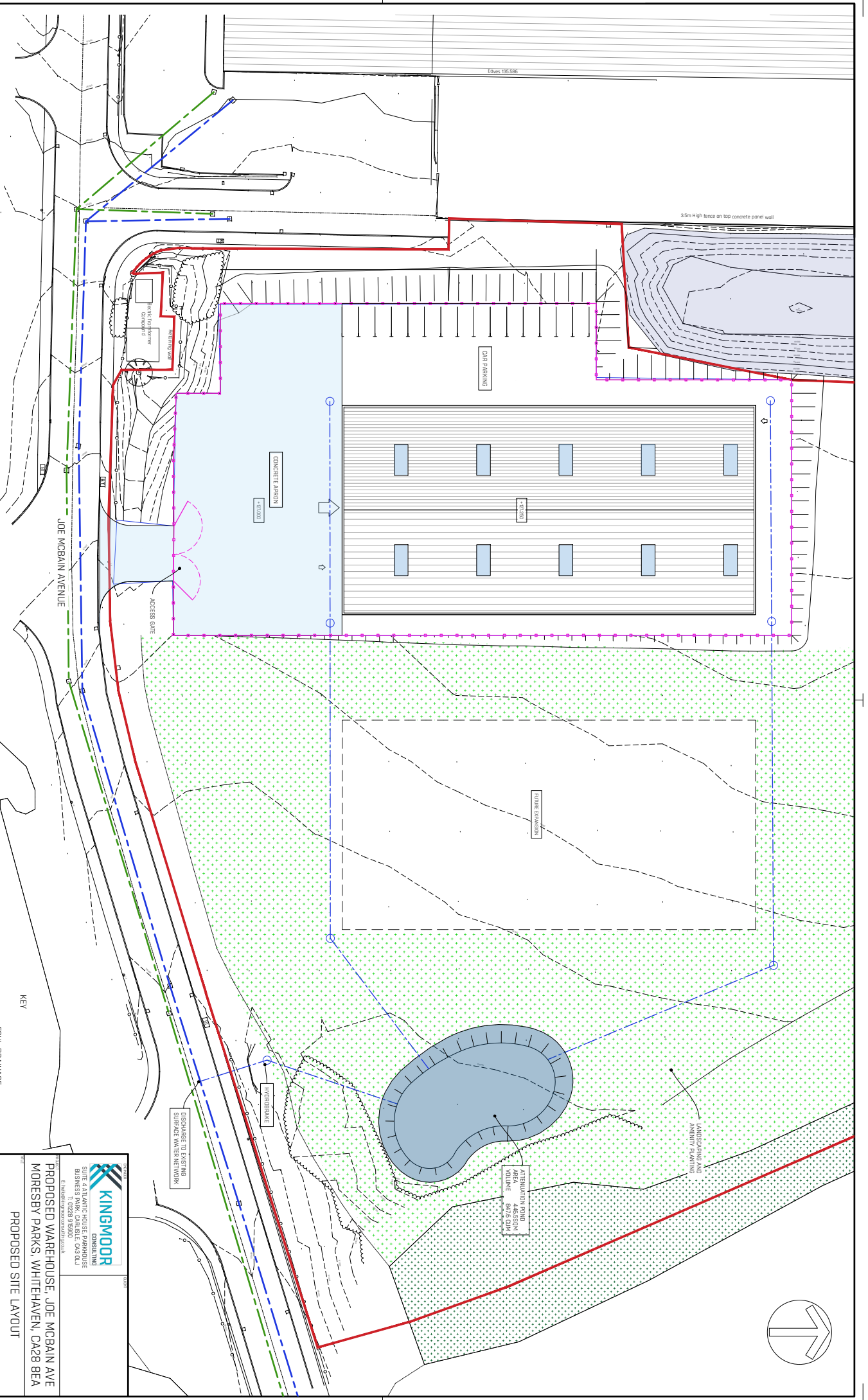


## Drawings



2.5m High fence on top concrete panel wall

ENTER USE 556

SITE PARKING

CONCRETE APRON  
1:07/03

1:07/20

EXISTING EXPOSURE

ATTENUATION POND  
VOLUME 8472.0M<sup>3</sup>

AMPHIPHILIC AND  
AMBIENT PLANTING

HYDROBRAKE

DISCHARGE TO EXISTING  
SURFACE WATER NETWORK

EXISTING  
DRAINAGE  
DITCH

ACCESS GATE

JOE MCBAIN AVENUE

KEY

FOUL DRAINAGE

FOUL DRAINAGE

SECURITY FENCE

SITE PLAN  
SCALE 1:250

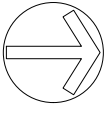
PROPOSED SITE LAYOUT

**KINGMOOR**  
CONSULTING

SITE 2 ATLANTIC HOUSE PARADISE  
100 BURNHAY RD  
BURNHAY, BRISTOL, BS3 1SS  
T: 01273 919501 S: 01273 919502  
E: KINGMOOR@KINGMOORCONSULTING.CO.UK

PROPOSED WAREHOUSE, JOE MCBAIN AVE  
MIDRESEY PARKS, WHITEHAVEN, CA28 8EA

DATE	1:250	FOR PLANNING
DRAWN BY	A1	DATE
CHECKED BY	C AMERS	DATE
PROJECT NO.	22-485-DW6001	DATE



## Calculations

**Design Settings**

Rainfall Methodology	FSR	Maximum Time of Concentration (mins)	30.00
Return Period (years)	100	Maximum Rainfall (mm/hr)	50.0
Additional Flow (%)	40	Minimum Velocity (m/s)	1.00
FSR Region	England and Wales	Connection Type	Level Soffits
M5-60 (mm)	20.000	Minimum Backdrop Height (m)	0.200
Ratio-R	0.300	Preferred Cover Depth (m)	0.650
CV	0.750	Include Intermediate Ground	x
Time of Entry (mins)	4.00	Enforce best practice design rules	x

**Nodes**

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
6	0.020	4.00	127.100	1010	299846.850	518665.875	0.750
7	0.020	4.00	127.100	1010	299846.850	518690.900	0.967
8	0.020	4.00	127.100	1010	299878.480	518691.000	1.322
9			127.100	1010	299929.111	518691.000	1.660
10			127.100		299942.864	518658.000	2.320
1	0.020	4.00	127.100	1010	299847.000	518646.250	0.750
2	0.020	4.00	127.100	1010	299847.000	518626.000	0.935
3	0.020	4.00	127.100	1010	299878.600	518626.700	1.221
4			127.100	1010	299925.000	518626.800	1.530
5			127.100		299944.200	518641.100	2.320
12		4.00	127.100		299949.200	518636.084	2.350
13			126.750	1200	299942.000	518617.000	2.136
99			125.800		299946.000	518608.000	1.244
11	0.020	4.00	127.100	1200	299876.792	518664.507	0.750
14	0.020	4.00	127.100	1200	299876.681	518645.658	0.750

**Links**

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
1.000	6	7	25.025	0.600	126.350	126.183	0.167	150.0	100	4.67	50.0
1.001	7	8	31.630	0.600	126.133	125.922	0.211	150.0	150	5.31	50.0
1.002	8	9	50.631	0.600	125.778	125.440	0.338	150.0	225	6.10	50.0
1.003	9	10	35.751	0.600	125.440	125.082	0.358	100.0	225	6.56	50.0
3.000_1	1	2	20.250	0.600	126.350	126.215	0.135	150.0	100	4.54	50.0
3.001	2	3	31.608	0.600	126.165	125.954	0.211	150.0	150	5.18	50.0
3.002	3	4	46.400	0.600	125.879	125.570	0.309	150.0	225	5.91	50.0
3.003	4	5	23.940	0.600	125.570	125.331	0.239	100.0	225	6.22	50.0

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
1.000	0.625	4.9	3.8	0.650	0.817	0.020	0.0	66	0.690
1.001	0.818	14.5	7.6	0.817	1.028	0.040	0.0	77	0.827
1.002	1.065	42.3	15.2	1.097	1.435	0.080	0.0	93	0.977
1.003	1.307	52.0	15.2	1.435	1.793	0.080	0.0	83	1.137
3.000_1	0.625	4.9	3.8	0.650	0.785	0.020	0.0	66	0.690
3.001	0.818	14.5	7.6	0.785	0.996	0.040	0.0	77	0.827
3.002	1.065	42.3	15.2	0.996	1.305	0.080	0.0	93	0.977
3.003	1.307	52.0	15.2	1.305	1.544	0.080	0.0	83	1.137

**Links**

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
3.000	12	13	20.397	0.600	124.750	124.614	0.136	150.0	225	4.41	50.0
5.001	13	99	9.849	0.600	124.614	124.556	0.058	169.8	225	4.57	50.0
2.000	11	8	26.547	0.600	126.350	125.903	0.447	59.4	100	4.44	50.0
4.000	14	3	19.055	0.600	126.350	126.004	0.346	55.1	100	4.31	50.0



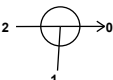









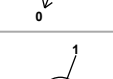
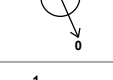



Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
3.000	1.065	42.3	0.0	2.125	1.911	0.000	0.0	0	0.000
5.001	1.000	39.8	0.0	1.911	1.019	0.000	0.0	0	0.000
2.000	1.001	7.9	3.8	0.650	1.097	0.020	0.0	49	0.991
4.000	1.040	8.2	3.8	0.650	0.996	0.020	0.0	48	1.022

**Pipeline Schedule**



Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
1.000	25.025	150.0	100	Circular	127.100	126.350	0.650	127.100	126.183	0.817
1.001	31.630	150.0	150	Circular	127.100	126.133	0.817	127.100	125.922	1.028
1.002	50.631	150.0	225	Circular	127.100	125.778	1.097	127.100	125.440	1.435
1.003	35.751	100.0	225	Circular	127.100	125.440	1.435	127.100	125.082	1.793
3.000_1	20.250	150.0	100	Circular	127.100	126.350	0.650	127.100	126.215	0.785
3.001	31.608	150.0	150	Circular	127.100	126.165	0.785	127.100	125.954	0.996
3.002	46.400	150.0	225	Circular	127.100	125.879	0.996	127.100	125.570	1.305
3.003	23.940	100.0	225	Circular	127.100	125.570	1.305	127.100	125.331	1.544
3.000	20.397	150.0	225	Circular	127.100	124.750	2.125	126.750	124.614	1.911
5.001	9.849	169.8	225	Circular	126.750	124.614	1.911	125.800	124.556	1.019
2.000	26.547	59.4	100	Circular	127.100	126.350	0.650	127.100	125.903	1.097
4.000	19.055	55.1	100	Circular	127.100	126.350	0.650	127.100	126.004	0.996

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.000	6	1010	Manhole	Adoptable	7	1010	Manhole	Adoptable
1.001	7	1010	Manhole	Adoptable	8	1010	Manhole	Adoptable
1.002	8	1010	Manhole	Adoptable	9	1010	Manhole	Adoptable
1.003	9	1010	Manhole	Adoptable	10		Junction	
3.000_1	1	1010	Manhole	Adoptable	2	1010	Manhole	Adoptable
3.001	2	1010	Manhole	Adoptable	3	1010	Manhole	Adoptable
3.002	3	1010	Manhole	Adoptable	4	1010	Manhole	Adoptable
3.003	4	1010	Manhole	Adoptable	5		Junction	
3.000	12		Junction		13	1200	Manhole	Adoptable
5.001	13	1200	Manhole	Adoptable	99		Junction	
2.000	11	1200	Manhole	Adoptable	8	1010	Manhole	Adoptable
4.000	14	1200	Manhole	Adoptable	3	1010	Manhole	Adoptable

**Manhole Schedule**

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)	
6	299846.850	518665.875	127.100	0.750	1010		0	1.000	126.350	100
7	299846.850	518690.900	127.100	0.967	1010		1	1.000	126.183	100
8	299878.480	518691.000	127.100	1.322	1010		0	1.001	126.133	150
9	299929.111	518691.000	127.100	1.660	1010		1	2.000	125.903	100
10	299942.864	518658.000	127.100	2.320			2	1.001	125.922	150
1	299847.000	518646.250	127.100	0.750	1010		0	1.002	125.778	225
2	299847.000	518626.000	127.100	0.935	1010		1	1.002	125.440	225
3	299878.600	518626.700	127.100	1.221	1010		0	1.003	125.440	225
4	299925.000	518626.800	127.100	1.530	1010		1	1.003	125.082	225
5	299944.200	518641.100	127.100	2.320			0	3.000_1	126.350	100
12	299949.200	518636.084	127.100	2.350			1	3.000_1	126.215	100
13	299942.000	518617.000	126.750	2.136	1200		0	3.001	126.165	150
99	299946.000	518608.000	125.800	1.244			1	4.000	126.004	100
							2	3.001	125.954	150
							0	3.002	125.879	225
							1	3.002	125.570	225
							0	3.003	125.570	225
							1	3.003	125.331	225

**Manhole Schedule**

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
11	299876.792	518664.507	127.100	0.750	1200				
						0	2.000	126.350	100
14	299876.681	518645.658	127.100	0.750	1200				
						0	4.000	126.350	100

**Simulation Settings**

Rainfall Methodology	FSR	Drain Down Time (mins)	240
FSR Region	England and Wales	Additional Storage (m <sup>3</sup> /ha)	0.0
M5-60 (mm)	20.000	Check Discharge Rate(s)	✓
Ratio-R	0.300	10 year (l/s)	17.9
Summer CV	0.750	30 year (l/s)	22.0
Winter CV	0.840	100 year (l/s)	26.9
Analysis Speed	Normal	Check Discharge Volume	✓
Skip Steady State	x	100 year +40% 360 minute (m <sup>3</sup> )	1004

**Storm Durations**

15 | 30 | 60 | 120 | 180 | 240 | 360 | 480 | 600 | 720 | 960 | 1440

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
10	0	0	0
30	0	0	0
100	40	0	0

**Pre-development Discharge Rate**

Site Makeup	Greenfield	Growth Factor 30 year	1.95
Greenfield Method	IH124	Growth Factor 100 year	2.48
Positively Drained Area (ha)	1.876	Betterment (%)	0
SAAR (mm)	950	QBar	13.0
Soil Index	4	Q 1 year (l/s)	
SPR	0.47	Q 30 year (l/s)	
Region	10	Q 100 year (l/s)	
Growth Factor 1 year	0.85		

**Pre-development Discharge Volume**

Site Makeup	Greenfield	Return Period (years)	100
Greenfield Method	FSR/FEH	Climate Change (%)	40
Positively Drained Area (ha)	1.876	Storm Duration (mins)	360
Soil Index	4	Betterment (%)	0
SPR	0.47	PR	0.547
CWI	124.875	Runoff Volume (m <sup>3</sup> )	1004

**Node 13 Online ACO Q-Brake Control**

Flap Valve	x	Design Depth (m)	1.400	Min Node Diameter (mm)	1050
Replaces Downstream Link	✓	Design Flow (l/s)	13.0	Orifice Diameter (mm)	0.145
Invert Level (m)	124.614	Min Outlet Diameter (m)	0.145		

**Node 12 Flow through Pond Storage Structure**

Base Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Main Channel Length (m)	30.000
Side Inf Coefficient (m/hr)	0.00000	Invert Level (m)	124.750	Main Channel Slope (1:X)	1000.0
Safety Factor	1.0	Time to half empty (mins)	45	Main Channel n	0.030

**Inlets**

10 | 5

Depth (m)	Area (m <sup>2</sup> )	Inf Area (m <sup>2</sup> )	Depth (m)	Area (m <sup>2</sup> )	Inf Area (m <sup>2</sup> )	Depth (m)	Area (m <sup>2</sup> )	Inf Area (m <sup>2</sup> )	Depth (m)	Area (m <sup>2</sup> )	Inf Area (m <sup>2</sup> )
0.000	0.0	0.0	0.050	25.0	0.0	1.200	50.0	0.0	1.500	85.0	0.0

**Other (defaults)**

Entry Loss (manhole)	0.250	Entry Loss (junction)	0.000	Apply Recommended Losses	x
Exit Loss (manhole)	0.250	Exit Loss (junction)	0.000	Flood Risk (m)	0.300

**Approval Settings**

Node Size	✓	Minimum Full Bore Velocity (m/s)	
Node Losses	✓	Maximum Full Bore Velocity (m/s)	3.000
Link Size	✓	Proportional Velocity	✓
Minimum Diameter (mm)	150	Return Period (years)	
Link Length	✓	Minimum Proportional Velocity (m/s)	0.750
Maximum Length (m)	100.000	Maximum Proportional Velocity (m/s)	3.000
Coordinates	✓	Surcharged Depth	✓
Accuracy (m)	1.000	Return Period (years)	
Crossings	✓	Maximum Surcharged Depth (m)	0.100
Cover Depth	✓	Flooding	✓
Minimum Cover Depth (m)		Return Period (years)	30
Maximum Cover Depth (m)	3.000	Time to Half Empty	x
Backdrops	✓	Discharge Rates	✓
Minimum Backdrop Height (m)		Discharge Volume	✓
Maximum Backdrop Height (m)	1.500	100 year 360 minute (m <sup>3</sup> )	
Full Bore Velocity	✓		

**Rainfall**

Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)	Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)
10 year 15 minute summer	192.806	54.557	10 year 180 minute winter	29.245	11.577
10 year 15 minute winter	135.303	54.557	10 year 240 minute summer	35.975	9.507
10 year 30 minute summer	130.321	36.876	10 year 240 minute winter	23.901	9.507
10 year 30 minute winter	91.453	36.876	10 year 360 minute summer	27.947	7.192
10 year 60 minute summer	90.826	24.003	10 year 360 minute winter	18.166	7.192
10 year 60 minute winter	60.342	24.003	10 year 480 minute summer	22.300	5.893
10 year 120 minute summer	57.664	15.239	10 year 480 minute winter	14.816	5.893
10 year 120 minute winter	38.311	15.239	10 year 600 minute summer	18.452	5.047
10 year 180 minute summer	44.990	11.577	10 year 600 minute winter	12.608	5.047



**Rainfall**

<b>Event</b>	<b>Peak Intensity (mm/hr)</b>	<b>Average Intensity (mm/hr)</b>	<b>Event</b>	<b>Peak Intensity (mm/hr)</b>	<b>Average Intensity (mm/hr)</b>
10 year 720 minute summer	16.587	4.446	30 year 960 minute winter	11.289	4.488
10 year 720 minute winter	11.148	4.446	30 year 1440 minute summer	12.485	3.346
10 year 960 minute summer	13.811	3.637	30 year 1440 minute winter	8.390	3.346
10 year 960 minute winter	9.149	3.637	100 year +40% CC 15 minute summer	441.486	124.925
10 year 1440 minute summer	10.216	2.738	100 year +40% CC 15 minute winter	309.815	124.925
10 year 1440 minute winter	6.866	2.738	100 year +40% CC 30 minute summer	304.460	86.152
30 year 15 minute summer	243.818	68.992	100 year +40% CC 30 minute winter	213.656	86.152
30 year 15 minute winter	171.101	68.992	100 year +40% CC 60 minute summer	214.603	56.713
30 year 30 minute summer	166.387	47.082	100 year +40% CC 60 minute winter	142.577	56.713
30 year 30 minute winter	116.763	47.082	100 year +40% CC 120 minute summer	135.791	35.885
30 year 60 minute summer	116.589	30.811	100 year +40% CC 120 minute winter	90.216	35.885
30 year 60 minute winter	77.459	30.811	100 year +40% CC 180 minute summer	104.615	26.921
30 year 120 minute summer	73.902	19.530	100 year +40% CC 180 minute winter	68.003	26.921
30 year 120 minute winter	49.099	19.530	100 year +40% CC 240 minute summer	82.776	21.875
30 year 180 minute summer	57.313	14.749	100 year +40% CC 240 minute winter	54.994	21.875
30 year 180 minute winter	37.255	14.749	100 year +40% CC 360 minute summer	63.377	16.309
30 year 240 minute summer	45.598	12.050	100 year +40% CC 360 minute winter	41.197	16.309
30 year 240 minute winter	30.295	12.050	100 year +40% CC 480 minute summer	50.006	13.215
30 year 360 minute summer	35.178	9.053	100 year +40% CC 480 minute winter	33.223	13.215
30 year 360 minute winter	22.867	9.053	100 year +40% CC 600 minute summer	40.997	11.214
30 year 480 minute summer	27.920	7.379	100 year +40% CC 600 minute winter	28.011	11.214
30 year 480 minute winter	18.550	7.379	100 year +40% CC 720 minute summer	36.560	9.799
30 year 600 minute summer	23.001	6.291	100 year +40% CC 720 minute winter	24.571	9.799
30 year 600 minute winter	15.716	6.291	100 year +40% CC 960 minute summer	30.041	7.911
30 year 720 minute summer	20.598	5.520	100 year +40% CC 960 minute winter	19.900	7.911
30 year 720 minute winter	13.843	5.520	100 year +40% CC 1440 minute summer	21.775	5.836
30 year 960 minute summer	17.043	4.488	100 year +40% CC 1440 minute winter	14.634	5.836

**Results for 10 year Critical Storm Duration. Lowest mass balance: 99.06%**

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m <sup>3</sup> )	Flood (m <sup>3</sup> )	Status
15 minute winter	6	10	126.441	0.091	5.3	0.0730	0.0000	OK
15 minute winter	7	10	126.228	0.095	10.3	0.0760	0.0000	OK
15 minute winter	8	10	125.892	0.114	20.6	0.0913	0.0000	OK
15 minute winter	9	11	125.538	0.098	20.3	0.0786	0.0000	OK
30 minute winter	10	26	125.101	0.321	15.9	0.0000	0.0000	OK
15 minute winter	1	10	126.443	0.093	5.3	0.0745	0.0000	OK
15 minute winter	2	10	126.260	0.095	10.4	0.0764	0.0000	OK
15 minute winter	3	10	125.993	0.114	20.7	0.0916	0.0000	OK
15 minute winter	4	11	125.669	0.099	20.5	0.0797	0.0000	OK
30 minute winter	5	24	125.091	0.311	16.7	0.0000	0.0000	OK
30 minute winter	12	25	125.091	0.341	24.5	0.0000	0.0000	SURCHARGED
30 minute winter	13	25	125.077	0.463	14.6	0.5238	0.0000	SURCHARGED
15 minute summer	99	1	124.556	0.000	13.0	0.0000	0.0000	OK
15 minute winter	11	10	126.412	0.062	5.3	0.0696	0.0000	OK
15 minute winter	14	10	126.411	0.061	5.3	0.0686	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m <sup>3</sup> )	Discharge Vol (m <sup>3</sup> )
15 minute winter	6	1.000	7	5.0	0.735	1.021	0.1700	
15 minute winter	7	1.001	8	10.0	0.876	0.693	0.3631	
15 minute winter	8	1.002	9	20.3	1.130	0.479	0.9153	
15 minute winter	9	1.003	10	20.1	1.226	0.388	0.5875	
30 minute winter	10	Flow through pond	12	24.5	0.266	0.008	8.3442	
15 minute winter	1	3.000_1	2	5.1	0.735	1.032	0.1389	
15 minute winter	2	3.001	3	10.1	0.877	0.698	0.3648	
15 minute winter	3	3.002	4	20.5	1.117	0.483	0.8503	
15 minute winter	4	3.003	5	20.4	1.225	0.393	0.3989	
30 minute winter	5	Flow through pond	12	24.5	0.266	0.008	8.3442	
30 minute winter	12	3.000	13	14.6	0.950	0.345	0.8112	
30 minute winter	13	ACO Q-Brake	99	13.0				24.8
15 minute winter	11	2.000	8	5.3	1.060	0.670	0.1320	
15 minute winter	14	4.000	3	5.3	1.087	0.648	0.0927	

**Results for 30 year Critical Storm Duration. Lowest mass balance: 99.06%**

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m <sup>3</sup> )	Flood (m <sup>3</sup> )	Status
15 minute winter	6	11	126.506	0.156	6.6	0.1247	0.0000	SURCHARGED
15 minute winter	7	10	126.242	0.109	12.4	0.0874	0.0000	OK
15 minute winter	8	10	125.907	0.129	25.2	0.1033	0.0000	OK
15 minute winter	9	11	125.551	0.111	24.9	0.0887	0.0000	OK
30 minute winter	10	26	125.226	0.446	20.2	0.0000	0.0000	OK
15 minute winter	1	11	126.503	0.153	6.6	0.1225	0.0000	SURCHARGED
15 minute winter	2	10	126.275	0.110	12.6	0.0882	0.0000	OK
15 minute winter	3	10	126.009	0.129	25.4	0.1037	0.0000	OK
15 minute winter	4	11	125.682	0.112	25.1	0.0899	0.0000	OK
30 minute winter	5	26	125.226	0.446	20.3	0.0000	0.0000	OK
30 minute winter	12	26	125.224	0.474	27.0	0.0000	0.0000	SURCHARGED
30 minute winter	13	26	125.211	0.597	15.1	0.6756	0.0000	SURCHARGED
15 minute summer	99	1	124.556	0.000	13.0	0.0000	0.0000	OK
15 minute winter	11	10	126.422	0.072	6.6	0.0816	0.0000	OK
15 minute winter	14	10	126.421	0.071	6.6	0.0803	0.0000	OK

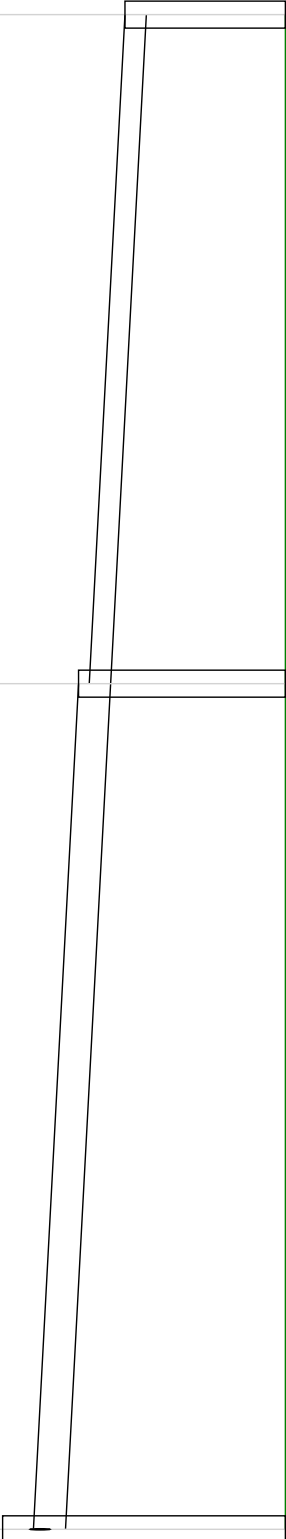
  

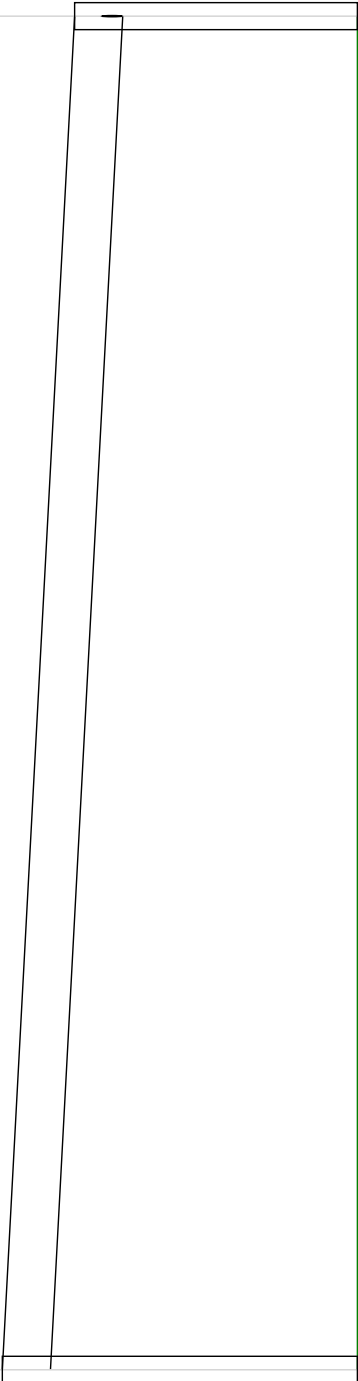
Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m <sup>3</sup> )	Discharge Vol (m <sup>3</sup> )
15 minute winter	6	1.000	7	6.0	0.779	1.215	0.1810	
15 minute winter	7	1.001	8	12.1	0.916	0.836	0.4183	
15 minute winter	8	1.002	9	24.9	1.182	0.589	1.0712	
15 minute winter	9	1.003	10	24.8	1.293	0.477	0.6860	
30 minute winter	10	Flow through pond	12	27.0	0.266	0.009	12.6613	
15 minute winter	1	3.000_1	2	6.1	0.791	1.236	0.1470	
15 minute winter	2	3.001	3	12.2	0.919	0.845	0.4215	
15 minute winter	3	3.002	4	25.1	1.169	0.593	0.9966	
15 minute winter	4	3.003	5	25.1	1.290	0.483	0.4660	
30 minute winter	5	Flow through pond	12	27.0	0.266	0.009	12.6613	
30 minute winter	12	3.000	13	15.1	0.957	0.357	0.8112	
30 minute winter	13	ACO Q-Brake	99	13.0				31.5
15 minute winter	11	2.000	8	6.6	1.104	0.834	0.1577	
15 minute winter	14	4.000	3	6.6	1.133	0.806	0.1107	

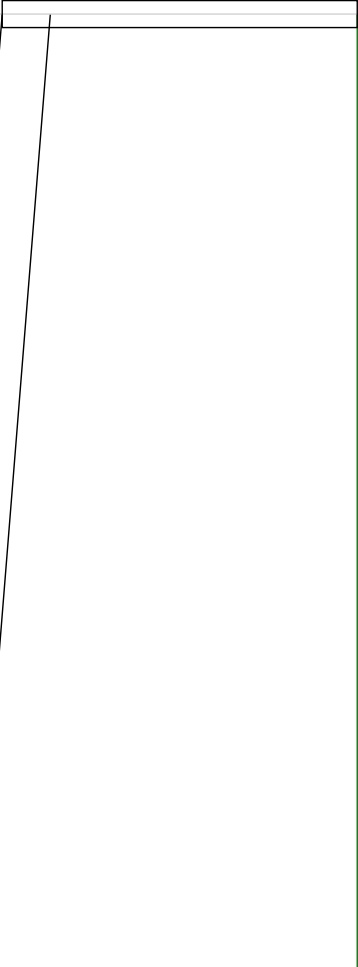
**Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 99.06%**

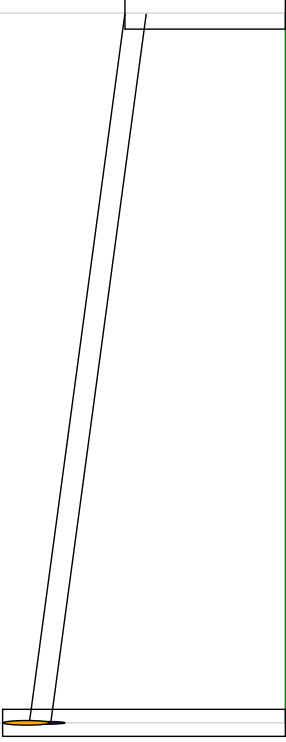
Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m <sup>3</sup> )	Flood (m <sup>3</sup> )	Status
15 minute winter	6	11	127.100	0.750	12.0	0.6008	0.0652	FLOOD
15 minute winter	7	11	126.443	0.310	20.8	0.2484	0.0000	SURCHARGED
15 minute winter	8	11	125.960	0.182	40.4	0.1460	0.0000	OK
60 minute winter	9	49	125.740	0.300	25.8	0.2400	0.0000	SURCHARGED
60 minute winter	10	54	125.730	0.950	25.7	0.0000	0.0000	OK
15 minute winter	1	11	127.098	0.748	12.0	0.5993	0.0000	FLOOD RISK
15 minute winter	2	11	126.491	0.326	21.1	0.2610	0.0000	SURCHARGED
15 minute winter	3	11	126.065	0.186	41.2	0.1492	0.0000	OK
60 minute winter	4	50	125.732	0.162	25.9	0.1298	0.0000	OK
60 minute winter	5	50	125.732	0.952	25.8	0.0000	0.0000	OK
60 minute winter	12	51	125.729	0.979	30.5	0.0000	0.0000	SURCHARGED
60 minute winter	13	50	125.718	1.104	13.9	1.2488	0.0000	SURCHARGED
15 minute summer	99	1	124.556	0.000	13.0	0.0000	0.0000	OK
15 minute winter	11	11	126.800	0.450	12.0	0.5087	0.0000	SURCHARGED
15 minute winter	14	11	126.741	0.391	12.0	0.4424	0.0000	SURCHARGED

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m <sup>3</sup> )	Discharge Vol (m <sup>3</sup> )
15 minute winter	6	1.000	7	9.2	1.180	1.879	0.1958	
15 minute winter	7	1.001	8	19.6	1.121	1.357	0.5318	
15 minute winter	8	1.002	9	40.5	1.285	0.955	1.5867	
60 minute winter	9	1.003	10	25.7	1.264	0.495	1.4219	
60 minute winter	10	Flow through pond	12	30.5	0.231	0.010	32.5318	
15 minute winter	1	3.000_1	2	9.7	1.242	1.978	0.1584	
15 minute winter	2	3.001	3	20.0	1.140	1.382	0.5330	
15 minute winter	3	3.002	4	41.3	1.276	0.974	1.4933	
60 minute winter	4	3.003	5	25.8	1.299	0.497	0.8426	
60 minute winter	5	Flow through pond	12	30.5	0.231	0.010	32.5318	
60 minute winter	12	3.000	13	13.9	0.973	0.327	0.8112	
60 minute winter	13	ACO Q-Brake	99	13.0				76.8
15 minute winter	11	2.000	8	10.1	1.293	1.286	0.2055	
15 minute winter	14	4.000	3	10.6	1.351	1.294	0.1476	

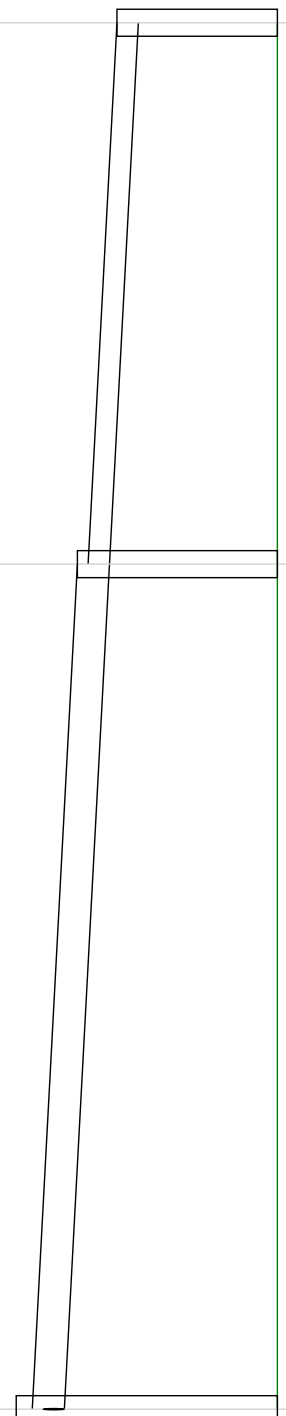
Node Name	6	7	8
<p>A3 drawing Hor Scale 200 Ver Scale 25</p> <p>Datum (m) 124.000</p> <p>Link Name</p> <p>Section Type</p> <p>Slope (1:X)</p> <p>Cover Level (m)</p> <p>Invert Level (m)</p> <p>Length (m)</p>	 <p>126.350</p> <p>127.100</p> <p>1.000</p> <p>100mm</p> <p>150.0</p> <p>126.183</p> <p>126.133</p> <p>25.025</p>	<p>127.100</p> <p>1.001</p> <p>150mm</p> <p>150.0</p> <p>127.100</p> <p>31.630</p>	<p>125.922</p> <p>127.100</p>

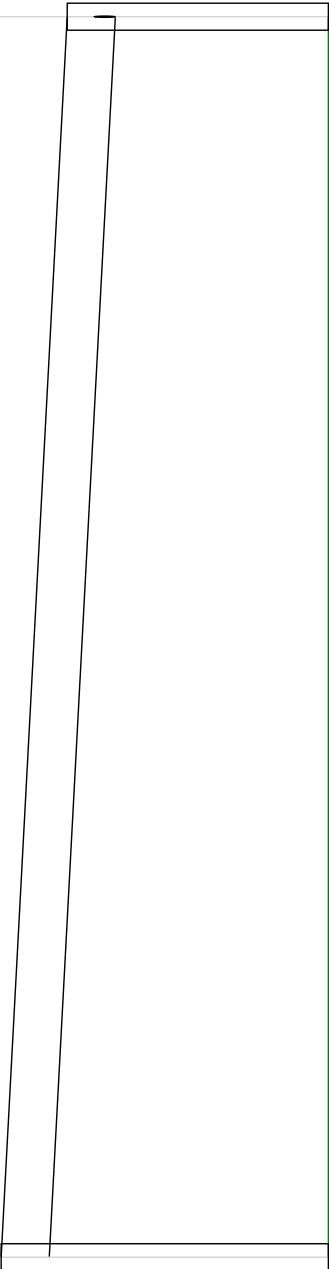
Node Name	8	9
A3 drawing		
Hor Scale 200		
Ver Scale 25		
Datum (m) 124.000		
Link Name		
Section Type		
Slope (1:X)		
Cover Level (m)		
Invert Level (m)		
Length (m)		
	125.778	125.440
	127.100	127.100

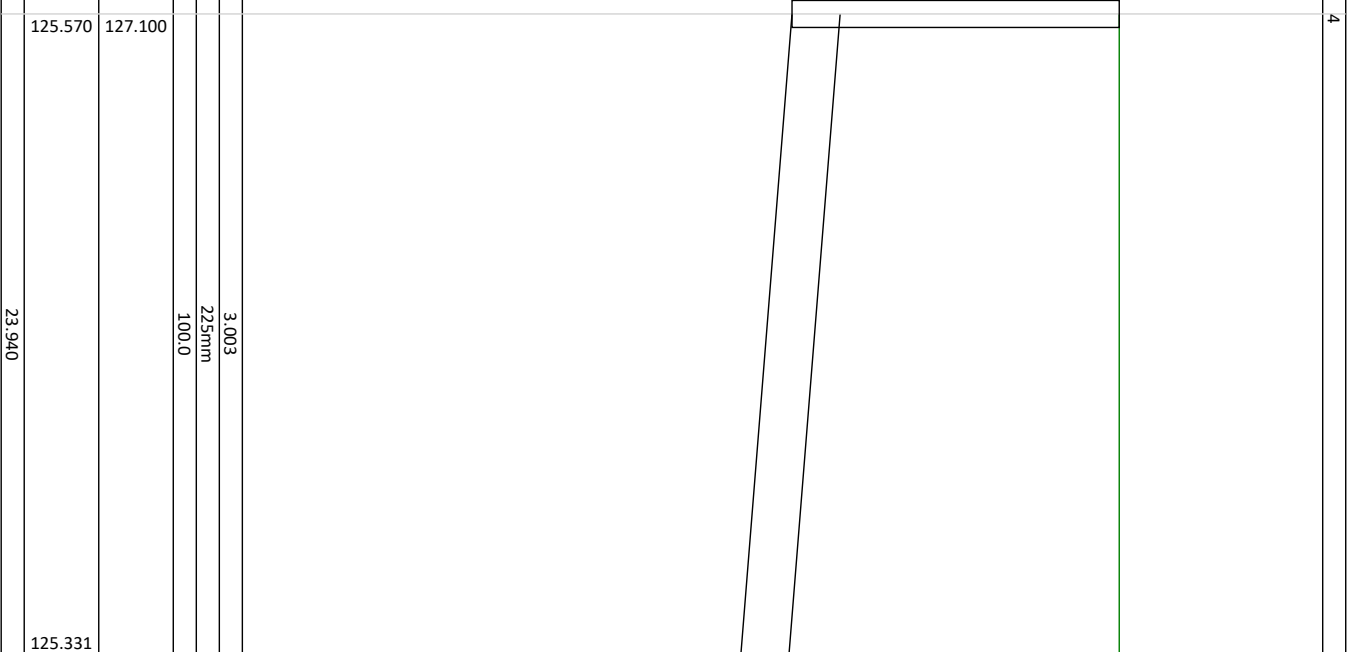
Node Name	9	10
A3 drawing		
Hor Scale 200		
Ver Scale 25		
Datum (m) 123.000		
Link Name		
Section Type	1.003	
Slope (1:X)	225mm	
Cover Level (m)	100.0	
Invert Level (m)	127.100	127.100
Invert Level (m)	125.440	125.082
Length (m)	35.751	

Node Name		11	8
			
A3 drawing			
Hor Scale 200			
Ver Scale 25			
Datum (m) 124.000			
Link Name		2.000	
Section Type		100mm	
Slope (1:X)		59.4	
Cover Level (m)			
Invert Level (m)		127.100	127.100
		126.350	125.903
Length (m)		26.547	

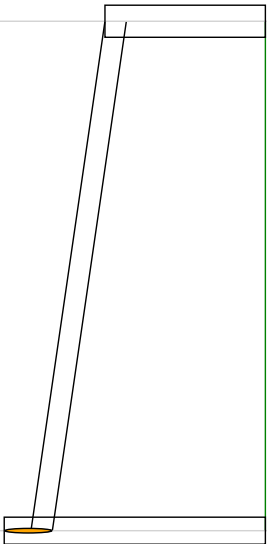


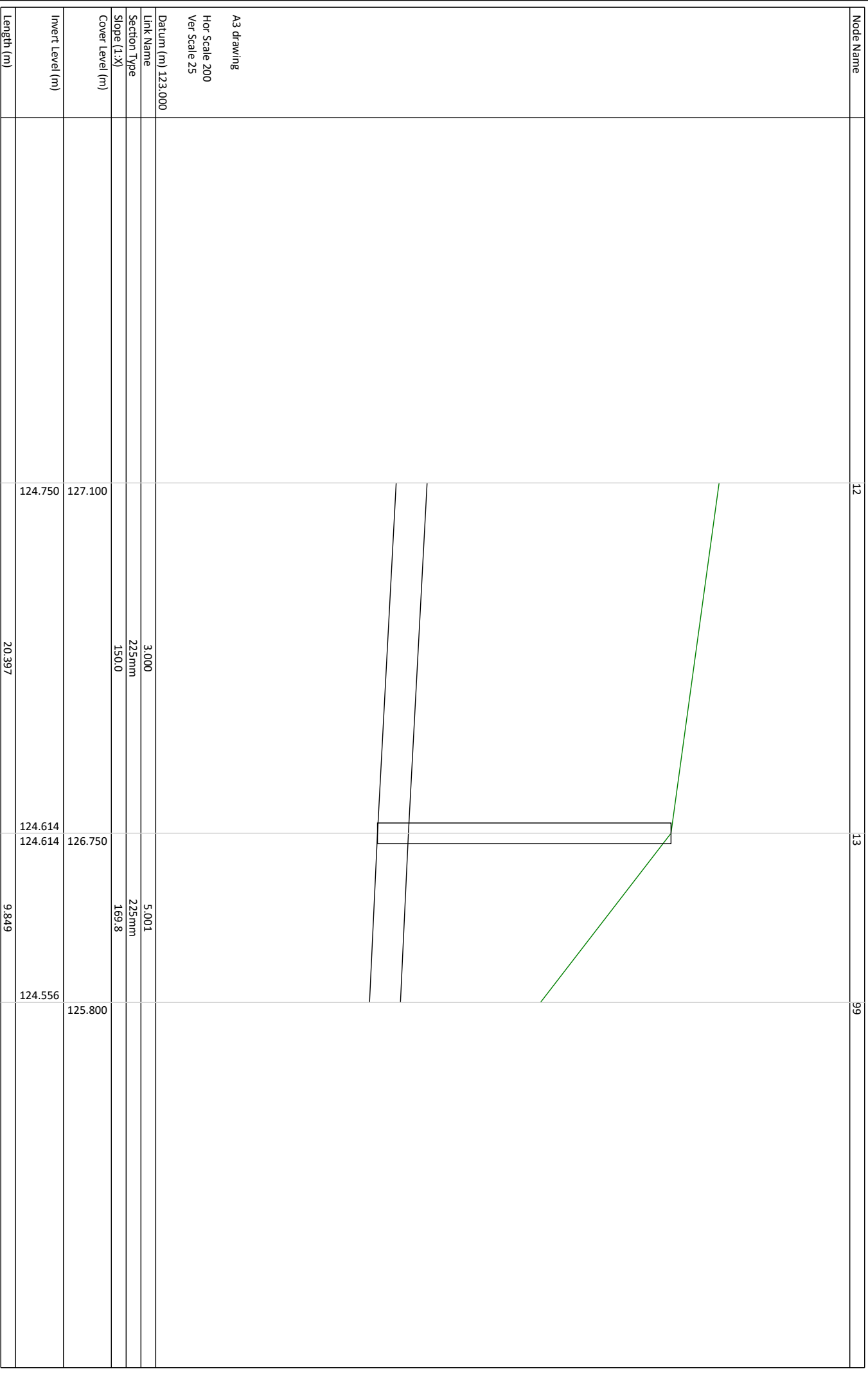
Node Name	1	2	3
A3 drawing Hor Scale 200 Ver Scale 25			
Datum (m) 124.000			
Link Name			
Section Type			
Slope (1:X)			
Cover Level (m)	127.100	127.100	127.100
Invert Level (m)	126.350	126.215 126.165	125.954
Length (m)	20.250	31.608	

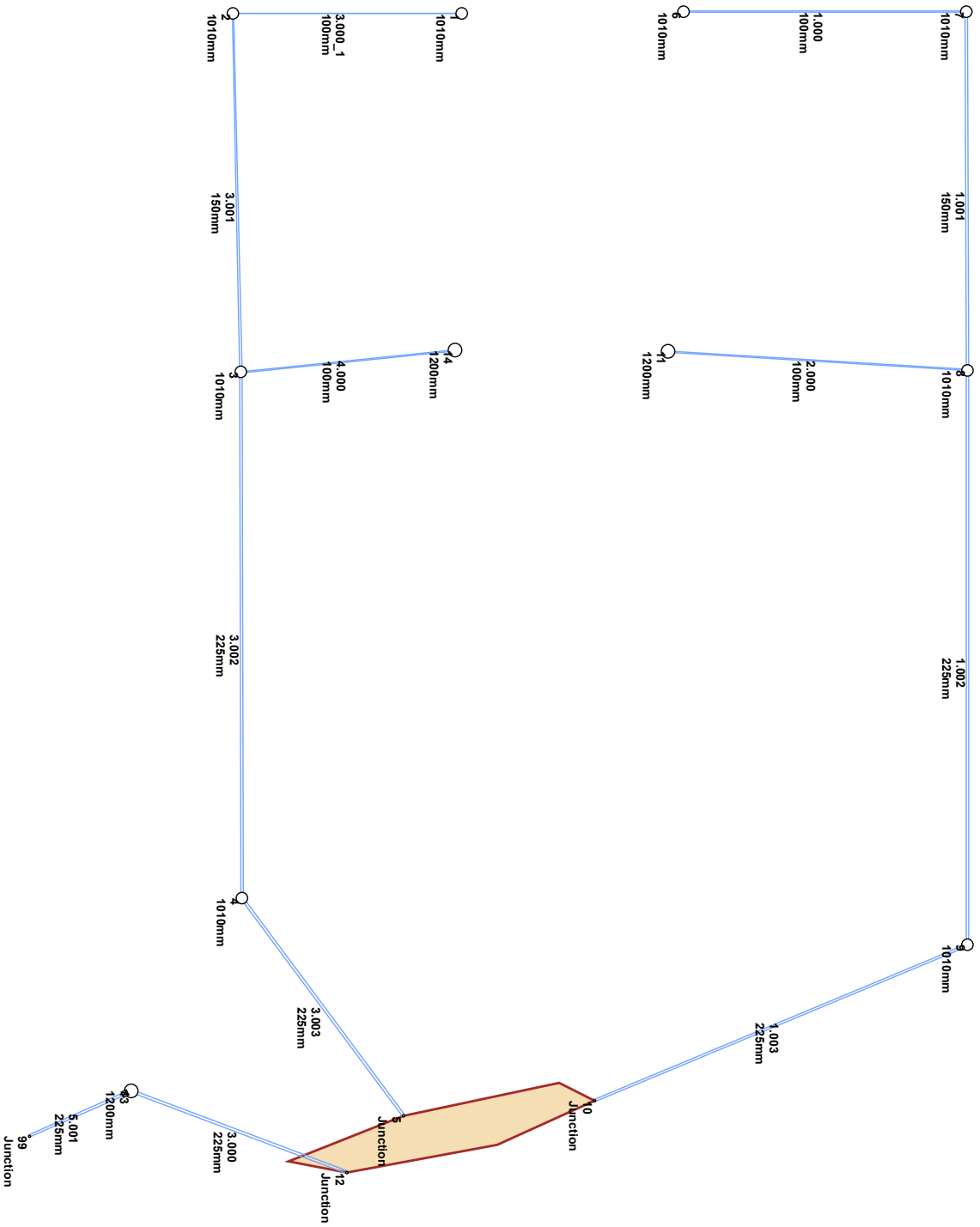
Node Name	3	4		
A3 drawing				
Hor Scale 200				
Ver Scale 25				
Datum (m) 124.000				
Link Name				
Section Type				
Slope (1:X)				
Cover Level (m)				
Invert Level (m)			127.100	125.570
Length (m)			46.400	

Node Name		4	5
A3 drawing			
Hor Scale 200			
Ver Scale 25			
Datum (m) 123.000			
Link Name			
Section Type	3.003		
Slope (1:X)	225mm		
Cover Level (m)	100.0		
Invert Level (m)	127.100	127.100	
Length (m)	125.570	125.331	23.940

Node Name		14	3
A3 drawing			
Hor Scale 200			
Ver Scale 25			
Datum (m) 124.000			
Link Name		4.000	
Section Type		100mm	
Slope (1:X)		55.1	
Cover Level (m)			
Invert Level (m)		127.100	127.100
		126.350	126.004
Length (m)		19.055	



Node Name	12	13	99		
A3 drawing Hor Scale 200 Ver Scale 25					
Datum (m) 123.000					
Link Name				3.000	5.001
Section Type				225mm	225mm
Slope (1:X)				150.0	169.8
Cover Level (m)					
Invert Level (m)	127.100	126.750	125.800		
Length (m)	20.397	9.849			
	124.750	124.614 124.614	124.556		





Kingmoor Consulting Ltd

Suite 4 Atlantic House

Parkhouse, Carlisle

Cumbria, CA3 0LJ

T: 01228 915900

E: [hello@kingmoorconsulting.co.uk](mailto:hello@kingmoorconsulting.co.uk)