



सत्यमेव जयते

# Citizen's / Client's Charter

## Central Water and Power Research Station

Government of India

Ministry of Jal Shakti

Department of Water Resources, River Development and Ganga Rejuvenation



April 2024

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Date of Issue:

Next Review:



## **Vision**

To be a world-class centre of excellence in hydraulic engineering research and allied areas; which is responsive to changing global scenario, and need for sustaining and enhancing excellence in providing technological solutions for optimal and safe design of water resources structures.

## **Mission**

- To meet the country's need for basic & applied research in water resources, power sector and coastal engineering with world-class standards.
- To develop competence in deployment of latest technologies by networking with the top institutions globally, to meet the future needs for development of water resources projects in the country effectively.
- To disseminate information, built skills and knowledge for capacity-building and mass awareness for optimization of available water resources.

## **Core Values:**

- Creativity and innovation through R&D
- Integrity - We believe in conducting ourselves in honest and ethical manner with service recipients/providers and each other
- Empathy - We realise that that the best way to interact with each other is by putting ourselves into their shoes and seeing things from their perspective
- Learning - We believe that learning is a continuous process that is essential for growth as professional and as human beings
- Coordination of multidisciplinary tasks
- Capacity building
- Team spirit

## **Details of Business Transacted**

- Undertaking specific research studies relating to development of water resources, power and coastal projects.
- Consultancy and advisory services to Central and State Governments, private sector and other countries.
- Disseminating research findings and promoting/assisting research activities in other organizations concerned with water resources projects.
- Contributions to Bureau of Indian Standards and International Standards Organization.
- Carrying out basic and applied research to support the specific studies.

- Contribution towards advancements in technology through participation in various committees at National and State Levels.

## **Services Provided**

The Central Water and Power Research Station (CWPRS) Pune, established in 1916, is a premier hydraulic research institute in India, under the Government of India Ministry of Water Resources, River Development and Ganga Rejuvenation.

Water-use scenario of today is centered on sustainable development and environmental issues. The mandate of CWPRS is to find and provide technical solutions to various problems associated with water resources projects, energy, water-borne transport and coastal engineering. Over the years CWPRS has evolved into multidisciplinary institute of international repute in the major area of hydraulics.

CWPRS caters to the project specific R&D needs and provides comprehensive recommendations of practical utility through physical and mathematical model studies, desk studies, field and laboratory experiments in specialized areas such as river training and flood control, hydraulic structures, harbours, coastal protection, foundation engineering, construction materials, pumps and turbines, ship hydrodynamics, hydraulic design of bridges, earth sciences, and cooling water intakes, environmental studies, water resources development, management and planning etc

CWPRS is one of the few institutions of its kind in the world, dealing with the entire life cycle of water, from its occurrence to joining the ocean and dealing with various uses of water on the one hand and water-related disasters on the other. CWPRS is the recognised regional laboratory for the Economic and Social Commission for Asia and Pacific (ESCAP) since 1971. The institution has rendered services for a number of projects from neighbouring, Middle East and African countries.

The total sanctioned staff strength of CWPRS, as of now is 1084; whereas the existing strength as on June, 2023 is 713. The research cadre, comprising a sanctioned strength of 315 personnel in different categories, is supported by technical, auxiliary technical, administration, accounts and ancillary services. The Director is the Head of Department (HoD). The activities of CWPRS encompass varied studies that are undertaken in the major disciplines listed below.

- I. River Engineering
- II. River & Reservoir System Modelling
- III. Reservoir & Appurtenant Structures
- IV. Coastal and Offshore Engineering V. Foundation & Structures
- VI. Applied Earth Sciences
- VII. Instrumentation, Calibration and Testing Services

Almost all important irrigation, power, water supply, navigation and ports projects have imprints of this institution. It is one of the few institutions of its kind in the world, dealing with the entire life cycle of water, from its occurrence to joining the ocean dealing with various uses of water on the one hand

and water-related disasters on the other. Owing to its receptivity towards incorporating new technology with the changing times, the CWPRS's journey has continued ceaselessly over a century, earning it the stature of a world-class water and power research institution. The institute has proudly completed its 100 years of existence in the year 2016 and is continued to be in the forefront of hydraulic research and played an important role in providing solutions to a large number of complex problems through physical and mathematical model studies and field, desk and laboratory studies fulfilling the mandate of '**Service to the Nation through Research**'. CWPRS has been awarded **ISO 9001:2015** certificate since the year 2017.

Various kinds of works/activities routinely undertaken by CWPRS is given in Annexure.

## **Clientele**

- Central/ State Government Organisations
- Public/ Private Sector Agencies/ Organisations/ Undertakings
- Municipal Corporations and other Local Bodies
- Port Trusts

## **Our Global Recognition**

- Recognised as Premier Hydraulic Research Laboratory under ESCAP region by UN
- World bank

## **Procedure Followed While Undertaking Studies by CWPRS**

Step-1: Receipt of formal reference from the project authority to the Director, CWPRS, detailing nature of the problem, scope of the studies, requisite drawings, etc.

Step-2: Preparation of the cost-estimate by subject experts from CWPRS, giving scope of the study, duration, data requirement, methodology etc. on a no-profit no-loss basis. Forwarding, in duplicate, of the cost-estimate approved by the Director to the project authority for perusal and sanction

Step-3: On receipt of the full estimated amount and the specified data, study taken up

Step-4: During the conduct of the studies, the estimate is operated as per actual, and accounts maintained in accordance with the Central Public Works Account Code.

Step-5: On completion of the studies, a Final Report is submitted to the client. On clearing of all debits by the concerned departments, a Completion Report is sent to the client; and balance amount, if any, refunded.

## **Expectations from Clients**

The clients of CWPRS are expected to:

- Send proposals in respect of proposed studies by following the prescribed procedure

- Prompt compliance as regards CWPRS requirements to facilitate expediently taking up of the studies.
- Timely supply requisite hydraulic/ hydrological/ hydro-meteorological data for the proposed R&D study.
- Intimate feedback on the results/ recommendations by CWPRS, both during implementation and post-implementation stages; so as to enable making amends as needed, learning from experiences, and/ or increasing effectiveness.

### **Interaction with Clientele/Stakeholders**

- Meetings are held with Central/ State Government Organisations & other clients through various committees such as Technical Advisory committee and BIS Working Groups.
- Variety of Training, capacity Programmes, lectures for field engineers, Scientists, students
- Mass awareness programmes
- Participation in Trade Fairs

### **Grievance Redressal Mechanism**

In case of non-compliance of the service standards the service recipients/ stake holders can contact the following public grievance officer of CWPRS for redress of their grievance:

Shri Jiweshwar Sinha,  
Scientist E and Chairman, Grievance Cell  
CWPRS, Pune 411024;  
Tel.: 020-24103293 (O) Fax: 020-24381004 e-mail: [sinha.J@cwprs.gov.in](mailto:sinha.J@cwprs.gov.in)

The grievance can also be lodged online on the following link:

<https://pgportal.gov.in>

In case of the grievance is not redressed finally, the same can be taken up at higher level to the following nodal authority:

Dr R. S. Kankara,  
Director, CWPRS,  
Pune 411024;  
Tel.: 020-24103500 (O) Fax: 020-24380540  
[e-mail: director@cwprs.gov.in](mailto:director@cwprs.gov.in)

### **Right to Information Act-2005**

The CWPRS is having office at Pune and to provide the required information to the information seekers as per the provision of the RTI Act, 2005, the organisation has designated CPIO and the details of Appellate Authority are:

Dr. Prabhat Chandra,  
Additional Director, CWPRS,  
Pune 411024;  
Tel.: 020-24103521 (O) Fax: 020-24381004  
[e-mail: prabhat.chandra.gov.in](mailto:prabhat.chandra.gov.in)

For details of other officers related to RTI, pl. visit CWPRS website: <https://cwprs.gov.in/Page/RTI-Cell.aspx>

## **Evaluation and Monitoring of Citizen's Charter**

Implementation of the Citizen's Charter at CWPRS will be monitored and evaluated periodically and updated as per need. Stakeholders are urged to send their suggestions/ inputs towards improving effectiveness of the Charter, to:

Shri A. A. Purohit  
Scientist 'E'  
CWPRS, Khadakwasla  
Pune 411024  
Tel: 020-24103508(O) , Fax: 020-24381004  
email: [purohit\\_aa@cwprs.gov.in](mailto:purohit_aa@cwprs.gov.in)

Suggestions/ inputs for improving the Charter would normally be considered within a time frame of two weeks of receipt of the same; and action taken in the regard intimated to the concerned party.

For more information on CWPRS, you are invited to visit the website:

<https://www.cwprs.gov.in>

### **Guidance for Citizens**

The Research Station has published a brochure containing the details of infrastructure facilities available, activities and research outputs. The brochure is available in soft copy can be downloaded from the Research Station's website. Dissemination of information in regard to our latest research findings is made available through the Research Station's annual report.

### Type of works/activities routinely undertaken by CWPRS

SI. No.	Services	Service/ Performance Standards	Rate/ Cost of work (The rates are only indicative and vary as per the scope of studies)
1	Area Drainage Studies for power plants	6-8 months	1600000
2	Determination of Safe Grade Elevation for power plants	8-10 months	Varies as per requirement of client and scope of the studies.
3	Water Availability studies for Catchment	6-8 months	1950000
4	a) Dam Break Analysis and Emergency Action planning b) Studies for Diversion of Nala /river	8-10 months	2500000 2500000
5	Analysis of physico-chemical parameters of water samples	2 weeks	Varies as per requirement of client and scope of the studies.
6	Grain-size distribution of sediment samples	2-4 weeks	- Do -
7	Chemical analysis of construction material	4 weeks	- Do -
8	Primary productivity (Density-Diversity Composition)	2 weeks	- Do -
9	Alkali Aggregate Reactivity	3 weeks	- Do -
10	Ratio of Cement and Sand in Mortar	2 weeks	- Do -
11	Mathematical Modeling WQ Studies of rivers and reservoirs	6-8 months	- Do -
12	Static Analysis of Stability of earth and Rockfill embankments and foundations (desk studies), Breakwaters and their foundation	6 months	1600000
13	Dynamic Analysis of Stability of earth and Rockfill embankments and foundations (desk studies), Breakwaters and their foundation	6 months	Varies as per requirement of client and scope of the studies.
14	Liquefaction studies of embankments and foundation	6 months	2000000
15	Determination of properties of geotextiles	8 days (5 samples)	1500000
16	Determination of physical and strength properties of soils	6 months	Varies as per requirement of client and scope of the studies.
17	Determination of strength and elastic properties, thermal properties viz: adiabatic temperature rise, diffusivity, coefficient of thermal expansion and creep properties of mass concrete and roller compacted concrete gravity dams and to estimate suitable placement temperature and devise cooling arrangement for a particular construction schedule of dam.	6-12 months	2500000
18	Testing of construction materials such as cement, brick, sand, aggregates for assessing their suitability in civil construction.	2 - 4 months	Varies as per requirement of client and scope of the studies.
19	Testing of repair materials for assessing their suitability towards rehabilitation/ repairs of distressed hydraulic structures such as gravity dam, aqueduct, energy dissipating arrangement etc.	3 – 6 months	2500000
20	Assessing structural health of gravity dams by testing extracted cores from dam body and testing in laboratory by determining physical parameters such as density, elasticity, compressive strength, Poisson's ratio.	2 - 3 months	1000000
21	Estimation of site-specific seismic design parameters for river valley projects	6-12 months	1200000
22	Micro-earthquake studies of river valley projects	1 year- 2 years	Varies as per requirement of client and scope of the studies.

SI. No.	Services	Service/ Performance Standards	Rate/ Cost of work (The rates are only indicative and vary as per the scope of studies)
23	Periodical calibration of water current meters used for discharge measurement.	2 weeks	Varies as per requirement of client and scope of the studies.
24	Drag force evaluation for water bodies	3 months	- Do -
25	Studies for River training works	6-8 months	2000000
26	Morphological Studies for behaviour of rivers	6-8 months	Varies as per requirement of client and scope of the studies.
27	Hydraulic model studies for bridges, barrages, weirs, spurs, etc	12 months	5000000
28	Hydraulic model studies for channelization of rivers for improving flow conditions	12 months	Varies as per requirement of client and scope of the studies.
29	Hydraulic model studies for gate operation patterns of barrages/ weirs	12 months	15000000
30	Desk studies for water availability/low flow in river and canals	6-8 months	2000000
31	2 -D flume studies for bridge piers	6-8 months	Varies as per requirement of client and scope of the studies.
32	Mathematical/ Physical model studies for assessing extend of back water in barrage/ weirs	6-12 months	2000000
33	Laboratory studies for determination of engineering properties of rock	2-3 months	2000000
34	Laboratory studies for determination of shear strength parameters of rock	2-3 months	2000000
35	Measurement of In-situ stress & deformation modulus	3 - 4 months	1200000
36	Determination of in-situ shear strength	3 - 4 months	1500000
37	Determination of deformation modulus by plate load test	3 - 4 months	Varies as per requirement of client and scope of the studies.
38	Determination of rock Permeability	2-3 months	1200000
39	BEM and FEM analysis of underground openings.	2-3 months	1500000
40	Mathematical Model studies for assessment of wave tranquillity in the harbour basin for design of harbour layouts	6 months	1200000
41	Mathematical Model studies for assessment of shoreline changes due to construction of coastal structures	6 months	1500000
42	Non- destructive studies for assessment of in-situ quality of concrete and masonry of massive engineering structures.	6-8 months	Varies as per requirement of client and scope of the studies
43	Seismic qualification studies of various equipment and installation for their seismic safety using shaking table. Vibration studies for in-situ dynamic properties of foundation rock using shaker. Monitoring of vibrations on structures using online data acquisition system.	6-8 months	- Do -
44	Controlled blasting studies at construction sites to minimize the unwanted effects of blasting viz. ground vibration, air blast, fly rocks, over breakage and propagation of cracks at the perimeter.	6-8 months	2000000
45	Monitoring of blast vibrations during rock excavation.	6-8 months	1300000
46	Hydraulic model studies for bridges	Depends upon the requirement	Varies as per requirement of client and scope of the studies
47	Morphological studies for deciding location of Intake	6-8 months	- Do -
48	One dimensional mathematical studies for bridge/intake etc.	5-6 months	2000000
49	Desk studies for location and hydraulic design of Intake	4-5 months	Varies as per requirement of client and scope of the studies
50	Sectional model studies for bridge / barrages	Depends upon the requirement	- Do -



SI. No.	Services	Service/ Performance Standards	Rate/ Cost of work (The rates are only indicative and vary as per the scope of studies)
51	Stress and Stability analysis of Gravity Dam by FEM	6 - 8 months	1600000
52	Analysis and Interpretation of Instrumentation Data Pertaining to Gravity Dams /Hydro Power Plants/ Water Conductor System	3 - 6 months	2000000
53	In-situ/Prototype Hydro Static Test of Water Conductor System for Assessing Structural Safety.	3 - 4 months	Varies as per requirement of client and scope of the studies
54	Extreme value analysis of meteorological parameters	4 - 5 months	2000000
55	Assessment of dependable flow and Water availability studies	4 - 5 months	Varies as per requirement of client and scope of the studies
56	Assessment of low flows using statistical approach	4 - 5 months	- Do -
57	Rating curve analysis using regression methods	3 months	600000
58	Hydrological modelling of river basins (Rainfall - Runoff)	4 - 5 months	2400000
59	Development of flood forecasting models for water resources projects	9 - 12 months	2300000
60	Assessment of sediment yield for catchments/ mine area	4 - 5 months	Varies as per requirement of client and scope of the studies
61	Studies on backwater effect due to dams/ barrages/ weirs- Flood inundation	5 - 6 months	- Do -
62	Studies on backwater effect due to dams/ barrages/ weirs- Power generation	5 - 6 months	- Do -
63	Installation, Testing of Automatic Tide Generating System (A.T.G) for various tidal physical models.	12 months	- Do -
64	Installation, Testing of Discharge control system for various river models.	12 months	2000000
65	Hydrographic Survey of lakes and Reservoirs for estimation of water storage capacity and evaluating sedimentation.	6 months	8000000
66	Advice and supervision of dam instrumentation for various dams.	6 months	1000000
67	Reservoir Sedimentation studies for hydroelectric power project	8 - 12 months	Varies as per requirement of client and scope of the studies
68	Flushing of sediment from reservoir	12 - 18 months	3500000
69	Flood protection measures for river	8 - 12 months	2000000
70	Studies for desilting basin for hydroelectric power project	8 - 12 months	Varies as per requirement of client and scope of the studies
71	Studies for barrages	12 - 18 months	- Do -
72	3D Mathematical modelling for Thermal /Salinity dispersion	6 - 8 months	- Do -
73	2D Mathematical modelling for Thermal /Salinity dispersion	4 - 6 months	- Do -
74	2D Mathematical modelling for Sediment /Mud transport	4 - 6 months	Varies as per requirement of client and scope of the studies
75	2D Mathematical modelling for Water Quality parameters	6 - 8 months	- Do -
76	Littoral Drift and shoreline evolution studies	4 - 6 months	1200000
77	Scour depth determination in tidal condition	4 - 6 months	Varies as per requirement of client and scope of the studies
78	Physical Wave Model studies in Multipurpose Wave Basin	4 - 10 months	- Do -
79	2D MMS for Littoral drift/Shoreline evaluation	4 - 6 months	1200000
80	1D MMS for evaluation of water level and flow conditions.	3 - 4 months	Varies as per requirement of client and scope of the studies
81	Physical tidal model studies in the existing facilities.	6 - 12 months	- Do -
82	2D MMS for Hydrodynamic and siltation.	4 - 6 months	2500000
83	Desk studies for development of Ports and Harbours	3 - 6 months	1600000
84	Study of Shoreline Changes using Satellite Remote Sensing (SRS) Techniques	4 - 6 months	Varies as per requirement of client and scope of the studies

SI. No.	Services	Service/ Performance Standards	Rate/ Cost of work (The rates are only indicative and vary as per the scope of studies)
85	River Morphological studies using Satellite Remote Sensing (SRS) Techniques	4 - 6 months	- Do -
86	Estimate of reservoir sedimentation using Satellite Remote Sensing (SRS) Techniques to	4 - 6 months	Varies as per requirement of client and scope of the studies
87	Training and demonstration of canal automation	3 days	1200000
88	Rating of canals	6 – 10 months	Varies as per requirement of client and scope of the studies
89	Physical model studies for tidal hydrodynamics for port layout optimisation.	6 – 12 months	- Do -
90	Mathematical model studies for wave transformation from deep sea to shallow coastal region for feasibility study.	3 - 4 months	- Do -
91	Mathematical model studies for wave tranquillity for port layout optimisation.	4 - 5 months	1700000
92	Mathematical model studies for tidal hydrodynamics for identification of circulation pattern in the area of port development.	4 - 5 months	Varies as per requirement of client and scope of the studies
93	Mathematical model studies for identification of siltation pattern and quantity of sediments for development of the port.	4 - 5 months	1800000
94	Mathematical model studies for shoreline evolution and littoral drift distribution due to coastal structures.	3 - 4 months	1200000
95	Thermal dispersion studies for locating intake and outfall of a Thermal Power Plant	12 months	Varies as per requirement of client and scope of the studies
96	Analysis of meteorological data	6 months	1600000
97	Studies for improvement and optimization of Cooling Water system using innovative techniques	6 months	Varies as per requirement of client and scope of the studies
98	Physical hydraulic model studies for the development of Port	12 months	5000000
99	Field data collection and analysis	6 months	2000000
100	Design, Development, Installation, testing commissioning, maintenance of computer based data acquisition systems for measurement of various hydraulic parameters such as Water Level, Velocity, Temperature, Pressure, Wave height etc. On physical hydraulic models	8 - 10 months	1000000
101	Underwater seismic reflection survey for delineating sediment and rock topography for reservoirs, ports and harbours	7 - 9 months	Varies as per requirement of client and scope of the studies
102	Seismic tomography survey for delineating weak zones for Dams and power projects	6 - 7 months	2000000
103	Seismic refraction survey for finding depth to bedrock, rock quality, fractures and joints for foundation of dams, power projects and other civil structures	6 - 8 months	Varies as per requirement of client and scope of the studies
104	Cross-hole seismic studies for finding P-wave, S-wave velocity, Young's and shear moduli for foundation of dams and power projects	4 - 6 months	2000000
105	Ground Penetrating Radar survey for finding cavities, pipes, buried objects, landmines for dams and various civil projects	4 - 6 months	Varies as per requirement of client and scope of the studies
106	Electrical Resistivity Imaging survey for determining depth to bedrock, mapping of faults and fractures, finding groundwater potential zones and location of buried drums for dams, power projects and other civil structures	4 - 6 months	- Do -
107	Mathematical model studies for tidal hydrodynamics and estimation of siltation for the development of port facilities	4 - 6 months	3500000

SI. No.	Services	Service/ Performance Standards	Rate/ Cost of work (The rates are only indicative and vary as per the scope of studies)
108	Physical hydraulic model studies for the assessment of flow conditions for finalising alignment of berth/terminal navigational channel/ effect of reclamation etc. In Mumbai area	6 - 8 months	2000000
109	Mathematical model studies to assess the wave conditions at berths/ terminals/ waterfront facilities	4 - 6 months	1200000
110	Mathematical model studies to identify dumping grounds for disposal of dredged material	4 - 6 months	1000000
111	Desk studies for design of fish landing centres	2 - 3 months	1500000
112	Desk and Wave flume studies for design of Breakwaters/ Sea walls for development of major/ minor/ fishery ports	3 - 4 months	1500000
113	Desk and Wave flume studies for design of coastal protection structures	2 - 3 months	1000000
114	Desk studies for Storm surge analysis and Wave Hind casting for different projects	2 - 4 months	Varies as per requirement of client and scope of the studies
115	Hydraulic model studies for Power Intake to observe (a)Flow condition near intake (b) possibility of any air entering vortices (c)Design of Anti-vortex device, if required	12 - 18 months	- Do -
116	Hydraulic model studies for Vertical Lift gates to assess (a)Hydrodynamic forces on it (b)Air demand on downstream of gate for proper size of air vent	12 - 18 months	- Do -
117	Hydraulic model studies for performance of sluice outlets	12 - 18 months	15000000
118	Hydraulic model studies for performance of Tailrace channel/ tunnel	12 - 18 months	15000000
119	Hydraulic transient analysis for water hammer pressure and to check the adequacy of surge tank by way of physical/ mathematical modelling	18 - 24 months	Varies as per requirement of client and scope of the studies
120	Identification of seepage through hydraulic structures using borehole logging	12 - 18 months	2000000
121	Detection of seepage through hydraulic structures using tracer studies	12 - 18 months	2000000
122	Innovative solutions to complex hydraulic problems through physical modelling.	6 - 8 months	2000000
123	Physical and Numerical flow model of Reservoir & Appurtenant structure of Dam.	6 - 8 months	2000000
124	Studies pertaining to the hydraulics of Spillways & Outlet works.	6 - 8 months	15000000
125	Studies for spillways, Energy dissipater devices, selection of proper energy dissipater arrangement.	6 - 8 months	15000000
126	Hydraulics of Diversion Tunnel.	6 - 8 months	Varies as per requirement of client and scope of the studies
127	Studies for Power Intakes of hydroelectric power plants.	6 - 8 months	20000000
128	Studies pertaining to hydraulics of Headrace, Tailrace and Water conductor system of Hydropower Plants.	6 - 8 months	50000000
129	Studies for Intakes of pumped storage plants.	6 - 8 months	2000000
130	Hydraulics of Drop Shaft, de-aerator of water conveying tunnels.	6 - 8 months	Varies as per requirement of client and scope of the studies

SI. No.	Services	Service/ Performance Standards	Rate/ Cost of work (The rates are only indicative and vary as per the scope of studies)
131	Hydraulic transient analysis and design recommendation for control of pressure surge and surge protection, safe opening/closing of valves.	6 - 8 months	- Do -
132	Water hammer analysis of water conveyance system of Hydropower Plants.	6 - 8 months	- Do -
133	Transient analysis for load rejection and acceptance, load variation at hydroelectric power plants to evaluate penstock designs.	6 - 8 months	- Do -
134	Surge protection practices for design & operation of pump stations and pipe lines.	6 - 8 months	1000000
135	Hydraulics of surge tank & Penstocks.	6 - 8 months	2000000
136	Recommendation on design for large diameter water transmission system.	6 - 8 months	Varies as per requirement of client and scope of the studies
137	Studies for hydraulics of high head hydraulic gates and valves of water conveyance system of hydroelectric power plants, spillways and outlet works of dam.	6 - 8 months	20000000
138	Regular Calibration of flowmeters and Cv/Kv test of various types of valves	One day after installation of test element in rig	Varies as per requirement of client and scope of the studies
139	Regular pressure drop test of various types of Filters	One day after installation of test element in rig	- Do -
140	Periodic performance test of submersible test	One - two days after installation of test element in rig	350000
141	Periodic accuracy test of water meters	One day after installation of test element in rig	Varies as per requirement of client and scope of the studies
142	Flow measurement and calibration of flow meters at site	Varies as per site conditions and client requirements	700000
143	Performance evaluation of hydro turbines at site	Varies as per site conditions and client requirements	1000000
144	Fabrication and installation of Radial gates and its operating mechanism for Tide Generation physical models in the field hydraulic model studies.	8 – 10 months	Varies as per requirement of client and scope of the studies
145	Miscellaneous and residuary matters and emerging studies	-	- Do -