**LEA Associates South Asia Pvt. Ltd.**
Office of the JTFRP-TAQA Consultant
2nd floor, ERA Commercial Complex, Rambagh
Srinagar - 190009

# SUB-PROJECT COMPLETION REPORT

## "JHELUM TAWI FLOOD RECOVERY PROJECT"

FUNDED BY WORLD BANK

LOAN NUMBER: IDA 56950

## COMPONENT–III

## RESTORATION OF URBAN FLOOD MANAGEMENT INFRASTRUCTURE

**Prepared By: LEA Associates South Asia Pvt. Ltd.**
**Technical Assistance & Quality Audit Consultants**

# COMPONENT – III

# VOLUME – III

# PIU:- SRINAGAR MUNICIPAL CORPORATION (SMC)

**Total Number of Projects:-1**

| S.No | Name of Projects | Status | Remarks |
|---|---|---|---|
| 1 | Upgradation of 49 Dewatering Stations of Srinagar Municipal Corporation in & around Srinagar City which includes construction of sump, pump house , supply, installation, testing, commissioning of electromechanical equipments. | Physical Completed & Financially Incomplete | Completion Certificates from PIU's are awaited |

# VOLUME-III

## Restoration of urban flood management infrastructure

### UNDER COMPONENT- 3


JTFRP-ICT
Pumping Station Lal Bagh
04.07.2024 11:38
34°1'5.37"N,74°54'42.31"E (16m)
Altitude: 1576m
126 Drangbal, near Post office, Pampore


JTFRP-ICT
SWDS
pora Srinagar Jammu and Kashmir, Asrar Colony, Srinagar


STORM WATER DRAINAGE SCHEME
WORLD BANK FUNDED
DANGER
JTFRP-ICT
Pumping Station Lal Mandi
18.07.2024 12:55
34°40.39"N 74°48'38.05"E (±7m)
Altitude: 1575m
Gogji Bagh, Jawahar Nagar, Srinagar
SW


RAJBAGH
Latitude
34.0473° N
Longitude
74.8111° E
Monday, 08 Jul, 2024
0° C
03:02 pm

# CONTENTS

***COVER PAGE*** ..... ***1***

***1. INTRODUCTION*** ..... ***7***

`

*1.2 Project Development Objective* ..... *8*

*1.3 Project Components* ..... *8*

***2. EXECUTIVE SUMMARY*** ..... ***9***

*2.1 Objective* ..... *9*

*2.2 Background of Project* ..... *9*

*2.3 Project Detail* ..... *10*

*2.4 Contract Detail* ..... *38*

***3. SUMMARY OF ACHIEVEMENT*** ..... ***39***

*3.1 Deliverables* ..... *39*

*3.2 Performance Metrics* ..... *39*

*3.3 Quality Assurance* ..... *40*

***4. LESSONS LEARNT*** ..... ***40***

***5. CONCLUSION*** ..... ***41***

*5.1 Summary* ..... *41*

*5.2 Impact* ..... *41*

***6. PHOTOGRAPHS*** ..... ***43***

# 1. INTRODUCTION

## 1.1 Project Background

In September 2014, Jammu & Kashmir experienced torrential monsoon rains in the region causing major flooding & landslides. The continuous spell of rains from September 2-6, 2014 caused Jhelum and Chenab Rivers as well as many other streams/tributaries to flow above the danger mark. The Jhelum River also breached its banks flooding many low-lying areas in Kashmir, including the capital. In many districts, the rainfall exceeded the normal by over 600%. The Indian Meteorological Department (IMD) records precipitation above 244.4 mm as extremely heavy rainfall and J&K received 558 mm of rain in the June – September period as against the normal 477.4 mm. For example, the district of Qazigund recorded over 550 mm of rainfall in 6 days as against a historic normal of 6.2 mm over the same period.

Due to unprecedented heavy rainfall the catchment areas particularly the low lying areas were flooded for more than two weeks. Some areas in urban Srinagar stayed flooded for 28 days. Water levels were as high as 27 feet in many parts of Srinagar. The areas from the main tributaries of river Jhelum vis-à-vis Brengi nallah, Vishav nallah, Lidder nallah and Sandran nallah started overflowing due to the heavy rainfall causing water levels in Jhelum to rise. Subsequently, the discharge of the river Suran was 200 thousand cusecs as against an average of 50 thousand cusecs. With the excessive discharge of water, the river Suran affected the basin areas and also took a different course at various locations causing damages to the surrounding villages in the catchment area. Water levels also increased in the rivers of ***Chenab and Tawi***, both of which were flowing above normal levels. Due to the rivers overflowing nearly 20 districts of the State were impacted.

A Joint team led by the Department of Economic Affairs (DEA), GoI, with representation from the World Bank visited J&K on October 21, 2014. Subsequently, GoI has sent a request to the World Bank on January 5, 2015 to field a joint Rapid Damage and needs Assessment (RDNA) Mission within the State. In response, a mission of the World Bank visited the State during February 1-6, 2015 in order to produce a rapid multi-sectoral assessment report of the damages and needs. The RDNA estimates the total damages and loss caused by floods at about INR 211.975 Million, most of it to housing, livelihoods; roads and bridges which combined represented more than 70% of the damages in terms of value. Public service infrastructure and equipment of hospitals and education centers were also severely damaged and are still not fully operational.

**Based on the Rapid Damage Needs Assessment (RDNA):** Results, restoration works underway and discussion with the GOJ&K, the project will focus on resorting critical infrastructure using international best practice on resilient infrastructure. Given the state's vulnerability to both floods and earthquakes, the infrastructure will be designed with upgraded resilient features and will include contingency planning for further disaster events. Therefore, the project aims at both restoring essential services disrupted by the floods and improving the design standard and practices in the state to increase resilience.

## 1.2 Project Development Objective

The Project Development Objective (PDO) is to support the recovery and increase disaster resilience in targeted areas of the state and increase the capacity of the state entities to respond promptly and effectively to an eligible crisis or emergency.

## 1.3 Project Components

The project is comprised of the following seven components:

1. Reconstruction and strengthening of critical infrastructure (US$ 50 million)
2. Reconstruction of Roads and Bridges (US$ 55 million)
3. **Restoration of Urban Flood Management Infrastructure (US$ 40 million)**
4. Restoration and strengthening of livelihoods (US$ 15 million)
5. Strengthening disaster risk management capacity (US$ 25 million)
6. Contingent Emergency Response (US$ 45 million)
7. Implementation Support (US$ 20 million).

Total Amount is **US$250 Million**.

**Component 3 - Restoration of Urban Flood Management Infrastructure (US$ 40 million):-**

The objective of this component was twofold:

i. To strengthen and reinforce existing weak and vulnerable flood control infrastructure, with a primary focus on the rehabilitation and renovation of stormwater pumping stations within the Srinagar municipal area. This included the construction/rehabilitation of new pumping stations and Sumps (if required) at the existing sites including the installation of new pumping machinery (submersible type), and all other necessary equipments having compatibility for the SCADA system with the intension to place the machinery above new established HFL (i.e after Floods 2014) after taking into account to enhance functionality and resilience;

ii. Assessing urban flood management interventions in other Project Areas

Under Component 3, one of the sub-projects was **Upgradation of 49 Dewatering Stations of Srinagar Municipal Corporation in & around Srinagar City which includes construction of sump, pump house, supply, installation, testing, commissioning of electromechanical equipment's.**

# 2. EXECUTIVE SUMMARY

## 2.1 Objective

The objective of the subproject (Upgradation of 49 Dewatering Stations of Srinagar Municipal Corporation in & around Srinagar City) was to effectively restore and reconstruct damaged dewatering stations while integrating the stations with disaster resilient features, comfortable space for the workers staff, and efficient machinery. This approach not only focuses on repairing and rebuilding facilities to ensure safety and resilience against future disasters but also enhances existing structures to create workable environments. The project aims to foster resilient and efficient dewatering operations, addressing diverse operational needs and promoting a safe working atmosphere. By transforming damaged stations into durable, disaster-resilient facilities, the initiative strives to enhance staff safety, equipment performance, and seamless collaboration during flood management. Ultimately, the goal is to establish reliable dewatering environments that empower operations to thrive effectively, ensuring flood mitigation is accessible and sustainable for all stakeholders. Some of the main objectives were as below:

- Upgrading the existing Dewatering stations.
- Taking the machine floor Level 1m above HFL as recorded in 2014.
- Replacing existing pumps with submersible pumps with adequate capacity.
- Augmentation of capacity of existing pumping station.
- Reduce the flood impact on highly vulnerable areas.
- Improve response time and capacity for municipal and disaster management authorities.

## 2.2 Background of Sub-Project

This Sub-project was conceptualized in response to the extensive devastation caused by the 2014 floods in the Kashmir Valley. During the floods, most of the existing dewatering stations suffered severe and irreparable damage, necessitating a comprehensive overhaul. In this context, the upgradation plan proposed the installation of fully automatic electro-mechanical equipment, replacing the previously used horizontal pumps with efficient submerged pump systems.

To enhance reliability and ensure uninterrupted operation during emergencies, the dewatering stations were equipped with increased captive power capacity through the installation of high-capacity diesel generator (DG) sets and state-of-the-art machinery designed to effectively address issues of waterlogging and flood mitigation. Additionally, the civil structures of the Dewatering stations were upgraded to accommodate the new equipment and to provide improved facilities for operational staff, including operator rooms equipped with essential amenities.

## 2.3 Sub-Project Details

The Sub-project **Upgradation of 49 Dewatering Stations** was executed under SMC Dept. Under this Sub-project 45 out of 49 Dewatering Stations were constructed under the Supervision of SMC Kashmir as PIU. All the Stations were identified by the SMC authority and approved by the World Bank under JTFRP (J&K). Out of 49 Stations only 45 completed remaining 04 Stations dropped due to following reason:

1. Peerbagh Station – Dropped due to Sub-Judice.

2. Old Zero Bridge – Dropped due to Sub-Judice.

3. Khan Colony – Dropped due land availability issue.

4. Surnai Mohalla – Dropped due to land availability issue.

All the completed Dewatering stations have been designed as Frame structure based on the individual bearing capacity of the Soil. The infrastructure has been designed to with stand Floods and Earthquakes as per the latest design guideline.

**The Main civil structural features of the constructed Dewatering Stations are as follows:**

1. Civil structure of Dewatering stations was upgraded to accommodate the latest machinery and provide accommodation for manpower (operators) in form of an operator room with all the basic amenities. 49 existing storm water pumping stations were taken up for up-gradation under JTFRP project.
2. Keeping in view of the HFL of 2014 floods the storm water Dewatering stations were upgraded above HFL for the safety of men and machinery during flood like situations. The machine floor level of the existing stations was raised from 0.60-1.0 m above the recorded HFL.
3. RCC framed structure (beam and column frame) with isolated footing foundations and plinth designed considering local soil conditions, groundwater and flood levels to prevent uplift and seepage. All stations were constructed using an RCC framed structural system.
4. Superstructure with RCC columns, beams and slab, with masonry infill walls (brick) and durable, low maintenance finishes suited to humid and flood prone environment.
5. Floor levels, access platforms, and equipment foundations kept above design flood level to maintain functionality during high water levels.
6. Pump space was designed in the premises of the station where feasible for adequate height for pump installation, overhead lifting devices and safe maintenance access to pumps, pipe work and valves. An RCC wet well (sump) was constructed at the existing site of each Dewatering station for collection of storm water, integrated with pump foundations, pipe supports and access platforms.
7. Electrical/control room to house LT panels, MCCs, APFC panels, SCADA and instrumentation, located in a dry, flood safe zone and physically separated from wet well and plumbing.

8. Ancillary rooms: operator rest room, kitchen/pantry, washroom and toilet with potable water supply, ventilation and proper separation from electrical equipment as per good practice.
9. Elevation of switchgear, control panels, cable trays and standby generator above design high flood level, with weather proof and corrosion resistant enclosures.
10. Each station was provided with proper drainage, non-slip finishes, guard rails, ladders etc.
11. Boundary wall (of brick masonry) with lockable entrance gate, lighting and basic security measures to prevent unauthorized access and vandalism.
12. The Dewatering stations were constructed with slab and steel truss roofs covered with CGI sheets, considering the heavy snowfall experienced in the valley, and were designed to withstand snow loads and seismic forces.

**The detail of the 49 Dewatering Stations (Civil Works) completed under JTFRP:**

| S.NO | DEWATERING STATION | BUILDING SIZE (Mtr) | SUMP WELL DIA (Mtr) | SLUICE CHAMBER DIA (Mtr) | SILT CHAMBER DIA (Mtr) | STATUS |
|---|---|---|---|---|---|---|
| 1 | AALI MASJID | 3.04X2.75 | 3 | 2.1 | - | Completed & handed over to SMC |
| 2 | ALAMGARI BAZAR | 3.04X2.75 | - | - | - | Completed & handed over to SMC |
| 3 | AMDA KADAL | 3.04X2.76 | 2 | 1.5 | - | Completed & handed over to SMC |
| 4 | ARAMWARI | 3.04X2.74 | 2.1 | 2.1 | - | Completed & handed over to SMC |
| 5 | BARZULLA | 4.57X4.26 | 4 | 3 | - | Completed & handed over to SMC |
| 6 | BUL BUL BAGH | 3.04X2.74 | - | - | - | Completed & handed over to SMC |
| 7 | CHANAPORA SLUICE | 4.57X4.26 | 4.5 | 3 | 3 | Completed & handed over to SMC |
| 8 | COPERATIVE COLONY | 3.04X2.74 | 4 | 2.1 | | Completed & handed over to SMC |
| 9 | FIRDOUSABAD | 5.48X10.97 | - | 3 | | Completed & handed over to SMC |
| 10 | FRUIT MANDI | 4.57X4.26 | 4 | 1.5 | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| 11 | GANI MEMORIAL STADIUM | 4.57X5.26 | 3 | 2.1 (2NO.) | | |
| 12 | GOJWARA | 3.04X2.74 | 3 | 1.5 | | |
| 13 | HASI BHAT 2 | 4.57X4.26 | 1.5 | 1.5 | | |
| 14 | HASSI BHAT I | X3.04X2.74 | 1.5 | 1.5 | | |
| 15 | KHACHARPORA | 4.57X4.26 | | 2.1 | | |
| 16 | KHAN COLONY CHANAPORA | 3.04X2.74 | 2.1 | 1.5 | | |
| 17 | LAL MANDI | 5.48X10.97 | 4 | - | | |
| 18 | LAL TRAG | 5.48X10.98 | 4.5 | - | | |
| 19 | LASJAN | | 5 | - | | |
| 20 | LOWER PARIMPORA | 4.57X4.26 | - | 3 | | |
| 21 | MAGRAY MOHALLA | 4.57X4.26 | 3 | - | | |
| 22 | MEHJOOR NAGAR | 4.57X4.26 | - | 3 | 4.5 | |
| 23 | MUGGHAL MASJID | 3.04X2.74 | - | 1.5 | | |
| 24 | NATIPORA | 7.62X4.57 | - | 3 | | |
| 25 | OLD ZERO BRIDGE | 3.04X2.74 | - | 1.5 | - | |
| 26 | PAMPOSH COLONY | 3.04X2.75 | 3 | 2.1 | - | |
| 27 | PARRAY PORA | 3.04X2.76 | 2.1 | 1.5 | - | |
| 28 | PEERBAGH | 3.04X2.74 | 4 | - | - | |
| 29 | RADPORA | 4.57X4.26 | 4 | 1.5 | - | |
| 30 | RATHPORA | 4.57X4.27 | - | - | 1.5 | |
| 31 | RATTAN RANI | 7.62X4.57 | - | 3 | 3 | |
| 32 | RAWALPORA | 7.62X4.57 | 3 | - | - | |
| 33 | REITENG KHANYAR | 3.04X2.74 | - | - | 1.5 | |
| 34 | ROSE AVENUE | 7.62X4.57 | - | - | 2.1 | |
| 35 | SP COLLEGE | 3.04X2.74 | 2.1 | 2.1 | - | |
| 36 | SADAR | 3.04X2.74 | - | - | - | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | MOHALLA | | | | | |
| 37 | SHAHEEN COLONY | 5.48X10.97 | 4.5 | 3 | - | |
| 38 | SHAKOOR COLONY | 3.04X2.74 | 4 | - | - | |
| 39 | SHALTENG II | 3.04X2.74 | 3 | 1.5 | - | |
| 40 | SHALTENG VILLAGE | 3.04X2.74 | 4 | 2.1 | - | |
| 41 | SHUHAMPORA | 7.62X4.57 | 3 | 2.1 | - | |
| 42 | SARNAI MOHALLA | 3.04X2.74 | 1.5 | 1.5 | 1.5 | |
| 43 | TERGARIPORA | 3.04X2.74 | - | 1.5 | 2.1 | |
| 44 | ZAMP KADAL | 4.57X4.26 | 2.1 | 2.1 | - | |
| 45 | ROSE LANE | 3.04X2.74 | - | - | - | |
| 46 | NOWGAM IPS | | | | | |
| 47 | CHANAPORA MPS | | | | | |
| 48 | TENGPORA | | | | | |
| 49 | BEMINA FRUIT MANDI | | | | | |

**MECHANICAL WORKS:**

The Mechanical works for **45 Dewatering Stations** have been successfully up-graded, this up-gradation especially includes the installation of Submersible Pumps. These submersible pumps were conceptualized after the 2014 floods, due to the earlier pumps (Vertical Pumps) installed were unable to operate/work because of flood immersion of the pumps.

Accordingly, improvement/augmentation work in existing 49 number of storm water dewatering pumping stations located in & around Srinagar City has been identified. The works include the rehabilitation/construction of new pumping stations & sumps at the existing sites including the installation of new pumping machinery (Submersible type) and all other necessary equipments having compatibility for the SCADA system with the intension to place the machinery above now established HFL (High Flood Level - i.e. after Floods-2014) after taking into account the catchment area.

Also the EOT cranes have been installed for the maintenance of the equipment installed under this up-gradation. The Valves through actuators installed are SCADA compatible This SCADA system enables the remote operation for Pumps, Valves from BCC & MCC centres.

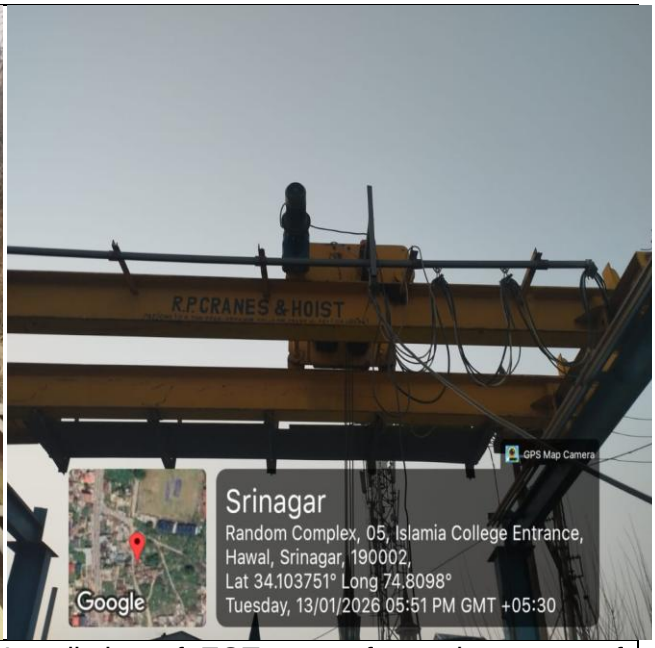
The details of the 49 Dewatering Stations (Mechanical Equipment) completed under JTFRP:

| S. No | Name of the Station | Pump Capacity (Cusec) | No. of Pumps Installed | Head (in mm) | Power Rating (KW) | Remarks |
|---|---|---|---|---|---|---|
| 1 | S P College | 3 | 2 | 10 | 18.5 | Completed |
| 2 | Shaheen Colony | 5 | 3 | 12 | 37 | Completed |
| 3 | Gani Stadium | 2 | 2 | 12 | 15 | Completed |
| | | 3 | 1 | 12.5 | 22.4 | Completed |
| 4 | Natipora | 10 | 1 | 12 | 68 | Completed |
| | | 5 | 2 | 13 | 37 | Completed |
| 5 | Ratan Rani | 10 | 1 | 9 | 50 | Completed |
| | | 5 | 2 | 10 | 28 | Completed |
| 6 | Firdousabad | 20 | 2 | 13 | 147 | Completed |
| | | 10 | 1 | 13 | 73 | Completed |
| | | 5 | 2 | 13 | 37 | Completed |
| 7 | Bul Bulbagh | 5 | 3 | 10 | 28 | Completed |
| 8 | Mughal Masjid | 1 | 2 | 8 | 4.5 | Completed |
| 9 | Shalteng Village | 3 | 4 | 11 | 18.7 | Completed |
| 10 | Shalteng-II | 5 | 1 | 9 | 30 | Completed |
| | | 3 | 1 | 8 | 15 | Completed |
| 11 | Chanapora Sluice | 10 | 3 | 10 | 55 | Completed |
| 12 | Gojwara | 2 | 2 | 8 | 11.2 | Completed |
| 13 | Pamposh Colony | 3 | 1 | 9 | 15 | Completed |
| | | 2 | 2 | 9 | 11.2 | Completed |

| | | | | | | |
|---|---|---|---|---|---|---|
| 14 | Parraypora | 3 | 1 | 10 | 18.7 | Completed |
| | | 2 | 1 | 9 | 11.2 | Completed |
| 15 | Fruit Mandi | 5 | 2 | 10 | 30 | Completed |
| | | 2 | 1 | 10 | 11.2 | Completed |
| 16 | Aali Masjid | 5 | 4 | 13 | 37.5 | Completed |
| 17 | Rawalpora | 5 | 3 | 10 | 30 | Completed |
| | | 3 | 1 | 10 | 18.5 | Completed |
| 18 | Zampa Kadal | 3 | 2 | 9 | 15 | Completed |
| | | 2 | 1 | 9 | 11.2 | Completed |
| 19 | Aramwari | 2 | 2 | 9 | 11.2 | Completed |
| 20 | Magray Mohalla | 10 | 3 | 10 | 55.95 | Completed |
| 21 | Shakoor Colony | 3 | 4 | 8 | 14.92 | Completed |
| 22 | Lal Mandi | 10 | 1 | 12 | 75 | Completed |
| | | 5 | 2 | 14 | 37 | Completed |
| | | 3 | 1 | 14 | 22.4 | Completed |
| 23 | Mehjoor Nagar | 10 | 2 | 13 | 75 | Completed |
| | | 5 | 2 | 13 | 37 | Completed |
| 24 | Lal Trag | 10 | 2 | 14 | 75 | Completed |
| | | 5 | 2 | 15 | 44.76 | Completed |
| 25 | Sardar Mohalla | 3 | 2 | 10 | 18.7 | Completed |
| 26 | Rathpora | 5 | 3 | 11 | 30 | Completed |
| 27 | Radpora | 3 | 2 | 8 | 14.92 | Completed |

| | | | | | | |
|---|---|---|---|---|---|---|
| 28 | Roselane | 3 | 4 | 10 | 18.65 | Completed |
| 29 | Cooperative Colony | 1 | 1 | 6 | 37.3 | Completed |
| | | 5 | 2 | 7 | 18.65 | Completed |
| | | 3 | 1 | 7 | 11.2 | Completed |
| 30 | Lasjan | 10 | 2 | 10 | 55.95 | Completed |
| | | 5 | 3 | 11 | 30 | Completed |
| 31 | Shuhampora | 1 | 3 | 11 | 7.5 | Completed |
| 32 | Barzulla | 20 | 1 | 10 | 112 | Completed |
| | | 10 | 2 | 10 | 55.95 | Completed |
| | | 5 | 1 | 11 | 30 | Completed |
| 33 | Reiteng | 1 | 2 | 6 | 3.7 | Completed |
| 34 | Chanapora MPS | 13.7 | 2 | 10.5 | 80 | Completed |
| | | 10 | 1 | 12 | 65 | Completed |
| | | 2 | 3 | 12 | 15 | Completed |
| 35 | Chanapora IPS | 21 | 2 | 13.5 | 155 | Completed |
| | | 10 | 1 | 14.5 | 80 | Completed |
| | | 2 | 3 | 17 | 18.65 | Completed |
| 36 | Lower Parimpora | 10 | 2 | 9 | 55.95 | Completed |
| | | 5 | 1 | 10 | 30 | Completed |
| 37 | Hassi Bhat-I | 2 | 2 | 11 | 15 | Completed |
| 38 | Hassi-Bhat-II | 1 | 2 | 12 | 7.5 | Completed |
| 39 | Tenpora Bridge | 26 | 2 | 9 | 130 | Completed |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | 11 | 1 | 10.5 | 65 | Completed |
| | | 2 | 3 | 11 | 12 | Completed |
| 40 | Fruit Mandi JVC | 15 | 2 | 16 | 130 | Completed |
| | | 5 | 2 | 17 | 50 | Completed |
| | | 2.5 | 3 | 17 | 22.4 | Completed |
| 41 | Rose Avenue | 5 | 2 | 12 | 37.3 | Completed |
| | | 3 | 1 | 14 | 22.38 | Completed |
| 42 | Amda Kadal | 2 | 2 | 15 | 18.65 | Completed |
| 43 | Tergaripora | 1 | 2 | 9 | 5 | Completed |
| 44 | Khacharpora | 5 | 3 | 9 | 30 | Completed |
| 45 | Alamgari Bazar | 1 | 2 | 8 | 5 | Completed |
| 46 | Old Zero Bridge | 2 | 2 | 9 | 11.2 | Station Dropped due to Sub Judice matter |
| 47 | Peerbagh | 20 | 1 | 11 | 120 | Station Dropped due to Sub Judice matter |
| | | 10 | 1 | 10 | 55.95 | |
| | | 10 | 1 | 12 | 65 | |
| | | 5 | 1 | 11 | 30 | |
| 48 | Surnai Mohalla | 1 | Station Dropped due to Land Issue | | | |
| 49 | Khan Colony | 3 | Station Dropped due to Land Issue | | | |

| | |
|---|---|
|  |  |
| Actuators installed at Sump well | Installation of EOT crane for maintenance of Submersible Pumps & Other accessories. |
|  |  |
| Actuators & Valves installed at Sump well | EOT Crane inspection at Factory, Hyderabad |

## ELECTRICAL WORKS:

The electrical works for **45 Dewatering Pumping Stations (49stations – 4 Stations Dropped)** have been successfully completed, transforming the pumping infrastructure through comprehensive modernization and standardization. The scope of work included replacement of the existing electrical arrangements with fully engineered systems comprising new distribution transformers, servo voltage stabilizers, APFC panels, diesel generator sets, and LT panels designed as per latest standards. All installations have been executed with proper protection, control, metering, earthing, and safety provisions, resulting in enhanced reliability, improved power quality, reduced downtime, and compliance with current electrical codes and operational requirements.

Dedicated electrical transformers have been established for individual dewatering pumping stations to ensure stable, controlled, and efficient power distribution. Each transformer is equipped with protection systems, metering, and associated LT distribution panels, eliminating dependency on shared electrical sources. This configuration improves voltage regulation, fault isolation, operational flexibility, and simplifies maintenance, while ensuring compliance with applicable electrical standards and safety requirements.

Each pumping station has been provided with a reliable backup power supply system through appropriately rated diesel generator sets to ensure uninterrupted operation during power failures due to faults. The generator systems are integrated with automatic mains failure panels arrangements, LT panels, and essential protections to enable seamless power transfer. This provision ensures continuous dewatering operations during emergency conditions like floods, which enhances system resilience, and supports critical infrastructure reliability.

Servo voltage stabilizers have been installed at the dewatering pumping stations to maintain a stable and regulated voltage supply to critical electrical and electromechanical equipment. The stabilizers ensure protection against voltage fluctuations, under-voltage, and over-voltage conditions, thereby improving equipment performance, reducing thermal stress on motors, and enhancing overall system reliability and service life.

All critical electrical equipment at the dewatering pumping stations has been installed above the designated highest flood Level (2014 HFL) to ensure operational safety and continuity during adverse flood conditions. LT panels, motor control panels, APFC panels, servo stabilizers, and associated control equipment, all mounted inside the control room building located inside the pump room building above 2014 highest floor Level, while as transformers, Metering arrangement (tri-vector meters) were mounted above HFL on the 2 /4 pole structure platform The arrangement minimizes the risk of water ingress, electrical faults, and equipment damage, thereby enhancing system reliability, personnel safety, and long-term serviceability.

A structured cable management system has been implemented through the provision of cable trays and cable ladders for routing power and control cables in an organized and secure manner. This arrangement ensures adequate mechanical protection, proper segregation of power and control cables, ease of inspection and

maintenance, improved heat dissipation, and enhanced safety, while maintaining compliance with applicable electrical installation standards.

Automatic Power Factor Correction (APFC) panels have been installed to improve the power factor of the electrical system, reducing reactive power consumption, minimizing energy losses, and enhancing the overall efficiency of the pumping station electrical network.

A comprehensive earthing system has been provided for all dewatering pumping stations, by providing earth pits, earth rods, and earth strips which ensures low-resistance paths for fault currents, enhancing personnel safety and equipment protection.

Below are the Photographs of various electrical equipments installed in the pumping stations above highest flood level 2014.

| | |
|---|---|
|  |  |
| Installation of Transformer on 4 Pole Structure above HFL 2014 | Installation of LT panel inside control room located in first floor of Pumping station which is above HFL 2014 |

| | |
|---|---|
|  |  |
| Installation of DG Set inside control room located in first floor of pumping station which is above HFL 2014 | Installation of Servo Stablizer inside control room located in first floor of pumping station which is above HFL 2014 |
|  |  |
| Installation of AMF Panel inside control room located in first floor of pumping station which is above HFL 2014 | Cable Management Through cable ladders and trays inside the control room |

Below is the list of electrical equipments along with the ratings for individual pumping stations: -

1. **Aali Masjid Pumping Station**

| Sr. | Item Description | Qty. | Ratings |
|---|---|---|---|
| i. | **Transformer** | 01 | 200KVA |
| ii. | **Servo Stabilizer** | 01 | 200KVA |
| iii. | **Generator** | 01 | 200KVA |
| iv. | **Other Electrical Equipments including LT Panel, APFC Panels, AMF Panel, Earthing Systems and related power & control cables and accessories** | | As per Site |

2. **Alamgiri Bazar Pumping Station**

| Sr. | Item Description | Qty. | Ratings |
|---|---|---|---|
| i. | **Transformer** | 01 | 16KVA |
| ii. | **Servo Stabilizer** | 01 | 16KVA |
| iii. | **Generator** | 01 | 10KVA |
| iv. | **Other Electrical Equipments including LT Panel, APFC Panels, AMF Panel, Earthing Systems and related power & control cables and accessories** | | As per Site |

3. **Amda Kadal Pumping Station**

| Sr. | Item Description | Qty. | Ratings |
|---|---|---|---|
| i. | **Transformer** | 01 | 50KVA |
| ii. | **Servo Stabilizer** | 01 | 50KVA |
| iii. | **Generator** | 01 | 40KVA |
| iv. | **Other Electrical Equipments including LT Panel, APFC Panels, AMF Panel, Earthing Systems and related power & control cables and accessories** | | As per Site |

### 4. Aramwari Pumping Station

| Sr. | Item Description | Qty. | Ratings |
|---|---|---|---|
| i. | Transformer | 01 | 40KVA |
| ii. | Servo Stabilizer | 01 | 40KVA |
| iii. | Generator | 01 | 25KVA |
| iv. | Other Electrical Equipments including LT Panel, APFC Panels, AMF Panel, Earthing Systems and related power & control cables and accessories | | As per Site |

### 5. Barzulla Flyover Pumping Station

| Sr. | Item Description | Qty. | Ratings |
|---|---|---|---|
| i. | Transformer | 01 | 400KVA |
| ii. | Servo Stabilizer | 01 | 400KVA |
| iii. | Generator | 01 | 140KVA |
| | | 01 | 180KVA |
| iv. | Other Electrical Equipments including LT Panel, APFC Panels, AMF Panel, Earthing Systems and related power & control cables and accessories | | As per Site |

### 6. Bul Bul Bagh Pumping Station

| Sr. | Item Description | Qty. | Ratings |
|---|---|---|---|
| i. | Transformer | 01 | 150KVA |
| ii. | Servo Stabilizer | 01 | 150KVA |
| iii. | Generator | 01 | 125KVA |
| iv. | Other Electrical Equipments including LT Panel, APFC Panels, AMF Panel, Earthing Systems and related power & control cables and accessories | | As per Site |

### 7. Chanapora Sluice Pumping Station

| Sr. | Item Description | Qty. | Ratings |
|---|---|---|---|
| i. | Transformer | 01 | 200KVA |
| ii. | Servo Stabilizer | 01 | 200KVA |
| iii. | Generator | 01 | 200KVA |
| iv. | Other Electrical Equipments including LT Panel, APFC Panels, AMF Panel, Earthing Systems and related power & control cables and accessories | | As per Site |

### 8. Cooperative Colony Pumping Station

| Sr. | Item Description | Qty. | Ratings |
|---|---|---|---|
| i. | Transformer | 01 | 150KVA |
| ii. | Servo Stabilizer | 01 | 150KVA |
| iii. | Generator | 01 | 140KVA |
| iv. | Other Electrical Equipments including LT Panel, APFC Panels, AMF Panel, Earthing Systems and related power & control cables and accessories | | As per Site |

### 9. Firdous Abad Pumping Station

| Sr. | Item Description | Qty. | Ratings |
|---|---|---|---|
| i. | Transformer | 01 | 630KVA |
| ii. | Servo Stabilizer | 01 | 400KVA |
| | | 01 | 315KVA |
| iii. | Generator | 01 | 320KVA |
| | | 01 | 250KVA |
| iv. | Other Electrical Equipments including LT Panel, APFC Panels, AMF Panel, Earthing Systems and related power & control cables and accessories | | As per Site |

### 10. Fruit Mandi Pumping Station

| Sr. | Item Description | Qty. | Ratings |
|---|---|---|---|
| i. | **Transformer** | 01 | 100KVA |
| ii. | **Servo Stabilizer** | 01 | 100KVA |
| iii. | **Generator** | 01 | 82.50KVA |
| iv. | **Other Electrical Equipments including LT Panel, APFC Panels, AMF Panel, Earthing Systems and related power & control cables and accessories** | | As per Site |

### 11. Gani Memorial Pumping Station

| Sr. | Item Description | Qty. | Ratings |
|---|---|---|---|
| i. | **Transformer** | 01 | 100KVA |
| ii. | **Servo Stabilizer** | 01 | 100KVA |
| iii. | **Generator** | 01 | 82.50KVA |
| iv. | **Other Electrical Equipments including LT Panel, APFC Panels, AMF Panel, Earthing Systems and related power & control cables and accessories** | | As per Site |

### 12. Gojwara Pumping Station

| Sr. | Item Description | Qty. | Ratings |
|---|---|---|---|
| i. | **Transformer** | 01 | 40KVA |
| ii. | **Servo Stabilizer** | 01 | 40KVA |
| iii. | **Generator** | 01 | 25KVA |
| iv. | **Other Electrical Equipments including LT Panel, APFC Panels, AMF Panel, Earthing Systems and related power & control cables and accessories** | | As per Site |

### 13. Hassi Bhat-1 Pumping Station

| Sr. | Item Description | Qty. | Ratings |
|---|---|---|---|
| i. | **Transformer** | 01 | 40KVA |
| ii. | **Servo Stabilizer** | 01 | 40KVA |
| iii. | **Generator** | 01 | 25KVA |
| iv. | **Other Electrical Equipments including LT Panel, APFC Panels, AMF Panel, Earthing Systems and related power & control cables and accessories** | | As per Site |

### 14. Hassi Bhat-2 Pumping Station

| Sr. | Item Description | Qty. | Ratings |
|---|---|---|---|
| i. | **Transformer** | 01 | 40KVA |
| ii. | **Servo Stabilizer** | 01 | 40KVA |
| iii. | **Generator** | 01 | 25KVA |
| iv. | **Other Electrical Equipments including LT Panel, APFC Panels, AMF Panel, Earthing Systems and related power & control cables and accessories** | | As per Site |

### 15. Khacharpora Pumping Station

| Sr. | Item Description | Qty. | Ratings |
|---|---|---|---|
| i. | **Transformer** | 01 | 150KVA |
| ii. | **Servo Stabilizer** | 01 | 150KVA |
| iii. | **Generator** | 01 | 125KVA |
| iv. | **Other Electrical Equipments including LT Panel, APFC Panels, AMF Panel, Earthing Systems and related power & control cables and accessories** | | As per Site |

### 16. Lal Mandi Pumping Station

| Sr. | Item Description | Qty. | Ratings |
|---|---|---|---|
| i. | **Transformer** | 01 | 315KVA |
| ii. | **Servo Stabilizer** | 01 | 315KVA |
| iii. | **Generator** | 01 | 320KVA |
| iv. | **Other Electrical Equipments including LT Panel, APFC Panels, AMF Panel, Earthing Systems and related power & control cables and accessories** | | As per Site |

### 17. Lal Trag Pumping Station

| Sr. | Item Description | Qty. | Ratings |
|---|---|---|---|
| i. | **Transformer** | 01 | 315KVA |
| ii. | **Servo Stabilizer** | 01 | 315KVA |
| iii. | **Generator** | 01 | 320KVA |
| iv. | **Other Electrical Equipments including LT Panel, APFC Panels, AMF Panel, Earthing Systems and related power & control cables and accessories** | | As per Site |

### 18. Lasjan Pumping Station

| Sr. | Item Description | Qty. | Ratings |
|---|---|---|---|
| i. | **Transformer** | 01 | 400KVA |
| ii. | **Servo Stabilizer** | 01 | 400KVA |
| iii. | **Generator** | 01 | 180KVA |
| | | 01 | 140KVA |
| iv. | **Other Electrical Equipments including LT Panel, APFC Panels, AMF Panel, Earthing Systems and related power & control cables and accessories** | | As per Site |

### 19. Lower Parimpora Pumping Station

| Sr. | Item Description | Qty. | Ratings |
|---|---|---|---|
| i. | Transformer | 01 | 200KVA |
| ii. | Servo Stabilizer | 01 | 200KVA |
| iii. | Generator | 01 | 180KVA |
| iv. | Other Electrical Equipments including LT Panel, APFC Panels, AMF Panel, Earthing Systems and related power & control cables and accessories | | As per Site |

### 20. Magray Mohalla Pumping Station

| Sr. | Item Description | Qty. | Ratings |
|---|---|---|---|
| i. | Transformer | 01 | 250KVA |
| ii. | Servo Stabilizer | 01 | 250KVA |
| iii. | Generator | 01 | 250KVA |
| iv. | Other Electrical Equipments including LT Panel, APFC Panels, AMF Panel, Earthing Systems and related power & control cables and accessories | | As per Site |

### 21. Mehjoor Nagar Pumping Station

| Sr. | Item Description | Qty. | Ratings |
|---|---|---|---|
| i. | Transformer | 01 | 315KVA |
| ii. | Servo Stabilizer | 01 | 315KVA |
| iii. | Generator | 01 | 320KVA |
| iv. | Other Electrical Equipments including LT Panel, APFC Panels, AMF Panel, Earthing Systems and related power & control cables and accessories | | As per Site |

### 22. Mughal Masjid Pumping Station

| Sr. | Item Description | Qty. | Ratings |
|---|---|---|---|
| i. | Transformer | 01 | 40KVA |
| ii. | Servo Stabilizer | 01 | 40KVA |
| iii. | Generator | 01 | 25KVA |
| iv. | Other Electrical Equipments including LT Panel, APFC Panels, AMF Panel, Earthing Systems and related power & control cables and accessories | | As per Site |

### 23. Natipora Pumping Station

| Sr. | Item Description | Qty. | Ratings |
|---|---|---|---|
| i. | Transformer | 01 | 250KVA |
| ii. | Servo Stabilizer | 01 | 250KVA |
| iii. | Generator | 01 | 250KVA |
| iv. | Other Electrical Equipments including LT Panel, APFC Panels, AMF Panel, Earthing Systems and related power & control cables and accessories | | As per Site |

### 24. Pamposh Colony Pumping Station

| Sr. | Item Description | Qty. | Ratings |
|---|---|---|---|
| i. | Transformer | 01 | 63KVA |
| ii. | Servo Stabilizer | 01 | 63KVA |
| iii. | Generator | 01 | 62.5KVA |
| iv. | Other Electrical Equipments including LT Panel, APFC Panels, AMF Panel, Earthing Systems and related power & control cables and accessories | | As per Site |

### 25. Parray Pora Pumping Station

| Sr. | Item Description | Qty. | Ratings |
|---|---|---|---|
| i. | **Transformer** | 01 | 50KVA |
| ii. | **Servo Stabilizer** | 01 | 50KVA |
| iii. | **Generator** | 01 | 40KVA |
| iv. | **Other Electrical Equipments including LT Panel, APFC Panels, AMF Panel, Earthing Systems and related power & control cables and accessories** | | As per Site |

### 26. Radpora Pumping Station

| Sr. | Item Description | Qty. | Ratings |
|---|---|---|---|
| i. | **Transformer** | 01 | 50KVA |
| ii. | **Servo Stabilizer** | 01 | 50KVA |
| iii. | **Generator** | 01 | 30KVA |
| iv. | **Other Electrical Equipments including LT Panel, APFC Panels, AMF Panel, Earthing Systems and related power & control cables and accessories** | | As per Site |

### 27. Rathpora Pumping Station

| Sr. | Item Description | Qty. | Ratings |
|---|---|---|---|
| i. | **Transformer** | 01 | 150KVA |
| ii. | **Servo Stabilizer** | 01 | 150KVA |
| iii. | **Generator** | 01 | 125KVA |
| iv. | **Other Electrical Equipments including LT Panel, APFC Panels, AMF Panel, Earthing Systems and related power & control cables and accessories** | | As per Site |

### 28. Rattan Rani Pumping Station

| Sr. | Item Description | Qty. | Ratings |
|---|---|---|---|
| i. | **Transformer** | 01 | 200KVA |
| ii. | **Servo Stabilizer** | 01 | 200KVA |
| iii. | **Generator** | 01 | 180KVA |
| iv. | **Other Electrical Equipments including LT Panel, APFC Panels, AMF Panel, Earthing Systems and related power & control cables and accessories** | | As per Site |

### 29. Rawal Pora Pumping Station

| Sr. | Item Description | Qty. | Ratings |
|---|---|---|---|
| i. | **Transformer** | 01 | 150KVA |
| ii. | **Servo Stabilizer** | 01 | 150KVA |
| iii. | **Generator** | 01 | 160KVA |
| iv. | **Other Electrical Equipments including LT Panel, APFC Panels, AMF Panel, Earthing Systems and related power & control cables and accessories** | | As per Site |

### 30. Reitang Khanyar Pumping Station

| Sr. | Item Description | Qty. | Ratings |
|---|---|---|---|
| i. | **Transformer** | 01 | 100KVA |
| ii. | **Servo Stabilizer** | 01 | 10KVA |
| iii. | **Generator** | 01 | 7.5KVA |
| iv. | **Other Electrical Equipments including LT Panel, APFC Panels, AMF Panel, Earthing Systems and related power & control cables and accessories** | | As per Site |

### 31. Rose Avenue Pumping Station

| Sr. | Item Description | Qty. | Ratings |
|---|---|---|---|
| i. | **Transformer** | 01 | 200KVA |
| ii. | **Servo Stabilizer** | 01 | 200KVA |
| iii. | **Generator** | 01 | 180KVA |
| iv. | **Other Electrical Equipments including LT Panel, APFC Panels, AMF Panel, Earthing Systems and related power & control cables and accessories** | | As per Site |

### 32. SP College Pumping Station

| Sr. | Item Description | Qty. | Ratings |
|---|---|---|---|
| i. | **Transformer** | 01 | 63KVA |
| ii. | **Servo Stabilizer** | 01 | 40KVA |
| iii. | **Generator** | 01 | 40KVA |
| iv. | **Other Electrical Equipments including LT Panel, APFC Panels, AMF Panel, Earthing Systems and related power & control cables and accessories** | | As per Site |

### 33. Sardar Mohalla Pumping Station

| Sr. | Item Description | Qty. | Ratings |
|---|---|---|---|
| i. | **Transformer** | 01 | 50KVA |
| ii. | **Servo Stabilizer** | 01 | 50KVA |
| iii. | **Generator** | 01 | 40KVA |
| iv. | **Other Electrical Equipments including LT Panel, APFC Panels, AMF Panel, Earthing Systems and related power & control cables and accessories** | | As per Site |

### 34. Shaheen Colony Pumping Station

| Sr. | Item Description | Qty. | Ratings |
|---|---|---|---|
| i. | **Transformer** | 01 | 150KVA |
| ii. | **Servo Stabilizer** | 01 | 150KVA |
| iii. | **Generator** | 01 | 125KVA |
| iv. | **Other Electrical Equipments including LT Panel, APFC Panels, AMF Panel, Earthing Systems and related power & control cables and accessories** | | As per Site |

### 35. Shakoor Colony Pumping Station

| Sr. | Item Description | Qty. | Ratings |
|---|---|---|---|
| i. | **Transformer** | 01 | 100KVA |
| ii. | **Servo Stabilizer** | 01 | 100KVA |
| iii. | **Generator** | 01 | 100KVA |
| iv. | **Other Electrical Equipments including LT Panel, APFC Panels, AMF Panel, Earthing Systems and related power & control cables and accessories** | | As per Site |

### 36. Shalteng Village Pumping Station

| Sr. | Item Description | Qty. | Ratings |
|---|---|---|---|
| i. | **Transformer** | 01 | 150KVA |
| ii. | **Servo Stabilizer** | 01 | 150KVA |
| iii. | **Generator** | 01 | 125KVA |
| iv. | **Other Electrical Equipments including LT Panel, APFC Panels, AMF Panel, Earthing Systems and related power & control cables and accessories** | | As per Site |

### 37. Shalteng II Pumping Station

| Sr. | Item Description | Qty. | Ratings |
|---|---|---|---|
| i. | **Transformer** | 01 | 100KVA |
| ii. | **Servo Stabilizer** | 01 | 100KVA |
| iii. | **Generator** | 01 | 100KVA |
| iv. | **Other Electrical Equipments including LT Panel, APFC Panels, AMF Panel, Earthing Systems and related power & control cables and accessories** | | As per Site |

### 38. Shuhampora Colony Pumping Station

| Sr. | Item Description | Qty. | Ratings |
|---|---|---|---|
| i. | **Transformer** | 01 | 40KVA |
| ii. | **Servo Stabilizer** | 01 | 400KVA |
| iii. | **Generator** | 01 | 40KVA |
| iv. | **Other Electrical Equipments including LT Panel, APFC Panels, AMF Panel, Earthing Systems and related power & control cables and accessories** | | As per Site |

### 39. Tergaripora Pumping Station

| Sr. | Item Description | Qty. | Ratings |
|---|---|---|---|
| i. | **Transformer** | 01 | 16KVA |
| ii. | **Servo Stabilizer** | 01 | 15KVA |
| iii. | **Generator** | 01 | 10KVA |
| iv. | **Other Electrical Equipments including LT Panel, APFC Panels, AMF Panel, Earthing Systems and related power & control cables and accessories** | | As per Site |

### 40. Zampa Kadal Pumping Station

| Sr. | Item Description | Qty. | Ratings |
|---|---|---|---|
| i. | **Transformer** | 01 | 80KVA |
| ii. | **Servo Stabilizer** | 01 | As per Site |
| iii. | **Generator** | 01 | 62.5KVA |
| iv. | **Other Electrical Equipments including LT Panel, APFC Panels, AMF Panel, Earthing Systems and related power & control cables and accessories** | | As per Site |

### 41. Rose Lane Pumping Station

| Sr. | Item Description | Qty. | Ratings |
|---|---|---|---|
| i. | **Transformer** | 01 | 125KVA |
| ii. | **Servo Stabilizer** | 01 | 125KVA |
| iii. | **Generator** | 01 | 100KVA |
| iv. | **Other Electrical Equipments including LT Panel, APFC Panels, AMF Panel, Earthing Systems and related power & control cables and accessories** | | As per Site |

The following four pumping stations were provided with new LT panels along with the necessary associated cabling.

### 42. Chanapora IPS Pumping Station

| Sr. | Item Description | Qty. | Ratings |
|---|---|---|---|
| i. | **Other Electrical Equipments including LT Panel, APFC Panels, AMF Panel, Earthing Systems and related power & control cables and accessories** | | As per Site |

### 43. Chanapora MPS Pumping Station

| Sr. | Item Description | Qty. | Ratings |
|---|---|---|---|
| i. | **Other Electrical Equipments including LT Panel, APFC Panels, AMF Panel, Earthing Systems and related power & control cables and accessories** | | As per Site |

### 44. Tengpora Bridge Pumping Station

| Sr. | Item Description | Qty. | Ratings |
|---|---|---|---|
| i. | **Other Electrical Equipments including LT Panel, APFC Panels, AMF Panel, Earthing Systems and related power & control cables and accessories** | | As per Site |

### 45. Fruit mandi JVC Pumping Station

| Sr. | Item Description | Qty. | Ratings |
|---|---|---|---|
| i. | **Other Electrical Equipments including LT Panel, APFC Panels, AMF Panel, Earthing Systems and related power & control cables and accessories** | | As per Site |

For the following two pumping stations, electrical equipments were supplied only. The execution of works could not be taken up as the project was dropped due to the matter being sub judice.

### 46. Peer Bagh Pumping Station

| Sr. | Item Description | Qty. | Ratings |
|---|---|---|---|
| i. | **Transformer** | 01 | 500KVA |
| ii. | **Servo Stabilizer** | 01 | 500KVA |
| iii. | **Generator** | 01 | 140KVA |
| | | 01 | 250KVA |
| iv. | **Other Electrical Equipments including LT Panel, APFC Panels, AMF Panel, Earthing Systems and related power & control cables and accessories** | | |

### 47. Old Zero Bridge Pumping Station

| Sr. | Item Description | Qty. | Ratings |
|---|---|---|---|
| i. | **Transformer** | 01 | 40KVA |
| ii. | **Servo Stabilizer** | 01 | 40KVA |
| iii. | **Generator** | 01 | 25KVA |
| iv. | **Other Electrical Equipments including LT Panel, APFC Panels, AMF Panel, Earthing Systems and related power & control cables and accessories** | | |

The Khan Colony and Sarnai Mohalla pumping stations were dropped at the initial stage due to land issues.

**Conclusion:**

The electrical modernization of all 49 dewatering pumping stations has been successfully completed, ensuring a reliable, efficient, and safe power supply to support continuous operations. The upgraded infrastructure enhances overall performance, operational safety, and durability, aligning with modern standards and best practices.

**Key Features:**

- **Installations above HFL:** installations of electrical equipments above the highest flood level (2014 HFL) which ensure maximum safety and uninterrupted operation.
- **Dedicated Transformers:** Ensures stable and reliable power distribution for each pumping station.
- **Servo Stabilizers:** Maintains voltage stability and protects sensitive equipment.
- **APFC Panels:** Improves power factor, reducing energy losses and enhancing efficiency.
- **LT Panels:** Provides safe, reliable power distribution with integrated protection features to safeguard the electrical system and connected mechanical equipments.
- **Cable Management Systems:** Organized cable trays and ladders for easy maintenance and safety.
- **Backup Generators:** Guarantees uninterrupted operation during power system outages.
- **Robust Earthing System:** Safeguards personnel and equipment against electrical faults.

## 2.4 Contract Detail

| S. No. | Identified Activity/Work | Consultant/ Contractor Name | Awarded Cost (INR Crores) | Revised Cost (INR Crores) | Completion Cost (INR Crores) | Start Date | Date of Completion | Remarks |
|---|---|---|---|---|---|---|---|---|
| 1 | Upgradation of 49 Dewatering Stations of Srinagar Municipal Corporation in & around Srinagar City which includes construction of sump, pump house, supply, installation, testing, commissioning of electromechanical equipments. | Magray Pratibha (JV) | 103.0 | 124.2 | | 10-April-19 | 31-Dec-24 | Work Completed |
| **Project Implementation Unit (PIU)** | | | | | **Srinagar Municipal Corporation** | | | |
| **Project Management Unit (PMU)** | | | | | **JHELUM TAWI FLOOD RECOVERY PROJECT (JTFRP)** | | | |
| **Funding Agency** | | | | | **World Bank** | | | |
| **Total / Revised Contract Cost** | | | | | **124.2 Cr.** | | | |

# 3. SUMMARY OF ACHIEVEMENT

Under the Flood Mitigation and Urban Resilience Component of the Jhelum Tawi Flood Recovery Project (JTFRP), the sub-project for the Up-gradation of 49 Dewatering Stations in Srinagar was successfully implemented. These stations were rehabilitated or reconstructed at their existing strategic locations in vulnerable low-lying areas, critical infrastructure points, and urban zones lacking adequate gravity-based drainage systems. The works included construction of new sumps and procurement of high-capacity, non-clog submersible pumps, significantly enhancing emergency response capabilities and rapid dewatering of flood-prone areas

## Deliverables

**Construction of Dewatering Stations:** Successfully completed the restoration and reconstruction of 45 Stations across Srinagar.

**Electrical and mechanical up-gradation:** The Pumping Stations were provided with adequate space to house electrical and mechanical equipment such as switchboard, control panels, transformer, generator room, etc. Independent electrical control panel rooms were provided to the stations and all electrical equipment were housed therein.

**Safety and Resilience Standards:** All completed Stations met established safety standards, including requirements for seismic and flood resilience. Stations were equipped with essential facilities, including Kitchen, washroom, toilet facilities, resting room, and potable water supply

**Stakeholder Collaboration:** Effectively engaged with various stakeholders, including the SMC Department, local communities, and PMU (JTFRP), ensuring a participatory approach to stations design and construction.

**Enhanced Operational Environments:** Developed resilient and worker friendly dewatering stations that address diverse operational needs, promoting safety, efficiency, and effective flood management.

## 3.1 Performance Metrics

**Completion Rate:** Approximately 91.83 % of planned dewatering Stations successfully restored or reconstructed (45 out of 49).

**Safety Compliance:** 100% of completed stations met established safety standards.

**Operational Resilience:** Improved infrastructure supports reliable 24/7 operation, minimizes downtime, and integrates with broader urban drainage networks for sustained flood mitigation.

**Feedback from End Users:** Satisfaction level of field operators, municipal staff, and disaster management teams regarding usability, reliability, and maintenance.

**Improvement of roadside drains and Provision of pedestrian drain crossings:** Enhanced drainage efficiency and pedestrian safety across project areas.

Timely Completion of Procurement Process: Procurement completed within the planned timeline as per the procurement schedule.

Quantity and Type of Equipment Procured: Number of high-capacity and low-capacity pumps, procured against the approved Bill of Quantities (BoQ).

Impact on Flood Response Time: Reduction in response time to water logging or drainage emergencies after equipment deployment.

### 3.2 Quality Assurance

The quality assurance process for the subproject involved:

**Compliance Checks:** Regular inspections ensured that all construction adhered to safety and design standards.

**Material Quality:** Stringent testing and approval of materials used in construction to guarantee durability and safety.

**Stakeholder Involvement:** Continuous feedback from stakeholders, including community members, was incorporated to align project outcomes with required needs.

- Identification of pump specifications and capacity based on field requirements.
- Competitive National bidding process for procurement of High-Capacity Pumps.
- Delivery, testing, and commissioning of pumps.

## 4. LESSONS LEARNT

The subproject achieved several key successes:

**Effective Communication:** Strong collaboration between the SMC Department, PMU, and local communities facilitated clear communication, leading to efficient project execution.

**High-Quality Construction:** A robust quality assurance framework ensured that all dewatering stations were built in compliance with safety and design standards, resulting in durable, resilient structures equipped with reliable and efficient machinery.

**Stakeholder Engagement:** Continuous feedback from SMC, JTFRP, and community members was actively sought and integrated, ensuring that the facilities addressed local drainage needs.

**Area of improvement**

An important enhancement to the project would have been the integration of Sewage Treatment Plants (STPs) at each dewatering station. At present, during heavy rainfall and high-runoff events, storm water often mixes with domestic sewage, resulting in the discharge of untreated wastewater into natural receiving bodies such as rivers and streams. The inclusion of STPs would have ensured that water pumped out from low-lying areas is adequately treated prior to release, significantly reducing the presence of contaminants such as suspended solids, organic matter, oils, nutrients, and microbial pollutants.

# 5. CONCLUSION

## 5.1 Summary

The Sub-project successfully upgraded and reconstructed 45 dewatering stations in Srinagar, following modern structural, electro-mechanical, and safety design standards to ensure disaster resilience and reliable operation. These interventions have significantly improved the storm water management infrastructure, creating safer, more efficient, and worker-friendly facilities that support effective flood mitigation for the city. The project has laid a strong foundation for future climate and disaster-resilient urban drainage management in the region.

## Impact

- Significant reduction in water logging time during the monsoon/flood season.
- Improved confidence and safety among residents in high-risk zones.
- These specifically designed dewatering stations, equipped with state-of-the-art machinery, enable rapid water removal from flooded areas. Efficient pumping operations significantly mitigate further damage to buildings, infrastructure, and surrounding assets.
- Quick water removal and drainage also reduce the risk of structural instability and minimize the chances of health hazards such as mildew, mosquitoes, and other pests.
- By rapidly eliminating water from roads, public spaces, and critical facilities, these pumps contribute to the prompt restoration of normalcy in affected areas.

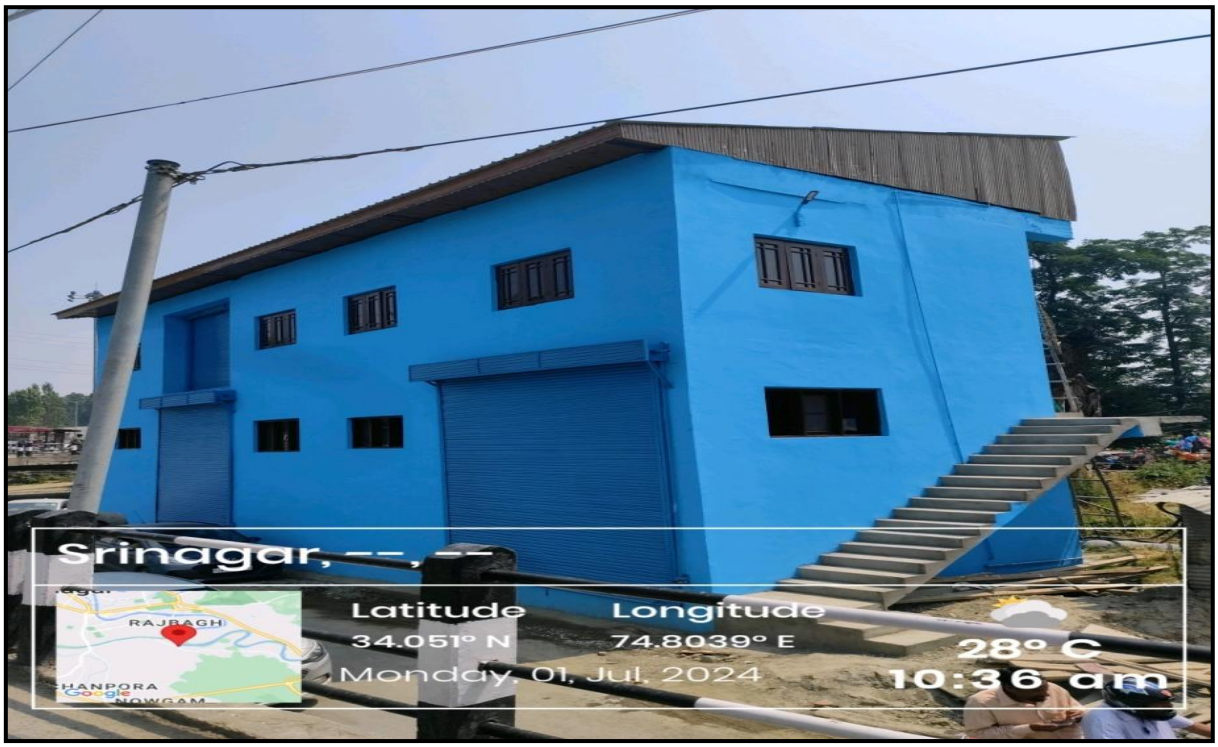
**Sustainability and Next Steps**

The project has built a foundation for better flood management. To sustain the impact:

- A maintenance schedule should be established.
- Annual review of equipment performance needs to be planned.

The project successfully met its objectives and contributed to improved urban flood resilience. The collaboration with the World Bank enabled transparent procurement and effective implementation, demonstrating a model for future disaster risk reduction investments.

## 6. PHOTOGRAPHS




**Barzulla Station**


**Rawalpora Station**


**Bul Bul Bagh Station**


**Cooperative Colony Station**


## Magray Mohalla Station


## Shaheen Colony station


**Aali Masjid station**


**Alamgari Bazar station**


**Zamp Kadal station**

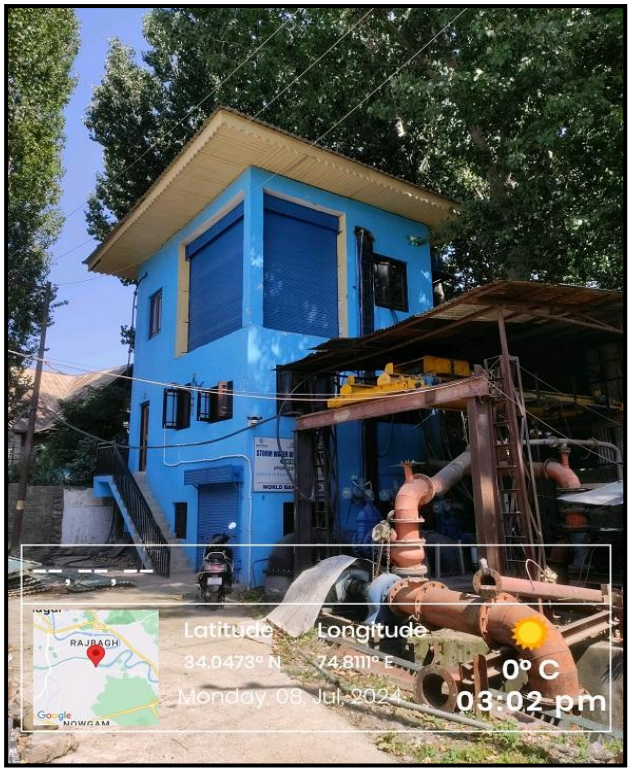

**Shuhamapopra station**


**Radapora station**

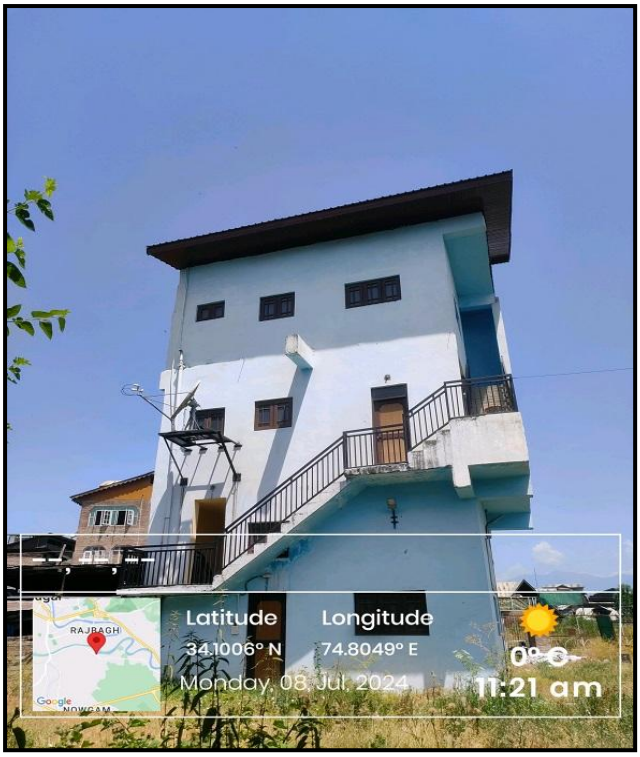

**Aramwari station**


**Gojwara station**


**Rose lane Station**

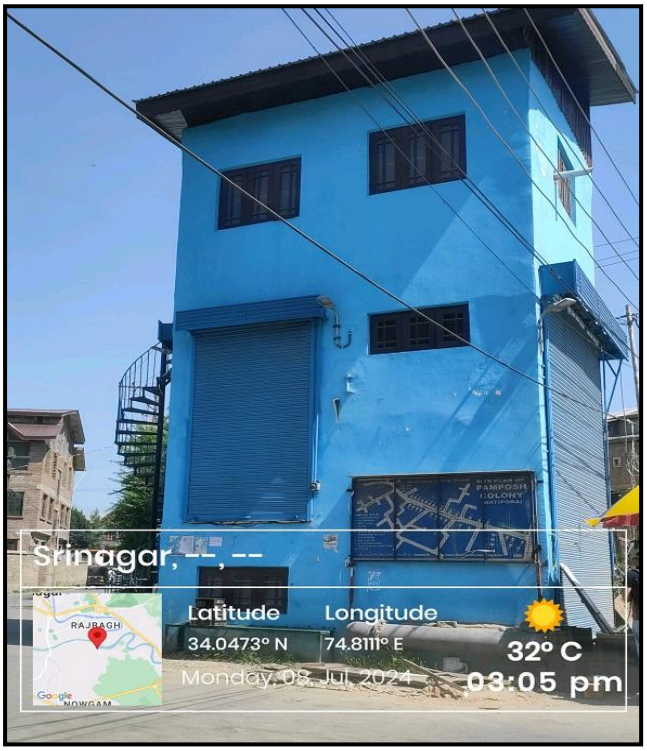



## Natipora Station

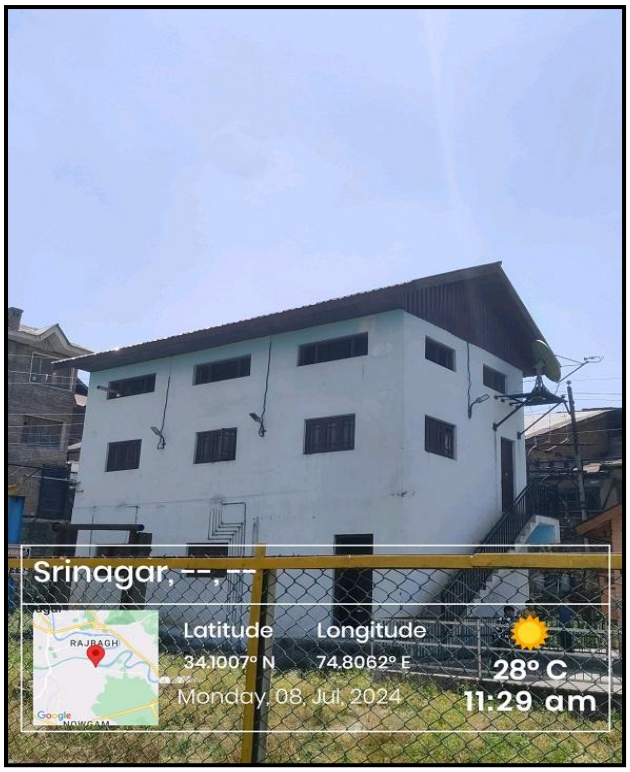



## Tergaripora station


## Rattan Rani station

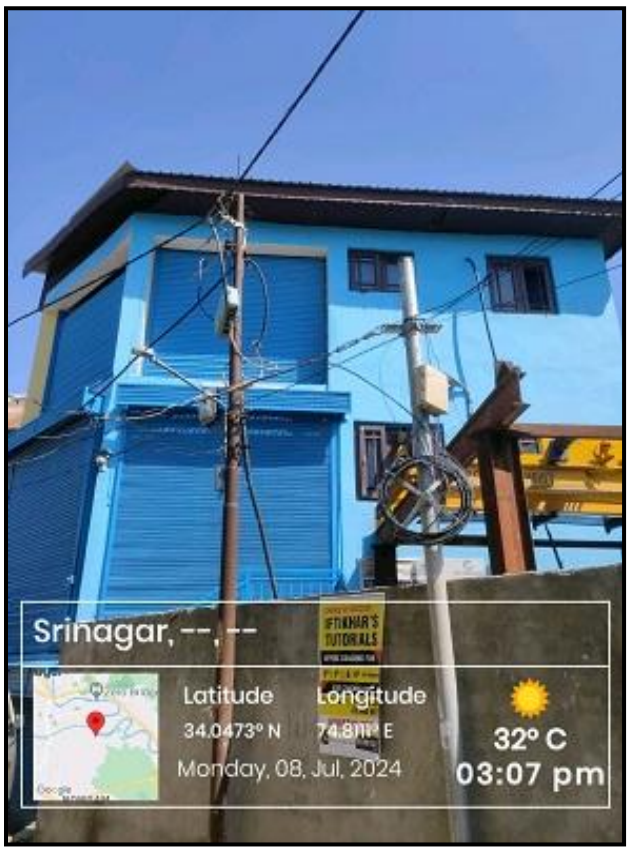



## Pamposh colony station

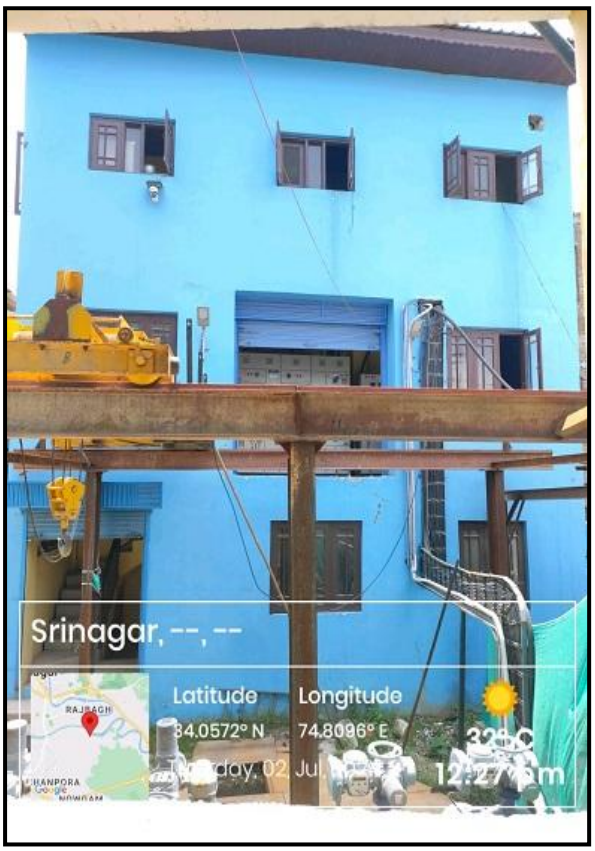



**Gani Memorial station**

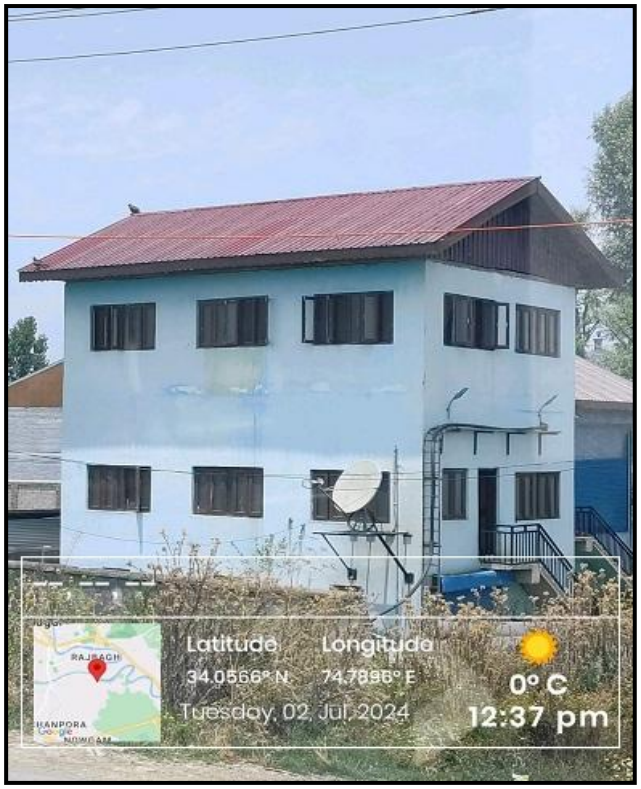

**Mughal Masjid station**



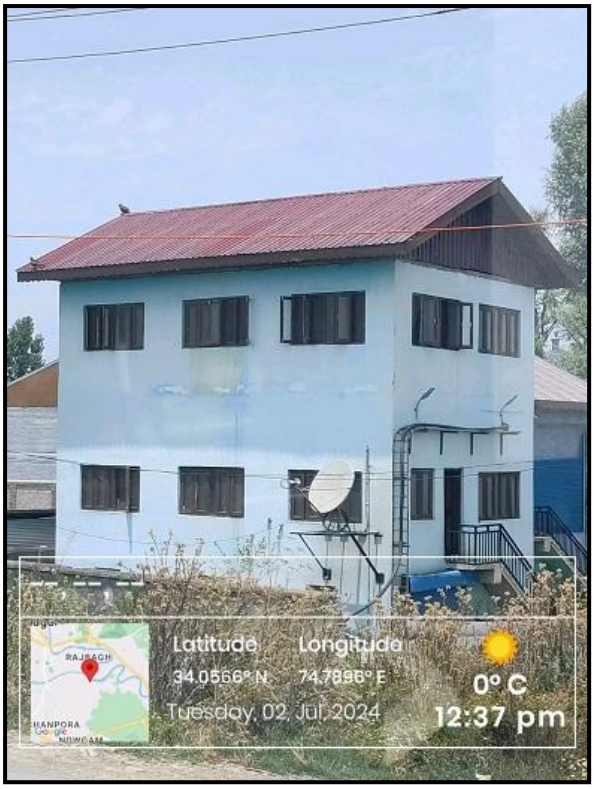

**Chanapora Sluice station**




**Mehjoor nagar station**

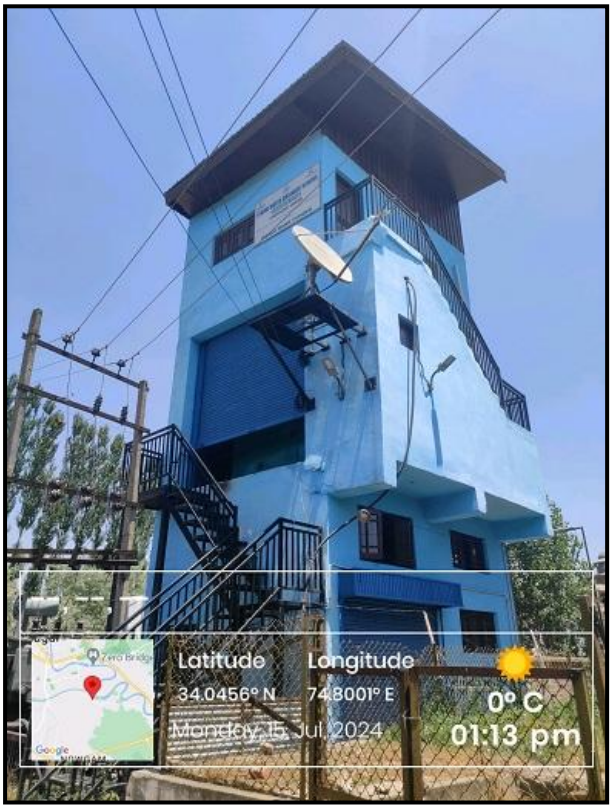



## Parray pora Station

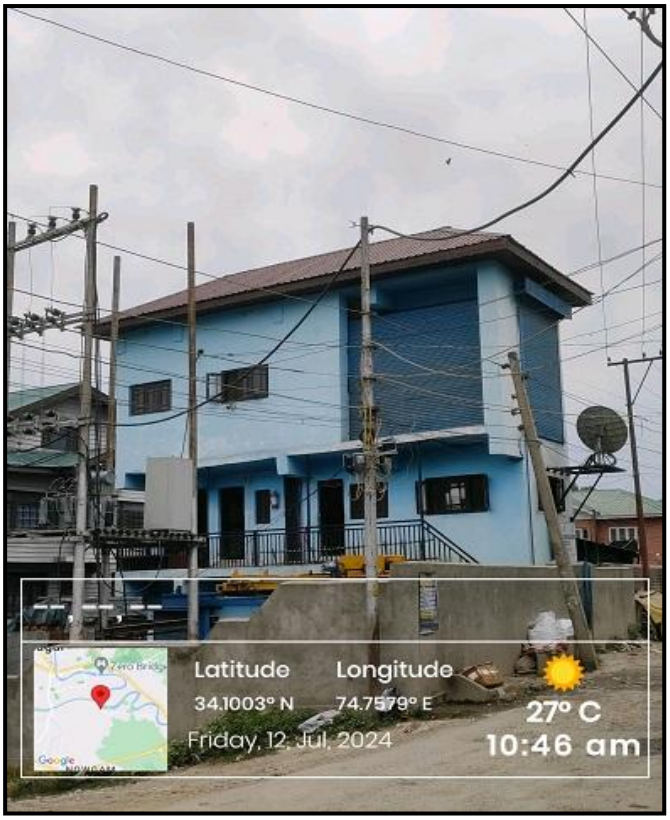



## Firdous Abad station


## Chanapora IPS



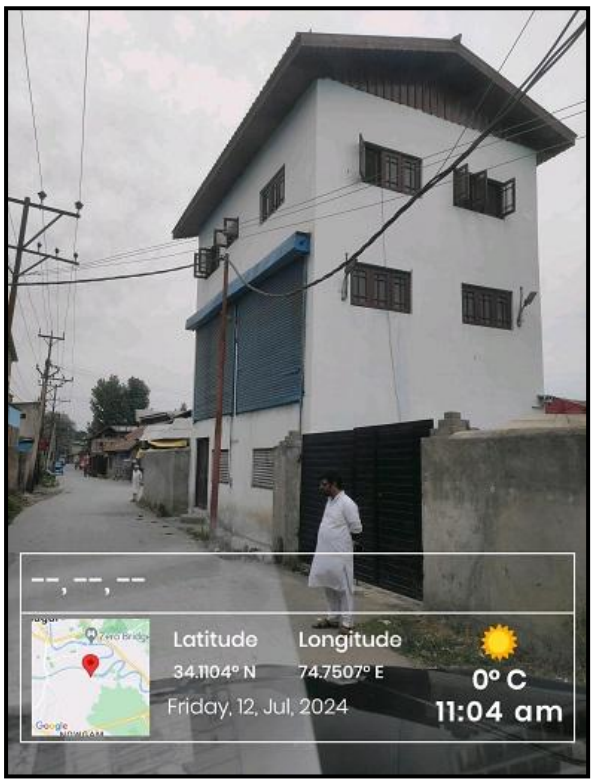

## Khacher Pora Station




**Fruit Mandi Station**

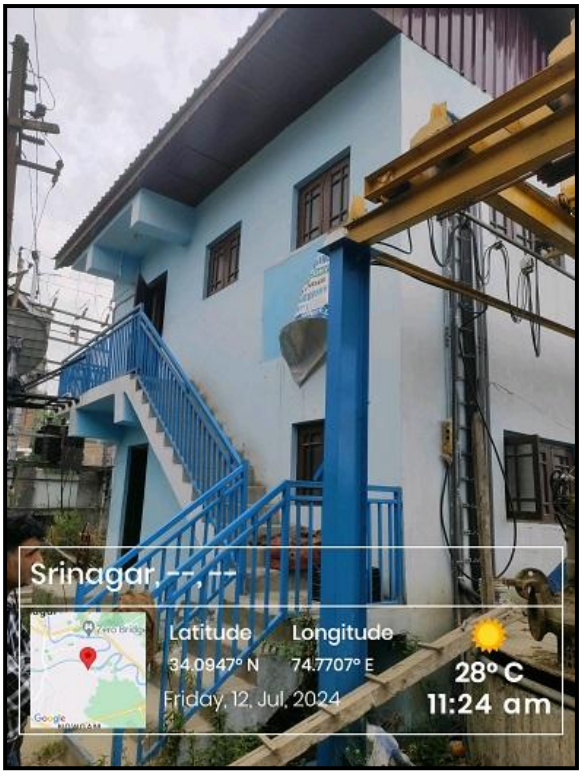

**Lower parimpora Station**


Rose Avenue HMT Station



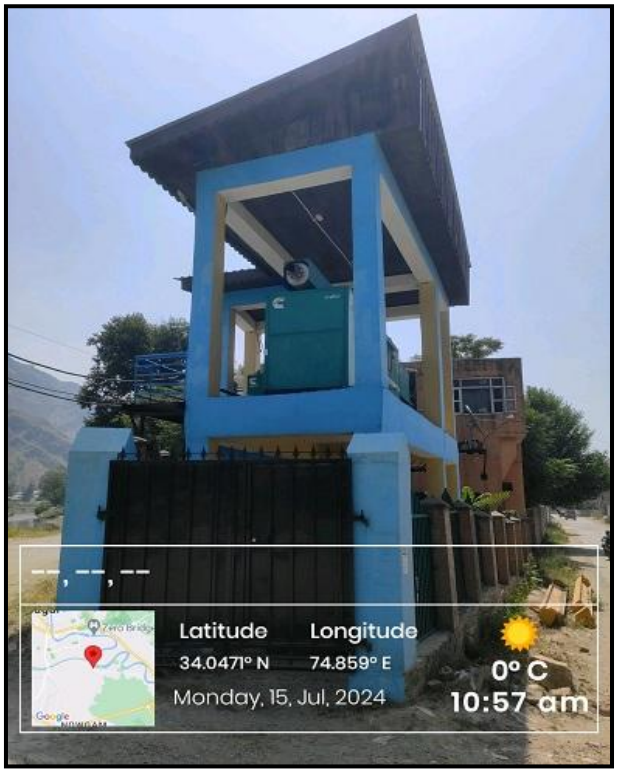

Shalteng –I Station


## Shalteng -II station

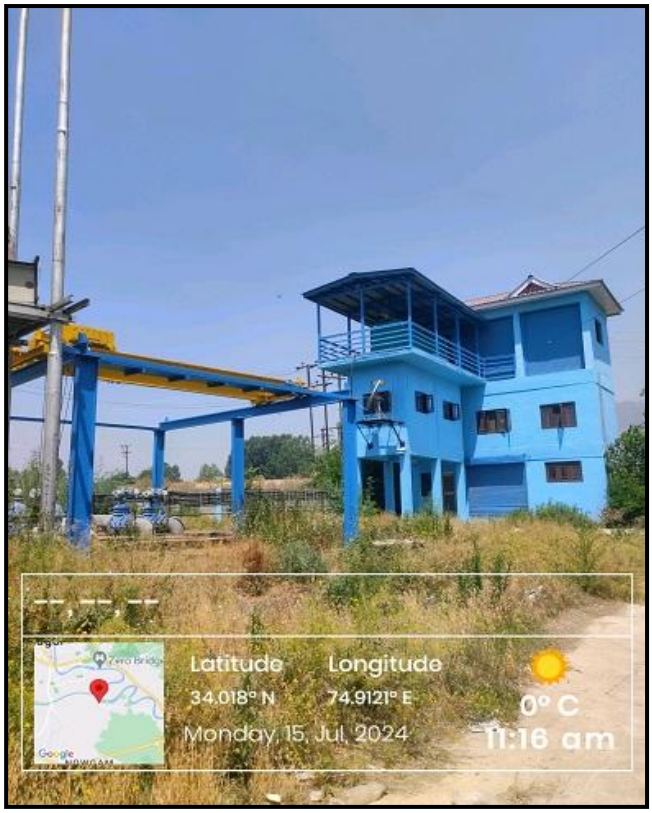



## Shakoor Colony Station

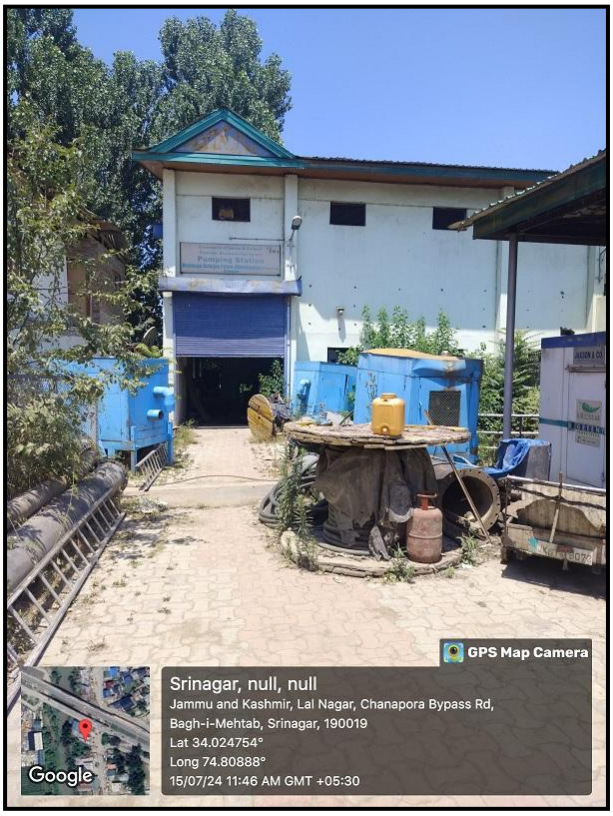

## S.P College Station




## Lasjan Station



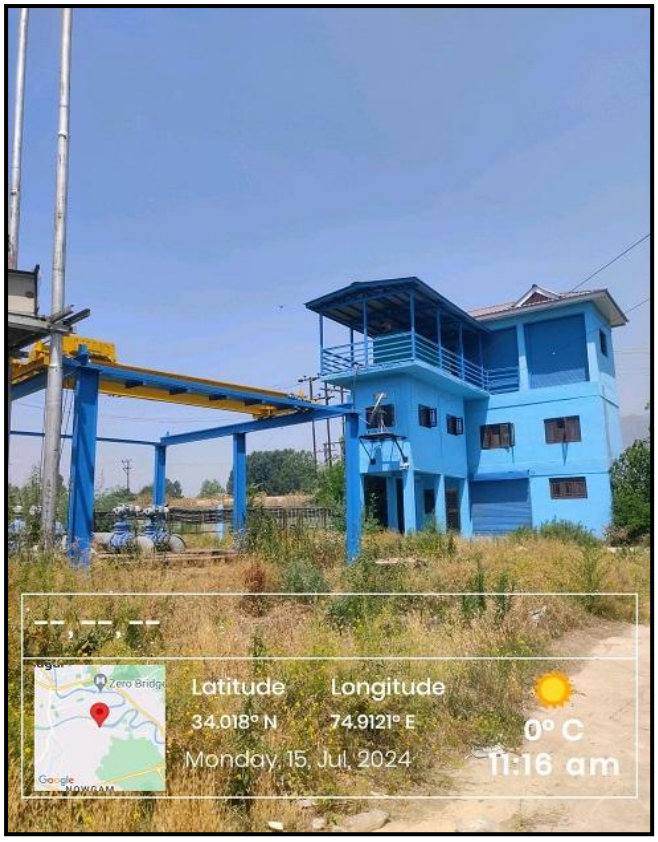

## Lal Trag Station




## Chanapora (MPS)

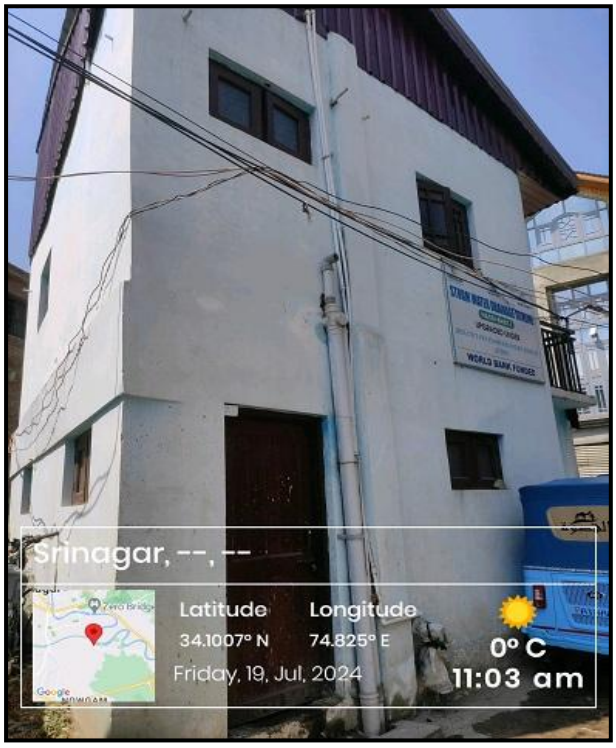

## Bemina (JVC)


## Chanapora (MPS)

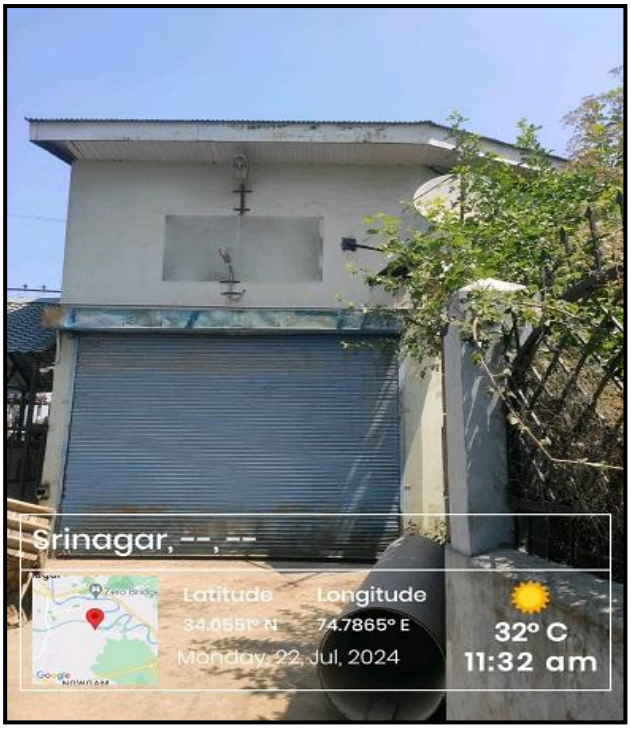



## Lal Trag (Pampore)


## Hassi Bhat –II Station




## Hassi Bhat –I Station




## Tengpora Station


## Sardar Mohalla Station

## Amda Kadal Station


## Reiteng Khanayar Station

## Completion of Environmental and Safety Compliance for the Dewatering Stations Sub-Project

During the construction of the dewatering sub-project, all reasonable measures were undertaken to protect the environment, workers, and the surrounding community. The Environmental, Health, and Safety (EHS) measures outlined in the Environmental Management Plan (EMP) were diligently implemented to ensure compliance with environmental and safety standards.

**The measures implemented during the construction phase of this sub-project are as follows:**

1. Environment and Safety officers (ESO) were appointed by the contractor for implementation of activities stated in the EMP, including occupation health and safety aspects.
2. Project information Board (Flex type) showing the name of work, project cost etc. were installed.
3. Workers were provided with necessary accommodations and ancillary facilities in functional and hygienic manner, as required.
4. Wherever feasible, unskilled and semi-skilled labourers from nearby communities were prioritized for employment to promote local livelihood opportunities and community participation.
5. Several dewatering stations were located in congested areas with access restricted to narrow streets. To ensure public comfort and safety, site-specific traffic management plans were prepared by the contractor in coordination with the Employer and the Traffic Police. The transportation of construction materials, machinery, pumps, and waste to and from these sites was scheduled during non-peak hours to minimize traffic disruptions and public inconvenience.
6. Although the construction of dewatering stations did not require any tree cutting or vegetation removal, necessary precautions were taken to prevent damage to existing trees and vegetation in adjacent and off-site areas during project activities.
7. Workers were not allowed to defecate in the open. Proper toilets fitted with septic tank and with required hand-washing facility was provided by the Contractor at the construction site.
8. Solid waste generated at the construction site was collected in covered wasted bins. Polyethylene/plastic wastes were stored in empty cement bags and sent to authorized facilities for recycling.
9. Potable water facilities were provided at accessible locations within the construction site to ensure safe drinking water for all workers.
10. All necessary precautions were taken to protect and prevent any damage to existing structures adjacent to the dewatering stations, including residential and commercial properties as well as access and haul roads.
11. All necessary measures were taken to avoid water logging during the execution of the work.
12. Temporary barricades were installed to clearly demarcate the construction zones, including material storage areas. The construction site and associated labour facilities were fully enclosed to prevent unauthorized entry and accidental trespassing by workers, staff, or the general public. Appropriate warning signage

was displayed along access roads adjoining the site to alert about the movement of construction vehicles and machinery.

13. All necessary measures to ensure the safety and health of workers were implemented throughout the execution phase. These included the provision and mandatory use of appropriate personal protective equipment (PPE); adoption of safety precautions during the demolition of existing structures and cleaning of sumps; availability of first-aid facilities with adequate sterilized dressings and appliances at work zones; safe storage of hazardous, toxic, and polluting materials; and strict adherence to electrical, fire, and mechanical safety protocols.
14. All vehicles, equipment, and machinery utilized for construction activities were regularly serviced and maintained in good working condition. The contractor ensured compliance by submitting valid Pollution Under Control (PUC) certificates for all vehicles, equipment, and machinery deployed on the project.
15. Roads used by vehicles of the contractor and suppliers were maintained in a clean condition, free from dust, mud, and other extraneous materials deposited by construction activities.
16. Measures were implemented to prevent contamination of surface water bodies and underlying aquifers from wastewater generated within the construction zone.
17. Cement bags were stored and handled within covered areas to minimize fugitive dust emissions.
18. Only diesel generator (DG) sets equipped with acoustic enclosures were permitted for use at the construction sites to control noise pollution.
19. Existing pumps, pipelines, electrical panels, and related equipment were carefully dismantled and stored at the designated location identified by the Employer's PIU for subsequent use by the Srinagar Municipal Corporation (SMC).
20. Abandoned deep pits or boreholes at the dewatering stations were properly sealed to eliminate safety hazards.
21. Debris generated from the demolition of structures and other construction activities was segregated for reuse within the project or in other works. Residual debris and spoils were disposed of at locations pre-approved by the Engineer/Employer, in compliance with the Construction and Demolition Waste Management Rules, 2016, and in a manner that prevented environmental contamination.
22. Paint residues remaining in containers were appropriately stored and disposed of in an environmentally sound and compliant manner.

**The measures implemented during the Post Construction Phase of this sub-project are as follows:**

1. Upon completion of the works and before handing over the Dewatering stations for use, the site was thoroughly cleaned, and all waste materials and debris were removed and disposed of at designated locations pre-approved by the Engineer/Employer. The contractor carried out the cleanup and site restoration activities prior to demobilization to ensure a safe and orderly project closure.
2. All temporary structures erected during construction were dismantled and cleared from the sites.
3. All disposal pits and trenches were backfilled and properly sealed to eliminate potential safety or environmental risks.

4. The construction zones, including labour camps and other areas used or affected during project execution, were restored to a clean and orderly condition.

*Approximately 568,349 people directly benefit from the successful completion of this sub-project, enhancing their safety and resilience through improved flood management infrastructure.*

## POST CONSTRUCTION COMPLIANCE

Clean-up Operations, Restoration and Rehabilitation

| S No | Description | Yes/ No |
|---|---|---|
| 1. | Whether Debris has been cleared from the roadside and levelling of ground carried out at site. | Yes |
| 2. | Whether all construction wastes from the campsite/ plant site have been removed and disposed of at the disposal site. | Yes |
| 3. | Whether Stockyard restoration has been successfully executed. | Yes |
| 4. | Whether all the Cement bags were removed from the site and disposed of at disposal site. | Yes |
| 5. | Whether all disposal pits or trenches were filled in and effectively sealed off. | Yes |
| 6. | Whether the contractor cleared all temporary structures, debris, construction wastes, garbage, night soils, etc in an environmentally sound manner. | Yes |
| 7. | Whether the Surfaces were cleared of waste products from activities such as concreting or asphalting. | Yes |
| 8. | Whether all the construction-related waste has been removed both from the interior and outside of the newly constructed Pumping stations | Yes |

## Photographs:Environmental and Safety Compliance



**THEN: Pumping stations were initially housed in temporary sheds, which were in a dilapidated condition.**





**Now: Pumping stations upgraded to robust framed structures with beams, columns, and optimal spacing; exteriors painted blue with information boards installed. Pump houses were also constructed above HFL for the safety of men and machinery during flood like situations.**


**THEN: Old worn out and inefficient electrical equipment in temporary sheds.**



**NOW: LT distribution and starter panels were installed for efficient power distribution and controller**

**THEN: Inefficient Diesel Generators operating at temporary Pumping Stations**




**NOW: CPCB approved DG sets installed that are silent and meet the emission norms**

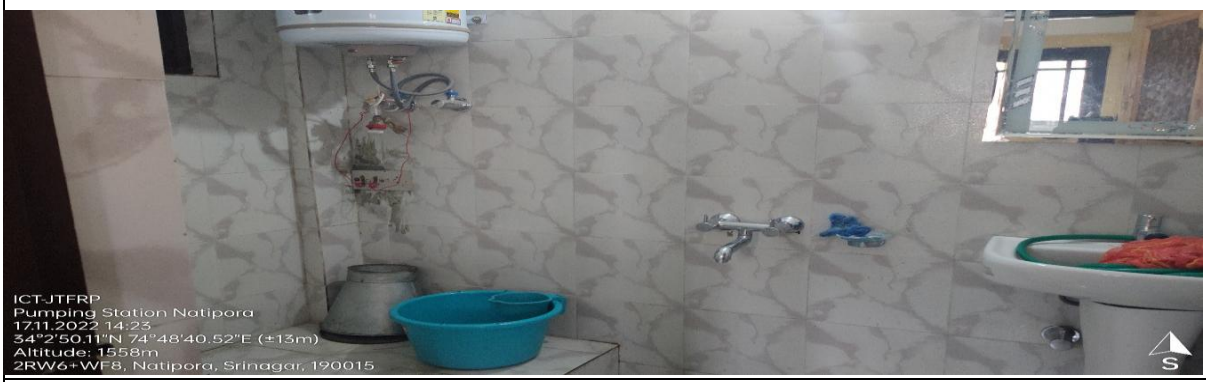





**Fire Extinguishers were provided for firefighting safety in the Pumping Stations.**








**Newly Constructed Pumping stations were provided with Kitchen, Washroom, toilet, and resting rooms.**

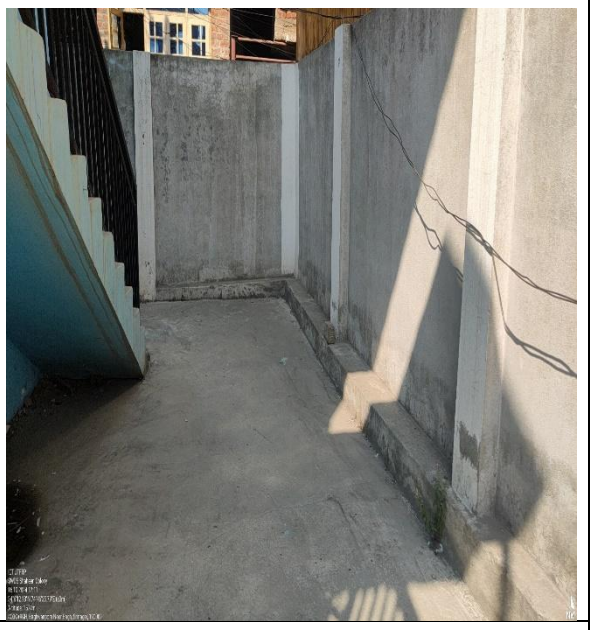
| | |
|---|---|
|  |  |
| **THEN: Old inefficient pumps installed at Lal trag Dewatering station** | **NOW: Energy efficient submersible pumps installed** |
|  |  |
| **THEN: Condition of pipes at Natipora Dewatering station** | **Now: Pipes upgraded with submersible pumps** |
|  |  |
| **Then: Condition of Mahjoor Nagar Dewatering station** | **Now: Improved condition after upgradation** |

| | |
|---|---|
|  |  |
| **Then: Condition of Radpora Dewatering station. Sumps uncovered** | **Now: Improved condition after upgradation and sumps were installed with chequered plates** |


**Electric cables neatly routed on ladder trays for safe and organized distribution at Dewatering stations**

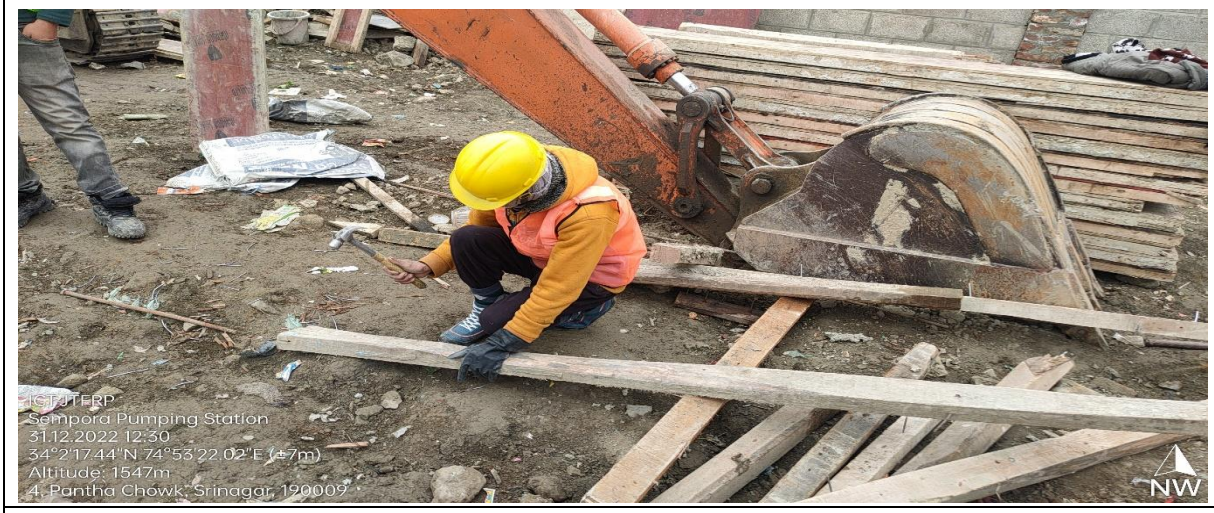

**Properly installed earthing strips and rods ensuring low-resistance grounding for electrical safety at Dewatering stations.**


**A view of Securely covered sump with chequered plate and neatly painted pipes ensuring drainage efficiency and corrosion protection at Dewatering Stations**


**Dewatering stations cleared of all construction-related debris inside and out, adhering strictly to Environmental Management Plan protocols.**






**Workers provided with PPE's during the construction phase of the sub-project.**




**Workers provided with PPE's during the construction phase of the Dewatering stations**







**Information boards displayed at each dewatering station providing essential project details.**





**Safety warning and awareness boards strategically installed at dewatering stations during construction for enhanced site safety.**


**Dewatering stations equipped with rubber mats in front of electric panels to prevent slips and provide electrical insulation.**

# END OF REPORT