



बृहन्मुंबई महानगरपालिका  
Municipal Corporation of Greater Mumbai



## Mithi River Water Quality Improvement Project

**Package 3:** Dry Weather Flow Interception at Tidal Outfalls (including Gate Pumps), Transfer Sewer, Training of River (Retaining wall and Service Road), Beautification including Promenades and Allied Works from Prem Nagar outfall, Kurla to Mahim Causeway.

Design Build Operate Contract

**Volume 5 - Background Information**

**Employer:**  
**Municipal Corporation of Greater Mumbai**  
Municipal Head Office Building, Mahapalika Marg,  
Fort, Mumbai - 400 001.

**Consultant:**  
**Frischmann Prabhu (India) Pvt. Ltd.**  
315, Balgovind Wadi, New Prabhadevi Road,  
Prabhadevi, Mumbai - 400 025



## MUNICIPAL CORPORATION OF GREATER MUMBAI

### Mithi River Water Quality Improvement Project

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### Volume 5 – Background Information

**Employer:**  
**Municipal Corporation of Greater Mumbai**  
Municipal Head Office Building,  
Mahapalika Marg, Fort, Mumbai - 400001  
India

**Consultant:**  
**Frischmann Prabhu (India) Pvt. Ltd.**  
315, Balgovind Wadi, New Prabhadevi Road,  
Prabhadevi, Mumbai - 400 025.  
India

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## **1 INTRODUCTION**

This volume contains background information provided in conjunction with the Tender Documents for the wastewater interception, transfer and adjacent beautification works.

Attention is drawn to Instruction to Tenderers section 7.0 and to the amended Clause 4.10 of the Conditions of Contract.

The Employer and its agents do not represent or warrant the accuracy or completeness of any information set out in this document or of any other background or reference information or documents prepared by the Employer or by third parties.

All data provided by the Employer, including any background information provided by the Employer herein is indicative and for information only, and any reliance on, interpretation of, or use of the data shall be at the user's own risk.

**Background of Mithi River Quality Improvement Project:**

MCGM had appointed the Consultant, M/s. Frischmann Prabhu (I) Pvt. Ltd. to suggest Short Term & Long Term measures for Mithi River Water Quality Improvement. After survey & study the Consultant had proposed Short Term Works and Long Term Works in 4 different packages to divert Dry Weather Flow of about 285 MLD discharging into Mithi River to Municipal Sewer system.

**Package- I** comprises of Providing & Laying Sewer line of 1.65 km length along banks of Mithi River from Filter Pada to WSSD Garage at Powai, Construction of Influent Pumping Station, Effluent Pumping Station and 8 MLD STP at WSSD Garage and Construction of service roads along banks of Mithi River.

**Package II** (from WSSD garage to CST Bridge) works are located in non-tidal influence zone. It includes 8.07 km length of sewer line along and nearby Mithi River and 102 nos. of minor interceptors to divert DWF from minor nallas to Municipal sewer network system. Along with this, works of retaining wall of 3.325 km length, service road of 9.375 km length are also proposed.

**Package III** (from CST bridge to Mahim Causeway including Vakola River), works are located in tidal influence zone. It includes training of river (Construction of Retaining Wall & Service Road), Pumping Stations, Interceptions & Diversion works for diverting Dry Weather Flow (DWF) of various outfalls / nallas into nearby existing Municipal Sewer networks along with Gate Pumps, Beautification including Promenades & allied works.

It comprises of Sewer line work (7.61km), Retaining Wall (7.490 km), Service Roads (6.421 km), 28 nos. of Interceptors, 26 nos. of Gate Pumps, 3 nos. of Sewage Pumping Stations and 8.850 kms of beautification of river including Promenades with their O&M for 10 years.

**Package IV-** This work comprises of construction of Tunnel for diversion of intercepted Dry Weather Flow from Bapat Nalla and Safed Pool Nalla to the proposed WwTF at Dharavi. The diameter of proposed sewer tunnel is 2.6m and length is about 6.5km.





KEY PLAN

NOTES  
 1. REFER TO FLOW SURVEY AND WATER QUALITY SUMMARY DATA SHEETS IN VOLUME 5 OF THE CONTRACT DOCUMENT FOR DETAILS OF MEASURED FLOW/LOAD AND CO-ORDINATES

LEGEND

- A4/XX TIDAL OUTFALL
- OUTFALL

RO	08.12.2017	SD	TENDER DRAWING - PACKAGE 3	SL	MH
REV	DATE	DRAWN	DESCRIPTION	CHKD.	APPD.

CONSULTANT  
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 E-mail: pfmumbai@fpindia.com www.fpindia.com

CLIENT  

**Municipal Corporation of Greater Mumbai**  
 SW Department

PROJECT  
**CONSULTANCY SERVICES FOR PREPARATION OF DETAIL PROJECT REPORT ON MITHI RIVER**

TITLE  
**OUTFALL LOCATIONS FOR TIDAL AREA**

DESIGNED	AP	CHECKED	SL
DRAWN	SD	APPROVED	MH
SCALE	N.T.S	DATE	08.12.2017
DRAWING NO	REV		
DE178004C272			R0



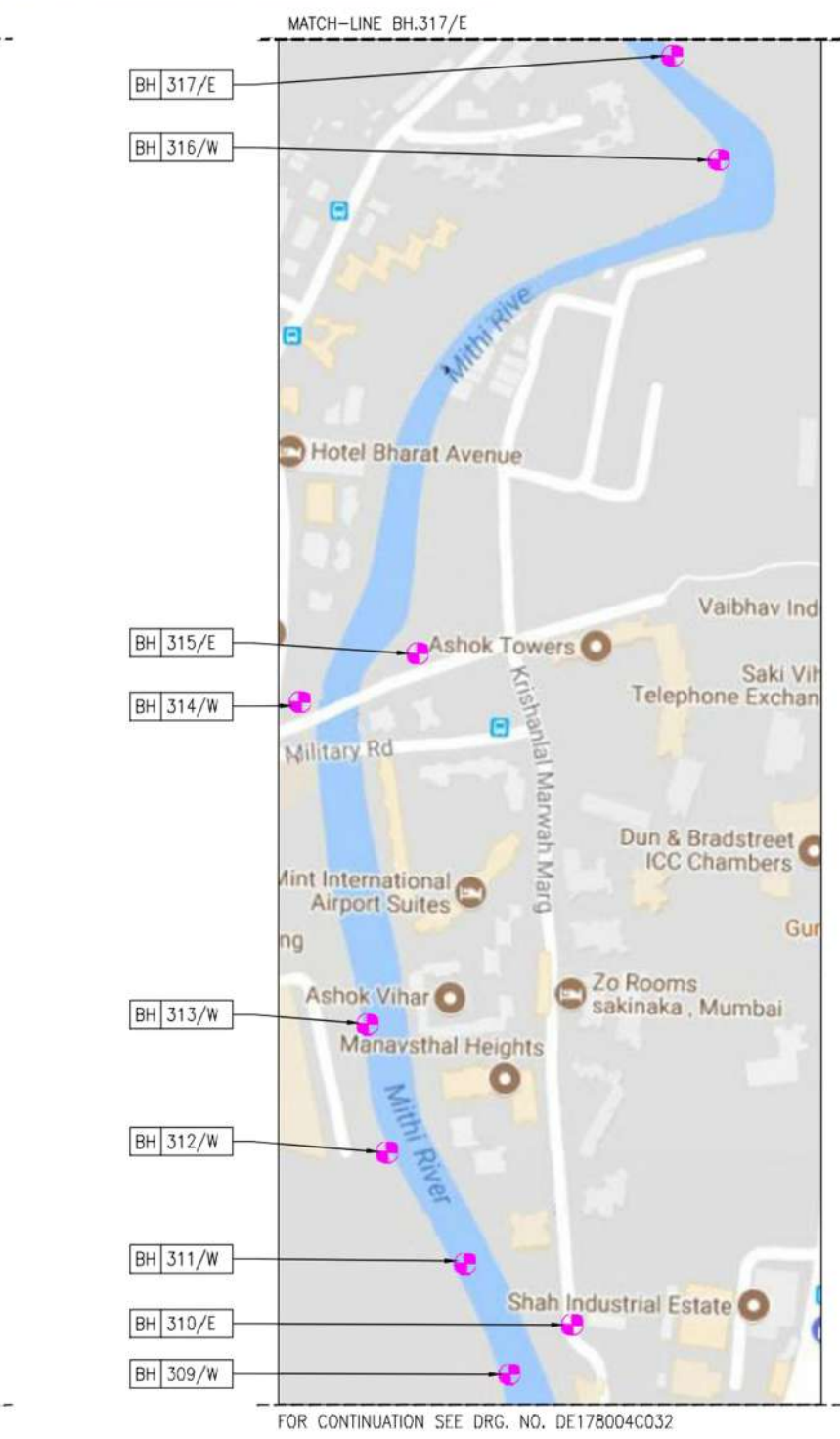
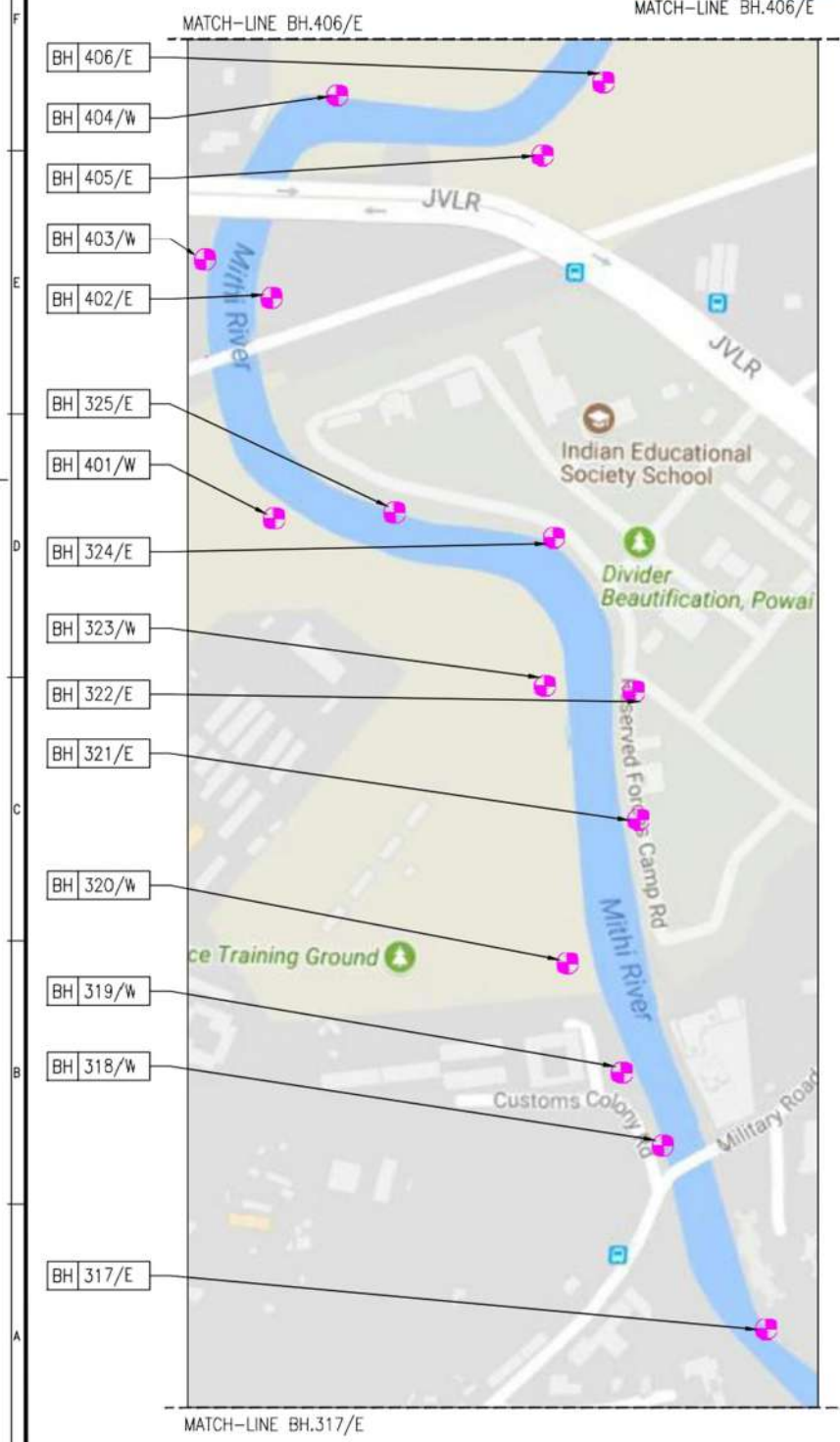
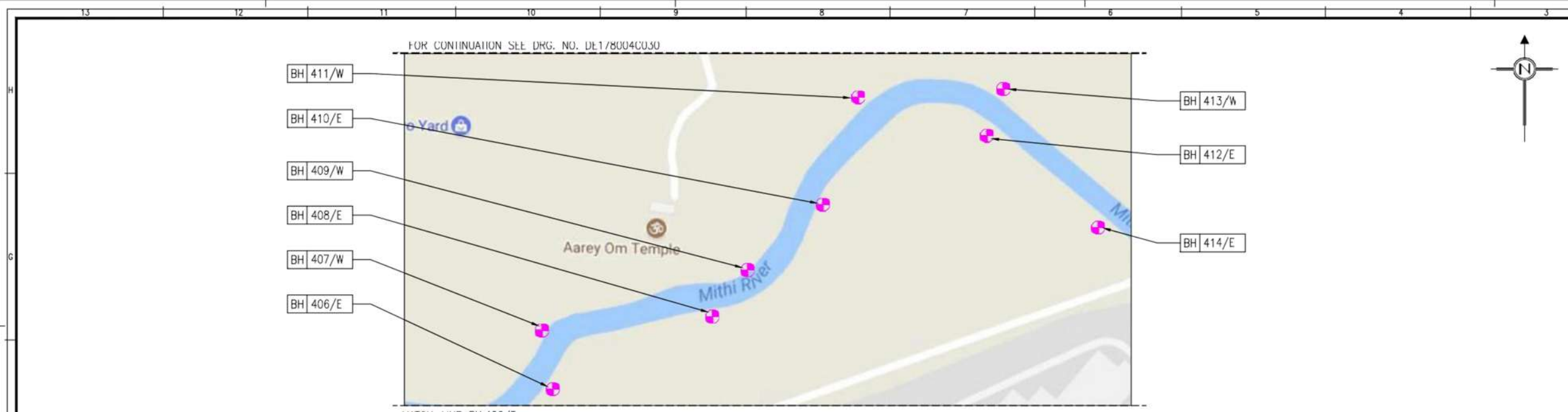
## 2 INFORMATION PROVIDED

### 2.1 Tidal Area Flow and Load Data

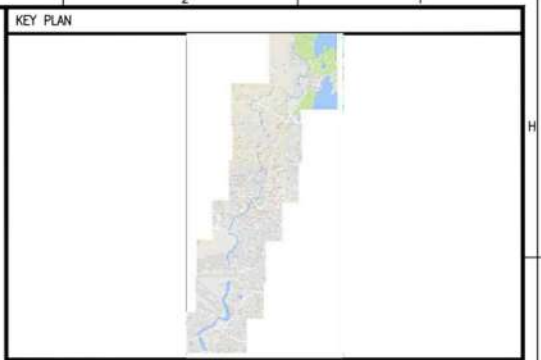
Sr. No.	Tidal Area Location Ref.	MLD Day 1	MLD Day 2	MLD Day 3	Max (MLD)	Additional Comments
1	A4-9	1.37	1.64	1.80	37.04	Kalanagar
2	A4-10	7.67	4.03	9.67	37.04	Indian Oil
6	A4-11	1.89	2.41	1.00	5.71	WEH
3	A4-14	19.17	18.43	14.57	61.70	L bridge
4	A4-15	6.47	8.95	10.89	36.46	Metro
5	A4-16	0.39	0.29	0.53	2.21	Krida Sankul
	<b>TOTAL</b>	<b>36.96</b>	<b>35.77</b>	<b>38.46</b>	<b>180.16</b>	

### 2.2 Ground Investigation Data

Bore Hole Location Plan with Bore Logs



Sr.No	BORE HOLE NO	EASTING	NORTHING
1	BH.309/W	277,698.00	2,114,818.00
2	BH.310/E	277,740.89	2,114,852.00
3	BH.311/W	277,667.72	2,114,893.48
4	BH.312/W	277,614.54	2,114,969.51
5	BH.313/W	277,601.28	2,115,056.68
6	BH.314/W	277,554.83	2,115,276.85
7	BH.315/E	277,635.35	2,115,310.11
8	BH.316/W	277,840.82	2,115,646.84
9	BH.317/E	277,809.23	2,115,717.80
10	BH.318/W	277,738.84	2,115,843.01
11	BH.319/W	277,710.89	2,115,892.71
12	BH.320/W	277,674.00	2,115,967.00
13	BH.321/E	277,722.22	2,116,064.66
14	BH.322/E	277,719.00	2,116,152.00
15	BH.323/W	277,658.42	2,116,155.86
16	BH.324/E	277,664.77	2,116,256.52
17	BH.325/E	277,556.00	2,116,274.00
18	BH.401/W	277,474.00	2,116,270.00
19	BH.402/E	277,472.19	2,116,420.16
20	BH.403/W	277,426.90	2,116,446.54
21	BH.404/W	277,517.00	2,116,558.00
22	BH.405/E	277,657.00	2,116,517.00
23	BH.406/E	277,698.47	2,116,566.90
24	BH.407/W	277,686.96	2,116,629.78
25	BH.408/E	277,870.00	2,116,645.00
26	BH.409/W	277,908.00	2,116,695.00
27	BH.410/E	277,989.00	2,116,765.00
28	BH.411/W	278,026.75	2,116,880.35
29	BH.412/E	278,165.00	2,116,839.00
30	BH.413/W	278,182.96	2,116,889.53
31	BH.414/E	278,284.65	2,116,740.67



NOTES

- CO-ORDINATES ARE GIVEN IN UTM
- REFER 'TENDER DOCUMENT VOLUME 5 BACKGROUND INFO - XX' FOR BORE LOG DETAILS

LEGEND

BORE HOLE

REV	DATE	DRAWN	DESCRIPTION	CHKD.	APPD.
R2	29.11.2017	SD	TENDER DRAWING PACKAGE-2	SL	MH
R1	28.09.2017	SD	ISSUE FOR FINAL FEASIBILITY REPORT	SL	MH
R0	22.08.2017	SD	ISSUE FOR FEASIBILITY REPORT	SL	MH

CONSULTANT

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CLIENT

**Municipal Corporation of Greater Mumbai**  
SW Department

PROJECT

**CONSULTANCY SERVICES FOR PREPARATION OF DETAIL PROJECT REPORT ON MITHI RIVER**

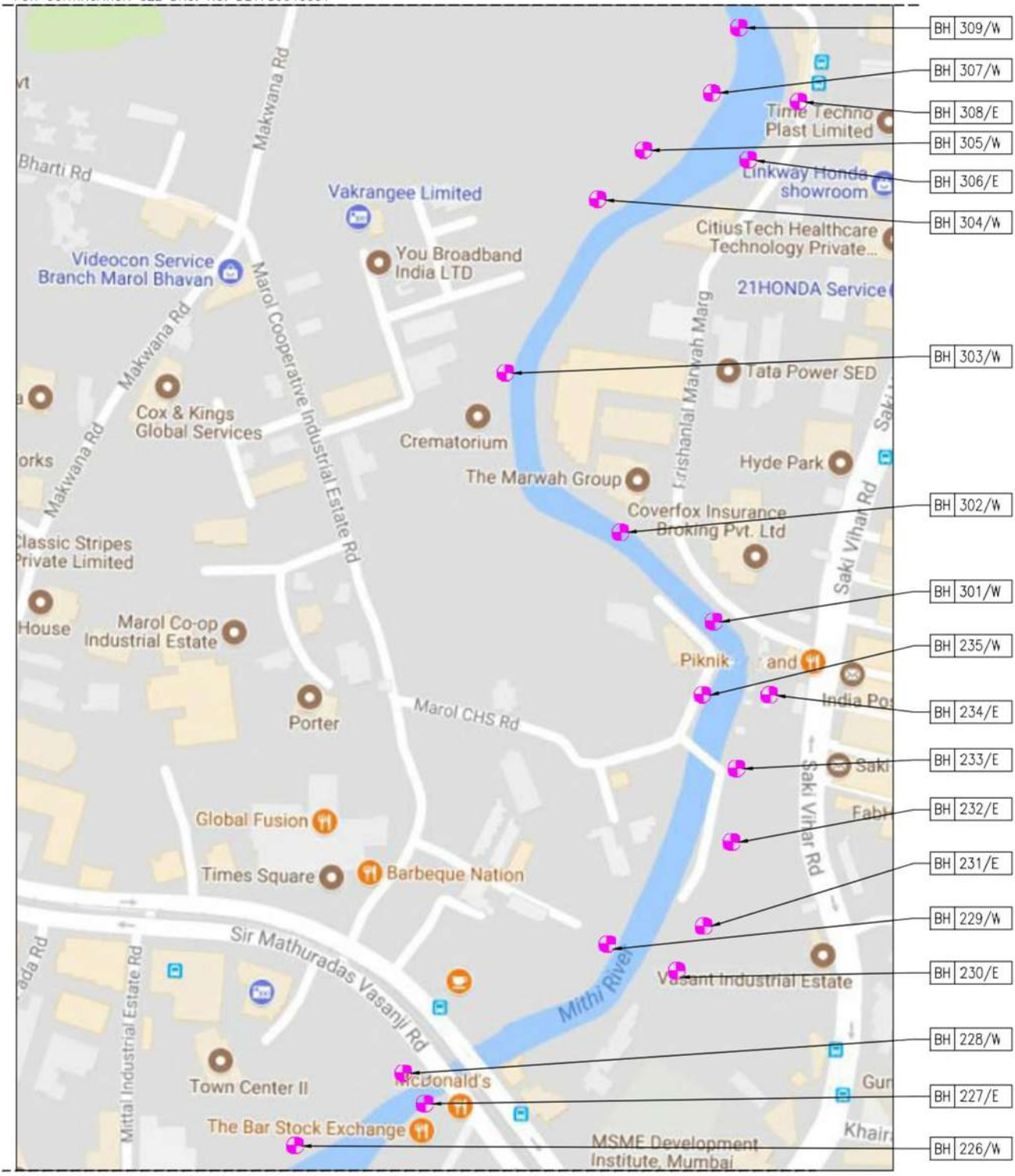
TITLE

**BORE HOLE LOCATIONS FOR AREA 2 SHEET 1 OF 2**

DESIGNED	AP	CHECKED	SL
DRAWN	SD	APPROVED	MH
SCALE	N.T.S	DATE	22.08.2017
DRAWING NO	DE178004C031		REV
			R2

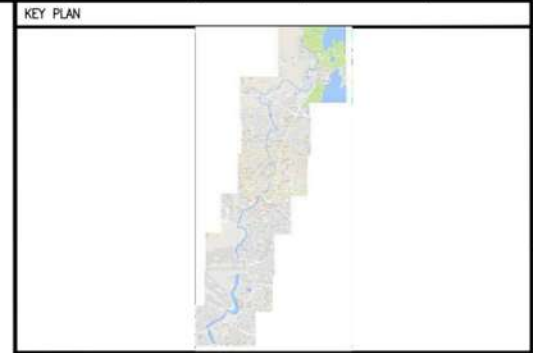


FOR CONTINUATION SEE DRG. NO. DE178004C031



Sr.No	BORE HOLE NO	EASTING	NORTHING
1	BH.226/W	277,318.45	2,113,862.42
2	BH.227/E	277,429.39	2,113,897.99
3	BH.228/W	277,411.00	2,113,924.00
4	BH.229/W	277,585.42	2,114,034.51
5	BH.230/E	277,645.00	2,114,012.00
6	BH.231/E	277,668.06	2,114,050.12
7	BH.232/E	277,691.73	2,114,121.81
8	BH.233/E	277,695.99	2,114,184.50
9	BH.234/E	277,723.93	2,114,247.85
10	BH.235/W	277,666.93	2,114,247.59
11	BH.301/W	277,676.46	2,114,310.22
12	BH.302/W	277,596.69	2,114,386.85
13	BH.303/W	277,498.35	2,114,522.75
14	BH.304/W	277,577.33	2,114,671.28
15	BH.305/W	277,616.43	2,114,713.25
16	BH.306/E	277,706.00	2,114,705.00
17	BH.307/W	277,674.91	2,114,762.37
18	BH.308/E	277,749.00	2,114,755.00
19	BH.309/W	277,698.00	2,114,818.00

FOR CONTINUATION SEE DRG. NO. DE178004C033



NOTES  
 1. CO-ORDINATES ARE GIVEN IN UTM  
 2. REFER 'TENDER DOCUMENT VOLUME 5 BACKGROUND INFO - XX' FOR BORE LOG DETAILS

LEGEND  
 BORE HOLE

REV	DATE	DRAWN	DESCRIPTION	CHKD.	APPD.
R2	29.11.2017	SD	TENDER DRAWING PACKAGE-2	SL	MH
R1	28.09.2017	SD	ISSUE FOR FINAL FEASIBILITY REPORT	SL	MH
RO	22.08.2017	SD	ISSUE FOR FEASIBILITY REPORT	SL	MH

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PROJECT  
**CONSULTANCY SERVICES FOR PREPARATION OF DETAIL PROJECT REPORT ON MITHI RIVER**

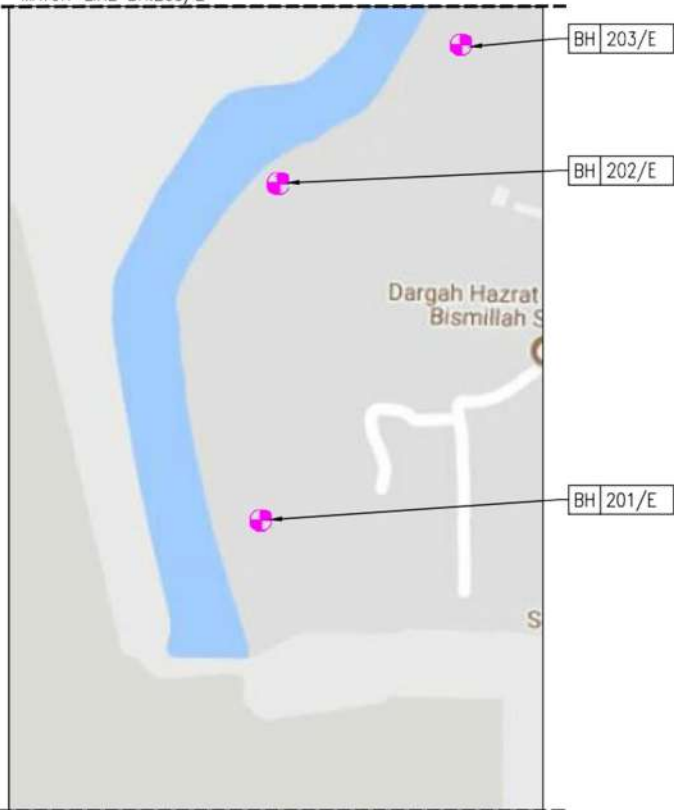
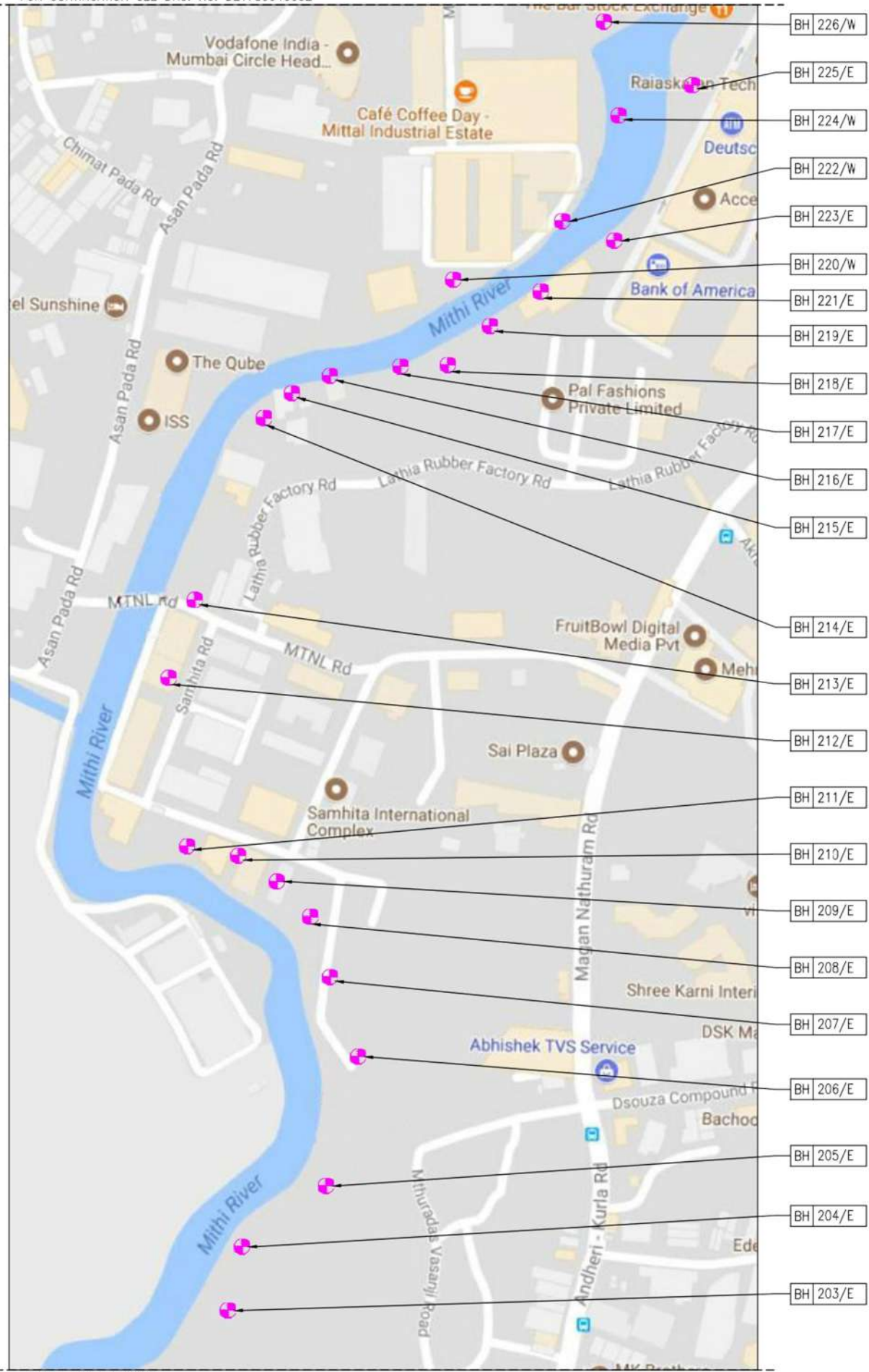
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**BORE HOLE LOCATIONS FOR AREA 2 SHEET 02 OF 02**

DESIGNED	AP	CHECKED	SL
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SCALE	N.T.S	DATE	22.08.2017
DRAWING NO	DE178004C032		
			REV R2



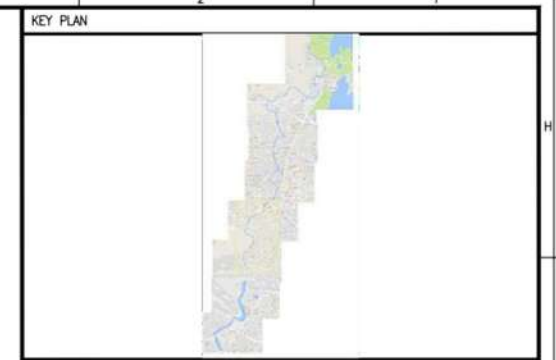
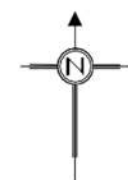
FOR CONTINUATION SEE DRG. NO. DE178004C032

MATCH-LINE BH.203/E



FOR CONTINUATION SEE DRG. NO. DE178004C034

Sr.No	BORE HOLE NO	EASTING	NORTHING
1	BH.201/E	276,837.03	2,112,353.16
2	BH.202/E	276,848.53	2,112,578.17
3	BH.203/E	276,970.70	2,112,670.80
4	BH.204/E	276,983.70	2,112,729.70
5	BH.205/E	277,061.57	2,112,785.96
6	BH.206/E	277,091.09	2,112,905.56
7	BH.207/E	277,065.00	2,112,979.00
8	BH.208/E	277,047.00	2,113,035.00
9	BH.209/E	277,015.98	2,113,067.67
10	BH.210/E	276,980.27	2,113,091.26
11	BH.211/E	276,933.00	2,113,100.00
12	BH.212/E	276,916.00	2,113,256.00
13	BH.213/E	276,940.07	2,113,328.14
14	BH.214/E	277,004.00	2,113,496.00
15	BH.215/E	277,030.00	2,113,519.00
16	BH.216/E	277,065.00	2,113,535.00
17	BH.217/E	277,130.39	2,113,543.60
18	BH.218/E	277,174.26	2,113,544.91
19	BH.219/E	277,213.00	2,113,581.00
20	BH.220/W	277,179.00	2,113,624.00
21	BH.221/E	277,260.00	2,113,613.00
22	BH.222/W	277,280.00	2,113,678.00
23	BH.223/E	277,328.00	2,113,660.00
24	BH.224/W	277,332.00	2,113,776.00
25	BH.225/E	277,400.00	2,113,804.00
	BH.226/W	277,318.45	2,113,862.42



NOTES  
 1. CO-ORDINATES ARE GIVEN IN UTM  
 2. REFER 'TENDER DOCUMENT VOLUME 5 BACKGROUND INFO - XX' FOR BORE LOG DETAILS

LEGEND  
 BORE HOLE

REV	DATE	DRAWN	DESCRIPTION	CHKD.	APPD.
R2	29.11.2017	SD	TENDER DRAWING PACKAGE-2	SL	MH
R1	28.09.2017	SD	ISSUE FOR FINAL FEASIBILITY REPORT	SL	MH
R0	22.08.2017	SD	ISSUE FOR FEASIBILITY REPORT	SL	MH

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 Tel: +91-22-6660 3901 Fax: +91-22-6660 3902  
 E-mail: pfmumbai@fplndia.com www.fplndia.com

CLIENT  
  
**Municipal Corporation of Greater Mumbai**  
 SW Department

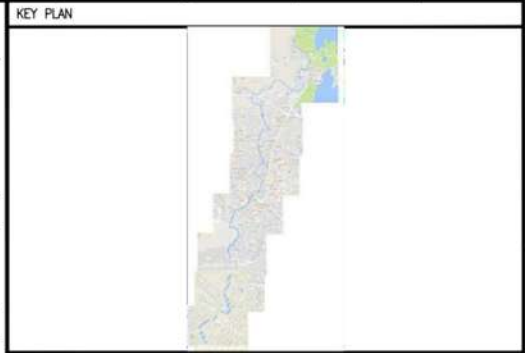
PROJECT  
**CONSULTANCY SERVICES FOR PREPARATION OF DETAIL PROJECT REPORT ON MITHI RIVER**

TITLE  
**BORE HOLE LOCATIONS FOR AREA 3**

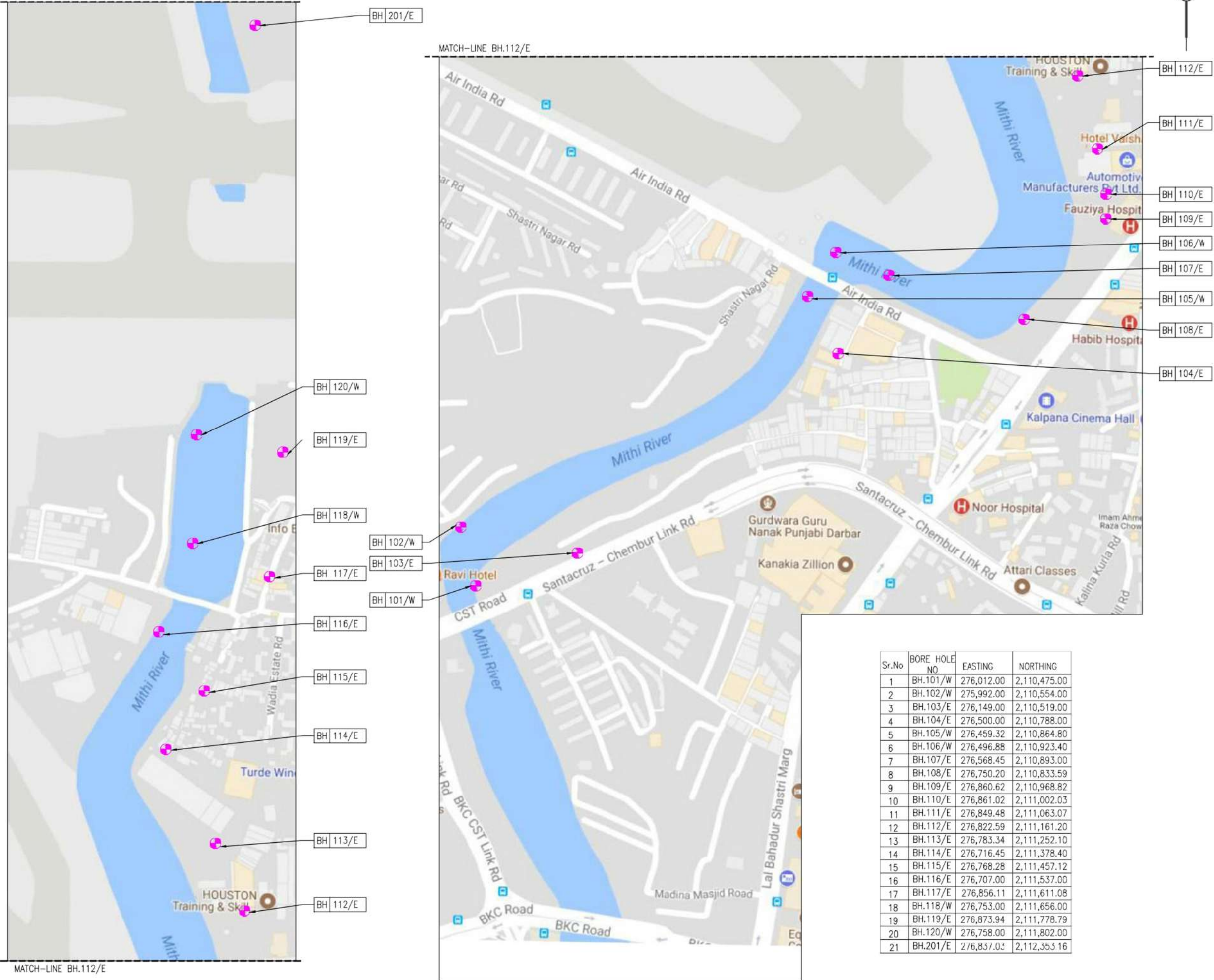
DESIGNED	AP	CHECKED	SL
DRAWN	SD	APPROVED	MH
SCALE	N.T.S	DATE	22.08.2017
DRAWING NO	DE178004C033		REV
			R2



FOR CONTINUATION SEE DRG. NO. DE178004C033



NOTES  
 1. CO-ORDINATES ARE GIVEN IN UTM  
 2. REFER 'TENDER DOCUMENT VOLUME 5 BACKGROUND INFO - XX' FOR BORE LOG DETAILS



Sr.No	BORE HOLE NO	EASTING	NORTHING
1	BH.101/W	276,012.00	2,110,475.00
2	BH.102/W	275,992.00	2,110,554.00
3	BH.103/E	276,149.00	2,110,519.00
4	BH.104/E	276,500.00	2,110,788.00
5	BH.105/W	276,459.32	2,110,864.80
6	BH.106/W	276,496.88	2,110,923.40
7	BH.107/E	276,568.45	2,110,893.00
8	BH.108/E	276,750.20	2,110,833.59
9	BH.109/E	276,860.62	2,110,968.82
10	BH.110/E	276,861.02	2,111,002.03
11	BH.111/E	276,849.48	2,111,063.07
12	BH.112/E	276,822.59	2,111,161.20
13	BH.113/E	276,783.34	2,111,252.10
14	BH.114/E	276,716.45	2,111,378.40
15	BH.115/E	276,768.28	2,111,457.12
16	BH.116/E	276,707.00	2,111,537.00
17	BH.117/E	276,856.11	2,111,611.08
18	BH.118/W	276,753.00	2,111,656.00
19	BH.119/E	276,873.94	2,111,778.79
20	BH.120/W	276,758.00	2,111,802.00
21	BH.201/E	276,837.00	2,112,353.16

LEGEND  
 BORE HOLE

REV	DATE	DRAWN	DESCRIPTION	CHKD.	APPD.
R2	29.11.2017	SD	TENDER DRAWING PACKAGE-2	SL	MH
R1	28.09.2017	SD	ISSUE FOR FINAL FEASIBILITY REPORT	SL	MH
R0	22.08.2017	SD	ISSUE FOR FEASIBILITY REPORT	SL	MH

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 E-mail: pfmumbai@fpmindia.com www.fpmindia.com

CLIENT  
  
**Municipal Corporation of Greater Mumbai**  
 SW Department

PROJECT  
**CONSULTANCY SERVICES FOR PREPARATION OF DETAIL PROJECT REPORT ON MITHI RIVER**

TITLE  
**BORE HOLE LOCATIONS FOR AREA 4**

DESIGNED	AP	CHECKED	SL
DRAWN	SD	APPROVED	MH
SCALE	N.T.S	DATE	22.08.2017
DRAWING NO	DE178004C034		REV
			R2



 <p><b>Client :</b> Municipal Corporation of Greater Mumbai  <b>Project :</b> Mithi River Development Project, Mumbai</p> <p><b>Location :</b> CH: 14728.630m  <b>Diameter of Borehole :</b> 100 / 76mm NX  <b>Depth of casing :</b>  <b>Depth of water :</b> 6.6m</p>	<b>Job No. :</b> MITHI RIVER
	<b>Bore Hole No :</b> BH.414E
	<b>Depth of BH :</b> 10.0m
	<b>Coordinates :</b> N: 2116740.671; E: 278284.660
	<b>Ground RL :</b> 47.489m
	<b>Start Date :</b> 6-12-2011 <b>End Date :</b> 7-12-2011

Scale (m)	Depths (m)	Run	Sample No	Symbol	Lithological Description	Type	R.L. (m)	SPT N value	SPT N graph				Core Recovery %	RQD %	Core recovery				Remarks / Other
									0	25	50	75			100	0	25	50	
0	0.000				Ground Surface		47.489												
					Yellowish brownish silty sand	SS	0.000												
1	1.500						45.989												
2	2.100	SPT-			Soft clay with gravel	SS	1.500	24											
			1-8		Highly to moderately Fractured weathered basalt	R	2.100					24	0						
			9-10			R						15							
			11-16			R						22	0						
			17-20			R						20	10						
			21-28			R						42	16						
			29-32			R						35	23						
10	10.000				End of Log		37.489												
							10.000												
11																			
12																			
13																			
14																			
15																			

DS: Disturbed Samples	Site Engr. O.P. Thawar	<p><b>Indian Institute of Technology, Bombay</b>                  Powai, Mumbai - 400076                  T: +91-22-2572-2545 / 2576-7325                  F: +91-22-2572-3480</p>
UDS: Undisturbed Samples	Drawn By AAJ	
SPT: Standard Penetration Test	Chkd. By SRK	
CR: Core Recovery	SS - Soil	
RQD: Rock Quality Designation	R- Rock	
GWL: Ground water Level	F - Filling	



**Client :** Municipal Corporation of Greater Mumbai  
**Project :** Mithi River Development Project, Mumbai

**Location :** CH: 14780.640  
**Diameter of Borehole :** 100 / 75mm NX  
**Depth of casing :**  
**Depth of water :** 6.4m

**Job No. :** MITHI RIVER  
**Bore Hole No :** BH.416W  
**Depth of BH :** 10.0m  
**Coordinates :** N: 2118783.881; E: 278341.068  
**Ground RL :** 47.281m  
**Start Date :** 10-12-2011  
**End Date :** 12-12-2011

Scale (m)	Depth (m)	Run	Sample No	Symbol	Lithological Description	Type	RL (m)	SPT N value	SPT N graph				Core Recovery %		Core recovery				Remarks / Other
									0	25	50	75/100	Core Recovery %	RQD %	0	25	50	75/100	
0	0.000				Ground Surface		47.281												
1	1.000				Brownish silty Clay	SS	48.281												
2					Highly to moderately Fractured weathered basalt	R													
3			1-3	R								12	0						
4			4-7	R								16	7						
5			8-11	R								19	12						
6			12-16	R								43	37						
7	7.000				basalt		49.281												
8			17-19	R			50.281												
9																			
10	10.000						57.281												
11					End of Log		10.000												

DS: Disturbed Samples UDS: Undisturbed Samples SPT: Standard Penetration Test N > 100 Refusal CR: Core Recovery RQD: Rock Quality Designation GWL: Ground water Level	Site Engr. O.P. Tiwari Drawn By AAJ Chkd. By SRK SS - Soil R- Rock F - Filling	<b>Indian Institute of Technology, Bombay</b> Powai, Mumbai - 400076 T: +91-22-2572-2545 / 2576-7325 F: +91-22-2572-3480
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**Client :** Municipal Corporation of Greater Mumbai  
**Project :** Mithi River Development Project, Mumbai

**Location :** CH:14800.580m  
**Diameter of Borehole :** 100 / 76mm NX  
**Depth of casing :**  
**Depth of water :** 4.8m

**Job No. :** MITHI RIVER  
**Bore Hole No :** BH.416/E  
**Depth of BH :** 10.0m  
**Coordinates :** N: 2116889.000; E: 278344.000  
**Ground RL :** 47.263m  
**Start Date :** 11-12-2011  
**End Date :** 13-12-2011

Scale (m)	Depth (m)	Run	Sample No	Symbol	Lithological Description	Type	R.L. (m)	SPT N value	SPT N graph				Core Recovery %		Core recovery				Remarks / Other	
									0	25	50	75/100	0	ROD %	0	25	50	75/100		
0	0.000				Ground Surface		47.253													
0	1.500				Completely disintegrated rock as hard murum	SS	45.753													
2	3.000				Boulders	R	44.253													
3			1-3		Highly to moderately Fractured weathered basalt	R	40.253					11	0							
4			4-8	R		17		7												
5			9-13	R		25		11												
7	7.000		14-17	R		37		32												
8			18-24	R	54	41														
10	10.000				End of Log		37.253													

DS: Disturbed Samples      Site Engr. **O.P. Tiwari**  
 UDS: Undisturbed Samples      Drawn By **AAJ**  
 SPT: Standard Penetration Test : 100 > Refusal      Chkd. By **SRK**  
 CR: Core Recovery      SS - Soil  
 RQD: Rock Quality Designation      R- Rock  
 OWL: Ground water Level      F - Filling

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**Client :** Municipal Corporation of Greater Mumbai  
**Project :** Mithi River Development Project, Mumbai

**Location :** CH: 14846,480  
**Diameter of Borehole :** 100 / 75mm NX  
**Depth of casing :**  
**Depth of water :** 0.72m (100% water loss form 3m to 10m)

**Job No. :** MITHI RIVER  
**Bore Hole No :** BH.417W  
**Depth of BH :** 10.0m  
**Coordinates :** N: 2118667.032; E: 278487.103  
**Ground RL :** 48.380m  
**Start Date :** 14-12-2011  
**End Date :** 16-12-2011

Scale (m)	Depths (m)	Run	Sample No	Symbol	Lithological Description	Type	R.L. (m)	SPT N value	SPT N graph				Core Recovery %		Core recovery				Remarks / Other
									0	25	50	75 100	0	ROD %	0	25	50	75 100	
0	0.000				Ground Surface		48.380												
0	1.000				Brownish silty clay	SS	47.380												
1					Highly to Completely disintegrated weathered rock	R						0	0						
2																			
3	3.050				Highly to moderately Fractured weathered basalt	R	45.330					10	0						Rock SPT-1 piece Refusal
4			1-3			R													
5			4-9			R						23	0						
6																			
7			10-15			R						37	11						
8																			
9	7.500		16-20		Moderately to slightly weathered, fractured basalt	R	40.880					47	36						
10																			
11	10.000		21-24			R	38.380					57	48						
12					End of Log		10.000												

DS: Disturbed Samples	Site Engr. <b>O.P. Tiwari</b>	<b>Indian Institute of Technology, Bombay</b> Powai, Mumbai - 400076 T: +91-22-2572-2545 / 2576-7325 F: +91-22-2572-3460
UDS: Undisturbed Samples	Drawn By <b>AAJ</b>	
SPT: Standard Penetration Test : 100 > Refusal	Chkd. By <b>SRK</b>	
CR: Core Recovery	SS - Soil	
RQD: Rock Quality Designation	R- Rock	
GWL: Ground water Level	F - Filling	



**Client :** Municipal Corporation of Greater Mumbai  
**Project :** Mithi River Development Project, Mumbai

**Location :** CH:16044,880

**Diameter of Borehole :** 100 / 75mm NX

**Depth of casing :**

**Depth of water :** 0.8m (100% water loss form 3m to 10m)

**Job No. :** MITHI RIVER

**Bore Hole No :** BH.418/W

**Depth of BH :** 10.0m

**Coordinates :** N: 2118813.822; E: 278687.283

**Ground RL :** 48.210m

**Start Date :** 16-12-2011

**End Date :** 17-12-2011

Scale (m)	Depths (m)	Run	Sample No	Symbol	Lithological Description	Type	R.L. (m)	SPT N value	SPT N graph				Core Recovery %		Core recovery				Remarks / Other
									0	25	50	75/100	0	ROD %	0	25	50	75/100	
0	0.000				Ground Surface		48.210												
	1.550				Brownish silty clay with gravel	SS	47.660												
	3.000				Boulders	R	46.210					0	0						SPT-1 Refusal
			1-5		Highly to moderately Fractured weathered basalt	R	42.710					27	0						Rock small piece
			6-8			R						18	0						
			9-11			R						16	0						
	6.500		12-17		Moderately to slightly weathered, fractured basalt	R	42.710					40	27						
			18-23			R	39.710					48	40						
	9.500		24-27		Compact greyish basalt	R	39.710					92	68						
	10.000				End of Log														

DS: Disturbed Samples  
 UDS: Undisturbed Samples  
 SPT: Standard Penetration Test : 100 > Refusal  
 CR: Core Recovery  
 RQD: Rock Quality Designation  
 GWL: Ground water Level

Site Engr. **G.P. Tiwari**  
 Drawn By **AAJ**  
 Chkd. By **SRK**  
 SS - Soil  
 R- Rock  
 F - Filling


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 <p><b>Client :</b> Municipal Corporation of Greater Mumbai  <b>Project :</b> Mithi River Development Project, Mumbai</p> <p><b>Location :</b> CH:16114.030  <b>Diameter of Borehole :</b> 100 / 76mm NX  <b>Depth of casing :</b>  <b>Depth of water :</b> 1.6m</p>	<b>Job No. :</b> MITHI RIVER
	<b>Bore Hole No :</b> BH.418E
	<b>Depth of BH :</b> 10.0m
	<b>Coordinates :</b> N: 2116681.000; E: 278827.000
	<b>Ground RL :</b> 48.270m
	<b>Start Date :</b> 14-12-2011 <b>End Date :</b> 16-12-2011

Scale (m)	Depth (m)	Run	Sample No	Symbol	Lithological Description	Type	R.L. (m)	SPT N value	SPT N graph				Core Recovery %	RQD %	Core recovery				Remarks / Other
									0	25	50	75/100			0	25	50	75/100	
	0.000				Ground Surface		48.270												
	1.000				Silty clay with Boulders	SS	48.270												
	2.000				Boulders	R	48.270												SPT-1 Refusal
	3.000		7-4			R	48.270												Rock small piece
	4.000		5-8		Highly to moderately Fractured weathered basalt	R	48.270				14	10							
	5.000		9-12			R	48.270				30	18							
	6.000		13-17		Moderately to slightly weathered, fractured basalt	R	48.270				40	34							
	7.000		18-23			R	48.270				38	23							
	8.000		24-26			R	48.270				44	44							
	10.000				End of Log		39.270												

DS: Disturbed Samples	Site Engr. O.P. Tiwari	<p><b>Indian Institute of Technology, Bombay</b>                  Powai, Mumbai - 400076                  T: +91-22-2572-2545 / 2576-7325                  F: +91-22-2572-3480</p>
UDS: Undisturbed Samples	Drawn By AAJ	
SPT: Standard Penetration Test: 100 > Refusal	Chkd. By SRK	
CR: Core Recovery	SS - Soil	
RQD: Rock Quality Designation	R- Rock	
GWL: Ground water Level	F - Filling	





**Client :** Municipal Corporation of Greater Mumbai  
**Project :** Mithi River Development Project, Mumbai

**Location :** CH: 16148.840  
**Diameter of Borehole :** 100 / 75mm NX  
**Depth of casing :**  
**Depth of water :** 1.8m

**Job No. :** MITHI RIVER  
**Bore Hole No :** BH.420/E  
**Depth of BH :** 10.0m  
**Coordinates :** N: 2118671.080; E: 278883.340  
**Ground RL :** 60.010m  
**Start Date :** 13-12-2011  
**End Date :** 14-12-2011

Scale (m)	Depth (m)	Run	Sample No	Symbol	Lithological Description	Type	R.L. (m)	SPT N value	SPT N graph				Core Recovery %	RQD %	Core recovery				Remarks / Other
									0	25	50	75			100	0	25	50	
0	0.000				Ground Surface	n	0.000												
0.500	0.500				Filled Up Soil	n	0.500												
1					Boulders	R													Rock small piece
2						R													
3	3.000				Highly to moderately Fractured weathered basalt	R	-3.000					18	12						
4			1-17			R						26	10						
5			18-22			R						26	10						
6	6.000				Moderately to slightly weathered, Compact black basalt	R	-6.000					36	28						
7			23-27			R						42	38						
8			28-30			R						42	38						
9			31-34			R						57	52						
10	10.000				End of Log		-10.000												

DS: Disturbed Samples UDS: Undisturbed Samples SPT: Standard Penetration Test : 100 > Refusal CR: Core Recovery RQD: Rock Quality Designation GWL: Ground water Level	Site Engr. O.P. Tiwari Drawn By AAJ Chkd. By SRK SS - Soil R- Rock F - Filling	<b>Indian Institute of Technology, Bombay</b> Powai, Mumbai - 400076 T: +91-22-2572-2545 / 2576-7325 F: +91-22-2572-3460
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**Client :** Municipal Corporation of Greater Mumbai  
**Project :** Mithi River training for MCGM, Mumbai

**Location :** CH: 16183.480  
**Diameter of Borehole :** 100 / 75mm NX  
**Depth of casing :**  
**Depth of water :** 0.86m (100% water loss form 2.3m to 10m)

**Job No. :** MITHI RIVER  
**Bore Hole No :** BH.421/E  
**Depth of BH :** 10.0m  
**Coordinates :** N: 2116682.000; E: 278883.000  
**Ground RL :** 60.280m  
**Start Date :** 14-12-2011  
**End Date :** 16-12-2011

Scale (m)	Depth (m)	Run	Sample No	Symbol	Lithological Description	Type	RL (m)	SPT N value	SPT N graph				Core recovery %		Core recovery				Remarks / Other
									0	25	50	75/100	Core Recovery %	RQD %	0	25	50	75/100	
	0.000				Ground Surface		50.280												
	0.500				Filled Up Soil	T	50.000					0	0						
	1				Highly to Completely disintegrated weathered rock	R													SPT-1 Refusal
	2					R													
	3					R													
	4					R	45.760												
	4.500				Highly to moderately Fractured weathered basalt	R	4.500					22	22						
	5		1-3			R	44.250												
	6.000				Moderately to slightly weathered, fractured basalt	R	6.000					38	34						
	7		4-7			R													
	8		8-10			R						44	44						
	9					R													
	10.000		11-12			R	40.250					35	35						
	10				End of Log		10.000												
	11																		
	12																		
	13																		
	14																		
	15																		


DS: Disturbed Samples	Site Engr. O.P. Tiwari	<b>Indian Institute of Technology, Bombay</b> Powai, Mumbai - 400076 T: +91-22-2572-2545 / 2576-7325 F: +91-22-2572-3480
UDS: Undisturbed Samples	Drawn By AAJ	
SPT: Standard Penetration Test : 100 > Refusal	Chkd. By SRK	
CR: Core Recovery	SS - Soil	
RQD: Rock Quality Designation	R- Rock	
GWL: Ground water Level	F - Filling	

	<p><b>Job No. : MITHI RIVER</b></p> <p><b>Bore Hole No : BH.422E</b></p> <p><b>Depth of BH : 10.0m</b></p> <p><b>Coordinates : N: 2116742.417; E: 278810.314</b></p> <p><b>Ground RL : 60.230m</b></p> <p><b>Start Date : 16-12-2011</b></p> <p><b>End Date : 17-12-2011</b></p>
<p><b>Client : Indian Institute of Technology, Bombay</b></p> <p><b>Project : Mithi River Development Project, Mumbai</b></p> <p><b>Location : CH: 16382.230</b></p> <p><b>Diameter of Borehole : 100 / 76mm NX</b></p> <p><b>Depth of casing :</b></p> <p><b>Depth of water : 0.8m (100% water loss from 2.6m to 10m)</b></p>	

Scale (m)	Depth (m)	Run	Sample No	Symbol	Lithological Description	Type	RL (m)	SPT N value	SPT N graph				Core Recovery %		Core recovery				Remarks / Other
									0	25	50	75/100	Core Recovery %	RQD %	0	25	50	75/100	
	0.000				Ground Surface		50.230												
	0.500				Filled Up Soil	F	0.000					0	0						
	1.550				Boulders	R	48.680												Rock small piece
	2.000				Highly to completely disintegrated weathered rock	R	1.550												SPT-1 Refusal
	4.030				Highly to moderately Fractured weathered basalt	R	48.200												Rock small piece
	5.000		1-9		Moderately to slightly weathered, fractured basalt	R	45.230					35	0						
	6.000		10-12		Moderately to slightly weathered, fractured basalt	R	5.000					52	45						
	7.000		13-16			R						44	44						
	8.000		17-20			R						51	51						
	9.000		21-24		Compact grey basalt	R	41.230					61	61						
	10.000				End of Log		40.230												

<p>DS: Disturbed Samples</p> <p>UDS: Undisturbed Samples</p> <p>SPT: Standard Penetration Test : N-100 &gt; Refusal</p> <p>CR: Core Recovery</p> <p>RQD: Rock Quality Designation</p> <p>GWL: Ground water Level</p>	<p>Site Engr. <b>O.P. Tiwari</b></p> <p>Drawn By <b>AAJ</b></p> <p>Chkd. By <b>SRK</b></p> <p>SS - Soil</p> <p>R- Rock</p> <p>F - Filling</p>	<p><b>Indian Institute of Technology, Bombay</b></p> <p><b>Powai, Mumbai - 400076</b></p> <p><b>T: +91-22-2572-2545 / 2576-7325</b></p> <p><b>F: +91-22-2572-3480</b></p>
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**Client :** Municipal Corporation of Greater Mumbai  
**Project :** Mithi River Development Project, Mumbai

**Location :** CH: 16773.880

**Diameter of Borehole :** 100 / 76mm NX

**Depth of casing :**

**Depth of water :** 1.6m (100% water loss from 3m to 10m)

**Job No. :** MITHI RIVER

**Bore Hole No :** BH.601/E

**Depth of BH :** 10.0m

**Coordinates :** N: 2117081.000; E: 278888.000


**Ground RL :** 64.348m

**Start Date :** 17-12-2011

**End Date :** 18-12-2011


Scale (m)	Depth (m)	Run	Sample No	Symbol	Lithological Description	Type	R.L. (m)	SPT N value	SPT N graph				Core Recovery %	ROD %	Core recovery				Remarks / Other
									0	25	50	75			100	0	25	50	
0	0.000				Ground Surface		64.348												
1					Boulders	R	63.000												
3	3.000				Highly to completely disintegrated weathered rock	R	61.348												Rock small piece
5			1-3			R						12	0						
6	6.000				Highly to moderately Fractured weathered basalt	R	60.348												
7			4-8			R													
8			9-15			R													
8.500					Moderately to slightly weathered, fractured grey basalt	R	59.848												
10	10.000					R													
10	10.000				End of Log		64.348												

DS: Disturbed Samples UDS: Undisturbed Samples SPT: Standard Penetration Test : N-100 > Refusal CR: Core Recovery RQD: Rock Quality Designation GWL: Ground water Level	Site Engr. O.P. Tiwari Drawn By AAJ Chkd. By SRK SS - Soil R- Rock F - Filling	<b>Indian Institute of Technology, Bombay</b> Powai, Mumbai - 400076 T: +91-22-2572-2545 / 2576-7325 F: +91-22-2572-3480
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 <p>Client : Municipal Corporation of Greater Mumbai                  Project : Mithi River Development Project, Mumbai</p> <p>Location : CH: 16790.330                  Diameter of Borehole : 100 / 75mm NX                  Depth of casing :                  Depth of water : 4.7m (100% water loss form 2.6m to 10m)</p>	Job No. : MITHI RIVER
	Bore Hole No : BH.602W
	Depth of BH : 10.0m
	Coordinates : N: 2117108.000; E: 278888.000
	Ground RL : 53.818m
	Start Date : 18-12-2011 End Date : 18-12-2011


Scale (m)	Depth (m)	Run	Sample No	Symbol	Lithological Description	Type	R.L. (m)	SPT N value	SPT N graph				Core recovery		Remarks / Other
									0	25	50	75 100	Core Recovery %	RQD %	
	0.000				Ground Surface		53.918								
	0.000				Filed up Soil	R	0.000								
	1.000					R									
	2.000					R									SPT-1 Refusal
	3.000					R									Rock small piece
	3.700					R	50.218								
	4.000		1-5		Highly to moderately Fractured weathered basalt	R	3.700					31	24		
	5.000		6-8			R						26	20		
	6.500		9-14		Moderately to slightly weathered, fractured black basalt	R	47.418					47	35		
	7.000					R	6.500								
	8.000		15-19			R						45	39		
	9.000					R									
	10.000		20			R	43.918					46	46		
	10.000				End of Log		10.000								

DS: Disturbed Samples	Site Engr. O.P. Tiwari	<p>Indian Institute of Technology, Bombay                  Powai, Mumbai - 400076                  T: +91-22-2572-2545 / 2576-7325                  F: +91-22-2572-3480</p>
UDS: Undisturbed Samples	Drawn By AAJ	
SPT: Standard Penetration Test : 100 > Refusal	Chkd. By SRK	
CR: Core Recovery	SS - Soil	
RQD: Rock Quality Designation	R- Rock	
OWL: Ground water Level	F - Filling	

 <p>Client : Municipal Corporation of Greater Mumbai                  Project : Mithi River Development Project, Mumbai                  Location : CH: 16862.880                  Diameter of Borehole : 100 / 76mm NX                  Depth of casing :                  Depth of water : 1.5m (100% water loss from 3m to 10m)</p>	Job No. : MITHI RIVER
	Bore Hole No : BH.603E
	Depth of BH : 10.0m
	Coordinates : N: 2117120.488; E: 278733.382
	Ground RL : 62.898m
	Start Date : 18-12-2011 End Date : 18-12-2011

Scale (m)	Depth (m)	Run	Sample No	Symbol	Lithological Description	Type	RL (m)	SPT N value	SPT N graph				Core Recovery %		Core recovery				Remarks / Other
									0	25	50	75/100	Core Recovery %	RQD %	0	25	50	75/100	
	0.000				Ground Surface		62.899												
	1.600				Filled Up Soil	R	61.299					0	0						Rock small piece
					Boulders	R	1.500												SPT-1 Refusal
						R						0	0						Rock small piece
	5.000					R	47.899					0	0						SPT-2 Refusal
			1-4		Highly to moderately Fractured weathered basalt	R	5.000					22	0						
			5-9			R						30	14						
	7.500					R	45.399												
			10-13		Moderately to slightly weathered, fractured grey basalt	R	7.500					47	47						
			14-18			R						45	40						
	10.000				End of Log		42.899												

DS: Disturbed Samples	Site Engr. O.P. Tiwari	<b>Indian Institute of Technology, Bombay</b> Powai, Mumbai - 400076 T: +91-22-2572-2545 / 2576-7325 F: +91-22-2572-3480
UDS: Undisturbed Samples	Drawn By AAJ	
SPT: Standard Penetration Test : N-100 > Refusal	Chkd. By SRK	
CR: Core Recovery	SS - Soil	
RQD: Rock Quality Designation	R- Rock	
GWL: Ground water Level	F - Filling	

 <p><b>Client :</b> Municipal Corporation of Greater Mumbai  <b>Project :</b> Mithi River Development Project, Mumbai</p>	<p><b>Job No. :</b> MITHI RIVER</p>
	<p><b>Bore Hole No :</b> BH.604W</p>
<p><b>Location :</b> CH: 16888.680</p>	<p><b>Depth of BH :</b> 10.0m</p>
<p><b>Diameter of Borehole :</b> 100mm/ 76mm</p>	<p><b>Coordinates :</b> N: 2117171.000; E: 278737.000</p>
<p><b>Depth of casing :</b></p>	<p><b>Ground RL :</b> 61.780m</p>
<p><b>Depth of water :</b> 8.6m (100% water loss from 3m to 6m &amp; 60% loss from 6m)</p>	<p><b>Start Date :</b> 18-12-2011</p>
	<p><b>End Date :</b> 21-12-2011</p>

Scale (m)	Depth (m)	Run	Sample No	Symbol	Lithological Description	Type	R.L. (m)	SPT N value	SPT N graph		Core Recovery %		Core recovery		Remarks / Other
									0	25	50	75	100	0	
	0.000				Ground Surface		51.780								
	1.000				Filled-up material	F	50.780								
	3.500				Highly to Completely disintegrated weathered rock	R	48.280								SPT- 1 Refusal
	4.000		1-4		Highly to moderately Fractured weathered basalt	SS	3.500				26	0			Rock small piece
	6.500		5-9		Compact Basalt	R	45.280				28	7			
	7.000		10-13			R	6.500					55	55		
	8.000		14-15			R						74	61		
	10.000		16			R	41.780				70	70			
					End of Log		10.000								

<p>DS: Disturbed Samples                  UDS: Undisturbed Samples                  SPT: Standard Penetration Test                  CR: Core Recovery                  RQD: Rock Quality Designation                  OWL: Ground water Level</p>	<p>Site Engr. <b>O.P. Tiwari</b>                  Drawn By <b>AAJ</b>                  Chkd. By <b>SRK</b>                  SS - Soil                  R- Rock                  F - Filling</p>	<p><b>Indian Institute of Technology, Bombay</b>                  Powai, Mumbai - 400076                  T: +91-22-2572-2545 / 2576-7325                  F: +91-22-2572-3480</p>
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**Client :** Municipal Corporation of Greater Mumbai  
**Project :** Mithi River Development Project, Mumbai

**Location :** CH: 16823.800  
**Diameter of Borehole :** 100mm/ 75mm  
**Depth of casing :**  
**Depth of water :** 6.4m (100% water loss from 6m & 50% at 6.6m)

**Job No. :** MITHI RIVER  
**Bore Hole No :** BH.606W  
**Depth of BH :** 10.0m  
**Coordinates :** N: 2117168.221; E: 278806.438  
**Ground RL :** 63.898m  
**Start Date :** 22-12-2011  
**End Date :** 23-12-2011

Scale (m)	Depth (m)	Run	Sample No	Symbol	Lithological Description	Type	RL (m)	SPT N value	SPT N graph				Core Recovery %		Core recovery				Remarks / Other
									0	25	50	75	100	0	25	50	75	100	
0	0.000				Ground Surface		53.898												
0	0.000				Filled-up material	F	0.000												
2	2.300		1-5		Highly to moderately Fractured weathered basalt	R	51.598												
4			6-7			R	47.198						15	0					
6	6.500		8-11			R	47.198						24	7					
7			12-14		Moderately to slightly weathered fractured Basalt	R	6.500												
9			15-16			R	43.898						52	52					
10	10.000				End of Log	R	43.898												
11							10.000												
12																			
13																			
14																			
15																			

DS: Disturbed Samples UDS: Undisturbed Samples SPT: Standard Penetration Test; N>100 Refusal CR: Core Recovery RQD: Rock Quality Designation GWL: Ground water Level	Site Engr. O.P. Tiwari Drawn By AAJ Chkd. By SRK SS - Soil R- Rock F - Filling	<b>Indian Institute of Technology, Bombay</b> Powai, Mumbai - 400076 T: +91-22-2572-2545 / 2576-7325 F: +91-22-2572-3460
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**Client :** Municipal Corporation of Greater Mumbai  
**Project :** Mithi River Development Project, Mumbai

**Location :** CH: 16838.480  
**Diameter of Borehole :** 100mm/ 75mm  
**Depth of casing :**  
**Depth of water :** 7.16m (60% water loss from 6m to 10m)

**Job No. :** MITHI RIVER  
**Bore Hole No :** BH.608/E  
**Depth of BH :** 10.0m  
**Coordinates :** N: 2117121.001; E: 278807.888  
**Ground RL :** 66.348m  
**Start Date :** 22-12-2011  
**End Date :** 23-12-2011

Scale (m)	Depth (m)	Run	Sample No	Symbol	Lithological Description	Type	R.L. (m)	SPT N value	SPT N graph				Core Recovery %		Core recovery				Remarks / Other
									0	25	50	75	100	0	25	50	75	100	
	0.000				Ground Surface		66.348												
	1.900				Filled-up material	F	63.448												
			1-3		Highly to moderately Fractured weathered basalt	R	61.500					15	7						
			4-5			R	60.348					19	7						
	5.000				Moderately to slightly weathered fractured Basalt	R	58.348					25	15						
			7-9			R	56.348					56	52						
	8.000				Compact Basalt	R	54.348					51	46						
			13-16			R	52.348					78	78						
	10.000		17-19			R	50.348												
					End of Log		48.000												

DS: Disturbed Samples UDS: Undisturbed Samples SPT: Standard Penetration Test CR: Core Recovery RQD: Rock Quality Designation GWL: Ground water Level	Site Engr. O.P. Tiwari Drawn By AAJ Chkd. By SRK SS - Soil R- Rock F - Filling	<b>Indian Institute of Technology, Bombay</b> Powai, Mumbai - 400076 T: +91-22-2572-2545 / 2576-7325 F: +91-22-2572-3480
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**Client :** Municipal Corporation of Greater Mumbai  
**Project :** Mithi River Development Project , Mumbai

**Location :** CH: 18051.050  
**Diameter of Borehole :** 100mm/ 75mm  
**Depth of casing :**  
**Depth of water :** 7.2m (80% Water loss at 6m)

**Job No. :** MITHI RIVER  
**Bore Hole No :** BH.607W  
**Depth of BH :** 10.0m  
**Coordinates :** N: 2117171.038; E: 278886.131  
**Ground RL :** 63.764m  
**Start Date :** 23-12-2011  
**End Date :** 24-12-2011

Scale (m)	Depth (m)	Run	Sample No	Symbol	Lithological Description	Type	R.L. (m)	SPT N value	SPT N graph				Core Recovery %		Core recovery				Remarks / Other
									0	25	50	75/100	Core Recovery %	RQD %	0	25	50	75/100	
0	0.000				Ground Surface		53.754												
1	1.000				Filled-up material	F	52.754												
2					Highly to completely disintegrated weathered rock	R													
3	3.000				Highly to moderately Fractured weathered basalt	R	50.754												
4			1-3			R						11	0						
5			4-5			R						16	7						
6	6.000				Moderately to slightly weathered fractured Basalt	R	47.754												
7			6-9			R						26	14						
8			10-16			R						52	42						
9			17-20			R						60	52						
10	10.000				End of Log		43.754												
11																			
12																			
13																			
14																			
15																			

DS: Disturbed Samples UDS: Undisturbed Samples SPT: Standard Penetration Test : N>100 Refusal CR: Core Recovery RQD: Rock Quality Designation GWL: Ground water Level	Site Engr. O.P. Tiwari Drawn By AAJ Chkd. By SRK SS - Soil R- Rock F - Filling	<b>Indian Institute of Technology, Bombay</b> Powai, Mumbai - 400076 T: +91-22-2572-2545 / 2576-7325 F: +91-22-2572-3480
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 <p>Client : Municipal Corporation of Greater Mumbai Project : Mithi River Development Project, Mumbai</p>	<p>Job No. : MITHI RIVER</p>
	<p>Bore Hole No : BH.608W</p>
<p>Location : CH: 18122.700</p>	<p>Depth of BH : 10.0m</p>
<p>Diameter of Borehole : 100mm/ 75mm</p>	<p>Coordinates : N: 2117235.218; E: 278886.227</p>
<p>Depth of casing :</p>	<p>Ground RL : 64.007m</p>
<p>Depth of water : 7.6m (100% Water loss at 6m &amp; 60% at 7m depth)</p>	<p>Start Date : 25-12-2011</p>
	<p>End Date : 28-12-2011</p>

Scale (m)	Depth (m)	Run	Sample No	Symbol	Lithological Description	Type	R.L. (m)	SPT N value	SPT N graph				Core Recovery %		Core recovery				Remarks / Other
									0	25	50	75/100	Core Recovery %	RQD %	0	25	50	75/100	
	0.000				Ground Surface		64.007												
	2.700				Filled-up material	F	61.307												
	5.700				Basaltic Boulders	R	48.307												
	5.700		1-2		Moderately to slightly weathered fractured Basalt	R	5.700					12	0						Rock small piece
			3-4	R								38	38						
			5-7	R								46	46						
			8-10	R								55	48						
	10.000				End of Log		44.007												

DS: Disturbed Samples	Site Engr. O.P. Thewari	<p><b>Indian Institute of Technology, Bombay</b> Powai, Mumbai - 400076 T: +91-22-2572-2545 / 2576-7325 F: +91-22-2572-3480</p>
UDS: Undisturbed Samples	Drawn By AAJ	
SPT: Standard Penetration Test : N>100 Refusal	Chkd. By SRK	
CR: Core Recovery	SS - Soil	
RQD: Rock Quality Designation	R- Rock	
GWL: Ground water Level	F - Filling	





**Client :** Municipal Corporation of Greater Mumbai  
**Project :** Mithi River Development Project, Mumbai

**Location :** CH: 18220.270  
**Diameter of Borehole :** 100mm/ 75mm

**Depth of casing :**  
**Depth of water :** 7.7m (80% water loss from 8m)

**Job No. :** MITHI RIVER  
**Bore Hole No :** BH.608/W  
**Depth of BH :** 10.0m  
**Coordinates :** N: 2117327.138; E: 278831.208  
**Ground RL :** 64.320m  
**Start Date :** 22-12-2011  
**End Date :** 23-12-2011

Scale (m)	Depth (m)	Run	Sample No	Symbol	Lithological Description	Type	R.L. (m)	SPT N value	SPT N graph				Core recovery %		Remarks / Other
									0	25	50	75/100	Core Recovery %	RQD %	
0	0.000				Ground Surface		64.320								
0	0.000				Filled-up material	F	0.000								
2	2.100		1-2		Highly to moderately Fractured weathered basalt	R	52.220					9	0		SPT-1 Refusal
4			3-5			R						16	7		
5	5.000		5-6		Moderately to slightly weathered fractured Basalt	R	49.320					19	12		
7			7-10			R						42	37		
8	8.000		11-14		Compact Basalt	R	46.320					46	46		
10	10.000		15-17			R	44.320					78	66		
					End of Log		10.000								

DS: Disturbed Samples UDS: Undisturbed Samples SPT: Standard Penetration Test : N>100 Refusal CR: Core Recovery RQD: Rock Quality Designation GWL: Ground water Level	Site Engr. G.P. Tiwari Drawn By AAJ Chkd. By SRK SS - Soil R- Rock F - Filling	<b>Indian Institute of Technology, Bombay</b> Powai, Mumbai - 400076 T: +91-22-2572-2545 / 2576-7325 F: +91-22-2572-3480
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**Client :** Municipal Corporation of Greater Mumbai  
**Project :** Mithi River Development Project, Mumbai

**Location :** CH: 16430.290

**Diameter of Borehole :** 100mm/ 75mm

**Depth of casing :**

**Depth of water :** 6.8m (100% Water loss at 6m & 80% at 7m depth)

**Job No. :** MITHI RIVER

**Bore Hole No :** BH.510/E

**Depth of BH :** 10.0m

**Coordinates :** N: 2117624.000; E: 278885.000

**Ground RL :** 64.760m


**Start Date :** 24-12-2011

**End Date :** 26-12-2011

Scale (m)	Depths (m)	Run	Sample No	Symbol	Lithological Description	Type	R.L. (m)	SPT N value	SPT N graph				Core Recovery %		Core recovery				Remarks / Other
									0	25	50	75/100	0	ROD %	0	25	50	75/100	
0	0.000				Ground Surface		64.750												
0	2.800				Filled-up material	n	61.950												
0	5.800				Highly to completely disintegrated weathered rock	R	58.950					0	0						Rock small piece
0	8.000		1-3		Highly to moderately Fractured weathered basalt	R	48.950					24	7						
0	8.000		4-7		Moderately to slightly weathered fractured Basalt	R	46.750					32	12						
0	8.000		8-10			R	46.750					59	50						
0	10.000		11-14			R	44.750					51	44						
0	10.000				End of Log		40.000												


DS: Disturbed Samples      Site Engr. **O.P. Tiwari**  
 UDS: Undisturbed Samples      Drawn By **AAJ**  
 SPT: Standard Penetration Test : N>100 Refusal      Chkd. By **SRK**  
 CR: Core Recovery      SS - Soil  
 RQD: Rock Quality Designation      R- Rock  
 GWL: Ground water Level      F - Filling

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 <p>Client : Municipal Corporation of Greater Mumbai                  Project : Mithi River Development Project, Mumbai</p> <p>Location : CH: 16667.730                  Diameter of Borehole : 100mm/ 76mm</p> <p>Depth of casing :                  Depth of water : 7.3m (80% Water loss at 8m depth)</p>	Job No. : MITHI RIVER
	Bore Hole No : BH.611/E
	Depth of BH : 10.0m
	Coordinates : N: 2117814.886; E: 278788.040
	Ground RL : 55.130m
	Start Date : 23-12-2011 End Date : 24-12-2011

Scale (m)	Depth (m)	Run	Sample No	Symbol	Lithological Description	Type	R.L. (m)	SPT N value	SPT N graph				Core Recovery %	RQD %	Core recovery				Remarks / Other
									0	25	50	75/100			0	25	50	75/100	
0	0.000				Ground Surface		55.130												
0	1.400				Filled-up material	F	53.730												
1					Highly to completely disintegrated weathered rock	R	50.130				0	0							
2					Highly to moderately Fractured weathered basalt	R	50.130				16	7	5	5					Rock small piece
3																			
4					Moderately to slightly weathered fractured Basalt	R	47.630				30	10	10	10					
5	5.000		1-3																
6					Moderately to slightly weathered fractured Basalt	R	7.500				44	30	20	20					
7	7.500		4-7																
8					Moderately to slightly weathered fractured Basalt	R	45.130				67	51	30	30					
9	10.000		8-12																
10					End of Log		10.000												
11																			
12																			
13																			
14																			
15																			

DS: Disturbed Samples	Site Engr. O.P. Thawar	<b>Indian Institute of Technology, Bombay</b> Powai, Mumbai - 400076 T: +91-22-2572-2545 / 2576-7325 F: +91-22-2572-3480
UDS: Undisturbed Samples	Drawn By AAJ	
SPT: Standard Penetration Test : N>100 Refusal	Chkd. By SRK	
CR: Core Recovery	SS - Soil	
RQD: Rock Quality Designation	R- Rock	
GWL: Ground water Level	F - Filling	



**Client :** Municipal Corporation of Greater Mumbai  
**Project :** Mithi River Development Project, Mumbai

**Location :** CH: 18808.080  
**Diameter of Borehole :** 100 / 76mm NX  
**Depth of casing :**  
**Depth of water :** 6.6m (100% water loss form 2.6m to 6.6m & 60% from 6.6m)]


**Job No. :** MITHI RIVER  
**Bore Hole No :** BH.612W  
**Depth of BH :** 10.0m  
**Coordinates :** N: 2117814.140; E: 278730.414  
**Ground RL :** 66.740M  
**Start Date :** 1-01-2012  
**End Date :** 2-01-2012

Scale (m)	Depth (m)	Run	Sample No	Symbol	Lithological Description	Type	RL (m)	SPT N value	SPT N graph		Core recovery		Remarks / Other
									0	25	50	75	
	0.000				Ground Surface		55.740						
	0.000				Filled up	F	0.000						
	2.200				Highly to completely weathered basalt	R	53.540						SPT-1 Refusal
	3.700		1-2		Highly to moderately Fractured weathered basalt	R	52.040				12	7	
			3-4			R					19	15	
			5-8			R					32	12	
			9-16			R					34	15	
	8.000				Moderately to slightly weathered, fractured basalt	R	47.740				49	40	
	9.500		17-22			R	46.240						
	10.000		23-25		Compact Basalt	R	9.500				80	62	
					End of Log								

DS: Disturbed Samples      Site Engr. O.P. Tiwari  
 UDS: Undisturbed Samples      Drawn By AAJ  
 SPT: Standard Penetration Test : 100 > Refusal      Chkd. By SRK  
 CR: Core Recovery      SS - Soil  
 RQD: Rock Quality Designation      R- Rock  
 GWL: Ground water Level      F - Filling


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 <p><b>Client :</b> Municipal Corporation of Greater Mumbai  <b>Project :</b> Mithi River Development Project, Mumbai  <b>Location :</b> CH: 18883.340  <b>Diameter of Borehole :</b> 100mm/ 75mm  <b>Depth of casing :</b>  <b>Depth of water :</b> 6.8m (100% Water loss at 3m to 6m depth &amp; 60% after 6mdepth)</p>	<b>Job No. :</b> MITHI RIVER <b>Bore Hole No :</b> BH.613E <b>Depth of BH :</b> 10.0m <b>Coordinates :</b> N: 2117887.318; E: 278883.800 <b>Ground RL :</b> 66.897m <b>Start Date :</b> 27-12-2011 <b>End Date :</b> 28-12-2011
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Scale (m)	Depth (m)	Run	Sample No	Symbol	Lithological Description	Type	R.L. (m)	SPT N value	SPT N graph				Core Recovery %		Core recovery				Remarks / Other
									0	25	50	75/100	Core Recovery %	RQD %	0	25	50	75/100	
	0.000				Ground Surface		55.897												
					Filled-up material	F	0.000												
	2.500		1		Highly to moderately Fractured weathered basalt	R	2.500					5	0						
			2-3			R							16	7					
			4-7			R							21	14					
	5.000		7-9			R	49.897	5.000					34	18					
			10-13		Moderately to slightly weathered fractured Basalt	R						47	32						
			14-16			R							61	61					
	10.000					R	45.897	10.000											
					End of Log														

DS: Disturbed Samples UDS: Undisturbed Samples SPT: Standard Penetration Test; N>100 Refusal CR: Core Recovery RQD: Rock Quality Designation GWL: Ground water Level	Site Engr. G.P. Tiwari Drawn By AAJ Chkd. By SRK SS - Soil R- Rock F - Filling	<b>Indian Institute of Technology, Bombay</b> Powai, Mumbai - 400076 T: +91-22-2572-2545 / 2576-7325 F: +91-22-2572-3480
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 <p>Client : Municipal Corporation of Greater Mumbai                  Project : Mithi River Development Project, Mumbai</p> <p>Location : CH: 18838.620                  Diameter of Borehole : 100/76mm                  Depth of casing :                  Depth of water : 8.2m (80% Water loss at 2.6m depth)</p>	Job No. : MITHI RIVER
	Bore Hole No : BH.614W
	Depth of BH : 10.0m
	Coordinates : N: 2117770.800; E: 278668.408
	Ground RL : 68.377M
	Start Date : 27-12-2011 End Date : 28-12-2011

Scale (m)	Depth (m)	Run	Sample No	Symbol	Lithological Description	Type	R.L. (m)	SPT N value	SPT N graph				Core Recovery %		Core recovery				Remarks / Other
									0	25	50	75	100	Core Recovery %	ROD %	0	25	50	
	0.000				Ground Surface		68.377												
					Filled-up material	F	0.000												
	2.500						53.877												
	3.500		1-5		Highly to moderately weathered fractured basalt	R	2.500					24	13						
			6-9		Moderately to slightly weathered fractured Basalt	R	3.500					36	30						
			10-12			R						41	37						
			13-15			R						47	47						
			16-18			R						54	54						
	9.500						46.877												
	10.000		19-20		Compact Basalt	R	9.500					70	70						
					End of Log														

DS: Disturbed Samples	Site Engr. O.P. Tiwari	<b>Indian Institute of Technology, Bombay</b> Powai, Mumbai - 400076 T: +91-22-2572-2545 / 2576-7325 F: +91-22-2572-3480
UDS: Undisturbed Samples	Drawn By AAJ	
SPT: Standard Penetration Test : N>100 Refusal	Chkd. By SRK	
CR: Core Recovery	SS - Soil	
RQD: Rock Quality Designation	R- Rock	
OWL: Ground water Level	F - Filling	



**Client :** Municipal Corporation of Greater Mumbai  
**Project :** Mithi River Development Project, Mumbai

**Location :** CH: 18807.700

**Diameter of Borehole :** 100/ 76mm

**Depth of casing :**

**Depth of water :** 8.6m (100% Water loss from 3m to 10m depth )

**Job No. :** MITHI RIVER

**Bore Hole No :** BH.616E

**Depth of BH :** 10.0m

**Coordinates :** N: 2117860.078; E: 278684.824

**Ground RL :** 58.090m

**Start Date :** 28-12-2011

**End Date :** 30-12-2011


Scale (m)	Depth (m)	Run	Sample No	Symbol	Lithological Description	Type	R.L. (m)	SPT N value	SPT N graph				Core Recovery %		Core recovery				Remarks / Other
									0	2.5	50	75/100	Core Recovery %	RQD %	0	25	50	75/100	
	0.000				Ground Surface		58.090												
	1.900				Filled-up material	F	54.190												
	1.900		1-3		Highly to Moderately weathered fractured Basalt	R	54.190					7	0						
			4-5			R							14	6					
			7-12			R							35	15					
	6.500		13-18			R	49.590	6.500					48	36					
			19-22		Moderately to slightly weathered fractured Basalt	R						73	73						
	10.000		23			R	48.090	10.000					70	70					
					End of Log														

DS: Disturbed Samples  
 UDS: Undisturbed Samples  
 SPT: Standard Penetration Test : N>100 Refusal  
 CR: Core Recovery  
 RQD: Rock Quality Designation  
 GWL: Ground water Level

Site Engr. G.P. Thwait  
 Drawn By AAJ  
 Chkd. By SRK  
 SS - Soil  
 R- Rock  
 F - Filling

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**Client :** Municipal Corporation of Greater Mumbai  
**Project :** Mithi River Development Project, Mumbai

**Location :** CH: 18875.340  
**Diameter of Borehole :** 100/ 76mm  
**Depth of casing :**  
**Depth of water :** 8.3m (80% Water loss from 3m to 10m depth )

**Job No. :** MITHI RIVER  
**Bore Hole No :** BH.618W  
**Depth of BH :** 10.0m  
**Coordinates :** N: 2117807.881; E: 278614.468  
**Ground RL :** 68.340M  
**Start Date :** 30-12-2011  
**End Date :** 1-1-2012

Scale (m)	Depth (m)	Run	Sample No	Symbol	Lithological Description	Type	R.L. (m)	SPT N value	SPT N graph				Core Recovery %		Core recovery				Remarks / Other
									0	25	50	75/100	Core Recovery %	RQD %	0	25	50	75/100	
	0.000				Ground Surface		68.340												
	1.500				Filled-up material	F	64.840												
	3.000		1-3		Highly to moderately weathered fractured basalt	R	63.340					15	0						SPT-1 Refusal
			4-8		Moderately to slightly weathered fractured Basalt	SS	63.000					37	32						
			9-13			SS						39	39						
			14-18			R						42	42						
			19-25			R						62	38						
			26-31			SS						51	46						
	10.000				End of Log		68.340												

DS: Disturbed Samples  
 UDS: Undisturbed Samples  
 SPT: Standard Penetration Test : N>100 Refusal  
 CR: Core Recovery  
 RQD: Rock Quality Designation  
 GWL: Ground water Level

Site Engr. O.P. Thwait  
 Drawn By AAJ  
 Chkd. By SRK  
 SS - Soil  
 R- Rock  
 F - Filling

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**Client :** Municipal Corporation of Greater Mumbai  
**Project :** Mithi River Development Project, Mumbai

**Location :** CH: 17071.080

**Diameter of Borehole :** 100 / 76mm NX

**Depth of casing :**

**Depth of water :** 6.5m (100% water loss form 2.5m to 8.6m & 60% from 8.6m)

**Job No. :** MITHI RIVER

**Bore Hole No :** BH.517E

**Depth of BH :** 12.0m

**Coordinates :** N: 211780.000; E: 278801.000

**Ground RL :** 68.430

**Start Date :** 1-01-2012

**End Date :** 2-01-2012

Scale (m)	Depth (m)	Run	Sample No	Symbol	Lithological Description	Type	R.L. (m)	SPT N value	SPT N graph				Core Recovery %	RQD %	Core recovery				Remarks / Other
									0	25	50	75			0	25	50	75	
0	0.000				Ground Surface		68.430												
1	1.000				Filled up	F	67.500												
2	2.500				Boulders	R	66.430												
3	2.500				Highly to completely weathered basalt	R	63.930												SPT-1 Refusal
4	2.500				Highly to completely weathered basalt	R	62.500												Rock small piece
5	5.500				Highly to moderately Fractured weathered basalt	R	60.930												
6	5.500		3-9		Highly to moderately Fractured weathered basalt	R	55.500												
7	5.500				Highly to moderately Fractured weathered basalt	R	55.500												
8	8.500		10-15		Moderately to slightly weathered, fractured basalt	R	47.930												
9	8.500				Moderately to slightly weathered, fractured basalt	R	47.930												
10	10.000		16-22		Compact Basalt	R	46.430												
11	10.000				Compact Basalt	R	46.430												
12	12.000		23-26		Compact Basalt	R	44.430												
13	12.000				Compact Basalt	R	44.430												
14	12.000		27-28		End of Log	R	44.430												

DS: Disturbed Samples

UDS: Undisturbed Samples

SPT: Standard Penetration Test: 100 > Refusal

CR: Core Recovery

RQD: Rock Quality Designation

GWL: Ground water Level

Site Engr. G.P. Tiwari

Drawn By AAJ

Chkd. By SRK

SS - Soil

R- Rock


F - Filling

**Indian Institute of Technology, Bombay**

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 <p><b>Client :</b> Municipal Corporation of Greater Mumbai  <b>Project :</b> Mithi River Development Project, Mumbai</p> <p><b>Location :</b> CH: 17083.640  <b>Diameter of Borehole :</b> 100/ 76mm  <b>Depth of casing :</b>  <b>Depth of water :</b> 8.1m (60% Water loss at 4.6m depth)</p>	<p><b>Job No. :</b> MITHI RIVER  <b>Bore Hole No :</b> BH.618W  <b>Depth of BH :</b> 10.0m  <b>Coordinates :</b> N: 2117998.000; E: 278902.00  <b>Ground RL :</b> 68.764M  <b>Start Date :</b> 28-12-2011  <b>End Date :</b> 29-12-2011</p>
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Scale (m)	Depths (m)	Run	Sample No	Symbol	Lithological Description	Type	R.L. (m)	SPT N value	SPT N graph				Core Recovery %		Core recovery				Remarks / Other
									0	25	50	75/100	Core Recovery %	RQD %	0	25	50	75/100	
	0.000				Ground Surface		58.754												
	0.800				Filled-up material	F	55.954												
			1-2		Highly to moderately weathered fractured basalt	R						12	0						
			3-5			R							24	16					
	3.000				Moderately to slightly weathered fractured Basalt	R	53.754												
			6-9			R							36	29					
			10-13			R							33	33					
			14-18			R							43	33					
			19-25			R							51	47					
	10.000		26-31		R		48.754					46	46						
					End of Log		10.000												

DS: Disturbed Samples UDS: Undisturbed Samples SPT: Standard Penetration Test : N>100 Refusal CR: Core Recovery RQD: Rock Quality Designation GWL: Ground water Level	Site Engr. O.P. Tiwari Drawn By AAJ Chkd. By SRK SS - Soil R- Rock F - Filling	<b>Indian Institute of Technology, Bombay</b> <b>Powai, Mumbai - 400076</b> <b>T: +91-22-2572-2545 / 2576-7325</b> <b>F: +91-22-2572-3480</b>
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