



Copper Tube Type B Based on AS 1432—2004

TABLE F8

FLOW RATE L/s	40 Nom. Bore 35.4 ID, C = 145.9			50 Nom. Bore 48.3 ID, C = 147.1			65 Nom. Bore 61.0 ID, C = 146.7			80 Nom. Bore 72.9 ID, C = 146.5		
	Velocity m/s	Velocity Head m	Head Loss m/100m	Velocity m/s	Velocity Head m	Head Loss m/100m	Velocity m/s	Velocity Head m	Head Loss m/100m	Velocity m/s	Velocity Head m	Head Loss m/100m
0.10	0.10	0.001	0.06									
0.20	0.20	0.002	0.21	0.11	0.001	0.05						
0.30	0.30	0.005	0.42	0.16	0.001	0.10						
0.40	0.41	0.008	0.69	0.22	0.002	0.16	0.10	0.001	0.03			
0.50	0.51	0.013	1.02	0.27	0.004	0.23	0.14	0.001	0.05			
0.60	0.61	0.019	1.40	0.33	0.005	0.32	0.17	0.001	0.08	0.12	0.001	0.03
0.70	0.71	0.026	1.84	0.38	0.007	0.42	0.21	0.002	0.11	0.14	0.001	0.05
0.80	0.81	0.034	2.33	0.44	0.010	0.53	0.24	0.003	0.14	0.17	0.001	0.06
0.90	0.91	0.043	2.87	0.49	0.012	0.65	0.27	0.004	0.18	0.19	0.002	0.08
1.00	1.01	0.052	3.45	0.55	0.015	0.79	0.31	0.005	0.22	0.22	0.002	0.09
1.20	1.22	0.076	4.77	0.66	0.022	1.09	0.34	0.006	0.26	0.24	0.003	0.11
1.40	1.42	0.103	6.28	0.76	0.030	1.43	0.41	0.009	0.36	0.29	0.004	0.15
1.60	1.62	0.134	7.96	0.87	0.039	1.81	0.48	0.012	0.47	0.34	0.006	0.20
1.80	1.83	0.170	9.82	0.96	0.049	2.23	0.55	0.015	0.59	0.38	0.008	0.25
2.00	2.03	0.210	11.86	1.09	0.061	2.69	0.62	0.019	0.73	0.43	0.010	0.31
2.50	2.54	0.328	17.69	1.35	0.095	4.00	0.68	0.024	0.88	0.48	0.012	0.38
3.00	3.05	0.472	24.65	1.64	0.137	5.54	0.86	0.037	1.31	0.60	0.018	0.56
3.50	3.55	0.643	32.41	1.91	0.186	7.31	1.03	0.054	1.81	0.72	0.026	0.77
4.00	4.06	0.840	41.24	2.18	0.243	9.29	1.20	0.073	2.39	0.84	0.036	1.02
4.50	4.56	1.063	51.04	2.46	0.308	11.48	1.37	0.096	3.03	0.95	0.047	1.29
5.00	5.07	1.312	61.78	2.73	0.380	13.87	1.54	0.121	3.74	1.08	0.059	1.60
5.50	5.58	1.588	73.44	3.00	0.460	16.48	1.71	0.149	4.52	1.20	0.073	1.93
6.00	6.09	1.890	86.03	3.28	0.547	19.28	1.88	0.181	5.36	1.32	0.089	2.28
6.50	6.59	2.218	99.53	3.55	0.642	22.28	2.05	0.215	6.27	1.44	0.106	2.67
7.00				3.82	0.745	25.48	2.23	0.253	7.25	1.56	0.124	3.08
7.50				4.09	0.855	28.87	2.40	0.293	8.28	1.68	0.144	3.52
8.00				4.37	0.973	32.46	2.57	0.336	9.38	1.80	0.165	3.99
8.50				4.64	1.098	36.24	2.74	0.383	10.54	1.92	0.188	4.48
9.00				4.91	1.232	40.20	2.91	0.432	11.76	2.04	0.212	5.00
9.50				5.19	1.372	44.35	3.08	0.484	13.04	2.16	0.238	5.54
10.00				5.46	1.520	48.69	3.25	0.540	14.38	2.28	0.265	6.11
11.00				6.00	1.840	57.93	3.42	0.598	15.78	2.40	0.294	6.70
12.00				6.55	2.189	67.90	3.77	0.724	18.75	2.64	0.355	7.96
13.00							4.11	0.861	21.96	2.88	0.423	9.32
14.00							4.45	1.011	25.40	3.12	0.496	10.77
15.00							4.79	1.172	29.07	3.36	0.576	12.32
16.00							5.14	1.345	32.96	3.60	0.661	13.96
18.00							5.48	1.531	42.26	3.84	0.752	17.83
20.00							6.16	1.937	52.16	4.32	0.951	21.99
22.00							6.85	2.392	62.99	4.80	1.175	26.54
24.00										5.28	1.421	31.47
26.00										5.76	1.691	36.78
28.00										6.24	1.985	42.48
										6.72	2.302	43.58

Note: values printed in bold are in the critical flow zone and are unreliable



Copper Tube Type B Based on AS 1432—2004

TABLE F9

FLOW RATE L/s	90 Nom. Bore 85.5 ID, C = 146.9			100 Nom. Bore 98.2 ID, C = 147.2			125 Nom. Bore 123.6 ID, C = 148.8		
	Velocity m/s	Velocity Head m	Head Loss m/100m	Velocity m/s	Velocity Head m	Head Loss m/100m	Velocity m/s	Velocity Head m	Head Loss m/100m
0.70	0.12	0.001	0.03						
0.80	0.14	0.001	0.04						
0.90	0.16	0.001	0.04	0.12	0.001	0.02			
1.00	0.17	0.002	0.05	0.13	0.001	0.03			
1.20	0.21	0.002	0.07	0.16	0.001	0.04			
1.40	0.24	0.003	0.09	0.18	0.002	0.05			
1.60	0.28	0.004	0.12	0.21	0.002	0.06			
1.80	0.31	0.005	0.15	0.24	0.003	0.08			
2.00	0.35	0.006	0.18	0.26	0.004	0.09	0.17	0.001	0.03
2.50	0.44	0.010	0.26	0.33	0.006	0.13	0.21	0.002	0.05
3.00	0.52	0.014	0.36	0.40	0.008	0.19	0.25	0.003	0.06
3.50	0.61	0.019	0.47	0.46	0.011	0.24	0.29	0.004	0.08
4.00	0.70	0.025	0.60	0.53	0.014	0.31	0.33	0.006	0.10
4.50	0.78	0.031	0.74	0.59	0.018	0.38	0.37	0.007	0.13
5.00	0.87	0.039	0.89	0.66	0.022	0.46	0.42	0.009	0.15
5.50	0.96	0.047	1.06	0.73	0.027	0.55	0.46	0.011	0.18
6.00	1.04	0.055	1.24	0.79	0.032	0.64	0.50	0.013	0.21
6.50	1.13	0.065	1.43	0.86	0.038	0.74	0.54	0.015	0.24
7.00	1.22	0.076	1.63	0.92	0.044	0.84	0.58	0.017	0.28
7.50	1.31	0.087	1.84	0.99	0.050	0.95	0.62	0.020	0.32
8.00	1.39	0.099	2.07	1.06	0.057	1.07	0.67	0.023	0.35
8.50	1.48	0.112	2.31	1.12	0.064	1.19	0.71	0.026	0.39
9.00	1.57	0.125	2.56	1.19	0.072	1.32	0.75	0.029	0.44
9.50	1.65	0.139	2.82	1.25	0.080	1.45	0.79	0.032	0.48
10.00	1.74	0.154	3.09	1.32	0.089	1.59	0.83	0.035	0.53
11.00	1.91	0.187	3.67	1.45	0.108	1.89	0.92	0.043	0.63
12.00	2.09	0.222	4.30	1.58	0.128	2.21	1.00	0.051	0.73
13.00	2.26	0.261	4.97	1.72	0.150	2.55	1.08	0.060	0.85
14.00	2.44	0.303	5.68	1.85	0.174	2.92	1.17	0.069	0.97
15.00	2.61	0.348	6.43	1.98	0.200	3.31	1.25	0.080	1.09
16.00	2.78	0.395	7.17	2.11	0.228	3.71	1.33	0.091	1.23
18.00	3.13	0.501	10.08	2.36	0.288	5.15	1.50	0.115	1.68
20.00	3.48	0.618	12.16	2.64	0.356	6.21	1.67	0.142	2.03
22.00	3.85	0.748	14.41	2.90	0.430	7.36	1.83	0.171	2.40
24.00	4.18	0.890	16.83	3.17	0.512	8.59	2.00	0.204	2.80
26.00	4.52	1.044	19.42	3.43	0.601	9.91	2.17	0.239	3.23
28.00	4.87	1.211	22.02	3.70	0.697	10.26	2.33	0.278	3.38
30.00	5.22	1.390	22.70	3.96	0.800	11.63	2.50	0.319	3.83
35.00	6.09	1.892	30.10	4.62	1.089	15.41	2.92	0.434	5.07
40.00	6.96	2.472	38.45	5.28	1.422	19.68	3.33	0.587	6.47
45.00				5.94	1.800	24.41	3.75	0.717	8.01
50.00				6.60	2.222	29.61	4.17	0.886	9.72
55.00							4.58	1.072	11.56
60.00							5.00	1.275	13.56
65.00							5.42	1.497	15.70
70.00							5.83	1.736	17.99
75.00							6.25	1.993	20.42
80.00							6.67	2.267	22.99



PVC Pipe – Cast Iron Outside Diameter PN9 Series 2 Based on AS 1477–2006

TABLE J6

k=0.0015	450 Nom. Bore 469.2 ID, C = 153.3			500 Nom. Bore 518.5 ID, C = 153.3			600 Nom. Bore 617.2 ID, C = 153.8		
	Velocity m/s	Head m	Loss m/100m	Velocity m/s	Head m	Loss m/100m	Velocity m/s	Head m	Loss m/100m
30.0	0.17	0.002	0.01						
40.0	0.23	0.003	0.01	0.19	0.002	0.01			
50.0	0.29	0.004	0.02	0.24	0.003	0.01			
60.0	0.35	0.006	0.02	0.28	0.004	0.01			
70.0	0.40	0.008	0.03	0.33	0.005	0.02	0.23	0.003	0.01
80.0	0.46	0.011	0.04	0.38	0.007	0.02	0.27	0.004	0.01
90.0	0.52	0.014	0.05	0.43	0.009	0.03	0.30	0.005	0.01
100.0	0.58	0.017	0.06	0.47	0.011	0.03	0.33	0.006	0.01
150.0	0.87	0.038	0.11	0.71	0.026	0.07	0.50	0.013	0.03
200.0	1.16	0.068	0.19	0.95	0.046	0.12	0.67	0.023	0.05
250.0	1.45	0.107	0.29	1.18	0.072	0.18	0.84	0.036	0.08
300.0	1.74	0.154	0.41	1.42	0.103	0.25	1.00	0.051	0.11
325.0	1.88	0.180	0.47	1.54	0.121	0.29	1.09	0.060	0.12
350.0	2.02	0.209	0.54	1.66	0.140	0.33	1.17	0.070	0.14
375.0	2.17	0.240	0.61	1.78	0.161	0.38	1.25	0.080	0.16
400.0	2.31	0.273	0.69	1.89	0.183	0.42	1.34	0.091	0.18
425.0	2.46	0.308	0.77	2.01	0.207	0.47	1.42	0.103	0.20
450.0	2.60	0.346	0.85	2.13	0.232	0.53	1.50	0.115	0.23
475.0	2.75	0.385	0.94	2.25	0.258	0.58	1.59	0.129	0.25
500.0	2.89	0.427	1.04	2.37	0.286	0.64	1.67	0.142	0.27
525.0	3.04	0.470	1.13	2.49	0.315	0.70	1.75	0.157	0.30
550.0	3.18	0.516	1.23	2.60	0.346	0.76	1.84	0.172	0.33
600.0	3.47	0.614	1.45	2.84	0.412	0.89	2.01	0.205	0.38
650.0	3.76	0.721	1.68	3.08	0.483	1.03	2.17	0.241	0.44
700.0	4.05	0.836	1.92	3.32	0.561	1.18	2.34	0.279	0.51
750.0	4.34	0.960	2.18	3.55	0.644	1.34	2.51	0.321	0.58
800.0	4.63	1.092	2.46	3.79	0.732	1.51	2.67	0.365	0.65
850.0	4.92	1.233	2.75	4.03	0.827	1.69	2.84	0.412	0.73
900.0	5.21	1.382	3.06	4.26	0.927	1.88	3.01	0.462	0.81
950.0	5.49	1.540	3.38	4.50	1.033	2.08	3.18	0.514	0.89
1000.0	5.78	1.707	3.71	4.74	1.144	2.29	3.34	0.570	0.98
1050.0	6.07	1.882	4.07	4.97	1.262	2.50	3.51	0.628	1.07
1100.0	6.36	2.065	4.43	5.21	1.385	2.73	3.68	0.690	1.17
1150.0	6.65	2.257	4.81	5.45	1.513	2.96	3.84	0.754	1.27
1200.0	6.94	2.458	5.21	5.68	1.648	3.20	4.01	0.821	1.37
1250.0	7.23	2.667	5.62	5.92	1.786	3.45	4.18	0.891	1.48
1300.0	7.52	2.884	6.04	6.16	1.934	3.71	4.35	0.963	1.59
1350.0	7.81	3.110	6.48	6.39	2.088	3.98	4.51	1.039	1.71
1400.0				6.63	2.243	4.26	4.68	1.117	1.83
1450.0				6.87	2.406	4.55	4.85	1.198	1.95
1500.0							5.01	1.282	2.07
1550.0							5.18	1.369	2.20
1600.0							5.35	1.459	2.34
1650.0							5.51	1.552	2.47
1700.0							5.68	1.647	2.61
1750.0							5.85	1.746	2.76
1800.0							6.02	1.847	2.91
1850.0							6.18	1.951	3.06
1900.0							6.35	2.058	3.21
1950.0							6.52	2.167	3.37
2000.0							6.68	2.280	3.53
2050.0							6.85	2.395	3.70



PVC Pipe – Cast Iron Outside Diameter PN12 Series 2 Based on AS 1477–2006

TABLE J7

k=0.0015	100 Nom. Bore 108.5 ID, C = 148.5			150 Nom. Bore 157.9 ID, C = 149.9			200 Nom. Bore 209.4 ID, C = 150.2			225 Nom. Bore 233.7 ID, C = 150.7		
	Velocity m/s	Head m	Loss m/100m	Velocity m/s	Head m	Loss m/100m	Velocity m/s	Head m	Loss m/100m	Velocity m/s	Head m	Loss m/100m
1.00	0.11	0.001	0.02									
1.50	0.16	0.001	0.03									
2.00	0.22	0.002	0.06									
3.00	0.32	0.005	0.12	0.15	0.001	0.02						
4.00	0.43	0.010	0.19	0.20	0.002	0.03						
5.00	0.54	0.015	0.29	0.26	0.003	0.05	0.15	0.001	0.01			
6.00	0.65	0.021	0.40	0.31	0.005	0.07	0.17	0.002	0.02			
7.00	0.76	0.029	0.52	0.36	0.007	0.09	0.20	0.002	0.02	0.16	0.001	0.01
7.50	0.81	0.034	0.59	0.38	0.007	0.10	0.22	0.002	0.03	0.17	0.002	0.02
8.00	0.87	0.038	0.66	0.41	0.009	0.11	0.23	0.003	0.03	0.19	0.002	0.02
8.50	0.92	0.043	0.74	0.43	0.010	0.12	0.25	0.003	0.03	0.20	0.002	0.02
9.00	0.97	0.048	0.82	0.46	0.011	0.14	0.26	0.003	0.04	0.21	0.002	0.02
9.50	1.03	0.054	0.90	0.49	0.012	0.15	0.28	0.004	0.04	0.22	0.003	0.02
10.00	1.08	0.060	0.99	0.51	0.013	0.16	0.29	0.004	0.04	0.23	0.003	0.03
11.00	1.19	0.072	1.17	0.56	0.016	0.19	0.32	0.005	0.05	0.26	0.003	0.03
12.00	1.30	0.086	1.37	0.61	0.019	0.23	0.35	0.006	0.06	0.28	0.004	0.03
13.00	1.41	0.101	1.58	0.66	0.023	0.26	0.38	0.007	0.07	0.30	0.005	0.04
14.00	1.51	0.117	1.81	0.72	0.028	0.30	0.41	0.008	0.08	0.33	0.005	0.05
15.00	1.62	0.134	2.05	0.77	0.030	0.34	0.44	0.010	0.09	0.35	0.006	0.05
16.00	1.73	0.153	2.30	0.82	0.034	0.38	0.48	0.011	0.10	0.37	0.007	0.06
18.00	1.95	0.193	2.85	0.92	0.043	0.47	0.52	0.014	0.12	0.42	0.009	0.07
20.00	2.16	0.239	3.44	1.02	0.053	0.57	0.58	0.017	0.15	0.47	0.011	0.09
22.00	2.38	0.289	4.09	1.12	0.064	0.67	0.64	0.021	0.17	0.51	0.013	0.10
24.00	2.60	0.344	4.79	1.23	0.077	0.79	0.70	0.025	0.20	0.56	0.016	0.12
25.00	2.70	0.373	5.16	1.28	0.083	0.85	0.73	0.027	0.22	0.58	0.017	0.13
26.00	2.81	0.403	5.54	1.33	0.090	0.91	0.76	0.029	0.23	0.61	0.018	0.14
28.00	3.03	0.468	6.34	1.43	0.104	1.04	0.81	0.034	0.27	0.65	0.022	0.16
30.00	3.24	0.537	7.19	1.53	0.120	1.18	0.87	0.039	0.30	0.70	0.026	0.18
35.00	3.79	0.731	9.52	1.79	0.163	1.66	1.02	0.053	0.40	0.82	0.034	0.24
40.00	4.33	0.955	12.15	2.04	0.213	1.99	1.16	0.069	0.51	0.93	0.044	0.30
45.00	4.87	1.209	15.07	2.30	0.270	2.46	1.31	0.087	0.63	1.05	0.056	0.37
50.00	5.41	1.492	18.27	2.56	0.333	2.98	1.45	0.108	0.76	1.17	0.069	0.45
55.00	5.95	1.805	21.76	2.81	0.403	3.55	1.60	0.130	0.91	1.28	0.084	0.53
60.00	6.49	2.149	25.52	3.07	0.480	4.15	1.74	0.155	1.06	1.40	0.100	0.63
65.00				3.32	0.563	4.81	1.89	0.182	1.23	1.52	0.117	0.72
70.00				3.58	0.653	5.51	2.03	0.211	1.41	1.63	0.136	0.83
75.00				3.83	0.749	6.24	2.18	0.242	1.60	1.75	0.156	0.94
80.00				4.09	0.853	7.03	2.32	0.276	1.79	1.87	0.178	1.06
90.00				4.60	1.079	8.72	2.61	0.349	2.22	2.10	0.225	1.31
100.00				5.11	1.332	10.58	2.91	0.431	2.70	2.33	0.278	1.59
110.00				5.62	1.612	12.60	3.20	0.521	3.21	2.57	0.336	1.89
120.00				6.13	1.918	14.79	3.49	0.620	3.76	2.80	0.400	2.21
130.00				6.64	2.252	17.13	3.78	0.728	4.36	3.03	0.469	2.56
140.00							4.07	0.844	4.99	3.27	0.544	2.93
150.00							4.36	0.969	5.66	3.50	0.624	3.33
160.00							4.65	1.102	6.38	3.73	0.710	3.74
180.00							5.23	1.395	7.92	4.20	0.899	4.65
200.00							5.81	1.722	9.81	4.66	1.110	5.64
220.00							6.39	2.084	11.46	5.13	1.343	6.72
240.00							6.97	2.480	13.45	5.60	1.599	7.89
260.00										6.06	1.876	9.14
280.00										6.53	2.176	10.48

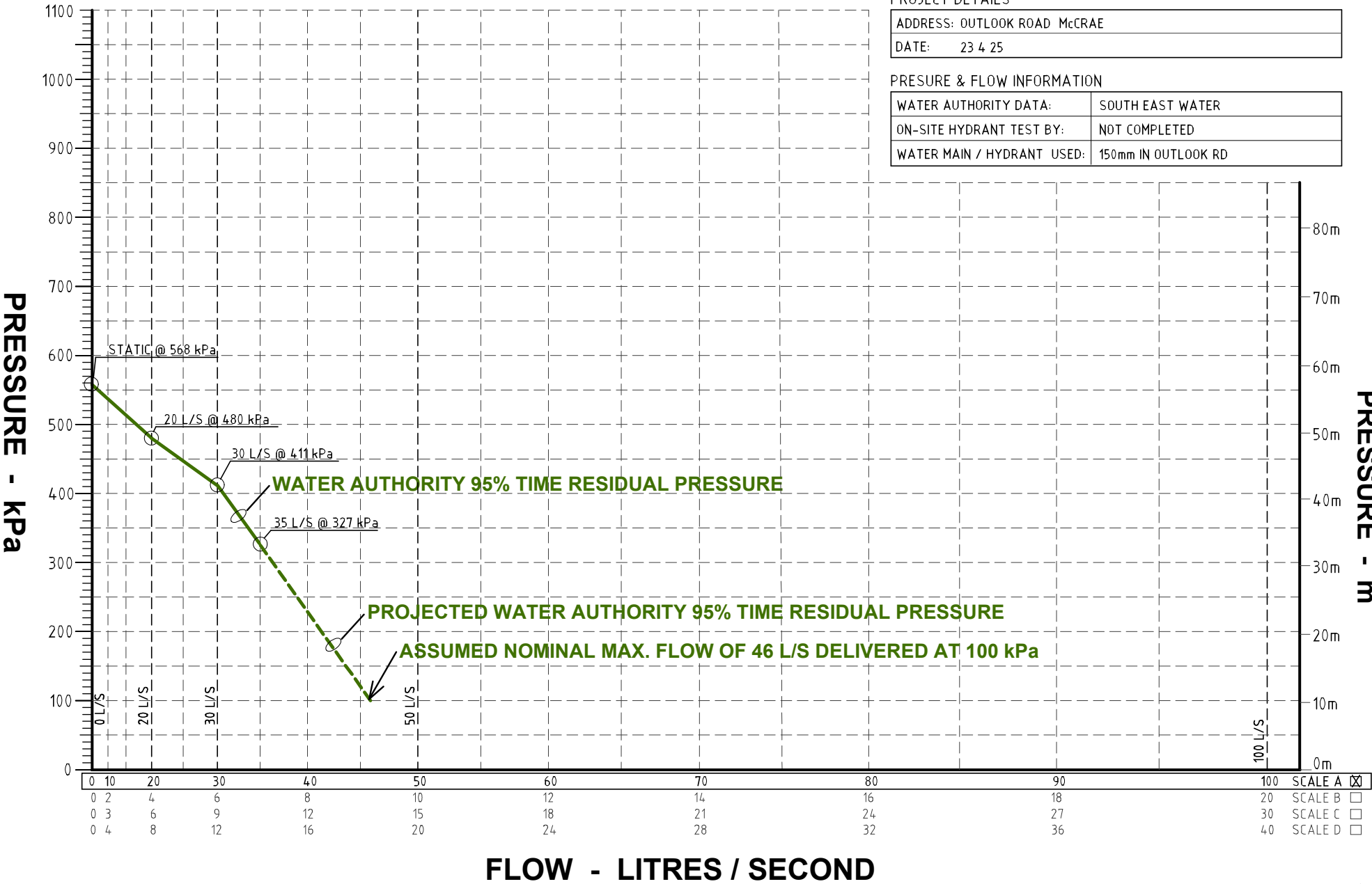
WATER SUPPLY ANALYSIS GRAPH

PROJECT DETAILS

ADDRESS:	OUTLOOK ROAD McCRAE
DATE:	23 4 25

PRESURE & FLOW INFORMATION

WATER AUTHORITY DATA:	SOUTH EAST WATER
ON-SITE HYDRANT TEST BY:	NOT COMPLETED
WATER MAIN / HYDRANT USED:	150mm IN OUTLOOK RD



LEAKAGE RATE ANALYSIS GRAPH

ADDRESS:	31 OUTLOOK RD McCRAE
DATE:	23 4 25
LEAKAGE PERIOD:	ASSUMED 60 DAYS (ENDING 31 DEC. 2024)
SIMULATED LEAKAGE:	EQUIVALENT TO 15mm, 25mm, 40mm & 150mm PIPE
WATER MAIN	150mm uPVC CL-12 IN OUTLOOK RD
TOTAL DISCHARGE	81,776 KL OVER 60 DAYS

