

BRIHANMUMBAI MUNICIPAL CORPORATION

Water Supply Projects Department

BUDGETORY QUOTATION NOTICE DOCUMENT

**For Design & Development of New 2000 MLD Water
Treatment Plant at Bhandup Complex**

DOC NO. Ch.E./WSP/P/1438 dtd. 25.07.2022

DATE – 25/07/2022

Issued By
Chief Engineer (W.S.P.)
BrihanMumbai Municipal Corporation
BrihanMumbai Engineering Hub Building
1st Floor, Dr. E. Moses road, Worli Naka,
Worli ,Mumbai- 400 018

DATE OF Budgetory Quotation Notice Document :- 25/07/2022

LAST DATE OF SUBMISSION OF Budgetory Quotation Notice Document :- 01/08/2022

Budgetary Quotation Notice

Disclaimer

Brihanmumbai Municipal Corporation (BMC) may in its absolute discretion, without being under any obligation to do so, update, amend or supplement the information, assessment or assumption contained in this Quotation Notice. This Quotation Notice will be used only for estimation purpose and to gather inputs to prepare tender document for the work. There will be no award of work /short listing on the basis of this Quotation Notice.

1. Objectives of this QUOTATION NOTICE

- BMC envisages to construct the new Water Treatment Plant in Bhandup Complex area since the existing plant of 1910 MLD capacity is due for the major repair works due to operations constraints.
- The objective of this Quotation Notice is to get the Budgetary (Techno – Commercial) Quotations from experienced Technology providers/ Reputed contractors in the field and who have experience of Design, Construction, Operation & Maintenance of Water Treatment Plant.

Brief scope of work

The Brief scope of the Agency/contractor/ technology provider shall consist of design, construction, operation, and maintenance of New 2000 MLD Water Treatment Plant at Bhandup Complex with O & M for 15 (Fifteen) years.

The scheme of new 2000 MLD water treatment plant may includes

- Inlet Works including tapping from the arm of available tapings at Tunnel Shaft kept for future WTP
- Coagulation and Pre-disinfection system
- Flocculation and settlement in clarifiers
- Filtration
- Disinfection system should consist of advanced technology which have residual effect up to consumer connection. Conventional Chlorination system should not be provided as per CPCB / MPCB guidelines.
- Associated pipelines, road works, drainage, sewerage, landscaping and miscellaneous works
- Construction of Storm Water Drains including Flood Mitigation Mechanism
- Designing and Construction of GIS Substation for the proposed load for various components of treatment plant i.e. WTP load, disinfection system load, Proposed pumping load with the redundancy
- Relocation of HT towers which are inside the proposed WTP land parcel, along with all necessary permissions.
- Supervisory/ annunciation, SCADA, Telecommunication and Public Address System

- Demolition of existing 5B store building of BMC, standalone staff quarter buildings and Security establishments near 5B store building and Construction of new centralize air condition fully furnished office building for BMC staff of 20,000 Sq. Ft. and staff quarters of existing capacity at different locations as suggested by BMC
- Laboratory along with all the equipments for conducting various tests prescribed in ISO - 10500 :2012 on raw as well as treated water
- Recycling waste water from WTP and handling & disposal of sludge as per MPCB Norms
- Fire Alarm and Fire Fighting system
- Obtaining all the necessary permissions as may be needed for the development of WTP at Bhandup complex.
- The agency shall also mark/spare the land of approximately 1 Ha. required for the pumping station for 2000 MLD (plus 10% overload) treated capacity

Note - This is the indicative components of the plant however; the agency may decide the components & sizing based on the technology & design proposed for the plant

2. Expectations of BMC from the Technology Providers /Firms Dealing in the line

BMC hereby invites the Budgetary (Techno – Commercial) Quotations from experienced Technology providers /reputed Contractors who may be experienced contractors in the field and who have experience of Design, Construction and Operation & Maintenance of Water Treatment Plant in last twenty years,

- The Technology proposed in the Budgetary (Techno-Commercial) Quotation should be operational globally anywhere for a minimum of 5 years with a minimum plant size of 300 MLD.
- The Budgetary (Techno – Commercial) Quotation shall be evaluated by the BMC and shall be adopted for preparation of the detailed estimates & project report.
- The Technology Provider/Reputed contractors in the field shall adhere to the treated water parameters as per Indian Standards ISO -10500 :2012 and also in line with the parameters currently being maintained at the 900 MLD WTP at Bhandup Complex as shown in Table –I.
- The Technology proven world-wide for treatment and already in use successfully (in BMC or other Government organisations) and suitable for the prevailing raw water parameters shall be given preference.
- As attached in Annexure – 1, total land available for development of New WTP is approximately 7.05 Ha. Out of which approximately 1 Ha. land shall be spared for the development of proposed Clear Water Pumping Station (Only for power demand calculation of Substation. Pumping station cost shall be not included in the quotation) and GIS based Substation. And Tunnel Shaft area shall not be disturbed while constructing the WTP. Further height of Plant shall not exceed more than 5 M.

- Technology adaptation will be based on:
 - i. Lowest lifecycle cost (CAPEX + OPEX +Asset replacement cost+ Power Consumption Cost)
 - ii. New innovative futuristic proven technology suitable to input & output water parameters
 - iii. Footprint of the plant should be compatible to the free vacant land available
 - iv. Minimal use of hazardous chemicals / substances
 - v. Least time required for the construction of the plant
 - vi. Environment, Sustainability & Resilience
- It should contain Proposed site layout of the proposed plant indicating space, hydraulics etc. along with the plant components (WTP of 2000 + 10% overload MLD treated capacity + Advanced Disinfection system + pumping capacity of 2000 + 10% overload MLD treated capacity+ GIS substation.)
- Electrical load shall be considered for 2000 WTP plus 10% overload + Advanced disinfection system for above capacity + Proposed 2000 Mld clear water pumping with 20-meter head + 10% overload.
- GIS Substation of suitable rating with minimum 50% standby provision of transformers & 30% spare feeders for future expansion
- Technology Provider/Reputed contractors in the field shall provide the CAPEX breakup for the construction of GIS substation
- Technology Provider/Reputed contractors in the field shall provide the CAPEX breakup for Civil structures and Electro – Mechanical components required for the WTP.
- Technology Provider/Reputed contractors in the field shall provide the breakup for OPEX such as manpower, asset replacement cost, spare parts, electricity consumption, chemical consumption and any such cost that comes under OPEX.
- Life & Warranty of the key components shall also be provided by the Technology Provider/Reputed contractor
- Location Map of Proposed WTP is attached as Annexure – 1, Contour map of the Bhandup Complex is attached as Annexure – 2, Raw Water Quality/ Treated water quality is attached as Annexure – 3 and Borehole details are attached as Annexure – 4
- Agencies shall give their details in the following format;
 - **Details to be filled by agency**
 - Area/Land Availability – 7.05 Ha.
 - Capacity of Proposed Plant – 2000 MLD
 - Proposed Technology Details – _____ (to be filled by Agency)
 - Detailed list of Components for Proposed Technology – _____ (to be filled by Agency)

Sr. No.	Details of Each Component	To be filled by Agency
Capital Component		
1	Civil	As % of Total Quantity of Civil Works (please provide the breakup in terms of price and not of the quantity)
	Concrete including TOR steel	
	Labour	
	Structural Steel (if any)	
2	Electro – Mechanical	
	Imported Components*	
	Indian Components	
3	Instrumentation	
	Imported Components	
	Indian Components	
O&M Component		
4	Chemical	
5	Maintenance including Spares & Sludge Disposal	
6	Power Consumption	
7	Asset Replacement Cost Component Wise	
	Total cost	

- You are requested to provide the schedule of replacement of Asset and if possible the percentage of the component to be replace to the overall cost of that item head like blower in Electro – Mechanical, Sensors & Probes in Instrumentation etc.

3. Challenges of the project

- Technology providers are required to submit the statement of capability of the company, its location, capacity, duration of construction of the WTP and age of the WTP where the said technology has been used.

The technology providers'/Reputed contractors in the field' representatives have to submit the proposal by 01/08/2022 via email on 2000mldwtpbc@gmail.com and submit five hard copies of proposal at the Office of the Deputy Chief Engineer (WSP), M&E (OC), Balkum within Seven days from date of submission.

- The technology providers /Reputed contractors may have to give a presentation to the BMC representatives /Technical Advisory Committee (TAC).

Technology Provider/Reputed contractors in the field are encouraged to do their own due diligence, study the water quality and flow data attached in Annexure and shall get the available data from the Office of the Deputy Chief Engineer (WSP), M&E (O.C.), Balkum,

Prashant Pawar, Deputy Chief Engineer (WSP), M&E (O.C.), +91 9769110708.

Sudhkar Hande , Executive Engineer (WSP)-MV -II – I/C +91 9869113088.

sd/-

Chief Engineer (Water Supply Projects)

Table – I

A) Clarified Water Quality shall be compatible with the following standards:

i. For dry season or non- monsoon season conditions when raw water turbidity is not expected to exceed 10 NTU:

- a. Turbidity : Not exceeding 5 NTU
- b. Suspended solids : not exceeding 5 mg/l
- c. Total Aluminium : not exceeding 0.03 mg/l as Al

ii. For monsoon conditions with turbid raw water:

- a. Turbidity : any single value not exceeding 7 NTU maximum, with an average value over 24 hrs. not exceeding 5 NTU.
- b. Suspended solids : not exceeding 5 mg/l maximum.
- c. Total Aluminium : not exceeding 0.05 mg/l as Al

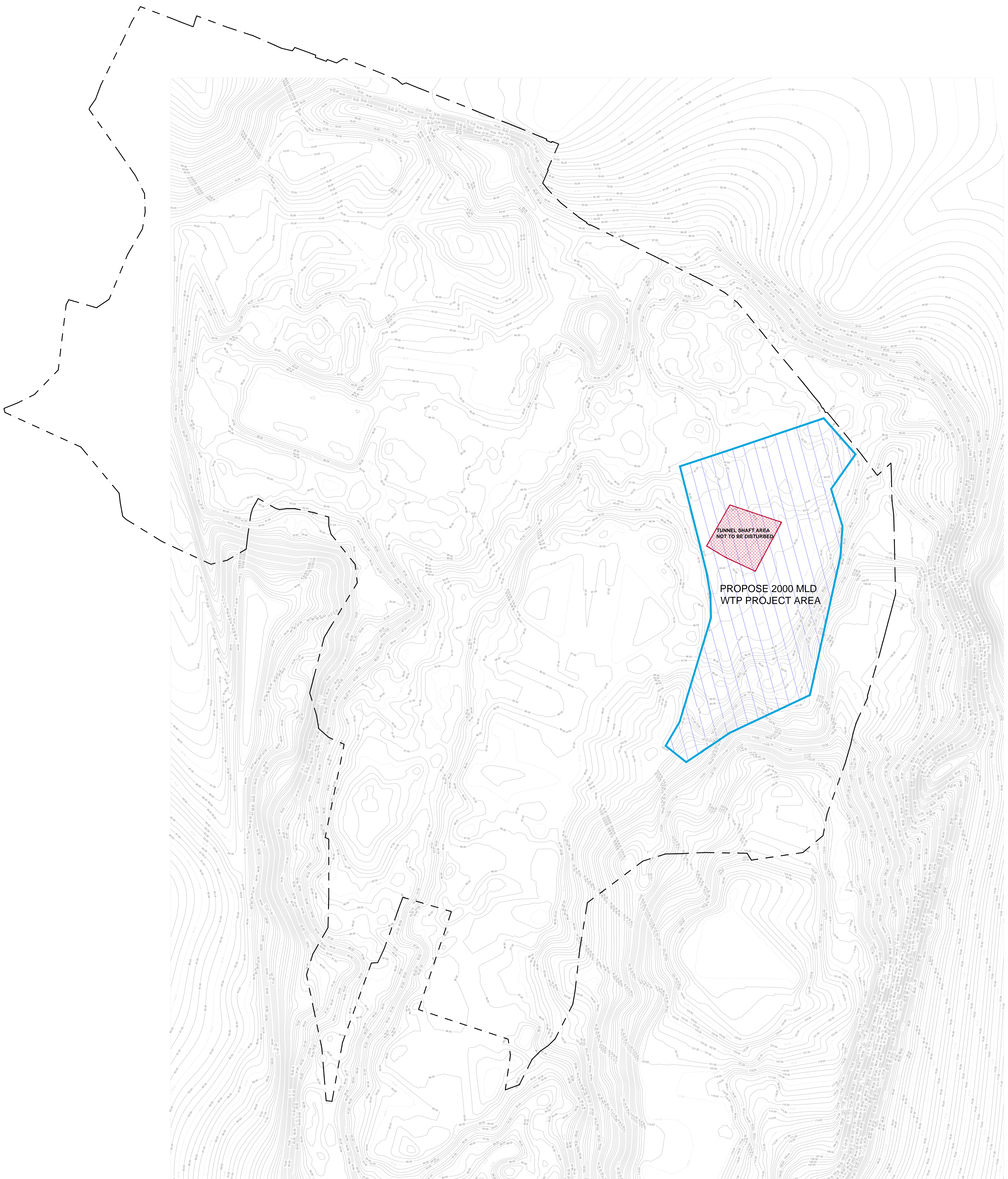
B) The water quality post Filtration and disinfection shall be compatible with the following standards:


- a. Turbidity : Not exceeding 0.4 NTU
- b. Suspended solids : not exceeding 1.0 mg/l
- c. Colour : not exceeding 5 hazen units
- d. Taste & Colour : Unobjectionable
- e. Iron & Fe : not exceeding 0.1 mg/l
- f. Manganese as Mn : not exceeding 0.1 mg/l
- g. Total Aluminium : not exceeding 0.03 mg/l as Al
- h. Coliform Organisms : Absent

Annexure – 1 – Proposed land for 2000 MLD WTP



Annexure – 2 – Contour Map of the Proposed WTP Location



	NAME OF DRAWING	NAME OF THE CLIENT	NAME OF THE CONSULTANT
	CONTOUR MAP WITH PROPOSE LOCATION	MUNICIPAL CORPORATION OF GREATER MUMBAI	 <p>TUSPL 701, HARBHAJAN, CST RD, VIDYANAGARI MARG, KALINA , SANTACRUZ (E), MUMBAI - 400 098. Telefax : +91 22 26655335 contact@tandonandassociaies.com/www.tandonandassociates.com</p>

**Annexure – 3 – Raw & Treated Water Quality Data of
1910 MLD Bhandup**

ANALYTICAL REPORT OF WATER SAMPLE FOR THE MONTH OF JANUARY – 2018

Parameters	IS : 10500 : 2012		Bhandup Complex				Tulsi Filtration Plant				Vehar Filtration Plant			
	Limits		Raw		Final		Raw		Final		Raw		Final	
	Acceptable	Permissible	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min
Turbidity (N.T.U)	1	5	2.5	1.5	0.67	0.23	11.0	2.2	1.20	0.58	2.2	1.0	1.3	0.75
pH	6.5-8.5	6.5-8.5	7.50	7.40	7.35	7.30	7.75	7.10	7.35	6.85	7.70	7.20	7.60	7.30
Color (Hazen Unit)	5	15	5	5	<5	<5	20	5	5	<5	5	5	5	<5
Total Dissolved solids (mg/l)	500	2000	50	46	50	46	52	48	52	48	60	57	58	54
Chlorides (mg/l)	250	1000	12	8	13	8	15	12	15	14	14	12	16	13
Total Alkalinity (mg/l)	200	600	40	38	38	36	35	34	32	31	42	41	40	40
Total Hardness (mg/l)	200	600	45	40	43	38	48	34	46	40	50	49	48	46
Cal. Hardness (mg/l)	–	–	30	24	28	23	30	25	30	23	31	27	30	26
Calcium as Ca ²⁺ (mg/l)	75	200	12.0	9.6	11.2	9.2	12.0	10.0	12.0	9.2	12.4	10.8	12.0	10.4
Magnesium as Mg ²⁺ (mg/l)	30	100	5.10	2.91	4.86	2.91	4.86	4.13	4.86	3.64	5.34	4.61	5.10	4.37
Iron as Fe ²⁺ (mg/l)	0.3	0.3	0.02	0.01	NIL	NIL	0.02	0.01	NIL	NIL	0.01	0.01	NIL	NIL
Res. Aluminium as Al ³⁺ (mg/l)	0.03	0.2	NIL	NIL	0.04	0.03	NIL	NIL	0.04	0.02	NIL	NIL	0.02	0.01
Dissolved Oxygen (mg/l)	–	–	8.6	7.9	8.6	7.9	8.7	6.6	8.7	6.5	8.6	8.3	8.6	8.3
Conductivity (µS/cm)	–	–	97	85	97	85	98	89	98	89	110	103	106	97
Free Res. Chlorine (mg/l)	Min.0.2	1	0.30	0.25	1.60	1.50	NIL	NIL	0.60	0.20	NIL	NIL	0.70	0.20
Total coliform	0	0	0	0	0	0	560*	159*	0	0	240*	60*	0	0
E.coli.	0	0	0	0	0	0	90*	42*	0	0	70*	18*	0	0

* Coliform & E.coli are present in the Raw water (Before Chlorination).

In Purified (Final) water Coli form & E.coli bacteria are absent.

Results of all parameters for Final Water of Bhandup Complex, Tulsi Filtration Plant and Vehar Filtration Plant are within Permissible Limit as per IS 10500 : 2012

ANALYTICAL REPORT OF WATER SAMPLE FOR THE MONTH OF FEBRUARY – 2018

Parameters	IS : 10500 : 2012		Bhandup Complex				Tulsi Filtration Plant				Vehar Filtration Plant			
	Limits		Raw		Final		Raw		Final		Raw		Final	
	Acceptable	Permissible	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min
Turbidity (N.T.U)	1	5	2.3	1.4	0.69	0.32	17.0	1.5	1.10	0.86	2.2	1.6	1.5	0.77
pH	6.5-8.5	6.5-8.5	7.50	7.40	7.40	7.30	7.60	6.95	7.35	6.90	8.00	7.60	7.80	7.50
Color (Hazen Unit)	5	15	5	5	<5	<5	10	5	5	<5	5	5	5	<5
Total Dissolved solids (mg/l)	500	2000	50	43	48	45	59	46	54	47	58	55	54	53
Chlorides (mg/l)	250	1000	10	9	12	10	11	9	13	11	11	10	12	11
Total Alkalinity (mg/l)	200	600	42	38	40	36	40	35*	38	31	45	40	46	38
Total Hardness (mg/l)	200	600	48	40	45	36	48	41	45	40	53	50	50	49
Cal. Hardness (mg/l)	--	--	32	26	30	24	35	32	33	29	32	31	30	30
Calcium as Ca ⁺² (mg/l)	75	200	12.8	10.0	12.0	9.6	14.0	12.8	13.2	11.6	12.8	12.4	12.0	12.0
Magnesium as Mg ⁺² (mg/l)	30	100	4.86	3.15	4.86	2.91	3.88	1.94	3.64	2.18	5.10	4.61	4.86	4.61
Iron as Fe ⁺² (mg/l)	0.3	0.3	0.03	0.01	NIL	NIL	0.02	0.01	NIL	NIL	NIL	NIL	NIL	NIL
Res. Aluminium as Al ⁺³ (mg/l)	0.03	0.2	NIL	NIL	0.04	0.03	NIL	NIL	0.03	0.02	NIL	NIL	0.02	0.02
Dissolved Oxygen (mg/l)	--	--	8.5	7.7	8.9	8.0	8.5	5.1	8.5	7.2	9.0	8.5	8.8	8.6
Conductivity (µS/cm)	--	--	88	80	88	82	107	84	100	87	104	99	99	96
Free Res. Chlorine (mg/l)	Min.0.2	1	0.25	0.15	1.60	1.40	NIL	NIL	1.10	0.40	NIL	NIL	1.30	0.40
Total coliform	0	0	0	0	0	0	368*	132*	0	0	352*	28*	0	0
E.coli.	0	0	0	0	0	0	180*	66*	0	0	148*	0	0	0

* Coliform & E.coli are present in the Raw water (Before Chlorination).

In Purified (Final) water Coli form & E.coli bacteria are absent.

Results of all parameters for Final Water of Bhandup Complex, Tulsi Filtration Plant and Vehar Filtration Plant are within Permissible Limit as per IS 10500 : 2012

ANALYTICAL REPORT OF WATER SAMPLE
FOR THE MONTH OF MARCH – 2018

Parameters	IS : 10500 : 2012		Bhandup Complex				Tulsi Filtration Plant				Vehar Filtration Plant			
	Limits		Raw		Final		Raw		Final		Raw		Final	
	Acceptable	Permissible	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min
Turbidity (N.T.U)	1	5	2.3	1.5	0.80	0.30	22.0	2.0	8.20	0.70	2.2	2.2	1.1	0.84
pH	6.5-8.5	6.5-8.5	7.60	7.35	7.50	7.20	7.70	7.30	7.65	7.10	8.55	7.40	8.05	7.35
Color (Hazen Unit)	5	15	5	5	<5	<5	10	56*	5	<5	5	5	<5	<5
Total Dissolved solids (mg/l)	500	2000	48	44	48	44	50	48*	58	49	55	54	54	53
Chlorides (mg/l)	250	1000	12	9	14	11	12	10*	14	12	15	11	18	13
Total Alkalinity (mg/l)	200	600	42	37	40	29	38	36	36	34	44	43	42	40
Total Hardness (mg/l)	200	600	48	39	46	37	46	42*	43	40	50	49	49	48
Cal. Hardness (mg/l)	--	--	31	24	30	20	30	27	29	25	35	32	34	30
Calcium as Ca ²⁺ (mg/l)	75	200	12.4	9.6	12.0	8.0	12.0	10.8	11.6	10.0	14	12.8	13.6	12
Magnesium as Mg ²⁺ (mg/l)	30	100	5.10	2.43	4.86	2.43	4.13	3.40	3.88	3.15	4.4	3.4	4.4	3.4
Iron as Fe ²⁺ (mg/l)	0.3	0.3	0.02	NIL	NIL	NIL	0.02	NIL	NIL	NIL	0.03	NIL	NIL	NIL
Manganese as Mn (mg/L)	0.1	0.3	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL
Res. Aluminium as Al ³⁺ (mg/l)	0.03	0.2	NIL	NIL	0.05	0.03	NIL	NIL	0.09	0.03	NIL	NIL	0.04	0.01
Dissolved Oxygen (mg/l)	--	--	8.1	7.1	8.6	7.5	8.2	6.4	8.3	7.1	8.8	8.2	8.7	8.1
Conductivity (µS/cm)	--	--	87	82	87	82	92	85	93	84	105	100	100	97
Free Res. Chlorine (mg/l)	Min.0.2	1	0.2	0.15	1.55	1.50	NIL	NIL	1.25	0.3	NIL	NIL	1.45	0.65
Fluorides as F ⁻ (mg/L)	1	1.5	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL
Total Arsenic as As (mg/L)	0.01	0.05	0.002	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL
Bacteriological Examination (CFU/100 ml)														
Total coliform	0	0	0	0	0	0	184*	112*	0	0	352*	80*	0	0
E.coli.	0	0	0	0	0	0	60*	20*	0	0	94*	12*	0	0

* Coliform & E.coli are present in the Raw water (Before Chlorination).

In Purified (Final) water Coli form & E.coli bacteria are absent.

Results of all parameters for Final Water of Bhandup Complex, Tulsi Filtration Plant and Vehar Filtration Plant are within Permissible Limit as per IS 10500 : 2012

ANALYTICAL REPORT OF WATER SAMPLE

FOR THE MONTH OF APRIL – 2018

Parameters	IS : 10500 : 2012		Bhandup Complex				Tulsi Filtration Plant				Vehar Filtration Plant			
	Limits		Raw		Final		Raw		Final		Raw		Final	
	Acceptable	Permissible	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min
Turbidity (N.T.U)	1	5	2.9	2.1	0.90	0.43	17.0	2.9	3.90	1.70	4.7	4.2	1.8	1.50
pH	6.5-8.5	6.5-8.5	7.45	7.25	7.30	7.15	8.40	7.20	7.80	7.05	8.45	8.40	8.40	8.30
Color (Hazen Unit)	5	15	5	5	<5	<5	25	5	5	<5	5	5	<5	<5
Total Dissolved solids (mg/l)	500	2000	49	46	48	46	55	48	54	50	57	56	55	55
Chlorides (mg/l)	250	1000	13	8	14	10	15	10	18	13	15	13	18	14
Total Alkalinity (mg/l)	200	600	44	36	42	33	44	38	41	34	46	44	46	43
Total Hardness (mg/l)	200	600	47	40	45	34	49	44	43	41	52	50	51	49
Cal. Hardness (mg/l)	–	–	30	25	28	22	39	31	33	26	37	36	36	34
Calcium as Ca ²⁺ (mg/l)	75	200	12.0	10.0	11.2	8.8	15.6	12.4	13.2	10.4	14.8	14.4	14.4	13.6
Magnesium as Mg ²⁺ (mg/l)	30	100	4.86	3.40	4.13	2.91	3.88	3.15	4.13	2.18	3.88	3.15	3.64	3.15
Iron as Fe ²⁺ (mg/l)	0.3	0.3	0.02	NIL	NIL	NIL	0.03	0.01	NIL	NIL	0.02	NIL	NIL	NIL
Manganese as Mn (mg/L)	0.1	0.3	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL
Res. Aluminium as Al ³⁺ (mg/l)	0.03	0.2	NIL	NIL	0.04	0.02	NIL	NIL	0.1	0.06	NIL	NIL	0.04	0.01
Dissolved Oxygen (mg/l)	–	–	7.8	6.6	8.5	7.3	8.2	6.3	8.8	7.1	8.2	8.2	8.1	~ 8.1
Conductivity (µS/cm)	–	–	90	84	88	84	96	87	95	91	105	103	102	101
Free Res. Chlorine (mg/l)	Min.0.2	1	0.15	0.10	1.60	1.25	NIL	NIL	1.80	0.60	NIL	NIL	1.05	0.30
Bacteriological Examination (CFU/100 ml)														
Total coliform	0	0	0	0	0	0	450*	162*	0	0	383*	156*	0	0
E.coli.	0	0	0	0	0	0	170*	40*	0	0	178*	20*	0	0

* Coliform & E.coli are present in the Raw water (Before Chlorination).

In Purified (Final) water Coli form & E.coli bacteria are absent.

Results of all parameters for Final Water of Bhandup Complex, Tulsi Filtration Plant and

Vehar Filtration Plant are within Permissible Limit as per IS 10500 : 2012

ANALYTICAL REPORT OF WATER SAMPLE FOR THE MONTH OF MAY – 2018

Parameters	IS : 10500 : 2012		Bhandup Complex				Tulsi Filtration Plant				Vehar Filtration Plant			
	Limits		Raw		Final		Raw		Final		Raw		Final	
	Acceptable	Permissible	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min
Turbidity (N.T.U)	1	5	2.3	1.6	0.74	0.33	8.5	4.1	4.60	0.70	7.5	7.1	5.0	4.60
pH	6.5-8.5	6.5-8.5	7.40	7.20	7.25	7.05	8.50	7.05	7.45	6.85	8.45	8.40	8.40	8.35
Color (Hazen Unit)	5	15	5	5	<5	<2.5	10	5	5	<2.5	15	10	10	5
Total Dissolved solids (mg/l)	500	2000	50	40	50	46	58	48*	59	50	63	62	61	60
Chlorides (mg/l)	250	1000	12	9	13	11	14	12	20	16	12	11	14	13
Total Alkalinity (mg/l)	200	600	44	34	42	32	39	38	39	26	40	38	40	36
Total Hardness (mg/l)	200	600	53	45	51	41	53	43	49	36	54	53	53	52
Cal. Hardness (mg/l)	--	--	40	27	38	24	38	25	33	22	38	37	36	35
Calcium as Ca ⁺² (mg/l)	75	200	16.0	10.8	15.2	9.6	15.2	10.0	13.2	8.8	15.2	14.8	14.4	14
Magnesium as Mg ⁺² (mg/l)	30	100	6.07	2.18	6.31	2.18	4.61	3.64	4.86	3.88	3.88	3.88	4.13	4.13
Iron as Fe ⁺² (mg/l)	0.3	0.3	0.01	Nil	Nil	Nil	0.03	0.02	Nil	Nil	0.01	0.01	Nil	Nil
Manganese as Mn ⁺² (mg/L)	0.1	0.3	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	0.01	0.01
Res. Aluminium as Al ⁺³ (mg/l)	0.03	0.2	Nil	Nil	0.04	0.03	Nil	Nil	0.15	0.08	Nil	Nil	7.5	7.4
Dissolved Oxygen (mg/l)	--	--	7.6	6.3	8.2	7.1	8.4	4.1	7.9	6.0	7.8	7.7	109	108
Conductivity (µS/cm)	--	--	91	84	93	83	104	87	107	90	113	112	109	108
Free Res. Chlorine (mg/l)	Min.0.2	1	0.15	0.10	1.90	1.25	Nil	Nil	1.60	0.40	Nil	Nil	0.35	0.30
Bacteriological Examination (CFU/100 ml)														
Total coliform	0	0	0	0	0	0	450*	112*	0	0	178*	164*	0	0
E.coli.	0	0	0	0	0	0	30*	0	0	0	34*	45*	0	0

* Coliform & E.coli are present in the Raw water (Before Chlorination).
In Purified (Final) water Coli form & E.coli bacteria are absent.
Results of all parameters for Final Water of Bhandup Complex, Tulsi Filtration Plant and Vehar Filtration Plant are within Permissible Limit as per IS 10500 : 2012

M. D. A.

[Signature]
21/5/18

ANALYTICAL REPORT OF WATER SAMPLE

FOR THE MONTH OF – JUNE 2018

Parameters	IS : 10500 : 2012		Bhandup Complex				Tulsi Filtration Plant				Vehar Filtration Plant			
	Limits		Raw		Final		Raw		Final		Raw		Final	
	Acceptable	Permissible	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min
N.T.U)	1	5	28.0	1.4	3.0	0.24	28.0	5.0	5.4	1.5	9.0	3.8	8.8	3.1
	6.5-8.5	6.5-8.5	7.40	7.10	7.25	6.90	7.75	6.55	7.05	6.50	7.60	7.15	7.60	7.00
zen Unit)	5	15	40	5	5	<2.5	>70	10	10	5	15	5	15	5
solved solids (mg/l)	500	2000	63	44	66	45	52	47	55	49	58	49	56	47
(mg/l)	250	1000	12	9	15	11	13	11	16	15	15	12	17	13
alinity (mg/l)	200	600	45	36	42	34	38	36	36	29	42	40	43	40
rdness (mg/l)	200	600	50	45	48	43	46	45	44	43	56	52	54	50
iness (mg/l)	--	--	39	27	30	25	37	35	35	33	41	39	38	36
as Ca ⁺² (mg/l)	75	200	15.6	10.8	12.0	10.0	14.8	14.0	14.0	13.2	16.4	15.6	15.2	14.4
um as Mg ⁺² (mg/l)	30	100	4.86	2.18	4.86	2.18	2.43	2.18	2.43	2.18	4.13	2.67	4.13	3.40
e ⁺² (mg/l)	0.3	0.3	0.05	Nil	Nil	Nil	0.04	0.02	Nil	Nil	0.01	Nil	0.01	Nil
ese as Mn ⁺² (mg/L)	0.1	0.3	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
minium as Al ⁺³ (mg/l)	0.03	0.2	Nil	Nil	0.05	0.03	Nil	Nil	0.10	0.08	Nil	Nil	0.01	Nil
d Oxygen (mg/l)	--	--	7.4	6.9	8.2	7.5	4.8	3.1	6.9	6.5	7.9	7.5	7.8	7.7
ivity (µS/cm)	--	--	114	74	121	78	95	86	101	86	120	88	122	84
s. Chlorine (mg/l)	Min.0.2	1	0.20	0.10	1.65	1.30	Nil	Nil	1.20	0.60	Nil	Nil	0.80	0.25
Biological Examination (CFU/100 ml)														
liform	0	0	0	0	0	0	420*	150*	0	0	386*	189*	0	0
	0	0	0	0	0	0	150*	20*	0	0	200*	55*	0	0

form & E.coli are present in the Raw water (Before Chlorination).

ified (Final) water Coli form & E.coli bacteria are absent.

of all parameters for Final Water of Bhandup Complex, Tulsi Filtration Plant and

Filtration Plant are within Permissible Limit as per IS 10500 : 2012



ANALYTICAL REPORT OF WATER SAMPLE

FOR THE MONTH OF – JULY 2018

Parameters	IS : 10500 : 2012		Bhandup Complex				Tulsi Filtration Plant				Vehar Filtration Plant			
	Limits		Raw		Final		Raw		Final		Raw		Final	
	Acceptable	Permissible	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min
Turbidity (N.T.U)	1	5	35.0	3.6	2.8	0.17	53.0	10.0	2.6	0.40	4.8	2.1	4.0	2.1
pH	6.5-8.5	6.5-8.5	7.30	7.05	7.05	6.75	7.50	6.50	6.90	6.50	7.40	7.10	7.40	6.90
Color (Hazen Unit)	5	15	45	5	5	<2.5	>70	15	5	<5	10	5	10	2.5
Total Dissolved solids (mg/l)	500	2000	64	41	68	43	56	45	57	44	61	50	61	57
Chlorides (mg/l)	250	1000	13	11	15	13	13	10	16	13	13	10	16	12
Total Alkalinity (mg/l)	200	600	41	30	39	28	42	30	40	28	46	32	42	30
Total Hardness (mg/l)	200	600	54	44	52	42	44	40	42	38	48	45	47	43
Cal. Hardness (mg/l)	--	--	32	25	30	24	28	25	26	23	36	28	34	30
Calcium as Ca ⁺² (mg/l)	75	200	12.8	10.0	12.0	9.6	11.2	10.0	10.4	9.2	14.4	11.2	13.6	12
Magnesium as Mg ⁺² (mg/l)	30	100	7.07	4.61	6.31	4.37	3.88	3.64	3.88	3.64	5.34	2.18	3.88	2.18
Iron as Fe ⁺² (mg/l)	0.3	0.3	0.12	0.02	Nil	Nil	0.02	0.01	Nil	Nil	0.02	Nil	Nil	Nil
Manganese as Mn ⁺² (mg/L)	0.1	0.3	Trace	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
Res. Aluminium as Al ⁺³ (mg/l)	0.03	0.2	Nil	Nil	0.04	0.01	Nil	Nil	0.05	0.04	Nil	Nil	0.01	0.01
Dissolved Oxygen (mg/l)	--	--	8.1	7.1	8.6	8.0	9.0	4.0	9.2	7.1	8.5	8.3	8.6	8.4
Conductivity (µS/cm)	--	--	117	75	126	79	101	77	102	80	113	93	111	105
Free Res. Chlorine (mg/l)	Min.0.2	1	0.15	0.10	1.65	1.45	Nil	Nil	1.60	0.25	Nil	Nil	0.25	Nil
Bacteriological Examination (CFU/100 ml)														
Total coliform	0	0	0	0	0	0	490	110	0	0	410	150	0	0
E.coli.	0	0	0	0	0	0	150	58	0	0	150	20	0	0

* Coliform & E.coli are present in the Raw water (Before Chlorination).

In Purified (Final) water Coli form & E.coli bacteria are absent.

Results of all parameters for Final Water of Bhandup Complex, Tulsi Filtration Plant and Vehar Filtration Plant are within Permissible Limit as per IS 10500 : 2012



ANALYTICAL REPORT OF WATER SAMPLE

FOR THE MONTH OF – AUGUST 2018

Parameters	IS : 10500 : 2012		Bhandup Complex				Tulsi Filtration Plant				Vehar Filtration Plant			
	Limits		Raw		Final		Raw		Final		Raw		Final	
	Acceptable	Permissible	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min
Turbidity (N.T.U)	1	5	17.0	6.0	1.9	0.31	35.0	4.2	4.5	0.50	3.0	2.5	2.5	1.5
pH	6.5-8.5	6.5-8.5	7.45	7.10	7.20	6.90	7.60	6.90	7.25	6.85	8.45	7.47	7.70	7.45
Color (Hazen Unit)	5	15	25	10	5	<2.5	>70	5	5	<2.5	5	5	5	5
Total Dissolved solids (mg/l)	500	2000	57	48	54	43	55	41	57	42	60	59	59	58
Chlorides (mg/l)	250	1000	15	10	17	12	14	12	17	16	12	12	15	12
Total Alkalinity (mg/l)	200	600	42	24	40	23	40	37	36	35	48	45	44	40
Total Hardness (mg/l)	200	600	53	39	51	37	44	40	42	38	50	45	53	43
Cal. Hardness (mg/l)	--	--	33	25	32	23	30	28	28	26	40	31	42	29
Calcium as Ca ⁺² (mg/l)	75	200	13.2	10.0	12.8	9.2	12.0	11.2	11.2	10.4	16	12.4	16.8	11.6
Magnesium as Mg ⁺² (mg/l)	30	100	5.10	2.67	4.86	2.91	3.40	2.43	3.40	2.43	5.83	3.40	6.07	3.40
Iron as Fe ⁺² (mg/l)	0.3	0.3	0.04	0.02	Nil	Nil	0.16	0.09	0.01	Nil	NIL	Nil	Nil	Nil
Manganese as Mn ⁺² (mg/L)	0.1	0.3	NIL	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
Res. Aluminium as Al ⁺³ (mg/l)	0.03	0.2	Nil	Nil	0.04	0.01	Nil	Nil	0.05	0.01	Nil	Nil	0.03	Nil
Dissolved Oxygen (mg/l)	--	--	8.4	7.3	8.5	8.1	8.7	5.9	8.9	8.0	8.9	8.3	8.6	8.4
Conductivity (µS/cm)	--	--	105	88	103	89	99	75	104	77	110	107	108	104
Free Res. Chlorine (mg/l)	Min.0.2	1	0.20	0.15	1.75	1.30	Nil	Nil	1.60	0.50	Nil	Nil	1.55	0.15
Bacteriological Examination (CFU/100 ml)														
Total coliform	0	0	0	0	0	0	580*	220*	0	0	480*	250*	0	0
E.coli.	0	0	0	0	0	0	390*	50*	0	0	130*	20*	0	0

* Coliform & E.coli are present in the Raw water (Before Chlorination).

In Purified (Final) water Coli form & E.coli bacteria are absent.

Results of all parameters for Final Water of Bhandup Complex, Tulsi Filtration Plant and Vehar Filtration Plant are within Permissible Limit as per IS 10500 : 2012

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ANALYTICAL REPORT OF WATER SAMPLE

FOR THE MONTH OF – SEPTEMBER 2018

Parameters	IS : 10500 : 2012		Bhandup Complex				Tulsi Filtration Plant				Vehar Filtration Plant			
	Limits		Raw		Final		Raw		Final		Raw		Final	
	Acceptable	Permissible	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min
Turbidity (N.T.U)	1	5	5.3	2.2	1.2	0.30	52.0	2.7	2.2	0.59	3.8	3.3	1.9	1.8
pH	6.5-8.5	6.5-8.5	7.50	7.30	7.40	7.20	7.70	7.15	7.40	7.10	8.50	8.10	7.95	7.65
Color (Hazen Unit)	5	15	10	5	2.5	<2.5	> 70	5	5	< 2.5	5	5	5	5
Total Dissolved solids (mg/l)	500	2000	54	51	55	52	59	54	59	55	61	61	60	59
Chlorides (mg/l)	250	1000	14	10	15	12	16	13	21	17	16	14	17	16
Total Alkalinity (mg/l)	200	600	44	36	43	34	45	37	40	33	43	41	40	38
Total Hardness (mg/l)	200	600	54	43	46	40	52	44	50	43	52	49	50	48
Cal. Hardness (mg/l)	--	--	38	26	35	24	35	27	33	25	35	30	33	30
Calcium as Ca ²⁺ (mg/l)	75	200	15.2	10.4	14.0	9.6	14.0	10.8	13.2	10.0	14	12	13.2	12
Magnesium as Mg ²⁺ (mg/l)	30	100	4.86	2.67	4.86	2.18	4.86	2.91	5.10	2.91	4.61	4.13	4.37	4.13
Iron as Fe ²⁺ (mg/l)	0.3	0.3	0.03	Nil	Nil	Nil	0.04	0.02	Nil	Nil	0.01	Nil	Nil	Nil
Res. Aluminium as Al ³⁺ (mg/l)	0.03	0.2	Nil	Nil	0.04	0.03	Nil	Nil	0.13	0.06	Nil	Nil	Nil	Nil
Manganese as Mn ²⁺ (mg/L)	0.1	0.3	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
Dissolved Oxygen (mg/l)	--	--	8.3	7.4	8.9	7.7	8.5	6.8	8.4	8.1	8.7	8.6	8.5	8.5
Conductivity (µS/cm)	--	--	102	94	103	95	115	99	118	104	112	110	109	108
Free Res. Chlorine (mg/l)	Min.0.2	1	0.20	0.20	1.65	1.50	Nil	Nil	1.55	0.50	Nil	Nil	0.55	0.50
Cyanide (mg/L)	0.05	No relaxation	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
Bacteriological Examination (CFU/100 ml)							680*	180*	0	0	280*	260*	0	0
Total coliform	0	0	0	0	0	0	430*	75*	0	0	140*	10*	0	0
E.coli.	0	0	0	0	0	0								

* Coliform & E.coli are present in the Raw water (Before Chlorination).
 In Purified (Final) water Coli form & E.coli bacteria are absent.
 Results of all parameters for Final Water of Bhandup Complex, Tulsi Filtration Plant and Vihar Filtration Plant are within Permissible Limit as per IS 10500 : 2012

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 5/9/18

ANALYTICAL REPORT OF WATER SAMPLE FOR THE MONTH OF - OCTOBER 2018

Parameters	IS : 10500 : 2012		Bhandup Complex				Tulsi Filtration Plant				Vehar Filtration Plant			
	Limits		Raw		Final		Raw		Final		Raw		Final	
	Acceptable	Permissible	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min
Turbidity (N.T.U)	1	5	2.6	1.5	0.78	0.46	3.9	3.6	1.0	0.27	5.6	2.5	2.3	1.2
pH	6.5-8.5	6.5-8.5	7.45	7.35	7.30	7.25	7.55	7.25	7.20	7.15	9.10	8.05	7.95	7.80
Color (Hazen Unit)	5	15	5	5	< 2.5	< 2.5	5	5	<2.5	<2.5	10	5	5	5
Total Dissolved solids (mg/l)	500	2000	55	49	55	48	64	60	65	64	69	66	66	64
Chlorides (mg/l)	250	1000	16	10	16	12	16	15	20	18	16	15	18	16
Total Alkalinity (mg/l)	200	600	42	35	40	33	42	40	34	31	43	40	41	34
Total Hardness (mg/l)	200	600	50	38	50	36	48	45	43	41	56	50	53	47
Cal. Hardness (mg/l)	--	--	33	23	33	21	28	27	27	24	40	32	38	29
Calcium as Ca ⁺² (mg/l)	75	200	13.2	9.2	13.2	8.4	11.2	10.8	10.8	9.6	16	12.8	15.2	11.6
Magnesium as Mg ⁺² (mg/l)	30	100	5.58	2.91	5.83	3.40	5.10	4.13	4.37	3.40	4.37	2.67	4.61	3.15
Iron as Fe ⁺² (mg/l)	0.3	0.3	0.02	0.01	Nil	Nil	0.05	0.02	Nil	Nil	Nil	Nil	Nil	Nil
Res. Aluminium as Al ⁺³ (mg/l)	0.03	0.2	Nil	Nil	0.04	0.02	Nil	Nil	0.06	0.04	Nil	Nil	0.03	0.02
Manganese as Mn ⁺² (mg/L)	0.1	0.3	0.006	Nil	0.001	Nil	0.003	Nil	Nil	Nil	0.003	Nil	Nil	Nil
Dissolved Oxygen (mg/l)	--	--	7.9	6.8	8.6	7.2	8.0	5.6	7.9	7.2	8.1	7.2	8.2	7.8
Conductivity (µS/cm)	--	--	98	91	101	90	117	110	119	117	126	120	120	117
Free Res. Chlorine (mg/l)	Min.0.2	1	0.30	0.15	1.70	1.40	0.25	0.20	1.50	0.50	0.25	0.20	1.0	0.80
Bacteriological Examination (CFU/100 ml)														
Total coliform	0	0	0	0	0	0	0	0	0	0	0	0	0	0
E.coli.	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Results of all parameters for Final Water of Bhandup Complex, Tulsi Filtration Plant and Vehar Filtration Plant are within Permissible Limit as per IS 10500 : 2012

ANALYTICAL REPORT OF WATER SAMPLE

FOR THE MONTH OF – November 2018

Parameters	IS : 10500 : 2012		Bhandup Complex				Tulsi Filtration Plant				Vehar Filtration Plant			
	Limits		Raw		Final		Raw		Final		Raw		Final	
	Acceptable	Permissible	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min
Turbidity (N.T.U)	1	5	1.8	1.4	0.57	0.38	4.3	3.3	0.96	0.35	9.9	2.5	1.9	0.99
pH	6.5-8.5	6.5-8.5	7.40	7.30	7.35	7.20	7.50	7.20	7.20	7.05	7.60	7.35	7.55	7.35
Color (Hazen Unit)	5	15	5	5	<2.5	<2.5	5	5	2.5	<2.5	10	5	2.5	<2.5
Total Dissolved solids (mg/l)	500	2000	62	50	60	50	69	64	68	66	67	65	66	63
Chlorides (mg/l)	250	1000	15	8	17	10	17	15	21	20	16	13	18	15
Total Alkalinity (mg/l)	200	600	46	33	43	31	42	38	38	36	49	43	46	42
Total Hardness (mg/l)	200	600	53	40	51	37	48	40	45	39	55	51	54	49
Cal. Hardness (mg/l)	--	--	39	23	38	20	30	28	29	25	35	33	34	32
Calcium as Ca ⁺² (mg/l)	75	200	15.6	8.8	15.2	8.0	12.0	11.6	11.6	10.0	14	13.2	13.6	12.8
Magnesium as Mg ⁺² (mg/l)	30	100	4.86	2.43	4.86	1.94	4.86	2.67	4.86	2.67	5.34	4.13	4.86	4.13
Iron as Fe ⁺² (mg/l)	0.3	0.3	0.01	Nil	Nil	Nil	Nil	0.02	Nil	Nil	0.07	Nil	Nil	Nil
Res. Aluminium as Al ⁺³ (mg/l)	0.03	0.2	Nil	Nil	0.04	0.03	Nil	Nil	0.04	0.03	Nil	Nil	0.04	0.03
Manganese as Mn ⁺² (mg/L)	0.1	0.3	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
Dissolved Oxygen (mg/l)	--	--	7.2	6.5	8.7	7.5	8.2	7.9	8.2	8.0	8.5	7.3	8.6	7.9
Conductivity (µS/cm)	--	--	103	91	101	92	126	117	125	120	136	120	132	119
Free Res. Chlorine (mg/l)	Min.0.2	1	0.40	0.25	1.65	1.50	1.0	0.10	1.6	1.5	1.1	0.40	1.3	1.1
Bacteriological Examination (CFU/100 ml)														
Total coliform	0	0	0	0	0	0	0	0	0	0	0	0	0	0
E.coli.	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Results of all parameters for Final Water of Bhandup Complex, Tulsi Filtration Plant and Vehar Filtration Plant are within Permissible Limit as per IS 10500 : 2012

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ANALYTICAL REPORT OF WATER SAMPLE

FOR THE MONTH OF – December 2018

Parameters	IS : 10500 : 2012		Bhandup Complex				Tulsi Filtration Plant				Vehar Filtration Plant			
	Limits		Raw		Final		Raw		Final		Raw		Final	
	Acceptable	Permissible	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min
Turbidity (N.T.U)	1	5	2.1	1.3	0.58	0.26	7.2	6.1	1.0	0.82	6.5	3.3	1.0	0.73
pH	6.5-8.5	6.5-8.5	7.45	7.25	7.35	7.15	7.45	7.35	7.20	7.20	7.50	7.40	7.40	7.30
Color (Hazen Unit)	5	15	15	5	5	<2.5	20	15	10	5	20	20	5	5
Total Dissolved solids (mg/l)	500	2000	60	55	60	54	69	61	68	68	73	70	68	67
Chlorides (mg/l)	250	1000	14	11	17	13	15	14	18	18	15	15	16	16
Total Alkalinity (mg/l)	200	600	45	38	43	37	43	41	42	38	45	44	42	41
Total Hardness (mg/l)	200	600	51	43	50	40	47	45	47	44	53	51	51	47
Cal. Hardness (mg/l)	--	--	30	24	28	23	31	29	29	28	32	31	31	29
Calcium as Ca ⁺² (mg/l)	75	200	12.0	9.6	11.2	9.2	12.4	11.6	11.6	11.2	12.8	12.4	12.4	11.6
Magnesium as Mg ⁺² (mg/l)	30	100	5.58	4.13	5.83	3.65	4.37	3.64	4.61	3.40	5.10	4.86	4.86	4.37
Iron as Fe ⁺² (mg/l)	0.3	0.3	0.01	Nil	Nil	Nil	0.01	0.01	Nil	Nil	0.03	0.01	Nil	Nil
Res. Aluminium as Al ⁺³ (mg/l)	0.03	0.2	Nil	Nil	0.03	0.02	Nil	Nil	0.06	0.05	Nil	Nil	0.03	0.02
Manganese as Mn ⁺² (mg/L)	0.1	0.3	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
Dissolved Oxygen (mg/l)	--	--	7.8	6.1	9.0	7.6	8.7	8.0	8.7	8.3	8.6	8.3	8.7	8.4
Conductivity (µS/cm)	--	--	108	100	107	100	126	121	124	123	133	128	123	122
Free Res. Chlorine (mg/l)	Min.0.2	1	0.35	0.25	1.70	1.30	1.35	0.55	2.1	1.0	1.1	0.95	1.45	1.1
Bacteriological Examination (CFU/100 ml)														
Total coliform	0	0	0	0	0	0	0	0	0	0	0	0	0	0
E.coli.	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Results of all parameters for Final Water of Bhandup Complex, Tulsi Filtration Plant and Vehar Filtration Plant are within Permissible Limit as per IS 10500 : 2012

ANALYTICAL REPORT OF WATER SAMPLE FOR THE MONTH OF – January 2019

Parameters	IS : 10500 : 2012		Bhandup Complex				Tulsi Filtration Plant				Vehar Filtration Plant			
	Limits		Raw		Final		Raw		Final		Raw		Final	
	Acceptable	Permissible	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min
Turbidity (N.T.U)	1	5	1.6	1.2	0.45	0.28	10.0	8.0	1.0	0.98	1.9	1.7	1.0	0.73
pH	6.5-8.5	6.5-8.5	7.50	7.20	7.40	7.10	7.85	7.35	7.35	6.85	7.60	7.05	7.30	7.00
Color (Hazen Unit)	5	15	7.5	5	2.5	2.5	20	20	5	5	5	5	< 2.5	< 2.5
Total Dissolved solids (mg/l)	500	2000	59	55	59	55	64	63	65	65	70	69	67	65
Chlorides (mg/l)	250	1000	14	10	15	11	17	15	20	19	17	16	18	17
Total Alkalinity (mg/l)	200	600	43	40	42	38	41	40	37	37	44	40	42	39
Total Hardness (mg/l)	200	600	52	43	49	41	43	42	42	41	52	50	51	48
Cal. Hardness (mg/l)	--	--	30	23	29	21	29	28	27	25	30	29	28	26
Calcium as Ca ²⁺ (mg/l)	75	200	12.0	9.2	11.6	8.4	11.6	11.2	10.8	10.0	12.0	11.2	11.6	10.4
Magnesium as Mg ²⁺ (mg/l)	30	100	7.04	3.88	6.80	3.88	3.40	3.40	3.88	3.40	5.34	5.34	5.34	5.34
Iron as Fe ²⁺ (mg/l)	0.3	0.3	0.01	Nil	Nil	Nil	0.01	0.01	Nil	Nil	Nil	Nil	Nil	Nil
Res. Aluminium as Al ³⁺ (mg/l)	0.03	0.2	Nil	Nil	0.04	0.02	Nil	Nil	0.06	0.05	Nil	Nil	0.04	0.03
Manganese as Mn ²⁺ (mg/L)	0.1	0.3	0.01	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
Dissolved Oxygen (mg/l)	--	--	8.8	7.4	9.5	8.3	8.7	8.5	9.1	8.8	8.9	8.7	8.9	8.8
Conductivity (µS/cm)	--	--	108	102	108	101	116	118	115	119	128	126	122	118
Free Res. Chlorine (mg/l)	Min.0.2	1	0.35	0.25	1.90	1.35	0.50	0.20	0.90	0.60	0.90	0.30	1.50	0.90
Bacteriological Examination (CFU/100 ml)														
Total coliform	0	0	0	0	0	0	0	0	0	0	0	0	0	0
E.coli.	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Results of all parameters for Final Water of Bhandup Complex, Tulsi Filtration Plant and Vehar Filtration Plant are within Permissible Limit as per IS 10500 : 2012

ANALYTICAL REPORT OF WATER SAMPLE

FOR THE MONTH OF – February 2019

Parameters	IS : 10500 : 2012		Bhandup Complex				Tulsi Filtration Plant				Vehar Filtration Plant			
	Limits		Raw		Final		Raw		Final		Raw		Final	
	Acceptable	Permissible	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min
Turbidity (N.T.U)	1	5	1.7	1.1	0.48	0.23	5.9	5.0	1.0	0.99	4.0	2.4	0.87	0.68
pH	6.5-8.5	6.5-8.5	7.65	7.50	7.50	7.30	8.55	8.05	7.35	7.20	8.35	7.80	7.75	7.70
Color (Hazen Unit)	5	15	5	5	< 2.5	< 2.5	30	25	5	5	5	5	2.5	2.5
Total Dissolved solids (mg/l)	500	2000	58	56	57	55	66	63	63	62	71	71	66	65
Chlorides (mg/l)	250	1000	12	10	14	13	17	13	19	18	15	15	17	16
Total Alkalinity (mg/l)	200	600	45	39	42	38	39	34	36	30	47	46	42	42
Total Hardness (mg/l)	200	600	48	44	46	43	45	42	42	40	50	49	45	45
Cal. Hardness (mg/l)	--	--	30	24	28	22	29	25	26	24	33	32	27	26
Calcium as Ca ⁺² (mg/l)	75	200	12.0	9.6	11.2	8.8	11.6	10	10.4	9.6	13.2	12.8	10.8	10.4
Magnesium as Mg ⁺² (mg/l)	30	100	5.83	3.64	5.83	3.64	4.86	3.15	4.37	3.40	4.37	3.88	4.61	4.37
Iron as Fe ⁺² (mg/l)	1.003	1.003	Nil	Nil	Nil	Nil	0.01	0.01	Nil	Nil	Nil	Nil	Nil	Nil
Res. Aluminium as Al ⁺³ (mg/l)	0.03	0.2	Nil	Nil	0.04	0.03	Nil	Nil	0.02	0.01	Nil	Nil	0.04	0.04
Manganese as Mn ⁺² (mg/L)	0.1	0.3	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
Dissolved Oxygen (mg/l)	--	--	8.9	8.2	9.3	8.6	8.7	8.6	8.6	8.5	9.1	9.0	8.8	8.7
Conductivity (µS/cm)	--	--	106	100	107	103	115	115	120	114	130	129	120	118
Free Res. Chlorine (mg/l)	Min.0.2	1	0.35	0.25	1.85	1.55	0.50	0.35	1.75	1.70	0.45	0.25	1.25	1.10
Bacteriological Examination (CFU/100 ml)														
Total coliform	0	0	0	0	0	0	0	0	0	0	0	0	0	0
E coli.	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Results of all parameters for Final Water of Bhandup Complex, Tulsi Filtration Plant and Vehar Filtration Plant are within Permissible Limit as per IS 10500 : 2012

ANALYTICAL REPORT OF WATER SAMPLE FOR THE MONTH OF – March 2019

Parameters	IS : 10500 : 2012		Bhandup Complex				Tulsi Filtration Plant				Vehar Filtration Plant			
	Limits		Raw		Final		Raw		Final		Raw		Final	
	Acceptable	Permissible	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min
Turbidity (N.T.U)	1	5	1.8	1.2	0.54	0.33	5.6	3.7	0.9	0.55	3.3	3.0	1.0	0.90
pH	6.5-8.5	6.5-8.5	7.75	7.55	7.55	7.40	8.55	7.80	7.35	7.35	8.80	8.35	7.90	7.80
Color (Hazen Unit)	5	15	5	5	2.5	< 2.5	30	5	5	< 2.5	25	5	5	2.5
Total Dissolved solids (mg/l)	500	2000	58	55	58	55	64	63	63	62	72	70	68	67
Chlorides (mg/l)	250	1000	16	10	18	12	19	18	21	19	15	14	17	17
Total Alkalinity (mg/l)	200	600	44	39	42	37	41	40	36	35	47	45	43	42
Total Hardness (mg/l)	200	600	54	44	52	41	47	45	44	43	56	48	50	45
Cal. Hardness (mg/l)	--	--	29	26	28	23	28	27	25	25	30	29	29	27
Calcium as Ca ⁺² (mg/l)	75	200	11.6	10.4	11.2	9.2	11.2	10.8	10.0	10.0	12.0	11.6	11.6	10.8
Magnesium as Mg ⁺² (mg/l)	30	100	6.80	3.64	7.04	3.64	4.61	4.37	4.61	4.37	6.31	4.61	5.10	4.37
Iron as Fe ⁺² (mg/l)	0.3	0.3	0.01	Nil	Nil	Nil	0.01	0.01	Nil	Nil	Nil	Nil	Nil	Nil
Res. Aluminium as Al ⁺³ (mg/l)	0.03	0.2	Nil	Nil	0.04	0.03	Nil	Nil	0.03	0.03	Nil	Nil	0.04	0.03
Manganese as Mn ⁺² (mg/L)	0.1	0.3	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
Dissolved Oxygen (mg/l)	--	--	8.4	7.8	9.0	8.2	8.3	8.0	8.5	8.3	8.9	8.8	8.6	8.5
Conductivity (µS/cm)	--	--	105	101	109	102	117	115	123	110	131	129	122	122
Free Res. Chlorine (mg/l)	Min.0.2	1	0.30	0.25	1.75	1.50	0.70	0.65	1.10	1.00	0.20	0.10	1.10	0.80
Bacteriological Examination (CFU/100 ml)														
Total coliform	0	0	0	0	0	0	0	0	0	0	0	0	0	0
E.coli.	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Results of all parameters for Final Water of Bhandup Complex, Tulsi Filtration Plant and Vehar Filtration Plant are within Permissible Limit as per IS 10500 : 2012

ANALYTICAL REPORT OF WATER SAMPLE FOR THE MONTH OF – April 2019

Parameters	IS : 10500 : 2012		Bhandup Complex				Tulsi Filtration Plant				Vehar Filtration Plant			
	Limits		Raw		Final		Raw		Final		Raw		Final	
	Acceptable	Permissible	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min
Turbidity (N.T.U)	1	5	1.9	1.4	0.61	0.34	5.7	3.3	1.0	0.40	8.3	5.6	1.6	1.00
pH	6.5-8.5	6.5-8.5	7.80	7.65	7.55	7.50	8.05	7.65	7.30	7.15	8.95	8.75	8.35	7.90
Color (Hazen Unit)	5	15	5	5	2.5	< 2.5	25	25	5	5	30	25	5	5
Total Dissolved solids (mg/l)	500	2000	60	57	59	57	66	66	70	68	80	73	71	65
Chlorides (mg/l)	250	1000	13	10	16	13	20	14	24	19	16	15	18	16
Total Alkalinity (mg/l)	200	600	44	40	42	39	40	35	34	30	48	42	45	41
Total Hardness (mg/l)	200	600	49	45	48	41	44	42	43	40	55	52	54	49
Cal. Hardness (mg/l)	--	--	31	24	30	23	30	28	28	26	35	33	33	30
Calcium as Ca ²⁺ (mg/l)	75	200	12.4	9.6	12.0	8.4	12	11.2	11.2	10.4	14.0	13.2	13.2	12
Magnesium as Mg ²⁺ (mg/l)	30	100	5.58	4.13	5.34	3.88	3.40	3.40	3.40	3.40	4.86	4.61	5.10	4.61
Iron as Fe ²⁺ (mg/l)	1	No relaxation	Nil	Nil	Nil	Nil	0.03	NIL	Nil	Nil	Nil	Nil	Nil	Nil
Res. Aluminium as Al ³⁺ (mg/l)	0.03	0.2	Nil	Nil	0.04	0.03	Nil	Nil	0.15	0.03	Nil	Nil	0.04	0.03
Manganese as Mn ²⁺ (mg/L)	0.1	0.3	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
Dissolved Oxygen (mg/l)	--	--	8.2	7.4	8.9	7.8	8.3	7.7	8.3	8.0	8.4	8.4	8.5	8.4
Conductivity (µS/cm)	--	--	109	103	108	104	121	120	128	125	134	134	130	118
Free Res. Chlorine (mg/l)	Min.0.2	1	0.30	0.20	1.65	1.50	1.25	1.00	1.65	0.55	0.30	0.30	0.90	0.50
Bacteriological Examination (CFU/100 ml)														
Total coliform	0	0	0	0	0	0	0	0	0	0	0	0	0	0
E.coli.	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Results of all parameters for Final Water of Bhandup Complex, Tulsi Filtration Plant and Vehar Filtration Plant are within Permissible Limit as per IS 10500 : 2012

ANALYTICAL REPORT OF WATER SAMPLE FOR THE MONTH OF – May 2019

Parameters	IS : 10500 : 2012		Bhandup Complex				Tulsi Filtration Plant				Vehar Filtration Plant			
	Limits		Raw		Final		Raw		Final		Raw		Final	
	Acceptable	Permissible	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min
Turbidity (N.T.U)	1	5	2.0	1.3	0.80	0.38	8.0	6.0	1.0	0.83	8.4	7.4	1.7	1.7
pH	6.5-8.5	6.5-8.5	7.80	7.65	7.55	7.45	7.60	7.40	7.35	7.35	8.90	7.70	7.70	7.65
Color (Hazen Unit)	5	15	5	5	< 2.5	< 2.5	15	10	< 2.5	< 2.5	30	30	5	5
Total Dissolved solids (mg/l)	500	2000	62	57	60	56	76	72.6	73	71.5	84	76	67	66
Chlorides (mg/l)	250	1000	15	11	18	12	20	20	22	18	15	14	19	15
Total Alkalinity (mg/l)	200	600	44	38	42	36	57	41	52	37	48	44	46	40
Total Hardness (mg/l)	200	600	49	43	48	41	55	49	53	46	55	50	53	48
Cal. Hardness (mg/l)	--	--	31	25	30	23	32	30	30	27	39	34	32	32
Calcium as Ca ²⁺ (mg/l)	75	200	12.4	10.0	12.0	9.2	12.8	12	12.0	10.8	15.6	13.6	12.8	12.8
Magnesium as Mg ²⁺ (mg/l)	30	100	5.58	4.13	5.58	3.15	5.58	4.61	5.58	4.61	3.88	3.88	5.10	3.88
Iron as Fe ²⁺ (mg/l)	1	No relaxation	Nil	Nil	Nil	Nil	0.02	NIL	Nil	Nil	0.01	0.01	Nil	Nil
Res. Aluminium as Al ³⁺ (mg/l)	0.03	0.2	Nil	Nil	0.05	0.03	Nil	Nil	0.03	0.03	Nil	Nil	0.04	0.03
Manganese as Mn ²⁺ (mg/L)	0.1	0.3	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
Dissolved Oxygen (mg/l)	--	--	7.7	7.2	8.4	7.5	8.3	6.0	7.2	6.4	8.4	8.4	8.4	8.1
Conductivity (µS/cm)	--	--	110	104	109	105	138	132	132	130	153	138	122	120
Free Res. Chlorine (mg/l)	Min.0.2	1	0.25	0.20	1.65	1.50	0.70	0.40	1.40	0.70	0.25	0.20	0.60	0.55
Bacteriological Examination (CFU/100 ml)														
Total coliform	0	0	0	0	0	0	0	0	0	0	0	0	0	0
E.coli.	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Results of all parameters for Final Water of Bhandup Complex, Tulsi Filtration Plant and Vehar Filtration Plant are within Permissible Limit as per IS 10500 : 2012

ANALYTICAL REPORT OF WATER SAMPLE

FOR THE MONTH OF – June 2019

Parameters	IS : 10500 : 2012		Bhandup Complex				Tulsi Filtration Plant				Vehar Filtration Plant			
	Limits		Raw		Final		Raw		Final		Raw		Final	
	Acceptable	Permissible	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min
Turbidity (N.T.U)	1	5	27.0	1.4	2.80	0.40	8.7	6.8	2.9	1.00	12.0	8.2	1.4	1.0
pH	6.5-8.5	6.5-8.5	7.70	7.20	7.50	7.00	7.30	7.20	7.15	7.10	8.55	8.15	7.75	7.60
Color (Hazen Unit)	5	15	55	5	5.0	< 2.5	30	30	5.0	2.5	20	20	5	5
Total Dissolved solids (mg/l)	500	2000	75	59	65	58	75	71	72	70	82	79	69	68
Chlorides (mg/l)	250	1000	15	10	16	12	19	18	21	20	19	15	20	17
Total Alkalinity (mg/l)	200	600	46	41	45	39	46	44	44	43	52	47	49	44
Total Hardness (mg/l)	200	600	49	42	48	39	47	45	44	43	57	55	55	51
Cal. Hardness (mg/l)	--	--	33	23	31	21	30	27	28	25	40	28	35	27
Calcium as Ca ²⁺ (mg/l)	75	200	13.2	9.2	12.4	8.4	12	10.8	11.2	10.0	16.0	11.2	14	10.8
Magnesium as Mg ²⁺ (mg/l)	30	100	4.61	4.37	4.37	4.13	4.37	4.13	4.37	4.37	6.56	4.86	5.10	4.86
Iron as Fe ²⁺ (mg/l)	1	No relaxation	0.07	Nil	0.01	Nil	0.01	0.01	Nil	Nil	0.02	0.02	Nil	Nil
Res. Aluminium as Al ³⁺ (mg/l)	0.03	0.2	Nil	Nil	0.05	0.03	Nil	Nil	0.15	0.10	Nil	Nil	0.04	0.03
Manganese as Mn ²⁺ (mg/L)	0.1	0.3	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
Dissolved Oxygen (mg/l)	--	--	7.4	6.4	8.5	6.9	5.8	5.8	6.8	6.8	8.7	8.0	8.2	8.1
Conductivity (µS/cm)	--	--	118	107	118	106	132	127	137	130	150	144	125	124
Free Res. Chlorine (mg/l)	Min.0.2	1	0.30	0.15	1.65	1.40	1.55	1.25	0.40	0.30	0.40	0.35	1.10	0.60
Bacteriological Examination (CFU/100 ml)														
Total coliform	0	0	0	0	0	0	0	0	0	0	0	0	0	0
E.coli.	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Results of all parameters for Final Water of Bhandup Complex, Tulsi Filtration Plant and Vehar Filtration Plant are within Permissible Limit as per IS 10500 : 2012

**ANALYTICAL REPORT OF WATER SAMPLE
FOR THE MONTH OF JULY - 2019**

Parameters	IS : 10500 : 2012		Bhandup Complex				Tulsi Filter Plant				Vehar Filtration Plant			
	Limits		Raw		Final		Raw		Final		Raw		Final	
	Acceptable	Maximum Permissible	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min
Turbidity (N.T.U) Max	1	5	138.0	6.0	2.80	0.25	13.0	5.2	2.9	1.0	5.4	4.6	1.6	0.75
pH value	6.5-8.5	6.5-8.5	7.30	7.10	7.00	6.80	7.45	6.90	7.20	6.85	8.15	7.20	7.90	7.05
Color (Hazen Unit)	5	15	>70	10	2.5	<2.5	25	10	5	2.5	10	10	5	2.5
Total Dissolved Solids (mg/l)	500	2000	72	47	71	47	63	55	66	54	69	67	68	63
Chlorides as Cl (mg/l)	250	1000	14	10	17	11	19	15	21	17	18	15	21	17
Total Alkalinity as CaCO ₃ (mg/l)	200	600	47	33	45	28	35	29	30	27	42	41	41	39
Total Hardness as CaCO ₃ (mg/l)	200	600	52	37	49	35	40	36	36	33	54	52	52	48
Cal. Hardness (mg/l)	--	--	33	21	32	19	25	23	24	22	36	35	33	33
Calcium as Ca (mg/l)	75	200	13.2	8.4	12.8	7.6	10.0	9.2	9.6	8.8	14.4	14.0	13.2	13.2
Magnesium as Mg (mg/l)	30	100	4.61	3.88	4.13	3.88	3.64	3.15	2.91	2.67	4.37	4.13	4.37	4.13
Total Iron as Fe (mg/l)	1	No Relaxation	0.21	0.02	Nil	Nil	0.06	0.01	Nil	Nil	0.02	0.01	Nil	Nil
Total Aluminium as Al (mg/l)	0.03	0.2	Nil	Nil	0.05	0.01	Nil	Nil	0.07	0.04	Nil	Nil	0.08	0.05
Manganese as Mn (mg/L)	0.1	0.3	Nil	nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
Dissolved Oxygen (mg/l)	--	--	7.0	6.1	7.60	6.70	7.9	6.6	7.6	7.3	7.7	7.0	7.7	7.4
Conductivity (µS/cm)	--	--	130	86	129	86	115	100	110	99	126	122	124	115
Free Res. Chlorine (mg/l)	Min.0.2	1	0.20	Trace	1.75	1.45	1.75	1.20	1.00	0.70	0.15	0.10	0.90	0.15
Bacteriological Examination (CFU/100 ml)														
Total coliform	0	0	0	0	0	0	0	0	0	0	0	0	0	0
E.coli.	0	0	0	0	0	0	0	0	0	0	0	0	0	0

In Purified (Final) water Coli form & E.coli bacteria are absent.

[Handwritten Signature]



Municipal Corporation of Greater Mumbai

Quality Formats

Monthly Report

HE-WQF-B-07

Rev. No.

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Rev. Date

01.05.2019

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ANALYTICAL REPORT OF WATER SAMPLE FOR THE MONTH OF AUGUST - 2019

Parameters	IS : 10500 : 2012		Bhandup Complex				Tulsi Filter Plant				Vehar Filtration Plant			
	Limits		Raw		Final		Raw		Final		Raw		Final	
	Acceptable	Maximum Permissible	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min
Turbidity (N.T.U) Max	1	5	117.0	25.0	3.30	0.17	30.0	5.0	0.80	0.76	6.2	3.6	0.37	0.24
pH value	6.5-8.5	6.5-8.5	7.40	7.10	7.00	6.80	7.20	6.80	7.00	6.70	7.75	7.35	7.55	7.25
Color (Hazen Unit)	5	15	>70	>70	2.5	< 2.5	>70	10	2.5	<2.5	15	5	< 2.5	< 2.5
Total Dissolved Solids (mg/l)	500	2000	51	41	50	38	55	48	54	47	59	58	57	57
Chlorides as Cl (mg/l)	250	1000	14	10	16	13	15	12	18	17	12	12	13	13
Total Alkalinity as CaCO ₃ (mg/l)	200	600	34	27	32	25	32	29	30	26	37	34	33	32
Total Hardness as CaCO ₃ (mg/l)	200	600	39	34	36	32	39	33	36	30	45	42	43	40
Cal. Hardness (mg/l)	--	--	27	21	25	19	22	20	21	18	27	25	25	23
Calcium as Ca (mg/l)	75	200	10.8	8.4	10.0	7.6	8.8	8.0	8.4	7.2	10.8	10.0	10	9.2
Magnesium as Mg (mg/l)	30	100	2.91	2.91	2.91	2.91	4.13	3.15	3.64	2.91	4.37	4.13	4.37	4.13
Total Iron as Fe (mg/l)	1	No Relaxation	0.15	0.05	Nil	Nil	0.02	0.01	Nil	Nil	0.03	0.01	0.01	Nil
Total Aluminium as Al (mg/l)	0.03	0.2	Nil	Nil	0.03	0.01	Nil	Nil	0.03	0.01	Nil	Nil	0.03	0.03
Manganese as Mn (mg/L)	0.1	0.3	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
Dissolved Oxygen (mg/l)	--	--	7.9	7.1	8.4	7.4	7.8	7.5	7.9	7.8	7.7	7.4	7.7	7.6
Conductivity (µS/cm)	--	--	92	75	90	70	100	88	98	86	108	106	104	104
Free Res. Chlorine (mg/l)	Min.0.2	1	0.25	NIL	1.70	1.45	0.35	0.20	1.00	0.20	0.10	Nil	0.20	0.10
Bacteriological Examination (CFU/100 ml)														
Total coliform	0	0	0	0	0	0	0	0	0	0	0	0	0	0
E.coli.	0	0	0	0	0	0	0	0	0	0	0	0	0	0

In Purified (Final) water Coli form & E.coli bacteria are absent.

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ANALYTICAL REPORT OF WATER SAMPLE FOR THE MONTH OF September - 2019

Parameters	IS : 10500 : 2012		Bhandup Complex				Tulsi Filter Plant				Vehar Filtration Plant			
	Limits		Raw		Final		Raw		Final		Raw		Final	
	Acceptable	Maximum Permissible	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min
Turbidity (N.T.U) Max	1	5	33.0	10.0	0.58	0.17	22.0	4.1	2.7	0.88	17.0	2.2	0.5	0.38
pH value	6.5-8.5	6.5-8.5	7.40	7.20	7.00	6.90	7.00	6.85	6.90	6.80	7.40	7.10	7.40	7.10
Color (Hazen Unit)	5	15	>70	40	<2.5	<2.5	40	5	7.5	<2.5	30	10	< 2.5	< 2.5
Total Dissolved Solids (mg/l)	500	2000	50	42	47	42	52	48	50	46	57	57	55	53
Chlorides as Cl (mg/l)	250	1000	13	11	15	13	16	15	18	17	17	16	18	18
Total Alkalinity as CaCO ₃ (mg/l)	200	600	35	31	33	30	37	35	33	32	33	30	30	27
Total Hardness as CaCO ₃ (mg/l)	200	600	39	34	37	32	42	40	38	37	40	39	38	34
Cal. Hardness (mg/l)	--	--	30	25	28	23	24	22	22	20	28	25	26	22
Calcium as Ca (mg/l)	75	200	12.0	10.0	11.2	9.2	9.6	8.8	8.8	8.0	11.2	10.0	10.4	8.8
Magnesium as Mg (mg/l)	30	100	2.18	2.18	2.18	2.18	4.37	4.37	4.13	3.88	3.40	2.91	2.91	2.91
Total Iron as Fe (mg/l)	1.0	No Relaxation	0.09	0.02	Nil	Nil	0.04	0.03	Nil	Nil	0.04	0.02	Nil	Nil
Total Aluminium as Al (mg/l)	0.03	0.2	Nil	Nil	0.02	0.02	Nil	Nil	0.03	0.02	Nil	Nil	0.03	0.03
Manganese as Mn (mg/L)	0.1	0.3	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
Dissolved Oxygen (mg/l)	--	--	7.7	7.0	8.10	7.30	7.4	7.0	7.65	7.3	8.0	7.5	7.7	7.6
Conductivity (µS/cm)	--	--	91	76	86	76	96	88	92	84	105	104	100	96
Free Res. Chlorine (mg/l)	Min.0.2	1	0.35	0.25	1.70	1.50	1.10	0.90	1.40	0.75	0.10	0.10	1.50	1.40
Bacteriological Examination (CFU/100 ml)														
Total coliform	0	0	0	0	0	0	0	0	0	0	0	0	0	0
E.coli.	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Results of all parameters for Final Water of Bhandup Complex, Tulsi Filtration Plant and Vehar Filtration Plant are within Permissible Limit as per IS 10500 : 2012

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ANALYTICAL REPORT OF WATER SAMPLE
FOR THE MONTH OF October - 2019

Parameters	IS : 10500 : 2012		Bhandup Complex				Tulsi Filter Plant				Vehar Filtration Plant			
	Limits		Raw		Final		Raw		Final		Raw		Final	
	Acceptable	Maximum Permissible	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min
Turbidity (N.T.U) Max	1	5	9.7	4.1	1.60	0.27	3.1	2.7	0.73	0.64	2.8	2.7	1.0	0.63
pH value	6.5-8.5	6.5-8.5	7.45	7.20	7.10	6.95	7.15	6.85	7.10	6.75	7.50	7.40	7.45	7.35
Color (Hazen Unit)	5	15	35	15	2.5	<2.5	5	5	<2.5	<2.5	7.5	7.5	< 2.5	< 2.5
Total Dissolved Solids (mg/l)	500	2000	51	46	50	45	53	53	52	51	59	58	56	55
Chlorides as Cl (mg/l)	250	1000	14	12	15	13	14	13	16	15	15	15	18	17
Total Alkalinity as CaCO ₃ (mg/l)	200	600	37	32	35	30	34	33	32	30	33	32	30	28
Total Hardness as CaCO ₃ (mg/l)	200	600	42	35	40	33	38	37	36	35	38	38	36	36
Cal. Hardness (mg/l)	--	--	26	20	25	18	26	25	24	23	27	26	25	24
Calcium as Ca (mg/l)	75	200	10.4	8.0	10.0	7.2	10.4	10.0	9.6	9.2	10.8	10.4	10.0	9.6
Magnesium as Mg (mg/l)	30	100	3.88	3.64	3.64	3.64	3.15	2.67	3.15	2.67	2.91	2.67	2.91	2.67
Total Iron as Fe (mg/l)	1.0	No Relaxation	0.04	0.02	Nil	NIL	0.02	0.02	Nil	Nil	0.03	0.02	Nil	Nil
Total Aluminium as Al (mg/l)	0.03	0.2	Nil	Nil	0.04	0.02	Nil	Nil	0.02	0.02	Nil	Nil	0.02	0.02
Manganese as Mn (mg/L)	0.1	0.3	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
Dissolved Oxygen (mg/l)	--	--	7.6	6.8	7.8	7.0	7.8	7.1	7.4	7.3	7.6	7.3	7.7	7.4
Conductivity (µS/cm)	--	--	93	85	91	82	96	95	94	93	107	105	102	101
Free Res. Chlorine (mg/l)	Min.0.2	1	0.35	0.25	1.60	1.40	1.40	1.35	0.85	0.80	0.15	0.10	1.50	1.10
Bacteriological Examination (CFU/100 ml)														
Total coliform	0	0	0	0	0	0	0	0	0	0	0	0	0	0
E.coli.	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Results of all parameters for Final Water of Bhandup Complex, Tulsi Filtration Plant and Vehar Filtration Plant are within Permissible Limit as per IS 10500 : 2012



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ANALYTICAL REPORT OF WATER SAMPLE FOR THE MONTH OF November - 2019

Parameters	IS : 10500 : 2012		Bhandup Complex				Tulsi Filter Plant				Vehar Filtration Plant			
	Limits		Raw		Final		Raw		Final		Raw		Final	
	Acceptable	Maximum Permissible	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min
Turbidity (N.T.U) Max	1	5	4.1	2.1	1.80	0.55	3.3	2.2	0.75	0.57	3.8	2.2	1.0	0.77
pH value	6.5-8.5	6.5-8.5	7.35	7.20	7.20	7.00	7.40	7.00	7.20	6.85	7.50	7.35	7.30	7.20
Color (Hazen Unit)	5	15	15	5	2.5	<2.5	50	5	<2.5	<2.5	61	59	60	55
Total Dissolved Solids (mg/l)	500	2000	50	45	48	44	52	52	52	51	15	14	16	15
Chlorides as Cl (mg/l)	250	1000	14	12	16	13	15	14	17	16	38	37	35	35
Total Alkalinity as CaCO ₃ (mg/l)	200	600	37	32	35	30	30	29	28	25	42	40	39	38
Total Hardness as CaCO ₃ (mg/l)	200	600	40	35	38	33	38	35	35	33	42	40	39	38
Cal. Hardness (mg/l)	--	--	25	21	24	19	23	20	22	18	28	24	26	22
Calcium as Ca (mg/l)	75	200	10.0	8.8	9.6	7.6	11.0	8.8	9.9	8.4	11.2	9.6	10.4	8.8
Magnesium as Mg (mg/l)	30	100	4.13	2.67	4.13	2.67	4.37	3.15	4.13	2.91	4.37	2.91	4.13	2.91
Total Iron as Fe (mg/l)	1.0	No Relaxation	0.02	0.01	Nil	Nil	0.02	0.01	Nil	Nil	0.02	0.02	Nil	Nil
Total Aluminium as Al (mg/l)	0.03	0.2	Nil	Nil	0.04	0.03	Nil	Nil	0.04	0.02	Nil	Nil	0.04	0.03
Manganese as Mn (mg/L)	0.1	0.3	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
Dissolved Oxygen (mg/l)	--	--	7.2	6.7	7.8	6.9	7.5	7.0	7.6	7.2	7.7	6.9	7.7	6.9
Conductivity (µS/cm)	--	--	90	82	88	81	96	95	95	94	112	108	110	100
Free Res. Chlorine (mg/l)	Min.0.2	1	0.35	0.25	1.65	1.45	1.35	1.10	0.80	0.65	0.25	0.10	1.15	0.35
Bacteriological Examination (CFU/100 ml)														
Total coliform	0	0	0	0	0	0	0	0	0	0	0	0	0	0
E.coli.	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Results of all parameters for Final Water of Bhandup Complex, Tulsi Filtration Plant and Vehar Filtration Plant are within Permissible Limit as per IS 10500 : 2012



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ANALYTICAL REPORT OF WATER SAMPLE FOR THE MONTH OF December - 2019

Parameters	IS : 10500 : 2012		Bhandup Complex				Tulsi Filter Plant				Vehar Filtration Plant			
	Limits		Raw		Final		Raw		Final		Raw		Final	
	Acceptable	Maximum Permissible	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min
Turbidity (N.T.U) Max	1	5	2.3	1.6	1.00	0.45	4.5	4.0	1.00	0.66	3.3	2.5	0.81	0.58
pH value	6.5-8.5	6.5-8.5	7.35	7.15	7.25	7.00	7.25	6.95	6.95	6.80	7.45	7.25	7.40	7.15
Color (Hazen Unit)	5	15	5	5	< 2.5	<2.5	5	5	<2.5	<2.5	5	2.5	< 2.5	< 2.5
Total Dissolved Solids (mg/l)	500	2000	51	45	49	42	54	54	54	53	77	60	71	55
Chlorides as Cl (mg/l)	250	1000	14	10	15	12	17	15	19	17	13	13	15	14
Total Alkalinity as CaCO ₃ (mg/l)	200	600	39	33	36	32	39	31	36	27	39	39	36	35
Total Hardness as CaCO ₃ (mg/l)	200	600	42	36	39	33	41	37	38	35	42	41	40	38
Total Hardness (mg/l)	--	--	27	23	26	21	27	25	25	24	28	27	26	25
Calcium as Ca (mg/l)	75	200	10.8	9.2	10.4	8.4	10.8	10.0	10.0	9.6	11.2	10.8	10.4	10.0
Magnesium as Mg (mg/l)	30	100	4.37	2.43	4.13	2.43	3.64	2.43	3.15	2.43	3.40	3.40	3.40	3.15
Total Iron as Fe (mg/l)	1.0	No Relaxation	0.01	Nil	Nil	Nil	0.01	Nil	Nil	Nil	0.02	Nil	Nil	Nil
Total Aluminium as Al (mg/l)	0.03	0.2	Nil	Nil	0.04	0.02	Nil	Nil	0.04	0.03	Nil	Nil	0.04	0.04
Manganese as Mn (mg/L)	0.1	0.3	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
Dissolved Oxygen (mg/l)	--	--	7.1	6.6	8.0	7.1	8.2	6.4	8.0	6.4	7.9	7.2	7.7	7.2
Conductivity (µS/cm)	--	--	94	83	90	82	99	98	98	97	140	110	130	100
Free Res. Chlorine (mg/l)	Min.0.2	1	0.40	0.25	1.70	1.45	0.75	0.20	1.40	0.60	0.35	0.30	0.80	0.60
Bacteriological Examination (CFU/100 ml)														
Total coliform	0	0	0	0	0	0	0	0	0	0	0	0	0	0
E.coli.	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Results of all parameters for Final Water of Bhandup Complex, Tulsi Filtration Plant and Vehar Filtration Plant are within Permissible Limit as per IS 10500 : 2012

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ANALYTICAL REPORT OF WATER SAMPLE FOR THE MONTH OF JANUARY - 2020

Parameters	IS : 10500 : 2012		Bhandup Complex				Tulsi Filter Plant				Vehar Filtration Plant			
	Limits		Raw		Final		Raw		Final		Raw		Final	
	Acceptable	Maximum Permissible	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min
Turbidity (N.T.U) Max	1	5	3.0	1.2	1.20	0.41	9.8	4.3	1.00	0.74	2.7	2.0	1.00	0.56
pH value	6.5-8.5	6.5-8.5	7.45	7.20	7.30	7.00	7.45	7.05	7.15	6.85	7.75	7.30	7.50	7.25
Color (Hazen Unit)	5	15	5	5	< 2.5	<2.5	15	10	5	2.5	10	5	5	< 2.5
Total Dissolved Solids (mg/l)	500	2000	54	48	53	47	57	55	58	55	75	60	70	68
Chlorides as Cl (mg/l)	250	1000	13	10	15	11	15	12	19	14	20	16	21	18
Total Alkalinity as CaCO ₃ (mg/l)	200	600	40	33	38	30	35	34	33	29	46	36	43	28
Total Hardness as CaCO ₃ (mg/l)	200	600	44	36	43	35	40	35	39	34	47	40	45	38
Cal. Hardness (mg/l)	--	--	28	22	26	20	28	21	26	20	36	28	34	26
Calcium as Ca (mg/l)	75	200	11.2	8.8	10.8	8.0	11.2	8.4	10.4	8.0	14.4	11.2	13.6	10.4
Magnesium as Mg (mg/l)	30	100	5.10	2.67	5.10	2.67	4.37	2.18	3.64	2.43	4.37	2.67	4.13	2.67
Iron as Fe (mg/L)	1.0	No Relaxation	0.01	Nil	Nil	Nil	0.02	0.01	Nil	Nil	0.01	Nil	Nil	Nil
Aluminium as Al (mg/L)	0.03	0.2	Nil	Nil	0.04	0.03	Nil	Nil	0.05	0.03	Nil	Nil	0.03	0.02
Manganese as Mn (mg/L)	0.1	0.3	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
Dissolved Oxygen (mg/l)	--	--	7.6	6.8	8.1	7.2	8.0	7.5	8.0	7.6	8.0	7.5	8.1	7.9
Conductivity (µS/cm)	--	--	98	88	96	86	105	101	107	100	137	110	128	122
Free Res. Chlorine (mg/l)	Min.0.2	1	0.35	0.25	1.70	0.45	0.95	Nil	2.00	0.50	0.25	0.10	0.85	0.30
Bacteriological Examination (CFU/100 ml)														
Total coliform	0	0	0	0	0	0	0	0	0	0	0	0	0	0
E.coli.	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Results of all parameters for Final Water of Bhandup Complex, Tulsi Filtration Plant and Vehar Filtration Plant are within Permissible Limit as per IS 10500 : 2012



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ANALYTICAL REPORT OF WATER SAMPLE FOR THE MONTH OF FEBRUARY - 2020

Parameters	IS : 10500 : 2012		Bhandup Complex				Tulsi Filter Plant				Vehar Filtration Plant			
	Limits		Raw		Final		Raw		Final		Raw		Final	
	Acceptable	Maximum Permissible	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min
Turbidity (N.T.U) Max	1	5	2.1	1.7	0.87	0.63	6.0	3.7	2.40	0.82	1.9	1.4	1.00	0.71
pH value	6.5-8.5	6.5-8.5	7.50	7.30	7.30	7.15	7.40	7.10	7.30	6.90	7.80	7.30	7.70	7.25
Color (Hazen Unit)	5	15	5	5	< 2.5	<2.5	10	7.5	5	<2.5	7.5	5	5	< 2.5
Total Dissolved Solids (mg/l)	500	2000	52	49	50	48	59	55	58	58	78	69	68	67
Chlorides as Cl (mg/l)	250	1000	12	10	15	12	14	11	17	15	18	13	21	15
Total Alkalinity as CaCO ₃ (mg/l)	200	600	38	32	36	31	35	34	32	30	41	40	39	38
Total Hardness as CaCO ₃ (mg/l)	200	600	43	35	40	34	38	35	36	33	44	40	42	39
Cal. Hardness (mg/l)	--	--	28	22	25	20	25	24	23	23	31	27	30	25
Calcium as Ca (mg/l)	75	200	11.2	8.8	10.0	8.0	10.0	9.6	9.2	9.2	12.4	10.8	12.0	10.0
Magnesium as Mg (mg/l)	30	100	3.64	3.15	3.64	3.40	3.15	2.67	3.15	2.43	3.15	3.15	2.91	2.91
Iron as Fe (mg/L)	1.0	No Relaxation	0.01	Nil	Nil	Nil	0.01	0.01	Nil	Nil	Nil	Nil	Nil	Nil
Aluminium as Al (mg/L)	0.03	0.2	Nil	Nil	0.04	0.03	Nil	Nil	0.05	0.03	Nil	Nil	0.08	0.02
Manganese as Mn (mg/L)	0.1	0.3	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
Dissolved Oxygen (mg/l)	--	--	7.7	7.1	8.4	7.4	8.1	6.9	8.5	7.5	8.0	7.0	8.0	7.8
Conductivity (µS/cm)	--	--	96	90	93	88	108	101	106	105	143	126	125	121
Free Res. Chlorine (mg/l)	Min.0.2	1	0.30	0.20	1.60	1.50	0.75	0.55	1.90	1.80	0.55	Nil	0.55	0.30
Bacteriological Examination (CFU/100 ml)														
Total coliform	0	0	0	0	0	0	0	0	0	0	0	0	0	0
E.coli.	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Results of all parameters for Final Water of Bhandup Complex, Tulsi Filtration Plant and Vehar Filtration Plant are within Permissible Limit as per IS 10500 : 2012



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**ANALYTICAL REPORT OF WATER SAMPLE
FOR THE MONTH OF MARCH - 2020**

Parameters	IS : 10500 : 2012		Bhandup Complex				Tulsi Filter Plant				Vehar Filtration Plant			
	Limits		Raw		Final		Raw		Final		Raw		Final	
	Acceptable	Maximum Permissible	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min
Turbidity (N.T.U) Max	1	5	2.1	1.6	0.89	0.52	7.2	4.6	4.70	1.20	3.2	2.5	1.50	1.00
pH value	6.5-8.5	6.5-8.5	7.50	7.25	7.30	7.10	7.75	7.45	7.25	7.10	8.30	7.85	7.75	7.45
Color (Hazen Unit)	5	15	5	5	<2.5	<2.5	10	7.5	5	5	5	5	2.5	< 2.5
Total Dissolved Solids (mg/l)	500	2000	53	49	52	48	59	56	58	55	79	69	69	63
Chlorides as Cl (mg/l)	250	1000	12	9	15	10	16	13	19	15	15	13	17	17
Total Alkalinity as CaCO ₃ (mg/l)	200	600	39	34	37	32	40	35	38	33	40	39	37	36
Total Hardness as CaCO ₃ (mg/l)	200	600	44	37	41	35	45	40	42	38	45	44	43	41
Cal. Hardness (mg/l)	--	--	27	24	26	20	28	25	27	23	28	25	27	23
Calcium as Ca (mg/l)	75	200	10.8	9.6	10.4	8.0	11.2	10.0	10.8	9.2	11.2	10.0	10.8	9.2
Magnesium as Mg (mg/l)	30	100	4.13	3.45	3.64	3.45	4.13	3.64	3.64	3.64	4.13	4.13	4.13	3.88
Iron as Fe (mg/L)	1.0	No Relaxation	NIL	NIL	NIL	NIL	0.01	NIL	NIL	NIL	NIL	NIL	NIL	NIL
Aluminium as Al (mg/L)	0.03	0.2	NIL	NIL	0.04	0.03	NIL	NIL	0.05	0.04	NIL	NIL	0.04	0.03
Manganese as Mn (mg/L)	0.1	0.3	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL
Dissolved Oxygen (mg/l)	--	--	7.5	6.4	8.0	6.7	7.8	7.1	7.7	7.3	8.0	7.5	8.0	7.6
Conductivity (µS/cm)	--	--	97	89	92	88	108	102	106	100	145	127	125	115
Free Res. Chlorine (mg/l)	Min.0.2	1	0.25	0.15	1.50	1.45	0.55	0.15	1.85	0.60	0.40	0.1	0.70	0.60
Bacteriological Examination (CFU/100 ml)														
Total coliform	0	0	0	0	0	0	0	0	0	0	0	0	0	0
E.coli.	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Results of all parameters for Final Water of Bhandup Complex, Tulsi Filtration Plant and Vehar Filtration Plant are within Permissible Limit as per IS 10500 : 2012



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ANALYTICAL REPORT OF WATER SAMPLE FOR THE MONTH OF APRIL - 2020

Parameters	IS : 10500 : 2012		Bhandup Complex				Tulsi Filter Plant		Vehar Filtration Plant	
	Limits		Raw		Final		Raw	Final	Raw	Final
	Acceptable	Maximum Permissible	Max	Min	Max	Min				
Turbidity (N.T.U) Max	1	5	1.8	1.5	1.0	0.71	4.6	2.0	4.5	2.3
pH value	6.5-8.5	6.5-8.5	7.70	7.35	7.50	7.10	8.20	7.45	8.70	8.00
Color (Hazen Unit)	5	15	5	5	<2.5	<2.5	7.5	5	5	5
Total Dissolved Solids (mg/l)	500	2000	54	50	52	48	57	57	78	75
Chlorides as Cl (mg/l)	250	1000	12	11	14	12	15	18	16	18
Total Alkalinity as CaCO ₃ (mg/l)	200	600	40	32	38	30	30	28	40	37
Total Hardness as CaCO ₃ (mg/l)	200	600	45	40	43	38	37	35	42	39
Cal. Hardness (mg/l)	--	--	29	25	27	22	22	20	25	22
Calcium as Ca (mg/l)	75	200	11.6	10.0	10.8	8.8	8.8	8.0	10.0	8.8
Magnesium as Mg (mg/l)	30	100	3.88	3.64	3.88	3.64	3.64	3.64	4.13	4.13
Iron as Fe (mg/L)	1.0	No Relaxation	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL
Aluminium as Al (mg/L)	0.03	0.2	NIL	NIL	0.03	0.02	NIL	0.04	NIL	0.03
Manganese as Mn (mg/L)	0.1	0.3	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL
Dissolved Oxygen (mg/l)	--	--	7.3	6.7	7.9	7.0	7.5	7.4	7.5	7.2
Conductivity (µS/cm)	--	--	97	91	93	88	105	105	143	136
Free Res. Chlorine (mg/l)	Min.0.2	1	0.30	0.15	1.60	1.50	0.45	2.45	0.30	0.65
Bacteriological Examination (CFU/100 ml)										
Total coliform	0	0	0	0	0	0	0	0	0	0
E.coli.	0	0	0	0	0	0	0	0	0	0

Results of all parameters for Final Water of Bhandup Complex, Tulsi Filtration Plant and Vehar Filtration Plant are within Permissible Limit as per IS 10500 : 2012

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**ANALYTICAL REPORT OF WATER SAMPLE
FOR THE MONTH OF MAY - 2020**

Parameters	IS : 10500 : 2012		Bhandup Complex				Tulsi Filter Plant			
	Limits		Raw		Final		Raw		Final	
	Acceptable	Maximum Permissible	Max	Min	Max	Min	Max	Min	Max	Min
Turbidity (N.T.U) Max	1	5	1.8	1.3	0.9	0.58	11.2	5.0	0.75	0.74
pH value	6.5-8.5	6.5-8.5	7.70	7.50	7.45	7.30	7.65	6.95	7.60	6.75
Color (Hazen Unit)	5	15	5	5	<2.5	<2.5	40	10	<2.5	<2.5
Total Dissolved Solids (mg/l)	500	2000	54	51	53	50	68	59	66	59
Chlorides as Cl (mg/l)	250	1000	13	10	15	11	16	15	18	18
Total Alkalinity as CaCO ₃ (mg/l)	200	600	40	33	39	30	36	36	34	34
Total Hardness as CaCO ₃ (mg/l)	200	600	45	37	43	35	48	40	45	38
Cal. Hardness (mg/l)	--	--	29	24	27	22	28	25	25	23
Calcium as Ca (mg/l)	75	200	11.6	10.0	10.8	8.8	11.2	10.0	10.0	9.2
Magnesium as Mg (mg/l)	30	100	3.88	3.64	3.88	3.15	4.86	3.64	4.86	3.64
Iron as Fe (mg/L)	1.0	No Relaxation	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL
Aluminium as Al (mg/L)	0.03	0.2	NIL	NIL	0.03	0.02	NIL	NIL	0.04	0.04
Manganese as Mn (mg/L)	0.1	0.3	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL
Dissolved Oxygen (mg/l)	--	--	8.0	6.5	8.0	6.6	7.4	6.1	7.4	7.1
Conductivity (µS/cm)	--	--	98	94	96	92	124	107	120	107
Free Res. Chlorine (mg/l)	Min.0.2	1	0.15	0.10	1.60	1.40	NIL	NIL	1.25	0.90
Bacteriological Examination (CFU/100 ml)										
Total coliform	0	0	0	0	0	0	0	0	0	0
E.coli.	0	0	0	0	0	0	0	0	0	0

Results of all parameters for Final Water of Bhandup Complex, Tulsi Filtration Plant are within Permissible Limit as per IS 10500 : 2012

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ANALYTICAL REPORT OF WATER SAMPLE
FOR THE MONTH OF JUNE - 2020

Parameters	IS : 10500 : 2012		Bhandup Complex				Tulsi Filter Plant				Vehar Filtration Plant	
	Limits		Raw		Final		Raw		Final		Raw	Final
	Acceptable	Maximum Permissible	Max	Min	Max	Min	Max	Min	Max	Min		
Turbidity (N.T.U) Max	1	5	3.5	1.3	1.1	0.40	8.6	7.0	0.7	0.55	6.7	2.5
pH value	6.5-8.5	6.5-8.5	7.70	7.45	7.50	7.35	7.15	7.10	6.95	6.85	8.70	8.00
Color (Hazen Unit)	5	15	5	5	2.5	<2.5	15	10	<2.5	<2.5	10	5
Total Dissolved Solids (mg/l)	500	2000	60	48	58	48	66	64	65	64	84	79
Chlorides as Cl (mg/l)	250	1000	13	11	15	13	15	14	18	17	19	20
Total Alkalinity as CaCO ₃ (mg/l)	200	600	43	33	40	31	38	37	36	35	40	38
Total Hardness as CaCO ₃ (mg/l)	200	600	47	39	45	37	44	42	42	40	50	48
Cal. Hardness (mg/l)	--	--	29	24	27	22	28	27	26	25	31	30
Calcium as Ca (mg/l)	75	200	11.6	9.6	10.8	8.8	11.2	10.8	10.4	10.0	12.4	12.0
Magnesium as Mg (mg/l)	30	100	4.37	3.64	4.37	3.64	3.88	3.64	3.88	3.64	4.61	4.37
Iron as Fe (mg/L)	1.0	No Relaxation	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL
Aluminium as Al (mg/L)	0.03	0.2	NIL	NIL	0.04	0.02	NIL	NIL	0.04	0.03	NIL	0.04
Manganese as Mn (mg/L)	0.1	0.3	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL
Dissolved Oxygen (mg/l)	--	--	7.0	6.3	7.5	6.8	5.2	4.0	5.8	5.7	7.5	6.9
Conductivity (µS/cm)	--	--	106	96	107	94	120	117	119	117	152	145
Free Res. Chlorine (mg/l)	Min.0.2	1	0.15	NIL	1.75	1.30	1.10	NIL	1.70	1.55	0.75	0.90
Bacteriological Examination (CFU/100 ml)												
Total coliform	0	0	0	0	0	0	0	0	0	0	0	0
E.coli.	0	0	0	0	0	0	0	0	0	0	0	0

Results of all parameters for Final Water of Bhandup Complex, Tulsi Filtration Plant and Vehar Filtration Plant are within Permissible Limit as per IS 10500 : 2012



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FOR THE MONTH OF JULY - 2020

Parameters	IS : 10500 : 2012		Bhandup Complex				Tulsi Filter Plant				Vehar Filtration Plant	
	Limits		Raw		Final		Raw		Final		Raw	Final
	Acceptable	Maximum Permissible	Max	Min	Max	Min	Max	Min	Max	Min		
Turbidity (N.T.U) Max	1	5	56.0	1.4	5.0	0.18	9.8	5.3	3.0	0.72	3.4	0.44
pH value	6.5-8.5	6.5-8.5	7.70	7.40	7.50	7.10	7.30	6.95	7.25	6.80	7.75	7.50
Color (Hazen Unit)	5	15	>70	5	5.0	<2.5	30	15	5.00	<2.5	5	<2.5
Total Dissolved Solids (mg/l)	500	2000	71	55	70	55	59	53	58	51	64	63
Chlorides as Cl (mg/l)	250	1000	13	10	15	12	16	11	18	15	16	19
Total Alkalinity as CaCO ₃ (mg/l)	200	600	42	36	40	35	30	27	28	24	37	35
Total Hardness as CaCO ₃ (mg/l)	200	600	50	41	48	40	36	33	33	31	45	43
Cal. Hardness (mg/l)	--	--	30	23	28	21	24	20	21	17	27	25
Calcium as Ca (mg/l)	75	200	12.0	9.2	11.2	8.4	9.6	8.0	8.4	6.8	10.8	10.0
Magnesium as Mg (mg/l)	30	100	5.58	0.40	5.58	3.88	3.15	2.91	3.4	2.67	4.37	4.37
Iron as Fe (mg/L)	1.0	No Relaxation	0.13	0.01	NIL	NIL	0.10	0.07	NIL	NIL	0.03	NIL
Aluminium as Al (mg/L)	0.03	0.2	NIL	NIL	0.03	0.02	NIL	NIL	0.08	0.03	NIL	0.01
Manganese as Mn (mg/L)	0.1	0.3	TRACE	NIL	NIL	NIL	TRACE	TRACE	NIL	NIL	NIL	NIL
Dissolved Oxygen (mg/l)	--	--	6.8	6.0	7.6	6.5	4.8	7.4	7.6	6.0	7.3	7.4
Conductivity (µS/cm)	--	--	129	101	128	100	109	96	107	93	116.0	114.0
Free Res. Chlorine (mg/l)	Min.0.2	1	*TRACE	NIL	1.85	1.15	0.90	NIL	1.40	0.70	0.20	1.30
Bacteriological Examination (CFU/100 ml)												
Total coliform	0	0	380	38	0	0	0	0	0	0	0	0
E.coli.	0	0	0	0	0	0	0	0	0	0	0	0

Results of all parameters for Final Water of Bhandup Complex, Tulsi Filtration Plant and Vehar Filtration Plant are within Permissible Limit as per IS 10500 : 2012

*TRACE: <0.1 mg/L

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ANALYTICAL REPORT OF WATER SAMPLE
FOR THE MONTH OF AUGUST - 2020

Parameters	IS : 10500 : 2012		Bhandup Complex				Tulsi Filter Plant				Vehar Filtration Plant	
	Limits		Raw		Final		Raw		Final		Raw	Final
	Acceptable	Maximum Permissible	Max	Min	Max	Min	Max	Min	Max	Min		
Turbidity (N.T.U) Max	1	5	52	5.4	1.7	0.27	18.0	7.4	1.6	0.70	5.0	1.7
pH value	6.5-8.5	6.5-8.5	7.75	7.05	7.50	6.90	7.70	7.10	7.55	7.00	7.50	7.40
Color (Hazen Unit)	5	15	>70	10	2.5	<2.5	35	10	5.00	<2.5	10	5
Total Dissolved Solids (mg/l)	500	2000	66	51	65	49	57	52	52	49	74	70
Chlorides as Cl (mg/l)	250	1000	12	10	15	11	14	13	18	15	14	15
Total Alkalinity as CaCO ₃ (mg/l)	200	600	40	30	39	28	30	29	28	27	34	32
Total Hardness as CaCO ₃ (mg/l)	200	600	51	39	49	37	32	32	30	30	44	43
Cal. Hardness (mg/l)	--	--	30	24	29	22	22	22	20	20	24	23
Calcium as Ca (mg/l)	75	200	12.0	9.6	11.6	8.8	8.8	8.8	8.0	8.0	9.6	9.2
Magnesium as Mg (mg/l)	30	100	5.10	3.64	4.86	3.64	2.43	2.43	2.43	2.43	4.86	4.86
Iron as Fe (mg/L)	1.0	No Relaxation	0.10	0.02	NIL	NIL	0.08	0.07	NIL	NIL	0.09	0.09
Aluminium as Al (mg/L)	0.03	0.2	NIL	NIL	0.04	0.02	NIL	NIL	0.03	0.03	NIL	0.04
Manganese as Mn (mg/L)	0.1	0.3	TRACE	NIL	NIL	NIL	TRACE	TRACE	NIL	NIL	Trace	NIL
Dissolved Oxygen (mg/l)	--	--	7.3	5.9	8.0	6.9	7.8	6.9	7.7	7.1	6.9	7.3
Conductivity (µS/cm)	--	--	120	92	118	90	105	93	95	90	135.0	127.0
Free Res. Chlorine (mg/l)	Min.0.2	1	0.15	Trace	1.80	1.40	0.85	0.15	1.85	0.50	0.30	0.80
Bacteriological Examination (CFU/100 ml)												
Total coliform	0	0	138	0	0	0	0	0	0	0	0	0
E.coli.	0	0	0	0	0	0	0	0	0	0	0	0

Results of all parameters for Final Water of Bhandup Complex, Tulsi Filtration Plant and Vehar Filtration Plant are within Permissible Limit as per IS 10500 : 2012



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ANALYTICAL REPORT OF WATER SAMPLE
FOR THE MONTH OF OCTOBER - 2020

Parameters	IS : 10500 : 2012		Bhandup Complex				Tulsi Filter Plant				Vehar Filtration Plant	
	Limits		Raw		Final		Raw		Final		Raw	Final
	Acceptable	Maximum Permissible	Max	Min	Max	Min	Max	Min	Max	Min		
Turbidity (N.T.U) Max	1	5	4.7	1.8	1.7	0.33	6.5	6.0	2.4	1.3	4.0	0.89
pH value	6.5-8.5	6.5-8.5	7.60	7.30	7.35	7.15	7.25	7.05	7.05	6.95	7.40	7.25
Color (Hazen Unit)	5	15	5	5	<2.5	<2.5	10	10	5	5	10	5
Total Dissolved Solids (mg/l)	500	2000	61	52	57	50	57	55	55	55	59	55
Chlorides as Cl (mg/l)	250	1000	11	9	14	11	15	14	17	16	18	22
Total Alkalinity as CaCO ₃ (mg/l)	200	600	42	35	39	33	34	32	30	28	35	33
Total Hardness as CaCO ₃ (mg/l)	200	600	44	41	42	39	38	35	36	33	40	38
Cal. Hardness (mg/l)	--	--	30	25	28	23	26	25	24	23	25	23
Calcium as Ca (mg/l)	75	200	12.0	10.0	10.8	9.2	12.0	10.4	10.4	9.2	10.0	9.2
Magnesium as Mg (mg/l)	30	100	4.37	2.67	4.37	2.67	2.91	2.43	3.15	2.18	3.64	3.64
Iron as Fe (mg/L)	1.0	No Relaxation	NIL	NIL	NIL	NIL	0.04	0.03	NIL	NIL	0.04	NIL
Aluminium as Al (mg/L)	0.03	0.2	NIL	NIL	0.04	0.02	NIL	NIL	0.06	0.03	NIL	0.03
Manganese as Mn (mg/L)	0.1	0.3	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL
Dissolved Oxygen (mg/l)	--	--	7.2	6.7	7.6	6.9	7.0	6.8	7.6	7.1	7.4	7.6
Conductivity (µS/cm)	--	--	110	95	104	95	105	101	101	100	108	100
Free Res. Chlorine (mg/l)	Min.0.2	1	0.25	NIL	1.65	1.40	0.55	0.55	1.45	1.00	0.90	1.50
Bacteriological Examination (CFU/100 ml)												
Total coliform	0	0	120	0	0	0	0	0	0	0	0	0
E.coli.	0	0	0	0	0	0	0	0	0	0	0	0

Results of all parameters for Final Water of Bhandup Complex, Tulsi Filtration Plant and Vehar Filtration Plant are within Permissible Limit as per IS 10500 : 2012

*TRACE: <0.1 mg/L

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ANALYTICAL REPORT OF WATER SAMPLE FOR THE MONTH OF NOVEMBER – 2020

Parameters	IS : 10500 : 2012		Bhandup Complex				Tulsi Filter Plant				Vehar Filter Plant			
	Limits		Raw		Final		Raw		Final		Raw		Final	
	Acceptable	Maximum Permissible	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min
Turbidity (N.T.U) Max	1	5	2.5	1.4	0.68	0.36	4.5	4.2	3.7	0.94	3.6	3.2	1.6	1.20
pH value	6.5-8.5	6.5-8.5	7.55	7.35	7.40	7.20	7.15	7.00	7.05	6.80	7.45	7.40	7.30	7.20
Color (Hazen Unit)	5	15	5	5	<2.5	<2.5	50	5	5	<2.5	10	5	5	<2.5
Total Dissolved Solids (mg/l)	500	2000	55	53	54	52	57	53	54	52	61	60	60	59
Chlorides as Cl (mg/l)	250	1000	12	10	14	11	15	12	17	15	15	14	17	15
Total Alkalinity as CaCO ₃ (mg/l)	200	600	38	34	36	31	32	30	30	28	38	37	36	35
Total Hardness as CaCO ₃ (mg/l)	200	600	42	36	41	34	38	34	36	33	39	39	37	37
Calcium. Hardness (mg/l)	--	--	28	24	26	22	25	24	23	22	26	26	24	24
Calcium as Ca (mg/l)	75	200	11.2	9.6	10	8.8	10.4	10.4	9.2	8.8	10.4	10.4	9.6	9.6
Magnesium as Mg (mg/l)	30	100	3.9	2.9	3.9	2.4	3.4	2.4	3.4	2.7	3.15	3.15	3.15	3.15
Iron as Fe (mg/L)	1.0	No Relaxation	NIL	NIL	NIL	NIL	0.03	0.02	NIL	NIL	0.02	0.01	NIL	NIL
Aluminium as Al (mg/L)	0.03	0.2	NIL	NIL	0.03	0.03	NIL	NIL	0.06	0.05	NIL	NIL	0.04	0.03
Manganese as Mn (mg/L)	0.1	0.3	Nil	Nil	NIL	NIL	Nil	Nil	NIL	NIL	Nil	Nil	Nil	Nil
Dissolved Oxygen (mg/l)	--	--	7.4	6.7	7.8	6.9	7.6	7.2	7.6	7.1	7.4	6.8	7.2	6.8
Conductivity (µS/cm)	--	--	101	96	100	96	103	96	98	94	112	110	109	108
Free Res. Chlorine (mg/l)	Min.0.2	1	0.15	NIL	1.70	1.25	0.65	0.35	1.75	1.00	0.15	Nil	1.30	0.10
Bacteriological Examination (CFU/100 ml)														
Total coliform	0	0	0	0	0	0	0	0	0	0	15	0	0	0
E.coli.	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Results of all parameters for Final Water of Bhandup Complex, Tulsi Filtration Plant and Vehar Filtration Plant are within Permissible Limit as per IS 10500 : 2012

**ANALYTICAL REPORT OF WATER SAMPLE
FOR THE MONTH OF DECEMBER - 2020**

Parameters	IS : 10500 : 2012		Bhandup Complex				Tulsi Filter Plant				Vehar Filter Plant			
	Limits		Raw		Final		Raw		Final		Raw		Final	
	Acceptable	Maximum Permissible	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min
Turbidity (N.T.U) Max	1	5	2.6	1.2	0.70	0.30	5.0	2.6	1.2	1.10	7.0	5.1	2.6	1.10
pH value	6.5-8.5	6.5-8.5	7.60	7.30	7.40	7.10	7.85	7.05	7.50	7.00	8.50	7.55	8.00	7.45
Color (Hazen Unit)	5	15	5	5	<2.5	<2.5	10	5	5	<2.5	15	10	5	<2.5
Total Dissolved Solids (mg/l)	500	2000	56	54	55	52	59	58	57	56	66	65	63	57
Chlorides as Cl (mg/l)	250	1000	12	10	14	12	14	13	17	16	14	13	19	18
Total Alkalinity as CaCO ₃ (mg/l)	200	600	43	36	42	35	35	33	33	31	44	42	40	40
Total Hardness as CaCO ₃ (mg/l)	200	600	48	38	47	36	37	36	35	34	45	44	44	42
Calcium Hardness (mg/l)	--	--	30	24	28	22	24	24	22	22	37	35	35	31
Calcium as Ca (mg/l)	75	200	12	9.6	11	8.8	9.6	9.6	8.8	8.8	14.8	14	14	12.4
Magnesium as Mg (mg/l)	30	100	5.6	2.9	5.8	2.9	3.2	2.9	3.2	2.9	4.86	1.70	3.15	1.70
Iron as Fe (mg/L)	1.0	No Relaxation	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	0.02	0.01	NIL	NIL
Aluminium as Al (mg/L)	0.03	0.2	NIL	NIL	0.03	0.02	NIL	NIL	0.07	0.04	NIL	NIL	0.03	0.03
Manganese as Mn (mg/L)	0.1	0.3	Nil	Nil	NIL	NIL	Nil	Nil	NIL	NIL	Nil	Nil	Nil	Nil
Dissolved Oxygen (mg/l)	--	--	7.4	6.6	8.0	7.2	7.2	6.9	7.8	7.4	7.6	7.2	8.0	7.9
Conductivity (µS/cm)	--	--	102	98	101	96	107	105	104	102	120	118	105	104
Free Res. Chlorine (mg/l)	Min.0.2	1	0.25	0.10	1.80	1.45	1.25	1.10	1.95	1.25	0.20	0.10	1.25	0.45
Bacteriological Examination (CFU/100 ml)														
Total coliform	0	0	0	0	0	0	0	0	0	0	0	0	0	0
E. coli.	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Results of all parameters for Final Water of Bhandup Complex, Tulsi Filtration Plant and Vehar Filtration Plant are within Permissible Limit as per IS 10500 : 2012

MUNICIPAL CORPORATION OF GREATER MUMBAI
Hydraulic Engineer's department

ANALYTICAL REPORT OF WATER SAMPLE
FOR THE MONTH OF JANUARY – 2021

Parameters	IS : 10500 : 2012		Bhandup Complex				Tulsi Filter Plant				Vehar Filter Plant			
	Limits		Raw		Final		Raw		Final		Raw		Final	
	Acceptable	Maximum Permissible	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min
Turbidity (N.T.U) Max	1	5	2.0	1.2	0.99	0.32	5.8	2.4	0.75	0.45	5.7	2.6	1.6	1.10
pH value	6.5-8.5	6.5-8.5	7.80	7.40	7.60	7.20	7.65	7.00	7.15	6.90	8.10	7.70	7.85	7.60
Color (Hazen Unit)	5	15	5	5	< 2.5	< 2.5	10	5	5	< 2.5	10	5	5	5
Total Dissolved Solids (mg/l)	500	2000	59	54	57	54	61	56	60	55	68	62	65	60
Chlorides as Cl (mg/l)	250	1000	12	10	14	12	14	13	16	14	15	14	18	15
Total Alkalinity as CaCO ₃ (mg/l)	200	600	42	34	40	33	37	34	35	33	39	36	36	33
Total Hardness as CaCO ₃ (mg/l)	200	600	52	41	50	40	40	37	38	35	42	40	40	38
Calcium. Hardness (mg/l)	--	--	28	23	27	21	28	26	26	24	31	29	29	28
Calcium as Ca (mg/l)	75	200	11.2	9.2	10.8	8.4	11.2	10.4	10.4	9.6	12.4	11.6	11.6	11.2
Magnesium as Mg (mg/l)	30	100	7.04	3.15	7.04	3.15	3.4	2.67	3.4	2.43	2.91	2.43	2.91	2.43
Iron as Fe (mg/L)	1.0	No Relaxation	Nil	Nil	NIL	NIL	Nil	Nil	NIL	NIL	0.02	0.01	Nil	Nil
Aluminium as Al (mg/L)	0.03	0.2	Nil	Nil	0.03	0.02	Nil	Nil	0.07	0.04	Nil	Nil	0.04	0.02
Manganese as Mn (mg/L)	0.1	0.3	Nil	Nil	NIL	NIL	Nil	Nil	NIL	NIL	Nil	Nil	Nil	Nil
Dissolved Oxygen (mg/l)	--	--	8.1	6.3	8.7	7.3	7.8	7.0	8.2	7.4	7.8	7.7	8.0	7.8
Conductivity (µS/cm)	--	--	108	99	105	97	112	102	110	101	124	113	118	110
Free Res. Chlorine (mg/l)	Min.0.2	1	0.25	Nil	1.70	1.40	1.30	0.95	1.70	1.30	0.15	0.10	0.90	0.20
Bacteriological Examination (CFU/100 ml)														
Total coliform	0	0	0	0	0	0	0	0	0	0	0	0	0	0
E.coli.	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Results of all parameters for Final Water of Bhandup Complex, Tulsi Filtration Plant and Vehar Filtration Plant are within Permissible Limit as per IS 10500 : 2012

*TRACE: <0.1 mg/L



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ANALYTICAL REPORT OF WATER SAMPLE FOR THE MONTH OF FEBRUARY 2021

Parameters	IS : 10500 : 2012		Bhandup Complex				Tulsi Filter Plant				Vehar Filtration Plant			
	Limits		Raw		Final		Raw		Final		Raw		Final	
	Desirable	Maximum Permissible	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min
Turbidity (N.T.U)	1	5	1.8	1.2	0.84	0.46	4.8	4.6	1.80	1.0	1.5	0.96	0.54	0.36
pH	6.5-8.5	6.5-8.5	7.80	7.60	7.60	7.40	7.75	7.10	7.15	6.90	8.30	8.10	7.85	7.60
Color (Hazen Unit)	5	15	5	5	< 2.5	< 2.5	5	5	2.5	2.5	5	5	< 2.5	< 2.5
Total Dissolved Solids (mg/l)	500	2000	58	55	57	54	59	57	56	55	66	62	65	61
Chlorides (mg/l)	250	1000	12	10	14	12	15	14	18	16	15	14	18	17
Total Alkalinity (mg/l)	200	600	42	34	40	33	32	30	30	28	39	38	35	35
Total Hardness (mg/l)	200	600	48	42	46	40	46	44	44	42	48	45	44	40
Cal. Hardness (mg/l)	--	--	29	25	27	23	30	28	28	26	28	25	25	24
Calcium as Ca (mg/l)	75	200	11.6	10	10.8	9.2	12	11.2	11.2	10.4	11.2	10	10.4	9.6
Magnesium as Mg (mg/l)	30	100	5.10	3.15	5.10	3.40	4.37	3.88	3.88	3.88	4.86	4.86	4.61	4.37
Total Iron as Fe (mg/l)	0.3	****	Nil	Nil	NIL	NIL	Nil	Nil	NIL	NIL	0.01	0.01	Nil	Nil
Res. Aluminium as Al (mg/l)	0.03	0.2	Nil	Nil	0.03	0.02	Nil	Nil	0.04	0.04	Nil	Nil	0.03	0.03
Manganese (Mn) (mg/L)	0.1	0.3	Nil	Nil	NIL	NIL	Nil	Nil	NIL	NIL	Nil	Nil	Nil	Nil
Dissolved Oxygen (mg/l)	--	--	7.9	7.1	8.5	7.5	7.7	7.0	7.9	7.3	8.3	7.9	7.7	7.6
Conductivity (µS/cm)	--	--	106	102	105	101	107	103	103	100	120	114	116	112
Free Res. Chlorine (mg/l)	Min.0.2	1	0.45	0.10	1.60	1.40	1.30	0.70	1.50	1.30	0.15	0.10	1.25	1.20
Bacteriological Examination (CFU/100 ml)														
Total coliform	0	0	0	0	0	0	0	0	0	0	0	0	0	0
E.coli.	0	0	0	0	0	0	0	0	0	0	0	0	0	0

* Coliform & E.coli are present in the Raw water (Before Chlorination).

In Purified (Final) water Coli form & E.coli bacteria are absent.



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ANALYTICAL REPORT OF WATER SAMPLE FOR THE MONTH OF MARCH - 2021

Parameters	IS : 10500 : 2012		Bhandup Complex				Tulsi Filter Plant				Vehar Filtration Plant			
	Limits		Raw		Final		Raw		Final		Raw		Final	
	Acceptable	Maximum Permissible	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min
Turbidity (N.T.U) Max	1	5	1.8	1.2	0.85	0.30	7.6	3.8	3.0	0.88	3.6	1.60	0.86	0.66
pH value	6.5-8.5	6.5-8.5	7.75	7.45	7.50	7.20	7.80	7.30	7.40	6.85	8.50	8.35	7.60	7.50
Color (Hazen Unit)	5	15	5	5	<2.5	<2.5	7.5	5	5	<2.5	5	5	<2.5	<2.5
Total Dissolved Solids (mg/l)	500	2000	61	57	59	55	59	56	57	56	73	69	66	64
Chlorides as Cl (mg/l)	250	1000	12	10	14	12	15	13	18	17	12	11	15	14
Total Alkalinity as CaCO ₃ (mg/l)	200	600	43	36	41	33	34	31	30	29	39	38	38	36
Total Hardness as CaCO ₃ (mg/l)	200	600	48	42	45	40	46	39	44	37	45	44	42	42
Cal. Hardness (mg/l)	--	--	29	25	27	22	27	26	26	23	29	27	26	25
Calcium as Ca (mg/l)	75	200	11.6	10.0	10.8	8.8	10.8	10.4	10.4	9.2	11.6	10.8	10.4	10.0
Magnesium as Mg (mg/l)	30	100	4.61	4.13	4.37	4.13	4.61	3.15	4.37	3.40	4.37	3.64	4.13	3.88
Iron as Fe (mg/L)	1.0	No Relaxation	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	0.01	NIL	NIL	NIL
Aluminium as Al (mg/L)	0.03	0.2	NIL	NIL	0.03	0.02	NIL	NIL	0.05	0.04	NIL	NIL	0.03	0.03
Manganese as Mn (mg/L)	0.1	0.3	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL
Dissolved Oxygen (mg/l)	--	--	7.8	6.8	8.2	7.1	7.5	6.8	7.9	7.3	8.4	7.6	7.5	7.1
Conductivity (µS/cm)	--	--	111	103	110	101	107	102	104	102	133	126	120	117
Free Res. Chlorine (mg/l)	Min.0.2	1	0.30	0.15	1.60	1.35	1.35	0.70	1.80	1.30	0.60	0.15	1.00	0.50
Bacteriological Examination (CFU/100 ml)														
Total coliform	0	0	0	0	0	0	0	0	0	0	0	0	0	0
E.coli.	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Results of all parameters for Final Water of Bhandup Complex, Tulsi Filtration Plant and Vehar Filtration Plant are within Permissible Limit as per IS 10500 : 2012

*TRACE: <0.1 mg/L



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ANALYTICAL REPORT OF WATER SAMPLE
FOR THE MONTH OF APRIL- 2021

Parameters	IS : 10500 : 2012		Bhandup Complex				Tulsi Filter Plant				Vehar Filtration Plant			
	Limits		Raw		Final		Raw		Final		Raw		Final	
	Acceptable	Maximum Permissible	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min
Turbidity (N.T.U) Max	1	5	1.7	1.0	0.69	0.26	7.7	5.4	5.8	1.60	4.5	2.2	1.5	0.88
pH value	6.5-8.5	6.5-8.5	7.70	7.50	7.45	7.30	8.30	7.75	7.25	7.05	8.80	8.80	7.90	7.70
Color (Hazen Unit)	5	15	5	2.5	<2.5	<2.5	10	10	5	2.5	5	5	2.5	2.5
Total Dissolved Solids (mg/l)	500	2000	63	58	61	57	59	55	58	54	72	65	71	65
Chlorides as Cl (mg/l)	250	1000	12	10	14	11	13	9	15	11	14	13	18	16
Total Alkalinity as CaCO ₃ (mg/l)	200	600	44	36	43	33	42	37	40	35	47	45	44	43
Total Hardness as CaCO ₃ (mg/l)	200	600	50	42	48	40	48	43	46	40	55	53	51	50
Cal. Hardness (mg/l)	--	--	30	23	28	22	28	25	27	24	36	34	35	32
Calcium as Ca (mg/l)	75	200	12.0	9.2	11.2	8.8	11.2	10.0	10.8	9.6	14.4	13.6	14.0	12.8
Magnesium as Mg (mg/l)	30	100	6.07	3.64	5.83	3.15	4.86	4.37	4.61	3.88	4.61	4.61	4.37	3.88
Iron as Fe (mg/L)	1.0	No Relaxation	NIL	NIL	NIL	NIL	0.01	NIL	NIL	NIL	NIL	NIL	NIL	NIL
Aluminium as Al (mg/L)	0.03	0.2	NIL	NIL	0.03	0.02	NIL	NIL	0.07	0.05	NIL	NIL	0.03	0.03
Manganese as Mn (mg/L)	0.1	0.3	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL
Dissolved Oxygen (mg/l)	--	--	7.8	6.9	8.1	7.2	7.6	7.1	7.6	7.0	7.0	6.7	7.5	7
Conductivity (µS/cm)	--	--	114	105	110	104	108	100	106	98	132	119	130	118
Free Res. Chlorine (mg/l)	Min.0.2	1	0.25	NIL	1.55	1.40	1.50	0.95	1.95	1.60	0.15	0.10	0.60	0.20
Bacteriological Examination (CFU/100 ml)														
Total coliform	0	0	0	0	0	0	0	0	0	0	0	0	0	0
E.coli.	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Results of all parameters for Final Water of Bhandup Complex, Tulsi Filtration Plant and Vehar Filtration Plant are within Permissible Limit as per IS 10500 : 2012

*TRACE: <0.1 mg/L

R. W. W. W.

A. K. K. K.



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ANALYTICAL REPORT OF WATER SAMPLE FOR THE MONTH OF MAY-2021

Parameters	IS : 10500 : 2012		Bhandup Complex				Tulsi Filter Plant				Vehar Filtration Plant			
	Limits		Raw		Final		Raw		Final		Raw		Final	
	Acceptable	Maximum Permissible	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min
Turbidity (N.T.U) Max	1	5	2	1.2	0.78	0.32	10.0	5.9	2.0	1.10	5.7	4.3	2.6	0.94
pH value	6.5-8.5	6.5-8.5	7.70	7.50	7.50	7.25	8.50	6.85	7.40	6.70	8.95	8.80	7.95	7.75
Color (Hazen Unit)	5	15	5	5	<2.5	<2.5	20	10	5	5.0	10	10	5	<2.5
Total Dissolved Solids (mg/l)	500	2000	65	60	62	59	65	56	64	55	80	77	77	77
Chlorides as Cl (mg/l)	250	1000	12	10	13	11	15	12	19	17	16	15	20	19
Total Alkalinity as CaCO ₃ (mg/l)	200	600	44	38	42	33	40	27	38	22	41	40	39	36
Total Hardness as CaCO ₃ (mg/l)	200	600	49	43	47	39	42	37	40	35	48	48	47	46
Total Hardness (mg/l)	--	--	32	26	30	24	30	27	28	26	30	28	29	26
Calcium as Ca (mg/l)	75	200	12.8	10.4	12.0	9.6	12.0	10.8	11.2	10.4	12.0	10.4	11.6	10.4
Magnesium as Mg (mg/l)	30	100	5.10	3.15	5.10	3.15	2.91	2.43	2.91	2.18	4.86	4.37	4.86	4.37
Iron as Fe (mg/L)	1.0	No Relaxation	NIL	NIL	NIL	NIL	0.04	0.01	NIL	NIL	0.02	0.01	NIL	NIL
Aluminium as Al (mg/L)	0.03	0.2	NIL	NIL	0.04	0.03	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL
Manganese as Mn (mg/L)	0.1	0.3	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL
Dissolved Oxygen (mg/l)	--	--	7.5	6.8	8.0	6.8	7.5	4.8	7.3	6.5	7.6	7.0	7.9	7.5
Conductivity (µS/cm)	--	--	118	109	114	108	119	101	116	100	145	141	141	140
Free Res. Chlorine (mg/l)	Min.0.2	1	0.20	NIL	1.60	1.30	1.45	1.00	2.00	1.70	NIL	NIL	0.20	0.15
Bacteriological Examination (CFU/100 ml)														
Total coliform	0	0	0	0	0	0	0	0	0	0	0	0	0	0
E.coli.	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Results of all parameters for Final Water of Bhandup Complex, Tulsi Filtration Plant and Vehar Filtration Plant are within Permissible Limit as per IS 10500 : 2012

*TRACE: <0.1 mg/L

Q. W. W.

A. S. (Lab)



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ANALYTICAL REPORT OF WATER SAMPLE FOR THE MONTH OF JUNE- 2021

Parameters	IS : 10500 : 2012		Bhandup Complex				Tulsi Filter Plant				Vehar Filtration Plant			
	Limits		Raw		Final		Raw		Final		Raw		Final	
	Acceptable	Maximum Permissible	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min
Turbidity (N.T.U) Max	1	5	19	1.3	3.00	0.31	16.0	5.9	3.3	0.50	7.7	6.0	2.5	2.10
pH value	6.5-8.5	6.5-8.5	7.70	7.40	7.50	7.20	7.00	6.80	6.90	6.60	9.00	7.25	7.70	7.20
Color (Hazen Unit)	5	15	20	5	2.5	<2.5	30	10	5	<2.5	10	10	5	5
Total Dissolved Solids (mg/l)	500	2000	74	60	72	60	66	57	66	55	78	64	76	64
Chlorides as Cl (mg/l)	250	1000	11	10	14	12	16	13	22	18	17	13	20	19
Total Alkalinity as CaCO ₃ (mg/l)	200	600	46	37	44	35	39	33	35	33	44	40	39	39
Total Hardness as CaCO ₃ (mg/l)	200	600	51	41	49	39	45	38	40	35	48	44	46	42
Cal. Hardness (mg/l)	--	--	32	26	30	23	29	26	28	23	31	30	30	28
Calcium as Ca (mg/l)	75	200	12.8	10.4	12.0	9.2	11.6	10.4	11.2	9.2	12.4	12.0	12.0	11.2
Magnesium as Mg (mg/l)	30	100	4.61	3.64	4.61	3.88	3.88	2.91	2.91	2.91	4.13	3.40	3.88	3.40
Iron as Fe (mg/L)	1.0	No Relaxation	0.04	NIL	NIL	NIL	0.02	0.01	NIL	NIL	0.02	0.01	NIL	NIL
Aluminium as Al (mg/L)	0.03	0.2	NIL	NIL	0.04	0.03	NIL	NIL	0.06	0.03	NIL	NIL	NIL	NIL
Manganese as Mn (mg/L)	0.1	0.3	Trace	NIL	Nil	NIL	Trace	NIL	Nil	NIL	NIL	NIL	NIL	NIL
Dissolved Oxygen (mg/l)	--	--	6.9	6.6	7.7	6.6	5.8	5.1	6.8	6.1	7.7	7.5	7.3	7.1
Conductivity (µS/cm)	--	--	134	110	129	110	121	105	120	101	143	117	138	116
Free Res. Chlorine (mg/l)	Min.0.2	1	0.20	Trace	1.80	1.00	1.85	1.00	2.25	0.90	0.20	0.15	1.40	1.25
Total Arsenic as As (mg/l)	0.01	0.05	Nil	-	0.001	-	Nil	-	0.002	-	Nil	-	Nil	-
Fluorides as F- (mg/L)	1.0	1.5	0.04	-	0.02	-	0.04	-	0.01	-	0.05	-	0.02	-
Bacteriological Examination (CFU/100 ml)														
Total coliform	0	0	35	0	0	0	0	0	0	0	0	0	0	0
E.coli.	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Results of all parameters for Final Water of Bhandup Complex, Tulsi Filtration Plant and Vehar Filtration Plant are within Permissible Limit as per IS 10500 : 2012

*TRACE: <0.1 mg/L

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Annexure - 4 - Borehole details

Project : Geotechnical Investigation proposed project at 1910 MLD WTP Bhandup		Location : Bhandup Complex	
Client : Tondon Urban Solutions Pvt. Ltd.		Borehole No. : BH-03	
Equipment : Calyx Rig		Co-ordinates : -----	
Drilling Orientation : Vertical		Date : 15.04.2022 to 18.04.2022	
Drilling Method : Rotary Drilling		Type of Bit : Diamond	
Casing Size : NX		Drilling Fluid : Water	
Casing Depth(m) : 2.00m		Core diameter (mm) : 54 mm	
		R.L.(m) : -----	
		T.D.(m) : 10.00 m	
		W.T. (m) : 1.10 m	

FIELD BOREHOLE LOG SHEET

Depth (m) Below EGL	Lithology	Description	Sample & Insitu Test depth (m)	Sample Type Disturbed or Undisturbed	Sample Number	SPT Blow Counts				SPT "N" value	Penetration Rate (m/Hr.)	TCR (%)	SCR (%)	RQD (%)	Core Piece No.	Fracture Index (FI)	Colour of Return Water
						15 cm	30 cm	45 cm	60 cm								
0.0	[Symbol]	Yellowish to Brown Clay with small gravels	0.50	[Symbol]	D1	-	-	-	-	-	-	-	-	-	-	-	Yellowish
0.5																	
1.0	[Symbol]	Completely Weathered Rock Fragments	1.50	[Symbol]	SPT 1	27	52	-	-	R	-	-	-	-	-	-	Yellowish
1.5																	
2.0	[Symbol]	Light Greyish to Grey, Highly to Moderately Weathered, Partly Fractured, BASALT, with some white infillings	1.77	[Symbol]	C1	-	-	-	-	-	-	18	NIL	1 to 2	-	Greyish	
2.5																	
3.0																	
3.5																	
4.0													34	17	3 to 7	-	Greyish
4.5																	
5.0																	
5.5													48	39	8 to 13	-	Greyish
6.0																	
6.5																	
7.0																	
7.5																	
8.0		Light Greyish to Grey, Moderately to Slightly Weathered, Slightly Fractured, BASALT with black infillings	7.50	[Symbol]	C4	-	-	-	-	-	-	69	64	14 to 19	-	Greyish	
8.5																	
9.0																	
9.5																	
10.0			10.00		C6	-	-	-	-	-		82	82	20 to 24	-	Greyish	

SPT- (Standard Penetration Test - S1,S2,S3...)	I Fresh	R SPT Refusal	Water Depth (m)	
UDS- (Undisturbed Sample - U1,U2,U3....)	II Slightly weathered	EGL Existing Ground Level	Date	Depth (m)
DS- (Disturbed Sample - D1,D2,D3....)	III Moderately weathered	F.I. Fracture Index		
RC/SC (Rock /Soil Core-C1,C2,C3....)	IV Highly weathered	PLI Point Load Index		
Wash Boring	V Completely weathered	UCS Unconfined Compressive Strength		
Fill	VI Residual Soil	TCR Total Core Recovery		
Silty Sand	TD Termination depth	SCR Solid Core Recovery		
CWR	R.L. Reduced Level	RQD Rock Quality Designation		

Project : Geotechnical Investigation proposed project at 1910 MLD WTP Bhandup			
Client : Tondon Urban Solutions Pvt. Ltd.		Location : Bhandup Complex	
Equipment : Calyx Rig		Borehole No. : BH-04	
Drilling Orientation : Vertical		Date : 19.04.2022 to 21.04.2022	
Drilling Method : Rotary Drilling		Type of Bit : Diamond	
Casing Size : NX		Drilling Fluid : Water	
Casing Depth(m) : 3.50m		Core diameter (mm) : 54 mm	
		T.D.(m) : 10.00 m	
		W.T. (m) : 1.30 m	

FIELD BOREHOLE LOG SHEET

Depth (m) Below EGL	Lithology	Description	Sample & Insitu Test depth (m)	Sample Type Disturbed or Undisturbed	Sample Number	SPT Blow Counts				SPT "N" value	Penetration Rate (m/hr.)	TCR (%)	SCR (%)	RQD (%)	Core Piece No.	Fracture Index (FI)	Colour of Return Water														
						15 cm	30 cm	45 cm	60 cm																						
0.0		Yellowish brown, Clay with Gravels	0.50		D1	-	-	-	-	-	-	-	-	-	-	-	Yellowish														
0.5																															
1.0								SPT 1	10	17	20	25	37	--	--	--	--	--	--	Yellowish											
1.5		Yellowish to Brown Sandy Clay with gravels	1.50		SPT 2	35	5/52	-	-	R	--	--	--	--	--	--	Yellowish														
2.0																															
2.5																															
3.0		Completely Weathered Rock	3.00																												
3.5		Dark Grey to Light Grey, Highly Weathered and Fractured, BASALT, with some white infillings	3.20		C1	-	-	-	-	-	-	-	17	NIL	SP	-	Grey														
4.0																															
4.5																															
5.0																															
5.5									C2	-	-	-	-	-	-	21	NIL	1 to 7	-	Grey											
6.0		Dark Grey to Light Grey, Moderately Weathered and Fractured, BASALT	6.00		C3	-	-	-	-	-	-	-	40	NIL	8 to 21	-	Grey														
6.5																															
7.0																															
7.5		Pinkish Grey to Light Grey, Slightly to Fresh, Partly Fractured, BASALT, with some white infillings	7.50		C4	-	-	-	-	-	-	-	81	71	22 to 28	-	Pinkish														
8.0																															
8.5																															
9.0		Pinkish Grey to Light Grey, Slightly to Fresh, Partly Fractured, BASALT, with some white infillings	9.00		C5	-	-	-	-	-	-	-	96	84	29 to 30	-	Pinkish														
9.5																															
10.0			10.00																												

	SPT- (Standard Penetration Test - S1,S2,S3...)	I	Fresh	R	SPT Refusal	Water Depth (m)	
	UDS- (Undisturbed Sample - U1,U2,U3...)	II	Slightly weathered	EGL	Existing Ground Level	Date	Depth (m)
	DS- (Disturbed Sample - D1,D2,D3...)	III	Moderately weathered	F.I.	Fracture Index		
	RC/SC (Rock /Soil Core-C1,C2,C3...)	IV	Highly weathered	PLI	Point Load Index		
	Wash Boring	V	Completely weathered	UCS	Unconfined Compressive Strength		
	Fill	VI	Residual Soil	TCR	Total Core Recovery		
	Silty Sand	TD	Termination depth	SCR	Solid Core Recovery		
	CWR	R.L.	Reduced Level	RQD	Rock Quality Designation		

Project : Geotechnical Investigation proposed project at 1910 MLD WTP Bhandup			
Client : Tondon Urban Solutions Pvt. Ltd.		Location : Bhandup Complex	
Equipment : Calyx Rig		Borehole No. : BH-05	
Drilling Orientation : Vertical		Co-ordinates : -----	
Drilling Method : Rotary Drilling		Date : 22.04.2022 to 24.04.2022	
Casing Size : NX		Type of Bit : Diamond	
Casing Depth(m) : 3.00m		Drilling Fluid : Water	
		T.D.(m) : 10.00 m	
		Core diameter (mm) : 54 mm	
		W.T. (m) : 1.60 m	

FIELD BOREHOLE LOG SHEET

Depth (m) Below EGL	Lithology	Description	Sample & Insitu Test depth (m)	Sample Type Disturbed or Undisturbed	Sample Number	SPT Blow Counts				SPT "N" value	Penetration Rate (m/Hr.)	TCR (%)	SCR (%)	RQD (%)	Core Piece No.	Fracture Index (FI)	Colour of Return Water	
						15 cm	30 cm	45 cm	60 cm									
0.0		Yellowish brown, Filledup material			D1	-	-	-	-	-	-	-	-	-	-	-	Yellowish	
0.5			0.50															
1.0		Brownish to Grey, Silty Clay with gravels			SPT 1	12	17	21	29	38	--	--	--	--	--	--	--	Brownish
1.5			1.50															
2.0			2.10			SPT 2	5/52	--	--	--	R	--	--	--	--	--	--	Brownish
2.5																		
3.0		Completely Weathered Rock	3.00															
3.5		Light Greyish to Grey, Highly to Moderately Weathered, Fractured, BASALT, with black infillings	3.05															
4.0			4.50		C1	--	--	--	--	--	--	--	14	NIL	1 to 3	--	Greyish	
4.5																		
5.0						C2	--	--	--	--	--	--	25	9	4 to 7	--	Greyish	
5.5																		
6.0																		
6.5		Light Greyish , Slightly to Fresh, Partly Fractured, Jointed, BASALT, with black infillings				C3	--	--	--	--	--	--	75	67	8 to 14	--	Greyish	
7.0																		
7.5																		
8.0						C4	--	--	--	--	--	--	91	91	15 to 18	--	Greyish	
8.5																		
9.0																		
9.5					C5	--	--	--	--	--	--	80	80	19	--	Greyish		
10.0			10.00															

	SPT- (Standard Penetration Test - S1,S2,S3...)	I	Fresh	R	SPT Refusal	Water Depth (m)	
	UDS- (Undisturbed Sample - U1,U2,U3...)	II	Slightly weathered	EGL	Existing Ground Level	Date	Depth (m)
	DS- (Disturbed Sample - D1,D2,D3...)	III	Moderately weathered	F.I.	Fracture Index		
	RC/SC (Rock /Soil Core-C1,C2,C3...)	IV	Highly weathered	PLI	Point Load Index		
	Wash Boring	V	Completely weathered	UCS	Unconfined Compressive Strength		
	Fill	VI	Residual Soil	TCR	Total Core Recovery		
	Silty Sand	TD	Termination depth	SCR	Solid Core Recovery		
	CWR	R.L.	Reduced Level	RQD	Rock Quality Designation		