ANNEXURES & HYDARULIC DESIGNS OF TRANSMISSION MAINS

ANNEXURES:

ANNEXURE 10.1: FRESH WATER SUPPLY DEMAND FOR ENTIRE CMA IN MLD

Core City

Existing HW	Core City-ZONES	ABSTRACT OF FRESH WATER SUPPLY DEMAND IN MLD							
		2015	2020	2025	2030	2035	2040	2045	2050
KPS	1	120.59	166.87	169.95	173.82	176.50	179.82	182.68	185.83
ANNA POONGA	2	33.83	46.76	47.93	48.55	49.25	50.18	51.15	51.73
KANNAPPAR THIDAL	3	33.31	45.68	46.46	46.78	47.18	47.74	48.41	48.61
TRIPLICANE	4	23.24	31.27	31.42	31.19	30.66	30.46	30.21	29.44
KK NAGAR (OLD & New)	5	38.85	54.23	55.59	56.91	58.15	59.57	60.92	62.13
VELACHERY	6	19.49	27.30	28.44	29.06	29.81	30.83	31.75	32.45
VELACHERY-NEW	6A	3.09	4.35	4.49	4.60	4.71	4.83	4.98	5.06
EKKADUTHANGAL	7	3.76	5.27	5.43	5.57	5.70	5.86	6.02	6.15
CHOOLAIMEDU	8	60.588	83.897	85.382	87.362	88.913	90.717	91.905	93.742
KOLATHUR	9	21.05	29.30	30.26	30.94	31.64	32.42	33.30	33.88
VYASARPADI	10	43.24	59.42	60.46	61.01	61.40	62.23	63.07	63.53
PATEL NAGAR	11	21.36	29.78	30.69	31.30	31.83	32.68	33.40	34.06
PALLIPATTU	12	11.17	15.62	16.25	16.61	17.03	17.57	18.10	18.48
THIRUVANMIYUR	12A	14.77	20.72	21.60	22.11	22.67	23.46	24.16	24.72
NANDANAM	13	11.92	16.67	17.24	17.64	18.04	18.61	19.05	19.49
MYLAPORE	14	25.88	35.62	36.61	36.85	37.11	37.77	38.38	38.45
VALLUVAR KOTTAM	15	18.83	26.08	25.97	27.06	27.42	27.89	27.82	28.73
SOUTHERN HEAD WORKS	16	18.73	26.06	26.61	27.26	27.78	28.38	28.90	29.48
Core City-Total		**523.72**	**724.90**	**740.77**	**754.62**	**765.78**	**781.01**	**794.18**	**805.95**

Added Areas

ZONES	ABSTRACT OF FRESH WATER SUPPLY DEMAND IN MLD							
	2015.00	2020.00	2025.00	2030.00	2035.00	2040.00	2045.00	2050.00
CC1-A	24.60	33.65	36.05	49.52	52.30	55.38	66.32	69.42
CC1-B	2.91	6.66	7.23	12.83	14.84	17.01	23.73	28.83
CC2	15.08	25.42	29.96	45.40	51.46	57.84	73.86	82.01
CC3	3.28	5.83	6.82	11.18	13.37	16.03	22.46	27.55
CC4	21.48	32.54	36.54	53.95	60.25	67.31	85.97	95.95
CC5	21.66	33.65	37.76	56.97	64.01	71.82	92.77	104.72
CC6	14.44	25.31	27.98	41.21	45.30	49.75	63.67	71.21
CC7	13.86	25.13	26.93	40.70	44.55	48.82	63.90	73.41
CC8	14.46	22.80	25.09	37.41	41.62	46.42	60.29	68.74
CC9	8.99	15.00	17.70	26.97	30.91	35.24	45.68	51.53
CC10	5.20	19.25	19.92	34.60	39.00	43.76	62.81	78.29
CC11	5.78	14.34	18.52	31.60	37.84	44.26	59.42	68.91
Total for Addded Areas	151.74	259.57	290.49	442.33	495.45	553.63	720.87	820.56

REST OF CMA

ZONES	ABSTRACT OF FRESH WATER SUPPLY DEMAND IN MLD							
	2015.00	2020.00	2025.00	2030.00	2035.00	2040.00	2045.00	2050.00
OC1	2.78	4.97	5.56	11.12	13.30	15.62	26.42	30.39
OC2	4.10	9.71	10.42	22.99	27.71	32.40	54.57	61.42
OC3	2.68	5.75	6.04	12.50	14.50	16.51	24.79	27.51
OC4	2.64	6.05	6.44	14.02	16.85	19.67	33.05	37.26
OC5B	3.57	6.08	6.47	11.03	13.46	17.13	27.77	34.03
OC5A	16.08	27.28	33.50	55.03	67.56	82.99	131.29	161.25

ZONES	ABSTRACT OF FRESH WATER SUPPLY DEMAND IN MLD							
	2015.00	2020.00	2025.00	2030.00	2035.00	2040.00	2045.00	2050.00
OC6	6.24	12.52	14.41	24.03	28.64	34.12	52.23	62.00
OC7	7.09	13.37	15.66	27.17	32.60	39.05	60.35	71.80
OC8	6.67	16.08	18.67	34.85	41.66	48.94	73.98	85.31
OC9	5.42	13.67	14.99	28.29	33.30	38.51	57.28	64.64
OC10	4.68	8.20	9.55	16.10	18.80	21.78	32.53	37.16
OC11	3.70	8.16	8.86	17.71	20.79	23.91	37.86	42.31
OC12	3.63	9.58	10.01	18.99	22.23	25.62	37.83	42.60
OC13	14.60	22.66	25.18	38.04	42.47	47.36	67.87	75.36
OC14	7.92	12.70	14.65	25.10	28.62	32.34	47.79	53.16
OC15	21.40	40.19	44.87	71.91	82.40	93.86	136.88	154.17
OC16	7.92	18.69	21.98	39.12	46.34	53.90	80.37	91.29
Total for Rest of CMA	121.11	235.66	267.25	467.98	551.23	643.70	982.86	1131.64
Chennai Corporation	675.46	984.47	1031.26	1196.95	1261.23	1334.64	1515.05	1626.51
Entire CMA	796.57	1220.13	1298.51	1664.93	1812.46	1978.34	2497.91	2758.15

HYDARULIC DESIGNS OF TRANSMISSION MAINS

NEMMELI SYSTEM

AREAS COVERED & WATER ALLOCATION UNDER NEMMELI SYSTEM

AREA	ZONE NOS.	2020	2025	2030	2035	2040	2045	2050
CORE CITY	13	16.67	17.24	17.64	18.04	18.61	19.05	19.49
	14	35.62	36.61	36.85	37.11	37.77	38.38	38.45
	16	26.06	26.61	27.26	27.78	28.38	28.90	29.48
	12	15.62	16.25	16.61	17.03	17.57	18.10	18.48
	12A	20.72	21.60	22.11	22.67	23.46	24.16	24.72
	6A	4.35	4.49	4.60	4.71	4.83	4.98	5.06
	Sub Total	**119.03**	**122.79**	**125.07**	**127.34**	**130.63**	**133.56**	**135.67**
ADDED AREA	CC8	22.80	25.09	37.41	41.62	46.42	60.29	68.74
	CC9	15.00	17.70	26.97	30.91	35.24	45.68	51.53
	CC10	19.25	19.92	34.60	39.00	43.76	62.81	78.29
	CC11	14.34	18.52	31.60	37.84	44.26	59.42	68.91
	Sub Total	**71.39**	**81.23**	**130.58**	**149.37**	**169.68**	**228.20**	**267.47**
REST OF CMA	OC15	40.19	44.87	71.91	82.40	93.86	136.88	154.17
	OC16	18.69	21.98	39.12	46.34	53.90	80.37	91.29
	Sub Total	**58.88**	**66.85**	**111.03**	**128.74**	**147.75**	**217.25**	**245.45**
GRAND TOTAL		**249.30**	**270.87**	**366.68**	**405.45**	**448.06**	**579.02**	**648.60**
Total Incl. of Treatment Loss		249.30	270.87	366.68	405.45	448.06	579.02	648.60
Addl.Cap. of DSP Proposed		150.00	400.00	0.00	0.00	0.00	0.00	0.00
Total Cap. that will be available		250.00	650.00	650.00	650.00	650.00	650.00	650.00

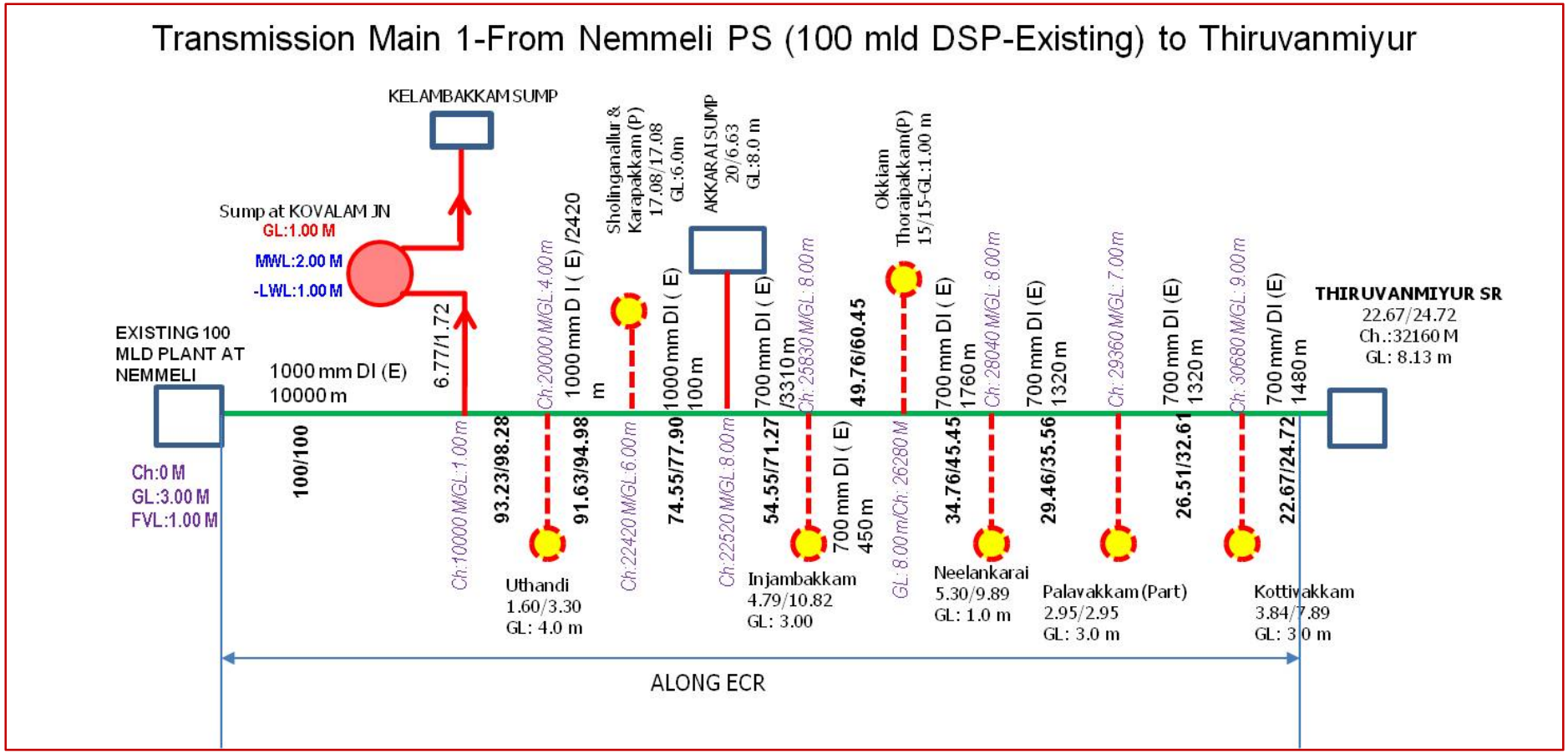
TRANSMISSION MAIN WISE AREAS COVERED UNDER NEMMELI SYSTEM

TM No.	ZONE/ GROUP	Beneficiary code	Name of Beneficiary		DESIGN YEAR						
					2020	2025	2030	2035	2040	2045	2050
	TRANSMISSION MAIN 1										
TM1	CC11	CV25	Uthandi		0.68	0.72	1.38	1.6	1.83	2.64	3.3
	CC11	CT8	Sholinganallur.	Part	5	7	12	17.08	17.08	17.08	17.08
	CC10	CV20	Karapakkam	Part							
	CC10	CV19	Injambakkam		2.18	2.27	4.09	4.79	5.58	8.34	10.82
	CC10	CV21	Oggiam Thuraipakkam	Part	5	6	10	15	15	15	15
	CC10	CV18	Neelankarai		2.86	2.94	4.84	5.3	5.8	8.12	9.89
	CC10	CV17	Palavakkam	Part	1	1	1.5	2.95	2.95	2.95	2.95
	CC10	CV16	Kottivakkam		1.97	2.02	3.41	3.84	4.32	6.26	7.89
	12A	12A	THIRUVANMIYUR		20.724	21.604	22.11	22.671	23.463	24.156	24.717
			TOTAL		39.414	43.554	59.33	73.231	76.023	84.546	91.647
	TRANSMISSION MAIN 2A										
TM2A	CC11	CV24	Semmanjeri		3.76	3.93	7.23	8.28	9.38	13.5	16.83
	TRANSMISSION MAIN 2B										
TM2B	CC10	CV17	Palavakkam	Part	1.25	1.3	2.15	1	1.32	2.96	4.18
	CC11	CT8	Sholinganallur.	Part	5.82	7.83	12.72	12.88	18.3	29.68	36.2
	CC10	CV20	Karapakkam	Part							
	CC10	CV21	Oggiam Thuraipakkam	Part	4.07	3.43	6.88	4.12	6.46	15.7	23.06
	12	12	PALLIPATTU		15.62	16.247	16.61	17.028	17.567	18.095	18.48
	CC9	CT6	Perungudi.		7.22	8.78	13.31	15.21	17.21	21.78	23.91
			TOTAL		33.98	37.587	51.67	50.238	60.857	88.215	105.83
	TRANSMISSION MAIN 3										
TM3	OC15	ST-9	Medavakkam	Part	1.55	1.605	2.96	3.5	4.12	6.195	7.17
	CC9	CV23	Jalladianpet		1.78	1.81	2.85	3.07	3.3	4.55	5.48
	CC9	CT7	Pallikkaranai		6	7.11	10.81	12.64	14.73	19.35	22.14
	CC8	CV22	Madippakkam		3.74	3.87	7.11	8.36	9.82	14.75	19.25

TM No.	ZONE/ GROUP	Beneficiary code	Name of Beneficiary		DESIGN YEAR						
					2020	2025	2030	2035	2040	2045	2050
	CC8	CM9	Ullagaram-Puzhudhivakkam		7.19	8.37	12.5	14.32	16.41	21.23	23.91
	CC8	CM8	Alandur	Part	5.934	6.423	8.898	9.471	10.095	12.156	12.792
	6A	6A	Velachery new		4.345	4.488	4.598	4.708	4.829	4.983	5.06
			TOTAL		30.539	33.676	49.726	56.069	63.304	83.214	95.802
	TRANSMISSION MAIN 4										
TM4	OC16	ST-15	Ottiyambakkam		0.22	0.23	0.42	0.51	0.59	0.89	1.02
	OC16	ST-16	Perumbakkam		2.57	2.66	4.9	5.81	6.83	10.26	11.88
	OC16	ST-19	Sithalapakkam		1.41	1.46	2.69	3.2	3.75	5.64	6.53
	OC16	ST-2	Arasankalani		0.11	0.12	0.22	0.25	0.3	0.45	0.53

TM No.	ZONE/ GROUP	Beneficiary code	Name of Beneficiary		DESIGN YEAR						
					2020	2025	2030	2035	2040	2045	2050
TM4	OC16	ST-6	Kovilancheri		0.09	0.09	0.19	0.22	0.25	0.41	0.47
	OC16	ST-13	Mulacheri		0.01	0.01	0.02	0.02	0.03	0.04	0.07
	OC16	ST-8	Maduraipakkam		0.08	0.08	0.14	0.19	0.21	0.33	0.39
	OC16	ST-22	Vengaivasal		1.43	1.49	2.72	3.22	3.78	5.7	6.6
	OC15	ST-5	Koilambakkam		2.86	2.96	5.44	6.46	7.59	11.41	13.21
	OC15	ST-7	Kulathur		0.66	0.68	1.25	1.48	1.74	2.62	3.03
	OC15	OCT7	Sembakkam		6.13	7.6	12.13	14.1	16.07	23.24	25.78
	OC15	OCM4	Pallavaram	Part	15.165	16.95	25.3275	28.2225	31.38	44.805	49.5075
	OC15	ST-21	Tirusulam		1.47	1.52	2.8	3.32	3.91	5.87	6.8
	OC15	ST-11	Moovarasampettai		1.01	1.05	1.91	2.28	2.68	4.04	4.67
	OC15	ST-17	Perundavakkam		0	0	0	0	0	0	0
	OC15	ST-14	Nanmangalam		1.94	2.01	3.7	4.38	5.15	7.73	8.96
	OC15	ST-9	Medavakkam	Part	1.55	1.605	2.96	3.5	4.12	6.195	7.17
	CC8	CM8	Alandur	Part	5.934	6.423	8.898	9.471	10.095	12.156	12.792
	OC16	OCT3	Madambakkam		7.24	9.9	16.8	20.36	23.91	35.41	40.01
	OC16	ST-1	Agaramthen		0.29	0.3	0.62	0.73	0.87	1.35	1.57

TM No.	ZONE/ GROUP	Beneficiary code	Name of Beneficiary		DESIGN YEAR						
					2020	2025	2030	2035	2040	2045	2050
	OC16	ST-10	Meppedu		0	0	0	0	0	0	0
	OC16	ST-20	Thiruvancheri		0.22	0.23	0.5	0.59	0.7	1.1	1.27
	OC16	KA-2	Kolapakkam		0.59	0.61	1.25	1.43	1.6	2.37	2.6
	OC16	KA-4	Nedungundram		1.07	1.11	2.27	2.58	2.88	4.27	4.69
	OC16	KA-5	Puthur		0.2	0.21	0.43	0.48	0.54	0.79	0.88
	OC16	OCT5	Peerkankaranai	Part	0.385	0.42	0.7	0.75	0.805	1.15	1.22
	OC16	KA-1	Kilambakkam		0.39	0.4	0.81	0.92	1.03	1.54	1.69
	OC16	KA-6	Vandalur	Part	0.3125	0.3275	0.6625	0.755	0.8475	1.2525	1.3725
	OC16	ST-4	Kasbapuram		0.18	0.19	0.39	0.46	0.54	0.85	0.98
	OC16	ST-23	Vengapakkam		0.19	0.2	0.42	0.48	0.57	0.89	1.03
	OC15	OCT1	Chitlapakkam		3.6	4.03	6.02	6.7	7.44	10.58	11.66
	OC15	OCM7	Tambaram	Part	4.255	4.8575	7.415	8.46	9.6575	14.1975	16.2075
	OC16	OCM7	Tambaram	Part	1.702	1.943	2.966	3.384	3.863	5.679	6.483
	13	13	NANDANAM		16.665	17.237	17.644	18.04	18.612	19.052	19.492
	14	14	MYLAPORE		35.618	36.608	36.85	37.114	37.774	38.379	38.445
	16	16	SOUTHERN HEAD WORKS		26.059	26.609	27.258	27.775	28.38	28.897	29.48
			TOTAL		141.6055	152.12	198.721	217.6415	238.494	309.543	338.4895
			GRAND TOTAL		249.2985	270.867	366.677	405.4595	448.058	579.018	648.5985


Transmission Main 1-From Nemmeli PS (100 mld DSP-Existing) to Thiruvanmiyur
KELAMBAKKAM SUMP
Sump at KOVALAM JN
GL:1.00 M
MWL:2.00 M
-LWL:1.00 M
EXISTING 100 MLD PLANT AT NEMMELI
Ch:0 M
GL:3.00 M
FVL:1.00 M
1000 mm DI (E)
10000 m
100/100
6.77/1.72
Ch:10000 M/GL:1.00 m
93.23/98.28
Ch:20000 M/GL:4.00 m
1000 mm D I (E) /2420 m
91.63/94.98
Uthandi
1.60/3.30
GL: 4.0 m
Sholinganallur & Karapakkam (P)
17.08/17.08
GL:6.0m
Ch:22420 M/GL:6.00 m
1000 mm DI (E) 100 m
74.55/77.90
AKKARAI SUMP
20/6.63
GL:8.0 m
Ch:22520 M/GL:8.00 m
700 mm DI (E) /3310 m
54.55/71.27
Injambakkam
4.79/10.82
GL: 3.00
Ch: 25830 M/GL: 8.00 m
700 mm DI (E) 450 m
49.76/60.45
Okkiam Thoraipakkam(P)
15/15-GL:1.00 m
GL: 8.00 m/Ch: 26280 M
700 mm DI (E) 1760 m
34.76/45.45
Neelankarai
5.30/9.89
GL: 1.0 m
Ch: 28040 M/GL: 8.00 m
700 mm DI (E) 1320 m
29.46/35.56
Palavakkam (Part)
2.95/2.95
GL: 3.0 m
Ch: 29360 M/GL: 7.00 m
700 mm DI (E) 1320 m
26.51/32.61
Ch: 30680 M/GL: 9.00 m
700 mm/ DI (E) 1480 m
22.67/24.72
Kottivakkam
3.84/7.89
GL: 3.0 m
THIRUVANMIYUR SR
22.67/24.72
Ch.:32160 M
GL: 8.13 m
ALONG ECR

Transmission Main 1-From Nemmeli PS (100 mld DSP-Existing) to Thiruvanmiyur WDS

HEAD WORKS:	NEMMELI DSP- 100 MLD Exist.	
Stage	Intermediate	Ultimate
Hours of pumping	23	23
GL	3.00m	3.00m
FVL/LWL	1.00m	1.00m
MWL of SR @ Thiruvanmiyur	24.13m	24.13m
Residual Head	3.00m	3.00m
HGL. Reqd @ End	27.13m	27.13m
Static Head	26.13m	26.13m
Total Losses	48.64m	59.19m
HGL @ Ch.:0 m	75.77m	86.32m

Beneficiary wise Flow						
Sl No	**ZONE CODE**	**Name of beneficiary**	**Projected Demand in MLD for 2035**	**Flow adopting 23 hours pumping (m^3/sec)**	**Projected Demand in MLD for 2050**	**Flow adopting 23 hours pumping (m^3/sec)**
1	***2***	***3***	***4***	***5***	***6***	***7***
1	Proposed sump @ Kovalam Jn.		6.77	0.08	1.72	0.02
2	CC11	Uthandi	1.60	0.02	3.30	0.04
3	CC11	Sholinganallur	17.08	0.21	17.08	0.21
4	CC10	Karapakkam				
5	To Akkarai Sump		20.00	0.24	6.630	0.08
6	CC10	Injambakkam	4.79	0.06	10.82	0.13
7	CC10	Oggiam Thuraipakkam	15.00	0.18	15.00	0.18
8	CC10	Neelankarai	5.30	0.06	9.89	0.12
9	CC10	Palavakkam-Part	2.95	0.04	2.95	0.04
10	CC10	Kottivakkam	3.84	0.05	7.89	0.10
11	12A	Thiruvanmiyur	22.67	0.27	24.72	0.30
			100.00	1.21	100.00	1.208

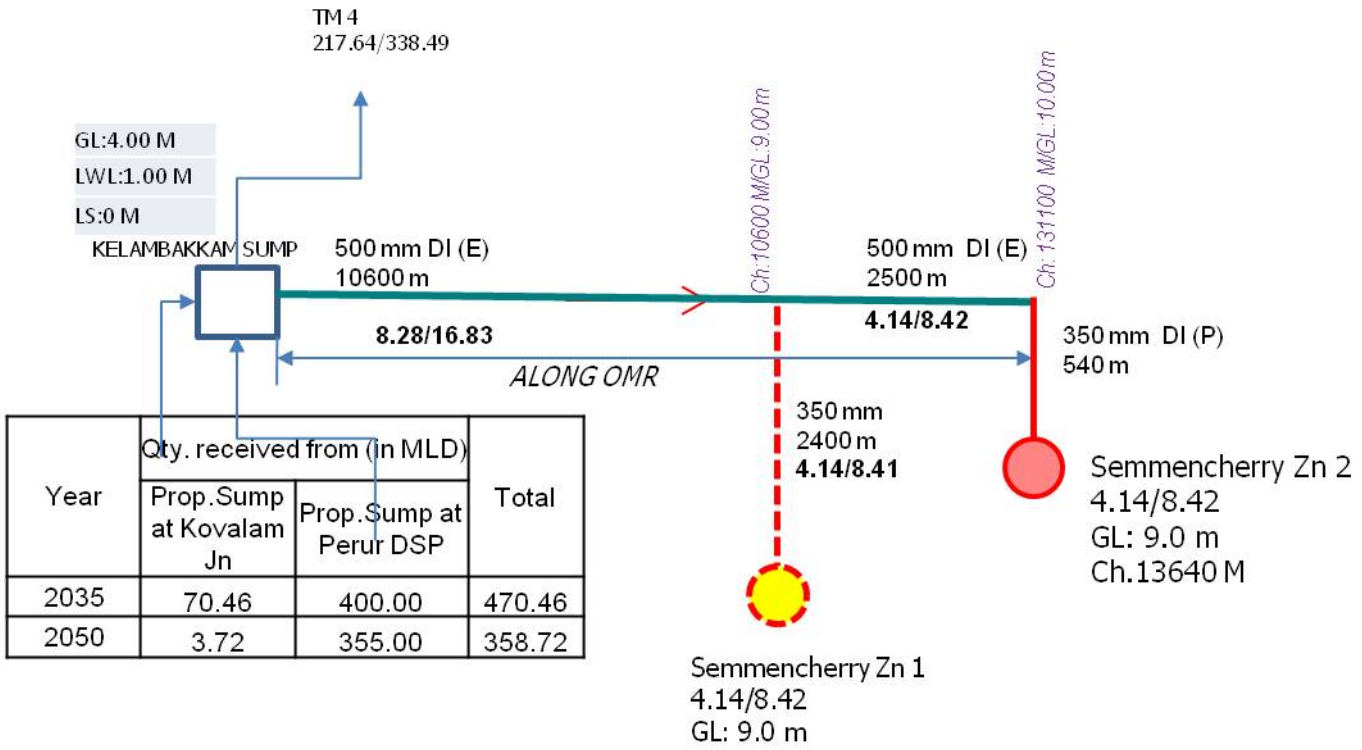
DESIGN OF TRANSMISSION MAIN															
TM1-INTERMEDIATE STAGE-2035															
Sl.No	From	To	Chainage (m)	Length in M	Flow in m^3/sec	Dia of Pipe in mm	Velocity m/sec	Existing Pipe							
			From	To				Flow in m^3/sec	Hfm/m	F.L	OL	TL	HGL	GL	RH
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
		Nemmeli PS (100 mld-Exist.)		0									75.77	3.00	72.77
1	Nemmeli PS (100 mld-Exist.)	Kovalam Jn	0	10000	10000	1.208	1000	1.538	0.0014	14.15	1.42	15.57	60.20	1.00	59.20
2	Kovalam Jn	Uthandi Jn	10000	20000	10000	1.126	1000	1.434	0.0012	12.46	1.25	13.71	46.49	4.00	42.49
3	Uthandi Jn	Sholinganallur Jn	20000	22420	2420	1.107	1000	1.409	0.0012	2.92	0.29	3.21	43.28	6.00	37.28
4	Sholinganallur Jn	Akkarai Jn	22420	22520	100	0.900	1000	1.146	0.0008	0.08	0.01	0.09	43.19	8.00	35.19
5	Akkarai Jn	Injambakkam Jn	22520	25830	3310	0.659	700	1.712	0.0026	8.70	0.87	9.57	33.62	8.00	25.62
6	Injambakkam Jn	Okkiam Thoraipakkam Jn.	25830	26280	450	0.601	700	1.562	0.0022	1.00	0.10	1.10	32.52	8.00	24.52
7	Okkiam Thoraipakkam Jn.	Neelankarai Jn	26280	28040	1760	0.420	700	1.091	0.0012	2.04	0.20	2.24	30.28	8.00	22.28
8	Neelankarai Jn	Pallavkkam Jn	28040	29360	1320	0.356	700	0.925	0.0009	1.14	0.11	1.25	29.03	7.00	22.03
9	Pallavkkam Jn	Kottivakkam Jn	29360	30680	1320	0.320	700	0.832	0.0007	0.94	0.09	1.03	28.00	9.00	19.00
10	Kottivakkam Jn	Thiruvanmiyur WDS	30680	32160	1480	0.274	700	0.711	0.0005	0.79	0.08	0.87	27.13	8.13	19.00
					32160					44.22	4.42	48.64			

TM1-ULTIMATE STAGE-2050															
Sl.No	From	To	Chainage (m)		Length in M	Existing Pipe									
			From	To		Flow in m^3/sec	Dia of Pipe in mm	Velocity m/sec	Hfm/m	F.L	OL	TL	HGL	GL	RH
1	2		4	5	6	7	8	9	10	11	12	13	14	15	16
		Nemmeli PS (100 mld-Exist.)											86.32	3.00	83.32
1	Nemmeli PS (100 mld-Exist.)	Kovalam Jn	0	10000	10000	1.208	1000	1.538	0.0014	14.15	1.42	15.57	70.75	1.00	69.75
2	Kovalam Jn	Uthandi Jn	10000	20000	10000	1.187	1000	1.511	0.0014	13.71	1.37	15.08	55.67	4.00	51.67
3	Uthandi Jn	Sholinganallur Jn	20000	22420	2420	1.147	1000	1.461	0.0013	3.12	0.31	3.43	52.24	6.00	46.24
4	Sholinganallur Jn	Akkarai Jn	22420	22520	100	0.941	1000	1.198	0.0009	0.09	0.01	0.10	52.14	8.00	44.14
5	Akkarai Jn	Injambakkam Jn	22520	25830	3310	0.861	700	2.236	0.0043	14.10	1.41	15.51	36.63	8.00	28.63
6	Injambakkam Jn	Okkiam Thoraipakkam Jn.	25830	26280	450	0.730	700	1.897	0.0032	1.42	0.14	1.56	35.07	8.00	27.07
7	Okkiam Thoraipakkam Jn.	Neelankarai Jn	26280	28040	1760	0.549	700	1.426	0.0019	3.32	0.33	3.65	31.42	8.00	23.42
8	Neelankarai Jn	Pallavkkam Jn	28040	29360	1320	0.429	700	1.116	0.0012	1.60	0.16	1.76	29.66	7.00	22.66
9	Pallavkkam Jn	Kottivakkam Jn	29360	30680	1320	0.394	700	1.023	0.0010	1.37	0.14	1.51	28.15	9.00	19.15
10	Kottivakkam Jn	Thiruvanmiyur WDS	30680	32160	1480	0.299	700	0.776	0.0006	0.93	0.09	1.02	27.13	8.13	19.00
					32160					53.81	5.38	59.19			

TM1-DESIGN OF BRANCH MAINS																	
INTERMEDIATE-2035																	
Sl.No	From	To	Chainage From	Chainage To	Length in M	Flow in m^3/sec	Dia of Pipe in mm	Velocity m/sec	Hfm/m	F.L	OL	TL	HGL	GL	RH	Remarks
1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*	*15*	*16*	*17*
1	Br. Main to Sump at KOVALAM JN															
	TM1-TAPPING PT AT LS 10000 M								HGL Available at Tapping point				60.20			
	LS: 10000m of TM1	Sump at KOVALAM JN	0	1000	1000	0.082	250	1.666	0.0085	8.52	0.85	9.37	50.83	1.00	49.83	Ends at UGT @ Sump at KOVALAM JN
2	Br. Main to Uthandi															
	TM1-TAPPING PT AT LS 20000 M								HGL Available at Tapping point				46.49			
	LS: 20000m of TM1	Uthandi	0	1000	1000	0.019	200	0.614	0.0018	1.82	0.18	2.00	44.49	4.00	40.49	Ends at UGT @ Uthandi
3	Br. Main to Sholinganallur (PART) & Karapakkam															
	TM1-TAPPING PT AT LS 22420 M								HGL Available at Tapping point				43.28			
	LS: 22420m of TM1	Sholinganallur (PART)& kARAPAKKAM	0	1000	1000	0.206	400	1.642	0.0047	4.74	0.47	5.21	38.07	6.00	32.07	Ends at UGT @ Sholinganallur (PART)& kARAPAKKAM
4	Br. Main to AKKARAI SUMP															
	TM1-TAPPING PT AT LS 22520 M								HGL Available at Tapping point				43.19			
	LS: 22520m of TM1	AKKARAI SUMP	0	1000	1000	0.242	400	1.922	0.0063	6.30	0.63	6.93	36.26	8.00	28.26	Ends at UGT @ AKKARAI SUMP
5	Br. Main to Injambakkam															
	TM1-TAPPING PT AT LS 25830 M								HGL Available at Tapping point				33.62			
	LS: 25830m of TM1	Injambakkam	0	1000	1000	0.058	300	0.819	0.0019	1.90	0.19	2.09	31.53	3.00	28.53	Ends at UGT @ Injambakkam
6	Br. Main to Okkiam Thoraipakkam (Part)															
	TM1-TAPPING PT AT LS 26280 M								HGL Available at Tapping point				32.52			
	LS: 26280m of TM1	Okkiam Thoraipakkam (Part)	0	1000	1000	0.181	350	1.883	0.0071	7.12	0.71	7.83	24.69	1.00	23.69	Ends at UGT @ Okkiam Thoraipakkam (Part)
7	Br. Main to Neelankarai															
	TM1-TAPPING PT AT LS 28040 M								HGL Available at Tapping point				30.28			
	LS: 28040m of TM1	Neelankarai	0	1000	1000	0.064	300	0.905	0.0023	2.27	0.23	2.50	27.78	1.00	26.78	Ends at UGT @ Neelankarai
8	Br. Main to Palavakkam (Part)															
	TM1-TAPPING PT AT LS 29360 M								HGL Available at Tapping point				29.03			
	LS: 29360m of TM1	Palavakkam (Part)	0	1000	1000	0.036	200	1.133	0.0055	5.53	0.55	6.08	22.95	3.00	19.95	Ends at UGT @ Palavakkam (Part)
9	Br. Main to Kottivakkam															
	TM1-TAPPING PT AT LS 30680 M								HGL Available at Tapping point				28.00			
	LS: 30680m of TM1	Kottivakkam	0	1000	1000	0.046	250	0.945	0.0031	3.05	0.31	3.36	24.64	3.00	21.64	Ends at UGT @ Kottivakkam

TM1-DESIGN OF BRANCH MAINS																	
ULTIMATE STAGE-2050																	
Sl. No	From	To	Chainage (m)		Length in M	Flow in m^3/sec	Dia of Pipe in mm	Velocity m/sec	Hfm/m	F.L	OL	TL	HGL	GL	RH	Remarks
			From	To												
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1	Br. Main to Sump at KOVALAM JN															
	TM1-TAPPING PT AT LS 10000 M								HGL Available at Tapping point				70.75			
	LS: 10000m of TM1	Sump at KOVALAM JN	0	1000	1000	0.021	250	0.424	0.0007	0.71	0.07	0.78	69.97	1.00	68.97	Ends at UGT @ Sump at KOVALAM JN
2	Br. Main to Uthandi															
	TM1-TAPPING PT AT LS 20000 M								HGL Available at Tapping point				55.67			
	LS: 20000m of TM1	Uthandi	0	1000	1000	0.040	200	1.270	0.0068	6.79	0.68	7.47	48.20	4.00	44.20	Ends at UGT @ Uthandi
3	Br. Main to Sholinganallur (PART)& kARAPAKKAM															
	TM1-TAPPING PT AT LS 22420 M								HGL Available at Tapping point				52.24			
	LS: 22420m of TM1	Sholinganallur (PART)& Karapakkam	0	1000	1000	0.206	400	1.642	0.0047	4.74	0.47	5.21	47.03	6.00	41.03	Ends at UGT @ Sholinganallur (PART)& kARAPAKKAM
4	Br. Main to AKKARAI SUMP															
	TM1-TAPPING PT AT LS 22520 M								HGL Available at Tapping point				52.14			
	LS: 22520m of TM1	AKKARAI SUMP	0	1000	1000	0.080	400	0.637	0.0009	0.86	0.09	0.95	51.19	8.00	43.19	Ends at UGT @ AKKARAI SUMP
5	Br. Main to Injambakkam															
	TM1-TAPPING PT AT LS 25830 M								HGL Available at Tapping point				36.63			
	LS: 25830m of TM1	Injambakkam	0	1000	1000	0.131	300	1.849	0.0083	8.28	0.83	9.11	27.52	3.00	24.52	Ends at UGT @ Injambakkam
6	Br. Main to Okkiam Thoraipakkam (Part)															
	TM1-TAPPING PT AT LS 26280 M								HGL Available at Tapping point				35.07			
	LS: 26280m of TM1	Okkiam Thoraipakkam (Part)	0	1000	1000	0.181	350	1.883	0.0071	7.12	0.71	7.83	27.24	1.00	26.24	Ends at UGT @ Okkiam Thoraipakkam (Part)
7	Br. Main to Neelankarai															
	TM1-TAPPING PT AT LS 28040 M								HGL Available at Tapping point				31.42			
	LS: 28040m of TM1	Neelankarai	0	1000	1000	0.119	300	1.689	0.0070	7.03	0.70	7.73	23.69	1.00	22.69	Ends at UGT @ Neelankarai
8	Br. Main to Palavakkam (Part)															
	TM1-TAPPING PT AT LS 29360 M								HGL Available at Tapping point				29.66			
	LS: 29360m of TM1	Palavakkam (Part)	0	1000	1000	0.036	200	1.133	0.0055	5.53	0.55	6.08	23.58	3.00	20.58	Ends at UGT @ Palavakkam (Part)
9	Br. Main to Kottivakkam															
	TM1-TAPPING PT AT LS 30680 M								HGL Available at Tapping point				28.15			
	LS: 30680m of TM1	Kottivakkam		1000	1000	0.095	250	1.941	0.0112	11.23	1.12	12.35	28.15	3.00	25.15	Ends at UGT @ Kottivakkam

Transmission Main 2 A-From Kelambakkam Sump to Semmencheri



Year	Qty. received from (in MLD)		Total
	Prop.Sump at Kovalam Jn	Prop.Sump at Perur DSP	
2035	70.46	400.00	470.46
2050	3.72	355.00	358.72

TRANSMISSION MAIN 2A

HEAD WORKS:	NEMMELI DSP	
Stage	Intermediate	Ultimate
Hours of pumping	23	23
GL	4.00m	4.00m
FVL/LWL	1.00m	1.00m
MWL of Sump @ End Beneficiary	10.00m	10.00m
Residual Head	3.00m	3.00m
HGL. Reqd @ End	13.00m	13.00m
Static Head	12.00m	12.00m
Total Losses	5.84m	21.10m
HGL @ Ch.:0 m	18.84m	34.10m

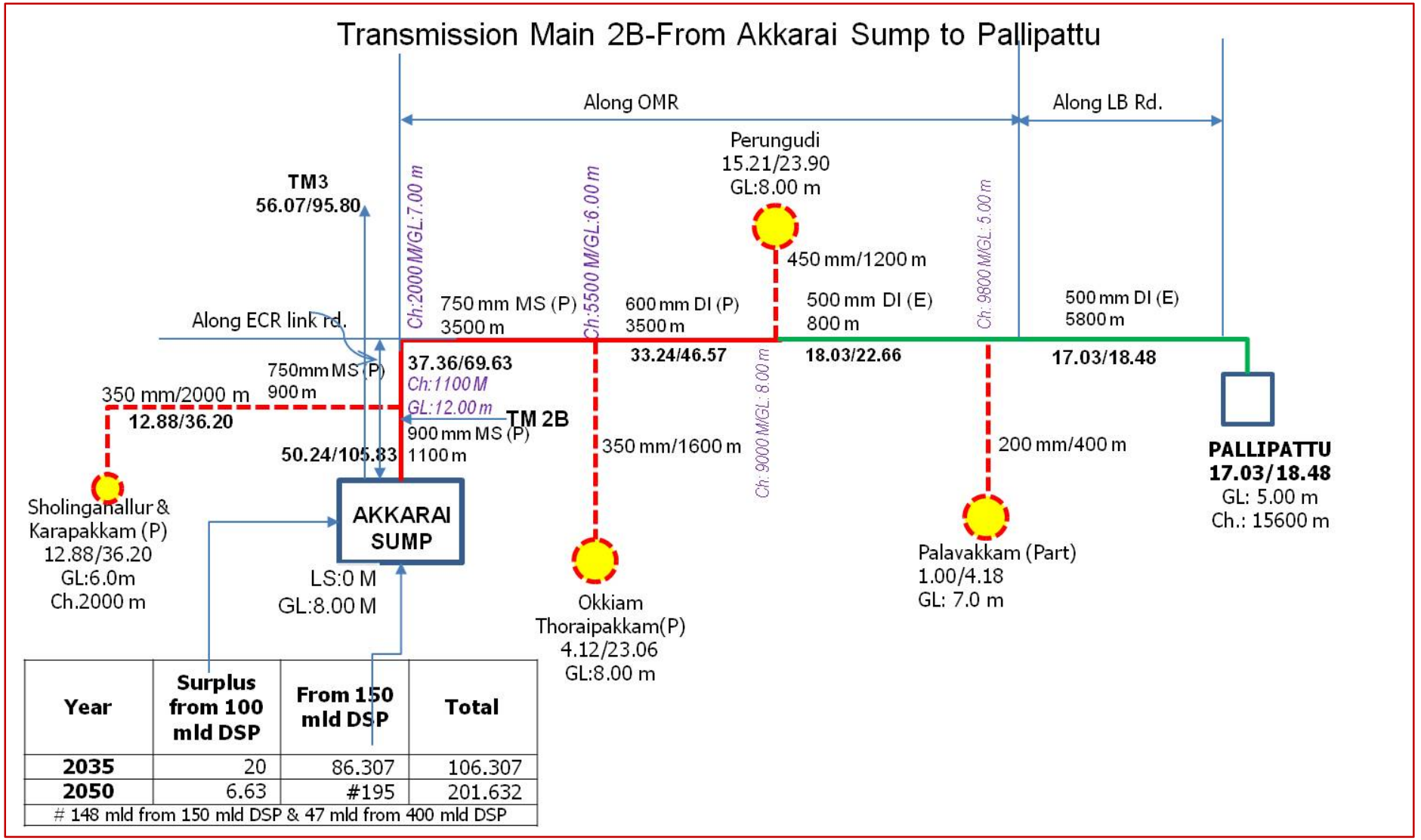
Beneficiary wise Flow						
Sl No	**ZONE CODE**	**Location**	**Projected Demand in MLD for 2035**	**Flow adopting 23 hours pumping (m3/sec)**	**Projected Demand in MLD for 2050**	**Flow adopting 23 hours pumping (m3/sec)**
1	**2**	**3**	**4**	**5**	**6**	**7**
	Kelambakkam SUMP					
1	CV24	Semmanjeri-Zn1	4.14	0.050	8.42	0.102
2	CV24	Semmanjeri-Zn2	4.14	0.050	8.42	0.102
		Total	**8.28**	**0.100**	**16.83**	**0.203**

DESIGN OF TRANSMISSION MAIN															
TM 2A-INTERMEDIATE STAGE-2035															
Sl.No	From	To	Chainage (m)		Length in M	Flow in m^3/sec	Dia of Pipe in mm	Velocity m/sec	Hfm/m	F.L	OL	TL	HGL	GL	RH
			From	To											
1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*	*15*	*16*
		Kelambakkam SUMP											18.84	2.00	16.84
1	Kelambakkam SUMP	Semmanjeri-Zn1 Jn	0	10600	10600	0.100	500	0.509	0.0004	4.63	0.46	5.09	13.75	9.00	4.75
2	Semmanjeri-Zn1 Jn	Semmanjeri-Zn 2 Jn	10600	13100	2500	0.050	500	0.255	0.0001	0.31	0.03	0.34	13.41	10.00	9.41
2	Semmanjeri-Zn 2 Jn	Semmanjeri-Zn 2	13100	13640	540	0.050	350	0.520	0.0007	0.37	0.04	0.41	13.00	10.00	9.49
										5.31	0.53	5.84			

TM 2A-INTERMEDIATE STAGE-2050															
Sl.No	From	To	Chainage (m)		Length in M	Flow in m3/sec	Dia of Pipe in mm	Velocity m/sec	Hfm/m	F.L	OL	TL	HGL	GL	RH
			From	To											
1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*	*15*	*16*
		Kelambakkam SUMP			0								34.10	2.00	32.10
1	Kelambakkam SUMP	Semmanjeri-Zn1 Jn	0	10600	10600	0.203	500	1.035	0.0016	16.71	1.67	18.38	15.72	9.00	6.72
2	Semmanjeri-Zn1 Jn	Semmanjeri-Zn 2 Jn	10600	13100	2500	0.102	500	0.517	0.0004	1.12	0.11	1.23	14.49	4.00	10.49
2	Semmanjeri-Zn 2 Jn	Semmanjeri-Zn 2	13100	13640	540	0.102	350	1.056	0.0025	1.35	0.14	1.49	13.00	3.51	9.49
										19.18	1.92	21.10			

DESIGN OF BRANCH MAINS-INTERMEDIATE STAGE-2035																
Sl.No	From	To	Chainage (m)-From	Chainage (m)-To	Length in M	Flow in m^3/sec	Dia of Pipe in mm	Velocity m/sec	Hfm/m	F.L	OL	TL	HGL	GL	RH	Remarks
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
	BR MAIN TO SEMMENCHERI-Zn 1															
	TM2-TAPPING PT AT LS:10600 M								HGL Available at Tapping point				13.75			
	LS10600m of TM2	SEMMENCHERI Zn-1 SUMP	0	2400	2400	0.050	400	0.398	0.0004	0.87	0.09	0.96	12.79	9.00	3.79	Ends at UGT @ SEMMENCHERI-Zn 1

DESIGN OF BRANCH MAINS-ULTIMATE STAGE-2050																
Sl.No	From	To	Chainage (m)		Length in M	Flow in m^3/sec	Dia of Pipe in mm	Velocity m/sec	Hfm/m	F.L	OL	TL	HGL	GL	RH	Remarks
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
	BR MAIN TO SEMMENCHERI Zn-1 SUMP															
	TM2-TAPPING PT AT LS 10600								HGL Available at Tapping point				15.72			
	LS10600m of TM2	SEMMENCHERI Zn-1 SUMP	0	2400	2400	0.102	400	0.809	0.0013	3.16	0.32	3.48	12.24	9.00	3.24	Ends at UGT @ SEMMENCHERI Zn-1 SUMP



Year	Surplus from 100 mld DSP	From 150 mld DSP	Total
2035	20	86.307	106.307
2050	6.63	#195	201.632
# 148 mld from 150 mld DSP & 47 mld from 400 mld DSP			

HEAD WORKS:	AKKARAI SUMP (Nemmeli DSP)	
Stage	Intermediate	Ultimate
Hours of pumping	23	23
GL	8.00m	8.00m
FVL/LWL	6.00m	6.00m
MWL of Sump @ End Beneficiary	5.00m	5.00m
Residual Head	3.00m	3.00m
HGL. Reqd @ End	8.00m	8.00m
Static Head	2.00m	2.00m
Total Losses	25.94m	47.59m
HGL @ Ch.:0 m	33.94m	55.59m

Sl No	ZONE CODE	Location	Projected Demand in MLD for 2035	Flow adopting 23 hours pumping (m3/sec)	Projected Demand in MLD for 2050	Flow adopting 23 hours pumping (m3/sec)
1	*2*	*3*	*4*	*5*	*6*	*7*
1	AKKARAI SUMP					
2	CC11	Sholinganallur & Karapakkam (Part)	12.88	0.156	36.20	0.437
3	CC10	Okkiam Thuraipakkam (Part)	4.12	0.050	23.06	0.279
4	CT6	Perungudi.	15.21	0.184	23.91	0.289
5	CV17	Palavakkam	1.00	0.012	4.18	0.051
6	12	Pallipattu	17.03	0.206	18.48	0.223
		Total	50.24	0.61	105.83	1.28

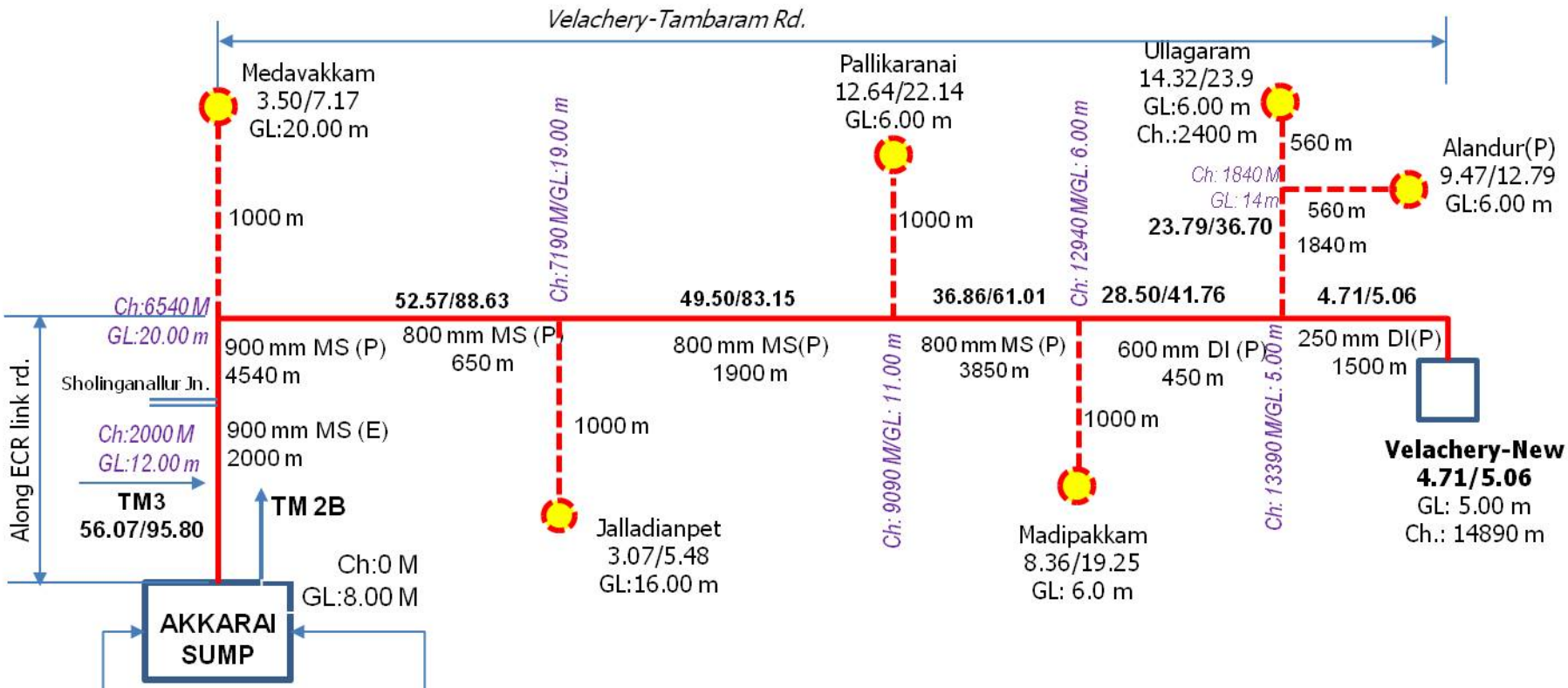
TM2B-INTERMEDIATE STAGE-2035															
Sl.No	From	To	Chainage (m)-From	Chainage (m)-To	Length in M	Flow in m^3/sec	Dia of Pipe in mm	Velocity m/sec	Hfm/m	F.L	OL	TL	HGL	GL	RH
1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*	*15*	*16*
		AKKARAI SUMP											33.94	8.00	25.94
1	AKKARAI SUMP	Br. road to Sholinganallur& Karapakkam Jn.	0	1100	1100	0.607	900	0.954	0.0007	0.74	0.07	0.81	33.13	12.00	21.13
2	Br. road to Sholinganallur& Karapakkam Jn.	Sholinganallur Jn & OMR	1100	2000	900	0.451	750	1.022	0.0010	0.86	0.09	0.95	32.18	7.00	25.18
3	Sholinganallur Jn & OMR	Oggiam Thuraipakkam Jn	2000	5500	3500	0.451	750	1.022	0.0010	3.33	0.33	3.66	28.52	6.00	22.52
4	Oggiam Thuraipakkam Jn	Perungudi.Jn.	5500	9000	3500	0.402	600	1.420	0.0022	7.87	0.79	8.66	19.86	8.00	11.86
5	Perungudi.Jn.	Palavakkam Jn.	9000	9800	800	0.218	500	1.109	0.0018	1.43	0.14	1.57	18.29	5.00	13.29
6	Palavakkam Jn.	Pallipattu	9800	15600	5800	0.206	500	1.048	0.0016	9.35	0.94	10.29	8.00	5.00	3.00
					15600					23.58	2.36	25.94			

TM2B-ULTIMATE STAGE-2050															
Sl.No	From	To	Chainage (m)-From	Chainage (m)-To	Length in M	Flow in m^3/sec	Dia of Pipe in mm	Velocity m/sec	Hfm/m	F.L	OL	TL	HGL	GL	RH
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
		AKKARAI SUMP											55.59	8.00	47.59
1	AKKARAI SUMP	Br. road to Sholinganallur& Karapakkam Jn.	0	1100	1100	1.278	900	2.009	0.0026	2.86	0.29	3.15	52.44	12.00	40.44
2	Br. road to Sholinganallur& Karapakkam Jn.	Sholinganallur Jn & OMR	1100	2000	900	0.841	750	1.904	0.0029	2.64	0.26	2.90	49.54	7.00	42.54
3	Sholinganallur Jn & OMR	Oggiam Thuraipakkam Jn	2000	5500	3500	0.841	750	1.904	0.0029	10.26	1.03	11.29	38.25	6.00	32.25
4	Oggiam Thuraipakkam Jn	Perungudi.Jn.	5500	9000	3500	0.563	600	1.989	0.0041	14.50	1.45	15.95	22.30	8.00	14.30
5	Perungudi.Jn.	Palavakkam Jn.	9000	9800	800	0.274	500	1.394	0.0027	2.16	0.22	2.38	19.92	5.00	14.92
6	Palavakkam Jn.	Pallipattu	9800	15600	5800	0.223	500	1.137	0.0019	10.84	1.08	11.92	8.00	5.00	3.00
					15600					43.26	4.33	47.59			

TM 2B-DESIGN OF BRANCH MAINS																
INTERMEDIATE-2035																
Sl.No	From	To	Chainage (m)-From	Chainage (m)-To	Length in M	Flow in m^3/sec	Dia of Pipe in mm	Velocity m/sec	Hfm/m	F.L	OL	TL	HGL	GL	RH	Remarks
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1	Br. Main to Sholinganallur & Karapakkam (Part)															
	TM 2B-Tapping @ Ch:1100 M								HGL Available at Tapping point				32.18			
	LS: 1100m of TM 2B	Sholinganallur & Karapakkam (Part)	0	2000	2000	0.156	600	0.550	0.0004	0.81	0.08	0.89	31.29	6.00	25.29	Ends at UGT @ Sholinganallur & Karapakkam (Part)
2	Br. Main to Okkiam Thuraipakkam (Part)															
	TM 2B-Tapping @ Ch:5500 M								HGL Available at Tapping point				28.52			
	LS: 5500m of TM 2B	Okkiam Thuraipakkam (Part)	0	1600	1600	0.050	450	0.313	0.0002	0.33	0.03	0.36	28.16	8.00	20.16	Ends at UGT @ Okkiam Thuraipakkam (Part)
3	Br. Main to Perungudi															
	TM 2B-Tapping @ Ch:9000 M								HGL Available at Tapping point				19.86			
	LS: 9000m of TM 2B	Perungudi	0	1200	1200	0.184	450	1.155	0.0022	2.62	0.26	2.88	16.98	8.00	8.98	Ends at UGT @ Perungudi
4	Br. Main to Palavakkam (Part)															
	TM 2B-Tapping @ Ch:9800 M								HGL Available at Tapping point				18.29			
	LS: 9800m of TM 2B	Palavakkam (Part)	0	400	400	0.012	200	0.385	0.0008	0.31	0.03	0.34	17.95	7.00	10.95	Ends at UGT @ Palavakkam (Part)

TM2B-BRANCH MAINS-ULTIMATE STAGE-2050																
Sl.No	From	To	Chainage (m)-From	Chainage (m)-To	Length in M	Flow in m^3/sec	Dia of Pipe in mm	Velocity m/sec	Hfm/m	F.L	OL	TL	HGL	GL	RH	Remarks
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1	Br. Main to Sholinganallur & Karapakkam (Part)															
	TM 2B-Tapping @ Ch:1100 M								HGL Available at Tapping point				49.54			
	LS: 1100m of TM 2B	Sholinganallur & Karapakkam (Part)	0	2000	2000	0.437	600	1.546	0.0026	5.25	0.53	5.78	43.76	6.00	37.76	Ends at UGT @ Sholinganallur & Karapakkam (Part)
2	Br. Main to Okkiam Thuraipakkam (Part)															
	TM 2B-Tapping @ Ch:5500 M								HGL Available at Tapping point				38.25			
	LS: 5500m of TM 2B	Okkiam Thuraipakkam (Part)	0	1600	1600	0.279	450	1.751	0.0046	7.41	0.74	8.15	30.10	8.00	22.10	Ends at UGT @ Okkiam Thuraipakkam (Part)
3	Br. Main to Perungudi															
	TM 2B-Tapping @ Ch:9000 M								HGL Available at Tapping point				22.30			
	LS: 9000m of TM 2B	Perungudi	0	1200	1200	0.289	450	1.816	0.0049	5.93	0.59	6.52	15.78	8.00	7.78	Ends at UGT @ Perungudi
4	Br. Main to Palavakkam (Part)															
	TM 2B-Tapping @ Ch:9800 M								HGL Available at Tapping point				19.92			
	LS: 9800m of TM 2B	Palavakkam (Part)	0	400	400	0.051	200	1.607	0.0104	4.16	0.42	4.58	15.34	7.00	8.34	Ends at UGT @ Palavakkam (Part)

Transmission Main 3-From Akkarai Sump to Velachery-New



Year	Surplus from 100 mld DSP	From 150 mld DSP	Total
2035	20	86.307	106.307
2050	6.63	#195	201.632
# 148 mld from 150 mld DSP & 47 mld from 400 mld DSP			

HEAD WORKS:	NEMMELI DSP	
Stage	Intermediate	Ultimate
Hours of pumping	23	23
GL	8.00m	8.00m
FVL/LWL	6.00m	6.00m
MWL of Sump @ End Beneficiary	6.00m	6.00m
Residual Head	3.00m	3.00m
HGL. Reqd @ End	9.00m	9.00m
Static Head	3.00m	3.00m
Total Losses	19.89m	40.32m
HGL @ Ch.:0 m	28.89m	49.32m

Sl No	ZONE CODE	Location	Projected Demand in MLD for 2035	Flow adopting 23 hours pumping (m3/sec)	Projected Demand in MLD for 2050	Flow adopting 23 hours pumping (m3/sec)
1	2		4	5	6	7
1	AKKARAI BS					
2	ST-9	Medavakkam	3.50	0.042	7.17	0.087
3	CV23	Jalladianpet	3.07	0.037	5.48	0.066
		Pallikaranai	12.64	0.153	22.14	0.267
4	CV22	Madippakkam	8.36	0.101	19.25	0.233
5	CM9	Ullagaram-Puzhudhivakkam	14.32	0.173	23.91	0.289
8	CM8	Alandur (Part)	9.47	0.114	12.79	0.155
8	6A	Velachery-NEW	4.71	0.057	5.06	0.061
			56.07	0.677	95.80	1.157

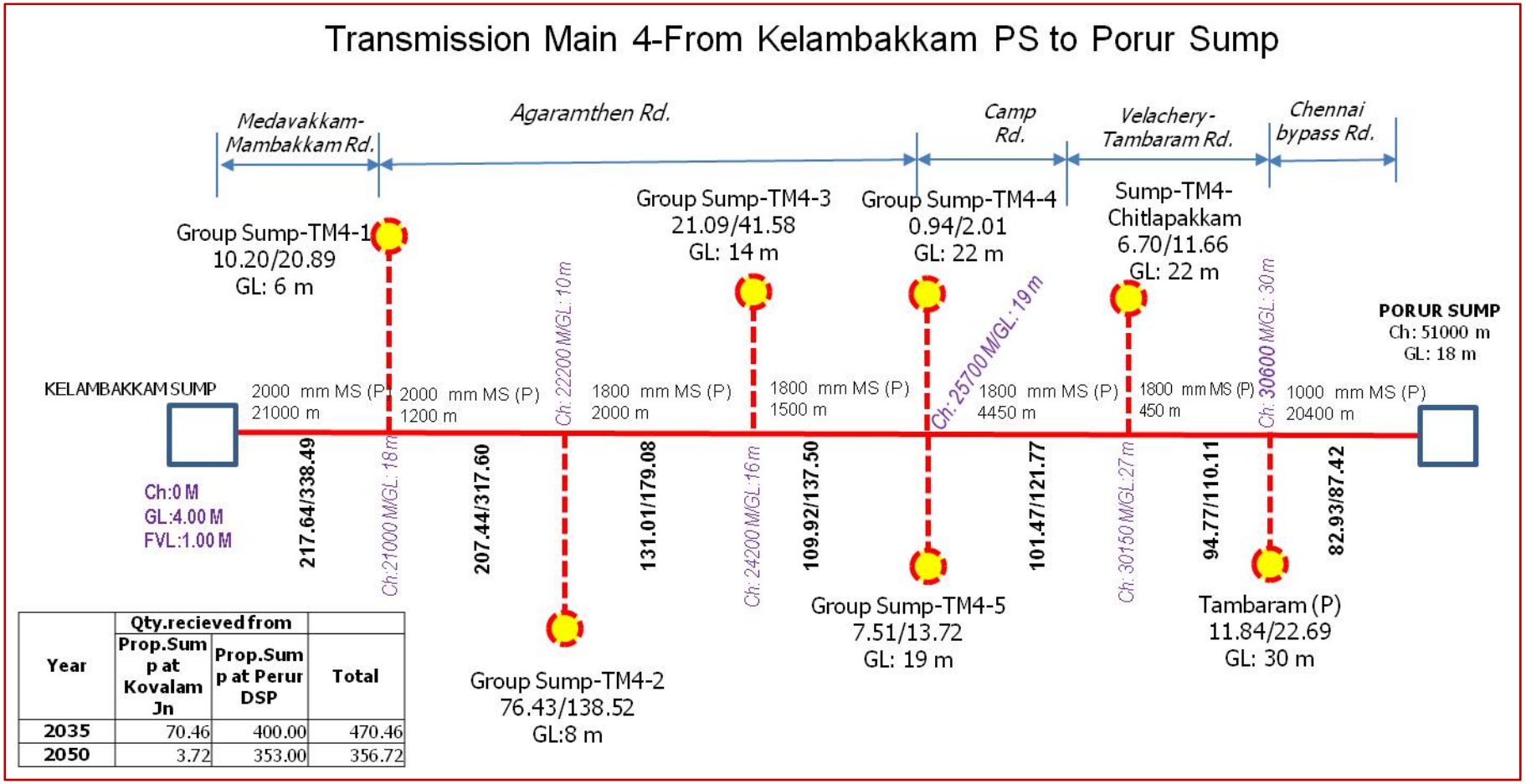
TM3-INTERMEDIATE-2035															
Sl.No	From	To	Chainage (m)-From	Chainage (m)-To	Length in M	Flow in m^3/sec	Dia of Pipe in mm	Velocity m/sec	Hfm/m	F.L	OL	TL	HGL	GL	RH
1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*	*15*	*16*
		AKKARAI BS			0								28.89	8.00	20.89
1	AKKARAI BS	Sholinganallur JN.	0	2000	2000	0.677	900	1.065	0.0008	1.65	0.17	1.82	27.07	12.00	15.07
2	Sholinganallur JN.	Medavakkam JN	2000	6540	4540	0.677	900	1.065	0.0008	3.74	0.37	4.11	22.96	20.00	2.96
3	Medavakkam JN	Jalladianpet JN	6540	7190	650	0.635	900	0.998	0.0007	0.48	0.05	0.53	22.43	16.00	6.43
4	Jalladianpet JN	Pallikaranai Jn.	7190	9090	1900	0.598	800	1.189	0.0012	2.20	0.22	2.42	20.01	11.00	9.01
5	Pallikaranai Jn.	Madipakkam Jn.	9090	12940	3850	0.445	800	0.886	0.0007	2.62	0.26	2.88	17.13	6.00	11.13
6	Madipakkam Jn.	Ullagaram & Alandur JN	12940	13390	450	0.344	600	1.217	0.0017	0.77	0.08	0.85	16.28	5.00	11.28
7	Ullagaram & Alandur JN	Velacherry-NEW	13390	14890	1500	0.057	250	1.159	0.0044	6.62	0.66	7.28	9.00	6.00	3.00
											18.08	1.81	19.89		

TM3-ULTIMATE STAGE-2050															
Sl.No	From	To	Chainage (m)-From	Chainage (m)-To	Length in M	Flow in m^3/sec	Dia of Pipe in mm	Velocity m/sec	Hfm/m	F.L	OL	TL	HGL	GL	RH
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
		AKKARAI BS			0								49.32	8.00	41.32
1	AKKARAI BS	Sholinganallur JN.	0	2000	2000	1.157	900	1.819	0.0022	4.35	0.44	4.79	44.53	12.00	32.53
2	Sholinganallur JN.	Medavakkam JN	2000	6540	4540	1.157	900	1.819	0.0022	9.87	0.99	10.86	33.67	20.00	13.67
3	Medavakkam JN	Jalladianpet JN	6540	7190	650	1.071	900	1.683	0.0019	1.23	0.12	1.35	32.32	16.00	16.32
4	Jalladianpet JN	Pallikaranai Jn.	7190	9090	1900	1.004	800	1.998	0.0030	5.63	0.56	6.19	26.13	11.00	15.13
5	Pallikaranai Jn.	Madipakkam Jn.	9090	12940	3850	0.737	800	1.466	0.0017	6.52	0.65	7.17	18.96	6.00	12.96
6	Madipakkam Jn.	Ullagaram & Alandur JN	12940	13390	450	0.504	600	1.784	0.0034	1.53	0.15	1.68	17.28	5.00	12.28
7	Ullagaram & Alandur JN	Velacherry-NEW	13390	14890	1500	0.061	250	1.245	0.0050	7.53	0.75	8.28	9.00	6.00	3.00
										36.66	3.66	40.32			

TM 3-DESIGN OF BRANCH MAINS																
TM3-BRANCH MAINS-INTERMEDIATE-2035																
Sl.No	From	To	Chainage (m)-From	Chainage (m)-To	Length in M	Flow in m^3/sec	dia of Pipe in mm	Velocity m/sec	Hfm/m	F.L	OL	TL	HGL	GL	RH	Remarks
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
1	Br. Main to MEDAVAKKAM															
	TM 3-Tapping @ LS 6540m								HGL Available at Tapping point				22.96			
	LS: 6540m of TM 3	MEDAVAKKAM	0	1000	1000	0.042	250	0.862	0.0026	2.58	0.26	2.84	20.12	20.00	0.12	Ends at UGT @ MEDAVAKKAM
2	Br. Main to JALLADIANPET															
	TM 3-Tapping @ LS 7190m								HGL Available at Tapping point				22.43			
	LS: 7190m of TM 3	JALLADIANPET	0	1000	1000	0.037	250	0.756	0.0020	2.04	0.20	2.24	20.19	16.00	4.19	Ends at UGT @ JALLADIANPET
3	Br. Main to PALLAIKARANAI															
	TM 3-Tapping @ LS 9090m								HGL Available at Tapping point				20.01			
	LS: 9090m of TM 3	PALLAIKARANAI	0	1000	1000	0.153	400	1.215	0.0027	2.75	0.28	3.03	16.98	6.00	10.98	Ends at UGT @ PALLAIKARANAI
4	Br. Main to MADIPAKKAM															
	TM 3-Tapping @ LS 12940m								HGL Available at Tapping point				17.13			
	LS: 12940m of TM 3	MADIPAKKAM	0	1000	1000	0.101	400	0.804	0.0013	1.30	0.13	1.43	15.70	6.00	9.70	Ends at UGT @ MADIPAKKAM
5	Br. Main to ULLAGARAM															
	TM 3-Tapping @ LS 13390m								HGL Available at Tapping point				16.28			
	LS: 13390m of TM 3	Tapping to Alandur	0	2000	2000	0.287	600	1.016	0.0012	2.46	0.25	2.71	13.57	6.00	7.57	Ends at UGT @ ULLAGARAM
	Tapping to Alandur	Ullgaram	2000	3000	1000	0.173	600	0.612	0.0005	0.49	0.05	0.54	13.03	6.00	7.03	Ends at UGT @ 13390

TM3-BRANCH MAINS-ULTIMATE STAGE-2050																
Sl.No	From	To	Chainage (m)-From	Chainage (m)-To	Length in M	Flow in m^3/sec	Dia of Pipe in mm	Velocity m/sec	Hfm/m	F.L	OL	TL	HGL	GL	RH	Remarks
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1	Br. Main to MEDAVAKKAM															
	TM 3-Tapping @ LS 6540m								HGL Available at Tapping point				33.67			
	LS: 6540m of TM 3	MEDAVAKKAM	0	1000	1000	0.087	250	1.764	0.0094	9.44	0.94	10.38	23.29	20.00	3.29	Ends at UGT @ MEDAVAKKAM
2	Br. Main to JALLADIANPET															
	TM 3-Tapping @ LS 7190m								HGL Available at Tapping point				32.32			
	LS: 7190m of TM 3	JALLADIANPET	0	1000	1000	0.066	250	1.349	0.0058	5.81	0.58	6.39	25.93	16.00	9.93	Ends at UGT @ JALLADIANPET
3	Br. Main to PALLAIKARANAI															
	TM 3-Tapping @ LS 9090m								HGL Available at Tapping point				26.13			
	LS: 9090m of TM 3	PALLAIKARANAI	0	1000	1000	0.267	400	2.128	0.0076	7.58	0.76	8.34	17.79	6.00	11.79	Ends at UGT @ PALLAIKARANAI
4	Br. Main to MADIPAKKAM															
	TM 3-Tapping @ LS 12940m								HGL Available at Tapping point				18.96			
	LS: 12940m of TM 3	MADIPAKKAM	0	1000	1000	0.233	400	1.850	0.0059	5.88	0.59	6.47	12.49	6.00	6.49	Ends at UGT @ MADIPAKKAM
5	Br. Main to Ullagaram & Alandur (Part)															
	TM 3-Tapping @ LS 13390m								HGL Available at Tapping point				17.28			
	LS: 13390m of TM 3	Tapping to Alandur	0	2000 M	2000 M	0.443	600	1.568	0.0027	5.38	0.54	5.92	11.36	6.00	5.36	Ends at UGT @ Ullagaram & Alandur (Part)
	Tapping to Alandur	Ullgaram	2000	3000 M	1000 M	0.289	600	1.021	0.0012	1.24	0.12	1.36	10.00	6.00	4.00	Ends at UGT @ Ullgaram

Transmission Main 4-From Kelambakkam PS to Porur Sump



Year	Qty.recieved from		
	Prop.Sump at Kovalam Jn	Prop.Sump at Perur DSP	Total
2035	70.46	400.00	470.46
2050	3.72	353.00	356.72

Group sump-TM4-1		2035	2050
ST-15	Ottiyambakkam	0.51	1.02
ST-16	Perumbakkam	5.81	11.88
ST-19	Sithalapakkam	3.20	6.53
ST-2	Arasankalani	0.25	0.53
ST-6	Kovilancheri	0.22	0.47
ST-13	Mulacheri	0.02	0.07
ST-8	Maduraipakkam	0.19	0.39
		10.20	**20.89**

Group sump-TM4-2		2035	2050
ST-22	Vengaivasal	3.22	6.6
ST-5	Koilambakkam	6.46	13.21
ST-7	Kulathur	1.48	3.03
OCT7	Sembakkam	14.10	25.78
OCM4	Pallavaram	28.22	49.51
ST-21	Tirusulam	3.32	6.80
ST-11	Moovarasampettai	2.28	4.67
ST-17	Perundavakkam	0.00	0.00
ST-14	Nanmangalam	4.38	8.96
ST-9	Medavakkam	3.50	7.17
CM8	Alandur	9.47	12.79
	TOTAL	**76.43**	**138.52**

Group sump-TM4-3		2035	2050
OCT3	Madambakkam	20.36	40.01
ST-1	Agaramthen	0.73	1.57
	TOTAL	**21.09**	**41.58**

Group sump-TM4-4		2035	2050
ST-4	Kasbapuram	0.46	0.98
ST-23	Vengapakkam	0.48	1.03
	TOTAL	**0.94**	**2.01**

Group sump-TM4-5			2035	2050
ST-10	Meppedu		0.59	1.27
ST-20	Thiruvancheri			
KA-2	Kolapakkam		1.43	2.60
KA-4	Nedungundram		2.58	4.69
KA-5	Puthur		0.48	0.88
OCT5	Peerkankaranai	Part	0.75	1.22
KA-1	Kilambakkam		0.92	1.69
KA-6	Vandalur	Part	0.76	1.37
	TOTAL		**7.51**	**13.72**

HEAD WORKS:	NEMMELI DSP	
Stage	Intermediate	Ultimate
Hours of pumping	23	23
GL	4.00m	4.00m
FVL/LWL	1.00m	1.00m
MWL of Sump @ End Beneficiary	18.00m	18.00m
Residual Head	3.00m	3.00m
HGL. Reqd @ End	21.00m	21.00m
Static Head	20.00m	20.00m
Total Losses	28.56m	37.41m
HGL @ Ch.:0 m	49.56m	58.41m

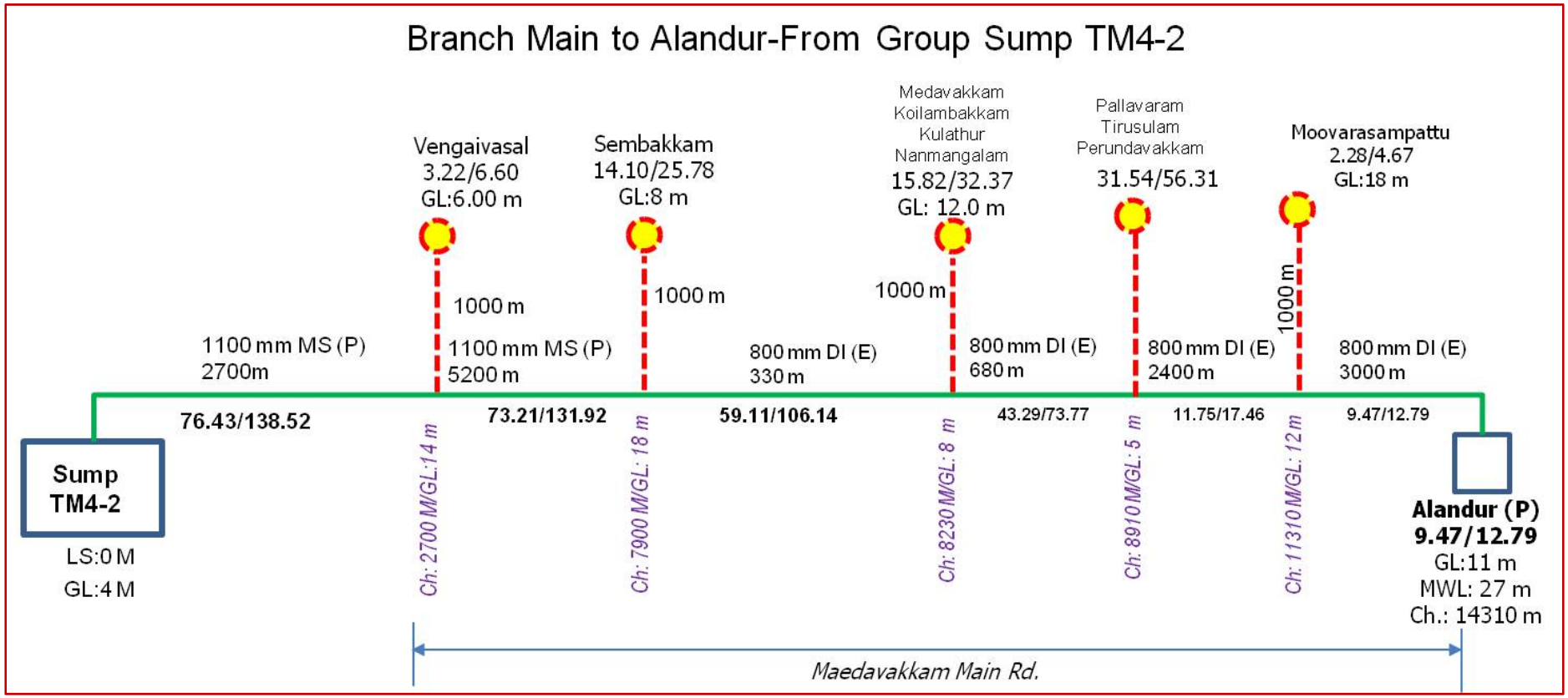
Sl No	ZONE CODE	Location	Projected Demand in MLD for 2035	Flow adopting 23 hours pumping (m3/sec)	Projected Demand in MLD for 2050	Flow adopting 23 hours pumping (m3/sec)	Receiving Sump
1	2	3	4	5	6	7	8
		From Kelambakkam BS					
1		St. Thomas Mount Union VPs 7Nos	10.20	0.123	20.89	0.252	Group sump-TM4-1
2		St. Thomas Mount Union VPs 8Nos	76.4335	0.923	138.5195	1.673	Group sump-TM4-2
	OCT7	Sembakkam					
	OCM4	Pallavaram					
	CM8	Alandur					
3	OCT3	Madambakkam	21.09	0.255	41.58	0.502	Group sump-TM4-3
		St. Thomas Mount Union VPs 1Nos					
4		St. Thomas Mount Union VPs 2Nos	0.94	0.011	2.01	0.024	Group sump-TM4-4
5		St. Thomas Mount Union VPs 2Nos	7.51	0.091	13.72	0.166	Group sump-TM4-5
		Kattankulathur Union VPs 5Nos					
	OCT5	Peerkankaranai (part)					
6	OCT1	Chitlapakkam	6.70	0.081	11.66	0.141	Sump-TM4-Chitla
7	OCM7	Tambaram 2-parts)	11.84	0.143	22.69	0.274	Group sump-TM4-6
8		PORUR-WDS*	82.93	1.002	87.42	1.056	
		Total	217.64	2.629	338.49	4.09	
		PORUR-WDS					
9	13	NANDANAM	18.04	0.22	19.49	0.24	
10	14	MYLAPORE	37.11	0.45	38.45	0.46	
11	16	SOUTHERN HEAD WORKS	27.78	0.34	29.48	0.36	
		Total	82.93	1.00	87.42	1.06	

TM4-DESIGN OF TRANSMISSION MAIN															
INTERMEDIATE STAGE-2035															
Sl. No	From	To	Chainage (m)-From	Chainage (m)-To	Length in M	Flow in m^3/sec	Dia of Pipe in mm	Velocity m/sec	Hfm/m	F.L	OL	TL	HGL	GL	RH
1	2		4	5	6	7	8	9	10	11	12	13	14	15	16
		Kelambakkam BS		0	0								49.56	4.00	45.56
1	Kelambakkam BS	St. Thomas Mount Union VPs 7 Nos	0	21000	21000	2.629	2000	0.837	0.0002	4.33	0.43	4.76	44.80	18.00	26.80
2	St. Thomas Mount Union VPs 7 Nos	St. Thomas Mount Union VPs 8 Nos+Sembakkam+Pallavaram+Alandur	21000	22200	1200	2.505	2000	0.797	0.0002	0.23	0.02	0.25	44.55	10.00	34.55
3	St. Thomas Mount Union VPs 8 Nos+Sembakkam+Pallavaram+Alandur	St. Thomas Mount Union VPs 1 No+ Madambakkam	22200	24200	2000	1.582	1800	0.622	0.0001	0.27	0.03	0.30	44.25	16.00	28.25
4	St. Thomas Mount Union VPs 1 No+ Madambakkam	St. Thomas Mount Union VPs 4 No+ Kattankulathur Union-5 nos +Peerkankartanai (part)	24200	25700	1500	1.328	1800	0.522	0.0001	0.15	0.02	0.17	44.08	19.00	25.08
5	St. Thomas Mount Union VPs 4 No+ Kattankulathur Union-5 nos +Peerkankartanai (part)	Chitlapakkam	25700	30150	4450	1.226	1800	0.482	0.0001	0.38	0.04	0.42	43.66	27.00	16.66
6	Chatlapakkam	Tambaram (2 parts)	30150	30600	450	1.145	1800	0.450	0.0001	0.03	0.00	0.03	43.63	30.00	13.63
7	Tambaram (2 parts)	PORUR-WDS*	30600	51000	20400	1.002	1000	1.275	0.0010	20.57	2.06	22.63	21.00	18.00	3.00
										25.96	2.60	28.56			

TM4-DESIGN OF TRANSMISSION MAIN															
ULTIMATE STAGE-2050															
Sl. No	From	To	Chainage (m)-From	Chainage (m)-To	Length in M	Flow in m^3/sec	Dia of Pipe in mm	Velocity m/sec	Hfm/m	F.L	OL	TL	HGL	GL	RH
1	2		4	5	6	7	8	9	10	11	12	13	14	15	16
		Kelambakkam BS		0	0								58.41	4.00	54.41
1	Kelambakkam BS	St. Thomas Mount Union VPs 7 Nos	0	21000	21000	4.088	2000	1.301	0.0005	9.63	0.96	10.59	47.82	18.00	29.82
2	St. Thomas Mount Union VPs 7 Nos	St. Thomas Mount Union VPs 8 Nos+Sembakkam+Pallavaram+Alandur	21000	22200	1200	3.836	2000	1.221	0.0004	0.49	0.05	0.54	47.28	10.00	37.28
3	St. Thomas Mount Union VPs 8 Nos+Sembakkam+Pallavaram+Alandur	St. Thomas Mount Union VPs 1 No+ Madambakkam	22200	24200	2000	2.163	1800	0.850	0.0002	0.48	0.05	0.53	46.75	16.00	30.75
4	St. Thomas Mount Union VPs 1 No+ Madambakkam	St. Thomas Mount Union VPs 4 No+ Kattankulathur Union-5 nos +Peerkankartanai (part)	24200	25700	1500	1.661	1800	0.653	0.0001	0.22	0.02	0.24	46.51	19.00	27.51
5	St. Thomas Mount Union VPs 4 No+ Kattankulathur Union-5 nos +Peerkankartanai (part)	Chitlapakkam	25700	30150	4450	1.471	1800	0.578	0.0001	0.53	0.05	0.58	45.93	27.00	18.93
6	Chitlapakkam	Tambaram (2 parts)	30150	30600	450	1.330	1800	0.523	0.0001	0.04	0.00	0.04	45.89	30.00	15.89
7	Tambaram (2 parts)	PORUR-WDS*	30600	51000	20400	1.056	1000	1.344	0.0011	22.63	2.26	24.89	21.00	18.00	3.00

TM4-DESIGN OF BRANCH MAINS																
INTERMEDIATE STAGE-2035																
Sl.No	From	To	Chainage (m)-From	Chainage (m)-To	Length in M	Flow in m^3/sec	Dia of Pipe in mm	Velocity m/sec	Hfm/m	F.L	OL	TL	HGL	GL	RH	RH
1	2	3	4	5	6	7	8		9	10	11	12	13	14	15	16
1	BR MAIN TO Group sump-TM4-1															
	TM4-TAPPING PT AT LS 21000									HGL Available at Tapping point				44.80		
	LS21000m of TM4	Group sump-TM4-1	0	1000	1000	0.123	450	Prop.	0.775	0.0011	1.06	0.11	1.17	43.63	6.00	37.63
2	BR MAIN TO Group sump-TM4-2															
	TM4-TAPPING PT AT LS 22200									HGL Available at Tapping point				44.55		
	LS22200m of TM4	Group sump-TM4-2	0	1000	1000	0.923	1100	Prop.	0.971	0.0005	0.55	0.06	0.61	43.94	8.00	35.94
3	BR MAIN TO Group sump-TM4-3															
	TM4-TAPPING PT AT LS 24200			0						HGL Available at Tapping point				44.25		
	LS24200m of TM4	Group sump-TM4-3	0	1000	1000	0.255	700	Prop.	0.662	0.0005	0.47	0.05	0.52	43.73	14.00	29.73
4	BR MAIN TO Group sump-TM4-5															
	TM4-TAPPING PT AT LS 25700									HGL Available at Tapping point				44.08		
	LS25700m of TM4	Group sump-TM4-5	0	1000	1000	0.011	150	Prop.	0.645	0.0028	2.81	0.28	3.09	40.99	19.00	21.99
5	BR MAIN TO Group sump-TM4-4															
	TM4-TAPPING PT AT LS 25700									HGL Available at Tapping point				44.08		
	LS25700m of TM4	Group sump-TM4-4	0	1000	1000	0.091	350	Prop.	0.942	0.0020	2.03	0.20	2.23	41.85	22.00	19.85
6	BR MAIN TO Chitlapakkam															
	TM4-TAPPING PT AT LS 30150									HGL Available at Tapping point				43.63		
	LS30150m of TM4	Chitlapakkam	0	1000	1000	0.081	350	Prop.	0.841	0.0017	1.65	0.17	1.82	41.81	22.00	19.81
7	BR MAIN TO Group sump-TM4-6															
	TM4-TAPPING PT AT LS 30600									HGL Available at Tapping point				43.63		
	LS30600m of TM4	Group sump-TM4-6	0	1000	1000	0.143	450	Prop.	0.899	0.0014	1.39	0.14	1.53	42.10	30.00	12.10

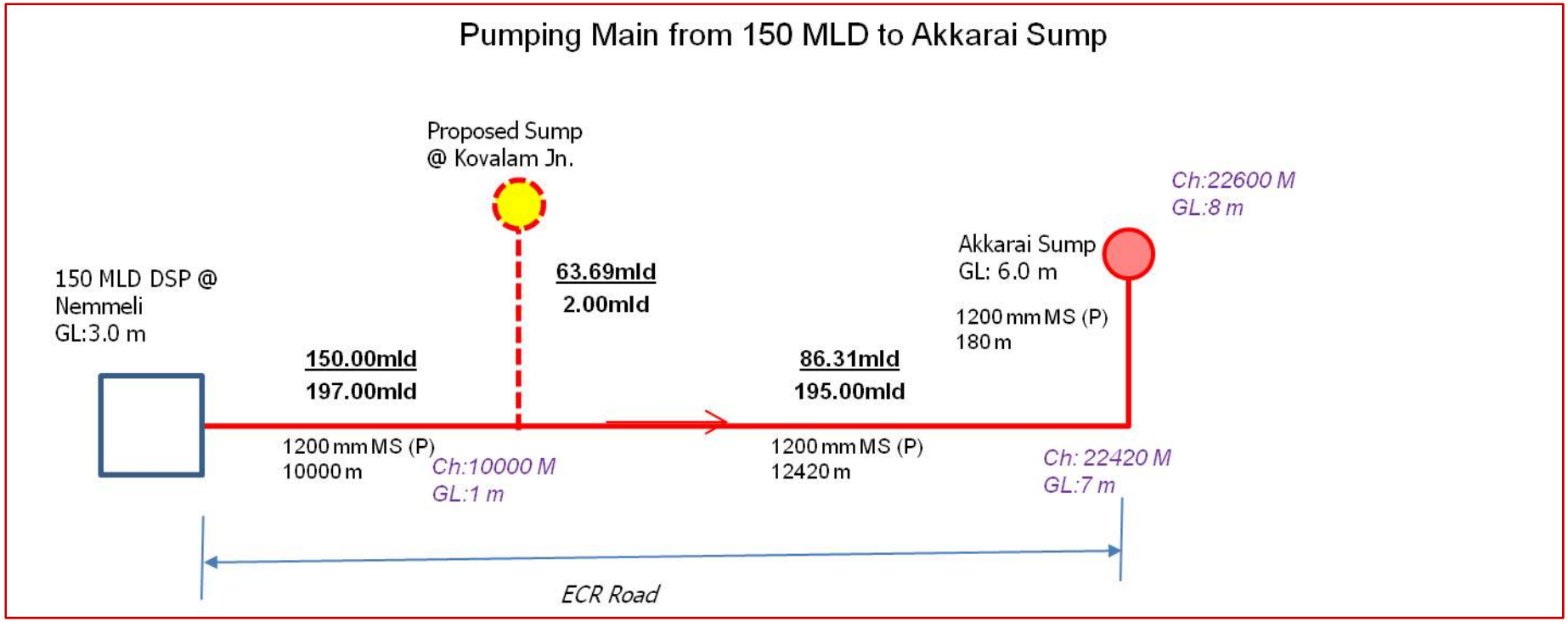
TM4-DESIGN OF BRANCH MAINS																	
ULTIMATE STAGE-2050																	
Sl.No	From	To	Chainage (m)-From	Chainage (m)-To	Length in M	Flow in m^3/sec	Dia of Pipe in mm	Velocity m/sec	Hfm/m	F.L	OL	TL	HGL	GL	RH	RH
1	2	3	4	5	6	7	8		9	10	11	12	13	14	15	16
1	BR MAIN TO St. Thomas Mount Union VPs 7 Nos															
	TM4-TAPPING PT AT LS 21000									HGL Available at Tapping point				47.82		
	LS21000m of TM4	Group sump-TM4-1	0	1000	1000	0.252	450	Prop.	1.586	0.0039	3.87	0.39	4.26	43.56	6.00	37.56
2	BR MAIN TO St. Thomas Mount Union VPs 8 Nos + Sembakkam + Pallavaram + Alandur															
	TM4-TAPPING PT AT LS 22200									HGL Available at Tapping point				47.28		
	LS22200m of TM4	Group sump-TM4-2	0	1000	1000	1.673	1100	Prop.	1.760	0.0016	1.61	0.16	1.77	45.51	8.00	37.51
3	BR MAIN TO St. Thomas Mount Union VPs 1 No+ Madambakkam															
	TM4-TAPPING PT AT LS 24200			0						HGL Available at Tapping point				46.75		
	LS24200m of TM4	Group sump-TM4-3	0	1000	1000	0.502	700	Prop.	1.305	0.0016	1.61	0.16	1.77	44.98	14.00	30.98
4	BR MAIN TO St. Thomas Mount Union VPs 2Nos															
	TM4-TAPPING PT AT LS 25700									HGL Available at Tapping point				46.51		
	LS25700m of TM4	Group sump-TM4-5	0	1000	1000	0.024	150	Prop.	1.375	0.0110	11.05	1.11	12.16	34.35	19.00	15.35
5	BR MAIN TO St. Thomas Mount Union VPs 2Nos,Kattankulathur Union VPs 5Nos,Peerkankaranai (part)															
	TM4-TAPPING PT AT LS 25700									HGL Available at Tapping point				46.51		
	LS25700m of TM4	Group sump-TM4-4	0	1000	1000	0.166	350	Prop.	1.722	0.0061	6.06	0.61	6.67	39.84	22.00	17.84
6	BR MAIN TO Chitlapakkam															
	TM4-TAPPING PT AT LS 30150									HGL Available at Tapping point				45.93		
	LS30150m of TM4	Chitlapakkam	0	1000	1000	0.141	350	Prop.	1.463	0.0045	4.51	0.45	4.96	40.97	22.00	18.97
7	BR MAIN TO Tambaram (2 parts)															
	TM4-TAPPING PT AT LS 30600									HGL Available at Tapping point				45.89		
	LS30600m of TM4	Group sump-TM4-6	0	1000	1000	0.274	450	Prop.	1.723	0.0045	4.49	0.45	4.94	40.95	30.00	10.95


Branch Main to Alandur-From Group Sump TM4-2
Vengaivasal
3.22/6.60
GL:6.00 m
Sembakkam
14.10/25.78
GL:8 m
Medavakkam
Koilambakkam
Kulathur
Nanmangalam
15.82/32.37
GL: 12.0 m
Pallavaram
Tirusulam
Perundavakkam
31.54/56.31
Moovarasampattu
2.28/4.67
GL:18 m
1000 m
1000 m
1000 m
1000 m
1100 mm MS (P)
2700m
1100 mm MS (P)
5200 m
800 mm DI (E)
330 m
800 mm DI (E)
680 m
800 mm DI (E)
2400 m
800 mm DI (E)
3000 m
76.43/138.52
73.21/131.92
59.11/106.14
43.29/73.77
11.75/17.46
9.47/12.79
Sump
TM4-2
LS:0 M
GL:4 M
Ch: 2700 M/GL:14 m
Ch: 7900 M/GL: 18 m
Ch: 8230 M/GL: 8 m
Ch: 8910 M/GL: 5 m
Ch: 11310 M/GL: 12 m
Alandur (P)
9.47/12.79
GL:11 m
MWL: 27 m
Ch.: 14310 m
Maedavakkam Main Rd.

DESIGN OF BRANCH MAIN TO ALANDUR		
HEAD WORKS:	**NEMMELI DSP**	
Stage	Intermediate	Ultimate
Hours of pumping	23	23
GL	4.00m	4.00m
FVL/LWL	1.00m	1.00m
MWL of Sump @ End Beneficiary	27.00m	27.00m
Residual Head	3.00m	3.00m
HGL. Reqd @ End	30.00m	30.00m
Static Head	29.00m	29.00m
Total Losses	6.24m	17.49m
HGL @ Ch.:0 m	36.24m	47.49m

	Location	Projected Demand in MLD for 2035	Flow adopting 23 hours pumping (m3/sec)	Projected Demand in MLD for 2050	Flow adopting 23 hours pumping (m3/sec)
ST-22	Vengaivasal	3.22	0.039	6.6	0.080
OCT7	Sembakkam	14.10	0.170	25.78	0.311
ST-9	Medavakkam	3.50	0.042	7.17	0.087
ST-5	Koilambakkam	6.46	0.078	13.21	0.160
ST-7	Kulathur	1.48	0.018	3.03	0.037
ST-14	Nanmangalam	4.38	0.053	8.96	0.108
OCM4	Pallavaram	28.22	0.341	49.51	0.598
ST-21	Tirusulam	3.32	0.040	6.80	0.082
ST-17	Perundavakkam				
ST-11	Moovarasampettai	2.28	0.028	4.67	0.056
CM8	Alandur (Part)	9.47	0.114	12.79	0.155
0	**TOTAL**	**76.43**	**0.92**	**138.52**	**1.67**

Sl. No	From	To	Chainage (m)-From	Chainage (m)-To	Length in M	Flow in m^3/sec	Dia of Pipe in mm	Type	Exist./Prop.	Velocity m/sec	Hfm/m	F.L	OL	TL	HGL	GL	RH
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Intermediate-2035																	
		GROUP SUMP TM4-2		0	0										36.24	4	32.24
1	GROUP SUMP TM4-2	Vengaivasal	0	2700	2700	0.923	1100	DI	Prop.	0.971	0.0006	1.49	0.15	1.64	34.60	14	20.60
2	Vengaivasal	Sembakkam	2700	7900	5200	0.884	1100	DI	Prop.	0.931	0.0005	2.65	0.27	2.92	31.68	18	13.68
4	Sembakkam	Medavakkam,Koilambakkam,Kulathur,Nanmangalam	7900	8230	330	0.714	800	DI	Exist.	1.420	0.0016	0.53	0.05	0.58	31.10	8	23.10
5	Medavakkam,Koilambakkam,Kulathur,Nanmangalam	Pallavaram,Tirusulam,Perundavakkam	8230	8910	680	0.523	800	DI	Exist.	1.040	0.0009	0.62	0.06	0.68	30.42	5	25.42
6	Pallavaram,Tirusulam,Perundavakkam	Moovarasampettai	8910	11310	2400	0.142	800	DI	Exist.	0.282	0.0001	0.21	0.02	0.23	30.19	12	18.19
7	Moovarasampettai	Alandur (Part)	11310	14310	3000	0.114	800	DI	Exist.	0.228	0.0001	0.17	0.02	0.19	30.00	11	19.00
												5.67	0.57	6.24			
Ultimate-2050																	
Sl. No	From	To	Chainage (m)-From	Chainage (m)-To	Length in M	Flow in m^3/sec	Dia of Pipe in mm	Type	Exist./Prop.	Velocity m/sec	Hfm/m	F.L	OL	TL	HGL	GL	RH
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
		GROUP SUMP TM4-2													47.49	4	43.49
1	GROUP SUMP TM4-2	Vengaivasal Jn.	0	2700 M	2700 M	1.673	1100	DI	Prop.	1.760	0.0016	4.36	0.44	4.80	42.69	14	28.69
2	Vengaivasal Jn.	Sembakkam Jn.	2700	7900 M	5200 M	1.593	1100	DI	Prop.	1.676	0.0015	7.68	0.77	8.45	34.24	18	16.24
4	Sembakkam Jn.	Medavakkam,Koilambakkam,Kulathur,Nanmangalam	7900	8230 M	330 M	1.282	800	DI	Exist.	2.550	0.0046	1.52	0.15	1.67	32.57	8	24.57
5	Medavakkam,Koilambakkam,Kulathur,Nanmangalam	Pallavaram,Tirusulam,Perundavakkam	8230	8910 M	680 M	0.891	800	DI	Exist.	1.772	0.0024	1.62	0.16	1.78	30.79	5	25.79
6	Pallavaram,Tirusulam,Perundavakkam	Moovarasampettai	8910	11310 M	2400 M	0.211	800	DI	Exist.	0.420	0.0002	0.42	0.04	0.46	30.33	12	18.33
7	Moovarasampettai	Alandur (Part)	11310	14310 M	3000 M	0.155	800	DI	Exist.	0.307	0.0001	0.30	0.03	0.33	30.00	11	19.00
												15.90	1.59	17.49			

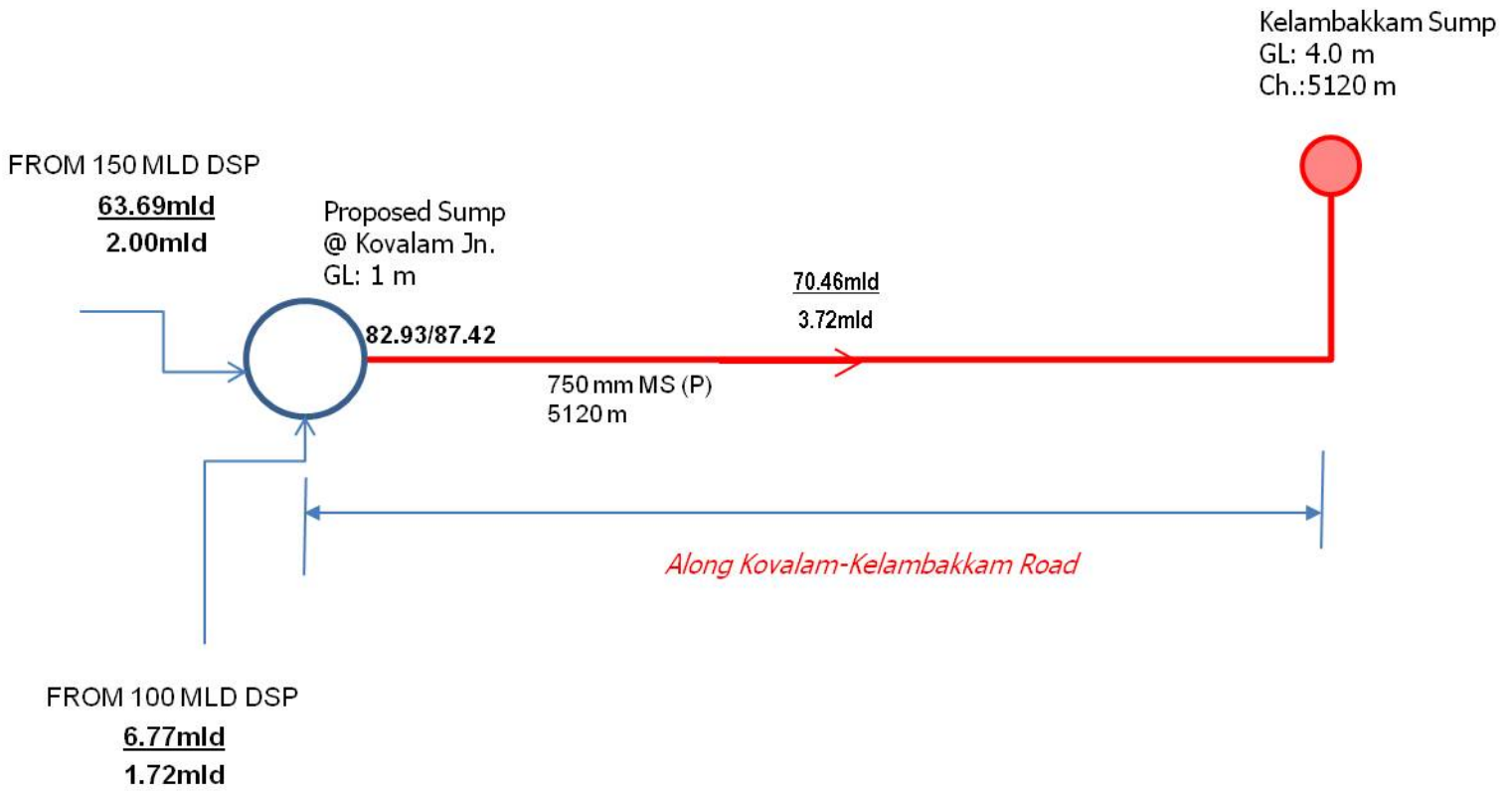

Pumping Main from 150 MLD to Akkarai Sump
Proposed Sump
@ Kovalam Jn.
Ch:22600 M
GL:8 m
Akkarai Sump
GL: 6.0 m
150 MLD DSP @
Nemmeli
GL:3.0 m
63.69mld
2.00mld
1200 mm MS (P)
180 m
150.00mld
197.00mld
86.31mld
195.00mld
1200 mm MS (P)
10000 m
Ch:10000 M
GL:1 m
1200 mm MS (P)
12420 m
Ch: 22420 M
GL:7 m
ECR Road

HEAD WORKS:	NEMMELI DSP	
Stage	Intermediate	Ultimate
Hours of pumping	23	23
GL	3.00m	3.00m
FVL/LWL	1.00m	1.00m
MWL of Sump @ End Beneficiary	8.00m	8.00m
Residual Head	3.00m	3.00m
HGL. Reqd @ End	11.00m	11.00m
Static Head	10.00m	10.00m
Total Losses	19.74m	49.41m
HGL @ Ch.:0 m	30.74m	60.41m

Sl No	Location	Projected Demand in MLD for 2035	Flow adopting 23 hours pumping (m3/sec)	Projected Demand in MLD for 2050	Flow adopting 23 hours pumping (m3/sec)
1	2	3	4	5	6
	Nemmeli 150 mld DSP				
1	To sump at Kovalam	63.69	0.769	2.00	0.024
2	Ends at Akkarai Sump	86.31	1.042	195.00	2.355
		150.00	1.812	197.00	2.379

Sl.No	From	To	Chainage (m) From	Chainage (m) To	Length in M	Flow in m^3/sec	Dia of Pipe in mm	Type	Exist./Prop.	Velocity m/sec	Hfm/m	F.L	OL	TL	HGL	GL	RH	Remarks
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Intermediate - 2035																		
		NEMMELI 150 MLD DSP			0										30.74	3.00	27.74	Sump at Nemmeli
1	NEMMELI 150 MLD DSP	Kovalam Jn.	0	10000	10000m	1.812	1200	MS	Prop.	1.602	0.0012	12.26	1.23	13.49	17.25	1.00	16.25	Br.to Kovalam Sump
1	Kovalam Jn.	AKKARAI SUMP	10000	22600m	12600m	1.042	1200	MS	Prop.	0.922	0.0005	5.68	0.57	6.25	11.00	8.00	3.00	Ends at Akkarai
												17.94	1.80	19.74				
Ultimate-2050																		
		NEMMELI 150 MLD DSP			0										60.41	3.00	57.41	Sump at Nemmeli
1	NEMMELI 150 MLD DSP	Kovalam Jn.	0	10000	10000m	2.379	1200	MS	Prop.	2.104	0.0020	20.08	2.01	22.09	38.32	1.00	37.32	Br.to Kovalam Sump
1	Kovalam Jn.	AKKARAI SUMP	10000	22600m	12600m	2.355	1200	MS	Prop.	2.082	0.0020	24.84	2.48	27.32	11.00	8.00	3.00	Ends at Akkarai
												44.92	4.49	49.41				

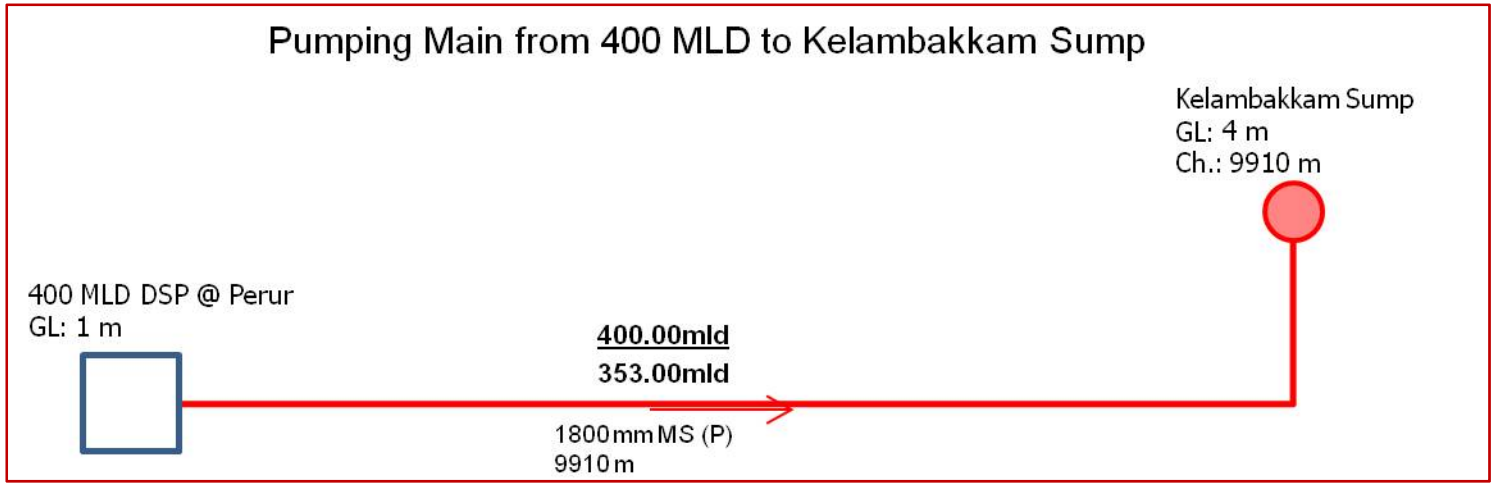
Pumping Main from proposed sump at Kovalam Jn. to Kelambakkam Sump



HEAD WORKS:	NEMMELI DSP-150 mld DSP	
Stage	Intermediate	Ultimate
Hours of pumping	23	23
GL	1.00m	1.00m
FVL/LWL	1.00m	1.00m
MWL of Sump @ End Beneficiary	4.00m	4.00m
Residual Head	3.00m	3.00m
HGL. Reqd @ End	7.00m	7.00m
Static Head	6.00m	6.00m
Total Losses	16.87m	0.08m
HGL @ Ch.:0 m	23.87m	7.08m

Sl No	Location	Projected Demand in MLD for 2035	Flow adopting 23 hours pumping (m3/sec)	Projected Demand in MLD for 2050	Flow adopting 23 hours pumping (m3/sec)
1	2	3	4	5	6
	Sump at Kovalm Jn				
1	To sump at Kelambakkam	70.46	0.851	3.72	0.045
		70.46	0.851	3.72	0.045

Sl.No	From	To	Chainage (m) From	Chainage (m) To	Length in M	Flow in m^3/sec	Dia of Pipe in mm	Type	Exist./Prop.	Velocity m/sec	Hfm/m	F.L	OL	TL	HGL	GL	RH	Remarks
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
	Intermediate-2035																	
		Sump at Kovalm Jn			0										23.87	1.00	22.87	Sump at Kovalam Jn
1	Sump at Kovalm Jn	Sump at Kelambakkam	0	5120	5120m	0.851	750	MS	Prop.	1.926	0.0030	15.34	1.53	16.87	7.00	4.00	3.00	Ends at Kelemabakkam Sump
												15.34	1.53	16.87				
	Ultimate-2050																	
		Sump at Kovalm Jn			0										7.08	1.00	6.08	Sump at Kovalam Jn
1	Sump at Kovalm Jn	Sump at Kelambakkam	0	5120	5120m	0.045	750	MS	Prop.	0.102	0.00001	0.07	0.01	0.08	7.00	4.00	3.00	Ends at Kelemabakkam Sump
												0.07	0.01	0.08				



HEAD WORKS:	Perur DSP-400 mld	
Stage	Intermediate	Ultimate
Hours of pumping	23	23
GL	1.00m	1.00m
FVL/LWL	1.00m	1.00m
MWL of Sump @ End Beneficiary	4.00m	4.00m
Residual Head	3.00m	3.00m
HGL. Reqd @ End	7.00m	7.00m
Static Head	6.00m	6.00m
Total Losses	11.22m	8.95m
HGL @ Ch.:0 m	18.22m	15.95m

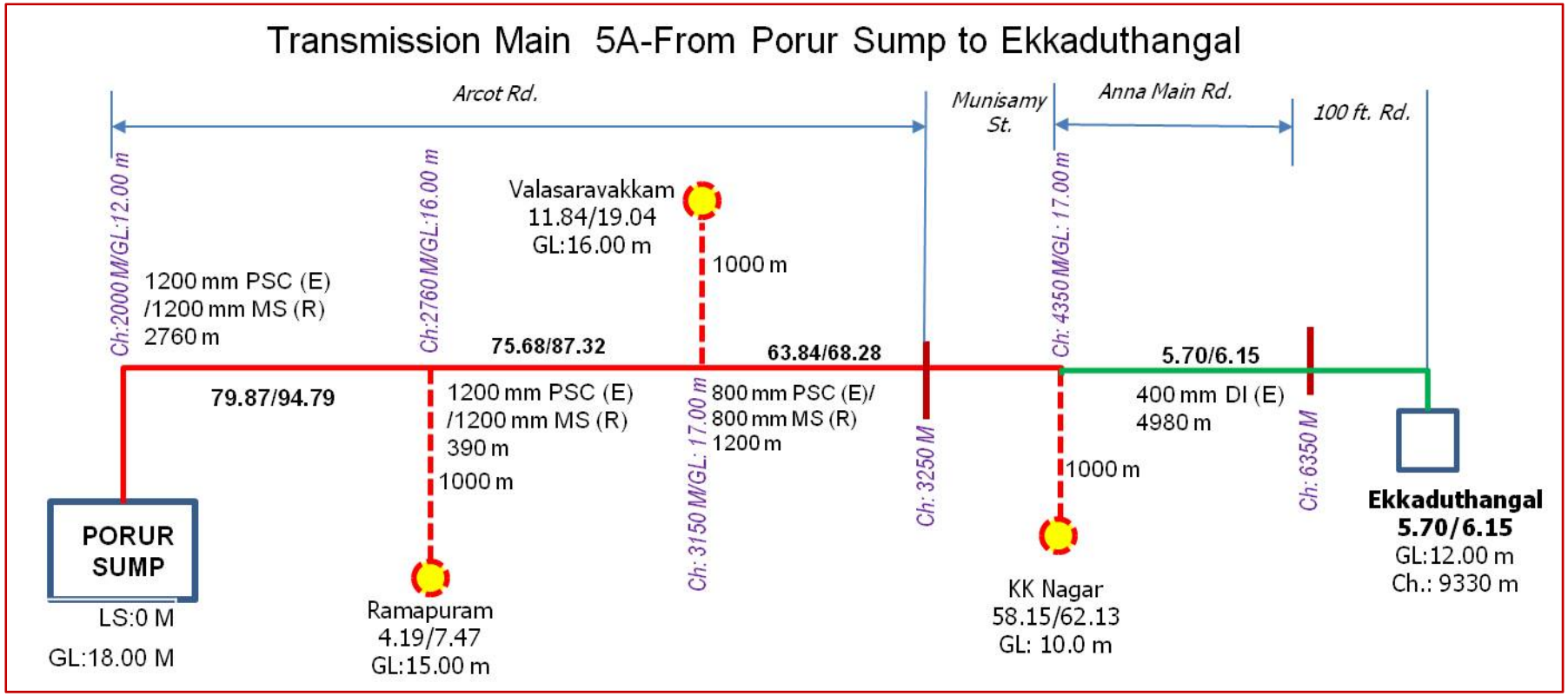
Sl No	Location	Projected Demand in MLD for 2035	Flow adopting 23 hours pumping (m3/sec)	Projected Demand in MLD for 2050	Flow adopting 23 hours pumping (m3/sec)
1	2	3	4	5	6
	400 mld DSP at Perur				
1	To sump at Kelambakkam	400.00	4.831	353.00	4.263
		400.00	4.831	353.00	4.263

Sl.No	From	To	Chainage (m) From	Chainage (m) To	Length in M	Flow in m^3/sec	Dia of Pipe in mm	Type	Exist./ Prop.	Velocity m/sec	Hfm/m	F.L	OL	TL	HGL	GL	RH	Remarks
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
	Intermediate-2035																	
		400 mld DSP at Perur			0										18.22	1.00	17.22	400 mld DSP at Perur
1	400 mld DSP at Perur	Sump at Kelambakkam	0	9910	9910m	4.831	1800	MS	Prop.	1.898	0.0010	10.20	1.02	11.22	7.00	4.00	3.00	Ends at Kelemabakkam Sump
												10.20	1.02	11.22				
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
	Ultimate-2050																	
		400 mld DSP at Perur			0										15.95	1.00	14.95	Sump at Kovalam Jn
1	400 mld DSP at Perur	Sump at Kelambakkam	0	9910	9910m	4.263	1800	MS	Prop.	1.675	0.0008	8.14	0.81	8.95	7.00	4.00	3.00	Ends at Kelemabakkam Sump
												8.14	0.81	8.95				

VEERANAM (PORUR HW) SYSTEM

VEERANAM WTP (PORUR HW)								
	ZONE NOS.	2020	2025	2030	2035	2040	2045	2050
CORE CITY	5	54.23	55.59	56.91	58.15	59.57	60.92	62.13
	6	27.30	28.44	29.06	29.81	30.83	31.75	32.45
	6A							
	7	5.27	5.43	5.57	5.70	5.86	6.02	6.15
Sub Total		86.80	89.46	91.54	93.65	96.26	98.68	100.73
ADDED AREA	CC7	25.13	26.93	40.70	44.55	48.82	63.90	73.41
Sub Total		25.13	26.93	40.70	44.55	48.82	63.90	73.41
REST OF CMA		0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sub Total		0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL		112.00	116.00	132.00	138.00	145.00	163.00	174.00

	ZONE NO.	NAME		2020	2025	2030	2035	2040	2045	2050	
Areas covered under Veeranam Supply											
	5	KK NAGAR (OLD & New)		54.23	55.59	56.91	58.15	59.57	60.92	62.13	TM5A
	6	VELACHERY		27.30	28.44	29.06	29.81	30.83	31.75	32.45	TM5B
	7	EKKADUTHANGAL		5.27	5.43	5.57	5.70	5.86	6.02	6.15	TM5B
CC7	CT3	Porur		5.79	6.34	8.88	9.54	10.25	12.43	13.17	TM5A
CC7	CV13	Ramapuram		4.87	4.97	7.79	8.37	9.01	12.42	14.94	TM5A & 5B
CC7	CV15	Manapakkam		1.73	1.8	3.38	3.87	4.4	6.35	7.91	TM5B
CC7	CT4	Nandambakkam		1.66	1.96	2.88	3.23	3.61	4.51	4.9	TM5B
CC7	CT5	Meenambakkam		0.52	0.55	0.79	0.85	0.93	1.16	1.24	TM5B
CC7	CV14	Mugalivakkam		2.65	2.75	5.12	6.06	7.16	10.82	14.19	TM5B
CC7	CM8	Alandur	Part	7.912	8.564	11.864	12.628	13.46	16.208	17.056	TM5B
				111.93	116.40	132.25	138.20	145.08	162.58	174.13	
Areas covered under Chembarambakkam system through PORUR HW (Reqd. Qty. will be drawn from Chembarambakkam WTP)											
CHEMBARAMBAKKAM SYSTEM				2020	2025	2030	2035	2040	2045	2050	
	CM7	Valasarawakkam		6.23	7.13	10.47	11.84	13.39	17.09	19.04	TM5A
Areas covered under Nemmeli system through PORUR HW (Reqd. Qty. will be drawn from Nemmeli DSP source through TM4)											
NEMMELI SYSTEM											
	13	NANDANAM		16.665	17.237	17.644	18.04	18.612	19.052	19.492	TM5B
	14	MYLAPORE		35.618	36.608	36.85	37.114	37.774	38.379	38.445	TM5B
	16	SOUTHERN HEAD WORKS		26.059	26.609	27.258	27.775	28.38	28.897	29.48	TM5B


Transmission Main 5A-From Porur Sump to Ekkaduthangal
Arcot Rd.
Munisamy St.
Anna Main Rd.
100 ft. Rd.
Ch:2000 M/GL:12.00 m
Ch:2760 M/GL:16.00 m
Ch: 3150 M/GL: 17.00 m
Ch: 3250 M
Ch: 4350 M/GL: 17.00 m
Ch: 6350 M
1200 mm PSC (E) /1200 mm MS (R) 2760 m
Valasaravakkam 11.84/19.04 GL:16.00 m
1000 m
75.68/87.32
63.84/68.28
79.87/94.79
1200 mm PSC (E) /1200 mm MS (R) 390 m
1000 m
800 mm PSC (E)/ 800 mm MS (R) 1200 m
5.70/6.15
400 mm DI (E) 4980 m
1000 m
PORUR SUMP
LS:0 M
GL:18.00 M
Ramapuram 4.19/7.47 GL:15.00 m
KK Nagar 58.15/62.13 GL: 10.0 m
Ekkaduthangal 5.70/6.15 GL:12.00 m Ch.: 9330 m

HEAD WORKS:	VEERANAM WTP-PORUS WDS	
Stage	Intermediate	Ultimate
Hours of pumping	23	23
GL	18.00m	18.00m
FVL/LWL	15.00m	15.00m
MWL of Sump @ End Beneficiary	12.00m	12.00m
Residual Head	3.00m	3.00m
HGL. Reqd @ End	15.00m	15.00m
Static Head	0.00m	0.00m
Total Losses	7.31m	8.65m
HGL @ Ch.:0 m	22.31m	23.65m

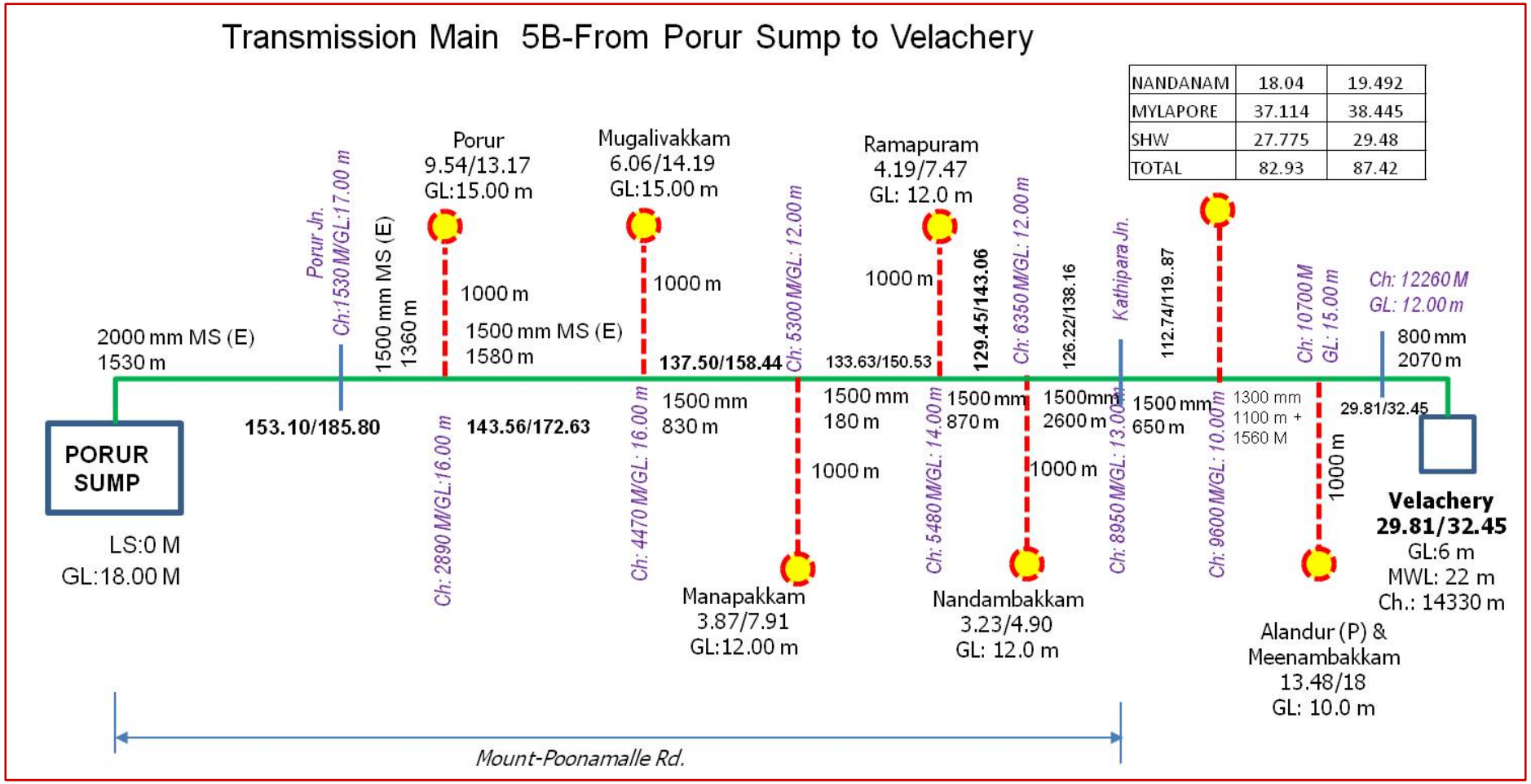
Sl No	ZONE CODE	Location	Projected Demand in MLD for 2035	Flow adopting 23 hours pumping (m3/sec)	Projected Demand in MLD for 2050	Flow adopting 23 hours pumping (m3/sec)
1	2	3	4	5	6	7
	PORUR WDS					
1	CV13	Ramapuram	4.19	0.051	7.47	0.090
2	CM7	Valasarawakkam	11.84	0.143	19.04	0.230
3	5	KK NAGAR (OLD & New)	58.15	0.702	62.13	0.750
4	7	EKKADUTHANGAL	5.70	0.069	6.15	0.074
		Total	79.87	0.96	94.79	1.14

TM 5A-DESIGN OF TRANSMISSION MAIN															
INTERMEDIATE-2035															
Sl.No	From	To	Chainage (m)-From	Chainage (m)-To	Length in M	Flow in m^3/sec	Dia of Pipe in mm	Velocity m/sec	Hfm/m	F.L	OL	TL	HGL	GL	RH
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
		PORUR WDS		0									22.31	18.00	4.31
1	PORUR WDS	Ramapuram	0	2760	2760m	0.965	1200	0.853	0.0004	1.08	0.11	1.19	21.12	16.00	5.12
2	Ramapuram	Valasarawakkam	2760	3150	390m	0.914	1200	0.808	0.0004	0.14	0.01	0.15	20.97	17.00	3.97
3	Valasarawakkam	KK NAGAR (OLD & New)	3150	4350	1200m	0.771	800	1.534	0.0018	2.20	0.22	2.42	18.55	17.00	1.55
4	KK NAGAR (OLD & New)	EKKADUTHANGAL	4350	9330	4980m	0.069	400	0.547	0.0006	3.23	0.32	3.55	15.00	12.00	3.00
					9330					6.65	0.66	7.31			

TM 5A-DESIGN OF TRANSMISSION MAIN															
ULTIMATE-2050															
Sl.No	From	To	Chainage (m)-From	Chainage (m)-To	Length in M	Flow in m^3/sec	Dia of Pipe in mm	Velocity m/sec	Hfm/m	F.L	OL	TL	HGL	GL	RH
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
		PORUR WDS		0									23.65	18.00	5.65
1	PORUR WDS	Ramapuram	0	2760	2760	1.145	1200	1.012	0.0005	1.47	0.15	1.62	22.03	16.00	6.03
2	Ramapuram	Valasarawakkam	2760	3150	390	1.055	1200	0.932	0.0005	0.18	0.02	0.20	21.83	17.00	4.83
3	Valasarawakkam	KK NAGAR (OLD & New)	3150	4350	1200	0.825	800	1.640	0.0021	2.49	0.25	2.74	19.09	17.00	2.09
4	KK NAGAR (OLD & New)	EKKADUTHANGAL	4350	9330	4980m	0.074	400	0.591	0.0007	3.72	0.37	4.09	15.00	12.00	3.00
					9330					7.86	0.79	8.65			

TM 5A-DESIGN OF BRANCH MAINS																
INTERMEDIATE-2035																
Sl.No	From	To	Chainage (m)-From	Chainage (m)-To	Length in M	Flow in m^3/sec	Dia of Pipe in mm	Velocity m/sec	Hfm/m	F.L	OL	TL	HGL	GL	RH	Remarks
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
1	Br. Main to Ramapuram															
	TM 5A-Tapping @ LS Ch:2760 M								HGL Available at Tapping point				21.12			
	LS: 2760m of TM 5A	Ramapuram	0	1000	1000	0.051	350	0.525	0.0007	0.71	0.07	0.78	20.34	15.00	5.34	Ends at UGT @ Ramapuram
2	Br. Main to Valasarawakkam															
	TM 5A-Tapping @ LS Ch:3150 M								HGL Available at Tapping point				20.97			
	LS: 3150m of TM 5A	Valasarawakkam	0	1000	1000	0.143	900	0.225	0.0000	0.05	0.01	0.06	20.91	16.00	4.91	Ends at UGT @ Valasarawakkam
3	Br. Main to KK NAGAR (OLD & New)															
	TM 5A-Tapping @ LS Ch:4350 M								HGL Available at Tapping point				18.55			
	LS: 4350m of TM 5A	KK NAGAR (OLD & New)	0	1000	1000	0.702	900	1.104	0.0009	0.88	0.09	0.97	17.58	10.00	7.58	Ends at UGT @ KK NAGAR (OLD & New)

TM 5A-DESIGN OF BRANCH MAINS																
ULTIMATE STAGE-2050																
Sl.No	From	To	Chainage (m)-From	Chainage (m)-To	Length in M	Flow in m^3/sec	Dia of Pipe in mm	Velocity m/sec	Hfm/m	F.L	OL	TL	HGL	GL	RH	Remarks
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1	Br. Main to Ramapuram															
	TM 5A-Tapping @ LS Ch:2760 M								HGL Available at Tapping point				22.03			
	LS: 2760m of TM 5A	Ramapuram	0	1000	1000	0.090	350	0.938	0.0020	2.02	0.20	2.22	19.81	15.00	4.81	Ends at UGT @ Ramapuram
2	Br. Main to Valasarawakkam															
	TM 5A-Tapping @ LS Ch:3150 M								HGL Available at Tapping point				21.83			
	LS: 3150m of TM 5A	Valasarawakkam	0	1000	1000	0.230	900	0.362	0.0001	0.12	0.01	0.13	21.70	16.00	5.70	Ends at UGT @ Valasarawakkam
3	Br. Main to KK NAGAR (OLD & New)															
	TM 5A-Tapping @ LS Ch:4350 M								HGL Available at Tapping point				19.09			
	LS: 4350m of TM 5A	KK NAGAR (OLD & New)	0	1000	1000	0.750	900	1.179	0.0010	0.99	0.10	1.09	18.00	10.00	8.00	Ends at UGT @ KK NAGAR (OLD & New)


Transmission Main 5B-From Porur Sump to Velachery
NANDANAM 18.04 19.492
MYLAPORE 37.114 38.445
SHW 27.775 29.48
TOTAL 82.93 87.42
2000 mm MS (E)
1530 m
PORUR SUMP
LS:0 M
GL:18.00 M
Porur Jn.
Ch:1530 M/GL:17.00 m
1500 mm MS (E)
1360 m
153.10/185.80
Porur
9.54/13.17
GL:15.00 m
1000 m
1500 mm MS (E)
1580 m
143.56/172.63
Ch: 2890 M/GL:16.00 m
Mugalivakkam
6.06/14.19
GL:15.00 m
1000 m
137.50/158.44
Ch: 4470 M/GL: 16.00 m
1500 mm
830 m
Ch: 5300 M/GL: 12.00 m
1000 m
Manapakkam
3.87/7.91
GL:12.00 m
Ramapuram
4.19/7.47
GL: 12.0 m
1000 m
133.63/150.53
1500 mm
180 m
Ch: 5480 M/GL: 14.00 m
129.45/143.06
1500 mm
870 m
Ch: 6350 M/GL: 12.00 m
1000 m
Nandambakkam
3.23/4.90
GL: 12.0 m
126.22/138.16
1500mm
2600 m
Kathipara Jn.
Ch: 8950 M/GL: 13.00m
112.74/119..87
1500 mm
650 m
Ch: 9600 M/GL: 10.00m
1300 mm
1100 m +
1560 M
Ch: 10700 M
GL: 15.00 m
1000 m
Alandur (P) &
Meenambakkam
13.48/18
GL: 10.0 m
29.81/32.45
Ch: 12260 M
GL: 12.00 m
800 mm
2070 m
Velachery
29.81/32.45
GL:6 m
MWL: 22 m
Ch.: 14330 m
Mount-Poonamalle Rd.

HEAD WORKS:	VEERANAM WTP-PORUR WDS	
Stage	Intermediate	Ultimate
Hours of pumping	23	23
GL	18.00m	18.00m
FVL/LWL	15.00m	15.00m
MWL of SR @ End Beneficiary	22.00m	22.00m
Residual Head	3.00m	3.00m
HGL. Reqd @ End	25.00m	25.00m
Static Head	10.00m	10.00m
Total Losses	5.42m	6.75m
HGL @ Ch.:0 m	30.42m	31.75m

Sl No	ZONE CODE	Location		Projected Demand in MLD for 2035	Flow adopting 23 hours pumping (m3/sec)	Projected Demand in MLD for 2050	Flow adopting 23 hours pumping (m3/sec)
1	2	3		4	5		
	PORUR WDS						
1	CT3	Porur		9.54	0.115	13.17	0.159
2	CV14	Mugalivakkam		6.06	0.073	14.19	0.171
3	CV15	Manapakkam		3.87	0.047	7.91	0.096
4	CV13	Ramapuram	PART	4.19	0.051	7.47	0.090
	CT4	Nandambakkam		3.23	0.039	4.90	0.059
		NANDANAM#		82.93	1.002	87.42	1.056
		MYLAPORE#					
		SOUTHERN HEAD WORKS #					
4	CM8	Alandur	PART	13.48	0.163	18.30	0.221
4	CT5	Meenambakkam					
1	6	VELACHERY		29.81	0.360	32.45	0.392
			Total	153.10	1.849	185.80	2.244

These 3 zones are fed by Nemmeli system. Water supplied from Perur DSP and received at proposed PORUR SUMP, where Veeernam water is also received. The Total requirment of TM 5B is pumped from this sump and conveyed thorugh the Exiting/ proposed mains aligned through Poonamalle-Guindy road. The demand of these three beneficiariesd is tapped neart Kathipara Junction and conveyed through the existing pipe lines to reach Myalapore. The demands of SHW and Nandanam are tapped at appropriate points, fromthese branch main.

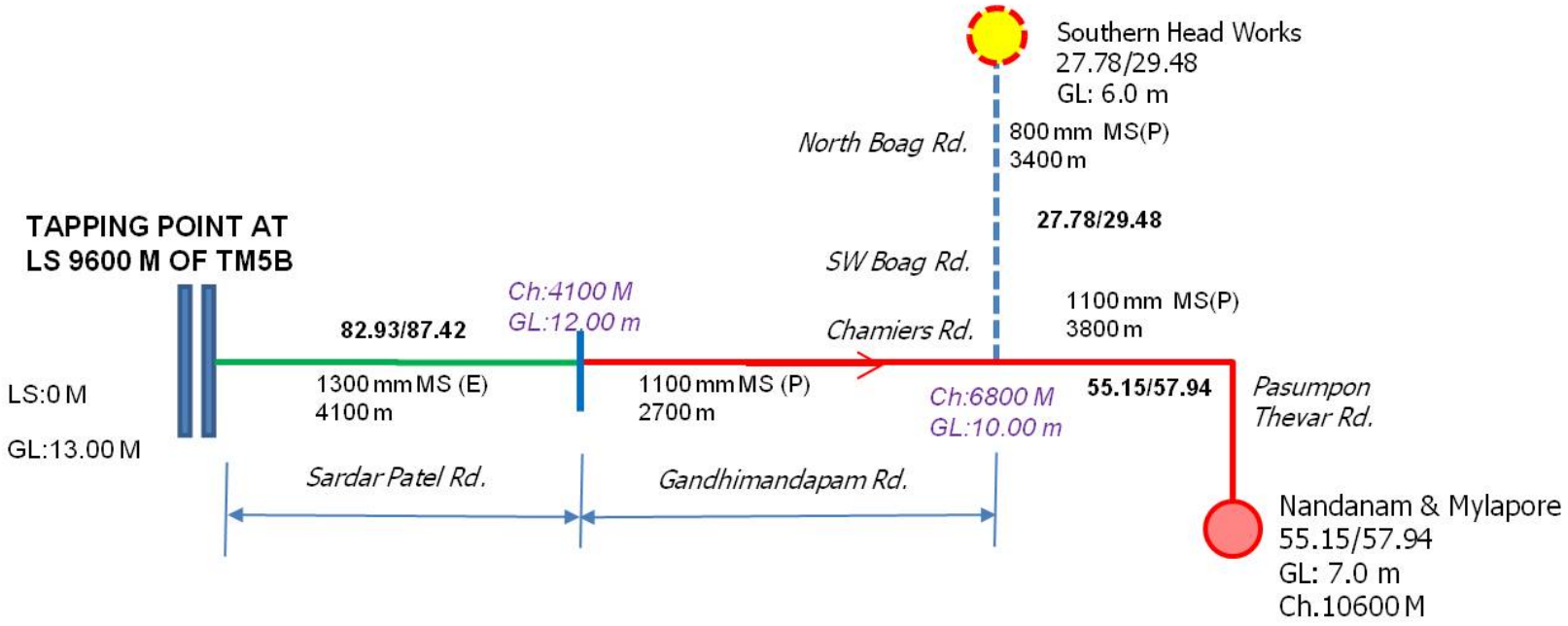
TM 5B-DESIGN OF TRANSMISSION MAIN															
INTERMEDIATE-2035															
Sl.No	From	To	Chainage (m)-From	Chainage (m)-To	Length in M	Flow in m^3/sec	Dia of Pipe in mm	Velocity m/sec	Hfm/m	F.L	OL	TL	HGL	GL	RH
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
		PORUR WDS		0									29.49	18.00	11.49
1	PORUR WDS	Porur JN	0	1530	1530	1.849	2000	0.589	0.0001	0.17	0.02	0.19	29.30	17.00	12.30
2	Porur JN	Porur	1530	2890	1360	1.849	1500	1.046	0.0004	0.59	0.06	0.65	28.65	16.00	12.65
3	Porur	Mugalivakkam	2890	4470	1580	1.734	1500	0.981	0.0004	0.61	0.06	0.67	27.98	16.00	11.98
4	Mugalivakkam	Manapakkam	4470	5300	830	1.661	1500	0.940	0.0004	0.30	0.03	0.33	27.65	12.00	15.65
5	Manapakkam	Ramapuram-Part	5300	5480	180	1.614	1500	0.913	0.0003	0.06	0.01	0.07	27.58	12.00	15.58
6	Ramapuram-Part	Nandambakkam	5480	6350	870	1.563	1500	0.885	0.0003	0.28	0.03	0.31	27.27	12.00	15.27
7	Nandambakkam	Kathipara JN	6350	8950	2600	1.524	1500	0.863	0.0003	0.80	0.08	0.88	26.39	10.00	16.39
8	Kathipara JN	Br. to Mylapore, Nandanam & SHW	8950	9600	650	0.523	1300	0.394	0.0001	0.06	0.01	0.07	26.32	13.00	13.32
9	Br. to Mylapore, Nandanam & SHW	Alandur PART & Meenambakkam	9600	10700	1100	0.523	1300	0.394	0.0001	0.10	0.01	0.11	26.21	13.00	13.21
10	Br. to Mylapore, Nandanam & SHW	Change of pipe	9600	11160	1560m	0.523	1300	0.394	0.0001	0.14	0.01	0.15	26.06	13.00	13.06
10	Alandur PART & Meenambakkam	VELACHERY	10700	12770	2070	0.360	800	0.716	0.0005	0.96	0.10	1.06	25.00	22.00	3.00
					14330					4.07	0.42	4.49			

TM 5B-DESIGN OF TRANSMISSION MAIN															
ULTIMATE-2050															
Sl.No	From	To	Chainage (m)-From	Chainage (m)-To	Length in M	Flow in m^3/sec	Dia of Pipe in mm	Velocity m/sec	Hfm/m	F.L	OL	TL	HGL	GL	RH
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
		PORUR WDS		0									31.98	18.00	13.98
1	PORUR WDS	Porur JN	0	1530	1530	2.244	2000	0.714	0.0002	0.24	0.02	0.26	31.72	17.00	14.72
2	Porur JN	Porur	1530	2890	1360	2.244	1500	1.270	0.0006	0.84	0.08	0.92	30.80	16.00	14.80
3	Porur	Mugalivakkam	2890	4470	1580	2.085	1500	1.180	0.0005	0.85	0.09	0.94	29.86	16.00	13.86
4	Mugalivakkam	Manapakkam	4470	5300	830	1.914	1500	1.083	0.0005	0.38	0.04	0.42	29.44	12.00	17.44
5	Manapakkam	Ramapuram-Part	5300	5480	180	1.818	1500	1.029	0.0004	0.08	0.01	0.09	29.35	12.00	17.35
6	Ramapuram-Part	Nandambakkam	5480	6350	870	1.728	1500	0.978	0.0004	0.33	0.03	0.36	28.99	12.00	
7	Nandambakkam	Kathipara JN	6350	8950	2600	1.669	1500	0.944	0.0004	0.94	0.09	1.03	27.96	10.00	17.96
8	Kathipara JN	Br. to Mylapore, Nandanam & SHW	8950	9600	650	1.669	1300	1.257	0.0007	0.47	0.05	0.52	27.44	13.00	14.44
9	Br. to Mylapore, Nandanam & SHW	Alandur PART & Meenambakkam	9600	10700	1100	1.448	1300	1.091	0.0006	0.61	0.06	0.67	26.77	13.00	13.77
	Br. to Mylapore, Nandanam & SHW	Change of pipe	10700	12260	1560	1.056	1300	0.795	0.0003	0.49	0.05	0.54	26.23	13.00	13.23
10	Alandur PART & Meenambakkam	VELACHERY	12260	14330	2070	0.392	800	0.780	0.0005	1.12	0.11	1.23	25.00	22.00	3.00
					14330					6.35	0.63	6.98			

TM 5B-DESIGN OF BRANCH MAINS																
INTERMEDIATE-2035																
Sl.No	From	To	Chainage (m)-From	Chainage (m)-To	Length in M	Flow in m^3/sec	Dia of Pipe in mm	Velocity m/sec	Hfm/m	F.L	OL	TL	HGL	GL	RH	Remarks
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
1	Br. Main to	Porur														
	TM 5B-Tapping @ Ch:2890 M								HGL Available at Tapping point				28.65			
	LS: 2890m of TM 5B	Porur	0	1000	1000m	0.115	350	1.197	0.0031	3.14	0.31	3.45	25.20	15.00	10.20	Ends at UGT @ Porur
2	Br. Main to	Mugalivakkam														
	TM 5B-Tapping @ LS 4470 m								HGL Available at Tapping point				27.98			
	LS: Mugalivakkamm of TM 5B	Mugalivakkam	0	1000	1000m	0.073	350	0.761	0.0014	1.38	0.14	1.52	26.46	15.00	11.46	Ends at UGT @ Mugalivakkam
3	Br. Main to	Manapakkam														
	TM 5B-Tapping @ Ch:5300 M								HGL Available at Tapping point				27.65			
	LS: 5300m of TM 5B	Manapakkam	0	1000	1000m	0.047	300	0.661	0.0013	1.28	0.13	1.41	26.24	12.00	14.24	Ends at UGT @ Manapakkam
4	Br. Main to	Ramapuram														
	TM 5B-Tapping @ Ch:5480 M								HGL Available at Tapping point				27.58			
	LS: 5480m of TM 5B	Ramapuram	0	1000	1000m	0.051	300	0.714	0.0015	1.48	0.15	1.63	25.95	12.00	13.95	Ends at UGT @ Ramapuram
5	Br. Main to	Nandambakkam														
	TM 5B-Tapping @ Ch:6350 M								HGL Available at Tapping point				27.27			
	LS: 6350m of TM 5B	Nandambakkam	0	1000	1000m	0.039	250	0.795	0.0022	2.23	0.22	2.45	24.82	12.00	12.82	Ends at UGT @ Nandambakkam
6	Br. Main to	Alandur (P)														
	TM 5B-Tapping @ Ch:10700 M								HGL Available at Tapping point				26.32			
	LS: 10700m of TM 5B	Alandur (P)	0	1000	1000m	0.163	400	1.296	0.0031	3.09	0.31	3.40	22.92	10.00	12.92	Ends at UGT @ Alandur (P)

TM 5B-DESIGN OF BRANCH MAINS																	
ULTIMATE STAGE-2050																	
Sl.No	From	To	Chainage (m)-From	Chainage (m)-To	Length in M	Flow in m^3/sec	Dia of Pipe in mm	Velocity m/sec	Hfm/m	F.L	OL	TL	HGL	GL	RH	Remarks
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1	Br. Main to	Porur														
	TM 5B-Tapping @ Ch.: 2890 M								HGL Available at Tapping point				30.80			
	LS: 2890m of TM 5B	Porur	0	1000	1000m	0.159	350	1.654	0.0056	5.63	0.56	6.19	24.61	15.00	9.61	Ends at UGT @ Porur
2	Br. Main to	Mugalivakkam														
	TM 5B-Tapping @ Ch.: 4470 M								HGL Available at Tapping point				29.86			
	LS: Mugalivakkamm of TM 5B	Mugalivakkam	0	1000	1000m	0.171	350	1.781	0.0064	6.44	0.64	7.08	22.78	15.00	7.78	Ends at UGT @ Mugalivakkam
3	Br. Main to	Manapakkam														
	TM 5B-Tapping @ Ch.: 5300 M								HGL Available at Tapping point				29.44			
	LS: 5300m of TM 5B	Manapakkam	0	1000	1000m	0.096	300	1.351	0.0047	4.69	0.47	5.16	24.28	12.00	12.28	Ends at UGT @ Manapakkam
4	Br. Main to	Ramapuram														
	TM 5B-Tapping @ Ch.: 5480 M								HGL Available at Tapping point				29.35			
	LS: 5480m of TM 5B	Ramapuram	0	1000	1000m	0.090	300	1.276	0.0042	4.23	0.42	4.65	24.70	12.00	12.70	Ends at UGT @ Ramapuram
5	Br. Main to	Nandambakkam														
	TM 5B-Tapping @ Ch.: 6350 M								HGL Available at Tapping point				28.99			
	LS: 6350m of TM 5B	Nandambakkam	0	1000	1000m	0.059	250	1.206	0.0047	4.74	0.47	5.21	23.78	12.00	11.78	Ends at UGT @ Nandambakkam
6	Br. Main to	Alandur (P)														
	TM 5B-Tapping @ Ch.: 10700 M								HGL Available at Tapping point				27.44			
	LS: 10700m of TM 5B	Alandur (P)	0	1000	1000m	0.221	400	1.759	0.0054	5.37	0.54	5.91	21.53	10.00	11.53	Ends at UGT @ Alandur (P)

Branch Main-from Tapping Point at Ch.9600 M of TM5B to Nandanam & Mylapore



Br. Main to Mylapore, Nanadanam, SHW															
TM 5B-Tapping @ Ch.: 9600 M								HGL Available at Tapping point				26.21			
LS: 9600m of TM 5B	change of pipe	0	4100	4100m	1.002	1300	0.755	0.0003	1.17	0.12	1.29	24.92	13.00	11.92	Ends at UGT @ change of pipe
change of pipe	SHW JN.	4100	6800	2700m	0.666	1100	0.701	0.0003	0.82	0.08	0.90	24.02	10.00	14.02	Br. to SHW
SHW JN.	Mylaopre & Nandanam	6800	10600	3800m	0.666	1100	0.701	0.0003	1.16	0.12	1.28	22.74	7.00	15.74	Ends at UGT @ Mylapore, Nanadanam, SHW
Sub Br. Main to SHW															
TM 5B-Br.to Mylapore-Tapping @ Ch,:6800 M								HGL Available at Tapping point				24.02			
LS: 6800m of TM 5B-Br.to Mylapore	SHW	0	3400	3400m	0.335	800	0.667	0.0004	1.38	0.14	1.52	22.50	6.00	16.50	Ends at UGT @ SHW

Br. Main to Mylapore, Nanadanam, SHW															
TM 5B-Tapping @ Ch.: 9600 M								HGL Available at Tapping point				27.98			
LS: 9600m of TM 5B	Change of pipe	0	4100	4100	1.056	1300	0.795	0.0003	1.29	0.13	1.42	26.56	13.00	13.56	Ends at UGT @ Mylapore, Nanadanam, SHW
Change of pipe	SHW JN.	4100	6800	2700	0.700	1100	0.736	0.0003	0.90	0.09	0.99	25.57	10.00	15.57	Br. to SHW
SHW JN.	Mylaopre & Nandanam	6800	10600	3800	0.700	1100	0.736	0.0003	1.27	0.13	1.40	24.17	7.00	17.17	Ends at UGT @ Change of pipe
Sub Br. Main to SHW															
TM 5B-Br.to Mylapore-Tapping @ Ch.:6800 M								HGL Available at Tapping point				25.57			
LS: 6800m of TM 5B-Br.to Mylapore	SHW	0	3400	3400	0.356	800	0.708	0.0005	1.54	0.15	1.69	23.88	6.00	17.88	Ends at UGT @ SHW

CHEMBARAMBAKKAM SYSTEM

Area	ZONE NOS.	2020	2025	2030	2035	2040	2045	2050
CORE CITY	**8**	83.90	85.38	87.36	88.91	90.72	91.91	93.74
	Sub Total	**83.90**	**85.38**	**87.36**	**88.91**	**90.72**	**91.91**	**93.74**
ADDED AREA	CC5	33.65	37.76	56.97	64.01	71.82	92.77	104.72
	CC6	25.31	27.98	41.21	45.30	49.75	63.67	71.21
Sub Total		**58.96**	**65.74**	**98.18**	**109.31**	**121.57**	**156.44**	**175.93**
REST OF CMA	OC6	12.52	14.41	24.03	28.64	34.12	52.23	62.00
	OC7	13.37	15.66	27.17	32.60	39.05	60.35	71.80
	OC8	16.08	18.67	34.85	41.66	48.94	73.98	85.31
	OC9	13.67	14.99	28.29	33.30	38.51	57.28	64.64
	OC10	8.20	9.55	16.10	18.80	21.78	32.53	37.16
	OC11	8.16	8.86	17.71	20.79	23.91	37.86	42.31
	OC12	9.58	10.01	18.99	22.23	25.62	37.83	42.60
	OC13	22.66	25.18	38.04	42.47	47.36	67.87	75.36
	OC14	12.70	14.65	25.10	28.62	32.34	47.79	53.16
	Sub Total	**116.94**	**131.96**	**230.26**	**269.10**	**311.63**	**467.71**	**534.33**
	GRAND TOTAL	**259.80**	**283.08**	**415.80**	**467.33**	**523.91**	**716.05**	**804.00**

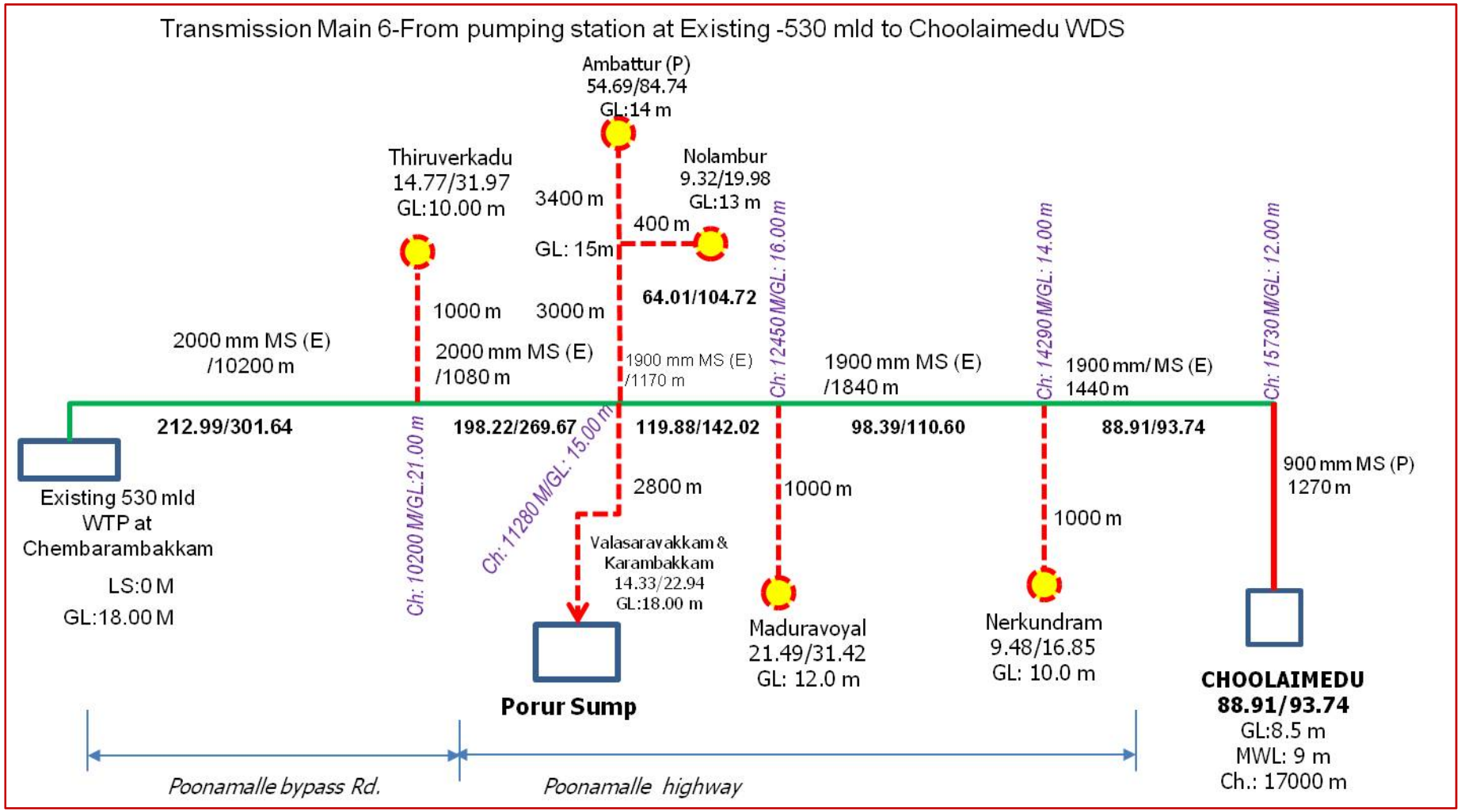
		ZONE NO.	NAME		2020	2025	2030	2035	2040	2045	2050
TM6		`	CHOOLAIMEDU		83.897	85.382	87.362	88.913	90.717	91.905	93.742
	CC5	CM5	Ambattur	Part	29.980	33.865	49.08	54.690	61.04	76.96	84.74
	CC5	CV10	Nolambur		3.670	3.890	7.89	9.320	10.78	15.81	19.98
	CC6	CM6	Maduravoyal		11.810	13.460	19.48	21.490	23.62	29.19	31.42
	CC6	CV12	Nerkunram		5.540	5.650	8.82	9.480	10.19	14.02	16.85
	OC7	OCM3	Thiruverkadu	Part	0.987	1.173	1.86	2.216	2.63	4.04	4.80
	OC6	OCM3	Thiruverkadu	Part	4.606	5.474	8.70	10.339	12.29	18.83	22.38

		ZONE NO.	NAME		2020	2025	2030	2035	2040	2045	2050
	OC9	OCM3	Thiruverkadu	PART	0.987	1.173	1.86	2.216	2.63	4.04	4.80
	CC6	CM7	Valasarawakkam		6.230	7.130	10.47	11.840	13.39	17.09	19.04
	CC6	CV11	Karambakkam		1.730	1.740	2.44	2.490	2.55	3.37	3.90
TM7	OC6	VI-1	Adayalampattu		0.190	0.200	0.34	0.390	0.45	0.66	0.76
	OC6	VI-4	Ayappakkam		2.940	3.020	5.31	6.140	7.10	10.48	11.96
	OC9	VI-5	Chettiyaragaram								
	OC9	VI-16	Sivabudham		0.140	0.140	0.26	0.320	0.36	0.53	0.60
	OC9	VI-18	Thandalam		0.150	0.150	0.29	0.340	0.39	0.56	0.65
	OC9	VI-19	Vanagaram		1.910	1.970	3.45	4.00	4.62	6.82	7.79
	OC11	PO-1	Agaramel								
	OC8	PO-2	Agraharam		0.44	0.46	1.02	1.20	1.38	2.08	2.31
	OC7	PO-3	Amudurmedu		0.29	0.30	0.68	0.79	0.91	1.38	1.53
	OC7	PO-4	Anaikattucheri		0.10	0.10	0.23	0.26	0.32	0.47	0.52
	OC8	PO-5	Annambedu		1.34	1.41	3.16	3.71	4.24	6.39	7.12
	OC8	PO-6	Ariyapancheri								
	OC7	PO-7	Ayalcheri								
	OC11	PO-8	Chembarambakkam		0.05	0.05	0.12	0.13	0.15	0.24	0.26
	OC7	PO-9	Chokkanallur								
	OC9	PO-10	Goparasanallur								
	OC7	PO-11	Kannapalaiyam								
	OC7	PO-12	Karunakaracheri		0.37	0.40	0.88	1.02	1.18	1.77	1.98
	OC9	PO-13	Kattupakkam		0.12	0.13	0.25	0.30	0.35	0.51	0.56
	OC8	PO-14	Kavalacheri		3.49	3.66	7.10	8.32	9.55	13.86	15.44
	OC8	PO-15	Kilmanambedu								
	OC7	PO-16	Kolappancheri		0.18	0.19	0.42	0.47	0.55	0.84	0.93
	OC8	PO-17	Korattur		0.11	0.12	0.28	0.33	0.36	0.55	0.63
	OC8	PO-18	Kuthambakkam		0.61	0.65	1.45	1.71	1.95	2.95	3.27
	OC8	PO-19	Melmanambedu		0.51	0.54	1.21	1.41	1.62	2.44	2.72
	OC7	PO-20	Melpakkam		0.05	0.05	0.11	0.13	0.15	0.23	0.25

		ZONE NO.	NAME		2020	2025	2030	2035	2040	2045	2050
	OC11	PO-21	Meppur		0.32	0.35	0.78	0.91	1.05	1.57	1.75
TM7	OC8	PO-22	Mothirambedu								
	OC8	PO-24	Narasingapuram		0.09	0.09	0.20	0.23	0.26	0.40	0.45
	OC11	PO-25	Nazarethpettai		1.25	1.33	2.57	3.01	3.45	5.02	5.60
	OC8	PO-26	Neman		0.32	0.34	0.77	0.89	1.02	1.54	1.73
	OC8	PO-27	Nemilicheri		0.84	0.88	1.70	2.00	2.29	3.33	3.71
	OC8	PO-28	Nochimedu		0.03	0.03	0.09	0.11	0.12	0.19	0.21
	OC11	PO-29	Palanjur								
	OC7	PO-30	Panaveduthottam		0.57	0.59	1.16	1.36	1.56	2.27	2.52
	OC7	PO-31	Parivakkam								
	OC8	PO-32	Parvatharajapuram		0.08	0.08	0.18	0.21	0.23	0.35	0.40
	OC7	PO-33	Pidarithangal		0.09	0.09	0.20	0.23	0.26	0.40	0.45
	OC7	PO-34	Senneerkuppam	Part	0.71	0.75	1.45	1.69	1.94	2.83	3.14
	OC8	PO-35	Sithukadu		0.40	0.41	0.92	1.09	1.24	1.87	2.09
	OC7	PO-36	Soranjeri								
	OC8	PO-37	Thirukovilpattu								
	OC8	PO-38	Thirumalarajapuram								
	OC8	PO-39	Thirumanam		0.66	0.69	1.35	1.58	1.81	2.63	2.93
	OC8	PO-40	Varadharajapuram								
	OC11	PO-40	Varadharajapuram		0.66	0.69	1.35	1.58	1.81	2.63	2.93
	OC8	PO-41	Vellavedu		0.18	0.19	0.42	0.48	0.56	0.85	0.95
	OC7	PO-42	Voyalanallur		0.61	0.65	1.45	1.69	1.95	2.94	3.27
	OC10	PO-34	Senneerkuppam	PART	0.71	0.75	1.45	1.69	1.94	2.83	3.14
	OC6	PO-34	Senneerkuppam	Part	0.94	1.00	1.93	2.26	2.59	3.77	4.19
	OC7	OCM2	Poonamallee	Part	1.72	1.99	3.08	3.57	4.14	6.18	7.17
	OC10	OCM2	Poonamallee	PART	4.00	4.64	7.20	8.34	9.67	14.43	16.72
	OC7	OCM1	Avadi	Part	7.30	8.97	14.73	18.08	22.21	35.13	43.15
	OC6	OCM1	Avadi	Part	3.84	4.72	7.75	9.52	11.69	18.49	22.71
	OC8	OCT11	Thirumazhisai		3.66	4.86	8.10	9.70	11.31	16.62	18.68

		ZONE NO.	NAME		2020	2025	2030	2035	2040	2045	2050
	OC8	OCT12	Thirunindravur	Part	3.69	4.62	7.74	9.69	12.14	19.62	24.57
	OC11	SR-1	Chembarambakkam (pt) Tank portion		0.03	0.05	0.08	0.09	0.10	0.18	0.19
	OC8	SR-2	Chettipattu								
	OC11	SR-3	Daravur		0.12	0.12	0.22	0.26	0.29	0.50	0.55
	OC11	SR-4	Kattirambakkam Tank portion								
TM8	OC9	OCT4	Mangadu	PART	2.10	2.45	3.83	4.48	5.21	7.76	8.93
	OC10	OCT4	Mangadu	PART	1.72	2.01	3.14	3.66	4.26	6.35	7.30
	OC9	OCT2	Kundrathur	PART	1.14	1.48	2.80	3.33	3.85	5.85	6.55
	OC10	OCT2	Kundrathur	PART	1.14	1.48	2.80	3.33	3.85	5.85	6.55
	OC11	OCT2	Kundrathur	Part	1.14	1.48	2.80	3.33	3.85	5.85	6.55
	OC14	OCT2	Kundrathur	PART	1.14	1.48	2.80	3.33	3.85	5.85	6.55
	OC9	KU-1	Ayyappanthangal		3.59	3.77	7.35	8.67	9.99	14.52	16.17
	OC9	KU-3	Chinnapanicheri								
	OC9	KU-8	Kolathuvancheri								
	OC9	KU-10	Kovur		1.07	1.12	2.53	2.98	3.43	5.19	5.79
	OC9	KU-18	Paraniputhur		1.48	1.57	3.52	4.14	4.77	7.22	8.03
	OC9	KU-21	Rendamkattalai								
	OC9	KU-23	Srinivasapuram								
	OC9	KU-26	Thelliaragaram		0.03	0.03	0.09	0.11	0.12	0.19	0.21
	OC9	KU-2	Chikkarayapuram	PART							
	OC9	KU-14	Mowlivakkam	PART	0.70	0.74	1.44	1.69	1.95	2.84	3.16
	OC9	KU-24	Thandalam	PART	0.26	0.28	0.62	0.73	0.84	1.27	1.42
	OC10	KU-9	Kollaicheri		0.37	0.39	0.88	1.03	1.20	1.79	2.00
	OC10	KU-11	Kozhumanivakkam		0.26	0.29	0.64	0.75	0.86	1.29	1.44
	OC10	KU-2	Chikkarayapuram	PART							
	OC11	KU-4	Erumaiyur		0.18	0.19	0.36	0.42	0.48	0.84	0.94
	OC11	KU-6	Kavanur		0.15	0.16	0.36	0.43	0.50	0.75	0.84
	OC11	KU-13	Malayambakkam		0.60	0.64	1.23	1.45	1.68	2.93	3.26

		ZONE NO.	NAME		2020	2025	2030	2035	2040	2045	2050
	OC11	KU-15	Naduveerapattu		0.46	0.48	0.95	1.11	1.29	2.23	2.49
	OC11	KU-16	Nandambakkam		0.92	0.98	1.88	2.21	2.55	4.44	4.96
	OC11	KU-17	Palanthandalam								
	OC11	KU-20	Poonthandalam		0.22	0.24	0.47	0.55	0.64	1.11	1.23
	OC11	KU-22	Sirukalathur		0.45	0.47	0.92	1.08	1.24	2.17	2.41
	OC11	KA-3	Mannivakkam		1.00	1.03	2.09	2.39	2.66	3.96	4.33
	OC12	KU-5	Gerugambakkam		1.73	1.83	3.56	4.20	4.84	7.05	7.84
	OC12	KU-7	Kolapakkam		0.77	0.82	1.84	2.17	2.50	3.77	4.20
	OC12	KU-12	Madanandapuram		0.80	0.84	1.65	1.95	2.24	3.26	3.63
	OC12	KU-19	Periyapanicheri		0.23	0.25	0.55	0.65	0.75	1.12	1.25
	OC12	KU-25	Tharapakkam		0.21	0.22	0.52	0.61	0.70	1.06	1.18
	OC12	KU-14	Mowlivakkam	PART	0.70	0.74	1.44	1.69	1.95	2.84	3.16
	OC12	KU-24	Thandalam	PART	0.26	0.28	0.62	0.73	0.84	1.27	1.42
	OC14	KU-27	Thirumudivakkam		0.40	0.42	0.94	1.11	1.28	1.94	2.15
	OC12	ST-3	Cowl Bazaar		0.30	0.31	0.55	0.65	0.77	1.17	1.34
	OC12	ST-18	Polichalur		2.29	2.38	4.36	5.17	6.07	9.13	10.57
	OC14	ST-12	Mudichur	PART	0.32	0.32	0.69	0.82	0.96	1.50	1.74
	OC11	ST-12	Mudichur	Part	0.74	0.76	1.61	1.91	2.24	3.49	4.05
	OC12	OCM6	Anakaputhur	PART	2.29	2.35	3.91	4.41	4.97	7.17	8.02
	OC13	OCM6	Anakaputhur	PART	2.29	2.35	3.91	4.41	4.97	7.17	8.02
TM8	OC13	OCM5	Pammal		7.13	7.91	11.66	12.80	14.00	19.65	21.31
	OC13	OCM4	Pallavaram	PART	5.06	5.65	8.44	9.41	10.46	14.94	16.50
	OC13	OCT8	Thiruneermalai	PART	1.39	1.50	2.17	2.32	2.48	3.40	3.60
	OC14	OCT8	Thiruneermalai	PART	1.39	1.50	2.17	2.32	2.48	3.40	3.60
	OC13	OCM7	Tambaram	PART	6.81	7.77	11.86	13.54	15.45	22.72	25.93
	OC14	OCM7	Tambaram	PART	4.26	4.86	7.42	8.46	9.66	14.20	16.21
	OC14	OCT6	Perungalathur.		3.12	3.83	7.00	8.07	9.16	13.70	15.15
	OC14	OCT5	Peerkankaranai	PART	1.16	1.26	2.10	2.25	2.42	3.45	3.66
	OC14	KA-6	Vandalur	PART	0.94	0.98	1.99	2.27	2.54	3.76	4.12
					259.89	283.18	415.80	467.31	523.88	715.92	803.84


Transmission Main 6-From pumping station at Existing -530 mld to Choolaimedu WDS
Ambattur (P)
54.69/84.74
GL:14 m
Thiruverkadu
14.77/31.97
GL:10.00 m
Nolambur
9.32/19.98
GL:13 m
3400 m
400 m
GL: 15m
64.01/104.72
1000 m
3000 m
2000 mm MS (E)
/10200 m
2000 mm MS (E)
/1080 m
1900 mm MS (E)
/1170 m
1900 mm MS (E)
/1840 m
1900 mm/ MS (E)
1440 m
900 mm MS (P)
1270 m
Ch: 10200 M/GL:21.00 m
Ch: 11280 M/GL: 15.00 m
Ch: 12450 M/GL: 16.00 m
Ch: 14290 M/GL: 14.00 m
Ch: 15730 M/GL: 12.00 m
212.99/301.64
198.22/269.67
119.88/142.02
98.39/110.60
88.91/93.74
Existing 530 mld
WTP at
Chembarambakkam
LS:0 M
GL:18.00 M
2800 m
1000 m
1000 m
Valasaravakkam &
Karambakkam
14.33/22.94
GL:18.00 m
Maduravoyal
21.49/31.42
GL: 12.0 m
Nerkundram
9.48/16.85
GL: 10.0 m
Porur Sump
CHOOLAIMEDU
88.91/93.74
GL:8.5 m
MWL: 9 m
Ch.: 17000 m
Poonamalle bypass Rd.
Poonamalle highway

Hydraulic Design of Transmission Main 6 from Pumping Station at Chembarabakam Existing 530 MLD WTP to Choolaimedu WDS

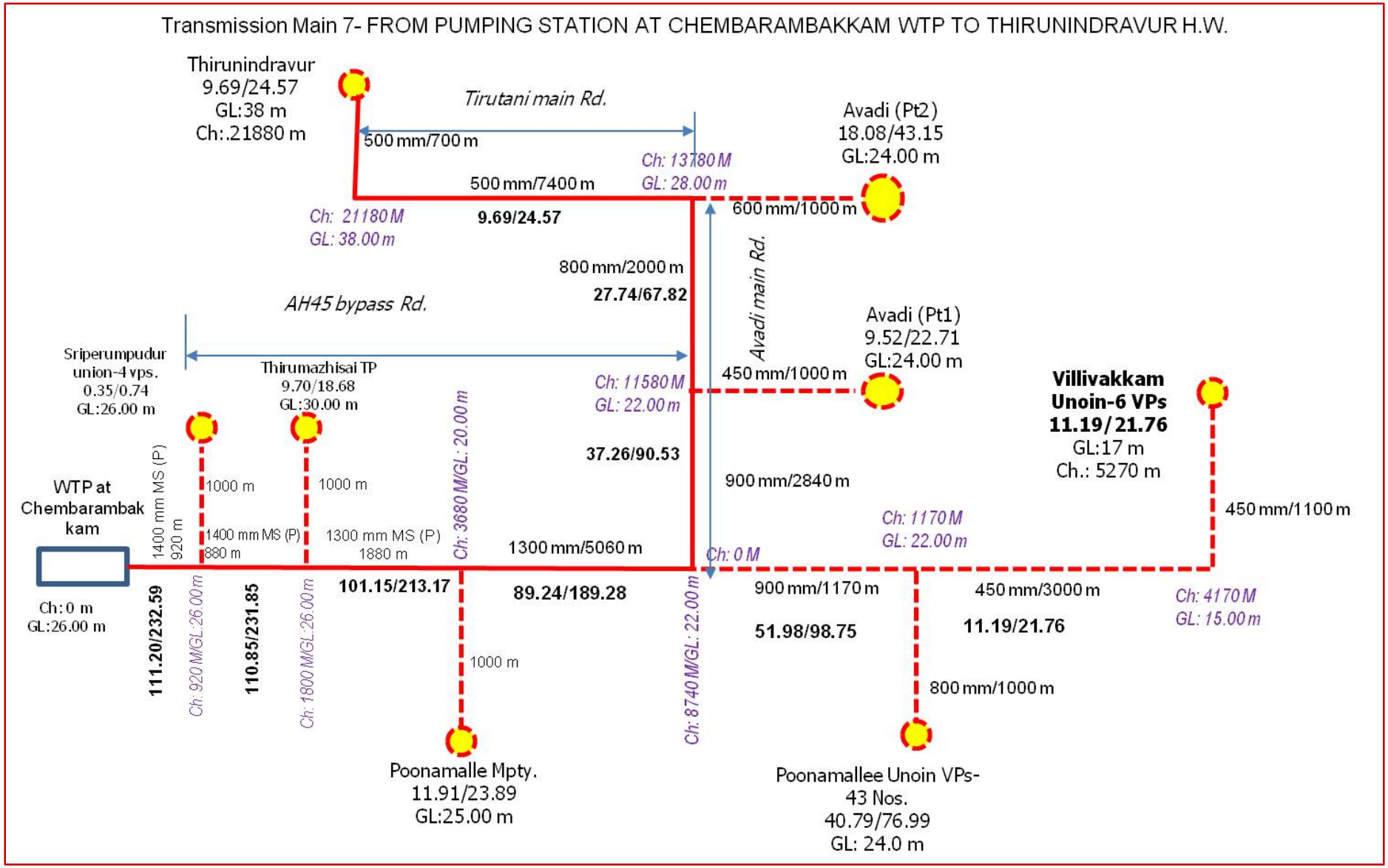
HEAD WORKS:	CHEMBARAMBAKKAM WTP	
Stage	Intermediate	Ultimate
Hours of pumping	23	23
GL	26.00m	26.00m
FVL/LWL	22.00m	22.00m
MWL of Sump @ End Beneficiary	24.00m	24.00m
Residual Head	3.00m	3.00m
HGL. Reqd @ End	27.00m	27.00m
Static Head	5.00m	5.00m
Total Losses	5.42m	7.88m
HGL @ Ch.:0 m	32.42m	34.88m

Sl No	Location	Projected Demand in MLD for 2035	Flow adopting 23 hours pumping (m3/sec)	Projected Demand in MLD for 2050	Flow adopting 23 hours pumping (m3/sec)
1	Thiruverkadu Part	14.770	0.178	31.97	0.39
2	Ambathur Part	54.69	0.661	84.74	1.02
3	Nolambur	9.32	0.113	19.98	0.24
4	Valasaravakkam	11.84	0.143	19.04	0.23
5	Karambakkam	2.49	0.030	3.90	0.05
6	Maduravoyal	21.49	0.260	31.42	0.38
7	Nerkundram	9.48	0.114	16.85	0.20
8	Choolaimedu WDS	88.913	1.074	93.742	1.13
		212.99	**2.573**	**301.64**	**3.64**

Sl.No	From	To	Chainage (m)-From	Chainage (m)-To	Length in M	Flow in m^3/sec	Dia in mm	Type	Exist/Prop.	Velocity m/sec	Hfm/m	F.L	OL	TL	HGL	GL	RH
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
															32.42	26.00	6.42
	Intermediate-2035																
1	Chembarabakkam WTP	Thiruverkadu (Jn)	0	10200	10200	2.57	2000	MS	Exist.	0.819	0.0002	2.02	0.20	2.22	30.20	21.00	9.20
2	Thiruverkadu (Jn)	Ambathur & Nolambuar -Jn.	10200	11280	1080	2.40	2000	MS	Exist.	0.762	0.0002	0.19	0.02	0.21	29.99	15.00	14.99
		Valasaravakkam & Karambakkm Jn.(to Porur Sump)															
3	Ambathur & Nolambuar -Jn.	Maduravoyal Jn.	11280	12450	1170	1.45	1900	MS	Exist.	0.511	0.0001	0.10	0.01	0.11	29.88	16.00	13.88
4	Maduravoyal Jn.	Nerkundram Jn	12450	14290	1840	1.19	1900	MS	Exist.	0.419	0.0001	0.12	0.01	0.13	29.75	14.00	15.75
5	Nerkundram Jn	Jn.Near Rohini Theatre	14290	15730	1440	1.19	1900	MS	Exist.	0.419	0.0001	0.09	0.01	0.10	29.65	12.00	17.65
6	Jn.Near Rohini Theatre	Choolaimedu WDS	15730	17000	1270	1.07	900	MS	Prop.	1.688	0.0019	2.41	0.24	2.65	27.00	24.00	3.00
					17000.00							4.93	0.49	5.42			
	Ultimate-2050														34.88	26.00	8.88
1	Chembarabakkam WTP	Thiruverkadu (Jn)	0	10200	10200	3.64	2000	MS	Exist.	1.160	0.0004	3.80	0.38	4.18	30.71	21.00	9.71
2	Thiruverkadu (Jn)	Ambathur & Nolambuar -Jn.	10200	11280	1080	3.26	2000	MS	Exist.	1.037	0.0003	0.33	0.03	0.36	30.35	15.00	15.35
		Valasaravakkam & Karambakkm Jn.(to Porur Sump)															
3	Ambathur & Nolambuar -Jn.	Maduravoyal Jn.	11280	12450	1170	1.72	1900	MS	Exist.	0.605	0.0001	0.14	0.01	0.15	30.20	16.00	14.20
4	Maduravoyal Jn.	Nerkundram Jn	12450	14290	1840	1.34	1900	MS	Exist.	0.471	0.0001	0.14	0.01	0.15	30.04	14.00	16.04
5	Nerkundram Jn	Jn.Near Rohini Theatre	14290	15730	1440	1.34	1900	MS	Exist.	0.471	0.0001	0.11	0.01	0.12	29.92	12.00	17.92
6	Jn.Near Rohini Theatre	Choolaimedu WDS	15730	17000	1270	1.13	900	MS	Prop.	1.780	0.0021	2.65	0.27	2.92	27.00	24.00	3.00
					17000							7.17	0.71	7.88			

TM 6-DESIGN OF BRANCH MAINS																
INTERMEDIATE-2035																
Sl.No	From	To	Chainage (m)-From	Chainage (m)-To	Length in M	Flow in m^3/sec	Dia of Pipe in mm	Velocity m/sec	Hfm/m	F.L	OL	TL	HGL	GL	RH	Remarks
1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*	*15*	*16*	*17*
1	Br. Main to Thiruverkadu (P)															
	TM 6-Tapping @ LS 10200 M								HGL Available at Tapping point				31.08			
	LS: 10200m of TM 6	Thiruverkadu (P)	0	1000	1000m	0.178	500	0.907	0.0012	1.24	0.12	1.36	29.72	20.00	9.72	Ends at UGT @ Thiruverkadu (P)
2	Br. Main to Ambattur															
	TM 6-Tapping @ LS 11280 M								HGL Available at Tapping point				30.87			
	LS: 11280m of TM 6	Ambattur	0	1000	1000m	0.774	900	1.217	0.0010	1.05	0.11	1.16	29.71	14.00	15.71	Ends at UGT @ Ambattur
3	Br. Main to Valasaravakkam															
	TM 6-Tapping @ LS 11280 M								HGL Available at Tapping point				30.87			
	LS: 11280m of TM 6	Valasaravakkam	0	1000	1000m	0.173	450	1.088	0.0020	1.96	0.20	2.16	28.71	18.00	10.71	Ends at UGT @ Valasaravakkam
4	Br. Main to Maduravoyal															
	TM 6-Tapping @ LS 12450 M								HGL Available at Tapping point				30.76			
	LS: 12450m of TM 6	Maduravoyal	0	1000	1000m	0.260	500	1.324	0.0025	2.46	0.25	2.71	28.05	15.00	13.05	Ends at UGT @ Maduravoyal
5	Br. Main to Nerkundram															
	TM 6-Tapping @ LS 14290 M								HGL Available at Tapping point				30.63			
	LS: 14290m of TM 6	Nerkundram	0	1000	1000m	0.114	400	0.907	0.0016	1.62	0.16	1.78	28.85	13.00	15.85	Ends at UGT @ Nerkundram

TM 6-DESIGN OF BRANCH MAINS																
ULTIMATE-2050																
Sl.No	From	To	Chainage (m)-From	Chainage (m)-To	Length in M	Flow in m^3/sec	Dia of Pipe in mm	Velocity m/sec	Hfm/m	F.L	OL	TL	HGL	GL	RH	Remarks
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
1	Br. Main to Thiruverkadu (P)															
	TM 6-Tapping @ LS 10200 M								HGL Available at Tapping point				31.67			
	LS: 10200m of TM 6	Thiruverkadu (P)	0	1000	1000	0.386	500	1.966	0.0050	5.04	0.50	5.54	26.13	20.00	6.13	Ends at UGT @ Thiruverkadu (P)
2	Br. Main to Ambattur															
	TM 6-Tapping @ LS 11280 M								HGL Available at Tapping point				31.31			
	LS: 11280m of TM 6	Ambattur	0	1000	1000	1.265	900	1.988	0.0026	2.55	0.26	2.81	28.50	14.00	14.50	Ends at UGT @ Ambattur
3	Br. Main to Valasaravakkam															
	TM 6-Tapping @ LS 11280 M								HGL Available at Tapping point				31.31			
	LS: 11280m of TM 6	Valasaravakkam	0	1000	1000	0.277	450	1.742	0.0046	4.59	0.46	5.05	26.26	18.00	8.26	Ends at UGT @ Valasaravakkam
4	Br. Main to Maduravoyal															
	TM 6-Tapping @ LS 12450 M								HGL Available at Tapping point				31.16			
	LS: 12450m of TM 6	Maduravoyal	0	1000	1000	0.380	500	1.933	0.0049	4.88	0.49	5.37	25.79	15.00	10.79	Ends at UGT @ Maduravoyal
5	Br. Main to Nerkundram															
	TM 6-Tapping @ LS 14290 M								HGL Available at Tapping point				31.01			
	LS: 14290m of TM 6	Nerkundram	0	1000	1000	0.204	400	1.619	0.0046	4.62	0.46	5.08	25.93	13.00	12.93	Ends at UGT @ Nerkundram


Transmission Main 7- FROM PUMPING STATION AT CHEMBARAMBAKKAM WTP TO THIRUNINDRAVUR H.W.
Thirunindravur
9.69/24.57
GL:38 m
Ch:.21880 m
Tirutani main Rd.
500 mm/700 m
500 mm/7400 m
Ch: 13780 M
GL: 28.00 m
Avadi (Pt2)
18.08/43.15
GL:24.00 m
600 mm/1000 m
Ch: 21180 M
GL: 38.00 m
9.69/24.57
800 mm/2000 m
27.74/67.82
AH45 bypass Rd.
Avadi main Rd.
Avadi (Pt1)
9.52/22.71
GL:24.00 m
Sriperumpudur
union-4 vps.
0.35/0.74
GL:26.00 m
Thirumazhisai TP
9.70/18.68
GL:30.00 m
Ch: 11580 M
GL: 22.00 m
450 mm/1000 m
Villivakkam
Unoin-6 VPs
11.19/21.76
GL:17 m
Ch.: 5270 m
37.26/90.53
900 mm/2840 m
1400 mm MS (P)
920 m
1000 m
1000 m
Ch: 3680 M/GL: 20.00 m
WTP at
Chembarambak
kam
1400 mm MS (P)
880 m
1300 mm MS (P)
1880 m
1300 mm/5060 m
Ch: 1170 M
GL: 22.00 m
450 mm/1100 m
Ch: 0 M
Ch: 0 m
GL:26.00 m
111.20/232.59
Ch: 920 M/GL: 26.00 m
110.85/231.85
Ch: 1800 M/GL: 26.00 m
101.15/213.17
89.24/189.28
Ch: 8740 M/GL: 22.00 m
900 mm/1170 m
51.98/98.75
450 mm/3000 m
11.19/21.76
Ch: 4170 M
GL: 15.00 m
1000 m
800 mm/1000 m
Poonamalle Mpty.
11.91/23.89
GL:25.00 m
Poonamallee Unoin VPs-
43 Nos.
40.79/76.99
GL: 24.0 m

HEAD WORKS:	CHEMBARAMBAKKAM WTP	
Stage	Intermediate	Ultimate
Hours of pumping	23	23
GL	26.00m	26.00m
FVL/LWL	22.00m	22.00m
MWL of Sump @ End Beneficiary	38.00m	38.00m
Residual Head	3.00m	3.00m
HGL. Reqd @ End	41.00m	41.00m
Static Head	19.00m	19.00m
Total Losses	10.85m	51.86m
HGL @ Ch.:0 m	51.85m	92.86m

Sl No	Location	Projected Demand in MLD for 2035	Flow adopting 23 hours pumping (m3/sec)	Projected Demand in MLD for 2050	Flow adopting 23 hours pumping (m3/sec)
1	SPP Union VPs 4 Nos	0.35	0.004	0.74	0.009
2	Thirumazhisai T.P	9.70	0.117	18.68	0.226
3	Poonamallee Mpty	11.91	0.144	23.89	0.289
4	Poonamallee Union VPs 43 Nos	40.79	0.493	76.99	0.930
5	Villivakkam Union VPs 6 Nos	11.19	0.135	21.76	0.263
6	Avadi Mpty (Part 1)	9.52	0.115	22.71	0.274
7	Avadi Mpty (Part 2)	18.08	0.218	43.15	0.521
8	Thirunindravur TP	9.69	0.117	24.57	0.297
	Total	**110.874**	**1.343**	**231.750**	**2.809**

Sl.No	From	To	Chainage (m)-From	Chainage (m)-To	Length in M	Flow in m^3/sec	Dia in mm	Type	Exist/Prop.	Velocity m/sec	Hfm/m	F.L	OL	TL	HGL	GL	RH
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
	Intermediate-2035																
															51.85	26.00	
1	Chembrambakkam P.S	SPP Union-T.P.	0	920	920	1.343	1400	MS	Prop.	0.872	0.0003	0.31	0.03	0.34	51.51	26.00	25.51
2	SPP Union-T.P.	Thirumazhisai T.P.	920	1800	880	1.339	1300	MS	Prop.	1.009	0.0005	0.42	0.04	0.46	51.04	26.00	25.04
3	Thirumazhisai T.P.	Poonamallee Mpty T.P.	1800	3680	1880	1.222	1300	MS	Prop.	0.921	0.0004	0.77	0.08	0.85	50.19	20.00	30.19
4	Poonamallee Mpty T.P.	Br. pt. to Villivakkm &Pml Unions	3680	8740	5060	1.078	1300	MS	Prop.	0.812	0.0003	1.65	0.16	1.81	48.38	22.00	26.38
5	Br. pt. to Villivakkm &Pml Unions	Avadi Mpty Part 1-Jn	8740	11580	2840	0.450	900	MS	Prop.	0.707	0.0004	1.12	0.11	1.23	47.15	26.00	21.15
6	Avadi Mpty Part 1-Jn	Avadi Mpty Part 2-Jn	11580	13780	2200	0.335	800	MS	Prop.	0.666	0.0004	0.89	0.09	0.98	46.17	28.00	18.17
7	Avadi Mpty Part 2-Jn	Thirunindravur Jn.	13780	21180	7400	0.117	500	MS	Prop.	0.596	0.0006	4.29	0.43	4.72	41.45	38.00	3.45
8	Thirunindravur Jn.	Thirunindravur Tank	21180	21880	700	0.117	500	MS	Prop.	0.596	0.0006	0.41	0.04	0.45	41.00	38.00	3.00
					21880							9.87	0.98	10.85		6.71	152.89

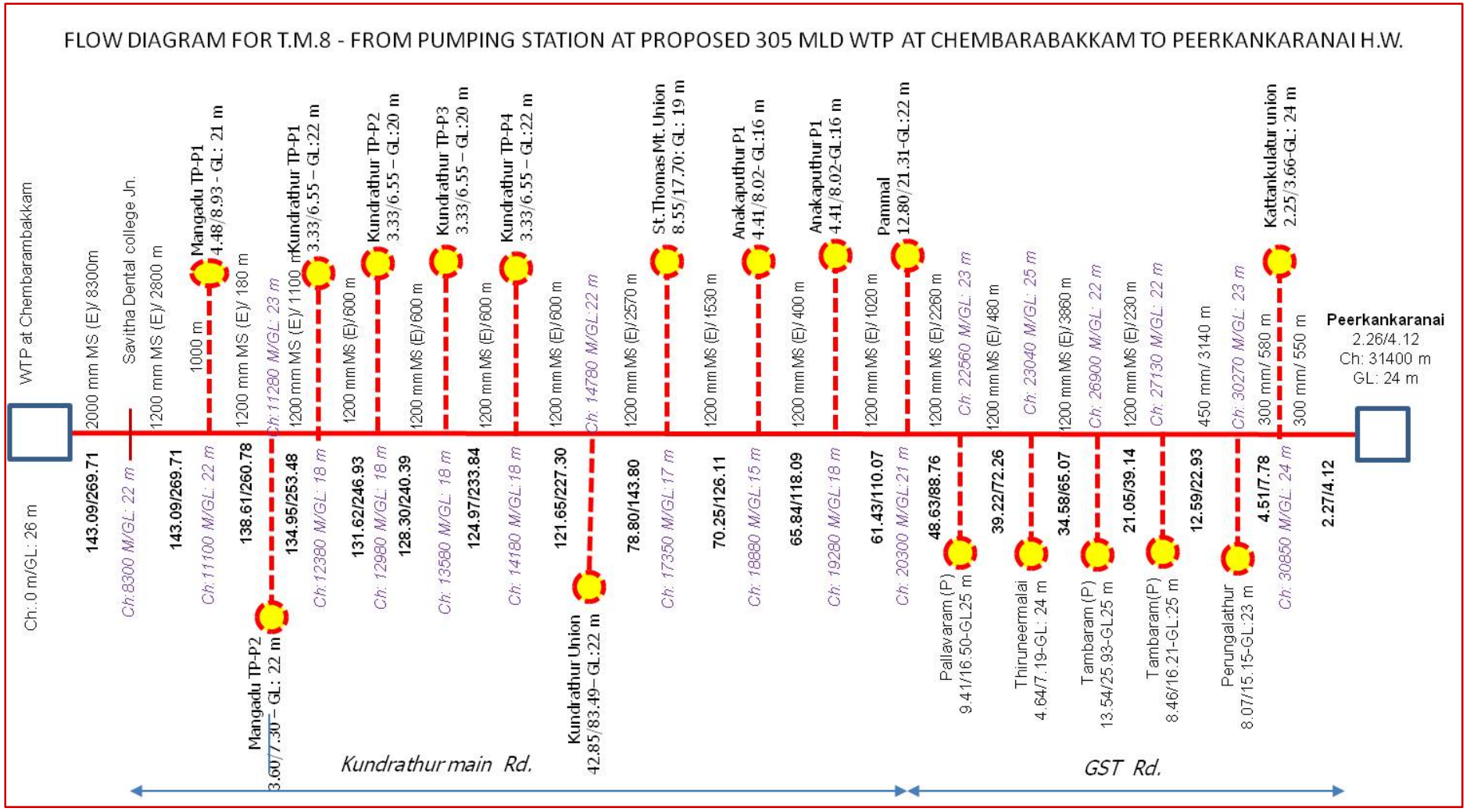
Sl.No	From	To	Chainage (m)-From	Chainage (m)-To	Length in M	Flow in m^3/sec	Dia in mm	Type	Exist/Prop.	Velocity m/sec	Hfm/m	F.L	OL	TL	HGL	GL	RH
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
	Ultimate-2050																
															92.86	26	66.86
1	Chembrambakkam P.S	SPP Union-T.P.	0	920	920	2.809	1400	MS	Prop.	1.825	0.0013	1.19	0.12	1.31	91.55	26	65.55
	SPP Union-T.P.	Thirumazhisai T.P.	920	1800	880	2.800	1400	MS	Prop.	1.819	0.0013	1.13	0.11	1.24	90.31	26	64.31
2	Thirumazhisai T.P.	Poonamallee Mpty T.P.	1800	3680	1880	2.574	1300	MS	Prop.	1.939	0.0016	2.96	0.30	3.26	87.05	20	67.05
3	Poonamallee Mpty T.P.	Br. pt. to Villivakkm &Pml Unions	3680	8740	5060	2.285	1300	MS	Prop.	1.722	0.0013	6.43	0.64	7.07	79.98	22	57.98
4	Br. pt. to Villivakkm &Pml Unions	Avadi Mpty Part 1-Jn	8740	11580	2840	1.092	900	MS	Prop.	1.717	0.0020	5.56	0.56	6.12	73.87	26	47.87
5	Avadi Mpty Part 1-Jn	Avadi Mpty Part 2-Jn	11580	13780	2200	0.818	800	MS	Prop.	1.627	0.0020	4.50	0.45	4.95	68.92	28	40.92
6	Avadi Mpty Part 2-Jn	Thirunindravur Jn.	13780	21180	7400	0.297	500	DI	Prop.	1.513	0.0031	23.19	2.32	25.51	43.41	38	5.41
7	Thirunindravur Jn.	Thirunindravur Tank	21180	21880	700	0.297	500	DI	Prop.	1.513	0.0031	2.19	0.22	2.41	41.00	38	3.00
					21880							47.14	4.72	51.86			

TM 7-DESIGN OF BRANCH MAINS																
INTERMEDIATE-2035																
Sl.No	From	To	Chainage (m) - From	Chainage (m) -To	Length in M	Flow in m^3/sec	Dia of Pipe in mm	Velocity m/sec	Hfm/m	F.L	OL	TL	HGL	GL	RH	Remarks
1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*	*15*	*16*	*17*
1	Br. Main to Sri Perumpudur Union VPs-4 Nos.															
	TM 7-Tapping @ Ch.: 920m								HGL Available at Tapping point				51.51			
	LS: 920m of TM 7	Sri Perumpudur Union VPs-4 Nos.	0	1000	1000m	0.004	200	0.127	0.0001	0.11	0.01	0.12	51.39	26.00	25.39	Ends at UGT @ Sri Perumpudur Union VPs-4 Nos.
1	Br. Main to Thirumazhisai TP															
	TM 7-Tapping @ Ch.: 1800m								HGL Available at Tapping point				51.04			
	LS: 1800m of TM 7	Thirumazhisai TP	0	1000	1000m	0.117	400	0.931	0.0017	1.70	0.17	1.87	49.17	30.00	19.17	Ends at UGT @ Thirumazhisai TP
2	Br. Main to Poonamalle Mpty															
	TM 7-Tapping @ Ch.: 5060m								HGL Available at Tapping point				50.19			
	LS: 5060m of TM 7	Poonamalle Mpty	0	1000	1000m	0.144	450	0.905	0.0014	1.40	0.14	1.54	48.65	25.00	23.65	Ends at UGT @ Poonamalle Mpty
3	Br. Main to Villivakkam Unoin-6 VPs															
	TM 7-Tapping @ Ch.: 8740m								HGL Available at Tapping point				48.38			
	LS: 8740m of TM 7	Jn.Poonamalle Union tapping pt.	0	1170	1170m	0.628	900	0.987	0.0007	0.84	0.08	0.92	47.46	22.00	25.46	Ends at UGT @ Villivakkam Unoin-6 VPs
	LS: Jn.Poonamalle Union tapping pt.m of TM 7	Villivakkam union	1170	4170	3000m	0.135	450	0.849	0.0012	3.74	0.37	4.11	43.35	17.00	26.35	Ends at UGT @ 8740
4	Br. Main to Avadi (M) Part-1															
	TM 7-Tapping @ Ch.: 11580m								HGL Available at Tapping point				47.15			
	LS: 11580m of TM 7	Avadi (M) Part-1	0	1000	1000m	0.115	450	0.723	0.0009	0.93	0.09	1.02	46.13	24.00	22.13	Ends at UGT @ Avadi (M) Part-1
5	Br. Main to Avadi (M) Part-2															
	TM 7-Tapping @ Ch.: 13780m								HGL Available at Tapping point				46.17			
	LS: 13780m of TM 7	Avadi (M) Part-2	0	1000	1000m	0.218	600	0.771	0.0007	0.74	0.07	0.81	45.36	24.00	21.36	Ends at UGT @ Avadi (M) Part-2
6	Br. Main to Sri Perumpudur Union VPs-4 Nos.															
	TM 7-Tapping @ Ch.: 21180m								HGL Available at Tapping point				41.45			
	LS: 21180m of TM 7	Sri Perumpudur Union VPs-4 Nos.	0	1000	1000m	0.004	250	0.081	0.0000	0.04	0.00	0.04	41.41	26.00	15.41	Ends at UGT @ Sri Perumpudur Union VPs-4 Nos.

TM 7-DESIGN OFSUB- BRANCH MAINS																
INTERMEDIATE-2035																
Sl.No	From	To	Chainage (m) - From	Chainage (m) -To	Length in M	Flow in m^3/sec	Dia of Pipe in mm	Velocity m/sec	Hfm/m	F.L	OL	TL	HGL	GL	RH	Remarks
1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*	*15*	*16*	*17*
1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*	*15*	*16*	
1	Br. Main to Poonamallee Unoin VPs-43 Nos.															
	TM 7-Tapping @ Ch.: 1170 M OF Br. Main to Villivakkam un.								HGL Available at Tapping point				47.46			
	LS: 1170 M OF Br. Main to Villivakkam un.m of TM 7	Poonamallee Unoin VPs-43 Nos.	0	1000	1000m	0.493	800	0.981	0.0008	0.82	0.08	0.90	46.56	25.00	21.56	Ends at UGT @ Poonamallee Unoin VPs-43 Nos.
ULTIMATE STAGE-2050																
Sl.No	From	To	Chainage (m) - From	Chainage (m) -To	Length in M	Flow in m^3/sec	Dia of Pipe in mm	Velocity m/sec	Hfm/m	F.L	OL	TL	HGL	GL	RH	Remarks
1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*	*15*	*16*	*17*
1	Br. Main to Sri Perumpudur Union VPs-4 Nos.															
	TM 7-Tapping @ Ch.: 920m								HGL Available at Tapping point				91.55			
	LS: 920m of TM 7	Sri Perumpudur Union VPs-4 Nos.	0	1000	1000	0.009	200	0.286	0.0005	0.46	0.05	0.51	91.04	26.00	65.04	Ends at UGT @ Sri Perumpudur Union VPs-4 Nos.
1	Br. Main to Thirumazhisai TP															
	TM 7-Tapping @ Ch.: 1800m								HGL Available at Tapping point				90.31			
	LS: 1800m of TM 7	Thirumazhisai TP	0	1000	1000	0.226	400	1.798	0.0056	5.59	0.56	6.15	84.16	30.00	54.16	Ends at UGT @ Thirumazhisai TP
2	Br. Main toPoonamalle Mpty															
	TM 7-Tapping @ Ch.: 5060m								HGL Available at Tapping point				87.05			
	LS: 5060m of TM 7	Poonamalle Mpty	0	1000	1000	0.289	450	1.817	0.0050	4.95	0.50	5.45	81.60	25.00	56.60	Ends at UGT @ Poonamalle Mpty
3	Br. Main toVillivakkam Unoin-6 VPs															
	TM 7-Tapping @ Ch.: 8740m								HGL Available at Tapping point				79.98			
	LS: 8740m of TM 7	Jn.Poonamalle Union tapping pt.	0	1170	1170	1.193	900	1.875	0.0023	2.69	0.27	2.96	77.02	22.00	55.02	Ends at UGT @ Villivakkam Unoin-6 VPs
	LS: Jn.Poonamalle Union tapping pt.m of TM 7	Villivakkam union	1170	4170	3000	0.263	450	1.654	0.0042	12.52	1.25	13.77	63.25	17.00	46.25	Ends at UGT @ 8740
4	Br. Main to Avadi (M) Part-1															
	TM 7-Tapping @ Ch.: 11580m								HGL Available at Tapping point				73.87			

	LS: 11580m of TM 7	Avadi (M) Part-1	0	1000	1000	0.274	450	1.723	0.0045	4.49	0.45	4.94	68.93	24.00	44.93	Ends at UGT @ Avadi (M) Part-1
5	Br. Main toAvadi (M) Part-2															
	TM 7-Tapping @ Ch.: 13780m								HGL Available at Tapping point				68.92			
	LS: 13780m of TM 7	Avadi (M) Part-2	0	1000	1000	0.521	600	1.843	0.0036	3.61	0.36	3.97	64.95	24.00	40.95	Ends at UGT @ Avadi (M) Part-2
6	Br. Main toSri Perumpudur Union VPs-4 Nos.															
	TM 7-Tapping @ Ch.: 21180m								HGL Available at Tapping point				43.41			
	LS: 21180m of TM 7	Sri Perumpudur Union VPs-4 Nos.	0	1000	1000	0.009	250	0.183	0.0002	0.16	0.02	0.18	43.23	26.00	17.23	Ends at UGT @ Sri Perumpudur Union VPs-4 Nos.

TM 7-DESIGN OFSUB- BRANCH MAINS																
ULTIMATE STAGE-2050																
Sl.No	From	To	Chainage (m) - From	Chainage (m) -To	Length in M	Flow in m^3/sec	Dia of Pipe in mm	Velocity m/sec	Hfm/m	F.L	OL	TL	HGL	GL	RH	Remarks
1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*	*15*	*16*	*17*
1	Br. Main toPoonamallee Unoin VPs-43 Nos.															
	TM 7-Tapping @ Ch.: 1170 M OF Br. Main to Villivakkam un.								HGL Available at Tapping point				77.02			
	LS: 1170 M OF Br. Main to Villivakkam un.m of TM 7	Poonamallee Unoin VPs-43 Nos.	0	1000	1000m	0.930	800	1.850	0.0026	2.58	0.26	2.84	74.18	25.00	49.18	Ends at UGT @ Poonamallee Unoin VPs-43 Nos.


FLOW DIAGRAM FOR T.M.8 - FROM PUMPING STATION AT PROPOSED 305 MLD WTP AT CHEMBARABAKKAM TO PEERKANKARANAI H.W.
WTP at Chembarambakkam
Ch:.0 m/GL: 26 m
2000 mm MS (E)/ 8300m
143.09/269.71
Ch:8300 M/GL: 22 m
Savitha Dental college Jn.
1200 mm MS (E)/ 2800 m
143.09/269.71
1000 m
Mangadu TP-P1
4.48/8.93 - GL: 21 m
Ch:11100 M/GL: 22 m
1200 mm MS (E)/ 180 m
138.61/260.78
Ch:11280 M/GL: 23 m
Mangadu TP-P2
3.60/7.30 – GL: 22 m
1200 mm MS (E)/1100 m
Kundrathur TP-P1
3.33/6.55 – GL:22 m
134.95/253.48
Ch: 12380 M/GL: 18 m
1200 mm MS (E)/600 m
131.62/246.93
Ch: 12980 M/GL: 18 m
Kundrathur TP-P2
3.33/6.55 – GL:20 m
1200 mm MS (E)/600 m
128.30/240.39
Ch: 13580 M/GL: 18 m
Kundrathur TP-P3
3.33/6.55 – GL:20 m
1200 mm MS (E)/600 m
124.97/233.84
Ch: 14180 M/GL:18 m
Kundrathur TP-P4
3.33/6.55 – GL:22 m
1200 mm MS (E)/600 m
121.65/227.30
Ch: 14780 M/GL:22 m
Kundrathur Union
42.85/83.49 – GL:22 m
1200 mm MS (E)/2570 m
78.80/143.80
Ch: 17350 M/GL:17 m
St.Thomas Mt. Union
8.55/17.70: GL: 19 m
1200 mm MS (E)/ 1530 m
70.25/126.11
Ch: 18880 M/GL:15 m
Anakaputhur P1
4.41/8.02- GL:16 m
1200 mm MS (E)/ 400 m
65.84/118.09
Ch: 19280 M/GL:18 m
Anakaputhur P1
4.41/8.02-GL:16 m
1200 mm MS (E)/ 1020 m
61.43/110.07
Ch: 20300 M/GL:21 m
Pammal
12.80/21.31-GL:22 m
1200 mm MS (E)/2260 m
48.63/88.76
Ch: 22560 M/GL: 23 m
Pallavaram (P)
9.41/16.50-GL25 m
1200 mm MS (E)/ 480 m
39.22/72.26
Ch: 23040 M/GL: 25 m
Thiruneermalai
4.64/7.19-GL: 24 m
1200 mm MS (E)/3860 m
34.58/65.07
Ch: 26900 M/GL: 22 m
Tambaram (P)
13.54/25.93-GL25 m
1200 mm MS (E)/230 m
21.05/39.14
Ch: 27130 M/GL: 22 m
Tambaram(P)
8.46/16.21-GL:25 m
450 mm/ 3140 m
12.59/22.93
Ch: 30270 M/GL: 23 m
Perungalathur
8.07/15.15-GL:23 m
300 mm/ 580 m
4.51/7.78
Ch: 30850 M/GL: 24 m
Kattankulatur union
2.25/3.66-GL: 24 m
300 mm/ 550 m
2.27/4.12
Peerkankaranai
2.26/4.12
Ch: 31400 m
GL: 24 m
Kundrathur main Rd.
GST Rd.

HEAD WORKS:	CHEMBARAMBAKKAM WTP	
Stage	Intermediate	Ultimate
Hours of pumping	23	23
GL	26.00m	26.00m
FVL/LWL	22.00m	22.00m
MWL of End Beneficiary	40.00m	40.00m
Residual Head	3.00m	3.00m
HGL. Reqd @ End	43.00m	43.00m
Static Head	18.00m	18.00m
Total Losses	18.35m	52.81m
HGL @ Ch.:0 m	61.35m	95.81m

Sl No	Location	Projected Demand in MLD for 2035	Flow adopting 23 hours pumping (m3/sec)	Projected Demand in MLD for 2050	Flow adopting 23 hours pumping (m3/sec)
1	Mangadu TP Part	4.48	0.05	8.93	0.11
2	Mangadu TP Part	3.66	0.04	7.30	0.09
3	Kundrathur TP Part	3.33	0.04	6.55	0.08
4	Kundrathur TP Part	3.33	0.04	6.55	0.08
5	Kundrathur TP Part	3.33	0.04	6.55	0.08
6	Kundrathur TP Part	3.33	0.04	6.55	0.08
7	Kundrathur Union VPs 31 Nos	42.85	0.52	83.49	1.01
8	St.thomas Mount Union VPs 4 Nos	8.55	0.10	17.70	0.21
9	Anakaputhur Municipality Part	4.41	0.05	8.02	0.10
10	Anakaputhur Municipality Part	4.41	0.05	8.02	0.10
11	Pammal Municipality	12.80	0.15	21.31	0.26
12	Pallavaram Part	9.41	0.11	16.50	0.20
13	Tiruneermalai TP	4.64	0.06	7.19	0.09
14	Tambaram Municipality Part	13.54	0.16	25.93	0.31
15	Tambaram Municipality Part	8.46	0.10	16.21	0.20
16	Perungalathur TP	8.07	0.10	15.15	0.18
17	Kattankulathur Union VPs 2 Nos	2.25	0.03	3.66	0.04
18	Peerkankaranai TP HW	2.27	0.03	4.12	0.05
	Total	**143.09**	**1.71**	**269.71**	**3.27**

Sl.No	From	To	Chainage (m) - From	Chainage (m) -To	Length in M	Flow in m^3/sec	Dia of Pipe in mm	Velocity m/sec	Hfm/m	F.L	OL	TL	HGL	GL	RH
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
	Inermediate-2035														
													61.35	26.00	35.35
1	Chembarambakkam P.S	Savitha Dental college Jn	0	8300	8300	1.71	2000	0.544	0.0001	0.79	0.08	0.87	60.48	22.00	38.48
1	Savitha Dental college Jn	Mangadu T.P Part 1-Jn	8300	11100	2800	1.71	1200	1.512	0.0011	3.09	0.31	3.40	57.08	22.00	35.08
2	Mangadu T.P Part 1-Jn	Mangadu T.P Part 2-Jn	11100	11280	180	1.66	1200	1.468	0.0010	0.19	0.02	0.21	56.87	23.00	33.87
3	Mangadu T.P Part 2-Jn	Kundrathur T.P Part 1-jn	11280	12380	1100	1.62	1200	1.432	0.0010	1.10	0.11	1.21	55.66	18.00	37.66
4	Kundrathur T.P Part 1-jn	Kundrathur T.P Part 2- Jn	12380	12980	600	1.58	1200	1.397	0.0010	0.57	0.06	0.63	55.03	18.00	37.03
5	Kundrathur T.P Part 2- Jn	Kundrathur T.P Part 3-Jn	12980	13580	600	1.54	1200	1.362	0.0009	0.55	0.05	0.60	54.43	18.00	36.43
6	Kundrathur T.P Part 3-Jn	Kundrathur T.P Part 4-Jn	13580	14180	600	1.50	1200	1.326	0.0009	0.52	0.05	0.57	53.85	17.00	36.85
7	Kundrathur T.P Part 4-Jn	Kundrathur Union Jn	14180	14780	600	1.46	1200	1.291	0.0008	0.50	0.05	0.55	53.31	22.00	31.31
8	Kundrathur Union Jn	St. Thomas Union Jn	14780	17350	2570	0.94	1200	0.831	0.0004	0.96	0.10	1.06	52.25	17.00	35.25
9	St. Thomas Union Jn	Anakaputhur Part 1-Jn	17350	18880	1530	0.84	1200	0.743	0.0003	0.47	0.05	0.52	51.73	15.00	36.73
10	Anakaputhur Part 1-Jn	Anakaputhur Part 2-Jn	18880	19280	400	0.79	1200	0.699	0.0003	0.11	0.01	0.12	51.61	18.00	33.61
11	Anakaputhur Part 2-Jn	Pammal Jn	19280	20300	1020	0.74	1200	0.654	0.0002	0.25	0.02	0.27	51.34	21.00	30.34
12	Pammal Jn	Pallavaram Part-Jn	20300	22560	2260	0.59	1200	0.522	0.0002	0.36	0.04	0.40	50.94	25.00	25.94
13	Pallavaram Part-Jn	Thiruneermalai Jn	22560	23040	480	0.48	1200	0.424	0.0001	0.05	0.01	0.06	50.88	23.00	27.88
14	Thiruneermalai Jn	Tambaram Part 1-Jn	23040	26900	3860	0.42	1200	0.371	0.0001	0.34	0.03	0.37	50.51	22.00	28.51
15	Tambaram Part 1-Jn	Tambaram Part 2-Jn	26900	27130	230	0.26	1200	0.230	0.0000	0.01	0.00	0.01	50.50	22.00	28.50
16	Tambaram Part 2-Jn	Perungalathur Jn	27130	30270	3140	0.16	450	1.006	0.0017	5.33	0.53	5.86	44.64	23.00	21.64
17	Perungalathur Jn	Kattankulathur Union-Jn	30270	30850	580	0.06	300	0.849	0.0020	1.17	0.12	1.29	43.35	24.00	19.35
18	Kattankulathur Union-Jn	Peerkankaranai HW	30850	31400	550	0.03	300	0.424	0.0006	0.32	0.03	0.35	43.00	24.00	19.00
					31400.00					16.68	1.67	18.35			

Sl.No	From	To	Chainage (m) - From	Chainage (m) -To	Length in M	Flow in m^3/sec	Dia of Pipe in mm	Velocity m/sec	Hfm/m	F.L	OL	TL	HGL	GL	RH
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
	Ultimate-2050														
													95.81	26.00	69.81
1	Chembarambakkam P.S	Savitha Dental college Jn	0	8300	8300	3.27	2000	1.041	0.0003	2.54	0.25	2.79	93.02	22.00	71.02
	Savitha Dental college Jn	Mangadu T.P Part 1-Jn	8300	11100	2800	3.27	1200	2.891	0.0036	10.00	1.00	11.00	82.02	22.00	60.02
2	Mangadu T.P Part 1-Jn	Mangadu T.P Part 2-Jn	11100	11280	180	3.16	1200	2.794	0.0034	0.60	0.06	0.66	81.36	23.00	58.36
3	Mangadu T.P Part 2-Jn	Kundrathur T.P Part 1-jn	11280	12380	1100	3.07	1200	2.714	0.0032	3.50	0.35	3.85	77.50	18.00	59.50
4	Kundrathur T.P Part 1-jn	Kundrathur T.P Part 2- Jn	12380	12980	600	2.99	1200	2.644	0.0030	1.82	0.18	2.00	75.50	18.00	57.50
5	Kundrathur T.P Part 2- Jn	Kundrathur T.P Part 3-Jn	12980	13580	600	2.91	1200	2.573	0.0029	1.73	0.17	1.90	73.60	18.00	55.60
6	Kundrathur T.P Part 3-Jn	Kundrathur T.P Part 4-Jn	13580	14180	600	2.83	1200	2.502	0.0027	1.65	0.16	1.81	71.79	17.00	54.79
7	Kundrathur T.P Part 4-Jn	Kundrathur Union Jn	14180	14780	600	2.75	1200	2.432	0.0026	1.57	0.16	1.73	70.06	22.00	48.06
8	Kundrathur Union Jn	St. Thomas Union Jn	14780	17350	2570	1.74	1200	1.538	0.0011	2.93	0.29	3.22	66.84	17.00	49.84
9	St. Thomas Union Jn	Anakaputhur Part 1-Jn	17350	18880	1530	1.53	1200	1.353	0.0009	1.38	0.14	1.52	65.32	15.00	50.32
10	Anakaputhur Part 1-Jn	Anakaputhur Part 2-Jn	18880	19280	400	1.43	1200	1.264	0.0008	0.32	0.03	0.35	64.97	18.00	46.97
11	Anakaputhur Part 2-Jn	Pammal Jn	19280	20300	1020	1.33	1200	1.176	0.0007	0.71	0.07	0.78	64.19	21.00	43.19
12	Pammal Jn	Pallavaram Part-Jn	20300	22560	2260	1.07	1200	0.946	0.0005	1.07	0.11	1.18	63.01	25.00	38.01
13	Pallavaram Part-Jn	Thiruneermalai Jn	22560	23040	480	0.87	1200	0.769	0.0003	0.16	0.02	0.18	62.83	23.00	39.83
14	Thiruneermalai Jn	Tambaram Part 1-Jn	23040	26900	3860	0.78	1200	0.690	0.0003	1.03	0.10	1.13	61.70	22.00	39.70
15	Tambaram Part 1-Jn	Tambaram Part 2-Jn	26900	27130	230	0.47	1200	0.416	0.0001	0.02	0.00	0.02	61.68	22.00	39.68
16	Tambaram Part 2-Jn	Perungalathur Jn	27130	30270	3140	0.27	450	1.698	0.0044	13.74	1.37	15.11	46.56	23.00	23.56
17	Perungalathur Jn	Kattankulathur Union-Jn	30270	30850	580	0.09	300	1.273	0.0042	2.44	0.24	2.68	43.88	24.00	19.88
18	Kattankulathur Union-Jn	Peerkankaranai HW	30850	31400	550	0.05	300	0.707	0.0015	0.80	0.08	0.88	43.00	24.00	19.00
					31400					48.03	4.78	52.81			

TM 8-DESIGN OF BRANCH MAINS																
INTERMEDIATE-2035																
Sl.No	From	To	Chainage (m)		Length in M	Flow in m^3/sec	Dia of Pipe in mm	Velocity m/sec	Hfm/m	F.L	OL	TL	HGL	GL	RH	Remarks
			From	To												
1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*	*15*	*16*	*17*
1	Br. Main to Mangadu TP (P)															
	TM 7-Tapping @ LS 6500 M								HGL Available at Tapping point				50.46			
	LS: 6500m of TM 7	Mangadu TP (P)	0	1000	1000m	0.050	300	0.707	0.0015	1.45	0.15	1.60	48.86	21.00	27.86	Ends at UGT @ Mangadu TP (P)
2	Br. Main to Mangadu TP (P)															
	TM 7-Tapping @ LS 7500 M								HGL Available at Tapping point				50.16			
	LS: 7500m of TM 7	Mangadu TP (P)	0	1000	1000m	0.040	250	0.815	0.0023	2.33	0.23	2.56	47.60	22.00	25.60	Ends at UGT @ Mangadu TP (P)
3	Br. Main to Kundrathur TP (P1)															
	TM 7-Tapping @ LS 10500 M								HGL Available at Tapping point				49.33			
	LS: 10500m of TM 7	Kundrathur TP (P1)	0	1000	1000m	0.040	250	0.815	0.0023	2.33	0.23	2.56	46.77	22.00	24.77	Ends at UGT @ Kundrathur TP (P1)
4	Br. Main to Kundrathur TP (P2)															
	TM 7-Tapping @ LS 11250 M								HGL Available at Tapping point				48.96			
	LS: 11250m of TM 7	Kundrathur TP (P2)	0	1000	1000m	0.040	250	0.815	0.0023	2.33	0.23	2.56	46.40	20.00	26.40	Ends at UGT @ Kundrathur TP (P2)
5	Br. Main to Kundrathur TP (P3)															
	TM 7-Tapping @ LS 12110 M								HGL Available at Tapping point				48.54			
	LS: 12110m of TM 7	Kundrathur TP (P3)	0	1000	1000m	0.040	250	0.815	0.0023	2.33	0.23	2.56	45.98	19.00	26.98	Ends at UGT @ Kundrathur TP (P3)
6	Br. Main to Kundrathur TP (P4)															
	TM 7-Tapping @ LS 12970 M								HGL Available at Tapping point				47.98			
	LS: 12970m of TM 7	Kundrathur TP (P4)	0	1000	1000m	0.040	250	0.815	0.0023	2.33	0.23	2.56	45.42	18.00	27.42	Ends at UGT @ Kundrathur TP (P4)
7	Br. Main to Kundrathur Union															
	TM 7-Tapping @ LS 13830 M								HGL Available at Tapping point				47.45			
	LS: 13830m of TM 7	Kundrathur Union	0	1000	1000m	0.520	800	1.035	0.0009	0.90	0.09	0.99	46.46	22.00	24.46	Ends at UGT @ Kundrathur Union
8	Br. Main to St.Thomas Mount Union															
	TM 7-Tapping @ LS 14690 M								HGL Available at Tapping point				47.45			
	LS: 14690m of TM 7	St.Thomas Mount Union	0	1000	1000m	0.100	400	0.796	0.0013	1.28	0.13	1.41	46.04	19.00	27.04	Ends at UGT @ St.Thomas Mount Union
9	Br. Main to Anakaputhur															
	TM 7-Tapping @ LS 15550 M								HGL Available at Tapping point				45.90			
	LS: 15550m of TM 7	Anakaputhur	0	1000	1000m	0.050	300	0.707	0.0015	1.45	0.15	1.60	44.30	16.00	28.30	Ends at UGT @ Anakaputhur
10	Br. Main to Anakaputhur															
	TM 7-Tapping @ LS 16200 M								HGL Available at Tapping point				45.44			
	LS: 16200m of TM 7	Anakaputhur	0	1000	1000m	0.050	300	0.707	0.0015	1.45	0.15	1.60	43.84	16.00	27.84	Ends at UGT @ Anakaputhur
11	Br. Main to Pammal															
	TM 7-Tapping @ LS 16850 M								HGL Available at Tapping point				45.02			
	LS: 16850m of TM 7	Pammal M	0	1000	1000m	0.150	450	0.943	0.0015	1.51	0.15	1.66	43.36	22.00	21.36	Ends at UGT @ Pammal M
12	Br. Main to Pallavaram (P)															

	TM 7-Tapping @ LS 18850 M								HGL Available at Tapping point				43.60				
	LS: 18850m of TM 7	Pallavaram (P)	0	1000	1000m	0.110	400	0.875	0.0015	1.52	0.15	1.67	41.93	25.00	16.93	Ends at UGT @ Pallavaram (P)
13	Br. Main to Thiruneermalai																
	TM 7-Tapping @ LS 20150 M								HGL Available at Tapping point				42.49				
	LS: 20150m of TM 7	Thiruneermalai	0	1000	1000m	0.060	250	1.222	0.0049	4.86	0.49	5.35	37.14	24.00	13.14	Ends at UGT @ Thiruneermalai
14	Br. Main to Tambaram Mpty(P)																
	TM 7-Tapping @ LS 22900 M								HGL Available at Tapping point				40.64				
	LS: 22900m of TM 7	Tambaram Mpty(P)	0	1000	1000m	0.160	450	1.006	0.0017	1.70	0.17	1.87	38.77	26.00	12.77	Ends at UGT @ Tambaram Mpty(P)
15	Br. Main to Tambaram Mpty(P)																
	TM 7-Tapping @ LS 25650 M								HGL Available at Tapping point				39.17				
	LS: 25650m of TM 7	Tambaram Mpty(P)	0	1000	1000m	0.100	400	0.796	0.0013	1.28	0.13	1.41	37.76	25.00	12.76	Ends at UGT @ Tambaram Mpty(P)
16	Br. Main to Perungalathur																
	TM 7-Tapping @ LS 28750 M								HGL Available at Tapping point				33.37				
	LS: 28750m of TM 7	Perungalathur	0	1000	1000m	0.100	350	1.039	0.0024	2.43	0.24	2.67	30.70	23.00	7.70	Ends at UGT @ Perungalathur
17	Br. Main to Kattankulathur Union																
	TM 7-Tapping @ LS 30450 M								HGL Available at Tapping point				29.60				
	LS: 30450m of TM 7	Kattankulathur Union	0	1000	1000m	0.030	250	0.611	0.0014	1.39	0.14	1.53	28.07	24.00	4.07	Ends at UGT @ Kattankulathur Union

TM 8-DESIGN OF BRANCH MAINS

ULTIMATE STAGE-2050

Sl.No	From	To	Chainage (m)-From	Chainage (m)-To	Length in M	Flow in m^3/sec	Dia of Pipe in mm	Velocity m/sec	Hfm/m	F.L	OL	TL	HGL	GL	RH	Remarks
1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*	*15*	*16*	*17*
1	Br. Main to Mangadu TP (P)															
	TM 7-Tapping @ LS 6500 M								HGL Available at Tapping point				90.48			
	LS: 6500m of TM 7	Mangadu TP (P)	0	1000	1000	0.110	300	1.556	0.0061	6.06	0.61	6.67	83.81	21.00	62.81	Ends at UGT @ Mangadu TP (P)
2	Br. Main to Mangadu TP (P)															
	TM 7-Tapping @ LS 7500 M								HGL Available at Tapping point				89.56			
	LS: 7500m of TM 7	Mangadu TP (P)	0	1000	1000	0.090	250	1.833	0.0101	10.13	1.01	11.14	78.42	22.00	56.42	Ends at UGT @ Mangadu TP (P)
3	Br. Main to Kundrathur TP (P1)															
	TM 7-Tapping @ LS 10500 M								HGL Available at Tapping point				86.93			
	LS: 10500m of TM 7	Kundrathur TP (P1)	0	1000	1000	0.080	250	1.630	0.0082	8.18	0.82	9.00	77.93	22.00	55.93	Ends at UGT @ Kundrathur TP (P1)
4	Br. Main to Kundrathur TP (P2)															
	TM 7-Tapping @ LS 11250 M								HGL Available at Tapping point				85.73			
	LS: 11250m of TM 7	Kundrathur TP (P2)	0	1000	1000	0.080	250	1.630	0.0082	8.18	0.82	9.00	76.73	20.00	56.73	Ends at UGT @ Kundrathur TP (P2)

TM 8-DESIGN OF BRANCH MAINS																
ULTIMATE STAGE-2050																
Sl.No	From	To	Chainage (m)-From	Chainage (m)-To	Length in M	Flow in m^3/sec	Dia of Pipe in mm	Velocity m/sec	Hfm/m	F.L	OL	TL	HGL	GL	RH	Remarks
1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*	*15*	*16*	*17*
5	Br. Main to Kundrathur TP (P3)															
	TM 7-Tapping @ LS 12110 M								HGL Available at Tapping point				84.43			
	LS: 12110m of TM 7	Kundrathur TP (P3)	0	1000	1000	0.080	250	1.630	0.0082	8.18	0.82	9.00	75.43	19.00	56.43	Ends at UGT @ Kundrathur TP (P3)
6	Br. Main to Kundrathur TP (P4)															
	TM 7-Tapping @ LS 12970 M								HGL Available at Tapping point				82.66			
	LS: 12970m of TM 7	Kundrathur TP (P4)	0	1000	1000	0.080	250	1.630	0.0082	8.18	0.82	9.00	73.66	18.00	55.66	Ends at UGT @ Kundrathur TP (P4)
7	Br. Main to Kundrathur Union															
	TM 7-Tapping @ LS 13830 M								HGL Available at Tapping point				80.98			
	LS: 13830m of TM 7	Kundrathur Union	0	1000	1000	1.010	800	2.009	0.0030	2.99	0.30	3.29	77.69	22.00	55.69	Ends at UGT @ Kundrathur Union
8	Br. Main to St.Thomas Mount Union															
	TM 7-Tapping @ LS 14690 M								HGL Available at Tapping point				78.38			
	LS: 14690m of TM 7	St.Thomas Mount Union	0	1000	1000	0.210	400	1.671	0.0049	4.89	0.49	5.38	73.00	19.00	54.00	Ends at UGT @ St.Thomas Mount Union
9	Br. Main to Anakaputhur															
	TM 7-Tapping @ LS 15550 M								HGL Available at Tapping point				76.33			
	LS: 15550m of TM 7	Anakaputhur	0	1000	1000	0.100	300	1.415	0.0051	5.10	0.51	5.61	70.72	16.00	54.72	Ends at UGT @ Anakaputhur M
10	Br. Main to Anakaputhur															
	TM 7-Tapping @ LS 16200 M								HGL Available at Tapping point				74.96			
	LS: 16200m of TM 7	Anakaputhur	0	1000	1000	0.100	300	1.415	0.0051	5.10	0.51	5.61	69.35	16.00	53.35	Ends at UGT @ Anakaputhur M
11	Br. Main to Pammal															
	TM 7-Tapping @ LS 16850 M								HGL Available at Tapping point				73.75			
	LS: 16850m of TM 7	Pammal M	0	1000	1000	0.260	450	1.635	0.0041	4.09	0.41	4.50	69.25	22.00	47.25	Ends at UGT @ Pammal M
12	Br. Main to Pallavaram (P)															
	TM 7-Tapping @ LS 18850 M								HGL Available at Tapping point				69.60			
	LS: 18850m of TM 7	Pallavaram (P)	0	1000	1000	0.200	400	1.592	0.0045	4.48	0.45	4.93	64.67	25.00	39.67	Ends at UGT @ Pallavaram (P)
13	Br. Main to Thiruneermalai															
	TM 7-Tapping @ LS 20150 M								HGL Available at Tapping point				66.33			
	LS: 20150m of TM 7	Thiruneermalai	0	1000	1000	0.090	250	1.833	0.0101	10.13	1.01	11.14	55.19	24.00	31.19	Ends at UGT @ Thiruneermalai
14	Br. Main to Tambaram Mpty(P)															
	TM 7-Tapping @ LS 22900 M								HGL Available at Tapping point				60.65			

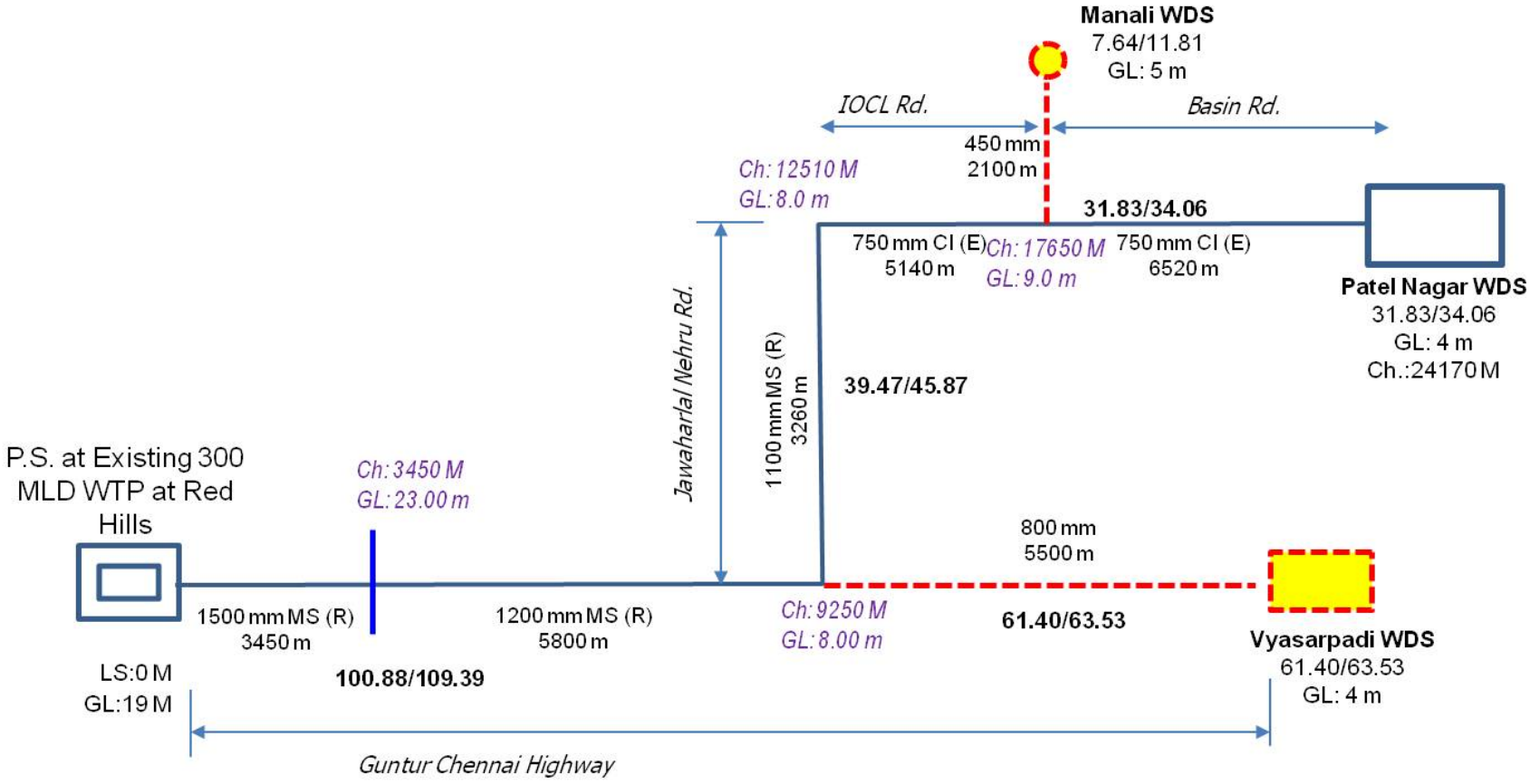
TM 8-DESIGN OF BRANCH MAINS																
ULTIMATE STAGE-2050																
Sl.No	From	To	Chainage (m)-From	Chainage (m)-To	Length in M	Flow in m^3/sec	Dia of Pipe in mm	Velocity m/sec	Hfm/m	F.L	OL	TL	HGL	GL	RH	Remarks
1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*	*15*	*16*	*17*
	LS: 22900m of TM 7	Tambaram Mpty(P)	0	1000	1000	0.310	450	1.949	0.0056	5.62	0.56	6.18	54.47	26.00	28.47	Ends at UGT @ Tambaram Mpty(P)
15	Br. Main to Tambaram Mpty(P)															
	TM 7-Tapping @ LS 25650 M								HGL Available at Tapping point				56.34			
	LS: 25650m of TM 7	Tambaram Mpty(P)	0	1000	1000	0.200	400	1.592	0.0045	4.48	0.45	4.93	51.41	25.00	26.41	Ends at UGT @ Tambaram Mpty(P)
16	Br. Main to Perungalathur															
	TM 7-Tapping @ LS 28750 M								HGL Available at Tapping point				41.41			
	LS: 28750m of TM 7	Perungalathur	0	1000	1000	0.180	350	1.871	0.0070	7.04	0.70	7.74	33.67	23.00	10.67	Ends at UGT @ Perungalathur
17	Br. Main to Kattankulathur Union															
	TM 7-Tapping @ LS 30450 M								HGL Available at Tapping point				33.53			
	LS: 30450m of TM 7	Kattankulathur Union	0	1000	1000	0.040	250	0.815	0.0023	2.33	0.23	2.56	30.97	24.00	6.97	Ends at UGT @ Kattankulathur Union

REDHILLS SYSTEM

REDHILLS WTP AND SURAPET	*Existing-300 MLD Plant at Redhills + 14 MLD Plant at Surapet:Total 314 MLD*							
	ZONE NOS.	2020	2025	2030	2035	2040	2045	2050
CORE CITY	9	29.30	30.26	30.94	31.64	32.42	33.30	33.88
	10	59.42	60.46	61.01	61.40	62.23	63.07	63.53
CORE CITY	11	29.78	30.69	31.30	31.83	32.68	33.40	34.06
Sub Total		118.50	121.41	123.24	124.87	127.33	129.77	131.46
ADDED AREA	CC1-B	6.66	7.23	12.83	14.84	17.01	23.73	28.83
	CC2	25.42	29.96	45.40	51.46	57.84	73.86	82.01
	CC3	5.83	6.82	11.18	13.37	16.03	22.46	27.55
	CC4	32.54	36.54	53.95	60.25	67.31	85.97	95.95
Sub Total		70.44	80.55	123.36	139.92	158.19	206.02	234.34
REST OF CMA	OC3	5.75	6.04	12.50	14.50	16.51	24.79	27.51
	OC5A	27.28	33.50	55.03	67.56	82.99	131.29	161.25
Sub Total		33.03	39.54	67.53	82.06	99.50	156.08	188.76
TOTAL		221.97	241.50	314.12	346.86	385.01	491.87	554.55

		ZONE NO.	NAME		2020	2025	2030	2035	2040	2045	2050
		10	VYASARPADI		59.42	60.46	61.01	61.40	62.23	63.07	63.53
	CC1-B	CM3	Manali	Part	2.19	2.43	3.47	3.82	4.25	5.35	5.91
	CC2	CM3	Manali	Part	2.19	2.43	3.47	3.82	4.25	5.35	5.91
TM9		11	PATEL NAGAR		29.78	30.69	31.30	31.83	32.68	33.40	34.06
		9	KOLATHUR		29.30	30.26	30.94	31.64	32.42	33.30	33.88
TM10	OC5A	OCM1	Avadi	Part	27.28	33.50	55.03	67.56	82.99	131.29	161.25
	CC4	CM5	Ambattur	Part	29.98	33.87	49.08	54.69	61.04	76.96	84.74
	CC3	CV8	Kathirvedu		0.80	0.83	1.52	1.80	2.15	3.31	4.46
TM11	CC4	CV7	Soorapattu		1.23	1.28	2.29	2.60	2.90	4.15	5.15
	CC4	CV9	Puthagaram		1.33	1.39	2.58	2.96	3.37	4.86	6.06
	CC2	CM4	Madhavaram		19.62	23.74	35.87	40.93	46.20	58.39	64.01
	CC3	CV6	Vadaperumbakkam		0.52	0.56	1.27	1.55	1.84	2.74	3.50
	CC3	CT2	Puzhal		4.51	5.43	8.39	10.02	12.04	16.41	19.59
	OC3	OCT10	Naravarikuppam		1.64	1.67	2.26	2.28	2.31	3.01	3.05
	OC3	PU-1	Alinjivakkam		0.15	0.16	0.39	0.46	0.54	0.81	0.90
	OC3	PU-2	Amulavoyal		0.00	0.00	0.00	0.00	0.00	0.00	0.00
	OC3	PU-3	Ariyalur		0.24	0.25	0.51	0.61	0.71	1.25	1.40
	OC3	PU-4	Athivakkam		0.41	0.45	1.05	1.24	1.45	2.21	2.47
	OC3	PU-5	Chettimedu		0.01	0.02	0.03	0.05	0.05	0.10	0.11
	OC3	PU-6	Elanthancheri		0.08	0.09	0.21	0.24	0.28	0.42	0.48
	OC3	PU-7	Grant Lyon		0.36	0.39	0.90	1.09	1.25	1.90	2.13
	OC3	PU-8	Kosappur	Part	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	OC3	PU-9	Lyon	Part	0.05	0.05	0.11	0.13	0.15	0.24	0.28
	OC3	PU-10	Manjambakkam	Part	0.21	0.22	0.54	0.65	0.76	1.14	1.28
	OC3	PU-11	Palavoyal	Part	0.05	0.05	0.12	0.14	0.18	0.26	0.30
TM12	OC3	PU-12	Payasambakkam		0.12	0.13	0.32	0.39	0.45	0.67	0.76
	OC3	PU-13	Sendrambakkam	Part	0.73	0.76	1.80	2.16	2.51	3.82	4.29
	OC3	PU-14	Sirugavur		0.01	0.01	0.02	0.02	0.02	0.04	0.04
	OC3	PU-15	Thandalkalani		0.08	0.08	0.19	0.22	0.25	0.40	0.45
	OC3	PU-16	Theerthakiriyampattu		0.64	0.67	1.60	1.90	2.20	3.36	3.76
	OC3	PU-17	Vadagarai		0.31	0.34	0.78	0.94	1.09	1.65	1.86
	OC3	PU-18	Vaikkadu								
	OC3	PU-19	Vilakkupattu								
	OC3	PU-20	Vilangadupakkam		0.66	0.70	1.67	1.98	2.31	3.51	3.95
	CC2	CV4	Thiyambakkam		0.22	0.24	0.59	0.75	0.90	1.35	1.74
	CC2	CV5	Mathur		2.57	2.62	4.10	4.41	4.74	6.53	7.86
	CC2	CT1	Chinnasekkadu	Part	0.82	0.94	1.38	1.55	1.76	2.25	2.50
	CC1-B	CV1	Edayanchavadi		1.79	1.89	3.72	4.34	4.98	7.24	9.10
	CC1-B	CV2	Sadayankuppam		1.11	1.18	2.51	3.01	3.52	5.18	6.59
	CC1-B	CV3	Kadapakkam		0.75	0.80	1.76	2.12	2.51	3.72	4.74
	CC1-B	CT1	Chinnasekkadu	Part	0.82	0.94	1.38	1.55	1.76	2.25	2.50
					221.97	241.50	314.12	346.86	385.01	491.87	554.55

Transmission Main 9- FROM P.S. AT EXISTING 300 MLD WTP AT RED HILLS TO PATEL NAGAR WDS



HEAD WORKS:	REDHILLS WTP	
Stage	Intermediate	Ultimate
Hours of pumping	23	23
GL	19.00m	19.00m
FVL/LWL	16.00m	16.00m
MWL of Sump @ End Beneficiary	20.00m	20.00m
Residual Head	3.00m	3.00m
HGL. Reqd @ End	23.00m	23.00m
Static Head	7.00m	7.00m
Total Losses	15.89m	16.27m
HGL @ Ch.:0 m	38.89m	39.27m

Sl No	Location	Projected Demand in MLD for 2035	Flow adopting 23 hours pumping (m3/sec)	Projected Demand in MLD for 2050	Flow adopting 23 hours pumping (m3/sec)
1	Vyasarpadi WDS	61.40	0.74	63.53	0.77
2	Manali	7.64	0.09	11.81	0.14
3	Patel Nagar WDS	31.83	0.38	34.06	0.41
	Total	**100.88**	**1.21**	**109.39**	**1.32**

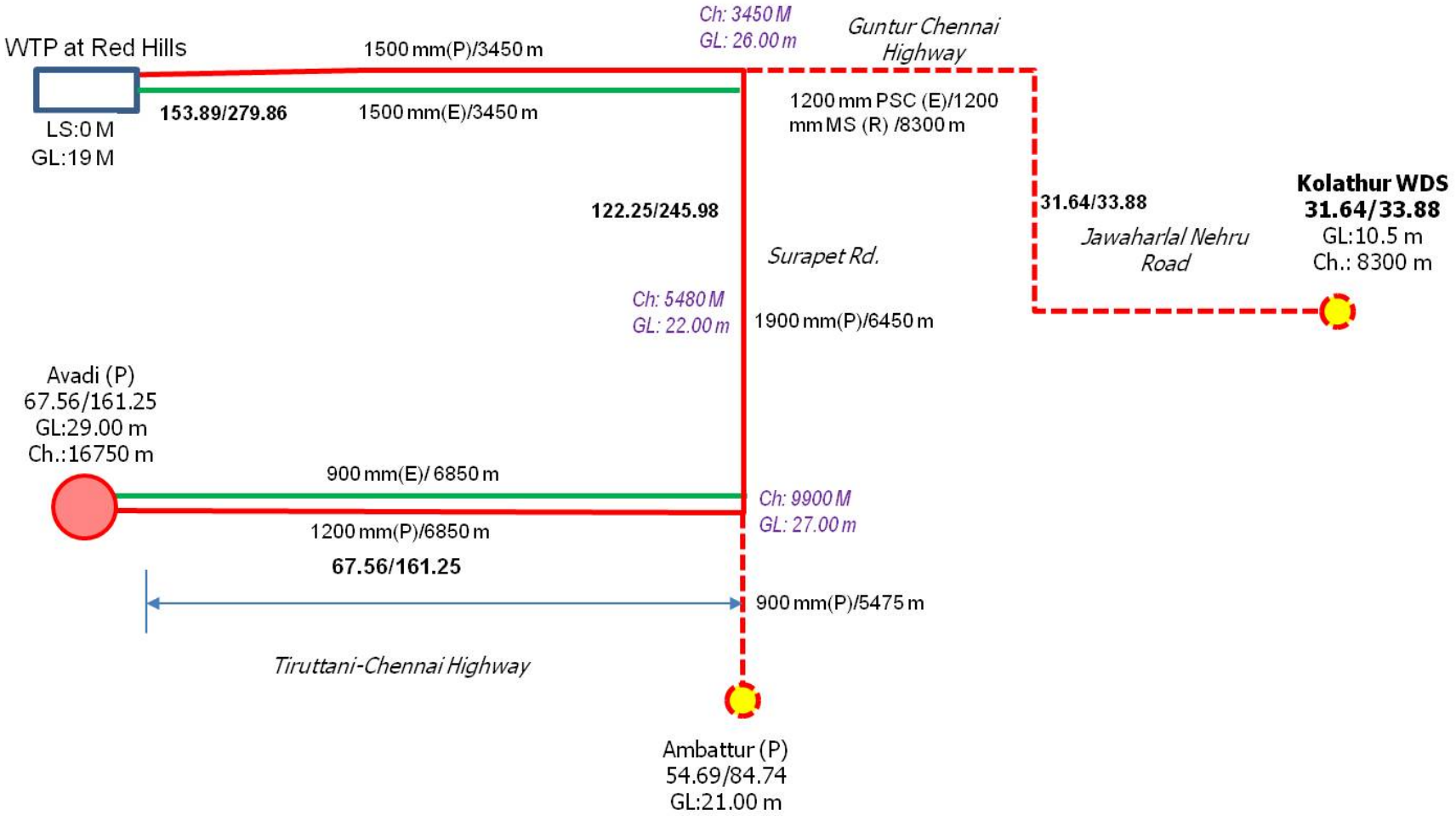
TM 9-DESIGN OF TRANSMISSION MAIN															
INTERMEDIATE-2035															
Sl.No	From	To	Chainage (m)-From	Chainage (m)-To	Length in M	Flow in m^3/sec	Dia of Pipe in mm	Velocity m/sec	Hfm/m	F.L	OL	TL	HGL	GL	RH
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
													38.89	19.00	
1	Redhills P.S	Change of pipe size	0	3450	3450	1.21	1500	0.685	0.0002	0.70	0.07	0.77	38.12	23.00	15.12
2	Change of pipe size	Br.pt to Vyasarpadi WDS	3450	9250	5800	1.21	1200	1.070	0.0006	3.43	0.34	3.77	34.35	8.00	26.35
3	Br.pt to Vyasarpadi WDS	Change of pipe size	9250	12510	3260	0.47	1100	0.495	0.0002	0.53	0.05	0.58	33.78	8.00	25.78
4	Change of pipe size	Manali Jn	12510	17650	5140	0.47	750	1.064	0.0010	5.26	0.53	5.79	27.99	9.00	18.99
5	Manali Jn	Patel Nagar WDS	17650	24170	6520	0.38	750	0.860	0.0007	4.54	0.45	4.99	23.00	20.00	3.00
					24170.00					14.45	1.44	15.89			

TM 9-DESIGN OF TRANSMISSION MAIN															
ULTIMATE-2050															
Sl.No	From	To	Chainage (m)-From	Chainage (m)-To	Length in M	Flow in m^3/sec	Dia of Pipe in mm	Velocity m/sec	Hfm/m	F.L	OL	TL	HGL	GL	RH
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
													39.27	19.00	
1	Redhills P.S	Jn 1	0	3450	3450	1.32	1500	0.747	0.0002	0.82	0.08	0.90	38.38	23.00	15.38
2	Jn 1	Vyasarpadi WDS	3450	9250	5800	1.32	1200	1.167	0.0007	4.01	0.40	4.41	33.97	8.00	25.97
3	Vyasarpadi WDS	Jn 2	9250	15070	5820	0.55	1100	0.579	0.0002	1.25	0.13	1.38	32.59	8.00	24.59
4	Jn 2	Manali Jn	15070	17650	2580	0.55	750	1.245	0.0014	3.51	0.35	3.86	28.73	9.00	19.73
5	Manali Jn	Patel Nagar WDS	17650	24170	6520	0.41	750	0.928	0.0008	5.21	0.52	5.73	23.00	20.00	3.00
					24170.00					14.79	1.48	16.27			

TM 9-DESIGN OF BRANCH MAINS																	
INTERMEDIATE-2035																	
Sl.No	From	To	Chainage (m)		Length in M	Flow in m^3/sec	Dia of Pipe in mm	Velocity m/sec	Hfm/m	F.L	OL	TL	HGL	GL	RH	Remarks
			From	To												
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1	Br. Main to Vyasarpadi WDS															
	TM 9-Tapping @ LS 9250 M								HGL Available at Tapping point				34.35			
	LS: 9250m of TM 9	Vyasarpadi WDS	0	5500	5500	0.740	800	1.472	0.0017	9.38	0.94	10.32	24.03	4.00	20.03	Ends at UGT @ Vyasarpadi WDS
2	Br. Main to Manali															
	TM 9-Tapping @ LS 17650 M								HGL Available at Tapping point				27.99			
	LS: 17650m of TM 9	Manali	0	2100	2100	0.090	350	0.935	0.0020	4.21	0.42	4.63	23.36	5.00	18.36	Ends at UGT @ Manali

TM 9-DESIGN OF BRANCH MAINS																
ULTIMATE STAGE-2050																
Sl.No	From	To	Chainage (m)		Length in M	Flow in m^3/sec	Dia of Pipe in mm	Velocity m/sec	Hfm/m	F.L	OL	TL	HGL	GL	RH	Remarks
			From	To												
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1	Br. Main to Vyasarpadi WDS															
	TM 9-Tapping @ LS 9250 M								HGL Available at Tapping point				33.97			
	LS: 9250m of TM 9	Vyasarpadi WDS		5500	5500	0.770	800	1.532	0.0018	10.08	1.01	11.09	22.88	4.00	18.88	Ends at UGT @ Vyasarpadi WDS
2	Br. Main to Manali															
	TM 9-Tapping @ LS 17650 M								HGL Available at Tapping point				28.73			
	LS: 17650m of TM 9	Manali		2100	2100	0.140	350	1.455	0.0045	9.38	0.94	10.32	18.41	5.00	13.41	Ends at UGT @ Manali

Transmission Main 10- FROM PUMPING STATION REDHILLS WTP TO AVADI H.W.



HEAD WORKS:	REDHILLS WTP	
Stage	Intermediate	Ultimate
Hours of pumping	23	23
GL	19.00m	19.00m
FVL/LWL	16.00m	16.00m
MWL of Sump @ End Beneficiary	29.00m	29.00m
Residual Head	3.00m	3.00m
HGL. Reqd @ End	32.00m	32.00m
Static Head	16.00m	16.00m
Total Losses	3.82m	15.74m
HGL @ Ch.:0 m	35.82m	47.74m

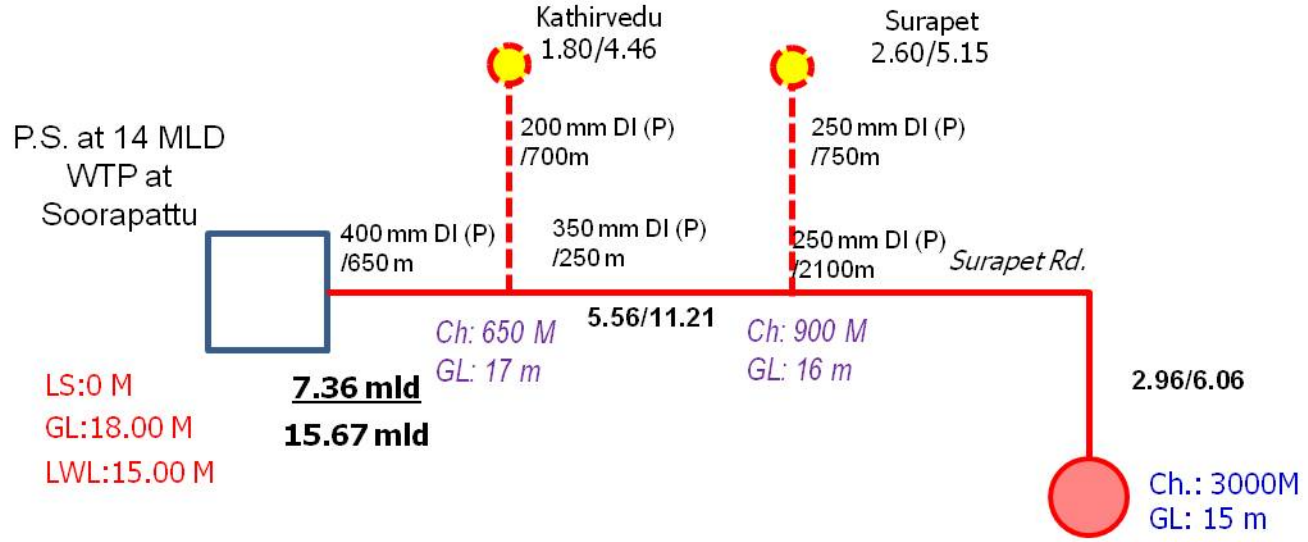
Sl No	Location	Projected Demand in MLD for 2035	Flow adopting 23 hours pumping (m3/sec)	Projected Demand in MLD for 2050	Flow adopting 23 hours pumping (m3/sec)
1	Kolathur WDS	31.64	0.38	33.88	0.41
2	Avadi HW	67.56	0.82	161.25	1.95
3	Ambattur HW	54.69	0.66	84.74	1.02
	Total	**153.89**	**1.86**	**279.86**	**3.38**

TM 10-DESIGN OF TRANSMISSION MAIN																					
INTERMEDIATE-2035																					
Sl. No	From	To	Chainage in m		Length in M	Existing Pipe					Proposed Pipe Line					FL Total	OL	TL	HGL	GL	RH
			From	To		Flow in m^3/sec	Dia of Pipe in mm	Velocity m/sec	Hfm/m	F.L	Flow in m^3/sec	Dia of Pipe in mm	Velocity m/sec	Hfm/m	F.L						
																			35.82	19.00	16.82
1	Redhills P.S	Ambattur Jn	0	3450	3450	0.93	1500	0.526	0.0001	0.43	0.93	1500	0.526	0.0001	0.43	0.87	0.09	0.96	34.86	26.00	8.86
2	Ambattur Jn	Avadi Jn	3450	9900	6450						1.48	1900	0.522	0.0001	0.60	0.60	0.06	0.66	34.20	27.00	7.20
3	Avadi Jn	Avadi HW	9900	16750	6850	0.26	900	0.409	0.0001	1.00	0.56	1200	0.495	0.0001	1.00	2.00	0.20	2.20	32.00	29.00	3.00
					16750					1.43					2.04	3.47	0.35	3.82			

TM 10-DESIGN OF TRANSMISSION MAIN																					
ULTIMATE-2050																					
Sl.No	From	To	Chainage		Length in M	Existing Pipe					Proposed Pipe Line					FL Total	OL	TL	HGL	GL	RH
			From	To		Flow in m^3/sec	Dia of Pipe in mm	Velocity m/sec	Hfm/m	F.L	Flow in m^3/sec	Dia of Pipe in mm	Velocity m/sec	Hfm/m	F.L						
																			47.74	19.00	28.74
1	Redhills P.S	Br.to Kolathur WDS	0	3450	3450	1.69	1500	0.956	0.0004	1.28	1.69	1500	0.956	0.0004	1.28	2.55	0.26	2.81	44.93	26.00	18.93
2	Br.to Kolathur WDS	Ambattur Jn.	3450	9900	6450						2.97	1900	1.048	0.0003	2.12	2.12	0.21	2.33	42.60	27.00	15.60
3	Ambattur Jn.	Avadi HW	9900	16775	6875	0.62	900	0.973	0.0007	4.82	1.33	1200	1.177	0.0007	4.82	9.64	0.96	10.60	32.00	29.00	3.00
					16750					6.09					8.22	14.31	1.43	15.74			

TM 10-DESIGN OF BRANCH MAINS																
INTERMEDIATE-2035																
Sl.No	From	To	Chainage (m)		Length in M	Flow in m^3/sec	Dia of Pipe in mm	Velocity m/sec	Hfm/m	F.L	OL	TL	HGL	GL	RH	Remarks
			From	To												
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
1	Br. Main to Kolathur WDS															
	TM 10-Tapping @ LS 3450 M								HGL Available at Tapping point				34.86			
	LS: 3450m of TM 10	Kolathur WDS	0	8300	8300	0.380	900	0.597	0.0003	2.40	0.24	2.64	32.22	10.50	21.72	Ends at UGT @ Kolathur WDS
2	Br. Main to Ambattur															
	TM 10-Tapping @ LS 9900 M								HGL Available at Tapping point				34.20			
	LS: 9900m of TM 10	Ambattur	0	5475	5475	0.660	900	1.037	0.0008	4.31	0.43	4.74	29.46	21.00	8.46	Ends at UGT @ Ambattur
ULTIMATE STAGE-2050																
Sl.No	From	To	Chainage (m)		Length in M	Flow in m^3/sec	Dia of Pipe in mm	Velocity m/sec	Hfm/m	F.L	OL	TL	HGL	GL	RH	Remarks
			From	To												
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1	Br. Main to Kolathur WDS															
	TM 10-Tapping @ LS 3450 M								HGL Available at Tapping point				44.93			
	LS: 3450m of TM 10	Kolathur WDS		8300	8300	0.410	900	0.644	0.0003	2.76	0.28	3.04	41.89	10.50	31.39	Ends at UGT @ Kolathur WDS
2	Br. Main to Ambattur															
	TM 10-Tapping @ LS 9900 M								HGL Available at Tapping point				42.60			
	LS: 9900m of TM 10	Ambattur		5475	5475	1.020	900	1.603	0.0017	9.47	0.95	10.42	32.18	21.00	11.18	Ends at UGT @ Ambattur

Transmission Main 11- FROM P.S. AT WTP AT SOORAPATTU TO SUMP AT SOORAPATTU



Kathirvedu	1.80	4.46
Soorapattu	2.60	5.15
Puthagaram	2.96	6.06
TOTAL	**7.36**	**15.67**

Hydraulic Design for TM 11		
HEAD WORKS:	REDHILLS WTP	
Stage	Intermediate	Ultimate
Hours of pumping	23.00	23.00
GL	18.00	18.00
FVL/LWL	15.00	15.00
MWL of Sump @ End Beneficiary	31.00	31.00
Residual Head	3.00	3.00
HGL. Reqd @ End	34.00	34.00
Static Head	19.00	19.00
Total Losses	3.35	9.90
HGL @ Ch.:0 m	37.35	43.90

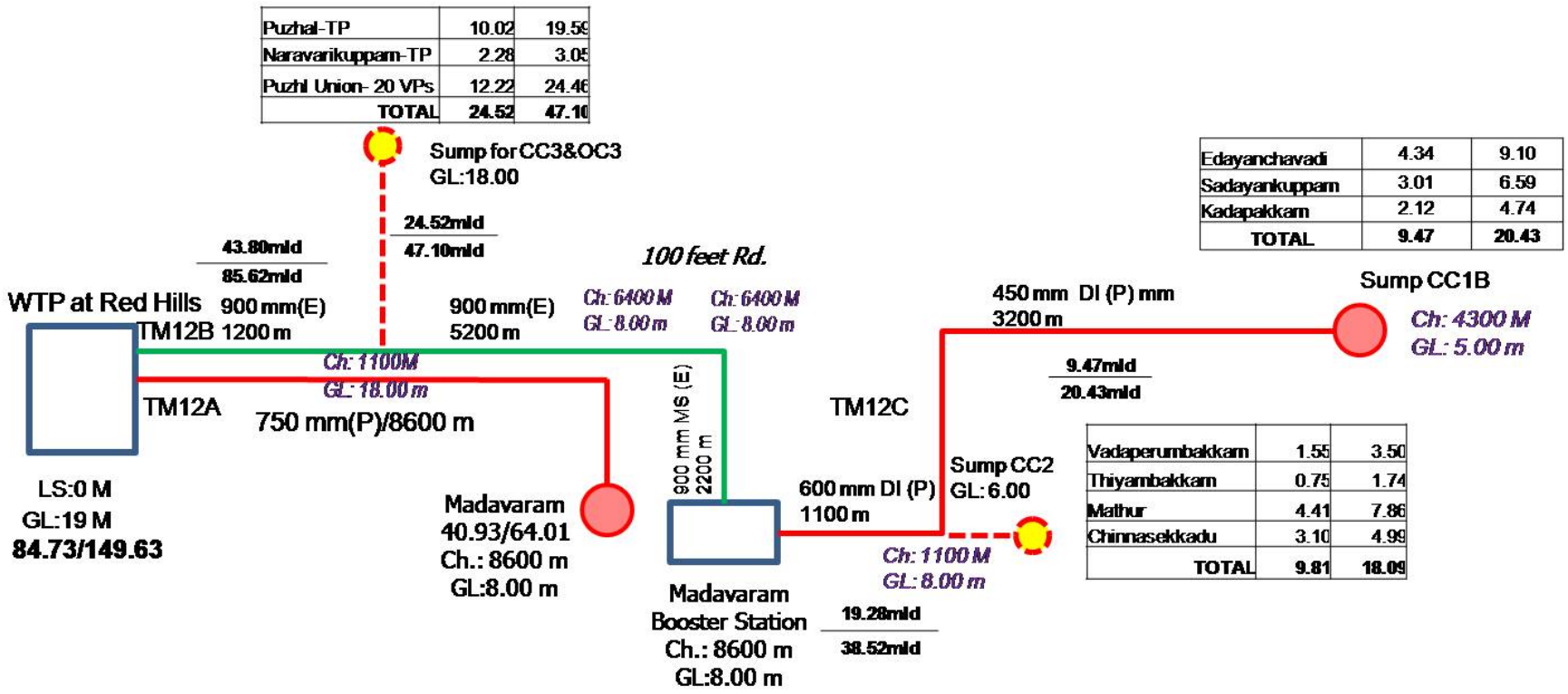
Sl No	Location	Projected Demand in MLD for 2035	Flow adopting 23 hours pumping (m3/sec)	Projected Demand in MLD for 2050	Flow adopting 23 hours pumping (m3/sec)
1	Kathirvedu	1.80	0.02	4.46	0.05
2	Soorapattu	2.60	0.03	5.15	0.06
3	Puthagaram	2.96	0.04	6.06	0.07
	Total	**7.36**	**0.09**	**15.67**	**0.18**

Sl.No	From	To	Chainage (m)-From	Chainage (m)-To	Length in M	Flow in m^3/sec	Dia of Pipe in mm	Type	Exist./Prop.	Velocity m/sec	Hfm/m	F.L	OL	TL	HGL	GL	RH
	Intermediate-2035																
		Surapet Sump													37.35	18.00	19.35
1.00	Surapet Sump	Kathirvedu	0	650	650	0.09	400	DI	Prop.	0.72	0.00	0.69	0.07	0.75	36.59	17.00	19.59
2.00	Kathirvedu	Soorapattu	650	900	250	0.07	350	DI	Prop.	0.73	0.00	0.32	0.03	0.35	36.24	16.00	20.24
3.00	Soorapattu	Puthagaram	900	3000	2100	0.04	300	DI	Prop.	0.57	0.00	2.04	0.20	2.24	34.00	31.00	3.00
					3000							3.04	0.30	3.35			
	Ultimate-2050																
		Surapet Sump													43.90	18.00	25.90
1.00	Surapet Sump	Kathirvedu	0	650	650	0.18	400	DI	Prop.	1.43	0.00	2.41	0.24	2.65	41.25	17.00	24.25
2.00	Kathirvedu	Soorapattu	650	900	250	0.13	350	DI	Prop.	1.35	0.00	0.98	0.10	1.07	40.17	16.00	24.17
3.00	Soorapattu	Puthagaram	900	3000	2100	0.07	300	DI	Prop.	0.99	0.00	5.61	0.56	6.17	34.00	31.00	3.00
					3000							9.00	0.90	9.90			

Transmission Main 12A- From Pumping Station Redhills WTP To Madavaram WDS

Transmission Main 12B - From Pumping Station Redhills WTP To Madavaram BS

Transmission Main12C- From Madavaram Bsto Edayanchavadi & others



Hydraulic Design for TM 12A		
HEAD WORKS:	**REDHILLS WTP**	
Stage	**Intermediate**	**Ultimate**
Hours of pumping	23	23
GL	19.00m	19.00m
FVL/LWL	16.00m	16.00m
MWL of Sump @ End Beneficiary	9.00m	9.00m
Residual Head	3.00m	3.00m
HGL. Reqd @ End	12.00m	12.00m
Static Head	-4.00m	-4.00m
Total Losses	10.44m	23.65m
HGL @ Ch.:0 m	22.44m	35.65m

Sl No	Location	Projected Demand in MLD for 2035	Flow adopting 23 hours pumping (m3/sec)	Projected Demand in MLD for 2050	Flow adopting 23 hours pumping (m3/sec)
1	Madhavaram WDS	40.93	0.49	64.01	0.77
	Total	40.93	0.49	64.01	0.77

Sl.No	From	To	Chainage		Length in M	Flow in m^3/sec	Dia of Pipe in mm	Type	Exist./Prop.	Velocity m/sec	Hfm/m	F.L	OL	TL	HGL	GL	RH
			From	To													
Intermediate-2035															22.44	19.0	
1	Redhills P.S	Madhavaram WDS	0	8600	8600	0.49	750	MS	Prop.	1.109	0.0011	9.49	0.95	10.44	12.00	9.0	3.00
					8600							9.49	0.95	10.44			
Ultimate -2050															35.65	19.0	
1	Redhills P.S	Madhavaram WDS Jn	0	8600	8600	0.77	750	MS	Prop.	1.743	0.0025	21.50	2.15	23.65	12.00	9.0	3.00
					8600							21.50	2.15	23.65			

Hydraulic Design for TM 12B		
HEAD WORKS:	**REDHILLS WTP**	
Stage	Intermediate	Ultimate
Hours of pumping	23	23
GL	19.00m	19.00m
FVL/LWL	16.00m	16.00m
MWL of Sump @ End Beneficiary	16.00m	16.00m
Residual Head	3.00m	3.00m
HGL. Reqd @ End	19.00m	19.00m
Static Head	3.00m	3.00m
Total Losses	1.65m	5.83m
HGL @ Ch.:0 m	20.65m	24.83m

Sl No	**Location**	**Projected Demand in MLD for 2035**	**Flow adopting 23 hours pumping (m3/sec)**	**Projected Demand in MLD for 2050**	**Flow adopting 23 hours pumping (m3/sec)**
1.	Sump CC3&OC3	24.52	0.30	47.10	0.57
2.	Sump CC2	9.81	0.12	18.09	0.22
3.	Sump CC1B	9.47	0.11	20.43	0.25
	Total	**43.80**	**0.53**	**85.62**	**1.04**

Sl.No	From	To	Chainage		Length in M	Flow in m^3/sec	Dia of Pipe in mm	Type	Exist./Prop.	Velocity m/sec	Hfm/m	F.L	OL	TL	HGL	GL	RH
			From	To													
Intermediate-2035																	
															20.65	19.0	
1	Redhills P.S	To Sump CC3 & OC3 Jn	0	1200	1200	0.53	900	MS	Exist.	0.833	0.0005	0.63	0.06	0.69	19.95	16.0	3.95
2	To Sump CC3 & OC3 Jn	Madavaram Booster Station	1200	8600	7400	0.23	900	MS	Exist.	0.362	0.0001	0.86	0.09	0.95	19.00	9.0	10.00
					8600.00							1.50	0.15	1.65			
Ultimate-2050																	
															24.83	19.0	
1	Redhills P.S	To Sump CC3 & OC3 Jn	0	1200	1200	1.04	900	MS	Exist.	1.635	0.0018	2.15	0.22	2.37	22.46	16.0	6.46
2	To Sump CC3 & OC3 Jn	Madavaram Booster Station	1200	8600	7400	0.47	900	MS	Exist.	0.739	0.0004	3.15	0.31	3.46	19.00	9.0	10.00
					8600.00							5.30	0.53	5.83			

Hydraulic Design for TM 12C		
HEAD WORKS:	REDHILLS WTP	
Stage	Intermediate	Ultimate
Hours of pumping	23	23
GL	19.00m	19.00m
FVL/LWL	16.00m	16.00m
MWL of Sump @ End Beneficiary	4.00m	4.00m
Residual Head	3.00m	3.00m
HGL. Reqd @ End	7.00m	7.00m
Static Head	-9.00m	-9.00m
Total Losses	4.03m	17.03m
HGL @ Ch.:0 m	11.03m	24.03m

Sl No	Location	Projected Demand in MLD for 2035	Flow adopting 23 hours pumping (m3/sec)	Projected Demand in MLD for 2050	Flow adopting 23 hours pumping (m3/sec)
1	Sump CC2	9.81	0.12	18.09	0.22
2	Sump CC1B	9.47	0.11	20.43	0.25
	Total	**19.28**	**0.23**	**38.52**	**0.47**

Sl.No	From	To	Chainage		Length in M	Flow in m^3/sec	Dia of Pipe in mm	Type	Exist./Prop.	Velocity m/sec	Hfm/m	F.L	OL	TL	HGL	GL	RH
			From	To													
Intermediate-2035																	
															11.03	9.0	
1	Madhavaram BS	Sump CC2 Jn	0	1100	1100	0.23	600	DI	Prop.	0.813	0.0008	0.90	0.09	0.99	10.04	9.0	1.04
2	Sump CC2 Jn	Sump CC1B	1100	4300	3200	0.11	450	DI	Prop.	0.692	0.0009	2.76	0.28	3.04	7.00	4.0	3.00
					4300							3.66	0.37	4.03			
Ultimate-2050																	
															24.03	9.0	
1	Madhavaram BS	Sump CC2 Jn	0	1100	1100	0.47	600	DI	Prop.	1.662	0.0030	3.29	0.33	3.62	20.40	9.0	11.40
2	Sump CC2 Jn	Sump CC1B	1100	4300	3200	0.25	450	DI	Prop.	1.572	0.0038	12.18	1.22	13.40	7.00	4.0	3.00
					4300							15.48	1.55	17.03			

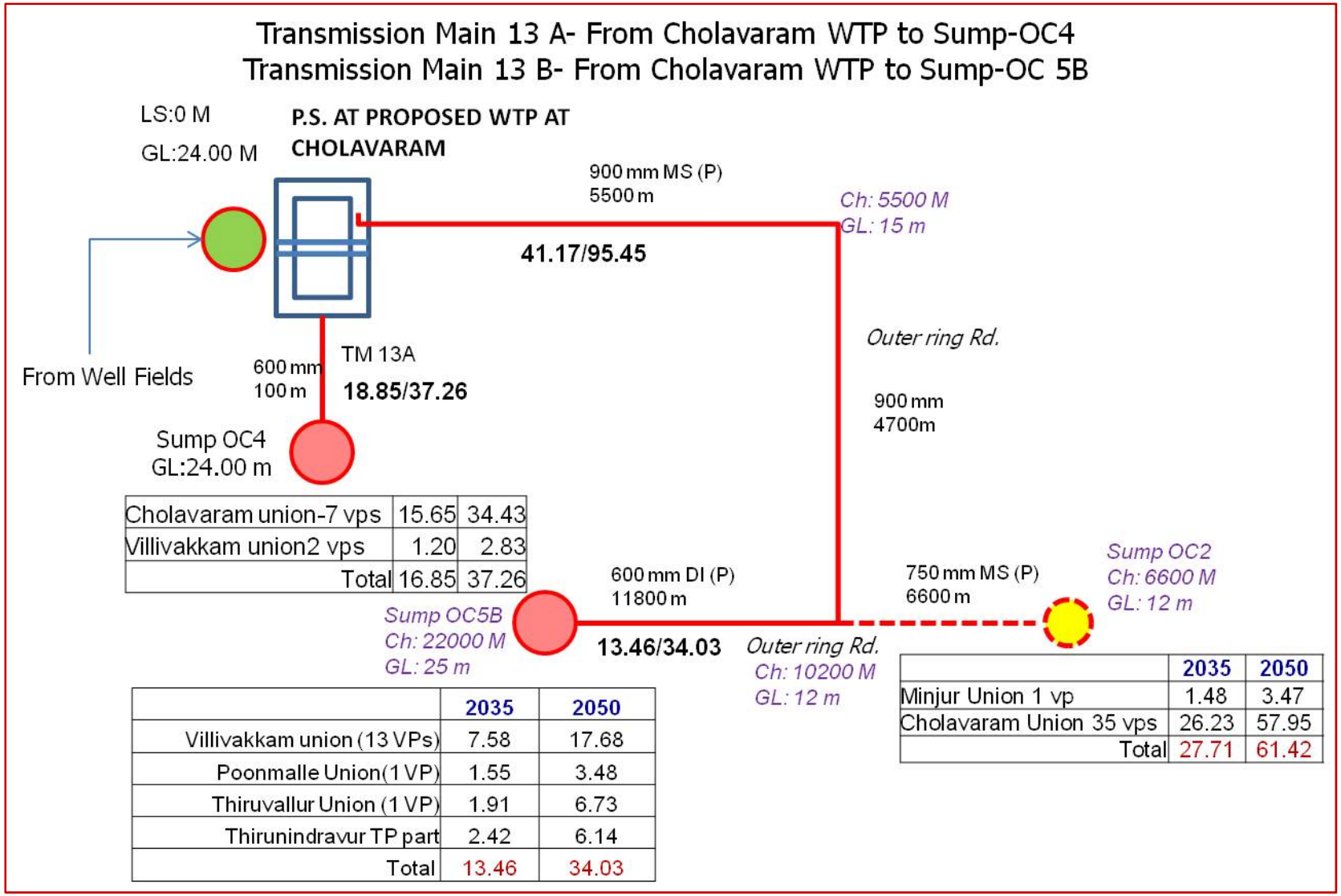
CHOLAVARAM SYSTEM

CHOLAVARAM WTP (PROPOSED)								
	ZONE NOS.	2020	2025	2030	2035	2040	2045	2050
CORE CITY	-	-	-	-	-	-	-	-
Sub Total		-	-	-	-	-	-	-
ADDED AREA	-	-	-	-	-	-	-	-
Sub Total		-	-	-	-	-	-	-
REST OF CMA	OC2	9.71	10.42	22.99	27.71	32.40	54.57	61.42
	OC4	6.05	6.44	14.02	16.85	19.67	33.05	37.26
	OC5B	6.08	6.47	11.03	13.46	17.13	27.77	34.03
Sub Total		21.84	23.33	48.04	58.02	69.20	115.40	132.71

	ZONE NO.	**NAME**		**2020**	**2025**	**2030**	**2035**	**2040**	**2045**	**2050**
OC2	MI-4	Vallur	Part	0.53	0.57	1.22	1.48	1.73	3.06	3.47
OC2	SH-2	Angadu		0.08	0.08	0.16	0.19	0.22	0.39	0.44
OC2	SH-3	Arumandai		0.18	0.19	0.39	0.46	0.54	0.95	1.07
OC2	SH-6	Chinnamullaivoyal		0.01	0.01	0.01	0.02	0.02	0.03	0.04
OC2	SH-8	Girudalapuram		0	0	0	0.00	0	0	0
OC2	SH-9	Kandigai		0.11	0.12	0.26	0.31	0.36	0.65	0.72
OC2	SH-10	Karanodai		0.37	0.4	0.85	1.02	1.2	2.11	2.38
OC2	SH-11	Kodipallam		0.07	0.07	0.13	0.16	0.19	0.33	0.37
OC2	SH-12	Kummanur		0.18	0.19	0.41	0.48	0.57	1.01	1.13
OC2	SH-13	Madiyur		0.03	0.03	0.08	0.09	0.1	0.18	0.2
OC2	SH-14	Mafuskhanpet		0.1	0.11	0.22	0.27	0.32	0.57	0.65
OC2	SH-15	Marambedu		0.07	0.08	0.15	0.18	0.21	0.37	0.42
OC2	SH-16	Melsingilimedu		0	0	0	0.00	0	0	0
OC2	SH-18	Nayur		0.45	0.48	1.01	1.22	1.43	2.52	2.84
OC2	SH-19	Nerkundram		0.08	0.08	0.16	0.19	0.22	0.41	0.45

	ZONE NO.	NAME		2020	2025	2030	2035	2040	2045	2050
OC2	SH-21	Orakkadu		0.16	0.18	0.36	0.44	0.51	0.9	1.01
OC2	SH-22	Padianallur		3.16	3.38	8.23	9.91	11.59	17.75	20
OC2	SH-23	Pannivakkam		0	0	0	0.00	0	0	0
OC2	SH-24	Periyamullaivoyal		0.1	0.1	0.22	0.26	0.31	0.55	0.61
OC2	SH-25	Perungavoor		0.22	0.24	0.51	0.61	0.73	1.27	1.43
OC2	SH-26	Pudupakkam		0.03	0.03	0.09	0.10	0.12	0.22	0.24
OC2	SH-27	Budur		0	0	0	0.00	0	0	0
OC2	SH-28	Seemapuram		0.19	0.2	0.42	0.51	0.58	1.05	1.17
OC2	SH-29	Sekkanjeri		0.08	0.08	0.16	0.20	0.23	0.42	0.46
OC2	SH-30	Sembilivaram		0.12	0.14	0.27	0.34	0.39	0.69	0.78
OC2	SH-31	Sholavaram		0.94	1	2.1	2.54	2.96	5.24	5.91
OC2	SH-32	Siruniam		0.12	0.14	0.29	0.35	0.41	0.73	0.81
OC2	SH-33	Soorapattu		1.03	1.11	2.34	2.82	3.3	5.82	6.56
OC2	SH-34	Sothupakkam		0	0	0	0.00	0	0	0
OC2	SH-35	Sothuperumbedu		0.16	0.18	0.37	0.45	0.53	0.92	1.05
OC2	SH-36	Thirunilai		0.1	0.1	0.21	0.26	0.3	0.54	0.59
OC2	SH-37	Valuthigaimedu		0.12	0.14	0.29	0.35	0.4	0.72	0.8
OC2	SH-38	Vellivoyal		0.35	0.37	0.78	0.95	1.11	1.96	2.2
OC2	SH-39	Vichoor		0.57	0.62	1.3	1.55	1.82	3.21	3.62
OC4	SH-1	Alamathi		0.74	0.79	1.67	2.00	2.34	4.14	4.66
OC4	SH-4	Athur		0.39	0.42	0.87	1.05	1.22	2.16	2.42
OC4	SH-5	Attanthangal		1.97	2.1	5.13	6.17	7.23	11.05	12.45
OC4	SH-7	Erumaivettipalayam		0.16	0.18	0.37	0.45	0.52	0.92	1.03
OC4	SH-17	Nallur		1.95	2.09	4.39	5.29	6.18	10.92	12.3
OC4	SH-20	Old Erumaivettipalayam		0.15	0.15	0.32	0.40	0.46	0.81	0.91
OC4	SH-40	Vijayanallur		0.1	0.11	0.23	0.29	0.32	0.58	0.66

	ZONE NO.	NAME		2020	2025	2030	2035	2040	2045	2050
OC4	VI-12	Pammadukulam		0.45	0.46	0.81	0.93	1.08	1.91	2.18
OC4	VI-14	Pothur		0.14	0.14	0.23	0.27	0.32	0.56	0.65
OC5B	VI-2	Alathur		0.18	0.19	0.32	0.37	0.43	0.76	0.86
OC5B	VI-3	Arakkambakkam		0.07	0.08	0.12	0.14	0.16	0.3	0.33
OC5B	VI-6	Kadavur		0.03	0.03	0.08	0.09	0.09	0.18	0.19
OC5B	VI-7	Karlapakkam		0.2	0.2	0.36	0.41	0.48	0.86	0.96
OC5B	VI-8	Kilakondaiyur		0.12	0.12	0.22	0.26	0.3	0.53	0.59
OC5B	VI-9	Melpakkam		0.02	0.02	0.05	0.05	0.07	0.11	0.12
OC5B	VI-10	Morai		0.53	0.55	0.95	1.10	1.27	2.24	2.56
OC5B	VI-11	Palavedu		0.39	0.4	0.69	0.80	0.92	1.64	1.88
OC5B	VI-13	Pandeswaram		0.11	0.11	0.2	0.23	0.27	0.47	0.55
OC5B	VI-15	Pulikutti		0.98	1	1.74	2.01	2.33	4.11	4.69
OC5B	VI-17	Tenambakkam		0.44	0.45	0.78	0.91	1.05	1.85	2.11
OC5B	VI-20	Vellacheri		0.02	0.02	0.03	0.03	0.05	0.09	0.1
OC5B	VI-21	Vellanur		0.56	0.58	1.02	1.18	1.35	2.41	2.74
OC5B	TH-1	Pakkam		0.85	0.88	1.21	1.91	3.53	4.21	6.73
OC5B	PO-23	Nadukkuthagai		0.66	0.69	1.33	1.55	1.79	3.11	3.48
OC5B	OCT12	Thirunindravur	Part	0.92	1.15	1.93	2.42	3.04	4.90	6.14



Cholavaram union-7 vps	15.65	34.43
Villivakkam union2 vps	1.20	2.83
Total	16.85	37.26

	2035	2050
Villivakkam union (13 VPs)	7.58	17.68
Poonmalle Union(1 VP)	1.55	3.48
Thiruvallur Union (1 VP)	1.91	6.73
Thirunindravur TP part	2.42	6.14
Total	13.46	34.03

	2035	2050
Minjur Union 1 vp	1.48	3.47
Cholavaram Union 35 vps	26.23	57.95
Total	27.71	61.42

HEAD WORKS:	Cholavaram WTP	
Stage	Intermediate	Ultimate
Hours of pumping	23	23
GL	24.00m	24.00m
FVL/LWL	22.00m	22.00m
MWL of Sump @ End Beneficiary	24.00m	24.00m
Residual Head	3.00m	3.00m
HGL. Reqd @ End	27.00m	27.00m
Static Head	25.00m	25.00m
Total Losses	0.07m	0.31m
HGL @ Ch.:0 m	27.07m	27.31m

Sl No	Location	Projected Demand in MLD for 2035	Flow adopting 23 hours pumping (m3/sec)	Projected Demand in MLD for 2050	Flow adopting 23 hours pumping (m3/sec)
1	OC 4	16.85	0.20	37.26	0.45
	Total	16.85	0.20	37.26	0.45

INTERMEDIATE-2035															
Sl.No	From	To	Chainage		Length in M	Proposed Pipe Line									
						Flow in m^3/sec	Dia of Pipe in mm	Velocity m/sec	Hfm/m	F.L	OL	TL	HGL	GL	RH
			From	To									27.07		
1	Sholavaram P.S	OC 4	0	100	100	0.20	600	0.707	0.0006	0.0637	0.0100	0.0737	27.00	24.00	3.00
					100.00					0.0637	0.0100	0.0737			

ULTIMATE-2050															
Sl.No	From	To	Chainage		Proposed Pipe Line										
					Length in M	Flow in m^3/sec	Dia of Pipe in mm	Velocity m/sec	Hfm/m	F.L	OL	TL	HGL	GL	RH
			From	To									27.31		
1	Sholavaram P.S	OC 4	0	100	100	0.45	600	1.592	0.0028	0.28	0.0300	0.3065	27.00	24.00	3.00
					100.00					0.28	0.0300	0.3065			

Transmission Main 13B from Pumping Station at WTP at sholavaram to Sump OC2

HEAD WORKS:	Cholavaram WTP	
Stage	Intermediate	Ultimate
Hours of pumping	23	23
GL	24.00m	24.00m
FVL/LWL	22.00m	22.00m
MWL of Sump @ End Beneficiary	25.00m	25.00m
Residual Head	3.00m	3.00m
HGL. Reqd @ End	28.00m	28.00m
Static Head	6.00m	6.00m
Total Losses	10.67m	54.44m
HGL @ Ch.:0 m	38.67m	82.44m

Sl No	**Location**	**Projected Demand in MLD for 2035**	**Flow adopting 23 hours pumping (m3/sec)**	**Projected Demand in MLD for 2050**	**Flow adopting 23 hours pumping (m3/sec)**
1	OC 2	27.71	0.33	61.42	0.74
1	OC 5B	13.46	0.16	34.03	0.41
	Total	**41.17**	**0.49**	**95.45**	**1.15**

Sl.No	From	To	Chainage		Length in M	Proposed Pipe Line									
			From	To		Flow in m^3/sec	Dia of Pipe in mm	Velocity m/sec	Hfm/m	F.L	OL	TL	HGL	GL	RH
													38.67		
1	Sholavaram P.S	Jn in ORR	0	10200	10200	0.49	900	0.770	0.0005	4.68	0.4700	5.1505	33.52	15.00	18.52
2	Jn in ORR	OC 5B	10200	22000	11800	0.16	600	0.566	0.0004	5.02	0.5000	5.5208	28.00	25.00	3.00
					22000.00					9.70	0.97	10.67	11.64		

Sl.No	From	To	Chainage		Length in M	Proposed Pipe Line										
			From	To		Flow in m^3/sec	Dia of Pipe in mm	Velocity m/sec	Hfm/m	F.L	OL	TL	HGL	GL	RH	RH
													82.44			
1	Sholavaram P.S	Jn in ORR	0	10200	10200	1.15	900	1.808	0.0021	21.92	2.1900	24.1130	58.33	15.00	43.33	-28.33
2	Jn in ORR	OC 5B	10200	22000	11800	0.41	600	1.450	0.0023	27.57	2.7600	30.3312	28.00	25.00	3.00	22.00
					22000.00					49.49	4.95	54.44				

BRANCH MAIN TO SUMP OC2 FROM Jn in ORR															
INTERMEDIATE-2035															
Sl. No.	From	To	Chainage		Length in M	Existing Pipe									
			From	To		Flow in m^3/sec	Dia of Pipe in mm	Velocity m/sec	Hfm/m	F.L	OL	TL	HGL	GL	RH
													33.52		
1	Jn in ORR	OC 2	0	5730	5730	0.33	700	0.857	0.0008	4.31	0.43	4.74	28.78	12.00	16.78
					5730.00					4.31	0.43	4.74			
ULTIMATE -2050															
Sl. No.	From	To	Chainage		Length in M	Existing Pipe									
						Flow in m^3/sec	Dia of Pipe in mm	Velocity m/sec	Hfm/m	F.L	OL	TL	HGL	GL	RH
													58.33		
1	Jn in ORR	OC 2	0	5730	5730	0.74	700	1.923	0.0032	18.57	1.86	20.43	37.90	12.00	25.90
					5730.00					18.57	1.86	20.43			

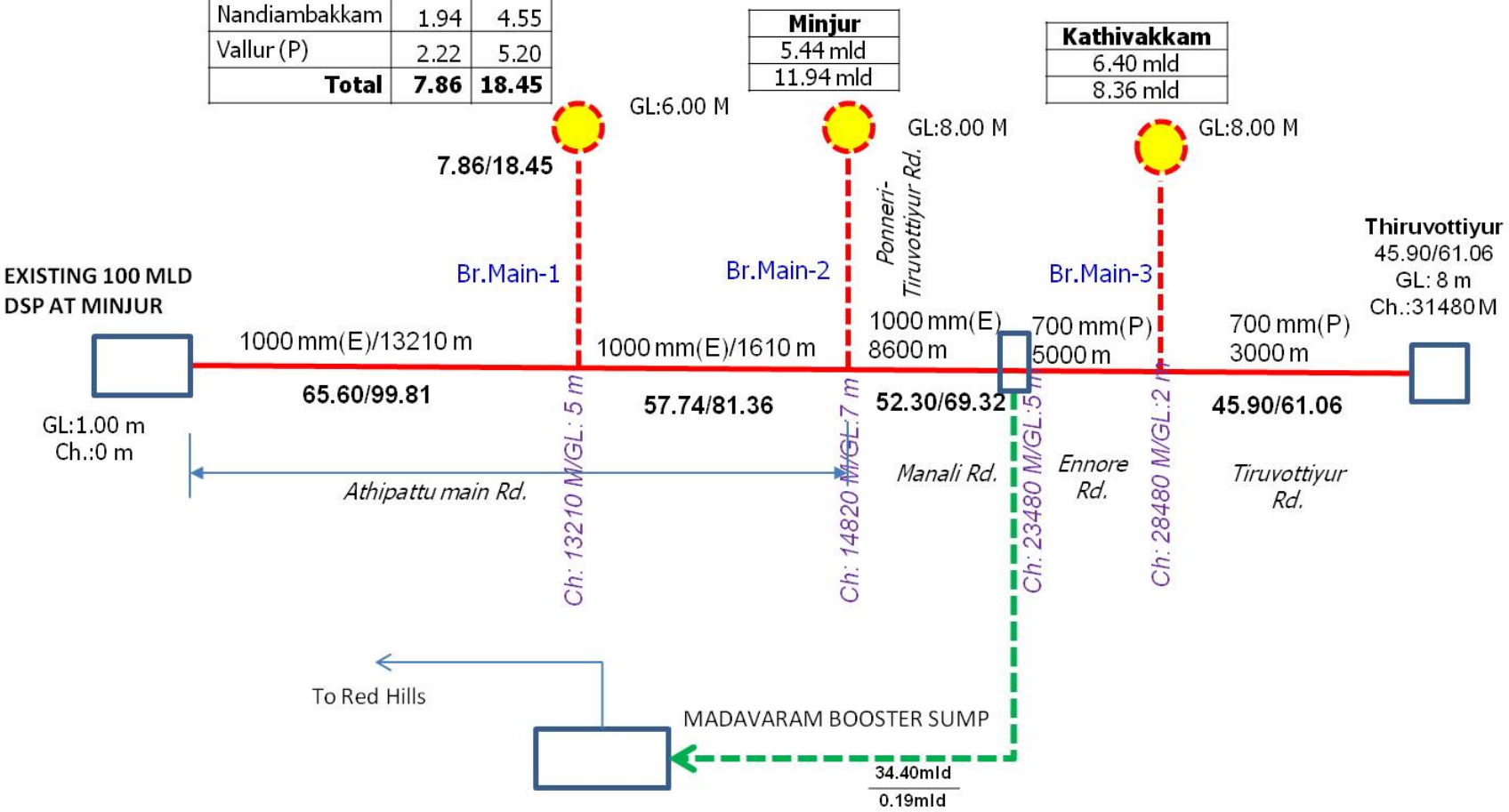
MINJUR SYSTEM

MINJUR DSP								
CAPACITY IN MLD		**100**	**100**	**100**	**100**	**100**	**100**	**100**
	ZONE NOS.	**2020**	**2025**	**2030**	**2035**	**2040**	**2045**	**2050**
CORE CITY		0.00	0.00	0.00	0.00	0.00	0.00	0.00
ADDED AREA	CC1-A	33.65	36.05	49.52	52.30	55.38	66.32	69.42
Sub Total		33.65	36.05	49.52	52.30	55.38	66.32	69.42
REST OF CMA	OC1	4.97	5.56	11.12	13.30	15.62	26.42	30.39
Sub Total		4.97	5.56	11.12	13.30	15.62	26.42	30.39
TOTAL		38.62	41.61	60.64	65.60	71.00	92.74	99.81
5% FOR TREATMENT LOSS		0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Incl. of Treatment Loss		38.62	41.61	60.64	65.60	71.00	92.74	99.81

Group No.	**ZONE NO.**	**NAME**	**2020**	**2025**	**2030**	**2035**	**2040**	**2045**	**2050**
CC1-A	CM1	Kathivakkam	4.21	4.48	6.1	6.40	6.73	8.03	8.36
CC1-A	CM2	Thiruvottiyur	29.44	31.57	43.42	45.90	48.65	58.29	61.06
OC1	OCT9	Minjur	2.16	2.54	4.62	5.44	6.41	10.12	11.94
OC1	MI-1	Athipattu	1.22	1.31	2.83	3.41	3.99	7.08	8.02
OC1	MI-2	Ennore	0.1	0.11	0.23	0.29	0.34	0.59	0.68
OC1	MI-3	Nandiambakkam	0.69	0.75	1.61	1.94	2.28	4.03	4.55
OC1	MI-4	Vallur Part	0.80	0.85	1.83	2.22	2.60	4.60	5.20
			38.62	**41.61**	**60.64**	**65.60**	**71.00**	**92.74**	**99.81**

Transmission Main 14- From Minjur DSP to Tiruvottiyur

	2035	2050
Athipattu	3.41	8.02
Ennore	0.29	0.68
Nandiambakkam	1.94	4.55
Vallur (P)	2.22	5.20
Total	**7.86**	**18.45**



HEAD WORKS:	MINJUR DSP	
Stage	Intermediate	Ultimate
Hours of pumping	23	23
GL	1.00m	1.00m
FVL/LWL	-2.00m	-2.00m
MWL of Sump @ End Beneficiary	8.00m	8.00m
Residual Head	3.00m	3.00m
HGL. Reqd @ End	11.00m	11.00m
Static Head	13.00m	13.00m
Total Losses	34.40m	52.84m
HGL @ Ch.:0 m	45.40m	63.84m

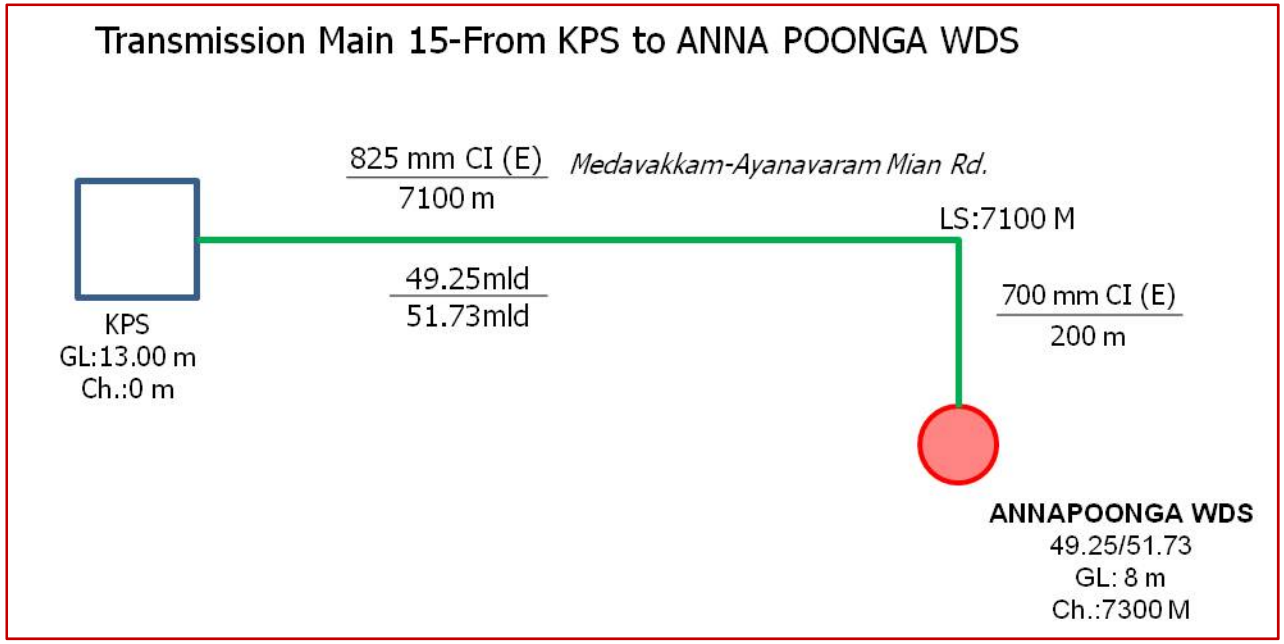
Sl No	ZONE CODE	Location	Projected Demand in MLD for 2035	Flow adopting 23 hours pumping (m3/sec)	Projected Demand in MLD for 2050	Flow adopting 23 hours pumping (m3/sec)
1	2	3	4	5	6	7
1	MI-1	Athipattu	3.41	0.041	8.02	0.097
2	MI-2	Ennore	0.29	0.004	0.68	0.008
3	MI-3	Nandiambakkam	1.94	0.023	4.55	0.055
4	MI-4	Vallur	2.22	0.027	5.20	0.063
		Total of Minjur 4 VPs	7.86	0.095	18.45	0.223
5	OCT9	Minjur	5.44	0.066	11.94	0.144
6	CM1	Kathivakkam	6.40	0.077	8.36	0.101
7	CM2	Thiruvottiyur	45.90	0.554	61.06	0.737
		Total	65.60	0.792	99.81	1.206

TM-14-INTERMEDEATE-2035																	
Sl.No	Location		Chainage (m)		Length in M	Existing Pipe			Proposed Pipe		Hfm/m	F.L	OL	TL	HGL	GL	RH
	From	To	From	To		Flow in m^3/sec	Dia of Pipe in mm	Velocity m/sec	Dia of Pipe in mm	Velocity m/sec							
1	2	3	4	5	6	7	8	9	8	9	10	11	12	13	14	15	16
		Minjur DSP		0											45.4	1.00	44.40
1	Minjur DSP	Br. to Minjur 4 VPs	0	13210	13210	0.792	1000	1.009			0.0007	8.71	0.87	9.58	35.82	5.00	30.82
2	Br. to Minjur 4 VPs	Minjur TP Jn	13210	14820	1610	0.697	1000	0.888			0.0005	0.84	0.08	0.92	34.90	7.00	27.90
3	Minjur TP Jn	Change of pipe	14820	23480	8660	0.632	1000	0.804			0.0004	3.79	0.38	4.17	30.73	5.00	25.73
4	Change of pipe	Kathivakkam Jn.	23480	28480	5000	0.632			700	1.641	0.0024	12.17	1.22	13.39	17.34	8.00	9.34
5	Kathivakkam Jn.	Tiruvottiyur	28480	31480	3000	0.554			700	1.440	0.0019	5.76	0.58	6.34	11.00	8.00	3.00
					31480							31.27	3.13	34.40			
TM-14-ULTIMATE-2050																	
		Minjur DSP		0											63.84	1.00	62.84
1	Minjur DSP	Br. to Minjur 4 VPs	0	13210	13210	1.206	1000	1.535			0.0014	18.63	1.86	20.49	43.35	5.00	38.35
2	Br. to Minjur 4 VPs	Minjur TP Jn	13210	14820	1610	0.983	1000	1.251			0.0010	1.57	0.16	1.73	41.62	7.00	34.62
3	Minjur TP Jn	Change of pipe	14820	23480	8660	0.838	1000	1.067			0.0007	6.33	0.63	6.96	34.66	5.00	29.66
4	Change of pipe	Kathivakkam Jn.	23480	28480	5000	0.838			750	1.898	0.0029	14.58	1.46	16.04	18.62	8.00	10.62
5	Kathivakkam Jn.	Tiruvottiyur	28480	31480	3000	0.737			750	1.669	0.0023	6.93	0.69	7.62	11.00	8.00	3.00
					31480							48.04	4.80	52.84			

TM 14-DESIGN OF BRANCH MAINS																
INTERMEDIATE-2035																
Sl.No	From	To	Chainage (m)		Length in M	Flow in m^3/sec	Dia of Pipe in mm	Velocity m/sec	Hfm/m	F.L	OL	TL	HGL	GL	RH	Remarks
			From	To												
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
1	Br. Main to Minjur 4 VP															
	TM 14-Tapping @ LS 13210 M								HGL Available at Tapping point				35.82			
	LS: 13210m of TM 14	Minjur 4 VPs	0	1000	1000m	0.095	400	0.755	0.0012	1.16	0.12	1.28	34.54	6.00	28.54	Ends at UGT @ Minjur 4 VPs
2	Br. Main to Minjur															
	TM 14-Tapping @ LS 14820 M								HGL Available at Tapping point				34.90			
	LS: 14820m of TM 14	Minjur	0	1000	1000m	0.066	300	0.929	0.0024	2.38	0.24	2.62	32.28	8.00	24.28	Ends at UGT @ Minjur
3	Br. Main to Kathivakkam															
	TM 14-Tapping @ LS 28480 M								HGL Available at Tapping point				17.34			
	LS: 28480m of TM 14	Kathivakkam	0	1000	1000m	0.077	300	1.094	0.0032	3.20	0.32	3.52	13.82	8.00	5.82	Ends at UGT @ Kathivakkam
ULTIMATE STAGE-2050																
1	Br. Main to Minjur 4 VPs															
	TM 14-Tapping @ LS 13210 M								HGL Available at Tapping point				43.35			
	LS: 13210m of TM 14	Minjur 4 VPs	0	1000	1000m	0.223	400	1.774	0.0055	5.45	0.55	6.00	37.35	6.00	31.35	Ends at UGT @ Minjur 4 VPs
2	Br. Main to Minjur															
	TM 14-Tapping @ LS 14820 M								HGL Available at Tapping point				41.62			
	LS: 14820m of TM 14	Minjur	0	1000	1000m	0.144	300	2.040	0.0099	9.89	0.99	10.88	30.74	8.00	22.74	Ends at UGT @ Minjur
3	Br. Main to Kathivakkam															
	TM 14-Tapping @ LS 28480 M								HGL Available at Tapping point				18.62			
	LS: 28480m of TM 14	Kathivakkam	0	1000	1000m	0.101	300	1.429	0.0052	5.19	0.52	5.71	12.91	8.00	4.91	Ends at UGT @ Kathivakkam

KPS SYSTEM

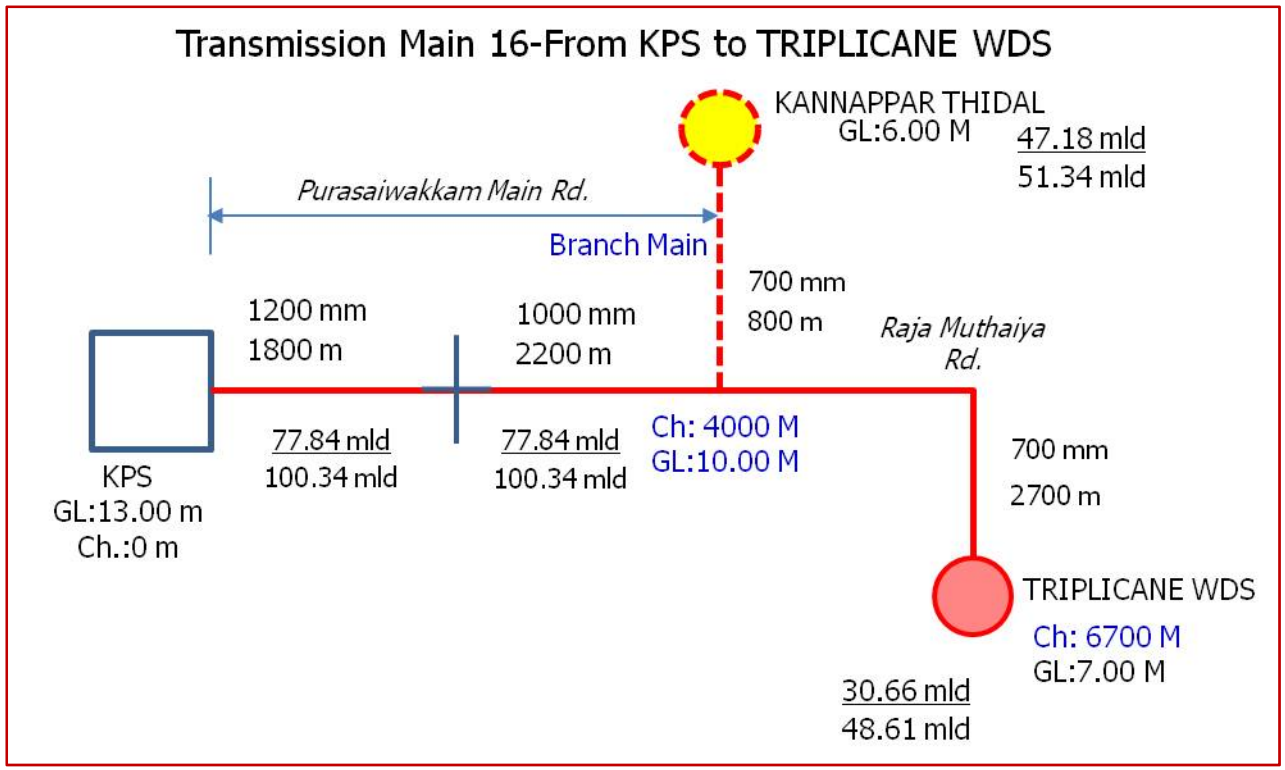
ZONE NO.	NAME		2020	2025	2030	2035	2040	2045	2050
1	KPS		166.87	169.95	173.822	176.495	179.817	182.677	185.834
2	ANNA POONGA		46.761	47.927	48.554	49.247	50.182	51.15	51.733
3	KANNAPPAR THIDAL		45.683	46.464	46.783	47.179	47.74	48.411	48.609
4	TRIPLICANE		31.273	31.416	31.185	30.657	30.459	30.206	29.436
15	VALLUVAR KOTTAM		26.081	25.971	27.06	27.423	27.885	27.819	28.732
	TOTAL		**316.668**	**321.728**	**327.404**	**331.001**	**336.083**	**340.263**	**344.344**


Transmission Main 15-From KPS to ANNA POONGA WDS
825 mm CI (E)
7100 m
Medavakkam-Ayanavaram Mian Rd.
LS:7100 M
49.25mld
51.73mld
700 mm CI (E)
200 m
KPS
GL:13.00 m
Ch.:0 m
ANNAPOONGA WDS
49.25/51.73
GL: 8 m
Ch.:7300 M

HEAD WORKS:	KPS	
Stage	Intermediate	Ultimate
Hours of pumping	23	23
GL	12.00m	12.00m
FVL/LWL	9.00m	9.00m
MWL of Sump @ End Beneficiary	10.00m	10.00m
Residual Head	3.00m	3.00m
HGL. Reqd @ End	13.00m	13.00m
Static Head	4.00m	4.00m
Total Losses	8.21m	8.99m
HGL @ Ch.:0 m	21.21m	21.99m

Sl No	ZONE CODE	Location	Projected Demand in MLD for 2035	Flow adopting 23 hours pumping (m3/sec)	Projected Demand in MLD for 2050	Flow adopting 23 hours pumping (m3/sec)
1	*2*	*3*	*4*	*5*	*6*	*7*
1	2	ANNA POONGA	49.25	0.595	51.73	0.625
		Total	49.25	0.595	51.73	0.625

Sl.No	From	To	Chainage (m)		Length in M	Existing Pipe			Hfm/m	F.L	OL	TL	HGL	GL	RH
			From	To		Flow in m^3/sec	Dia of Pipe in mm	Velocity m/sec							
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
TM15-INTERMEDIATE-2035															
		KPS			0								21.21	12.00	9.21
1	KPS	ANNAPOONGA JN	0	7100	7100m	0.595	825mm	1.113	0.0010	7.03	0.70	7.73	13.48	8.00	5.48
1	ANNAPOONGA JN	ANNAPOONGA	7100	7300m	200m	0.595	700mm	1.546	0.0022	0.44	0.04	0.48	13.00	10.00	3.00
												8.21			
TM15-ULTIMATE-2050															
		KPS			0								21.99	12.00	9.99
1	KPS	ANNAPOONGA JN	0	7100	7100m	0.625	825mm	1.169	0.0011	7.69	0.77	8.46	13.53	8.00	5.53
1	ANNAPOONGA JN	ANNAPOONGA	7100	7300m	200m	0.625	700mm	1.624	0.0024	0.48	0.05	0.53	13.00	10.00	3.00

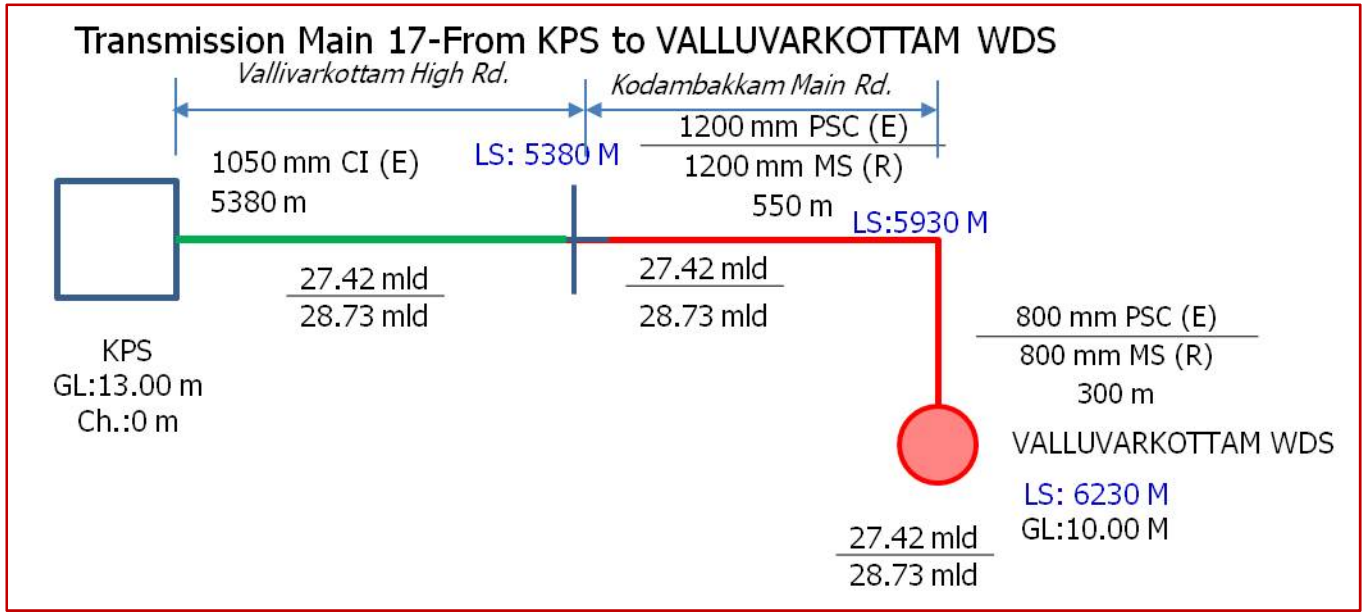

Transmission Main 16-From KPS to TRIPLICANE WDS
KANNAPPAR THIDAL
GL:6.00 M
47.18 mld
51.34 mld
Purasaiwakkam Main Rd.
Branch Main
700 mm
800 m
Raja Muthaiya Rd.
1200 mm
1800 m
1000 mm
2200 m
77.84 mld
100.34 mld
77.84 mld
100.34 mld
Ch: 4000 M
GL:10.00 M
700 mm
2700 m
KPS
GL:13.00 m
Ch.:0 m
TRIPLICANE WDS
Ch: 6700 M
GL:7.00 M
30.66 mld
48.61 mld

HEAD WORKS:	KPS	
Stage	Intermediate	Ultimate
Hours of pumping	23	23
GL	12.00m	12.00m
FVL/LWL	9.00m	9.00m
MWL of Sump @ End Beneficiary	12.00m	12.00m
Residual Head	3.00m	3.00m
HGL. Reqd @ End	15.00m	15.00m
Static Head	6.00m	6.00m
Total Losses	5.16m	10.42m
HGL @ Ch.:0 m	20.16m	25.42m

Sl No	ZONE CODE	Location	Projected Demand in MLD for 2035	Flow adopting 23 hours pumping (m3/sec)	Projected Demand in MLD for 2050	Flow adopting 23 hours pumping (m3/sec)
1	*2*	*3*	*4*	*5*		
1		KANNAPPAR THIDAL JN				
2	3	KANNAPPAR THIDAL	47.18	0.570	51.73	0.625
3	4	TRIPLICANE	30.66	0.370	48.61	0.587
		Total	77.84	0.940	100.34	1.21

Sl.No	From	To	Chainage (m)		Length in M	Existing Pipe			Hfm/m	F.L	OL	TL	HGL	GL/MWL	RH
			From	To		Flow in m^3/sec	Dia of Pipe in mm	Velocity m/sec							
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
TM 16-INTERMEDIATE-2035															
		KPS			0								20.16	12.00	8.16
1	KPS	Pipe change	0	1000	1000m	0.940	1200mm	0.831	0.0004	0.37	0.04	0.41	19.75	10.00	9.75
1	Pipe change	KANNAPPAR THIDAL JN	1000	2625m	1625m	0.940	1000mm	1.197	0.0009	1.46	0.15	1.61	18.14	10.00	8.14
2	KANNAPPAR THIDAL JN	TRIPLICANE	2625	5705m	3080m	0.370	700mm	0.962	0.0009	2.85	0.29	3.14	15.00	12.00	3.00
TM 16-ULTIMATE-2050															
												5.16			
		KPS			0								25.42	12.00	13.42
1	KPS	Pipe change	0	1000	1000m	1.212	1200mm	1.072	0.0006	0.59	0.06	0.65	24.77	10.00	14.77
1	Pipe change	KANNAPPAR THIDAL JN	1000	2625m	1625m	1.212	1000mm	1.543	0.0014	2.31	0.23	2.54	22.23	10.00	12.23
2	KANNAPPAR THIDAL JN	TRIPLICANE	2625	5705m	3080m	0.587	700mm	1.526	0.0021	6.57	0.66	7.23	15.00	12.00	3.00
												10.42			

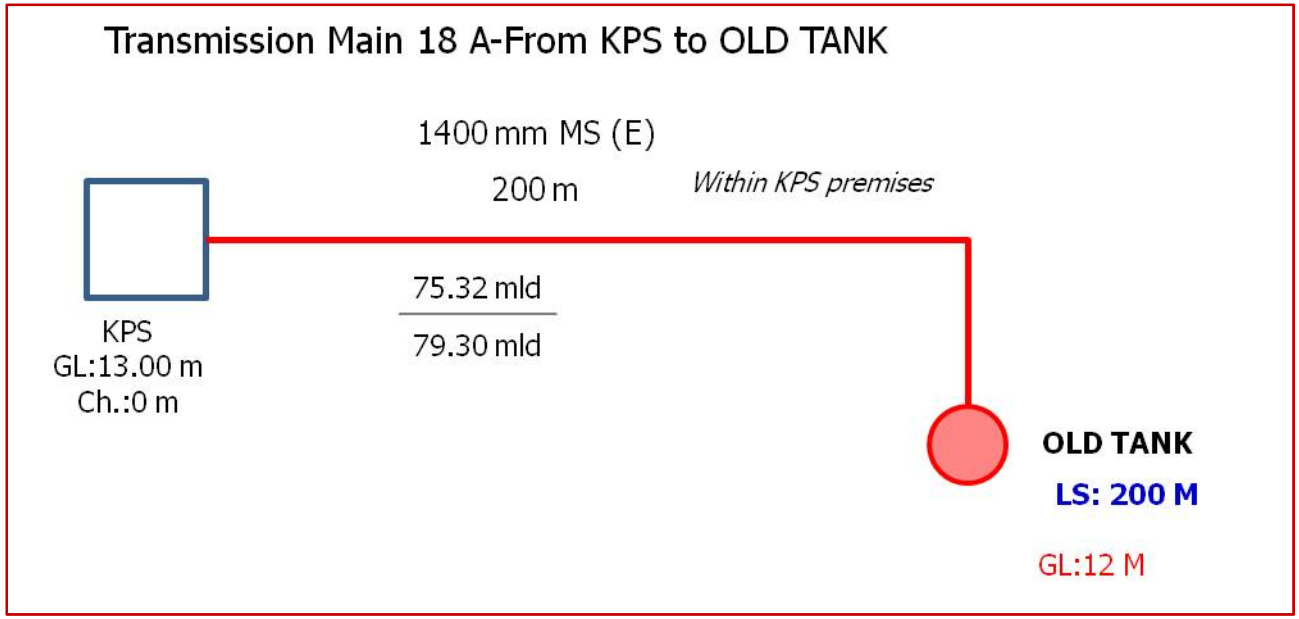
TM 16-DESIGN OF BRANCH MAINS																
INTERMEDIATE-2035																
Sl.No	From	To	Chainage (m)		Length in M	Flow in m^3/sec	Dia of Pipe in mm	Velocity m/sec	Hfm/m	F.L	OL	TL	HGL	GL	RH	Remarks
			From	To												
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
1	Br. Main to KANNAPPAR THIDAL															
	TM 16-Tapping @ LS 2625 M								HGL Available at Tapping point				18.14			
	LS: 2625m of TM 16	KANNAPPAR THIDAL	0	925	925m	0.570	700	1.481	0.0020	1.87	0.19	2.06	16.08	5.00	11.08	Ends at UGT @ KANNAPPAR THIDAL
ULTIMATE STAGE-2050																
1	Br. Main to KANNAPPAR THIDAL															
	TM 16-Tapping @ LS 2625 M								HGL Available at Tapping point				22.23			
	LS: 2625m of TM 16	KANNAPPAR THIDAL	0	925	925m	0.625	700mm	1.624	0.0024	2.21	0.22	2.43	19.80	5.00	14.80	Ends at UGT @ KANNAPPAR THIDAL



HEAD WORKS:	KPS	
Stage	Intermediate	Ultimate
Hours of pumping	23	23
GL	12.00m	12.00m
FVL/LWL	9.00m	9.00m
MWL of Sump @ End Beneficiary	11.00m	11.00m
Residual Head	3.00m	3.00m
HGL. Reqd @ End	14.00m	14.00m
Static Head	5.00m	5.00m
Total Losses	1.19m	1.27m
HGL @ Ch.:0 m	15.19m	15.27m

Sl No	ZONE CODE	Location	Projected Demand in MLD for 2035	Flow adopting 23 hours pumping (m3/sec)	Projected Demand in MLD for 2050	Flow adopting 23 hours pumping (m3/sec)
1	*2*	*3*	*4*	*5*	*6*	*7*
1	15	VALLUVAR KOTTAM	27.42	0.331	28.73	0.347
		Total	27.42	0.331	28.73	0.347

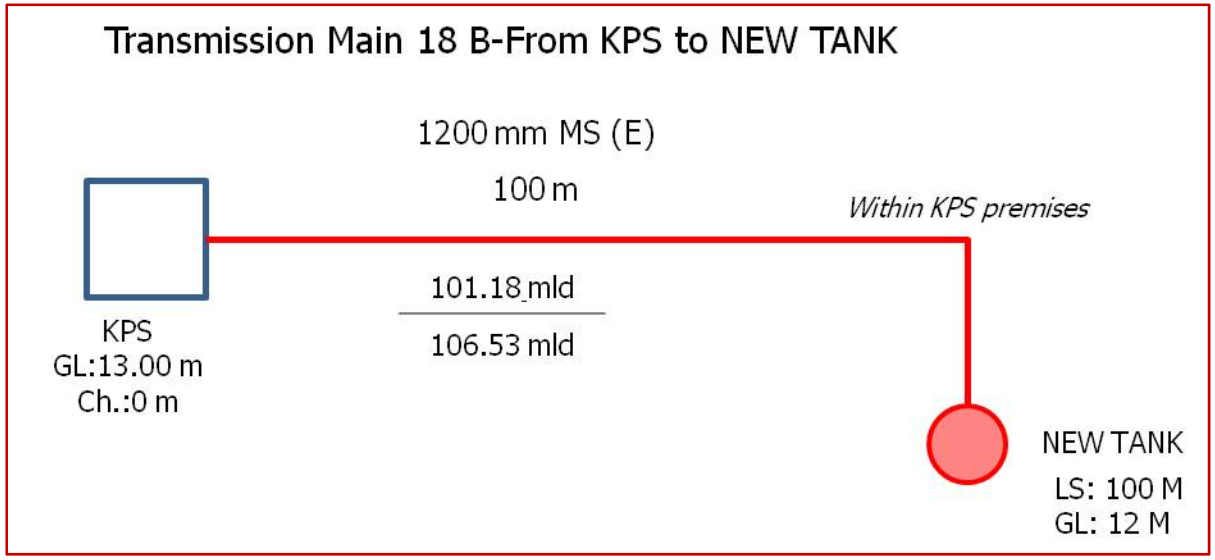
Sl.No	From	To	Chainage (m)		Length in M	Existing Pipe			Hfm/m	F.L	OL	TL	HGL	GL/MWL	RH
			From	To		Flow in m^3/sec	Dia of Pipe in mm	Velocity m/sec							
1	2	3	4	5	6	7	8	9	10	11	12	13	1	2	3
TM 17-INTERMEDIATE-2035															
		KPS			0								15.19	12.00	3.19
1	KPS	Change of pipe	0	8050	8050m	0.331	1050	0.382	0.0001	0.87	0.09	0.96	14.23	10.00	4.23
2	Change of pipe	Change of pipe	8050	9560	1510m	0.331	1200	0.293	0.0001	0.09	0.01	0.10	14.13	10.00	4.13
3	Change of pipe	Vallluvarkottam HW	9560	9860	300m	0.331	800	0.659	0.0004	0.12	0.01	0.13	14.00	11.00	3.00
													1.19		
TM 17-ULTIMATE-2050															
		KPS			0								15.27	12.00	3.27
1	KPS	Change of pipe	0	8050	8050m	0.347	1050	0.401	0.0001	0.94	0.09	1.03	14.24	10.00	4.24
2	Change of pipe	Change of pipe	8050	9560	1510m	0.347	1200	0.307	0.0001	0.09	0.01	0.10	14.14	10.00	4.14
3	Change of pipe	Vallluvarkottam HW	9560	9860	300m	0.347	800	0.690	0.0004	0.13	0.01	0.14	14.00	11.00	3.00
													1.27		



HEAD WORKS:	KPS	
Stage	Intermediate	Ultimate
Hours of pumping	23	23
GL	12.00m	12.00m
FVL/LWL	9.00m	9.00m
MWL of Sump @ End Beneficiary	12.00m	12.00m
Residual Head	3.00m	3.00m
HGL. Reqd @ End	15.00m	15.00m
Static Head	6.00m	6.00m
Total Losses	0.08m	0.09m
HGL @ Ch.:0 m	15.08m	15.09m

Sl No	ZONE CODE	Location	Projected Demand in MLD for 2035	Flow adopting 23 hours pumping (m3/sec)	Projected Demand in MLD for 2050	Flow adopting 23 hours pumping (m3/sec)
1	2	3	4	5		
1	1	OLD TANK	75.32	0.910	79.30	0.958
		Total	75.32	0.910	79.30	0.958

Sl.No	From	To	Chainage (m)		Length in M	Existing Pipe			Hfm/m	F.L	OL	TL	HGL	GL/MWL	RH
			From	To		Flow in m^3/sec	Dia of Pipe in mm	Velocity m/sec							
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
TM18A-INTERMEDIATE-2035															
		KPS			0								15.08	12.00	3.08
1	KPS	OLD TANK	0	200	200m	0.910	1400mm	0.804	0.0004	0.07	0.01	0.08	15.00	12.00	3.00
												0.08			
TM18A-ULTIMATE-2050															
		KPS			0								15.09	12.00	3.09
1	KPS	OLD TANK	0	200	200m	0.958	1400mm	0.847	0.0004	0.08	0.01	0.09	15.00	12.00	3.00
												0.09			



HEAD WORKS:	KPS	
Stage	Intermediate	Ultimate
Hours of pumping	23	23
GL	12.00m	12.00m
FVL/LWL	9.00m	9.00m
MWL of Sump @ End Beneficiary	12.00m	12.00m
Residual Head	3.00m	3.00m
HGL. Reqd @ End	15.00m	15.00m
Static Head	6.00m	6.00m
Total Losses	0.03m	0.03m
HGL @ Ch.:0 m	15.03m	15.03m

Sl No	ZONE CODE	Location	Projected Demand in MLD for 2035	Flow adopting 23 hours pumping (m3/sec)	Projected Demand in MLD for 2050	Flow adopting 23 hours pumping (m3/sec)
1	*2*	*3*	*4*	*5*	*6*	*7*
1	2	NEW TANK	101.18	1.222	106.53	1.287
		Total	101.18	1.222	106.53	1.287

Sl.No	From	To	Chainage (m)		Length in M	Existing Pipe			Hfm/m	F.L	OL	TL	HGL	GL/M WL	RH
			From	To		Flow in m^3/sec	Dia of Pipe in mm	Velocity m/sec							
1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*	*15*	*16*
TM18B-INTERMEDIATE-2035															
		KPS			0								15.03	12.00	3.03
1	KPS	NEW TANK	0	100	100m	1.222	1200mm	0.794	0.0003	0.03	0.00	0.03	15.00	12.00	3.00
												0.03			
TM18B-ULTIMATE-2050															
		KPS			0								15.03	12.00	3.03
1	KPS	NEW TANK	0	100	100m	1.287	1200mm	0.836	0.0003	0.03	0.00	0.03	15.00	12.00	3.00
												0.03			

ANNEXURE - 10.2

BALANCING OF NEMMELI SYSTEM

Water Demand, Supply and surplus aavailabe in Nemmeli system

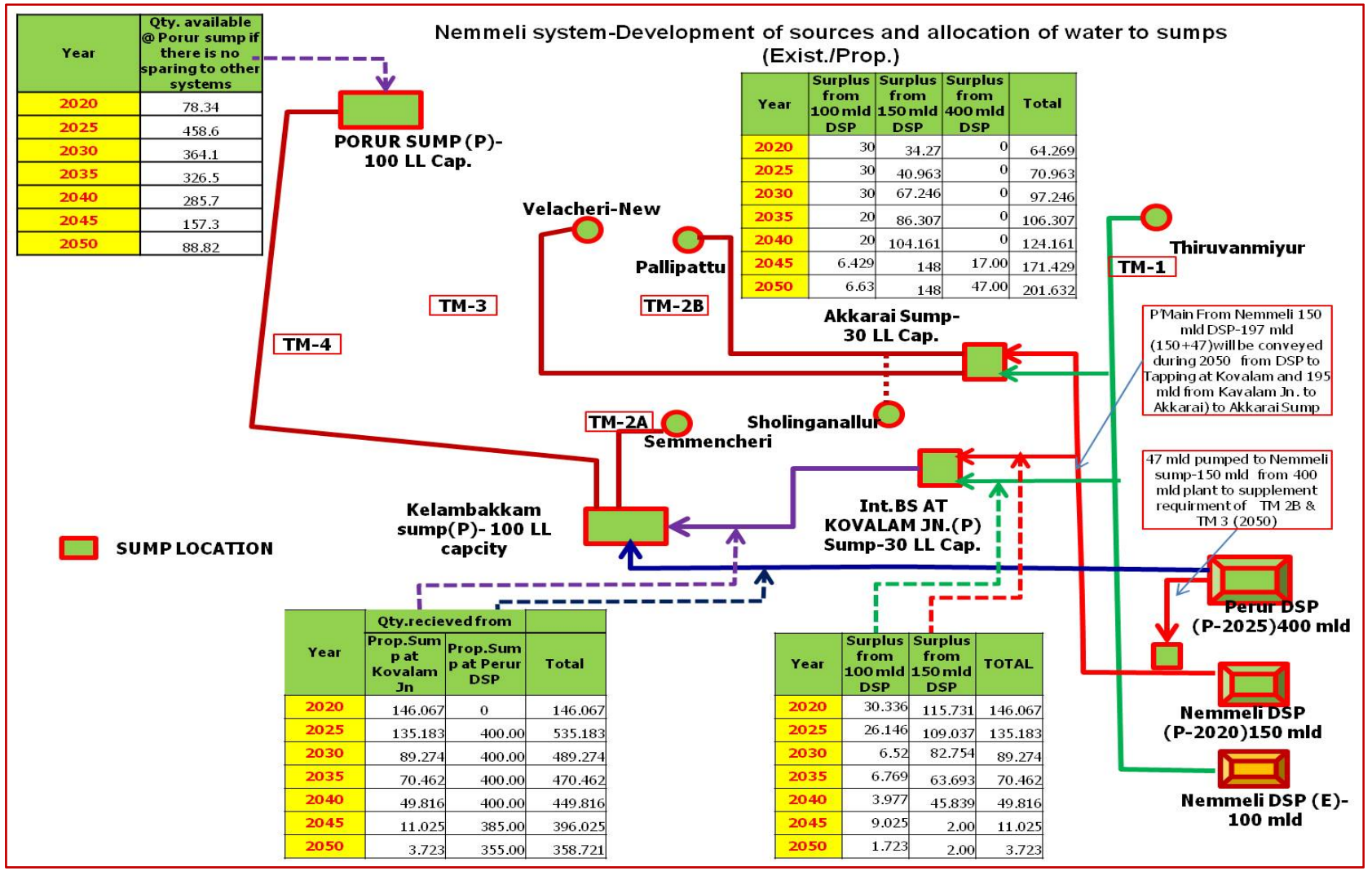
AREA	ZONE NOS.	2020	2025	2030	2035	2040	2045	2050
CORE CITY	13	16.67	17.24	17.64	18.04	18.61	19.05	19.49
	14	35.62	36.61	36.85	37.11	37.77	38.38	38.45
	16	26.06	26.61	27.26	27.78	28.38	28.90	29.48
	12	15.62	16.25	16.61	17.03	17.57	18.10	18.48
	12A	20.72	21.60	22.11	22.67	23.46	24.16	24.72
	6A	4.35	4.49	4.60	4.71	4.83	4.98	5.06
Sub Total		119.03	122.79	125.07	127.34	130.63	133.56	135.67
ADDED AREA	CC8	22.80	25.09	37.41	41.62	46.42	60.29	68.74
	CC9	15.00	17.70	26.97	30.91	35.24	45.68	51.53
	CC10	19.25	19.92	34.60	39.00	43.76	62.81	78.29
	CC11	14.34	18.52	31.60	37.84	44.26	59.42	68.91
Sub Total		71.39	81.23	130.58	149.37	169.68	228.20	267.47
REST OF CMA	OC15	40.19	44.87	71.91	82.40	93.86	136.88	154.17
	OC16	18.69	21.98	39.12	46.34	53.90	80.37	91.29
Sub Total		58.88	66.85	111.03	128.74	147.75	217.25	245.45
Total Demand		249.30	270.87	366.68	405.45	448.06	579.02	648.60
Addl.Cap. of DSP Proposed(150 mld DIP during 2020 & 400 mld DIP during 2025)		150.00	400.00					
Total Cap. that will be available		250.00	650.00	650.00	650.00	650.00	650.00	650.00
Balance/SurplusAvailable		0.7	379.13	283.32	244.55	201.94	70.98	1.4

Based on the commissioning of the desal Plants in the Nemmeli system, the balancing between Sumps and Transmission mains have been done and shown in the table below:

NEMMELI SYSTEM- BALANCING OF TRANSMISSION MAINS BETWEEN DEMAND AND SUPPLY									
Sl.No.	**Description**	**Period**							**Remarks/Source**
		2020	**2025**	**2030**	**2035**	**2040**	**2045**	**2050**	
1.	***2.***	***3.***	***4.***	***5.***	***6.***	***7.***	***8.***	***9.***	***10.***
1	**BALANCING OF TRANSMISSION MAINS BETWEEN DEMAND AND SUPPLY**								
2	**Balancing between supply and demand for TM1- Direct pumping**								
3	TM1	39.7	43.854	63.5	73.2	76	84.5	91.6	100 mld Existing DSP at Nemmeli-Direct supply
4	Surplus Available	60.3	56.146	36.5	26.8	24	15.5	8.35	100 *minus* respective demand
5	**Balancing between supply and demand for TM 2B & 3 from Akkarai Sump**								
6	TM2B	33.73	37.287	47.52	50.238	60.86	88.22	105.8	Supply from Akkarai Sump (Refer to Row 14)
7	TM3	30.54	33.676	49.726	56.069	63.3	83.21	95.8	
8	**Total Demand for TM 2B & TM3**	**64.27**	**70.96**	**97.25**	**106.31**	**124.16**	**171.43**	**201.63**	
9	Surplus Available	85.73	79.037	52.754	43.693	25.84	-21.43	-51.6	150 mld (prop.DSP) *minus* respective demand
10	Shortage						-21	-52	
11	Supply from 100 MLD to Akkarai Sump	30	30	30	20	20	6.43	6.63	
12	Supply from 150 MLD to Akkarai Sump	34.27	40.963	67.246	86.307	104.2	148	148	Balance (150 – respective Qty) to Kelambakkam sump through proposed sump @ Kovalam Jn.
13	Supply from 400 MLD to feed Akkarai Sump						17.00	47.00	Qty. will be pumped to the sump at 150 MLD DIP @ Nemmeli & the combined Qty will be pumped to Akkarai sump
14	Total Available at Akkarai Sump (11+12+13)	64.269	70.963	97.246	106.31	124.16	171.43	201.63	Check with the demand vide Row No.8

NEMMELI SYSTEM- BALANCING OF TRANSMISSION MAINS BETWEEN DEMAND AND SUPPLY									
Sl.No.	Description	Period							Remarks/Source
		2020	2025	2030	2035	2040	2045	2050	
1.	*2.*	*3.*	*4.*	*5.*	*6.*	*7.*	*8.*	*9.*	*10.*
15	**Balancing Between Supply And Demand For TM 2A & TM 4 From Kelambakkam Sump**								
16	Supply from 100 MLD to Kelambakkam Sump	30.336	26.146	6.52	6.769	3.977	9.025	1.723	Respective Qty. received at proposed sump @ Kovalam Jn. And pumped to Kelambakkam sump
17	Supply from 150 MLD to Kelambakkam Sump	115.73	109.04	82.75	63.69	45.84	2.00	2.00	
18	Supply from 400 MLD to Kelambakkam Sump		400	400	400	400	383	353	Directly received from 400 MLD DIP; 17 mld (2045) & 47 mld (2050) supplied to Akkarai sump from 400 mld DIP (Refer row.13)
19	Total avilable At Kelambakkam Sump (16+17+18)	146.1	535.183	489.27	470.46	449.8	394	356.7	
20	Supply to Semmenchri (TM2A)	3.76	3.93	7.23	8.28	9.38	13.5	16.83	
21	Balance (19-20)	142.3	531.253	482.04	462.18	440.4	380.5	339.9	
22	Supply through TM4	141.6	152.12	198.72	217.64	238.5	309.5	338.5	
23	Balance available (21-22)		379	283	245	202	71	1	
24	Add for supply to MYLAPORE, NANDANAM & SHW From Porur Sump	78.34	80.454	81.752	82.929	84.77	86.33	87.42	
25	Net Available/Required at last reach of TM4 (Qty. received at Porur Sump)(23+24)	78.34	459.59	365.08	327.47	286.7	157.3	88.82	

Based on the above table a flow diagram is given below:



Year	Qty. available @ Porur sump if there is no sparing to other systems
2020	78.34
2025	458.6
2030	364.1
2035	326.5
2040	285.7
2045	157.3
2050	88.82

Year	Surplus from 100 mld DSP	Surplus from 150 mld DSP	Surplus from 400 mld DSP	Total
2020	30	34.27	0	64.269
2025	30	40.963	0	70.963
2030	30	67.246	0	97.246
2035	20	86.307	0	106.307
2040	20	104.161	0	124.161
2045	6.429	148	17.00	171.429
2050	6.63	148	47.00	201.632

Year	Qty.recieved from		
	Prop.Sump at Kovalam Jn	Prop.Sump at Perur DSP	Total
2020	146.067	0	146.067
2025	135.183	400.00	535.183
2030	89.274	400.00	489.274
2035	70.462	400.00	470.462
2040	49.816	400.00	449.816
2045	11.025	385.00	396.025
2050	3.723	355.00	358.721

Year	Surplus from 100 mld DSP	Surplus from 150 mld DSP	TOTAL
2020	30.336	115.731	146.067
2025	26.146	109.037	135.183
2030	6.52	82.754	89.274
2035	6.769	63.693	70.462
2040	3.977	45.839	49.816
2045	9.025	2.00	11.025
2050	1.723	2.00	3.723

Supplementing strategy for the surplus water from Nemmeli System to Chembarambakkam System during the Design Years

The 150 mld and 400 mld Desal plants are proposed to be implemented during 2020 and 2025 respectively. Since the demand of the Nemmeli system during these periods are far less and therefore more surplus water will be available fromNemmeli system. These surplus water shall be utilized to the Chembaram bakkam system, which is adjacent to Nemmeli system. A strategy hsas been formulated to supplement the excess water to the Groups/Areas of Chembarambakkam system as given in the Chatrt below. These quantities can be tapped in the Group sumps proposed along the TM4 at appropriate locations within Chembarambakkam system.

Chembarambakkam system Zones / Ares / Groups		**Demand in MLD for the Design Years**						
		2020	**2025**	**2030**	**2035**	**2040**	**2045**	**2050**
	ZONE NOS.							
Core	8	83.90	85.38	87.36	88.91	90.72	91.91	93.74
	Sub Total	**83.90**	**85.38**	**87.36**	**88.91**	**90.72**	**91.91**	**93.74**
Added Area	CC5	33.65	37.76	56.97	64.01	71.82	92.77	104.72
	CC6	25.31	27.98	41.21	45.30	49.75	63.67	71.21
	Sub Total	**58.96**	**65.74**	**98.18**	**109.31**	**121.57**	**156.44**	**175.93**
REST OF CMA	OC6	12.52	14.41	24.03	28.64	34.12	52.23	62.00
	OC7	13.37	15.66	27.17	32.60	39.05	60.35	71.80
	OC8	16.08	18.67	34.85	41.66	48.94	73.98	85.31
	OC9	13.67	14.99	28.29	33.30	38.51	57.28	64.64
	OC10	8.20	9.55	16.10	18.80	21.78	32.53	37.16
	OC11	8.16	8.86	17.71	20.79	23.91	37.86	42.31
	OC12	9.58	10.01	18.99	22.23	25.62	37.83	42.60
	OC13	22.66	25.18	38.04	42.47	47.36	67.87	75.36
	OC14	12.70	14.65	25.10	28.62	32.34	47.79	53.16
	Sub Total	**116.94**	**131.96**	**230.26**	**269.10**	**311.63**	**467.71**	**534.33**
	Total	**259.80**	**283.08**	**415.80**	**467.33**	**523.91**	**716.05**	**804.00**
Excess water available from Nemmeli system		**-**	**379.133**	**283.323**	**244.5405**	**201.942**	**70.982**	**1.4015**
		-	Can supply to entire Chembarambakkam system	Can supply to entire rest of CMA + CC6 (chem.sys.)	Can supply to entire rest of CMA except OC6	Can supply to entire rest of cma except OC6, OC 7, OC8	Can supply to OC13 in rest of CMA	
Bal. Avilable after supplementing to Chembarambakkam Sys.			96.05					
			This bal. can be supplied to RH sys.					