Norwich Western Link

Drainage Strategy Report Appendix 6 : Ditches and Piped Ditches Calculations

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Contents

1 Introduction

1.1.1 The PED table shows the hydraulic calculations for each C124 PED by catchment and outfall, showing what ditch type / geometry is required to cater for the proposed flows. It includes catchment properties, ditch alignment information, design flows, ditch selection and maximum velocity check.
The pipes ditches design table shows the design calculations for each culvert including length, levels, gradient, design flow, diameter, capacity and capacity utilisation pergentage

Table 1: Hydraulic calculations for Pre-Earthworks Ditches (PED)

FEH Method data - uksuds.com
Parameters

Parameter	Value
BFI/Host	0.697
SAAR (mm)	636
Ditch Mannings n	0.08
Growth Curve Factor	3.56

Notes
For catchment information refer to drawing PK1002-RAM-HDG-MLE-DR-DZ-0502
For more detail on ditch locations refer to drawings PK1002-RAM-HDG-MLE-DR-DZ-0503 to 0512
* = Catchment area too small to produce a flow according to the FEH method

Notes for Ditch Selection
1. From Ditch Selection Table, starting with Type A, select Ditch size to suit the design flows determined
2. Flow Capacity is highlighted if ditch not large enough to accommodate design flow

Notes for Maximum Velocity Assessment
1. Minimum gradient was used to determine ditch size. This will also give maximum flow depth
2. Use goal seek to determine flow depth for selected ditch type ie. Design Depth varied so that calculated Actual Flow = Design Flow
3. Manning's equation used to determine "Threshold Gradient" at which the design flow depth exceeds 1m/s velocity (where erosion protection is required)
4. From ditch 3D design model, identify sections of ditch where gradient is steeper than Threshold Gradient and provide erosion protection

ditch type:	A	B	C	D	E	F
Ditch Slope (1 in X)	1	1	1	1	1	1
Ditch Depth y (m)	0.30	0.45	0.60	0.75	1.00	2.00
Base Width B (m)	0.30	0.45	0.60	0.75	1.00	1.00
Area (m2)	0.18	0.41	0.72	1.13	2.00	6.00
Wetted Perimeter (m)	1.15	1.73	2.30	2.88	3.83	6.66

Column1	Catchment Properties	Catchment Properties2	Catchment Properties3	Catchment Properties4	Catchment Properties5	Catchment Properties6	Ditch Alignment	Ditch Alignment7	Ditch Alignment8	Ditch Alignment9	Ditch Alignment10	Ditch Alignment11	Ditch Alignment12	Total Design Flows	Total Design Flows13	Ditch Selection Table	Ditch Selection Table14	Ditch Selection Table15	Ditch Selection Table16	Ditch Selection Table17	Ditch Selection Table18	Ditch Selection Table19	Ditch Selection Table20	Maximum Velocity Check (>1m/s) Table	Maximum Velocity Check (>1m/s) Table21	Maximum Velocity Check (>1m/s) Table22	Maximum Velocity Check (>1m/s) Table23	Maximum Velocity Check (>1m/s) Table24	Maximum Velocity Check (>1m/s) Table25	Maximum Velocity Check (>1m/s) Table26	Maximum Velocity Check (>1m/s) Table27	Maximum Velocity Check (>1m/s) Table28
OUTFALL 1	Catchment	Area (m2)	Area (ha)	Design Flow Q (uksuds.com) (l/s)	Design Flow Q + 45%CC (l/s)	Design Flow Q + 45%CC (m3/s)	Ditch Ref	Length (m)	Start Elevation (m)	End Elevation (m)	Level Difference (m)	Average Gradient	Minmum Gradient	∑Ditch Design Flow (m3/s)	∑Ditch Design Flow (l/s)	Ditch Type Selected	Base width	Ditch depth	Side slope	Cross sectional area	Wetted Perimeter	Hydraulic Radius	Flow Capacity	Ditch design depth	Flow Area	Wetted Perimeter	Hydraulic Radius	Top width	Design Flow	Actual Flow	Gradient threshold for 1 m/s	Slope (1:X)
OUTFALL 1	21a	29760	2.976	12.92	18.73	0.019	D-001-A-1.000	238.8	27.23	23.82	3.42	0.01	0.00	0.02	18.73	A	0.300	0.300	1	0.180	1.150	0.157	0.038	0.213	0.109	0.903	0.121	0.727	0.019	0.019	10.7%	9.4

Column1	Catchment Properties	Catchment Properties2	Catchment Properties3	Catchment Properties4	Catchment Properties5	Catchment Properties6	Ditch Alignment	Ditch Alignment7	Ditch Alignment8	Ditch Alignment9	Ditch Alignment10	Ditch Alignment11	Ditch Alignment12	Total Design Flows	Total Design Flows13	Ditch Selection Table	Ditch Selection Table14	Ditch Selection Table15	Ditch Selection Table16	Ditch Selection Table17	Ditch Selection Table18	Ditch Selection Table19	Ditch Selection Table20	Maximum Velocity Check (>1m/s) Table	Maximum Velocity Check (>1m/s) Table21	Maximum Velocity Check (>1m/s) Table22	Maximum Velocity Check (>1m/s) Table23	Maximum Velocity Check (>1m/s) Table24	Maximum Velocity Check (>1m/s) Table25	Maximum Velocity Check (>1m/s) Table26	Maximum Velocity Check (>1m/s) Table27	Maximum Velocity Check (>1m/s) Table28
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OUTFALL 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Column1	Catchment Properties	Catchment Properties2	Catchment Properties3	Catchment Properties4	Catchment Properties5	Catchment Properties6	Ditch Alignment	Ditch Alignment7	Ditch Alignment8	Ditch Alignment9	Ditch Alignment10	Ditch Alignment11	Ditch Alignment12	Total Design Flows	Total Design Flows13	Ditch Selection Table	Ditch Selection Table14	Ditch Selection Table15	Ditch Selection Table16	Ditch Selection Table17	Ditch Selection Table18	Ditch Selection Table19	Ditch Selection Table20	Maximum Velocity Check (>1m/s) Table	Maximum Velocity Check (>1m/s) Table21	Maximum Velocity Check (>1m/s) Table22	Maximum Velocity Check (>1m/s) Table23	Maximum Velocity Check (>1m/s) Table24	Maximum Velocity Check (>1m/s) Table25	Maximum Velocity Check (>1m/s) Table26	Maximum Velocity Check (>1m/s) Table27	Maximum Velocity Check (>1m/s) Table28
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OUTFALL 3	11b	93504	9.350	40.59	58.86	0.059	D-003-B-1.000	373.6	27.05	16.84	10.21	0.03	0.00	0.06	58.86	B	0.450	0.450	1	0.405	1.730	0.234	0.110	0.324	0.250	1.365	0.183	1.097	0.059	0.058	6.1%	16.3
OUTFALL 3	11a	30170	3.017	13.10	19.00	0.019	D-003-A-2.000	166.9	19.85	16.78	3.07	0.02	0.00	0.02	19.00	A	0.300	0.300	1	0.180	1.150	0.157	0.042	0.199	0.099	0.863	0.115	0.698	0.019	0.019	11.4%	8.8
OUTFALL 3	-	-	-	-	-	-	C-003-A-1.000	19.5	16.78	15.60	1.18	0.06	0.06	0.08	77.85	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
OUTFALL 3	11c	296	0.030	0.13	0.19	0.000	D-003-B-1.001	15.2	15.60	14.58	1.02	0.07	0.04	0.08	78.04	B	0.450	0.450	1	0.405	1.730	0.234	0.384	0.194	0.125	0.998	0.125	0.838	0.078	0.078	10.2%	9.8
OUTFALL 3	-	-	-	-	-	-	C-003-B-2.000	9.5	14.58	14.49	0.08	0.01	0.01	0.08	78.04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
OUTFALL 3	11d	5681	0.568	2.47	3.58	0.004	D-003-B-1.002	161.8	14.49	13.89	0.61	0.00	0.00	0.08	81.62	B	0.450	0.450	1	0.405	1.730	0.234	0.111	0.386	0.322	1.541	0.209	1.221	0.082	0.082	5.2%	19.4
OUTFALL 3	11i	2113	0.211	0.92	1.33	0.001	D-003-A-4.001	78.0	19.94	14.98	4.96	0.06	0.03	0.00	1.33	A	0.300	0.300	1	0.180	1.150	0.157	0.119	0.024	0.008	0.367	0.021	0.347	0.001	0.001	112.1%	0.9
OUTFALL 3	11j	4589	0.459	1.99	2.89	0.003	D-003-B-1.004	128.3	13.99	10.10	3.88	0.03	0.00	0.09	85.84	B	0.450	0.450	1	0.405	1.730	0.234	0.105	0.406	0.347	1.598	0.217	1.262	0.086	0.086	4.9%	20.4
OUTFALL 3	11k	6366	0.637	2.76	4.00	0.004	D-003-C-6.000	271.3	21.28	8.99	12.30	0.05	0.00	0.00	4.00	C	0.600	0.600	1	0.720	2.300	0.313	0.238	0.069	0.046	0.795	0.058	0.738	0.004	0.005	28.5%	3.5

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OUTFALL 4	12c	32657	3.266	14.18	20.56	0.021	D-004-A-1.000	187.9	20.21	17.19	3.02	0.02	0.00	0.02	20.56	A	0.300	0.300	1	0.180	1.150	0.157	0.043	0.208	0.105	0.887	0.119	0.715	0.021	0.021	11.0%	9.1
OUTFALL 4	12d	8695	0.869	3.77	5.47	0.005	D-004-A-1.001	139.4	17.19	12.35	4.84	0.03	0.02	0.03	26.03	A	0.300	0.300	1	0.180	1.150	0.157	0.102	0.149	0.067	0.722	0.093	0.598	0.026	0.027	15.2%	6.6
OUTFALL 4	12e	4305	0.431	1.87	2.71	0.003	D-004-A-2.000	61.4	13.48	12.40	1.08	0.02	0.00	0.00	2.71	A	0.300	0.300	1	0.180	1.150	0.157	0.039	0.076	0.028	0.514	0.055	0.451	0.003	0.003	30.4%	3.3
OUTFALL 4	-	-	-	-	-	-	C-004-A-1.000	5.1	12.35	12.25	0.10	0.02	0.02	0.03	0.03	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
OUTFALL 4	*	*	*	*	0.00	0.000	D-004-A-1.002	100.4	12.25	8.39	3.86	0.04	0.00	0.03	28.74	A	0.300	0.300	1	0.180	1.150	0.157	0.037	0.267	0.151	1.055	0.143	0.834	0.029	0.030	8.5%	11.7

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OUTFALL 5	24a	5396	0.540	2.34	3.39	0.003	D-005-A-1.000	90.4	40.34	39.29	1.05	0.01	0.00	0.00	3.39	A	0.300	0.300	1	0.180	1.150	0.157	0.038	0.089	0.035	0.552	0.063	0.478	0.003	0.004	25.7%	3.9
OUTFALL 5	-	-	-	-	-	-	C-05-A-4.000	5.4	39.29	39.23	0.05	0.01	0.01	0.00	3.39	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
OUTFALL 5	24b	2963	0.296	1.29	1.87	0.002	D-005-A-1.001	160.2	39.23	32.12	7.11	0.04	0.00	0.01	5.26	A	0.300	0.300	1	0.180	1.150	0.157	0.038	0.100	0.040	0.583	0.069	0.500	0.005	0.005	22.8%	4.4
OUTFALL 5	-	-	-	-	-	-	C-05-A-3.000	5.3	32.12	32.07	0.05	0.01	0.01	0.01	5.26	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
OUTFALL 5	24c	16253	1.625	7.05	10.22	0.010	D-005-A-1.002	530.5	32.07	10.55	21.52	0.04	0.00	0.02	15.49	A	0.300	0.300	1	0.180	1.150	0.157	0.036	0.196	0.097	0.854	0.114	0.692	0.015	0.016	11.6%	8.6
OUTFALL 5	24d	338	0.034	0.15	0.22	0.000	D-005-A-2.000	30.5	10.93	10.60	0.33	0.01	0.00	0.00	0.22	A	0.300	0.300	1	0.180	1.150	0.157	0.038	0.036	0.012	0.401	0.030	0.371	0.000	0.001	69.0%	1.4
OUTFALL 5	*	*	*	*			D-005-A-1.003	46.9	10.55	8.74	1.81	0.04	0.02	0.02	15.70	A	0.300	0.300	1	0.180	1.150	0.157	0.089	0.122	0.052	0.645	0.080	0.544	0.016	0.016	18.6%	5.4
OUTFALL 5	24e	11916	1.192	5.17	7.50	0.007	D-005-C-3.000	568.8	39.86	21.50	18.36	0.03	0.00	0.01	7.50	C	0.600	0.600	1	0.720	2.300	0.313	0.238	0.088	0.060	0.849	0.071	0.776	0.007	0.007	21.7%	4.6
OUTFALL 5	-	-	-	-	-	-	C-05-A-2.000	5.2	21.50	21.44	0.05	0.01	0.01	0.01	7.50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
OUTFALL 5	24f	3515	0.352	1.53	2.22	0.002	D-005-A-3.001	344.0	21.44	9.52	11.93	0.03	0.03	0.01	9.72	A	0.300	0.300	1	0.180	1.150	0.157	0.105	0.089	0.035	0.552	0.063	0.478	0.010	0.011	25.7%	3.9
OUTFALL 5	24g	3020	0.302	1.31	1.90	0.002	D-005-A-4.000	207.1	16.85	10.31	6.54	0.03	0.02	0.00	1.90	A	0.300	0.300	1	0.180	1.150	0.157	0.094	0.044	0.015	0.425	0.036	0.388	0.002	0.003	54.3%	1.8
OUTFALL 5	12a	49008	4.901	21.27	30.84	0.031	D-005-A-5.000	332.5	40.01	18.61	21.40	0.06	0.00	0.03	30.84	A	0.300	0.300	1	0.180	1.150	0.157	0.038	0.272	0.156	1.070	0.146	0.844	0.031	0.031	8.4%	12.0
OUTFALL 5	12b	68243	6.824	29.62	42.95	0.043	D-005-B-6.000	158.0	20.05	18.61	1.44	0.01	0.00	0.04	42.95	B	0.450	0.450	1	0.405	1.730	0.234	0.105	0.283	0.207	1.250	0.166	1.016	0.043	0.043	7.0%	14.2
OUTFALL 5	12f	10337	1.034	4.49	6.51	0.007	D-005-B-5.001	301.2	18.61	12.80	5.81	0.02	0.00	0.08	80.30	B	0.450	0.450	1	0.405	1.730	0.234	0.110	0.382	0.317	1.530	0.208	1.213	0.080	0.080	5.2%	19.2
OUTFALL 5	*	*	*	*	0.00	0.000	D-005-A-7.000	125.0	16.87	12.56	4.31	0.03	0.02	0.00	0.00	A	0.300	0.300	1	0.180	1.150	0.157	0.095	0.100	0.040	0.583	0.069	0.500	0.000	0.012	22.8%	4.4
OUTFALL 5	*	*	*	*	0.00	0.000	D-005-B-5.002	78.4	12.56	9.65	2.91	0.04	0.02	0.08	80.30	B	0.450	0.450	1	0.405	1.730	0.234	0.279	0.234	0.160	1.113	0.144	0.919	0.080	0.080	8.5%	11.8
OUTFALL 5	-	-	-	-	-	-	C-05-A-5.000	8.0	9.65	9.45	0.20	0.03	0.03	0.08	80.30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
OUTFALL 5	*	*	*	*	0.00	0.000	D-005-B-5.003	6.0	9.45	9.40	0.05	0.01	0.01	0.08	80.30	B	0.450	0.450	1	0.405	1.730	0.234	0.176	0.301	0.226	1.302	0.174	1.052	0.080	0.080	6.6%	15.1
OUTFALL 5	-	-	-	-	-	-	C-05-A-1.000	7.9	9.52	8.90	0.62	0.08	0.08	0.09	91.92	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
OUTFALL 5	*	*	*	*	0.00	0.000	D-005-A-3.002	2.2	8.90	8.83	0.07	0.03	0.03	0.11	107.62	A	0.300	0.300	1	0.180	1.150	0.157	0.117	0.289	0.171	1.119	0.153	0.879	0.108	0.109	7.9%	12.7
OUTFALL 5	*	*	*	*	0.00	0.000	D-005-B-1.004	39.7	8.74	8.57	0.18	0.00	0.00	0.11	107.62	B	0.450	0.450	1	0.405	1.730	0.234	0.110	0.444	0.397	1.705	0.233	1.338	0.108	0.108	4.5%	22.4

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	Catchment	Area (m2)	Area (ha)	Design Flow Q (uksuds.com) (l/s)	Design Flow Q + 45%CC (l/s)	Design Flow Q + 45%CC (m3/s)	Ditch Ref	Length (m)	Start Elevation (m)	End Elevation (m)	Level Difference (m)	Average Gradient	Minimum Gradient	∑Ditch Design Flow (m3/s)	∑Ditch Design Flow (l/s)	Ditch Type Selected	Base width	Ditch depth	Side slope	Cross sectional area	Wetted Perimeter	Hydraulic Radius	Flow Capacity	Ditch design depth	Flow Area	Wetted Perimeter	Hydraulic Radius	Top width	Design Flow	Actual Flow	Gradient threshold for 1 m/s	Slope (1:X)
OUTFALL 6	5a	116087	11.609	50.39	73.07	0.073	D-006-B-1.000	508.7	57.30	48.08	9.22	0.02	0.00	0.07	73.07	B	0.450	0.450	1	0.405	1.730	0.234	0.110	0.364	0.296	1.479	0.200	1.178	0.073	0.073	5.5%	18.3
OUTFALL 6	5c	8219	0.822	3.57	5.18	0.005	D-006-A-2.000	158.5	51.92	48.12	3.80	0.02	0.00	0.01	5.18	A	0.300	0.300	1	0.180	1.150	0.157	0.038	0.100	0.040	0.583	0.069	0.500	0.005	0.005	22.8%	4.4
OUTFALL 6	5b	30387	3.039	13.19	19.13	0.019	D-006-B-1.001-A	66.3	48.08	46.96	1.11	0.02	0.00	0.10	97.37	B	0.450	0.450	1	0.405	1.730	0.234	0.110	0.421	0.367	1.641	0.223	1.292	0.097	0.097	4.7%	21.2
OUTFALL 6	-	-	-	-	-	-	C-06-A-1.001	2.5	46.96	46.94	0.02	0.01	0.01	0.10	97.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
OUTFALL 6	*	*	*	*	0.00	0.000	D-006-B-1.001-B	122.5	46.94	44.72	2.22	0.02	0.00	0.10	97.37	B	0.450	0.450	1	0.405	1.730	0.234	0.110	0.421	0.367	1.641	0.223	1.292	0.097	0.097	4.7%	21.2
OUTFALL 6	5d	1008	0.101	0.44	0.64	0.001	D-006-A-3.000	48.8	45.24	44.76	0.48	0.01	0.00	0.00	0.64	A	0.300	0.300	1	0.180	1.150	0.157	0.031	0.050	0.018	0.442	0.040	0.401	0.001	0.001	47.0%	2.1
OUTFALL 6	-	-	-	-	-	-	C-06-B-1.000	14.9	44.72	44.65	0.07	0.00	0.00	0.10	98.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
OUTFALL 6	*	*	*	*	0.00	0.000	D-006-B-1.003	44.1	44.65	44.11	0.54	0.01	0.01	0.10	98.01	B	0.450	0.450	1	0.405	1.730	0.234	0.148	0.050	0.025	0.592	0.043	0.551	0.098	0.003	43.1%	2.3
OUTFALL 6	6b	59876	5.988	25.99	37.69	0.038	D-006-A-1.002	339.6	46.00	40.07	5.93	0.02	0.00	0.04	37.69	A	0.300	0.300	1	0.180	1.150	0.157	0.037	0.304	0.184	1.160	0.158	0.908	0.038	0.039	7.5%	13.4
OUTFALL 6	6d	10656	1.066	4.63	6.71	0.007	D-006-B-4.000	405.7	44.12	40.01	4.12	0.01	0.00	0.10	104.72	B	0.450	0.450	1	0.405	1.730	0.234	0.110	0.436	0.386	1.683	0.229	1.322	0.105	0.104	4.6%	21.9
OUTFALL 6	6c	716	0.072	0.31	0.45	0.000	D-006-C-1.003	32.1	39.84	39.74	0.10	0.00	0.00	0.14	142.85	C	0.600	0.600	1	0.720	2.300	0.313	0.232	0.470	0.502	1.928	0.261	1.539	0.143	0.143	3.8%	26.0
OUTFALL 6	6a	16612	1.661	7.21	10.45	0.010	D-006-A-5.000	79.3	41.05	40.50	0.55	0.01	0.00	0.01	10.45	A	0.300	0.300	1	0.180	1.150	0.157	0.040	0.148	0.066	0.718	0.092	0.596	0.010	0.010	15.4%	6.5
OUTFALL 6	-	-	-	-	-	-	C-06-B-2.000	7.0	39.74	39.43	0.30	0.04	0.04	0.15	153.31	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
OUTFALL 6	*	*	*	*	0.00	0.000	D-006-C-1.004	10.0	39.43	39.39	0.05	0.00	0.01	0.15	153.31	C	0.600	0.600	1	0.720	2.300	0.313	0.293	0.430	0.443	1.817	0.244	1.461	0.153	0.153	4.2%	23.8
OUTFALL 6	*	*	*	*	0.00	0.000	D-006-A-6.000	29.7	40.72	40.20	0.52	0.02	0.00	0.00	0.00	A	0.300	0.300	1	0.180	1.150	0.157	0.038	0.100	0.040	0.583	0.069	0.500	0.000	0.005	22.8%	4.4
OUTFALL 6	-	-	-	-	-	-	C-06-B-3.000	28.1	39.39	38.26	1.13	0.04	0.04	0.15	153.31	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
OUTFALL 6	7a	42119	4.212	18.28	26.51	0.027	D-006-C-1.005	702.1	38.26	24.02	14.23	0.02	0.00	0.18	179.81	C	0.600	0.600	1	0.720	2.300	0.313	0.238	0.521	0.584	2.073	0.282	1.642	0.180	0.180	3.5%	28.8
OUTFALL 6	7b	21981	2.198	9.54	13.83	0.014	D-006-B-17.000	119.0	25.15	24.22	0.94	0.01	0.00	0.01	13.83	B	0.450	0.450	1	0.405	1.730	0.234	0.110	0.143	0.085	0.855	0.099	0.736	0.014	0.013	13.9%	7.2
OUTFALL 6	*	1053	0.105	0.46	0.67	0.001	D-006-B-18.000	115.0	24.75	23.53	1.23	0.01	0.00	0.00	0.67	B	0.450	0.450	1	0.405	1.730	0.234	0.110	0.042	0.021	0.568	0.036	0.534	0.001	0.002	53.5%	1.9
OUTFALL 6	-	-	-	-	-	-	C-06-B-4.000	13.0	24.02	23.24	0.78	0.06	0.06	0.19	193.65	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
OUTFALL 6	*	*	*	*	0.00	0.000	D-006-C-1.006	60.6	23.24	22.51	0.73	0.01	0.00	0.19	194.31	C	0.600	0.600	1	0.720	2.300	0.313	0.238	0.541	0.618	2.131	0.290	1.683	0.194	0.194	3.3%	30.0
OUTFALL 6	-	-	-	-	1200.00	1.200	C-06-D-5.001	17.5	25.50	24.61	0.89	0.05	0.05	1.20	1200.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
OUTFALL 6	9h,8	3093020	309.302	1023.36	1483.87	1.484	D-006-E-7.000	122.8	24.61	23.19	1.42	0.01	0.00	1.48	1483.87	E	1.000	1.000	1	2.000	3.830	0.522	0.936	1.254	2.825	4.546	0.621	3.507	1.484	1.484	1.2%	82.9
OUTFALL 6	9g	2746	0.275	1.19	1.73	0.002	D-006-A-19.000	42.3	24.95	24.06	0.89	0.02	0.00	0.00	1.73	A	0.300	0.300	1	0.180	1.150	0.157	0.038	0.069	0.025	0.495	0.051	0.438	0.002	0.003	33.5%	3.0
OUTFALL 6	-	-	-	-	-	-	C-06-D-5.000	9.5	23.19	23.11	0.08	0.01	0.01	1.49	1485.60	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
OUTFALL 6	*	*	*	*	0.00	0.000	D-006-E-7.001	22.9	23.11	22.63	0.48	0.02	0.01	1.49	1485.60	E	1.000	1.000	1	2.000	3.830	0.522	1.904	0.883	1.661	3.496	0.475	2.765	1.486	1.485	1.7%	57.9
OUTFALL 6	9a	50422	5.042	21.89	31.74	0.032	D-006-A-8.000	372.1	40.39	23.96	16.43	0.04	0.00	0.03	31.74	A	0.300	0.300	1	0.180	1.150	0.157	0.036	0.283	0.165	1.101	0.150	0.867	0.032	0.032	8.0%	12.5
OUTFALL 6	*	*	*	*	0.00	0.000	D-006-A-20.000	20.6	25.00	24.16	0.85	0.04	0.02	0.00	0.00	A	0.300	0.300	1	0.180	1.150	0.157	0.103	0.050	0.018	0.441	0.040	0.400	0.000	0.004	47.3%	2.1
OUTFALL 6	-	-	-	-	-	-	C-06-A-6.000	12.4	23.96	23.32	0.64	0.05	0.05	0.03	31.74	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
OUTFALL 6	*	*	*	*	0.00	0.000	D-006-A-8.001	21.3	23.32	23.05	0.27	0.01	0.01	0.03	31.74	A	0.300	0.300	1	0.180	1.150	0.157	0.074	0.195	0.096	0.851	0.113	0.690	0.032	0.032	11.7%	8.6
OUTFALL 6	-	-	-	-	-	-	C-06-D-7.000	14.5	22.63	22.21	0.42	0.03	0.03	1.71	1711.65	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
OUTFALL 6	9b	2750	0.275	1.19	1.73	0.002	D-006-C-9.000	265.4	39.87	24.24	15.64	0.06	0.00	0.00	1.73	C	0.600	0.600	1	0.720	2.300	0.313	0.242	0.040	0.026	0.713	0.036	0.680	0.002	0.002	54.0%	1.9
OUTFALL 6	9c	1211	0.121	0.53	0.77	0.001	D-006-A-10.000	57.2	33.16	30.86	2.30	0.04	0.00	0.00	0.77	A	0.300	0.300	1	0.180	1.150	0.157	0.038	0.047	0.016	0.433	0.038	0.394	0.001	0.001	50.8%	2.0
OUTFALL 6	-	-	-	-	-	-	C-06-A-8.000	7.1	30.86	30.14	0.72	0.10	0.10	0.00	0.77	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
OUTFALL 6	9d	1226	0.123	0.53	0.77	0.001	D-006-A-10.001	57.3	30.14	24.58	5.56	0.10	0.04	0.00	1.54	A	0.300	0.300	1	0.180	1.150	0.157	0.130	0.032	0.011	0.391	0.027	0.364	0.002	0.002	77.7%	1.3
OUTFALL 6	9e	1791	0.179	0.78	1.13	0.001	D-006-A-9.001	48.8	24.24	22.78	1.46	0.03	0.01	0.00	3.26	A	0.300	0.300	1	0.180	1.150	0.157	0.076	0.050	0.018	0.441	0.040	0.400	0.003	0.003	47.3%	2.1
OUTFALL 6	9f	1803	0.180	0.78	1.13	0.001	D-006-E-1.007	8.1	22.21	22.12	0.09	0.01	0.00	1.71	1714.92	E	1.000	1.000	1	2.000	3.830	0.522	0.920	1.355	3.189	4.831	0.660	3.709	1.715	1.715	1.1%	89.8
OUTFALL 6	-	-	-	-	-	-	C-06-D-9.000	77.0	22.12	21.37	0.76	0.01	0.01	1.71	1714.92	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
OUTFALL 6	13b	911	0.091	0.40	0.58	0.001	D-006-A-11.000	38.4	32.38	23.45	8.93	0.23	0.09	0.00	0.58	A	0.300	0.300	1	0.180	1.150	0.157	0.194	0.017	0.005	0.348	0.016	0.334	0.001	0.001	165.5%	0.6
OUTFALL 6	-	-	-	-	-	-	C-06-A-10.000	7.9	23.45	21.87	1.58	0.20	0.20	0.00	0.58	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
OUTFALL 6	13c	2002	0.200	0.87	1.26	0.001	D-006-A-11.001	70.1	21.87	21.35	0.52	0.01	0.00	0.00	1.84	A	0.300	0.300	1	0.180	1.150	0.157	0.038	0.069	0.025	0.495	0.051	0.438	0.002	0.003	33.5%	3.0
OUTFALL 6	13d	680	0.068	0.30	0.44	0.000	D-006-A-12.000	18.5	22.90	22.46	0.44	0.02	0.01	0.00	0.44	A	0.300	0.300	1	0.180	1.150	0.157	0.050	0.037	0.013	0.405	0.031	0.374	0.000	0.001	65.9%	1.5
OUTFALL 6	13a	115730	11.573	50.24	72.85	0.073	D-006-E-1.008	366.5	21.53	20.64	0.89	0.00	0.00	1.72	1717.19	E	1.000	1.000	1	2.000	3.830	0.522	0.513	1.782	4.957	6.040	0.821	4.564	1.717	1.717	0.8%	120.1
OUTFALL 6	15	13982	1.398	6.07	8.80	0.009	D-006-A-13.000	664.1	36.08	24.94	11.14	0.02	0.00	0.01	8.80	A	0.300	0.300	1	0.180	1.150	0.157	0.038	0.143	0.063	0.704	0.090	0.586	0.009	0.009	15.9%	6.3
OUTFALL 6	-	-	-	-	-	-	C-06-A-11.000	6.2	24.94	24.88	0.06	0.01	0.01	0.01	8.80	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
OUTFALL 6	14a	6866	0.687	2.98	4.32	0.004	D-006-C-14.000	275.2	35.28	25.67	9.61	0.03	0.00	0.00	4.32	A	0.300	0.300	1	0.180	1.150	0.157	0.038	0.100	0.040	0.583	0.069	0.500	0.004	0.005	22.8%	4.4
OUTFALL 6	14b	19157	1.916	8.32	12.06	0.012	D-006-A-13.001	125.0	24.88	22.41	2.46	0.02	0.00	0.03	25.19	A	0.300	0.300	1	0.180	1.150	0.157	0.038	0.243	0.132	0.987	0.134	0.786	0.025	0.025	9.4%	10.7
OUTFALL 6	-	-	-	-	-	-	C-06-A-13.000	9.5	22.41	22.32	0.09	0.01	0.01	0.03	25.19	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
OUTFALL 6	*	*	*	*	0.00	0.000	D-006-A-13.002	2.9	22.32	22.30	0.02	0.01	0.03	0.03	25.33	A	0.300	0.300	1	0.180	1.150	0.157	0.110	0.139	0.061	0.692	0.088	0.577	0.025	0.025	16.4%	6.1
OUTFALL 6	13e	240	0.024	0.10	0.15	0.000	D-006-A-15.000	19.6	22.66	22.53	0.13	0.01	0.00	0.00	0.15	A	0.300	0.300	1	0.180	1.150	0.157	0.038	0.034	0.011	0.397	0.029	0.368	0.000	0.001	72.4%	1.4
OUTFALL 6	-	-	-	-	-	-	C-06-A-12.000	9.8	22.53	22.43	0.10	0.01		0.00	0.15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
OUTFALL 6	*	*	*	*	0.00	0.000	D-006-A-15.001	15.3	22.43	22.05	0.38	0.03	0.03	0.00	0.15	A	0.300	0.300	1	0.180	1.150	0.157	0.103	0.019	0.006	0.355	0.017	0.339	0.000	0.001	141.9%	0.7
OUTFALL 6	*	*	*	*	0.00	0.000	D-006-A-16.000	29.6	22.20	22.10	0.09	0.00	0.00	0.00	0.00	A	0.300	0.300	1	0.180	1.150	0.157	0.035	0.100	0.040	0.583	0.069	0.500	0.000	0.004	22.8%	4.4
OUTFALL 6	*	*	*		0.00	0.000	D-006-A-15.002	38.6	22.05	21.96	0.09	0.00	0.00	0.00	0.15	A	0.300	0.300	1	0.180	1.150	0.157	0.038	0.035	0.012	0.399	0.029	0.370	0.000	0.001	70.7%	1.4
OUTFALL 6	14c	52461	5.246	15.68	22.74	0.023	D-006-B-13.003	218.3	21.96	20.55	1.41	0.01	0.00	0.05	47.92	B	0.450	0.450	1	0.405	1.730	0.234	0.094	0.316	0.243	1.345	0.180	1.083	0.048	0.047	6.3%	15.9

Column1	Catchment Properties	Catchment Properties2	Catchment Properties3	Catchment Properties4	Catchment Properties5	Catchment Properties6	Ditch Alignment	Ditch Alignment7	Ditch Alignment8	Ditch Alignment9	Ditch Alignment10	Ditch Alignment11	Ditch Alignment12	Total Design Flows	Total Design Flows13	Ditch Selection Table	Ditch Selection Table14	Ditch Selection Table15	Ditch Selection Table16	Ditch Selection Table17	Ditch Selection Table18	Ditch Selection Table19	Ditch Selection Table20	Maximum Velocity Check (>1m/s) Table	Maximum Velocity Check (>1m/s) Table21	Maximum Velocity Check (>1m/s) Table22	Maximum Velocity Check (>1m/s) Table23	Maximum Velocity Check (>1m/s) Table24	Maximum Velocity Check (>1m/s) Table25	Maximum Velocity Check (>1m/s) Table26	Maximum Velocity Check (>1m/s) Table27	Maximum Velocity Check (>1m/s) Table28
	Catchment	Area (m2)	Area (ha)	Design Flow Q (uksuds.com) (l/s)	Design Flow Q + 45%CC (l/s)	Design Flow Q + 45%CC (m3/s)	Ditch Ref	Length (m)	Start Elevation (m)	End Elevation (m)	Level Difference (m)	Average Gradient	Minmum Gradient	∑Ditch Design Flow (m3/s)	∑Ditch Design Flow (l/s)	Ditch Type Selected	Base width	Ditch depth	Side slope	Cross sectional area	Wetted Perimeter	Hydraulic Radius	Flow Capacity	Ditch design depth	Flow Area	Wetted Perimeter	Hydraulic Radius	Top width	Design Flow	Actual Flow	Gradient threshold for 1 m/s	Slope (1:X)
OUTFALL 7	16	5050	0.505	2.19	3.18	0.003	D-007-A-1.000	182.8	36.00	33.54	2.47	0.01	0.00	0.00	3.18	A	0.300	0.300	1	0.180	1.150	0.157	0.038	0.086	0.033	0.543	0.061	0.472	0.003	0.004	26.6%	3.8
OUTFALL 7	17,18	59138	5.914	25.67	37.22	0.037	D-007-B-2.000	1086.0	57.40	36.62	20.78	0.02	0.00	0.04	37.22	B	0.450	0.450	1	0.405	1.730	0.234	0.110	0.256	0.180	1.173	0.154	0.961	0.037	0.037	7.8%	12.9
OUTFALL 7	17,18	2424	0.242	1.05	1.52	0.002	D-007-A-2.001	36.0	48.87	47.11	1.76	0.05	0.03	0.00	1.52	A	0.300	0.300	1	0.180	1.150	0.157	0.115	0.034	0.011	0.396	0.029	0.368	0.002	0.002	73.3%	1.4
OUTFALL 7	-	-	-	-	-	-	C-07-A-1.001	3.9	47.11	47.07	0.04	0.01	0.01	0.00	1.52	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
OUTFALL 7	17,18	7587	0.759	3.29	4.77	0.005	D-007-A-2.002	119.6	47.07	43.57	3.50	0.03	0.01	0.01	6.29	A	0.300	0.300	1	0.180	1.150	0.157	0.052	0.100	0.040	0.583	0.069	0.500	0.006	0.007	22.8%	4.4
OUTFALL 7	-	-	-	-	-	-	C-07-A-1.002	6.8	43.57	43.51	0.07	0.01	0.01	0.01	6.29	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
OUTFALL 7	17,18	14052	1.405	6.10	8.85	0.009	D-007-A-2.003	329.0	43.51	36.80	6.71	0.02	0.01	0.02	15.14	A	0.300	0.300	1	0.180	1.150	0.157	0.055	0.156	0.071	0.742	0.096	0.612	0.015	0.016	14.6%	6.9
OUTFALL 7	17,18	15831	1.583	3.56	5.16	0.005	D-007-B-2.004	126.2	36.62	33.39	3.23	0.03	0.00	0.06	57.52	B	0.450	0.450	1	0.405	1.730	0.234	0.112	0.321	0.247	1.358	0.182	1.092	0.058	0.058	6.2%	16.1
OUTFALL 7	-	-	-	-	-	-	C-07-A-1.000	10.3	33.69	33.59	0.10	0.01	0.00	0.06	57.52	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
OUTFALL 7	*	*	*	*	*	0.000	D-007-B-1.001	34.4	33.54	33.28	0.26	0.01	0.00	0.06	57.52	B	0.450	0.450	1	0.405	1.730	0.234	0.105	0.335	0.263	1.396	0.188	1.119	0.058	0.059	5.9%	16.8

Column1	Catchment Properties	Catchment Properties2	Catchment Properties3	Catchment Properties4	Catchment Properties5	Catchment Properties6	Ditch Alignment	Ditch Alignment7	Ditch Alignment8	Ditch Alignment9	Ditch Alignment10	Ditch Alignment11	Ditch Alignment12	Total Design Flows	Total Design Flows13	Ditch Selection Table	Ditch Selection Table14	Ditch Selection Table15	Ditch Selection Table16	Ditch Selection Table17	Ditch Selection Table18	Ditch Selection Table19	Ditch Selection Table20	Maximum Velocity Check (>1m/s) Table	Maximum Velocity Check (>1m/s) Table21	Maximum Velocity Check (>1m/s) Table22	Maximum Velocity Check (>1m/s) Table23	Maximum Velocity Check (>1m/s) Table24	Maximum Velocity Check (>1m/s) Table25	Maximum Velocity Check (>1m/s) Table26	Maximum Velocity Check (>1m/s) Table27	Maximum Velocity Check (>1m/s) Table28
	Catchment	Area (m2)	Area (ha)	Design Flow Q (uksuds.com) (l/s)	Design Flow Q + 45%CC (l/s)	Design Flow Q + 45%CC (m3/s)	Ditch Ref	Length (m)	Start Elevation (m)	End Elevation (m)	Level Difference (m)	Average Gradient	Minmum Gradient	∑Ditch Design Flow (m3/s)	∑Ditch Design Flow (l/s)	Ditch Type Selected	Base width	Ditch depth	Side slope	Cross sectional area	Wetted Perimeter	Hydraulic Radius	Flow Capacity	Ditch design depth	Flow Area	Wetted Perimeter	Hydraulic Radius	Top width	Design Flow	Actual Flow	Gradient threshold for 1 m/s	Slope (1:X)
OUTFALL 8	19a	1774	0.177	0.77	1.12	0.001	D-008-A-1.000	121.0	57.43	56.37	1.06	0.01	0.00	0.00	1.12	A	0.300	0.300	1	0.180	1.150	0.157	0.038	0.047	0.016	0.433	0.038	0.394	0.001	0.001	50.5%	2.0
OUTFALL 8	19b	5243	0.524	2.27	3.29	0.003	D-008-A-2.000	83.3	58.10	56.85	1.24	0.01	0.00	0.00	3.29	A	0.300	0.300	1	0.180	1.150	0.157	0.037	0.089	0.035	0.552	0.063	0.478	0.003	0.004	25.7%	3.9
OUTFALL 8	19c	44943	4.494	19.51	28.29	0.028	D-008-B-3.000	121.1	57.52	56.87	0.65	0.01	0.00	0.03	28.29	B	0.450	0.450	1	0.405	1.730	0.234	0.110	0.218	0.145	1.066	0.136	0.886	0.028	0.028	9.1%	11.0
OUTFALL 8	-	-	-	-	-	-	C-08-A-1.001	10.0	56.85	56.77	0.08	0.01	0.01	0.03	32.70	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Column1	Catchment Properties	Catchment Properties2	Catchment Properties3	Catchment Properties4	Catchment Properties5	Catchment Properties6	Ditch Alignment	Ditch Alignment7	Ditch Alignment8	Ditch Alignment9	Ditch Alignment10	Ditch Alignment11	Ditch Alignment12	Total Design Flows	Total Design Flows13	Ditch Selection Table	Ditch Selection Table14	Ditch Selection Table15	Ditch Selection Table16	Ditch Selection Table17	Ditch Selection Table18	Ditch Selection Table19	Ditch Selection Table20	Maximum Velocity Check (>1m/s) Table	Maximum Velocity Check (>1m/s) Table21	Maximum Velocity Check (>1m/s) Table22	Maximum Velocity Check (>1m/s) Table23	Maximum Velocity Check (>1m/s) Table24	Maximum Velocity Check (>1m/s) Table25	Maximum Velocity Check (>1m/s) Table26	Maximum Velocity Check (>1m/s) Table27	Maximum Velocity Check (>1m/s) Table28
	Catchment	Area (m2)	Area (ha)	Design Flow Q (uksuds.com) (l/s)	Design Flow Q + 45%CC (l/s)	Design Flow Q + 45%CC (m3/s)	Ditch Ref	Length (m)	Start Elevation (m)	End Elevation (m)	Level Difference (m)	Average Gradient	Minmum Gradient	∑Ditch Design Flow (m3/s)	∑Ditch Design Flow (l/s)	Ditch Type Selected	Base width	Ditch depth	Side slope	Cross sectional area	Wetted Perimeter	Hydraulic Radius	Flow Capacity	Ditch design depth	Flow Area	Wetted Perimeter	Hydraulic Radius	Top width	Design Flow	Actual Flow	Gradient threshold for 1 m/s	Slope (1:X)
OUTFALL 9	19d	2343	0.234	1.02	1.48	0.001	D-009-B-1.000	93.5	58.27	54.30	3.98	0.04	0.04	0.00	1.48	B	0.450	0.450	1	0.405	1.730	0.234	0.370	0.023	0.011	0.515	0.021	0.496	0.001	0.002	110.3%	0.9

Column1	Catchment Properties	Catchment Properties2	Catchment Properties3	Catchment Properties4	Catchment Properties5	Catchment Properties6	Ditch Alignment	Ditch Alignment7	Ditch Alignment8	Ditch Alignment9	Ditch Alignment10	Ditch Alignment11	Ditch Alignment12	Total Design Flows	Total Design Flows13	Ditch Selection Table	Ditch Selection Table14	Ditch Selection Table15	Ditch Selection Table16	Ditch Selection Table17	Ditch Selection Table18	Ditch Selection Table19	Ditch Selection Table20	Maximum Velocity Check (>1m/s) Table	Maximum Velocity Check (>1m/s) Table21	Maximum Velocity Check (>1m/s) Table22	Maximum Velocity Check (>1m/s) Table23	Maximum Velocity Check (>1m/s) Table24	Maximum Velocity Check (>1m/s) Table25	Maximum Velocity Check (>1m/s) Table26	Maximum Velocity Check (>1m/s) Table27	Maximum Velocity Check (>1m/s) Table28
	Catchment	Area (m2)	Area (ha)	Design Flow Q (uksuds.com) (l/s)	Design Flow Q + 45%CC (l/s)	Design Flow Q + 45%CC (m3/s)	Ditch Ref	Length (m)	Start Elevation (m)	End Elevation (m)	Level Difference (m)	Average Gradient	Minmum Gradient	∑Ditch Design Flow (m3/s)	∑Ditch Design Flow (l/s)	Ditch Type Selected	Base width	Ditch depth	Side slope	Cross sectional area	Wetted Perimeter	Hydraulic Radius	Flow Capacity	Ditch design depth	Flow Area	Wetted Perimeter	Hydraulic Radius	Top width	Design Flow	Actual Flow	Gradient threshold for 1 m/s	Slope (1:X)
OUTFALL 11	*	*	*	*	*		D-011-A-1.000	88.9	48.91	47.87	1.04	0.01	0.01	0.00	0.00	A	0.300	0.300	1	0.180	1.150	0.157	0.051	0.001	0.000	0.303	0.001	0.302	0.000	0.000	6451.9%	0.0
OUTFALL 11	20a	10533	1.053	4.57	6.63	0.007	D-011-C-2.000	305.8	48.47	47.71	0.76	0.00	0.00	0.01	6.63	C	0.600	0.600	1	0.720	2.300	0.313	0.238	0.089	0.061	0.852	0.072	0.778	0.007	0.008	21.4%	4.7
OUTFALL 11	-	-	-	-	-	-	C-011-A-1.000	35.8	47.71	45.95	1.76	0.05	0.05	0.01	6.63	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
OUTFALL 11	20b	1509	0.660	0.45	0.65	0.001	D-011-A-1.001	150.7	45.95	35.20	10.75	0.07	0.00	0.01	7.28	A	0.300	0.300	1	0.180	1.150	0.157	0.036	0.128	0.055	0.663	0.083	0.557	0.007	0.007	17.7%	5.7

Column1	Catchment Properties	Catchment Properties2	Catchment Properties3	Catchment Properties4	Catchment Properties5	Catchment Properties6	Ditch Alignment	Ditch Alignment7	Ditch Alignment8	Ditch Alignment9	Ditch Alignment10	Ditch Alignment11	Ditch Alignment12	Total Design Flows	Total Design Flows13	Ditch Selection Table	Ditch Selection Table14	Ditch Selection Table15	Ditch Selection Table16	Ditch Selection Table17	Ditch Selection Table18	Ditch Selection Table19	Ditch Selection Table20	Maximum Velocity Check (>1m/s) Table	Maximum Velocity Check (>1m/s) Table21	Maximum Velocity Check (>1m/s) Table22	Maximum Velocity Check (>1m/s) Table23	Maximum Velocity Check (>1m/s) Table24	Maximum Velocity Check (>1m/s) Table25	Maximum Velocity Check (>1m/s) Table26	Maximum Velocity Check (>1m/s) Table27	Maximum Velocity Check (>1m/s) Table28
	Catchment	Area (m2)	Area (ha)	Design Flow Q (uksuds.com) (l/s)	Design Flow Q + 45%CC (l/s)	Design Flow Q + 45%CC (m3/s)	Ditch Ref	Length (m)	Start Elevation (m)	End Elevation (m)	Level Difference (m)	Average Gradient	Minimum Gradient	∑Ditch Design Flow (m3/s)	∑Ditch Design Flow (l/s)	Ditch Type Selected	Base width	Ditch depth	Side slope	Cross sectional area	Wetted Perimeter	Hydraulic Radius	Flow Capacity	Ditch design depth	Flow Area	Wetted Perimeter	Hydraulic Radius	Top width	Design Flow	Actual Flow	Gradient threshold for 1 m/s	Slope (1:X)
OUTFALL 12	20d	5196	0.520	2.26	3.28	0.003	D-012-C-1.000	268.5	47.19	41.29	5.90	0.02	0.01	0.00	3.28	C	0.600	0.600	1	0.720	2.300	0.313	0.337	0.048	0.031	0.735	0.042	0.695	0.003	0.004	43.9%	2.3
OUTFALL 12	-	-	-	-	-	-	C-12-A-1.000	18.0	41.29	41.22	0.07	0.00	0.00	0.00	3.28	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
OUTFALL 12	20c	4562	0.456	1.98	2.87	0.003	D-012-A-1.001	169.7	41.22	35.32	5.90	0.03	0.00	0.01	6.15	A	0.300	0.300	1	0.180	1.150	0.157	0.038	0.111	0.046	0.614	0.074	0.522	0.006	0.006	20.5%	4.9

Column1	Catchment Properties	Catchment Properties2	Catchment Properties3	Catchment Properties4	Catchment Properties5	Catchment Properties6	Ditch Alignment	Ditch Alignment7	Ditch Alignment8	Ditch Alignment9	Ditch Alignment10	Ditch Alignment11	Ditch Alignment12	Total Design Flows	Total Design Flows13	Ditch Selection Table	Ditch Selection Table14	Ditch Selection Table15	Ditch Selection Table16	Ditch Selection Table17	Ditch Selection Table18	Ditch Selection Table19	Ditch Selection Table20	Maximum Velocity Check (>1m/s) Table	Maximum Velocity Check (>1m/s) Table21	Maximum Velocity Check (>1m/s) Table22	Maximum Velocity Check (>1m/s) Table23	Maximum Velocity Check (>1m/s) Table24	Maximum Velocity Check (>1m/s) Table25	Maximum Velocity Check (>1m/s) Table26	Maximum Velocity Check (>1m/s) Table27	Maximum Velocity Check (>1m/s) Table28
	Catchment	Area (m2)	Area (ha)	Design Flow Q (uksuds.com) (l/s)	Design Flow Q + 45%CC (l/s)	Design Flow Q + 45%CC (m3/s)	Ditch Ref	Length (m)	Start Elevation (m)	End Elevation (m)	Level Difference (m)	Average Gradient	Minimum Gradient	∑Ditch Design Flow (m3/s)	∑Ditch Design Flow (l/s)	Ditch Type Selected	Base width	Ditch depth	Side slope	Cross sectional area	Wetted Perimeter	Hydraulic Radius	Flow Capacity	Ditch design depth	Flow Area	Wetted Perimeter	Hydraulic Radius	Top width	Design Flow	Actual Flow	Gradient threshold for 1 m/s	Slope (1:X)
OUTFALL 13	4b	30536	3.054	9.13	13.24	0.013	D-013-A-1.000	285.1	57.38	54.28	3.10	0.01	0.00	0.01	13.24	A	0.300	0.300	1	0.180	1.150	0.157	0.038	0.171	0.081	0.784	0.103	0.642	0.013	0.013	13.3%	7.5
OUTFALL 13	4c	1844	0.184	0.55	0.80	0.001	D-013-A-2.000	181.0	57.12	54.91	2.21	0.01	0.01	0.00	0.80	A	0.300	0.300	1	0.180	1.150	0.157	0.055	0.043	0.015	0.420	0.035	0.385	0.001	0.002	56.7%	1.8
OUTFALL 13	-	-	-	-	-	-	C-13-A-2.000	38.7	54.28	53.50	0.78	0.02	0.03	0.01	14.04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
OUTFALL 13	4a	25020	2.502	7.48	10.85	0.011	D-013-C-3.000	284.5	56.90	54.33	2.57	0.01	0.00	0.01	10.85	A	0.300	0.300	1	0.180	1.150	0.157	0.036	0.169	0.079	0.777	0.102	0.637	0.011	0.012	13.5%	7.4
OUTFALL 13	-	-	-	-	-	-	C-13-A-1.000	7.8	54.33	54.07	0.26	0.03	0.03	0.01	10.85	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
OUTFALL 13	3a	1513	0.151	0.66	0.96	0.001	D-013-A-5.000	125.0	54.07	53.65	0.41	0.00	0.00	0.01	11.80	A	0.300	0.300	1	0.180	1.150	0.157	0.038	0.163	0.076	0.762	0.099	0.627	0.012	0.012	13.9%	7.2
OUTFALL 13	3b	52168	5.217	22.65	32.84	0.033	D-013-B-1.002	650.3	53.50	44.61	8.90	0.01	0.00	0.06	58.68	B	0.450	0.450	1	0.405	1.730	0.234	0.105	0.334	0.262	1.396	0.188	1.119	0.059	0.059	5.9%	16.8
OUTFALL 13	-	-	-	-	-	-	C-13-A-3.000	12.4	44.61	44.48	0.12	0.01	0.03	0.06	58.68	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
OUTFALL 13	3c	2331	0.233	1.01	1.46	0.001	D-013-B-1.003	57.5	44.48	44.29	0.19	0.00	0.00	0.06	60.15	B	0.450	0.450	1	0.405	1.730	0.234	0.111	0.328	0.256	1.379	0.185	1.107	0.060	0.060	6.1%	16.5
OUTFALL 13	-	-	-	-	-	-	C-13-A-4.000	11.3	44.29	43.30	0.99	0.09	0.00	0.06	60.15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
OUTFALL 13	3d	2391	0.239	1.04	1.51	0.002	D-013-B-1.004	95.9	43.30	35.90	7.40	0.08	0.01	0.06	61.65	A	0.300	0.300	1	0.180	1.150	0.157	0.077	0.269	0.153	1.060	0.144	0.837	0.062	0.062	8.5%	11.8

Column1	Catchment Properties	Catchment Properties2	Catchment Properties3	Catchment Properties4	Catchment Properties5	Catchment Properties6	Ditch Alignment	Ditch Alignment7	Ditch Alignment8	Ditch Alignment9	Ditch Alignment10	Ditch Alignment11	Ditch Alignment12	Total Design Flows	Total Design Flows13	Ditch Selection Table	Ditch Selection Table14	Ditch Selection Table15	Ditch Selection Table16	Ditch Selection Table17	Ditch Selection Table18	Ditch Selection Table19	Ditch Selection Table20	Maximum Velocity Check (>1m/s) Table	Maximum Velocity Check (>1m/s) Table21	Maximum Velocity Check (>1m/s) Table22	Maximum Velocity Check (>1m/s) Table23	Maximum Velocity Check (>1m/s) Table24	Maximum Velocity Check (>1m/s) Table25	Maximum Velocity Check (>1m/s) Table26	Maximum Velocity Check (>1m/s) Table27	Maximum Velocity Check (>1m/s) Table28
	Catchment	Area (m2)	Area (ha)	Design Flow Q (uksuds.com) (l/s)	Design Flow Q + 45%CC (l/s)	Design Flow Q + 45%CC (m3/s)	Ditch Ref	Length (m)	Start Elevation (m)	End Elevation (m)	Level Difference (m)	Average Gradient	Minimum Gradient	∑Ditch Design Flow (m3/s)	∑Ditch Design Flow (l/s)	Ditch Type Selected	Base width	Ditch depth	Side slope	Cross sectional area	Wetted Perimeter	Hydraulic Radius	Flow Capacity	Ditch design depth	Flow Area	Wetted Perimeter	Hydraulic Radius	Top width	Design Flow	Actual Flow	Gradient threshold for 1 m/s	Slope (1:X)
OUTFALL 14	1ba	61315	6.132	26.62	38.60	0.039	D-014-B-1.000	506.6	49.86	36.55	13.31	0.03	0.00	0.04	38.60	B	0.450	0.450	1	0.405	1.730	0.234	0.110	0.265	0.189	1.198	0.158	0.979	0.039	0.040	7.5%	13.3
OUTFALL 14	1bb	3351	0.335	1.45	2.10	0.002	D-014-A-2.000	69.5	41.41	36.09	5.32	0.08	0.01	0.00	2.10	A	0.300	0.300	1	0.180	1.150	0.157	0.071	0.048	0.017	0.436	0.038	0.396	0.002	0.003	49.5%	2.0

Column1	Catchment Properties	Catchment Properties2	Catchment Properties3	Catchment Properties4	Catchment Properties5	Catchment Properties6	Ditch Alignment	Ditch Alignment7	Ditch Alignment8	Ditch Alignment9	Ditch Alignment10	Ditch Alignment11	Ditch Alignment12	Total Design Flows	Total Design Flows13	Ditch Selection Table	Ditch Selection Table14	Ditch Selection Table15	Ditch Selection Table16	Ditch Selection Table17	Ditch Selection Table18	Ditch Selection Table19	Ditch Selection Table20	Maximum Velocity Check (>1m/s) Table	Maximum Velocity Check (>1m/s) Table21	Maximum Velocity Check (>1m/s) Table22	Maximum Velocity Check (>1m/s) Table23	Maximum Velocity Check (>1m/s) Table24	Maximum Velocity Check (>1m/s) Table25	Maximum Velocity Check (>1m/s) Table26	Maximum Velocity Check (>1m/s) Table27	Maximum Velocity Check (>1m/s) Table28
	Catchment	Area (m2)	Area (ha)	Design Flow Q (uksuds.com) (l/s)	Design Flow Q + 45%CC (l/s)	Design Flow Q + 45%CC (m3/s)	Ditch Ref	Length (m)	Start Elevation (m)	End Elevation (m)	Level Difference (m)	Average Gradient	Minmum Gradient	∑Ditch Design Flow (m3/s)	∑Ditch Design Flow (l/s)	Ditch Type Selected	Base width	Ditch depth	Side slope	Cross sectional area	Wetted Perimeter	Hydraulic Radius	Flow Capacity	Ditch design depth	Flow Area	Wetted Perimeter	Hydraulic Radius	Top width	Design Flow	Actual Flow	Gradient threshold for 1 m/s	Slope (1:X)
OUTFALL 15	22aa	3480	0.348	1.51	2.19	0.002	D-015-A-1.000	154.5	52.71	49.97	2.74	0.02	0.00	0.00	2.19	A	0.300	0.300	1	0.180	1.150	0.157	0.036	0.069	0.025	0.495	0.051	0.438	0.002	0.002	33.5%	3.0

Column1	Catchment Properties	Catchment Properties2	Catchment Properties3	Catchment Properties4	Catchment Properties5	Catchment Properties6	Ditch Alignment	Ditch Alignment7	Ditch Alignment8	Ditch Alignment9	Ditch Alignment10	Ditch Alignment11	Ditch Alignment12	Total Design Flows	Total Design Flows13	Ditch Selection Table	Ditch Selection Table14	Ditch Selection Table15	Ditch Selection Table16	Ditch Selection Table17	Ditch Selection Table18	Ditch Selection Table19	Ditch Selection Table20	Maximum Velocity Check (>1m/s) Table	Maximum Velocity Check (>1m/s) Table21	Maximum Velocity Check (>1m/s) Table22	Maximum Velocity Check (>1m/s) Table23	Maximum Velocity Check (>1m/s) Table24	Maximum Velocity Check (>1m/s) Table25	Maximum Velocity Check (>1m/s) Table26	Maximum Velocity Check (>1m/s) Table27	Maximum Velocity Check (>1m/s) Table28
	Catchment	Area (m2)	Area (ha)	Design Flow Q (uksuds.com) (l/s)	Design Flow Q + 45%CC (l/s)	Design Flow Q + 45%CC (m3/s)	Ditch Ref	Length (m)	Start Elevation (m)	End Elevation (m)	Level Difference (m)	Average Gradient	Minimum Gradient	∑Ditch Design Flow (m3/s)	∑Ditch Design Flow (l/s)	Ditch Type Selected	Base width	Ditch depth	Side slope	Cross sectional area	Wetted Perimeter	Hydraulic Radius	Flow Capacity	Ditch design depth	Flow Area	Wetted Perimeter	Hydraulic Radius	Top width	Design Flow	Actual Flow	Gradient threshold for 1 m/s	Slope (1:X)
OUTFALL 16	1aa	172412	17.241	51.91	75.27	0.075	D-016-B-1.000	439.4	53.10	47.76	5.35	0.01	0.00	0.08	75.27	B	0.450	0.450	1	0.405	1.730	0.234	0.110	0.369	0.302	1.494	0.202	1.188	0.075	0.075	5.4%	18.6
OUTFALL 16	-	-	-	-	-	-	C-16-C-2.000	9.5	46.52	46.44	0.08	0.01	0.01	0.08	75.27	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
OUTFALL 16	*	*	*	*	0.00	0.000	D-016-A-2.000	199.5	53.09	51.71	1.37	0.01	0.00	0.00	0.00	A	0.300	0.300	1	0.180	1.150	0.157	0.038	0.010	0.003	0.328	0.009	0.320	0.000	0.000	320.6%	0.3
OUTFALL 16	1ad	3521	0.352	1.05	1.52	0.002	D-016-A-3.000	120.5	52.65	51.66	0.98	0.01	0.00	0.00	1.52	A	0.300	0.300	1	0.180	1.150	0.157	0.038	0.069	0.025	0.495	0.051	0.438	0.002	0.003	33.5%	3.0
OUTFALL 16	-	-	-	-	-	-	C-16-A-1.000	10.2	51.66	50.84	0.82	0.08	0.08	0.00	1.52	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
OUTFALL 16	*	*	*	*	0.00	0.000	D-016-C-2.001	249.0	50.84	47.55	3.29	0.01	0.00	0.00	1.52	C	0.600	0.600	1	0.720	2.300	0.313	0.227	0.040	0.026	0.713	0.036	0.680	0.002	0.002	54.0%	1.9
OUTFALL 16	1ac	3807	0.381	1.14	1.65	0.002	D-016-A-4.000	202.7	48.99	46.96	2.03	0.01	0.00	0.00	1.65	A	0.300	0.300	1	0.180	1.150	0.157	0.036	0.069	0.025	0.495	0.051	0.438	0.002	0.002	33.5%	3.0
OUTFALL 16	*	*	*	*	0.00	0.000	D-016-C-5.000	138.9	47.84	46.36	1.48	0.01	0.00	0.00	0.00	C	0.600	0.600	1	0.720	2.300	0.313	0.227	0.010	0.006	0.628	0.010	0.620	0.000	0.000	309.0%	0.3
OUTFALL 16	1ab	188987	18.899	54.50	79.03	0.079	D-016-B-6.000	165.6	50.02	47.82	2.20	0.01	0.00	0.08	79.03	B	0.450	0.450	1	0.405	1.730	0.234	0.105	0.389	0.326	1.549	0.210	1.227	0.079	0.079	5.1%	19.6
OUTFALL 16	*	*	*	*	0.00	0.000	D-016-B-1.001	6.7	46.44	46.33	0.11	0.02	0.02	0.16	157.47	B	0.450	0.450	1	0.405	1.730	0.234	0.246	0.358	0.289	1.461	0.198	1.165	0.157	0.157	5.6%	18.0
OUTFALL 16	*	*	*	*	0.00	0.000	D-016-A-7.000	42.6	47.83	47.36	0.47	0.01	0.00	0.00	0.00	A	0.300	0.300	1	0.180	1.150	0.157	0.038	0.010	0.003	0.328	0.009	0.320	0.000	0.000	320.6%	0.3
OUTFALL 16	-	-	-	-	-	-	C-16-C-3.000	39.0	46.33	46.16	0.17	0.00	0.00	0.16	157.47	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
OUTFALL 16	*	*	*	*	0.00	0.000	D-016-B-1.002	5.7	46.16	46.02	0.14	0.02	0.02	0.16	157.47	B	0.450	0.450	1	0.405	1.730	0.234	0.303	0.321	0.248	1.358	0.182	1.092	0.157	0.157	6.2%	16.2
OUTFALL 16	20h	4935	0.493	1.58	2.29	0.002	D-016-A-8.000	268.3	50.40	47.69	2.71	0.01	0.00	0.00	2.29	A	0.300	0.300	1	0.180	1.150	0.157	0.038	0.055	0.020	0.456	0.043	0.410	0.002	0.002	42.7%	2.3
OUTFALL 16	-	-	-	-	-	-	C-16-C-4.000	10.7	46.02	45.91	0.11	0.01	0.00	0.16	159.76	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
OUTFALL 16	20g	1200	0.120	0.34	0.49	0.000	D-016-C-1.003	54.0	45.91	45.74	0.17	0.00	0.00	0.16	160.25	C	0.600	0.600	1	0.720	2.300	0.313	0.238	0.490	0.534	1.987	0.269	1.580	0.160	0.160	3.7%	27.1
OUTFALL 16	*	*	*	*	0.00	0.000	D-016-A-7.001	56.1	47.35	46.43	0.92	0.02	0.00	0.00	0.00	A	0.300	0.300	1	0.180	1.150	0.157	0.039	0.010	0.003	0.328	0.009	0.320	0.000	0.000	320.6%	0.3
OUTFALL 16	-	-	-	-	-	-	C-16-A-5.000	5.8	46.43	45.74	0.70	0.12	0.00	0.00	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Column1	Catchment Properties	Catchment Properties2	Catchment Properties3	Catchment Properties4	Catchment Properties5	Catchment Properties6	Ditch Alignment	Ditch Alignment7	Ditch Alignment8	Ditch Alignment9	Ditch Alignment10
OUTFALL 1	Catchment	Area (m2)	Area (ha)	Design Flow Q (uksuds.com) (l/s)	Design Flow Q + 45%CC (l/s)	Design Flow Q + 45%CC (m3/s)	Ditch Ref	Length (m)	Start Elevation (m)	End Elevation (m)	Level Difference (m)
OUTFALL 16	20f	486	0.049	0.18	0.26	0.000	D-016-C-1.004	29.8	45.74	45.63	0.10
OUTFALL 16	20e	1914	0.191	0.72	1.04	0.001	D-016-A-9.000	118.6	47.18	46.00	1.18
OUTFALL 16	-	-	-	-	-	-	C-16-C-6.000	41.5	45.63	45.57	0.06

Column1	Ditch Alignment11	Ditch Alignment12	Total Design Flows	Total Design Flows13	Ditch Selection Table	Ditch Selection Table14	Ditch Selection Table15	Ditch Selection Table16	Ditch Selection Table17	Ditch Selection Table18	Ditch Selection Table19	Ditch Selection Table20
OUTFALL 1	Average Gradient	Minmum Gradient	∑Ditch Design Flow (m3/s)	∑Ditch Design Flow (l/s)	Ditch Type Selected	Base width	Ditch depth	Side slope	Cross sectional area	Wetted Perimeter	Hydraulic Radius	Flow Capacity
OUTFALL 16	0.00	0.00	0.16	160.52	C	0.600	0.600	1	0.720	2.300	0.313	0.239
OUTFALL 16	0.01	0.00	0.00	1.04	A	0.300	0.300	1	0.180	1.150	0.157	0.038
OUTFALL 16	0.00	0.00	0.16	161.56	-	-	-	-	-	-	-	-

Column1	Maximum Velocity Check (>1m/s) Table	Maximum Velocity Check (>1m/s) Table21	Maximum Velocity Check (>1m/s) Table22	Maximum Velocity Check (>1m/s) Table23	Maximum Velocity Check (>1m/s) Table24	Maximum Velocity Check (>1m/s) Table25	Maximum Velocity Check (>1m/s) Table26	Maximum Velocity Check (>1m/s) Table27	Maximum Velocity Check (>1m/s) Table28
OUTFALL 1	Ditch design depth	Flow Area	Wetted Perimeter	Hydraulic Radius	Top width	Design Flow	Actual Flow	Gradient threshold for 1 m/s	Slope (1:X)
OUTFALL 16	0.491	0.535	1.988	0.269	1.581	0.161	0.161	3.7%	27.2
OUTFALL 16	0.047	0.016	0.433	0.038	0.394	0.001	0.001	50.5%	2.0
OUTFALL 16	-	-	-	-	-	-	-	-	-

Table 2: Piped Ditches Design

Culvert Reference	Length (m)	From Ditch Spreadsheet U/S IL	D/S IL	U/S SL	D/S SL	Calculated gradient	From Ditch Spreadsheet Design Flow (m3/s)	Design Flow (l/s)	Diameter (m)	Full Bore Capacity (l/s)	Capacity - 10% (For sedimentation deposit) (l/s)	Design / Capacity (%)
C-03-A-1.000	19.5	16.78	15.60	17.08	15.90	16.5	0.078	78	0.300	274.6	247.2	32%
C-03-B-2.000	9.5	14.58	14.49	15.03	14.94	105.6	0.078	78	0.450	314.4	283.0	28%
C-04-A-1.000	5.068	12.354	12.25	12.65	12.55	48.7	0.029	29	0.300	159.5	143.5	20%
C-05-A-1.000	7.92	9.25	8.90	9.55	9.20	22.8	0.092	92	0.300	233.9	210.5	44%
C-05-A-2.000	5.206	21.496	21.44	21.80	21.74	100.1	0.008	8	0.300	111.0	99.9	8%
C-05-A-3.000	5.277	32.124	32.07	32.42	32.37	101.5	0.005	5	0.300	110.2	99.2	5%
C-05-A-4.000	5.398	39.288	39.23	39.59	39.53	100.0	0.003	3	0.300	111.0	99.9	3%
C-05-A-5.000	8.000	9.651	9.56	9.95	9.86	88.9	0.080	80	0.300	117.8	106.0	75%
C-06-B-1.000	14.867	44.722	44.65	45.17	45.10	200.9	0.098	98	0.450	227.3	204.6	48%
C-06-A-1.001	2.529	46.964	46.94	47.26	47.24	101.2	0.025	25	0.300	110.4	99.3	25%
C-06-B-2.000	7.046	39.736	39.43	40.19	39.88	23.3	0.153	153	0.450	671.4	604.3	25%
C-06-B-3.000	28.139	39.385	38.26	39.84	38.71	24.9	0.153	153	0.450	649.8	584.8	26%
C-06-B-4.000	13.04	24.024	23.24	24.47	23.69	16.7	0.194	194	0.450	794.1	714.7	27%
C-06-D-5.001	17.506	25.5	24.61	26.40	25.51	19.6	1.200	1200	0.900	4509.6	4058.6	30%
C-06-D-5.000	9.5	23.189	23.11	24.09	24.01	118.8	1.486	1486	0.900	1827.7	1644.9	90%
C-06-A-6.000	12.368	23.963	23.32	24.26	23.62	19.3	0.032	32	0.300	253.9	228.5	14%
C-06-D-7.000	14.5	22.633	22.21	23.53	23.11	34.3	1.712	1712	0.900	3409.9	3068.9	56%
C-06-A-8.000	7.07	30.857	30.14	31.16	30.44	9.8	0.001	1	0.300	356.8	321.1	0%
C-06-D-9.000	77	22.124	21.37	23.02	22.27	101.6	1.715	1715	0.900	1976.8	1779.2	96%
C-06-A-10.000	7.87	23.448	21.87	23.75	22.17	5.0	0.001	1	0.300	500.4	450.4	0%
C-06-A-11.000	6.188	24.938	24.88	25.24	25.18	101.4	0.013	13	0.300	110.2	99.2	13%
C-06-A-12.000	9.824	22.53	22.43	22.83	22.73	101.3	0.025	25	0.300	110.3	99.3	25%
C-06-A-13.000	9.495	22.413	22.32	22.71	22.62	99.9	0.025	25	0.300	111.1	99.9	25%
C-07-A-1.001	3.897	47.109	47.07	47.41	47.37	99.9	0.002	2	0.300	111.1	100.0	2%
C-07-A-1.002	6.757	43.573	43.51	43.87	43.81	100.9	0.006	6	0.300	110.5	99.5	6%
C-07-A-1.000	10.332	33.694	33.59	33.99	33.89	100.3	0.058	58	0.300	110.8	99.8	58%
C-08-A-1.001	10	56.853	56.77	57.15	57.07	123.5	0.033	33	0.300	99.8	89.8	36%
C-011-A-1.000	35.839	47.71	45.95	48.01	46.25	20.4	0.007	7	0.300	247.4	222.6	3%
C-12-A-1.000	18.031	41.285	41.22	41.59	41.52	257.6	0.003	3	0.300	68.8	61.9	5%
C-13-A-1.000	7.787	54.331	54.07	54.63	54.37	29.7	0.011	11	0.300	204.5	184.1	6%
C-13-A-2.000	38.659	54.284	53.50	54.58	53.80	49.6	0.014	14	0.300	158.1	142.3	10%
C-13-A-3.000	12.385	44.606	44.48	44.91	44.78	100.7	0.059	59	0.300	110.6	99.6	59%
C-13-A-4.000	11.262	44.292	43.30	44.59	43.60	11.4	0.060	60	0.300	331.2	298.1	20%
C-16-A-1.000	10.241	51.661	50.84	51.96	51.14	12.5	0.002	2	0.300	315.9	284.3	1%
C-16-C-2.000	9.5	46.519	46.44	47.27	47.19	120.3	0.075	75	0.750	1126.3	1013.7	7%
C-16-C-3.000	39	46.331	46.16	47.08	46.91	225.4	0.158	158	0.750	820.9	738.8	21%
C-16-C-4.000	10.7	46.017	45.91	46.77	46.66	100.0	0.160	160	0.750	1235.7	1112.1	14%
C-16-A-5.000	5.841	46.43	45.74	46.73	46.04	8.5	0.000	0	0.300	384.1	345.7	0%
C-16-C-6.000	41.512	45.634	45.57	46.38	46.32	680.5	0.162	162	0.750	469.8	422.8	38%

	Capacity at 1 in 100 shlope (l/s)
0.3	111.1
0.5	323.4
0.8	1236.4
0.9	1993.5