नवी मुंबई
महाागरपालिका
पाणी पुरवठा विभाग, दुसरा मजला
भू.क्र. १ सेक्टर १५ए, बेलापूर
नवी मुंबई५ - ४०० ७०८.
दुरध्वनी - २७५६७३९३, २७५६७१३४

Navi Mumbai
Municipal Corporation
Water Supply Dept. २nd Floor,
Plot No. १ Sector १५A, Belapur
Navi Mumbai - ४०० ७०८.
Phone - २७५६७३९३,२७५६७१३४

No. NMMC/C.E/2016 /2016
Date : 24 /10/2016

Certificate – Service Level Benchmark (SLB)

The Service Level Benchmarks for NMMC sewerage system is stated below:

Sr. No.	Indicators	Existing Service Level	MOUD Benchmarks
1	Coverage of latrines (Individual or community)	100%	100%
2	Coverage of Sewerage network services	100%	100%
3	Efficiency of Collection of Sewerage	100%	100%
4	Efficiency in Treatment: Adequacy of Sewerage Treatment Capacity	100%	100%

21-10-16

City Engineer
Navi Mumbai Municipal Corporation

केन्द्रीय प्रदूषण नियंत्रण बोर्ड
CENTRAL POLLUTION CONTROL BOARD
(पर्यावरण एवं वन मंत्रालय, भारत सरकार)
(MINISTRY OF ENVIRONMENT & FORESTS, GOVT. OF INDIA)

File No. A-19014/43/06-MON

Date: 21 April, 2015

To,

The Chairman,
Meghalaya Pollution Control Board,
Arden, Lumpyngngad,
Shillong – 793014

Directions Under Section 18(1)(b) of the Water (Prevention and Control of Pollution) Act, 1974 regarding treatment and utilization of sewage.

Whereas, amongst others, under Section 16 of the Water (Prevention and Control of Pollution) Act, 1974, one of the functions of the Central Pollution Control Board (CPCB) constituted under the Water (Prevention & Control of Pollution) Act, 1974 is to coordinate activities of the SPCBs/PCCs and to provide technical assistance and guidance to SPCBs/PCCs; and

Whereas, amongst others, under Section 17 of the Water (Prevention and Control of Pollution) Act, 1974, one of the functions of the State Pollution Control Boards (SPCBs) and Pollution Control Committees (PCCs), constituted under the Water (Prevention & Control of Pollution) Act, 1974 is to plan a comprehensive programme for prevention, control or abatement of pollution of streams and wells in the State and to secure the execution thereof;

Whereas, sewage, the single major source for water resources deterioration contributes 70% of the pollution load to water bodies.Consumption of polluted water adversely impact human health and aquatic life.Quality of treated sewage generally of lower standard further adding to problem.Very sizeable gap is observed in generation and treatment of sewage.

Whereas, the Central Pollution Control Board reported during 2010-2011 that out of 38254 MLD of sewage generated by class I cities and class II towns, only 11787 MLD has been treated and thereby leaving huge gap between sewage generation and sewage treatment. Central Pollution Control Board, reassessed sewage generation and treatment capacity for Urban Population of India for the year 2015. The sewage generation estimated to be 62000 MLD approximately and sewage treatment capacity developed so far is only 23277 MLD from 816 STPs.

Whereas, sewage treatment capacity of Meghalaya State is 1 MLD in contrast to sewage generation of 95 MLD. 94 MLD untreated sewage discharge to water bodies that is responsible for deteriorating its water quality.

Whereas, water quality monitoring results of rivers as indicated that water quality has been affected because of disposal of untreated or partially treated sewage into the water bodies and as a result, there are high number of faecal bacteria making the water body unfit for human consumption or for other uses.

'परिवेश भवन' पूर्वी अर्जुन नगर, दिल्ली-110032
'Parivesh Bhawan', East Arjun Nagar, Delhi - 110032
दूरभाष/Tel. : 43102030, फैक्स/Fax : 22305793, 22307078, 22307079, 22301932, 22304948
ई-मेल/e-mail : cpcb@nic.in वेबसाईट/Website : www.cpcb.nic.in

Whereas, the cities and the towns are not having adequate system for sewage collection and its treatment and thus entire waste water either falls into rivers or lakes or remains inundated on land causing potential risk to the ground water contamination.

Whereas, the majority of the municipal authorities have not sought consents under the Water (Prevention and Control of Pollution) Act, 1974 which is a statutory requirement and also have not provided facilities for sewage treatment.

Whereas, the State Pollution Control Board under Section 17 of the Water Act has been mandated with the following functions which inter-alia including;

(f) to inspect sewage or trade effluents, works and plants for the treatment of sewage and trade effluents and to review plans, specifications or other data relating to plants set up for the treatment of water, works for the purification thereof and the system for the disposal of sewage or trade effluents or in connection with the grant of any consent as required by this Act;

(g) lay down, modify or annul effluent standards for the sewage and trade effluents and for the quality of receiving waters (not being water in an inter-State stream) resulting from the discharge of effluents and to classify waters of the State;

(h) to evolve economical and reliable methods of treatment of sewage and trade effluents, having regard to the peculiar conditions of soils, climate and water resources of different regions and more especially the prevailing flow characteristics of water in streams and wells which render it impossible to attain even the minimum degree of dilution;

(i) to evolve methods of utilization of sewage and suitable trade effluents in agriculture;

(j) to evolve efficient methods of disposal of sewage and trade effluents on land, as are necessary on account of the predominant conditions of scant stream flows that do not provide for major part of the year the minimum degree of dilution;

(k) to lay down standards of treatment of sewage and trade effluents to be discharged into any particular stream taking into account the minimum fair weather dilution available in that stream and the tolerance limits of pollution permissible in the water of the stream, after the discharge of such effluents;

(m) to lay down effluent standards to be complied with by persons while causing discharge of sewage or sullage or both and to lay down, modify or annul effluent standards for the sewage and trade effluents;

Whereas,the Central Board in its 168th meeting held on 27/03/2015 resolved to notify the standards for treated sewage. These standards for discharge of treated sewage from STPs have also been endorsed in the Minster's Conference held during April 6-7, 2015 and 59th Conference of Chairmen & Member Secretaries of Pollution Control Boards and Pollution Control committees held on april 8, 2015;

Whereas, Government of Tamilnadu mandated to develop sewerage system in all the municipalities and all household to mandatorily connect to sewerage system as well as to pay monthly fee for sewage management to cover CAPEX and OPEX:

NOW THEREFORE, in view of the above stated facts and realizing that rivers and water bodies have been polluted and to prevent further deterioration ofsurface, sub-surface and coastal waters, it is essential to issue following directions under section 18(1)(b) of the Water(Prevention and Control of Pollution) Act, 1974. The following directions are hereby issued for compliance:

1. State Pollution Control Board shall make mandatory for local/urban bodies to set up a sewerege system for sewage collection, underground conveyance, treatment and its disposals to cover the entire local/urban area to bridge the widening treatment gap along with enforcement of consent management in line with standards for sewage treatment (Annexure-I).
2. SPCB/PCC shall issue directions to all municipalities and other concerned authorities in the State/UT responsible for treatment and disposal of sewage to the following effect

(I) The existing STPs which are being operated before issuance of these directions shall meet the standards within two years from the date of issuance of these directions.

(II) All the local bodies shall seek consent under Water (Prevention and Control of Pollution) Act, 1974 from the SPCB/Committee within a period of 60 Days.

(III) Secondary treated sewage should be mandatorily sold for use for non potable purposes such as industrial process, railways & bus cleaning, flushing of toilets through dual piping, horticulture and irrigation. No potable water to be allowed for such activities. They will also digest methane for captive power generation to further improve viability of STPs.

(IV) Dual piping system should be enforced in new housing constructions for use of treated sewage for flushing propose.

(V) Each municipal authority and the concerned authority shall submit a time bound action plan for setting up sewerage system covering proper collection, treatment and disposal of sewage generated in the local/urban area and such plan shall be submitted by the municipal authority to the State Board within a period of 90-120 Days.

(VI) In case of disposal of effluents on land or river or any water body including coastal water/creek or a drain, the treated effluents shall meet the suggested standards annexed to these direction.

(VII) The new sewage treatment plants which will come in existence after the issuance of these directions shall be designed to treat and achieve standards as per the suggested standards.

3. The State Board shall acknowledge the receipt of this direction within 10 days and shall communicate the status on the actions taken to achieve before 30 September 2015 informing the status of consents along with the action plan for treatment and disposal of sewage.

Shashi Shekhar 21/4/15

(Shashi Shekhar)
Chairman

ANNEXURE-I

EFFLUENT DISCHARGED STANDARDS FOR SEWAGE TREATMENT PLANT

Sl. No.	Parameters	Parameters Limit (Standards for New STPs Design after notification date) *
1.	pH	6.5-9.0
2.	BOD (mg/l)	Not more than 10
3.	COD (mg/l)	Not more than 50
4.	TSS (mg/l)	Not more than 20
5.	NH_4-N (mg/l)	Not more than 5
6.	N-total (mg/l)	Not more than 10
7.	Fecal Coliform (MPN/100ml)	Less than 100

Note:

(i) These standards will be applicable for discharge in water resources as well as for land disposal. The standards for Fecal Coliform may not be applied for use of treated sewage in industrial purposes.

(ii) * Achievements of Standards for existing STPs within 05 years from the date of notification.

Table 7.13 Recommended norms of treated sewage quality for specified activities at point of use

	Parameter	Toilet flushing	Fire protection	Vehicle External washing	Non-contact impoundments	Landscaping, Horticulture & Agriculture			
						Horticulture, Golf courses	Crops		
							Non edible crops	Crops which are eaten	
								raw	cooked
1	Turbidity (NTU)	<2	<2	<2	<2	< 2	AA	< 2	AA
2	SS	nil	nil	nil	nil	nil	30	nil	30
3	TDS	2100							
4	pH	6.5 to 8.3							
5	Temperature °C	Ambient							
6	Oil & Grease	10	nil	nil	nil	<10	10	nil	Nil
7	Minimum Residual Chlorine	1	1	1	0.5	1	nil	nil	nil
8	Total Kjeldahl Nitrogen as N	10	10	10	10	<10	10	10	10
9	BOD	10	10	10	10	<10	20	10	20
10	COD	AA	AA	AA	AA	AA	30	AA	30
11	Dissolved Phosphorous as P	1	1	1	1	2	5	2	5
12	Nitrate Nitrogen as N	10	10	10	5	<10	10	10	10
13	Faecal Coliform in 100 ml	Nil	Nil	Nil	Nil	Nil	230	Nil	230
14	Helminthic Eggs / litre	AA	AA	AA	AA	AA	<1	<1	<1
15	Colour	Colourless	Colourless	Colourless	Colourless	Colourless	AA	Colourless	Colourless
16	Odour	Aseptic which means not septic and no foul odour							

All units in mg/l unless specified. AA-as arising when other parameters are satisfied.
A tolerance of plus 5% is allowable when yearly average values are considered

COST ESTIMATE

RECAPITULATION

NAVI MUMBAI MUNICIPAL CORPORATION					
PROJECT : - RECYCLE WATER SYSTEM					
RECAPITULATION SHEET (Airoli, KK,Vashi MIDC)- (Trench Method with Road Restoration)					
Subwork No.	Name of Sub Work	Vashi MIDC	Koperkhairane MIDC	Airoli MIDC	Total Cost of all Zones (Rs.)
Part-I Treatment Technology					
1	Ultra Filtration Plant for Tertiary Treatment		17,86,40,000	17,86,40,000	35,72,80,000
2	UV		89,87,000	89,87,000	1,79,74,000
				Sub Cost	**37,52,54,000**
Part-II CIVIL & ELECTRO - MECHANICAL WORKS					
1	RCC Sump (at STP campus)		1,11,37,380	1,00,64,688	2,12,02,068
2	Pumping Main	7,76,71,688	10,56,87,722	2,22,82,899	20,56,42,309
3	Elevated Storage Reservions(ESR)	2,86,16,511	1,78,73,210	1,18,64,484	5,83,54,204
4	Disrtibution Network	15,18,39,494	11,05,96,464	10,02,67,469	36,27,03,428
5	Property connection	1,08,95,279	97,97,270	1,07,64,903	3,14,57,453
6	Road Restoration	7,31,32,194	5,28,47,300	7,07,18,848	19,66,98,342
				Sub Cost	**87,60,57,805**
7	**Electro Mechanical works**				
a)	Mechchanical	-	1,75,50,506	1,64,52,992	3,40,03,498
b)	Electrical	-	2,11,27,176	2,11,88,320	4,23,15,496
c)	HT Power	-	98,53,149	98,53,249	1,97,06,399
d)	DG Power	-	69,12,528	69,12,528	1,38,25,056
8	Cost of Implementation of Environment Management Plan				45,23,000
				Sub Cost	**11,43,73,449**
				Total Cost	**1,36,56,85,254**
	Add cost of Impact of GST @ 8 % (GST 18% - (Vat 6% +Service Tax 4%))				**10,92,54,820**
	Total Net Cost				**1,47,49,40,074**
	Add 3% Contingencies				4,42,48,202
	Add 7 % Escalation charges of each year (For 2 years)				15,48,68,708
	Add 3 % PDMC Charges				4,42,48,202
	Add 1.25 % Consultancy Charges				1,84,36,751
	Total Gross Cost in Rs.				**1,73,67,41,937**

Technically Sanctioned For Rs
Rs 173,67,41,937=00
(Rs One Hundred Seventy Three Crores Sixty Seven Lakhs Forty One Thousand Nine Hundred Thirty Seven Only)
No. NMMC/EE/CENTS For 209/2017
Dt. 23/08/2017

Executive Engineer (Wator, Supply/Sewerage) H.O.
Navi mumbai muncinipal Corporation

23.8.17
City Engineer
Navi Mumbai Municipal Corporation

NAVI MUMBAI MUNICIPAL CORPORATION					
PROJECT : - RECYCLE WATER SYSTEM					
RECAPITULATION SHEET (Airoli, KK,Vashi MIDC)- (Trench Method with Road Restoration)					
Subwork No.	**Name of Sub Work**	**Vashi MIDC**	**Koperkhairane MIDC**	**Airoli MIDC**	**Total Cost of all Zones (Rs.)**
Part-1 Treatment Technology					
1	Ultra Filtration Plant for Tertiary Treatment		17,86,40,000	17,86,40,000	35,72,80,000
2	UV		89,87,000	89,87,000	1,79,74,000
				Sub Cost	**37,52,54,000**
Part-II CIVIL & ELECTRO - MECHANICAL WORKS					
1	RCC Sump (at STP campus)		1,11,37,380	1,00,64,688	2,12,02,068
2	Pumping Main	7,76,71,688	10,56,87,722	2,22,82,899	20,56,42,309
3	Elevated Storage Reserviors(ESR)	2,86,16,511	1,78,73,210	1,18,64,484	5,83,54,204
4	Disrtibution Network	15,18,39,494	11,05,96,464	10,02,67,469	36,27,03,428
5	Property connection	1,08,95,279	97,97,270	1,07,64,903	3,14,57,453
6	Road Restoration	7,31,32,194	5,28,47,300	7,07,18,848	19,66,98,342
				Sub Cost	**87,60,57,805**
7	**Electro Mechanical works**				
a)	Mechchanical	-	1,75,50,506	1,64,52,992	3,40,03,498
b)	Electrical	-	2,11,27,176	2,11,88,320	4,23,15,496
c)	HT Power	-	98,53,149	98,53,249	1,97,06,399
d)	DG Power	-	69,12,528	69,12,528	1,38,25,056
8	Cost of Implementation of Environment Management Plan				45,23,000
				Sub Cost	**11,43,73,449**
				Total Cost Rs.	**1,36,56,85,254**
	Total Net Cost				**1,36,56,85,254**
	Add 3% Contingencies				4,09,70,558
	Add 7 % Escalation charges of each year (For 2 years)				14,33,96,952
	Add 3 % PDMC Charges				4,09,70,558
	Add 1.25 % Consultancy Charges				1,70,71,066
	Total Gross Cost in Rs.				**1,60,80,94,386**

COST ESTIMATE OF

SUMP

Navi Mumbai Municipal Corporation		
Recycle Water System		
Sr. No.	**ABSTRACT**	**COST (Rs.)**
1	SUMP AT AIROLI for AIROLI MIDC ESR	4,514,174
2	SUMP AT AIROLI for KK MIDC ESR	5,550,514
3	SUMP AT KOPARKHAIRANE For KK MIDC ESR	3,428,590
4	SUMP AT KOPARKHAIRANE For VASHI MIDC ESR	7,708,790
	TOTAL COST	**21,202,067.98**

NAVI MUMBAI MUNICIPAL CORPORATION								
RECYCLE WATER SYSTEM FOR NMMC								
SUMP AT AIROLI for AIROLI MIDC ESR								
Rate Analysis of Sump								
SR.NO	Description	DSR Ref	Description	Sump capacity (lt)	Rate	Add 10%	Total Rate	Total Amount (Rs)
1	PS at AIROLI - 700000 lit Capacity	As per MJP SOR 2015-2016,page no.334	Cost of Capacity	500,000	2524949	5%	2651196.45	2651196.45
			add for capacity per lit	200,000	3.03	5%	3.1815	636300.00
	Concrete qty.		174.94					
	Steel qty.		13.31					
2	Sand		74.35				1,679.50	124,871.84
3	Metal		148.70				-	-
	Steel Epoxy Paint							
4	Providing fusion bonded epoxy coating to reinforcement bars as per IS-13620-993 specification for a thickness of 175mm(+or - 50) microns including extra cost on account of careful handling,extra cost on account of using PVC coated binding wire instead of GI wire, extra cost on account of touch-up material supplied by coating agency and repair work extra cost on account of transportation to & fro from steel yard at kalamboli to plant at Daman and Plant at Daman to work site by trailer, loading, unloading, including all taxes (Central & Local), etc. complete. as directed by the Engineer in charge. MJP 16-17 It. No. 9B 1 pg.no. 53							
	1) For 8mm to 20mm dia	Steel Qty.	13.31		15772.00	5%	16560.6	220375.22
5	Over head Pump House	SQM	210				3900.5	819,105.00
Total Cost								4,451,848.51
Add 1% for labour welfare cess								44518.49
Add 1% for labour aminities								17807.39
TOTAL COST OF SUMP								4,514,174.39

NAVI MUMBAI MUNICIPAL CORPORATION						
RECYCLE WATER SYSTEM FOR NMMC						
SUMP AT AIROLI for AIROLI MIDC ESR						
Sump Estimate						
Sr.No	**DSR Reference**	**Description**	**QTY**	**Unit**	**Rate**	**Amount**
1	As per MJP SOR 2016-2017,page no.334	**XIX. RCC; G.S.Rs AND SUMPUS** Designing (aesthetically), and constructing RCC ground service reservoirs /RCC sumps in -300 mix. of required capacity including excavation in all type to f strata, foundation concrete, container walls, bottom slab p RCC roof slab / or dome, 20 mm thick cement plaster with water proofing compound in CM 1:3 proportion. to inside face of the container including epoxy paint from inside including refilling and disposing of surplus stuff within lead of 50 M, all labour and material charges, for laying and jointing of pipe assembly for inlet, outlet washout, over flow and bye-pass arrangement consisting of C.I./M.S. D/F. pipes, specials and valves of given diameters, providing and fixing accessories such as Stainless Steel ladder inside and outside, C.I. Manhole frame and cover, water top slab, B.B. masonry chamber for all valves, ventilating shafts, including giving satisfactory hydraulic test and water tightness test as per IS code and providing three coat of Acrylic emulsion with Silicon additives Paint to all expose surface of structure including roof surface etc. complete as per design data, criteria, obligatory requirements and detailed specifications. Anti terminate treatment shall be given for under ground portion of the structure. The designing shall be in accordance with various rel event I. S. specification (I.S. 456/2000 (Latest edition), I.S. 875 - 1987, I.S.3370-1965 or revised.) Only M.S. bars grade I confirming to I.S. 432 part-I or high yield strength deformed bars as confirming to I.S. 1786 or I.S.1139 shall be used grade II M.S. bars shall not be used. Entire structure shall be constructed in M300 only. The scope of pipe assembly work shall be upto 5 metre beyond outside face of the wall, cost of pipes valves and specials is not included in the rate but labour cost for laying and jointing is included The G.S.R/Sump above 15 lakh liters capacity shall be in two compartment The job included designing the structure for uplift pressure and dewatering if required using entire execution and disposal of surplus excavated stuff with in lead of 50 meters as directed by Engineer-in-charge. If up lifts considered in design then these rate shall be increased by 7.5% G S.R. outlets shall be with bell mouth of approved pattern in bottom slab and cost of designing bell mouth is included in the mte. Sump well includes cost of suction pit required at bottom. For pipe diameters upto 300 mm only CI pipes and CI specials shall be used. For pipe diameters above 300mm, M.S. pipes and specials minimum 10 mm thick shall be used with proper anticorrosive epoxy treatment from in side and outside. Cost of pump house is not included in these rates Above rates are applicable for seismic zones-2,3 and 4. 75% part rate shall be payable for reinforcement, concrete and plastering items of all types of G.S.R.s. and sumps till satisfactory hydraulic testing for water tightness test is given and till that work shall be treated as income plate. 10% shall be added for sump if overhead pump house is proposed Condition from Sr. No. I to II shall form a part and parcel of tender and must be included in the Draft tender papers for work of R.C.C. GSRs and sump. Rates for R.C.C.G.S.Rs or Sumps	700000.00	LS	3287496.45	3287496.45
2	RA	**Over Head Pump House**	210.00	Sqm	3900.50	819105.00
3	RA	**Transporation of sand metal beyond 5 km**				

		Sand	74.35	cum	1679.50	124871.84
		Metal	148.70	cum	0.00	0.00
4		**Steel Epoxy Paint**				
	MJP 16-17 It. No. 9B 1 pg.no. 53	Providing **fusion bonded epoxy coating to reinforcement bars** as per IS-13620-993 specification for a thickness of 175mm(+or - 50) microns including extra cost on account of careful handling,extra cost on account of using PVC coated binding wire instead of GI wire, extra cost on account of touch-up material supplied by coating agency and repair work extra cost on account of transportation to & fro from steel yard at kalamboli to plant at Daman and Plant at Daman to work site by trailer, loading, unloading, including all taxes (Central & Local), etc. complete. as directed by the Engineer in charge.	13.31	MT	16560.6	220375 2163
		Total Cost				**4451848.51**
		Add 1% for labour welfare cess				44518.49
		Add 1% for labour aminities				17807.39
		TOTAL COST OF SUMP AT AIROLI MIDC AREA				**4,514,174.39**

NAVI MUMBAI MUNICIPAL CORPORATION								
RECYCLE WATER SYSTEM FOR NMMC								
SUMP AT AIROLI for KK MIDC ESR								
Rate Analysis of Sump								
SR.NO	**Description**	**DSR Ref**	**Description**	**Sump capacity (lt)**	**Rate**	**Add 10%**	**Total Rate**	**Total Amount (Rs)**
1	**PS at AIROLI - 1000000 lit Capacity**	As per MJP SOR 2015-2016,page no.334	Cost of Capacity	1,000,000	4038731	5%	4240667.55	4240667.55
			add for capacity per lit					
	Concrete qty.		222.44					
	Steel qty.		15.42					
2	Sand		94.54				1,679.50	158,775.61
3	Metal		189.07				-	-
	Steel Epoxy Paint							
4	Providing fusion bonded epoxy coating to reinforcement bars as per IS-13620-993 specification for a thickness of 175mm(+or - 50) microns including extra cost on account of careful handling,extra cost on account of using PVC coated binding wire instead of GI wire, extra cost on account of touch-up material supplied by coating agency and repair work extra cost on account of transportation to & fro from steel yard at kalamboli to plant at Daman and Plant at Daman to work site by trailer, loading, unloading, including all taxes (Central & Local), etc. complete. as directed by the Engineer in charge. MJP 16-17 It. No. 9B 1 pg.no. 53							
	1) For 8mm to 20mm dia	Steel Qty.	15.42		15772.00	5%	16560.6	255331.33
5	**Over head Pump House**	SQM	210				3900.5	819,105.00
Total Cost								5,473,879.49
Add 1% for labour welfare cess								54738.79
Add 1% for labour aminities								21895.52
TOTAL COST OF SUMP								5,550,513.80

NAVI MUMBAI MUNICIPAL CORPORATION						
RECYCLE WATER SYSTEM FOR NMMC						
SUMP AT AIROLI for KK MIDC ESR						
Sump Estimate						
Sr.No	DSR Reference	Description	QTY	Unit	Rate	Amount
1	As per MJP SOR 2016-2017,page no.334	XIX. RCC; G.S.Rs AND SUMPUS Designing (aesthetically), and constructing RCC ground service reservoirs /RCC sumps in -300 mix. of required capacity including excavation in all type to f strata, foundation concrete, container walls, bottom slab p RCC roof slab / or dome, 20 mm thick cement plaster with water proofing compound in CM 1:3 proportion. to inside face of the container including epoxy paint from inside including refilling and disposing of surplus stuff within lead of 50 M, all labour and material charges, for laying and jointing of pipe assembly for inlet, outlet washout, over flow and bye-pass arrangement consisting of C.I./M.S. D/F. pipes, specials and valves of given diameters, providing and fixing accessories such as Stainless Steel ladder inside and outside, C.I. Manhole frame and cover, water top slab, B.B. masonry chamber for all valves, ventilating shafts, including giving satisfactory hydraulic test and water tightness test as per IS code and providing three coat of Acrylic emulsion with Silicon additives Paint to all expose surface of structure including roof surface etc. complete as per design data, criteria, obligatory requirements and detailed specifications. Anti terminate treatment shall be given for under ground portion of the structure. The designing shall be in accordance with various rel event I. S. specification (I.S. 456/2000 (Latest edition), I.S. 875 - 1987, I.S.3370-1965 or revised.) Only M.S. bars grade I confirming to I.S. 432 part-I or high yield strength deformed bars as confirming to I.S. 1786 or I.S.1139 shall be used grade II M.S. bars shall not be used. Entire structure shall be constructed in M300 only. The scope of pipe assembly work shall be upto 5 metre beyond outside face of the wall, cost of pipes valves and specials is not included in the rate but labour cost for laying and jointing is included The G.S.R/Sump above 15 lakh liters capacity shall be in two compartment The job included designing the structure for uplift pressure and dewatering if required using entire execution and disposal of surplus excavated stuff with in lead of 50 meters as directed by Engineer-in-charge. If up lifts considered in design then these rate shall be increased by 7.5% G S.R. outlets shall be with bell mouth of approved pattern in bottom slab and cost of designing bell mouth is included in the mte. Sump well includes cost of suction pit required at bottom. For pipe diameters upto 300 mm only CI pipes and CI specials shall be used. For pipe diameters above 300mm, M.S. pipes and specials minimum 10 mm thick shall be used with proper anticorrosive epoxy treatment from in side and outside. Cost of pump house is not included in these rates Above rates are applicable for seismic zones-2,3 and 4. 75% part rate shall be payable for reinforcement, concrete and plastering items of all types of G.S.R.s. and sumps till satisfactory hydraulic testing for water tightness test is given and till that work shall be treated as income plate. 10% shall be added for sump if overhead pump house is proposed Condition from Sr. No. I to II shall form a part and parcel of tender and must be included in the Draft tender papers for work of R.C.C. GSRs and sump. Rates for R.C.C.G.S.Rs or Sumps	1000000.00	LS	4240667.55	4240667.55
2	RA	Over Head Pump House	210.00	Sqm	3900.50	819105.00
3	RA	Transporation of sand metal beyond 5 km				

		Sand	94.54	cum	1679.50	158775.61
		Metal	189.07	cum	0.00	0.00
4		**Steel Epoxy Paint**				
	MJP 16-17 It. No. 9B 1 pg no. 53	Providing **fusion bonded epoxy coating to reinforcement bars** as per IS-13620-993 specification for a thickness of 175mm(+or - 50) microns including extra cost on account of careful handling,extra cost on account of using PVC coated binding wire instead of GI wire, extra cost on account of touch-up material supplied by coating agency and repair work extra cost on account of transportation to & fro from steel yard at kalamboli to plant at Daman and Plant at Daman to work site by trailer, loading, unloading, including all taxes (Central & Local), etc. complete. as directed by the Engineer in charge.	15.42	MT	16560.6	255331.3308
		Total Cost				**5473879.49**
		Add 1% for labour welfare cess				54738.79
		Add 1% for labour aminities				21895.52
		TOTAL COST OF SUMP AT AIROLI MIDC AREA				**5,550,513.80**

NAVI MUMBAI MUNICIPAL CORPORATION								
RECYCLE WATER SYSTEM FOR NMMC								
SUMP AT KOPARKHAIRANE For KK MIDC ESR								
Rate Analysis of Sump								
SR.NO	Description	DSR Ref	Description	Sump capacity (lt)	Rate	Add 10%	Total Rate	Total Amount (Rs)
1	PS at KOPARKHAIRANE - 250000lit Capacity	As per MJP SOR 2015-2016,page no.334	Cost of Capacity	200,000	1375266	5%	1444029.3	1444029.30
			add for capacity per lit	50,000	4.23	5%	4.4415	222075.00
	Concrete qty.		73.93					
	Steel qty.		6.17					
2	Sand		31.42				1,679.50	52,769.36
3	Metal		62.84				-	-
	Steel Epoxy Paint							
4	Providing fusion bonded epoxy coating to reinforcement bars as per IS-13620-993 specification for a thickness of 175mm(+or - 50) microns including extra cost on account of careful handling,extra cost on account of using PVC coated binding wire instead of GI wire, extra cost on account of touch-up material supplied by coating agency and repair work extra cost on account of transportation to & fro from steel yard at kalamboli to plant at Daman and Plant at Daman to work site by trailer, loading, unloading, including all taxes (Central & Local), etc. complete. as directed by the Engineer in charge. MJP 16-17 It. No. 9B 1 pg.no. 53							
	1) For 8mm to 20mm dia	Steel Qty.	6.17		15772.00	5%	16560.6	102178.90
5	Over head Pump House	SQM	400				3900.5	1,560,200.00
Total Cost								3,381,252.56
Add 1% for labour welfare cess								33812.53
Add 1% for labour aminities								13525.01
TOTAL COST OF SUMP FOR MIDC AREA								3,428,590.10

NAVI MUMBAI MUNICIPAL CORPORATION						
RECYCLE WATER SYSTEM FOR NMMC						
SUMP AT KOPARKHAIRANE For KK MIDC ESR						
Sump Estimate						
Sr.No	DSR Reference	Description	QTY	Unit	Rate	Amount
1	As per MJP SOR 2016-2017,page no 334	XIX. RCC; G.S.Rs AND SUMPUS Designing (aesthetically), and constructing RCC ground service reservoirs /RCC sumps in -300 mix. of required capacity including excavation in all type to f strata, foundation concrete, container walls, bottom slab p RCC roof slab / or dome, 20 mm thick cement plaster with water proofing compound in CM 1:3 proportion. to inside face of the container including epoxy paint from inside including refilling and disposing of surplus stuff within lead of 50 M, all labour and material charges, for laying and jointing of pipe assembly for inlet, outlet washout, over flow and bye-pass arrangement consisting of C.I./M.S. D/F. pipes, specials and valves of given diameters, providing and fixing accessories such as Stainless Steel ladder inside and outside, C.I. Manhole frame and cover, water top slab, B.B. masonry chamber for all valves, ventilating shafts, including giving satisfactory hydraulic test and water tightness test as per IS code and providing three coat of Acrylic emulsion with Silicon additives Paint to all expose surface of structure including roof surface etc. complete as per design data, criteria, obligatory requirements and detailed specifications. Anti terminate treatment shall be given for under ground portion of the structure. The designing shall be in accordance with various rel event I. S. specification (I.S. 456/2000 (Latest edition), I.S. 875 - 1987, I.S.3370-1965 or revised.) Only M.S. bars grade I confirming to I.S. 432 part-I or high yield strength deformed bars as confirming to I.S. 1786 or I.S.1139 shall be used grade II M.S. bars shall not be used. Entire structure shall be constructed in M300 only. The scope of pipe assembly work shall be upto 5 metre beyond outside face of the wall, cost of pipes valves and specials is not included in the rate but labour cost for laying and jointing is included The G.S.R/Sump above 15 lakh liters capacity shall be in two compartment The job included designing the structure for uplift pressure and dewatering if required using entire execution and disposal of surplus excavated stuff with in lead of 50 meters as directed by Engineer-in-charge. If up lifts considered in design then these rate shall be increased by 7.5% G S.R. outlets shall be with bell mouth of approved pattern in bottom slab and cost of designing bell mouth is included in the mte. Sump well includes cost of suction pit required at bottom. For pipe diameters upto 300 mm only CI pipes and CI specials shall be used. For pipe diameters above 300mm, M.S. pipes and specials minimum 10 mm thick shall be used with proper anticorrosive epoxy treatment from in side and outside. Cost of pump house is not included in these rates Above rates are applicable for seismic zones-2,3 and 4. 75% part rate shall be payable for reinforcement, concrete and plastering items of all types of G.S.R.s and sumps till satisfactory hydraulic testing for water tightness test is given and till that work shall be treated as income plate. 10% shall be added for sump if overhead pump house is proposed Condition from Sr. No. I to II shall form a part and parcel of tender and must be included in the Draft tender papers for work of R.C.C GSRs and sump. Rates for R.C.C G.S.Rs or Sumps	250000.00	LS	1666104.30	1666104.30
2	RA	Over Head Pump House	400.00	Sqm	3900.50	1560200.00

3	RA	**Transporation of sand metal beyond 5 km**				
		Sand	31.42	cum	1679.50	52769.36
		Metal	62.84	cum	0.00	0.00
4		**Steel Epoxy Paint**				
	MJP 16-17 It. No. 9B 1 pg.no. 53	Providing **fusion bonded epoxy coating to reinforcement bars** as per IS-13620-993 specification for a thickness of 175mm(+or - 50) microns including extra cost on account of careful handling,extra cost on account of using PVC coated binding wire instead of GI wire, extra cost on account of touch-up material supplied by coating agency and repair work extra cost on account of transportation to & fro from steel yard at kalamboli to plant at Daman and Plant at Daman to work site by trailer, loading, unloading, including all taxes (Central & Local), etc. complete. as directed by the Engineer in charge.	6.17	MT	16560.6	102178.902
		Total Cost				**3381252.56**
		Add 1% for labour welfare cess				33812.53
		Add 1% for labour aminities				13525.01
		TOTAL COST OF SUMP AT KOPARKHAIRANE MIDC AREA				**3,428,590.10**

NAVI MUMBAI MUNICIPAL CORPORATION								
RECYCLE WATER SYSTEM FOR NMMC								
SUMP AT KOPARKHAIRANE For VASHI MIDC ESR								
Rate Analysis of Sump								
SR.NO	Description	DSR Ref	Description	Sump capacity (lt)	Rate	Add 10%	Total Rate	Total Amount (Rs)
1	PS at KOPARKHAIRANE - 1500000lit Capacity	As per MJP SOR 2015-2016,page no.334	Cost of Capacity	1,500,000	5250746	5%	5513283.3	5513283.30
	Concrete qty		301.61					
	Steel qty.		18.94					
2	Sand		128.18				1,679.50	215,281.88
3	Metal		256.36				-	-
	Steel Epoxy Paint							
4	Providing fusion bonded epoxy coating to reinforcement bars as per IS-13620-993 specification for a thickness of 175mm(+or - 50) microns including extra cost on account of careful handling,extra cost on account of using PVC coated binding wire instead of GI wire, extra cost on account of touch-up material supplied by coating agency and repair work extra cost on account of transportation to & fro from steel yard at kalamboli to plant at Daman and Plant at Daman to work site by trailer, loading, unloading, including all taxes (Central & Local), etc. complete. as directed by the Engineer in charge. MJP 16-17 It. No. 9B 1 pg.no. 53							
	1) For 8mm to 20mm dia	Steel Qty.	18.94		15772.00	5%	16560.6	313591.52
5	Over head Pump House	SQM	400				3900.5	1,560,200.00
Total Cost								7,602,356.70
Add 1% for labour welfare cess								76023.57
Add 1% for labour aminities								30409.43
TOTAL COST OF SUMP FOR MIDC AREA								7,708,789.69

NAVI MUMBAI MUNICIPAL CORPORATION						
RECYCLE WATER SYSTEM FOR NMMC						
SUMP AT KOPARKHAIRANE For VASHI MIDC ESR						
Sump Estimate						
Sr.No	DSR Reference	Description	QTY	Unit	Rate	Amount
1	As per MJP SOR 2016-2017,page no.334	XIX. RCC; G.S.Rs AND SUMPUS Designing (aesthetically), and constructing RCC ground service reservoirs /RCC sumps in -300 mix. of required capacity including excavation in all type to f strata, foundation concrete, container walls, bottom slab p RCC roof slab / or dome, 20 mm thick cement plaster with water proofing compound in CM 1:3 proportion. to inside face of the container including epoxy paint from inside including refilling and disposing of surplus stuff within lead of 50 M, all labour and material charges, for laying and jointing of pipe assembly for inlet, outlet washout, over flow and bye-pass arrangement consisting of C.I./M.S. D/F. pipes, specials and valves of given diameters, providing and fixing accessories such as Stainless Steel ladder inside and outside, C.I. Manhole frame and cover, water top slab, B.B. masonry chamber for all valves, ventilating shafts, including giving satisfactory hydraulic test and water tightness test as per IS code and providing three coat of Acrylic emulsion with Silicon additives Paint to all expose surface of structure including roof surface etc. complete as per design data, criteria, obligatory requirements and detailed specifications. Anti terminate treatment shall be given for under ground portion of the structure. The designing shall be in accordance with various rel event I. S. specification (I.S. 456/2000 (Latest edition), I.S. 875 - 1987, I.S.3370-1965 or revised.) Only M.S. bars grade I confirming to I.S. 432 part-I or high yield strength deformed bars as confirming to I.S. 1786 or I.S.1139 shall be used grade II M.S. bars shall not be used. Entire structure shall be constructed in M300 only. The scope of pipe assembly work shall be upto 5 metre beyond outside face of the wall, cost of pipes valves and specials is not included in the rate but labour cost for laying and jointing is included The G.S.R/Sump above 15 lakh liters capacity shall be in two compartment The job included designing the structure for uplift pressure and dewatering if required using entire execution and disposal of surplus excavated stuff with in lead of 50 meters as directed by Engineer-in-charge. If up lifts considered in design then these rate shall be increased by 7.5% G S.R. outlets shall be with bell mouth of approved pattern in bottom slab and cost of designing bell mouth is included in the mte. Sump well includes cost of suction pit required at bottom. For pipe diameters upto 300 mm only CI pipes and CI specials shall be used. For pipe diameters above 300mm, M.S. pipes and specials minimum 10 mm thick shall be used with proper anticorrosive epoxy treatment from in side and outside. Cost of pump house is not included in these rates Above rates are applicable for seismic zones-2,3 and 4. 75% part rate shall be payable for reinforcement, concrete and plastering items of all types of G.S.R.s. and sumps till satisfactory hydraulic testing for water tightness test is given and till that work shall be treated as income plate. 10% shall be added for sump if overhead pump house is proposed Condition from Sr. No. I to II shall form a part and parcel of tender and must be included in the Draft tender papers for work of R.C.C. GSRs and sump. Rates for R.C.C G.S.Rs or Sumps	1500000.00	LS	5513283.30	5513283.30
2	RA	Over Head Pump House	400.00	Sqm	3900.50	1560200.00

3	RA	**Transporation of sand metal beyond 5 km**				
		Sand	128.18	cum	1679.50	215281.88
		Metal	256.36	cum	0.00	0.00
4		**Steel Epoxy Paint**				
	MJP 16-17 It. No. 9B 1 pg.no. 53	Providing **fusion bonded epoxy coating to reinforcement bars** as per IS-13620-993 specification for a thickness of 175mm(+or - 50) microns including extra cost on account of careful handling,extra cost on account of using PVC coated binding wire instead of GI wire, extra cost on account of touch-up material supplied by coating agency and repair work extra cost on account of transportation to & fro from steel yard at kalamboli to plant at Daman and Plant at Daman to work site by trailer, loading, unloading, including all taxes (Central & Local), etc. complete. as directed by the Engineer in charge.	18.94	MT	16560.6	313591.5216
		Total Cost				**7602356.70**
		Add 1% for labour welfare cess				76023.57
		Add 1% for labour aminities				30409.43
		TOTAL COST OF SUMP AT KOPARKHAIRANE MIDC AREA				**7,708,789.69**

Navi Mumbai Municipal Corporation						
Estimate of Pump House on Sump						
Measurement sheet						
Sr. No.	**Item**	**Numbers**	**Length**	**Width**	**Height**	**Quantity**
1	**Excavation**					
	For foundation upto 1.5 M for steps	1.00	5.00	2.00	1.50	15.00
						-
					TOTAL	**15.00**
2	**Earth filling**	1.00	5.00	0.50	0.30	0.75
					TOTAL	**0.75**
3	**Soling** for flooring	1.00	5.00	2.00	0.23	2.30
						-
						2.30
4	**PCC** for floor	1.00	5.00	2.00	0.10	1.00
						-
					TOTAL	**1.00**
5	**RCC**					
						-
	Column	13.00	0.30	0.30	5.50	6.44
	Ramp	1.00	2.00	1.00	0.15	0.30
					(i)	**6.74**
	Beam	14.00	4.50	0.30	0.50	9.45
	curved Beam	1.00	30.00	0.30	0.50	4.50
					(ii)	**13.95**
	RCC Slab	1.00	20.00	10.00	0.15	30.00
	Chhajja	6.00	1.50	0.60	0.15	0.81
					(iii)	**30.81**
					TOTAL	**51.50**
6	**Brick Masonary**	1.00	30.00	0.23	5.50	37.95
	Steps	1.00	0.75	0.45	1.20	0.41
	Deduction due to opening	1.00	1.00	2.10	D	2.10
		5.00	1.20	1.50	W1	9.00
					TOTAL	**27.26**
7	**Flooring**	1.00	20.00	10.00		200.00
	for steps	1.00	0.75	1.50		1.13
					TOTAL	**201.13**
8	**Plastering**	2.00	30.00	5.50		330.00
	Deduction due to opening	1.00	1.00	2.10	D	2.10
		5.00	1.20	1.50	W1	9.00
					TOTAL	**318.90**

Sr. No.	Item	Numbers	Length	Width	Height	Quantity
9	**Painting** main walls	2.00	30.00	5.50		330.00
	ceiling	1.00	20.00	10.00		200.00
	Deduction due to opening	1.00	1.00	2.10	D	2.10
		5.00	1.20	1.50	W1	9.00
					TOTAL	**518.90**
10	**Painting (Distemper)**					
	main walls	2.00	30.00	5.50		330.00
	Deduction due to opening	1.00	1.00	2.10	D	2.10
		3.00	1.20	1.50	W1	5.40
					TOTAL	**322.50**
11	**Reinforcement**	1.00				**4.89**
12	structural steel ISMB 450	1.00	6.00	72.400		0.43
13	rolling shutter	1.00	3.00	3.000		9.00
14	**railing**	1.00	20	1.000		20.00
15	**windows**					
	W1	5.00	1.20	1.50	W1	9.00
16	**window grill**	5.00	1.20	1.50		9.00

Navi Mumbai Municipal Corporation							
Ungderground Sewerage System							
Estimate of Pump House on sump							
Sr. No.		DSR Ref	Item	Unit	Quantity	Total Rate 16-17	Amount (Rs)
1	Excavation	MJP16-17, Item No 1, Pg-39	Excavation for foundation/ pipes trenches in earth, soil of all types ,sand ,gravel and soft murum including removing the excavated material upto a distance of 50M beyond area & lift as below, stacking and spreading as directed,normal dewatering,preparing of bed for foundation &				
		a	0 to 1.5 m	CuM	15.00	156.20	2,343.00
2	Filling	MJP16-17, Item No 18, Pg-43	Filling in plinth with and floor/trenches with approved murrum from excavated materials for bedding in 15cm to 20 cm layers including watering and compaction royalty charges etc. complete as directed by the Engineer in charge.	CuM	0.75	68.20	51.15
3	Soling	MJP 16-17	Providing dry trap rubble stone solling in 15 cm to 20cm layers including hand packing and compacting, royalty charges etc complete.	CuM	2.30	1,496.15	3,441.16
4	PCC	MJP 16-17, Item No1, Pg-47	Providing and laying in situ Cement concrete in proportion 1:2:4 of trap /granite / quartzite / gneiss metal for foundation and bedding, including centering, formwork, compacting, roughening them if special finish is to be provided and curing and finishing if required complete, without SCADA with concrete mixer with hopper.	CuM	1.00	5,500.40	5,500.40
5	i) RCC for columns	MJP 16-17	Providing and casting in situ Cement Concrete of trap/granite/quartzite/ gneiss metal of approved quality for RCC work as per detailed drawings and designs or as directed by Engineer-in-charge including normal dewatering, centering, 'plywood formwork, bully/steel prop-ups, compaction, finishing the formed surfaces with CM 1:3 of sufficient minimum thickness if special finish is to be provided and curing, etc. complete. (By weigh batching and mix design for M-250 and M-300 only. Use of L&T, A.C.C., Ambuja, Birla Gold, Manikgad, Rajashree, etc. cement is permitted) (excluding M.S, or Tor reinforcement)	CuM	6.74	9,389.97	63,241.46
	ii) RCC for Beams and Lintel	MJP 16-17	Providing and casting in situ Cement Concrete of trap/granite/quartzite/ gneiss metal of approved quality for RCC work as per detailed drawings and designs or as directed by Engineer-in-charge including normal dewatering, centering, 'plywood formwork, bully/steel prop-ups, compaction, finishing the formed surfaces with CM 1:3 of sufficient minimum thickness to give a smooth and even surface wherever necessary or roughening if special finish is to be provided and curing, etc. complete. (By weigh batching and mix design for M-250 and M-300 only. Use of L&T, A.C. C., Ambuja, Birla Gold, Manikgad, Rajashree, etc. cement is	CuM	13.95	9,325.07	130,084.76
	iii) RCC for Slab	MJP 16-17	Providing and casting in situ C.C. of trap/granite/quartzite/ gneiss metal of approved quality for RCC work as per detailed drawings and designs or as directed by Engineer-in-charge including normal dewatering, centering, 'plywood formwork, bully/steel prop-ups, compaction, finishing the formed surfaces with CM 1:3 of sufficient minimum thickness smooth and even surface wherever necessary or roughening if special finish is to be provided and curing, etc complete (By weigh batching and mix design for M-250 and M-300 only. Use of L&T, A.C. C., Ambuja, Birla	CuM	30.81	9,917.97	305,572.72

Sr. No.		DSR Ref	Item	Unit	Quantity	Total Rate 16-17	Amount (Rs)
6	**Brick Masonary**	PWD DSR 17-18 Bd G 5, PN. 162, Item no 27.05	Providing second classs burnt brick masonry with conventional / I.S. type brick in cement mortar 1:6 in superstructure , including striking joints,racking out joints , watering and scafolding etc complete.	CuM	27.255	5551.65	151,310.35
7	**Flooring**						
		PWD DSR 17-18, Bd-M, Page no. 161 Item no 33.08	Providing and laying in position polished Kota Stone flooring with Hand Cut Polished Kota of approved quality 25mm to 30mm thick in plain/diamond pattern on a bed of cement mortar 1:6 including cement morter, cement float, filling joints with neat cement slurry, curing, mirror polishing and cleaning etc. complete	SqM	201.13	826.37	166,204.32
8	**Plastering**						
		PWD DSR 17-18, Bd-L 2A, Page no. 176 Item no 32.04	Providing internal cement plaster 12 mm thick in single coat , in cement mortar 1:3 , without neeru finish to concrete or brick masonry in all positions , including scafolding and curing etc complete.	SqM	318.90	151.70	48,376.70
9	**Painting : white wash**						
		PWD DSR 17-18, Bd-P 1 A, Page no. 196 Item no 36.03.	Providing and applying white wash of approved quality in two coats on old/new plastered or masonry surfaces and asbestos cement sheets including scafolding and preparing the surface by brushing and brooming down etc complete.	SqM	518.90	6.30	3,269.07
10	**Painting: Distemper**						
		PWD DSR 17-18, Bd-P 5A, Page no. 197 Item no 36.11	Providing and applying washable oil-bound distemper of approved colour and shade to new/ old surface , in two coats including scafolding, preparing the surface, etc complete.	SqM	322.50	36.75	11,851.88
11	**Reinforcement**						
		MJP 16-17	Providing and fixing in position steel bar reinforcement of various diameters for RCC piles, caps, footings, foundations, slabs, beams, columns, canopies, staircases. newels, chajjas, lintels, pardies, copings, fins, arches, etc. as per detailed designs, drawings and schedules; including cutting, bending, hooking the bars, binding with wires or tack welding and supporting as required, etc. complete. (including cost of binding wire). (Bd-F-17/306)	MT	4.89	54,336.45	265,815.27
12	**structural steel**	PWD DSR 17-18 Bd C 2 item 23.01 p 108	Providing and fabricating structural steel work in rolled sections like joists, channels, angles, tees etc. as per detailed design and drawings or as directed including cutting, fabricating, hoisting, erecting, fixing in position making riveted / bolted /welded connections without connecting plates, braces etc. and including one coat of anticorrosive paint and over it two coats of oil painting of approved quality and shade etc. complete.	MT	0.43	59,220.00	25,725.17

Sr. No.		DSR Ref	Item	Unit	Quantity	Total Rate 16-17	Amount (Rs)
13	rolling shutter	PWD DSR 17-18 Bd T 55 item 39.25 p 217	Providing and fixing rolling shutter fabricated from steel laths of minimum thickness 0.9 mm with lock plate of 3.15 mm thickness reinforced with 35 x 35 x 5 mm angle section fitted with sliding bolts and handles for both sides, deep M.S. channel section of depth and thickness not less than 65 mm and 3.15 mm respectively with hold fast arrangements, M.S. Bracket plate 300 x 300 x 3.15 mm minimum size and shape with square bar, suspension shaft of minimum 32 mm diameter, hood cover of M.S. sheet not less than 0.9 mm thickness and of any size at top and safety devices including mechanical gear operation arrangement consisting of worm gear wheels and worms of high grade cast iron or mild steel and one coat of red lead primer etc. complete. (I.S. 62481979) (Without mechanical gear)	SqM	9.00	2,467.50	22,207.50
14	railing	PWD DSR 17-18 BR 51B item 14.48 p 68	Providing railing of mild steel angle post 2.0m center to center of section 75mm x 75mm x 10mm or equivalent I/C section of height 1.05 above bridge surface with minimum anchor length of 30cm including hold fast of 25mm diameter MS bar welded at the bottom and concreting of 1:3:6 of size 30cm x 30cm x 30cm with three rows of 40mm B class GI pipe provided at 30cm on center to center including scaffolding and one coat of anticorrosive paint with two coats of oil painting, curing of concrete etc. complete.	SqM	20.00	2,100.00	42,000.00
15	Windows						
		PWD DSR 17-18, Bd-T 53, Page no. 216 Item no 39.20	Providing and fixing steel window of various sizes as per detailed drawing without hot dip zinc coating, without ventilators, including fabricating / glazing with plain / obscured glass panels of approved type and quality, iron oxidised fixtures and fastenings, finishing with oil painting two coats complete (with guard bars 12 mm square at 10 cm c/c.)	SqM	9.00	3,037.65	27,338.85
16	window grill	PWD DSR 17-18, Bd-U1, Page no. 233 Item no 40.40	Providing and fixing mild steel grill work for windows, ventilators etc-20 kg /sqm as per drawing including fixtures,neccessary welding and painting with one coat of anticorrosive paint and two coats of oil painting complete	SqM	9.00	1,380.75	12,426.75
				TOTAL COST FOR 20.5 M DIA			1,286,760.50
				AREA O F20.5 M DIA			329.89625
				R SQMT COST OF O H PUMP HOU			3,900.50

RATE ANALYSIS

R.A. No.1	Excavation for foundation in earth , soil of all types , sand gravel and soft murum, including removing the excavated material upto a distance of 50 meters beyond the building area and lift as specified , stacking and spreading, necessary dewatering unless provided elsewhere, preparing the bed for foundation and required backfilling, ramming , watering, shoring, and strutting etc complete as directed. Lift upto 1.5 metres								Unit
	Excavation Rate as per MJP 16-17			MJP 16-17		=	142.00		Cum
	Add 10% for Corporation Areas					=	14.2		
					Total		156.20		
					Say	=	156.20		Cum
R.A. No. 2	Filling in plinth and floors with approved excavated materials in 15 to 20 cm layers including watering compaction etc complete								
	Earth filling Rate as per PWD DSR-2016-17			MJP 16-17		=	62.00		Cum
	Add 10% for Corporation Areas					=	6.2		
	Add lead charges for								
		Murum	1.00	0.00		=	0.00		
	Add royalty charges for								
		Murum	1.00	0		=	0.00		
							68.20		
					Say	=	68.20		Cum
R.A. No. 3	Providing dry trap rubble stone solling in 15 cm to 20cm layers including hand packing and compacting, royalty charges etc complete.								
	Soling Rate as per MJP 16-17,Item No 20,Page No 43			MJP 16-17		=	1014.00		Cum
	Add 10% for Corporation Areas					=	101.4		
	Add lead charges for								
		Hand Broken Metal	1.000	158.10		=	158.10		
		Sand	0.150	1013.24		=	151.99		
	Add royalty charges for								
		Hand Broken Metal	1.00	70.67		=	70.67		
					Total		1496.15		
					Say	=	1496.15		Cum
R.A. No.4	Providing and laying in situ Cement concrete in proportion 1:2:4 of trap /granite / quartzite / gneiss metal for foundation and bedding, including centering, formwork, compacting, roughening them if special finish is to be provided and curing and finishing if required complete, without SCADA with concrete mixer with hopper.								
	PCC Rate as per MJP 16-17, Item No1, Pg-47			MJP 16-17, Item No1, Pg-47		=	4457.00		Cum
	Add 10% for Corporation Areas					=	445.7		
	Add lead charges for								
		Sand	0.47	1013.24		=	476.22		
		crushed metal (40 mm)	0.70	129.23		=	90.46		
		crushed metal (20 mm)	0.24	129.23		=	31.01		
					Total		5500.40		
					Say	=	5500.40		Cum
R.A. No.5 (i)	Providing and casting in situ Cement Concrete of trap/granite/quartzite/ gneiss metal of approved quality for RCC work as per detailed drawings and designs or as directed by Engineer-in-charge including normal dewatering, centering, 'plywood formwork, bully/steel prop-ups, compaction, finishing the formed surfaces with CM 1:3 of sufficient minimum thickness if special finish is to be provided and curing, etc. complete. (By weigh batching and mix design for M-250 and M-300 only. Use of L&T, A.C.C., Ambuja, Birla Gold, Manikgad, Rajashree, etc. cement is permitted) (excluding M.S, or Tor reinforcement)								
	RCC for columns Rate as per MJP 16-17			MJP 16-17		=	8045.00		Cum
	Add 10% for Corporation Areas					=	804.5		
	Add lead charges for								
		Sand	0.425	1013.24		=	430.63		
		crushed metal (20 mm)	0.57	129.23		=	73.66		
		crushed metal (10 mm)	0.28	129.23			36.18		
							9389.97		
					Total	=	9389.97		
					Say	=	9389.97		Cum
R.A. No. 5 (ii)	Providing and casting in situ Cement Concrete of trap/granite/quartzite/ gneiss metal of approved quality for RCC work as per detailed drawings and designs or as directed by Engineer-in-charge including normal dewatering, centering, 'plywood formwork, bully/steel prop-ups, compaction, finishing the formed surfaces with CM 1:3 of sufficient minimum thickness to give a smooth and even surface wherever necessary or roughening if special finish is to be provided and curing, etc. complete. (By weigh batching and mix design for M-250 and M-300 only. Use of L&T, A.C. C., Ambuja, Birla Gold, Manikgad, Rajashree, etc. cement is permitted) (excluding M.S, or Tor reinforcement)								
	RCC for Beams and Lintel Rate as per MJP DSR 16-17			MJP 16-17		=	7986.00		Cum
	Add 10% for Corporation Areas					=	798.6		
	Add lead charges for								
		Sand	0.425	1013.24		=	430.63		
		crushed metal (20 mm)	0.57	129.23		=	73.66		
		crushed metal (10 mm)	0.28	129.23			36.18		
							9325.07		
					Total	=	9325.07		
					Say	=	9325.07		Cum
R.A. No.5 (iii)	Providing and casting in situ C.C. of trap/granite/quartzite/ gneiss metal of approved quality for RCC work as per detailed drawings and designs or as directed by Engineer-in-charge including normal dewatering, centering, 'plywood formwork, bully/steel prop-ups, compaction, finishing the formed surfaces with CM 1:3 of sufficient minimum thickness smooth and even surface wherever necessary or roughening if special finish is to be provided and curing, etc. complete. (By weigh batching and mix design for M-250 and M-300 only. Use of L&T, A.C. C., Ambuja, Birla Gold, Manikgad, Rajashree, etc. cement is permitted) (excluding M.S, or Tor reinforcement)								
	RCC for Slab Rate as per MJP DSR-2016-17			MJP 16-17		=	8525.00		Cum
	Add 10% for Corporation Areas					=	852.5		
	Add lead charges for								
		Sand	0.425	1013.24		=	430.63		
		crushed metal (20 mm)	0.57	129.23		=	73.66		
		crushed metal (10 mm)	0.28	129.23			36.18		
							9917.97		
					Total	=	9917.97		
					Say	=	9917.97		Cum
R.A. No.6	Providing second classs burnt brick masonry with conventional / I.S. type brick in cement mortar 1:6 in superstructure , including striking joints,racking out joints , watering and scafolding etc complete.								
	Brick Masonary Rate as per PWD DSR-2017-18			PWD DSR 17-18 Bd G 5, PN. 162, Item no 27.05		=	4950		Cum
	Add 5% for Corporation Areas					=	247.5		

	Add lead charges for									
		Sand	0 25	1013.24		=	253 31		
		brick	475 00	0 21			100 84		
							5551 65		
					Total	=	5551.65		
					Say	=	5551 65		Cum
R.A. No.7	**Providing and laying in position polished Kota Stone flooring with Hand Cut Polished Kota of approved quality 25mm to 30mm thick in plain/diamond pattern on a bed of cement mortar 1:6 including cement morter, cement float, filling joints with neat cement slurry, curing, mirror polishing and cleaning etc. complete**									
	Flooring Rate as per PWD DSR-2017-18			PWD DSR 17-18, Bd-M, Page no 161 Item no 33 08		=	758		Sq m
	Add 5% for Corporation Areas					=	37 9		
	Add lead charges for								
		Sand	0 022	1013 24		=	22.29		
		kota tiles	1 00	0 00			0.00		
							818.19		
	Add 1% for Labour Welfare						8.18		
					Total	=	826.37327		Sq m
					Say	=	826.37		
R.A. No.8	**Providing internal cement plaster 12 mm thick in single coat , in cement mortar 1:3 , without neeru finish to concrete or brick masonry in all positions , including scafolding and curing etc complete.**									
	Plastering Rate as per PWD DSR-2017-18			PWD DSR 17-18, Bd-L 2A, Page no 176 Item no 32 04		=	130		Sq m
	Add 5% for Corporation Areas					=	6 5		
	Add lead charges for								
		Sand	0 015	1013.24		=	15.20		
							151 70		
					Total	=	151.70		
					Say	=	151.70		Sq m
R.A. No.9	**Providing and applying white wash of approved quality in two coats on old/new plastered or masonry surfaces and asbestos cement sheets including scafolding and preparing the surface by brushing and brooming down etc complete.**									
	Painting white wash Rate as per PWD DSR-2017-18			PWD DSR 17-18, Bd-P 1 A, Page no 196 Item no 36 03		=	6		Sq m
	Add 5% for Corporation Areas					=	0 3		
							6.30		
					Total	=	6.30		
					Say	=	6 30		Sq m
R A. No.10	**Providing and applying washable oil-bound distemper of approved colour and shade to new/ old surface , in two coats including scafolding, preparing the surface, etc complete.**									
	Painting Distemper Rate as per PWD DSR-2017-18			PWD DSR 17-18, Bd-P 5A, Page no 197 Item no 36 11		=	35		Sq m
	Add 5% for Corporation Areas					=	1.75		
							36.75		
					Total	=	36.75		
					Say	=	36 75		Sq m
R.A. No.11	**Providing and fixing in position steel bar reinforcement of various diameters for RCC piles, caps, footings, foundations, slabs, beams, columns, canopies, staircases. newels, chajjas, lintels, pardies, copings, fins, arches, etc. as per detailed designs, drawings and schedules; including cutting, bending, hooking the bars, binding with wires or tack welding and supporting as required, etc. complete.** **(including cost of binding wire). (Bd-F-17/306)**									
	For Tor Steel Reinforcement Rate as per MJP DSR-2016-17			MJP 16-17		=	51749		MT
	Add10% for Corporation Areas					=	2587 45		
							54336 45		
					Total	=	54336.45		
					Say	=	54336 45		MT
R.A. No.12	**Providing and fixing frame with / without ventilator of size as specified with ghana teak wood for doors and windows Including chamfering, rounding , rebating, iron holdfast of size 300 mm x 40 mm x 5 mm with oil painting etc complete.**									
	Frames Rate as per PWD DSR-2017-18			PWD DSR 17-18, Bd-T, Page no 213 Item no 39 01		=	105,610 00		cu m
	Add 5% for Corporation Areas					=	5280 5		
							110890 50		
					Total	=	110890.50		
					Say	=	110890 50		cu m
R.A. No.13	**Providing and fixing single leaf shutter of 35 mm thick , for solid core flush door , decorative type of exterior grade as per detailed drawings or as approved Laminates (Formica) on both faces venitions, all necessary beads, moulding and lipping, brass oxidised / aluminium with powder coating fixtures & Fastning With Mortise Lock, chromium plate handled on both sides and finishing etc complete. (without frame)**									
	Panels Rate as per PWD DSR-2017-18			PWD DSR 17-18, Bd-T 11, Page no 214 Item no 39 06		=	4,561 00		sq m
	Add 5% for Corporation Areas					=	228.05		
							4789 05		
					Total	=	4789.05		
					Say	=	4789 05		sq m
R.A. No.14	**Providing and fixing steel window of various sizes as per detailed drawing without hot dip zinc coating, without ventilators, including fabricating / glazing with plain / obscured glass panels of approved type and quality, iron oxidised fixtures and fastenings, finishing with oil painting two coats complete (with guard bars 12 mm square at 10 cm c/c.)**									
	Windows Rate as per PWD DSR-2017-18			PWD DSR 17-18, Bd-T 53, Page no 216 Item no 39 20		=	2,893 00		sq m
	Add 5% for Corporation Areas					=	144 65		
							3037 65		
					Total	=	3037.65		
					Say	=	3037 65		sq m

Navi Mumbai Municipal Corporation								
Underground Sewerage System								
LEAD CHART								
Sr. No.	**Material**	**Source**	**Lead in Kms**	**Lead Charges 2016-17**	**Initial Lead**	**Initial Lead Charges 16-17**	**Net Lead Charges 16-17**	**Unit**
1	Sand	Ambet	100.00	1163.817	5.00 Kms	150.57	**1013.24**	Cum
2	Crushed Metal	Mharal Stone Quarry	15.00	279.80	5.00 Kms	150.57	**129.23**	Cum
3	Soling Stone	Mharal Stone Quarry	15.00	342.31	5.00 Kms	184.21	**158.10**	Cum
4	Murum / Earth	Mharal Stone Quarry	15.00	335.18	5.00 Kms	180.38	**154.80**	Cum
5	Brick		15.00	459.67	5.00 Kms	247.37	**212.30**	1000 no.

COST ESTIMATE OF

PUMPING MAIN

Navi Mumbai Municipal Corporation		
Recycle Water System		
Sr. No.	ABSTRACT_Pumping Main	COST (Rs.)
1	Sump at KK STP to ESR at VASHI MIDC	77,671,688
2	Sump at KK STP to ESR-KOPHERKARINE,MIDC	30,082,571
3	Sump at AIROLI STP to ESR-KOPHERKARINE,MIDC AREA (2)	75,605,150
4	Sump at AIROLI STP to ESR-AIROLI -MIDC AREA	22,282,899
	TOTAL COST	**205,642,308.83**

NAVI MUMBAI MUNICIPAL CORPORATION							
RECYCLE WATER SYSTEM							
Cost Estimate for Pumping Main from Sump to ESR at VASHI MIDC Area							
Add 5% Area Weightage for Corporation Area							
Sr. No	Reference	Description	Total Quantity	Unit	Basic Rate 16-17	Final Rate 16-17	Amount (Rs.) 16-17
1	MJP 16-17, Item No 5, Pg-39	Excavation for foundation/ pipes trenches by all mean in **soft rock & old cement and lime masonary foundation asphalt road** including removing the excavated material upto a distance of 50M beyond area & lift as below, stacking as directed by Engineer-in -charge, normal dewatering, prepration of bed for foundation & **excluding backfilling**,etc. complete					
	a	Lift 0 to 1.5m	1285.05	cum	473.00	496.65	638219.09
	b	Lift 1.5 to 3m	0.00	cum	495.00	519.75	0.00
2	MJP 16-17, Item No 1, Pg-39	Excavation for foundation/ pipes trenches in earth, **soil of all types ,sand ,gravel and soft murum** including removing the excavated material upto a distance of 50M beyond area & lift as below, stacking and spreading as directed,normal dewatering,preparing of bed for foundation & **excluding backfilling**,etc. complete					
	a	Lift 0 to 1.5m	4934.58	cum	142.00	149.10	735746.52
	b	Lift 1.5 to 3m	1233.65	cum	156.00	163.80	202071.23
3	MJP 16-17, Item No 3, Pg-39	Excavation for foundation/ pipe trenches in **hard murum and boulders,W.B.M.road** including removing the excation material up to a distance of 50 meter and lift as below, stacking and spreading as directed, normal dewatering,prepairing the bed for foundation and **excluding backfilling**, etc complete.					
	a	Lift 0 to 1.5m	2914.49	cum	187.00	196.35	572259.89
	b	Lift 1.5 to 3m	1711.68	cum	201.00	211.05	361250.89
4	MJP 16-17, Item No 10, Pg-40	Excavation for foundation/ pipe trenches in **slush muddy/ Marshy/ Slushy / Soil use of poclain**, labour for dewatering during executation including removing the excation material up to a distance of 50 meter and lift as below, stacking and spreading as directed, prepairing the bed by cleaning the mud,labour required for executation for shuttering shall be paid seperately.					
	a	0 to 1.5 m	385.51	cum	315.00	330.75	127508.89
	b	1.5 to 3 m	385.51	cum	337.00	353.85	136414.27
5		**Dewatering**					
	MJP 16-17, Item No 16, Pg-42	**Dewatering** the excavated trenches and pools of water in the building trenches pipelines, as well works by using pumps and other devices including disposing off water to safe distance as directed by engineer-in-charge (including cost of machinery,labour, fuel) etc. complete.	8700.00	bhp/hr	62	65.10	566370.00

Sr. No	Reference	Description	Total Quantity	Unit	Basic Rate 16-17	Final Rate 16-17	Amount (Rs.) 16-17
6		**Transportation of earth**					
	MJP16-17, Statement VI, Pg-24	Transportation charges including loading & unloading of soil of all types ,sand ,gravel and soft murum hard murum,boulders,Slushy soil,rock,solid waste etc complete for a lead beyond 5 Km outside the work site at given dump yard as directed by the Engineer in charge.	1427.82	cum	290.06	304.56	434861.39
7		**Providing and Laying Pipes -H.D.P.E PE-100**					
	MJP DSR 2016-17, X, Page No.178, item no.1c	Providing and supplying in standard lengths Polyethelene Pipes, confirming to IS 4984 / 14151 / 12786 / 13488 with nesessary jointing material like mechanical connector i. e. thread / insert joint / quick release coupler joint / compression fitting joint or flanged joint, including all local & central taxes, transportation and fright charges inspection charges, loading / unloading charges, conveyance to the departmental stores / site & stacking the same in closed shade duly protecting from sunrays & rains, etc. complete.					
		vi) Dia pipe :560 mm	5800.00	RMT	9714	9714.00	56341200.00
8	MJP 16-17,X, item no 2,A, Pg-182	Lowering laying and jointing HDPE /MDPE pipes in proper position including all specials by Compression fitting / Electrofusion and But fusion jointing procedure including hydraulic testing as per relevent IS Code complete with all materials for jointing procedures like Electrofusion machine, Electric mirror/ heater / But fusion welding machine with hydraulic jack, top laoding clamp etc pump and accessories for hydraulic testing and all labours as directe by engineer incharge as per IS - 7634 Part II.					
		vi) Dia pipe : 560 mm	5800.00	RMT	336.00	352.80	2046240.00
9		**Valve**					
	MJP DSR 2016-17 It no.XIII, 3 b,page no.216	Providing, double flanged short body pattern type manually operated Butterfly Valve having body, disc and end cover in graded cast iron to IS-210 Gr.CF 200 generally confirming in to IS- 13095-1991, Synthetic rubber faced ring secured on disc by retaining ring with stainless steel screw stub shaft of stainless steel riding in teflon bearing excluding C.C. foundation /structural steel support.	1.00	Nos	86882	86882.00	86882.00
		500 mm					
10	MJP DSR 2016-17 It no.4 page no.217	**Lowering, laying and Jointing in Position following C.I.D./F Reflex valves, Butterfly valves and Sluice valves** including cost of all labour join ting material, including nut bolts and giving satisfactory hydraulic testing etc. complete. (rate for all class)	1.00	Nos	8237	8648.85	8648.85
		500 mm					
		Air Valve					
11		**Kinetic Air Valve Flanged type- PN-1.6**					

Sr. No	Reference	Description	Total Quantity	Unit	Basic Rate 16-17	Final Rate 16-17	Amount (Rs.) 16-17
	MJP DSR 2016-17 It No. 9b page no.222	**Providing and Supplying Kinetic Double orifice type air valves** as per MJP's standard specification having , small orifice elastic ball resting on a gun metal orifice nipple, large orifice vulcanite ball seating on moulded seat ring,with built in kinetic features,isolated sluice valve mounted in horizontal position and operated by wheel gearing, inlet face and drilled, including all taxes (central and Local), insurance, third party inspection charges, loading, unloading, transportation upto departmental stores/site, etc. complete.					
		200 mm	1.00	Nos	33638	33638.00	33638.00
12	MJP DSR 2016-17 It No. 10c page no.224	**Lowering, laying and fixing in proper alignment and position all types of CI air valves** as directed by Engineer-in-charge including cost of conveyance from stores to site of work, cost of all material and giving satisfactory hydralic testing, etc. complete **(for all class of valves)**					
		200 mm	1.00	Nos	769	807.45	807.45
13		**Refilling in trenches**					
	MJP 16-17, Item No 17, Pg-43	**Refilling the trenches with approved excavated stuff** with soft materials first over pipeline & then hard material in 15 cm layers with all leads and lifts including consolidation, surcharging etc.complete.	11422.66	cum	64.00	67.20	767602.70
		Road Restoration (Bituminous Road)					
14	RA	Providing and making road restoration including stone aggregates of specified size, 50 mm (about 2") thick full grout bituminus road surface, providing and laying bituminus tac coat @ 50 kg/100 sq.m., providing & laying hot mix hot laid bituminus macadam 50/75 mm average thickness with 3.3% bitumen content, providing & rolling of close graded premix seal surfacing, including labour & material etc. complete as directed by Engineer in charge.	5800.00	RMT	2400.00	2400.00	13,920,000.00
		Total Cost					**76979721**
		Add 1% cess on Labour welfare *(For MJP items)*					**630597**
		Add 1% cess on Labour amenities *(For MJP items)*					**61370**
		Total Estimation for RSRM (Sump to STP)					**77,671,687.93**

NAVI MUMBAI MUNICIPAL CORPORATION

RECYCLE WATER SYSTEM

Measuremet Sheet for Pumping Main from Sump to ESR at VASHI MIDC Area

From	To	U/S Invert Elevation (m)	D/S Invert Elevation (m)	Length (m)	Section Size	Average Pipe Cover (m)	Depth of Excavation	Width of Excavation	Exacavation in cu. M.	Exacavation																Timbering in sq. M.	Dewatering	Transportation of earth	Bedding in Cum	Rifilling in trenches	Road restoration
										Soft Murum upto 1.5 m	Soft Murum upto 3 m	Total Soft Murum 48.0%	Soft Rock upto 1.5 m	Soft Rock upto 3 m	Total Soft Rock 10.0%	Slushy Muddy Soil upto 1.5 m	Slushy Muddy Soil upto 3 m	Total Slushy Muddy Soil 6.0%	Hard Rock upto 1.5 m	Hard Rock upto 3 m	Total Hard Rock 0.0%	Hard Murum upto 1.5 m	Hard Murum upto 3 m	Total Hard Murum 36.0%						
Sump	ESR	3.38	3.32	5800	560	1	1.91	1.16	12850.48	4934.58	1233.65	6168.23	1285.05	0.00	1285.05	385.51	385.51	771.03	0.00	0.00	0.00	2914.49	1711.68	4626.17	0	8700.00	1427.82	0.00	11422.66	5800.00
Total				5800	560	1	1.91	1.16	12850.48	4934.58	1233.65	6168.23	1285.05	0.00	1285.05	385.51	385.51	771.03	0.00	0.00	0.00	2914.49	1711.68	4626.17	0.00	8700.00	1427.82	0.00	11422.66	5800.00

NAVI MUMBAI MUNICIPAL CORPORATION
RECYCLE WATER SYSTEM
Cost Estimate for Pumping Main from Sump to ESR at KOPERKHAIRANE MIDC Area
Add 5% Area Weightage for Corporation Area

Sr. No	Reference	Description	Total Quantity	Unit	Basic Rate 16-17	Final Rate 16-17	Amount (Rs.) 16-17
1	MJP 16-17, Item No 5, Pg-39	Excavation for foundation/ pipes trenches by all mean in **soft rock & old cement and lime masonary foundation asphalt road** including removing the excavated material upto a distance of 50M beyond area & lift as below, stacking as directed by Engineer-in -charge, normal dewatering, prepration of bed for foundation & **excluding backfilling**,etc. complete					
	a	Lift 0 to 1.5m	829.60	cum	473.00	496.65	412020.84
	b	Lift 1.5 to 3m	0.00	cum	495.00	519.75	0.00
2	MJP 16-17, Item No 1, Pg-39	Excavation for foundation/ pipes trenches in earth, **soil of all types ,sand ,gravel and soft murum** including removing the excavated material upto a distance of 50M beyond area & lift as below, stacking and spreading as directed,normal dewatering,preparing of bed for foundation & **excluding backfilling**,etc. complete					
	a	Lift 0 to 1.5m	3185.66	cum	142.00	149.10	474982.50
	b	Lift 1.5 to 3m	796.42	cum	156.00	163.80	130452.94
3	MJP 16-17, Item No 3, Pg-39	Excavation for foundation/ pipe trenches in **hard murum and boulders,W.B.M.road** including removing the excation material up to a distance of 50 meter and lift as below, stacking and spreading as directed, normal dewatering,prepairing the bed for foundation and **excluding backfilling**, etc complete.					
	a	Lift 0 to 1.5m	1881.53	cum	187.00	196.35	369438.97
	b	Lift 1.5 to 3m	1105.03	cum	201.00	211.05	233215.99
4	MJP 16-17, Item No 10, Pg-40	Excavation for foundation/ pipe trenches in **slush muddy/ Marshy/ Slushy / Soil use of poclain**, labour for dewatering during executation including removing the excation material up to a distance of 50 meter and lift as below, stacking and spreading as directed, prepairing the bed by cleaning the mud,labour required for executation for shuttering shall be paid seperately.					
	a	0 to 1.5 m	248.88	cum	315.00	330.75	82317.06
	b	1.5 to 3 m	248.88	cum	337.00	353.85	88066.19
5		**Dewatering**					
	MJP 16-17, Item No 16, Pg-42	**Dewatering** the excavated trenches and pools of water in the building trenches pipelines, as well works by using pumps and other devices including disposing off water to safe distance as directed by engineer-in-charge (including cost of machinery,labour, fuel) etc. complete.	9150.00	bhp/hr	62	65.10	595665.00
6		**Transportation of earth**					

Sr. No	Reference	Description	Total Quantity	Unit	Basic Rate 16-17	Final Rate 16-17	Amount (Rs.) 16-17
	MJP16-17, Statement VI, Pg-24	Transportation charges including loading & unloading of soil of all types ,sand ,gravel and soft murum hard murum,boulders,Slushy soil,rock,solid waste etc complete for a lead beyond 5 Km outside the work site at given dump yard as directed by the Engineer in charge.	299.28	cum	290.06	304.56	91150.00
		Providing and Laying Pipes -H.D.P.E PE-100					
7		**Providing and Laying Pipes**					
	MJP DSR 2016-17, X, Page No.178, item no.1c	Providing and supplying in standard lengths Polyethelene Pipes, confirming to IS 4984 / 14151 / 12786 / 13488 with nesessary jointing material like mechanical connector i. e. thread / insert joint / quick release coupler joint / compression fitting joint or flanged joint, including all local & central taxes, transportation and fright charges inspection charges, loading / unloading charges, conveyance to the departmental stores / site & stacking the same in closed shade duly protecting from sunrays & rains, etc. complete.					
		vi) Dia pipe : 250 mm	6100.00	RMT	**1853**	1853.00	11303300.00
8	MJP 16-17,X, item no 2,A, Pg-182	Lowering laying and jointing HDPE /MDPE pipes in proper position including all specials by Compression fitting / Electrofusion and But fusion jointing procedure including hydraulic testing as per relevent IS Code complete with all materials for jointing procedures like Electrofusion machine, Electric mirror/ heater / But fusion welding machine with hydraulic jack, top laoding clamp etc pump and accessories for hydraulic testing and all labours as directe by engineer incharge as per IS - 7634 Part II.					
		b) Dia pipe : 250 mm	6100.00	RMT	137	143.85	877485.00
9		**Valve**					
	MJP DSR 2016-17 It no.XIII, 3 b,page no.216	Providing, double flanged short body pattern type manually operated Butterfly Valve having body, disc and end cover in graded cast iron to IS-210 Gr.CF 200 generally confirming in to IS- 13095-1991, Synthetic rubber faced ring secured on disc by retaining ring with stainless steel screw stub shaft of stainless steel riding in teflon bearing excluding C.C. foundation /structural steel support.	1.00	Nos	19812	19812.00	19812.00
		250 mm					
10	MJP DSR 2016-17 It no.4 page no.217	Lowering, laying and Jointing in Position following C.I.D./F Reflex valves, Butterfly valves and Sluice valves including cost of all labour join ting material, including nut bolts and giving satisfactory hydraulic testing etc. complete. (rate for all class)	1.00	Nos	4334	4550.70	4550.70
		250 mm					
11		**Air Valve**					
		Kinetic Air Valve Flanged type- PN-1.6					

Sr. No	Reference	Description	Total Quantity	Unit	Basic Rate 16-17	Final Rate 16-17	Amount (Rs.) 16-17
	MJP DSR 2016-17 It No. 9b page no.222	Providing and Supplying Kinetic Double orifice type air valves as per MJP's standard specification having , small orifice elastic ball resting on a gun metal orifice nipple, large orifice vulcanite ball seating on moulded seat ring,with built in kinetic features,isolated sluice valve mounted in horizontal position and operated by wheel gearing, inlet face and drilled, including all taxes (central and Local), insurance, third party inspection charges, loading, unloading, transportation upto departmental stores/site, etc. complete.					
		200 mm	1.00	Nos	33638	33638.00	33638.00
12	MJP DSR 2016-17 It No. 10c page no.224	Lowering, laying and fixing in proper alignment and position all types of CI air valves as directed by Engineer-in-charge including cost of conveyance from stores to site of work, cost of all material and giving satisfactory hydralic testing, etc. complete (for all class of valves)					
		200 mm	1.00	Nos	769	807.45	807.45
13		**Refilling in trenches**					
	MJP 16-17, Item No 17, Pg-43	**Refilling the trenches with approved excavated stuff** with soft materials first over pipeline & then hard material in 15 cm layers with all leads and lifts including consolidation, surcharging etc.complete.	7996.72	cum	64.00	67.20	537379.50
		Road Restoration (Bituminous Road)					
14	RA	Providing and making road restoration including stone aggregates of specified size, 50 mm (about 2") thick full grout bituminus road surface, providing and laying bituminus tac coat @ 50 kg/100 sq.m., providing & laying hot mix hot laid bituminus macadam 50/75 mm average thickness with 3.3% bitumen content, providing & rolling of close graded	6100.00	RMT	2400.00	2400.00	14,640,000.00
		Total Cost					**29894282.13**
		Add 1% cess on Labour welfare *(For MJP items)*					**152542.82**
		Add 1% cess on Labour amenities *(For MJP items)*					**35746.20**
		Total Estimation for RSRM (Sump to STP)					**30,082,571.15**

NAVI MUMBAI MUNICIPAL CORPORATION

RECYCLE WATER SYSTEM

Measuremet Sheet for Pumping Main from Sump to ESR at KOPERKHAIRANE MIDC Area

From	To	Length (m)	Section Size	Average Pipe Cover (m)	Depth of Excavation	Width of Excavation	Exacavation in cu. M.	Exacavation															Timbering in sq. M.	Dewatering	Transportation of earth	Rifilling in trenches	Road restoration
								Soft Murum upto 1.5 m	Soft Murum upto 3 m	Total Soft Murum	Soft Rock upto 1.5 m	Soft Rock upto 3 m	Total Soft Rock	Slushy Muddy Soil upto 1.5 m	Slushy Muddy Soil upto 3 m	Total Slushy Muddy Soil	Hard Rock upto 1.5 m	Hard Rock upto 3 m	Total Hard Rock	Hard Murum upto 1.5 m	Hard Murum upto 3 m	Total Hard Murum					
										48%			10.0%			6%			0%			36.0%					
Sump	ESR	6100	250	1	1.60	0.85	8296.00	3185.66	796.42	3982.08	829.60	0.00	829.60	248.88	248.88	497.76	0.00	0.00	0.00	1881.53	1105.03	2986.56	0	9150.00	299.28	7996.72	6100.00
Total		6100	250	1	1.60	0.85	8296.00	3185.66	796.42	3982.08	829.60	0.00	829.60	248.88	248.88	497.76	0.00	0.00	0.00	1881.53	1105.03	2986.56	0.00	9150.00	299.28	7996.72	6100.00

NAVI MUMBAI MUNICIPAL CORPORATION

RECYCLE WATER SYSTEM

Cost Estimate for Pumping Main from Sump To ESR at AIROLI MIDC Area

Add 5% Area Weightage for Corporation Area

Sr. No	Reference	Description	Total Quantity	Unit	Basic Rate 16-17	Final Rate 16-17	Amount (Rs.) 16-17
1	MJP 16-17, Item No 5, Pg-39	Excavation for foundation/ pipes trenches by all mean in **soft rock & old cement and lime masonary foundation asphalt road** including removing the excavated material upto a distance of 50M beyond area & lift as below, stacking as directed by Engineer-in -charge, normal dewatering, prepration of bed for foundation & **excluding backfilling**,etc. complete					
	a	Lift 0 to 1.5m	472.50	cum	473.00	496.65	234667.13
	b	Lift 1.5 to 3m	0.00	cum	495.00	519.75	0.00
2	MJP 16-17, Item No 1, Pg-39	Excavation for foundation/ pipes trenches in earth, **soil of all types ,sand ,gravel and soft murum** including removing the excavated material upto a distance of 50M beyond area & lift as below, stacking and spreading as directed,normal dewatering,preparing of bed for foundation & **excluding backfilling**,etc. complete					
	a	Lift 0 to 1.5m	1814.40	cum	142.00	149.10	270527.04
	b	Lift 1.5 to 3m	453.60	cum	156.00	163.80	74299.68
3	MJP 16-17, Item No 3, Pg-39	Excavation for foundation/ pipe trenches in **hard murum and boulders,W.B.M.road** including removing the excation material up to a distance of 50 meter and lift as below, stacking and spreading as directed, normal dewatering,prepairing the bed for foundation and **excluding backfilling**, etc complete.					
	a	Lift 0 to 1.5m	1071.63	cum	187.00	196.35	210414.55
	b	Lift 1.5 to 3m	629.37	cum	201.00	211.05	132828.54
4	MJP 16-17, Item No 10, Pg-40	Excavation for foundation/ pipe trenches in **slush muddy/ Marshy/ Slushy / Soil use of poclain**, labour for dewatering during executation including removing the excation material up to a distance of 50 meter and lift as below, stacking and spreading as directed, prepairing the bed by cleaning the mud,labour required for executation for shuttering shall be paid seperately.					
a		0 to 1.5 m	141.75	cum	315.00	330.75	46883.81
b		1.5 to 3 m	141.75	cum	337.00	353.85	50158.24
5		**Dewatering**					
	MJP 16-17, Item No 16, Pg-42	**Dewatering** the excavated trenches and pools of water in the building trenches pipelines, as well works by using pumps and other devices including disposing off water to safe distance as directed by engineer-in-charge (including cost of machinery,labour, fuel) etc. complete.	4050.00	bhp/hr	62	65.10	263655.00
6		**Transportation of earth**					
	MJP16-17, Statement VI, Pg-24	Transportation charges including loading & unloading of soil of all types ,sand ,gravel and soft murum hard murum,boulders,Slushy soil,rock,solid waste etc complete for a lead beyond 5 Km outside the work site at given dump yard as directed by the Engineer in charge.	339.12	cum	290.06	304.56	103283.40

Sr. No	Reference	Description	Total Quantity	Unit	Basic Rate 16-17	Final Rate 16-17	Amount (Rs.) 16-17
7		**Providing and Laying Pipes -H.D.P.E PE-100**					
		Providing and Laying Pipes					
	MJP DSR 2016-17, X, Page No.178, item no.1c	Providing and supplying in standard lengths Polyethelene Pipes, confirming to IS 4984 / 14151 / 12786 / 13488 with nesessary jointing material like mechanical connector i. e. thread / insert joint / quick release coupler joint / compression fitting joint or flanged joint, including all local & central taxes, transportation and fright charges inspection charges, loading / unloading charges, conveyance to the departmental stores / site & stacking the same in closed shade duly protecting from sunrays & rains, etc. complete.					
		vi) Dia pipe :400 mm	2700.00	RMT	4912	4912.00	13262400.00
8	MJP 16-17,X, item no 2,A, Pg-182	Lowering laying and jointing HDPE /MDPE pipes in proper position including all specials by Compression fitting / Electrofusion and But fusion jointing procedure including hydraulic testing as per relevent IS Code complete with all materials for jointing procedures like Electrofusion machine, Electric mirror/ heater / But fusion welding machine with hydraulic jack, top laoding clamp etc pump and accessories for hydraulic testing and all labours as directe by engineer incharge as per IS - 7634 Part II.					
		b) Dia pipe : 400 mm	2700.00	RMT	206.00	216.30	584010.00
		Valve					
9	MJP DSR 2016-17 It no.XIII, 3 b,page no.216	Providing, double flanged short body pattern type manually operated Butterfly Valve having body, disc and end cover in graded cast iron to IS-210 Gr.CF 200 generally confirming in to IS- 13095-1991, Synthetic rubber faced ring secured on disc by retaining ring with stainless steel screw stub shaft of stainless steel riding in teflon bearing excluding C.C. foundation /structural steel support.	1.00	Nos	68489	68489.00	68489.00
		400 mm					
10	MJP DSR 2016-17 It no.4 page no.217	**Lowering, laying and Jointing in Position following C.I.D./F Reflex valves, Butterfly valves and Sluice valves** including cost of all labour join ting material, including nut bolts and giving satisfactory hydraulic testing etc. complete. (rate for all class)	1.00	Nos	6686	7020.30	7020.30
		400 mm					
		Air Valve					
11		**Kinetic Air Valve Flanged type- PN-1.6**					

Sr. No	Reference	Description	Total Quantity	Unit	Basic Rate 16-17	Final Rate 16-17	Amount (Rs.) 16-17
	MJP DSR 2016-17 It No. 9b page no.222	Providing and Supplying Kinetic Double orifice type air valves as per MJP's standard specification having , small orifice elastic ball resting on a gun metal orifice nipple, large orifice vulcanite ball seating on moulded seat ring,with built in kinetic features,isolated sluice valve mounted in horizontal position and operated by wheel gearing, inlet face and drilled, including all taxes (central and Local), insurance, third party inspection charges, loading, unloading, transportation upto departmental stores/site, etc. complete.					
		150 mm	1.00	Nos	21574	21574.00	21574.00
12	MJP DSR 2016-17 It No. 10c page no.224	Lowering, laying and fixing in proper alignment and position all types of CI air valves as directed by Engineer-in-charge including cost of conveyance from stores to site of work, cost of all material and giving satisfactory hydralic testing, etc. complete (for all class of valves)					
		150 mm	1.00	Nos	706	741.30	741.30
13		**Refilling in trenches**					
	MJP 16-17, Item No 17, Pg-43	**Refilling the trenches with approved excavated stuff** with soft materials first over pipeline & then hard material in 15 cm layers with all leads and lifts including consolidation, surcharging etc.complete.	4385.88	cum	64.00	67.20	294731.14
		Road Restoration (Bituminous Road)					
14	RA	Providing and making road restoration including stone aggregates of specified size, 50 mm (about 2") thick full grout bituminus road surface, providing and laying bituminus tac coat @ 50 kg/100 sq.m., providing & laying hot mix hot laid bituminus macadam 50/75 mm average thickness with 3.3% bitumen content, providing & rolling of close graded premix seal surfacing, including labour & material	2700.00	RMT	2400.00	2400.00	6,480,000.00
		Total Cost					**22105683.12**
		Add 1% cess on Labour welfare *(For MJP items)*					**156256.83**
		Add 1% cess on Labour amenities *(For MJP items)*					**20959.37**
		Total Estimation for RSRM (Sump to STP)					**22,282,899.32**

NAVI MUMBAI MUNICIPAL CORPORATION

RECYCLE WATER SYSTEM

Measurement for Pumping Main from Sump to ESR at AIROLI MIDC Area

From	To	Length (m)	Section Size	Average Pipe Cover (m)	Depth of Excavation	Width of Excavation	Exacavation in cu. M.	Exacavation															Timbering in sq. M.	Dewatering	Transportation of earth	Rifilling in trenches	Road restoration
								Soft Murum upto 1.5 m	Soft Murum upto 3 m	Total Soft Murum 48%	Soft Rock upto 1.5 m	Soft Rock upto 3 m	Total Soft Rock 10%	Slushy Muddy Soil upto 1.5 m	Slushy Muddy Soil upto 3 m	Total Slushy Muddy Soil 6%	Hard Rock upto 1.5 m	Hard Rock upto 3 m	Total Hard Rock 0%	Hard Murum upto 1.5 m	Hard Murum upto 3 m	Total Hard Murum 36%					
Sump	ESR	2700	400	1	1.75	1.00	4725.00	1814.40	453.60	2268.00	472.50	0.00	472.50	141.75	141.75	283.50	0.00	0.00	0.00	1071.63	629.37	1701.00	0.00	4050.00	339.12	4385.88	2700.00
Total		2700			1.75	1.00	4725.00	1814.40	453.60	2268.00	472.50	0.00	472.50	141.75	141.75	283.50	0.00	0.00	0.00	1071.63	629.37	1701.00	0.00	4050.00	339.12	4385.88	2700.00

NAVI MUMBAI MUNICIPAL CORPORATION
RECYCLE WATER SYSTEM
Cost Estimate for Pumping Main from Sump to ESR at KOPERKHAIRANE MIDC Area
Add 5% Area Weightage for Corporation Area

Sr. No	Reference	Description	Total Quantity	Unit	Basic Rate 16-17	Final Rate 16-17	Amount (Rs.) 16-17
1	MJP 16-17, Item No 5, Pg-39	Excavation for foundation/ pipes trenches by all mean in **soft rock & old cement and lime masonary foundation asphalt road** including removing the excavated material upto a distance of 50M beyond area & lift as below, stacking as directed by Engineer-in -charge, normal dewatering, prepration of bed for foundation & **excluding backfilling**,etc. complete					
	a	Lift 0 to 1.5m	1436.40	cum	473.00	496.65	713388.06
	b	Lift 1.5 to 3m	0.00	cum	495.00	519.75	0.00
2	MJP 16-17, Item No 1, Pg-39	Excavation for foundation/ pipes trenches in earth, **soil of all types ,sand ,gravel and soft murum** including removing the excavated material upto a distance of 50M beyond area & lift as below, stacking and spreading as directed,normal dewatering,preparing of bed for foundation & **excluding backfilling**,etc. complete					
	a	Lift 0 to 1.5m	5515.78	cum	142.00	149.10	822402.20
	b	Lift 1.5 to 3m	1378.94	cum	156.00	163.80	225871.03
3	MJP 16-17, Item No 3, Pg-39	Excavation for foundation/ pipe trenches in **hard murum and boulders,W.B.M.road** including removing the excation material up to a distance of 50 meter and lift as below, stacking and spreading as directed, normal dewatering,prepairing the bed for foundation and **excluding backfilling**, etc complete.					
	a	Lift 0 to 1.5m	3257.76	cum	187.00	196.35	639660.23
	b	Lift 1.5 to 3m	1913.28	cum	201.00	211.05	403798.76
4	MJP 16-17, Item No 10, Pg-40	Excavation for foundation/ pipe trenches in **slush muddy/ Marshy/ Slushy / Soil use of poclain**, labour for dewatering during executation including removing the excation material up to a distance of 50 meter and lift as below, stacking and spreading as directed, prepairing the bed by cleaning the mud,labour required for executation for shuttering shall be paid seperately.					
	a	0 to 1.5 m	430.92	cum	315.00	330.75	142526.79
	b	1.5 to 3 m	430.92	cum	337.00	353.85	152481.04
5		**Dewatering**					
	MJP 16-17, Item No 16, Pg-42	**Dewatering** the excavated trenches and pools of water in the building trenches pipelines, as well works by using pumps and other devices including disposing off water to safe distance as directed by engineer-in-charge (including cost of machinery,labour, fuel) etc. complete.	11400.00	bhp/hr	62	65.10	742140.00
6		**Transportation of earth**					

Sr. No	Reference	Description	Total Quantity	Unit	Basic Rate 16-17	Final Rate 16-17	Amount (Rs.) 16-17
	MJP16-17, Statement VI, Pg-24	Transportation charges including loading & unloading of soil of all types ,sand ,gravel and soft murum hard murum,boulders,Slushy soil,rock,solid waste etc complete for a lead beyond 5 Km outside the work site at given dump yard as directed by the Engineer in charge.	1208.12	cum	290.06	304.56	367947.13
		Providing and Laying Pipes -H.D.P.E PE-100					
7		**Providing and Laying Pipes**					
	MJP DSR 2016-17, X, Page No.178, item no.1c	Providing and supplying in standard lengths Polyethelene Pipes, confirming to IS 4984 / 14151 / 12786 / 13488 with nesessary jointing material like mechanical connector i. e. thread / insert joint / quick release coupler joint / compression fitting joint or flanged joint, including all local & central taxes, transportation and fright charges inspection charges, loading / unloading charges, conveyance to the departmental stores / site & stacking the same in closed shade duly protecting from sunrays & rains, etc. complete.					
		vi) Dia pipe : 450 mm	7600.00	RMT	**6535**	6535.00	49666000.00
8	MJP 16-17,X, item no 2,A, Pg-182	Lowering laying and jointing HDPE /MDPE pipes in proper position including all specials by Compression fitting / Electrofusion and But fusion jointing procedure including hydraulic testing as per relevent IS Code complete with all materials for jointing procedures like Electrofusion machine, Electric mirror/ heater / But fusion welding machine with hydraulic jack, top laoding clamp etc pump and accessories for hydraulic testing and all labours as directe by engineer incharge as per IS - 7634 Part II.					
		b) Dia pipe : 450 mm	7600.00	RMT	232	243.60	1851360.00
9		**Valve**					
	MJP DSR 2016-17 It no.XIII, 3 b,page no.216	Providing, double flanged short body pattern type manually operated Butterfly Valve having body, disc and end cover in graded cast iron to IS-210 Gr.CF 200 generally confirming in to IS- 13095-1991, Synthetic rubber faced ring secured on disc by retaining ring with stainless steel screw stub shaft of stainless steel riding in teflon bearing excluding C.C. foundation /structural steel support.	1.00	Nos	79128	79128.00	79128.00
		450 mm					
10	MJP DSR 2016-17 It no.4 page no.217	Lowering, laying and Jointing in Position following C.I.D./F Reflex valves, Butterfly valves and Sluice valves including cost of all labour join ting material, including nut bolts and giving satisfactory hydraulic testing etc. complete. (rate for all class)	1.00	Nos	7954	8351.70	8351.70
		450 mm					
11		**Air Valve**					
		Kinetic Air Valve Flanged type- PN-1.6					

Sr. No	Reference	Description	Total Quantity	Unit	Basic Rate 16-17	Final Rate 16-17	Amount (Rs.) 16-17
	MJP DSR 2016-17 It No. 9b page no.222	Providing and Supplying Kinetic Double orifice type air valves as per MJP's standard specification having , small orifice elastic ball resting on a gun metal orifice nipple, large orifice vulcanite ball seating on moulded seat ring,with built in kinetic features,isolated sluice valve mounted in horizontal position and operated by wheel gearing, inlet face and drilled, including all taxes (central and Local), insurance, third party inspection charges, loading, unloading, transportation upto departmental stores/site, etc. complete.					
		200 mm	1.00	Nos	33638	33638.00	33638.00
12	MJP DSR 2016-17 It No. 10c page no.224	Lowering, laying and fixing in proper alignment and position all types of CI air valves as directed by Engineer-in-charge including cost of conveyance from stores to site of work, cost of all material and giving satisfactory hydralic testing, etc. complete (for all class of valves)					
		200 mm	1.00	Nos	769	807.45	807.45
13		**Refilling in trenches**					
	MJP 16-17, Item No 17, Pg-43	**Refilling the trenches with approved excavated stuff** with soft materials first over pipeline & then hard material in 15 cm layers with all leads and lifts including consolidation, surcharging etc.complete.	13155.89	cum	64.00	67.20	884075.47
		Road Restoration (Bituminous Road)					
14	RA	Providing and making road restoration including stone aggregates of specified size, 50 mm (about 2") thick full grout bituminus road surface, providing and laying bituminus tac coat @ 50 kg/100 sq.m., providing & laying hot mix hot laid bituminus macadam 50/75 mm average thickness with 3.3% bitumen content, providing & rolling of close graded	7600.00	RMT	2400.00	2400.00	18240000.00
		Total Cost					**74973575.86**
		Add 1% cess on Labour welfare ***(For MJP items)***					**567335.76**
		Add 1% cess on Labour amenities ***(For MJP items)***					**64238.80**
		Total Estimation for RSRM (Sump to STP)					**75,605,150.42**

NAVI MUMBAI MUNICIPAL CORPORATION

RECYCLE WATER SYSTEM

Measuremet Sheet for Pumping Main from Sump to ESR at KOPERKHAIRANE MIDC Area

From	To	Length (m)	Section Size	Average Pipe Cover (m)	Depth of Excavation	Width of Excavation	Exacavation in cu. M.	Excavation															Timbering in sq. M.	Dewatering	Transportation of earth	Rifilling in trenches	Road restoration
								Soft Murum upto 1.5 m	Soft Murum upto 3 m	Total Soft Murum	Soft Rock upto 1.5 m	Soft Rock upto 3 m	Total Soft Rock	Slushy Muddy Soil upto 1.5 m	Slushy Muddy Soil upto 3 m	Total Slushy Muddy Soil	Hard Rock upto 1.5 m	Hard Rock upto 3 m	Total Hard Rock	Hard Murum upto 1.5 m	Hard Murum upto 3 m	Total Hard Murum					
										48%			10.0%			6%			0%			36.0%					
Sump	ESR	7600	450	1	1.80	1.05	14364.00	5515.78	1378.94	6894.72	1436.40	0.00	1436.40	430.92	430.92	861.84	0.00	0.00	0.00	3257.76	1913.28	5171.04	0	11400.00	1208.12	13155.89	7600.00
Total		7600	450	1	1.80	1.05	14364.00	5515.78	1378.94	6894.72	1436.40	0.00	1436.40	430.92	430.92	861.84	0.00	0.00	0.00	3257.76	1913.28	5171.04	0.00	11400.00	1208.12	13155.89	7600.00

NAVI MUMBAI MUNICIPAL CORPORATION

RECYCLE WATER SYSTEM

Rate analysis

R.A. No. 1	**Filling in Excavated surface with contractor's murum in 15 to 20 cm layers including watering compaction etc complete**								
	Earth filling MJP 16-17, Item No 19, Pg-41				MJP 16-17, Item No 19, Pg-41		=	723.00	Cum
	Add 5 % for Corporation Area						=	36.15	
	Add lead charges for								
			Murum	1.00	0.00		=	0.00	
								759.15	
						Total	=	759.15	
						Say	=	759.15	Cum
R.A. No. 2	**Providing dry trap rubble stone solling in 15 cm to 20cm layers including hand packing and compacting, royalty charges etc complete.**								
	Soling Rate as per MJP 16-17, Page No. 41 Item No 20				MJP 16-17, Page No. 41 Item No 20		=	1014.00	Cum
	Add 5 % for Corporation Area						=	50.7	
	Add lead charges for								
			Hand Broken Metal	1.000	0.00		=	0.00	
			Sand	0.150	1679.50		=	251.92	
								1316.62	
						Total	=	1316.624	
						Say	=	1316.62	Cum
R.A. No.3	**Providing and laying in situ, fallowing grade of C.C. of trap/granite/gneiss metal for foundation and bedding including dewatering,formwork,compacting and curing,finishing,etc.complete.**								
	PCC Rate as per MJP 16-17, Item No1, Pg-45				MJP 16-17, Item No1, Pg-45		=	4457.00	Cum
	Add 5 % for Corporation Area						=	222.85	
	Add lead charges for								
			Sand	0.45	1679.50		=	755.77	
			crushed metal (40 mm)	0.52	0.00		=	0.00	
			crushed metal (20 mm,10 m	0.33	0.00		=	0.00	
								5435.62	
						Total	=	5435.623	
						Say	=	5435.62	Cum
R.A. No.4	**Providing and filling in the foundation trenches with sand of approved quality including watering compaction. Etc complete**								
	Sand Bedding Rate as per MJP 16-17 Item No 21, Pg				MJP 16-17 Item No 21, Pg-41		=	973.00	Cum
	Add 5 % for Corporation Area						=	48.65	
	Add lead charges for								
			Sand	1.00	1679.50		=	1679.50	
								2701.15	
						Total	=	2701.146	
						Say	=	2701.15	Cum
R.A. No.5	**Providing and laying insitu Cement concrete of trap/granite/ quartzite / gneiss metal for RCC work in foundation like raft, grillage, strip foundation and footing of RCC columns and steel stanchions including dewatering, formwork, compaction finishing & curing etc, complete.(By wigh batching and mix design for M-250 and M-300 only.) Use of L&T, A.C.C., Ambuja, Birla Gold, Manikgad, Rajashree etc cement is permitted) (excluding M.S. or Tor reinforcement)**								
	RCC work MJP 16-17, Item No 2 c, Pg-46				MJP 16-17, Item No 2 c, Pg-46		=	5999.00	Cum
	Add 5 % for Corporation Area						=	299.95	
	Add lead charges for								
			Sand	0.425	1679.50		=	713.79	
			crushed metal (20 mm)	0.57	0.00		=	0.00	
			crushed metal (10 mm)	0.28	0.00			0.00	
								7012.74	
						Total	=	7012.736	
						Say	=	7012.74	Cum

NAVI MUMBAI MUNICIPAL CORPORATION								
RECYCLE WATER SYSTEM								
LEAD CHART								
Sr. No.	**Material**	**Source**	**Lead in Kms**	**Lead Charges 2016-17**	**Initial Lead**	**Initial Lead Charges 16-17**	**Net Lead Charges 16-17**	**Unit**
1	Sand	Ambet	160.00	1830.07	5	150.57	**1679.50**	Cum
2	Crushed Metal	Local Stone Quarry	5.00	150.57	5	150.57	**0.00**	Cum
3	Soling Stone	Local Stone Quarry	5.00	184.21	5	184.21	**0.00**	Cum
4	Murum / Earth	Local Stone Quarry	5.00	180.38	5	180.38	**0.00**	Cum
5	Brick		5.00	247.37	5	247.37	**0.00**	1000 no.

COST ESTIMATE OF ESR

Navi Mumbai Municipal Corporation				
Recycle Water System				
Abstract of ESR				
Sr. No.	Zone	Compound Wall Cost in Rs	ESR COST (Rs.)	Total Cost
1	VASHI MIDC AREA	556,117.50	28060393.7	28616511
2	KOPARKHAIRANE MIDC AREA	499,416	17373793	17873210
3	AIROLI MIDC AREA	386,014	11478470	11864484
		TOTAL COST	**56912657**	**58354204**

NAVI MUMBAI MUNICIPAL CORPORATION RECYCLE WATER SYSTEM Abstract for Airoli ESR At MIDC Area Reserviors							
Sr. No	Reference	Description of Item	Qty.	Unit	Basic Rate 16-17	Final Rate 16-17	Amount in (Rs.)
		ESR					
1	(MJP DSR 2016-17, P. No 337, I. No 1)	**Item No.1Designing (aesthetically), and constructing RCC elevated service reservoirs of following capacity with RCC staging consisting of columns, internal and external bracings spaced vertically not more than 4.5 metres centre to centre for ESR having capacity upto 500 cum and not more than 6 m c/c for ESRs having capacity above 500 Cum including excavation in all types of strata, foundation concrete, cement plaster with water proofing compound to the inside face of the container including refilling disposing off the surplus stuff within a lead of 50 metres, all labour and material charges including lowering, laying, erecting, hoisting and jointing of pipe assembly of inlet, outlet, washout, overflow and bypass arrangements as per departmental design, providing and fixing accessories such as M.S. ladder, C.I. manhole frame and covers, water level indicators, lightening conductor, G.I. pipe railing around walk way and top slab, providing spiral stair case from ground level to roof level, M.S. grill gate of 2 M height with locking arrangement of approved design, B.B. masonry chambers for all valves, ventilating shafts, providing and applying three coats of cement paint to the structure including roof slab, epoxy painting to internal surface and anti-termite treatment for underground parts of the structure**					
		The design of the structure be in accordance with relevant I.S. specification (I.S. 3370 - 1965 or revised.)					
		The design shall satisfy the stipulations as per I.S. 1893 - 1984 and I.S. 13920 / 1993 for seismic force and I.S. - 11682 / 1985 for R.C.C. staging of overhead tanks.					
		For design having more than 6 columns, provision of					
		The entire structure shall be in M-300 mix only.					
		Plain round mild steel bars grade-I conforming to I.S. 432 part-I or high yield strength deformed bars conforming to I.S. 1786 or I.S. 1139 shall be used, grade-II mild steel bars will not be allowed.					
		Irrespective of the type of foundation proposed in the design, one set of bracing be provided at the ground level.					
		These rates include providing M.S. ladder for E.S.R.s upto 2 lakh litres capacity and providing spiral staircase for E.S.R. above 2 lakh litres capacity.					
		Staging shall have to be designed with stresses of M-200 concrete for ESR. However all RCC construction should be done in M-300.					
		These rates are including the cost of uplift pressure if any and entire dewatering during execution. In case of water logging area where water is stretch at shallow depth, extra provision of dewatering shall be made as per site condition.					
		All conditions given in the Member Secretary's Circular No. MJP / TS-I / 350 / 1668 dt. 2-8-97 and MJP / S-I / 350 / 2127 dt. 13-7-99 shall be strictly followed and additional cost, if any, due to these conditions is included in the rates mentioned below.					
		75% part rate shall be payable for reinforcement concrete and plastering items of containers of E.S.R. till satisfactory hydraulic testing for water tightness is given; and till that work shall be treated as incomplete.					
		The rates indicated in the table are excluding the cost of pipes, specials and valves required for inlet, outlet, washout, overflow and bypass arrangement. The scope of work, however, includes cost of erecting, laying and jointing of pipes and valves including cost of jointing materials upto 5 M beyond outer face of outermost column.					
		For ESR upto 500 cum capacity C.I. double flanged pipes upto 300 mm dia shall be provided and C.I. specials shall be used. For ESR above 500 cum capacity C.I./M.S. pipe assembly with minimum 8 mm thickness upto 500 mm dia and minimum 10 mm thickness above 500 mm dia can be used with proper anti-corrosive epoxy treatment from inside and outside.					
		Below mentioned rates are for foundations with individual footing with bearing capacity of 20 tonnes per square metre. For raft foundations, these rates shall be increased by 7.5% where safe bearing capacity (SBC) is 5 MT per sqm and by 5% where SBC is more than 5 MT/sqm and upto 10 MT/sqm. This % of 5% or 7.5% is applicable for estimation of amount of lumpsum item of ESR. For extra item due to change from individual foundation to raft, actual increase in concrete and steel be paid as per relevant DSR item.					

Sr. No	Reference	Description of Item	Qty.	Unit	Basic Rate 16-17	Final Rate 16-17	Amount in (Rs.)
		The rate shall be increased by 30% for bearing piles upto depth of 10 M and for further increased in depth by 5 M each, it shall be increased by another 10%. These rates are applicable where raft is not feasible. For pile foundations sulphate resistant cement shall only be used. Single pile for the column is not permitted, group of piles shall be designed with pile cap for each column of ESR.					
		The rates are applicable for staging height of 12 M. These rates shall be increased or decreased for per metre variation in this staging height as below :					
		12 to 16 M staging - 2% per metre					
		16 to 20 M staging - 3% per metre					
		20 M and above - 4% per metre					
		For 17 M staging height, percentage calculation will be like below :					
		12 to 16 M --- 4 x 2 = 8%					
		16 & 17 M --- 1 x 3% = 3% Total = 11%					
		For 21 M staging height, percentage calculation will be like below :					
		12 to 16 M --- 4 x 2 = 8%					
		16 to 20 M --- 4 x 3% = 12%					
		20& 21 M --- 1 x 4% = 4% Total = 24%					
		Following rates are for seismic zone III. For zone IV, these rates shall be increased by 5% and for zone II, these rates shall be decreased by 5%. Concerned Executive Engineer shall confirm the seismic zone for the scheme from seismic zones plan before estimation and adopt appropriate rates as per actual seismic zones. (Seismic maps attached in this CSR)					
		Notes					
		Conditions from Sr. No. 1 to 11 shall form a part and parcel of the tender and must be included in the draft tender papers for works of R.C.C. E.S.R.					
		Conditions from Sr. No. 12 to 17 are for estimation purpose only and shall not appear in the tender.					
		Airoli MIDC	1.00	LS	8,324,984.75	8,324,984.75	8,324,985
	(MJP DSR 2016-17, P. No 339, Item. No 1,Note-15)	Providing Pile foundation for ESR Construction, the rate shall be increased by 30% for bearing piles upto depth of 10 M and for further increased in depth by 5 M each, it shall be increased by another 10%. These rates are applicable where raft is not feasible. For pile foundations sulphate resistant cement shall only be used. Single pile for the column is not permitted, group of piles shall be designed with pile cap for each column of ESR.	1.00	LS	1,534,559.40	1,534,559.40	1,534,559
		Epoxy Coating Paint For RCC Structures					
2	(MJP DSR 2016-17, Section K. Page No 356, No -6)	**Item No 2:** Providing and applying epoxy paint of approved make(Shalimar,Ciba,Mahindra & mahindra) to concrete surface of **RCC ESR or GSR or any other structure** including cleaning the surface by scrapping and air blowers to the satisfaction of Engineer-in-charge,necessary scaffolding,etc complete with all leads and lifts and giving satisfactory hyraulic test for water tightness,film test as per I.S. codes.					
		a) For New surfaces - Two coats					
		Airoli MIDC	434.05	Sqmt.	582.00	611.10	265,248
		Sluice Valves					
3	(MJP16-17, Item No-2 c XIII , Pg-213)	**Item No.3** Providing Double flange sluice valve confirming for IS 2906/14846/ including worm gear arrangements as per test pressure stainless steel spindle, caps including all taxes transportation etc. complete.					
		Sluice Valve - PN - 1 6 (Without Bypass arrangement)					
		150 mm	0.00	No.	11239.00	11239.00	-
		200 mm	0.00	No.	21881.00	21881.00	-
		250 mm	0.00	No.	33833.00	33833.00	-
		300 mm	1.00	No.	42964.00	42964.00	42,964
		ButterflyValves					
4	(MJP16-17, Item No-3 b, XIII , Pg-216)	**Item No.4:** Providing, double flanged short body pattern type manually operated Butterfly Valve having body, disc and end cover in graded cast iron to IS-210 Gr.CF 200 generally confirming in to IS- 13095-1991, Synthetic rubber faced ring secured on disc by retaining ring with stainless steel screw stub shaft of stainless steel riding in teflon bearing excluding C.C. foundation /structural steel support.					

Sr. No	Reference	Description of Item	Qty.	Unit	Basic Rate 16-17	Final Rate 16-17	Amount in (Rs.)
		Butterfly Valve - PN - 1.6 (Without Bypass arrangement)					
		350 mm	0.00	No.	55908.00	55908.00	-
		400 mm	0.00	No.	68489.00	68489.00	-
		450 mm	0.00	No.	79128.00	79128.00	-
		500 mm	0.00	No.	86882.00	86882.00	-
		600 mm	0.00	No.	102422.00	102422.00	-
		700 mm	0.00	No.	153574.00	153574.00	-
		750 mm	0.00	No.	181876.00	181876.00	-
		800 mm	0.00	No.	193707.00	193707.00	-
5	(MJP16-17, Item No-4, XIII , Pg-217)	**Item No.5:** **Lowering, laying and Jointing in Position following C.I.D./F Reflex valves, Butterfly valves and Sluice valves** including cost of all labour join ting material, including nut bolts and giving satisfactory hydraulic testing etc. complete (rate for all class)					
		150 mm	0.00	No.	3198.00	3357.90	-
		200 mm	0.00	No.	3327.00	3493.35	-
		250 mm	0.00	No.	4334.00	4550.70	-
		300 mm	1.00	No.	4497.00	4721.85	4,722
		350 mm	0.00	No.	5541.00	5818.05	-
		400 mm	0.00	No.	6686.00	7020.30	-
		450 mm	0.00	No.	7954.00	8351.70	-
		500 mm	0.00	No.	8237.00	8648.85	-
		600 mm	0.00	No.	8742.00	9179.10	-
		700 mm	0.00	No.	9425.00	9896.25	-
		750 mm	0.00	No.	10380.00	10899.00	-
		800 mm	0.00	No.	12370.00	12988.50	-
		Full Bore Electromagnetic Flow meter					
6	MJP DSR (E/M) 2015-16, Pg. No. 118 Item no WM3	**Item No.6** Manufacturing, supplying & commissioning Electromagnetic Flow Meter(EMF) for Raw/Pure water with accuracy+/-0.5% of measured value and protection as per given specifications for size 100mm-1000mm including sensor transmitter surge arrestor, cable duct separate PVC of 25mm dia for 25 mtrs.sensor transmitter surge arrestor, flow meter, including the pipe cutting, leveling & installation of flow meter in the pipelines with necessary tool tackles, cranes etc. as may be required at site & based on technical specifications.					
		150 mm	0.00	No.	143915.00	143915.00	-
		200 mm	0.00	No.	170631.00	170631.00	-
		250 mm	0.00	No.	188462.00	188462.00	-
		300 mm	1.00	No.	215974.00	215974.00	215,974
		Ultrasonic Multi channel Flow Meter					
7	(As per quotation)	**Item No. 7** supply 4 path ultrasonic flow meter with all accessroies complete in all respect as per technical specifications.600NB along with battery power GSM modem (Intergral pipe section model)					
		350 mm	0.00	No.	460149.50	460149.50	-
		400 mm	0.00	No.	460149.50	460149.50	-
		450 mm	0.00	No.	460149.50	460149.50	-
		500 mm	0.00	No.	460149.50	460149.50	-
		600 mm	0.00	No.	460149.50	460149.50	-
		700 mm	0.00	No.	460149.50	460149.50	-
		750 mm	0.00	No.	467829.50	467829.50	-
		800 mm	0.00	No.	467829.50	467829.50	-
8		**Additional lead beyond 5 Kms for materials**					
		Sand Qty					
		Item No-8					
		Airoli MIDC	198.48	cum	1679.50	1679.50	333,338
9		**Metal Qty (Crushed Metal)**					
		Item No-9					
		Airoli MIDC	396.95	cum	0.00	0.00	-
		Steel Epoxy Paint					
		Item No-10					

Sr. No	Reference	Description of Item	Qty.	Unit	Basic Rate 16-17	Final Rate 16-17	Amount in (Rs.)
10	MJP 16-17 It. No. 9B 1 pg.no. 53	Providing **fusion bonded epoxy coating to reinforcement bars** as per IS-13620-993 specification for a thickness of 175mm(+or - 50) microns including extra cost on account of careful handling,extra cost on account of using PVC coated binding wire instead of GI wire, extra cost on account of touch-up material supplied by coating agency and repair work extra cost on account of transportation to & fro from steel yard at kalamboli to plant at Daman and Plant at Daman to work site by trailer, loading, unloading, including all taxes (Central & Local), etc. complete. as directed by the Engineer in charge.					
		Airoli MIDC	36.41	M.T	15772.00	16560.60	602,971
						Cost	11,324,762
						Add 1% cess on Labour welfare *(For MJP items)*	109,914
						Add 1% cess on Labour amenities *(For MJP items)*	43,794
						Total Cost	**11,478,470**

NAVI MUMBAI MUNICIPAL CORPORATION							
RECYCLE WATER SYSTEM							
Abstract for Kopherkharine ESR At MIDC Area							
Elevated Service Reserviors							
Sr. No	Reference	Description of Item	Qty.	Unit	Basic Rate 16-17	Final Rate 16-17	Amount in (Rs.)
		ESR					
1	(MJP DSR 2016-17, P. No 337, I. No 1)	Item No.1Designing (aesthetically), and constructing RCC elevated service reservoirs of following capacity with RCC staging consisting of columns, internal and external bracings spaced vertically not more than 4.5 metres centre to centre for ESR having capacity upto 500 cum and not more than 6 m c/c for ESRs having capacity above 500 Cum including excavation in all types of strata, foundation concrete, cement plaster with water proofing compound to the inside face of the container including refilling disposing off the surplus stuff within a lead of 50 metres, all labour and material charges including lowering, laying, erecting, hoisting and jointing of pipe assembly of inlet, outlet, washout, overflow and bypass arrangements as per departmental design, providing and fixing accessories such as M.S. ladder, C.I. manhole frame and covers, water level indicators, lightening conductor, G.I. pipe railing around walk way and top slab, providing spiral stair case from ground level to roof level, M.S. grill gate of 2 M height with locking arrangement of approved design, B.B. masonry chambers for all valves, ventilating shafts, providing and applying three coats of cement paint to the structure including roof slab, epoxy painting to internal surface and anti-termite treatment for					
		The design of the structure be in accordance with relevant I.S. specification (I.S. 3370 - 1965 or revised.)					
		The design shall satisfy the stipulations as per I.S. 1893 - 1984 and I.S. 13920 / 1993 for seismic force and I.S. - 11682 / 1985 for R.C.C. staging of overhead tanks.					
		For design having more than 6 columns, provision of					
		The entire structure shall be in M-300 mix only.					
		Plain round mild steel bars grade-I conforming to I.S. 432 part-I or high yield strength deformed bars conforming to I.S. 1786 or I.S. 1139 shall be used, grade-II mild steel bars will not be allowed.					
		Irrespective of the type of foundation proposed in the design, one set of bracing be provided at the ground level.					
		These rates include providing M.S. ladder for E.S.R.s upto 2 lakh litres capacity and providing spiral staircase for E.S.R. above 2 lakh litres capacity.					
		Staging shall have to be designed with stresses of M-200 concrete for ESR. However all RCC construction should be done in M-300.					
		These rates are including the cost of uplift pressure if any and entire dewatering during execution. In case of water logging area where water is stretch at shallow depth, extra provision of dewatering shall be made as per site condition.					
		All conditions given in the Member Secretary's Circular No. MJP / TS-I / 350 / 1668 dt. 2-8-97 and MJP / S-I / 350 / 2127 dt. 13-7-99 shall be strictly followed and additional cost, if any, due to these conditions is included in the rates mentioned below.					
		75% part rate shall be payable for reinforcement concrete and plastering items of containers of E.S.R. till satisfactory hydraulic testing for water tightness is given, and till that work shall be treated as incomplete.					
		The rates indicated in the table are excluding the cost of pipes, specials and valves required for inlet, outlet, washout, overflow and bypass arrangement. The scope of work, however, includes cost of erecting, laying and jointing of pipes and valves including cost of jointing materials upto 5 M beyond outer face of outermost column.					
		For ESR upto 500 cum capacity C.I. double flanged pipes upto 300 mm dia shall be provided and C.I. specials shall be used. For ESR above 500 cum					

Sr. No	Reference	Description of Item	Qty.	Unit	Basic Rate 16-17	Final Rate 16-17	Amount in (Rs.)
		Below mentioned rates are for foundations with individual footing with bearing capacity of 20 tonnes per square metre. For raft foundations, these rates shall be increased by 7.5% where safe bearing capacity (SBC) is 5 MT per sqm and by 5% where SBC is more than 5 MT/sqm and upto 10 MT/sqm. This % of 5% or 7.5% is applicable for estimation of amount of lumpsum item of ESR. For extra item due to change from individual foundation to raft, actual increase in concrete and steel be paid as per relevant DSR item.					
		The rate shall be increased by 30% for bearing piles upto depth of 10 M and for further increased in depth by 5 M each, it shall be increased by another 10%. These rates are applicable where raft is not feasible. For pile foundations sulphate resistant cement shall only be used. Single pile for the column is not permitted, group of piles shall be designed with pile cap for each column of ESR.					
		The rates are applicable for staging height of 12 M. These rates shall be increased or decreased for per metre variation in this staging height as below :					
		12 to 16 M staging - 2% per metre					
		16 to 20 M staging - 3% per metre					
		20 M and above - 4% per metre					
		For 17 M staging height, percentage calculation will be like below :					
		12 to 16 M --- 4 x 2 = 8%					
		16 & 17 M --- 1 x 3% = 3% Total = 11%					
		For 21 M staging height, percentage calculation will be like below :					
		12 to 16 M --- 4 x 2 = 8%					
		16 to 20 M --- 4 x 3% = 12%					
		20& 21 M --- 1 x 4% = 4% Total = 24%					
		Following rates are for seismic zone III. For zone IV, these rates shall be increased by 5% and for zone II, these rates shall be decreased by 5%. Concerned Executive Engineer shall confirm the seismic zone for the scheme from seismic zones plan before estimation and adopt appropriate rates as per actual seismic zones. (Seismic maps attached in this CSR).					
		Notes					
		Conditions from Sr. No. 1 to 11 shall form a part and parcel of the tender and must be included in the draft tender papers for works of R.C.C. E.S.R.					
		Conditions from Sr. No. 12 to 17 are for estimation purpose only and shall not appear in the tender.					
		Koperkhairane MIDC	1.00	LS	11,949,291.23	11,949,291.23	11,949,291
	(MJP DSR 2016-17, P. No 339, Item. No 1,Note-15)	Providing Pile foundation for ESR Construction, the rate shall be increased by 30% for bearing piles upto depth of 10 M and for further increased in depth by 5 M each, it shall be increased by another 10%. These rates are applicable where raft is not feasible. For pile foundations sulphate resistant cement shall only be used. Single pile for the column is not permitted, group of piles shall be designed with pile cap for each column of ESR.	1.00	LS	2,510,355.30	2,510,355.30	2,510,355
		Epoxy Coating Paint For RCC Structures					
2	(MJP DSR 2016-17, Section K Page No 356, No - 6)	**Item No 2:** Providing and applying epoxy paint of approved make(Shalimar,Ciba,Mahindra & mahindra) to concrete surface of **RCC ESR or GSR or any other structure** including cleaning the surface by scrapping and air blowers to the satisfaction of Engineer-in-charge,necessary scaffolding,etc complete with all leads and lifts and giving satisfactory hyraulic test for water tightness,film test as per I.S. codes.					
		a) For New surfaces - Two coats					
		Koperkhairane MIDC	613.84	Sqmt	582.00	611.10	375,118
		Sluice Valves					

Sr. No	Reference	Description of Item	Qty.	Unit	Basic Rate 16-17	Final Rate 16-17	Amount in (Rs.)
3	(MJP16-17, Item No-2 c XIII , Pg-213)	**Item No.3** Providing Double flange sluice valve confirming for IS 2906/14846/ including worn gear arrangements as per test pressure stainless steel spindle, caps including all taxes transportation etc. complete.					
		Sluice Valve - PN - 1.6 (Without Bypass arrangement)					
		150 mm	0.00	No.	11239.00	11239.00	-
		200 mm	0.00	No.	21881.00	21881.00	-
		250 mm	0.00	No.	33833.00	33833.00	-
		300 mm	1.00	No.	42964.00	42964.00	42,964
		ButterflyValves					
4	(MJP16-17, Item No-3 b, XIII , Pg-216)	**Item No.4:** Providing, double flanged short body pattern type manually operated Butterfly Valve having body, disc and end cover in graded cast iron to IS-210 Gr.CF 200 generally confirming in to IS- 13095-1991, Synthetic rubber faced ring secured on disc by retaining ring with stainless steel screw stub shaft of stainless steel riding in teflon bearing excluding C.C. foundation /structural steel support.					
		Butterfly Valve - PN - 1.6 (Without Bypass arrangement)					
		350 mm	0.00	No.	55908.00	55908.00	-
		400 mm	0.00	No.	68489.00	68489.00	-
		450 mm	0.00	No.	79128.00	79128.00	-
		500 mm	0.00	No.	86882.00	86882.00	-
		600 mm	0.00	No.	102422.00	102422.00	-
		700 mm	0.00	No.	153574.00	153574.00	-
		750 mm	0.00	No.	181876.00	181876.00	-
		800 mm	0.00	No.	193707.00	193707.00	-
5	(MJP16-17, Item No-4, XIII , Pg-217)	**Item No.5:** **Lowering, laying and Jointing in Position following C.I.D./F Reflex valves, Butterfly valves and Sluice valves** including cost of all labour join ting material, including nut bolts and giving satisfactory hydraulic testing etc. complete (rate for all class)					
		150 mm	0.00	No.	3198.00	3357.90	-
		200 mm	0.00	No.	3327.00	3493.35	-
		250 mm	0.00	No.	4334.00	4550.70	-
		300 mm	1.00	No.	4497.00	4721.85	4,722
		350 mm	0.00	No.	5541.00	5818.05	-
		400 mm	0.00	No.	6686.00	7020.30	-
		450 mm	0.00	No.	7954.00	8351.70	-
		500 mm	0.00	No.	8237.00	8648.85	-
		600 mm	0.00	No.	8742.00	9179.10	-
		700 mm	0.00	No.	9425.00	9896.25	-
		750 mm	0.00	No.	10380.00	10899.00	-
		800 mm	0.00	No.	12370.00	12988.50	-
		Full Bore Electromagnetic Flow meter					
6	MJP DSR (E/M) 2015-16, Pg No. 118 Item no WM3	**Item No.6** Manufacturing, supplying & commissioning Electromagnetic Flow Meter(EMF) for Raw/Pure water with accuracy+/-0.5% of measured value and protection as per given specifications for size 100mm-1000mm including sensor transmitter surge arrestor, cable duct separate PVC of 25mm dia for 25 mtrs.sensor transmitter surge arrestor, flow meter, including the pipe cutting, leveling & installation of flow meter- in the pipelines with necessary tool tackles, cranes etc as may be required at site & based on technical specifications.					
		150 mm	0.00	No.	143915.00	143915.00	-
		200 mm	0.00	No.	170631.00	170631.00	-
		250 mm	0.00	No.	188462.00	188462.00	-
		300 mm	0.00	No.	215974.00	215974.00	-
		Ultrasonic Multi channel Flow Meter					

Sr. No	Reference	Description of Item	Qty.	Unit	Basic Rate 16-17	Final Rate 16-17	Amount in (Rs.)
7	(As per quotation)	**Item No. 7** supply 4 path ultrasonic flow meter with all accessroies complete in all respect as per technical specifications.600NB along with battery power GSM modem (Intergral pipe section model)					
		350 mm	0.00	No.	460149.50	460149.50	-
		400 mm	1.00	No.	460149.50	460149.50	460,150
		450 mm	0.00	No.	460149.50	460149.50	-
		500 mm	0.00	No.	460149.50	460149.50	-
		600 mm	0.00	No.	460149.50	460149.50	-
		700 mm	0.00	No.	460149.50	460149.50	-
		750 mm	0.00	No.	467829.50	467829.50	-
		800 mm	0.00	No.	467829.50	467829.50	-
8		**Additional lead beyond 5 Kms for materials**					
		Sand Qty					
		Item No-8					
		Koperkhairane MIDC	383.35	cum	1679.50	1679.50	643,835
		Metal Qty (Crushed Metal)					
		Item No-9					
9		Koperkhairane MIDC	766.70	cum	0.00	0.00	-
		Steel Epoxy Paint					
		Item No-10					
10	MJP 16-17 It. No. 9B 1 pg.no. 53	Providing **fusion bonded epoxy coating to reinforcement bars** as per IS-13620-993 specification for a thickness of 175mm(+or - 50) microns including extra cost on account of careful handling,extra cost on account of using PVC coated binding wire instead of GI wire, extra cost on account of touch-up material supplied by coating agency and repair work extra cost on account of transportation to & fro from steel yard at kalamboli to plant at Daman and Plant at Daman to work site by trailer, loading, unloading, including all taxes (Central & Local), etc. complete. as directed by the Engineer in charge.					
		Koperkhairane MIDC	70.31	M.T	15772.00	16560.60	1,164,376
						Cost	17,150,810
						Add 1% cess on Labour welfare *(For MJP items)*	160,468
						Add 1% cess on Labour amenities *(For MJP items)*	62,515
						Total Cost	**17,373,793**

NAVI MUMBAI MUNICIPAL CORPORATION
RECYCLE WATER SYSTEM
Abstract for Vashi ESR At MIDC Area
Reserviors

Sr. No	Reference	Description of Item	Qty.	Unit	Basic Rate 16-17	Final Rate 16-17	Amount in (Rs.)
		ESR					
1	(MJP DSR 2016-17, P No 337, I. No 1)	Item No.1Designing (aesthetically), and constructing RCC elevated service reservoirs of following capacity with RCC staging consisting of columns, internal and external bracings spaced vertically not more than 4.5 metres centre to centre for ESR having capacity upto 500 cum and not more than 6 m c/c for ESRs having capacity above 500 Cum including excavation in all types of strata, foundation concrete, cement plaster with water proofing compound to the inside face of the container including refilling disposing off the surplus stuff within a lead of 50 metres, all labour and material charges including lowering, laying, erecting, hoisting and jointing of pipe assembly of inlet, outlet, washout, overflow and bypass arrangements as per departmental design, providing and fixing accessories such as M.S. ladder, C.I. manhole frame and covers, water level indicators, lightening conductor, G.I. pipe railing around walk way and top slab, providing spiral stair case from ground level to roof level, M.S. grill gate of 2 M height with locking arrangement of approved design, B.B. masonry chambers for all valves, ventilating shafts, providing and applying three coats of cement paint to the structure including roof slab, epoxy painting to internal surface and anti-termite treatment for underground parts of the structure					
		The design of the structure be in accordance with relevant I.S. specification (I.S. 3370 - 1965 or revised.)					
		The design shall satisfy the stipulations as per I.S. 1893 - 1984 and I.S. 13920 / 1993 for seismic force and I.S. - 11682 / 1985 for R.C.C. staging of overhead tanks.					
		For design having more than 6 columns, provision of					
		The entire structure shall be in M-300 mix only.					
		Plain round mild steel bars grade-I conforming to I.S. 432 part-I or high yield strength deformed bars conforming to I.S. 1786 or I.S. 1139 shall be used, grade-II mild steel bars will not be allowed.					
		Irrespective of the type of foundation proposed in the design, one set of bracing be provided at the ground level.					
		These rates include providing M.S. ladder for E.S.R.s upto 2 lakh litres capacity and providing spiral staircase for E.S.R. above 2 lakh litres capacity.					
		Staging shall have to be designed with stresses of M-200 concrete for ESR. However all RCC construction should be done in M-300.					
		These rates are including the cost of uplift pressure if any and entire dewatering during execution. In case of water logging area where water is stretch at shallow depth, extra provision of dewatering shall be made as per site condition.					
		All conditions given in the Member Secretary's Circular No. MJP / TS-I / 350 / 1668 dt. 2-8-97 and MJP / S-I / 350 / 2127 dt. 13-7-99 shall be strictly followed and additional cost, if any, due to these conditions is included in the rates mentioned below.					
		75% part rate shall be payable for reinforcement concrete and plastering items of containers of E.S.R. till satisfactory hydraulic testing for water tightness is given; and till that work shall be treated as incomplete.					
		The rates indicated in the table are excluding the cost of pipes, specials and valves required for inlet, outlet, washout, overflow and bypass arrangement. The scope of work, however, includes cost of erecting, laying and jointing of pipes and valves including cost of jointing materials upto 5 M beyond outer face of outermost column.					
		For ESR upto 500 cum capacity C.I. double flanged pipes upto 300 mm dia shall be provided and C.I. specials shall be used. For ESR above 500 cum capacity C.I./M.S. pipe assembly with minimum 8 mm thickness upto 500 mm dia and minimum 10 mm thickness above 500 mm dia can be used with proper anti-corrosive epoxy treatment from inside and outside.					

Sr. No	Reference	Description of Item	Qty.	Unit	Basic Rate 16-17	Final Rate 16-17	Amount in (Rs.)
		Below mentioned rates are for foundations with individual footing with bearing capacity of 20 tonnes per square metre. For raft foundations, these rates shall be increased by 7.5% where safe bearing capacity (SBC) is 5 MT per sqm and by 5% where SBC is more than 5 MT/sqm and upto 10 MT/sqm. This % of 5% or 7.5% is applicable for estimation of amount of lumpsum item of ESR. For extra item due to change from individual foundation to raft, actual increase in concrete and steel be paid as per relevant DSR item.					
		The rate shall be increased by 30% for bearing piles upto depth of 10 M and for further increased in depth by 5 M each, it shall be increased by another 10%. These rates are applicable where raft is not feasible. For pile foundations sulphate resistant cement shall only be used. Single pile for the column is not permitted, group of piles shall be designed with pile cap for each column of ESR.					
		The rates are applicable for staging height of 12 M. These rates shall be increased or decreased for per metre variation in this staging height as below :					
		12 to 16 M staging - 2% per metre					
		16 to 20 M staging - 3% per metre					
		20 M and above - 4% per metre					
		For 17 M staging height, percentage calculation will be like below :					
		12 to 16 M --- 4 x 2 = 8%					
		16 & 17 M --- 1 x 3% = 3% Total = 11%					
		For 21 M staging height, percentage calculation will be like below :					
		12 to 16 M --- 4 x 2 = 8%					
		16 to 20 M --- 4 x 3% = 12%					
		20& 21 M --- 1 x 4% = 4% Total = 24%					
		Following rates are for seismic zone III. For zone IV, these rates shall be increased by 5% and for zone II, these rates shall be decreased by 5%. Concerned Executive Engineer shall confirm the seismic zone for the scheme from seismic zones plan before estimation and adopt appropriate rates as per actual seismic zones. (Seismic maps attached in this CSR).					
		Notes					
		Conditions from Sr. No. 1 to 11 shall form a part and parcel of the tender and must be included in the draft tender papers for works of R.C.C. E.S.R.					
		Conditions from Sr. No. 12 to 17 are for estimation purpose only and shall not appear in the tender.					
		Vashi MIDC	1.00	LS	20,027,466.53	20027466.53	20,027,467
	(MJP DSR 2016-17, P. No 339, Item. No 1,Note-15)	Providing Pile foundation for ESR Construction, the rate shall be increased by 30% for bearing piles upto depth of 10 M and for further increased in depth by 5 M each, it shall be increased by another 10%. These rates are applicable where raft is not feasible. For pile foundations sulphate resistant cement shall only be used. Single pile for the column is not permitted, group of piles shall be designed with pile cap for each column of ESR.	1.00	LS	3,691,698.90	3691698.90	3,691,699
		Epoxy Coating Paint For RCC Structures					
2	(MJP DSR 2016-17, Section K. Page No 356, No -6)	**Item No 2:** Providing and applying epoxy paint of approved make(Shalimar,Ciba,Mahindra & mahindra) to concrete surface of **RCC ESR or GSR or any other structure** including cleaning the surface by scrapping and air blowers to the satisfaction of Engineer-in-charge,necessary scaffolding,etc complete with all leads and lifts and giving satisfactory hyraulic test for water tightness,film test as per I.S. codes.					
		a) For New surfaces - Two coats					
		Vashi MIDC	792.46	Sqmt.	582.00	611.10	484,275
		Sluice Valves					
3	(MJP16-17, Item No-2 c XIII , Pg-213)	**Item No.3** Providing Double flange sluice valve confirming for IS 2906/14846/ including worn gear arrangements as per test pressure stainless steel spindle, caps including all taxes transportation etc complete.					
		Sluice Valve - PN - 1.6 (Without Bypass arrangement)					
		150 mm	0.00	No.	11239.00	11239.00	-
		200 mm	0.00	No.	21881.00	21881.00	-
		250 mm	0.00	No.	33833.00	33833.00	-

Sr. No	Reference	Description of Item	Qty.	Unit	Basic Rate 16-17	Final Rate 16-17	Amount in (Rs.)
		300 nmn	0.00	No	42964.00	42964.00	-
		Butterfly Valves					
4	(MJP16-17, Item No-3 b, XIII , Pg-216)	**Item No.4:** Providing, double flanged short body pattern type manually operated Butterfly Valve having body, disc and end cover in graded cast iron to IS-210 Gr.CF 200 generally confirming in to IS- 13095-1991, Synthetic rubber faced ring secured on disc by retaining ring with stainless steel screw stub shaft of stainless steel riding in teflon bearing excluding C.C. foundation /structural steel support.					
		Butterfly Valve - PN - 1.6 (With Bypass arrangement)					
		350 mm	1.00	No.	55908.00	55908.00	55,908
		400 mm	0.00	No.	68489.00	68489.00	-
		450 mm	0.00	No.	79128.00	79128.00	-
		500 mm	0.00	No.	86882.00	86882.00	-
		600 mm	0.00	No.	102422.00	102422.00	-
		700 mm	0.00	No.	153574.00	153574.00	-
		750 mm	0.00	No.	181876.00	181876.00	-
		800 mm	0.00	No.	193707.00	193707.00	-
5	(MJP16-17, Item No-4, XIII , Pg-217)	**Item No.5:** **Lowering, laying and Jointing in Position following C.I.D./F Reflex valves, Butterfly valves and Sluice valves** including cost of all labour join ting material, including nut bolts and giving satisfactory hydraulic testing etc. complete (rate for all class)					
		150 mm	0.00	No.	3198.00	3357.90	-
		200 mm	0.00	No.	3327.00	3493.35	-
		250 mm	0.00	No.	4334.00	4550.70	-
		300 nmn	0.00	No.	4497.00	4721.85	-
		350 mm	1.00	No.	5541.00	5818.05	5,818
		400 mm	0.00	No.	6686.00	7020.30	-
		450 mm	0.00	No.	7954.00	8351.70	-
		500 mm	0.00	No.	8237.00	8648.85	-
		600 mm	0.00	No.	8742.00	9179.10	-
		700 mm	0.00	No.	9425.00	9896.25	-
		750 mm	0.00	No.	10380.00	10899.00	-
		800 mm	0.00	No.	12370.00	12988.50	-
		Full Bore Electromagnetic Flow meter					
6	MJP DSR (E/M) 2015-16, Pg. No. 118 Item no WM3	**Item No.6** Manufacturing, supplying & commissioning Electromagnetic Flow Meter(EMF) for Raw/Pure water with accuracy+/-0.5% of measured value and protection as per given specifications for size 100mm-1000mm including sensor transmitter surge arrestor, cable duct separate PVC of 25mm dia for 25 mtrs.sensor transmitter surge arrestor, flow meter, including the pipe cutting, leveling & installation of flow meter in the pipelines with necessary tool tackles, cranes etc. as may be required at site & based on technical specifications.					
		150 mm	0.00	No.	143915.00	143915.00	-
		200 mm	0.00	No.	170631.00	170631.00	-
		250 mm	0.00	No.	188462.00	188462.00	-
		300 nmn	0.00	No.	215974.00	215974.00	-
		Ultrasonic Multi channel Flow Meter					
7	(As per quotation)	**Item No. 7** supply 4 path ultrasonic flow meter with all accessroies complete in all respect as per technical specifications 600NB along with battery power GSM modem (Intergral pipe section model)					
		350 mm	0.00	No.	460149.50	460149.50	-
		400 mm	0.00	No	460149.50	460149.50	-
		450 mm	0.00	No	460149.50	460149.50	-
		500 mm	1.00	No.	460149.50	460149.50	460,150
		600 mm	0.00	No	460149.50	460149.50	-
		700 mm	0.00	No.	460149.50	460149.50	-
		750 mm	0.00	No.	467829.50	467829.50	-
		800 mm	0.00	No	467829.50	467829.50	-
		Additional lead beyond 5 Kms for materials					

Sr. No	Reference	Description of Item	Qty.	Unit	Basic Rate 16-17	Final Rate 16-17	Amount in (Rs.)
8		**Sand Qty**					
		Item No-8					
		Vashi MIDC	629.85	cum	1679.50	1679.50	1,057,830
		Metal Qty (Crushed Metal)					
9		**Item No-9**					
		Vashi MIDC	1259.70	cum	0.00	0.00	-
		Steel Epoxy Paint					
		Item No-10					
10	MJP 16-17 It. No. 9B 1 pg.no. 53	Providing **fusion bonded epoxy coating to reinforcement bars** as per IS-13620-993 specification for a thickness of 175mm(+or - 50) microns including extra cost on account of careful handling,extra cost on account of using PVC coated binding wire instead of GI wire, extra cost on account of touch-up material supplied by coating agency and repair work extra cost on account of transportation to & fro from steel yard at kalamboli to plant at Daman and Plant at Daman to work site by trailer, loading, unloading, including all taxes (Central & Local), etc. complete. as directed by the Engineer in charge.					
		Vashi MIDC	115.51	M.T	15772.00	16560.60	1,912,915
						Cost	27,696,061
						Add 1% cess on Labour welfare *(For MJP items)*	261,781
						Add 1% cess on Labour amenities *(For MJP items)*	102,552
						Total Cost	**28,060,394**

NAVI MUMBAI MUNICIPAL CORPORATION

RECYCLE WATER SYSTEM

Reserviors -Calculations

Sr No	Name/Location of RCC ESR	Capacity in litres	St. Ht. M	Basic cost(Rs.)	Seismic Zone add 5%	Add for Stagging > 12 m	Net cost(Rs.)	Add for Corporation Area 5%	Gross cost (Rs.)	Pile found 20m(50%)	Steel quantity	Concrete qty.
1	Vashi MIDC	2500000	20	12305663	615283	2461133	19073778	953689	**20027467**	3691699	115.51	1482
2	Koperkhairane MIDC	1500000	12.5	8367851	418393	83679	11380277	569014	**11949291**	2510355	70.31	902
3	Airoli MIDC	750000	20	5115198	255760	1023040	7928557	396428	**8324985**	1534559	36.41	467

Calculation of Epoxy Coating Paint					
		Unit	Vashi MIDC	Koperkhaira ne MIDC	Airoli MIDC
2	Capacity	cum	2500	1500	750
	Height. of water column	m	5	5	5
	c/s area	sqm	500	300	150
	Diameter required	m	25.24	19.55	13.82
	Surface area	sqm	396.23	306.92	217.03
	Area to be painted	sqm	792.46	613.84	434.05
		Total in Sqm			**1840.36**

NAVI MUMBAI MUNICIPAL CORPORATION

Recycle Water System

Rate analysis

Add 5 % for Corporation Area — 5%

R.A. No. 1	Filling in Excavated surface with contractor's murum in 15 to 20 cm layers including watering compaction etc complete								
	Earth filling MJP 16-17, Item No 19, Pg-41				MJP 16-17, Item No 19, Pg-41		=	723.00	Cum
	Add 5 % for Corporation Area						=	36.15	
	Add lead charges for								
			Murum	1.00	0.00		=	0.00	
								759.15	
						Total	=	**759.15**	
						Say	=	759.15	Cum
R.A. No. 2	Providing dry trap rubble stone solling in 15 cm to 20cm layers including hand packing and compacting, royalty charges etc comple								
	Soling Rate as per MJP 16-17, Page No. 41 Item No 20				MJP 16-17, Page No. 41 Item No 20		=	1014.00	Cum
	Add 5 % for Corporation Area						=	50.7	
	Add lead charges for								
			Hand Broken Metal	1.000	0.00		=	0.00	
			Sand	0.150	1679.50		=	251.92	
								1316.62	
						Total	=	**1316.624348**	
						Say	=	1316.62	Cum
R.A. No.3	Providing and laying in situ, fallowing grade of C.C. of trap/granite/gneiss metal for foundation and bedding including								
	PCC Rate as per MJP 16-17, Item No1, Pg-45				MJP 16-17, Item No1, Pg-45		=	4457.00	Cum
	Add 5 % for Corporation Area						=	222.85	
	Add lead charges for								
			Sand	0.45	1679.50		=	755.77	
			crushed metal (40 mm)	0.52	0.00		=	0.00	
			crushed metal (20 mm,10 mm)	0.33	0.00		=	0.00	
								5435.62	
						Total	=	**5435.623043**	
						Say	=	5435.62	Cum
R.A. No.4	Providing and filling in the foundation trenches with sand of approved quality including watering compaction. Etc complete								
	Sand Bedding Rate as per MJP 16-17 Item No 21, Pg-41				MJP 16-17 Item No 21, Pg-41		=	973.00	Cum
	Add 5 % for Corporation Area						=	48.65	
	Add lead charges for								
			Sand	1.00	1679.50		=	1679.50	
								2701.15	
						Total	=	**2701.145652**	
						Say	=	2701.15	Cum
R.A. No.5	Providing and laying insitu Cement concrete of trap/granite/ quartzite / gneiss metal for RCC work in foundation like raft, grillage, strip								
	RCC work MJP 16-17, Item No 2 c, Pg-46				MJP 16-17, Item No 2 c, Pg-46		=	5999.00	Cum
	Add 5 % for Corporation Area						=	299.95	
	Add lead charges for								
			Sand	0.425	1679.50		=	713.79	
			crushed metal (20 mm)	0.57	0.00		=	0.00	
			crushed metal (10 mm)	0.28	0.00		=	0.00	
								7012.74	
						Total	=	**7012.735652**	
						Say	=	7012.74	Cum

R.A. No. 6	**Providing and constructing on sewer.BBM manhole 1.2 m dia at bottom and 0.5 m dia at top and up to a depth of 2.0 M in CM 1:4 proportion excluding excavation including foundation concrete 250 mm thick and haunches and channels in C.C.1:2:4 proportion, finishing channel, in smooth rendering, providing C.I dapuri type steps each weighing 5.5 kg., 1:2:4 coping and providing and fixing approved make and quality SFRC frame and cover of 56 cm dia etc., complete as directed by engineer- in-charge.**								
	MJP 16-17	0..			MJP 16-17, Item No 6, Pg-312		=	21486.00	No.
	Add 5 % for Corporation Area						=	1074.3	
	Add lead charges for								
		Qty for 1.2	Brick Masonry						
			Sand	0.200	1679.50		=	335.90	
			Brick	380.00	0.00		=	0.00	
		Qty for 1.2	Foundation Concrete						
			Sand	0.20	1679.50		=	336.32	
			crushed metal (40 mm)	0.32	0.00		=	0.00	
			crushed metal (20 mm,10 mm)	0.15	0.00		=	0.00	
								23232.52	
						Total	=	**23232.51813**	
						Say	=	23232.52	No.
R.A. No. 7	**Providing and constructing on sewer.BBM manhole 1.5 m dia at bottom and 0.5 m dia at top and up to a depth of 2 to 5 M in CM 1:4 proportion excluding excavation including foundation concrete 250 mm thick and haunches and channels in C.C.1:2:4 proportion, finishing channel, in smooth rendering, providing C.I dapuri type steps each weighing 5.5 kg., 1:2:4 coping and providing and fixing approved make and quality SFRC frame and cover of 56 cm dia etc., complete as directed by engineer- in-charge.**								
	MJP 16-17, Item No 7, Pg-312				MJP 16-17, Item No 7, Pg-312		=	59242.00	No.
	Add 5 % for Corporation Area						=	2962.1	
	Add lead charges for								
			Brick Masonry						
			Sand	0.250	1679.50		=	419.87	
			Brick	475.00	0.00		=	0.00	
			Foundation Concrete						
			Sand	0.45	1679.50		=	747.38	
			crushed metal (40 mm)	0.70	0.00		=	0.00	
			crushed metal (20 mm,10 mm)	0.33	0.00		=	0.00	
								63371.35	
						Total	=	**63371.34948**	
						Say	=	63371.35	No.

NAVI MUMBAI MUNICIPAL CORPORATION								
Recycle Water System								
LEAD CHART								
Sr. No.	**Material**	**Source**	**Lead in Kms**	**Lead Charges 2016-17**	**Initial Lead**	**Initial Lead Charges 16-17**	**Net Lead Charges 16-17**	**Unit**
1	Sand	Ambet	160.00	1830.07	5	150.57	**1679.50**	Cum
2	Crushed Metal	Local Stone Quarry	5	150.57	5	150.57	**0.00**	Cum
3	Soling Stone	Local Stone Quarry	5	184.21	5	184.21	**0.00**	Cum
4	Murum / Earth	Local Stone Quarry	5	180.38	5	180.38	**0.00**	Cum
5	Brick		5	247.37	5	247.37	**0.00**	1000 no.

COST ESTIMATE OF COMPOUND WALL

NAVI MUMBAI MUNICIPAL CORPORATION		
RECYCLE WATER SYSTEM		
Compound Wall, Gates,		
ABSTRACT		
Sr No	**Subwork**	**Amount in Rs.**
1	Vashi MIDC	556,117.50
2	koparkharine MIDC	499,416.24
3	Airoli MIDC	386,013.73
	Total	**1,441,547.48**

NAVI MUMBAI MUNICIPAL CORPORATION					
RECYCLE WATER SYSTEM					
Providing constructing compound walls for ESR					
ABSTRACT					
MIDC Zone	**Quantity**	**Items**	**Rate in Rs.**	**Per**	**Amount in Rs.**
	1	2	3	4	5
Vashi	108.00	2.4m Height Compound Wall for ESR with BB Masonary 1.5ht and 0.9m height MS grill work above BB masonary inc. RCC work i.e. foundation/ pile foundation, beams, columns at regular interval etc. complete. (As per rate analysis)	4725.10	Rmt	510,311
Koparkharine	96.00		4725.10		453,610
Airoli	72.00		4725.10		340,208
		Total			1,304,128.88

NAVI MUMBAI MUNICIPAL CORPORATION			
RECYCLE WATER SYSTEM			
Providing and fixing gates to Compound wall for ESR at MIDC AREA			
ABSTRACT			
Quantity	Items	Rate in Rs.	Amount in Rs.
1	2	3	4
1	**Item No.1** Providing and fixing M.S. gate 2.5 m wide for compound wall with 40 mm dia. G.I. Pipe approved grill work, R.C.C. M150, side pillar of 25 cm X 40 cm, 2.5 m height including foundation, finishing, painting etc. completed (MJP DSR 2016-17 sec H Page No. 56 Item No.3).	28818.90	28,818.90
1	**Item No.2** Providing and fixing Wicket gate 1.0 m wide for compound wall with 40 mm dia. G.I. Pipe approved grill work, RCC M150, side pillar of 25 cm x 40 cm x 2.5 m height including foundation, finishing, painting etc. Completed (MJP DSR 2016-17 sec H Page No. 56 Item No.4).	16987.30	16,987.30
		Cost Per ESR	**45,806.20**
		Total cost (3 zones)	**137418.6**

NAVI MUMBAI MUNICIPAL CORPORATION						
RECYCLE WATER SYSTEM						
Area Requirement for MIDC ESR						
ESR Location at Midc area	Diameter of ESR	Area Required With Compound Wall	Area Required Without Compound Wall	length	breath	Total compound wall constructi on QTY
Vashi	23	1215	729	27	27	108
Koparkharine	20	1080	576	24	24	96
Airoli	14	720	324	18	18	72
				Total QTY		**276**

NAVI MUMBAI MUNICIPAL CORPORATION							
RECYCLE WATER SYSTEM							
Abstract for Compound Wall							
Sr.no.	Quantity	Item no	Description	Unit	Basic rate	Final Rate(Rs.)	Amount(Rs.)
1.a)		MJP DSR 16-17 Pg No.	Excavation for foundation / pipe trenches in earth, soils of all types, sand, gravel and soft murum, including removing the excavated material up to a distance of 50 metres and lifts as below, stacking and spreading as directed, normal dewatering, preparing the bed for foundation and excluding backfilling, etc. complete.				
	410.06		Lift 0 to 1.5 M	Cum	142	149.10	61139.95
b)		MJP DSR 16-17 Pg No.	Excavation for foundation / pipe trenches in hard murum including removing the excavated material up to a distance of 50 M and lifts as below, stacking and spreading as directed by Engineer-in-charge, normal dewatering, preparing the bed for foundation and excluding backfilling, etc. complete.				
	90.21		Lift 0 to 1.5 M	Cum	166	174.30	15723.60
2	158.63	MJP DSR 16-17 Pg No.	Filling in plinth and floors murum bedding in trenches with approved murum from excavated materials from foundation 15cm to 20cm layers including watering and compaction complete.(Bd-A-10/263)	Cum	64	67.20	10659.94
3	62.88	MJP DSR 16-17 Pg No.	Providing **soling using 80mm size trap metal** in layers of 15 cm each including filling voids with sand, ramming, watering etc. complete. Specs No.	Cum		1312.85	82552.14
4	27.34	PWD DSR 15-16, Bd-E, page no. 16, item no.1A(ii)	Providing and laying in situ cement concrete in proportion **M 15** of trap metal for foundation and bedding, including bailing out water manually, formwork, compacting and curing etc. complete..	Cum		5454.26	149119.50
5	123.02	MJP DSR 16-17 Pg No.	Providing and casting in situ cement concrete **M-20** of trap metal for **R.C.C.. work like raft, grillage, strip, foundations and footing** of R.C.C. Columns and steel stanchions, including bailing out water manually, centering, formwork, compacting, finishing and curing etc. complete. (Excluding steel reinforcement)	Cum		6463.72	795166.28

Sr.no.	Quantity	Item no	Description	Unit	Basic rate	Final Rate(Rs.)	Amount(Rs.)
6	80.92	MJP DSR 16-17 Pg No.	Providing and casting in situ cement concrete **M20** of trap metal for **R.C.C. columns** as per detailed designs and drawings or As directed by Engineer-In-Charge., including centering, formwork, compacting, roughening the surface if special finish is to be provided and curing etc. complete. (Excluding steel reinforcement)	Cum		8612.02	696884.29
7	47.49	PWD DSR 15-16, Bd-F, page no. 19 , item no. 3 b(a)	Providing and casting in situ cement concrete **M-20** of trap metal for **R.C.C. Beams and Lintels** as per detailed drawings and designs or as directed by Engineer-In-Charge., including centering formwork, compacting, roughening the surface if special finish is to be provided and curing etc. complete. (Excluding steel reinforcement.)	Cum		8550.07	406042.61
8	22.21	MJP15-16, Item No 8, Pg-50	**Providing and fixing in position steel bar reinforcement** of various diameters for RCC piles, caps, footings, foundations, slabs, beams, columns, canopies, staircases. newels, chajjas, lintels, pardies, copings, fins, arches, etc. as per detailed designs, drawings and schedules; including cutting, bending, hooking the bars, binding with wires or tack welding and supporting as required, etc. complete. **(including cost of binding wire).** (Bd-F-17 /306)	M.T.	51749.00	56923.90	1264148.89
9	22.21	MJP15-16, Item No 9) b), Pg-51	**Providing fusion bonded epoxy coating to reinforcement bars** as per IS-13620-1993 specificaion for a thickness of 175 (±50) microns including extra cost on account of careful handling, extra cost on account of using PVC coated binding wire instead of G. I. wire, extra cost on account of touch-up material supplied by coating agency and repair work extra cost on account of transportation to and fro from steel yard at kalamboli to plant at Daman and plant at Daman to work site by trailer, loading, unloading, , including all taxes (central and local) etc complete.	M.T.	15772.00	17349.20	385285.83
			1) For 8mm to 20mm dia				
10	468.24	PWD DSR 15-16 Bd G, PN. 26, Item no 4	Providing second classs burnt brick masonry with conventional / I.S. type brick in cement mortar 1:6 in superstructure , including striking joints,racking out joints , watering and scafolding etc complete.	Sqm		5330.65	2496023.94
11	23.09	PWD DSR 15-16, Bd-E, page no. 17, item no5	Providing and casting in situ PCC M15 grade of trap metal for coping to head walls / parapet including centering, form work, compaction and curing etc. complete. (with reversible drum type mixer with SCADA with crushed sand)	Cum		5246.36	121138.48

Sr.no.	Quantity	Item no	Description	Unit	Basic rate	Final Rate(Rs.)	Amount(Rs.)
12	1,141.22	PWD DSR 17-18, Bd-L, Page no. 177Item no 32.13	Providing **sand faced plaster** externally in cement morter using approved screened sand, in all positions including base coat of 15 mm thick in cement morter 1:4 using waterproofing compound at 1 kg per cement bag curing the same for not less than 2 days and keeping the surface of the base coat rough to receive the sand faced treatment 6 to 8 mm thick in cement morter 1:4 finishing the surface by taking out grains and curing for fourteen days scaffolding etc. complete.	Sqm		421.94	481524.56
13	-	PWD DSR 15-16, Bd-P, Page no. 74 Item no-1 b	Providing and applying white wash in two coat on old/new plastered or masonary surfaces & asbestos cement sheets including scaffolding & preparing the surface by brushing & brooming down complete.	Sqm	6	6.30	0.00
14	1,141.22	PWD DSR 17-18, Bd-08, Page no. 194 Item no-35.13	Providing and applying of waterproof cement paint of approved manufacture and colour to the plastered surface, including scaffolding preparing the surface, watering for two days etc. complete	Sqm	40	42.00	47931.24
		b)	**Three Coat**				
15	1,141.22	PWD DSR 17-18, Bd-0 8F, Page no. 195 Item no- 35.22	Providing and applying one coat of seal cement primer of approved manufacture and shade, including scaffolding if necessary, cleaning the surface etc. complete.	Sqm	12	12.60	14379.37
16	293.76	PWD DSR 17-18, Bd-W, Page no. 287,Item no-46.39	Providing and erecting chain link fencing 1.6 M. height with G I chain link of size 50 x 50 mm 8 guage thick 123 Spec. 63 Sq.M. 2169.00 173.00 G.I.and fixed 75 mm above Ground level vertical M.S. Angle of 40 x 40 x 6 mm size embedded in C.C.M-15 block of size 45 x 45 x 67 cms at 1.75 M. c/c with iron bar 16 mm dia as hold fast including welding link with angle frame at 30 cm c/c nuts and bolts and horizontal M.S. angles at top and bottom of 25 x 25x 5 mm size and vertical M.S. flat 35 x 5 mm and 25 x 5 mm horizontal including cross support of 40 x 40 x 6mm angles both sides at every corner or bends embedded in C.C.M-15 block of size 45 x 45 x 67 cms including 3 coats of oil painting etc.complete. (Prior permission of S.E.'s is necessary)	Sqm	1740	1827.00	536699.52
			Sub Total Cost of the project				**7,564,420.14**
			Total Cost of Project				7,564,420.14
			Say				**7,564,420.00**
			RMT per Cost				**4,725.10**

NAVI MUMBAI MUNICIPAL CORPORATION								
RECYCLE WATER SYSTEM								
Measurement Sheet for Compund Wall								
Sl No	Item no	Description	Unit	No	Length	Width	Depth	Quantity
		LENGTH OF COMPOUND WALL	M		600.56	200.19		
		Footing size			1.50	0.75	0.45	
		Column size			0.30	0.3		
		Beam size						
		Expansion Joint proposed at 9.34 Rmt C/c						
		Total Excavation	Cum	243	1.50	0.75	1.83	500.28
1 a)	MJP DSR 16-17 Pg No.	Excavation for foundation ; Lift from 0.00 mtr to 1.50 mtr						
		Footing	Cum	243	1.50	0.75	1.5	410.06
		Ordinary Soil		100%				410.06
1B)	MJP DSR 16-17 Pg No.	Excavation for foundation ; Lift from 1.5 mtr to 3.0 mtr						
		Footing	Cum	243	1.50	0.75	0.33	90.21

Sl No	Item no	Description	Unit	No	Length	Width	Depth	Quantity
		Hard Murum		100%				90.21
2	MJP DSR 16-17 Pg No.	Filling in plinth and Floors **with approved excavated murrum** in 15cm to 20cm layers including watering and compaction etc. complete.. Specs No.						
		Total Excavation	Cum					500.28
		PCC	Cum					-27.34
		Soling	Cum					-62.88
		RCC	Cum					- 251.43
			Cum					**159**
		Soling						
3	MJP DSR 16-17 Pg No.	Providing **soling using 80mm size trap metal** in layers of 15 cm each including filling voids with sand, ramming, watering etc. complete. Specs No.						
		Footing	Cum	**243**	1.5	0.75	**0.23**	**62.88**
		PCC						

Sl No	Item no	Description	Unit	No	Length	Width	Depth	Quantity
4	PWD DSR 15-16, Bd-E, page no. 16, item no.1A(ii)	Providing and laying in situ cement concrete in proportion **M 15** of trap metal for foundation and bedding, including bailing out water manually, formwork, compacting and curing etc. complete..						
		Footing	Cum	**243**	1.5	0.75	**0.1**	**27.34**
5	MJP DSR 16-17 Pg No.	Providing and casting in situ cement concrete **M-20** of trap metal for **R.C.C.. work like raft, grillage, strip, foundations and footing** of R.C.C. Columns and steel stanchions, including bailing out water manually, centering, formwork, compacting, finishing and curing etc. complete. (Excluding steel reinforcement)						
		Footing	Cum	243	1.50	0.75	0.45	**123.02**
6	MJP DSR 16-17 Pg No.	Providing and casting in situ cement concrete **M20** of trap metal for **R.C.C. columns** as per detailed designs and drawings or As directed by Engineer-In-Charge., including centering, formwork, compacting, roughening the surface if special finish is to be provided and curing etc. complete. (Excluding steel reinforcement)						
		Columns						
		upto Ground ; L = 2.5-0.45-0.15 = 1.60m	Cum	243	2.05	0.30	0.30	**44.83**
		Above Ground	Cum	243	1.65	0.30	0.30	**36.09**
								80.92

Sl No	Item no	Description	Unit	No	Length	Width	Depth	Quantity
7	PWD DSR 15-16, Bd-F, page no. 19 , item no. 3 b(a)	Providing and casting in situ cement concrete **M-20** of trap metal for **R.C.C. Beams and Lintels** as per detailed drawings and designs or as directed by Engineer-In-Charge., including centering formwork, compacting, roughening the surface if special finish is to be provided and curing etc. complete. (Excluding steel reinforcement.)						
		Ground Beams (excluding columns)	Cum	1	527.66	0.30	0.30	**47.49**
8	MJP15-16, Item No 8, Pg-50	Providing and fixing in position- **Tor steel reinforcement** of various diameters for R.C.C. pile caps, footings, foundations, slabs, beams, columns, caNo.pies, staircases, newels, chajjas, lintels, pardies, coping, fins, arches, etc. as per detailed designs, drawings and schedules, including cutting, bending, hooking the bars, binding with wires or tack welding and supporting as required etc. complete.						
			Foundation	Columns	beams			
		Upto Plinth	123.02	44.83	47.49			
		Gr Floor		36.09				
		unit weight	0.080	0.100	0.090			
			80 Kg/cum,					
		Reinforcement Steel Qty Summary						
		Upto Plinth	**9.84**	**4.48**	**4.27**			**18.6**
		Gr Floor		**3.61**	**0.00**	**0.00**	**0.00**	**3.6**

Sl No	Item no	Description	Unit	No	Length	Width	Depth	Quantity
		Total Reinforcement Steel Qty----	9.84	8.09	4.27	0.00	0.00	
								22.21
								M.T.
9	MJP15-16, Item No 9) b), Pg-51	Providing fusion bonded epoxy coating to reinforcement bars as per IS-13620-993 specification for a thickness of 175mm(+or - 50) microns including extra cost on account of careful handling,extra cost on account of using PVC coated binding wire instead of GI wire, extra cost on account of touch-up material supplied by coating agency and repair work extra cost on account of transportation to & fro from steel yard at kalamboli to plant at Daman and Plant at Daman to work site by trailer, loading, unloading, including all taxes (Central & Local), etc. complete. as directed by the Engineer in charge.	**MT**					**22.21**
		Brick Masonary						
10	PWD DSR 15-16 Bd G, PN. 26, Item no 4	Providing second classs burnt brick masonry with conventional / I.S. type brick in cement mortar 1:6 in superstructure , including striking joints,racking out joints , watering and scafolding etc complete.						
		For Wall	Sqm	1	565.48		0.95	537.21
		Deduction						
		Columns	Sqm	- 242	0.3		0.95	- 68.97
								468.24
								SQM

Sl No	Item no	Description	Unit	No	Length	Width	Depth	Quantity
		PCC Coping over Wall & Columns						
11	PWD DSR 15-16, Bd-E, page no. 17, item no5	Providing and casting in situ cement concrete **M-15** of trap metal for **coping to plinth or parapet,** moulded or chamfered as per drawings or As directed by Engineer-In-Charge., roughening the exposed faces if special finish is to be provided and curing etc. complete.						
		Above Wall						
		L= 565.48- (0.3*242) = 492.88m	Cum	1	527.66	0.30	0.10	15.83
		Above Columns						
			Cum	242	0.50	0.40	0.15	7.26
								23.09
		12 mm thk Plaster (over coping) CM 1:4						
12	PWD DSR 17-18, Bd-L, Page no. 177Item no 32.13	Providing internal cement plaster 12mm thick in a single coat, **B) 1:4** without neeru finish to concrete or brick surface in all positions including racking out. joints, scaffolding and curing etc. complete.						
		On Wall	Sqm	2	468.24		0.80	749.18
		For Columns						
		Both Sides	Sqm	484	0.30		1.65	239.58

Sl No	Item no	Description	Unit	No	Length	Width	Depth	Quantity
		Column offset	Sqm	484		0.10	0.80	38.72
		For Coping						
		Sides	Sqm	242	0.50	0.40	0.15	65.34
		Top	Sqm	242	0.50	0.40		48.40
		w=0.2+0.05*2+0.075*2						
		Columns						**1,141.22**
13	PWD DSR 15-16, Bd-P, Page no. 74 Item no-1 b	Providing and applying white wash in two coat on old/new plastered or masonary surfaces & asbestos cement sheets including scaffolding & preparing the surface by brushing & brooming down complete.	Sqm					
		Two Coat						1,141.22
		same as plaster quantity						
14	PWD DSR 17-18, Bd-08, Page no. 194 Item no-35.13	Providing and applying of waterproof cement paint of approved manufacture and colour to the plastered surface, including scaffolding preparing the surface, watering for two days etc. complete	Sqm					1,141.22
	b)	**Three Coat**						
		same as plaster quantity						

Sl No	Item no	Description	Unit	No	Length	Width	Depth	Quantity
15	PWD DSR 17-18, Bd-0 8F, Page no. 195 Item no- 35.22	Providing and applying one coat of seal cement primer of approved manufacture and shade, including scaffolding if necessary, cleaning the surface etc. complete.	Sqm					1,141.22

Sl No	Item no	Description	Unit	No	Length	Width	Depth	Quantity

Sl No	Item no	Description	Unit	No	Length	Width	Depth	Quantity
16	PWD DSR 17-18, Bd-W, Page no. 287,Item no-46.39	Providing and erecting chain link fencing 1.6 M. height with G I chain link of size 50 x 50 mm 8 guage thick 123 Spec. 63 Sq.M. 2169.00 173.00 G.I.and fixed 75 mm above Ground level vertical M.S. Angle of 40 x 40 x 6 mm size embedded in C.C.M-15 block of size 45 x 45 x 67 cms at 1.75 M. c/c with iron bar 16 mm dia as hold fast including welding link with angle frame at 30 cm c/c nuts and bolts and horizontal M.S. angles at top and bottom of 25 x 25x 5 mm size and vertical M.S. flat 35 x 5 mm and 25 x 5 mm horizontal including cross support of 40 x 40 x 6mm angles both sides at every corner or bends embedded in C.C.M-15 block of size 45 x 45 x 67 cms including 3 coats of oil painting etc.complete. (Prior permission of S.E.'s is necessary)						
			Sqm	64	7.65	0.6	-	293.76

RATE ANALYSIS

R.A. No. 1	**Providing dry trap / granite / quartzite / gneiss, rubble stone soling in 15cm to 20 cm thick layers (including hand packing and compacting), royalty charges etc. complete.(Bd-A-12/264)**								
	Soling Rate as per MJP DSR-2016-17			MJP DSR 16-17, Pg		=	1014.00		Cum
	Add 5% for Corporation Areas					=	50.7		
	Add lead charges for								
		Hand Broken Metal	1.000	158.10		=	158.10		
		Sand	0.150	129.23		=	19.38		
	Add royalty charges for								
		Hand Broken Metal	1.00	70.67		=	70.67		
					Total		1312.85		
					Say	=	1312.85		Cum
R.A. No.2	**Providing and laying in situ Cement concrete in proportion 1:2:4 of trap /granite /** quartzite / gneiss metal for foundation and bedding, including centering, formwork, compacting, roughening them **if special finish is to be provided and curing and finishing if required complete, without SCADA with concrete mixer with hopper.**								
	PCC Rate as per PWD DSR-2015-16			PWD DSR 15-16		=	5021.00		Cum
	Add 5% for Corporation Areas			0		=	251.05		
	Add lead charges for								
		Sand	0.47	129.23		=	60.74		
		crushed metal (40 mm)	0.70	129.23		=	90.46		
		crushed metal (20 mm)	0.24	129.23		=	31.01		
					Total		5454.26		
					Say	=	5454.26		Cum
R.A. No.3	**Providing and casting in situ PCC M15 grade of trap metal for coping to head walls** / parapet including centering, form work, compaction and curing etc. complete. **(with reversible drum type mixer with SCADA with crushed sand)**								
	PCC Rate as per PWD DSR-2017-18			PWD DSR 17-18, Pg no 49, Item No. 11.31		=	4823.00		Cum
	Add 5% for Corporation Areas					=	241.15		
	Add lead charges for								
		Sand	0.47	129.23		=	60.74		
		crushed metal (40 mm)	0.70	129.23		=	90.46		
		crushed metal (20 mm)	0.24	129.23		=	31.01		
					Total		5246.36		
					Say	=	5246.36		Cum
R.A. No.4	**Providing and laying in situ Cement concrete of trap/granite/quartzite/ gneiss metal for RCC work in foundation like raft, grillage, strip foundation and footing of RCC columns and steel stanchions including normal dewatering, 'plywood form work, bully/steel propups, compaction, finishing and curing, etc. complete. (By weigh batching and mix design for M-250 and M-300 only. Use of L & T, A C.C., Ambuja, Birla Gold, Manikgad, Rajashree, etc. cement is permitted) (excluding M.S. or Tor reinforcement)**								
	RCC for columns Rate as per MJP DSR-2016-17			MJP DSR 16-17, Pg		=	5999.00		Cum
	Add 5% for Corporation Areas					=	299.95		
	Add lead charges for								
		Sand	0.425	129.23		=	54.92		
		crushed metal (20 mm)	0.57	129.23		=	73.66		
		crushed metal (10 mm)	0.28	129.23			36.18		
							6463.72		
					Total	=	6463.72		
					Say	=	6463.72		Cum
R.A. No.5	**Providing and casting in situ Cement Concrete of trap/granite/quartzite/ gneiss metal of approved quality for RCC work as per detailed drawings and designs or as directed by Engineer-in-charge including normal dewatering, centering, 'plywood formwork, bully/steel prop-ups, compaction, finishing the formed surfaces with CM 1:3 of sufficient minimum thickness if special finish is to be provided and curing, etc. complete. (By weigh batching and mix design for M-250 and M-300 only. Use of L&T, A.C.C., Ambuja, Birla Gold, Manikgad, Rajashree, etc. cement is permitted) (excluding M.S, or Tor reinforcement)**								
	RCC for columns Rate as per MJP DSR-2016-17			MJP DSR 16-17, Pg		=	8045.00		Cum
	Add 5% for Corporation Areas					=	402.25		
	Add lead charges for								
		Sand	0.425	129.23		=	54.92		
		crushed metal (20 mm)	0.57	129.23		=	73.66		
		crushed metal (10 mm)	0.28	129.23			36.18		
							8612.02		
					Total	=	8612.02		
					Say	=	8612.02		Cum
R.A. No. 6	**Providing and casting in situ Cement Concrete of trap/granite/quartzite/ gneiss metal of approved quality for RCC work as per detailed drawings and designs or as directed by Engineer-in-charge including normal dewatering, centering, 'plywood formwork, bully/steel prop-ups, compaction, finishing the formed surfaces with CM 1:3 of sufficient minimum thickness to give a smooth and even surface wherever necessary or roughening if special finish is to be provided and curing, etc. complete. (By weigh batching and mix design for M-250 and M-300 only. Use of L&T, A.C. C , Ambuja, Birla Gold, Manikgad, Rajashree, etc. cement is permitted) (excluding M.S, or Tor**								
	RCC for Beams and Lintel Rate as per MJP DSR-2016-17			MJP DSR 16-17, Pg		=	7986.00		Cum
	Add 5% for Corporation Areas					=	399.3		
	Add lead charges for								
		Sand	0.425	129.23		=	54.92		
		crushed metal (20 mm)	0.57	129.23		=	73.66		
		crushed metal (10 mm)	0.28	129.23			36.18		
							8550.07		
					Total	=	8550.07		
					Say	=	8550.07		Cum
R.A. No.7	**Providing second classs burnt brick masonry with conventional / I.S. type brick in cement mortar 1:6 in superstructure , including striking joints,racking out joints , watering and scafolding etc complete.**								
	Brick Masonary Rate as per MJP DSR-2016-17			MJP DSR 16-17, Pg		=	4950		Cum
	Add 5% for Corporation Areas					=	247.5		
	Add lead charges for								
		Sand	0.25	129.23		=	32.31		
		brick	475.00	0.21			100.84		
							5330.65		
					Total	=	5330.65		
					Say	=	5330.65		Cum
R.A. No.8	**Providing sand faced plaster externally in cement morter using approved screened sand, in all positions including base coat of 15 mm thick in cement morter 1:4 using waterproofing compound at 1 kg per cement bag curing the same for not less than 2 days and keeping the surface of the base coat rough to receive the sand faced treatment 6 to 8 mm thick in cement morter 1:4 finishing the surface by taking out grains and curing for fourteen days scaffolding etc. complete.**								
	Plastering Rate as pee PWD DSR-2017-18			PWD DSR 17-18 Item No 32.11 Pg No. 177		=	400		Sq.m
	Add 5% for Corporation Areas					=	20		
	Add lead charges for								
		Sand	0.015	129.23		=	1.94		
							421.94		
					Total	=	421.94		
					Say	=	421.94		Sq.m

NAVI MUMBAI MUNICIPAL CORPORATION								
RECYCLE WATER SYSTEM								
LEAD CHART								
Sr. No.	**Material**	**Source**	**Lead in Kms**	**Lead Charges 2016-17**	**Initial Lead**	**Initial Lead Charges 16-17**	**Net Lead Charges 16-17**	**Unit**
1	Sand		15.00	279.80	5.00 Kms	150.57	**129.23**	Cum
2	Crushed Metal		15.00	279.80	5.00 Kms	150.57	**129.23**	Cum
3	Soling Stone		15.00	342.31	5.00 Kms	184.21	**158.10**	Cum
4	Murum / Earth		15.00	335.18	5.00 Kms	180.38	**154.80**	Cum
5	Brick		15.00	459.67	5.00 Kms	247.37	**212.30**	1000 no.

COST ESTIMATE OF DISTRIBUTION NETWORK

NAVI MUMBAI MUNICIPAL CORPORATION					
NAME OF WORK:- Distribution Network of NMMC					
COST SUMMARY					
Sr.no	Area	PART-1- Cost of pipeline trench works in Rs	PART-2 -Cost of Pipe Laying Works in Rs	PART-3 -Cost of Survey in Rs	Total cost in Rs
1	Distribution System of Vashi	66,379,307	85,270,429	189,759	151,839,494.00
2	Distribution System of Koperkhairane	63,444,141	46,992,029	160,294	110,596,464.38
3	Distribution System of Airoli	57,701,535	42,379,676	186,259	100,267,469.45
	Total Cost	**187524982.39**	**174642133.92**	**536311.51**	**362,703,427.82**

Navi Mumbai Municipal Corporation							
Recycled Water System							
Name of Work :- Distribution System of Airoli MIDC area.							
ABSTRACT							
Item No.	Qty	DSR Ref.	Description of Item	Unit	Basic Rate	Final Rate (Rs.)	Total Amount (Rs)
Add 5% area wightage for corporation area.							
1	1042.51	MJP 16-17, Item No 2, Pg-48+RA	RCC Thrust Block : **Providing and laying insitu Cement Concrete** of trap/granaite/quartzite/gneiss metal for RCC work in foundation like raft,grillage,strip foundation and footing of RCC columns and steel,stanchions including normal dewatering ,plywood form work, bully/ steel prop-ups, compaction, finishing and curing etc. complete(by weigh batching and mix design for M-250 and M-300 only. use L&T, A.C.C. Ambuja, Birla Gold, ManikGad, Rajashree, etc. cement is permitted (Excluding M.S. of Tor reinforcement) **M-250 for Anchor Block.**	Cum	0.00	7012.74	7310857.84
2	41.70	MJP16-17, Item No 8, Pg-52	**Providing and fixing in position steel bar reinforcement** of various daimeters for RCC piles caps ,footing foundations, slabs, beams, colums,canopies,staircases,newls ,chajjas lintels,pardies,copings ,fins arches ,etc. as per detailed designs,drawings and schedules including cutting bending ,hooking the bars, binding with wires or tack welding and supporting as required etc.complete. **(including cost of binding wire)** as directed by the Engineer in charge.	MT	51749.00	54336.45	2265855.05
3		MJP16-17, Item No 9) b), Pg-53	Providing **fusion bonded epoxy coating to reinforcement bars** as per IS-13620-993 specification for a thickness of 175mm(+or -50) microns including extra cost on account of careful handling,extra cost on account of using PVC coated binding wire instead of GI wire, extra cost on account of touch-up material supplied by coating agency and repair work extra cost on account of transportation to & fro from steel yard at kalamboli to plant at Daman and Plant at Daman to work site by trailer, loading, unloading, including all taxes (Central & Local), etc. complete. as directed by the Engineer in charge.				
	41.70		1) For 8mm to 20mm dia	MT	15772.00	16560.60	690584.66
4			**H.D.P.E Pipes PE-100 PN 8**				
		MJP16-17, Item No X 1) b), Pg-176	**Providing and Supplying** in standard lengths polyethelene pipes, confirming to IS 4984 / 14151 / 12786 / 13488 with necessary jointing material like mechanical connector i.e. thread / insert joint / quick telease couplar joint or flanged joint including all local and central taxes, transportation and frigt charges inspection charges, loading unloading charges, conveyance to departmental stores b/ site & stacking the same in closed shade duly protecting from sunrays & rays etc. complete.				
			HDPE Pipes outer Diameter in mm				
	16918.00		110	RMT	295.00	295.00	4990810.00
	4209.00		160	RMT	666.00	666.00	2803194.00
	0.00		180	RMT	840.00	840.00	0.00
	2100.00		200	RMT	988.00	988.00	2074800.00
	5973.00		250	RMT	1565.00	1565.00	9347745.00

Item No.	Qty	DSR Ref.	Description of Item	Unit	Basic Rate	Final Rate (Rs.)	Total Amount (Rs)
	526.00		315	RMT	2483.00	2483.00	1306058.00
	134.00		355	RMT	3142.00	3142.00	421028.00
	0.00		400	RMT	4127.00	4127.00	0.00
	0.00		450	RMT	5518.00	5518.00	0.00
	0.00		500	RMT	6807.00	6807.00	0.00
	0.00		560	RMT	8543.00	8543.00	0.00
	0.00		630	RMT	10756.00	10756.00	0.00
	0.00		710	RMT	13629.00	13629.00	0.00
5		MJP16-17, Item No X 2) A), Pg-182	Lowering, laying and jointing H.D.P.E / M.D.P.E in proper position including all specials by compression fitting /electrofusion and but fusion jointing procedure including hydraulic testion as per relevent IS Code complete with all materials for jointion procedures like Elctrofusion machine , Electro mirror /heater but fusion welding machine with hydraulic jack, top loading clampetc, pump,and accessories for hydraulic testing and all labours as directed by engineer in charge as per IS-7634 Part-II.				
			HDPE Pipes outer Diameter in mm				
	16918.00		110	RMT	57.00	59.85	1012542.30
	4209.00		160	RMT	93.00	97.65	411008.85
	0.00		180	RMT	93.00	97.65	0.00
	2100.00		200	RMT	103.00	108.15	227115.00
	5973.00		250	RMT	137.00	143.85	859216.05
	526.00		315	RMT	186.00	195.30	102727.80
	134.00		355	RMT	203.00	213.15	28562.10
	0.00		400	RMT	206.00	216.30	0.00
	0.00		450	RMT	232.00	243.60	0.00
	0.00		500	RMT	299.00	313.95	0.00
	0.00		560	RMT	336.00	352.80	0.00
	0.00		630	RMT	377.00	395.85	0.00
	0.00		710	RMT	377.00	395.85	0.00
6	14930.0	MJP16-17, Item No 16, Pg-42	Dewatering the excavated trenches and pools of water in the building trenches / pipeline trenches, well works by using pumps and other devices including disposing off water to safe distance as directed by engineer-in-charge (including cost of machinery,labour, fuel) etc. complete. as directed by the Engineer in charge.	BHP/ Hr.	62.00	65.10	971943.00
7			HDPE fittings				
			Providing and supply of Electro Fusion Fittings in accordance with BS EN 12201: Part-3 suitable for drinking water with in black/blue colour manufactured from compounded PE80/PE100 virgin polymer and compatible with PE80/PE100 pipes, in pressure rating SDR11 with min PN12.5 rated for water application and shall be inclusive of all cost such as testing, all taxes related to central, state, and municipal inspection charges, transportation upto site, transite insurance, loading, unloading, stacking etc. complete				
			FITTINGS for HDPE Pipes (5%)	Lumpsum		1047181.75	1047181.75
8.0			PIPE APPURTANANCES SUPPLYING				
		MJP16-17, Item No-2 XIII , Pg-211	Providing Double flange sluice valve confirming for IS 2906/14846/ including worn gear arrangements as per test pressure stainless steel spindle, caps including all taxes transportation etc. complete				
			sluice valve & Scour Valve (PN-1 Without bypass)				
a	9.00		80 mm for Scouring purpose	No.	4,834.00	4834.00	43506.00
b	17.00		100 mm for control purpose	No.	6438.00	6438.00	109446.00
c	3.00		100 mm for Scouring purpose	No.	6438.00	6438.00	19314.00
d	5.00		150 mm for control purpose	No.	9655.00	9655.00	48275.00
e	5.00		150 mm for Scouring purpose	No.	9655.00	9655.00	48275.00
f	3.00		200 mm for control purpose	No.	17501.00	17501.00	52503.00

Item No.	Qty	DSR Ref.	Description of Item	Unit	Basic Rate	Final Rate (Rs.)	Total Amount (Rs)
g	2.00		200 mm for Scouring purpose	No.	17,501.00	17501.00	35002.00
h	6.00		250 mm for control purpose	No.	27059.00	27059.00	162354.00
i	0.00		250 mm for Scouring purpose	No.	27,059.00	27059.00	0.00
j	1.00		300 mm for control purpose	No.	34353.00	34353.00	34353.00
k	0.00		300 mm for Scouring purpose	No.	34,353.00	34353.00	0.00
l	0.00		350 mm for Scouring purpose	No.	50,535.00	50535.00	0.00
m	0.00		400 mm for Scouring purpose	No.	66,533.00	66533.00	0.00
n	0.00		450 mm for Scouring purpose	No.	71,530.00	71530.00	0.00
9.0		MJP16-17, Item No-3 XIII , Pg-215	Providing, double flanged short body pattern type manually operated Butterfly Valve having body, disc and end cover in graded cast iron to IS-210 Gr.CF 200 generally confirming in to IS- 13095-1991, Synthetic rubber faced ring secured on disc by retaining ring with stainless steel screw stub shaft of stainless steel riding in teflon bearing excluding C.C. foundation /structural steel support.				
			i) Butterfly Valves PN - 1 (WithBypass) (Diameter in mm)				
a	1.00		350	No.	44727.00	44727.00	44727.00
b	0.00		400	No.	55490.00	55490.00	0.00
c	0.00		450	No.	64770.00	64770.00	0.00
d	0.00		500	No.	69967.00	69967.00	0.00
10.0		MJP16-17, Sec XIII, Item No-5 a , Pg-218	**Air Valves** **Providing and supplying Air Valves as per IS 14845-2000 and MJP's standard specifications of approved make and quality of following diameters including all taxes (central and local), railway freight, inspection charges, unloading from railway wagons,loading into trucks, transportation upto departmental stores / site, unloading and stacking etc. complete.**				
			Air Valve Single Ball Flanged/Screwed Type-PN-1(Diameter in mm)				
a	17.00		40	No.	1193.00	1193.00	20281.00
11.0		MJP16-17, Item No-6 a,Sec XIII , Pg-219	**Air Valves** **Providing and supplying Air Valves as per IS-10845 and MJP's standard specifications double orifice type combined with screw down isolating valve, small orifice elastic ball resting on a gun metal orifice nipple, large orifice vulcanite ball seating on moulded seat ring, inlet face and drilled, including all taxes (Central and local), insurance, third party inspection charges, loading, unloding, transporta-toin upto departmental stores / site, etc. complete.**				
			Air Valve Double Ball Flanged-Type-PN-1(Diameter in mm)				
a	5.00		50	No.	5510.00	5510.00	27550.00
b	0.00		65	No.	6429.00	6429.00	0.00
c	9.00		80	No.	7344.00	7344.00	66096.00

Item No.	Qty	DSR Ref.	Description of Item	Unit	Basic Rate	Final Rate (Rs.)	Total Amount (Rs)
12.0		MJP16-17, Item No-7 a, Sec XIII , Pg-220	**Providing and supplying Air Valves as per** IS-14845-2000 and MJP's standard specifications double orifice type combined with isolating sluice valve, mounted in horzontal position and operated by wheel gearing, small orifice elastic ball resting on a gun metal orifice nipple, large orifice vulcanite ball seating on moulded seat ring, inlet face and drilled, including all taxes (Central and local), insurance, third party inspection charges, loading, unloading, transporta-tion upto departmental storer / site, etc. complete.				
			Air Valve Double Ball Flanged-Type-PN-1(Diameter in mm)				
a	1.00		**100**	No.	9286.00	9286.00	9286.00
b	1.00		**150**	No.	16924.00	16924.00	16924.00
c	0.00		**200**	No.	28461.00	28461.00	0.00
			PIPE APPURTANANCES LAYING				
13		MJP16-17, Item No-4,XIII , Pg-217	Lowering laying and jointing in position D.I. D/F Reflux valves,Butterfly velves and sluice valves including cost of all labour, jointing material, including nut bolts and giving satisfactory hydraulic testing, etc. complete. (Rate for all class of valve)				
			Sluice Valves (Diameter in mm)				
a	9.00		80 mm for Scouring purpose	No.	1401.00	1471.05	13239.45
b	17.00		100 mm for control purpose	No.	1831.00	1922.55	32683.35
c	3.00		100 mm for Scouring purpose	No.	1831.00	1922.55	5767.65
d	5.00		150 mm for control purpose	No.	2878.00	3021.90	15109.50
e	5.00		150 mm for Scouring purpose	No.	2878.00	3021.90	15109.50
f	3.00		200 mm for control purpose	No.	2994.00	3143.70	9431.10
g	2.00		200 mm for Scouring purpose	No.	2994.00	3143.70	6287.40
h	6.00		250 mm for control purpose	No.	3901.00	4096.05	24576.30
i	0.00		250 mm for Scouring purpose	No.	3901.00	4096.05	0.00
j	1.00		300 mm for control purpose	No.	4047.00	4249.35	4249.35
k	0.00		300 mm for Scouring purpose	No.	4047.00	4249.35	0.00
l	0.00		350 mm for Scouring purpose	No.	4987.00	5236.35	0.00
m	0.00		400 mm for Scouring purpose	No.	6017.00	6317.85	0.00
n	0.00		450 mm for Scouring purpose	No.	7159.00	7516.95	0.00
14.0			**Butterfly Valve(diameter in mm)**				
a	1.00		350	No.	4987.00	5236.35	5236.35
b	0.00		400	No.	6017.00	6317.85	0.00
c	0.00		450	No.	7159.00	7516.95	0.00
d	0.00		500	No.	7413.00	7783.65	0.00
15			Lowering,laying and fixing in proper alignment and position all types of C.I. air valves as directed by Engineer-in-charge including cost of conveyance from stores to site of work,cost of all material and giving satisfactory hydraulic testing,etc.complete.(for all class of valves)				
		MJP16-17, Item No-10 a,SecXIII , Pg-223	**Air Valves Single ball - PN - 1 (Diameter in mm)**				
a	17.00		**40**	No.	208.00	218.40	3712.80
		MJP16-17, Item No-10 b,SecXIII , Pg-223	**Air Valves Double ball - PN - 1 (Diameter in mm)**				
b	5.00		**50**	No.	268.00	281.40	1407.00
c	0.00		**65**	No.	309.00	324.45	0.00
d	9.00		**80**	No.	369.00	387.45	3487.05
e	1.00		**100**	No.	390.00	409.50	409.50
f	1.00		**150**	No.	587.00	616.35	616.35
g	0.00		**200**	No.	646.00	678.30	0.00
16		As Per RA	**Utility Shifting**				5134303.23

Item No.	Qty	DSR Ref.	Description of Item	Unit	Basic Rate	Final Rate (Rs.)	Total Amount (Rs)
17.00	8.00	MJP16-17, Item No 16,XVII, Pg-287	Supplying, transporting, the S.P. fire hydrants including duck foot bend, S.V. and S.V. road box, painting the hydrant, fixing the saddle piece, supplying, and laying required length of C.I. pipeline and jointing the same spun yarn, molten lead including caulking, fixing the S.V. road box in one brick masonry chamber in 1:5 C.M. with 12 mm thick 1:3 cement plaster both inside and outside on 1:3:6 C.C. 150 mm thick etc. complete as specified and directed. [As per I.S. 900/1965 Revised]	NO	11461	12034.05	96272.40
18.00	0.00	Quotion	Drip irrigation	km	945417.40	945417.40	0.00
19.00	0.00	Quotion	Sprinkler irrigation	Sqrm	82.57	82.57	0.00
						Net Cost (in Rs)	41981020
			Add 1% cess on Labour welfare *(For MJP items)*				346701.6
			Add 1% cess on Labour amenities *(For MJP items)*				51954.5
			Total Cost				42379676

NAVI MUMBAI MUNICIPAL CORPORATION

RECYCLE WATER SYSTEM

MEASUREMENT SHEET

Name of Work :- Distribution System of Airoli MIDC area.

No.	Description of Item	No.	L	B	D	Qty	Unit	Total Qty
	Pipe Diameter							
	110	1.0	16918					
	160	1.0	4209					
	180	1.0	0					
	200	1.0	2100					
	250	1.0	5973					
	315	1.0	526					
	355	1.0	134					
	400	1.0	0					
	450	1.0	0					
	500	1.0	0					
	560	1.0	0					
	630	1.0	0					
	710	1.0	0					
		Total	29860.00					
1	**RCC.Thrust Block:** Providing and laying insitu Cement Concrete of trap/granaite/quartzite/gneiss metal for RCC work in foundation like raft,grillage,strip foundation and footing of RCC columns and steel,stanchions including normal dewatering ,plywood form work, bully/ steel prop-ups, compaction, finishing and curing etc. complete(by weigh batching and mix design for M-250 and M-300 only. use L&T, A.C.C. Ambuja, Birla Gold, ManikGad, Rajashree, etc. cement is permitted (Excluding M.S. of Tor reinforcement) M-250 for Anchor Block							
	1 x 0.6 x 0.6 m block	60.00	1.00	0.60	0.60	**21.60**		
	R C C for pipe support							
	110	16918	0.32			541.71		
	160	4209	0.32			134.77		
	180	0	0.34			0.00		
	200	2100	0.34			71.40		
	250	5973	0.41			244.89		
	315	526	0.41			21.57		
	355	134	0.49			6.57		
	400	0	0.56			0.00		
	450	0	0.73			0.00		
	500	0	0.73			0.00		
	560	0	0.73			0.00		
	630	0	0.73			0.00		
	710	0	0.85			0.00		
						1042.51	**cum**	**1042.51**

No.	Description of Item	No.	L	B	D	Qty	Unit	Total Qty
2	**Reinforcement:** Providing and Fixing in position steel bar reinforcement of Anchor block etc.as per detailed design drawing and shedules including cutting bending hooking the bars binding with wires or tack welding and supporting as required etc. completet (including cost of binding wire).							
	Assuming Steel for above item 40 kg per cum							
	Quantity of steel for Thrust block		1042.51	0.04		41.70		
			Total			**41.70**		
					Total	**41.70**	MT	41.70
3	Providing fusion bonded epoxy coating to reinforcement bars as per IS-13620-993 specification for a thickness of 175mm(+or - 50) microns including extra cost on account of careful handling,extra cost on account of using PVC coated binding wire instead of GI wire, extra cost on account of touch-up material supplied by coating agency and repair work extra cost on account of transportation to & fro from steel yard at kalamboli to plant at Daman and Plant at Daman to work site by trailer, loading, unloading, including all taxes (Central & Local), etc. complete. as directed by the Engineer in charge						MT	41.70
	H.D.P.E Pipes PE-100 PN 8							
4	Providing and Supplying in standard lengths polyethelene pipes, confirming to IS 4984 / 14151 / 12786 / 13488 with necessary jointing material like mechanical connector i.e. thread / insert joint / quick telease couplar joint or flanged joint including all local and central taxes, transportation and frigt charges inspection charges, loading unloading charges, conveyance to departmental stores b/ site & stacking the same in closed shade duly protecting from sunrays & rays etc. complete.							
	Diameter in mm							
	110		16918.00			16918.00	Rmt	16918.00
	160		4209.00			4209.00	Rmt	4209.00
	180		0.00			0.00	Rmt	0.00
	200		2100.00			2100.00	Rmt	2100.00
	250		5973.00			5973.00	Rmt	5973.00
	315		526.00			526.00	Rmt	526.00
	355		134.00			134.00	Rmt	134.00
	400		0.00			0.00	Rmt	0.00
	450		0.00			0.00	Rmt	0.00
	500		0.00			0.00	Rmt	0.00

No.	Description of Item	No.	L	B	D	Qty	Unit	Total Qty
	560		0.00			0.00	Rmt	0.00
	630		0.00			0.00	Rmt	0.00
	710		0.00			0.00	Rmt	0.00
5	Lowering, laying and jointing H.D.P.E / M.D.P.E in proper position including all specials by compression fitting /electrofusion and but fusion jointing procedure including hydraulic testion as per relevent IS Code complete with all materials for jointion procedures like Elctrofusion machine , Electro mirror /heater but fusion welding machine with hydraulic jack, top loading clampetc, pump,and accessories for hydraulic testing and all labours as directed by engineer in charge as per IS-7634 Part-II.							
	HDPE Pipes outer Diameter in mm							
	110					16918.00	Rmt	16918.00
	160					4209.00	Rmt	4209.00
	180					0.00	Rmt	0.00
	200					2100.00	Rmt	2100.00
	250					5973.00	Rmt	5973.00
	315					526.00	Rmt	526.00
	355					134.00	Rmt	134.00
	400					0.00	Rmt	0.00
	450					0.00	Rmt	0.00
	500					0.00	Rmt	0.00
	560					0.00	Rmt	0.00
	630					0.00	Rmt	0.00
	710					0.00	Rmt	0.00
6	**Deawtering:** Dewatering the excavated trenches and pools of water in the building trenches / pipeline trenches, well works by using pumps and other devices including disposing off water to safe distance as directed by Engineer-in - charge (including cost of machinery, labour, fuel), etc complete		L	B	D	Qty		
	110		16918.00		2.16	8459.00		
	160		4209.00		2.16	2104.50		
	180		0.00		2.16	0.00		
	200		2100.00		2.16	1050.00		
	250		5973.00		2.16	2986.50		
	315		526.00		2.16	263.00		
	355		134.00		2.16	67.00		
	400		0.00		2.16	0.00		
	450		0.00		2.16	0.00		
	500		0.00		2.16	0.00		
	560		0.00		3.16	0.00		
	630		0.00		4.16	0.00		
	710		0.00		5.16	0.00		
						14930.00	BHP/HR	**14930.00**

No.	Description of Item	No.	L	B	D	Qty	Unit	Total Qty
7	HDPE fittings							
	Providing and supply of Electro Fusion Fittings in accordance with BS EN 12201: Part-3 suitable for drinking water with in black/blue colour manufactured from compounded PE80/PE100 virgin polymer and compatible with PE80/PE100 pipes, in pressure rating SDR11 with min PN12.5 rated for water application and shall be inclusive of all cost such as testing, all taxes related to central, state, and municipal inspection charges, transportation upto site, transite insurance, loading, unloading, stacking etc. complete.							
	FITTINGS for HDPE Pipes (5%)	Amount Provison at 5% of Item No. 4						
8	PIPE APPURTENANCES SUPPLY							
	Providing Double flange sluice valve confirming for IS 2906/14846/ including worn gear arrangements as per test pressure stainless steel spindle, caps including all taxes transportation etc. complete							
	sluice valve & Scour Valve (PN-1 Without bypass)							
a	80 mm for Scouring purpose	9				9.00	Nos.	9.00
b	100 mm for control purpose	17				17.00	Nos	17.00
c	100 mm for Scouring purpose	3				3.00	Nos.	3.00
d	150 mm for control purpose	5				5.00	Nos	5.00
e	150 mm for Scouring purpose	5				5.00	Nos.	5.00
f	200 mm for control purpose	3				3.00	Nos	3.00
g	200 mm for Scouring purpose	2				2.00	Nos.	2.00
h	250 mm for control purpose	6				6.00	Nos	6.00
i	250 mm for Scouring purpose	0				0.00	Nos.	0.00
j	300 mm for control purpose	1				1.00	Nos	1.00
k	300 mm for Scouring purpose	0				0.00	Nos.	0.00
l	350 mm for Scouring purpose	0				0.00	Nos.	0.00
m	400 mm for Scouring purpose	0				0.00	Nos.	0.00
n	450 mm for Scouring purpose	0				0.00	Nos.	0.00
9	**Butterfly valve (Dia in mm)**							
f	350	1				1.00	Nos	1.00
g	400	0				0.00	Nos	0.00
h	450	0				0.00	Nos	0.00
i	500	0				0.00	Nos	0.00
10	**Air valve (Dia in mm)**							
	Air Valve Single Ball Flanged/Screwed Type-PN-1(Diameter in mm)							
a	40	17				17.00	Nos	17.00
11	**Air valve (Dia in mm)**							
	Air Valve Double Ball Flanged-Type-PN-1(Diameter in mm)							
a	50	5				5.00	Nos	5.00
b	65	0				0.00	Nos	0.00

No.	Description of Item	No.	L	B	D	Qty	Unit	Total Qty
c	80	9				9.00	Nos	9.00
12	**Air valve (Dia in mm)**							
	Providing and supplying Air Valves as per IS-14845-2000 and MJP's standard specifications double orifice type combined with isolating sluice valve, mounted in horzontal position and operated by wheel gearing, small orifice elastic ball resting on a gun metal orifice nipple, large orifice vulcanite ball seating on moulded seat ring, inlet face and drilled, including all taxes (Central and local), insurance, third party inspection charges, loading, unloading, transporta-tion upto departmental storer / site, etc. complete.							
a	100	1				1.00	Nos	1.00
b	150	1				1.00	Nos	1.00
c	200	0				0.00	Nos	0.00
	PIPE APPURTENANCES FIXING							
13	Lowering laying and jointing in position D.I. D/F Reflux valves,Butterfly velves and sluice valves including cost of all labour, jointing material, including nut bolts and giving satisfactory hydraulic testing, etc. complete. (Rate for all class of valve)							
	Sluice Valve & Scour Valve							
a	80 mm for Scouring purpose	9.00				9.00	Nos.	9.00
b	100 mm for control purpose	17				17.00	Nos	17.00
c	100 mm for Scouring purpose	3.00				3.00	Nos.	3.00
d	150 mm for control purpose	5				5.00	Nos	5.00
e	150 mm for Scouring purpose	5.00				5.00	Nos.	5.00
f	200 mm for control purpose	3				3.00	Nos	3.00
g	200 mm for Scouring purpose	2.00				2.00	Nos.	2.00
h	250 mm for control purpose	6				6.00	Nos	6.00
i	250 mm for Scouring purpose	0.00				0.00	Nos.	0.00
j	300 mm for control purpose	1				1.00	Nos	1.00
k	300 mm for Scouring purpose	0.00				0.00	Nos.	0.00
l	350 mm for Scouring purpose	0.00				0.00	Nos.	0.00
m	400 mm for Scouring purpose	0.00				0.00	Nos.	0.00
n	450 mm for Scouring purpose	0.00				0.00	Nos.	0.00
14	**Butterfly valve (Dia in mm)**							
a	350	1				1.00	NO.	1.00
b	400	0				0.00	NO.	0.00
c	450	0				0.00	NO.	0.00
d	500	0				0.00	NO.	0.00
15	Air Valve (Dia in mm)							
a	40	17				17.00	NO.	17.00
b	50	5				5.00	NO.	5.00
c	65	0				0.00	NO.	0.00
d	80	9				9.00	NO.	9.00
e	100	1				1.00	NO.	1.00
f	150	1				1.00	NO.	1.00
g	200	0				0.00	NO.	0.00

No.	Description of Item	No.	L	B	D	Qty	Unit	Total Qty
16	Utility Shifting							
17	Supplying, transporting, the S.P. fire hydrants including duck foot bend, S.V. and S.V. road box, painting the hydrant, fixing the saddle piece, supplying, and laying required length of C.I. pipeline and jointing the same spun yarn, molten lead including caulking, fixing the S.V. road box in one brick masonry chamber in 1:5 C.M. with 12 mm thick 1:3 cement plaster both inside and outside on 1:3:6 C.C. 150 mm thick etc. complete as specified and directed. [As per I.S. 900/1965 Revised]	2					Nos	2
18	Drip irrigation	0					km	0
19	Sprinkler irrigation	0					Sqrm	0

NAVI MUMBAI MUNICIPAL CORPORATION

RECYCLE WATER SYSTEM

Rate analysis

							Add 5 % for Corporation Area=		5%
R.A. No. 1	Filling in Excavated surface with contractor's murum in 15 to 20 cm layers including watering compaction etc complete								
	Earth filling MJP 16-17, Item No 19, Pg-43				MJP 16-17, Item No 19, Pg-43		=	723.00	Cum
	Add 5 % for Corporation Area						=	36.15	
	Add lead charges for								
			Murum	1.00	0.00		=	0.00	
								759.15	
						Total	=	759.15	
						Say	=	759.15	Cum
R.A. No. 2	Providing dry trap rubble stone solling in 15 cm to 20cm layers including hand packing and compacting, royalty charges etc complete.								
	Soling Rate as per MJP 16-17, Page No. 43 Item No 20				MJP 16-17, Page No. 43 Item No 20		=	1014.00	Cum
	Add 5 % for Corporation Area						=	50.7	
	Add lead charges for								
			Hand Broken Metal	1.000	0.00		=	0.00	
			Sand	0.150	1679.50		=	251.92	
								1316.62	
						Total	=	1316.624348	
						Say	=	1316.62	Cum
R.A. No.3	Providing and laying in situ, fallowing grade of C.C. of trap/granite/gneiss metal for foundation and bedding including								
	PCC Rate as per MJP 16-17, Item No1, Pg-47				MJP 16-17, Item No1, Pg-47		=	4457.00	Cum
	Add 5 % for Corporation Area						=	222.85	
	Add lead charges for								
			Sand	0.45	1679.50		=	755.77	
			crushed metal (40 mm)	0.52	0.00		=	0.00	
			crushed metal (20 mm,10 mm)	0.33	0.00		=	0.00	
								5435.62	
						Total	=	5435.623043	
						Say	=	5435.62	Cum
R.A. No.4	Providing and filling in the foundation trenches with sand of approved quality including watering compaction. Etc								
	Sand Bedding Rate as per MJP 16-17 Item No 21, Pg-43				MJP 16-17 Item No 21, Pg-43		=	973.00	Cum
	Add 5 % for Corporation Area						=	48.65	
	Add lead charges for								
			Sand	1.00	1679.50		=	1679.50	
								2701.15	
						Total	=	2701.145652	
						Say	=	2701.15	Cum
R.A. No.5	Providing and laying insitu Cement concrete of trap/granite/ quartzite / gneiss metal for RCC work in foundation like raft, grillage, strip foundation and footing of RCC columns and steel stanchions including dewatering, formwork, compaction finishing & curing etc, complete (By wigh batching and mix design for M-250 and M-300 only) Use of L&T, A.C.C., Ambuja, Birla Gold, Manikgad, Rajashree etc cement is permitted) (excluding M.S. or Tor reinforcement)								
	RCC work MJP 16-17, Item No 2 c, Pg-48				MJP 16-17, Item No 2 c, Pg-48		=	5999.00	Cum
	Add 5 % for Corporation Area						=	299.95	
	Add lead charges for								
			Sand	0.425	1679.50		=	713.79	
			crushed metal (20 mm)	0.57	0.00		=	0.00	
			crushed metal (10 mm)	0.28	0.00		=	0.00	
								7012.74	
						Total	=	7012.735652	
						Say	=	7012.74	Cum

NAVI MUMBAI MUNICIPAL CORPORATION								
Recycle Water System								
LEAD CHART								
Sr. No.	**Material**	**Source**	**Lead in Kms**	**Lead Charges 2016-17**	**Initial Lead**	**Initial Lead Charges 16-17**	**Net Lead Charges 16-17**	**Unit**
1	Sand	Ambet	160.00	1830.07	5	150.57	**1679.50**	Cum
2	Crushed Metal	Local Stone Quarry	5	150.57	5	150.57	**0.00**	Cum
3	Soling Stone	Local Stone Quarry	5	184.21	5	184.21	**0.00**	Cum
4	Murum / Earth	Local Stone Quarry	5	180.38	5	180.38	**0.00**	Cum
5	Brick		5	247.37	5	247.37	**0.00**	1000 no.

Navi Mumbai Municipal Corporation

Recycled Water System

Measurement Sheet

Part-1 -Pipeline Trench Works For Distribution System of AIROLI MIDC

Item No.	Description of Item		Measurements			Unit	Qty
		No.	L	B	D		
	PART-I CIVIL WORKS						
1	Excavation for foundation/ pipe trenches in earth soil of all types sand graval and soft murum including removing the excavated material upto a distance of 50 meters and lifts as below, stacking and spreding as directed normal dewatering, preparing the bed for foundation and excluding backfilling, etc complete.						
	Lift 0 to 1.5 m						
	Dia in mm						
	Excavtion for pipe laying						
	110	1.0	16918	0.41	0.86		5965.29
	160	1.0	4209	0.46	0.91		1761.89
	180	1.0	0	0.48	0.93		0.00
	200	1.0	2100	0.50	0.95		997.50
	250	1.0	5973	0.55	1.00		3285.15
	315	1.0	526	0.62	1.07		344.52
	355	1.0	134	0.66	1.11		96.99
	400	1.0	0	0.90	1.15		0.00
	450	1.0	0	0.95	1.20		0.00
	500	1.0	0	1.00	1.25		0.00
	560	1.0	0	1.06	1.31		0.00
	630	1.0	0	1.13	1.38		0.00
	710	1.0	0	1.21	1.46		0.00
		TOTAL	29860.00				
	Chambers						
	90*45 cm	1.00	1.50	1.05	1.60		2.52
	90*60 cm	45.00	1.50	1.20	1.60		129.60
	90*90 cm	58.00	1.50	1.50	1.60		208.80
					Total	Cum	**18535.82**
	Assuming 50 % of Qty for above item	1.00	18535.82		0.50		**9267.91**
	PCC For Valve Chamber				**Thickness**		
	90*45 cm	1.00	1.50	1.05	0.15		0.24
	90*60 cm	45.00	1.50	1.20	0.15		12.15
	90*90 cm	58.00	1.50	1.50	0.15		19.58
					Total	Cum	**31.96**
2	Excavation for foundation/ pipe trenches by all means in hard murum, including removing the excavated material upto a distance of 50 meters and lifts as below, stacking and spreding as directed normal dewatering, preparing the bed for foundation and excluding backfilling, etc complete.						
	Assuming 40% of qty for above item	1.00	18535.82		0.40	Cum	**7414.33**

Item No.	Description of Item		Measurements			Unit	Qty
		No.	L	B	D		
3	Excavation for foundation/ pipe trenches in hard rock and concrete road by chiselling wedging line drill by mechanical means or by all means other than blasting including triming and levelling the bed removing the excavated material upto a distance of 50 meters and lifts as below, stacking and spreding as directed normal dewatering, preparing the bed for foundation and excluding backfilling, etc complete.						
	Assuming 10% of qty for above item	1.00	18535.82		0.10	Cu.m	**1853.58**
4	**Rubble Soling :**Providing dry trap granite quartizite qneiss, rubble stone soling in 15 cm to 20 cm thick layer including hand packing and compacting royalty charges etc.complete						
	For Dia. in mm						
	110	1.00	5075.40	0.41	0.25		520.23
	160	1.00	1262.70	0.46	0.25		145.21
	180	1.00	0.00	0.48	0.25		0.00
	200	1.00	630.00	0.50	0.25		78.75
	250	1.00	1791.90	0.55	0.25		246.39
	315	1.00	157.80	0.62	0.25		24.26
	355	1.00	40.20	0.66	0.25		6.58
	400	1.00	0.00	0.90	0.25		0.00
	450	1.00	0.00	0.95	0.25		0.00
	500	1.00	0.00	1.00	0.25		0.00
	560	1.00	0.00	1.06	0.25		0.00
	630	1.00	0.00	1.13	0.25		0.00
	710	1.00	0.00	1.21	0.25		0.00
	Chambers						
	90*45 cm	1.00	1.50	1.05	0.25		0.39
	90*60 cm	45.00	1.50	1.20	0.25		20.25
	90*90 cm	58.00	1.50	1.50	0.25		32.63
	Total quantity					Cum	**1074.69**
5	**Bedding** Providing and filling sand boxing in pipeline or for foundation with sand of approved quality including watering and compaction intial lead upto 5 km etc. complete						
	Dia. in mm						
	Sand Bedding for pipe laying						
	110	1.00	16918.00	0.41	0.15		1040.46
	160	1.00	4209.00	0.46	0.15		290.42
	180	1.00	0.00	0.48	0.15		0.00
	200	1.00	2100.00	0.50	0.15		157.50
	250	1.00	5973.00	0.55	0.15		492.77
	315	1.00	526.00	0.62	0.15		48.52
	355	1.00	134.00	0.66	0.15		13.17
	400	1.00	0.00	0.90	0.15		0.00
	450	1.00	0.00	0.95	0.15		0.00
	500	1.00	0.00	1.00	0.15		0.00
	560	1.00	0.00	1.06	0.15		0.00
	630	1.00	0.00	1.13	0.15		0.00
	710	1.00	0.00	1.21	0.15		0.00
							2042.84

Item No.	Description of Item		Measurements			Unit	Qty
		No.	L	B	D		
6	PCC for pipe laying						
	110	16918	5075.40	0.00	0.15		0.00
	160	4209	1262.70	1.60	0.15		303.05
	180	0	0.00	1.60	0.15		0.00
	200	2100	630.00	1.60	0.15		151.20
	250	5973	1791.90	1.60	0.15		430.06
	315	526	157.80	1.61	0.15		37.99
	355	134	40.20	1.61	0.15		9.68
	400	0	0.00	1.68	0.15		0.00
	450	0	0.00	1.68	0.15		0.00
	500	0	0.00	1.74	0.15		0.00
	560	0	0.00	1.78	0.15		0.00
	630	0	0.00	1.88	0.15		0.00
	710	0	0.00	0.00	0.15		0.00
			Total PCC quantity			Cum	**985.24**
7	**Disposal of Earth:** Disposal of excavated material including loading and unloading, lead upto 10 km etc. Complete						
	volume of pipe						
	110	1.00	16918.00	0.79	0.01		**160.70**
	160	1.00	4209.00	0.79	0.03		**84.58**
	180	1.00	0.00	0.79	0.03		**0.00**
	200	1.00	2100.00	0.79	0.04		**65.94**
	250	1.00	5973.00	0.79	0.06		**293.05**
	315	1.00	526.00	0.79	0.10		**40.97**
	355	1.00	134.00	0.79	0.13		**13.26**
	400	1.00	0.00	0.79	0.16		**0.00**
	450	1.00	0.00	0.79	0.20		**0.00**
	500	1.00	0.00	0.79	0.25		**0.00**
	560	1.00	0.00	0.79	0.31		**0.00**
	630	1.00	0.00	0.79	0.40		**0.00**
	710	1.00	0.00	0.79	0.50		**0.00**
	Road reinstatement						
	110	1.00	16918.00	1.40	0.20		**4737.04**
	160	1.00	4209.00	1.40	0.20		**1178.52**
	180	1.00	0.00	1.40	0.20		**0.00**
	200	1.00	2100.00	1.40	0.20		**588.00**
	250	1.00	5973.00	1.40	0.20		**1672.44**
	315	1.00	526.00	1.40	0.20		**147.28**
	355	1.00	134.00	1.40	0.20		**37.52**
	400	1.00	0.00	1.40	0.20		**0.00**
	450	1.00	0.00	1.40	0.20		**0.00**
	500	1.00	0.00	1.40	0.20		**0.00**
	560	1.00	0.00	1.40	0.20		**0.00**
	630	1.00	0.00	1.40	0.20		**0.00**
	710	1.00	0.00	1.40	0.20		**0.00**
						Cum	**9019.30**
8	**Deawtering:** Dewatering the excavated trenches and pools of water in the building trenches / pipeline trenches, well works by using pumps and other devices including disposing off water to safe distance as directed by Engineer-in -charge (including cost of machinery, labour, fuel), etc complete						

Item No.	Description of Item		Measurements			Unit	Qty
		No.	L	B	D		
	Lum sum	1.00	29860.00			BHP/Hr.	**36000.00**
9	**RCC.Thrust Block:** Providing and laying insitu Cement Concrete of trap/granaite/quartzite/gneiss metal for RCC work in foundation like raft,grillage,strip foundation and footing of RCC columns and steel,stanchions including normal dewatering ,plywood form work, bully/ steel prop-ups, compaction, finishing and curing etc. complete(by weigh batching and mix design for M-250 and M-300 only. use L&T, A.C.C. Ambuja, Birla Gold, ManikGad, Rajashree, etc. cement is permitted (Excluding M.S. of Tor reinforcement) M-250 for Anchor Block						
	1 x 0.6 x 0.6 m block	60.00	1.00	0.60	0.60		**17.36**
						Cum	**17.36**
10	**Reinforcement:** Providing and Fixing in position steel bar reinforcement of Anchor block etc.as per detailed design drawing and shedules including cutting bending hooking the bars binding with wires or tack welding and supporting as required etc. completet (including cost of binding wire).						
	Assuming Steel for above item 40 kg per cum						
	Quantity of steel for Thrust block		**17.36**	**0.4**			**6.94**
					Total	MT	6.94
11	**CHAMBERS**						
	Providing and constructing B.B. masonry valve chamber with 15 cm thick 1:3:6 proportion PCC bedding, excluding excavation, B.B. masonry in C.M. 1:5 Proportion precast RCC frame and cover, etc complete as directed by Engineer-in-charge						
	Inspection Chambers						
	Valve Chambers with Precast R.C.C covers						
	90*45 cm	1.00				No.	1.00
	90*60 cm	45.00				No.	45.00
	90*90 cm	58.00				No.	58.00
12	**Refilling the trenches** with available excaveted stuff with soft material first over pipeline and then hard material in 15 cm layers with all leads and lifts including consolidation, surcharging etc. complete						
	Filling in trenches with approved excavated material						

Item No.	Description of Item		Measurements			Unit	Qty
		No.	L	B	D		
	Total Excavation	1					18535.82
	Deductions						
	PCC Bedding						985.24
	Rubble Soling						1074.69
	Sand bedding						2042.84
	Pipe Volume						
	110		16918.00				160.70
	160		4209.00				84.58
	180		0.00				0.00
	200		2100.00				65.94
	250		5973.00				293.05
	315		526.00				40.97
	355		134.00				13.26
	400		0.00				0.00
	450		0.00				0.00
	500		0.00				0.00
	560		0.00				0.00
	630		0.00				0.00
	710		0.00				0.00
	Total quantity of Pipe volume		**Total**			Cum	**658.50**
	Total Quantity to be deducted						**4761.27**
	Net quantity of filling						**13774.55**
13	Reinstatment of road by excavating the potholes in rectangular shape and filling of potholes by one layers of soling 230 mm thick, one layer of 80 mm trap metal of 200mm thick, one layer of 40 mm trap metal of 200 mm thick including suppling and spreding of stonedust, watering compaction and 75mm thick bituminous bound macadam with cold emulsion and bitumious macadam of 50 mm thick with bitumen of S-65 grade and 25mm thick aspalt concrete with S-35 grade of bitumen including compaction by vibratory roller of all layers and providing and applying tack coat of 50 kg /100 m2 on black top surface and bitumen contained of 250 kg/100 m2 for BBM surface and disposal of surplus clay/soil etc. complete. pipeline trenches of various diameter of pipes etc complete.						
	110	1.0	16918.00	1.00			**16918.00**
	160	1.0	4209.00	1.00			**4209.00**
	180	1.0	0.00	1.00			**0.00**
	200	1.0	2100.00	1.00			**2100.00**
	250	1.0	5973.00	1.00			**5973.00**
	315	1.0	526.00	1.00			**526.00**
	355	1.0	134.00	1.00			**134.00**
	400	1.0	0.00	1.00			**0.00**
	450	1.0	0.00	1.00			**0.00**
	500	1.0	0.00	1.00			**0.00**
	560	1.0	0.00	1.00			**0.00**
	630	1.0	0.00	1.00			**0.00**
	710	1.0	0.00	1.00			**0.00**
						Sq.m.	**29860.00**

Navi Mumbai Municipal Corporation

Recycled Water System

ABSTRACT

Part-1 -Pipeline Trench Works For Distribution System of AIROLI MIDC

Item No.	Ref	Qty	Description of Item	Unit	Rate (Rs.)	AW 10%	Final rate (Rs.)	Amount (Rs)
			Excavation					
1	MJP 16-17 It. No. 1 Pg. no. 39		Excavation for foundation/ pipe trenches in earth**soil of all types sand graval and soft murum** including removing the excavated material upto a distance of 50 meters and lifts as below, stacking and spreding as directed normal dewatering, preparing the bed for foundation and excluding backfilling, etc complete.					
		6487.54	Lift 0 to 1.5 M	Cum	142.00	5%	149.10	967291.51
		2780.37	Lift 1.5 to 3 M	Cum	156.00	5%	163.80	455424.97
2	MJP 16-17 It. No. 2 Pg. no. 39		Excavation for foundation/ pipe trenches by all means in**hard murum,** including removing the excavated material upto a distance of 50 meters and lifts as below, stacking and spreding as directed normal dewatering, preparing the bed for foundation and excluding backfilling, etc complete					
		2965.73	Lift 0 to 1.5 M	Cum	166.00	5%	174.30	516926.81
		4448.60	Lift 1.5 to 3 M	Cum	180.00	5%	189.00	840784.57
3	MJP 16-17 It. No. 5 Pg. no. 39		Excavation for foundation/ pipe trenches by all meaans in**soft rock and old cement & lime masonry foundation asphalt road** removing the excavated material upto a distance of 50 meters and lifts as below, stacking and spreding as directed normal dewatering, preparing the bed for foundation and excluding backfilling, etc complete.	Cum				
		370.72	Lift 0 to 1.5 M	Cum	473.00	5%	496.65	184116.25
		1482.87	Lift 1.5 to 3 M	Cum	494.00	5%	518.70	769162.18
4	MJP 16-17 It. No. 20 Pg. no. 43	1074.69	**Rubble Soling :** Providing Dry Trap Granite quartizite qneiss, rubble stone soling in 15 cm to 20 cm thick layer including hand packing and compacting royalty charges etc.complete	Cum	1014.00	5%	1064.70	1144220.85
5	MJP 16-17 It. No. 21Pg. no. 43	2042.84	**Bedding** Providing and filling sand boxing in pipeline or for foundation with sand of approved quality including watering and compaction intial lead upto 5 km etc. complete	Cum	973.00	5%	1021.65	2,087,067
6	MJP 16-17 It. No. 47 Pg. no. 1 b	985.24	**PCC** Providing & laying in situ folowing grades of cement concrete of trap / granite metal for foundation & bedding including dewatering formwork curing compacting finishing etc. complete **M-150**	Cum	4457.00	5%	5358.18	5,279,099
7	MJP 16-17 Statement VI	9019.30	**Disposal of Earth :** Disposal of excavated material including loading and unloading, lead upto 10 km etc. Complete	Cum	411.16	5%	431.72	3,893,793
8	MJP 16-17 It. No. 16 Pg. no. 42	36000.00	**Dewatering :** Dewatering the excavated trenches and pools of water in the building trenches / pipeline trenches, well works by using pumps and other devices including disposing off water to safe distance as directed by Engineer-in -charge (including cost of machinery, labour, fuel), etc complete	BHP/ Hr.	62.00	5%	65.10	2,343,600
9	MJP 16-17 It. No. 10 Pg. no. 54	17.36	**RCC Thrust Block** : Providing and laying insitu Cement Concrete of trap/granaite/quartzite/gneiss metal for RCC work in foundation like raft,grillage,strip foundation and footing of RCC columns and steel,stanchions including normal dewatering ,plywood form work, bully/ steel prop-ups, compaction, finishing and curing etc. complete(by weigh batching and mix design for M-300 only. use L&T, A.C.C. Ambuja, Birla Gold, ManikGad, Rajashree, etc. cement is permitted (Excluding M.S. of Tor reinforcement) M-250 for Anchor Block.	Cum	5999.00	5%	6939.59	120478.30
10	MJP 16-17 It. No. 8 Pg. no. 51	6.94	**Reinforcement:** Providing and Fixing in position steel bar reinforcement of Anchor block etc.as per detailed design drawing and shedules including cutting bending hooking the bars binding with wires or tack welding and supporting as required etc. completet (including cost of binding wire)	MT	51749.00	5%	54336.45	377334.04
11	MJP 16-17 Sect I, Item No 1, pg. no. 343		Providing and constructing B.B. masonry valve chamber with 15 cm thick 1:3:6 proportion PCC bedding, excluding excavation, B.B. masonry in C.M. 1:5 Proportion precast RCC frame and cover, etc complete as directed by Engineer-in-charge					

Item No.	Ref	Qty	Description of Item	Unit	Rate (Rs.)	AW 10%	Final rate (Rs.)	Amount (Rs)
(a)		1	As above of 90*45 cm internal size and depth upto 1.2 m with precast R.C.C slab cover	No.	7,719.00	5%	8104.95	8104.95
(b)		45	As above of 90*60 cm internal size and depth upto 1.2 m with precast R.C.C slab cover	No.	8,400.00	5%	8820.00	396900.00
(c)		58	As above of 90*90 cm internal size and depth upto 1.2 m with precast R.C.C slab cover	No.	10,066.00	5%	10569.30	613019.40
12			FILLING IN TRENCHES					
	MJP 16-17 It. No. 17 Pg. no. 43	13,774.55	Refilling the trenches with available excaveted stuff with soft material first over pipeline and then hard material in 15 cm layers with all leads and lifts including consolidation, surcharging etc. complete	RMT	64.00	5%	67.20	925649.64
13	RA	29,860.00	Reinstatment of road by excavating the potholes in rectangular shape and filling of potholes by one layers of soling 230 mm thick, one layer o 80 mm trap metal of 200mm thick, one layer of 40 mm trap metal of 200 mm thick including suppling and spreding of stonedust, watering compaction and 75mm thick bituminous bound macadam with cold emulsion and bitumious macadam of 50 mm thick with bitumen of S-65 grade and 25mm thick aspalt concrete with S-35 grade of bitumen including compaction by vibratory roller of all layers and providing and applying tack coat of 50 kg /100 m2 on black top surface and bitumen contained of 250 kg/100 m2 for BBM surface and disposal of surplus clay/soil etc. complete, pipeline trenches of various diameter of pipes etc complete.	Sqm	1231.70			36,778.562
		PART-I	Net Cost (in Rs)					57,701,535

NAVI MUMBAI MUNICIPAL CORPORATION

RECYCLE WATER SYSTEM

Rate analysis

R.A. No. 1	**Filling in Excavated surface with contractor's murum in 15 to 20 cm layers including watering compaction etc complete**							
	Earth filling MJP 16-17, Item No 19, Pg-43				MJP 16-17, Item No 19, Pg-43		=	723.00 Cum
	Add 5 % for Corporation Area						=	36.15
	Add lead charges for							
			Murum	1.00	0.00		=	0.00
								759.15
						Total	=	**759.15**
						Say	=	759.15 Cum
R.A. No. 2	**Providing dry trap rubble stone solling in 15 cm to 20cm layers including hand packing and compacting, royalty charges etc complete.**							
	Soling Rate as per MJP 16-17, Page No. 43 Item No 20				MJP 16-17, Page No. 43 Item No 20		=	1014.00 Cum
	Add 5 % for Corporation Area						=	50.7
	Add lead charges for							
			Hand Broken Metal	1.000	0.00		=	0.00
			Sand	0.000	1507.40		=	0.00
								1064.70
						Total	=	**1064.70**
						Say	=	1064.70 Cum
R.A. No.3	**Providing and laying in situ, fallowing grade of C.C. of trap/granite/gneiss metal for foundation and bedding including dewatering,formwork,compacting and curing,finishing,etc.complete.**							
	PCC Rate as per MJP 16-17, Item No1, Pg-47				MJP 16-17, Item No1, Pg-47		=	4457.00 Cum
	Add 5 % for Corporation Area						=	222.85
	Add lead charges for							
			Sand	0.45	1507.40		=	678.33
			crushed metal (40 mm)	0.52	0.00		=	0.00
			crushed metal (20 mm,10 mm)	0.33	0.00		=	0.00
								5358.18
						Total	=	5358.18
						Say	=	5358.18 Cum
R.A. No.4	**Providing and filling in the foundation trenches with sand of approved quality including watering compaction. Etc**							
	Sand Bedding Rate as per MJP 16-17 Item No 21, Pg-43				MJP 16-17 Item No 21, Pg-43		=	973.00 Cum
	Add 5 % for Corporation Area						=	48.65
	Add lead charges for							
			Sand	1.00	1507.40		=	1507.40
								2529.05
						Total	=	**2529.048261**
						Say	=	2529.05 Cum
R.A. No.5	Providing and laying **insitu Cement concrete** of trap/granite/ quartzite / gneiss metal for **RCC work** in foundation like raft, grillage, strip foundation and footing of RCC columns and steel stanchions including dewatering, formwork, compaction finishing & curing etc, complete (By wigh batching and mix design for M-250 and M-300 only.) Use of L&T, A.C.C., Ambuja, Birla Gold, Manikgad, Rajashree etc cement is permitted) (excluding M.S. or Tor reinforcement)							
	RCC work MJP 16-17, Item No 2 c, Pg-48				MJP 16-17, Item No 2 c, Pg-48		=	5999.00 Cum
	Add 5 % for Corporation Area						=	299.95
	Add lead charges for							
			Sand	0.425	1507.40		=	640.64
			crushed metal (20 mm)	0.57	0.00		=	0.00
			crushed metal (10 mm)	0.28	0.00		=	0.00
								6939.59
						Total	=	**6939.594261**
						Say	=	6939.59 Cum

NAVI MUMBAI MUNICIPAL CORPORATION								
Recycle Water System								
LEAD CHART								
Sr. No.	**Material**	**Source**	**Lead in Kms**	**Lead Charges 2016-17**	**Initial Lead**	**Initial Lead Charges 16-17**	**Net Lead Charges 16-17**	**Unit**
1	Sand	Ambet	160.00	1830.07	5	150.57	**1679.50**	Cum
2	Crushed Metal	Local Stone Quarry	5	150.57	5	150.57	**0.00**	Cum
3	Soling Stone	Local Stone Quarry	5	184.21	5	184.21	**0.00**	Cum
4	Murum / Earth	Local Stone Quarry	5	180.38	5	180.38	**0.00**	Cum
5	Brick		5	247.37	5	247.37	**0.00**	1000 no.

Navi Mumbai Municipal Corporation							
Recycled Water System							
Name of Work :- Distribution System of Koparkhairane area.							
ABSTRACT							
Item No.	Qty	DSR Ref.	Description of Item	Unit	Basic Rate	Final Rate (Rs.)	Total Amount (Rs)
Add 5% area wightage for corporation area.							
1	838.81	MJP 16-17, Item No 2, Pg-48+RA	**RCC Thrust Block :** **Providing and laying insitu Cement Concrete** of trap/granaite/quartzite/gneiss metal for RCC work in foundation like raft,grillage,strip foundation and footing of RCC columns and steel,stanchions including normal dewatering ,plywood form work, bully/ steel prop-ups, compaction, finishing and curing etc. complete(by weigh batching and mix design for M-250 and M-300 only. use L&T, A.C.C. Ambuja, Birla Gold, ManikGad, Rajashree, etc. cement is permitted (Excluding M.S. of Tor reinforcement) **M-250 for Anchor Block.**	Cum	0.00	7012.74	5882387.72
2	33.55	MJP16-17, Item No 8, Pg-52	**Providing and fixing in position steel bar reinforcement** of various daimeters for RCC piles caps ,footing foundations, slabs, beams, colums,canopies,staircases,newls ,chajjas lintels,pardies,copings ,fins arches ,etc. as per detailed designs,drawings and schedules including cutting bending ,hooking the bars, binding with wires or tack welding and supporting as required etc.complete. **(including cost of binding wire)** as directed by the Engineer in charge.	MT	51749.00	54336.45	1823129.13
3		MJP16-17, Item No 9) b), Pg-53	Providing **fusion bonded epoxy coating to reinforcement bars** as per IS-13620-993 specification for a thickness of 175mm(+or - 50) microns including extra cost on account of careful handling,extra cost on account of using PVC coated binding wire instead of GI wire, extra cost on account of touch-up material supplied by coating agency and repair work extra cost on account of transportation to & fro from steel yard at kalamboli to plant at Daman and Plant at Daman to work site by trailer, loading, unloading, including all taxes (Central & Local), etc. complete. as directed by the Engineer in charge.				
	33.55		1) For 8mm to 20mm dia	MT	15772.00	16560.60	555651.17
4			**H.D.P.E Pipes PE-100 PN 8**				
		MJP16-17, Item No X 1) b), Pg-176	**Providing and Supplying** in standard lengths polyethelene pipes, confirming to IS 4984 / 14151 / 12786 / 13488 with necessary jointing material like mechanical connector i.e. thread / insert joint / quick telease couplar joint or flanged joint including all local and central taxes, transportation and frigt charges inspection charges, loading unloading charges, conveyance to departmental stores b/ site & stacking the same in closed shade duly protecting from sunrays & rays etc complete.				
			HDPE Pipes outer Diameter in mm				
	6723.00		**110**	RMT	295.00	295.00	1983285.00
	576.00		**160**	RMT	666.00	666.00	383616.00
	0.00		**180**	RMT	840.00	840.00	0.00

Item No.	Qty	DSR Ref.	Description of Item	Unit	Basic Rate	Final Rate (Rs.)	Total Amount (Rs)
	5367.00		200	RMT	988.00	988.00	5302596.00
	5352.00		250	RMT	1565.00	1565.00	8375880.00
	3066.00		315	RMT	2483.00	2483.00	7612878.00
	1085.00		355	RMT	3142.00	3142.00	3409070.00
	145.00		400	RMT	4127.00	4127.00	598415.00
	0.00		450	RMT	5518.00	5518.00	0.00
	0.00		500	RMT	6807.00	6807.00	0.00
	0.00		560	RMT	8543.00	8543.00	0.00
	0.00		630	RMT	10756.00	10756.00	0.00
	0.00		710	RMT	13629.00	13629.00	0.00
5		MJP16-17, Item No X 2) A), Pg-182	Lowering, laying and jointing H.D.P.E / M.D.P.E in proper position including all specials by compression fitting /electrofusion and but fusion jointing procedure including hydraulic testion as per relevent IS Code complete with all materials for jointion procedures like Elctrofusion machine , Electro mirror /heater but fusion welding machine with hydraulic jack, top loading clampetc, pump,and accessories for hydraulic testing and all labours as directed by engineer in charge as per IS-7634 Part-II.				
			HDPE Pipes outer Diameter in mm				
	6723.00		110	RMT	57.00	59.85	402371.55
	576.00		160	RMT	93.00	97.65	56246.40
	0.00		180	RMT	93.00	97.65	0.00
	5367.00		200	RMT	103.00	108.15	580441.05
	5352.00		250	RMT	137.00	143.85	769885.20
	3066.00		315	RMT	186.00	195.30	598789.80
	1085.00		355	RMT	203.00	213.15	231267.75
	145.00		400	RMT	206.00	216.30	31363.50
	0.00		450	RMT	232.00	243.60	0.00
	0.00		500	RMT	299.00	313.95	0.00
	0.00		560	RMT	336.00	352.80	0.00
	0.00		630	RMT	377.00	395.85	0.00
	0.00		710	RMT	377.00	395.85	0.00
6	11157.0	MJP16-17, Item No 16, Pg-42	**Dewatering** the excavated trenches and pools of water in the building trenches / pipeline trenches, well works by using pumps and other devices including disposing off water to safe distance as directed by engineer-in-charge (including cost of machinery,labour, fuel) etc. complete. as directed by the Engineer in charge.	BHP/ Hr.	62.00	65.10	726320.70
7			HDPE fittings				
			Providing and supply of Electro Fusion Fittings in accordance with BS EN 12201: Part-3 suitable for drinking water with in black/blue colour manufactured from compounded PE80/PE100 virgin polymer and compatible with PE80/PE100 pipes, in pressure rating SDR11 with min PN12.5 rated for water application and shall be inclusive of all cost such as testing, all taxes related to central, state, and municipal inspection charges, transportation upto site, transite insurance, loading, unloading, stacking etc. complete.				
			FITTINGS for HDPE Pipes (5%)	Lumpsum		1383287.00	1383287.00
8.0			PIPE APPURTANANCES SUPPLYING				
		MJP16-17, Item No-2 XIII , Pg-211	Providing Double flange sluice valve confirming for IS 2906/14846/ including worn gear arrangements as per test pressure stainless steel spindle, caps including all taxes transportation etc. complete				
			sluice valve & Scour Valve (PN-1 Without bypass)				

Item No.	Qty	DSR Ref.	Description of Item	Unit	Basic Rate	Final Rate (Rs.)	Total Amount (Rs)
a	4.00		80 mm for Scouring purpose	No.	4,834.00	4834.00	19336.00
b	7.00		100 mm for control purpose	No.	6438.00	6438.00	45066.00
c	1.00		100 mm for Scouring purpose	No.	6438.00	6438.00	6438.00
d	1.00		150 mm for control purpose	No.	9655.00	9655.00	9655.00
e	6.00		150 mm for Scouring purpose	No.	9655.00	9655.00	57930.00
f	6.00		200 mm for control purpose	No.	17501.00	17501.00	105006.00
g	3.00		200 mm for Scouring purpose	No.	17,501.00	17501.00	52503.00
h	6.00		250 mm for control purpose	No.	27059.00	27059.00	162354.00
i	1.00		250 mm for Scouring purpose	No.	27,059.00	27059.00	27059.00
j	4.00		300 mm for control purpose	No.	34353.00	34353.00	137412.00
k	0.00		300 mm for Scouring purpose	No.	34,353.00	34353.00	0.00
l	0.00		350 mm for Scouring purpose	No.	50,535.00	50535.00	0.00
m	0.00		400 mm for Scouring purpose	No.	66,533.00	66533.00	0.00
n	0.00		450 mm for Scouring purpose	No.	71,530.00	71530.00	0.00
9.0		MJP16-17, Item No-3 XIII , Pg-215	Providing, double flanged short body pattern type manually operated Butterfly Valve having body, disc and end cover in graded cast iron to IS-210 Gr.CF 200 generally confirming in to IS-13095-1991, Synthetic rubber faced ring secured on disc by retaining ring with stainless steel screw stub shaft of stainless steel riding in teflon bearing excluding C.C. foundation /structural steel support.				
			i) Butterfly Valves PN - 1 (WithBypass) (Diameter in mm)				
f	3.00		350	No.	44727.00	44727.00	134181.00
g	0.00		400	No.	55490.00	55490.00	0.00
h	0.00		450	No.	64770.00	64770.00	0.00
i	0.00		500	No.	69967.00	69967.00	0.00
10.0		MJP16-17, Sec XIII, Item No-5 a , Pg-218	**Air Valves** **Providing and supplying Air Valves as per IS 14845-2000** and MJP's standard specifications of approved make and quality of following diameters including all taxes (central and local), railway freight, inspection charges, unloading from railway wagons,loading into trucks, transportation upto departmental stores / site, unloading and stacking etc. complete.				
			Air Valve Single Ball Flanged/Screwed Type-PN-1(Diameter in mm)				
a	7.00		**40**	No.	1193.00	1193.00	8351.00
11.0		MJP16-17, Item No-6 a,Sec XIII , Pg-219	Air Valves Providing and supplying Air Valves as per IS-10845 and MJP's standard specifications double orifice type combined with screw down isolating valve, small orifice elastic ball resting on a gun metal orifice nipple, large orifice vulcanite ball seating on moulded seat ring, inlet face and drilled, including all taxes (Central and local), insurance, third party inspection charges, loading, unloding, transporta-toin upto departmental stores / site, etc. complete.				
			Air Valve Double Ball Flanged-Type-PN-1(Diameter in mm)				
a	1.00		**50**	No.	5510.00	5510.00	5510.00
b	0.00		**65**	No.	6429.00	6429.00	0.00
c	12.00		**80**	No.	7344.00	7344.00	88128.00

Item No.	Qty	DSR Ref.	Description of Item	Unit	Basic Rate	Final Rate (Rs.)	Total Amount (Rs)
12.0		MJP16-17, Item No-7 a, Sec XIII , Pg-220	**Providing and supplying Air Valves as per** IS-14845-2000 and MJP's standard specifications double orifice type combined with isolating sluice valve, mounted in horzontal position and operated by wheel gearing, small orifice elastic ball resting on a gun metal orifice nipple, large orifice vulcanite ball seating on moulded seat ring, inlet face and drilled, including all taxes (Central and local), insurance, third party inspection charges, loading, unloading, transporta-tion upto departmental storer / site, etc. complete.				
			Air Valve Double Ball Flanged-Type-PN-1(Diameter in mm)				
a	4.00		**100**	No.	9286.00	9286.00	37144.00
b	3.00		**150**	No.	16924.00	16924.00	50772.00
c	0.00		**200**	No.	28461.00	28461.00	0.00
			PIPE APPURTANANCES LAYING				
13		MJP16-17, Item No-4,XIII , Pg-217	Lowering laying and jointing in position D.I. D/F Reflux valves,Butterfly velves and sluice valves including cost of all labour, jointing material, including nut bolts and giving satisfactory hydraulic testing, etc. complete. (Rate for all class of valve)				
			Sluice Valve & Scour Valve(Dia in mm)				
a	4.00		80 mm for Scouring purpose	No.	1401.00	1471.05	5884.20
b	7.00		100 mm for control purpose	No.	1831.00	1922.55	13457.85
c	1.00		100 mm for Scouring purpose	No.	1831.00	1922.55	1922.55
d	1.00		150 mm for control purpose	No.	2878.00	3021.90	3021.90
e	6.00		150 mm for Scouring purpose	No.	2878.00	3021.90	18131.40
f	6.00		200 mm for control purpose	No.	2994.00	3143.70	18862.20
g	3.00		200 mm for Scouring purpose	No.	2994.00	3143.70	9431.10
h	6.00		250 mm for control purpose	No.	3901.00	4096.05	24576.30
i	1.00		250 mm for Scouring purpose	No.	3901.00	4096.05	4096.05
j	4.00		300 mm for control purpose	No.	4047.00	4249.35	16997.40
k	0.00		300 mm for Scouring purpose	No.	4047.00	4249.35	0.00
l	0.00		350 mm for Scouring purpose	No.	4987.00	5236.35	0.00
m	0.00		400 mm for Scouring purpose	No.	6017.00	6317.85	0.00
n	0.00		450 mm for Scouring purpose	No.	7159.00	7516.95	0.00
14.0			**Butterfly Valve(diameter in mm)**				
a	3.00		350	No.	5380.00	5649.00	16947.00
b	0.00		400	No.	6491.00	6815.55	0.00
c	0.00		450	No.	7722.00	8108.10	0.00
d	0.00		500	No.	7997.00	8396.85	0.00
15			Lowering,laying and fixing in proper alignment and position all types of C.I. air valves as directed by Engineer-in-charge including cost of conveyance from stores to site of work,cost of all material and giving satisfactory hydraulic testing,etc.complete.(for all class of valves)				
		MJP16-17, Item No-10 a,SecXIII , Pg-223	**Air Valves Single ball - PN - 1 (Diameter in mm)**				
a	7.00		**40**	No.	208.00	218.40	1528.80
		MJP16-17, Item No-10 b,SecXIII , Pg-223	**Air Valves Double ball - PN - 1 (Diameter in mm)**				
b	1.00		**50**	No.	268.00	281.40	281.40
c	0.00		**65**	No.	309.00	324.45	0.00
d	12.00		**80**	No.	369.00	387.45	4649.40
e	4.00		**100**	No.	390.00	409.50	1638.00
f	3.00		**150**	No.	587.00	616.35	1849.05
g	0.00		**200**	No.	646.00	678.30	0.00
16		As Per RA	**Utility Shifting**				4600830.36

Item No.	Qty	DSR Ref.	Description of Item	Unit	Basic Rate	Final Rate (Rs.)	Total Amount (Rs)
17.00	8.00	MJP16-17, Item No 16,XVII, Pg-287	Supplying, transporting, the S.P. fire hydrants including duck foot bend, S.V. and S.V. road box, painting the hydrant, fixing the saddle piece, supplying, and laying required length of C.I. pipeline and jointing the same spun yarn, molten lead including caulking, fixing the S.V. road box in one brick masonry chamber in 1:5 C.M. with 12 mm thick 1:3 cement plaster both inside and outside on 1:3:6 C.C. 150 mm thick etc. complete as specified and directed. [As per I.S. 900/1965 Revised]	NO	11461	12034.05	96272.40
18.00	0.00	Quotion	Drip irrigation	km	945417.40	945417.40	0.00
19.00	0.00	Quotion	Sprinkler irrigation	Sqrm	82.57	82.57	0.00
						Net Cost (in Rs)	46494103.3
			Add 1% cess on Labour welfare *(For MJP items)*				406117.2
			Add 1% cess on Labour amenities *(For MJP items)*				91808.7
			Total Cost				**46992029.2**

NAVI MUMBAI MUNICIPAL CORPORATION

RECYCLE WATER SYSTEM

MEASUREMENT SHEET

Name of Work :- Distribution System of Koparkhairane area.

No.	Description of Item	No.	L	B	D	Qty	Unit	Total Qty
	Pipe Diameter							
	110	1.0	6723					
	160	1.0	576					
	180	1.0	0					
	200	1.0	5367					
	250	1.0	5352					
	315	1.0	3066					
	355	1.0	1085					
	400	1.0	145					
	450	1.0	0					
	500	1.0	0					
	560	1.0	0					
	630	1.0	0					
	710	1.0	0					
		Total	22314.00					
1	**RCC.Thrust Block:** Providing and laying insitu Cement Concrete of trap/granaite/quartzite/gneiss metal for RCC work in foundation like raft,grillage,strip foundation and footing of RCC columns and steel,stanchions including normal dewatering ,plywood form work, bully/ steel prop-ups, compaction, finishing and curing etc. complete(by weigh batching and mix design for M-250 and M-300 only. use L&T, A.C.C. Ambuja, Birla Gold, ManikGad, Rajashree, etc. cement is permitted (Excluding M.S. of Tor reinforcement) M-250 for Anchor Block							
	1 x 0.6 x 0.6 m block	45.00	1.00	0.60	0.60	**16.20**		
	R C C for pipe support							
	110	6723	0.32			215.27		
	160	576	0.32			18.44		
	180	0	0.34			0.00		
	200	5367	0.34			182.48		
	250	5352	0.41			219.43		
	315	3066	0.41			125.71		
	355	1085	0.49			53.17		
	400	145	0.56			8.12		
	450	0	0.73			0.00		
	500	0	0.73			0.00		
	560	0	0.73			0.00		
	630	0	0.73			0.00		
	710	0	0.85			0.00		
						838.81	**cum**	**838.81**