

81 BELSIZE PARK GARDENS

Flood Risk Assessment

Prepared for: Land and Site Acquisitions Limited



SLR Ref: 425.12338.00001
Version No: V2.0
August 2021

SLR 

BASIS OF REPORT

This document has been prepared by SLR with reasonable skill, care and diligence, and taking account of the manpower, timescales and resources devoted to it by agreement with Land and Site Acquisition Limited (the Client) as part or all of the services it has been appointed by the Client to carry out. It is subject to the terms and conditions of that appointment.

SLR shall not be liable for the use of or reliance on any information, advice, recommendations and opinions in this document for any purpose by any person other than the Client. Reliance may be granted to a third party only in the event that SLR and the third party have executed a reliance agreement or collateral warranty.

Information reported herein may be based on the interpretation of public domain data collected by SLR, and/or information supplied by the Client and/or its other advisors and associates. These data have been accepted in good faith as being accurate and valid.

The copyright and intellectual property in all drawings, reports, specifications, bills of quantities, calculations and other information set out in this report remain vested in SLR unless the terms of appointment state otherwise.

This document may contain information of a specialised and/or highly technical nature and the Client is advised to seek clarification on any elements which may be unclear to it.

Information, advice, recommendations and opinions in this document should only be relied upon in the context of the whole document and any documents referenced explicitly herein and should then only be used within the context of the appointment.

CONTENTS

1.0 INTRODUCTION	3
1.1 Site Location.....	3
1.2 Development Proposals.....	4
2.0 BASELINE ENVIRONMENTAL CONTEXT	5
2.1 Topography.....	5
2.2 Geology and Hydrogeology.....	6
2.3 Local Hydrology.....	6
3.0 PLANNING POLICY AND GUIDANCE	7
3.1 Proposal Summary	7
3.2 Planning Context.....	7
3.2.1 Planning Policy.....	7
3.3 Flood Risk and Planning	7
3.3.1 Environment Agency and Chiltern and South Bucks Flood Zone Classification	7
3.3.2 Flood Risk Compatibility.....	8
3.3.3 Sequential Test	9
3.4 Climate Change	9
3.4.1 Rainfall Intensity.....	10
4.0 POTENTIAL SOURCES OF FLOODING	11
4.1 Methodology & Best Practice	11
4.2 Screening Study	11
4.2.1 Flooding from Sea or Tidal Flooding.....	11
4.2.2 Flooding from Rivers or Fluvial Flooding.....	11
4.2.3 Flooding from Surface Water and Overland Flow	11
4.2.4 Flooding from Groundwater	12
4.2.5 Flooding from Sewers and Mains Water Systems	13
4.2.6 Flooding from Reservoirs, Canals and other Artificial Sources	13
4.2.7 Flooding from Infrastructure Failure	13
4.3 Summary of Flood Screening	13
5.0 CONCLUSIONS	14

DOCUMENT REFERENCES

TABLES

Table 3-1: Flood Risk Vulnerability and Flood Zone 'Compatibility'	9
Table 3-3: Peak Rainfall Intensity Allowance in Small and Urban Catchment (Use 1961 to 1990 baseline)	10
Table 4-1: Potential Risk Posed by Flooding Sources	13

FIGURES

Figure 1-1: Site Location Plan	3
Figure 2-1: LiDAR Digital Surface Model (DSM) elevation plot	5
Figure 3-1: Extract of Environment Agency Flood Map for Planning	8
Figure 4-1: Risk of surface water flooding.....	12

APPENDICES

Appendix 01: Development Plans
Appendix 02: Thames Water Asset Plans

1.0 Introduction

SLR Consulting Limited (SLR) has been appointed by Land and Site Acquisition Limited to prepare this Flood Risk Assessment (FRA) in support of a planning application for the change of use of 81 Belsize Park ("the Site") from a gym to residential.

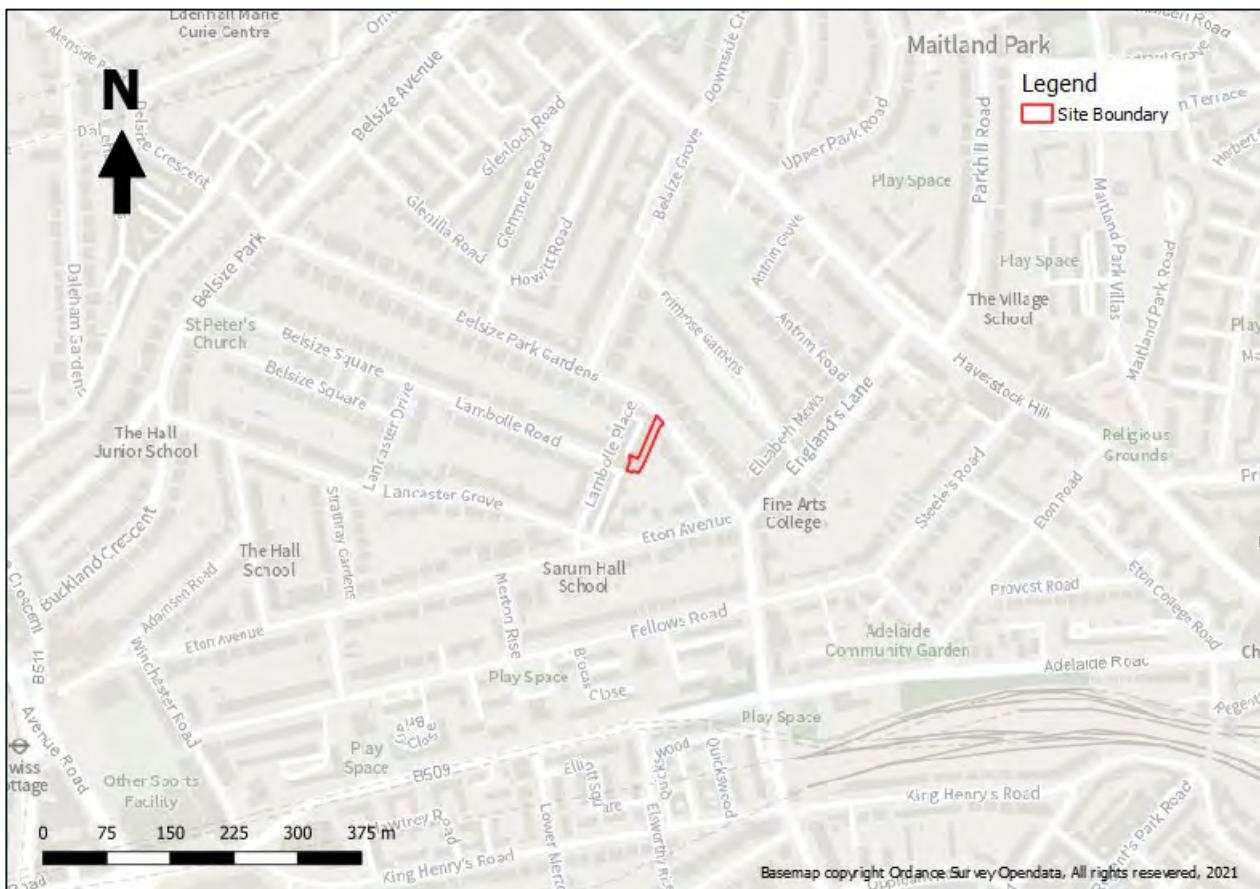
This FRA has been prepared under the direction of a Technical Director of SLR who specialises in flood risk and associated planning matters. The report has been completed in accordance with guidance presented within the National Planning Policy Framework (NPPF)¹ and its associated Planning Practice Guidance (PPG)², taking due account of current best practice documents relating to assessment of flood risk published by the British Standards Institution BS8533³.

The site is under the jurisdiction of the London Borough of Camden who are both the planning authority and the Lead Local Flood Authority (LLFA).

1.1 Site Location

81 Belsize Park Gardens, highlighted in Figure 1-1, is located in Camden (NW3 4NJ) and is centred at coordinates 495825, 201360.

Figure 1-1: Site Location Plan



1 National Planning Policy Framework: Communities and Local Government (July 2021)

2 Planning Practice Guidance: Communities and Local Government (March 2014)

3 BS8533:2017, Assessing and managing flood risk in development: Code of Practice (December 2017)

1.2 Development Proposals

The proposed development is to create three flats in the existing building involving a change of use from a gym (Land Use Class E) building to residential (Land Use Class C3). The proposed works will involve an internal reconfiguration of the property, but there will be no changes to the external fabric of the building or associated hardstanding.

For the avoidance of doubt, we are applying for prior approval under Class MA, Schedule 2 of The Town and Country Planning (General Permitted Development) (England) Order 2015 (as amended). Plans for the scheme are included in Appendix 01.

2.0 Baseline Environmental Context

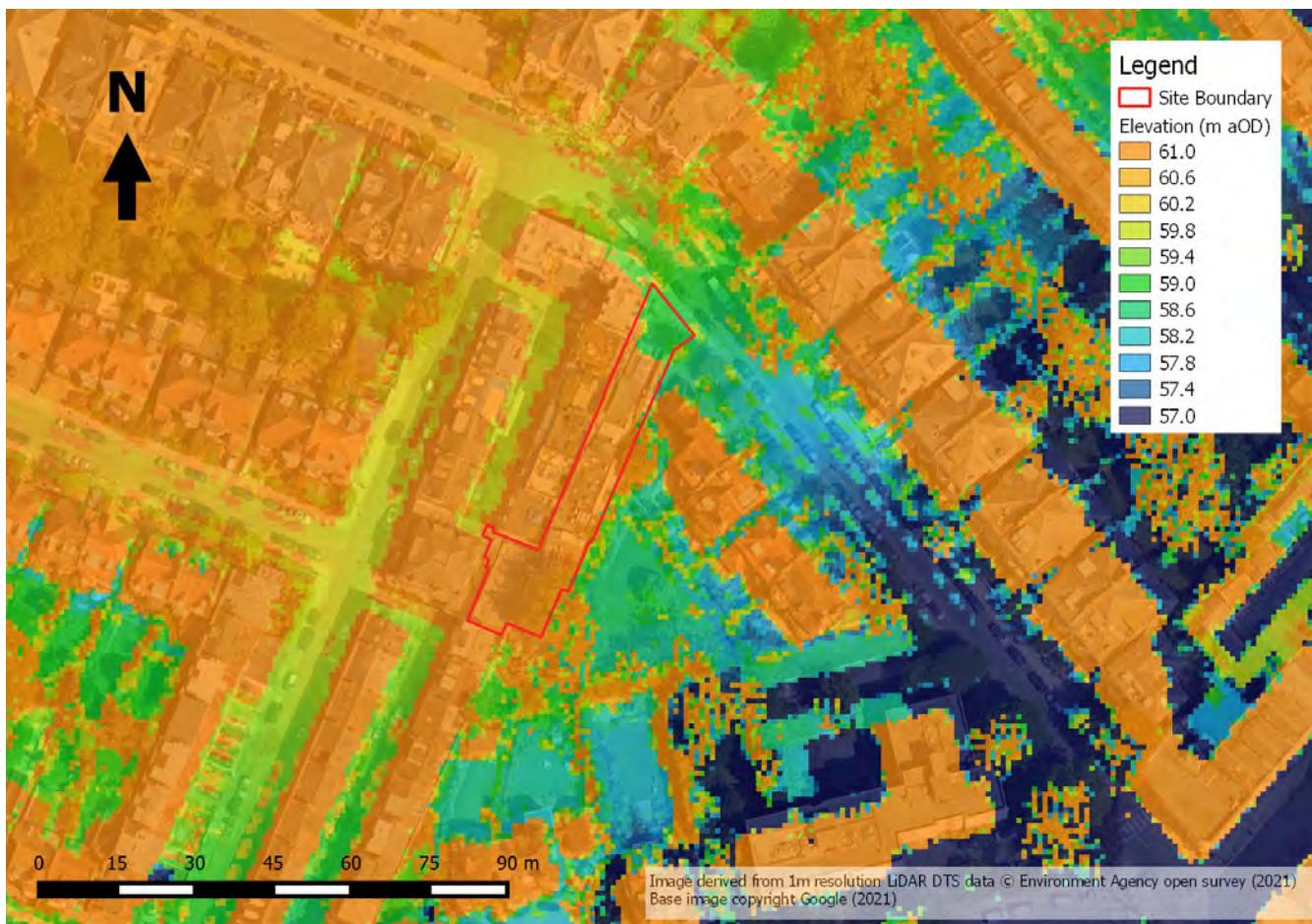
The Site, which is accessed off Belsize Park Gardens (road) to the north, covers an area of c.0.08ha which is almost entirely comprised of the existing building. A secondary access route to the west exists onto Lancaster Stables (road).

The surrounding area is predominantly residential, albeit with a number of commercial units at ground floor level to west of Lancaster Stables. The existing gym building directly adjoins the row of properties to the west that front onto Lancaster Stables.

2.1 Topography

1m resolution LiDAR elevation data for the Site has been downloaded from the Environment Agency⁴ open data website and used to develop a plot of topographic levels across the Site and surrounding area (Figure 2-1). The LiDAR data presented is a digital surface model (DSM) and therefore shows the first reflective surface which includes features such as trees and buildings where these are present.

Figure 2-1: LiDAR Digital Surface Model (DSM) elevation plot



4 Environment Agency Open survey, <https://environment.data.gov.uk/ds/survey/#/survey> accessed August 2021

This shows the site to be situated at an elevation of approximately 58.9 metres above Ordnance Datum (aOD). Levels along Belsize Park Gardens (road) to the north are around 0.1m lower than the site, but sloping along the road to the southeast (i.e. marginally lower relative to the site in the southeast corner).

Locally ground levels slope from the northwest to the southeast across the site.

2.2 Geology and Hydrogeology

British Geological Survey (BGS) mapping indicates that site, and the entire local area, is underlain by the London Clay with no superficial deposits. In reality as an urban site it is likely that some Made Ground will be present at the surface consisting of demolition material and reworked natural deposits.

The London Clay mainly comprises bioturbated or poorly laminated, blue-grey or grey-brown, slightly calcareous silty clay, with some layers of sandy clay. This unit typically has a low permeability and, in line with this, the Environment Agency have designated it as an '*unproductive*' strata. Groundwater flows within the London Clay beneath the site are likely to be near zero.

2.3 Local Hydrology

Storm water runoff from the property is drained to a below ground system that drains to the local sewer network. Thames Water asset plans (Appendix 2) indicate that combined sewers are present to the north beneath Lancaster Stables and to the east beneath Belsize Park Gardens.

There are no surface water features on or adjacent to the site. Based on Ordnance Survey mapping the nearest significant surface water features are lakes within Hamstead Heath (to the north) and the Regents Canal (to the southeast) both of which are about 1.2km from the site.

Mapping of the 'Lost rivers of London'⁵ indicates that one of the headwaters of the River Tyburn (now all culverted) is approximately 275m to the west of the site. This system feeds the boating Lake within Regents Park.

⁵ The Lost Rivers of London (Revised & extended with colour maps), Nicolas Bartyon and Stephen Myers, Historical Publications Ltd; 3rd Revised edition (29 Feb. 2016)

3.0 Planning Policy and Guidance

3.1 Proposal Summary

As discussed at Section 1.2, the proposed development consists of residential units. Under the development types defined within the PPG² this would be considered as a “*more vulnerable*” development type with respect to flood risk. The existing land use as a gym would be a “*less vulnerable*” (i.e. the development would increase the vulnerability with respect to flood risk).

In line with guidance for residential development this assessment considers the risk posed to the scheme with an assumed development lifetime of 100 years.

3.2 Planning Context

3.2.1 Planning Policy

National Planning Policy

This FRA report has been completed in accordance with guidance presented in NPPF¹ and with reference to the PPG for flood risk and coastal change².

Local Planning Policy

The London Plan was updated in March 2021⁶. Policy SI 12 (Flood Risk Management) relates to flood risk and has been considered in the preparation of the assessment.

Supplementary planning guidance relating to flood risk was published by Camden Council in 2019⁷

This document states that;

“Developments must not increase the risk of flooding, and are required to put in place mitigation measures where there is known to be a risk of flooding (Local Plan policies CC2 and CC3). Major developments will be required to constrain runoff volumes for a 1 in 100 year, 6 hour rainfall event, where feasible. All sites in Camden of one hectare or more require a Flood Risk Assessment in line with the National Planning Policy Framework.”

3.3 Flood Risk and Planning

3.3.1 Environment Agency and Chiltern and South Bucks Flood Zone Classification

The definition of Environment Agency flood zones is provided in PPG Table 1: Flood Zones:

- Zone 1 - Low Probability (Flood Zone 1) is defined as land which could be at risk of flooding from fluvial or tidal flood events with less than 0.1% annual probability of occurrence (1:1,000 year) i.e. considered to be at ‘low probability’ of flooding.
- Zone 2 - Medium Probability (Flood Zone 2) is defined as land which could be at risk of flooding with an annual probability of occurrence between 1% (1:100 year) and 0.1% (1:1,000 year) from fluvial sources and between 0.5% (1:200 year) and 0.1% (1:1,000 year) from tidal sources i.e. considered to be at ‘medium probability’ of flooding.

⁶ The London Plan, The Spatial Strategy for Greater London, March 2021, https://www.london.gov.uk/sites/default/files/the_london_plan_2021.pdf

⁷ Water and Flooding, Camden Planning Guidance, London Borough of Camden, March 2019, <https://www.camden.gov.uk/documents/20142/4823269/Water+and+Flooding+CPG+-+March+2019.pdf/c7633c7d-2b93-cb52-ee01-717fa0416e84>

- Zone 3a - High Probability (Flood Zone 3a) is defined as land which could be at risk of flooding with an annual probability of occurrence greater than 1% (1:100 year) from fluvial sources and greater than 0.5% (1:200 year) from tidal sources i.e. considered to be at 'high probability' of flooding.
- Zone 3b - the Functional Floodplain (Flood Zone 3b) is defined as land where water has to flow or be stored in times of flood. Local Planning Authorities should identify in their Strategic Flood Risk Assessments areas of functional floodplain in agreement with the Environment Agency. In the absence of definitive information, it is often defined as land that would flood with an annual probability of occurrence of 5% (1:20 year) or greater.

In assessing the boundary between Flood Zones 1, 2 and 3, the protection afforded by flood defence structures, and other local circumstances, is not taken into account by the Environment Agency. Based upon the Environment Agency Flood Map for Planning⁸ (Figure 3-1) the Site lies in Flood Zone 1 and is a considerable distance away from areas of Flood Zone 2 and 3.

Figure 3-1: Extract of Environment Agency Flood Map for Planning



3.3.2 Flood Risk Compatibility

As discussed in Section 3.3.1, based on Environment Agency mapping the site is located in Flood Zone 1 and, as detailed in Section 3.1, the development proposals are considered a '*more vulnerable*' development type.

8 Flood Map for Planning Service: Website <https://flood-map-for-planning.service.gov.uk/> [Accessed July 2020]

PPG Table 3: Flood risk vulnerability and flood zone ‘compatibility’ (reproduced as Table 3-1) confirms that, with respect to flood risk, ‘*more vulnerable*’ development types are considered appropriate in Flood Zone 1.

Table 3-1: Flood Risk Vulnerability and Flood Zone ‘Compatibility’

Flood Risk Vulnerability Classification (PPG Table 2)	Essential Infrastructure	Highly Vulnerable	More Vulnerable	Less Vulnerable	Water Compatible
Flood Zone (PPG Table 1)	Zone 1	✓	✓	✓	✓
	Zone 2	✓	Exception Test Required	✓	✓
	Zone 3a	Exception Test Required	x	Exception Test Required	✓
	Zone 3b (functional floodplain)	Exception Test Required	x	x	x

Key: ✓ Development is appropriate x Development should not be permitted

3.3.3 Sequential Test

The aim of the Sequential Test as set out in NPPF is to:

“...steer new development to areas with the lowest risk of flooding from any source. Development should not be allocated or permitted if there are reasonably available sites appropriate for the proposed development in areas with a lower risk of flooding.”

The Environment Agency flood map for planning (Figure 3-1) and Strategic Flood Risk Assessments are geared to providing the basis for applying this test. As set out in this report, based on these sources and other available data the site is at low risk of flooding.

The proposed development is for a change of use of an existing building. Environment Agency guidance⁹ clearly states that the Sequential Test does not apply to change of use applications. Even if it were of relevance the low prevailing flood risk would mean that the scheme would pass the Sequential Test.

3.4 Climate Change

In February 2016 the Environment Agency issued guidance on the impacts of climate change on flood risk in the UK to support the NPPF. This was most recently updated in July 2021¹⁰. This advice sets out that peak rainfall intensity, sea level, peak river flow, offshore wind speed and extreme wave heights are all expected to increase in the future as a result of climate change.

PPG recommends that considerations for future climate change are included in FRA’s for proposed developments. As discussed in detail in Section 4.2.2, flood risk from fluvial sources and tidal sources (and therefore wind speed and waves heights) are not of relevance in this area. As such the consideration of climate change in this assessment is limited to potential changes in rainfall intensity.

¹⁰ Environment Agency, Flood Risk Assessments: Climate change allowances, February 2016 (Updated July 2021)

¹⁰ Environment Agency, Flood Risk Assessments: Climate change allowances, February 2016 (Updated July 2021)

3.4.1 Rainfall Intensity

The Environment Agency climate change guidance acknowledges that there is uncertainty with respect to the absolute level of change that is likely to occur with respect to rainfall and that both the absolute level of change and the level uncertainty increase over time. As such the document provides estimates of possible changes that reflect three different time horizons and two different emission scenarios. These recommended allowances for rainfall depths are set out in Table 3-3.

Guidance states that flood risk assessments should assess both the ‘Central’ and ‘Upper End’ allowances to understand the range of impact, which equates to uplifts of 20% and 40% respectively for a 100-year development lifetime (Table 3-3).

**Table 3-2: Peak Rainfall Intensity Allowance in Small and Urban Catchment
(Use 1961 to 1990 baseline)**

River Basin District	Allowance	Total potential change anticipated for 2015 to 2039	Total potential change anticipated for 2040 to 2059	Total change anticipated for 2060 to 2115
Applies across all of England	Upper End	10%	20%	40%
	Central	5%	10%	20%

4.0 Potential Sources of Flooding

4.1 Methodology & Best Practice

This FRA report has been prepared in accordance with the advice and requirements prescribed in current best practice documents relating to management of flood risk in development published by the Construction Industry Research and Information Association (CIRIA), and British Standard BS8533.

A screening study has been completed to identify whether there are any potential sources of flooding at the site which may warrant further consideration. If required, any potential significant flooding issues identified in the screening study are then considered in subsequent sections of this assessment.

4.2 Screening Study

Potential sources of flooding include

- Flooding from sea or tidal flooding;
- Flooding from rivers or fluvial flooding;
- Flooding from surface water and overland flow;
- Flooding from groundwater;
- Flooding from sewers and mains water systems;
- Flooding from reservoirs, canals and other artificial sources; and
- Flooding from infrastructure failure.

4.2.1 Flooding from Sea or Tidal Flooding

The site is located approximately 5km from the tidal River Thames and is at an elevation of over 50m aOD. Based on this the risk of flooding from the sea or tidal flooding is negligible.

4.2.2 Flooding from Rivers or Fluvial Flooding

The site is remote from mapped surface water features and the headwater of the River Tyburn discussed in Section 2.3 runs at an elevation that is lower than the site and is also separated from it by a ridge of higher land.

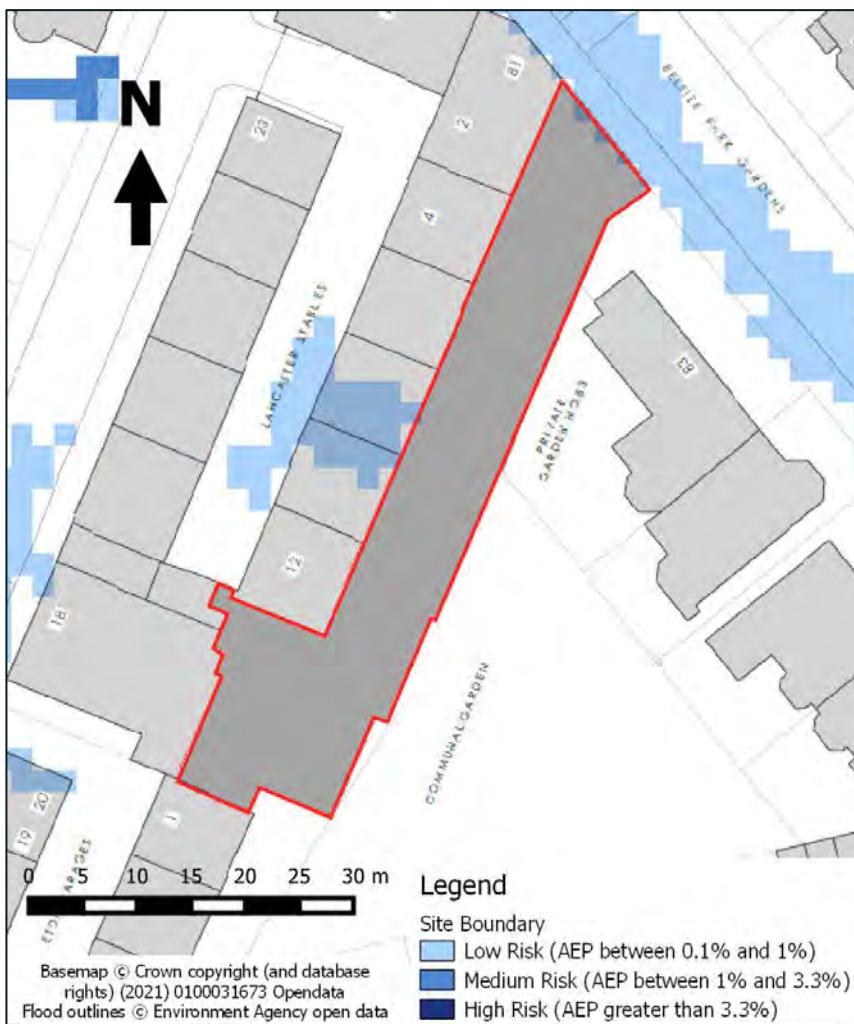
Based on this the risk of flooding from rivers or fluvial flooding is negligible.

4.2.3 Flooding from Surface Water and Overland Flow

Any surface runoff from the higher ground to the northwest would be blocked / diverted around the site by the adjacent buildings along Lancaster Stable. There is no gradient to direct surface flows from along Belsize Park Garden's onto the site (i.e. runoff on the road would just flow to the southeast following prevailing gradient). Ground levels to the south and east are lower than the site and so any surface runoff in those area would drain away from the site.

Surface Water flood modelling has been undertaken by the Environment Agency and mapped outputs from this¹¹ for the area at and around the site are reproduced in Figure 4-1. This confirms the conceptual understanding and indicates that the risk of flooding from surface water or overland flow at the site is very low¹².

Figure 4-1: Risk of surface water flooding



4.2.4 Flooding from Groundwater

Given the underlying geology (London Clay) significant flows of groundwater at, around or below the site are unlikely. As no basement levels are proposed within the building (which have potential to penetrate the London Clay to more permeable geology below) it can be concluded the groundwater flood risk is low.

¹¹ Environment Agency long term flood risk mapping, <https://flood-warning-information.service.gov.uk/long-term-flood-risk/postcode> [accessed August 2021]

¹² We note that an area of 'low' flood risk on the western boundary of the site relates to an area of low ground illustrated on LiDAR digital terrain model data. This data set has been processed to remove buildings and trees that are shown on the digital surface model shown in Figure 2-1; however, the processing is based on an algorithm and in heavily urbanised areas is prone to error. In this instance the low area does not exist and hence the slightly elevated surface water flood risk in this area is also not realistic.

4.2.5 Flooding from Sewers and Mains Water Systems

Combined sewers and mains water systems are present beneath Lancaster Stables and Belsize Park Gardens (refer to Appendix 02). While there are no known problems or vulnerabilities within these systems, failures and surcharge are always possible. However, if this occurred at the site, in line with the routing described in Section 4.2.3, there are no pathways for surcharged flows to flow into this property.

Based on this it is concluded that the risk of flooding from sewers and mains water systems at the site is very low

4.2.6 Flooding from Reservoirs, Canals and other Artificial Sources

There are no water bodies classified as reservoirs or canals in location upstream or upgradient of the site. Based on this the risk of flooding from reservoirs, canals and artificial sources is assessed to be negligible.

4.2.7 Flooding from Infrastructure Failure

The site is not defended and is not believed to be protected from flooding by any other artificial infrastructure. Based on this the risk of flooding from infrastructure is assessed to be negligible.

4.3 Summary of Flood Screening

Table 3-3 summarises the flood screening assessment.

Table 4-1: Potential Risk Posed by Flooding Sources

Potential Source	Potential Flood Risk at Site?
Sea or Tidal Flooding	No
Rivers or Fluvial Flooding	No
Surface Water and Overland Flow	No
Groundwater	No
Sewers and Water Mains	No
Reservoirs, Canals and other Artificial Sources	No
Infrastructure Failure	No

5.0 Conclusions

This Flood Risk Assessment (FRA) has been undertaken SLR Consulting on behalf of Land and Site Acquisition Limited.

Based on the work it is noted that;

- The site is located in Flood Zone 1 and is remote from any surface water features and is not at risk for fluvial or tidal sources;
- Environment Agency mapping indicates that the site is at very low risk of surface water flooding. A review of the site context and ground elevations confirms that there is no realistic path for offsite flows to drain into the property;
- Combined sewers and mains water pipes are present beneath the roads around the site. A review of the site context and ground elevations confirms that there is no realistic path for surcharged flows from these to flow into the property; and
- The proposals for the site are for internal reconfiguration for the building. There will be no significant external changes and no changes to the existing approach for managing stormwater runoff at the site.

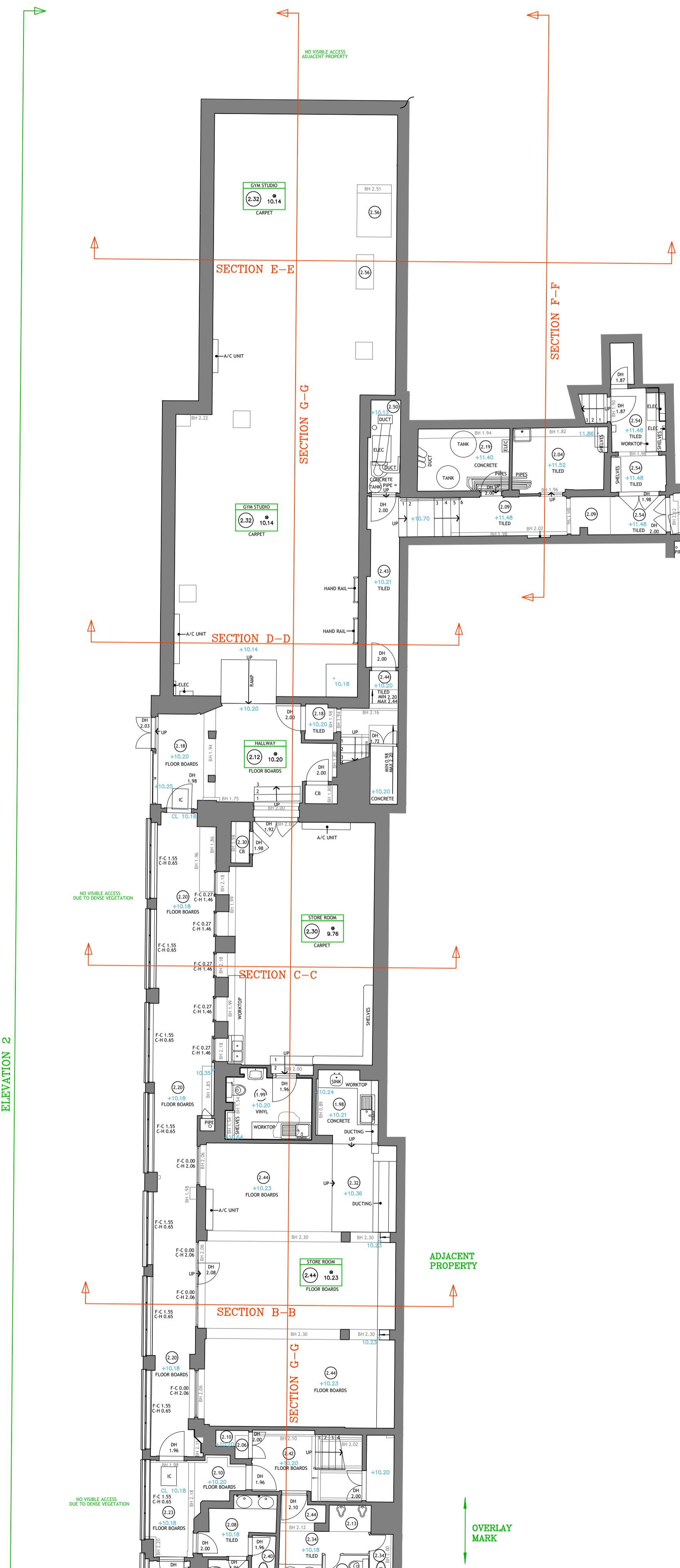
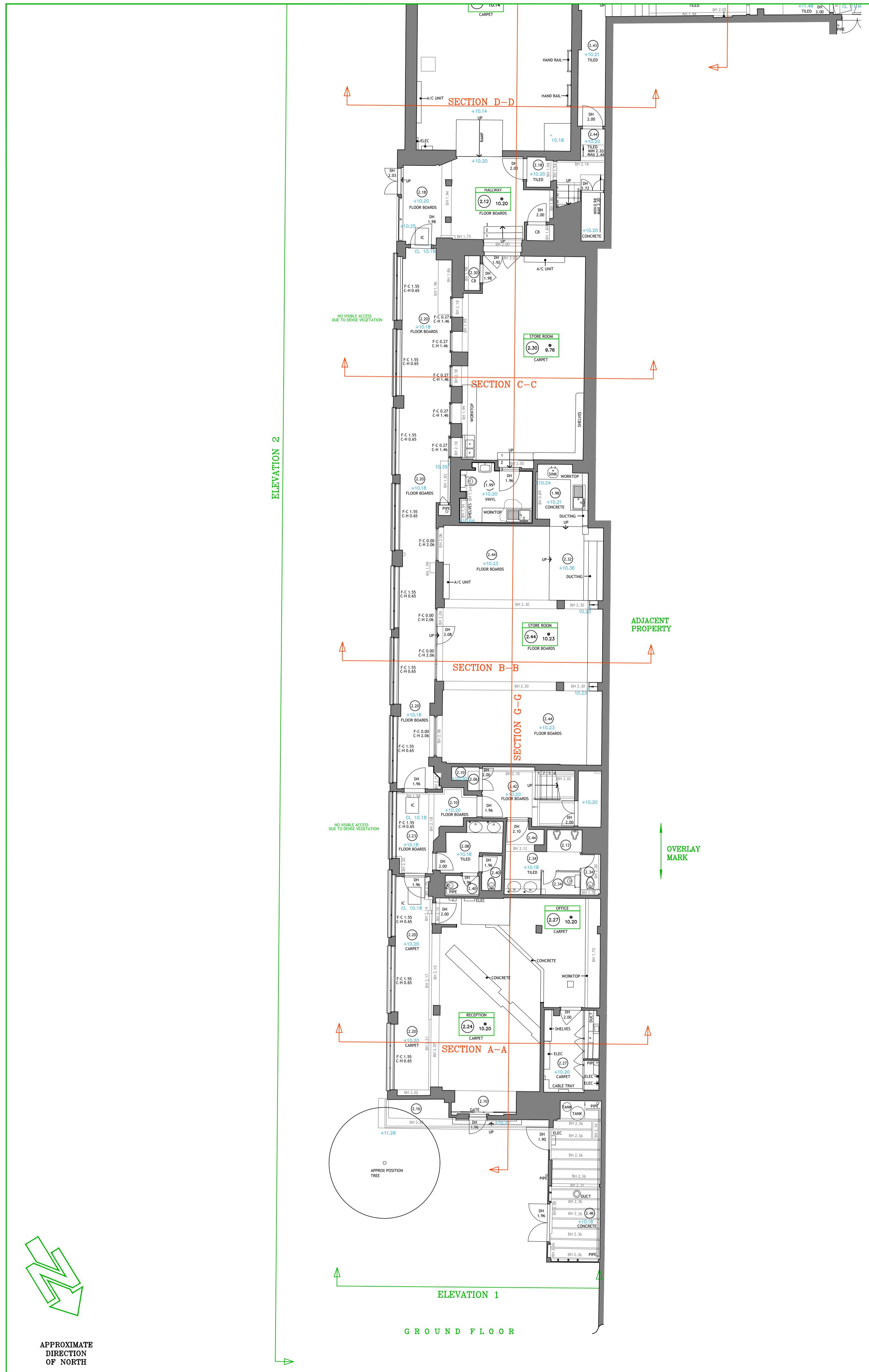
Based on the above the proposed change of use of 81 Belsize Park Gardens from a gym (Use Class E) building to residential (Use Class C3) to create 3 flats is considered to be acceptable in flood risk terms. The completed development would not be subject to significant levels of flood risk even when considered over a 100 year projected development lifetime. This assessment has demonstrated that the proposal will not increase flood risk and is compliant with Local Plan Policy CC3 (Water and Flooding).

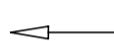
APPENDIX 01: DEVELOPMENT PLANS









Drawing Naming Convention:		
Job No\Code\	Dwg type\	Location\Ref
Code:	13 = Existing	14 = Proposed
Dwg Type:	B = Building S = Section	E = Elevation T = Topographical
Location:	B = Basement E = External G = Ground 1 = First R = Roof M = Mezzanine	C = Ceiling Plan F = Front S = Side Re = Rear GA = General Layout AA = Section A-A
Ref	Ref to individual dwg I.D. (e.g. Revision)	
Standard Abbreviations (where applicable):		
Building Survey		Land Survey
AIR BRICK		BOLLARD
AIR CONDITIONING UNIT		BELISHA BEACON
ACCESS HATCH		BUS STOP
ACCESS PANEL		BUS SHELTER
AIR VALVE		B.T. COVER
BEAM HT		CAMERA
BOILER		CABLE TV COVER
BEAM SOFFIT LEVEL		COVER LEVEL
CUPBOARD		ELECTRIC COVER
CEILING CHANGE		ELECTRIC POLE
CLEAR INTERNAL HT		EARTH ROD
CILL TO APEX HT		FLAG POLE
CILL TO HEAD HT		FOUL WATER
CILL TO SPRING HT		GULLY
DOOR BASE HT		GAS VALVE
DOOR HEAD HT		FIRE HYDRANT
DRAIN		ILLUMINATED BOLLARD
EXTRACTOR FAN		INSPECTION COVER
FIRE ALARM		INVERT LEVEL
FLOOR TO APEX HT		LAMP POST
FLOOR TO CILL HT		MANHOLE
FLOOR TO HEAD HT		MARKER POST
FLOOR TO SPRING HT		POST
GROSS EXTERNAL AREA		PARKING METER
GROSS INTERNAL AREA		PIPE
GULLY		PAVEMENT LIGHT
HEATER		RODDING EYE
HOT WATER TANK		ROAD SIGN
NET INTERNAL AREA		RAIN WATER PIPE
NOT TO SCALE		SITE AREA
RADIATOR		SIGN BOARD
RECESS HEAD HEIGHT		SIGN
RAISED FLOOR VOID		SOFFIT LEVEL
ROOF LIGHT		STOP VALVE
ROLLER SHUTTER		SOIL VENT PIPE
RAIN WATER PIPE		STORM WATER
SWITCH		TELEPHONE CALL BOX
SOCKET		TRAFFIC LIGHT
SOIL VENT PIPE		TELEGRAPH POLE
VENT		UNABLE TO LOCATE
WARDROBE		UNABLE TO RAISE
		VENT PIPE
		WATER METER
		WATER TAP
Symbols (where applicable):		
 Direction of sloping ceiling		
 2.65		
 2.65		
 10.00		
FLOOR TO STRUCTURAL CEILING HT	FLOOR TO SUSPENDED CEILING HT	FLOOR LEVEL RELATIVE TO DATUM

The Survey has been computed on an arbitrary grid.
All Levels are in metres and relate to an arbitrary site
datum.

Station X1 Value 10.00m

All direction arrows indicate DOWN unless otherwise stated.

Rainage pipe sizes (where shown) have been gauged from
the surface (for safety reasons) and should be regarded as
approximate only.

Visible features in the vicinity of any boundaries, as shown
in this survey, may not represent the extent of legally
conveyed ownership.



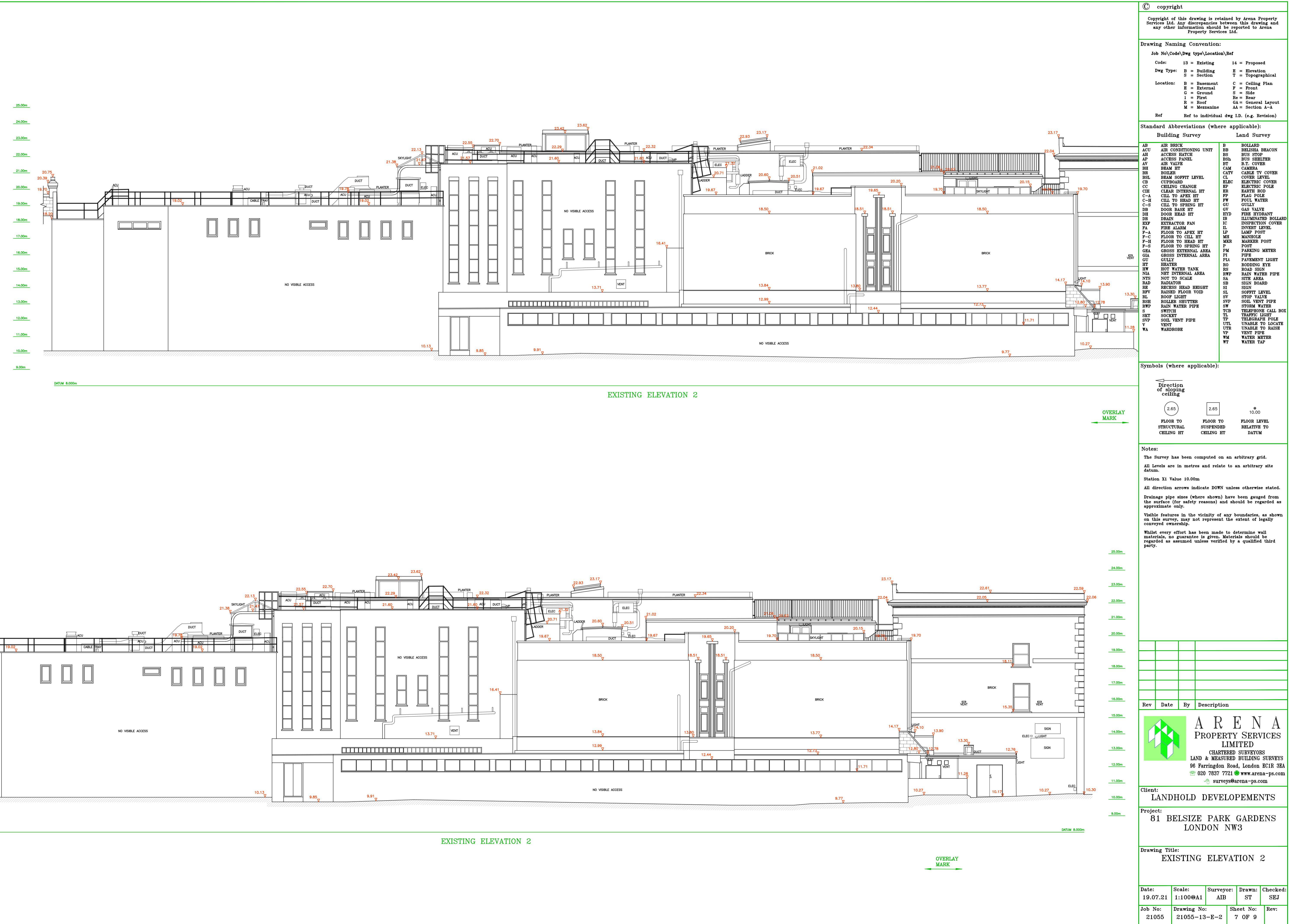
A R E N A
PROPERTY SERVICES
LIMITED
CHARTERED SURVEYORS
ND & MEASURED BUILDING SURVEYS
Farringdon Road, London EC1R 3EA
020 7837 7721  www.arena-ps.com

 surveys@arena-ps.com

object:
81 BELSIZE PARK GARDENS
LONDON NW3

awing Title:
EXISTING GROUND FLOOR

Revised:	Scale:	Surveyor:	Drawn:	Checked:
9.07.21	1:100@A1	AIB	ST	SEJ
Job No:	Drawing No:	Sheet No:	Rev:	
21055	21055-13-R-G	1 OF 9		



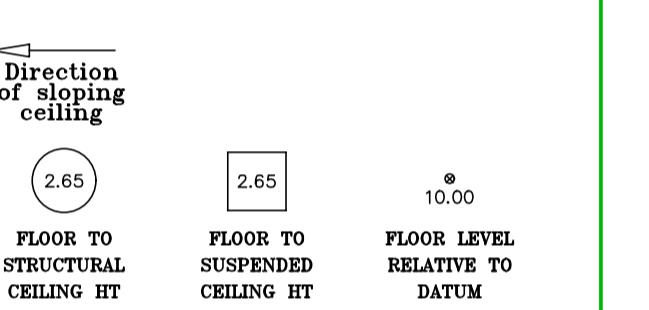
© copyright
Copyright of this drawing is retained by Arena Property Services Ltd. Any discrepancies between this drawing and any other information should be reported to Arena Property Services Ltd.

Drawing Naming Convention:	
Job No\Code\DWG type\Location\Ref	
Code:	IS = Existing 14 = Proposed
Dwg Type:	B = Building E = Elevation
Location:	C = Ceiling Plan B = Basement F = Front G = Ground S = Side 1 = First Re = Rear R = Roof GA = General Layout M = Mezzanine AA = Section A-A
Ref:	Ref to individual dwg I.D. (e.g. Revision)

Standard Abbreviations (where applicable):

Building Survey	Land Survey
AB AIR BRICK	B BOLLARD
ACU AIR CONDITIONING UNIT	BB BELSIZE BEACON
AH ACCESS HATCH	BS BUS STOP
AL ACCESS PANEL	BT BOTTLE THROTTER
AV AIR VALVE	BT. B.T. COVER
BH BEAM HT	CAM CAMERA
BLI BOILER	CATV CABLE T.V. COVER
BSL BEAM SOFFIT LEVEL	CL COVER LEVEL
CB CUPBOARD	ELEC ELECTRIC COVER
CHL CHIMNEY CHAPE	EP ELECTRIC POLE
CHL TO APPEX HT	FP FLAG POLE
C-H CILL TO HEAD HT	FW FOUL WATER
C-S CILL TO SPRING HT	GU GUARD
DR DOOR BASE HT	GV GAS VALVE
DRH DOOR HEAD HT	HYD HYDRANT
DRS DRAIN	IL INVERT LEVEL
EXTRACTOR FAN	IC INDICATION COVER
FA FIRE ALARM	IP MARKER POST
F-A FLOOR TO APPEX HT	LAMP POST
F-P FLOOR TO PLATE HT	LP PARKING METER
F-H FLOOR TO HEAD HT	M MARKER POST
F-S FLOOR TO SPRING HT	P POST
GEA GROSS EXTERNAL AREA	PI PAVING LIGHT
GEA INTERNAL AREA	PL PLATE
GU GULLY	RO RODDING EYE
HHT HEATER	RS RAIL
HWT HOT WATER TANK	RWP RAIN WATER PIPE
NIA NET INTERNAL AREA	SA SITE AREA
NTS NOT TO SCALE	SB SIGN BOARD
RAD RADTONE	SL SOFT LEVEL
RECEIVED HEAD HEIGHT	SV STOP VALVE
RFV RAISED FLOOR VOID	SW STORM PIPE
RFI ROOF LIGHT	T TELCO BOX
RSH ROOF SHUTTER	TCB TELEPHONE CALL BOX
RWP RAIN WATER PIPE	TP TELEGRAPH POLE
S SWITCH	UTL UNABLE TO LOCATE
SKT SOCKET	V VP UNABLE TO RAISE
SPV SOFT VENT PIPE	W VENT METER
V VENT	WM WATER METER
WA WARDROBE	WT WATER TAP

Symbols (where applicable):



Notes:

The Survey has been computed on an arbitrary grid.
All Levels are in metres and relate to an arbitrary site datum.

Station XI Value 10.00m

All direction arrows indicate DOWN unless otherwise stated.
Drainage pipe sizes (where shown) have been gauged from the surface (for safety reasons) and should be regarded as approximate only.

Visible features in the vicinity of any boundaries, as shown on this survey, may not represent the extent of legally conveyed ownership.

While every effort has been made to determine wall materials, no guarantee is given. Materials should be regarded as assumed unless verified by a qualified third party.

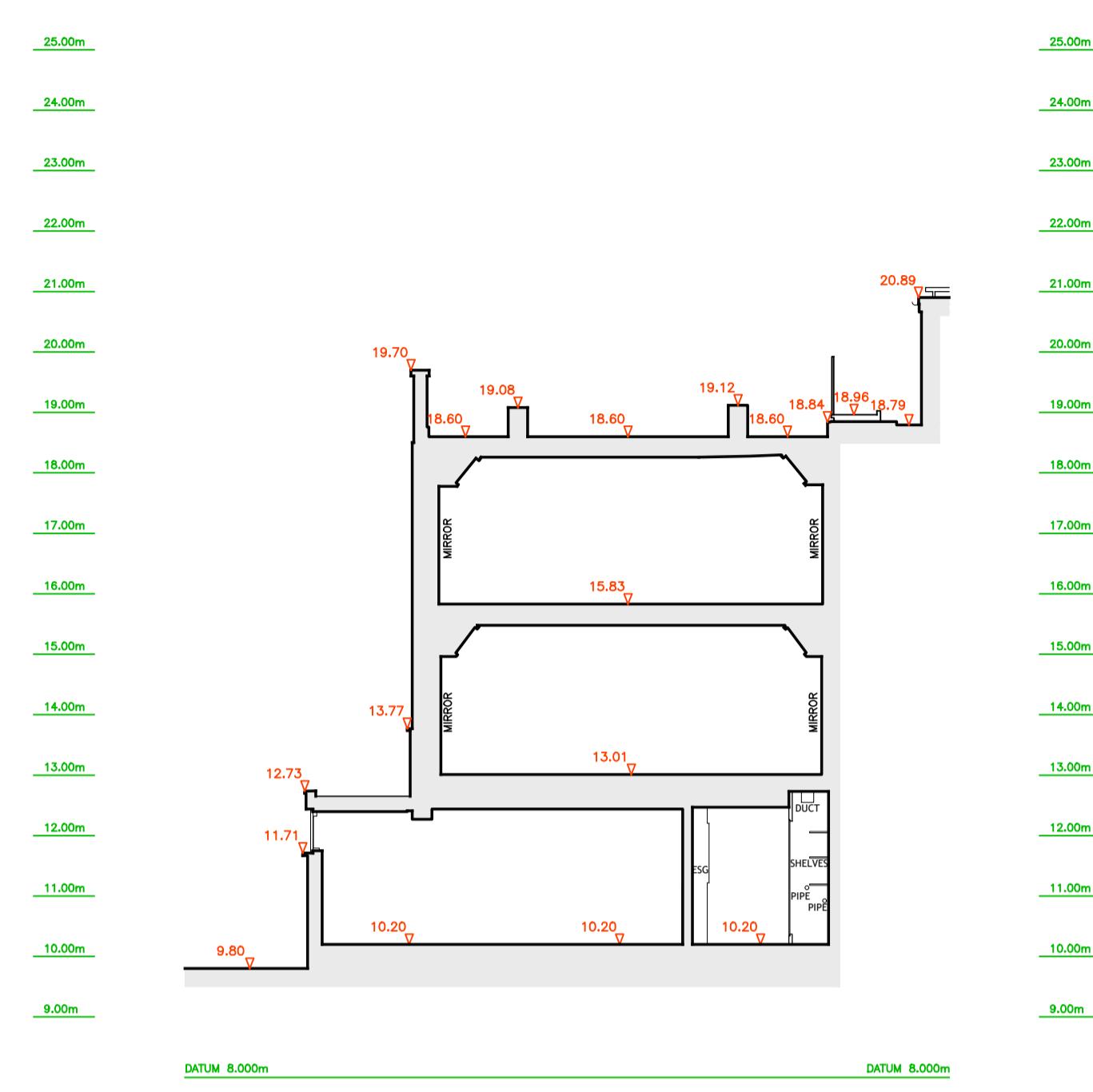


Client:
LANDHOLD DEVELOPMENTS

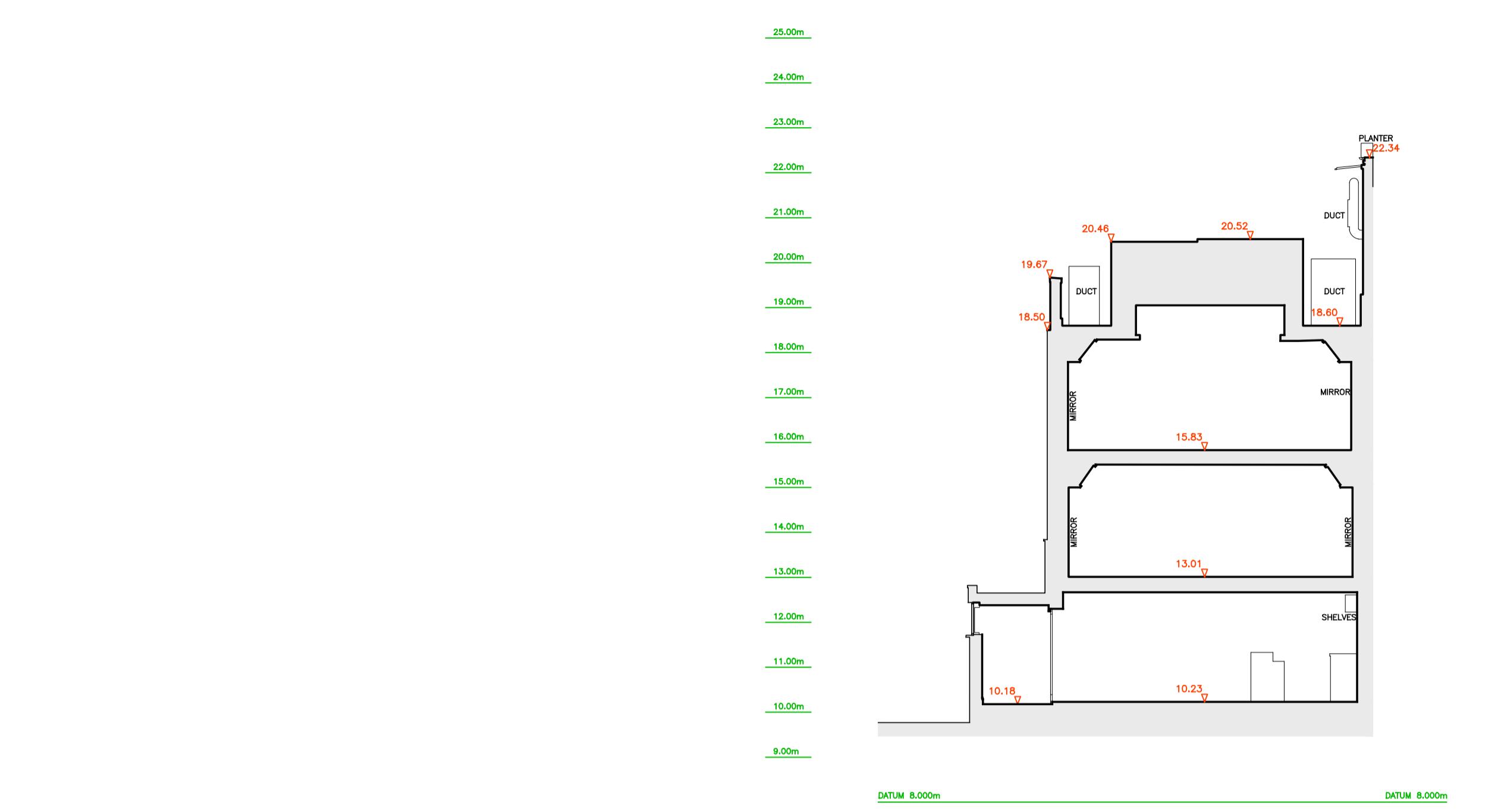
Project:
81 BELSIZE PARK GARDENS
LONDON NW3

Drawing Title:
EXISTING SECTIONS
A, B, C, D

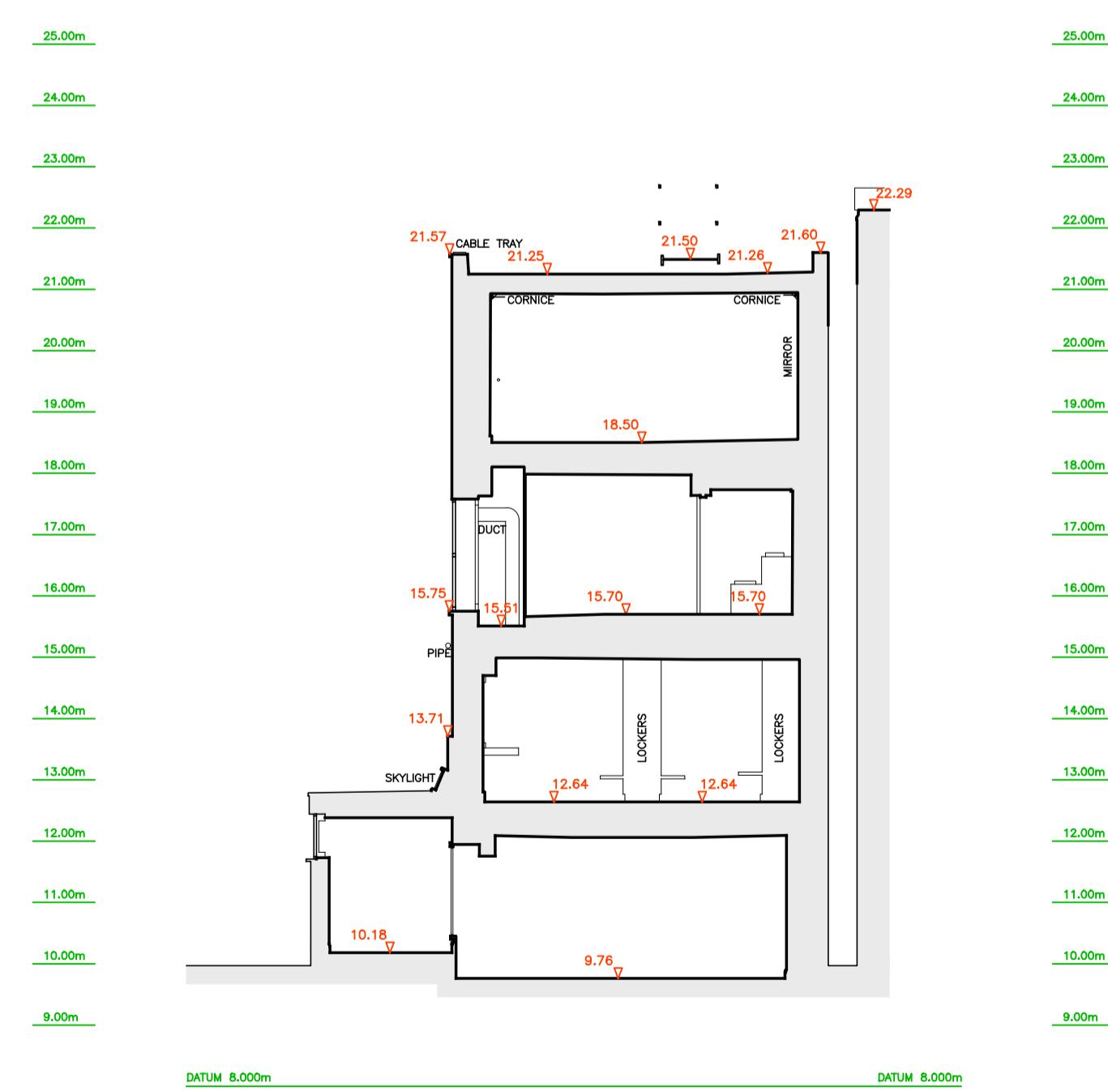
Date: 19.07.21	Scale: 1:100@A1	Surveyor: AIB	Drawn: ST	Checked: SEJ
Job No: 21055	Drawing No: 21055-13-S-GA	Sheet No: 8 OF 9	Rev:	



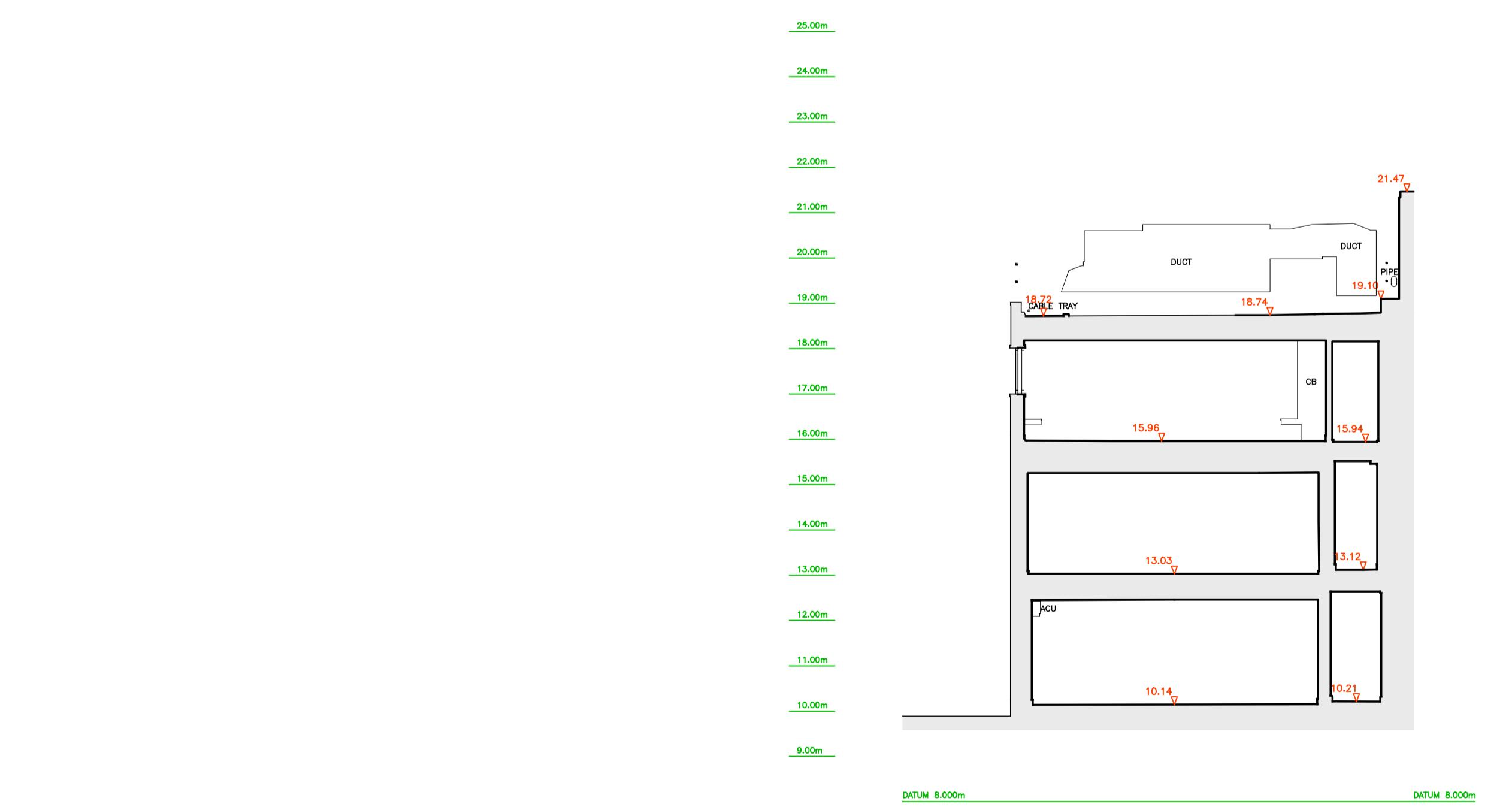
EXISTING SECTION A-A



EXISTING SECTION B-B



EXISTING SECTION C-C



EXISTING SECTION D-D

APPENDIX 02: THAMES WATER ASSETT PLANS

Asset location search



Property Searches

SLR Consulting
83 Victoria Street
LONDON
SW1H 0HW

Search address supplied 81 Belgrave Gardens

Your reference E00.60674.00PP

Our reference ALS/ALS Standard/2021_4483436

Search date 6 August 2021

Knowledge of features below the surface is essential for every development

The benefits of this knowledge not only include ensuring due diligence and avoiding risk, but also being able to ascertain the feasibility of any development.

Did you know that Thames Water Property Searches can also provide a variety of utility searches including a more comprehensive view of utility providers' assets (across up to 35-45 different providers), as well as more focused searches relating to specific major utility companies such as National Grid (gas and electric).

Contact us to find out more.



Thames Water Utilities Ltd
Property Searches, PO Box 3189, Slough SL1 4WW
DX 151280 Slough 13



searches@thameswater.co.uk
www.thameswater-propertysearches.co.uk



0800 009 4540

Asset location search



Property Searches

Search address supplied: 81 Belgrave Gardens,

Dear Sir / Madam

An Asset Location Search is recommended when undertaking a site development. It is essential to obtain information on the size and location of clean water and sewerage assets to safeguard against expensive damage and allow cost-effective service design.

The following records were searched in compiling this report: - the map of public sewers & the map of waterworks. Thames Water Utilities Ltd (TWUL) holds all of these.

This search provides maps showing the position, size of Thames Water assets close to the proposed development and also manhole cover and invert levels, where available.

Please note that none of the charges made for this report relate to the provision of Ordnance Survey mapping information. The replies contained in this letter are given following inspection of the public service records available to this company. No responsibility can be accepted for any error or omission in the replies.

You should be aware that the information contained on these plans is current only on the day that the plans are issued. The plans should only be used for the duration of the work that is being carried out at the present time. Under no circumstances should this data be copied or transmitted to parties other than those for whom the current work is being carried out.

Thames Water do update these service plans on a regular basis and failure to observe the above conditions could lead to damage arising to new or diverted services at a later date.

Contact Us

If you have any further queries regarding this enquiry please feel free to contact a member of the team on 0800 009 4540, or use the address below:

Thames Water Utilities Ltd
Property Searches
PO Box 3189
Slough
SL1 4WW

Email: searches@thameswater.co.uk

Web: www.thameswater-propertysearches.co.uk

Asset location search



Property Searches

Waste Water Services

Please provide a copy extract from the public sewer map.

Enclosed is a map showing the approximate lines of our sewers. Our plans do not show sewer connections from individual properties or any sewers not owned by Thames Water unless specifically annotated otherwise. Records such as "private" pipework are in some cases available from the Building Control Department of the relevant Local Authority.

Where the Local Authority does not hold such plans it might be advisable to consult the property deeds for the site or contact neighbouring landowners.

This report relates only to sewerage apparatus of Thames Water Utilities Ltd, it does not disclose details of cables and or communications equipment that may be running through or around such apparatus.

The sewer level information contained in this response represents all of the level data available in our existing records. Should you require any further Information, please refer to the relevant section within the 'Further Contacts' page found later in this document.

For your guidance:

- The Company is not generally responsible for rivers, watercourses, ponds, culverts or highway drains. If any of these are shown on the copy extract they are shown for information only.
- Any private sewers or lateral drains which are indicated on the extract of the public sewer map as being subject to an agreement under Section 104 of the Water Industry Act 1991 are not an 'as constructed' record. It is recommended these details be checked with the developer.

Clean Water Services

Please provide a copy extract from the public water main map.

Enclosed is a map showing the approximate positions of our water mains and associated apparatus. Please note that records are not kept of the positions of individual domestic supplies.

For your information, there will be a pressure of at least 10m head at the outside stop valve. If you would like to know the static pressure, please contact our Customer Centre on 0800 316 9800. The Customer Centre can also arrange for a full flow and pressure test to be carried out for a fee.

Asset location search



Property Searches

For your guidance:

- Assets other than vested water mains may be shown on the plan, for information only.
- If an extract of the public water main record is enclosed, this will show known public water mains in the vicinity of the property. It should be possible to estimate the likely length and route of any private water supply pipe connecting the property to the public water network.

Payment for this Search

A charge will be added to your suppliers account.

Asset location search



Property Searches

Further contacts:

Waste Water queries

Should you require verification of the invert levels of public sewers, by site measurement, you will need to approach the relevant Thames Water Area Network Office for permission to lift the appropriate covers. This permission will usually involve you completing a TWOSA form. For further information please contact our Customer Centre on Tel: 0845 920 0800. Alternatively, a survey can be arranged, for a fee, through our Customer Centre on the above number.

If you have any questions regarding sewer connections, budget estimates, diversions, building over issues or any other questions regarding operational issues please direct them to our service desk. Which can be contacted by writing to:

Developer Services (Waste Water)
Thames Water
Clearwater Court
Vastern Road
Reading
RG1 8DB

Tel: 0800 009 3921
Email: developer.services@thameswater.co.uk

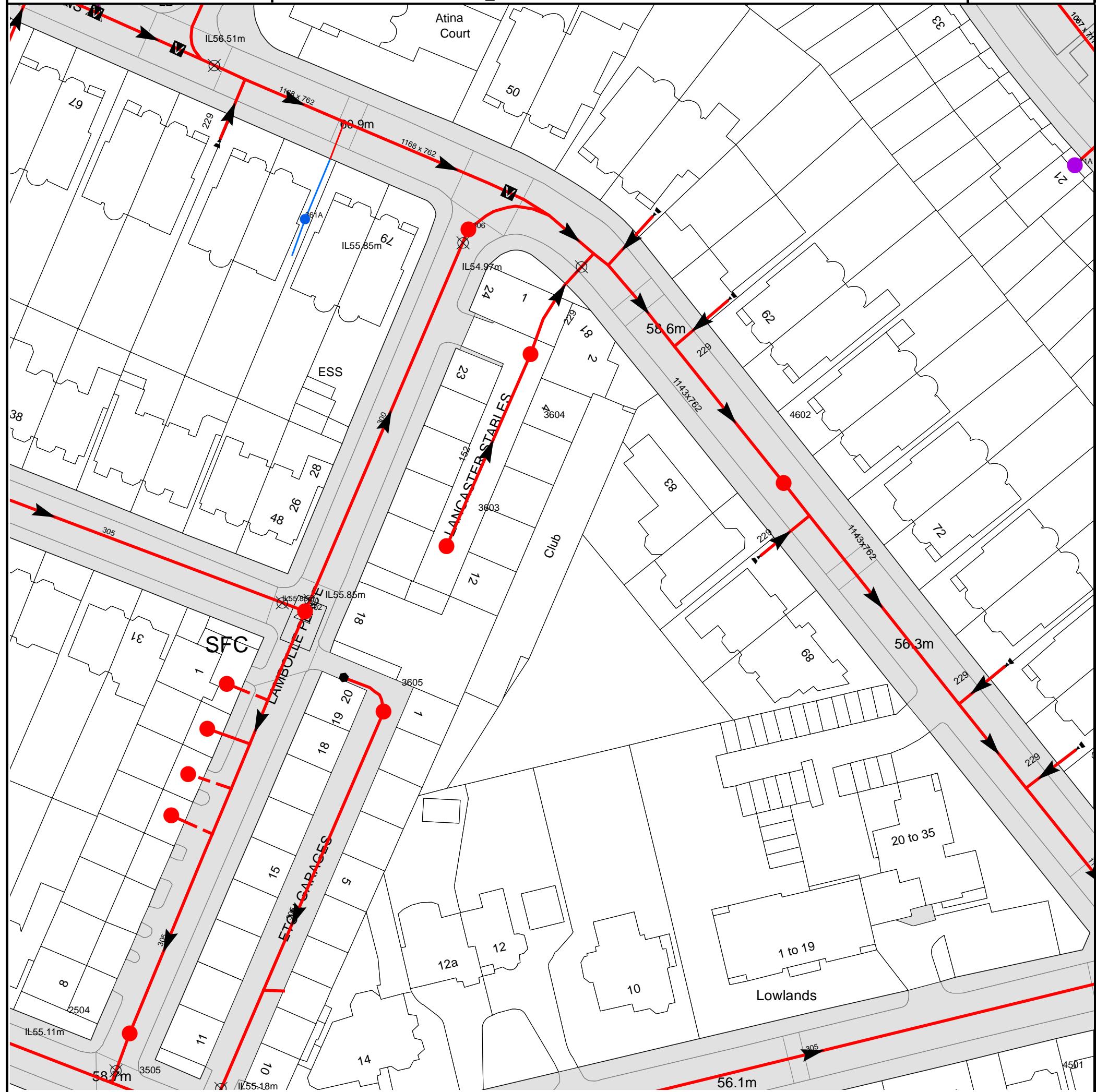
Clean Water queries

Should you require any advice concerning clean water operational issues or clean water connections, please contact:

Developer Services (Clean Water)
Thames Water
Clearwater Court
Vastern Road
Reading
RG1 8DB

Tel: 0800 009 3921
Email: developer.services@thameswater.co.uk

Asset Location Search Sewer Map - ALS/ALS Standard/2021_4483436



NB. Levels quoted in metres Ordnance Newlyn Datum. The value -9999.00 indicates that no survey information is available

Manhole Reference	Manhole Cover Level	Manhole Invert Level
3605	59.65	58.06
3603	60.03	57.67
4602	57.77	53.04
3606	n/a	n/a
3604	60.12	55.97
471A	n/a	n/a
3512	n/a	n/a
3511	n/a	n/a
3618	n/a	n/a
3617	n/a	n/a
361A	n/a	n/a
3602	60.08	n/a
2504	n/a	n/a

The position of the apparatus shown on this plan is given without obligation and warranty, and the accuracy cannot be guaranteed. Service pipes are not shown but their presence should be anticipated. No liability of any kind whatsoever is accepted by Thames Water for any error or omission. The actual position of mains and services must be verified and established on site before any works are undertaken.



ALS Sewer Map Key

Public Sewer Types (Operated & Maintained by Thames Water)

	Foul: A sewer designed to convey waste water from domestic and industrial sources to a treatment works.
	Surface Water: A sewer designed to convey surface water (e.g. rain water from roofs, yards and car parks) to rivers or watercourses.
	Combined: A sewer designed to convey both waste water and surface water from domestic and industrial sources to a treatment works.
	Trunk Surface Water
	Trunk Foul
	Storm Relief
	Trunk Combined
	Vent Pipe
	Bio-solids (Sludge)
	Proposed Thames Surface Water Sewer
	Proposed Thames Water Foul Sewer
	Gallery
	Foul Rising Main
	Surface Water Rising Main
	Combined Rising Main
	Sludge Rising Main
	Vacuum

Notes:

- 1) All levels associated with the plans are to Ordnance Datum Newlyn.
- 2) All measurements on the plans are metric.
- 3) Arrows (on gravity fed sewers) or flecks (on rising mains) indicate direction of flow.
- 4) Most private pipes are not shown on our plans, as in the past, this information has not been recorded.
- 5) 'na' or '0' on a manhole level indicates that data is unavailable.

Sewer Fittings

A feature in a sewer that does not affect the flow in the pipe. Example: a vent is a fitting as the function of a vent is to release excess gas.

	Air Valve
	Dam Chase
	Fitting
	Meter
	Vent Column

Operational Controls

A feature in a sewer that changes or diverts the flow in the sewer. Example: A hydrobrake limits the flow passing downstream.

	Control Valve
	Drop Pipe
	Ancillary
	Weir

End Items

End symbols appear at the start or end of a sewer pipe. Examples: an Undefined End at the start of a sewer indicates that Thames Water has no knowledge of the position of the sewer upstream of that symbol. Outfall on a surface water sewer indicates that the pipe discharges into a stream or river.

	Outfall
	Undefined End
	Inlet

Other Symbols

Symbols used on maps which do not fall under other general categories.

	Public/Private Pumping Station
	Change of characteristic indicator (C.O.C.I.)
	Invert Level
	Summit

Areas

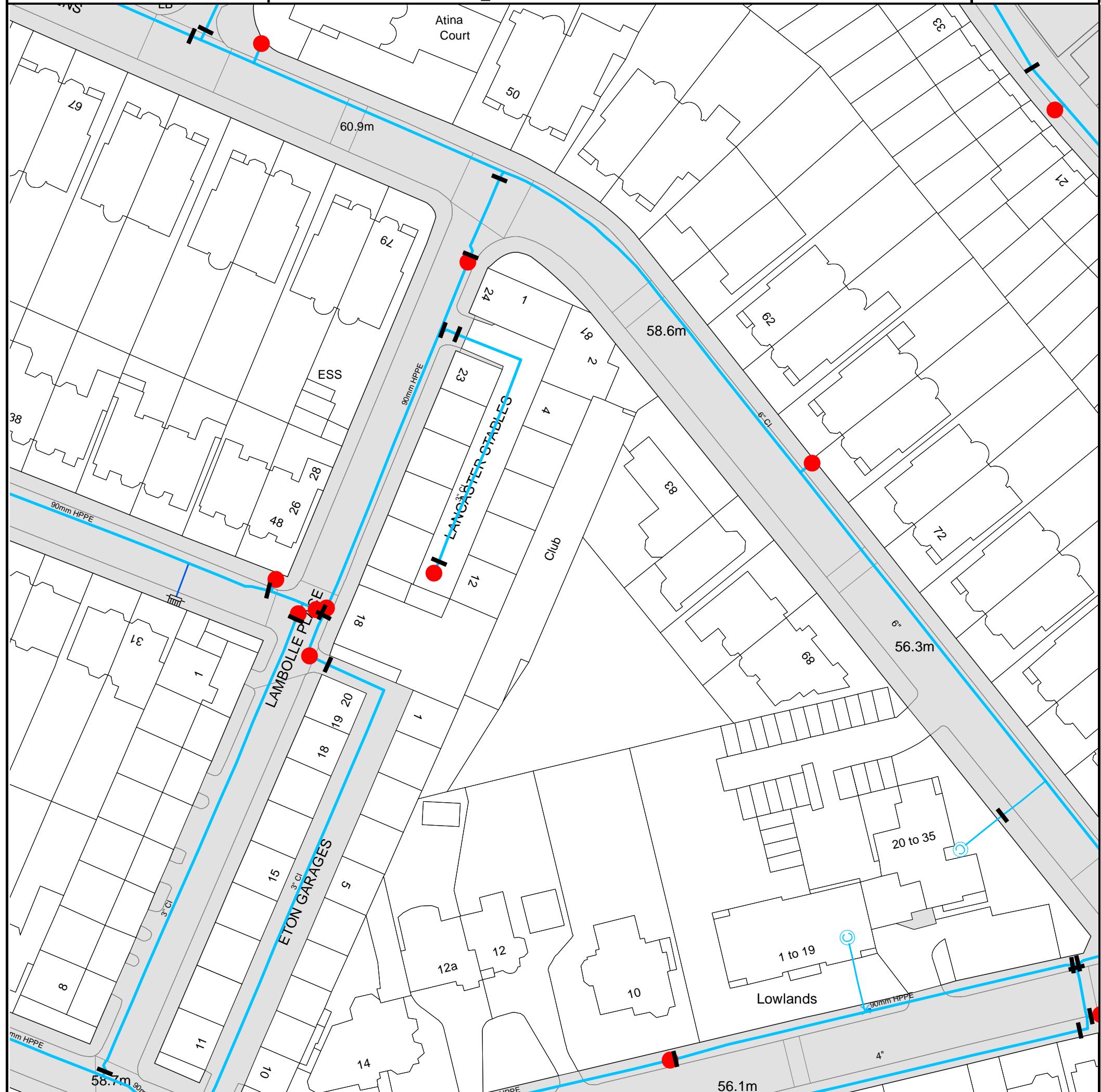
Lines denoting areas of underground surveys, etc.

	Agreement
	Operational Site
	Chamber
	Tunnel
	Conduit Bridge

Other Sewer Types (Not Operated or Maintained by Thames Water)

	Foul Sewer		Surface Water Sewer
	Combined Sewer		Gully
	Culverted Watercourse		Proposed
	Abandoned Sewer		

Asset Location Search Water Map - ALS/ALS Standard/2021_4483436



The width of the displayed area is 200 m and the centre of the map is located at OS coordinates 527374, 184635.

The position of the apparatus shown on this plan is given without obligation and warranty, and the accuracy cannot be guaranteed. Service pipes are not shown but their presence should be anticipated. No liability of any kind whatsoever is accepted by Thames Water for any error or omission. The actual position of mains and services must be verified and established on site before any works are undertaken.

Based on the Ordnance Survey Map with the Sanction of the controller of H.M. Stationery Office, License no. 100019345 Crown Copyright Reserved.



ALS Water Map Key

Water Pipes (Operated & Maintained by Thames Water)

- 4"** Distribution Main: The most common pipe shown on water maps. With few exceptions, domestic connections are only made to distribution mains.
- 16"** Trunk Main: A main carrying water from a source of supply to a treatment plant or reservoir, or from one treatment plant or reservoir to another. Also a main transferring water in bulk to smaller water mains used for supplying individual customers.
- 3" SUPPLY** Supply Main: A supply main indicates that the water main is used as a supply for a single property or group of properties.
- 3" FIRE** Fire Main: Where a pipe is used as a fire supply, the word FIRE will be displayed along the pipe.
- 3" METERED** Metered Pipe: A metered main indicates that the pipe in question supplies water for a single property or group of properties and that quantity of water passing through the pipe is metered even though there may be no meter symbol shown.
- Transmission Tunnel:** A very large diameter water pipe. Most tunnels are buried very deep underground. These pipes are not expected to affect the structural integrity of buildings shown on the map provided.
- Proposed Main:** A main that is still in the planning stages or in the process of being laid. More details of the proposed main and its reference number are generally included near the main.

PIPE DIAMETER	DEPTH BELOW GROUND
Up to 300mm (12")	900mm (3')
300mm - 600mm (12" - 24")	1100mm (3' 8")
600mm and bigger (24" plus)	1200mm (4')

Valves

- I General Purpose Valve
- ♦ Air Valve
- ▲ Pressure Control Valve
- X Customer Valve

Hydrants

- ● Single Hydrant

Meters

- ■ Meter

End Items

Symbol indicating what happens at the end of a water main.

- | Blank Flange
- T Capped End
- O Emptying Pit
- C Undefined End
- F Manifold
- C Customer Supply
- L Fire Supply

Operational Sites

- ⊕ Booster Station
- ⊖ Other
- ⊘ Other (Proposed)
- ▲ Pumping Station
- ▲ Service Reservoir
- ⊕ Shaft Inspection
- ⊖ Treatment Works
- ⊖ Unknown
- ⊖ Water Tower

Other Symbols

- □ Data Logger

Other Water Pipes (Not Operated or Maintained by Thames Water)

Other Water Company Main: Occasionally other water company water pipes may overlap the border of our clean water coverage area. These mains are denoted in purple and in most cases have the owner of the pipe displayed along them.

Private Main: Indicates that the water main in question is not owned by Thames Water. These mains normally have text associated with them indicating the diameter and owner of the pipe.

Terms and Conditions

All sales are made in accordance with Thames Water Utilities Limited (TWUL) standard terms and conditions unless previously agreed in writing.

1. All goods remain in the property of Thames Water Utilities Ltd until full payment is received.
2. Provision of service will be in accordance with all legal requirements and published TWUL policies.
3. All invoices are strictly due for payment 14 days from due date of the invoice. Any other terms must be accepted/agreed in writing prior to provision of goods or service, or will be held to be invalid.
4. Thames Water does not accept post-dated cheques-any cheques received will be processed for payment on date of receipt.
5. In case of dispute TWUL's terms and conditions shall apply.
6. Penalty interest may be invoked by TWUL in the event of unjustifiable payment delay. Interest charges will be in line with UK Statute Law 'The Late Payment of Commercial Debts (Interest) Act 1998'.
7. Interest will be charged in line with current Court Interest Charges, if legal action is taken.
8. A charge may be made at the discretion of the company for increased administration costs.

A copy of Thames Water's standard terms and conditions are available from the Commercial Billing Team (cashoperations@thameswater.co.uk).

We publish several Codes of Practice including a guaranteed standards scheme. You can obtain copies of these leaflets by calling us on 0800 316 9800

If you are unhappy with our service you can speak to your original goods or customer service provider. If you are not satisfied with the response, your complaint will be reviewed by the Customer Services Director. You can write to her at: Thames Water Utilities Ltd. PO Box 492, Swindon, SN38 8TU.

If the Goods or Services covered by this invoice falls under the regulation of the 1991 Water Industry Act, and you remain dissatisfied you can refer your complaint to Consumer Council for Water on 0121 345 1000 or write to them at Consumer Council for Water, 1st Floor, Victoria Square House, Victoria Square, Birmingham, B2 4AJ.

Ways to pay your bill

Credit Card	BACS Payment	Telephone Banking	Cheque
Call 0800 009 4540 quoting your invoice number starting CBA or ADS / OSS	Account number 90478703 Sort code 60-00-01 A remittance advice must be sent to: Thames Water Utilities Ltd., PO Box 3189, Slough SL1 4WW. or email ps.billing@thameswater.co.uk	By calling your bank and quoting: Account number 90478703 Sort code 60-00-01 and your invoice number	Made payable to ' Thames Water Utilities Ltd' Write your Thames Water account number on the back. Send to: Thames Water Utilities Ltd., PO Box 3189, Slough SL1 4WW or by DX to 151280 Slough 13

Thames Water Utilities Ltd Registered in England & Wales No. 2366661 Registered Office Clearwater Court, Vastern Rd, Reading, Berks, RG1 8DB.

EUROPEAN OFFICES

United Kingdom

AYLESBURY T: +44 (0)1844 337380	LONDON T: +44 (0)203 805 6418
BELFAST belfast@slrconsulting.com	MAIDSTONE T: +44 (0)1622 609242
BRADFORD-ON-AVON T: +44 (0)1225 309400	MANCHESTER (Denton) T: +44 (0)161 549 8410
BRISTOL T: +44 (0)117 906 4280	MANCHESTER (Media City) T: +44 (0)161 872 7564
CARDIFF T: +44 (0)29 2049 1010	NEWCASTLE UPON TYNE T: +44 (0)191 261 1966
CHELMSFORD T: +44 (0)1245 392170	NOTTINGHAM T: +44 (0)115 964 7280
EDINBURGH T: +44 (0)131 335 6830	SHEFFIELD T: +44 (0)114 245 5153
EXETER T: +44 (0)1392 490152	SHREWSBURY T: +44 (0)1743 23 9250
GLASGOW T: +44 (0)141 353 5037	STIRLING T: +44 (0)1786 239900
GUILDFORD T: +44 (0)1483 889800	WORCESTER T: +44 (0)1905 751310

Ireland

DUBLIN T: +353 (0)1 296 4667	GRENOBLE T: +33 (0)6 23 37 14 14
--	--

France