

NOTES

GENERAL NOTES :-

ALL LEVELS ARE IN METRES DERIVED FROM GPS TRANSFORMATION.

THIS DRAWING HAS BEEN PRODUCED WITH A PLOT SCALE ACCURACY OF 1:200

SERVICE COVERS INDICATED WHERE VISIBLE. PIPE INVERTS / DETAILS SURVEYED FROM SURFACE INSPECTION ONLY. GENERALLY DAMAGED COVERS AND COVERS WITH HIGHWAYS WILL NOT BE LIFTED

THREE SPEEDS SHOULD BE CONFIRMED BY THREE SPEEDSHOT IF CRITICAL.

OVERHEAD CABLES ARE INDICATED USING REMOTE SURVEY METHODS AND ARE SUBJECT TO SEASONAL VARIATION, AND SHOULD BE TREATED AS APPROXIMATE.

THE SURVEYOR WILL NOT BE RESPONSIBLE FOR THE OMISSION OF DETAILS OBSERVED DURING SITE SURVEY

RICS PROFESSIONAL STANDARDS 2ND EDITION ISSUE 1.1.9 APPLIES TO THIS SURVEY.

TOPOGRAPHICAL SURVEY/UTILITY KEY :-

[illegible]

UTILITY SURVEY KEY :-

			WATER PIPE
			FOUR SEWER
			COMBINED SEWER
			CABLE TELEVISION
			TELECOM CABLE
			GAS PIPE
			UNIDENTIFIED SERVICE
			OTHER
			TRAFFIC LIGHT
			OFFSET FILL
			FUEL PIPE
			GAUGE LINE
			ASSIGNED ROUTE
			TARRED DRIVE/ROAD

DISCLAIMER :-

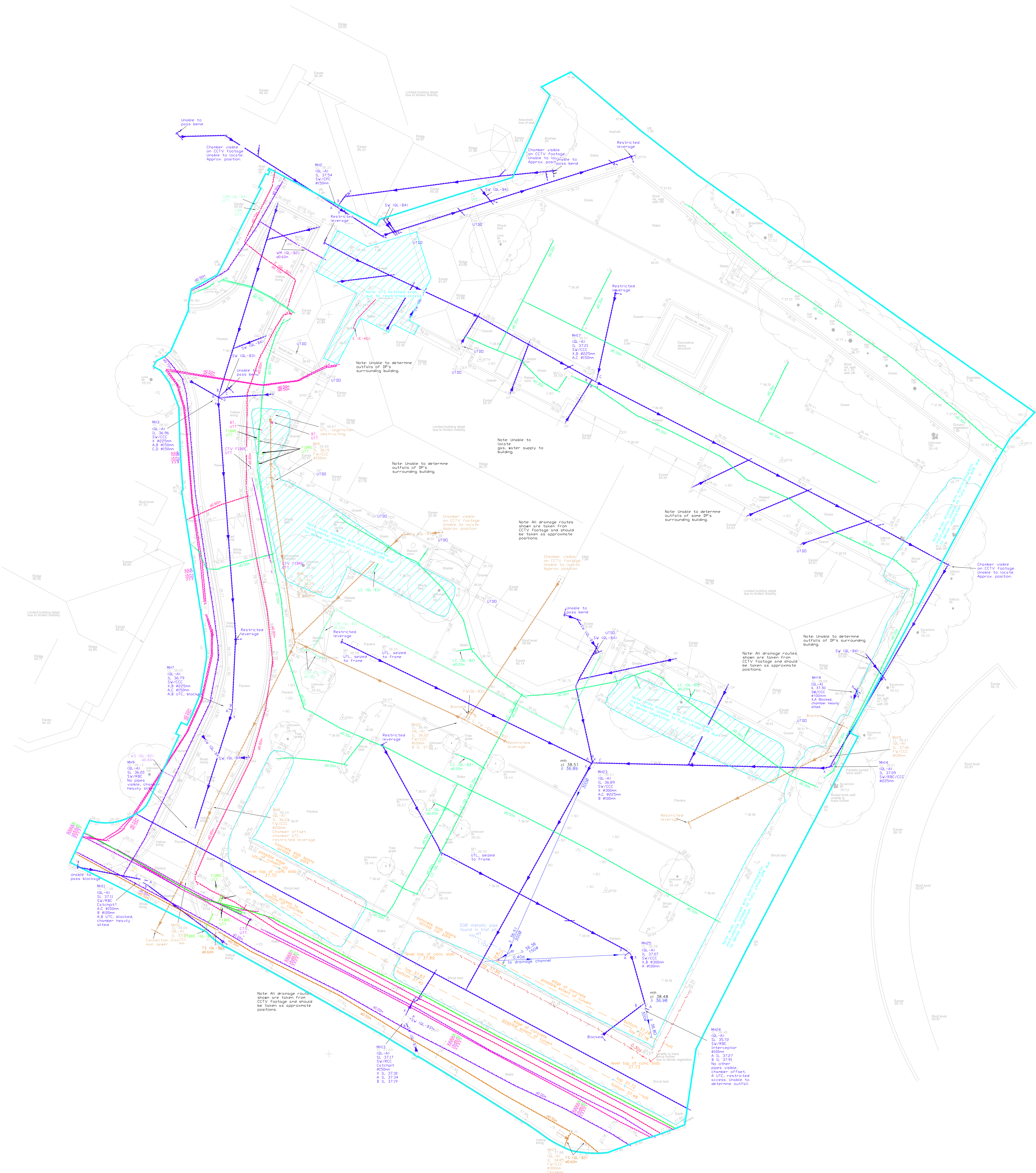
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UTILITY NOTES

CONCRETE SLAB FOUND IS ASSUMED TO BE THE DULVERT, NO ACCESS INTO CONCRETE SLAB TO CONFIRM

IN AREAS, CONCRETE SLAB SPANS ACROSS THE CAR PARK. NO EDGE TO ASSUME IT TO BE THE CULVERT

UNABLE TO GET DEPTHS AT THE BOTTOM OF CONCRETE SLAB DUE TO ACCESS AND IN AREAS THE CONCRETE SLAB STEPS DOWN.



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Title	UTILITY SURVEY OF CULVERT
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Client: CANNA CONSULTING LTD

Project WESTERN ROAD, READING, RG1 8DA

Date	NOVEMBER 2023	Revisions
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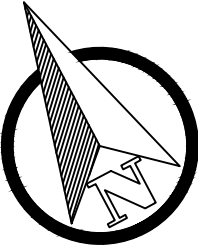
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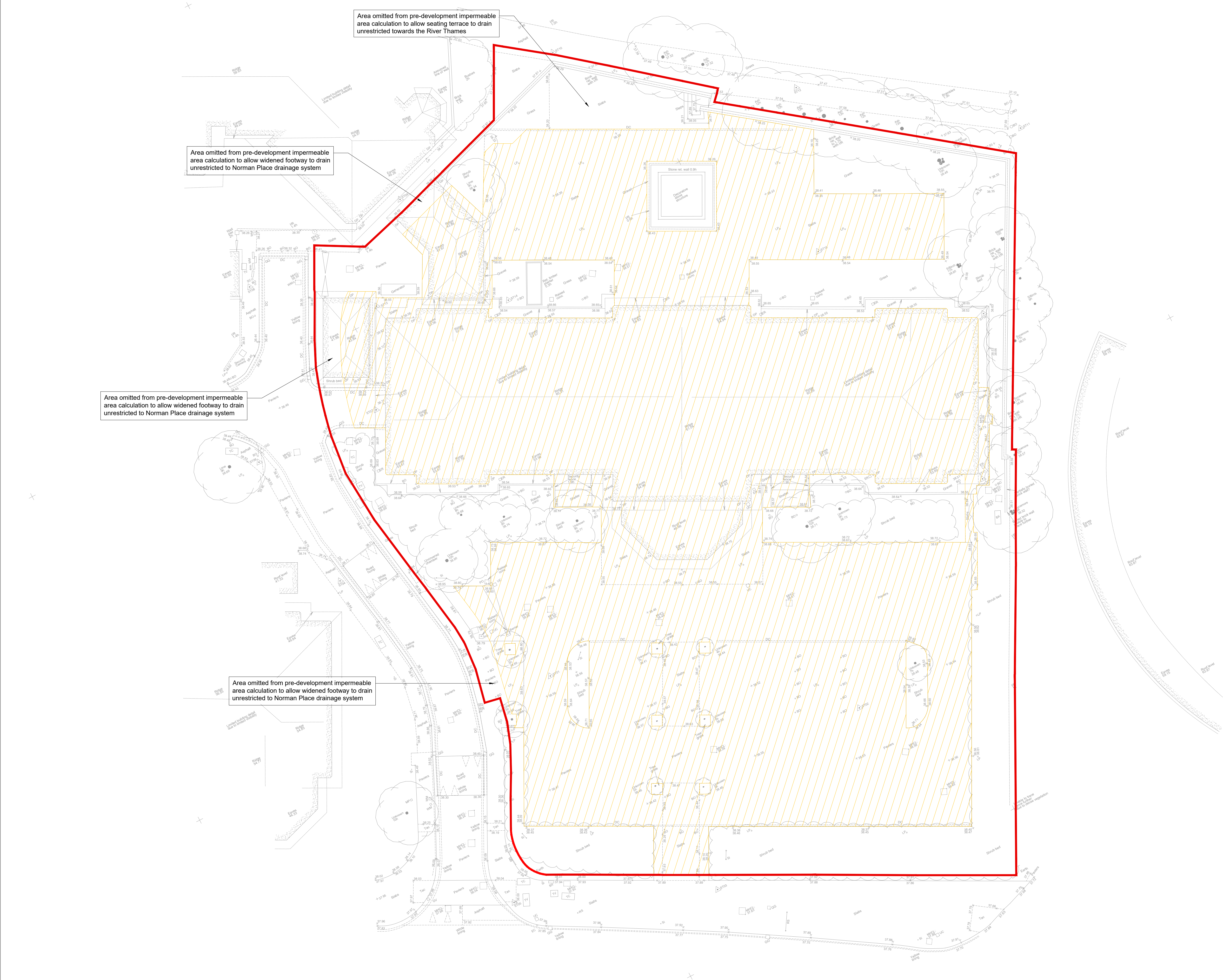
Surveyor JHO

Checked JHG

Appendix H – Drainage Drawings



Notes			
1. Do not scale this drawing. All dimensions must be checked/ verified on site. If in doubt ask.			
2. This drawing is to be read in conjunction with all relevant architects, engineers and specialists drawings and specifications.			
3. All dimensions in millimetres unless noted otherwise. All levels in metres unless noted otherwise.			
4. Any discrepancies noted on site are to be reported to the engineer immediately.			
Key Plan			
Legend			
		Existing private FW drain	
		Existing private FW drain (assumed route)	
		Existing private SW drain	
		Existing private SW drain (assumed route)	
		Existing culverted watercourse	
P02	29.01.24	Updated to culvert survey and TW PPSE	MF MF
P01	17.10.23	Preliminary Issue	MF MF
Rev	Date	Details of issue / revision	Drw Rev
Issues & Revisions			
HEXA			
Client PACKAGED LIVING			
Project Title WATERFRONT SQUARE READING			
Drawing Title EXISTING DRAINAGE			
Drawn:	MF	Reviewed:	MF
Hexa Ref:	700135	Scale@A1:	1:200
Purpose of Issue FOR INFORMATION			Status S2
Project - Originator - Zone - Level - Type - Role - Number 700135-HEX-ZZ-ZZ-DR-C-9200			Rev P02



Notes

1. Do not scale this drawing. All dimensions must be checked/ verified on site. If in doubt ask.
2. This drawing is to be read in conjunction with all relevant architects, engineers and specialists drawings and specifications.
3. All dimensions in millimetres unless noted otherwise. All levels in metres unless noted otherwise.
4. Any discrepancies noted on site are to be reported to the engineer immediately.

Key Plan

Legend

 Existing Surface Water Catchment
3,765m² (0.377ha)

Existing Discharge Rate
Q = 2.78 x 50mm/hr x 0.377ha = **52.4 l/s**

P03	09.12.24	Existing discharge rate calculation added	LMc	LMc	
P02	22.07.24	Update to Site Boundary	MF	MF	
P01	29.01.24	Preliminary Issue	MF	MF	
Rev	Date	Details of issue / revision	Drw	Rev	

Issues & Revisions

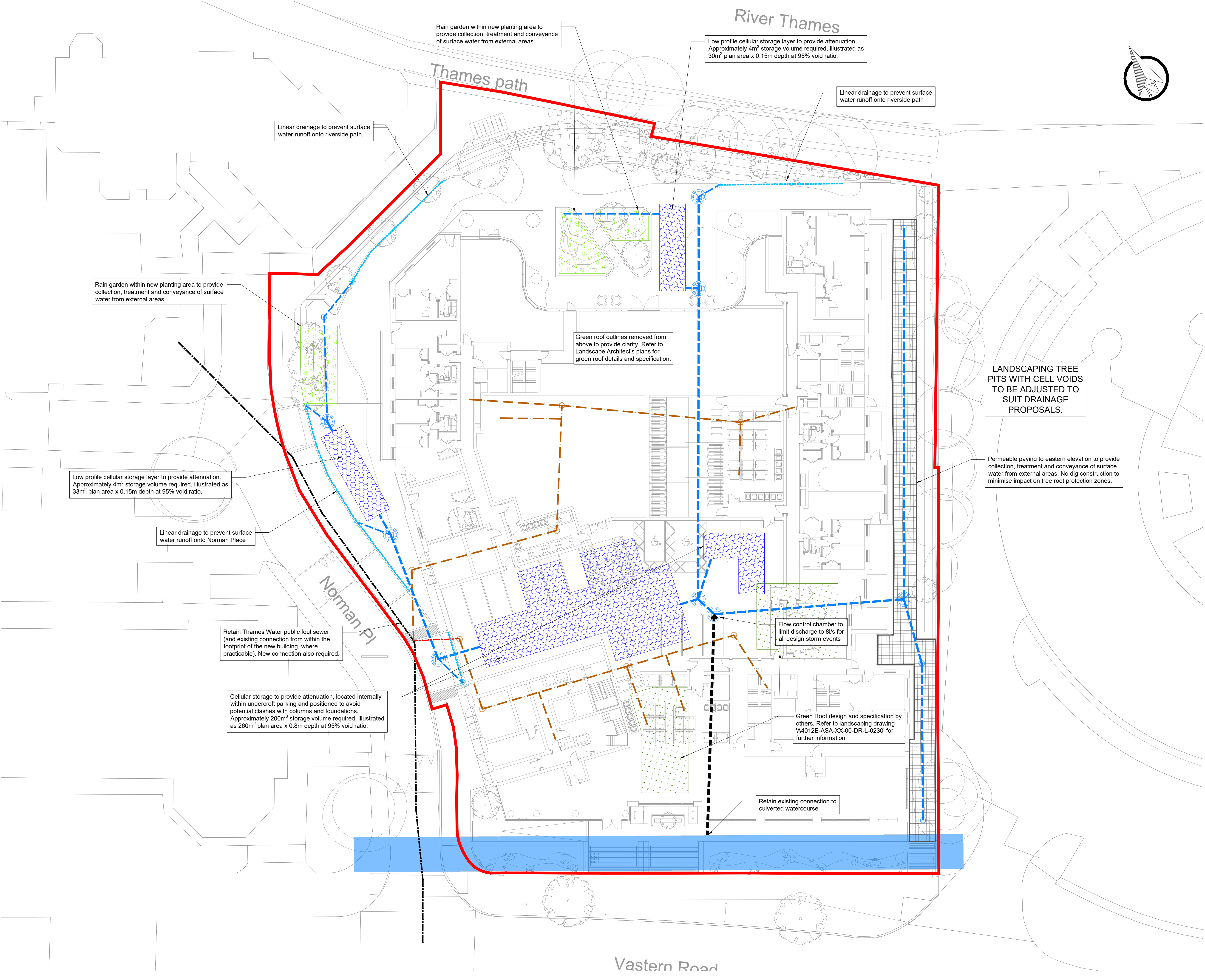


Client
PACKAGED LIVING

Project Title
**NORMAN PLACE,
READING**

Drawing Title
**EXISTING SURFACE
WATER CATCHMENT**

Drawn:	MF	Reviewed:	MF
Hexa Ref:	700135	Scale@A1:	1:200
Purpose of Issue FOR INFORMATION			Status S2
Project - Originator - Zone - Level - Type - Role - Number 700135-HEX-ZZ-ZZ-DR-C-9201			Rev P03



Notes

- Do not scale this drawing. All dimensions must be checked/verified on site. If in doubt ask.
- This drawing is to be read in conjunction with all relevant architects, engineers and specialists drawings and specifications.
- All dimensions in meters unless noted otherwise. All levels in metres unless noted otherwise.
- Any discrepancies noted on site are to be reported to the engineer immediately.
- This drawing should be printed and read in colour.

Design Notes

- Drainage Design based upon Landscape Architects Plan A4012E-ASA-XX-00-DR-L-0200 P4

Legend

- Existing private FW drain
- Existing private SW drain
- Existing culverted watercourse
- Proposed Surface Water Drainage
- Proposed Surface Water Flow Control Chamber
- Proposed Linear Drainage and Outlet
- Proposed Rain Garden
- Proposed Green Roof (Specification by others)
- Proposed Permeable Paving
- Proposed Cellular Attenuation
- Proposed Foul Water Drainage

1m SCALE 1:200

P07	29/10/25	Updated to Show Green Roofs	LW	RR
P06	24/10/25	Updated to Landscape Cell Voids	LW	RR
P05	28/02/25	Updated to Landscape Architects Layout	AR	RR
P04	22/07/24	Update to Site Boundary	MF	MF
P03	01/07/24	Updated to Landscape Architect's layout	MF	MF
P02	06/02/24	Updated to Landscape Architect's layout	MF	MF
P01	29/01/24	Preliminary issue	MF	MF

Rev Date Details of Issue Drawn Rwd

Issues & Revisions

Consultant

HEXA

Client

PACKAGED LIVING

Project Title

NORMAN PLACE, READING

Drawing Title

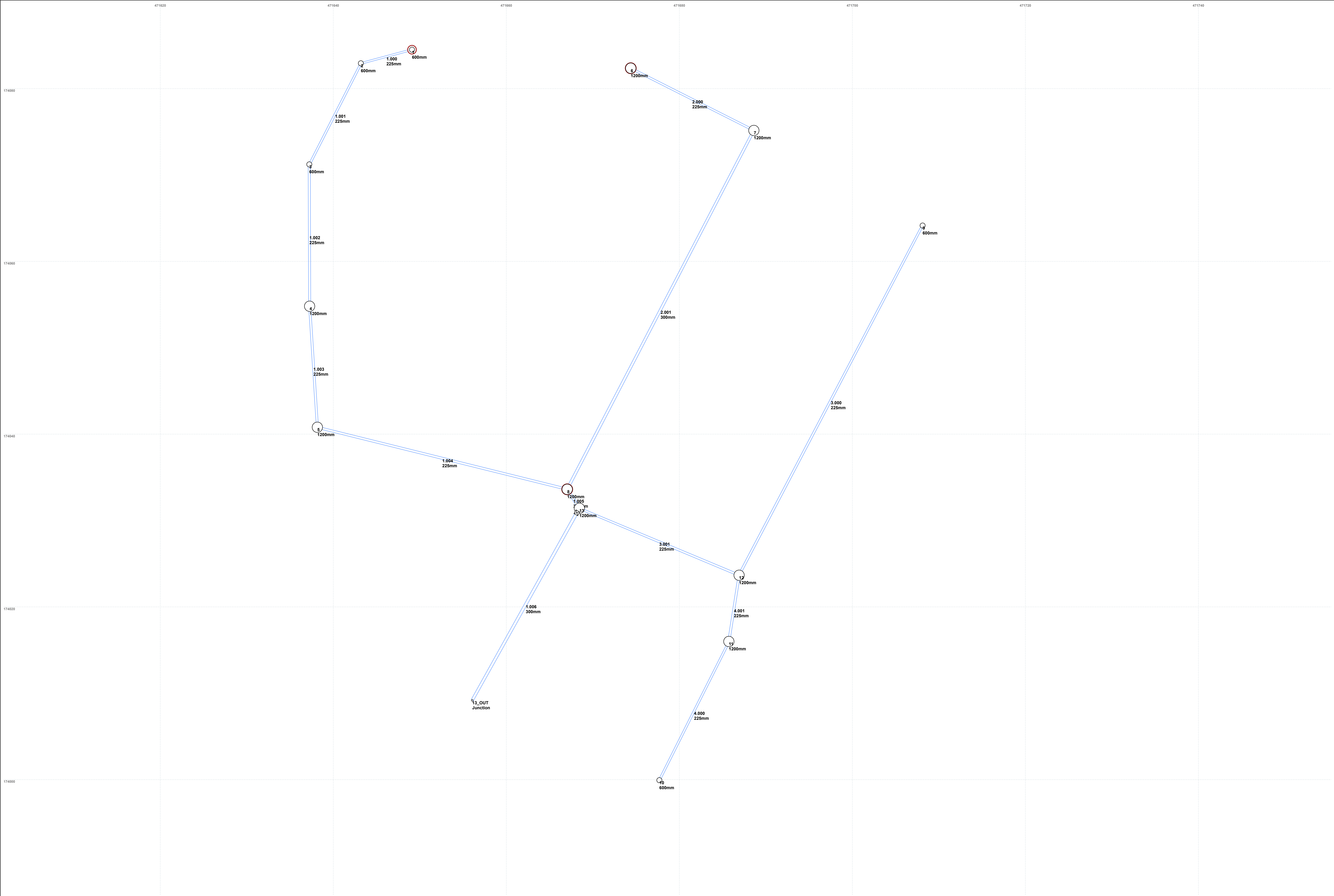
DRAINAGE STRATEGY

Drawn By	MF	Reviewed By	MF
Hexa Ref	700135	Scale at A1	1:200

Purpose of Issue	Status
For Information	S2

Project - Originator - Zone - Level - Type - Role - Number	Revision
700135-HEX-ZZ-ZZ-DR-C-9202	P07

Appendix I - Hydraulic 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)	17.000	Minimum Backdrop Height (m)	0.200
Ratio-R	0.400	Preferred Cover Depth (m)	1.200
CV	0.750	Include Intermediate Ground	✓
Time of Entry (mins)	5.00	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	0.040	5.00	38.300	1200	471674.381	174082.358	0.850
1	0.040	5.00	38.500	600	471649.097	174084.501	1.050
7	0.040	5.00	38.300	1200	471688.611	174075.154	1.100
2	0.040	5.00	38.500	600	471643.187	174082.927	1.100
8	0.040	5.00	38.600	1200	471667.037	174033.611	1.650
9	0.040	5.00	38.500	600	471708.118	174064.145	1.100
10	0.040	5.00	38.500	600	471677.688	173999.937	1.150
11	0.040	5.00	38.500	1200	471685.721	174015.996	1.300
12	0.040	5.00	38.500	1200	471686.906	174023.665	1.350
3	0.040	5.00	38.600	600	471637.226	174071.227	1.300
4	0.040	5.00	38.600	1200	471637.262	174054.806	1.400
13	0.030	5.00	38.600	1200	471668.444	174031.415	1.700
13_OUT			38.450		471656.059	174009.182	1.650
5			38.600	1200	471638.157	174040.795	1.500



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)
2.000	6	7	15.950	0.600	37.450	37.275	0.175	91.1	225	5.19	50.0
1.003	4	5	14.040	0.600	37.200	37.100	0.100	140.4	225	5.76	50.0
2.001	7	8	46.811	0.600	37.200	37.000	0.200	234.1	300	5.96	50.0
1.000	1	2	6.116	0.600	37.450	37.400	0.050	122.3	225	5.09	50.0
1.005	8	13	2.608	0.600	36.950	36.900	0.050	52.2	300	6.32	50.0
3.000	9	12	45.701	0.600	37.400	37.150	0.250	182.8	225	5.79	50.0
4.000	10	11	17.956	0.600	37.350	37.200	0.150	119.7	225	5.25	50.0
4.001	11	12	7.760	0.600	37.200	37.150	0.050	155.2	225	5.37	50.0
3.001	12	13	20.023	0.600	37.150	36.900	0.250	80.1	225	6.02	50.0
1.002	3	4	16.421	0.600	37.300	37.200	0.100	164.2	225	5.55	50.0
1.004	5	8	29.760	0.600	37.100	36.950	0.150	198.4	225	6.30	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)
2.000	1.370	54.5	7.6	0.625	0.800	0.040	0.0	57	0.972
1.003	1.101	43.8	30.4	1.175	1.275	0.160	0.0	138	1.188
2.001	1.023	72.3	15.2	0.800	1.300	0.080	0.0	93	0.814
1.000	1.181	46.9	7.6	0.825	0.875	0.040	0.0	61	0.873
1.005	2.181	154.2	53.1	1.350	1.400	0.280	0.0	121	1.984
3.000	0.964	38.3	7.6	0.875	1.125	0.040	0.0	68	0.756
4.000	1.194	47.5	7.6	0.925	1.075	0.040	0.0	60	0.876
4.001	1.047	41.6	15.2	1.075	1.125	0.080	0.0	94	0.965
3.001	1.462	58.1	30.4	1.125	1.475	0.160	0.0	116	1.478
1.002	1.017	40.5	22.8	1.075	1.175	0.120	0.0	121	1.047
1.004	0.924	36.8	30.4	1.275	1.425	0.160	0.0	156	1.029



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)
1.006	13	13_OUT	25.450	0.600	36.900	36.800	0.100	254.5	300	6.75	50.0
1.001	2	3	13.131	0.600	37.400	37.300	0.100	131.3	225	5.28	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)
1.006	0.981	69.3	89.2	1.400	1.350	0.470	0.0	300	0.993
1.001	1.139	45.3	15.2	0.875	1.075	0.080	0.0	89	1.026

Simulation Settings

Rainfall Methodology	FSR	Summer CV	0.750	Drain Down Time (mins)	240
FSR Region	England and Wales	Winter CV	0.840	Additional Storage (m³/ha)	0.0
M5-60 (mm)	17.000	Analysis Speed	Normal	Check Discharge Rate(s)	x
Ratio-R	0.400	Skip Steady State	x	Check Discharge Volume	x

Storm Durations

15	30	60	120	180	240	360	480	600	720	960	1440
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Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)	Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
2	0	0	0	100	40	0	0
30	35	0	0				

Node 13 Online Hydro-Brake® Control

Flap Valve	x	Design Depth (m)	0.800	Product Number	CTL-SCU-0090-7500-0800-7500
Downstream Link	1.006	Design Flow (l/s)	7.5	Min Outlet Diameter (m)	0.150
Replaces Downstream Link	✓	Objective	(CU) Linear Discharge	Min Node Diameter (mm)	1200
Invert Level (m)	36.900	Sump Available	✓		



Node 8 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	36.950
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.95	Time to half empty (mins)	252

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	260.0	0.0	0.800	260.0	0.0	0.801	0.0	0.0

Node 6 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	37.450
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.95	Time to half empty (mins)	168

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	30.0	0.0	0.150	30.0	0.0	0.151	0.0	0.0

Node 1 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	37.450
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.95	Time to half empty (mins)	9

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	33.0	0.0	0.150	33.0	0.0	0.151	0.0	0.0



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Network: Storm Network
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Norman Place, Reading
Surface Water Hydraulic Calculations

Results for 2 year Critical Storm Duration. Lowest mass balance: 99.76%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	6	12	37.493	0.043	6.2	1.2847	0.0000	OK
15 minute winter	1	13	37.495	0.045	6.2	1.4227	0.0000	OK
15 minute winter	7	12	37.273	0.073	9.5	0.0823	0.0000	OK
15 minute winter	2	11	37.470	0.070	9.3	0.0197	0.0000	OK
180 minute winter	8	144	37.121	0.171	12.8	42.4087	0.0000	OK
15 minute winter	9	10	37.460	0.060	6.2	0.0169	0.0000	OK
15 minute winter	10	10	37.404	0.054	6.2	0.0154	0.0000	OK
15 minute winter	11	10	37.293	0.093	12.3	0.1051	0.0000	OK
15 minute winter	12	11	37.250	0.100	24.2	0.1129	0.0000	OK
15 minute winter	3	11	37.400	0.100	15.0	0.0282	0.0000	OK
15 minute winter	4	11	37.319	0.119	20.8	0.1348	0.0000	OK
15 minute summer	13	9	37.133	0.233	27.1	0.2636	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	6	2.000	7	4.2	0.807	0.077	0.0835	
15 minute winter	1	1.000	2	3.9	0.536	0.082	0.0478	
15 minute winter	7	2.001	8	9.2	0.708	0.127	0.6087	
15 minute winter	2	1.001	3	9.2	0.679	0.204	0.1798	
180 minute winter	8	1.005	13	8.3	0.507	0.054	0.1266	
15 minute winter	9	3.000	12	6.0	0.479	0.156	0.5795	
15 minute winter	10	4.000	11	6.1	0.543	0.129	0.2048	
15 minute winter	11	4.001	12	12.0	0.748	0.289	0.1251	
15 minute winter	12	3.001	13	23.9	0.964	0.412	0.5448	
15 minute winter	3	1.002	4	15.0	0.784	0.371	0.3145	
15 minute winter	4	1.003	5	20.9	0.919	0.476	0.3185	
15 minute summer	13	Hydro-Brake®	13_OUT	4.2				27.9



Results for 2 year Critical Storm Duration. Lowest mass balance: 99.76%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	13_OUT	1	36.800	0.000	4.2	0.0000	0.0000	OK
15 minute winter	5	11	37.231	0.131	20.9	0.1484	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	5	1.004	8	21.1	1.459	0.573	0.4781	



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Norman Place, Reading
Surface Water Hydraulic Calculations

Results for 30 year +35% CC Critical Storm Duration. Lowest mass balance: 99.76%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	6	12	37.529	0.079	15.7	2.3268	0.0000	OK
15 minute winter	1	13	37.588	0.138	20.8	4.3576	0.0000	OK
180 minute winter	7	176	37.466	0.266	7.4	0.3005	0.0000	OK
15 minute winter	2	12	37.584	0.184	22.4	0.0520	0.0000	OK
180 minute winter	8	176	37.466	0.516	36.9	127.9417	0.0000	SURCHARGED
15 minute winter	9	10	37.498	0.098	15.7	0.0278	0.0000	OK
15 minute winter	10	12	37.495	0.145	15.7	0.0411	0.0000	OK
15 minute winter	11	12	37.484	0.284	31.3	0.3211	0.0000	SURCHARGED
180 minute winter	12	176	37.466	0.316	14.8	0.3572	0.0000	SURCHARGED
15 minute winter	3	12	37.564	0.264	34.7	0.0749	0.0000	SURCHARGED
15 minute winter	4	11	37.489	0.289	45.9	0.3265	0.0000	SURCHARGED
180 minute winter	13	172	37.466	0.566	17.4	0.6406	0.0000	SURCHARGED
Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	6	2.000	7	13.1	1.102	0.241	0.1900	
15 minute winter	1	1.000	2	16.1	0.784	0.343	0.1832	
180 minute winter	7	2.001	8	7.3	0.520	0.102	3.1925	
15 minute winter	2	1.001	3	23.9	0.796	0.529	0.4892	
180 minute winter	8	1.005	13	-12.3	-0.204	-0.080	0.1837	
15 minute winter	9	3.000	12	15.3	0.561	0.401	1.2883	
15 minute winter	10	4.000	11	15.6	0.632	0.328	0.6003	
15 minute winter	11	4.001	12	27.6	0.855	0.662	0.3086	
180 minute winter	12	3.001	13	14.6	0.478	0.252	0.7963	
15 minute winter	3	1.002	4	32.0	0.843	0.791	0.6531	
15 minute winter	4	1.003	5	43.3	1.088	0.988	0.5584	
180 minute winter	13	Hydro-Brake®	13_OUT	6.4				126.9



Results for 30 year +35% CC Critical Storm Duration. Lowest mass balance: 99.76%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	13_OUT	1	36.800	0.000	4.8	0.0000	0.0000	OK
180 minute winter	5	172	37.466	0.366	14.7	0.4141	0.0000	SURCHARGED

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
180 minute winter	5	1.004	8	13.9	0.831	0.379	1.1836	



Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 99.76%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
240 minute winter	6	228	37.659	0.209	4.4	4.5251	0.0000	OK
15 minute winter	1	12	38.237	0.787	30.7	4.9409	0.0000	FLOOD RISK
240 minute winter	7	228	37.658	0.458	8.2	0.5186	0.0000	SURCHARGED
15 minute winter	2	12	38.227	0.827	39.8	0.2341	0.0000	FLOOD RISK
240 minute winter	8	228	37.658	0.708	37.9	175.7759	0.0000	SURCHARGED
15 minute winter	9	11	37.795	0.395	21.0	0.1117	0.0000	SURCHARGED
15 minute winter	10	11	37.836	0.486	21.0	0.1376	0.0000	SURCHARGED
15 minute winter	11	11	37.803	0.603	40.6	0.6825	0.0000	SURCHARGED
15 minute winter	12	11	37.739	0.589	74.7	0.6662	0.0000	SURCHARGED
15 minute winter	3	12	38.158	0.858	51.0	0.2429	0.0000	SURCHARGED
15 minute winter	4	12	37.974	0.774	66.8	0.8756	0.0000	SURCHARGED
240 minute winter	13	224	37.660	0.760	18.1	0.8593	0.0000	SURCHARGED

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
240 minute winter	6	2.000	7	4.1	0.779	0.075	0.6237	
15 minute winter	1	1.000	2	18.8	0.849	0.400	0.2432	
240 minute winter	7	2.001	8	7.2	0.484	0.099	3.2964	
15 minute winter	2	1.001	3	32.1	0.808	0.710	0.5222	
240 minute winter	8	1.005	13	-12.2	-0.173	-0.079	0.1837	
15 minute winter	9	3.000	12	18.0	0.560	0.470	1.8176	
15 minute winter	10	4.000	11	19.6	0.643	0.412	0.7141	
15 minute winter	11	4.001	12	38.7	0.973	0.930	0.3086	
15 minute winter	12	3.001	13	73.4	1.846	1.263	0.7963	
15 minute winter	3	1.002	4	48.2	1.211	1.191	0.6531	
15 minute winter	4	1.003	5	63.9	1.607	1.460	0.5584	
240 minute winter	13	Hydro-Brake®	13_OUT	7.3				165.9



Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 99.76%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	13_OUT	1	36.800	0.000	5.4	0.0000	0.0000	OK
15 minute winter	5	13	37.691	0.591	63.9	0.6682	0.0000	SURCHARGED

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	5	1.004	8	62.8	1.587	1.708	1.1836	



Hexa Consulting Limited
Studio 22
46 The Calls
Leeds, LS2 7EY

File: 700135-HEX-ZZ-ZZ-CA-C-9290-P04_Hydra
Network: Storm Network
Matt Freeman
01/07/2024

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700113-HEX-00-XX-CA-C-9290-P04
Norman Place, Reading
Surface Water Hydraulic Calculations

Results for 100 year Critical Storm Duration. Lowest mass balance: 99.93%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
360 minute summer	6	184	37.485	0.035	2.9	1.0319	0.0000	OK
360 minute summer	1	184	37.487	0.037	2.9	1.1640	0.0000	OK
360 minute winter	7	280	37.436	0.236	4.2	0.2667	0.0000	OK
360 minute summer	2	184	37.454	0.054	5.6	0.0152	0.0000	OK
360 minute winter	8	280	37.436	0.486	19.1	120.5385	0.0000	SURCHARGED
360 minute summer	9	184	37.441	0.041	2.9	0.0117	0.0000	OK
360 minute winter	10	280	37.436	0.086	2.1	0.0243	0.0000	OK
360 minute winter	11	280	37.436	0.236	4.2	0.2670	0.0000	SURCHARGED
360 minute winter	12	280	37.436	0.286	8.4	0.3235	0.0000	SURCHARGED
360 minute winter	3	280	37.437	0.137	6.3	0.0387	0.0000	OK
360 minute winter	4	280	37.437	0.237	8.5	0.2676	0.0000	SURCHARGED
360 minute winter	13	272	37.435	0.535	10.0	0.6052	0.0000	SURCHARGED

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
360 minute summer	6	2.000	7	2.7	0.712	0.050	0.1358	
360 minute summer	1	1.000	2	2.7	0.482	0.057	0.0350	
360 minute winter	7	2.001	8	4.2	0.441	0.058	3.0388	
360 minute summer	2	1.001	3	5.6	0.617	0.123	0.1192	
360 minute winter	8	1.005	13	6.1	0.276	0.039	0.1837	
360 minute summer	9	3.000	12	2.9	0.390	0.075	0.9394	
360 minute winter	10	4.000	11	2.1	0.442	0.044	0.4819	
360 minute winter	11	4.001	12	4.2	0.572	0.101	0.3086	
360 minute winter	12	3.001	13	8.4	0.304	0.144	0.7963	
360 minute winter	3	1.002	4	6.4	0.679	0.157	0.5337	
360 minute winter	4	1.003	5	8.4	0.761	0.192	0.5584	
360 minute winter	13	Hydro-Brake®	13_OUT	6.2				168.5

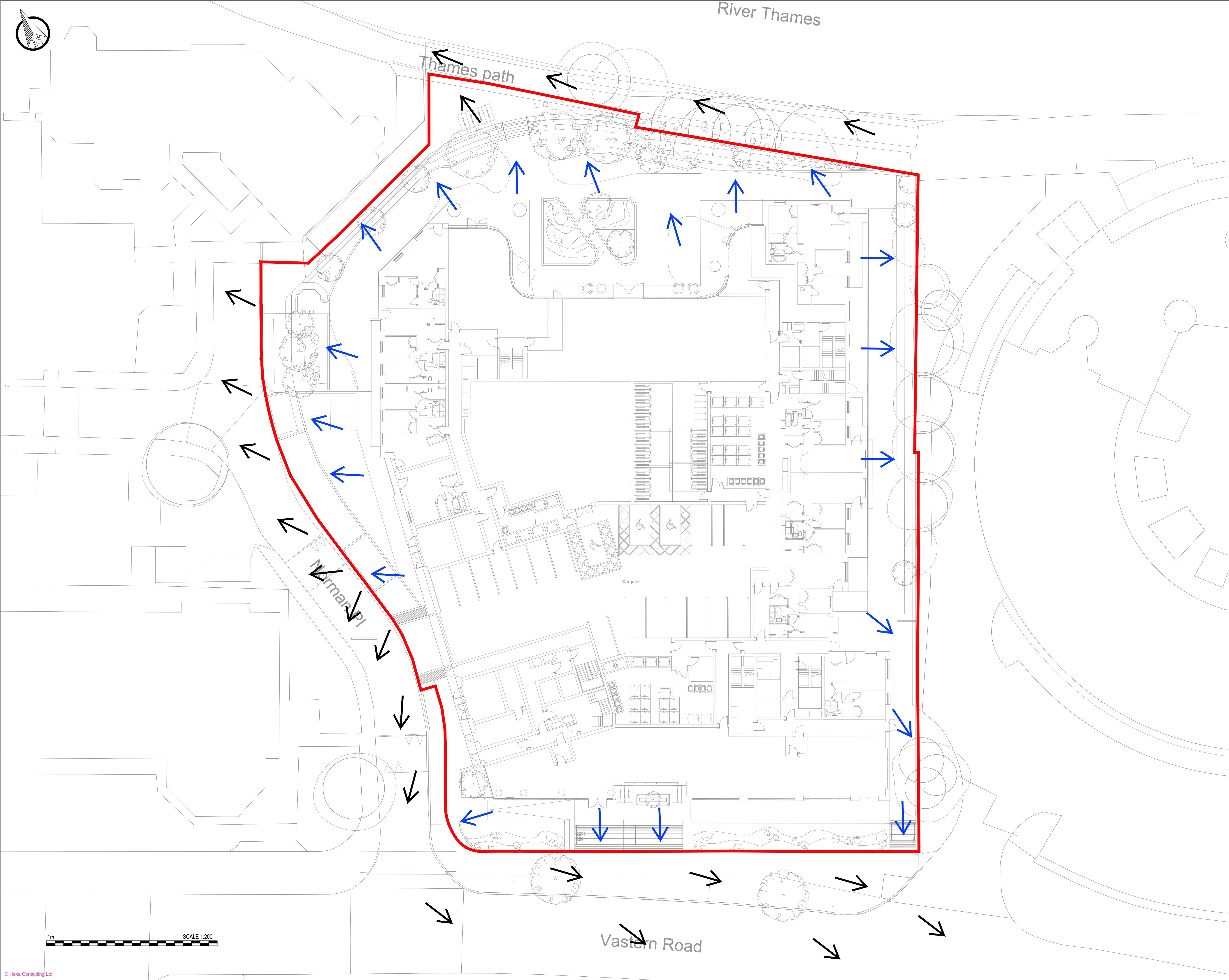


Results for 100 year Critical Storm Duration. Lowest mass balance: 99.93%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
360 minute summer	13_OUT	8	36.800	0.000	5.8	0.0000	0.0000	OK
360 minute winter	5	280	37.436	0.336	8.4	0.3804	0.0000	SURCHARGED

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
360 minute winter	5	1.004	8	8.0	0.727	0.217	1.1836	

Appendix J – Flood Exceedance Plan



Notes

1.

Do not scale this drawing. All dimensions must be checked/ verified on site. If in doubt ask.

2.

This drawing is to be read in conjunction with all relevant architects, engineers and specialists drawings and specifications.

3.

All dimensions in meters unless noted otherwise. All levels in metres unless noted otherwise.

4.

Any discrepancies noted on site are to be reported to the engineer immediately.

5.

This drawing should be printed and read in colour.

Design Notes

1.

THIS DRAWING IS BASED ON THE FOLLOWING DRAWINGS:
• A4012E-ASA-XX-00-DR-L-0200-P4 - LANDSCAPE PROPOSALS
GROUND FLOOR PLAN (RECEIVED 21.10.25)

Legend

PROPOSED RED LINE BOUNDARY

PROPOSED LEVELS FLOW ARROW

EXISTING LEVELS FLOW ARROW

P02	29.10.25	UPDATED LANDSCAPING	LW	RR
P01	28.02.25	INITIAL ISSUE	AR	RR
Rev	Date	Details of Issue	Drawn	Rwd

Issues & Revisions

Consultant

HEXA

Client

PACKAGED LIVING

Project Title

NORMAN PLACE, READING

Drawing Title

FLOOD EXCEEDANCE PLAN

Drawn By	AR	Reviewed By	RR
Hexa Ref	700135	Scale at A1	1:200

Purpose of Issue

FOR INFORMATION

Status

S2

Project - Originator - Zone - Level - Type - Role - Number

700135-HEX-ZZ-ZZ-DR-C-9203

Revision

P02