Flood Risk Assessment Report St Pancras Substation, Camden, London, NW1 0DP

Prepared for Fisher German, on Behalf of UK Power Networks

24/04/2024

Rev01

Michael Crown
Divisional Director
Michael.crown@clancy.co.uk
0113 426 3434

enquiries@clancy.co.uk
www.clancy.co.uk

Clancy Consulting Limited
Park House,
Park Square West
Leeds
LS1 2PW

Revision	Date	Revision Description		Name	Signature
00	04/04/2024	Initial Issue	Prepared	Jack Prest	JP
			Checked	Christopher Micklethwaite	CAM
			Approved	Michael Crown	MLC
01	24/04/24	Amended in line with Drainage Strategy Report	Prepared	Jack Prest	JP
			Checked	Chris Micklethwaite	CAM
			Approved	Michael Crown	MLC

Executive Summary

Client	Fisher German, on behalf of UK Power Networks
Location	St Pancras Substation, Camden, London, NW1 0DP
Description	Erection of a new car parking and van parking spaces for use of the UK Power Networks operatives and staff, and storage areas. The proposals also seek the creation of a new open metal fence to replace the existing wall.
Report Objectives	The aim of this report is to undertake the following: • Review of the proposal drawings and topographical survey information for the site. • Obtain up to date information from the Environment Agency / Camden Council / Lead Local Flood Authority relating to flood levels, data, and flood extents in the vicinity of the site. • Investigate records of fluvial, pluvial or ground water flooding incidents in the vicinity of the development. • Identify flood risk mechanisms or issues and appropriate flood risk mitigation measure appropriate for the development and locality.
Flood Zones	The Environment Agency Flood Maps for Planning indicates that the proposed development site is situated within Flood Zone 1 at low risk of flooding, that the site is situated outside of modelled reservoir flood map zones and that the low-lying catchment areas may be prone to medium to low risk of overland flood flows in the event of exceedance of the drainage networks within the vicinity of the site.
Key Considerations	This Flood Risk Assessment Report is to inform and to be read in conjunction with the drainage strategy: 21-0644-St Pancras DSR
Greenfield Runoff Rate	The existing greenfield runoff rate has been calculated using the FEH method to be 1.0l/s.

Contents

1.0 Introduction

1.1 General

Clancy Consulting Limited (CCL) have been commissioned by Fisher German, on behalf of UK Power Networks to produce this Flood Risk Assessment (FRA) in support of a planning application for the proposed re-development at St Pancras Substation, Camden, London, NW1 0DP.

The local planning authority (LPA) Is Camden Council, the local highway and Lead Local Flood Authority (HLLFA) is also The London Borough of Camden Council.

The local Incumbent potable water mains provider is Thames Water (TW).

The local sewerage undertaker is Thames Water (TW).

This report sets out the results of a flood risk assessment required by the LPA and LLFA in support of the planning application for the new development. The assessment has been carried out in accordance with the general principles set out in National Planning Policy Framework published in December 2023 and Technical Guidance to the National Planning Policy Framework.

This report is prepared solely for the benefit of the Client. This report may not be assigned without prior written permission from Clancy Consulting Limited.

1.2 Background Information

In March 2012, the Government released National Planning Policy Framework (NPPF) aiming to make the planning system less complex and more accessible, to protect the environment and promote sustainable growth.

NPPF accompanied with the Technical Guidance published also in March 2012 supersedes PPS25 although the principles set out in the new publication remain similar in terms of the flood risk aspect.

A new updated NPPF revision was published in December 2023 within which the flood risk principals remain similar to the NPPF published in March 2012.

The flood risk Practice Guide was published on-line in March 2014 and updated in February 2017.

As part of its general obligations under the Water Resources Act 1991, The Environment Agency has carried out surveys of its existing defences against flooding and has published a series of nationwide 'Indicative Floodplain Maps' based upon information from historic flood events and basic hydraulic modelling. In general terms, these maps give a good indication of the areas likely to be affected by flooding. More recently, the Environment Agency have published the 'Flood Map' on their website which is based on improved hydraulic modelling and detailed local data indicating the flood zones.

The Environmental Agency flood zones related to are defined within the Technical Guidance to the National Planning Policy Framework as detailed below:

Zone 1: Low Probability (Flood Zone 1)

This zone comprises land assessed as having a less than 1 in 1000 annual probability of river or sea flooding in any one year. (<0.1%)

Zone 2: Medium Probability (Flood Zone 2)

This zone comprises land assessed as having between 1 in 100 and 1 in 1000 annual probability of river flooding (1%-0.1%) or between a 1 in 200 and 1 in 1000 annual probability of sea flooding (0.5% - 0.1%) in any year.

Zone 3a: High Probability (Flood Zone 3a)

This zone comprises land assessed as having between 1 in 100 or greater annual probability of river flooding (>1%) or a 1 in 200 or greater annual probability of flooding from the sea (>0.5%) in any year.

Zone 3b: Functional Flood Plain (Flood Zone 3b)

This zone comprises land where water has to flow or be stored in times of flood. Strategic Flood Risk Assessments should identify this zone.

1.3 Structure of the Report

The report has been structured to follow the general principals set out in the Technical Guidance published in March 2012.

The methodology for this FRA has comprised a desktop study, topographical survey and liaison with the Camden LLFA, Sewerage undertaker Thames Water, and the Environment Agency (EA). Reference has also been made to relevant plans and reports where applicable.

Sources of information:

- Flood maps from the Environment Agency (EA) published online (Gov.uk)
- Environment Agency Maps Product 1 - Data supplied by the Environment Agency under the Open Government License v3.0
- Department for Environment Food and Rural Affairs (DEFRA) Records – Magic Maps
- British Geological Survey (BGS) Records.
- Camden Strategic Flood Risk Management Strategy (FMS)
- Camden Council Strategic Flood Risk Assessment (SFRA)
- Environment Agency Statutory Main River Map (EA)

2.0 Site Description

2.1 Location

Figure 1 below identifies an illustrative site boundary (red line) for the proposed UK Power Networks development, the blue line represents buildings that are proposed to remain unchanged. This can be found in **Appendix A**.

The site extents cover circa 0.400 Ha and is located on brownfield land in Camden, as detailed below:

OS X (Eastings)	529309
OS Y (Northings)	183930
Nearest Post Code	NW1 0DP
Lat (WGS84)	N51:32:20:26 (51.538961)
Long (WGS84)	W0:8:6:91 (-0.135252)
National Grid Ref	TQ 2983 3093

Table 1: Site Location Approximate Land Parcel Centre

.

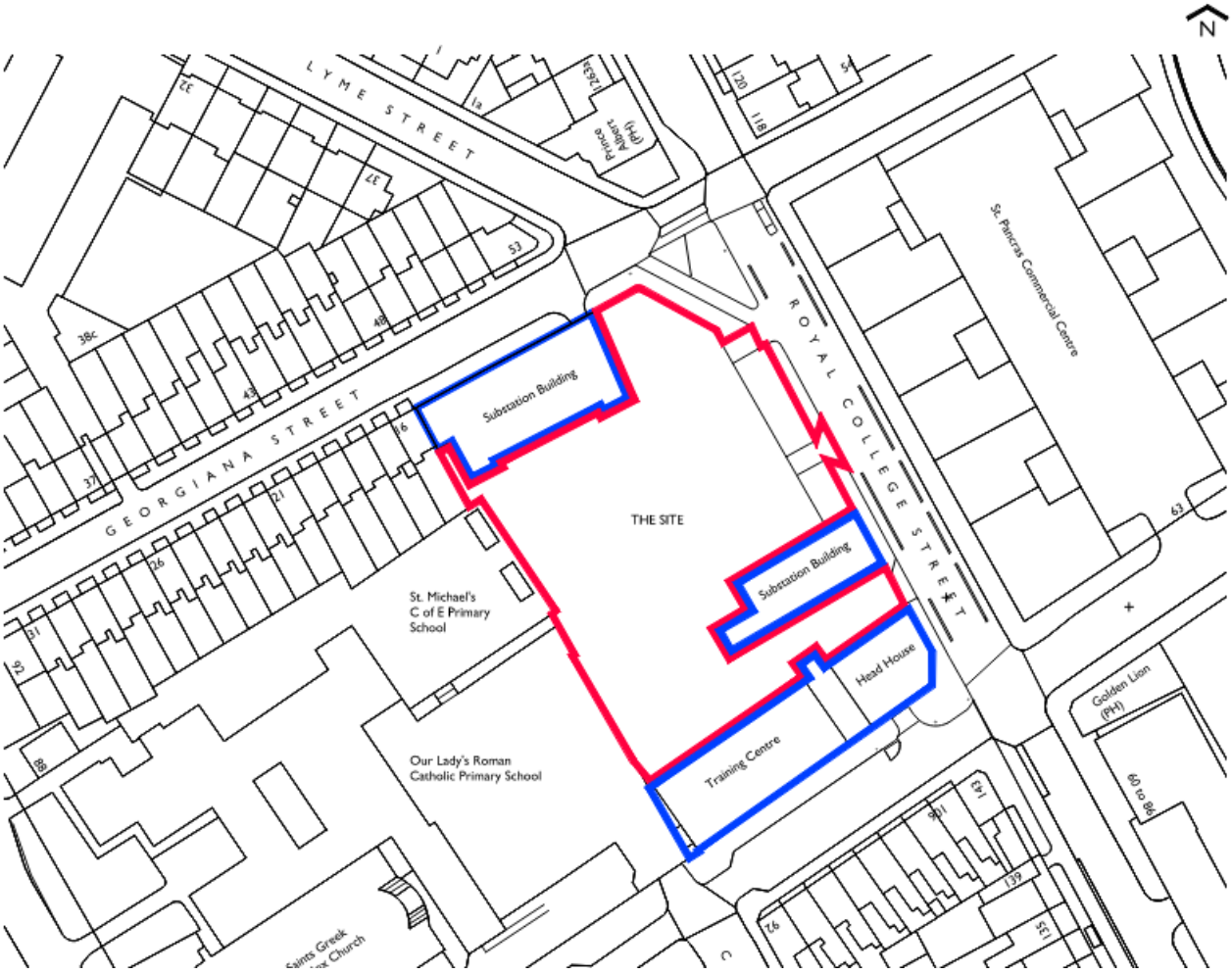


Figure 1 – Site Location Plan

2.2 Site Observations

The existing substation site is located within the London Borough of Camden.

The eastern boundary is defined by Royal College Street

The west north-western boundary is defined by Georgiana Street, until it eventually intersects with Royal College Street on the north north-eastern corner of the site.

The south-eastern boundary is defined by Pratt Street, until it eventually intersects with Royal College Street on the east south-eastern corner of the site.

The south-western boundary of the site is adjacent to St Michael's CE Primary School & All Saints Greek Orthodox Church.

Opposite the existing substation compound is another redevelopment by W.RE, labelled St Pancras Campus, which has now been constructed.

The site is entirely impermeable, with hardstanding and paving around the building footprint.

A Topographical Survey was undertaken by EDF Energy in September 2008 and can be found in **Appendix B.**

2.4 Development Proposals

The description for the re-development is as follows; Erection of a new car parking and van parking spaces for use of the UK Power Networks operatives and staff, and storage areas. The proposals also seek the creation of a new open metal fence to replace the existing wall.

The proposed site plan is shown below in figure 2 and attached within **Appendix C.**

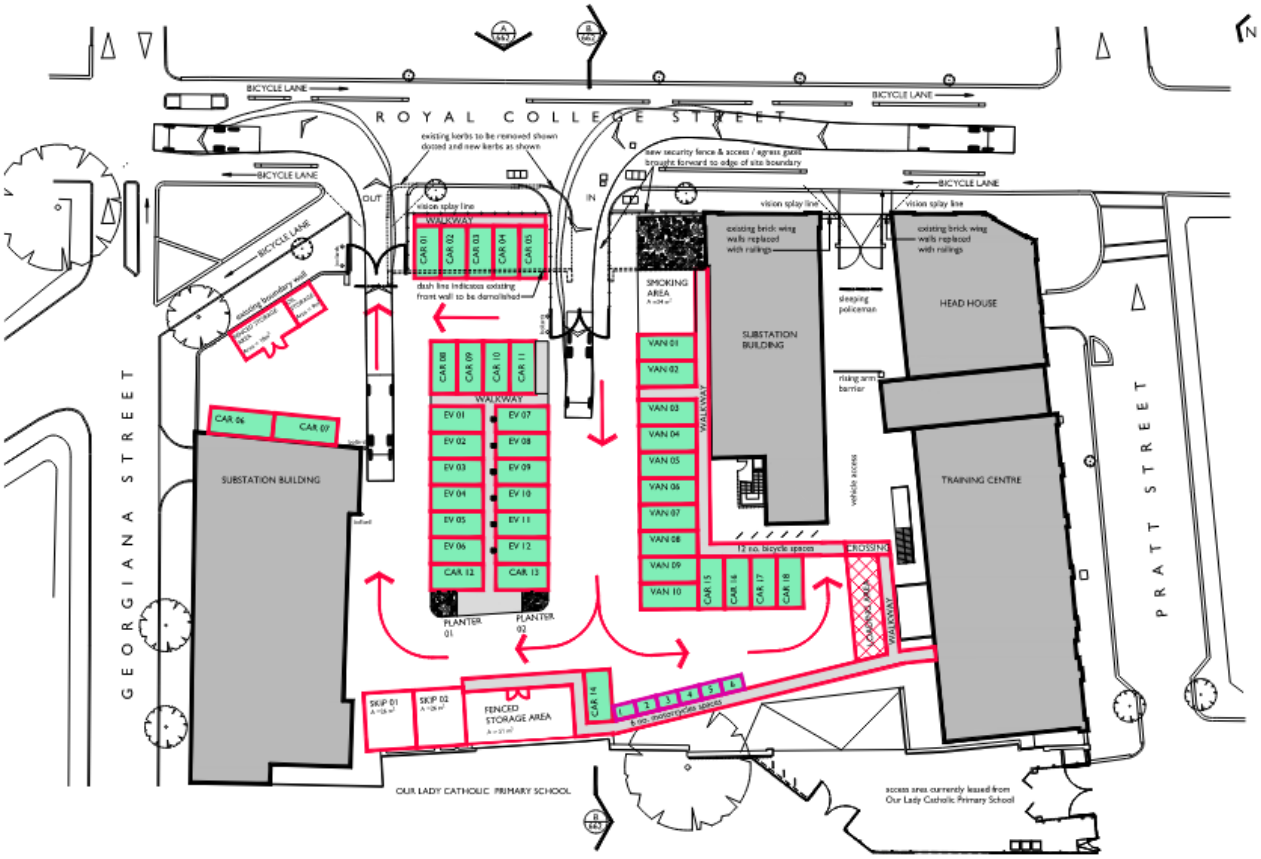


Figure 2 – Proposed Site Plan

3 Flood Potential

3.1 Potential for Flooding

The EA Flood Map for Planning from Rivers and Seas for the area of the proposed development indicates that the site lies in an area of Flood Zone 1.

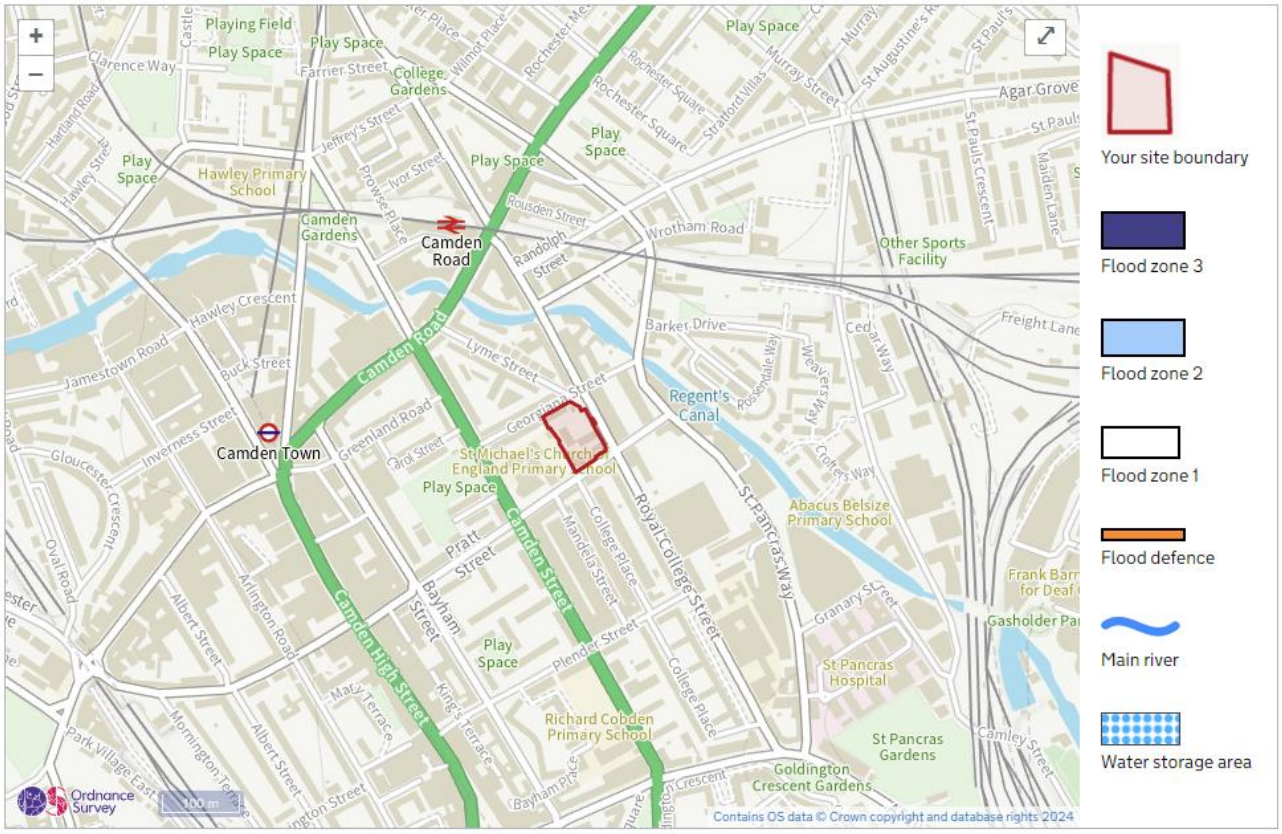


Figure 2: Flood Map from Gov.uk

The potential main sources of flooding, which are addressed in more detail in the following chapters, are the following:

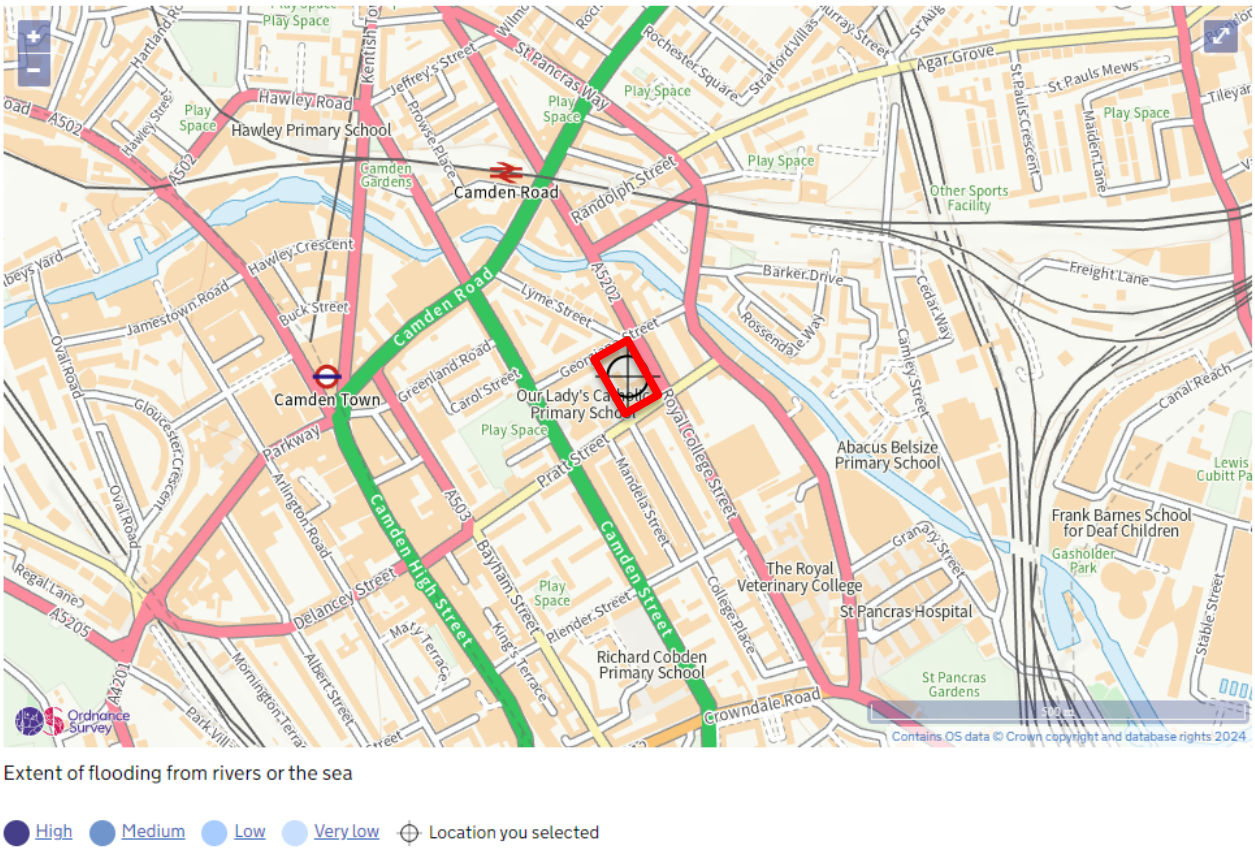
- Flooding from the sea
- Flooding from rivers or fluvial flooding
- Flooding from surface water and overland flow off site
- Flooding from high groundwater levels.
- Flooding from the surcharging of drains or sewers on the site
- Flooding from reservoirs, canals, and other artificial sources.

3.2 Flood Risk Probabilities

3.2.1 Flooding from the sea

The site is not located within the proximity of the sea, and therefore is not affected by flooding from the sea.

3.2.2 Flooding from rivers or fluvial flooding



Extent of flooding from rivers or the sea

High Medium Low Very low Location you selected

Figure 3 - EA Extent of flooding from rivers or the sea.

The River Thames, which is a statutory main river, maintained & managed by the Environment Agency, is located circa 3.5km to the south of the site. The River Thames poses no threat to the site.

The nearest canal which is circa 100m from the site, is not shown to be any more of a flood risk than the River Thames.

According to the Camden Council SFRA (Ref: 47070547), there is evidence that during the recorded 1975 and 2002 return period events, surcharging of the local sewer network occurred as its capacity was exceeded. This is potentially due to the inability of the combined sewer network to discharge to the River Thames at a high enough rate to convey surface water present during the extreme return period exceedance events.

3.2.3 Flooding from Surface Water – Overland Flow

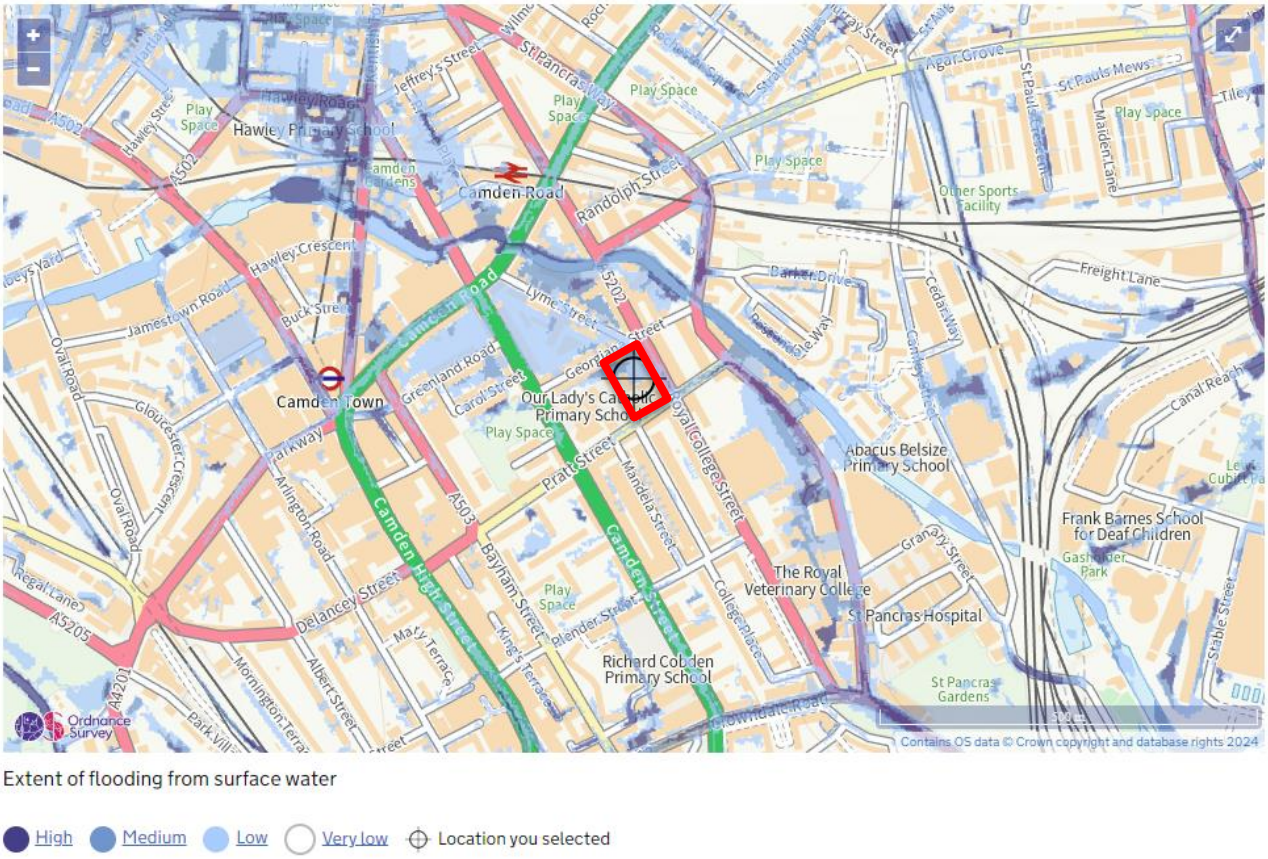


Figure 4: Long Term Flood Risk Map - Surface water flood risk indication

The map (Figure 4) represents the sites surface water runoff and the key indicates the areas of high – very low chance of flooding. The flood map identifies a limited area of medium flood risk to the northwest and a medium to low-risk flooding zones within the northern area of the site. It is noted that the limited area identified as within medium risk corresponds to a localised low point identified on the topographical survey for the site.

Copies of the maps produced by the Environment Agency showing the likely depth of surface water flooding are included in Figures 5, 6 and 7 below. These are based on the site's topography only, and do not allow for any existing drainage, nor infiltration, to offer a simple assessment of existing surface water flow paths.

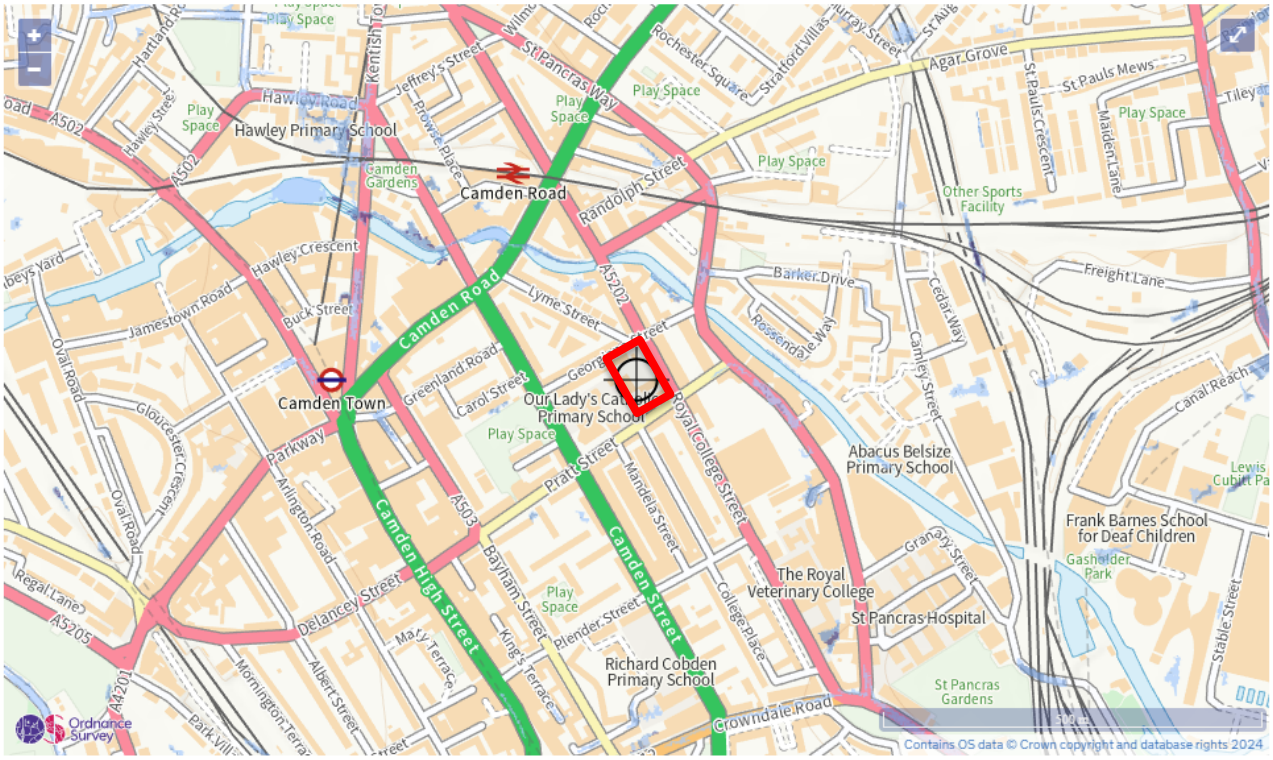


Figure 5 - Surface water Flood Risk: water depth in a high risk scenario

High risk flooding event represents the surface water depths in a 1 in 30 year storm.

No area in the vicinity of the site is expected to flood in a 1 in year 30 storm event.

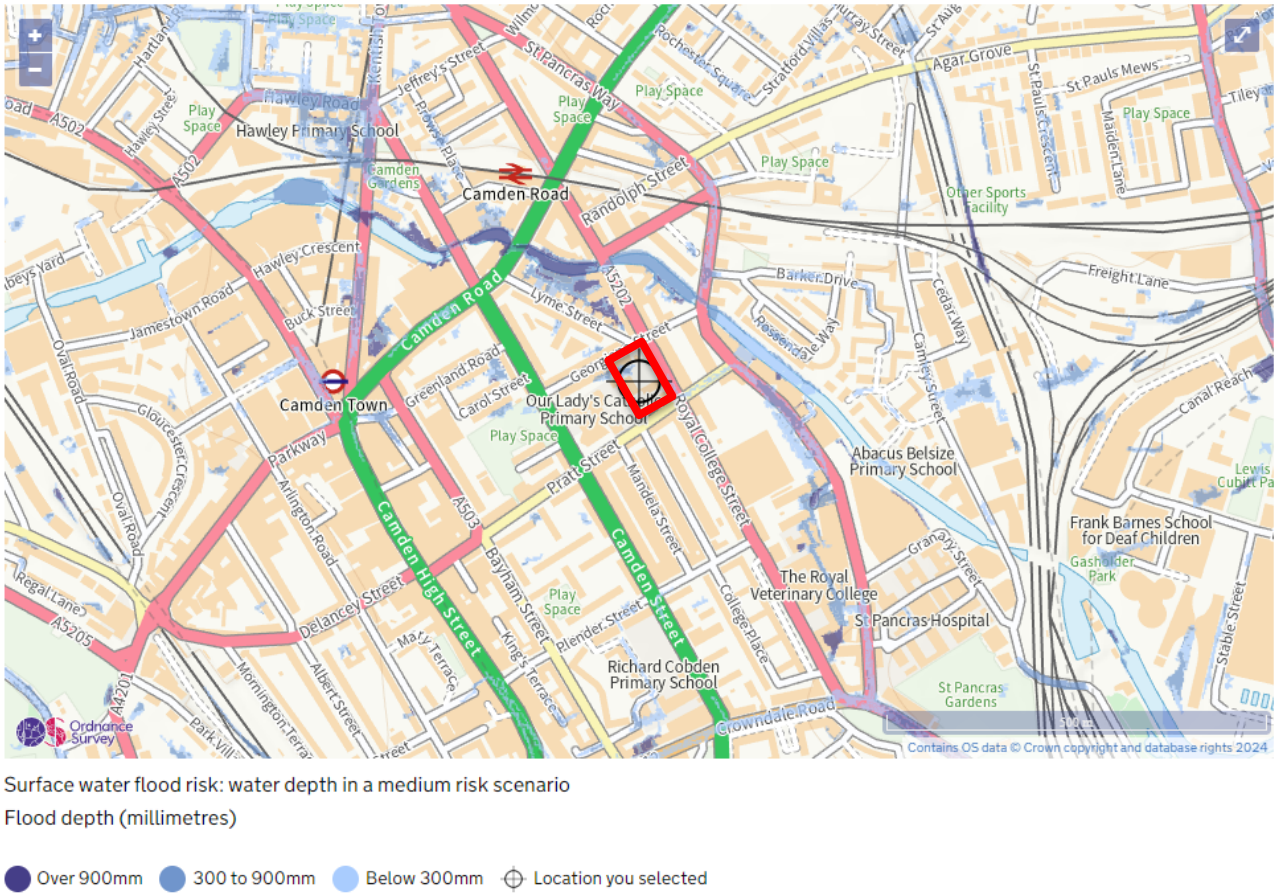


Figure 6 - Surface water Flood Risk: water depth in a medium risk scenario

Medium risk flooding event represents the surface water depths in a 1 in 100 year storm.

The northern section of the site is expected to flood between 300mm & 900mm in a 1 in 100 year storm return period.

No area of the site is expected to flood over 900mm in the 1 in 100-year storm return period.

The maps show that the surface water will enter the site in a flooding event via an existing access along the northern boundary. This access has since been removed and replaced with the building extension, which would remove the direct flow route into the site.

It is therefore unlikely that the extents of flooding shown on the map above are accurate.

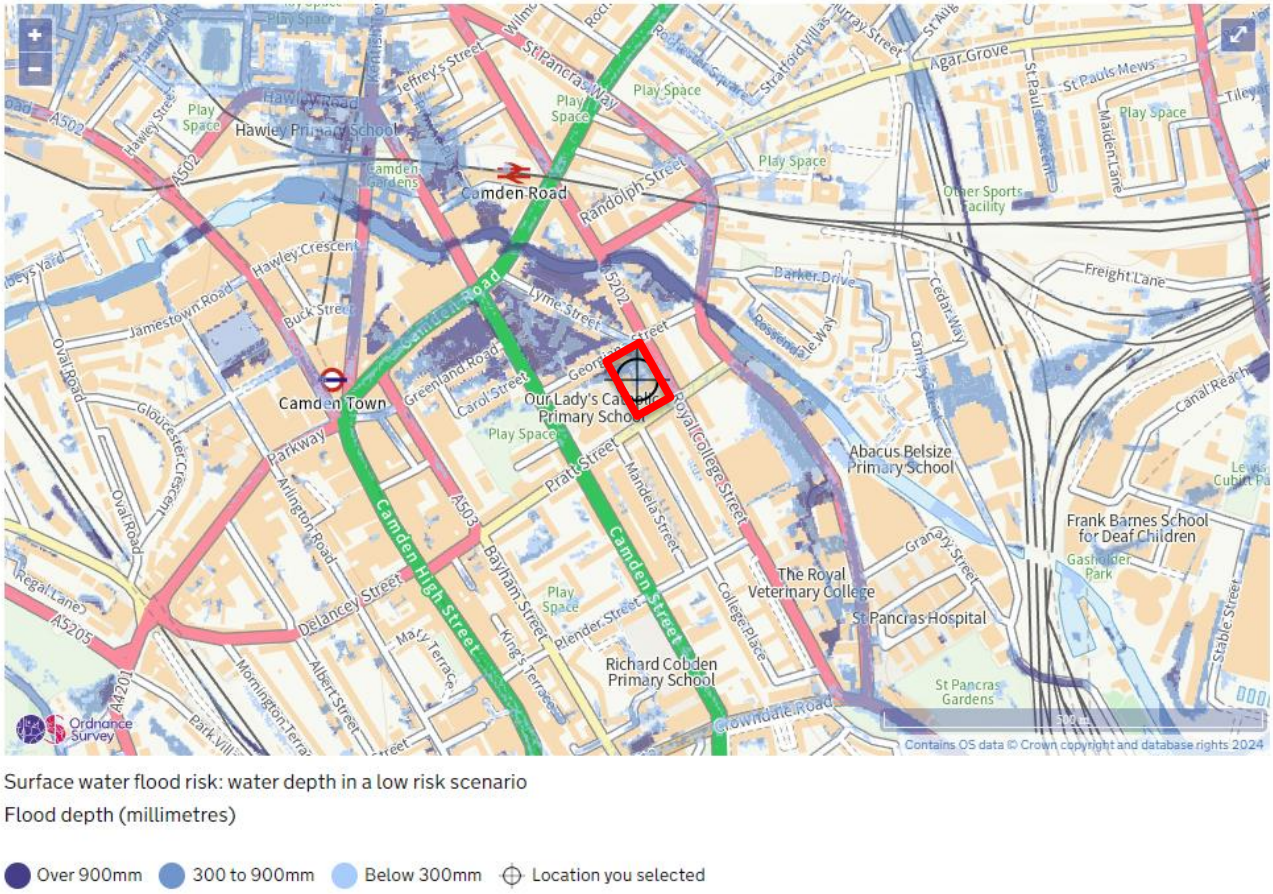


Figure 7 - Surface water Flood Risk: water depth in a low-risk scenario

Low risk flooding event represents the surface water depths in a 1 in 1000 year storm.

The northern section of the site is expected to flood in a 1 in 1000-year storm return period, with some parts of the site expected to flood over 900mm. This is likely due to a localised low point in the existing topography.

The rest of the site is not expected to flood in a 1 in 1000 year storm return period.

The maps show that the surface water will enter the site in a flooding event via an existing access along the northern boundary. This access has since been removed and replaced with the building extension, which would remove the direct flow route into the site.

It is therefore unlikely that the extents of flooding shown on the map above are accurate.

3.2.4 Flooding from Groundwater

Groundwater flooding can occur due to water rising from the underlying soil strata or can occur from water flowing above ground from the recharge of springs. Groundwater flooding tends to occur after much longer periods of sustained high rainfall.

Return periods with increased rainfall intensity can mean more water will infiltrate into the ground and cause the water table to rise above normal levels.

Groundwater flows tend to follow local topography and permeable soils strata emerging at local low points or emerging where soils converge with impermeable strata and can be raised under artesian water pressure.

Groundwater flooding is most likely to occur in low-lying areas underlain by permeable rocks (aquifers). These may be extensive, regional aquifers, such as chalk or sandstone, or may be localised sands or river gravels in valley bottoms underlain by less permeable rocks.

Groundwater flooding can take longer to emerge and dissipate where groundwater moves slowly in comparison to surface water (fluvial and pluvial) flooding and can take time to return to the below ground condition.

The risk of flooding from ground water can be difficult to predict. Groundwater flooding is dependent on several factors, especially the local geological structure and topography. Although the causes of a flood can be monitored (ground water levels and rainfall), it is difficult to predict where and when flooding may occur.

Intrusive investigations have been undertaken and the depth of groundwater is established to be between levels of circa 2.69 – 4.67m below ground.

3.2.5 Flooding History of properties located in Camden

The Camden Flood Risk Management Strategy states that there have been three major flooding incidents recorded in Camden, taking place in 1975, 2002 and 2021, which are each described in more detail below.

The 1975 flood was caused by a severe exceedance event on 14 August 1975. It led to extensive flooding in West and South Hampstead as well as Gospel Oak, Kentish Town, Belsize Park and Camden Town. The drainage capacity of the sewer networks was insufficient to attenuate the volume of rainfall, resulting in surface water flooding.

The 2002 flood was caused by a 1 in 100-year return period event on 7 August 2002. The flooding (surface water and sewer) occurred in West and South Hampstead and in parts of Kentish Town.

Camden experienced a varied rainfall intensity within July 2021, with some areas experiencing a 1 in 100-year storm return period. Flooding occurred due to insufficient capacity within the Thames Water public sewer networks. It was reported by Camden LLFA that over 100 homes and organisations around Camden Borough were affected.

The London Borough of Camden Council are the Lead Local Flood Authority in the area and instead now maintain a register of flood incidents associated with Section 19 flood investigations as defined and required by the Flood and Water Management Act 2010. These records can be accessed online to review flood history and ongoing investigations.

Although three flooding events have been reported by Camden LLFA between 1975 & 2021, the location of the substation has not experienced severe flooding during these events.

3.2.6 Flooding from reservoirs, canals, and other artificial sources.

The Environment agency mapping available on the Gov.uk website identifies the potential for Risk of Flooding from Reservoirs. These maps do not indicate that the site, or any surrounding areas, are vulnerable to flood risk in the event of a failure of a reservoir.

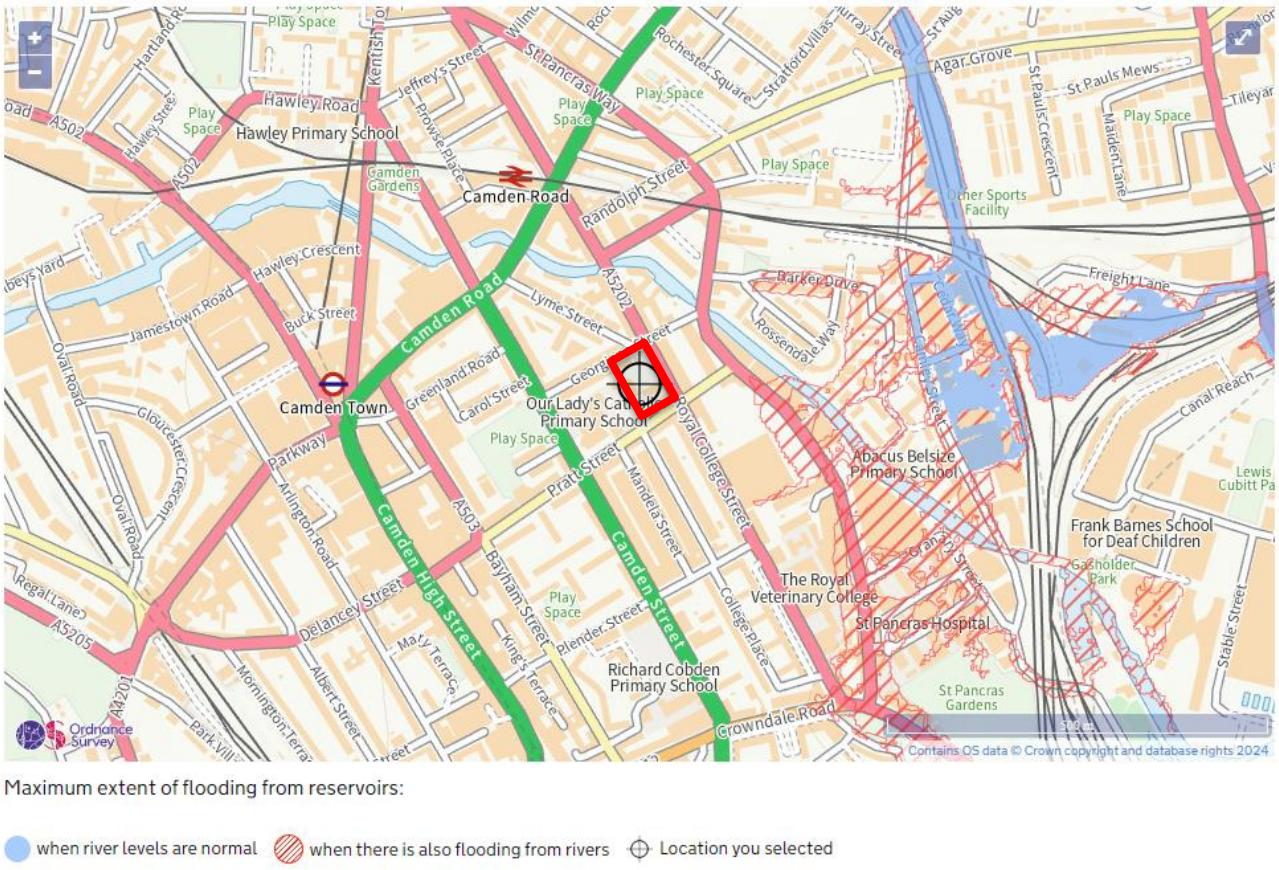


Figure 8 - Maximum extent of flooding from reservoirs and distance from the proposed RLB

3.3 Development Proposal & Flood Risk Compatibility

The proposed development uses are identified as a more vulnerable development under the NPPF Flood Risk vulnerability classification. (Refer to Table 2 within Technical Guidance to National Planning Policy Framework).

Flood risk vulnerability classification (see table 2)		Essential infrastructure	Water compatible	Highly vulnerable	More vulnerable	Less vulnerable
Flood zone (see table 1)	Zone 1	✓	✓	✓	✓	✓
	Zone 2	✓	✓	Exception Test required	✓	✓
	Zone 3a	Exception Test required	✓	×	Exception Test required	✓
	Zone 3b functional floodplain	Exception Test required	✓	×	×	×

Key: ✓ Development is appropriate.
× Development should not be permitted.

Notes to table 3:
This table does not show:
a. the application of the Sequential Test which guides development to Flood Zone 1 first, then Zone 2, and then Zone 3;
b. flood risk assessment requirements; or
c. the policy aims for each flood zone.

Table 1: Flood risk vulnerability and flood zone 'compatibility' taken form Technical Guidance to National Planning Policy Framework

The development land parcel is located within Flood Zone 1. As such, the uses proposed are compatible with regard to the flood zone classification.

Considering the risk vulnerability classification of essential infrastructure for the proposed development and that the development is proposed to be within Flood Zone 1, the proposed development is deemed appropriate.

4 DRAINAGE

4.1 Existing Public Sewerage Drainage

Asset location plans from Thames Water identify existing combined sewers located within Georgiana Street, Royal College Street & Pratt Street.

Existing public sewer asset maps obtained from Thames Water can be found in **Appendix D**.

4.2 Existing Onsite Drainage

Existing surface water runoff is collected and conveyed via rainwater pipes, gullies and underground pipe networks, which is assumed to discharge into the existing public combined sewer network.

There is a combined water drainage run located to the south of the site, which discharges to the Thames Water Public Combined Sewer situated within Pratt Street adjacent.

There are no Thames Water assets located within the extents of the site.

4.3 Existing Brownfield Surface Water Runoff Assessment

Existing surface water runoff assessments have been undertaken for the site, simulating the total rate of discharge into the Thames Water combined public sewer networks.

St Pancras Substation Existing Rate of Discharge	
Return Period	Rate of Discharge (l/s)
2-year	55.4
30-year	137.9
100-year	148.7

4.4 Pre-Development Greenfield Surface Water Runoff Assessment

The existing site land parcel is approximate 0.400Ha in plan.

The existing 1 in 100 year runoff rate and the greenfield run off rate, QBar, has been calculated using the FEH method within Flow+.

QBar has been calculated as 1.0l/s.

This rate is extremely low for network drainage controls and typically a minimum of 2l/s is used for sustainable drainage systems.

The calculation for QBar can be found in **Appendix E**.

It is recommended that an agreement is reached with the LLFA for reduction of discharge rate to 2l/s. This will provide a substantial reduction in rate of discharge to the existing Thames Water combined public sewer networks and provide a more sustainable construction to provide the capacity onsite to attenuate prior to discharge.

4.5 Proposed Climate Change Allowance.

The Environment Agency published Flood Risk Assessment climate change allowances in February 2016. The latest update to this guidance was issued on the 27th May 2022.

The site is located within the London Management Catchment peak rainfall allowances.

The updated guidance states an assessment should be made for a 2070s epoch for development with a lifetime between 2061 and 2125. This will be applicable for the development.

The guidance requires the 1 in 30-year return period to be assessed with a central allowance increase of 20% and upper end allowance of 35% of rainfall intensity.

In addition, the 1 in 100-year return period should be assessed with a central allowance increase of 25% and upper end allowance of 40% of rainfall intensity.

London Management Catchment peak rainfall allowances		
3.3% annual exceedance rainfall event		
Epoch		
	Central allowance	**Upper end allowance**
2050s	20%	35%
2070s	20%	35%
London Management Catchment peak rainfall allowances		
1% annual exceedance rainfall event		
Epoch		
	Central allowance	**Upper end allowance**
2050s	20%	40%
2070s	25%	40%

*Use '2050s' for development with a lifetime up 2060 and use the 2070s epoch for development with a lifetime between 2061 and 2125.

4.6 Proposed Return Period

It is required that no part of the site should flood in a 30-year rainfall event, as such the proposed drainage systems should be designed to accommodate this event within any drainage or below ground storage system as a minimum.

In addition to the above, it is a requirement that no part of a building, utility plant or neighbouring site should flood in a 100-year event plus a suitable allowance for climate change impacts on rainfall intensities.

The proposed surface water drainage system should be designed to cater for the 100-year return period storm with a 40% sensitivity allowance for climate change impact.

Surface water associated with the proposed development is to be managed within the site perimeter and is not permitted to be passed through the drainage systems in an uncontrolled manner. As such, a restriction on discharge rate will need to be incorporated.

4.7 Overland flow

A topographic survey has been undertaken in September 2008 by EDF Energy and has identified levels to the west north-western of the development as circa 24.00m, with levels to the east north-eastern as circa 24.40m, creating a fall of circa 1 in 133.

North of the development has levels of circa 24.80m with levels to the south-eastern of circa 24.50m, equating to a gradient of circa 1 in 303.

The survey shows a localised depression to the northern central area of the site, located at the hardstanding between the existing buildings, with the rest of the hardstanding falling towards the west south-western boundary behind the other existing buildings. Any design for surface water drainage will attempt to replicate the existing flow route arrangement.

The topographic survey drawing ref Site Survey 2008 can be found in **Appendix B**.

4.8 Disposal of Surface Water

The disposal of surface water should be considered in the following order of priority;

1. Source control, infiltration into source, evapotranspiration,
2. Discharge to a water course or the sea
3. Discharge to a surface water sewer
4. Discharge to a combined sewer.

Please refer to Clancy Consulting Sustainable Drainage Report CCL-21-0644-DSR for further analysis of the disposal options and recommended sustainable drainage strategy.

5 NPPF AND LOCAL POLICY

5.1 Planning Policy Requirements

The proposed land parcel for the development is located within Flood Zone 1.

The NPPF (Technical Guide) Table 3, Flood Risk Vulnerability and Flood Zone Compatibility matrix indicates that “essential infrastructure” development proposals in Flood Zone 1 is appropriate.

5.2 Sequential Test

As set out in the National Planning Policy Framework, the aim of a Sequential Test is to steer new development to areas with the lowest probability of flooding (i.e., Flood Zone 1).

As stated in Section 5.1, the development will be delivered within the flood zone 1 land parcel extents.

As such, the sequential test has deemed to have been met in this instance.

5.3 Exception test and Policy check.

The Exception test is not applicable to the proposed development which will be delivered within the Flood Zone 1 land parcel.

5.4 Residual Risk, Flood Mitigation, Resistance and Resilience of Proposed Building

The site has been shown to be at low risk from flooding. This can be maintained by implementing adequate drainage design and surface water management for the post development.

Residual risks could arise from:

- from groundwater exceedance
- from failure of the existing drainage network off site due to capacity being exceeded and flows entering site via overland flow.
- from failure of proposed drainage systems within the development in the event of exceedance.

6 Conclusions and Recommendations

This report gives details of the flood risk assessment, which has been carried out in relation to the proposed erection of new car parking and van parking spaces at St Pancras Substation, Camden, London, NW1 0DP.

The Environment Agency Flood Maps for Planning indicates that the proposed development site is situated within Flood Zone 1 at low risk of flooding, that the site is situated outside of modelled reservoir flood map zones and that the low-lying catchment areas may be prone to medium to low risk of overland flood flows in the event of exceedance of the drainage networks within the vicinity of the site.

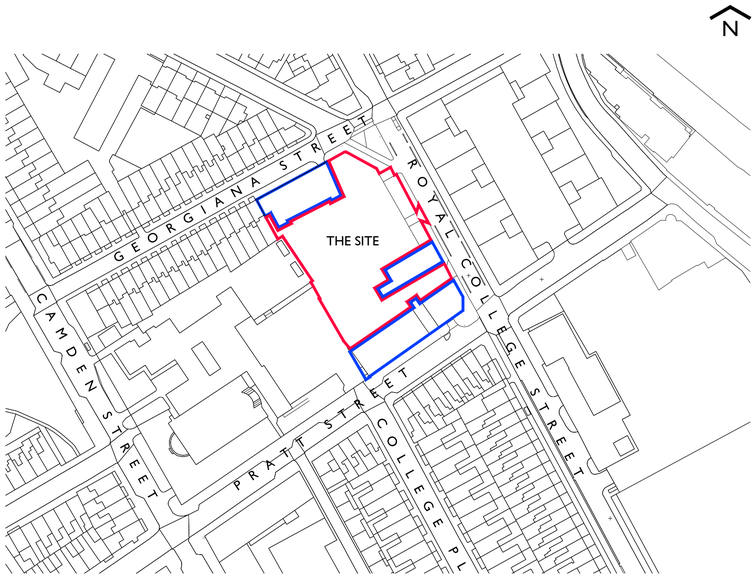
The NPPF (Technical Guide) Table 3, Flood Risk Vulnerability and Flood Zone Compatibility matrix indicates that “essential infrastructure” development proposals in Flood Zone 1 are appropriate and do not require the application of the sequential and exception test.

The key further matters for consideration when managing surface water runoff and mitigating or reducing potential for flood risk whilst undertaking further master planning and detailed design of the proposed development will be:

- Implementation of a sustainable drainage system, where viable incorporating attenuation of surface water runoff rates to the downstream combined public sewer networks.
- Allowance for Climate Change impact on rainfall intensities to be included in hydraulic calculations and modelling with above and below ground surface water attenuation provided where suitable and viable.
- The provision of a surface water management and maintenance plan.
- Undertake inspection and necessary cleansing of the existing site wide drainage network within the site to ensure free flowing conditions and that maximum capacity to store flood water is available.
- Secure an agreement in reduction of the rate of surface water runoff to provide betterment to the system.
- This Flood Risk Assessment Report is to be read in conjunction with the drainage strategy: 21-0644-St Pancras DSR.

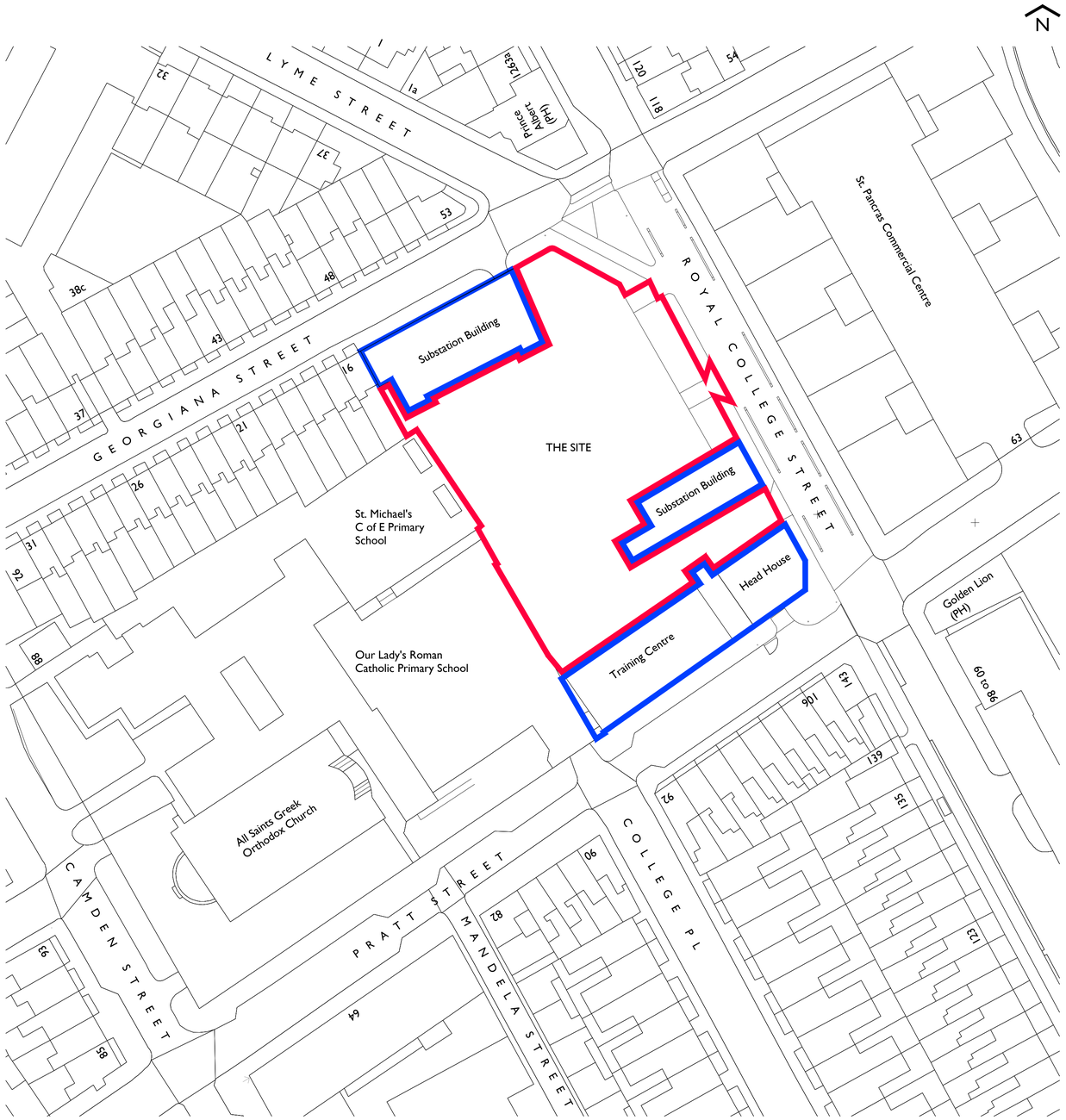
The proposed development is found to be appropriate within Flood Zone 1 land parcels and any potential for the development to increase flood risk to neighbouring land or property can be mitigated by the application of appropriate sustainable drainage systems and restrictions of discharge to the suitable runoff rate as confirmed by the LLFA.

Appendix A – Site Location Plan



SITE LOCATION

scale 1:1250



BLOCK PLAN

scale 1:500

THESE NOTES ARE IMPORTANT

If you are in any doubt about something - ASK

This drawing must be read in conjunction with all necessary architectural, structural, services drawings and scope of works

LEGEND

- Application boundary. Total internal area = 2720m²
- Area owned by client but not in application

Scale Bar 1:500

0 5 10 15 20 25 40

Scale Bar 1:1250

0m 10 20 30 40 50 100

REV.	DESCRIPTION	DATE	DRN.	CHKD.
A	ISSUED FOR PLANNING red line amended & internal area added	21.07.23	RM	TM
*	ISSUED FOR PLANNING	15.06.23	TC	TM

MARKWICK ARCHITECTS
THE OLD DAIRY
51a ST. PETERS STREET
SOUTH CROYDON SURREY CR2 7DG
TELEPHONE 020 8686 2955
E-MAIL ma@markwickarchitects.co.uk

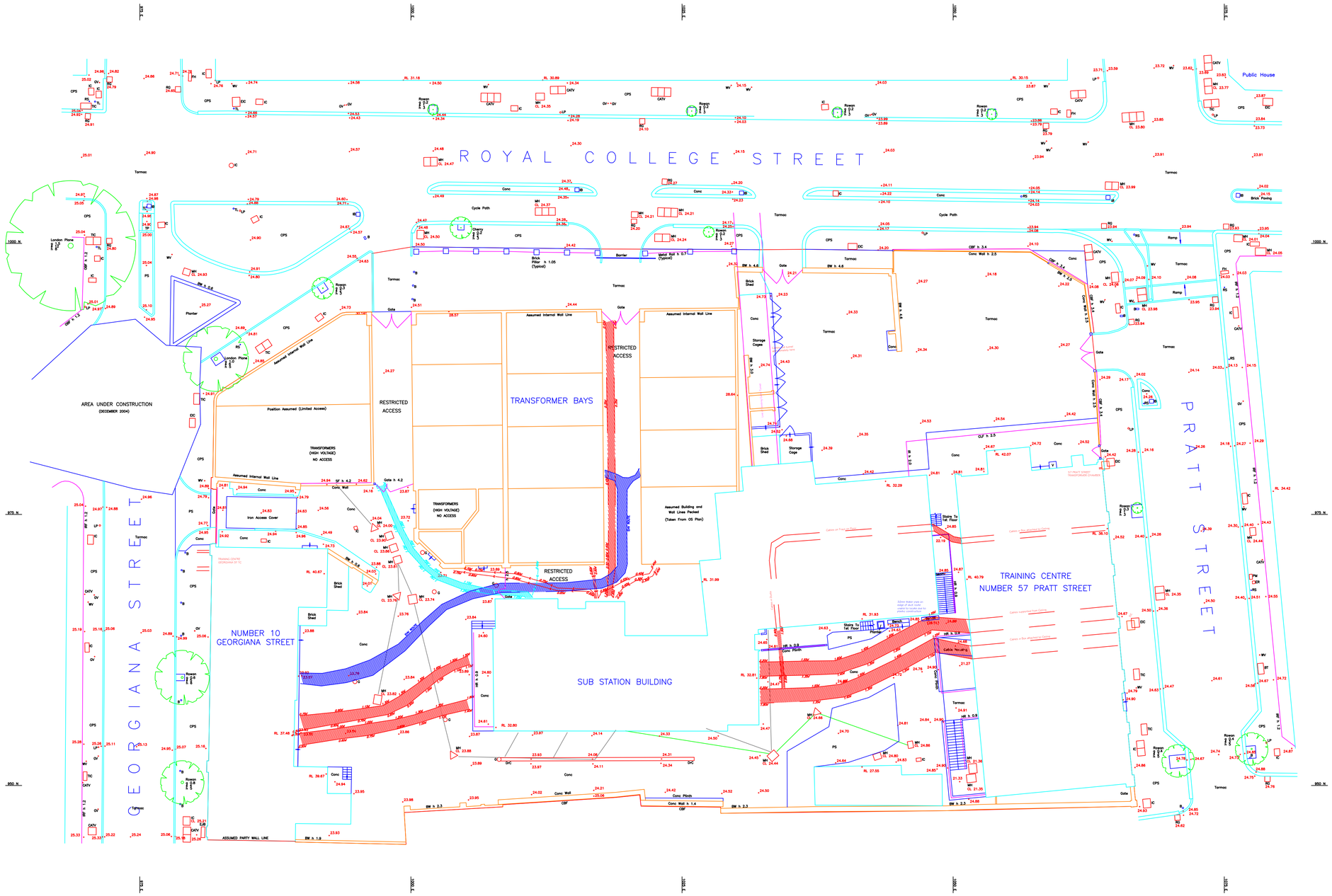
CLIENT
UK POWER NETWORKS

PROJECT
St. Pancras
Existing Transformer Removal

DRAWING TITLE
Site Location & Block Plan

DATE	SCALE
February 2023	as shown @ A1
DRAWING NUMBER	DRAWING REVISION
2209 / P / 650	A
DRAWN BY	CHECKED BY
RM	TM

Appendix B – Topographical Survey



	Fence
d.50m	Depth below surface in metres
500mm	Diameter of Pipe
dist	Depth unobtainable
E	Electricity Cable
E(R)	Assumed route of Electricity Cable
E(R)	Assumed route of Elec Cable (records)
	Band of Electricity Cables
T/F/O/M	BT / Fibre Optic / Mercury Cable
T/F/O/M	Assumed route of BT/FOM
T/F/O/M(R)	Assumed route of BT/FOM (records)
	Band of Communications Cables
CTV	Cable Television Cable
CTV	Assumed route of CTV Cable
CTV(R)	Assumed route of CTV Cable (records)
	Band of Cable Television Cables
W	Water pipe
W	Assumed route of Water pipe
W(R)	Assumed route of Water pipe (records)
G/A	Gas/Air Pipe
G/A	Assumed route of Gas/Air pipe
G(R)	Assumed route of Gas pipe (records)
W&G	Service directly over another
O	Oil Pipe
O	Assumed route of Oil pipe
O(R)	Assumed route of Oil pipe (records)
	Route of Drainage (flow) SWD Surface Water Drainage FWD Foul Water Drainage CD Combined Sewer System
	Assumed route of Drainage (flow)
	Unknown service
	Assumed route of unknown service
	Proposed Drill Route
	Proposed Mole Route
GPR	Service found by Ground Probing Radar

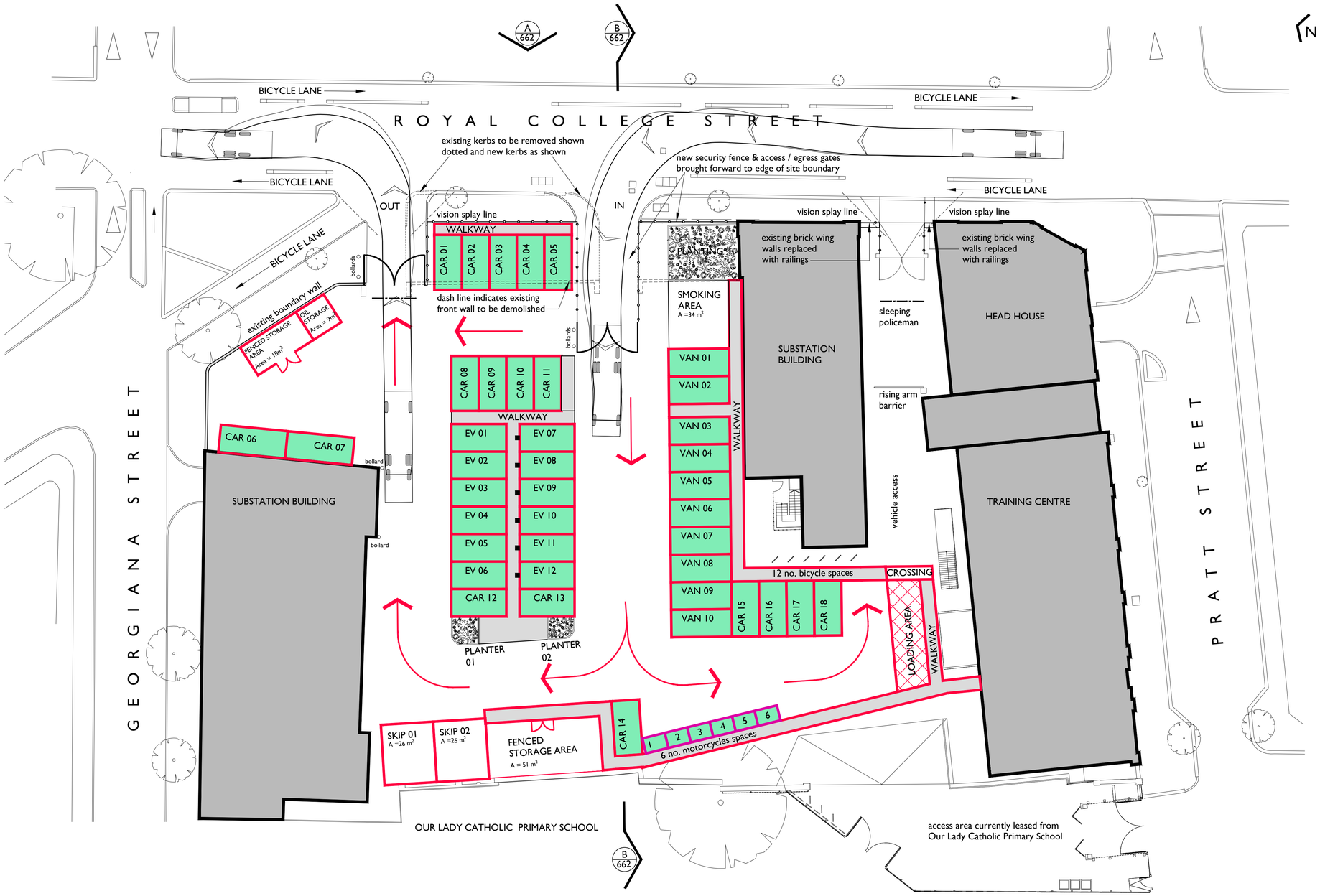
EDF ENERGY	client: CORPORATE BRANCH	notes: -	site: LONDON . OFFICE PREMISES AT CAMDEN TOWN, NW1	project: -	drawing title: SITE SURVEY

revisions

date:	scale:	drawn:
SEPT 2008	1:200@A1	PCA / EPS

rev. -

Appendix C –Development Masterplan



THESE NOTES ARE IMPORTANT

If you are in any doubt about something - ASK

This drawing must be read in conjunction with all necessary architectural, structural, services drawings and scope of works

Scale Bar 1:200

0 1 2 3 4 5 10 15

PARKING PROVISION

18 Cars Spaces - 5000mm x 2500mm

12 EV Spaces - 5000mm x 2500mm

10 Vans Spaces - 5500mm x 2500mm

2 Skip Spaces - 5500mm x 4762mm

6 Motorcycle Spaces - 2100mm x 1400mm

12 Bicycle spaces - 6000mm x 2000mm

car parking spaces with permeable paving shown thus

motorcycle parking spaces with permeable paving shown thus

PENDING 05.12.23 - TC

REV.	DESCRIPTION	DATE	DRN.	CHKD.
C	ISSUED FOR PLANNING 'in' gate repositioned and associated fence amended. 'out' gate - existing kerb repositioned and associated fence amended. 2no. car parking bays relocated.	xxxx.23	TC	TM
B	ISSUED FOR PLANNING bicycle and motorcycle bays amended	21.07.23	RM	TM
A	ISSUED FOR PLANNING bicycle and motorcycle bays added	30.06.23	TC	TM
*	ISSUED FOR PLANNING	15.06.23	TC	TM

MARKWICK ARCHITECTS
THE OLD DAIRY
51a ST. PETERS STREET
SOUTH CROYDON SURREY CR2 7DG
TELEPHONE 020 8686 2955
E-MAIL ma@markwickarchitects.co.uk

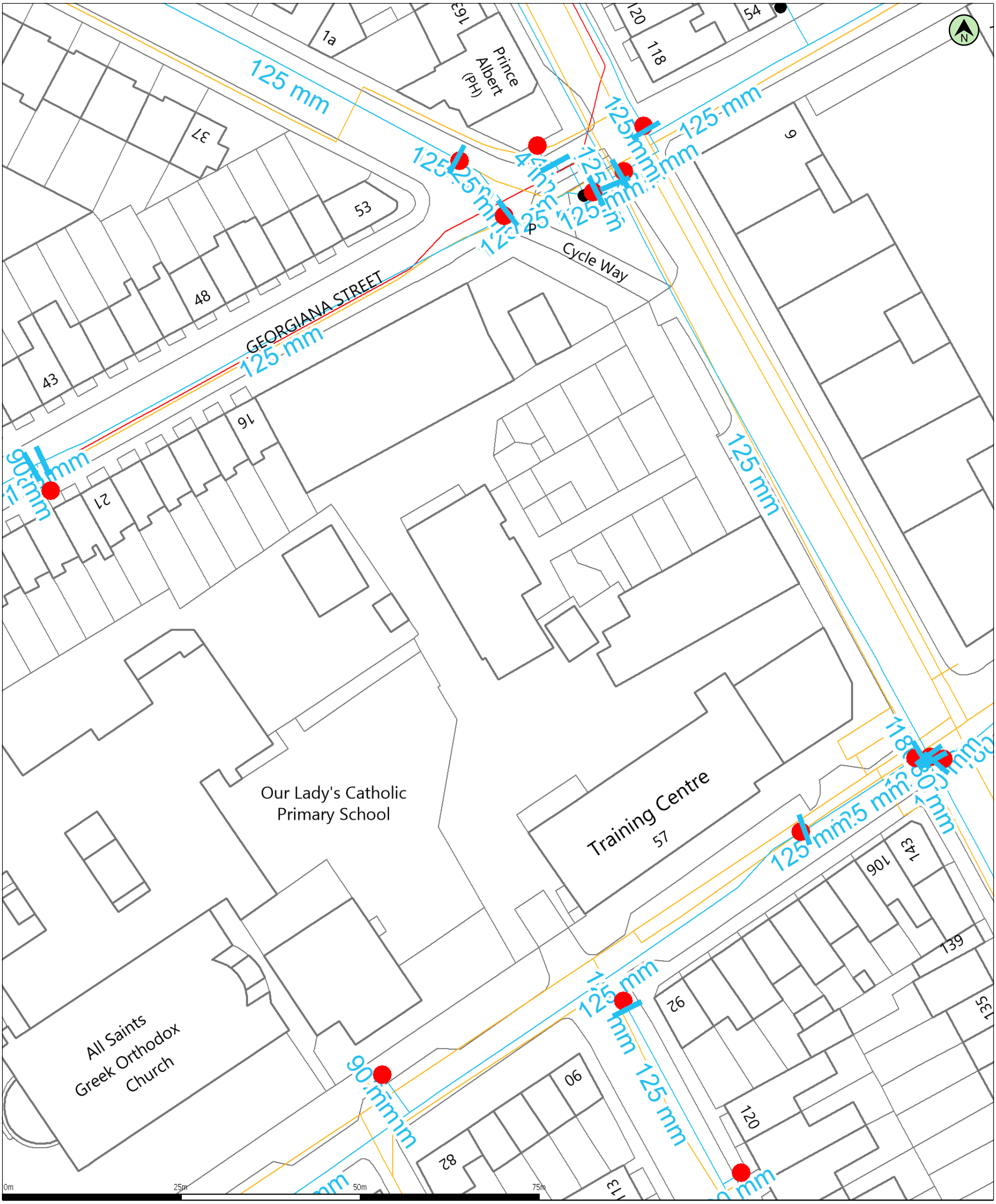
CLIENT
UK POWER NETWORKS

PROJECT
St. Pancras
Existing Transformer Removal

DRAWING TITLE
Proposed Site Plan

DATE	SCALE
February 2023	1:200 @ A1
DRAWING NUMBER	DRAWING REVISION
2209 / P / 661	C
DRAWN BY	CHECKED BY
RM	TM

Appendix D – Existing Public Sewer Asset Maps



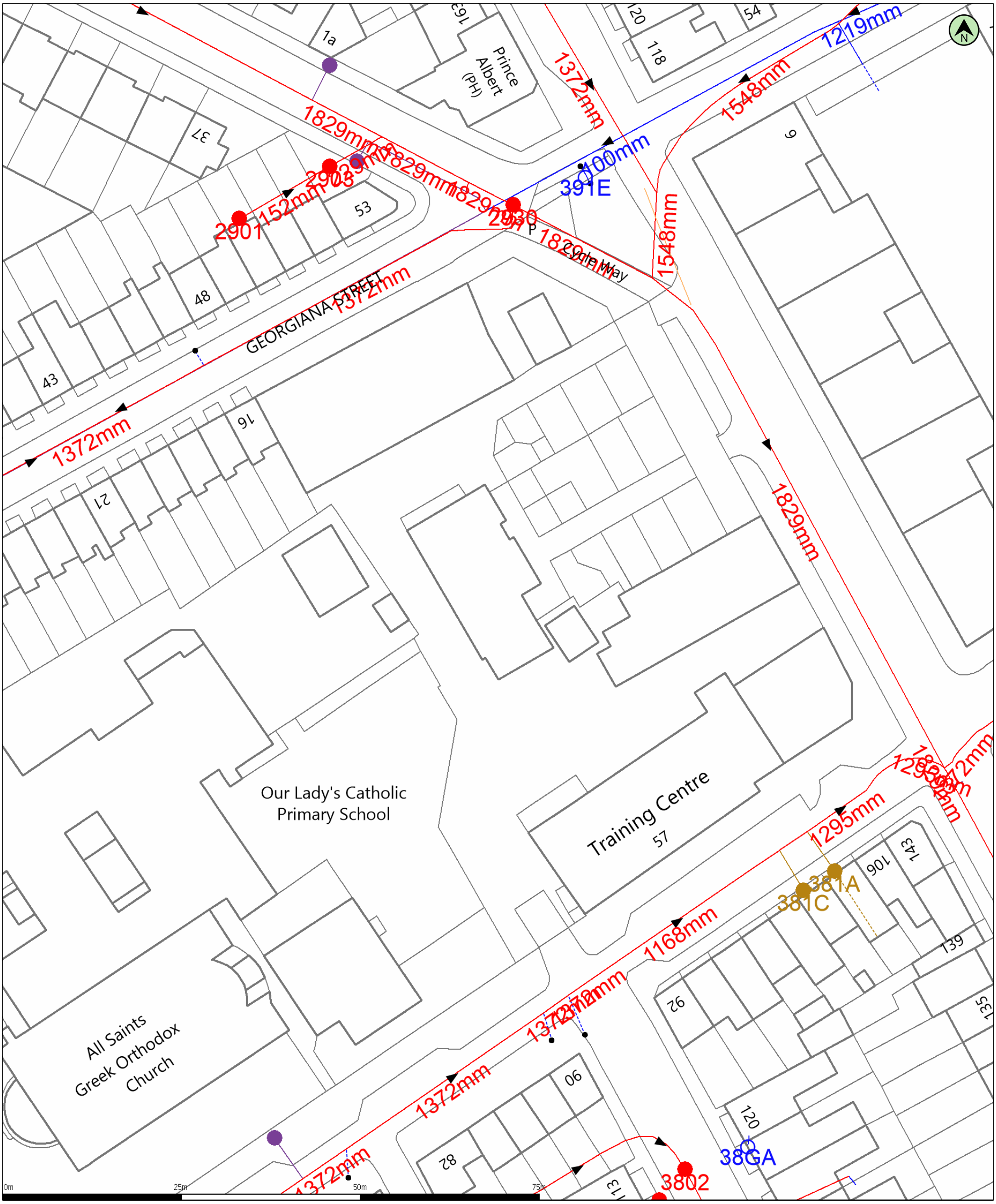
Scale: 1:500 | Date: 03/10/22 | Clean Water Plan A3

Data updated: 05/09/22 | Map Centre: 529297,183912 | Our Ref: 966514 - 1 | Powered by digdat

Water Main	Meter
Private Water	Valve
Proposed Water	Hydrant
Trunk Main	End Item
Proposed Trunk Main	
Abandoned Asset	

scott.watkins@ukpowernetworks.co.uk

1



(c) Crown copyright and database rights 2022 Ordnance Survey 100019209 | Scale: 1:500 | Date: 03/10/22 | Wastewater Plan A3

Data updated: 05/09/22 | Map Centre: 529297,183912 | Our Ref: 966514 - 2 | Powered by digdat

Foul Sewer	Foul Manhole
Surface Sewer	Surface Manhole
Combined Sewer	Combined Manhole
Abandoned Sewer	Abandoned Manhole
Pressure Main	Other Manhole
Private Asset (Colour dependant on effluent type)	End Item
Proposed Asset (Colour dependant on effluent type)	S104 Boundary

scott.watkins@ukpowernetworks.co.uk

1

Manhole Reference	Liquid Type	Cover Level	Invert Level	Depth to Invert
2803	A	-	-	-
2901	C	-	-	-
2903	C	-	-	-
2928	A	25.09	20.58	4.51
2929	Z	25.02	22.03	2.99
2930	C	24.89	18.08	6.81
3802	C	-	-	-
381A	F	-	-	-
381C	F	-	-	-
38DI	C	-	-	-
38GA	S	-	-	-
391E	S	-	-	3

Manhole Reference	Liquid Type	Cover Level	Invert Level	Depth to Invert

Appendix E – Greenfield QBar Calculations

Greenfield Runoff Rates