MODELLED FLOWS

				Return Period												
Node Label	**Easting**	**Northing**	**2 yr**	**5 yr**	**10 yr**	**20 yr**	**30 yr**	**50 yr**	**75 yr**	**100 yr**	**100yr + 20%**	**100yr + 25%**	**100yr + 35%**	**100yr + 70%**	**250 yr**	**1000yr**
138In1	506174	182967	7.60	9.31	10.54	12.24	13.11	14.37	15.36	16.12	18.34	18.91	19.88	22.61	19.34	24.64
138In2	506170	182935	7.60	9.31	10.54	12.24	13.11	14.37	15.36	16.12	18.29	18.86	19.84	22.50	19.30	24.28
137	506156	182898	7.60	9.31	10.54	12.24	13.10	14.37	15.36	16.12	18.26	18.77	19.61	21.83	19.13	23.57
137In1	506151	182874	7.71	9.42	10.65	12.35	13.23	14.50	15.45	16.15	18.06	18.52	19.20	21.02	18.82	22.39
137a	506147	182846	7.71	9.42	10.65	12.34	13.22	14.50	15.49	16.27	18.52	19.10	20.18	23.62	19.58	26.04
136	506147	182832	7.71	9.42	10.65	12.34	13.22	14.50	15.49	16.27	18.52	19.10	20.18	23.62	19.58	26.04
136a	506145	182792	7.71	9.42	10.65	12.34	13.22	14.49	15.49	16.27	18.52	19.10	20.18	23.68	19.59	26.51
07132_003	506145	182761	7.71	9.42	10.65	12.34	13.22	14.49	15.49	16.27	18.52	19.10	20.18	23.64	19.58	26.50
07132_002	506145	182756	7.71	9.42	10.65	12.34	13.22	14.49	15.49	16.27	18.52	19.10	20.18	23.67	19.58	26.60
07132_001	506145	182750	7.71	9.42	10.65	12.34	13.21	14.49	15.49	16.27	18.52	19.10	20.18	23.79	19.58	26.91
135b	506149	182716	7.71	9.42	10.65	12.33	13.21	14.49	15.49	16.27	18.51	19.09	20.16	23.66	19.57	26.71
135	506150	182691	7.71	9.42	10.65	12.33	13.21	14.49	15.49	16.27	18.50	19.05	20.02	22.97	19.49	25.15
135D	506150	182683	7.71	9.42	10.65	12.33	13.21	14.49	15.49	16.27	18.50	19.05	20.02	22.97	19.49	25.15
134	506141	182648	7.71	9.42	10.65	12.33	13.15	14.34	15.29	16.03	18.20	18.76	19.78	23.04	19.22	25.67
134In1	506119	182614	7.71	9.42	10.65	12.32	13.18	14.28	15.15	15.84	17.80	18.30	19.22	22.16	18.71	24.59
134In2	506112	182576	7.71	9.42	10.65	12.32	13.00	13.95	14.87	15.61	17.78	18.35	19.41	22.80	18.83	25.61
134In3	506108	182534	7.71	9.42	10.65	12.18	12.70	13.47	14.00	14.48	15.98	16.37	17.09	19.46	16.69	21.46
134In4	506100	182491	7.71	9.42	10.64	11.80	11.80	12.92	14.11	15.05	17.75	18.46	19.78	23.86	19.05	27.16
133	506092	182442	7.71	9.42	10.65	12.25	12.44	12.46	12.54	12.72	13.28	13.41	13.57	14.31	13.48	14.98
P16	506095	182433	7.71	9.42	10.65	12.25	12.44	12.46	12.54	12.72	13.28	13.41	13.57	14.31	13.48	14.98
P16a	506093	182422	7.71	9.42	10.64	12.25	12.51	12.67	12.89	13.14	13.46	13.46	13.48	13.44	13.48	13.40
P14	506092	182412	7.71	9.42	10.64	12.25	12.51	12.67	12.89	13.14	13.46	13.46	13.48	13.44	13.48	13.40
P13	506086	182372	7.71	9.42	10.65	12.25	12.94	13.88	14.50	15.05	16.32	16.54	16.92	18.02	16.67	18.41
130	506068	182348	7.71	9.42	10.64	12.25	13.16	14.52	15.51	16.27	18.46	19.01	20.01	23.21	19.45	25.48

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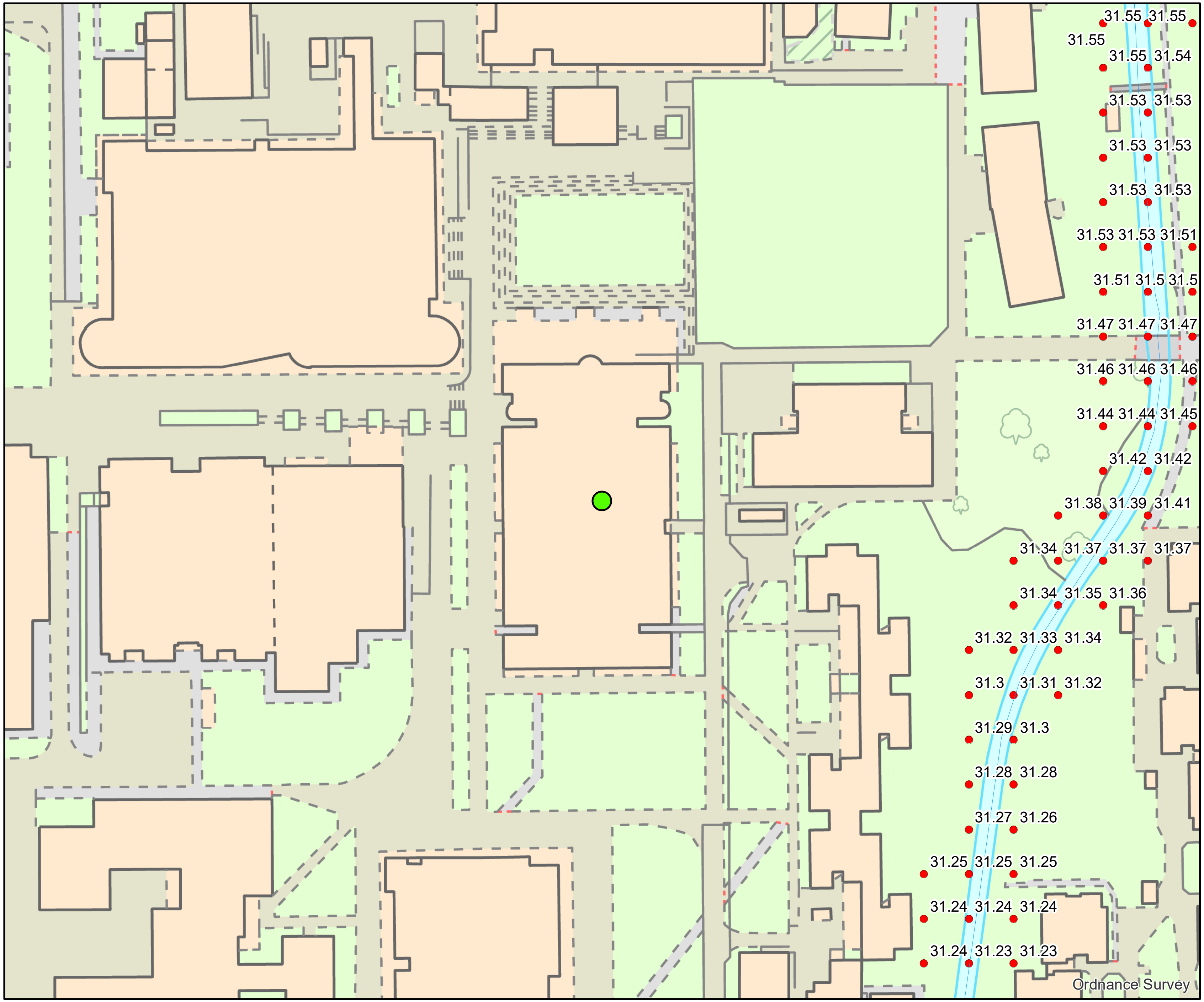

Environment Agency

Environment Agency
Alchemy,
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Welwyn Garden City,
Hertfordshire,
AL7 1HE

N

0 15 30 60
Metres

Legend

Statutory Main Rivers

Site location

2D Node Results: Heights

1 in 2 year (50%) Defended

The data in this map has been extracted from the River Pinn Mapping Study (JBA, 2015).
This model has been designed for catchment wide flood risk mapping. It should be noted that it was not created to produce flood levels for specific development sites within the catchment.
Modelled outlines take into account catchment wide defences.

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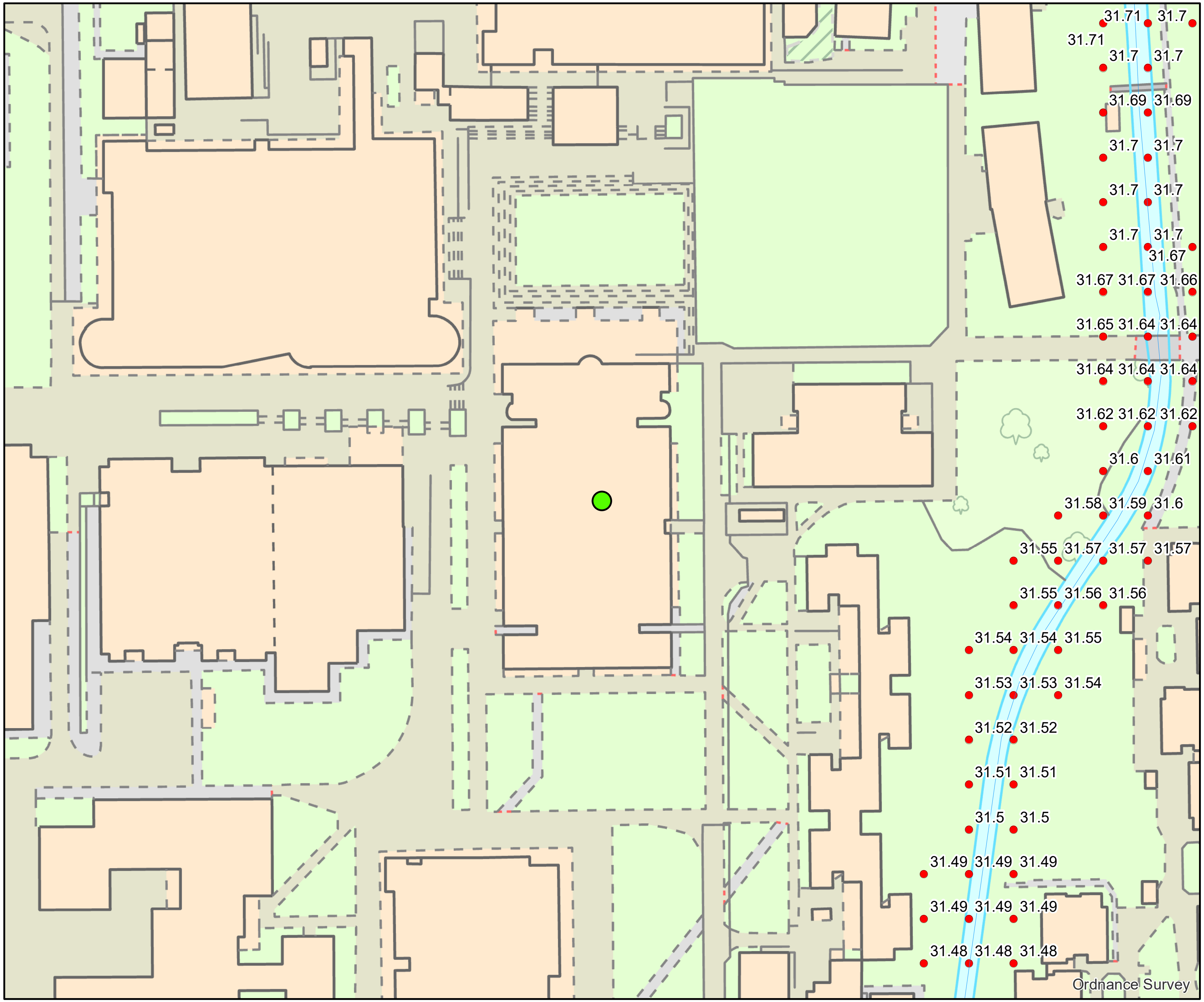

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Statutory Main Rivers

Site location

2D Node Results: Heights

1 in 5 year (20%) Defended

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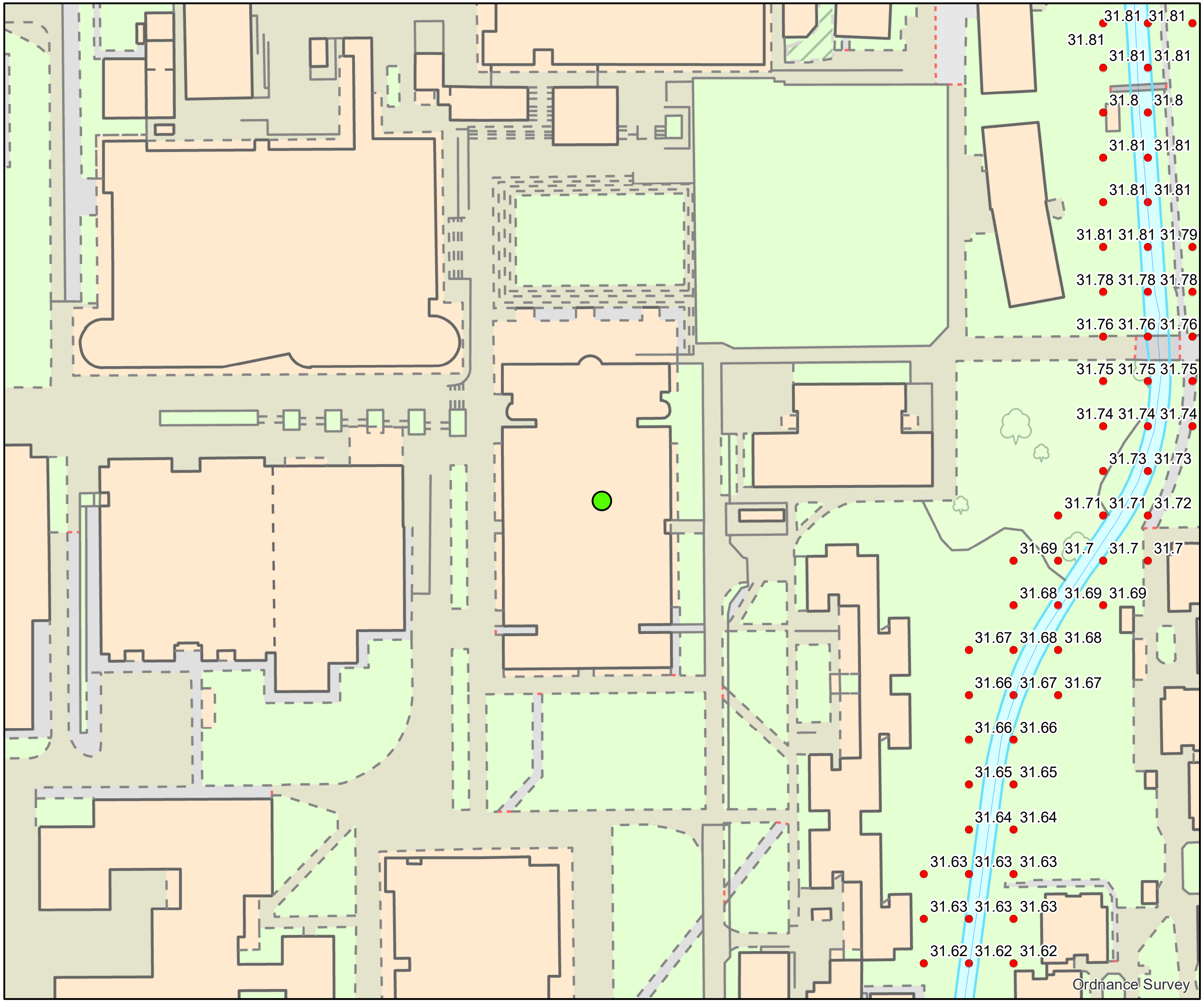

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Statutory Main Rivers

Site location

2D Node Results: Heights

1 in 10 year (10%) Defended

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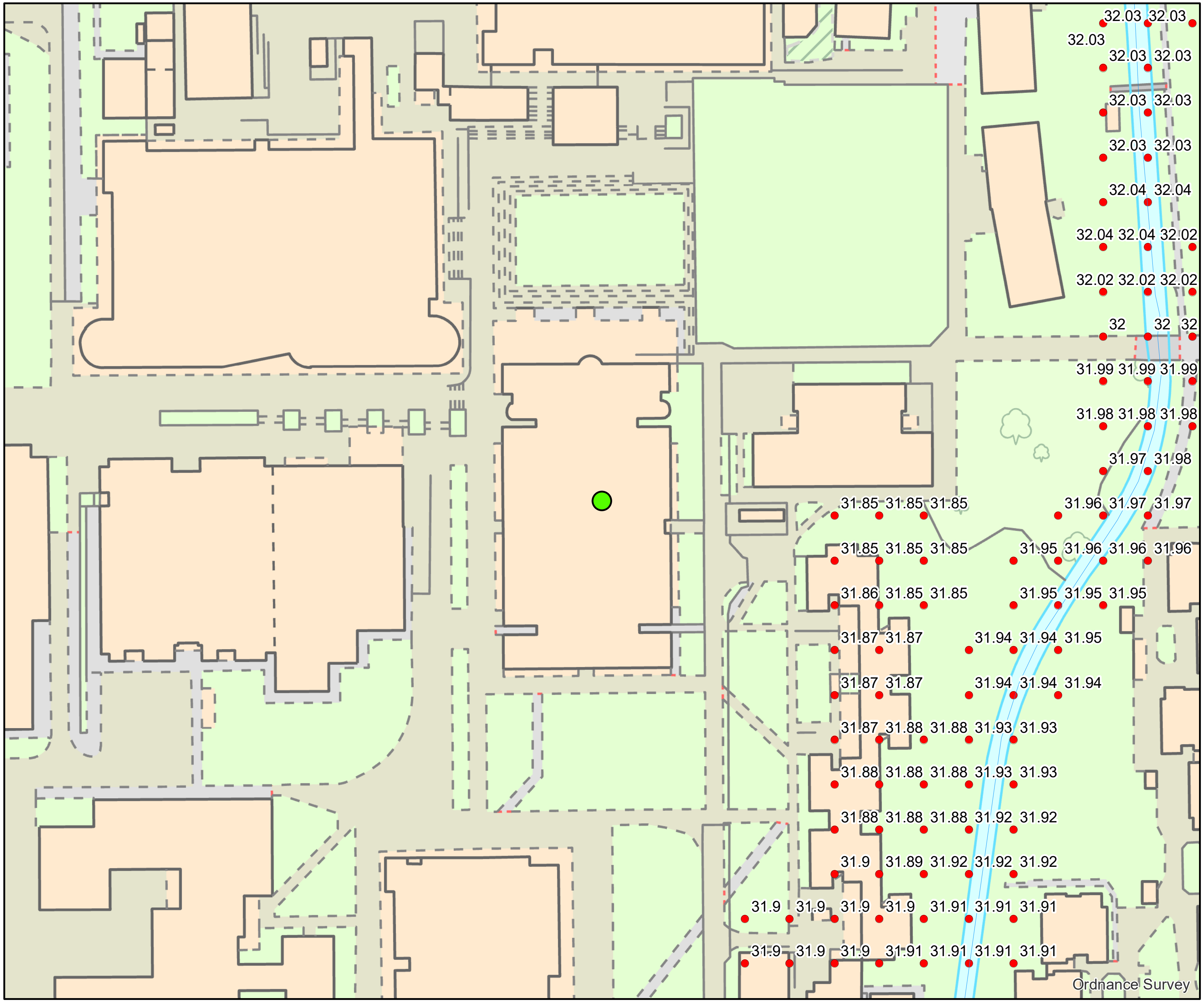

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Statutory Main Rivers

Site location

2D Node Results: Heights

1 in 20 year (5%) Defended

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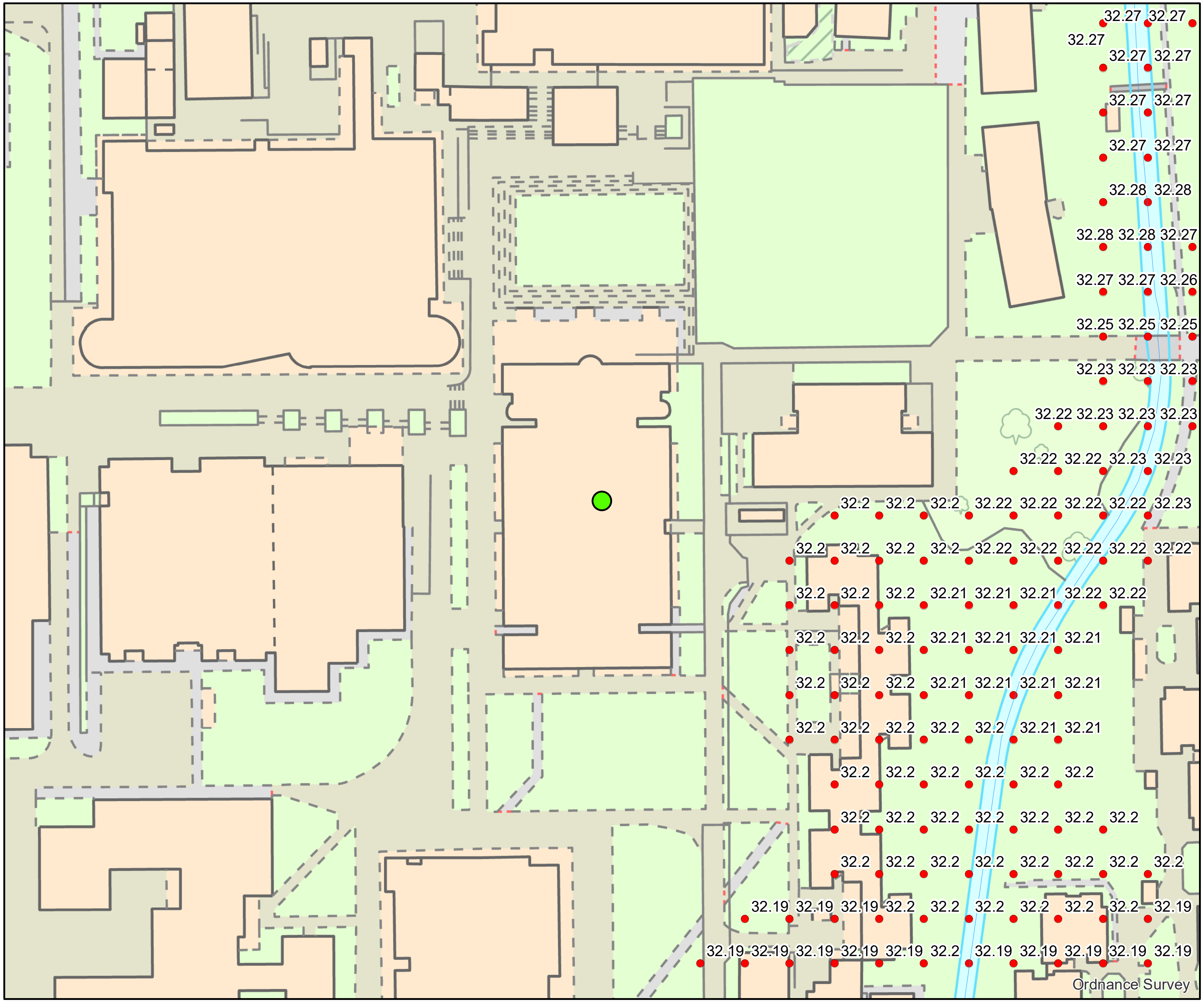

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AL7 1HE

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Metres

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Statutory Main Rivers

Site location

2D Node Results: Heights

1 in 30 year (3.33%) Defended

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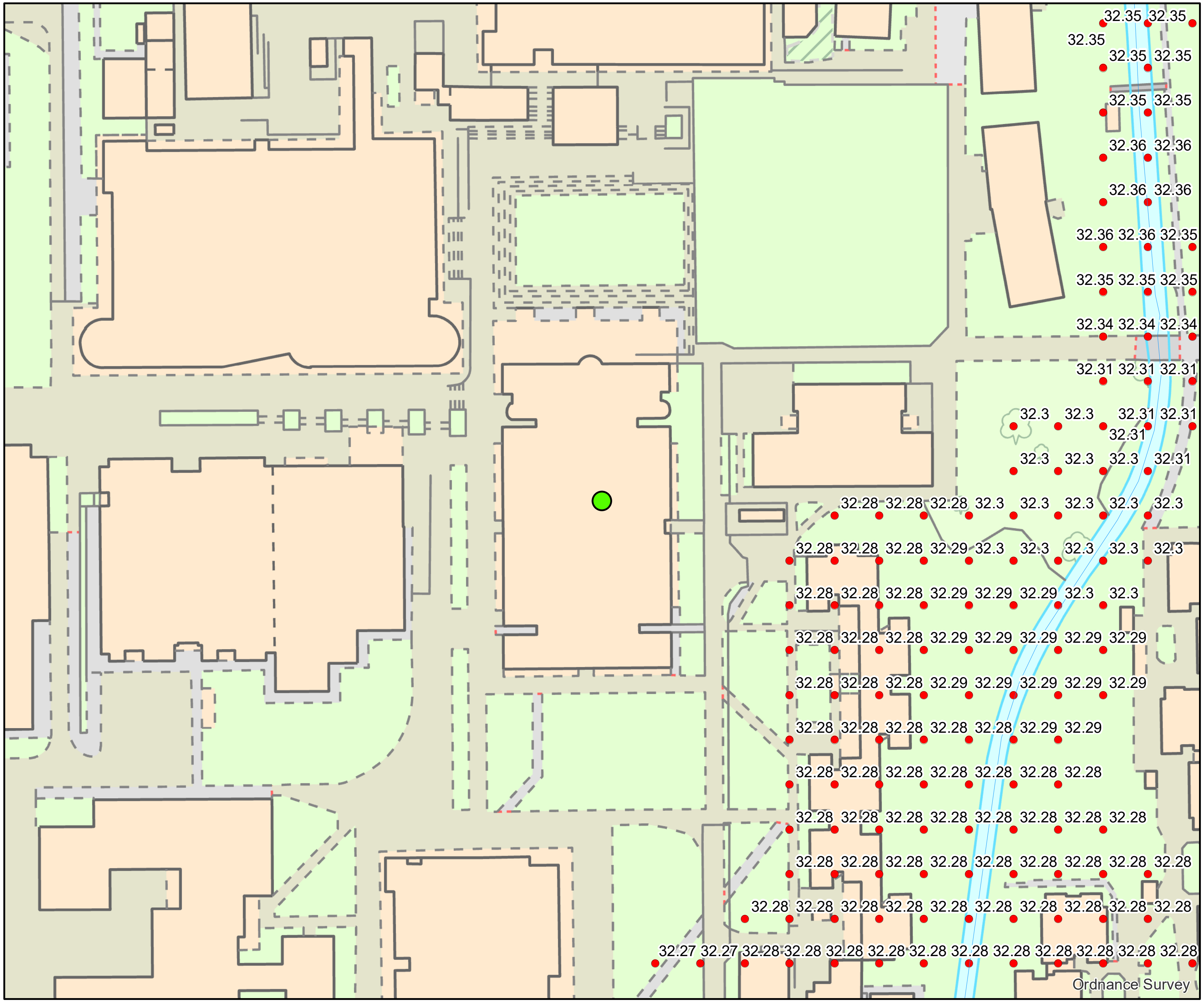

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Metres

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Statutory Main Rivers

Site location

2D Node Results: Heights

1 in 50 year (2%) Defended

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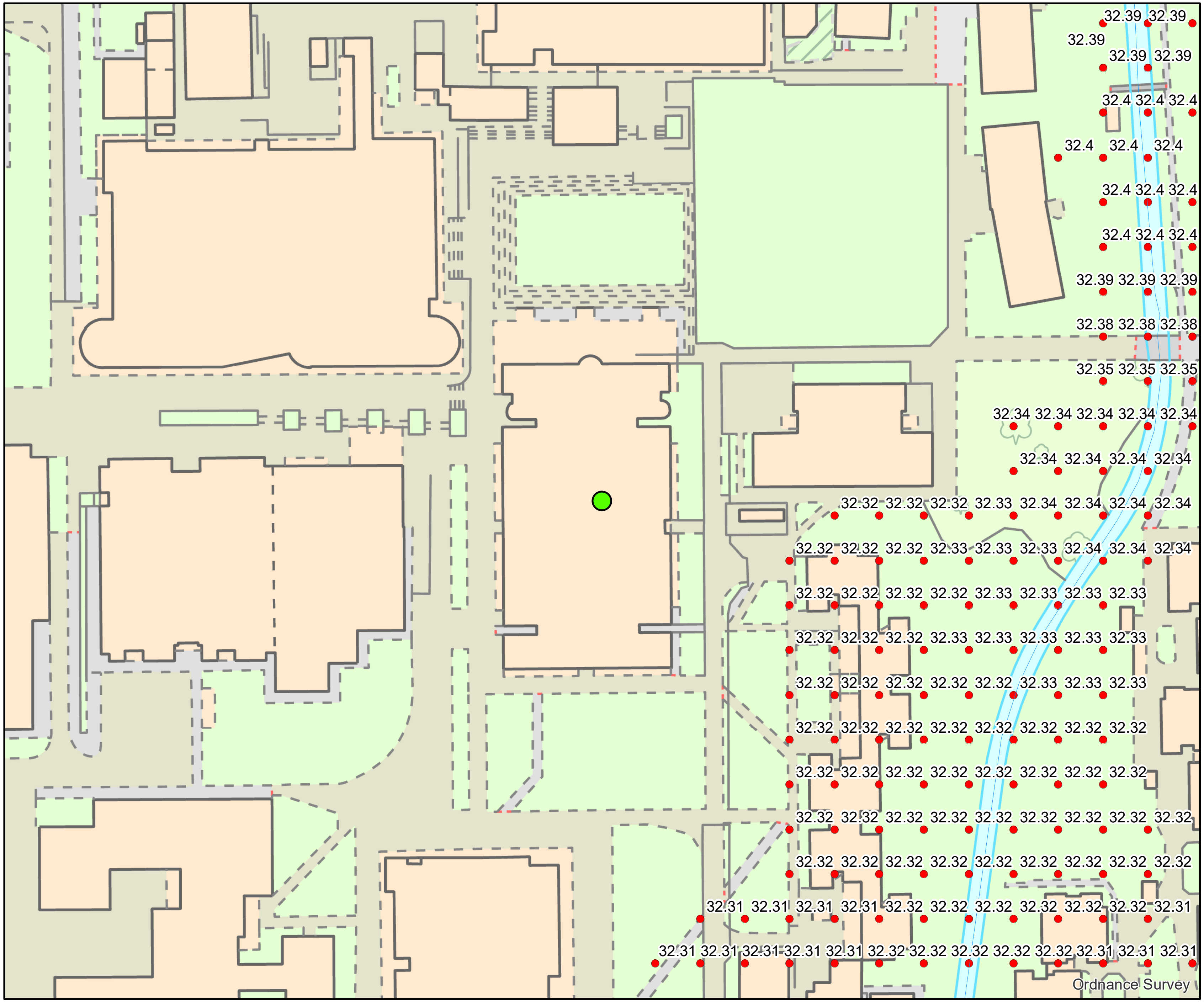

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Metres

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Statutory Main Rivers

Site location

2D Node Results: Heights

1 in 75 year (1.33%) Defended

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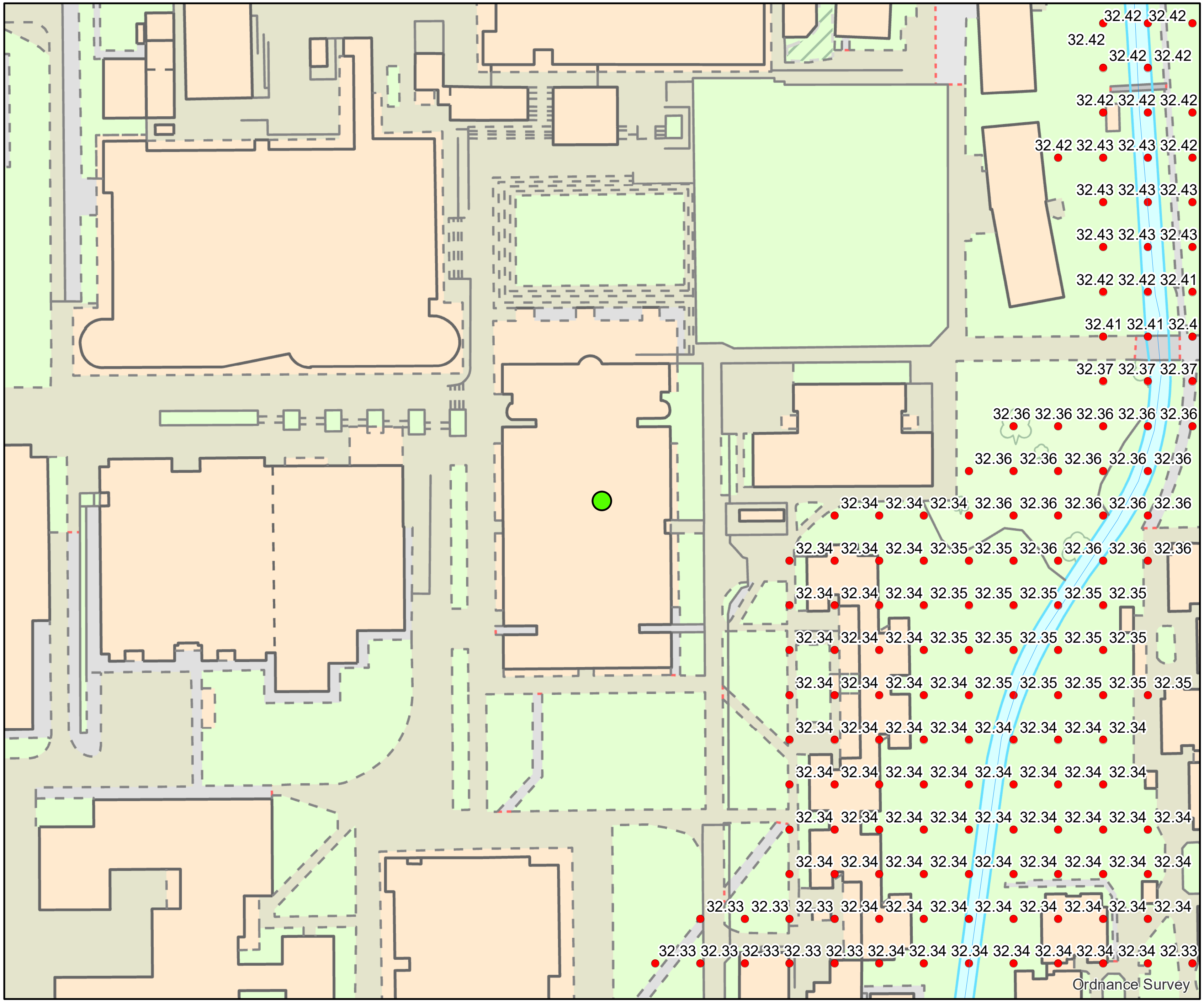

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Metres

Legend

Statutory Main Rivers

Site location

2D Node Results: Heights

1 in 100 year (1%) Defended

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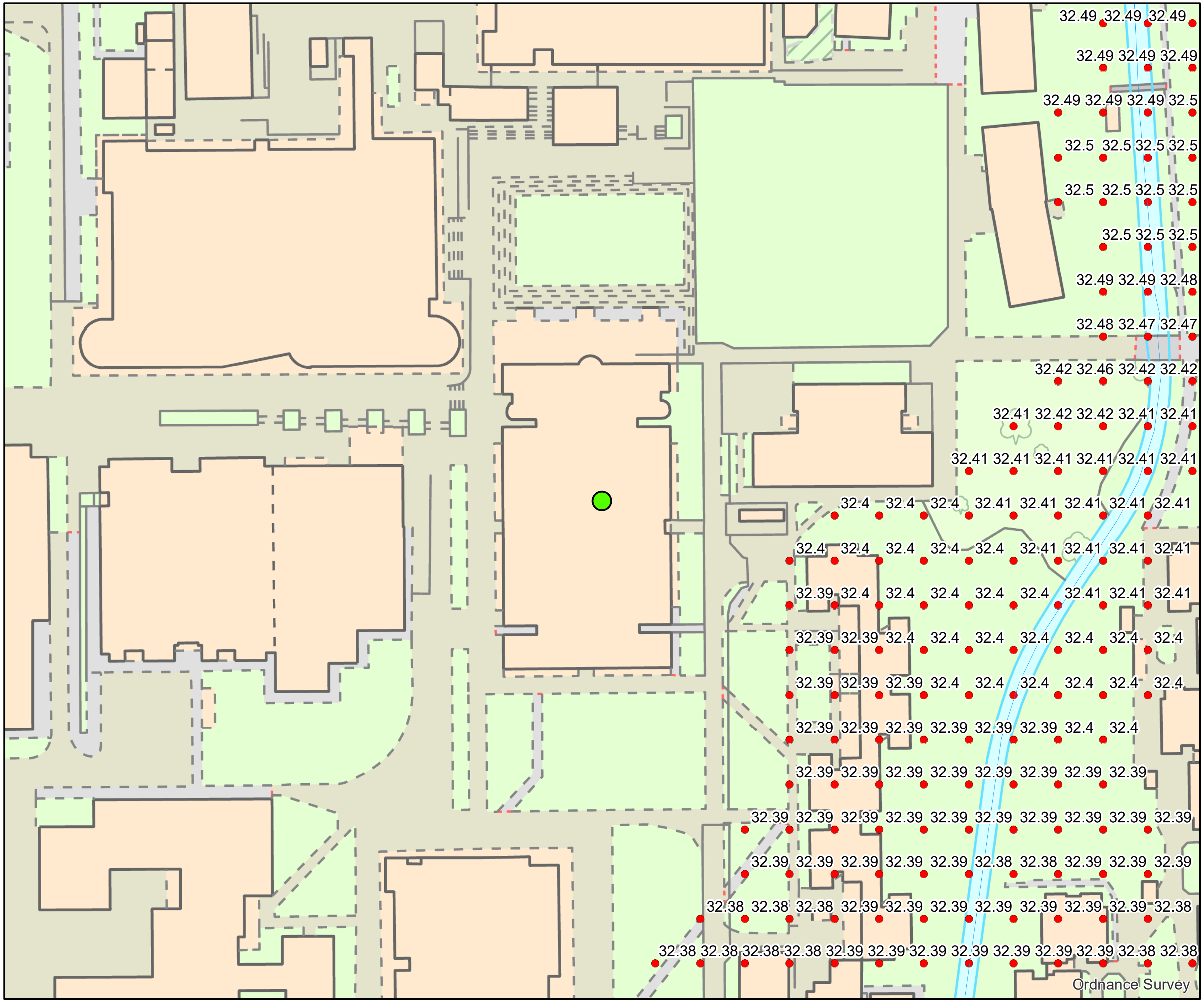

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Metres

Legend

Statutory Main Rivers

Site location

2D Node Results: Heights

1 in 100 year + 20% (*CC) Defended

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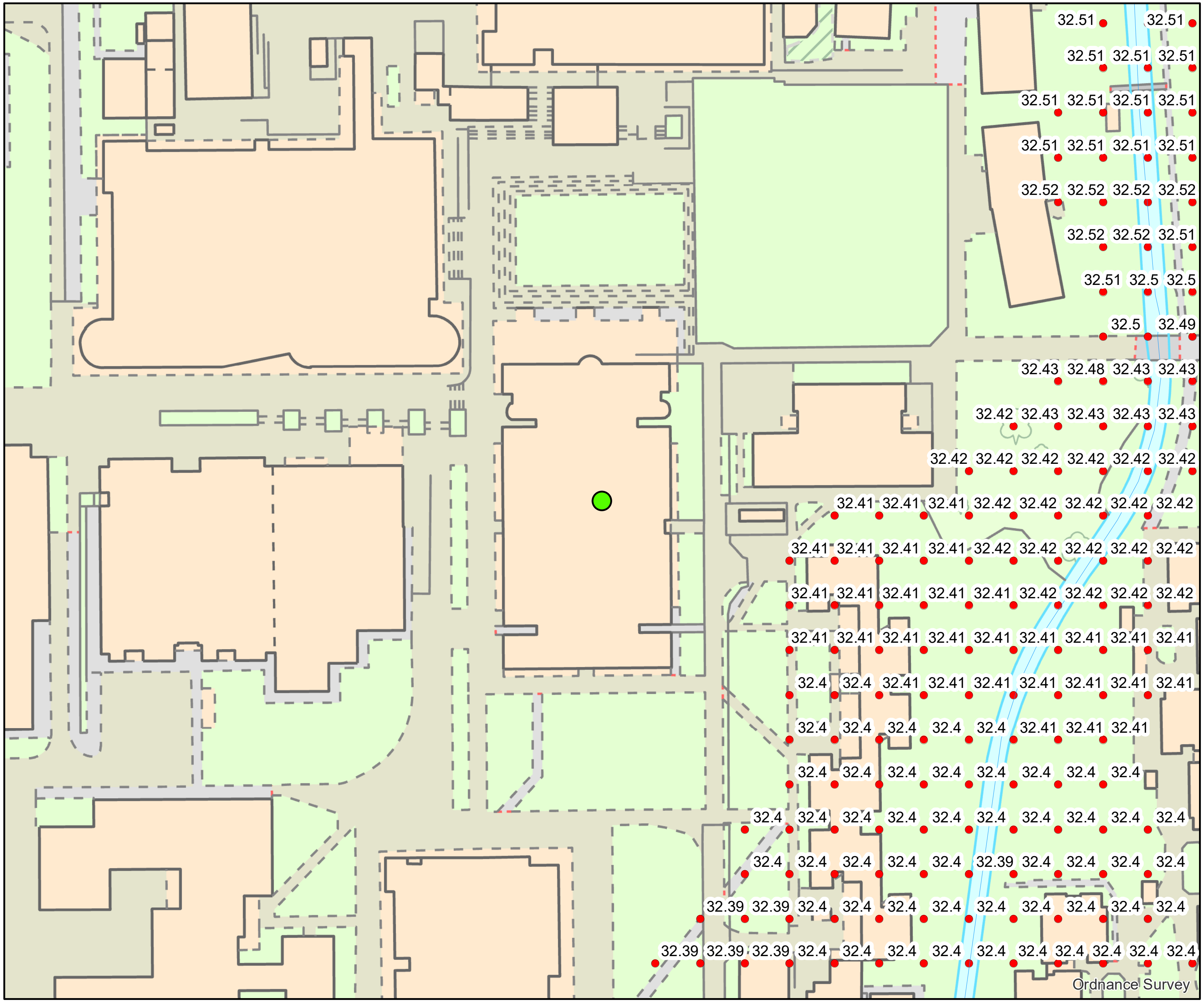

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N

0 15 30 60
Metres

Legend

Statutory Main Rivers

Site location

2D Node Results: Heights

1 in 100 year + 25% (*CC) Defended

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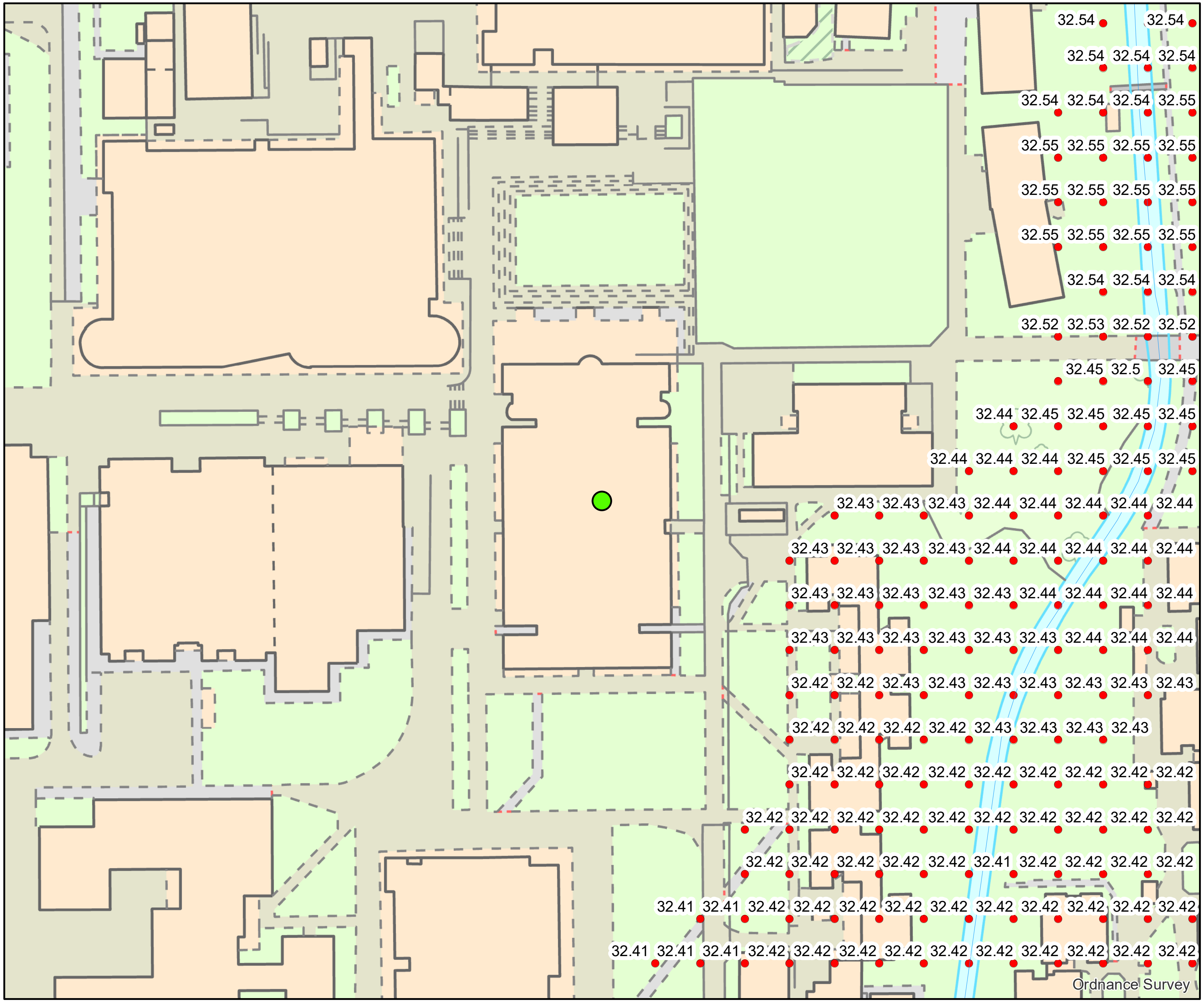

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N

0 15 30 60
Metres

Legend

Statutory Main Rivers

Site location

2D Node Results: Heights

1 in 100 year + 35% (*CC) Defended

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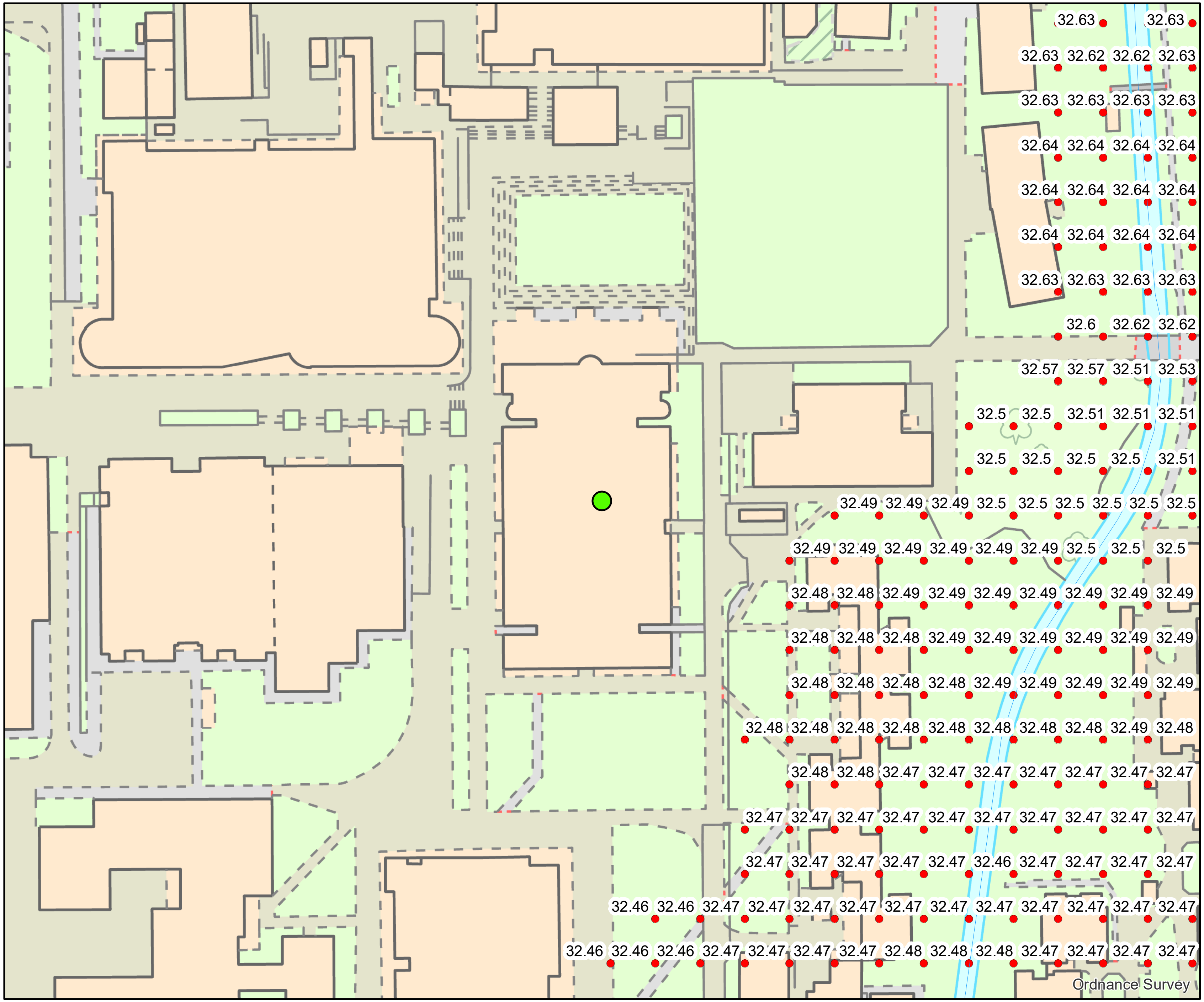

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Alchemy,
Bessemer Road,
Welwyn Garden City,
Hertfordshire,
AL7 1HE

N

0 15 30 60
Metres

Legend

Statutory Main Rivers

Site location

2D Node Results: Heights

1 in 100 year + 70% (*CC) Defended

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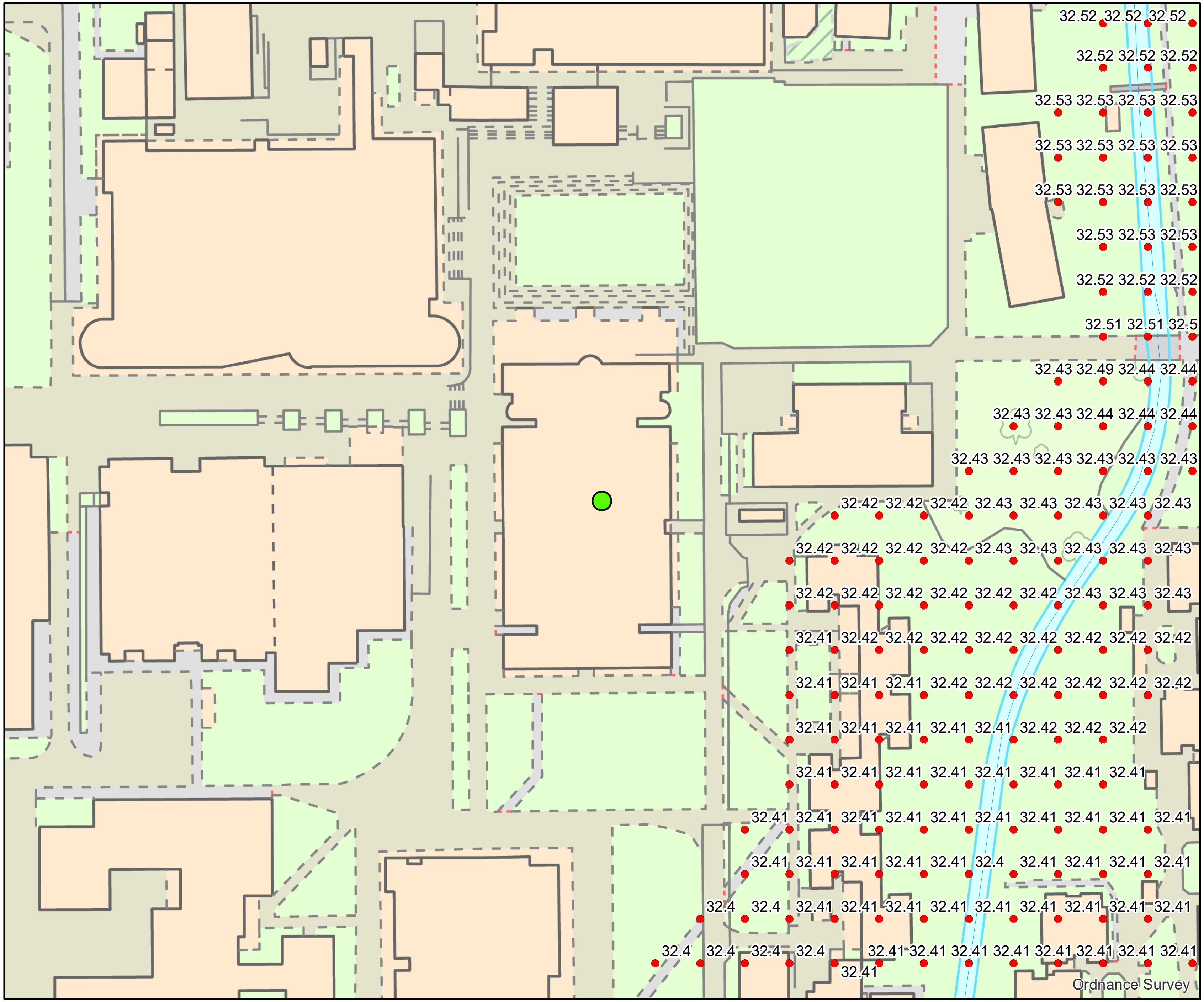

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N

0 15 30 60
Metres

Legend

Statutory Main Rivers

Site location

2D Node Results: Heights

1 in 250 year (0.4%) Defended

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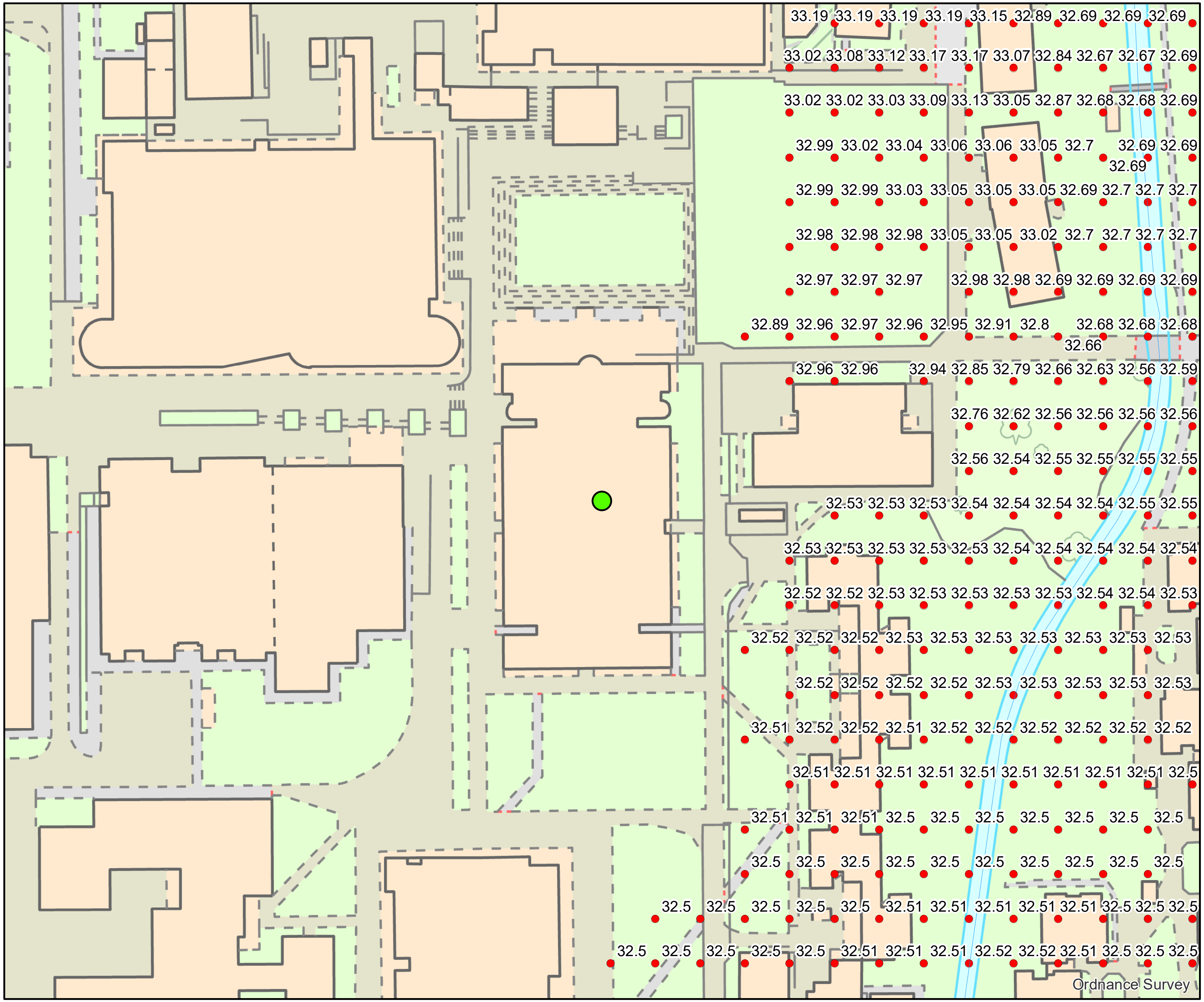

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N

0 15 30 60
Metres

Legend

Statutory Main Rivers

Site location

2D Node Results: Heights

1 in 1000 year (0.1%) Defended

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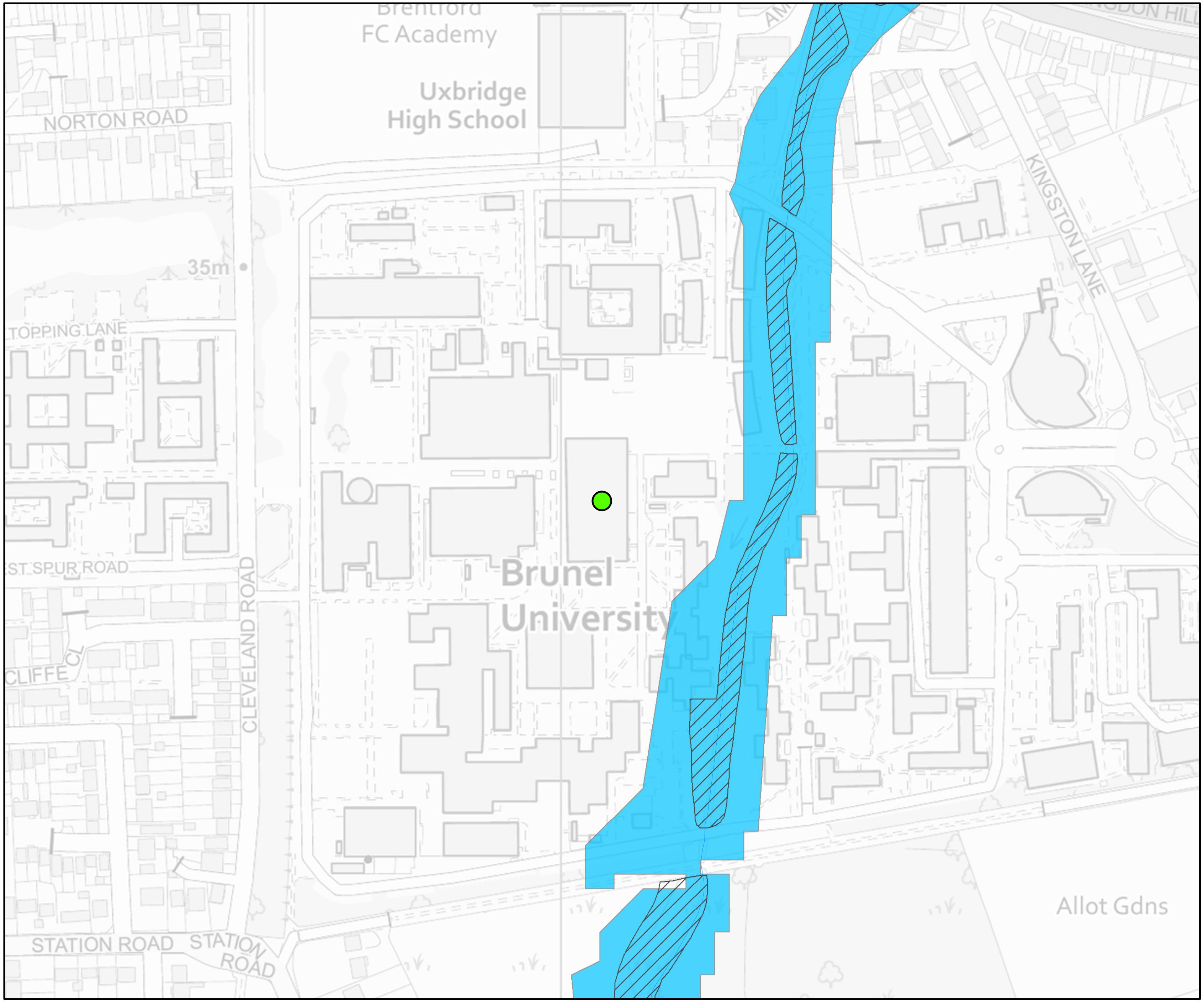
Hertfordshire & North London

Historic Flood Map centred on: Brunel University, Kingston Lane, Uxbridge, UB8 3PH - 02/03/2023 - HNL 301043 WD



Environment Agency

Environment Agency
Alchemy,
Bessemer Road,
Welwyn Garden City,
Hertfordshire,
AL7 1HE

N

0 50 100 200
Metres

Legend

Statutory Main Rivers

Site location

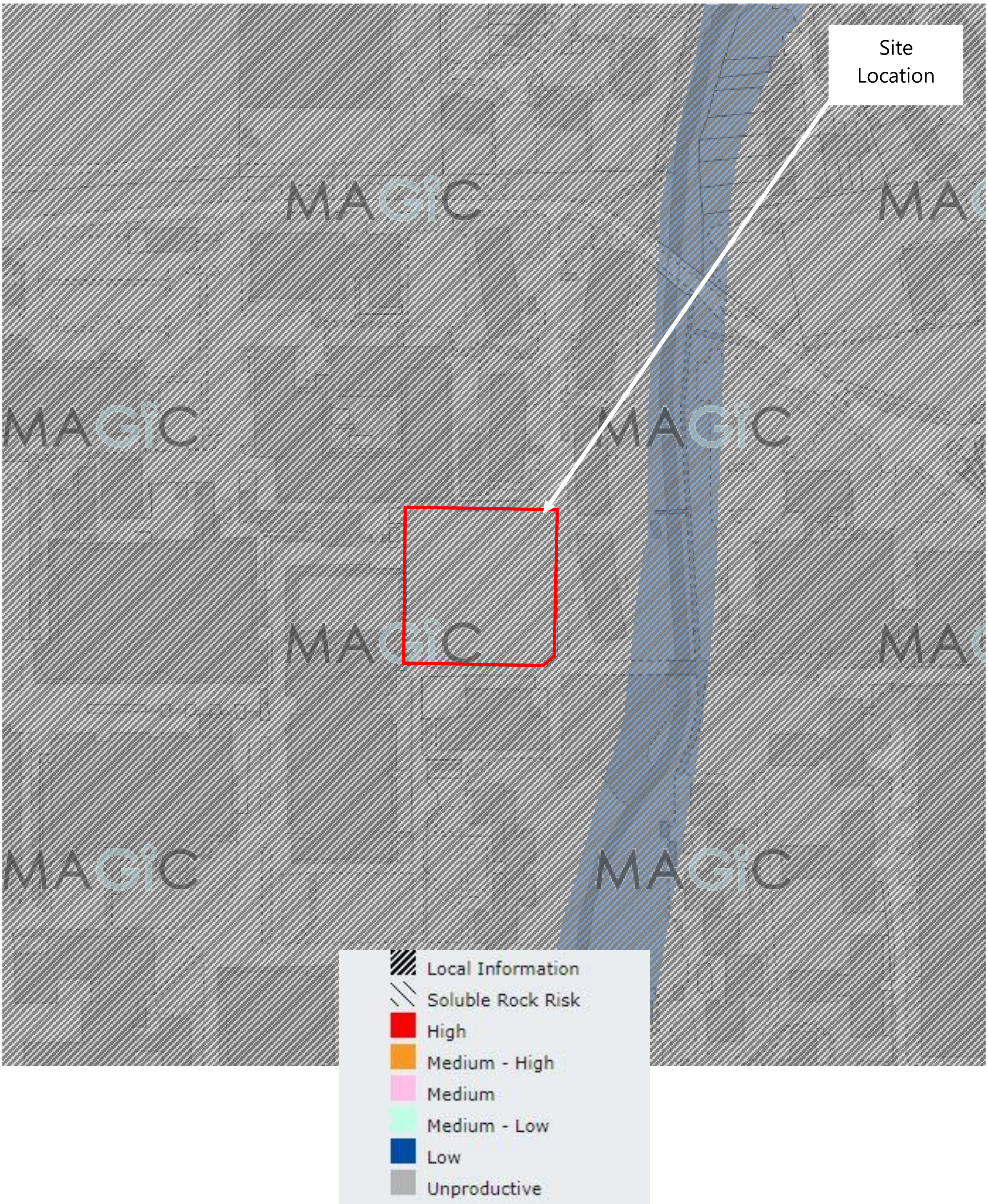
Flood Event Outlines

1977

1988

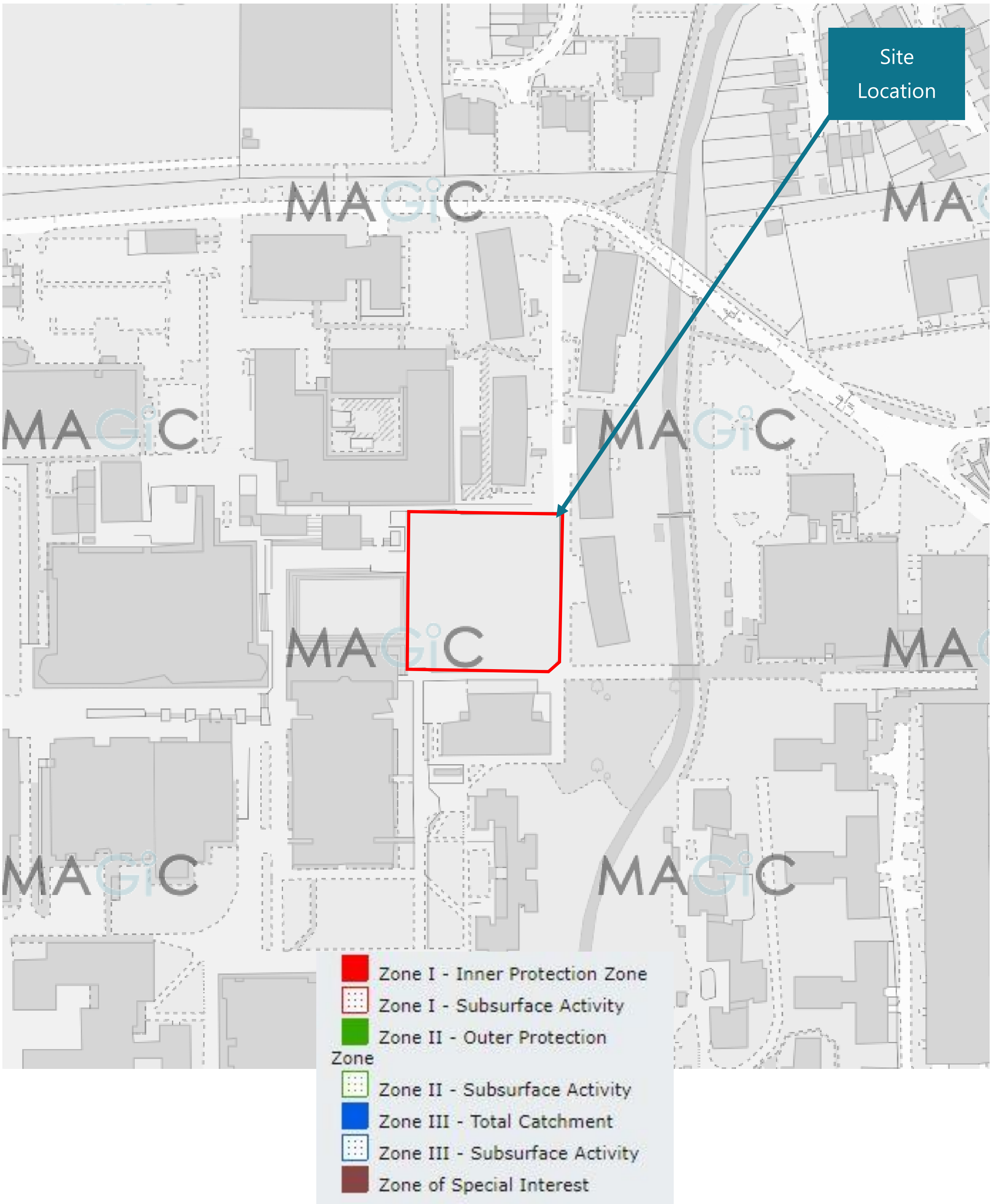
The historic flood event outlines are based on a combination of anecdotal evidence, Environment Agency staff observations and survey.
Our historic flood event outlines do not provide a definitive record of flooding.
It is possible that there will be an absence of datain places where we have not been able to record the extent of flooding.
It is also possible for errors occur in the digitisation of historic records of flooding.

Produced by:
Partnerships & Strategic Overview,
Hertfordshire & North London



<u>Environment Agency's Online Groundwater Vulnerability Zones Map</u>

The site overlies an 'Unproductive' Aquifer

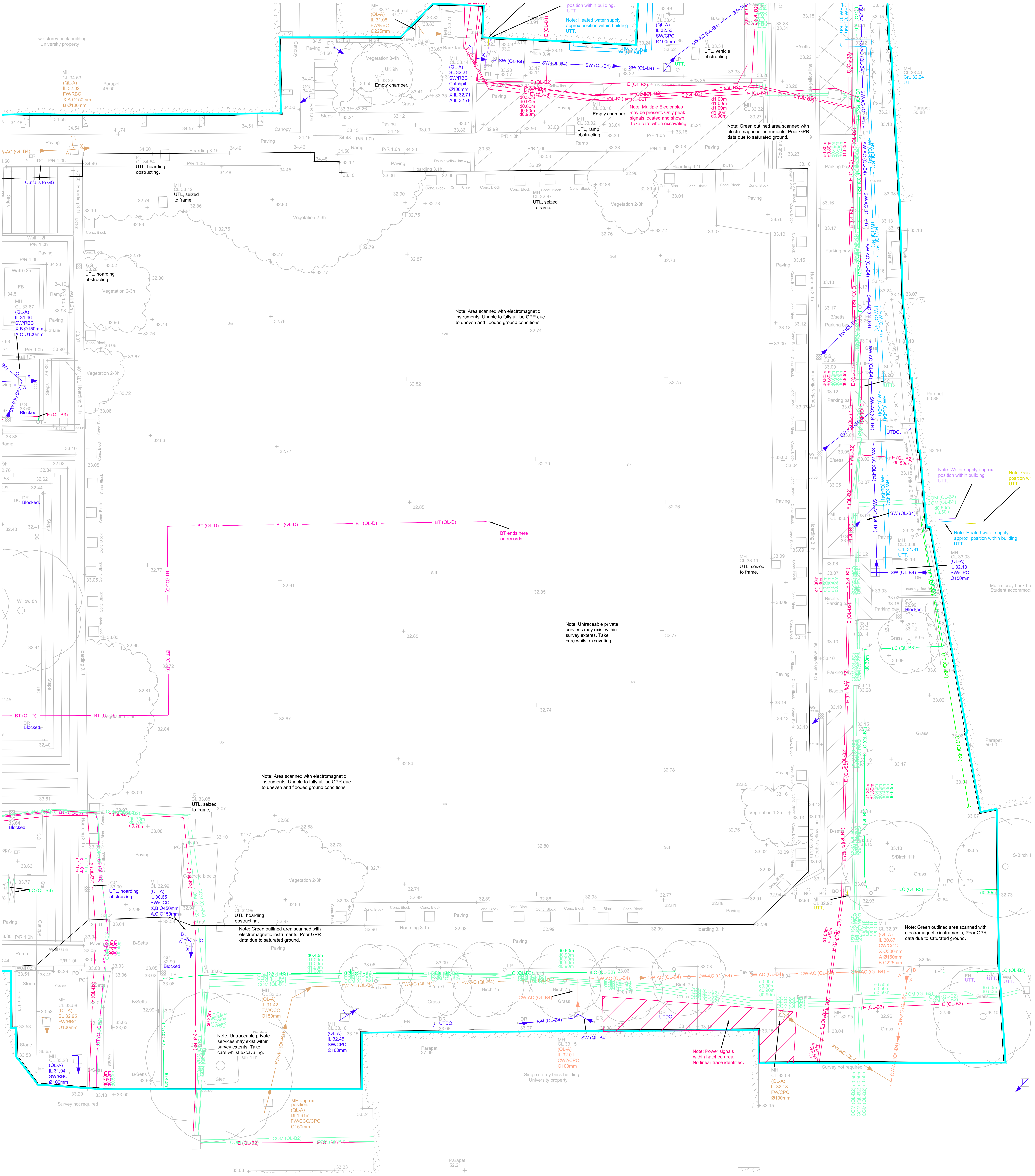


<u>**Environment Agency's Online Groundwater Source Protection Zones Map**</u>

The site is removed from all Groundwater Source Protection Zones

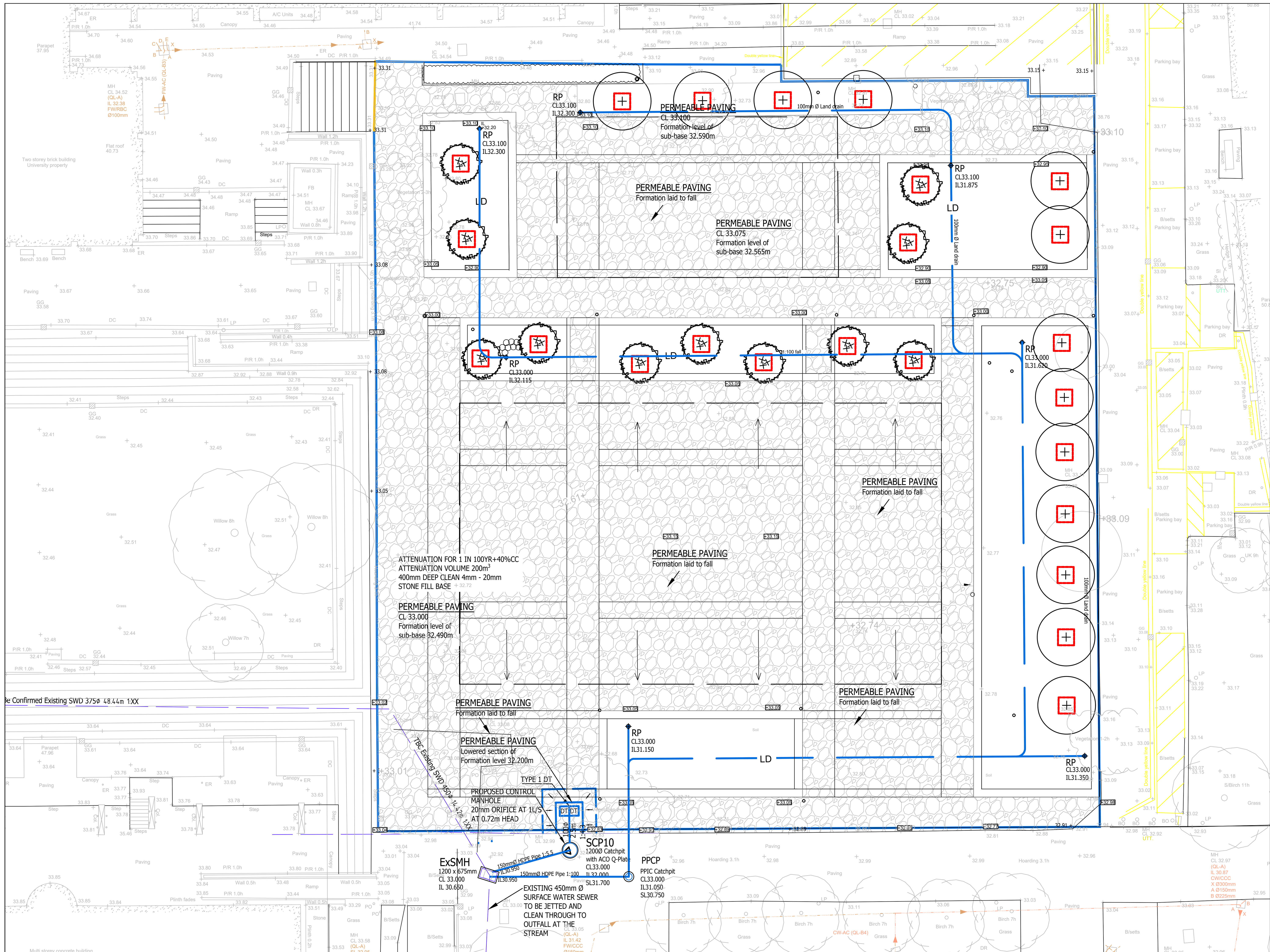
Appendix C

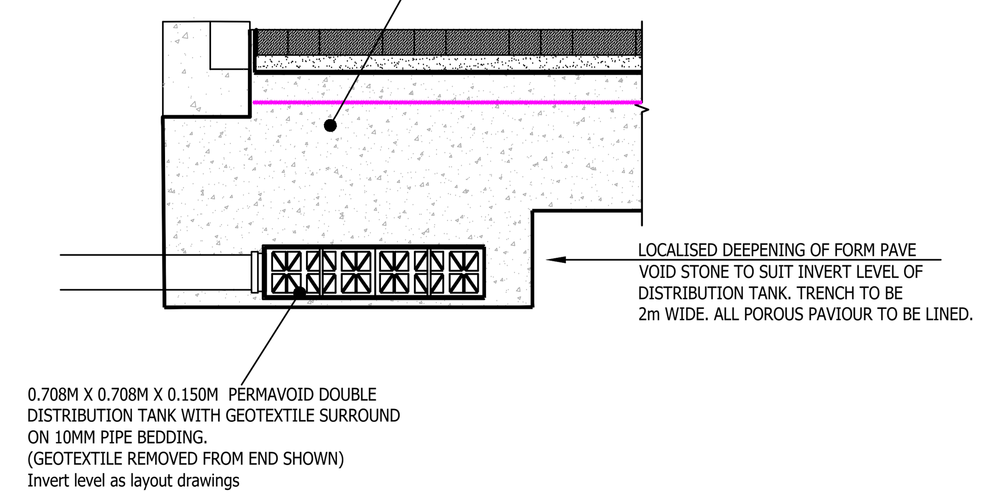
Topographic Survey


Two storey brick building
University property
Note: Heated water supply approx.position within building. UTT.
Note: Multiple Elec cables may be present. Only peak signals located and shown. Take care when excavating.
Note: Green outlined area scanned with electromagnetic instruments. Poor GPR data due to saturated ground.
Note: Area scanned with electromagnetic instruments. Unable to fully utilise GPR due to uneven and flooded ground conditions.
BT ends here on records.
Note: Untraceable private services may exist within survey extents. Take care whilst excavating.
Note: Water supply approx. position within building. UTT.
Note: Heated water supply approx. position within building. UTT.
Multi storey brick building
Student accommodation
Note: Power signals within hatched area. No linear trace identified.
Single storey brick building
University property
Survey not required
Vegetation 2-3h
Vegetation 1-2h
Hoarding 3.1h
Outfalls to GG
UTL, hoarding obstructing.
UTL, seized to frame.
UTL, ramp obstructing.
UTL, vehicle obstructing.
Empty chamber.

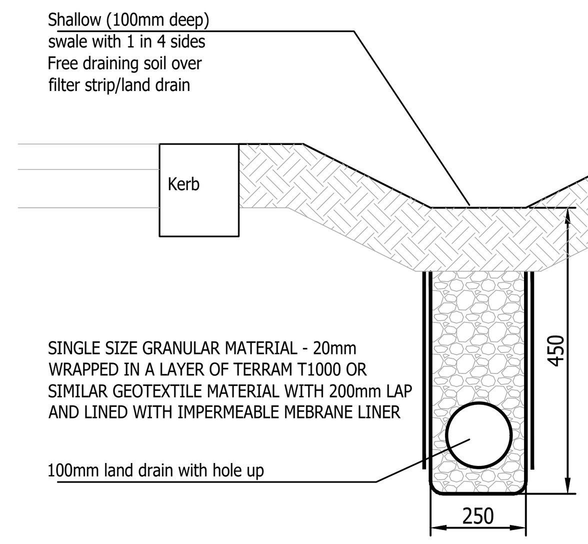
Appendix D

Drainage Strategy Layout & Micro Drainage Calculations

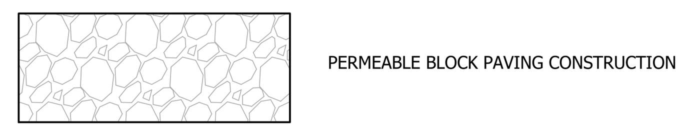




TYPICAL POROUS INLET DETAIL
(MARKED DT ON LAYOUT)



PLANTED AREA WITH FILTER STRIP & LAND DRAIN UNDER



Note:
THE FORMATION LEVELS STATED ON THIS LAYOUT DO NOT INCLUDE THE DEPTH OF CAPPING REQUIRED.

GENERAL NOTES

1. The location, size, depth and identification of existing services that may be shown or referred to on this drawing have been assessed from non intrusive observations , record drawings or the like. The contractor shall safely carry out intrusive investigations, trial holes or soundings prior to commencing work to satisfy himself that it is safe to proceed and that the assessments are accurate. any discrepancies shall be notified to gta prior to works commencing.

2. Tender or billing drawings shall not be used for construction or the ordering of materials.

3. Do not scale. All dimensions and levels to be site confirmed.

4. This drawing shall be read in conjunction with all relevant architects, consultants drawings and specifications, together with H&S plan requirements.

5. Copyright : This drawing must not be copied, amended nor reproduced without the prior written agreement of gta.

6. All drawings specifications and recommendations made by gta are subject to Local Authority and other relevant Statutory Authorities approval. Any works or services made abortive due to the client proceeding prior to these approvals is considered wholly at the Clients risk. gta hold no responsibility for resulting abortive works or costs.

SPECIFICATION NOTES

All drainage shall be constructed and commissioned in accordance with BS EN 295 & BS EN752, Building Regulations Doc. H and any particular requirements of the Building Control Officer.

Drainage pipelines shall be in PVC-u below ground as Marley or similar approved, or vitrified clay.
All sewer pipelines to be VC only.

This drawing shall be read in conjunction with all other relevant drainage drawings, architectural drawings and structural drawings.

For manhole details, gully details, bedding etc, refer to gta detail sheets.

All foul water drain runs shall have a fall of 1:40 or steeper, unless noted otherwise.

All cement used for concrete drainage installations shall be sulphate resistant to class 3 of BRE Digest 363. (Grade ST5)

The use of short radius or 90º bends for changes in direction is not permitted, only long or medium radius 45º bends shall be used. All junctions shall be 45º.

All drains shall have granular bed and surround as class `S` bedding, unless noted otherwise.

All drainage works shall commence from the downstream end first unless agreed otherwise. Outfall level to be checked by contractor prior to any works commencing and any discrepancy identified to engineer prior to laying and drainage.

ABBREVIATIONS

FWD	FOUL DRAIN
SWD	SURFACE WATER DRAIN
MH	MANHOLE
IC	INSPECTION CHAMBER
FIC	450mm DIA. FOUL INSPECTION CHAMBER - D202.6
SIC	450mm DIA. SURFACE WATER INSPECTION CHAMBER - D202.6
FAC	300mm DIA. FOUL ACCESS CHAMBER - D202.18
SAC	300mm DIA. SURFACE WATER ACCESS CHAMBER - D202.18
SVP	SOIL VENT PIPE DROP
SS	STUB STACK OR DIRECT DRAIN CONNECTION
FFL	FINISHED FLOOR LEVEL
SSL	STRUCTURAL SLAB LEVEL
CL	COVER LEVEL
IL	INVERT LEVEL
SL	SUMP LEVEL
BL	BASE LEVEL
CBS	CONCRETE BED & SURROUND
CLASS S	GRANULAR BED & SURROUND
CLASS B	GRANULAR BED

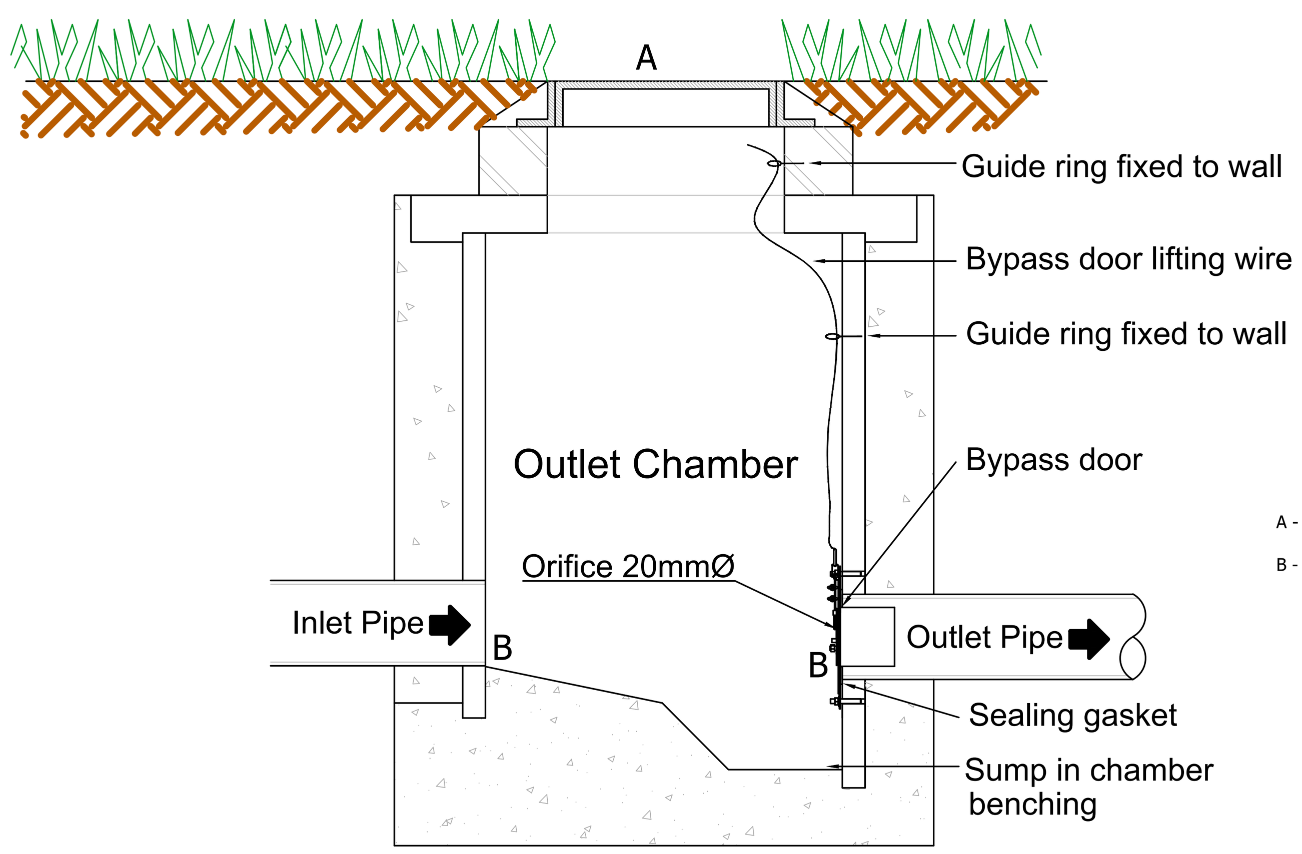
KEY

Existing surface water drain
Private surface water drain
Private Surface Water Manhole
SIC — Surface Water Plastic Inspection Chamber - D202.6

DISTRIBUTION TANKS

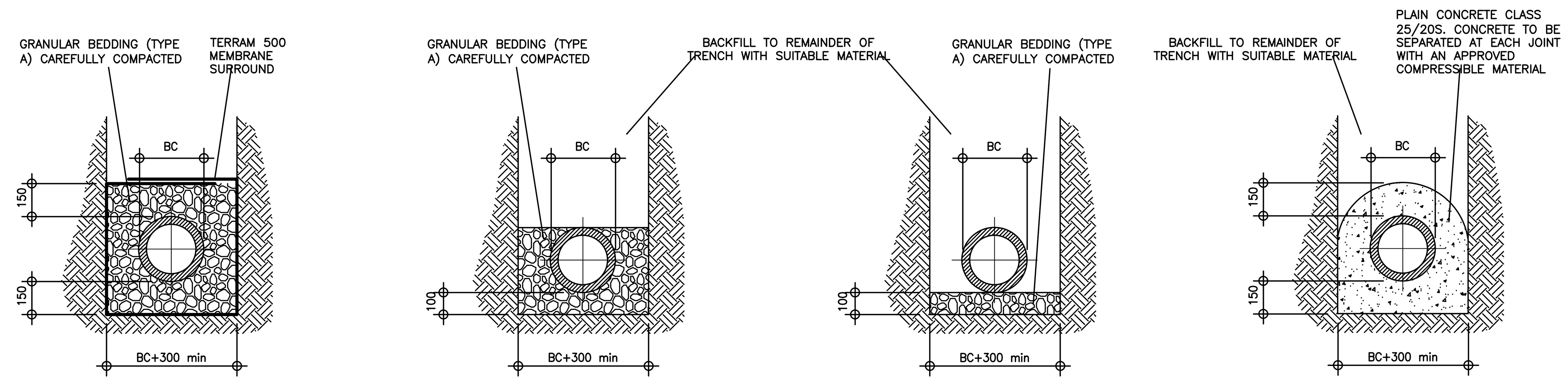
Type	Size	Pipe connection dia.	Max. Drained Area m^2	Max. Flow rate from DT
1	708mm x 708mm x 150mm thick	100ø	100	3 l/s

NOTES:
DT Type 1 specification reference - SEL: PVOD05101. All other types are based on a multiplication of this size and need to be manufactured to order.



A - COVER LEVEL (33.000m AOD)
B - PIPE INVERT LEVEL (32.000m AOD)

1200Ømm CONTROL CHAMBER WITH ACO Q-PLATE FLOW CONTROL



GRANULAR SURROUND
TO BE USED WHERE PIPE PASSES WITHIN 3M OF NEW OR EXISTING TREES UNLESS PIPE REQUIRED CONCRETE SURROUND

GRANULAR SIDE FILL
TO BE USED WHERE COVER TO CROWN OF PIPE IS GREATER THAN 900mm UNDER ROADS, FOOTWAYS & HARDSTANDINGS

GRANULAR BED
TO BE USED WHERE COVER TO CROWN OF PIPE IS GREATER THAN 600mm IN LANDSCAPED AREAS

CONCRETE SURROUND
TO BE USED WHERE COVER TO CROWN OF PIPE IS LESS THAN 900mm UNDER ROADS, FOOTWAYS & HARDSTANDINGS AND LESS THAN 600mm IN LANDSCAPED AREAS

GRANULAR BEDDING TYPE A – SHALL CONSIST OF AGGREGATES FROM NATURAL SOURCES OR SINTERED PULVERISED FUELASH COMPLYING WITH THE RELEVANT PROVISIONS OF BS 882 AND BS 3797 PART 2 RESPECTIVELY. TO BE SIZED ACCORDING TO PIPE DIAMETER TO APPROVED DOCUMENT H OF THE BUILDING REGULATIONS – 5mm TO 10mm SIZE MATERIAL FOR 100mm PIPES, 14mm FOR 150mm PIPES & 20mm FOR PIPES 150–600mm.

PIPE BEDDING DETAILS

Rev	Amendments	Date	Dsn	Chk
P2	DRAINAGE ADJUSTED TO SUIT REPLAN	20.02.23	GS	NS
P1	INITIAL ISSUE	30.12.22	GS	NS

Status: PRELIMINARY

Client: BRUNEL UNIVERSITY

Architect:

Project: LANDSCAPE REDEVELOPMENT OF THE CRANK BUILDING

Title: DRAINAGE STRATEGY LAYOUT

Date: December 2022 | Scale @ A1: 1:200

Clients Ref. | Project Ref. 12365

gta Civils & Transport
Maple House, 192-198 London Road, Burgess Hill, West Sussex, RH15 9RD
Tel.01444 871444 Web: www.gtacivils.co.uk

Drawing Number: 12365/1601 | Rev. P2

ICP SUDS Mean Annual Flood

Input

Return Period (years)	1	SAAR (mm)	600	Urban	0.000
Area (ha)	0.187	Soil	0.300	Region Number	Region 6

Results	**l/s**
QBAR Rural	0.3
QBAR Urban	0.3
Q1 year	0.2
Q1 year	0.2
Q30 years	0.6
Q100 years	0.9

Summary of Results for 100 year Return Period (+40%)

Half Drain Time : 1384 minutes.

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Control (l/s)	Max Σ Outflow (l/s)	Max Volume (m³)	Status
15 min Summer	32.385	0.085	0.0	0.9	0.9	46.7	O K
30 min Summer	32.415	0.115	0.0	0.9	0.9	63.7	Flood Risk
60 min Summer	32.446	0.146	0.0	0.9	0.9	80.4	Flood Risk
120 min Summer	32.483	0.183	0.0	0.9	0.9	101.1	Flood Risk
180 min Summer	32.504	0.204	0.0	0.9	0.9	112.9	Flood Risk
240 min Summer	32.518	0.218	0.0	0.9	0.9	120.4	Flood Risk
360 min Summer	32.532	0.232	0.0	0.9	0.9	128.0	Flood Risk
480 min Summer	32.537	0.237	0.0	0.9	0.9	130.6	Flood Risk
600 min Summer	32.536	0.236	0.0	0.9	0.9	130.5	Flood Risk
720 min Summer	32.534	0.234	0.0	0.9	0.9	129.0	Flood Risk
960 min Summer	32.523	0.223	0.0	0.9	0.9	123.3	Flood Risk
1440 min Summer	32.501	0.201	0.0	0.9	0.9	110.7	Flood Risk
2160 min Summer	32.474	0.174	0.0	0.9	0.9	96.1	Flood Risk
2880 min Summer	32.454	0.154	0.0	0.9	0.9	85.1	Flood Risk
4320 min Summer	32.423	0.123	0.0	0.9	0.9	67.9	Flood Risk
5760 min Summer	32.398	0.098	0.0	0.9	0.9	54.2	O K
7200 min Summer	32.378	0.078	0.0	0.9	0.9	43.3	O K
8640 min Summer	32.362	0.062	0.0	0.9	0.9	34.4	O K
10080 min Summer	32.349	0.049	0.0	0.9	0.9	27.1	O K
15 min Winter	32.397	0.097	0.0	0.9	0.9	53.5	O K
30 min Winter	32.431	0.131	0.0	0.9	0.9	72.6	Flood Risk
60 min Winter	32.465	0.165	0.0	0.9	0.9	91.3	Flood Risk
120 min Winter	32.508	0.208	0.0	0.9	0.9	115.0	Flood Risk
180 min Winter	32.533	0.233	0.0	0.9	0.9	128.5	Flood Risk

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
15 min Summer	161.536	0.0	47.1	19
30 min Summer	105.856	0.0	64.7	34
60 min Summer	65.788	0.0	82.5	64
120 min Summer	41.312	0.0	105.9	124
180 min Summer	31.050	0.0	120.5	184
240 min Summer	25.136	0.0	130.6	242
360 min Summer	18.374	0.0	143.8	362
480 min Summer	14.536	0.0	148.0	482
600 min Summer	12.048	0.0	147.5	602
720 min Summer	10.300	0.0	146.7	720
960 min Summer	7.996	0.0	144.9	960
1440 min Summer	5.560	0.0	140.7	1156
2160 min Summer	3.849	0.0	176.7	1516
2880 min Summer	2.968	0.0	179.3	1928
4320 min Summer	2.070	0.0	183.1	2724
5760 min Summer	1.614	0.0	185.9	3512
7200 min Summer	1.343	0.0	188.9	4256
8640 min Summer	1.162	0.0	192.1	5008
10080 min Summer	1.033	0.0	195.5	5744
15 min Winter	161.536	0.0	53.9	19
30 min Winter	105.856	0.0	73.5	33
60 min Winter	65.788	0.0	93.7	64
120 min Winter	41.312	0.0	119.8	122
180 min Winter	31.050	0.0	136.2	180

Summary of Results for 100 year Return Period (+40%)

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Control (l/s)	Max Σ Outflow (l/s)	Max Volume (m³)	Status
240 min Winter	32.548	0.248	0.0	0.9	0.9	137.2	Flood Risk
360 min Winter	32.565	0.265	0.0	0.9	0.9	146.4	Flood Risk
480 min Winter	32.572	0.272	0.0	0.9	0.9	150.0	Flood Risk
600 min Winter	32.573	0.273	0.0	0.9	0.9	150.7	Flood Risk
720 min Winter	32.571	0.271	0.0	0.9	0.9	149.7	Flood Risk
960 min Winter	32.563	0.263	0.0	0.9	0.9	145.0	Flood Risk
1440 min Winter	32.538	0.238	0.0	0.9	0.9	131.4	Flood Risk
2160 min Winter	32.504	0.204	0.0	0.9	0.9	112.9	Flood Risk
2880 min Winter	32.478	0.178	0.0	0.9	0.9	98.1	Flood Risk
4320 min Winter	32.433	0.133	0.0	0.9	0.9	73.3	Flood Risk
5760 min Winter	32.396	0.096	0.0	0.9	0.9	53.3	O K
7200 min Winter	32.368	0.068	0.0	0.9	0.9	37.3	O K
8640 min Winter	32.345	0.045	0.0	0.8	0.8	24.6	O K
10080 min Winter	32.326	0.026	0.0	0.8	0.8	14.6	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
240 min Winter	25.136	0.0	147.5	240
360 min Winter	18.374	0.0	150.5	356
480 min Winter	14.536	0.0	150.3	472
600 min Winter	12.048	0.0	149.8	588
720 min Winter	10.300	0.0	149.2	702
960 min Winter	7.996	0.0	147.4	924
1440 min Winter	5.560	0.0	143.3	1340
2160 min Winter	3.849	0.0	199.9	1644
2880 min Winter	2.968	0.0	203.3	2100
4320 min Winter	2.070	0.0	208.2	2940
5760 min Winter	1.614	0.0	212.1	3752
7200 min Winter	1.343	0.0	216.5	4536
8640 min Winter	1.162	0.0	220.7	5192
10080 min Winter	1.033	0.0	225.3	5856

Rainfall Details

Rainfall Model	FEH
Return Period (years)	100
FEH Rainfall Version	2013
Site Location	GB 506953 187367 TQ 06953 87367
Data Type	Point
Summer Storms	Yes
Winter Storms	Yes
Cv (Summer)	0.750
Cv (Winter)	0.840
Shortest Storm (mins)	15
Longest Storm (mins)	10080
Climate Change %	+40

Time Area Diagram

Total Area (ha) 0.187

Time From:	(mins) To:	Area (ha)
0	4	0.187

Model Details

Storage is Online Cover Level (m) 32.700

Porous Car Park Structure

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	40.0
Membrane Percolation (mm/hr)	1000	Length (m)	46.0
Max Percolation (l/s)	511.1	Slope (1:X)	0.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	32.300	Membrane Depth (m)	0

Orifice Outflow Control

Diameter (m) 0.020 Discharge Coefficient 0.600 Invert Level (m) 31.300

Annex

SuDS Drainage Management and Maintenance Plan

Ownership & Maintenance Responsibilities

This plan has been prepared for Brunel University in relation to this proposed development. No responsibility is accepted to any third party for all or part of this study in connection with this or any other development.

It is the responsibility of the site owner to ensure the Drainage Infrastructure in these areas is maintained in accordance with this Plan. The University's Estates Division will administer all related infrastructure.

Health and Safety

All those responsible for and involved in the maintenance of the site drainage systems should be safety-conscious and comply with the relevant health and safety legislation. This includes:

- The Health and Safety at Work etc Act 1974
- The Management of Health and Safety at Work Regulations 1999
- The Workplace (Health, Safety and Welfare) Regulations 1992

The Estates Division will be responsible for suitable risk assessment and management to ensure safe working conditions and practices, with as much work done during holiday periods as is practical.

Specialist contractors used should work to industry guidelines and be able to demonstrate safe working practices.

Employers have a duty to employees to inform them about the risks of their work environment and to decrease the risk as far as reasonably practicable. Appropriate personal protective equipment (PPE) should be provided and policies implemented based on risk assessment.

Operatives should be trained for working near water. Risks of contaminated water should be considered. Checking for open cuts and using nitrile gloves, waterproof plasters etc is advised.

Entry of pipes, chambers, tanks and culverts should be avoided wherever possible. Work should be carried out from the surface using appropriate equipment. In the event that entry cannot be avoided to perform a critical task, the required safety training, protection measures and precautions must be implemented prior to entry. Lone working should never be attempted.

For further information refer to Section 36 of The SuDS Manual (CIRIA C753).

Contamination or Dilution of Spillage

In the event of a spillage, it is the responsibility of the landowner to clear up any spillage before it enters the drainage system. The primary method of dealing with any spillage of hydrocarbons should be using sand to soak up the leak and prevent any hydrocarbons entering the drainage system. Once sand has been contaminated it should not be washed into the drainage system but disposed of by a Licensed Contractor.

Environment Agency – Emergency Contact Number

In the event of a spillage the Environment Agency should be contacted to notify the event and seek advice. The Environment Agency Incident Hotline is **0800 80 70 60** (Freephone 24hrs).

Schedule A – Sewers, Gullies and Manholes

Regular inspection and maintenance are required to ensure the effective long-term operation of private drains and manholes.

Post Completion: a CCTV survey to be carried out on all new and retained existing drainage systems and any downstream receiving systems.

The report will be used to prove the integrity of the as-built drainage system prior to issue of practical completion certificate and will be handed over to the Client & Management Company for future reference.

All drains and manholes are private and to be maintained by the Estates Division in shared areas. Operation and maintenance requirements for all sewers, manholes, gullies and channel drains are described in the following table:

Schedule	Action	Frequency
Regular Maintenance	Inspect and identify any areas that are not operating correctly. If required, take remedial action	6 Monthly
	Common yard & car park & other hard standing areas to be swept clear of debris, to prevent possibility of blockages to the receiving drainage systems	Monthly
	Lift and inspect receiving manholes to check for any blockages	Monthly
Remedial Actions	Repair any damaged drains	As required
	Replace / fix any loose manhole covers	As required

Monitoring	Carry out full CCTV survey to confirm ongoing integrity of all drains. Inspect all silt pits during the survey	10-yearly intervals

Where appropriate refer also to specialist drainage manufacturer's information and maintenance requirements.

In all instances, inspection and cleaning should be carried out only by a specialist contractor and in accordance with the guidelines given in `Safe Working in Sewers and at Sewage Works' published by National Joint Health and Safety Committee for the Water Services. Further information on safety is set out in Section 2.

Schedule B – Permeable Pavements

Inspection Frequency and Maintenance Requirements: as per table below:

Schedule	Action	Frequency
Regular Maintenance	Standard road sweeper	Annually after autumn leaf fall
Occasional Maintenance	Weed removal	Annually
Remedial Actions	Remediate adjacent landscaping to original levels Paving repairs including replenishment of lost jointing material Rehabilitation of surface and upper substructure by remedial sweeping	As required As required Every 10 to 15 years or as required if infiltration is reduced by clogging
Monitoring	Initial inspection Inspection for evidence of poor operation and/or weed growth Inspection for silt accumulation to establish sweeping frequencies Monitor inspection chambers	Monthly for first three months Quarterly, 48 hrs after large storms in first six months Annually Annually

4.15

gta Civils & Transport

Civil Engineering - Transport Planning - Flood Risk

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