whitby wood

Hampton Wick Royal Cricket Ground Temporary Facilities

Flood Risk Assessment

Client: Hampton Wick Royal Cricket Club

Date: 18/03/2024

P451640-WW-XX-XX-RP-C-0001

whitby wood

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LONDON SE1 7AB
UNITED KINGDOM

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Whitby Wood Limited
reg in England and Wales
reg no 07786822

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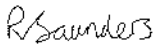
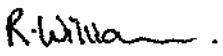
62A Highgate Street
London N6 5HX

REVISION RECORD

Rev	Date	Description	Prepared	Reviewed	Approved
P1	15/03/2024	Stage Issue	AR	RS	RW
P2	18/03/2024	Stage Issue	AR	RS	RW

Prepared by:	Reviewed by:	Approved by:
		
Aaron Rogers	Ryan Saunders	Ryan WIlliams
Design Engineer – Civils	Senior Engineer– Civils	Associate – Civils

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1 INTRODUCTION

This Flood Risk Assessment (FRA) has been prepared in accordance with National Planning Policy Framework (NPPF) in support of the detailed planning and listed building consent application being submitted by Hampton Wick Royal Cricket Club ('the Applicant'). The application will be submitted to London Borough (LB) of Richmond ('the Council') for the temporary installation of Club room and changing facilities at Hampton Wick Royal Cricket Ground, Surrey, KT1 4AZ ('the site'). This assessment has been undertaken to ascertain the constraints in order to redevelop the site, and to assess the impact of the proposals with respect to flood risk.

1.1 Sources of Information

A review of the relevant information from a range of sources has been undertaken and includes the following:

- London Regional Flood Risk Appraisal (Greater London Authority, 2018)
- Level 1 Strategic Flood Risk Assessment (London Borough of Richmond, 2021)
- Surface Water Management Plan (London Borough of Richmond, 2021)
- British National Geology Viewer [Accessed March 2024];
- Soilscapes Viewer [Accessed March 2024]
- London Borough of Richmond Local Plan (London Borough of Richmond, 2018) and;
- National Planning Policy Framework (2023);

1.2 Environment Agency Data

The following information has been gathered from DEFRA's Spatial Data Catalogue of data.gov.uk [accessed March 2024]. As the site is situated within Flood Zone 2, no further data has been requested from the Environment Agency (EA).

- Flood Map for Planning (Rivers and Sea) – Flood Zone 2;
- Flood Map for Planning (Rivers and Sea) – Flood Zone 3;
- Risk of Flooding from Reservoirs – Maximum Flood Extent;
- Risk of Flooding from Surface Water Extent (1%, 3.3% and 0.1% AEP);
- Statutory Main River Map; and
- Preliminary Flood Risk Assessment for England, October 2018.

2 THE SITE

2.1 Site Location

The site sits within the Hampton Wick Royal Cricket Ground on Bushey Park, Surrey. The site currently comprises of a pavilion, which has been destroyed, and a storage shed. The approximate centre of the site is located at an easting and northing of 517127 and 169451.

A site location plan has been included in Figure 1 which can also be found in **Appendix A**.

FIGURE 1 - SITE LOCATION PLAN

2.2 Watercourses

The closest watercourse is an ordinary watercourse between Heron and Leg of Mutton Ponds drainage ditch, which is located approximately 350m to the north of the site. There is another ordinary watercourse approximately 500m to the east of the site. The River Thames is 550m east of the site.

2.3 Geology

The British Geological Survey's Geology of Britain map has been reviewed as shown in **Appendix B** and it indicates a bedrock geology of Lambeth Group (Clay, Silt and Sand), overlain with Kempton Park Gravel Member (Sand and gravel). The site belongs to soilscape 6 – freely draining slightly acid loamy soils.

2.4 Proposed Development

The proposed development will include the installation of four free-standing cabins to provide temporary kitchen and changing facilities. A marquee is proposed to act as the temporary club room.

The club is used for cricket during the summer and rugby during the winter. The four portacabins will be there and used all year round. The likelihood is that the marquee will be only used in the summer, but this is yet to be agreed.

The temporary facilities are expected to be in place for approximately a year, until work is completed on a new pavilion. These structures are all to be located in the northeastern corner of the site. See Figure 2.

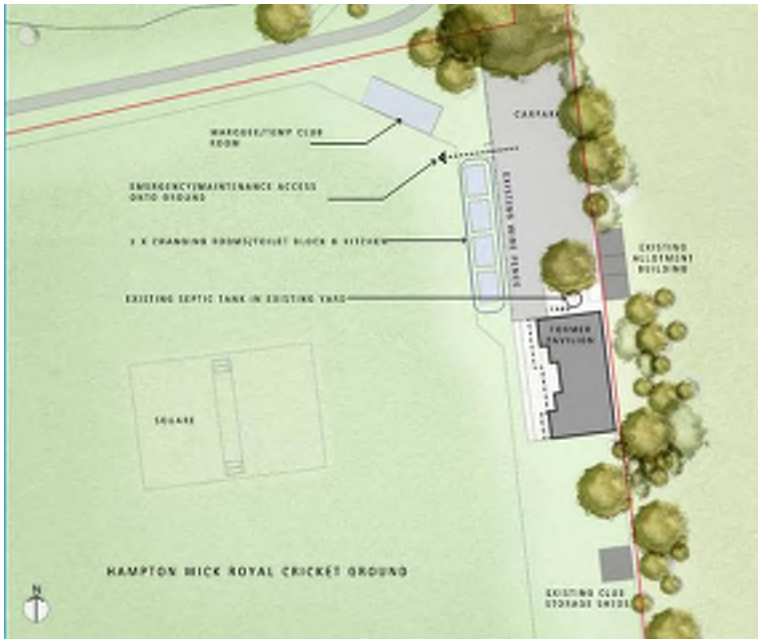


FIGURE 2 PROPOSED TEMPORARY FACILITIES

3 FLOOD RISK

3.1 Fluvial (Rivers and Seas)

The Environment Agency's (EA) Flood Risk Data shows the majority of the site is situated within Flood Zone 1 as demonstrated in Figure 3, where Flood Zone 1 is shown by the absence of a raster. The site is therefore at very low risk of fluvial flooding. There is however a small part of the eastern boundary and southeastern corner which lies within Flood Zone 2 where the risk of flooding is slightly greater. The definition of each flood zone can be found below.

- Land in **Flood Zone 1** has a 0.1% or less annual probability of river or sea flooding;
- Land in **Flood Zone 2** has between 0.1% and 1% annual probability of river flooding and between 0.1% and 0.5% annual probability of sea flooding; and
- Land in **Flood Zone 3** has a 1% or greater annual probability of river flooding and a 0.5% annual probability of sea flooding.

FIGURE 3 – FLOOD ZONE MAP

3.2 Pluvial (Rainfall)

The definitions for each surface water flood risk category have been detailed below:

- **Very low** risk means that each year this area has a chance of flooding of less than 0.1%.
- **Low** risk means that each year this area has a chance of flooding of between 0.1% and 1%.
- **Medium** risk means that each year this area has a chance of flooding of between 1% and 3.3%. Flooding from surface water is difficult to predict as rainfall location and volume are difficult to forecast. In addition, local features can greatly affect the chance and severity of flooding.
- **High** risk means that each year this area has a chance of flooding of greater than 3.3%.

The risk of surface water flooding has been assessed by viewing the Risk of Flooding from Surface Water (RoFSW) maps, which have been replicated in Figure 4. This shows for the majority of the site the risk is 'very low'. The LB of Richmond Surface Water Management Plan (SWMP) recognises that the site does not lie within a Critical Drainage Area (CDA) and there have been no historic flooding events at this location. Refer to **Appendix C.**

It should be noted that, flooding from surface water is difficult to predict as rainfall location and volume are not easy to forecast. In addition to this, local features can greatly affect the chance and severity of flooding. It is therefore important to consider exceedance routes and overland flow paths of surface water.

FIGURE 4 - RISK OF SURFACE WATER FLOODING EXTENT MAP

3.3 Groundwater

The LB of Richmond SWMP includes a broad scale assessment of the susceptibility of groundwater flooding across the borough. Figure 5 is taken from the flood maps and illustrates that the site is within an area that has a high (50-75%) potential for groundwater flooding to occur at the surface. The western boundary of the site is in the very high (>75%) zone.

Existing Borehole record for the well TQ16NE70 adjacent to Hampton Wick Pond show the groundwater level at 2.80m below ground level. The well is approximately 225m south of the Site. Borehole TQ17SE186 is located 500m north of site and was dry down to 5.95m. TQ16NE113 is located 450m east of site and was also dry down to 6.4m (21 feet). Refer to **Appendix B**. There have been no historic reports of groundwater flooding.

It is envisaged that the temporary cabins will be installed above ground and that the entry thresholds will be raised to prevent water ingress. Subterranean basements are not being proposed for this scheme.

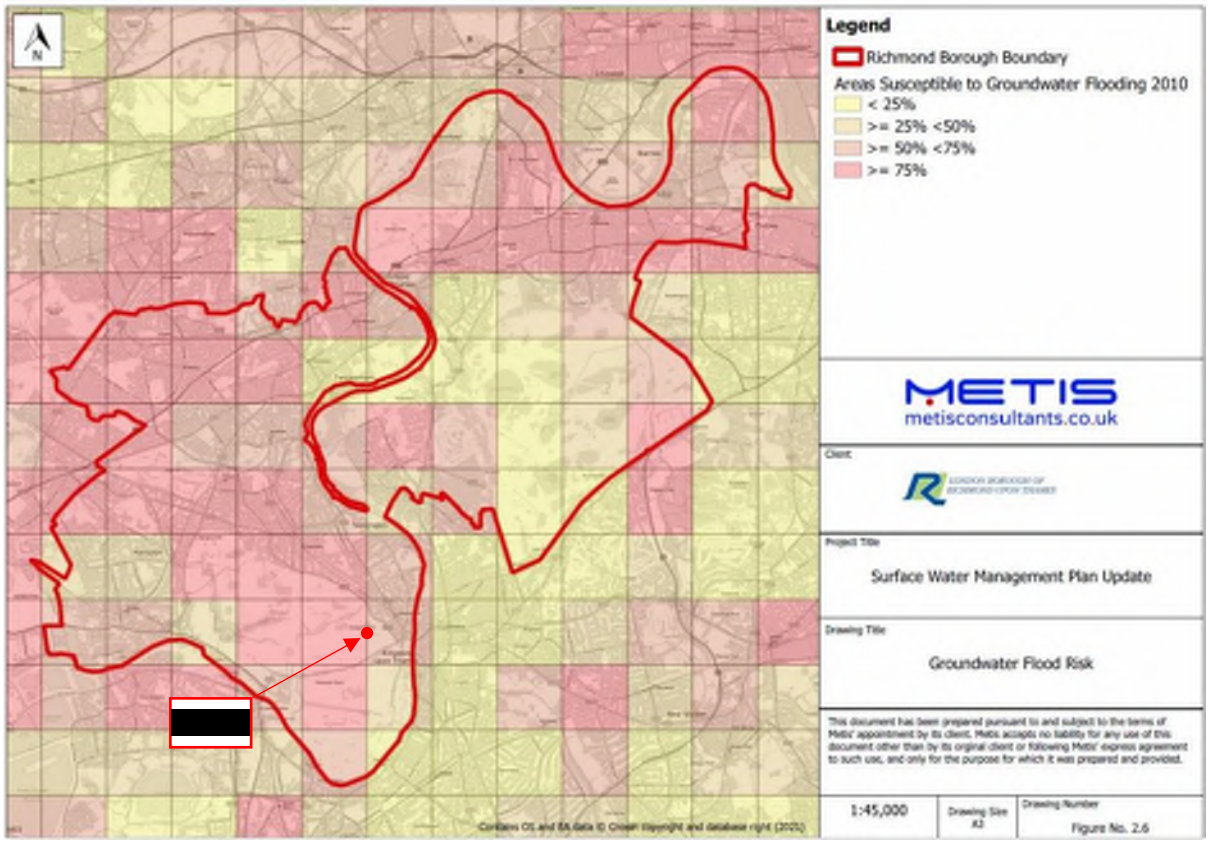


FIGURE 5 SUSCEPTIBILITY TO GROUNDWATER FLOODING MAP FROM LB OF RICHMOND SWMP

3.4 Sewer Flooding

According to the LB of Richmond SWMP, there has been <5 reported incidence of flooding reported by Thames Water as shown in Figure 6 sewer flooding. A closer look into the data provided in the SWMP shows that there were 4 flood incidents in the KT1 4 postcode. The risk of sewer flooding of the site is therefore assessed as low. It has been assumed that all foul discharge will be either self-contained within the temporary units or connected to the existing septic tank on site.

TABLE 1 THAMES WATER SEWER FLOODING

Postcode	Internal Flooding			External Flooding			Total
	2in10year	1in10year	1in20year	2in10year	1in10year	1in20year	
KT1 4	0	0	2	0	2	0	4

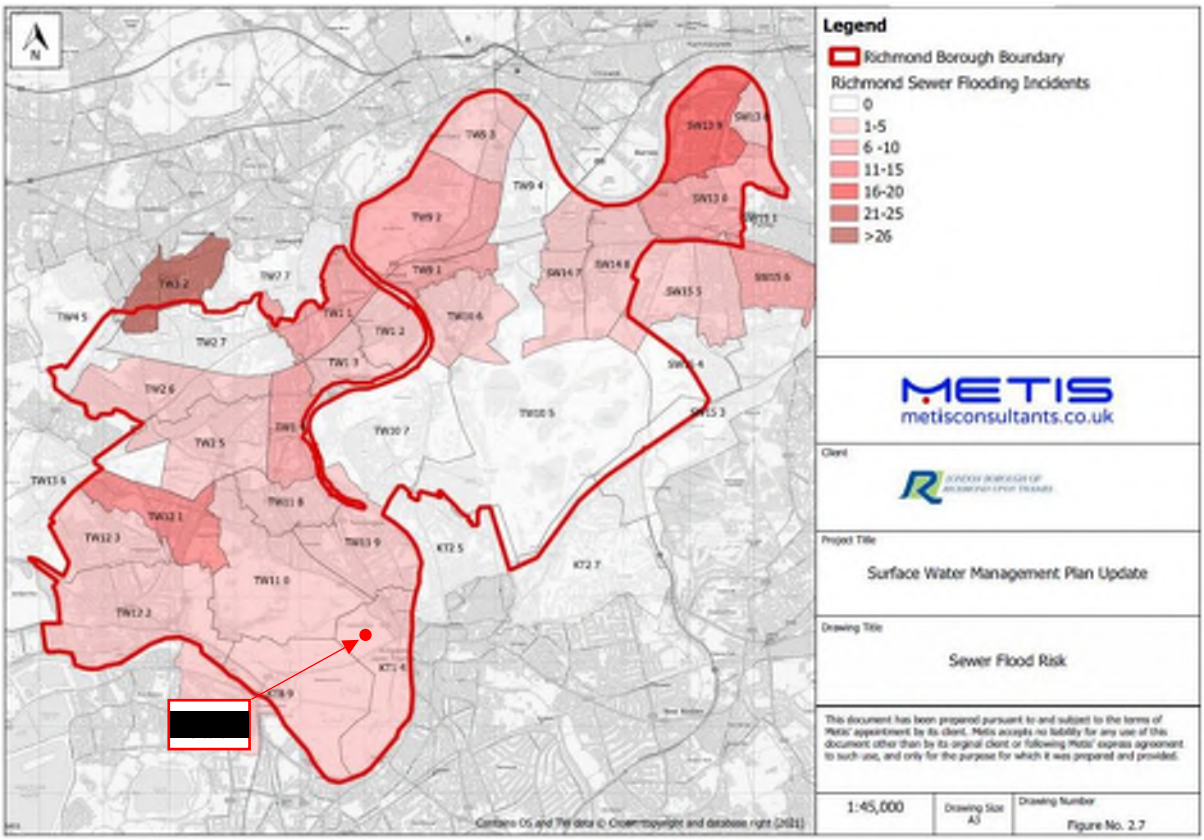


FIGURE 6 SEWER FLOODING FROM LB OF RICHMOND SWMP

3.5 Artificial Sources

Figure 7 indicates that there is a low risk of reservoir flooding to the site during a Dry Day event. However, the site would be inundated if there was also fluvial flooding. This risk is extremely low, and mitigation will not need to be considered given the nature of the development.

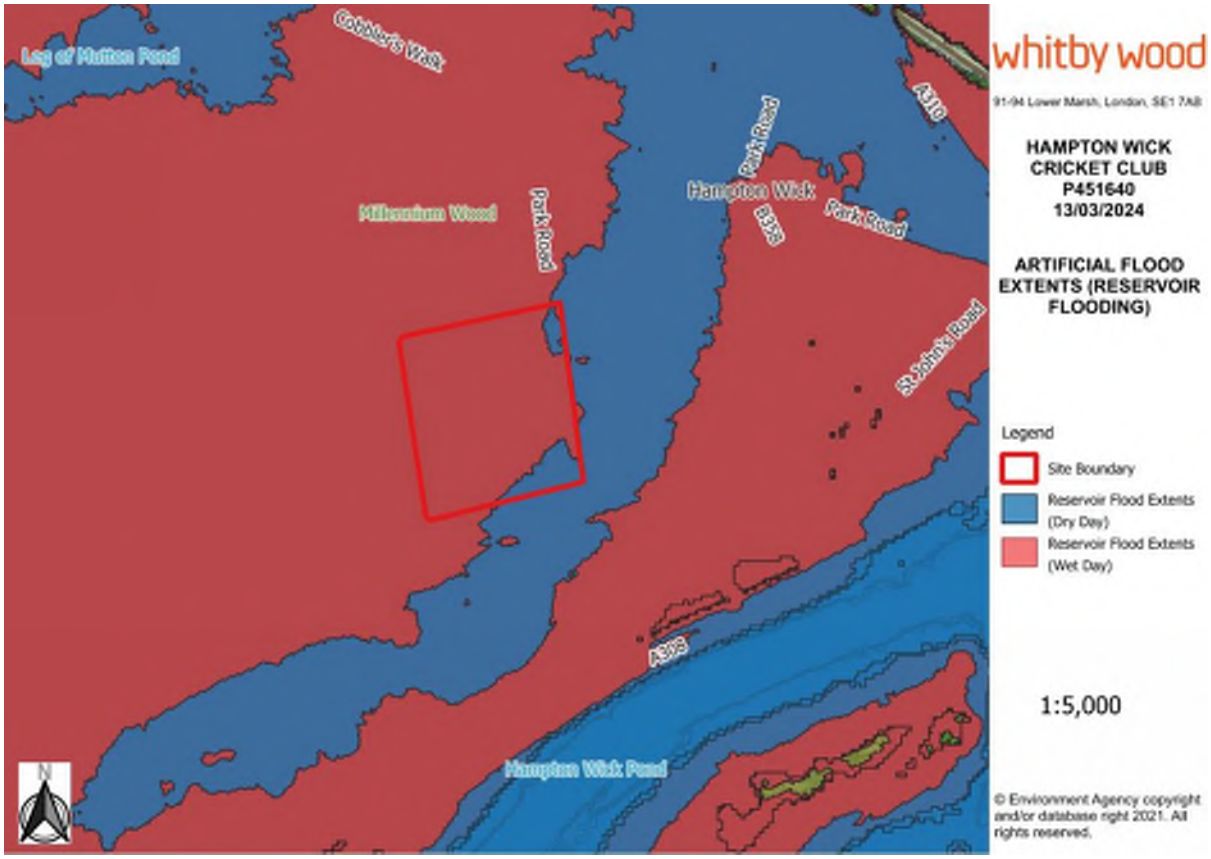


FIGURE 7 – FLOOD RISK FROM RESERVOIRS MAP

3.6 Summary

The table below provides a summary of the 5 sources of flood risk. The site is deemed to have an overall flood risk of low from fluvial and pluvial sources. While the site is in an area of high susceptibility to groundwater flooding, historic borehole records suggest the water table is at least 2.8m below ground and there have been no historic records of flooding. The risk has been assessed as Medium, which should be considered during the installation of the temporary facilities. Artificial and Sewer flood risk is characterised as low for this site. All data maps, and flood maps can be located in **Appendix C** and **Appendix D** respectfully.

TABLE 2 - FLOOD RISK SUMMARY

Flood Type	Risk		
	Low	Medium	High
Fluvial	✓		
Pluvial	✓		
Groundwater		✓	
Sewer	✓		
Artificial	✓		

4 MANAGING FLOOD RISK

4.1 Master Planning

The temporary facilities have been located outside of the extents of Flood Zone 2 to minimise the potential risk of flood. It is recommended that during the progression of the masterplan, the proposed development is continued to be designed with flood risk and drainage implications in mind. Proposed ground levels will need to consider potential exceedance flow pathways from onsite drainage. Any displaced surface water flooding should be mitigated against to avoid increasing flooding elsewhere.

4.2 Safe Access and Egress

As most of the site sits within Flood Zone 1, it is considered that there will always be safe access and egress provided and no site-specific flood evacuation plan is required. It should be noted that, while the car park area and main access road are in Flood Zone 2, there is both vehicular and pedestrian access in all other directions, should this route become impassable.

4.3 Mitigating Measures

Additional measures can be implemented to minimise the likelihood or severity of flooding. As flood risk for the site is mostly low, no specialist flood measures are required.

5 CONCLUSIONS AND RECOMMENDATIONS

The main conclusions from this flood risk assessment are detailed below. These conclusions and recommendations may change if further Site investigations become available and the proposals are developed.

- The majority of the site is located in Flood Zone 1 with a small section of the eastern boundary lying in Flood Zone 2. The area located on Flood Zone 2 constitutes the car park and yard area behind the existing pavilion. The temporary facilities are to be located outside of the Flood Zone 2 extents. Overall, the risk of flooding from Rivers and Seas is low.
- The site is situated in an area of high potential for groundwater flooding. However, local borehole records show the ground water to be at least 2.8m below ground level and the temporary facilities will be placed above ground with raised thresholds. There have been no reports of previous historical flooding.
- There is a risk of the site flooding due to artificial sources on a wet-day scenario. This possibility is recognised as extremely unlikely.
- It is assumed that the foul discharge will be contained by the temporary units or make use of the existing septic tank.
- No formal drainage design is envisaged for the temporary structures. The structures have a small footprint so the impact on runoff rates will be negligible.
- A separate FRA is to be prepared for the permanent works on site to construct a new pavilion.

Appendix A – Site location

whitby wood

91-94 Lower Marsh, London, SE1 7AB

HAMPTON WICK CRICKET CLUB
P451640
13/03/24

SITE LOCATION PLAN

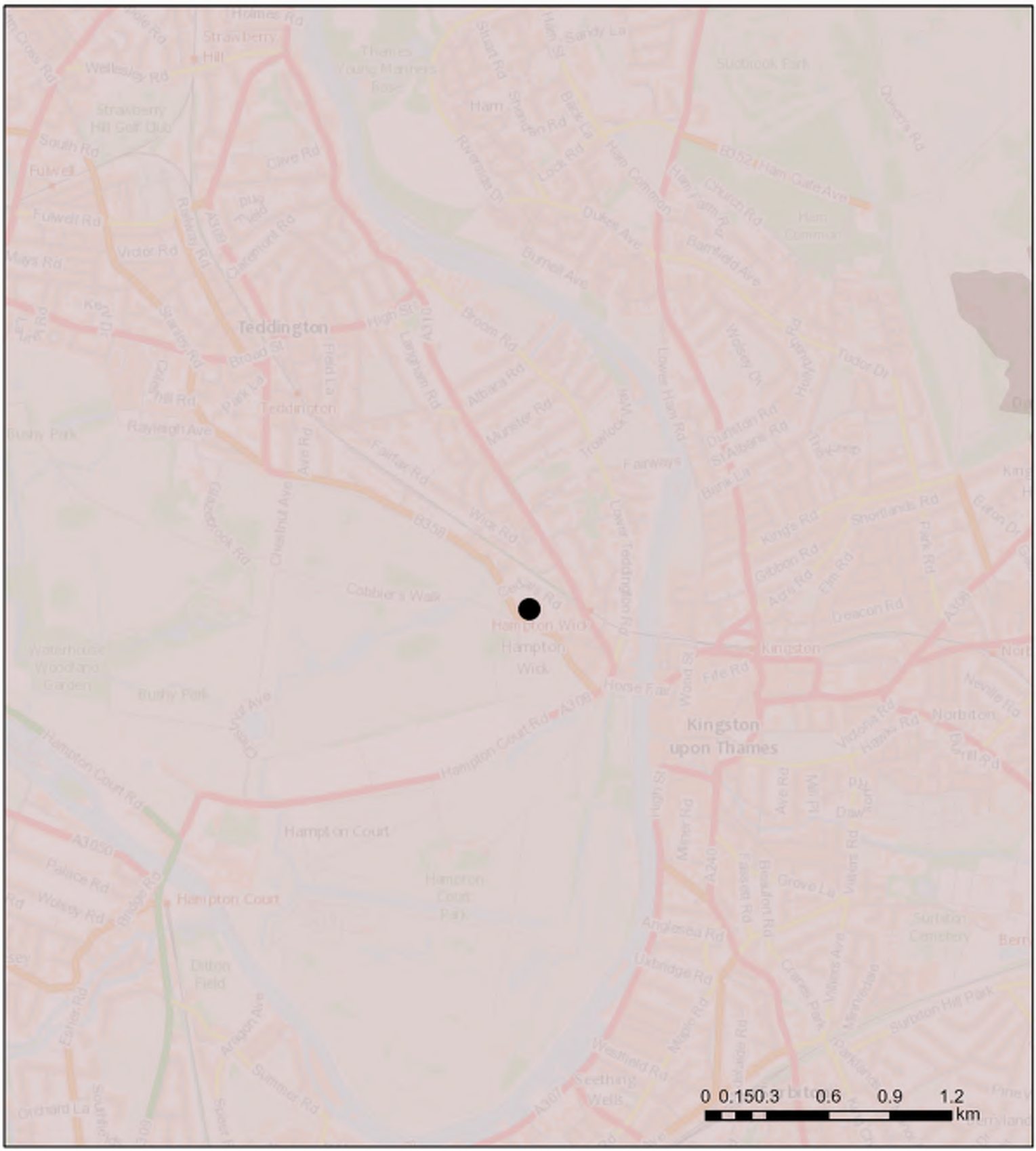
Legend

Site Boundary

1:5,000
1:10,000

Appendix B – British Geology Society

GeoIndex Report



Map Key

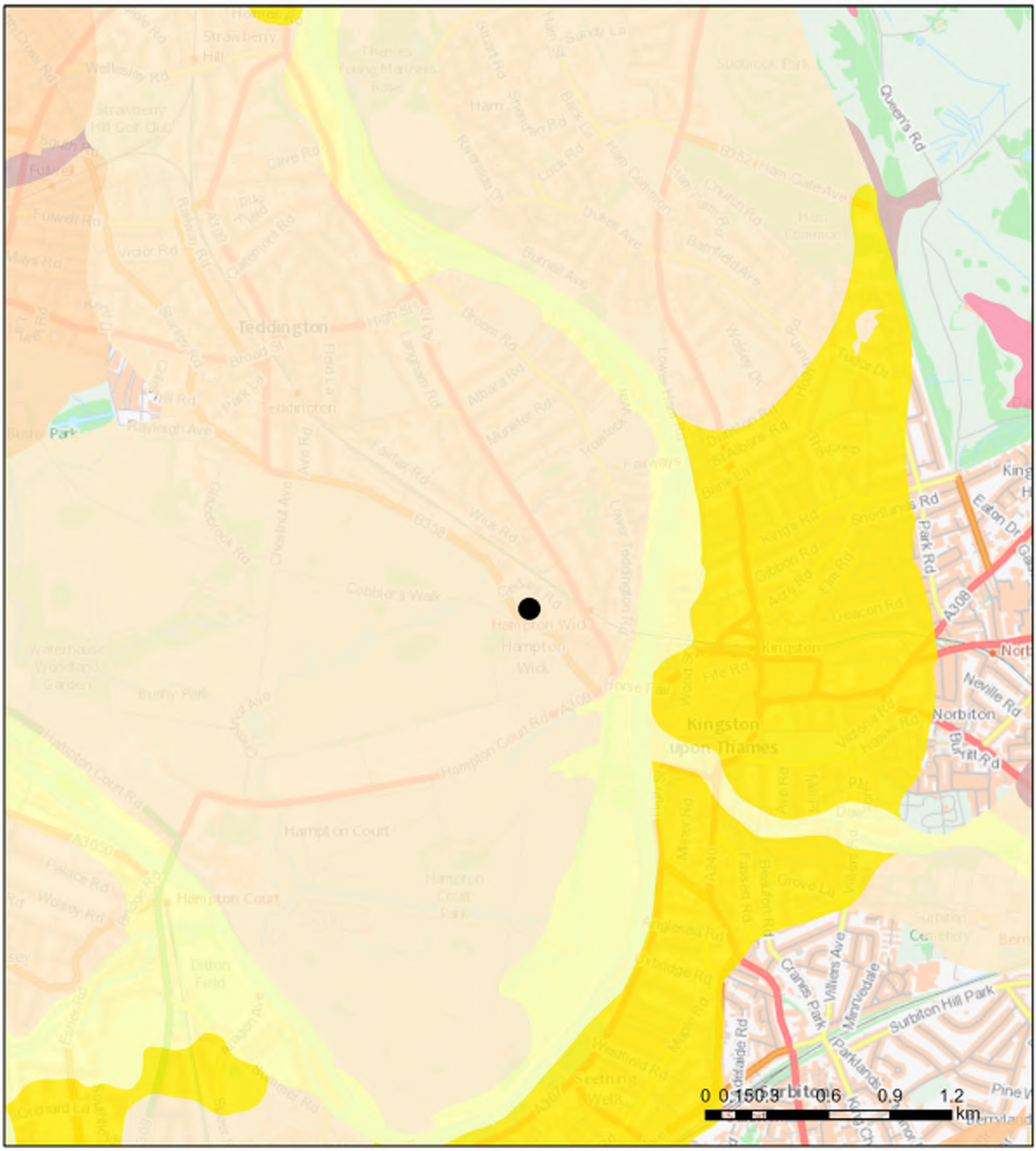
Bedrock geology 1:50,000 scale

LONDON CLAY FORMATION - CLAY AND SILT


CLAYGATE MEMBER - SAND, SILT AND CLAY

GeoIndex Report

British Geological Survey



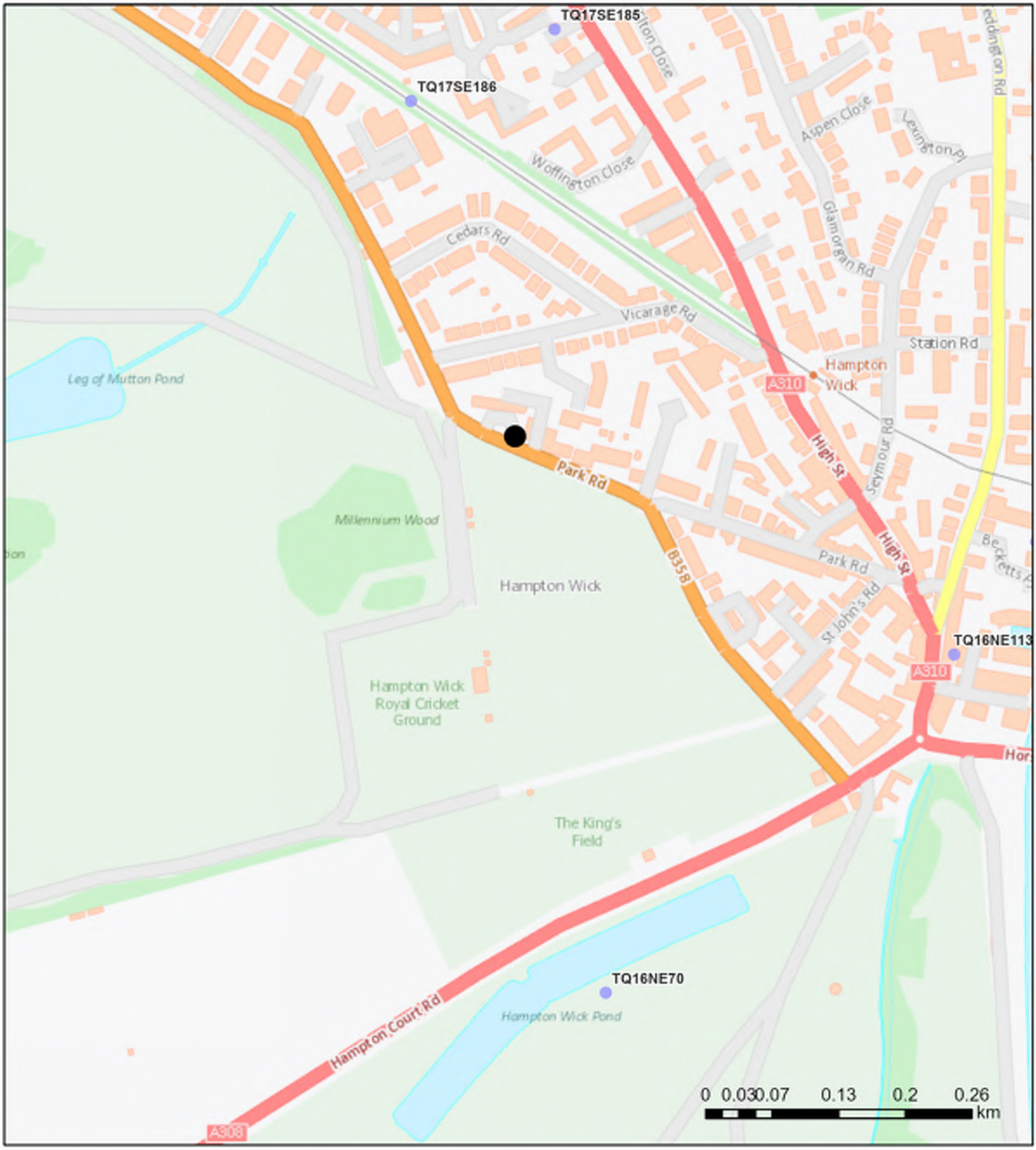
Map Key

Superficial deposits 1:50,000 scale

- KEMPTON PARK GRAVEL MEMBER - SAND AND GRAVEL
- ALLUVIUM - CLAY, SILT, SAND AND PEAT
- ALLUVIUM - CLAY, SILT, SAND AND GRAVEL
- TAPLOW GRAVEL MEMBER - SAND AND GRAVEL
- BLACK PARK GRAVEL MEMBER - SAND AND GRAVEL
- HEAD - CLAY, SILT, SAND AND GRAVEL
- LANGLEY SILT MEMBER - CLAY AND SILT

GeoIndex Report

British Geological Survey



Map Key

Borehole records

- **Unknown Length**
- **Confidential**
- **0 - 10m**
- **10 - 30m**
- **30m+**

TQ 16 NE 113.

BOREHOLE NO. 1

Ground Level .....

Diameter of Boring 8"

Water Struck 4'6"

Method Shell and Auger

Standing Water Level 5'0"

Start 13.1.70 Finish 13.1.70

1759

6948

REMARKS:

Description of Strata	Thickness	Depth	Reduced Level	Disturbed Samples	Undisturbed Samples and Insitu Tests
Made Ground: Sand, topsoil and rubble	1'6"	1'6"		1'0" J6466	
Soft grey silty clay with brick fragments and gravel	3'0"	4'6"		3'0" J6467	
Soft grey silty clay	5'2"	9'8"		4'6" W6474 5'0" J6468 7'0" J6469	
Soft brown silty clay	2'4"	12'0"		10'0" J6470	
Medium to coarse flint gravel	6'6"	18'6"		13'0" B6471 W6475	
Firm brown clay	1'6"	20'0"		19'0" J6472	
Firm to stiff grey clay	1'0"	21'0"		21'0" J6473	
Bottom of Borehole		6 Um.			
TOTALS	21'0"	21'0"			

NOTES: Descriptions in accordance with C.P.2001 "Site Investigations"
J = Jar Sample B = Bulk Sample W = Water Sample
U = Undisturbed Core Samples, 4 in dia. × 18 in long. Depth shown to top of sample. U* = Sample not recovered.
N = Number of blows per ft. penetration in Standard Penetration Test.
V = Shear strength in lb/in² given by Insitu Vane Test.

Contract Name	HAMPTON WICK	
Terresearch Ltd.	Report No. S.606/20	Borehole No. 1

TQ17SE 186

Record of Borehole No.4

Sheet 1 of 1

1706
7002

Location NPL TEDDINGTON

Client PROPERTY SERVICES AGENCY

Type of boring LIGHT CABLE PERCUSSION

Job No. 11311519 Ground level 8.00m O.D. Diameter / 150mm Casing / 150mm to 5.95m

Daily Progress	Ground water levels	Depth of casing	Samples: Depth	No.	Type	Scale	Strata: Depth	Reduced level	Description of strata	Legend	Geology
18.1.88.							G.L.	8.00			
							0.30	7.70	MADE GROUND: (100mm of CONCRETE overlying rubble).		
			0.40 - 1.00	1	B				Brown medium to coarse SAND and fine to medium occasionally coarse angular to sub-rounded flint GRAVEL.		
		1.00	1.00 - 1.45	2	BC(43)	1	1.00		-- becoming dense SAND with much fine to medium gravel.		
		2.00	2.00 - 2.45	3	BC(39)	2					
	▼ 2.85		2.85	5	✕						
	2.85	3.00	3.00 - 3.45	4	BC(28)	3	2.90		-- becoming medium dense mottled dark greyish brown to brown SAND and fine to coarse GRAVEL, maloderous (very).		FLOOD PLAIN GRAVEL
	2.90	4.00	4.00 - 4.45	6	BC(24)	4	4.00		-- becoming mottled dark grey to brown		
	2.80	5.00	5.00 - 5.45	7	BC(23)	5					
			5.80	8	D		5.70	2.30	Stiff intact mottled dark grey and brown silty CLAY with small pockets of medium to coarse sand and fine gravel, maloderous.		
	5.95		5.90	9	D		5.85	2.15			
	Sealed	5.95	6.00 - 6.45	10	U (21)	6					
			6.45	11	D				Stiff to Very stiff thinly laminated poorly very closely fissured dark brownish grey silty CLAY with partings of fine to medium sand, occasional shell fragments and occasional weak pyrites nodules.		LONDON CLAY
			6.75	12	D						
			7.05 - 7.50	13	DS(19)	7					
(7.50m)	DRY	5.95					7.50	0.50			
						8			BOREHOLE COMPLETED.		

Key
- U. . . . undisturbed 102mm diameter sample
- D. . . . disturbed jar sample
- B. . . . disturbed bulk sample
- W. . . . water sample
- S( ). standard penetration test
- C( ). cone penetration test
- (33). . number of blows ('N' value)
- ▼ . . groundwater encountered

Remarks
Starter pit dug to 1.50m.
Groundwater struck at 2.85m, did not rise, and was sealed off at 5.95m.
Stratum highly polluted between 2.90 and 5.70m.
Standpipe installed at 6.00m.
Filter zone 6.00 to 5.00m.
Seal 5.00 to 4.50m.
Backfill 4.50 to 1.00m.
Concrete 1.00 to G.L.

GROUND ENGINEERING

GE 3035

TQ 16NE 70 1725-6915
For Institute use only Licence No.
N ....
TQ16|52
270. TQ16NE

Eastern A.S.
Thames N.R.A.

RECORD OF WELL

At HAMPTON WICK POND
HAMPTON COURT PALACE
Town or Village EAST MOLESLEY
County KT8 9AU.

EXACT SITE OF WELL

Six-inch National Grid sheet and reference TQ 1725 6915
For HARRIS GROUP OF COMPANIES
State whether owner, tenant, builder, contractor, consultant, etc.: CONTRACTOR
Address (if different from above) BRENTSIDE WHARF, DOCK ROAD, BRENTFORD, MIDDLESEX, TW8 8AQ.
Level of ground surface above sea level (O.D.) ......ft (10.00 m)
*DELETE AS NECESSARY
If well top is not at ground level state how far above:* below: ......ft (......m)
SHAFT ......ft (......m); diameter ......ft (......m);
HEADINGS (please attach details—dimensions and directions)
BORE ......ft (6.60 m); diameter: at top ......in (150 mm);
at bottom ......in (150 mm)
Full details of permanent lining tubes (position, length, inner and outer diameters, plain slotted etc.):
6.60 metres of 150mm diameter polypropylene lining tube installed with the lower 3.00 metres slotted.

Water struck at depths of ......ft (2.80 m) below well top

TEST CONDITIONS

Rest level of water ......ft (2.80 m) ~~above~~* below well top. Suction at ......ft (5.80 m)
Yield on 4 hours'* ~~days~~ test pumping at 1,250 galls per hour (...... l/s) with
depression to ......ft (2.92 m) below well top. Recovery to test level in 10 mins* ~~hours~~
Capacity of pump 1,250 g.p.h. (...... l/s)
Date of measurements 8th March 1991. (4 hour pump test)

NORMAL CONDITIONS

DESCRIPTION OF PERMANENT PUMPING EQUIPMENT:
Make and/or type Grundfos SP5A.4 submersible Motive power Electric
Capacity 1,250 galls (......m³) per hour. Suction at ......ft (5.80 m)
below well top. Amount pumped 30,000 galls (......m³) per day. Estimated
consumption 210,000 galls (......m³) per week
Well made by Smith & Webb (Drilling) Ltd. Date of sinking 15th February 1991

ADDITIONAL NOTES ANALYSIS (please attach copy if available)

LOG OF STRATA OVERLEAF

RECEIVED N.C.D.C.
DATE: 8th Oct 92
SIG: [signature]

Received from Smith & Webb
Date 8th May 1992
Observation well
Recorder
ER log
Site marked on
1" map
6" map—Grid Sheet (use symbol)
Copy to
Date

NGDC ACCESSION NUMBER 8577

Institute of Geological Sciences
Hydrogeology Unit
Exhibition Road
London SW7 2DE

IGS 2494 10 000 7/79

BGS ID: 580014 : BGS Reference: TQ16NE70
British National Grid (27700) : 517250,169150

For Institute use only

Geological Classification	Nature of Strata *If measurements start below ground surface, state how far.*	Thickness Feet	Inches	Metres	Depth Feet	Inches	Metres
	Topsoil			1.00			1.00
	Firm brown and grey clay			1.40			2.40
	Brown sand and gravel			3.10			5.50
	Brown clay			0.10			5.60
	Blue clay			1.00			6.60

Eastern L.S.

Thames N.R.A

RECORD OF WELL

For Institute use only Licence No.

N .....

TQ16/52

At HAMPTON WICK POND
HAMPTON COURT PALACE

Town or Village EAST MOLESLEY

County KT8 9AU.

270. TQ16NE

EXACT SITE OF WELL

Six-inch National Grid sheet and reference TQ 1725 6915

For HARRIS GROUP OF COMPANIES

State whether owner, tenant, builder, contractor, consultant, etc.: CONTRACTOR

Address (if different from above) BRENTSIDE WHARF, DOCK ROAD, BRENTFORD, MIDDLESEX. TW8 9AQ.

Level of ground surface above sea level (O.D.) ..... ft (10.00 m)

*DELETE AS NECESSARY

If well top is not at ground level state how far above:* below: ..... ft (..... m)

SHAFT ..... ft (..... m); diameter ..... ft (..... m);

HEADINGS (please attach details—dimensions and directions)

BORE ..... ft (6.60 m); diameter: at top ..... in (150 mm);

at bottom ..... in (150 mm)

Full details of permanent lining tubes (position, length, inner and outer diameters, plain slotted etc.):
6.60 metres of 150mm diameter polypropylene lining tube installed with the lower 3.00 metres slotted.

Water struck at depths of ..... ft (2.80 m) below well top

TEST CONDITIONS

Rest level of water ..... ft (2.80 m) ~~above~~* below well top. Suction at ..... ft (5.80 m)

Yield on 4 ~~hours~~* ~~days~~* test pumping at 1,250 galls per hour (..... l/s) with depression to ..... ft (2.92 m) below well top. Recovery to rest level in 10 mins* ~~hours~~*

Capacity of pump 1,250 g.p.h. (..... l/s)

Date of measurements 8th March 1991. (4 hour pump test)

NORMAL CONDITIONS

DESCRIPTION OF PERMANENT PUMPING EQUIPMENT:

Make and/or type Grundfos SP5A.4 submersible Motive power Electric

Capacity 1,250 galls (..... m³) per hour. Suction at ..... ft (5.80 m) below well top. Amount pumped 30,000 galls (..... m³) per day. Estimated consumption 210,000 galls (..... m³) per week

Well made by Smith & Webb (Drilling) Ltd. Date of sinking 15th February 1991

ADDITIONAL NOTES ANALYSIS (please attach copy if available)

LOG OF STRATA OVERLEAF

Received from Smith & Webb

Date 8th May 1992

Observation well

Recorder

ER log

Site marked on
1" map
6" map—Grid Sheet
(use symbol)

Copy to

Date

INSTITUTE OF GEOLOGICAL SCIENCES
HYDROGEOLOGY UNIT
EXHIBITION ROAD
LONDON SW7 2DE

IGS 2494 10 000 7/75

For Institute use only

Geological Classification	Nature of Strata *If measurements start below ground surface, state how far.*	Thickness Feet	Inches	Metres	Depth Feet	Inches	Metres
	Topsoil			1.00			1.00
	Firm brown and grey clay			1.40			2.40
	Brown sand and gravel			3.10			5.50
	Brown clay			0.10			5.60
	Blue clay			1.00			6.60

BGS ID: 580014 : BGS Reference: TQ16NE70
British National Grid (27700) : 517250,169150

HAMPTON WICK PONDS

TQ 16/52

wner | Licence No. | Nat. Grid Ref. TQ 1725 6915

ccupier | IGS Ref. No. | Status

round Level m OD ft. OD | Aquifer Gravels

evel of Well Top m OD ft. OD

est Water Level m bwt ft. bwt | Summary of Geological Section | Thickness | Depth

Date) m OD ft. OD

onstruction

Depth bwt	Dia	Linings (below well top) From	To	Dia.	Type
..6M	150mm	0	6·6M	150mm	UPVC
		3.3	6·6M	"	Slotts

bstraction Rates | Type of Pump

gph | Chem./Bact. Anal. YES NO

gpd | Well Driller

Insufficient space has been allowed, continue in 'Notes' overleaf.

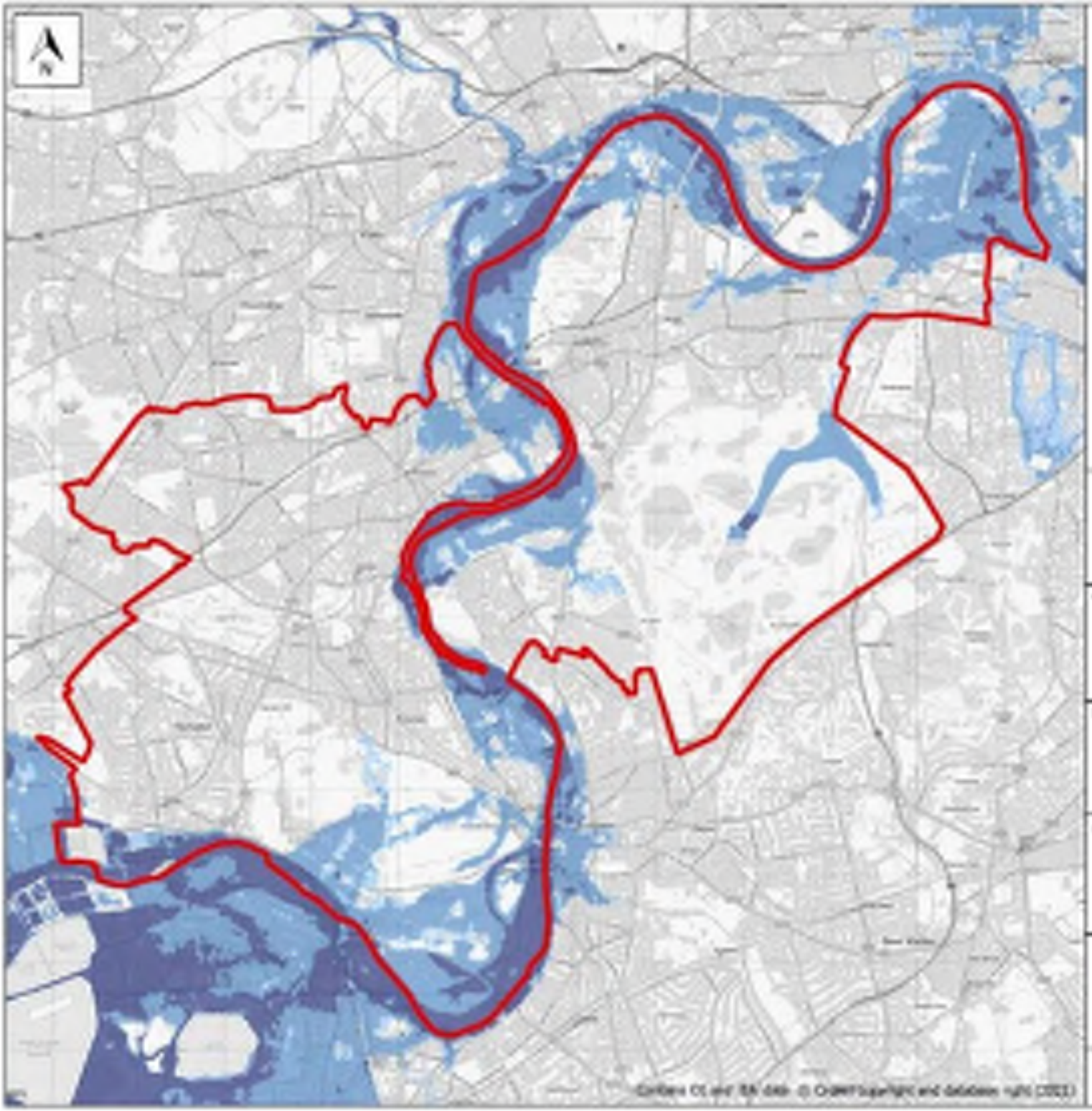
Site Plan

Notes

Topsoil	1.00		1
Firm brown and grey clay	1.40		2
Brown sand and gravel	3.10		5
Brown clay	0.10		5
Blue clay	1.00		6

TQ 16/52

Appendix C –LB of Richmond Maps



Legend

- Richmond Borough Boundary

Risk of Flooding from Reservoirs Maximum Flood Depth

Flood Depth (metres)

- Below 0.3m
- Between 0.3 and 2m
- Over 2m

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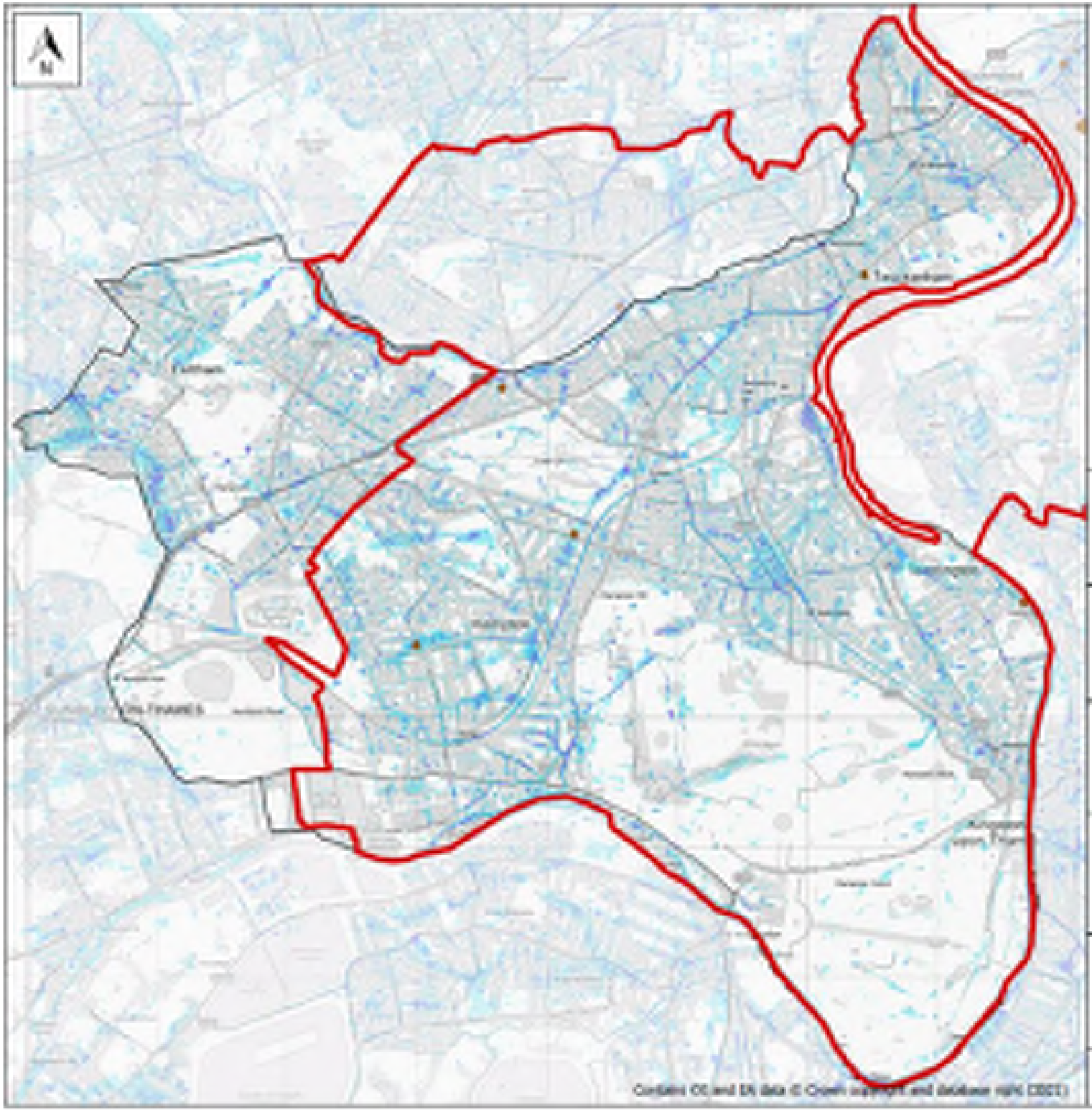
Project Title

Surface Water Management Plan Update

Drawing Title

Flood Risk from Artificial Sources

1:45,000	Drawing Size A3	Drawing Number Figure No. 2.8



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Client:

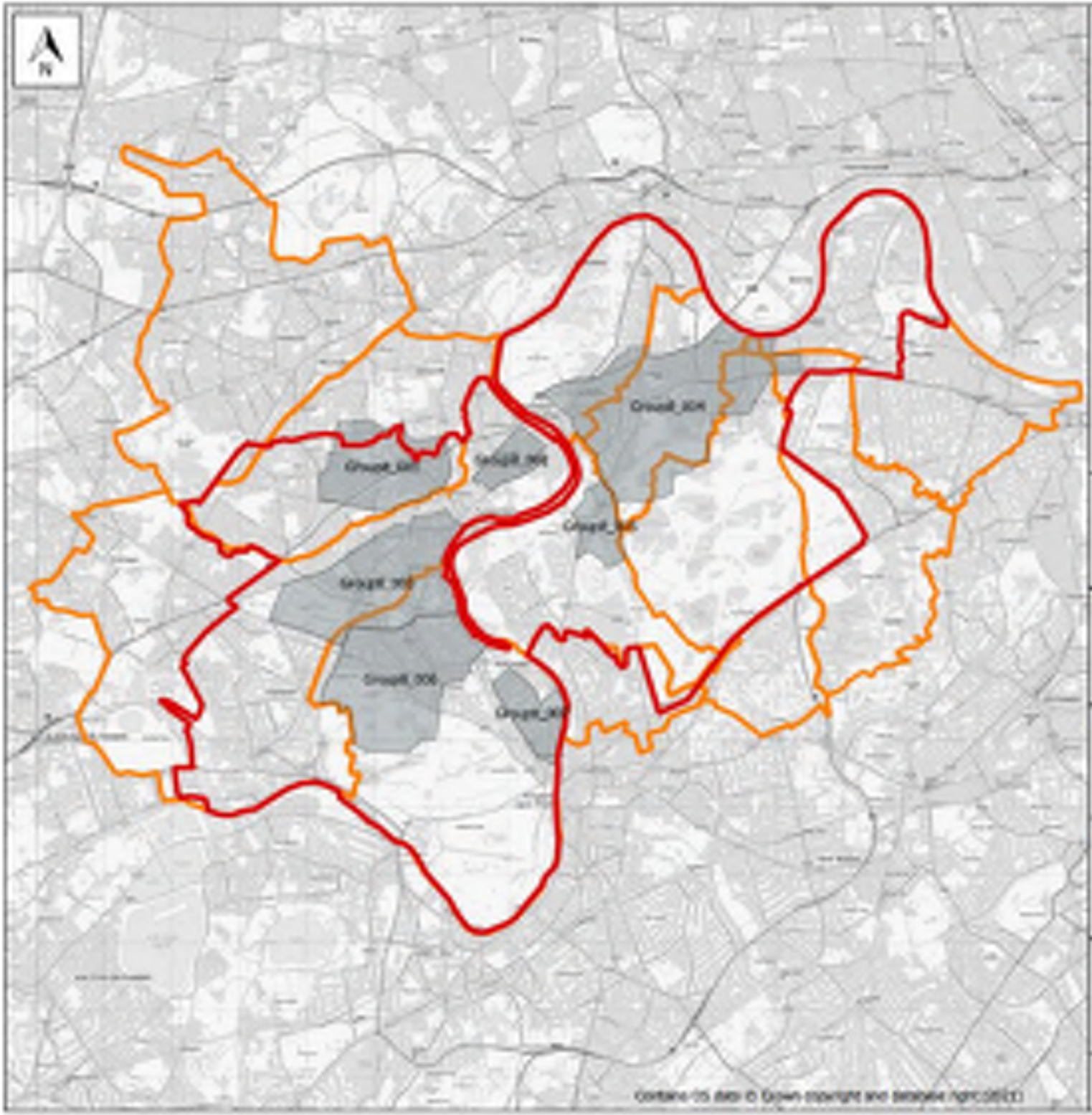
Project Title:

Surface Water Management Plan Update

Drawing Title:

Basin 8 Validation Analysis

1:30,000	Drawing Size A3	Drawing Number Figure No. 3.4



Legend

- Richmond Borough Boundary
- New Catchments
- Critical Drainage Areas

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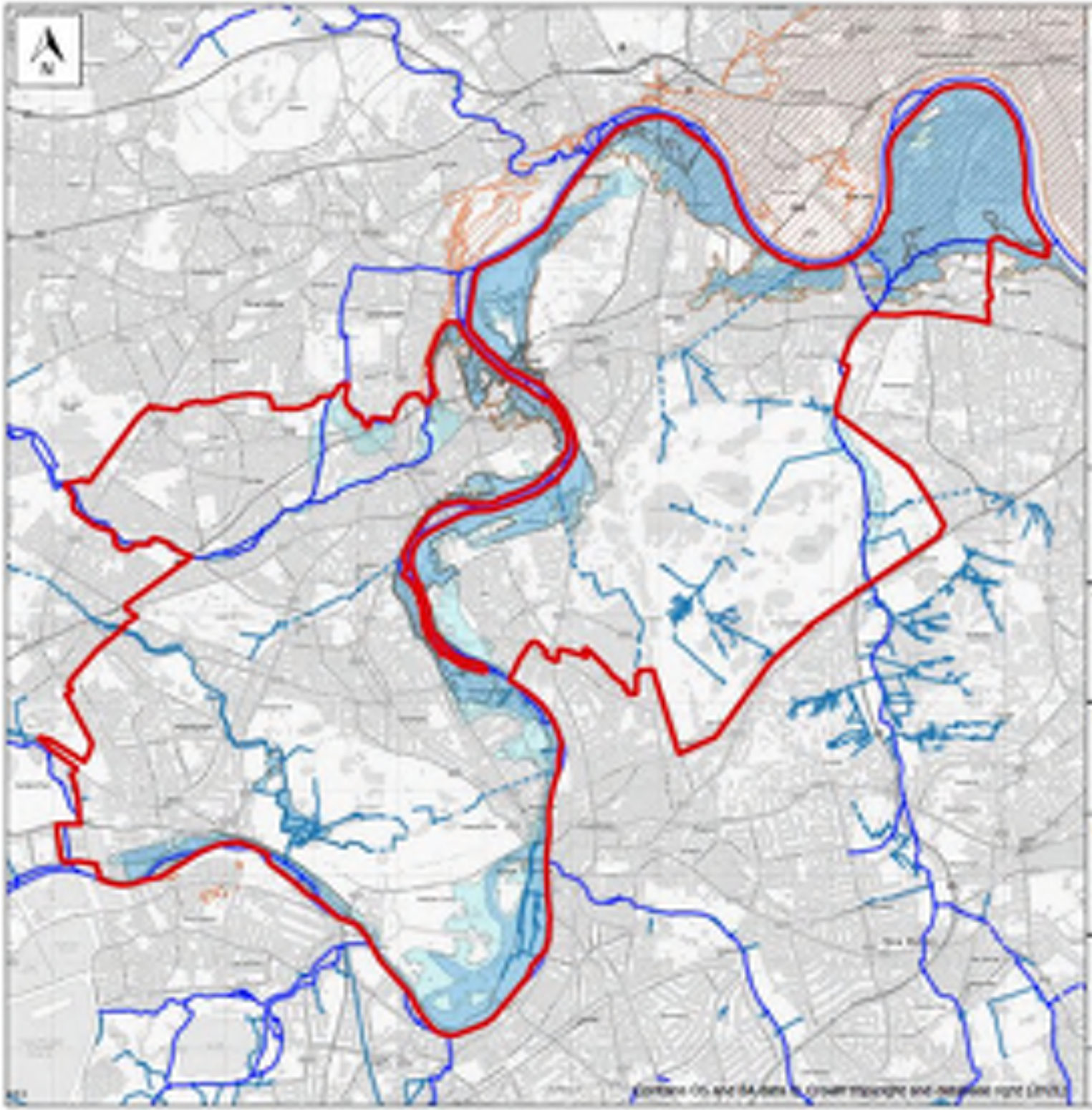
Project Title

Surface Water Management Plan Update

Drawing Title

New Catchments Underlain by Previous Critical Drainage Areas

1:58,000	Drawing Size A3	Drawing Number Figure No. 3.1



Legend

- Richmond Borough Boundary

Flood Map for Planning Rivers and Sea

- Areas Benefiting from Flood Defences
- Flood Zone 2
- Flood Zone 3

Detailed River Network

- Main River
- Main River - Culverted
- Ordinary Watercourse
- Ordinary Watercourse - Culverted

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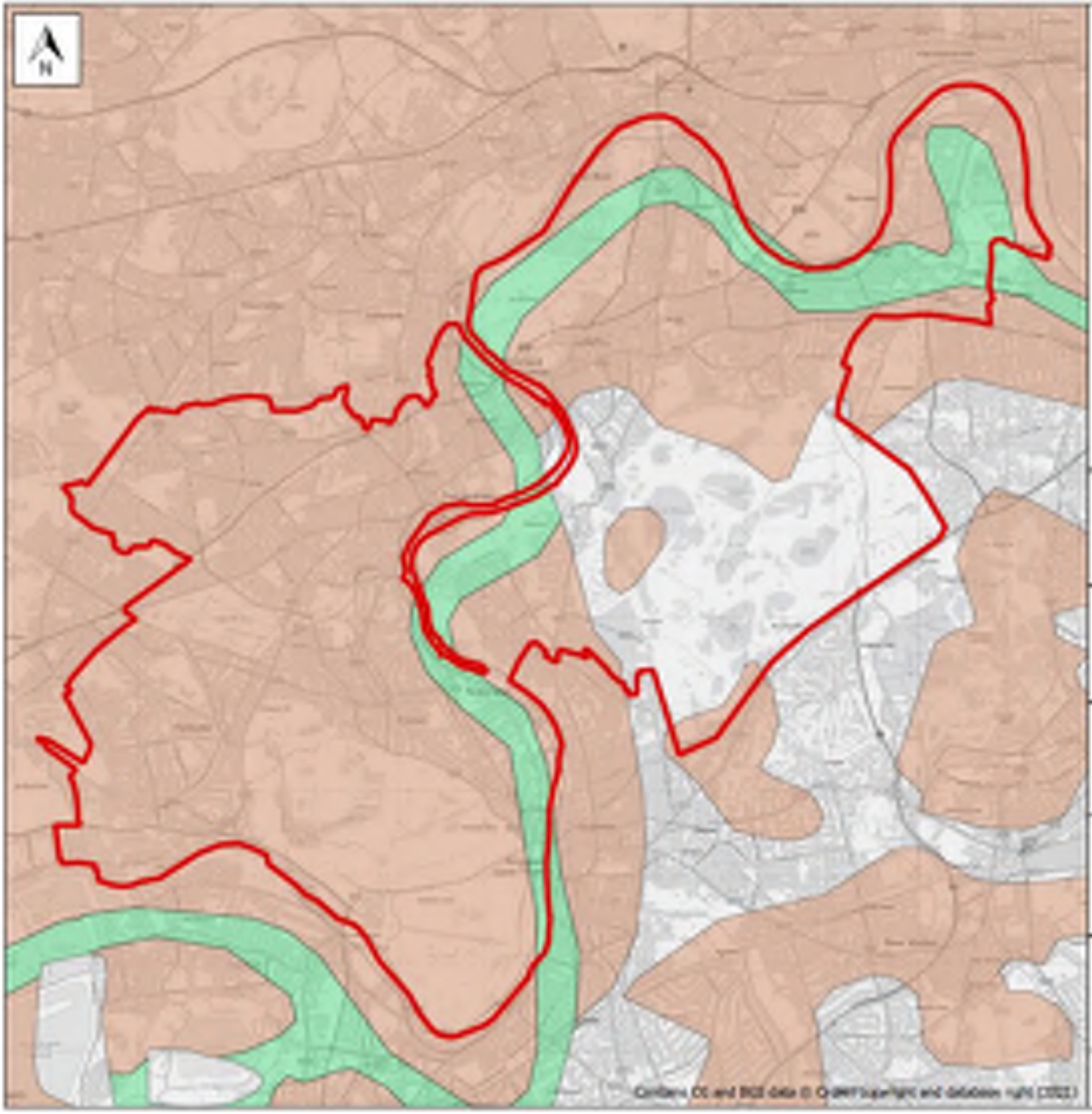
Project Title

Surface Water Management Plan Update

Drawing Title

Watercourses and Fluvial Flood Zones

1:45,000	Drawing Size A3	Drawing Number Figure No. 2.3



Legend

- Richmond Borough Boundary

Superficial Geology

- Clay, Silt and Sand
- Sand and Gravel

Bedrock Geology

- Clay, Silt, Sand and Gravel

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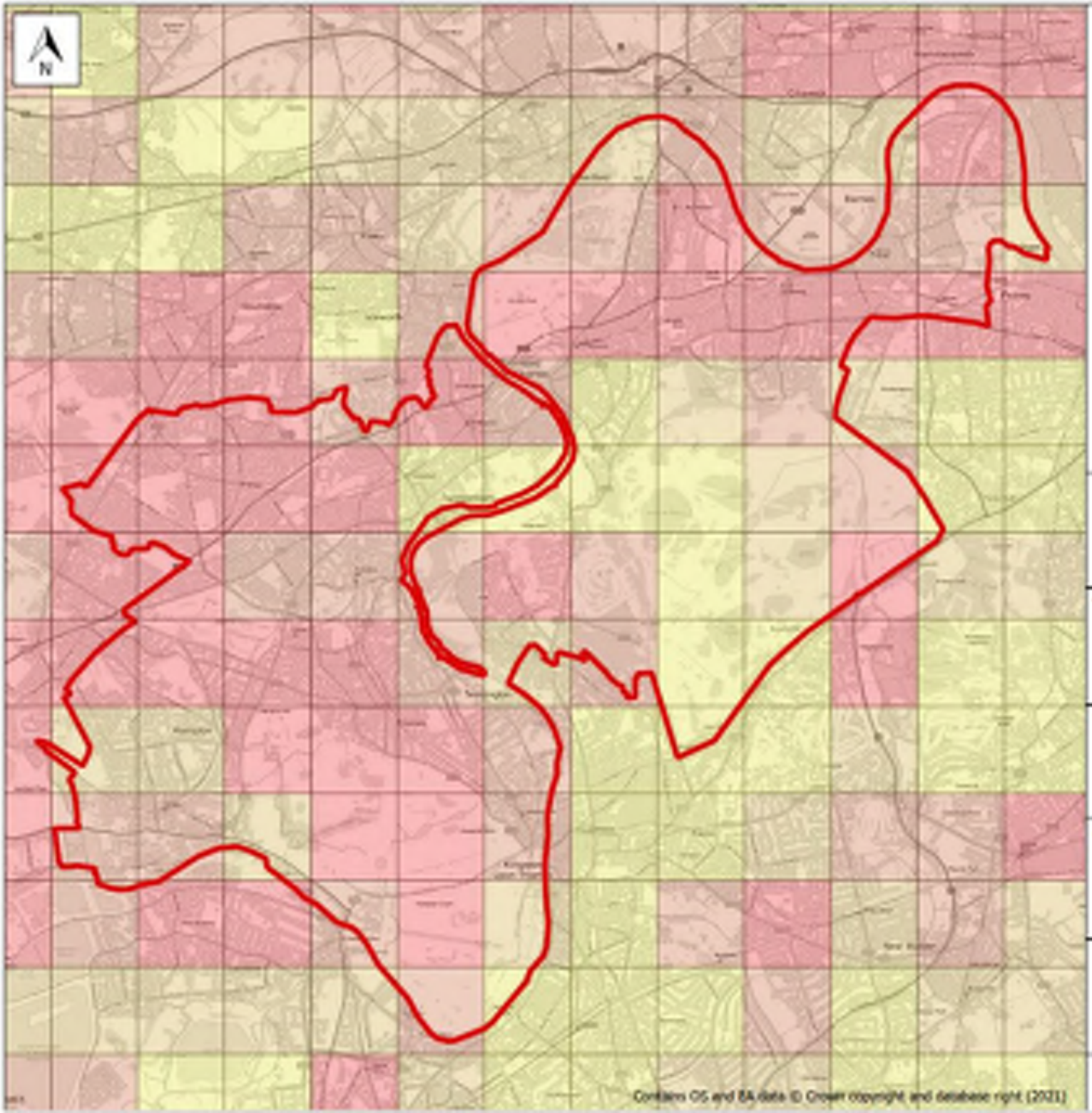
Project Title

Surface Water Management Plan Update

Drawing Title

Geological Map of Richmond

1:45,000	Drawing Size A3	Drawing Number Figure No. 2.5



Legend

Richmond Borough Boundary

Areas Susceptible to Groundwater Flooding 2010

- < 25%
- >= 25% <50%
- >= 50% <75%
- >= 75%

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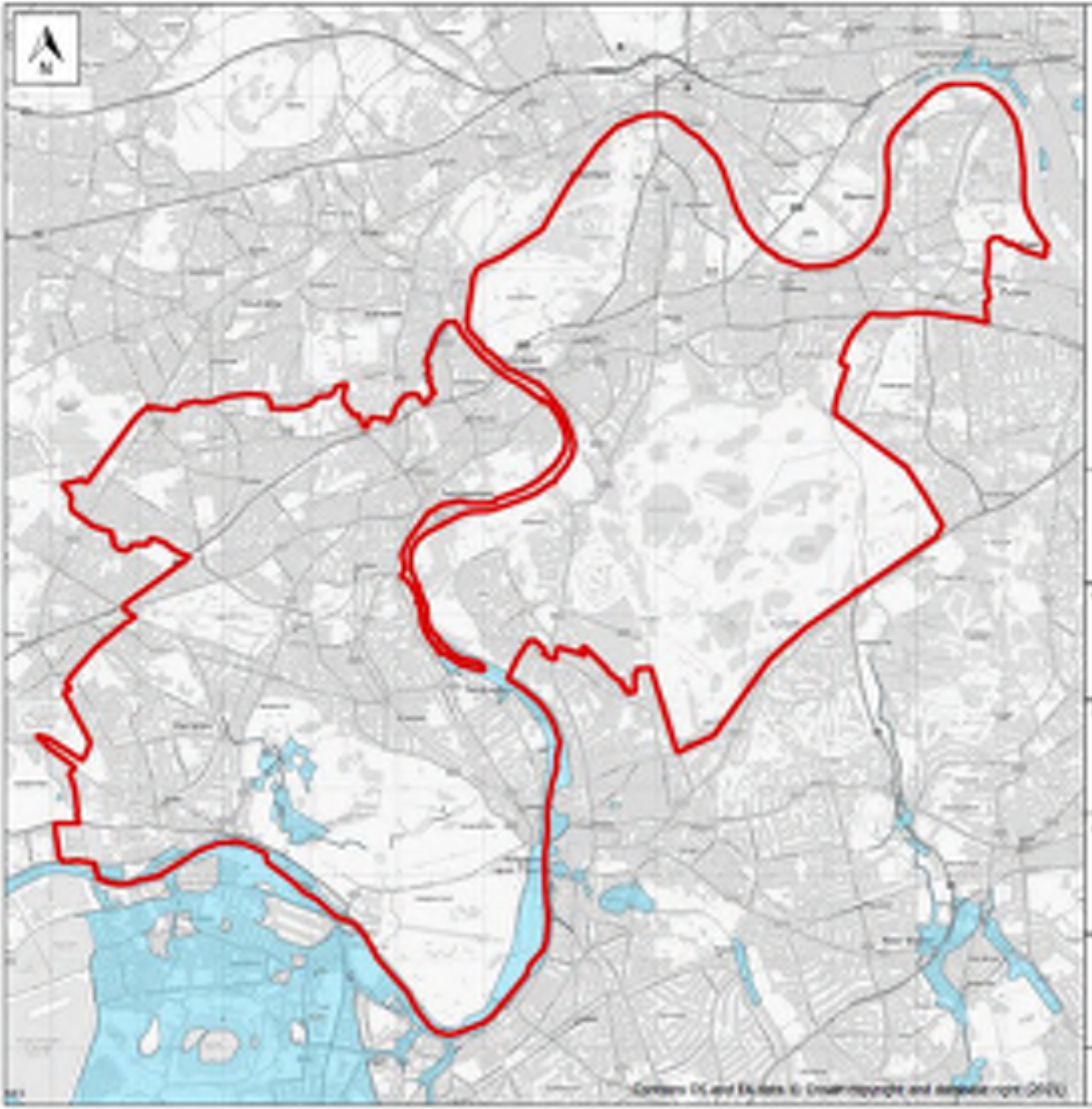
Project Title

Surface Water Management Plan Update

Drawing Title

Groundwater Flood Risk

1:45,000	Drawing Size A3	Drawing Number Figure No. 2.6



Legend

- Richmond Borough Boundary
- Historic Flood Map

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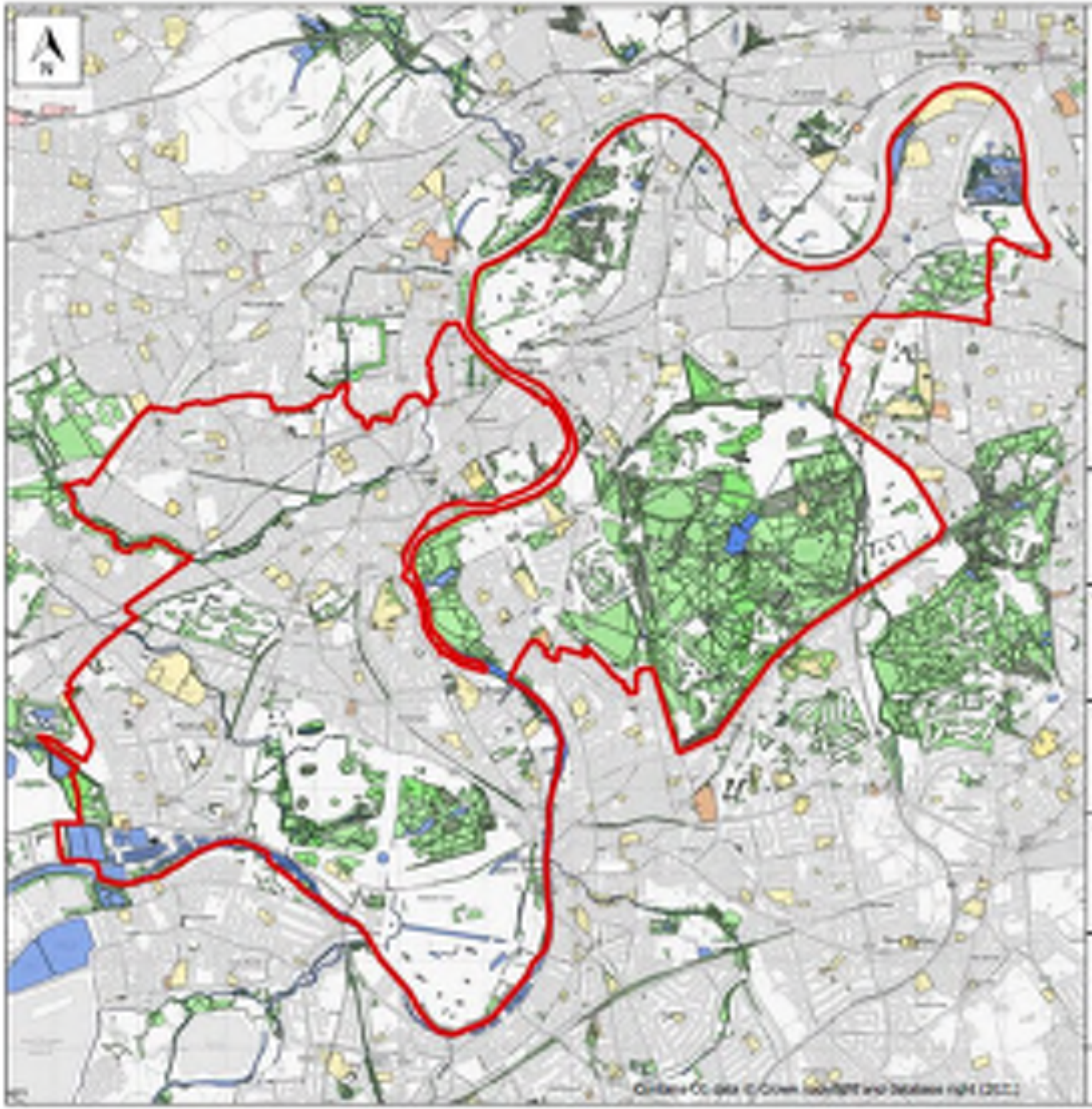
Project Title

Surface Water Management Plan Update

Drawing Title

Historic Flooding Map

1:45,000	Drawing Size A3	Drawing Number Figure No. 2.11



Legend

Richmond Borough Boundary

Land Uses

- Education
- Medical Care
- Road Transport
- Inland Water
- Open Semi-Natural
- Woodland

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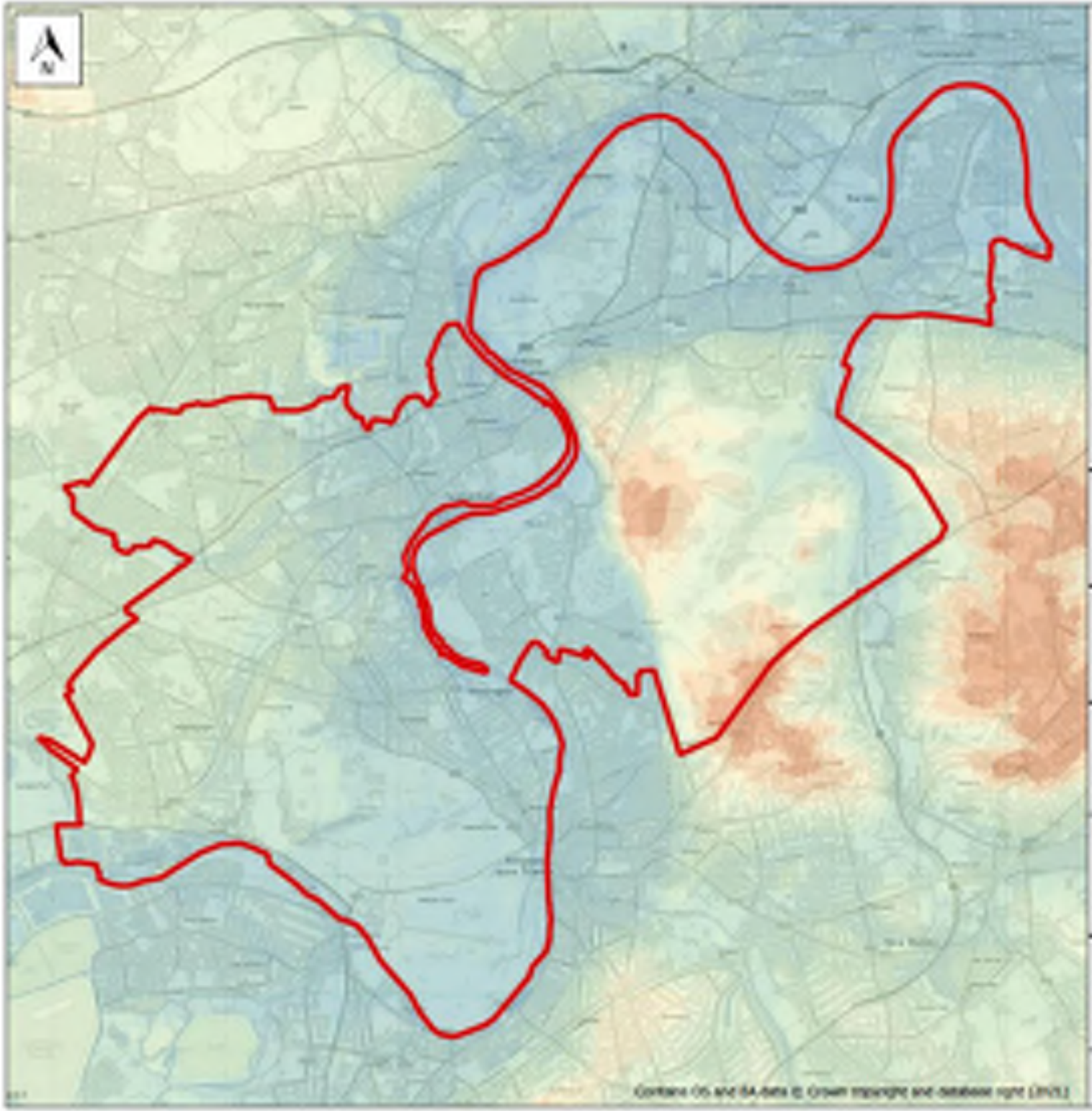
Project Title

Surface Water Management Plan Update

Drawing Title

Land Uses

1:45,000	Drawing Size A3	Drawing Number Figure No. 2.2



Legend

- Richmond Borough Boundary

Digital Terrain Map (m AOD)

- <= -1
- -1 - 4
- 4 - 6
- 6 - 9
- 9 - 11
- 11 - 16
- 16 - 21
- 21 - 26
- 26 - 31
- 31 - 41
- 41 - 51
- 51-76

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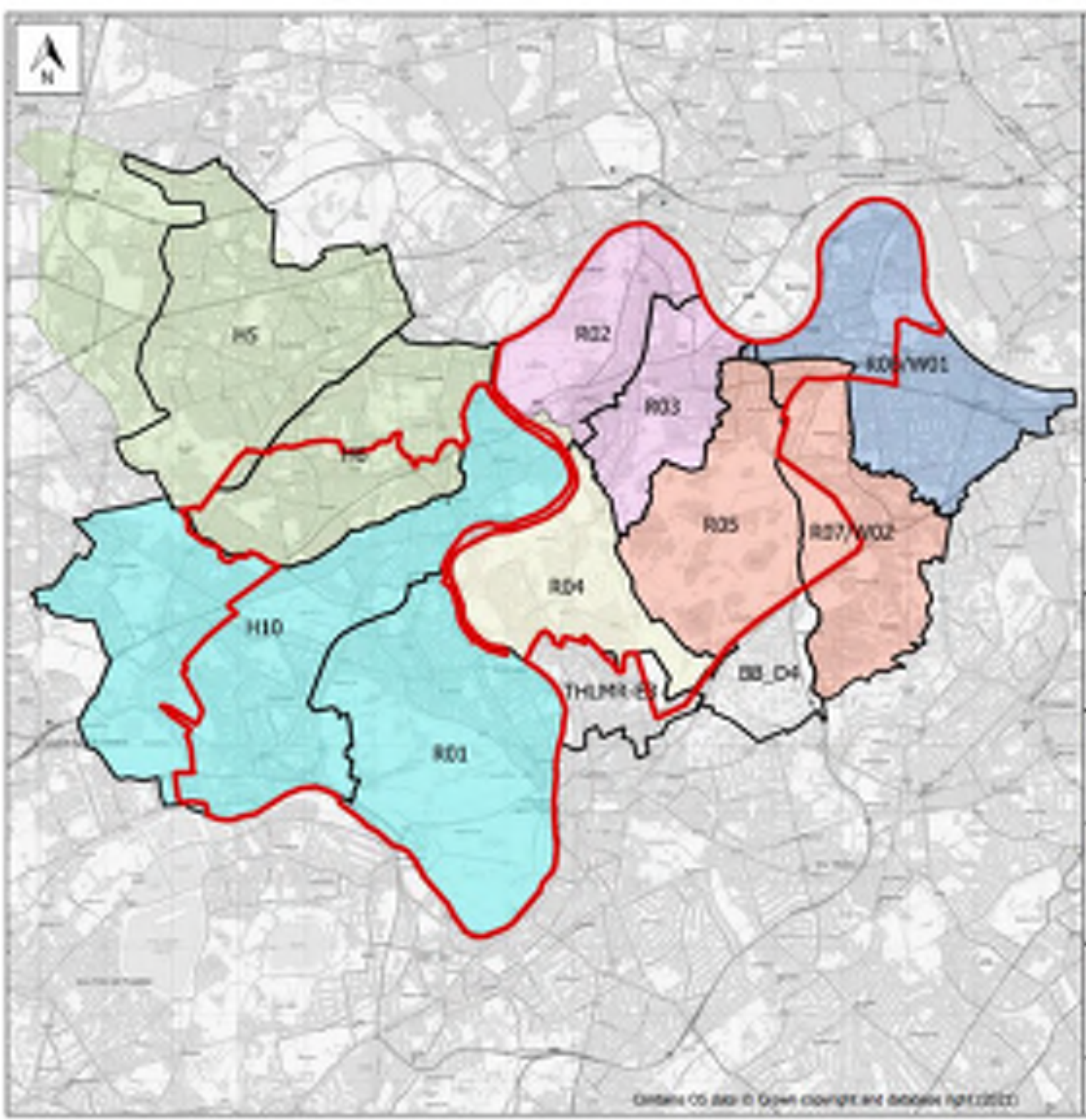
Project Title

Surface Water Management Plan Update

Drawing Title

LiDAR Representation of the Topography within Richmond

1:45,000	Drawing Size A3	Drawing Number Figure No. 2.1



Legend

- Richmond Borough Boundary

New Basins

- Basin A
- Basin B
- Basin C
- Basin D
- Basin E
- Basin F
- New Catchments and Catchment No.

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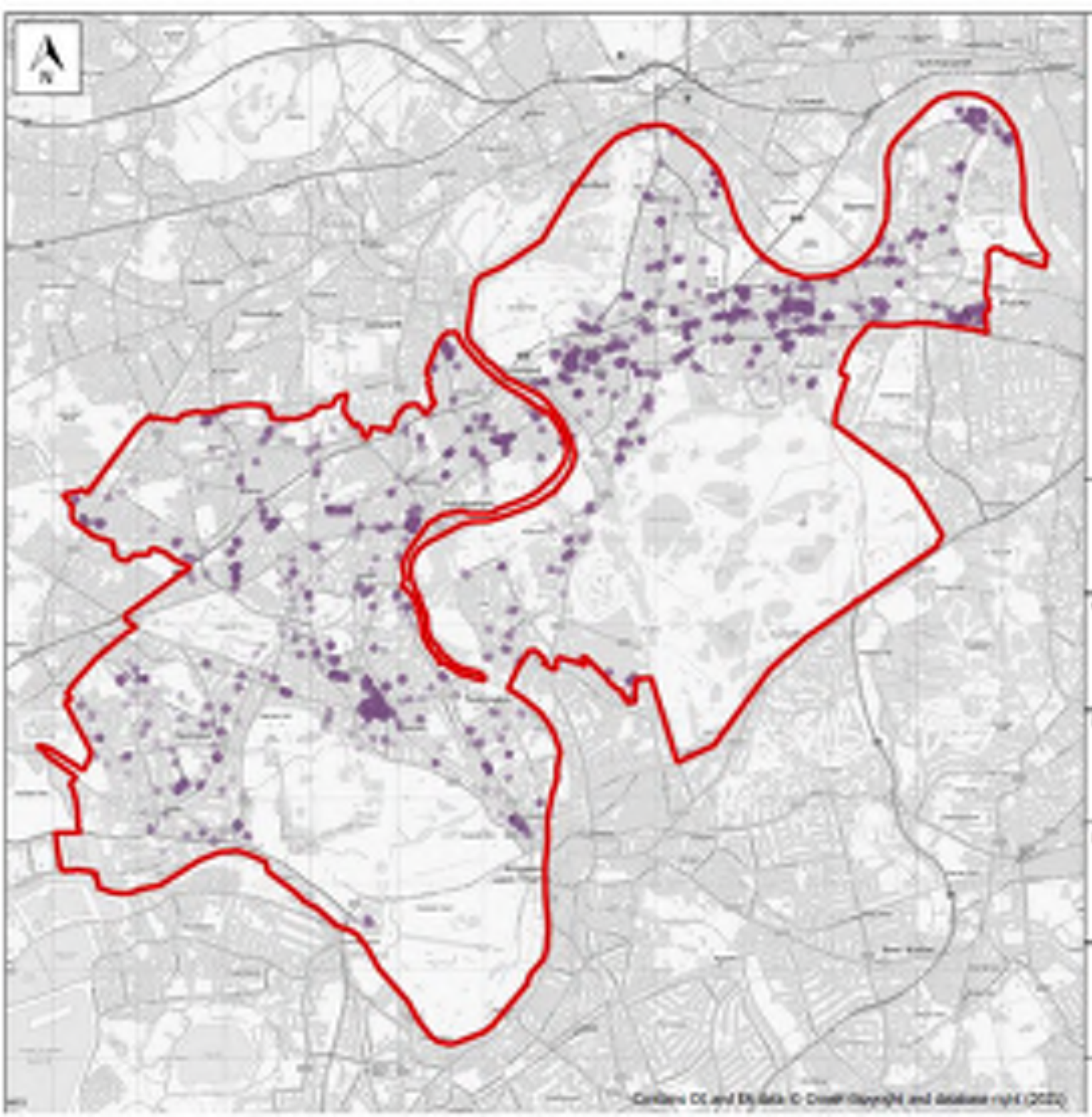
Project Title

Surface Water Management Plan Update

Drawing Title

New Catchments and New Basins

1:58,000	Drawing Size A3	Drawing Number Figure No. 3.2



Legend

- Richmond Borough Boundary
- Properties at Risk - 1 in 100 Year

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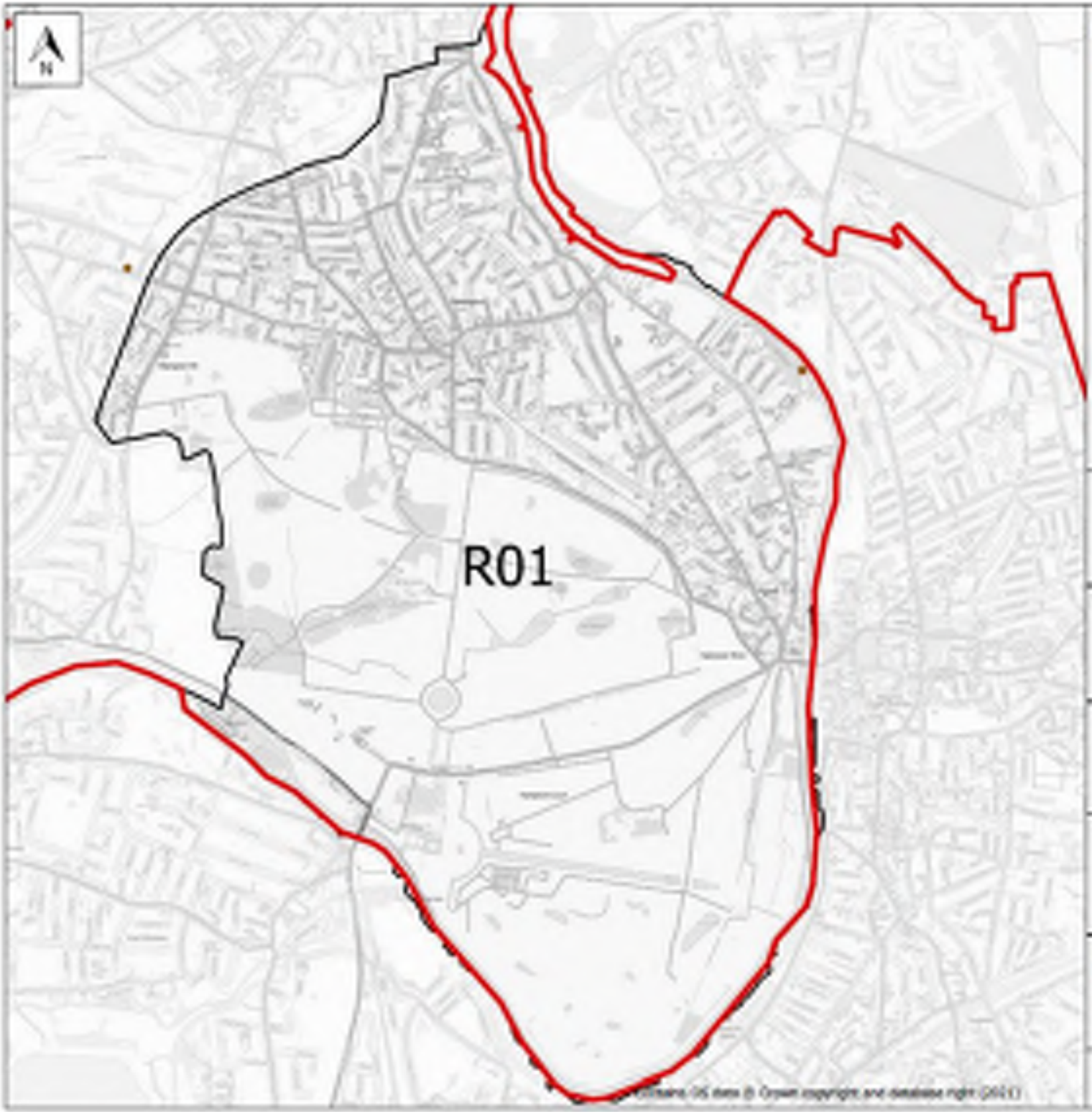
Project Title

Surface Water Management Plan Update

Drawing Title

Properties at Risk from Surface Water Flooding for the 1 in 100 Year Flood Event

1:45,000	Drawing Size A3	Drawing Number Figure No. 2.5



Legend

- Richmond Borough Boundary
- Catchment R01 - Hampton
- Historic Flood Incidents

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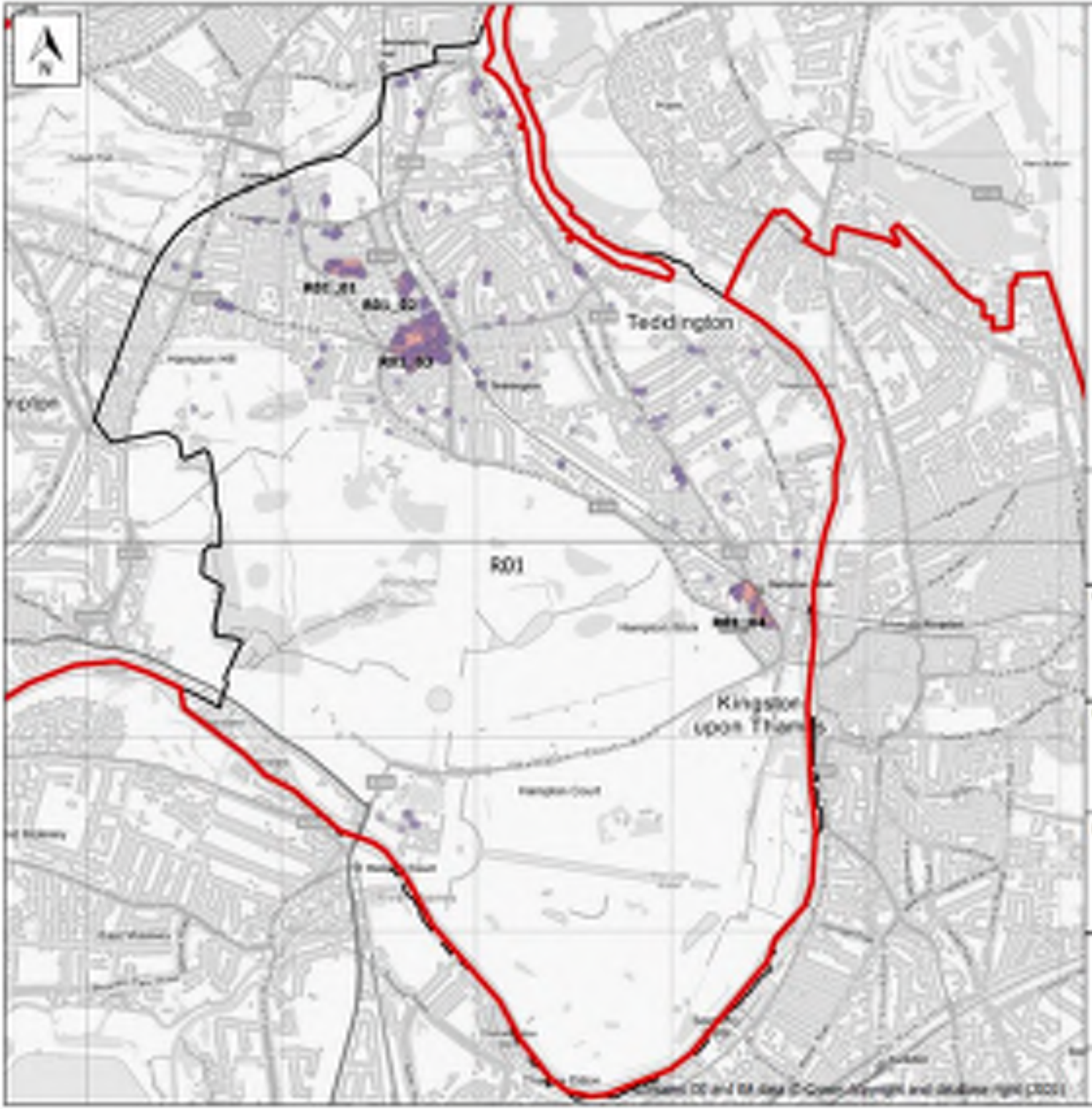
Project Title

Surface Water Management Plan Update

Drawing Title

Catchment R01 Hampton Historic Flood Incidents and Flood Incident Areas

1:20,000	Drawing Size A3	Drawing Number Figure No. 4.3



Legend

- Richmond Borough Boundary
- Catchment R01 - Hampton
- Hotspots
- Properties at Risk - 1 in 100 Year

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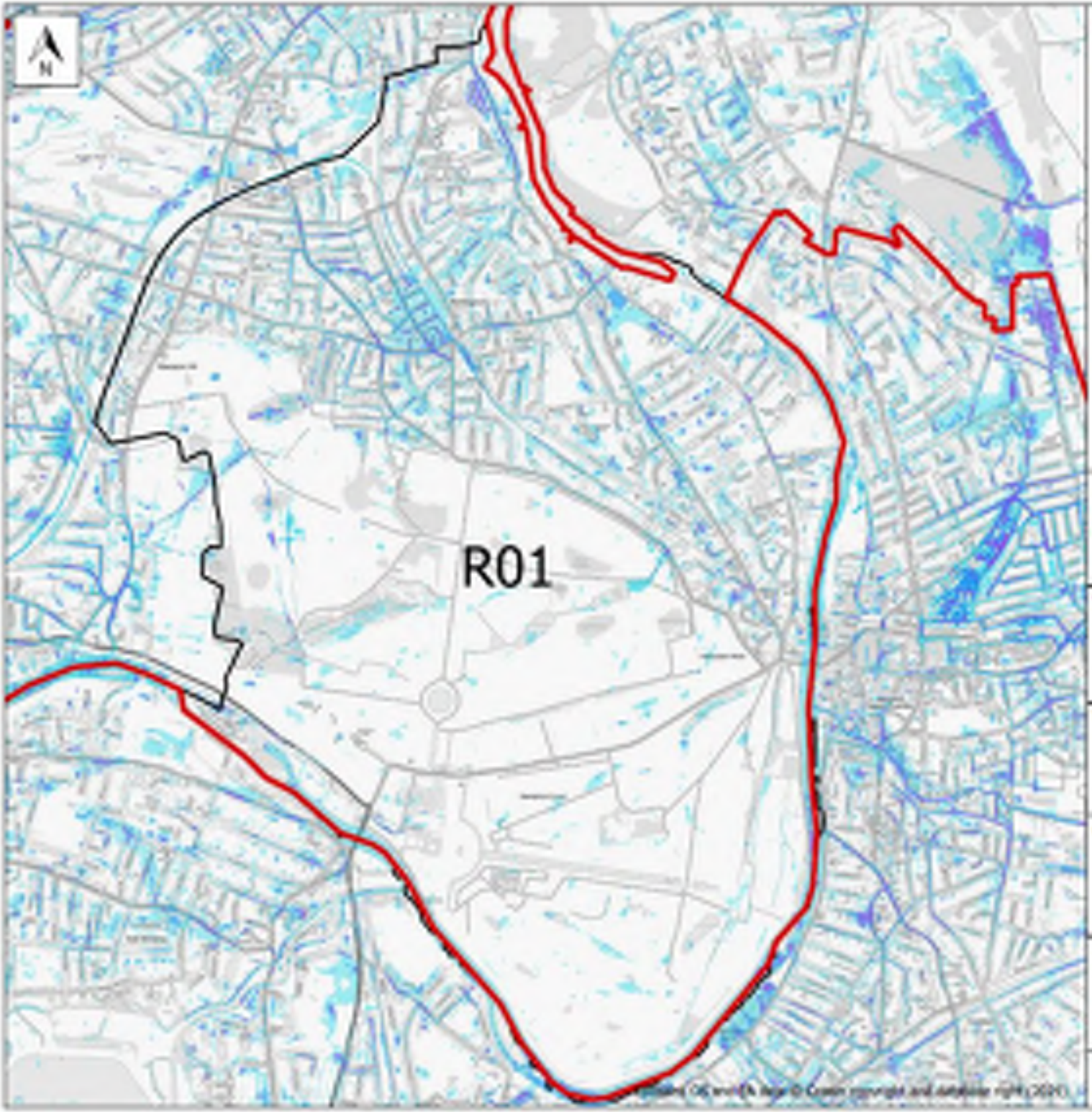
Project Title

Surface Water Management Plan Update

Drawing Title

Catchment R01 Hampton Properties at Risk and Hotspots

1:20,000	Drawing Size A3	Drawing Number Figure No. 4.2



Legend

- Richmond Borough Boundary
- Catchment R01 - Hampton

Risk of Flooding from Surface Water (RoFSW)

- RoFSW Extent - 1 in 30 year
- RoFSW Extent - 1 in 100 year
- RoFSW Extent - 1 in 1000 year

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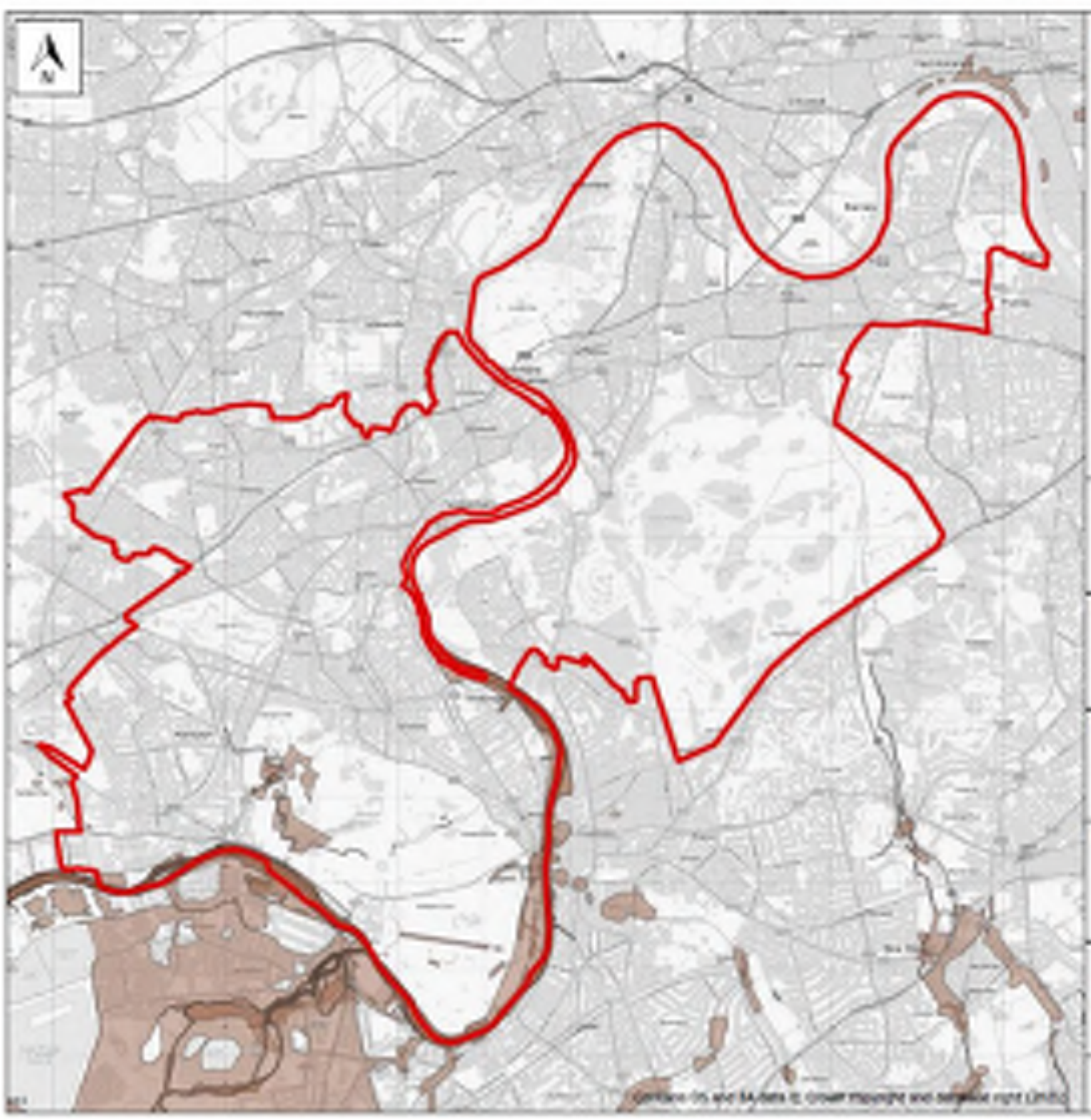
Project Title

Surface Water Management Plan Update

Drawing Title

Catchment R01 Hampton Boundary and Surface Water Flood Risk

1:20,000	Drawing Size A0	Drawing Number Figure No. 4.1



Legend

- Richmond Borough Boundary
- Recorded Flood Outlines

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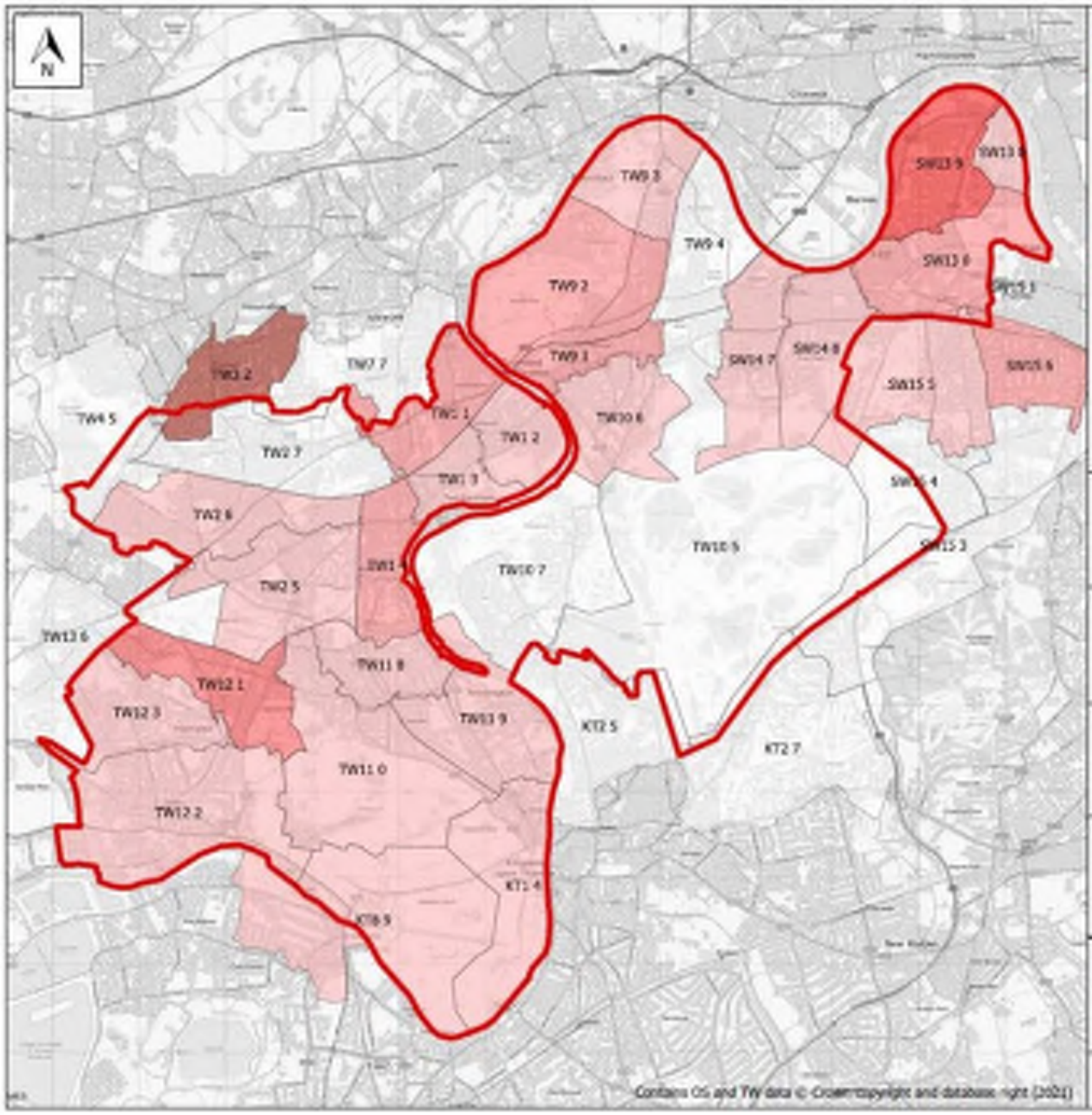
Project Title:

Surface Water Management Plan Update

Drawing Title:

Recorded Flood Outlines

1:45,000	Drawing Size A0	Drawing Number Figure No. 2.30



Legend

Richmond Borough Boundary

Richmond Sewer Flooding Incidents

- 0
- 1-5
- 6 -10
- 11-15
- 16-20
- 21-25
- >26

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London Borough of Richmond upon Thames

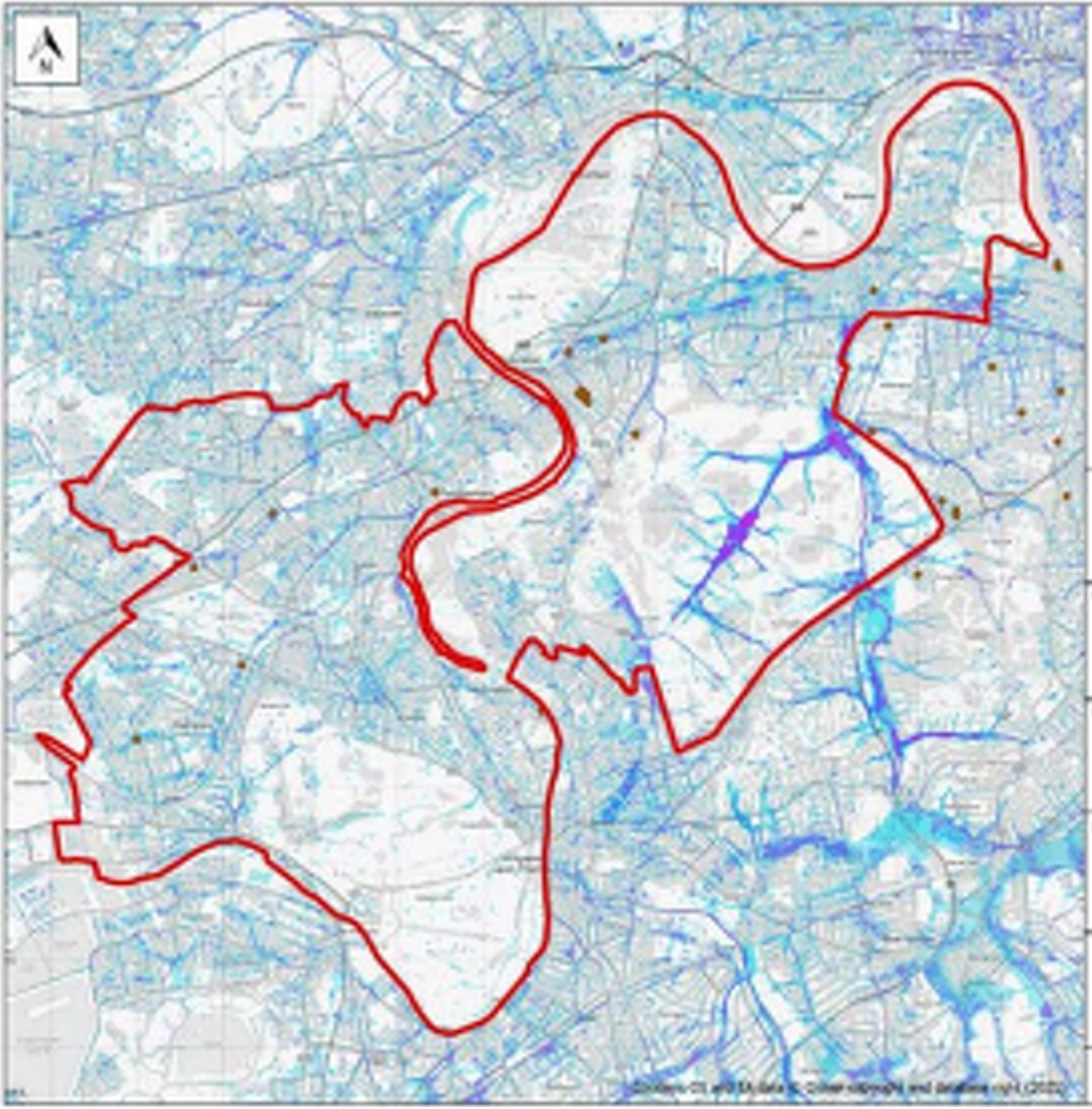
Project Title

Surface Water Management Plan Update

Drawing Title

Sewer Flood Risk

1:45,000	Drawing Size A3	Drawing Number Figure No. 2.7



Legend

- Richmond Borough Boundary
- Surface Water Flooding Incidents

Risk of Flooding from Surface Water (RoFSW)

- RoFSW Extent - 1 in 30 year
- RoFSW Extent - 1 in 100 year
- RoFSW Extent - 1 in 1000 year

Client

Project Title

Surface Water Management Plan Update

Drawing Title

Surface Water Flood Risk

1:45,000	Drawing Size A3	Drawing Number Figure No. 2.4

Appendix D – Flood Maps

whitby wood

91-94 Lower Marsh, London, SE1 7AB

HAMPTON WICK CRICKET CLUB
P451640
13/03/2024

FLOOD ZONE MAP

Legend

- Site Boundary
- Areas Benefiting from Flood Defences
- Flood Zone 2
- Flood Zone 3

1:5,000

whitby wood

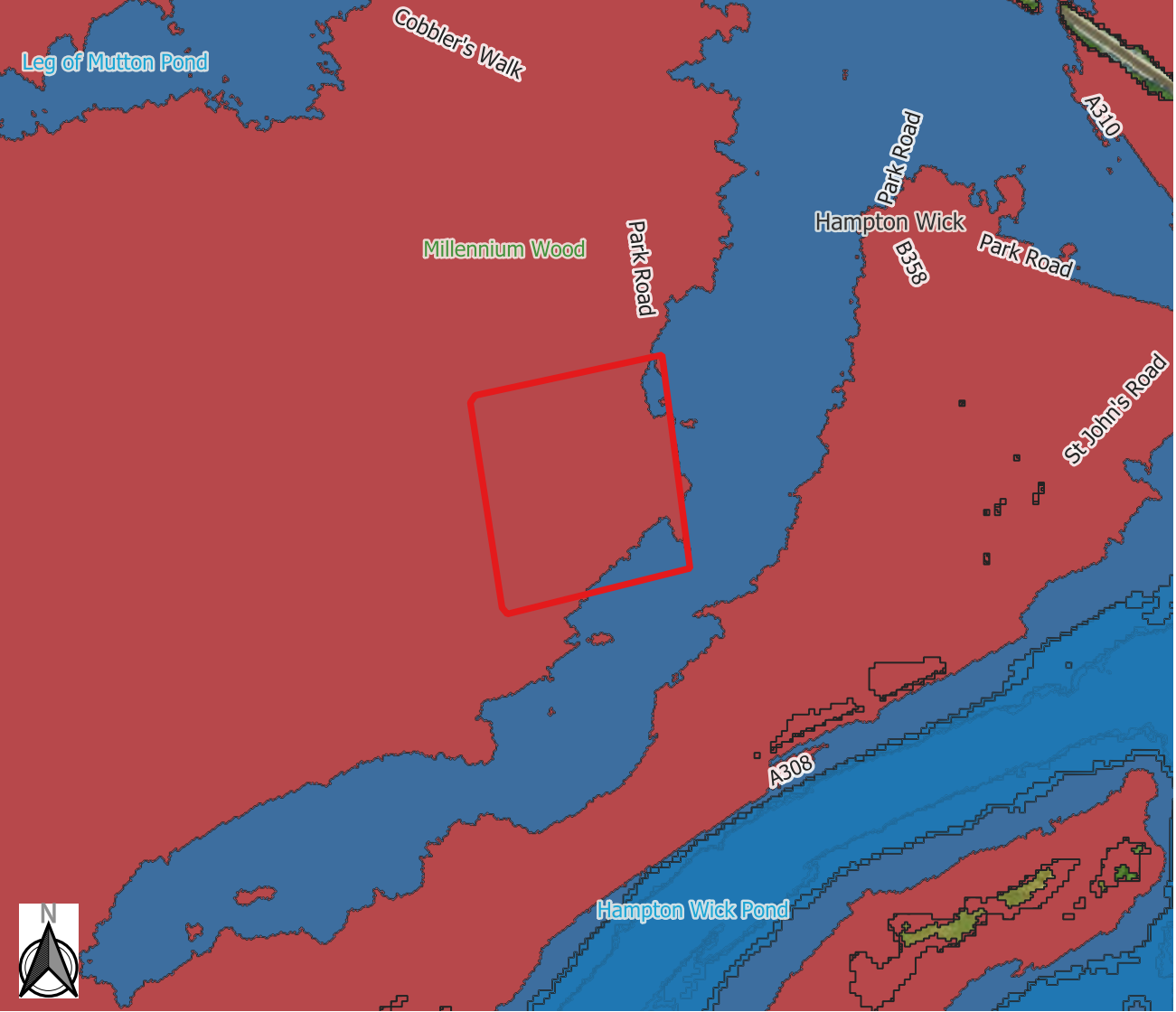
91-94 Lower Marsh, London, SE1 7AB

HAMPTON WICK CRICKET GROUND
P451640
13/03/2024
RISK OF FLOODING FROM SURFACE WATER (EXTENT)

Legend

- Site Boundary
- RoFSW Extent 1in30
- RoFSW Extent 1in100
- RoFSW Extent 1in1000

1:5,000



whitby wood

91-94 Lower Marsh, London, SE1 7AB

HAMPTON WICK CRICKET CLUB
P451640
13/03/2024

ARTIFICIAL FLOOD EXTENTS (RESERVOIR FLOODING)

Legend

- Site Boundary
- Reservoir Flood Extents (Dry Day)
- Reservoir Flood Extents (Wet Day)

1:5,000

whitby wood

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