700 MPN/100 ml |
| 5 | Consistency – Sludge | > 20 % | 22.67 to 24.41% |
| 6 | Fecal Coliform – Sludge | < 20,00,000 MPN/gTS | 1200000 to 1700000 MPN/gTS |

Note: 1) Source for above data is Register for Laboratory of STP.

- **Status of Energy Consumption:**

| S. No. | Facility Name | Actual Energy Consumption (KWH/MLD) |
|---|---|---|
| 1 | Kodra STP | 78.16 to 109.71 |
| 2 | Kodra Associated Infrastructure | 94.84 to 103.13 |

Note: 1) Source for above data is Register for Power Consumption Record of STP.

- **Status of various units & records at site:**

1. Process analyzers at outlet is working. Validation of Calibration was done on 03rd Sep 2022 in presence of representatives of Aaxis Nano Technologies (OEM of Multiparameter analyzer) with the help of stock solutions of pH, COD, TSS and a sample was collected from outlet chamber which was tested in laboratory as well as with analyzer and following were the results:

| S. No. | Parameters | Lab Value (mg/l) | Online Value (mg/l) | Variation (%) |
|---|---|---|---|---|
| | pH | 7.54 | 7.17 | -0.37 |
| | BOD | 15.00 | 12.90 | -14.00 % |
| | COD | 40.00 | 38.20 | -4.50 % |
| | TSS | 19.00 | 18.00 | -5.26 % |

2. Retaining wall for the nearby drain is damaged due to the rain and it is not repaired yet. Most of the Raw Sewage is going into the Ganga River. Concessionaire is suggested to rectify it on urgent basis.
3. Due to flood, tapping point at Kodra MPS was completely submerged in river water therefore isolation gate for tapping point is closed at 9:32 AM on 18th Aug 2022. Currently, raw sewage from Vivekanand park SPS and Kalimandir SPS is coming into the STP only. Now, when level of water in river has gone down, isolation gate for tapping point is opened at 9:36 AM on 03rd Sep 2022.
4. Online analyzer at Inlet is not working. This is a long-term pending issue and must be rectified at the earliest.
5. Online analyzer at outlet is working. Validation of Calibration was done in presence of representatives of Aaxis Nano Technologies (OEM of Multiparameter analyzer) along with UPJN officials with the help of stock solutions of pH, COD, TSS on 03rd Sep 2022. Since then, reports generated through SCADA system were studied and it was found that still variation can be seen in between recorded values of KPIs in laboratory and recorded values of KPIs in reports generated by multiparameter analyzers through SCADA system which is more than prescribed limit given in 'Guidelines for Online Continuous Effluent Monitoring Systems (OCEMS)' by Central Pollution Control Board. Also, it is observed that errors are coming 7-8 times a day in these SCADA reports for values of BOD, COD and TSS of effluent and sudden spikes can be seen in the values of parameters given in the report which is fundamentally not correct. Concessionaire is required to rectify the discrepancies as mentioned above and check the working/calibration of Multiparameter Analyzers and get it verified by UPJN/Project Engineer at the earliest.
6. Data transfer from online analyzer at the outlet of STP to CPCB servers is in progress. By studying the graph of Sep-22 available at the online portal, it is found that graph is breaking at several points during the month which may be due to breakage in transmission of data from online analyzers to CPCP servers or some other problem. Also, sudden spikes/drops can be seen in the graphs available at the online portal which is fundamentally not correct. These types of incidents have been observed in past also. Concessionaire is required to rectify these problems.
7. Flowmeter at inlet of STP is working.
8. Flowmeter at outlet of STP is working but it is not showing correct readings as compared to that of inlet flowmeter.
9. Both grit removal unit are working.
10. Both Mechanical Fine Screens at PTU are working. Though the screens are running in auto mode through timer, differential level sensors must also be made operational for

running mechanical screens more efficiently through level difference during peak and lean period.

11. All Biotowers are working. Small amount of plastic waste is reaching the biotowers which must be rectified by doing overhauling of mechanical screens at PTU.
12. Replacement of net is required for all biotowers.
13. All Aeration tanks are working.
14. In aeration tank no. 1 & 2, air is coming out vigorously from 3-4 points due to which air distribution is not proper in the tank which could affect the quality of treatment in aeration tanks. Maintenance for these tanks is required at the earliest.
15. Both DO Analyzer are not working at aeration tank.
16. All Aeration blowers are working.
17. All Centrifuges are in working condition.
18. Drainage system must be provided near the sludge collection area of dewatering system for avoiding sludge accumulation.
19. All Sludge Recirculation Pumps are working.
20. Both Centrifuge Feed Pumps are working.
21. Both Secondary Clarifiers are working.
22. Thickener unit is working.
23. Both Chlorine Dosing Systems are working. Residual chlorine in effluent was found to be around 0.2 to 0.3 mg/l.
24. Chlorine analyzer for the effluent is not giving correct values.
25. It is continuously observed that dewatered sludge is being dumped inside the plant. Concessionaire is required to dump the dewatered sludge in the place given by UPJN.
26. In SCADA system, flow variation can be seen in recorded values of daily and monthly flow as per site records. Also, there is variation in between flow recorded in SCADA reports and flow recorded in logbooks. This problem must be rectified.
27. There is variation in recorded values of flow from inlet flowmeter at Kodra STP and outlet flowmeter of Kodra STP, please rectify the problem.
28. Both Mechanical coarse Screens at MPS are working. Though the screens are running in auto mode through timer, differential level sensors must also be made operational for running mechanical screens more efficiently through level difference during peak and lean period.
29. At Kodra MPS, all 6 pumps are OK for operation. Electrical panel for one pump is under maintenance. Pressure transmitter is not installed in common header line of pumps yet. Also, pumps must be kept in auto mode so that they can start & stop on the basis of level in the sump.
30. At Kodra MPS, it is suggested to rectify problems in old pumps also so that they be used in emergency situation. Currently, all old pumps are not in working condition.
31. Landscaping of site must be improved; it needs to be made better.
32. As already discussed, all the waste material obtained during Rehabilitation Works must be removed from the site as per point (h) in clause 8.8 of Concession Agreement.
33. As per Clause no. 1.6 & 1.7.1 of Concession Agreement, Computer Maintenance Management System (CMMS) must be implemented at all Sites. This is not started yet, Concessionaire to please do the needful.
34. Installation of Public Address System is done but its commissioning is not completed yet.
35. Painting of units in the STP is completed from outside. It is suggested to start the painting work for all units from inside also.
36. Since COD is announced on 01.11.2020 for all Package – III facilities hence Concessionaire is required to implement following documents as per Clause no. 9 & Part-G in Schedule – 10 of Concession Agreement at the earliest:

a) Portable samplers must be provided to collect composite samples for monitoring from inlet and outlet of STP as per clause no. 1.3.1 in Part-E of Schedule-10 of CA. Also, all the instruments as mentioned in Table-3 given in clause no. 1.3.1 in Part-E of Schedule-10 of CA must be maintained in the laboratory.
b) Calibration certificates of all the instruments must be submitted as per clause no. 9.8(a)(viii) of Concession Agreement.
c) Testing of TN, NH4-N, TP for composite samples each day as per Part-G in Schedule-10 of CA.
d) Site Diary as per Clause no. 1.7.2 of Part-G in Schedule – 10 of Concession Agreement.
e) Quarterly report as per Part-G in Schedule-10 of CA.
f) Monthly Environmental Monitoring Report as per Part-G in Schedule-10 of CA.
g) Procedure for recording & disposal of complaints.
h) Safety & Health Records. Incident reports must also be submitted along with action plan.
i) Periodic reports from all facilities must be uploaded on Central Pollution Control Board's Website.
j) Scheduled Maintenance Program specifying the impact of Scheduled Maintenance Periods on the Availability of each facility.

## 3.3 Recommendation's

- Some of the issues mentioned above are pending since long time and hence must be rectified at the earliest for enhancing the efficiency of the STP.
- Concessionaire must ensure satisfactory working of Online monitoring system & transmit the data as per requirement.
- All the maintenance jobs required for the observations made above must be done as soon as possible to increase the efficiency of plant.
- Permits must be used for all kind of maintenance jobs whether it is Preventive or Corrective. Concessionaire to please ensure the same.
- All the records must be provided as per the observations made above.
- All logbooks must be filled timely and accurately.
- Testing of samples must be done from outlet of PSTs also for checking the efficiency of PSTs.
- Concessionaire to please ensure that all the testing must be done as per the clause no. 1.7.9 of Part-G in Concession Agreement.
- All the old material obtained due to rehabilitation works in various units must be stacked properly at the identified part of the site and proper record must be maintained.
- It is recommended to follow proper safety measures during O&M, and it must be ensured that workers must wear proper PPEs while doing work at Site.
- More awareness trainings for workers must be given for encouraging them to use PPEs.

# Ponghat STP, 10 MLD STP at Prayagraj
## INLET FLOW & QUALITY REPORT

| Date | Daily Feed Quantity MLD (Design- 10 MLD) | | pH | | BOD (mg/l) | | COD (mg/l) | | TSS (mg/l) | | FECAL COLIFORM | | FRC | DEWATERED SLUDGE | | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | M3 | MLD | Inlet pH (Design- <9) | Final pH (Design- 6.5 to 9.0) | Inlet BOD (Design- <250 mg/l) | Final BOD (Design - <20 mg/l) | Inlet COD (Design- <500 mg/l) | Final COD (Design - <50 mg/l) | Inlet TSS (Design- <500 mg/l) | Final TSS (Design - <30 mg/l) | Inlet (Design - NA) | Final (Design - <1000 MPN/100 ml) | Final (Design - 0.2 mg/l) | Outlet Concentration (>20%) | Fecal Coliform (20,00,000 MPN/gTS) | |
| 1-Sep-22 | 12480 | 12.48 | 7.16 | 7.44 | 123 | 14 | 312 | 36 | 266 | 22 | NA | 400 | 0.3 | 22.13 | 1200000 | Plant availability is 100% |
| 2-Sep-22 | 6510 | 6.51 | 7.12 | 7.36 | 130 | 16 | 300 | 40 | 251 | 24 | NA | 700 | 0.2 | 21.88 | 1400000 | Plant availability is 100% |
| 3-Sep-22 | 5010 | 5.01 | 7.17 | 7.41 | 120 | 15 | 308 | 36 | 257 | 21 | NA | 600 | 0.2 | 22.44 | 1300000 | Plant availability is 100% |
| 4-Sep-22 | 7600 | 7.60 | 7.24 | 7.47 | 126 | 13 | 316 | 40 | 271 | 23 | NA | 500 | 0.3 | 23.14 | 1700000 | Plant availability is 100% |
| 5-Sep-22 | 8250 | 8.25 | 7.18 | 7.51 | 133 | 15 | 304 | 44 | 263 | 20 | NA | 600 | 0.2 | 22.38 | 1400000 | Plant availability is 100% |
| 6-Sep-22 | 10330 | 10.33 | 7.37 | 7.58 | 139 | 16 | 312 | 40 | 284 | 22 | NA | 700 | 0.3 | 22.78 | 1300000 | Plant availability is 100% |
| 7-Sep-22 | 11370 | 11.37 | 7.29 | 7.48 | 143 | 14 | 308 | 36 | 269 | 19 | NA | 400 | 0.2 | 23.21 | 1700000 | Plant availability is 100% |
| 8-Sep-22 | 9830 | 9.83 | 7.21 | 7.39 | 136 | 15 | 316 | 44 | 276 | 23 | NA | 500 | 0.3 | 23.64 | 1200000 | Plant availability is 100% |
| 9-Sep-22 | 8680 | 8.68 | 7.32 | 7.45 | 130 | 14 | 304 | 40 | 285 | 21 | NA | 700 | 0.3 | 22.67 | 1400000 | Plant availability is 100% |
| 10-Sep-22 | 8930 | 8.93 | 7.27 | 7.52 | 140 | 16 | 312 | 36 | 273 | 22 | NA | 600 | 0.2 | 23.29 | 1300000 | Plant availability is 100% |
| 11-Sep-22 | 13350 | 13.35 | 7.23 | 7.46 | 146 | 15 | 320 | 44 | 265 | 24 | NA | 500 | 0.3 | 21.77 | 1700000 | Plant availability is 100% |
| 12-Sep-22 | 13130 | 13.13 | 7.15 | 7.36 | 139 | 14 | 308 | 40 | 271 | 21 | NA | 400 | 0.2 | 23.28 | 1400000 | Plant availability is 100% |
| 13-Sep-22 | 7880 | 7.88 | 7.22 | 7.41 | 133 | 16 | 300 | 44 | 258 | 23 | NA | 700 | 0.2 | 22.31 | 1300000 | Plant availability is 100% |
| 14-Sep-22 | 10800 | 10.80 | 7.26 | 7.51 | 140 | 13 | 316 | 36 | 269 | 20 | NA | 500 | 0.3 | 21.96 | 1200000 | Plant availability is 100% |
| 15-Sep-22 | 10910 | 10.91 | 7.34 | 7.57 | 136 | 15 | 304 | 40 | 280 | 22 | NA | 600 | 0.3 | 22.67 | 1400000 | Plant availability is 100% |
| 16-Sep-22 | 13520 | 13.52 | 7.28 | 7.61 | 139 | 14 | 312 | 36 | 276 | 24 | NA | 700 | 0.2 | 23.27 | 1300000 | Plant availability is 100% |
| 17-Sep-22 | 11610 | 11.61 | 7.21 | 7.49 | 143 | 15 | 320 | 40 | 261 | 23 | NA | 400 | 0.3 | 22.47 | 1700000 | Plant availability is 100% |
| 18-Sep-22 | 11700 | 11.70 | 7.30 | 7.58 | 133 | 16 | 308 | 44 | 272 | 21 | NA | 500 | 0.2 | 21.58 | 1400000 | Plant availability is 100% |
| 19-Sep-22 | 9380 | 9.38 | 7.33 | 7.66 | 130 | 14 | 300 | 36 | 256 | 23 | NA | 600 | 0.3 | 22.71 | 1200000 | Plant availability is 100% |
| 20-Sep-22 | 12510 | 12.51 | 7.22 | 7.51 | 136 | 15 | 316 | 40 | 264 | 22 | NA | 500 | 0.2 | 21.36 | 1300000 | Plant availability is 100% |
| 21-Sep-22 | 13190 | 13.19 | 7.25 | 7.56 | 133 | 13 | 304 | 36 | 270 | 21 | NA | 700 | 0.2 | 22.53 | 1400000 | Plant availability is 100% |
| 22-Sep-22 | 13000 | 13.00 | 7.19 | 7.48 | 139 | 15 | 320 | 40 | 260 | 20 | NA | 500 | 0.3 | 23.35 | 1700000 | Plant availability is 100% |
| 23-Sep-22 | 12940 | 12.94 | 7.23 | 7.53 | 136 | 14 | 312 | 44 | 268 | 22 | NA | 600 | 0.3 | 22.44 | 1300000 | Plant availability is 100% |
| 24-Sep-22 | 13300 | 13.30 | 7.27 | 7.42 | 130 | 13 | 308 | 36 | 273 | 24 | NA | 700 | 0.2 | 21.77 | 1200000 | Plant availability is 100% |
| 25-Sep-22 | 13180 | 13.18 | 7.22 | 7.55 | 136 | 14 | 316 | 40 | 266 | 21 | NA | 400 | 0.3 | 23.14 | 1400000 | Plant availability is 100% |
| 26-Sep-22 | 13290 | 13.29 | 7.16 | 7.39 | 133 | 15 | 304 | 44 | 276 | 23 | NA | 500 | 0.2 | 22.29 | 1300000 | Plant availability is 100% |
| 27-Sep-22 | 16320 | 16.32 | 7.24 | 7.64 | 140 | 14 | 320 | 36 | 281 | 22 | NA | 600 | 0.3 | 21.86 | 1200000 | Plant availability is 100% |
| 28-Sep-22 | 13480 | 13.48 | 7.31 | 7.54 | 136 | 16 | 312 | 40 | 292 | 21 | NA | 700 | 0.2 | 22.87 | 1700000 | Plant availability is 100% |
| 29-Sep-22 | 12960 | 12.96 | 7.26 | 7.61 | 143 | 13 | 324 | 36 | 278 | 20 | NA | 500 | 0.2 | 21.56 | 1400000 | Plant availability is 100% |
| 30-Sep-22 | 13660 | 13.66 | 7.18 | 7.59 | 139 | 15 | 316 | 40 | 265 | 22 | NA | 400 | 0.3 | 22.16 | 1200000 | Plant availability is 100% |
| | | | | | | | | | | | | | | | | |
| Average | 11383.33 | 11.38 | 7.24 | 7.50 | 135.33 | 14.57 | 311.07 | 39.47 | 269.87 | 21.87 | NA | 556.67 | 0.25 | 22.50 | 1386666.67 | |

**Source: Logbook of Laboratory at Sewage Treatment Plant**

## 4.2 Inspection Report

| | |
|---|---|
| **Month of Site Inspection** | Sep 2022 |
| **Site Inspectors** | 1. Mr. Santosh Kumar PM-I, UPJN.<br>2. Mr. Tauseef Ahamed, AE UPJN.<br>3. Mr. Narendra, JE UPJN.<br>4. Mr. Gaurav Gupta, AECOM.<br>5. Mr. Sudhir Kumar Tomar, AECOM.<br>6. Mr. Rahul Azaad, PWPL.<br>7. Mr. Anjani, PWPL. |
| **Place(s) of Inspection** | • 10 MLD STP at Ponghat, Prayagraj<br>• 10 MLD MPS at Ponghat, Prayagraj |

Visit was done on 2nd Sep 2022, 14th Sep 2022, 21st Sep 2022 and following observations were made:

- **Status of Availability:**

| S. No. | Facility Name | Actual Flow Pumped /Received at Facility (MLD) |
|---|---|---|
| 1 | Ponghat STP | 5.01 to 13.52 |
| 2 | Ponghat MPS | 5.01 to 13.52 |

Note: 1) Source for above data is Register for flow record of STP & MPS.

- **Status of KPIs:**

| S. No. | Parameter Name | Design Value | Parameter Value |
|---|---|---|---|
| 1 | BOD – Effluent | < 20 mg/l | 13 to 16 |
| 2 | TSS – Effluent | < 30 mg/l | 19 to 24 |
| 3 | pH – Effluent | 6.5 – 9.0 | 7.52 to 7.76 |
| 4 | Fecal coliform – Effluent | <= 1000 MPN/100 ml | 400 to 700 |
| 5 | Consistency – Sludge | > 20 % | 21.36 to 23.64 |
| 6 | Fecal Coliform – Sludge | < 20,00,000 MPN/gTS | 1200000 to 1700000 |

Note: 1) Source for above data is Register for Laboratory of STP.

- **Status of Energy Consumption:**

| S. No. | Facility Name | Actual Energy Consumption (KWH/MLD) |
|---|---|---|
| 1 | Ponght STP | 86.43 to 311.38 |
| 2 | Ponght Associated Infrastructure | 72.92 to 113.77 |

Note: 1) Source for above data is Register for Power Consumption Record of STP.

- **Status of various units & records at site:**

1. Process analyzers at outlet is working. Validation of Calibration was done on 02nd Sep 2022 in presence of representatives of Aaxis Nano Technologies (OEM of Multiparameter analyzer) with the help of stock solutions of pH, COD, TSS and a sample was collected from outlet chamber which was tested in laboratory as well as with analyzer and following were the results:

| S. No. | Parameters | Lab Value (mg/l) | Online Value (mg/l) | Variation (%) |
|---|---|---|---|---|
| | pH | 7.38 | 7.05 | -0.33 |
| | BOD | 8.00 | 9.60 | +20.00 % |
| | COD | 36.00 | 31.80 | -11.67 % |
| | TSS | 23.00 | 11.80 | -48.69 % |

2. There is major leakage in the inlet pipe of tapping point for Ponghat MPS due to which nearly 3-4 MLD of raw sewage is going into the river without treatment. Hence, Concessionaire is required to rectify the problem at the earliest.
3. Online analyzer at inlet is working but it is not showing correct values of parameters as compared to lab reports. As per current situation, inlet analyzer requires calibration every day for showing correct values of inlet parameters which is not a correct working condition. Also, KPI reports of this Multiparameter analyzer generated through SCADA system were studied and it was found that variation can be seen in between recorded values of KPIs in laboratory and recorded values of KPIs in reports generated by multiparameter analyzers through SCADA system which is more than prescribed limit given in 'Guidelines for Online Continuous Effluent Monitoring Systems (OCEMS)' by Central Pollution Control Board.
4. Online analyzer at outlet is working. Validation of Calibration was done in presence of representatives of Aaxis Nano Technologies (OEM of Multiparameter analyzer) along with UPJN officials with the help of stock solutions of pH, COD, TSS on 02nd Sep 2022. Since then, reports generated through SCADA system were studied and it was found that still variation can be seen in between recorded values of KPIs in laboratory and recorded values of KPIs in reports generated by multiparameter analyzers through SCADA system which is more than prescribed limit given in 'Guidelines for Online Continuous Effluent Monitoring Systems (OCEMS)' by Central Pollution Control Board. Also, it is observed that errors are coming 7-8 times a day in these SCADA reports for values of BOD, COD and TSS of effluent and sudden spikes can be seen in the values of parameters given in the report which is fundamentally not correct. Concessionaire is required to rectify the discrepancies as mentioned above and check the working/calibration of Multiparameter Analyzers and get it verified by UPJN/Project Engineer at the earliest.
5. Data transfer from online analyzer at the outlet of STP to CPCB servers is in progress. By studying the graph of Sep-22 available at the online portal, it is found that graph is breaking at several points during the month which may be due to breakage in transmission of data from online analyzers to CPCP servers or some other problem. Also, sudden spikes/drops can be seen in the graphs available at the online portal which is fundamentally not correct. These types of incidents have been observed in past also. Concessionaire is required to rectify these problems.
6. Flowmeter at inlet of STP is working.
7. Flowmeter at outlet of STP is working but it is not showing correct readings as compared to that of inlet flowmeter.

8. Both Mechanical fine screens at PTU are working. Though the screens are running in auto mode through timer, differential level sensors must also be made operational for running mechanical screens more efficiently through level difference during peak and lean period.
9. Both Grit Removal Units are working.
10. Both Biotowers are working. Small amount of plastic waste is reaching the biotowers which must be rectified by doing overhauling of mechanical screens at PTU.
11. Replacement of net is required for both biotowers.
12. All Aeration tanks are working. In Aeration tank no. 2, air is coming out vigorously from 1 point due to which air distribution is not proper in the tank which could affect the quality of treatment in aeration tanks. Maintenance for these tanks must be completed.
13. In Aeration tanks, the appearance of sewage is blackish in color which must be brownish in appearance in ideal conditions. Effect of the same can be seen in effluent quality also as the clarity of the same is not up to the mark. Hence, Concessionaire is required to rectify the problem so that effluent quality can be improved.
14. Both DO Analyzers at aeration tanks are not working.
15. All Aeration Blowers are working.
16. All Centrifuges are working along with Sludge Feed pumps and Poly dosing pumps. Sludge generation is 4–5 trolleys per day.
17. Quality of effluent is satisfactory.
18. Drainage system must be provided near the sludge collection area of dewatering system for avoiding sludge accumulation.
19. Both Sludge Recirculation Pumps are working.
20. Both Secondary Clarifiers are working. In Secondary clarifier no. 1, it is found that dead sludge is coming to the top of water surface in some parts. Concessionaire is suggested to rectify the problem.
21. Both Chlorine Dosing Systems are working. Residual chlorine in effluent was found to be 0.2 to 0.3 mg/l.
22. Chlorine analyzer for the effluent is not giving correct values.
23. It is continuously observed that dewatered sludge is being dumped inside the plant. Concessionaire is required to dump the dewatered sludge in the place given by UPJN.
24. Recording of flow from flowmeters at inlet & outlet is not accurate in SCADA system and the same is not matching site record also, Concessionaire to please check & rectify the problem.
25. At Ponghat MPS, all 6 pumps are OK for operation. Presser transmitter is not installed at pump discharge common header.
26. One mechanical coarse screen at MPS is working and one is in maintenance. Though the screens are running in auto mode through timer, differential level sensors must also be made operational for running mechanical screens more efficiently through level difference during peak and lean period.
27. At Ponghat MPS, it is suggested to rectify problems in old pumps also so that they be used in emergency situation. Currently, all old pumps are not in working condition.
28. As already discussed, all the waste material obtained during Rehabilitation Works must be removed from the site as per point (h) in clause 8.8 of Concession Agreement.
29. As per Clause no. 1.6 & 1.7.1 of Concession Agreement, Computer Maintenance Management System (CMMS) must be implemented at all Sites. This is not started yet, Concessionaire to please do the needful.
30. Installation of Public Address System is done but its commissioning is not completed yet.
31. Painting of units in the STP is completed from outside. It is suggested to start the painting work for all units from inside also.

32. Since COD is announced on 01.11.2020 for all Package – III facilities hence Concessionaire is required to implement following documents as per Clause no. 9 & Part-G in Schedule – 10 of Concession Agreement at the earliest:

a) Portable samplers must be provided to collect composite samples for monitoring from inlet and outlet of STP as per clause no. 1.3.1 in Part-E of Schedule-10 of CA. Also, all the instruments as mentioned in Table-3 given in clause no. 1.3.1 in Part-E of Schedule-10 of CA must be maintained in the laboratory.
b) Calibration certificates of all the instruments must be submitted as per clause no. 9.8(a)(viii) of Concession Agreement.
c) Testing of TN, NH4-N, TP for composite samples each day as per Part-G in Schedule-10 of CA.
d) Site Diary as per Clause no. 1.7.2 of Part-G in Schedule – 10 of Concession Agreement.
e) Quarterly report as per Part-G in Schedule-10 of CA.
f) Monthly Environmental Monitoring Report as per Part-G in Schedule-10 of CA.
g) Procedure for recording & disposal of complaints.
h) Safety & Health Records. Incident reports must also be submitted along with action plan.
i) Periodic reports from all facilities must be uploaded on Central Pollution Control Board's Website.
j) Scheduled Maintenance Program specifying the impact of Scheduled Maintenance Periods on the Availability of each facility.

## 4.3 Recommendation's

- Some of the issues mentioned above are pending since long time and hence must be rectified at the earliest for enhancing the efficiency of the STP.
- Concessionaire must ensure satisfactory working of Online monitoring system & transmit the data as per requirement.
- All the maintenance jobs required for the observations made above must be done as soon as possible to increase the efficiency of plant.
- Permits must be used for all kind of maintenance jobs whether it is Preventive or Corrective. Concessionaire to please ensure the same.
- All the records must be provided as per the observations made above.
- All logbooks must be filled timely and accurately.
- Testing of samples must be done from outlet of PSTs also for checking the efficiency of PSTs.
- Concessionaire to please ensure that all the testing must be done as per the clause no. 1.7.9 of Part-G in Concession Agreement.
- All the old material obtained due to rehabilitation works in various units must be stacked properly at the identified part of the site and proper record must be maintained.
- It is recommended to follow proper safety measures during O&M, and it must be ensured that workers must wear proper PPEs while doing work at Site.
- More awareness trainings for workers must be given for encouraging them to use PPEs.

# ANNEXURE-IV

## *PROJECT ENGINEER ACTIVITY AS PER TOR*

| Activities carried out as per TOR | | | | |
|---|---|---|---|---|
| **Clouse as per TOR** | **Scope** | **Period from 1st Sept 2022 to 30th Sept 2022** | | |
| | | **Undertaken till previous months** | **Undertaken during this month** | **Expected for next month** |
| 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 | Yes | Review of construction material including lab testing. |
| 4,1(ii) | Review, analysis and qualifying assessment of Design Memorandums, specifications and construction drawings prepared and submitted by the concessionaire. | Yes | Yes | Review of construction drawing |
| 4.1(iii) | Conduct Kick Off meetings | Yes | NA | NA |
| 4.1(iv) | Review and Monitor 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 ii. Mechanical and Electrical Works<br>iii. Automation and Instrumentation works<br>iv. Any other allied works<br>e.QA/QC plans | Yes | Yes | Review of remaining drawing design of Civil/Mech/Electrical |

| Activities carried out as per TOR | | | | |
|---|---|---|---|---|
| **Clouse as per TOR** | **Scope** | **Period from 1st Sept 2022 to 30th Sept 2022** | | |
| | | **Undertaken till previous months** | **Undertaken during this month** | **Expected for next month** |
| | f. Environment Health and Safety Plan, material safety data and hazardous chemicals if any. | | | |
| 4.1(v) | Review of the Drawings and Documents as set forth in Paragraph 4 and 5; | Yes | Yes | Review of remaining drawing design of Civil/Mech/Electrical |
| 4.1(vi) | Identification of Construction Milestones & Project progress monitoring and issue of Milestone Construction Certificates, Construction Completion Certificate, monitoring Trail run, recommendations for issuance of COD certificate by Jal Nigam etc.. | Review and Monitoring of project | Review and Monitoring of project | Review and Monitoring of project |
| 4.1(vii) | To Assist NMCG for getting Statutory permissions | NA | NA | NA |
| 4.1(viii) | Ensure compliance with Statutory provisions under various applicable laws | Yes | Yes | Yes |
| 4.1(ix) | Review, inspection, supervision and monitoring of Construction Works as set forth in Paragraph 6; conducting Tests on completion of construction and issuing Completion/ Provisional Certificate as set forth in Paragraph 6 | Yes | Yes | Yes |
| | Review, inspection and monitoring of O&M as set forth in Paragraph 6; | Yes | Yes | Yes |
| | determining, as required under the Concession Agreement, the costs of any | NA | NA | NA |

| Activities carried out as per TOR | | | | |
|---|---|---|---|---|
| **Clouse as per TOR** | **Scope** | **Period from 1st Sept 2022 to 30th Sept 2022** | | |
| | | **Undertaken till previous months** | **Undertaken during this month** | **Expected for next month** |
| | works or services and/or their reasonableness; | | | |
| | determining, as required under the Concession Agreement, the period or any extension thereof, for performing any duty or obligation | Yes | Yes | Yes |
| | Determining the Events of default and guidance on consequent Termination notices and Payment as detailed in clauses 16.1 to 16.5of the Concession Agreement | NA | NA | NA |
| | 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 | NA | NA |
| | 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. | Yes | Yes | Yes |
| 4.1(x) | Ensuring Interim Availability of the existing Facilities during construction period and certifying Scheduled Outages during Scheduled Maintenance. | NA | NA | NA |
| 4.1(xi) | The Project Engineer shall submit regular periodic reports, as specified in the Concession Agreement to | YES | YES | YES |

| Activities carried out as per TOR | | | | |
|---|---|---|---|---|
| **Clouse as per TOR** | **Scope** | **Period from 1st Sept 2022 to 30th Sept 2022** | | |
| | | **Undertaken till previous months** | **Undertaken during this month** | **Expected for next month** |
| | Uttar Pradesh Jal Nigam and NMCG, in respect of its duties and functions under the Concession Agreement. | | | |
| 4.1(xii) | The Project Engineer shall aid and advise the Employer on any proposal for variation under Article 20 of the Concession Agreement. | Yes | Yes | Yes |
| 4.1(xiii) | Assisting the Parties in resolution of Disputes as set forth in Paragraph 9; | Yes | Yes | Yes |
| 4.1(xiv) | Assisting the employer in the fulfilment of Hand back requirements as detailed in clause 20.3 of the Concession Agreement; and | NA | NA | NA |
| 4.1(xv) | Undertaking all other duties and functions in accordance with this agreement. Project Engineer shall utilize best of analytical tools /computational models for review/analysis of structural/hydraulics wherever essential. | Yes | Yes | Yes |
| 4.2 | The Project Engineer shall discharge its duties in an efficient manner, consistent with the highest standards of professionalism and Good Industry Practice. | Yes | Yes | Yes |
| 4.3 | The Project Engineer must function in a manner to assist and equip the employer to ascertain that the Concessionaire shall operate and maintain the Facilities in a manner that: | Yes | Yes | Yes |

| Activities carried out as per TOR | | | | |
|---|---|---|---|---|
| **Clouse as per TOR** | **Scope** | **Period from 1st Sept 2022 to 30th Sept 2022** | | |
| | | **Undertaken till previous months** | **Undertaken during this month** | **Expected for next month** |
| | (i) Is in compliance with the Technical Specifications, Applicable Laws, Applicable Permits and Good Industry Practice;<br>Results in the Facilities achieving the KPIs as detailed in schedule 9of the Concession Agreement and certify within 7 days the KPI adherence Report as per clause 9.12 of the Concession Agreement;<br>(ii) Ensures that the Allahabad Facilities are capable of treating Sewage up to the Design Capacity on a daily basis;<br>(iii) Ensures efficient treatment of Sewage and handling and disposal of STPs By- Products and the Treated Effluent<br>(iv) STPs are safe and reliable, subject to normal wear and tear of the Facilities and the Associated Infrastructure;<br>(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;<br>(vi) Maintains the safety and security of personnel, material and property at the | | | |

| Activities carried out as per TOR | | | | |
|---|---|---|---|---|
| **Clouse as per TOR** | **Scope** | **Period from 1st Sept 2022 to 30th Sept 2022** | | |
| | | **Undertaken till previous months** | **Undertaken during this month** | **Expected for next month** |
| | Site, in accordance with the approved EHS Plan, Applicable Laws and Applicable Permits; and<br>(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. | | | |
| 4.4 | Overall, The Project Engineer shall assist the Uttar Pradesh Jal Nigam in supervising the construction, rehabilitation, operation and maintenance of the Facilities and shall work closely with the Uttar Pradesh Jal Nigam and NMCG to monitor compliance with the KPIs. The detailed scope of work of the Project Engineer during various stages of the project, to be read in conjunction with the provisions of the Concession Agreement, is outlined in Paragraphs 4-12 of the TOR. | Yes | Yes | Yes |
| 5.1 | During the Development Period, the Project Engineer shall undertake a detailed review of the basic engineering Designs, furnished by the Concessionaire along with supporting data, including the geo-technical and hydrological investigations, characteristics of materials from borrow areas and quarry sites, topographical surveys | Yes | Yes | Yes |

| Activities carried out as per TOR | | | | |
|---|---|---|---|---|
| **Clouse as per TOR** | **Scope** | **Period from 1st Sept 2022 to 30th Sept 2022** | | |
| | | **Undertaken till previous months** | **Undertaken during this month** | **Expected for next month** |
| | and Sewage Flow Analysis. The Project Engineer shall complete such review and send its comments/observations to the Uttar Pradesh Jal Nigam and the Concessionaire within 10 (ten) days of receipt of such Drawings. In particular, such comments shall specify the conformity or otherwise of such Drawings with the Scope of the Project and Specifications and Standards. | | | |
| 5.2 | The Project Engineer shall review and assist the Uttar Pradesh Jal Nigam in approval of the submissions by the concessionaire relating to the "design and, Construction Plan, rehabilitation Plan of existing facilities" so as to confirm to the scope as per Schedule 1 of the Concession Agreement. | NA | NA | NA |
| 5.3 | The basic engineering drawings for the construction and rehabilitation in the above case shall mean the designs and documents to be submitted by the Concessionaire and approved by the Uttar Pradesh Jal Nigam as a Condition Precedent and shall include but not limited to | Yes | Yes | Yes |

| Activities carried out as per TOR | | | | |
|---|---|---|---|---|
| **Clouse as per TOR** | **Scope** | **Period from 1st Sept 2022 to 30th Sept 2022** | | |
| | | **Undertaken till previous months** | **Undertaken during this month** | **Expected for next month** |
| | (a) Conduct Kick off meeting, Scrutiny of contractor's submittals<br>(b) Process description, process calculations and hydraulic calculations;<br>(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) Structure design and drawings<br>(n) Pump Characteristics and<br>(o) General arrangement diagrams of all units of Facilities and;<br>(p) Any other information, design, drawings, etc needed for effective development/rehabilitation and operation of Facilities.. | | | |
| 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) | Yes | Yes | Yes |

| Activities carried out as per TOR | | | | |
|---|---|---|---|---|
| **Clouse as per TOR** | **Scope** | **Period from 1st Sept 2022 to 30th Sept 2022** | | |
| | | **Undertaken till previous months** | **Undertaken during this month** | **Expected for next month** |
| | days of receiving such Drawings or Documents. | | | |
| 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 | Yes | Yes |
| 5.6 | Upon reference by the NMCG/Uttar Pradesh Jal Nigam, the Project Engineer shall review and; comment on the EPC Contract or any other contract for construction, operation and maintenance of the Project, and furnish its comments within 10 (ten) days from receipt of such reference from the NMCG/Uttar Pradesh Jal Nigam | NA | NA | NA |
| 6.1 | In respect of the Designs Drawing and 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 | Yes | Yes |
| 6.2 | The Project Engineer shall review, and assist the Uttar Pradesh Jal Nigam in reviewing the submissions by the concessionaire, the | Yes | Review the Construction plan submitted by concessionaire | Review the Construction plan submitted by concessionaire |

| Activities carried out as per TOR | | | | |
|---|---|---|---|---|
| **Clouse as per TOR** | **Scope** | **Period from 1st Sept 2022 to 30th Sept 2022** | | |
| | | **Undertaken till previous months** | **Undertaken during this month** | **Expected for next month** |
| | Construction plan as defined in clause 8.3, 8.4 and 8.5 of the Concession Agreement including Phase 1 and Phase II Design & Drawings, as well as the 'As Built' drawings on completion and EHS plans as defined in clause 8.6 of the Concession Agreement. | | | |
| 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 | Yes | Yes |
| 6.4 | The Project Engineer shall review, in particular, the submissions by the Concessionaire as per Schedule 1 of the Concession Agreement and assist Uttar Pradesh Jal Nigam in assessing the effectiveness them. | Yes | Yes | Yes |
| 6.5 | The Project Engineer shall review the monthly progress report furnished by the Concessionaire and send its comments thereon to the / Uttar Pradesh Jal Nigam and the Concessionaire within 7 (seven) days of receipt of such report. | Yes | Yes | Yes |
| 6.6 | The Project Engineer shall inspect the Construction | Yes | Yes | Yes |

| Activities carried out as per TOR | | | | |
|---|---|---|---|---|
| **Clouse as per TOR** | **Scope** | **Period from 1st Sept 2022 to 30th Sept 2022** | | |
| | | **Undertaken till previous months** | **Undertaken during this month** | **Expected for next month** |
| | Works and the Project as and 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 / Uttar Pradesh Jal Nigam and the Concessionaire within 3 (three) days of the inspection. | | | |
| 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 | Yes | Yes |

| Activities carried out as per TOR | | | | |
|---|---|---|---|---|
| **Clouse as per TOR** | **Scope** | **Period from 1st Sept 2022 to 30th Sept 2022** | | |
| | | **Undertaken till previous months** | **Undertaken during this month** | **Expected for next month** |
| 6.8 | For determining that the Construction Works conform to Specifications and Standards, the Project Engineer shall require the Concessionaire to carry out, or cause to be carried out, tests on a sample basis, to be specified by the Project Engineer in accordance with approved norms/Good Industry Practice for quality assurance. The Project Engineer shall issue necessary directions to the Concessionaire for ensuring that the tests are conducted in a fair and efficient manner and shall monitor and review the results thereof. | Yes | Yes | Yes |
| 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 | Yes | Yes |
| 6.10 | In the event that the Concessionaire carries out any remedial works for | Yes | Yes | Yes |

| Activities carried out as per TOR | | | | |
|---|---|---|---|---|
| **Clouse as per TOR** | **Scope** | **Period from 1st Sept 2022 to 30th Sept 2022** | | |
| | | **Undertaken till previous months** | **Undertaken during this month** | **Expected for next month** |
| | removal or rectification of any defects or deficiencies, the Project Engineer shall require the Concessionaire to carry out, or cause to be carried out, tests to determine that such remedial works have brought the Construction Works into conformity with the Specifications and Standards, and the provisions of this Paragraph 5 shall apply to such tests. | | | |
| 6.11 | In the event that the Concessionaire fails to achieve any of the Project Milestones, the Project Engineer shall undertake a review of the progress of construction and identify potential delays, if any. If the Project Engineer identifies that completion of the Project is not feasible within the time specified in the Concession Agreement, it shall require the Concessionaire to indicate within 15 (fifteen) days the steps proposed to be taken to expedite progress, and the period within which COD shall be achieved. Upon receipt of a report from the Concessionaire, the Project Engineer shall review the same and send its comments to the NMCG/ Uttar Pradesh Jal Nigam and the Concessionaire forthwith. | Yes | Yes | Yes |

| Activities carried out as per TOR | | | | |
|---|---|---|---|---|
| **Clouse as per TOR** | **Scope** | **Period from 1st Sept 2022 to 30th Sept 2022** | | |
| | | **Undertaken till previous months** | **Undertaken during this month** | **Expected for next month** |
| 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 | NA |
| 6.13 | In the event that the Concessionaire carries out any remedial measures to secure the safety of suspended works and common public, it may, by notice in writing, require the Project Engineer to inspect such works, and within 3 (three) days of receiving such notice, the Project Engineer shall inspect the suspended works and make a report to the NMCG/ Uttar Pradesh Jal Nigam forthwith, recommending whether or not such suspension may be revoked by the NMCG/ Uttar Pradesh Jal Nigam. | NA | NA | NA |

| Activities carried out as per TOR | | | | |
|---|---|---|---|---|
| **Clouse as per TOR** | **Scope** | **Period from 1st Sept 2022 to 30th Sept 2022** | | |
| | | **Undertaken till previous months** | **Undertaken during this month** | **Expected for next month** |
| 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 | 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 | NA |
| 6.16 | The Project Engineer shall aid and advise the Concessionaire in preparing the Operation & Maintenance Manual. | NA | NA | NA |
| 6.17 | Upon reference from the NMCG/ Uttar Pradesh Jal Nigam the Project Engineer shall undertake the assessment of cost of civil works, as per applicable schedule of rates, for the reduction of Scope of work if any as per Article 21. | Yes | Yes | Yes |

| Activities carried out as per TOR | | | | |
|---|---|---|---|---|
| **Clouse as per TOR** | **Scope** | **Period from 1st Sept 2022 to 30th Sept 2022** | | |
| | | **Undertaken till previous months** | **Undertaken during this month** | **Expected for next month** |
| 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 | Review the payment milestone proposed by Concessioner |
| 6.19 | The Project Engineer shall support the employer in ensuring that the provisions specified in Clause 8, of the Concession Agreement including those for liquidated damages and Bonus, are being complied with. | Yes | 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 8.14(a)of the Concession Agreement. | Yes | 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 8.15(d) of the Concession Agreement | NA | NA | NA |
| 6.22 | Project Engineer shall ensure that the Concessionaire shall meet the Guaranteed Interim Availability of the existing Allahabad STPs and associated infrastructure | Yes | NA | NA |

| Activities carried out as per TOR | | | | |
|---|---|---|---|---|
| **Clouse as per TOR** | **Scope** | **Period from 1st Sept 2022 to 30th Sept 2022** | | |
| | | **Undertaken till previous months** | **Undertaken during this month** | **Expected for next month** |
| | within 30 days from the Effective Date of the Concession Agreement. | | | |
| 6.23 | Project Engineer shall also ensure that the STP by-products and Treated Effluents discharged from the Existing Facilities meet the relevant Discharge Standards in accordance with the Clause 9.12(c) of the Concession Agreement, from 1 year from the Effective Date | Yes | Yes | Yes |
| 6.24 | Project Engineer shall ensure that the Concessionaire shall meet the Guaranteed Interim Availability of the existing Allahabad STP and associated infrastructure within 30 days from the Effective Date of the Concession Agreement. | Yes | NA | NA |
| 6.25 | Project Engineer shall also ensure that the STP by-products and Treated Effluents discharged from the Existing Facilities meet the relevant Discharge Standards in accordance with the Clause 9.12(c) of the Concession Agreement, from 1 year from the Effective Date. | Yes | Yes | 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. | Yes | Yes | Yes |

| Activities carried out as per TOR | | | | |
|---|---|---|---|---|
| **Clouse as per TOR** | **Scope** | **Period from 1st Sept 2022 to 30th Sept 2022** | | |
| | | **Undertaken till previous months** | **Undertaken during this month** | **Expected for next month** |
| 7.2 | The Project Engineer shall review the O&M Manual (Clause 9.2) and the Scheduled Maintenance Programme submitted by the concessionaire and provides its recommendations on the same, including suggestions for change, if any. 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 | NA | NA |
| 7.3 | The Project Engineer shall review the annual Maintenance Program furnished by the Concessionaire and send its comments thereon to the | NA | NA | NA |

| Activities carried out as per TOR | | | | |
|---|---|---|---|---|
| **Clouse as per TOR** | **Scope** | **Period from 1st Sept 2022 to 30th Sept 2022** | | |
| | | **Undertaken till previous months** | **Undertaken during this month** | **Expected for next month** |
| | NMCG/ Uttar Pradesh Jal Nigam and the Concessionaire within 10 (ten) days of receipt of the Maintenance Program. | | | |
| 7.4 | The Project Engineer shall review the reports generated from online monitoring systems to assess adherence to KPIs and submit the monthly KPI Adherence Report to Uttar Pradesh Jal Nigam | Yes | Yes | Yes |
| 7.5 | The Project Engineer shall verify the daily reports submitted by the concessionaire regarding the volume of sewage and its quality re influent standards and monitor and record the same on regular basis; | Yes | Yes | 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 9.8(b)(iii) (A) to (G) of the Concession Agreement. | Yes | Yes | 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 Facilities for the Digested Sludge. Separately, the Project Engineer shall also have the right to take random samples of the incoming Sewage, the | Yes | Yes | Yes |

| Activities carried out as per TOR | | | | |
|---|---|---|---|---|
| **Clouse as per TOR** | **Scope** | **Period from 1st Sept 2022 to 30th Sept 2022** | | |
| | | **Undertaken till previous months** | **Undertaken during this month** | **Expected for next month** |
| | Digested Sludge and the Treated Effluent at any time during the O&M Period to test compliance with the Influent Standards and the Discharge Standards. | | | |
| 7.8 | The Project Engineer shall review the monthly status report furnished by the Concessionaire (as required under clause 9.8(b)(iii)(E) 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 | Yes | Yes | Yes |
| 7.9 | The Project Engineer shall inspect the Project once every month, preferably after receipt of the monthly status report from the Concessionaire, but before the 20th (twentieth) day of each month in any case, and make out an O&M Inspection Report setting forth an overview of the status, quality and safety of O&M including its conformity with the Maintenance Requirements and Safety Requirements. In a separate section of the O&M Inspection Report, the Project Engineer shall describe in reasonable detail the lapses, defects or deficiencies observed by it in O&M of the Project. The Project Engineer | Yes | Yes | Yes |

| Activities carried out as per TOR | | | | |
|---|---|---|---|---|
| **Clouse as per TOR** | **Scope** | **Period from 1st Sept 2022 to 30th Sept 2022** | | |
| | | **Undertaken till previous months** | **Undertaken during this month** | **Expected for next month** |
| | 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. | Yes | Yes | Yes |
| 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 and the remedial measures, if any, taken by the Concessionaire in this behalf. | Yes | Yes | Yes |
| 7.12 | The Project Engineer shall determine if any delay has occurred in completion of repair or remedial works in accordance with the Concession Agreement, and shall also determine the Damages, if any, payable by the Concessionaire to the NMCG/ Uttar Pradesh Jal Nigam for such delay. | Yes | Yes | Yes |
| 7.13 | The Project Engineer shall monitor and review the curing | Yes | Yes | Yes |

| Activities carried out as per TOR | | | | |
|---|---|---|---|---|
| **Clouse as per TOR** | **Scope** | **Period from 1st Sept 2022 to 30th Sept 2022** | | |
| | | **Undertaken till previous months** | **Undertaken during this month** | **Expected for next month** |
| | of defects and deficiencies by the Concessionaire. | | | |
| 7.14 | In the event that the Concessionaire notifies the Project Engineer of any modifications that it proposes to make to the project, the Project Engineer shall review the same and send its comments to the NMCG/ Uttar Pradesh Jal Nigam and the Concessionaire within 15 (fifteen) days of receiving the proposal. | NA | NA | 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. | Yes | Yes | 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 10(Part G) of the Concession Agreement. | Yes | Yes | Yes |
| 7.17 | The Project Engineer shall provide necessary training/capacity building to the operators/technicians of the STP, as and when required, so as to address the gap in skill sets of the | Yes | Yes | Yes |

| Activities carried out as per TOR | | | | |
|---|---|---|---|---|
| **Clouse as per TOR** | **Scope** | **Period from 1st Sept 2022 to 30th Sept 2022** | | |
| | | **Undertaken till previous months** | **Undertaken during this month** | **Expected for next month** |
| | manpower deployed by the Concessionaire. | | | |
| 7.18 | The Project Engineer will provide necessary assistance to NMCG and UP Jal Nigam for the understanding various projects undertaken through other Central Government/State Government schemes /Urban Local Bodies and advice NMCG/UP Jal Nigam accordingly so that the overall objective preventing flow of untreated sewage into the river Yamuna is accomplished. The support by the proposed PE will include, but not limited to the following:<br>7.18.1 Preparation of a road map/policy note for completion of sewage related work at the City Level taking into consideration various schemes implemented through NMCG/Central/State Government funding and/or through Urban Local Body funding;<br>7.18.2 Assist in developing dovetailing partnerships with other schemes in the sewage sector like AMRUT, SMART City Mission and Swachh Bharat Mission to develop Synergistic plans.<br>7.18.3 Assist in identification of suitable new technologies | NA | NA | NA |

| Activities carried out as per TOR | | | | |
|---|---|---|---|---|
| **Clouse as per TOR** | **Scope** | **Period from 1st Sept 2022 to 30th Sept 2022** | | |
| | | **Undertaken till previous months** | **Undertaken during this month** | **Expected for next month** |
| | for improving sewage infrastructure, economizing investment and for sustainable development and operation of the project;<br>7.18.4 Collecting information on regular monitoring and of implementation of various projects by the project implementing agencies/Urban Local Bodies and to produce status report; | | | |
| 7.19 | Assist in identification of bottlenecks in implementation of projects and suggesting remedial actions. | Yes | Yes | Yes |

# ANNEXURE-V

## *QUALITY CONTROL / QUALITY ASSURANCE*

| SL NO | DESCRIPTION | IS CODE | Period: September 2022 | | | | REMARKS |
|---|---|---|---|---|---|---|---|
| | | | AS PER IS NO OF TEST REQUIRED | NO OF TEST CONDECTED | NO OF TEST ACCEPTED | NO OF TEST REJECTED | |
| 1 | Aggregate Impact Value | IS 2386-Part 4 | ONE TEST/300 CUM | 1 | 1 | 0 | Aggregate Impact value test for Phaphamau conducted in Jhushi and found satisfactory. |
| 2 | Aggregate Impact Value | IS 2386-Part 4 | ONE TEST/300 CUM | 1 | 1 | 0 | Aggregate Impact value test conduct in Jhunsi and found satisfactory |
| 3 | Sand gradation | IS 2386-Part 1 | ONE TEST/300CUM | 1 | 1 | 0 | Sand Gradation Test for Phaphamau conducted in Jhunsi and found satisfactory. |
| 4 | Sand gradation | IS 2386-Part 1 | ONE TEST/300CUM | 2 | 2 | 0 | Sand Gradation Test conduct in Jhunsi and found satisfactory |
| 5 | Cube test | IS 516-2001 | Quantity of concrete (m3) Number of samples<br>1-5 1<br>6-15 2<br>16-30 3<br>31-50 4<br>51 and above 4 plus one additional sample for each additional 50 m3 or part thereof. | 22 | 22 | 0 | Staff Quarter (Mawaiya nala) Naini-II , TB Stair Case ( Jhunsi Stp) . Phaphamau (Basanalla SPS & Process Building), Cube test is acceptable for 7 Days |
| 6 | Cube test | IS 516-2001 | Quantity of concrete (m3) Number of samples<br>1-5 1 | 16 | 16 | 0 | Staff Quarter (Mawaiya nala) Naini- |

| SL NO | DESCRIPTION | IS CODE | Period: September 2022 | | | | REMARKS |
|---|---|---|---|---|---|---|---|
| | | | AS PER IS NO OF TEST REQUIRED | NO OF TEST CONDECTED | NO OF TEST ACCEPTED | NO OF TEST REJECTED | |
| | | | 6-15 2<br>16-30 3<br>31-50 4<br>51 and above 4 plus one additional sample | | | | II , TB Stair Case ( Jhunsi Stp) . Phaphamau (Basanalla SPS & Process Building), Cube test is acceptable for 28 Days |
| 7 | Silt Content in Sand | IS 2386: 1963-Part 2 | 50 M3 – 1 TEST | 2 | 2 | 0 | Silt Content Test conduct for Phaphamau and found satisfactory |
| 08 | Silt Content in Sand | IS 2386: 1963-Part 2 | 50 M3 – 1 TEST | 2 | 2 | 0 | Silt Content Test conduct in Jhunsi and found satisfactory |
| 09 | Sieve analysis (Aggregate 10mm ) | IS 2386 | ONE TEST/300 M3 | 2 | 2 | 0 | Sieve Test Analysis conduct for Phaphamau site and found acceptable |
| 10 | Sieve analysis (Aggregate 10mm ) | IS 2386 | ONE TEST/300 M3 | 2 | 2 | 0 | Sieve Test Analysis conduct for Jhushi site and found acceptable |
| 11 | Sieve analysis (Aggregate 20mm ) | IS 2386 | ONE TEST/300 M3 | 2 | 2 | 0 | Sieve Test Analysis conduct for Phaphamau site and found acceptable |
| 12 | Sieve analysis (Aggregate 20mm ) | IS 2386 | ONE TEST/300 M3 | 2 | 2 | 0 | Sieve Test Analysis conduct for Jhushi site |

| SL NO | DESCRIPTION | IS CODE | Period: September 2022 | | | | REMARKS |
|---|---|---|---|---|---|---|---|
| | | | AS PER IS NO OF TEST REQUIRED | NO OF TEST CONDECTED | NO OF TEST ACCEPTED | NO OF TEST REJECTED | |
| | | | | | | | and found acceptable |
| 13 | Brick Test | IS 1077 & 3495 | 1 SAMPLE/50000 BRICKS | 2 | 2 | 0 | As per site brick test activity for Phaphamau & Jhunsi and result found acceptable as per IS |
| 14 | OPC CEMENT 43 GRADE | IS 4031 | I TEST PER LOT | 1 | 1 | 0 | Ultratech (Third party batch report Submitted) |