

FLOOD RISK ASSESSMENT & DRAINAGE STRATEGY

Proposed Commercial Redevelopment, Ariel Hotel, 118
Bath Road, Heathrow, UB3 5AJ on Behalf of R Ariel
Heathrow Opco Limited

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Drawing No. 3777-01(A)

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1.0 INTRODUCTION

- 1.1 This *Flood Risk Assessment & Drainage Strategy* has been prepared by Cole Easdon Consultants Limited (CE) on behalf of R Ariel Heathrow Opco Limited in respect of a proposed commercial redevelopment at Ariel Hotel, 118 Bath Road, Heathrow UB3 5AJ. Refer to CE Figure 9285/500 Figure 1 [*Site Location Plan*] in Appendix 1.

Development Proposals

- 1.2 The proposals comprise the addition of two storeys above the existing hotel building, providing 113 new hotel rooms (a total of 299 hotel rooms), and the erection of a new apart-hotel building comprising 98 apart-hotel rooms, including façade enhancements and associated works.
- 1.3 This study is based on Drawing No. 1041-099-P1 [*Proposed Site Plan*] (by Ackroyd Lowrie) in Appendix 4.

Need for Study

- 1.4 The purpose of this assessment is to demonstrate that the development proposal outlined above can be satisfactorily accommodated without worsening flood risk for the area and without placing the development itself at risk of flooding, as per National guidance provided within the National Planning Policy Framework document (NPPF).
- 1.5 Accordingly, this study has been prepared to:
- assess flood risk to the development from fluvial sources;
 - assess flood risk to the development from other potential sources, including ditches, sewers, groundwater and overland flows;
 - ensure that the proposed development will fully comply with the requirements of the Environment Agency's (EA's) policy on the safeguarding of floodplains; and
 - assess a surface water drainage strategy for the proposed development.

Local Policy

- 1.6 This assessment demonstrates that the proposals meet the requirements of the London Borough of Hillingdon Strategic Flood Risk Assessment (SFRA) and the London Borough of Hillingdon (LBH) Preliminary Flood Risk Assessment (PFRA). The PFRA states that '*flood risk is taken into account at all stages in the planning process to avoid inappropriate development in areas at risk of flooding, and to direct development away from areas at highest risk*'

- 1.7 The West London SFRA is a combined SFRA commissioned by Barnet, Brent, Ealing, Harrow, Hillingdon and Hounslow councils. The West London SFRA highlights how ‘*all new developments should incorporate SuDS*’, additionally the SuDS that are implemented must follow guidance set out by the *London Sustainable Drainage Action Plan*, *The SuDS Manual* and the *Construction of SuDS*. Any surface water drainage strategy must also follow the *London Plan Drainage Hierarchy*, which is in line with the *CIRIA C753 The SuDS Manual*.

Scope of Study

- 1.8 In Section 2.0, we describe the characteristics of the proposed development site and surrounding area. In Section 3.0, we assess flood risk issues. The proposed surface water drainage strategy is outlined in Sections 4.0. Conclusions are presented in Section 5.0.
- 1.9 The following resources have been used for this study:
- Defra’s Multi-Agency Geographic Information for the Countryside (MAGIC) Map (EA, accessed May 2023);
 - Flood Map for Planning – Environment Agency (EA, accessed May 2023);
 - Flood Map for Surface Water – Environment Agency (EA, accessed May 2023);
 - Geological Map - British Geological Survey (BGS, accessed May 2023);
 - Public Sewer Records (Thames Water, April 2023); and
 - Revised Climate Change Allowances (EA, May 2022).
- 1.10 The following publicly available documents have also been reviewed as part of this assessment:
- Building Regulations 2015 – Approved Document H (Drainage and Waste Disposal);
 - C753 The SuDS Manual (CIRIA, November 2015);
 - London Borough of Hillingdon (LBH) Preliminary Flood Risk Assessment (2011);
 - London Borough of Hillingdon (LBH) Strategic Flood Risk Assessment (2008);
 - London Plan (Mayor of London, 2021)
 - London Sustainable Drainage Action Plan (Mayor of London, 2016);
 - National Planning Policy Framework (NPPF) (July 2021);
 - Non-Statutory Technical Standards for Sustainable Drainage Systems (Defra, March 2015);
 - Planning Practice Guidance (PPG) (July 2022);
 - Sewerage Sector Guidance (SSG), Version 2.2 (Water UK, June 2022); and
 - West London Strategic Flood Risk Assessment (West London Alliance, 2018).
- 1.11 The following abbreviations are used in this Report:
- AEP – Annual Exceedance Probability;

-
- AOD – Above Ordnance Datum;
 - BGS – British Geological Survey;
 - EA – Environment Agency;
 - FMP – Flood Map for Planning;
 - LBH – London Borough of Hillingdon;
 - LFRMS – Local Flood Risk Management Strategy;
 - NPPF – National Planning Policy Framework;
 - SFRA – Strategic Flood Risk Assessment;
 - SuDS – Sustainable Drainage Systems; and
 - TWU – Thames Water Utilities

2.0 THE EXISTING SITE

- 2.1 The development site comprises an existing hotel including associated parking and landscaping located to the north of Bath Road. Refer to CE Figure 9285/500 Figure 1 [*Site Location Plan*] in Appendix 1.
- 2.2 The site is bounded to the north by residential development fronting Marlborough Crescent; to the east of the site is commercial development in the form of the Courtyard Hotel; to the south of the site beyond Bath Road is parking and commercial units associated with Heathrow Airport; to the west the site beyond High Street Harlington is a conference centre 'Avanta Heathrow'.
- 2.3 Land use in the immediate vicinity of the site comprises of residential and commercial development.

Existing Topography

- 2.4 A site topographical survey, referenced to Ordnance datum, has been provided for the site. Refer to Drawing No. 3777-01 [*Site Plan*] (by Mobile CAD Surveying Solutions) in Appendix 4. The survey indicates that the site is relatively flat across the site but with a slight fall from north to south. Existing ground levels vary from 25.124m AOD in the north west of the site to 24.98m AOD in the south of the site.

Nearby Watercourses/Drainage Features

- 2.5 There are no watercourses in the immediate vicinity of the site. However, the River Crane, a main river as defined by the EA is located approximately 1.12km east of the site.

Existing Ground Conditions

- 2.6 Records from the British Geological Survey indicate that the site is underlain by bedrock comprising London Clay Formation Clay. Superficial geology within the site has been identified as Langley Silt Member – clay and silt. Refer to Figure 2.1 below.
- 2.7 Defra's Multi-Agency Geographic Information for the Countryside (MAGIC) map indicates that the geology underlying the site is classified as an unproductive aquifer and hence has no vulnerability factor. The site is not located within a Groundwater Source Protection Zone.

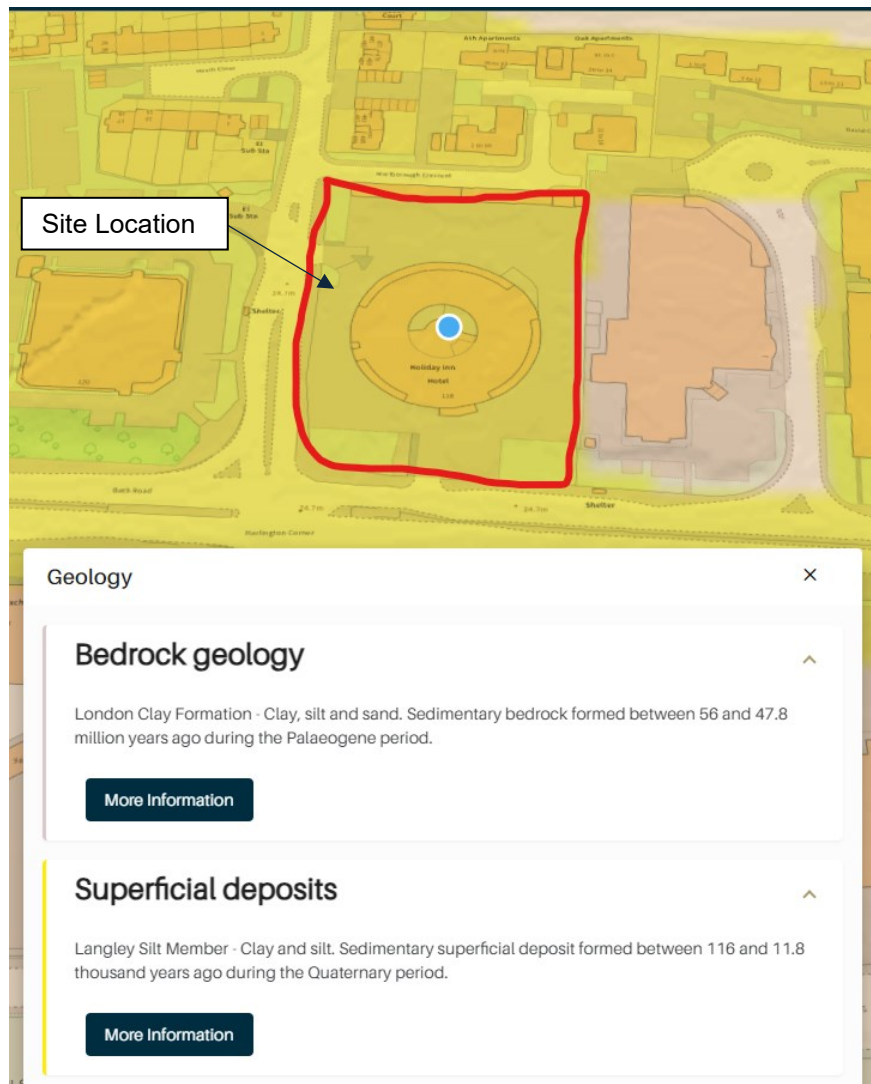


Figure 2.1: Bedrock Geology Map (Extract from British Geological Survey Geoindex)
Source: Geology of Britain viewer - British Geological Survey (bgs.ac.uk)

Existing Sewers

- 2.8 Asset records obtained from Thames Water Utilities (TWU) indicate the presence of an existing 225mm diameter surface water sewer within High Street Harlington to the west of the site. This sewer flows in a southerly direction before joining a 750mm diameter public surface water sewer within Bath Road. This sewer runs in an easterly direction along the site's southern boundary. TWU sewer records also indicate the presence of a 1524mm diameter public foul water sewer within Bath Road, to the south of the development site. This public foul sewer runs in an easterly direction away from the development site. Refer to TWU Sewer Records within Appendix 2.

Existing Drainage

- 2.9 The site comprises an existing hotel which is presumed to drain both foul water and surface water runoff via a positive drainage system to the public sewer system. Topographical survey indicates the presence of a number of existing manholes to the west of the existing hotel building, however further details are unknown.
- 2.10 The existing area where the proposed apart-hotel building shall be built consists of approximately 0.119ha of impermeable area in the form of existing parking area. Equivalent brownfield runoff rates for this area are 8.3l/s in the 1:1 year event, 20.4l/s in the 1:30 year event and 26.5l/s in the 1:100 year event.

3.0 FLOOD RISK ISSUES

- 3.1 This Section presents an assessment of flood risk to the development and includes recommended flood risk mitigation measures appropriate to the level of perceived risk. Flood risk issues and proposed mitigation measures are summarised in Table 3.1 below.

Historic Flooding

- 3.2 The West London Strategic Flood Risk Assessment (SFRA) includes historic flood mapping across the combined council areas. The SFRA mapping does not indicate that significant flooding has occurred on Bath Road or in the immediate vicinity of the development site.

Assessment of Flood Risk from Fluvial/Tidal Sources

- 3.3 The Flood Map for Planning (FMP) for the locality as produced by the EA is shown on Figure 3.1 below. According to the FMP, it can be seen that the site lies within Flood Zone 1 (Low Risk).

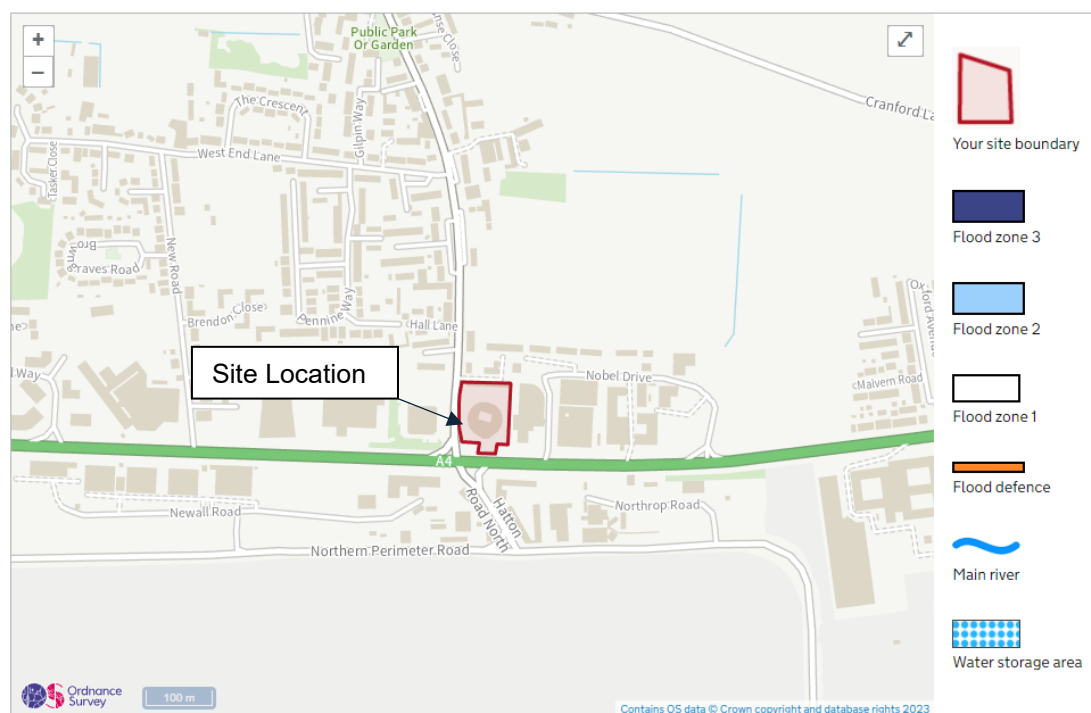


Figure 3.1: EA Flood Map for Planning
Source : <https://flood-map-for-planning.service.gov.uk/>

- 3.4 *NPPF Practice Guidance (Table 2: Flood Risk Vulnerability Classification)* classifies the proposed site usage 'Buildings used for dwelling hotels' as 'More Vulnerable' development. In accordance with the *NPPF Practice Guidance (Table 3: Flood Risk Vulnerability and Flood Zone Compatibility)*, More Vulnerable Development is appropriate within Flood Zone 1.

- 3.5 Flood risk from this source is therefore considered to be low.

Fluvial/Tidal Flood Risk Mitigation Measures

- 3.6 No mitigation is required.

Assessment of Flood Risk from Existing Sewers/Drains

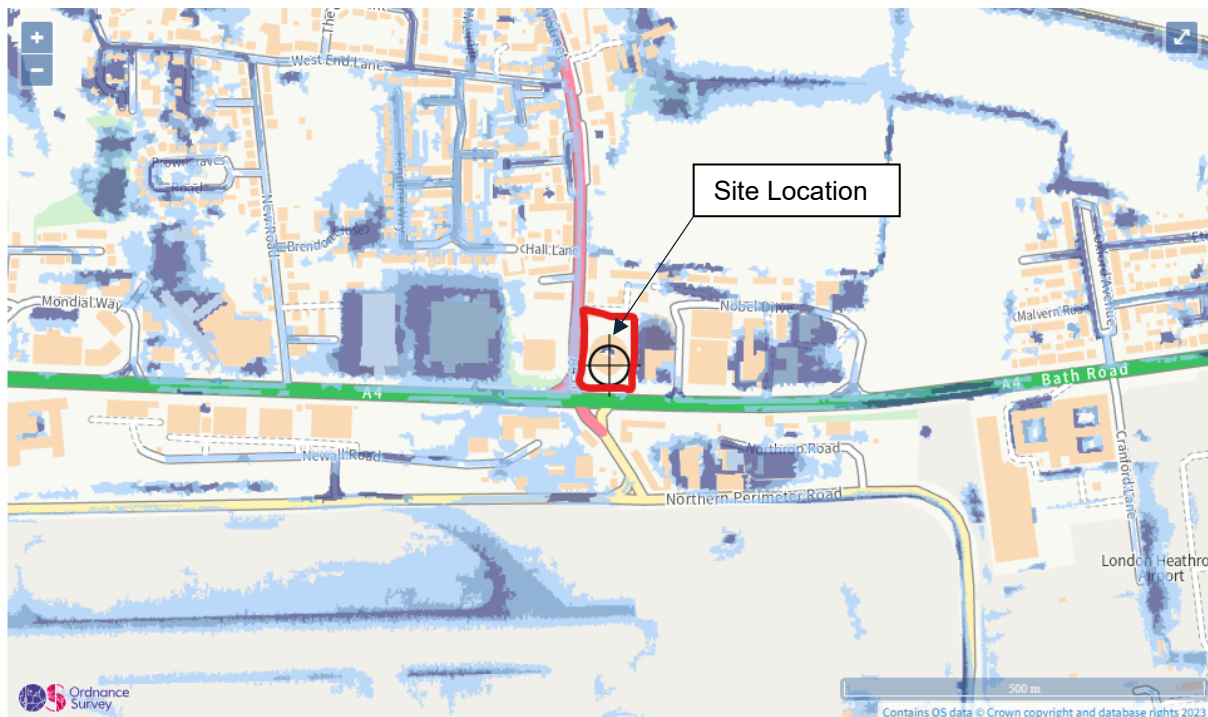
- 3.7 Thames Water Utilities public sewer records indicate that a 225mm diameter public surface water sewer is located within High Street Harlington, immediately to the west of the site. This surface water sewer flows in a southerly direction, entering a 450mm diameter sewer further south along High Street Harlington. This sewer then enters manhole 8902 before flowing along the southern boundary of the site within a 750mm diameter public surface water sewer within Bath Road. Sewer records also indicate the presence of a 1524mm diameter public foul water sewer flowing in a westerly direction along the site's southern boundary.
- 3.8 Comparing information on existing ground levels contained within the topographical survey and the public sewer records contained within Appendix 2 indicates that existing ground levels within the site are higher than those within Bath Road and High Street Harlington. Therefore, in the event of sewer flooding overflow would be retained within the highway corridor and would not impact the site. Flood risk from existing sewers can be considered to be low.

Sewer/Drain Flood Risk Mitigation Measures

- 3.9 No mitigation is required.

Assessment of Flood Risk from Overland Flow (Pluvial)

- 3.10 The EA Map 'Risk of Flooding from Surface Water' indicates that a surface water flow path is routed from north to south along the western boundary of the site. According to the mapping in Figure 3.2 below, the surface water flood risk to the majority of the site is 'very low' with the chance of flooding being less than 0.1% each year. There is an area of 'high' chance of flooding in the garden at the centre of the hotel. This means the chances of flooding within this garden are greater than 3.3% each year.



Extent of flooding from surface water

● High ● Medium ● Low ○ Very low ⊕ Location you selected

Figure 3.2: EA Surface Water Flood Map
Source : <https://flood-map-for-planning.service.gov.uk/>

- 3.11 The development will be located in an area of very low flood risk. Therefore, flood risk is considered to be low.

Overland Flow Flood Risk Mitigation Measures

- 3.12 No mitigation required.

Assessment of Flood Risk from Groundwater

- 3.13 LBH have advised that the borough is subject to potential groundwater risks. The West London SFRA indicates that the majority of the site is at a greater than 75% chance of ground water flooding occurring each year, with the northern extent of the site (where the new hotel building will be located) being at below 25% chance of ground water flooding occurring each year. Flood risk from groundwater is considered to be medium-high. Refer to Figure 3.4 below.

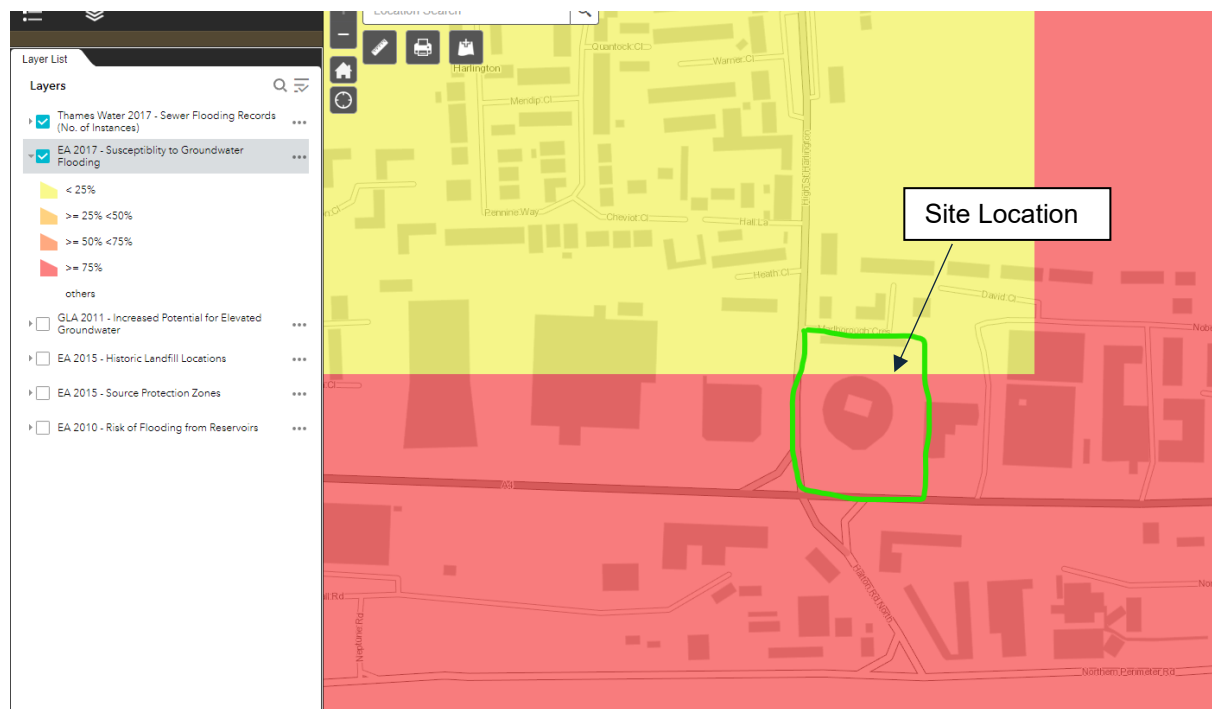


Figure 3.4: EA 2017 Susceptibility to Groundwater Flooding

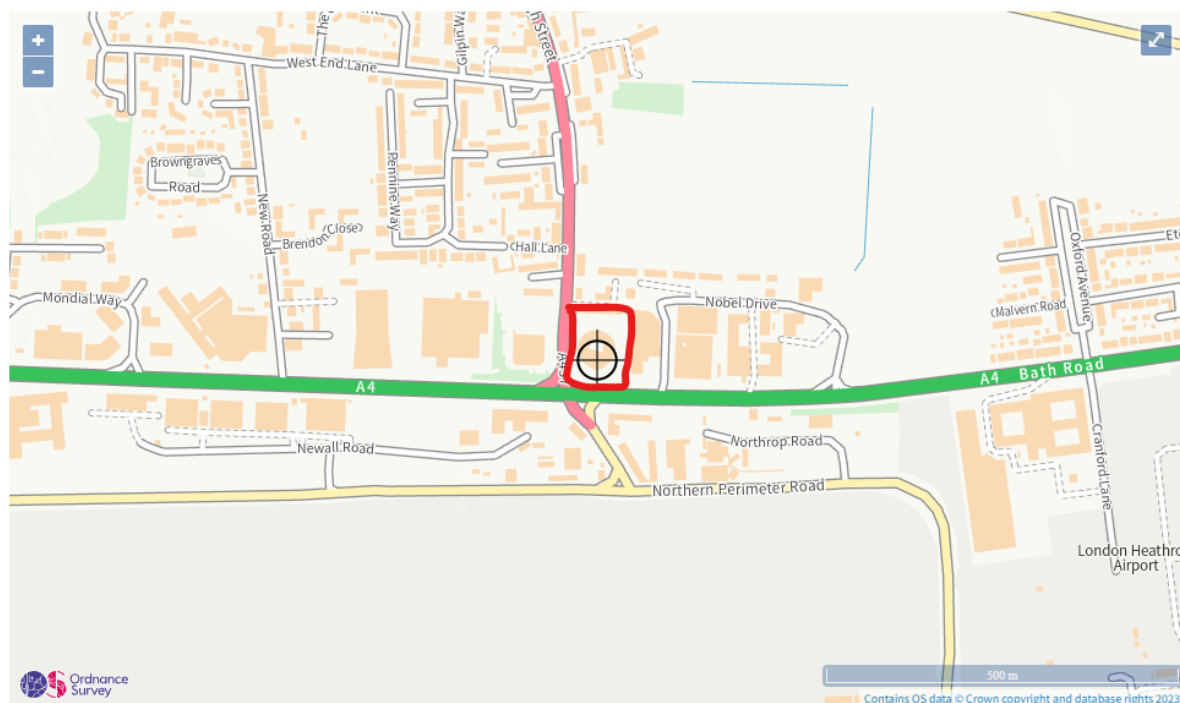
Source: <https://westlondon.sfra.london/>

Groundwater Flood Risk Mitigation Measures

- 3.14 The development will be located in the area at less than 25% chance of groundwater flooding in any year. In the event of groundwater emergence, groundwater would follow site topography and flow south away from the new building. No mitigation is proposed.
- 3.15 All below ground SuDS will be wrapped in an impermeable membrane to prevent groundwater ingress. Design measures will be undertaken at detailed design to mitigate the effect of uplift pressure on below ground SuDS. This may take the form of anchoring into the strata below.

Assessment of Flood Risk from Artificial Sources

- 3.16 The EA Risk of Flooding from Artificial Sources map shows the site is not at risk from any source of artificial flooding. Therefore, flood risk from artificial sources is considered to be low. Refer to Figure 3.5 below.



Maximum extent of flooding from reservoirs:




 when river levels are normal  when there is also flooding from rivers  Location you selected

Figure 3.5: EA Risk of Flooding from Reservoirs

Source : <https://flood-map-for-planning.service.gov.uk/>

Artificial Sources Flood Risk Mitigation Measures

3.17 No mitigation is required.

Table 3.1: Assessment of Flood Risk to the Development Site Arising from External Sources

Source of Potential Flooding to the Development Site	Flood Risk	Mitigation/Comments
Fluvial/Tidal	Low	<ul style="list-style-type: none"> The site is located within Flood Zone 1 (Low Risk). No mitigation is required
Overland Flow (Pluvial)	Low	<ul style="list-style-type: none"> Any pluvial flooding which enters the site will flow along the western boundary in a southerly direction without impacting the existing hotel or proposed apart-hotel building No mitigation required
Groundwater	Medium-High	<ul style="list-style-type: none"> The West London SFRA indicates that the majority of the site is at greater than 75% chance of ground water flooding occurring each year, with the northern reaches of the site being at below 25% risk. The hotel building will be located in an area at less than 25% risk. In the event of groundwater emergence groundwater would follow site topography and flow south away from the new building.

Source of Potential Flooding to the Development Site	Flood Risk	Mitigation/Comments
		<ul style="list-style-type: none"> Proposed SuDS will be wrapped to prevent groundwater ingress and anchored to prevent uplift.
Public Sewer	Low	<ul style="list-style-type: none"> Existing ground levels on site are higher than those within the highway. if sewer flooding was to occur flows would be contained within the highway corridor No mitigation required
Artificial Sources	Low	<ul style="list-style-type: none"> The site is not at risk of flooding from artificial sources No mitigation is required.

4.0 SURFACE WATER DRAINAGE STRATEGY

Refer to CE Plan 9285/501(B) [*Proposed Drainage Strategy*] in Appendix 1 and Hillingdon Proforma in Appendix 5.

- 4.1 In order to mitigate flood risk posed by post development runoff, adequate control measures will be provided within the site. This will ensure that flood risk is not increased elsewhere as a result of the development.
- 4.2 The proposed vertical extension to the existing hotel building will not increase impermeable area and, therefore, there will be no increase in flood risk arising from the extension. As such, SuDS is not required for this element of the proposal. SuDS will be provided for runoff from the proposed apart-hotel building. Furthermore, the development will introduce some 540 sqm of soft landscaping around the proposed apart-hotelso there will be a reduction in runoff from the site compared to the existing situation.

Drainage Hierarchy

- 4.3 The drainage strategy for the site has been prepared according to the drainage discharge hierarchy set out in *CIRIA C753 The SuDS Manual*, as follows. Refer to Table 4.1 below
1. Infiltration to the maximum extent that is practical;
 2. Discharge to surface waters;
 3. Discharge to surface water sewer; and,
 4. Discharge to combined sewer.

Infiltration Potential

- 4.4 BGS mapping confirms that the site is underlain by Clay bedrock strata (London Formation). Clay is impermeable and would prevent the operation of infiltration-based SuDs, therefore, in accordance with the drainage hierarchy, an attenuation-based surface water drainage strategy with disposal via the existing surface water sewer has been proposed.
- 4.5 Surface water runoff from the site will be discharged via a proposed cellular attenuation tank into the existing public surface water sewer to the west of the site.

Discharge Rate

- 4.6 Post development runoff from the new apart-hotel building will be restricted using an orifice flow control to 3.5l/s for all storms up to and including the 1 in 100 year + 40% climate change storm. This discharge rate will provide significant betterment (greater than 50%) over existing brownfield discharge rates from the site which currently discharge as unattenuated flow to the

public sewer. Brownfield runoff rates for this area are 8.3l/s in the 1:1 year event, 20.4l/s in the 1:30 year event and 26.5l/s in the 1:100 year event. Refer to Table 4.2 below and Appendix 3.

Table 4.1: Review of SuDS Components in accordance with the Drainage Hierarchy

SuDS Technique	Proposed	Not proposed	Reason
Store rainwater for later use		X	Use of water butts to be considered as part of detailed design for non-potable water reuse
Use infiltration techniques		X	Underlying clay strata will prevent the use of infiltration techniques
Attenuate rainwater in ponds or open water features		X	External space is used for carparking. Due to lack of space, it is proposed to discharge surface water to an attenuation tank within the client's ownership.
Attenuate rainwater in sealed tanks	X		Below ground attenuation will be utilised to store run off before being discharged to the surface water sewer
Discharge direct to a watercourse		X	There are no existing watercourses in the immediate vicinity of the site.
Discharge to a surface water sewer	X		Public surface water sewers are present in the vicinity of the site.
Discharge to a combined sewer		X	No combined sewers are present in the vicinity of the site.

Proposed Sustainable Drainage Systems (SuDS)

4.7 It is proposed that runoff from the proposed apart-hotel building will be discharged into a cellular attenuation tank located within the existing car parking area. Preliminary calculations indicate that a volume of 52.7m³ will be required to accommodate runoff from the proposed development, at the proposed discharge rate. This can be provided within a cellular attenuation tank measuring 5m x 14m x 0.8m deep x 0.95 (voids) to attenuate runoff from a 1:100-year event, with a 40% allowance for future climate change, without flooding.

4.8 Existing and proposed discharge rates are summarised below in Table 4.2.

4.9 All surface water drainage design calculations have been undertaken using Micro Drainage software. Refer to Appendix 3.

Table 4.2: Summary of Existing and Proposed Surface Water Discharge Rates

Developable area (ha)		Discharge Point	Calculation Method	Discharge Rate (l/s)				Volume required (m ³)
				1:1yr	1:30 yr	1:100 yr	1:100yr +40%	
Existing	0.119	To SW sewer	Modified Rational Method	8.3	20.4	26.5	-	-
Proposed	0.119	To SW sewer	Micro Drainage	3.5	3.5	3.5	3.5	52.7

Design Exceedance

- 4.10 In the event of flow control blockage or design exceedance, flows would follow the existing topography of the site and flow westwards or southwards into the highway corridor without impacting upon the site or adjacent properties. Refer to CE Plan 9285/501(B) [*Proposed Drainage Strategy*] in Appendix 1.

Water Quality

- 4.11 Runoff from the proposed roof areas are considered fairly uncontaminated. Catch pits will provide adequate water quality treatment via the removal of sediments before entering the proposed cellular attenuation tank.

Adoption and Maintenance

- 4.12 The proposed cellular attenuation tank, catch pits and associated drainage network will be maintained by the site owner or a private maintenance company acting on the owner's behalf. A draft Maintenance Schedule is outlined below and summarised in Table 4.3.

Cellular Attenuation Storage

- 4.13 It is not envisaged that silt build up within the cellular crate systems will require a rigorous maintenance regime so long as silt is removed from upstream catch pits and inspection chambers on a regular basis. Notwithstanding this, a suitable maintenance regime for the systems will comprise of routine inspection and silt removal (as necessary). Inspection should be undertaken using CCTV equipment offered up the inspection tunnels located within the crate system. Camera access can be gained via inspection chambers and inlet pipework located at each end of the tunnels.
- 4.14 Silt removal can be achieved by jetting the inspection tunnels. Jetting should be undertaken in accordance with current jetting guidelines, in particular the Code of Practice for Sewer Jetting published by The Water Research Centre. Jetting at 150bar at 300l/min should be more than adequate in removing any build-up of material within the tunnel. The crate system will take higher pressures. However, unlike regular jetting which relies heavily on high pressure to remove hardened deposits on the inner bore of pipes, effective cleansing of a crate system relies more on the delivery flow rate to flush solids back through the system.
- 4.15 A standard jet head with rear facing nozzles should be used. The head should be fed to the far end of the crate tunnel via the nearest inspection chamber, activated and retracted. As the nozzle is removed, debris will be swept back into the inspection chamber where it can then be removed with the use of a standard gully sucker. This method will ensure the effective removal

of gross solids (carrier bags, cans, leaf litter etc.) from the system. Whilst 100% removal cannot be guaranteed, it has been shown that this jetting method will also remove an element of finer material which would otherwise be 'lost' within the system.

Pipework and catchpits

- 4.16 It is not envisaged that silt build up within the pipework systems will require a rigorous maintenance regime so long as silt is removed from upstream catch pits on a regular basis. Notwithstanding this, a suitable maintenance regime for the systems will comprise of routine inspection (every six months) and silt removal (as necessary).

Flow Control

- 4.17 The flow control should be inspected regularly for blockages and silt/ debris removed as necessary.

Table 4.5: Draft Maintenance Schedule for Proposed Drainage Infrastructure

Drainage Element	Schedule	Maintenance Requirement	Frequency
Cellular Attenuation Storage	Regular	Remove debris from the catchment surface	Monthly
		Inspect and identify any areas that are not operating correctly	Monthly for 3 months, then annually
		Remove sediment from pre-treatment structures and internal forebays	Annually, or as required
	Remedial	Repair and rehabilitate inlets, outlets, overflows and vents	As required
	Monitoring	Inspect inlets, outlets, overflows and vents to ensure they are operating as designed	Annually
		Survey inside of tank for sediment build-up and remove as necessary	Every 5 years, or as required
Pipework and Flow Control	Regular	<ul style="list-style-type: none"> Inspect for accumulation of silt Inspect inlets, outlets and overflows for blockages Inspect for debris and litter 	Every six months
	Occasional	<ul style="list-style-type: none"> Remove debris and litter Remove silt 	As required

5.0 FOUL WATER DRAINAGE STRATEGY

- 5.1 TWU records indicate the presence of a public foul sewer within Bath Road, to the south of the development site.
- 5.2 It is proposed to discharge post development foul water to the existing foul sewer within Bath Road, subject to approval from TWU. Refer to 9285/501(B) [*Proposed Drainage Strategy*] in Appendix 1.
- 5.3 A capacity check application has been submitted to TWU and a response is awaited
- 5.4 The foul sewer network will be offered for adoption by TWU.

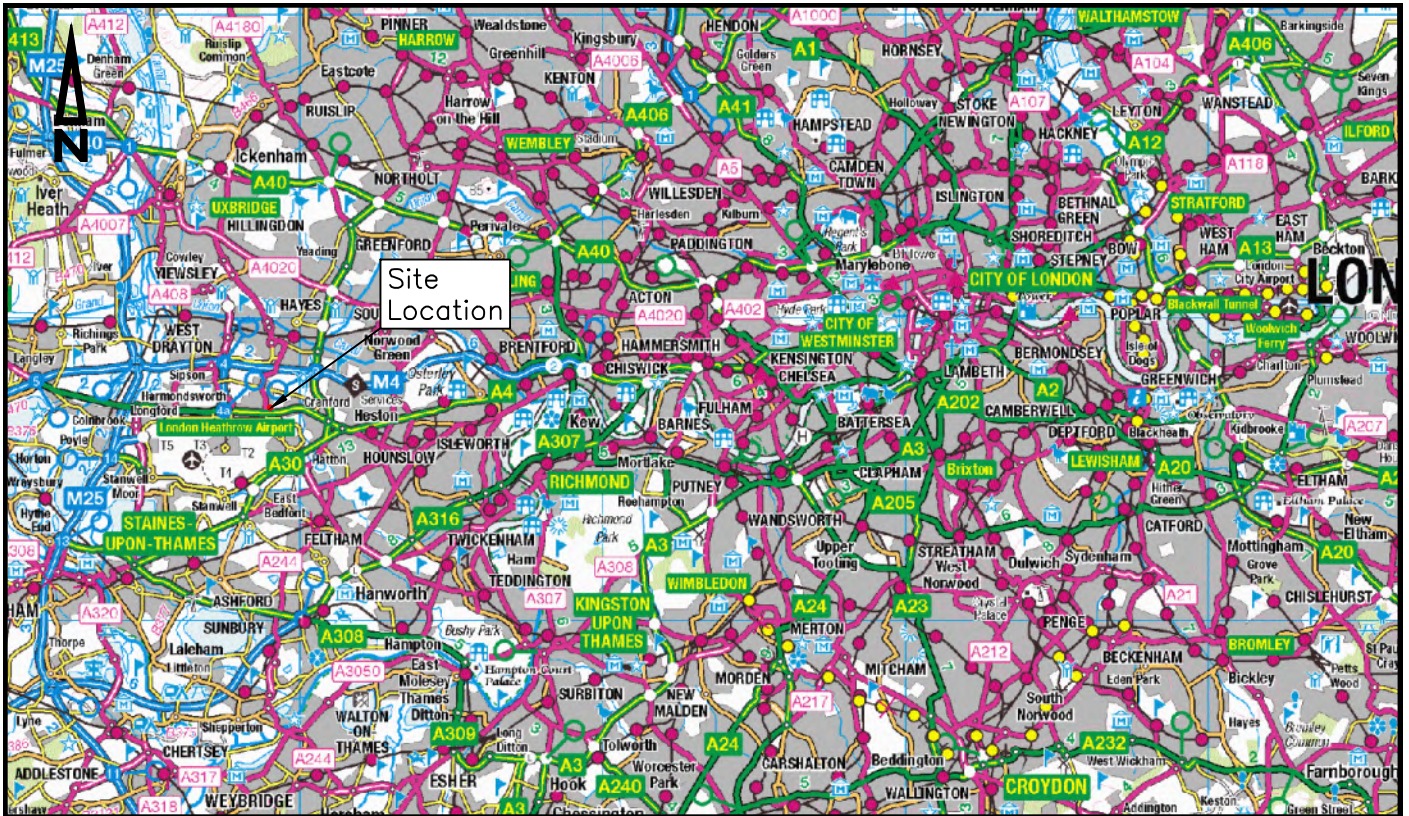
6.0 DISCUSSION AND CONCLUSIONS

- 6.1 Flood risk to the proposed development from various sources, such as fluvial, sewers, groundwater, reservoirs and overland flow has been considered in this study. Flood risk from all sources is considered to be low, apart from groundwater flooding, with no mitigation required.
- 6.2 Ground water flooding risk to the site has been deemed to be medium-high with the West London SFRA indicating that the majority of the site is at greater than 75% chance of ground water flooding occurring each year, with the northern reaches of the site being at below 25%. The development will be located in the area at less than 25% chance of groundwater flooding in any year. In the event of groundwater emergence, groundwater would follow site topography and flow south away from the new building without collecting to any significant depth. No mitigation is proposed. All below ground SuDS will be wrapped in an impermeable membrane to prevent groundwater ingress. Design measures will be undertaken at detailed design to mitigate the effect of uplift pressure on below ground SuDS.
- 6.3 The surface water drainage strategy for the site has been prepared according to the drainage discharge hierarchy set out in *CIRIA C753 The SuDS Manual*. The site is underlain by impermeable clay, which would prevent the operation of infiltration-based SuDs. Therefore, in accordance with the drainage hierarchy, an attenuation based surface water drainage strategy, with disposal to the existing surface water sewer is proposed.
- 6.4 SuDS will be provided for runoff from the proposed apart-hotel building. Post development surface water discharge from the proposed apart-hotel building will be restricted to a rate of 3.5 l/s. This provides betterment over the existing brownfield situation. Furthermore, the development will introduce some 540 sqm of soft landscaping around the proposed building so there will be a reduction in runoff from the site compared to the existing situation.
- 6.5 On site attenuation will be provided within a cellular attenuation tank measuring 5m x 14m x 0.8m deep.
- 6.6 Runoff from post development roof areas is considered fairly uncontaminated, therefore the conveyance of water through proposed catchpits will provide adequate water quality treatment before entering the proposed cellular attenuation tank.

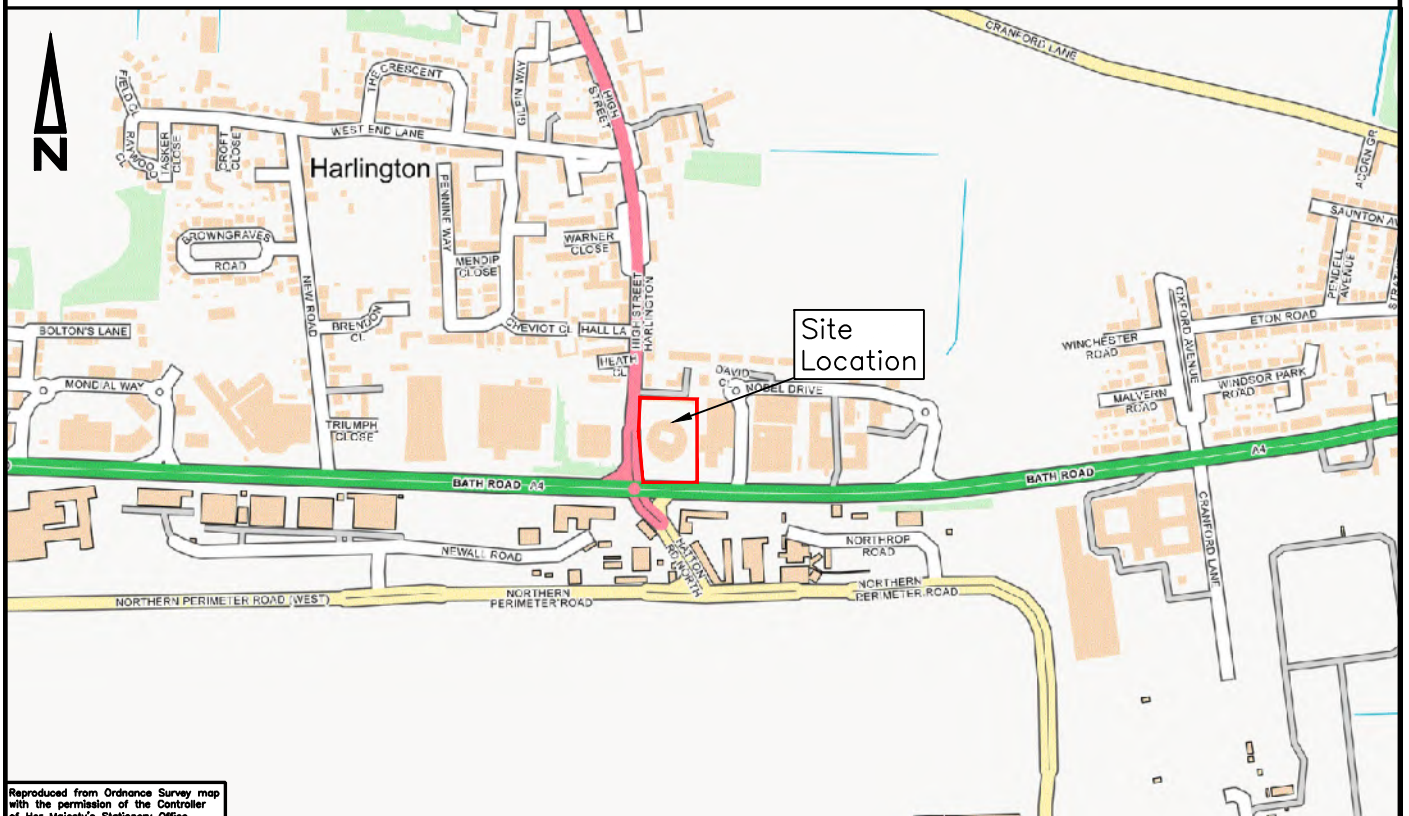
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- 6.7 In the event of flow control blockage or design exceedance, flows would follow the existing topography of the site and flow westwards or southwards into the highway corridor without impacting upon the site or adjacent properties.
- 6.8 All on site surface water drainage systems will remain private, and will be the responsibility of the site owner or a private maintenance company acting on the owner's behalf.
- 6.9 Foul water is proposed to be discharged to the existing public foul sewer within Bath Road, subject to approval from TWU.
- 6.10 This study has been undertaken in accordance with the principles set out in NPPF. We can conclude that providing the development adheres to the conditions advised in this Report, the said development proposals can be accommodated without increasing flood risk within the locality in accordance with objectives set by Central Government and the EA.

Cole Easdon Consultants Limited
September 2023

Appendix 1



Scale: 1:250,000



Scale: 1:10,000

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01793 619 965 | cec@ColeEasdon.com | www.ColeEasdon.com

Job Title:

Ariel Hotel
118 Bath Road
Heathrow
Hayes & Harlington

Drawing Title:

Site Location Plan

Client:

R Ariel Heathrow Opco Ltd

Drawn By

NJ

Date Drawn

June 2023

Checked By

DF

Drawing No.

9285/500 Figure 1

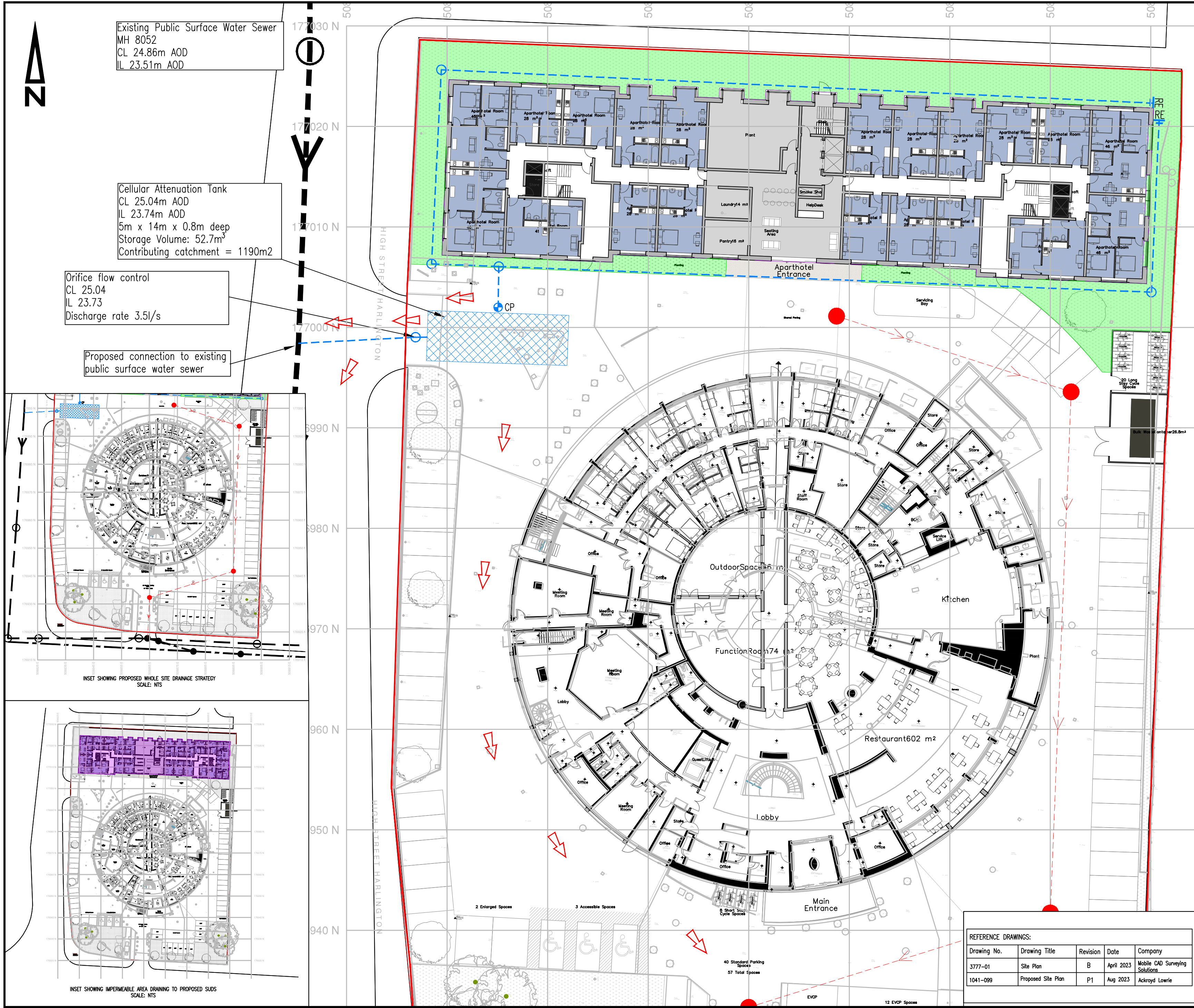
Drawing Status:

CONSTRUCTION	FOR COMMENT	
AT CLIENT AND/OR CONTRACTOR RISK	FOR PLANNING	
	FOR TENDER	
	FOR APPROVAL	
	FOR CONSTRUCTION	
	AS BUILT	

Scale

As Shown (A4)

Revision

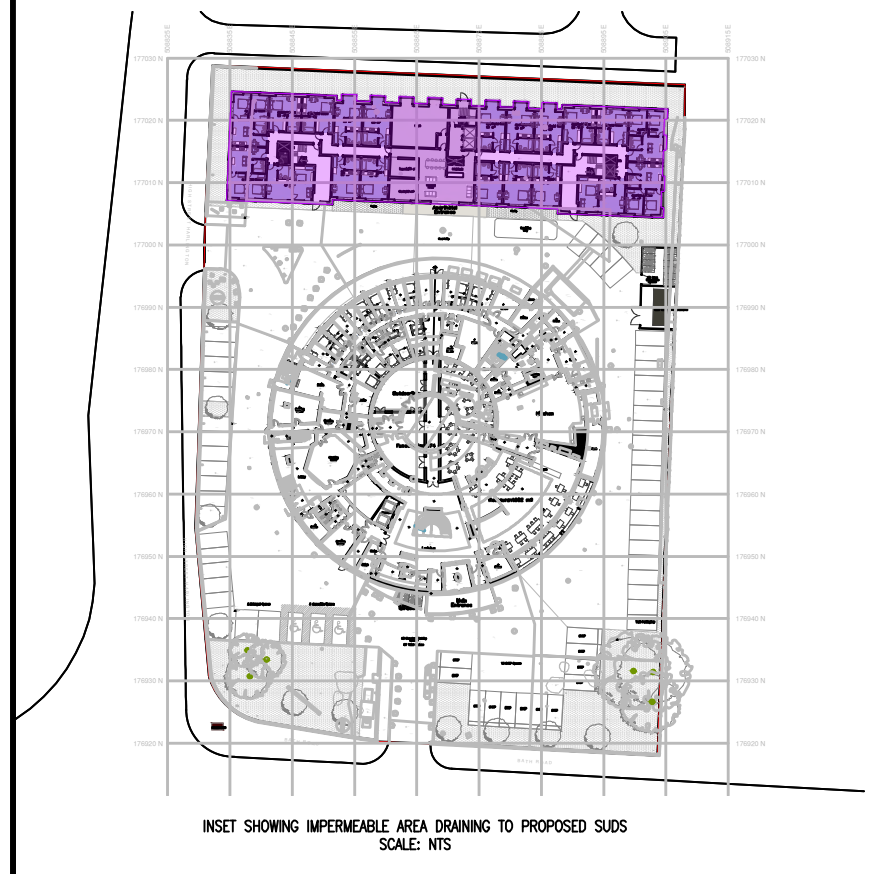
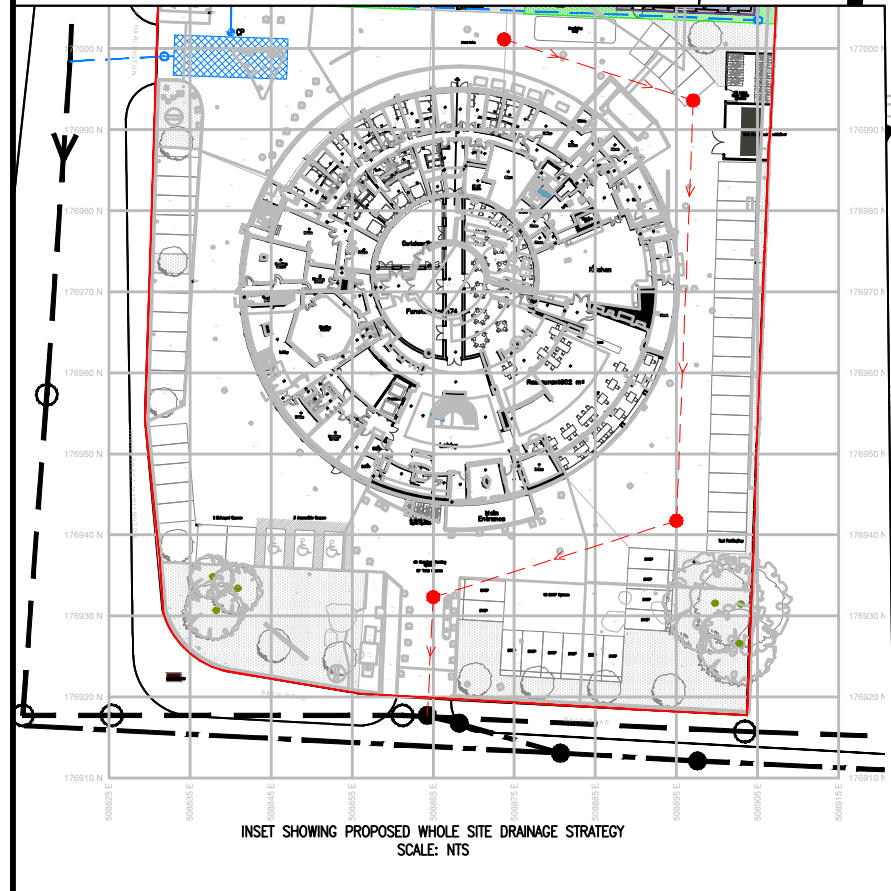


Existing Public Surface Water Sewer
MH 8052
CL 24.86m AOD
IL 23.51m AOD

Cellular Attenuation Tank
CL 25.04m AOD
IL 23.74m AOD
5m x 14m x 0.8m deep
Storage Volume: 52.7m³
Contributing catchment = 1190m²

Orifice flow control
CL 25.04
IL 23.73
Discharge rate 3.5l/s

Proposed connection to existing
public surface water sewer



- Key:
- Site boundary
 - Proposed impermeable area
Area: 0.119 ha
 - Proposed soft landscaping area
Area: 0.054ha
 - Proposed surface water drain
and inspection chamber
 - Proposed private foul water
sewer
 - Proposed cellular attenuation
tank
 - Proposed catch pit
 - Proposed rodding eye
 - Design exceedence route
 - Existing public foul sewer
 - Existing public surface water
sewer
 - 25.04+
 - Existing ground level

- NOTES
- All levels are in metres above Ordnance datum
 - Surface water drainage systems designed to accommodate the 1 in 100 year critical storm including a 40% allowance for climate change
 - Public sewer details based on records provided by Thames Water in June 2023
 - This drainage strategy is indicative only and is subject to detailed design

B	BT	Sept 2023	Final Layout Added
A	BT	Sept 2023	Revised Layout Added

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Client
R Ariel Heathrow Opco Ltd

Job Title
Ariel Hotel
118 Bath Road
Heathrow
Hayes & Harlington
UB3 5AJ

Drawing Title
Proposed Drainage Strategy

FOR COMMENT	FOR PLANNING	FOR TENDER	FOR APPROVAL	FOR CONSTRUCTION	AS BUILT
CONSTRUCTION AT CLIENT / CONTRACTOR RISK					

Designed by: BT	Drawn by: BT	Checked by: JP
Date September 2023	Scale 1:250 @ A2	
Drg No. 9285/501		Rev. B

Drawing No.	Drawing Title	Revision	Date	Company
3777-01	Site Plan	B	April 2023	Mobile CAD Surveying Solutions
1041-099	Proposed Site Plan	P1	Aug 2023	Ackroyd Lowrie

Appendix 2

Cole Easdon Consultants Limited
SWINDON
SN3 3RB

Search address supplied Holiday Inn London Heathrow Ariel
118
Bath Road
Harlington
Hayes
UB3 5AJ

Your reference 9285 Ariel Hotel

Our reference ALS/ALS Standard/2023_4850165

Search date 28 June 2023

Notification of Price Changes

From 1st April 2023 Thames water Property Searches will be increasing the prices of its CON29DW, CommercialDW Drainage & Water Enquiries and Asset Location Searches. Historically costs would rise in line with RPI but as this currently sits at 14.2%, we are capping it at 10%.

Customers will be emailed with the new prices by January 1st 2023.

Any orders received with a higher payment prior to the 1st April 2023 will be non-refundable. For further details on the price increase please visit our website at www.thameswater-propertysearches.co.uk



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



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



0800 009 4540

Search address supplied: Holiday Inn London Heathrow Ariel, 118, Bath Road,
Harlington, Hayes, UB3 5AJ

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

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.

With regard to the fresh water supply, this site falls within the boundary of another water company. For more information, please redirect your enquiry to the following address:

Affinity Water Ltd
Tamblin Way
Hatfield



AL10 9EZ
Tel: 0345 3572401

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.

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

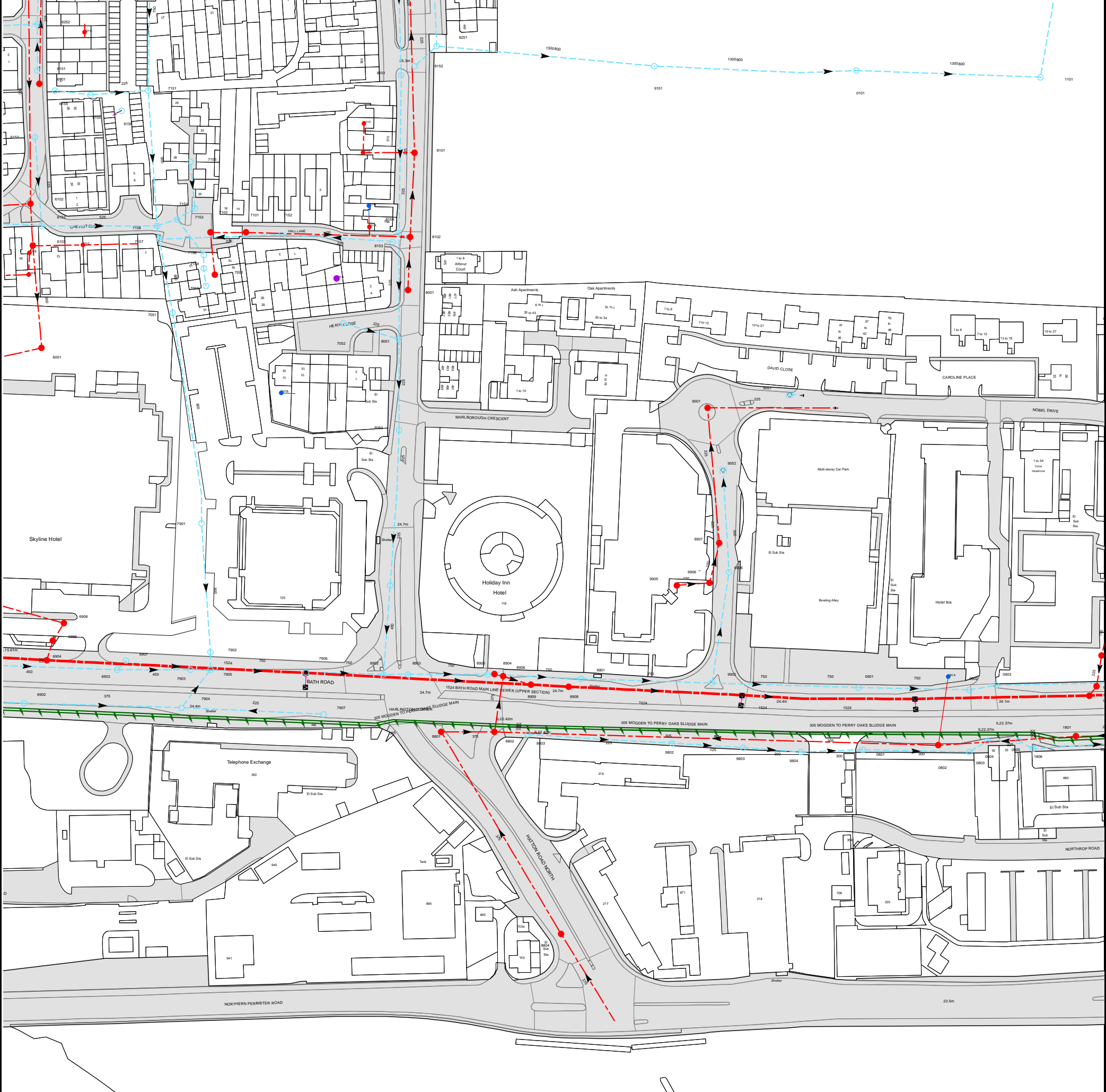
Clean Water queries

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/2023 4850165



The width of the displayed area is 500 m and the centre of the map is located at OS coordinates 508889,176975
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 (2020) with the Sanction of the controller of H.M. Stationery Office, License no. 100019345 Crown Copyright Reserved.

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
8251	25.26	22.7
9151	n/a	n/a
0101	24.76	22.6
1101	24.7	22.51
0901	24.32	22.77
091A	n/a	n/a
0902	24.13	22.73
0903	24.38	22.67
1901	24.3	14.9
1905	n/a	n/a
1903	n/a	n/a
0803	23.9	22.87
0801	24.05	22.96
1806	n/a	n/a
0802	24.04	20.49
0805	24.01	22.81
0804	23.97	22.86
1801	24.18	20.68
6252	25.09	24.13
621C	n/a	n/a
601B	n/a	n/a
611B	n/a	n/a
6103	n/a	n/a
6102	25.03	20.83
6152	25.04	24.05
6101	25.05	23.38
6151	25.09	24.22
6153	25.1	23.67
6154	25.13	24.27
611C	n/a	n/a
6155	25.09	24.13
6156	25.02	24.38
7151	n/a	n/a
7158	24.04	22.5
7157	n/a	n/a
7051	n/a	n/a
7153	25.07	23.98
7155	25.42	24.32
7154	25.37	24.06
7156	25.32	n/a
7159	25.38	24.45
7053	25.44	24.59
7102	25.36	24.03
7001	25.41	24.25
7052	25.02	24.15
8001	25.07	23.28
701A	n/a	n/a
8154	25.14	24.35
8102	25.1	23.24
7152	25.41	23.96
7101	25.51	23.83
8153	25.11	23.71
811A	n/a	n/a
811B	n/a	n/a
811D	n/a	n/a
8101	25.09	23.14
811C	n/a	n/a
8151	25.23	23.9
8152	25.12	23.22
6902	24.59	23.34
6001	24.01	n/a
6904	24.64	15.48
6905	n/a	n/a
6906	23.81	20.51
6903	24.51	23.02
6907	24.46	22.98
7904	24.56	23.11
7903	24.71	23.06
7901	24.73	23.25
7905	24.64	22.98
7902	24.59	23.2
701B	n/a	n/a
7906	24.54	23.04
7907	24.57	23.24
8902	24.86	23.01
8901	24.5	23.47
8051	25.27	23.67
8052	24.86	23.51
8903	24.86	23.01
8801	24.69	19.66
8905	24.77	23.01
8904	24.63	20.79
8802	24.58	19.62
8906	24.64	19.14
8803	24.63	23.53
8909	24.89	15.21
8804	24.24	20.04
8908	24.55	15.21
9901	24.59	22.89
9802	24.19	23.19
9905	n/a	n/a

Manhole Reference	Manhole Cover Level	Manhole Invert Level
9001	24.73	22.45
9906	n/a	n/a
9902	24.51	22.8
9907	n/a	n/a
9052	24.91	23.14
9908	n/a	n/a
9803	23.97	23.02
9051	24.69	23.51
9804	24.07	22.92
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.		



Asset Location Search - Sewer Key

Public Sewer Types (Operated and maintained by Thames Water)

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

Other Sewer Types (Not operated and maintained by Thames Water)

	Sewer		Culverted Watercourse
	Proposed		Decommissioned Sewer
	Content of this drainage network is currently unknown		Ownership of this drainage network is currently unknown

Notes:

- 1) All levels associated with the plans are to Ordnance Datum Newlyn.
- 2) All measurements on the plan are metric.
- 3) Arrows (on gravity fed sewers) or flecks (on rising mains) indicate the direction of flow.
- 4) Most private pipes are not shown on our plans, as in the past, this information has not been recorded.

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		Meter
	Dam Chase		Vent
	Fitting		

Operational Controls

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

	Ancillary		Drop Pipe
	Control Valve		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.

	Inlet		Outfall
	Undefined End		

Other Symbols

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

	Change of Characteristic Indicator		Public / Private Pumping Station
	Invert Level		Summit

Areas

Lines denoting areas of underground surveys, etc.

	Agreement
	Chamber
	Operational Site

Ducts or Crossings

	Casement	Ducts may contain high voltage cables. Please check with Thames Water.
	Conduit Bridge	
	Subway	
	Tunnel	

5) 'na' or '0' on a manhole indicates that data is unavailable.

6) The text appearing alongside a sewer line indicates the internal diameter of the pipe in millimeters. Text next to a manhole indicates the manhole reference number and should not be taken as a measurement. If you are unsure about any text or symbology, please contact Property Searches on 0800 009 4540.

Payment 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 within 14 days of the 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. 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'.
5. Interest will be charged in line with current Court Interest Charges, if legal action is taken.
6. 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 still not satisfied with the outcome provided, we will refer the matter to a Senior Manager for resolution who will provide you with a response.

If you are still dissatisfied with our final response, and in certain circumstances such as you are buying a residential property or commercial property within certain parameters, The Property Ombudsman will investigate your case and give an independent view. The Ombudsman can award compensation of up to £25,000 to you if he finds that you have suffered actual financial loss and/or aggravation, distress, or inconvenience because of your search not keeping to the Code. Further information can be obtained by visiting www.tpos.co.uk or by sending an email to admin@tpos.co.uk.

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 0300 034 2222 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
Please Call 0800 009 4540 quoting your invoice number starting CBA or ADS	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

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

Appendix 3

The Rational Formula

$$Q_p = CiA/0.36$$

Q_p	8.3l/s	Peak discharge from catchment
A	0.119ha	Catchment area
i	19.4mm/hr	Average rainfall intensity
C	1.3mm/hr	Dimensionless coefficient

Determination of C

Value of C_V		
C _V	1	Volumetric runoff coefficient
Value of C_R		
C _R	1.3	Routing coefficient

Determination of i

Determination of M5-60 min and r

M5-60min	20.2mm	5 year - 60 minute rainfall depth
r	0.432	Ratio of the 5 year - 60 minute rainfall depth to the 5 year - 2 day rainfall depth
D	30min	Rainfall duration
T	1year	Return period

Determination of M5-D

Z ₁	0.81	
M5-D	16.4mm	rainfall depth of 5 year return period for required duration

Determination of MT-D

Z ₂	0.63	
MT-D	10.33mm	rainfall depth of the required return period

Determination of point rainfall intensities

i	20.7mm/hr
---	-----------

Application of areal reduction factor

A	0.0012km ²
ARF	0.94
i	19.4mm/hr

The Rational Formula

$$Q_p = CiA/0.36$$

Q_p	20.4l/s	Peak discharge from catchment
A	0.119ha	Catchment area
i	47.5mm/hr	Average rainfall intensity
C	1.3mm/hr	Dimensionless coefficient

Determination of C

Value of C_V		
C _V	1	Volumetric runoff coefficient
Value of C_R		
C _R	1.3	Routing coefficient

Determination of i

Determination of M5-60 min and r

M5-60min	20.2mm	5 year - 60 minute rainfall depth
r	0.432	Ratio of the 5 year - 60 minute rainfall depth to the 5 year - 2 day rainfall depth
D	30min	Rainfall duration
T	30year	Return period

Determination of M5-D

Z ₁	0.81	
M5-D	16.4mm	rainfall depth of 5 year return period for required duration

Determination of MT-D

Z ₂	1.54	
MT-D	25.26mm	rainfall depth of the required return period

Determination of point rainfall intensities

i	50.5mm/hr
---	-----------

Application of areal reduction factor

A	0.0012km ²
ARF	0.94
i	47.5mm/hr

The Rational Formula

$$Q_p = CiA/0.36$$

Q_p	26.5l/s	Peak discharge from catchment
A	0.119ha	Catchment area
i	61.7mm/hr	Average rainfall intensity
C	1.3mm/hr	Dimensionless coefficient

Determination of C

Value of C_V		
C _V	1	Volumetric runoff coefficient
Value of C_R		
C _R	1.3	Routing coefficient

Determination of i

Determination of M5-60 min and r

M5-60min	20.2mm	5 year - 60 minute rainfall depth
r	0.432	Ratio of the 5 year - 60 minute rainfall depth to the 5 year - 2 day rainfall depth
D	30min	Rainfall duration
T	100year	Return period

Determination of M5-D

Z ₁	0.81	
M5-D	16.4mm	rainfall depth of 5 year return period for required duration

Determination of MT-D

Z ₂	2.00	
MT-D	32.80mm	rainfall depth of the required return period

Determination of point rainfall intensities

i	65.6mm/hr
---	-----------

Application of areal reduction factor

A	0.0012km ²
ARF	0.94
i	61.7mm/hr

Cole Easdon

160 Aztec, Aztec West
Almondsbury
Bristol, BS32 4TU

Ariel Hotel, 118 Bath Road
Heathrow, UB3 5AJ
Cellular Attenuation Tank


Date 22/08/2023 11:13
File Cellular Attenuation Ca...

Designed by bthornton
Checked by JP

Innovyze

Source Control 2020.1

Page 1




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


Half Drain Time : 154 minutes.

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (1/s)	Max Control (1/s)	Max Σ Outflow (1/s)	Max Volume (m³)	Status
15 min Summer	24.196	0.456	0.0	2.7	2.7	30.3	O K
30 min Summer	24.311	0.571	0.0	3.0	3.0	38.0	O K
60 min Summer	24.399	0.659	0.0	3.2	3.2	43.8	O K
120 min Summer	24.434	0.694	0.0	3.3	3.3	46.1	O K
180 min Summer	24.433	0.693	0.0	3.3	3.3	46.1	O K
240 min Summer	24.421	0.681	0.0	3.3	3.3	45.3	O K
360 min Summer	24.389	0.649	0.0	3.2	3.2	43.1	O K
480 min Summer	24.354	0.614	0.0	3.1	3.1	40.8	O K
600 min Summer	24.319	0.579	0.0	3.0	3.0	38.5	O K
720 min Summer	24.286	0.546	0.0	2.9	2.9	36.3	O K
960 min Summer	24.228	0.488	0.0	2.8	2.8	32.5	O K
1440 min Summer	24.138	0.398	0.0	2.5	2.5	26.4	O K
2160 min Summer	24.045	0.305	0.0	2.1	2.1	20.3	O K
2880 min Summer	23.983	0.243	0.0	1.9	1.9	16.1	O K
4320 min Summer	23.907	0.167	0.0	1.5	1.5	11.1	O K
5760 min Summer	23.864	0.124	0.0	1.3	1.3	8.3	O K
7200 min Summer	23.839	0.099	0.0	1.1	1.1	6.6	O K
8640 min Summer	23.822	0.082	0.0	1.0	1.0	5.4	O K
10080 min Summer	23.810	0.070	0.0	0.9	0.9	4.6	O K
15 min Winter	24.252	0.512	0.0	2.8	2.8	34.1	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
15 min Summer	143.471	0.0	31.8	18
30 min Summer	92.945	0.0	41.3	32
60 min Summer	57.296	0.0	51.1	62
120 min Summer	34.135	0.0	60.8	106
180 min Summer	24.896	0.0	66.6	136
240 min Summer	19.794	0.0	70.6	170
360 min Summer	14.272	0.0	76.3	238
480 min Summer	11.320	0.0	80.7	306
600 min Summer	9.451	0.0	84.3	374
720 min Summer	8.152	0.0	87.2	442
960 min Summer	6.452	0.0	92.0	570
1440 min Summer	4.634	0.0	99.1	824
2160 min Summer	3.323	0.0	106.7	1192
2880 min Summer	2.622	0.0	112.3	1556
4320 min Summer	1.876	0.0	120.4	2252
5760 min Summer	1.478	0.0	126.6	2992
7200 min Summer	1.228	0.0	131.5	3680
8640 min Summer	1.055	0.0	135.5	4408
10080 min Summer	0.928	0.0	139.0	5144
15 min Winter	143.471	0.0	35.7	18

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Cole Easdon							Page 2
160 Aztec, Aztec West Almondsbury Bristol, BS32 4TU			Ariel Hotel, 118 Bath Road Heathrow, UB3 5AJ Cellular Attenuation Tank				
Date 22/08/2023 11:13 File Cellular Attenuation Ca...			Designed by bthornton Checked by JP				
Innovyze			Source Control 2020.1				
<u>Summary of Results for 100 year Return Period (+40%)</u>							
Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Control (l/s)	Max Σ Outflow (l/s)	Max Volume (m³)	Status
30 min Winter	24.384	0.644	0.0	3.2	3.2	42.8	O K
60 min Winter	24.487	0.747	0.0	3.4	3.4	49.7	O K
120 min Winter	24.532	0.792	0.0	3.5	3.5	52.7	O K
180 min Winter	24.524	0.784	0.0	3.5	3.5	52.1	O K
240 min Winter	24.507	0.767	0.0	3.5	3.5	51.0	O K
360 min Winter	24.458	0.718	0.0	3.4	3.4	47.8	O K
480 min Winter	24.407	0.667	0.0	3.2	3.2	44.3	O K
600 min Winter	24.357	0.617	0.0	3.1	3.1	41.0	O K
720 min Winter	24.311	0.571	0.0	3.0	3.0	38.0	O K
960 min Winter	24.230	0.490	0.0	2.8	2.8	32.6	O K
1440 min Winter	24.111	0.371	0.0	2.4	2.4	24.7	O K
2160 min Winter	23.998	0.258	0.0	2.0	2.0	17.2	O K
2880 min Winter	23.931	0.191	0.0	1.7	1.7	12.7	O K
4320 min Winter	23.860	0.120	0.0	1.3	1.3	7.9	O K
5760 min Winter	23.825	0.085	0.0	1.0	1.0	5.7	O K
7200 min Winter	23.807	0.067	0.0	0.9	0.9	4.4	O K
8640 min Winter	23.799	0.059	0.0	0.7	0.7	3.9	O K
10080 min Winter	23.794	0.054	0.0	0.7	0.7	3.6	O K
Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)			
30 min Winter	92.945	0.0	46.3	32			
60 min Winter	57.296	0.0	57.2	60			
120 min Winter	34.135	0.0	68.2	114			
180 min Winter	24.896	0.0	74.6	144			
240 min Winter	19.794	0.0	79.1	182			
360 min Winter	14.272	0.0	85.5	258			
480 min Winter	11.320	0.0	90.4	330			
600 min Winter	9.451	0.0	94.4	402			
720 min Winter	8.152	0.0	97.7	470			
960 min Winter	6.452	0.0	103.1	606			
1440 min Winter	4.634	0.0	111.0	864			
2160 min Winter	3.323	0.0	119.5	1232			
2880 min Winter	2.622	0.0	125.8	1588			
4320 min Winter	1.876	0.0	134.9	2292			
5760 min Winter	1.478	0.0	141.8	3000			
7200 min Winter	1.228	0.0	147.3	3680			
8640 min Winter	1.055	0.0	151.8	4392			
10080 min Winter	0.928	0.0	155.7	5104			
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Cole Easdon		Page 3
160 Aztec, Aztec West Almondsbury Bristol, BS32 4TU	Ariel Hotel, 118 Bath Road Heathrow, UB3 5AJ Cellular Attenuation Tank	
Date 22/08/2023 11:13 File Cellular Attenuation Ca...	Designed by bthornton Checked by JP	
Innovyze	Source Control 2020.1	

Rainfall Details


Rainfall Model	FSR	Winter Storms	Yes
Return Period (years)	100	Cv (Summer)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	20.200	Shortest Storm (mins)	15
Ratio R	0.432	Longest Storm (mins)	10080
Summer Storms	Yes	Climate Change %	+40

Time Area Diagram

Total Area (ha) 0.119

Time (mins)		Area
From:	To:	(ha)
0	4	0.119

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Cole Easdon		Page 4
160 Aztec, Aztec West Almondsbury Bristol, BS32 4TU	Ariel Hotel, 118 Bath Road Heathrow, UB3 5AJ Cellular Attenuation Tank	
Date 22/08/2023 11:13 File Cellular Attenuation Ca...	Designed by bthornton Checked by JP	
Innovyze	Source Control 2020.1	

Model Details

Storage is Online Cover Level (m) 25.040

Cellular Storage Structure

Invert Level (m) 23.740 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.00000

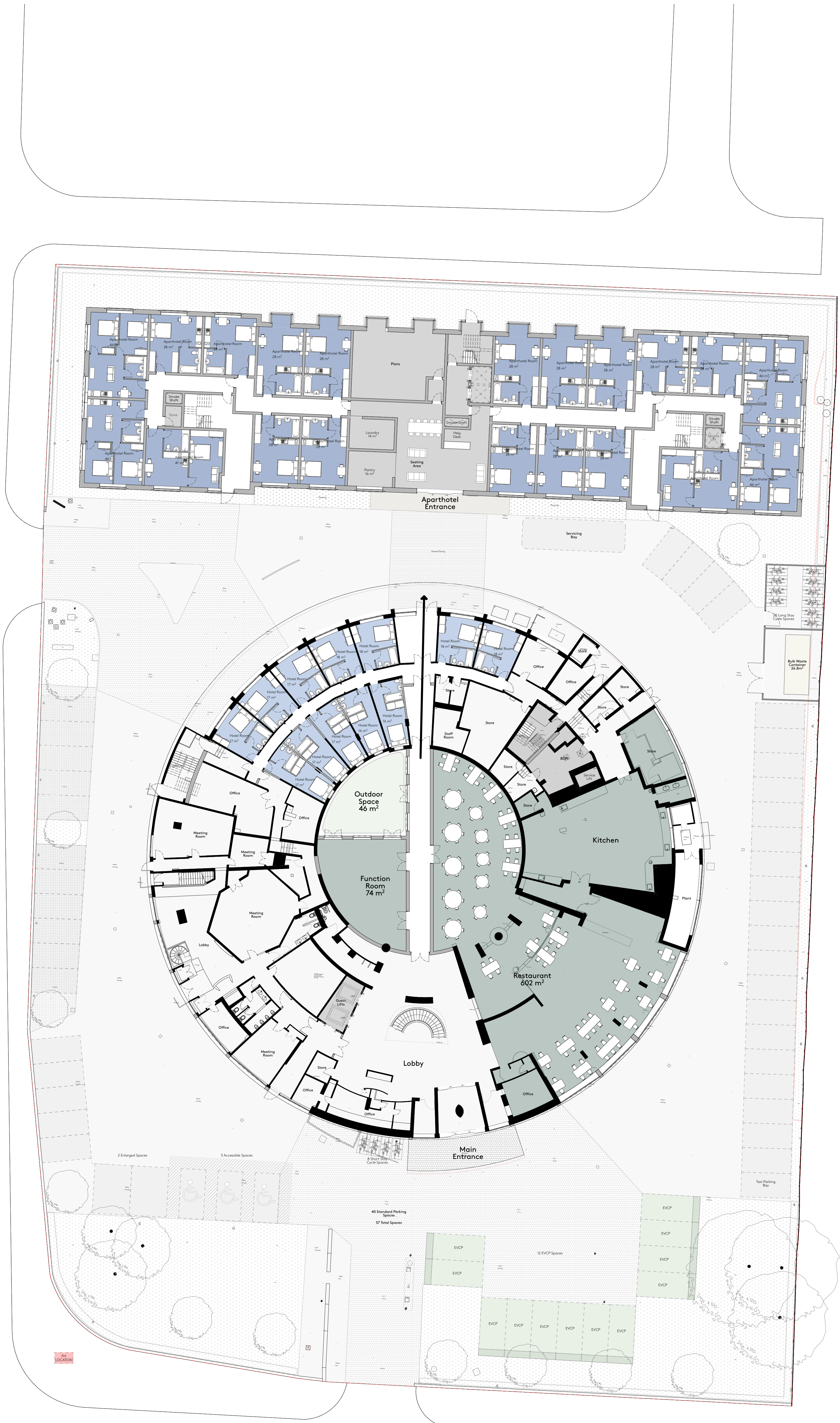
Depth (m)	Area (m ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)
0.000	70.0	70.0	0.801	0.0	100.4
0.800	70.0	100.4			

Orifice Outflow Control

Diameter (m) 0.044 Discharge Coefficient 0.600 Invert Level (m) 23.740

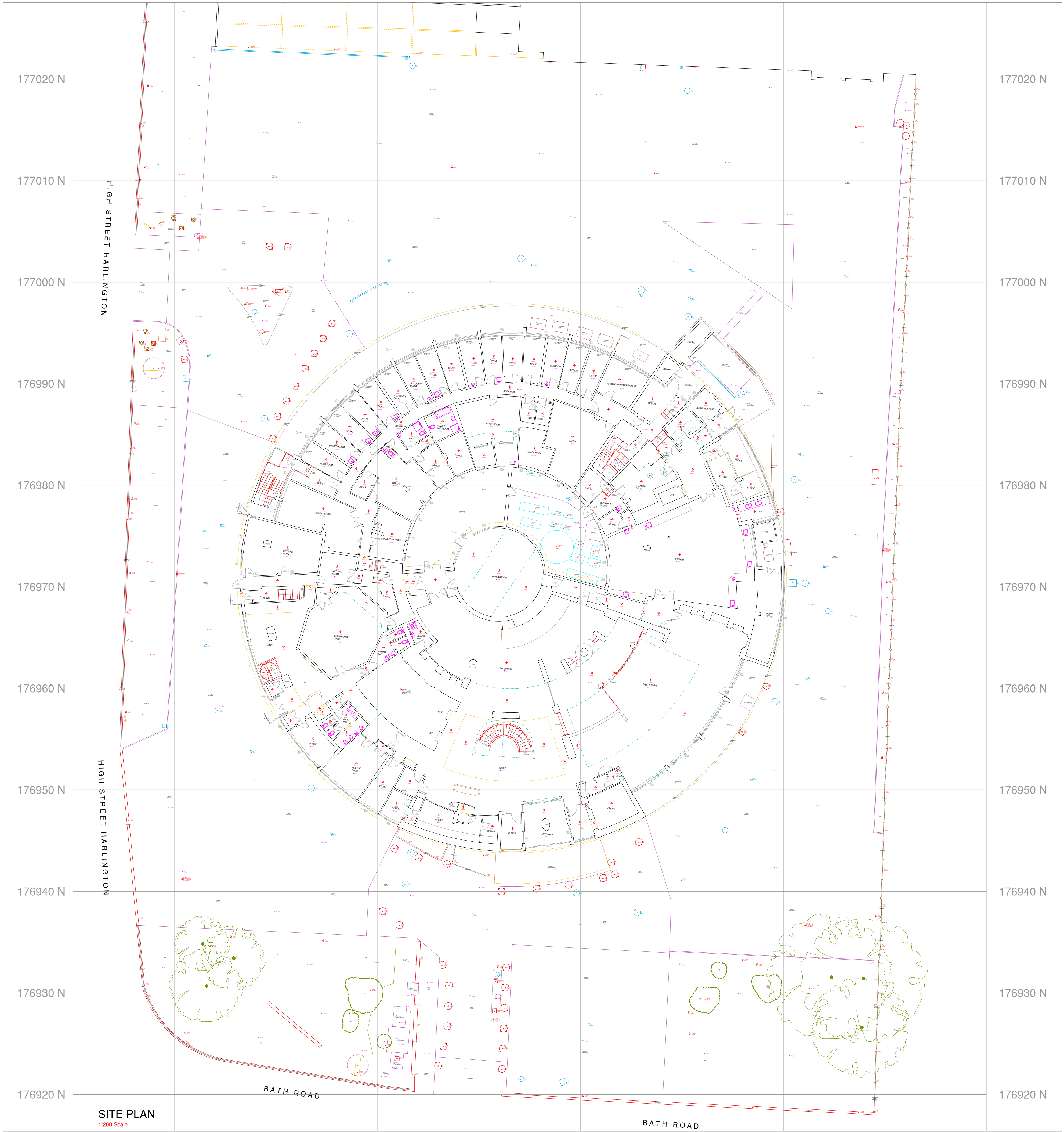
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Appendix 4



Proposed Site Plan

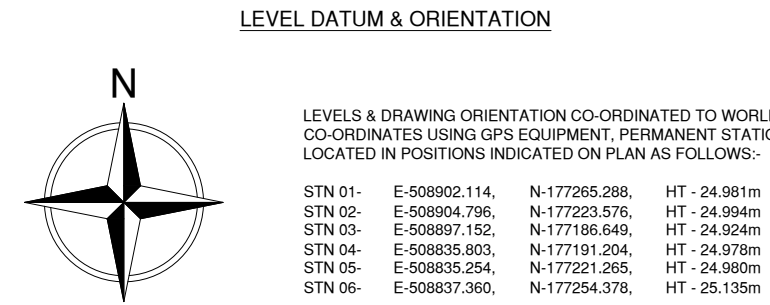
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ABBREVIATIONS & LEGEND:	
LEVELS & HEIGHTS CL - COVER LEVEL IL - INVERT LEVEL LT - LEVEL ES - EARTHING ROD STN - SURVEY STATION DM - DRAINAGE CE - CEILING J - JOISTS RA - RAFTERS E - EAVES F - FENCE UIS - UNDERSIDE OF RL - RIDGE LINE FR - FLAT ROOF HL - HIP LINE VL - VALLEY LINE PW - PARAPET WALL SL - SLAB SF - SOFFIT T - TREE THR - THRESHOLD To - TOP OF W - WALL HH - HEAD HEIGHT OH - OPENING HEIGHT SH - SILL HEIGHT	SERVICES BT - BRITISH TELECOMS CATV - CABLE TELEVISION ER - EARTHING ROD ES - ELECTRICAL SUPPLY FH - FIRE HYDRANT GAS - GAS SUPPLY PO - POST OFFICE TELEPHONE SV - STOP VALVE TSU - TRAFFIC LIGHT SIGNALS DRAINAGE DC - DRAINAGE CHANNEL G - GULLY IC - INSPECTION CHAMBER MH - MANHOLE RE - ROODING EYE RWP - RAIN WATER PIPE UTL - UNABLE TO LIFT SVP - SOL & VENT PIPE ST - STOP TAP WM - WATER METER TYPICAL DRAWING SYMBOLS SPOT LEVEL SURVEY STATION MANHOLE / INSPECTION CHAMBER SURVEY HEIGHT WINDOW TAG DOOR TAG RADIATOR TAG TOP & BOTTOM OF KERB TOPOGRAPHICAL SYMBOLS OVERHEAD ELECTRICAL OVERHEAD TELEPHONE FENCE LINE VEGETATION OUTLINE SINGLE GATE DOUBLE GATE TREE CONTOURS SLOPING DIRECTION LINE

B 26.04.2023 STAIRCASES UPDATED
A 25.04.2023 DRAWING ORIENTATED TO WORLD CO-ORDINATES
REV DATE AMENDMENTS

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DWG NO.: 3777-01
DVG TITLE: SITE PLAN
DWG DATE: APRIL 2023
DWG SIZE: 1:200 @ A1

DRAWN: AL
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ISSUE: A

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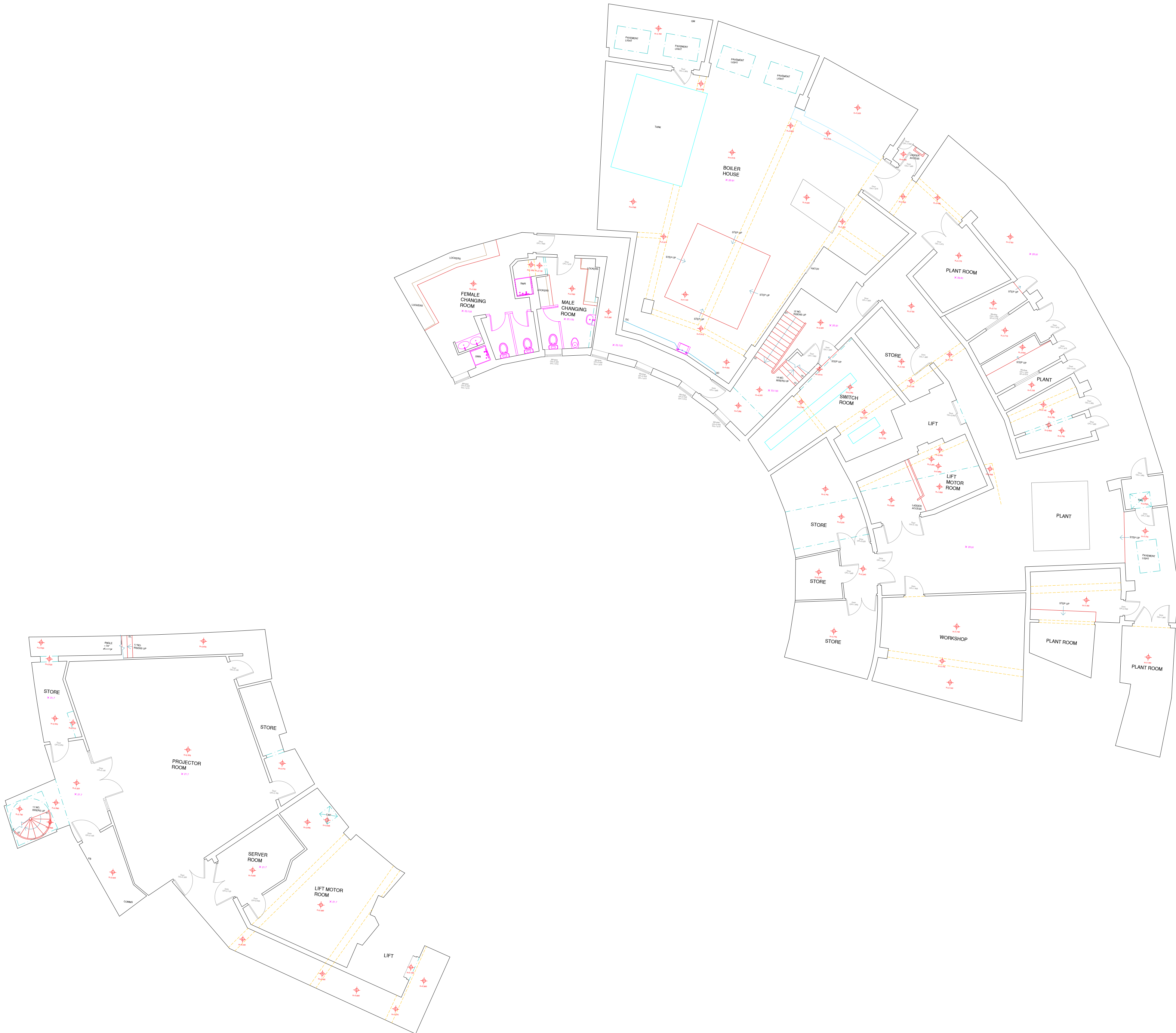
LEVEL DATUM & ORIENTATION

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STN 02-	E-508804.796,	N-177223.575,	HT - 24.984m
STN 03-	E-508897.152,	N-177186.649,	HT - 24.924m
STN 04-	E-508835.853,	N-177198.254,	HT - 24.978m
STN 05-	E-508835.254,	N-177221.265,	HT - 24.969m
STN 06-	E-508837.350,	N-177254.378,	HT - 25.135m

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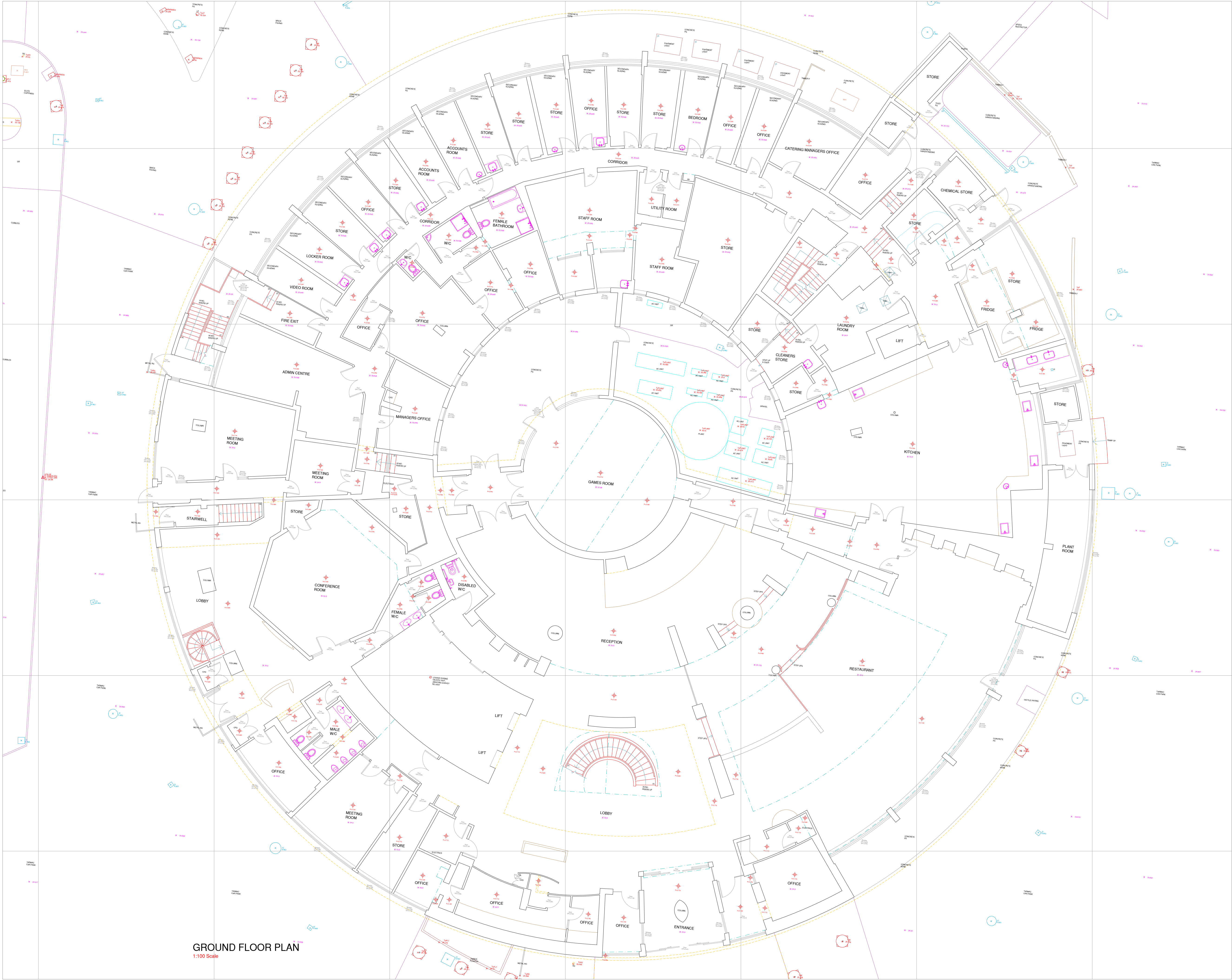
LOWER GROUND FLOOR PLAN
1:100 Scale

REV DATE AMENDMENTS

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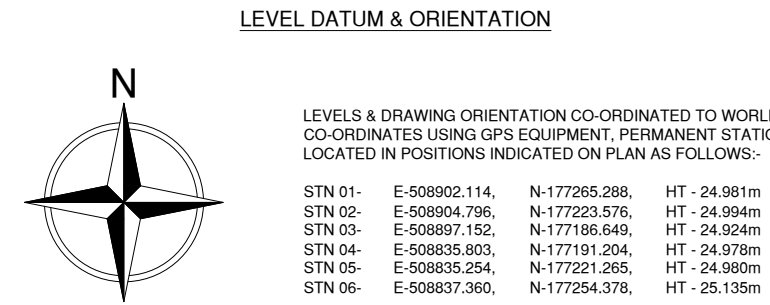


GROUND FLOOR PLAN
1:100 Scale

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ABBREVIATIONS & LEGEND:	
LEVELS & HEIGHTS	SERVICES
CL - COVER LEVEL	BT - BRITISH TELECOMS
IL - INVERT LEVEL	CATV - CABLE TELEVISION
LT - LEVEL	ER - EARTHING ROD
HT - HEIGHT	ES - ELECTRICAL SUPPLY
STN - SURVEY STATION	PH - FIRE HYDRANT
DM - DAM	GAS - GAS SUPPLY
CE - CEILING	PO - POST OFFICE TELEPHONE
J - JOISTS	SV - STOP VALVE
RA - RAFTERS	TSSU - TRAFFIC LIGHT SIGNALS
E - EAVES	
F - FENCE	DRAINAGE
US - UNDERSIDE OF	DC - DRAINAGE CHANNEL
RL - RIDGE LINE	G - GULLY
FR - FLAT ROOF	IC - INSPECTION CHAMBER
HL - HIP LINE	MM - MANHOLE
VL - VALLEY LINE	RE - RIDDING EYE
PW - PARAPET WALL	RWP - RAIN WATER PIPE
SL - UNABLE TO LIFT	UTL - UNABLE TO LIFT
SF - SOFFIT	SV - SOL & VENT PIPE
T - TREE	ST - STOP TAP
THR - THRESHOLD	WM - WATER METER
To - TOP OF	
W - WALL	
HH - HEAD HEIGHT	
OH - OPENING HEIGHT	
SH - SILL HEIGHT	
TYPICAL DRAWING SYMBOLS	
SPOT LEVEL	
SURVEY STATION	
MANHOLE / INSPECTION CHAMBER	
SURVEY HEIGHT	
WINDOW TAG	
DOOR TAG	
RADIATOR TAG	
TOP & BOTTOM OF KERB	
TOPOGRAPHICAL SYMBOLS	
OVERHEAD ELECTRICAL	
OVERHEAD TELEPHONE	
FENCE LINE	
VEGETATION OUTLINE	
SINGLE GATE	
DOUBLE GATE	
TREE	
CONTOURS	
SLOPING DIRECTION LINE	

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DWG SIZE: 1:100 @ A1
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LEVEL DATUM & ORIENTATION

N

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STN 01-	E-508802.114,	N-177265.288,	HT - 24.981m
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STN 03-	E-508897.152,	N-177186.649,	HT - 24.924m
STN 04-	E-508835.853,	N-177181.254,	HT - 24.978m
STN 05-	E-508835.254,	N-177221.265,	HT - 24.969m
STN 06-	E-508837.350,	N-177254.378,	HT - 25.135m

ABBREVIATIONS & LEGEND:

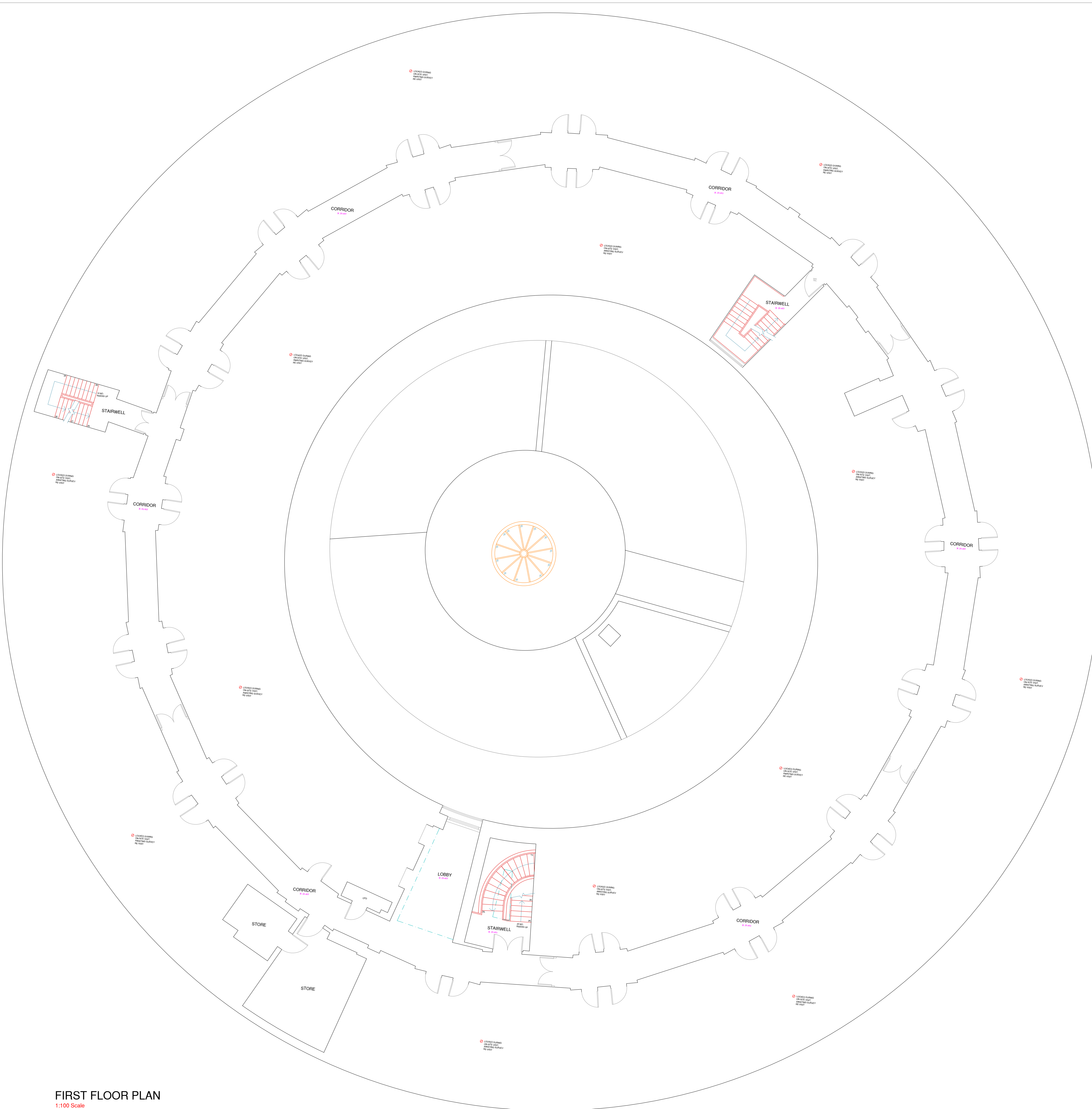
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T - TREE	ST - STOP TAP
THR - THRESHOLD	WM - WATER METER
To - TOP OF	
W - WALL	TYPICAL DRAWING SYMBOLS
HH - HEAD HEIGHT	SPOT LEVEL
OH - OPENING HEIGHT	
SH - SILL HEIGHT	
GENERAL NOTES	
AB - ADVERTISING BOARD	
AC - AIR CONDITIONING UNIT	
AHU - AIR HANDLING UNIT	
AP - INTRUDER ALARM PANEL	
B - BOLLARD	
BA - BARRIER	
BE - BENCH	
BS - BUS STOP	
BLR - BOILER	
BKO - BOWING OUT	
CAN - CEILING ACCESS HATCH	
CHY - CHIMNEY	
CPD - CUPBOARD	
DB - DOG WASTE BIN	
DW - DWAP WALL	
DK - DROP KERB	
EDR - ELECTRICAL DISTRIBUTION BOARD	
EG - EXTRACT GRILLE	
EM - ELECTRIC METER	
FB - FUSE BOX	
FP - FIRE PLACE	
FU - FLUE	
FAP - FIRE ALARM PANEL	
GR - GRASS	
GU - GUARDING	
GM - GAS METER	
HWC - HOT WATER CYLINDER	
LB - LITTER BIN	
LP - LAMP POST	
PC - PELICAN CROSSING	
PS - PAVING SLABS	
PL - PAVEMENT LIGHT	
PLT - PLANTING	
PB - POST BOX	
RS - RAILING	
RS - ROAD SIGN	
RFL - ROOF LIGHT	
SB - SPEED BUMP	
SG - SIGNAGE	
SN - STREET NAME SIGN	
SWR - SHOWER	
SHV - SHELVEING	
TB - TELEPHONE BOX	
THR - THRESHOLD	
TL - TRAFFIC LIGHT	
TM - TICKET MACHINE	
TP - TELEGRAPH POLE	
VE - VEGETATION	
WA - WATER	
WD - WARDROBE	
WH - WATER HEATER	
ZC - ZEBRA CROSSING	

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FIRST FLOOR PLAN
1:100 Scale

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DRAINAGE

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RWP - RAIN WATER PIPE
UTL - UNABLE TO LIFT
SVP - SOL & VENT PIPE
ST - STOP TAP
WM - WATER METER

TYPICAL DRAWING SYMBOLS

SPOT LEVEL

SURVEY STATION

MANHOLE / INSPECTION CHAMBER

SURVEY HEIGHT

WINDOW TAG

DOOR TAG

RADIATOR TAG

TOP & BOTTOM OF KERB

TOPOGRAPHICAL SYMBOLS

OVERHEAD ELECTRICAL

OVERHEAD TELEPHONE

FENCE LINE

VEGETATION OUTLINE

SINGLE GATE

DOUBLE GATE

TREE

CONTOURS

SLOPING DIRECTION LINE

SECOND FLOOR PLAN
1:100 Scale

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PROJECT: MEASURED BUILDING SURVEY

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BATH ROAD, HARLINGTON,
HAYES, UB8 5AJ

DWG NO.: 3777 - 05

DWG TITLE: SECOND FLOOR PLAN

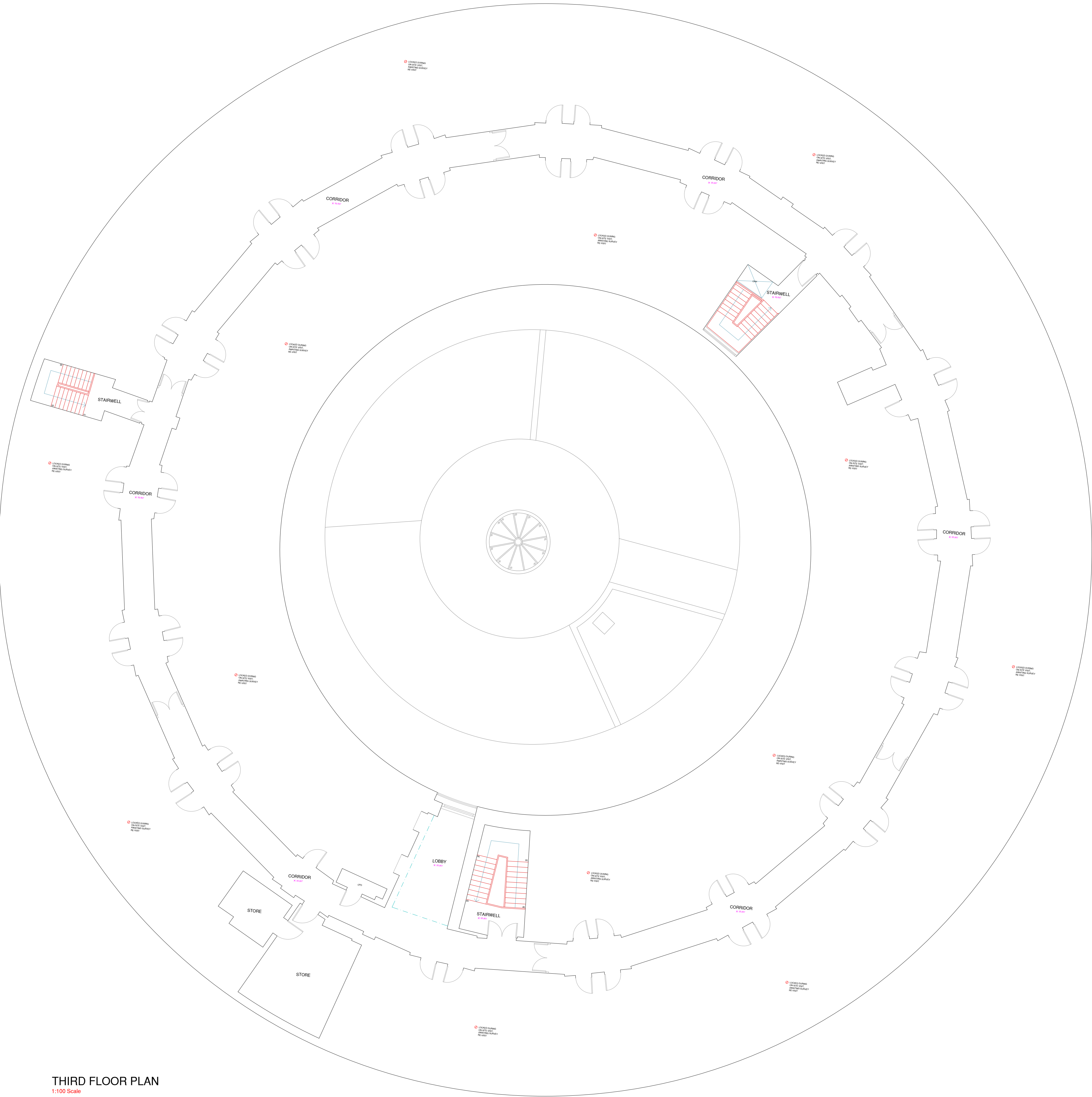
DWG DATE: APRIL 2023

DWG SIZE: 1:100 @ A1

DRAWN: AL

CHECKED: JW

ISSUE: 1



THIRD FLOOR PLAN
1:100 Scale

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Note:
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LEVEL DATUM & ORIENTATION

N

LEVELS & DRAWING ORIENTATION CO-ORDINATED TO WORLD CO-ORDINATES USING GPS EQUIPMENT. PERMANENT STATIONS LOCATED IN POSITIONS INDICATED ON PLAN AS FOLLOWS:-

STN 01-	E-508802.114,	N-177265.288,	HT - 24.981m
STN 02-	E-508904.796,	N-177223.575,	HT - 24.994m
STN 03-	E-508897.152,	N-177186.649,	HT - 24.924m
STN 04-	E-508835.853,	N-177181.254,	HT - 24.978m
STN 05-	E-508835.254,	N-177221.265,	HT - 24.969m
STN 06-	E-508837.350,	N-177254.378,	HT - 25.135m

ABBREVIATIONS & LEGEND:

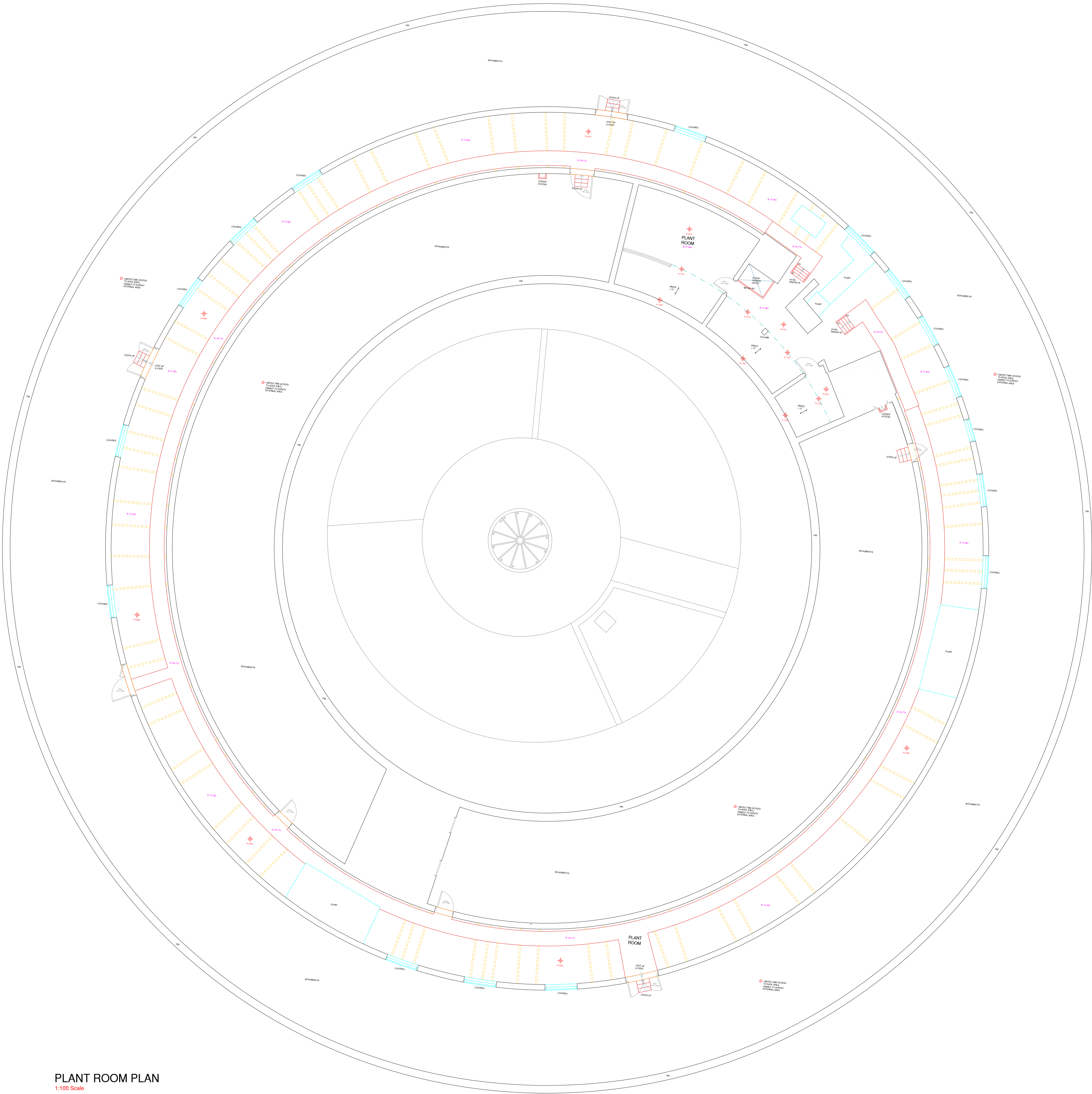
LEVELS & HEIGHTS	SERVICES
CL - COVER LEVEL	BT - BRITISH TELECOMS
IL - INVERT LEVEL	CATV - CABLE TELEVISION
LT - LEVEL	ER - EARTHING ROD
HT - HEIGHT	ES - ELECTRICAL SUPPLY
STN - SURVEY STATION	PH - FIRE HYDRANT
BM - BENCH	GAS - GAS SUPPLY
CE - CEILING	PO - POST OFFICE TELEPHONE
J - JOISTS	SV - STOP VALVE
RA - RAFTERS	TSSU - TRAFFIC LIGHT SIGNALS
E - EAVES	
F - FENCE	DRAINAGE
US - UNDERSIDE OF	DC - DRAINAGE CHANNEL
RL - RIDGE LINE	G - GULLY
FR - FLAT ROOF	IC - INSPECTION CHAMBER
HL - HIP LINE	MH - MANHOLE
VL - VALLEY LINE	RE - RIDDING EYE
PW - PARAPET WALL	RWP - RAIN WATER PIPE
SL - SLAB	UTL - UNABLE TO LIFT
SF - SOFFIT	SVP - SOL & VENT PIPE
T - TREE	ST - STOP TAP
THR - THRESHOLD	WM - WATER METER
To - TOP OF	
W - WALL	TYPICAL DRAWING SYMBOLS
HH - HEAD HEIGHT	SPOT LEVEL
OH - OPENING HEIGHT	
SH - SILL HEIGHT	
GENERAL NOTES	
AB - ADVERTISING BOARD	
AC - AIR CONDITIONING UNIT	
AHU - AIR HANDLING UNIT	
AP - INTRUDER ALARM PANEL	
B - BOLLARD	
BA - BARRIER	
BE - BENCH	
BS - BUS STOP	
BLR - BOILER	
BKO - BOWING OUT	
CAN - CEILING ACCESS HATCH	
CHY - CHIMNEY	
CPD - CUPBOARD	
DB - DOG WASTE BIN	
DW - DWAP WALL	
DK - DROP KERB	
EDR - ELECTRICAL DISTRIBUTION BOARD	
EG - EXTRACT GRILLE	
EM - ELECTRIC METER	
FB - FUSE BOX	
FP - FIREPLACE	
FU - FLUE	
FAP - FIRE ALARM PANEL	
GR - GRASS	
GU - GUARDING	
GM - GAS METER	
HWC - HOT WATER CYLINDER	
LB - LITTER BIN	
LP - LAMP POST	
PC - PELICAN CROSSING	
PS - PAVING SLABS	
PL - PAVEMENT LIGHT	
PLT - PLANTING	
PB - POST BOX	
RS - RAILING	
RS - ROAD SIGN	
RFL - ROOF LIGHT	
SB - SPEED BUMP	
SG - SIGNAGE	
SN - STREET NAME SIGN	
SWR - SHOWER	
SHV - SHELVEING	
TB - TELEPHONE BOX	
THR - THRESHOLD	
TL - TRAFFIC LIGHT	
TM - TICKET MACHINE	
TP - TELEGRAPH POLE	
VE - VEGETATION	
WA - WATER	
WD - WARDROBE	
WH - WATER HEATER	
ZC - ZEBRA CROSSING	

A 25.04.2023 STAIRCASES UPDATED
REV DATE AMENDMENTS

PROJECT: MEASURED BUILDING SURVEY
ADDRESS: BEST WESTERN LONDON
HEATHROW ARIEL HOTEL,
BATH ROAD, HARLINGTON,
HAYES, UB3 5AJ

DWG NO.: 3777 - 06
DWG TITLE: THIRD FLOOR PLAN
DWG DATE: APRIL 2023
DWG SIZE: 1:100 @ A1

DRAWN: AL
CHECKED: JW
ISSUE: 1



PLANT ROOM PLAN
1:100 Scale

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Note:
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LEVEL DATUM & ORIENTATION

N

LEVELS & DRAWING ORIENTATION CO-ORDINATED TO WORLD CO-ORDINATES USING GPS EQUIPMENT. PERMANENT STATIONS LOCATED IN POSITIONS INDICATED ON PLAN AS FOLLOWS:-

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STN 02-	E-508804.796,	N-177223.575,	HT - 24.994m
STN 03-	E-508897.152,	N-177186.649,	HT - 24.924m
STN 04-	E-508835.853,	N-177191.254,	HT - 24.978m
STN 05-	E-508835.254,	N-177221.265,	HT - 24.969m
STN 06-	E-508837.350,	N-177254.378,	HT - 25.135m

ABBREVIATIONS & LEGEND:

LEVELS & HEIGHTS CL - COVER LEVEL IL - INVERT LEVEL L - LEVEL HT - HEIGHT STN - SURVEY STATION BM - BEAM CE - CEILING J - JOISTS RA - RAFTERS E - EAVES F - FENCE UIS - UNDERSIDE OF RL - RIDGE LINE FR - FLAT ROOF HL - HIP LINE VL - VALLEY LINE PW - PARAPET WALL SL - SLAB SF - SOFFIT T - TREE THR - THRESHOLD To - TOP OF W - WALL HH - HEAD HEIGHT OH - OPENING HEIGHT SH - SILL HEIGHT	SERVICES BT - BRITISH TELECOMS CATV - CABLE TELEVISION ER - EARTHING ROD ES - ELECTRICAL SUPPLY PH - FIRE HYDRANT GAS - GAS SUPPLY PO - POST OFFICE TELEPHONE SV - STOP VALVE TSU - TRAFFIC LIGHT SIGNALS	
GENERAL NOTES AB - ADVERTISING BOARD AC - AIR CONDITIONING UNIT AHU - AIR HANDLING UNIT AP - INTRUDER ALARM PANEL B - BOLLARD BA - BARRIER BE - BENCH BS - BUS STOP BLR - BOILER BXO - BOXING OUT CAN - CEILING ACCESS HATCH CHY - CHIMNEY CPD - CUPBOARD DB - DOG WASTE BIN DW - DWAP WALL DK - DROP KERB EDR - ELECTRICAL DISTRIBUTION BOARD EG - EXTRACT GRILLE EM - ELECTRIC METER FB - FUSE BOX FP - FIRE PLACE FU - FLUE FAP - FIRE ALARM PANEL GR - GRASS GU - GUARDING GM - GAS METER HWC - HOT WATER CYLINDER LB - LITTER BIN LP - LAMP POST PC - PELICAN CROSSING PS - PAVING SLABS PL - PAVEMENT LIGHT PLT - PLANTING PB - POST BOX RS - RAILING RS - ROAD SIGN RFL - ROOF LIGHT SB - SPEED BUMP SG - SIGNAGE SN - STREET NAME SIGN SWR - SHOWER SHV - SHELVEING TB - TELEPHONE BOX THR - THRESHOLD TL - TRAFFIC LIGHT TM - TICKET MACHINE TP - TELEGRAPH POLE VE - VEGETATION WA - WATER WD - WARDROBE WH - WATER HEATER ZC - ZEBRA CROSSING	DRAINAGE DC - DRAINAGE CHANNEL G - GULLY IC - INSPECTION CHAMBER MH - MANHOLE RE - RIDDING EYE RWP - RAIN WATER PIPE UTL - UNABLE TO LIFT SVP - SOL & VENT PIPE ST - STOP TAP WM - WATER METER	TYPICAL DRAWING SYMBOLS SPOT LEVEL SURVEY STATION MANHOLE / INSPECTION CHAMBER SURVEY HEIGHT WINDOW TAG DOOR TAG RADIATOR TAG TOP & BOTTOM OF KERB TOPOGRAPHICAL SYMBOLS OVERHEAD ELECTRICAL OVERHEAD TELEPHONE FENCE LINE VEGETATION OUTLINE SINGLE GATE DOUBLE GATE TREE CONTOURS SLOPING DIRECTION LINE

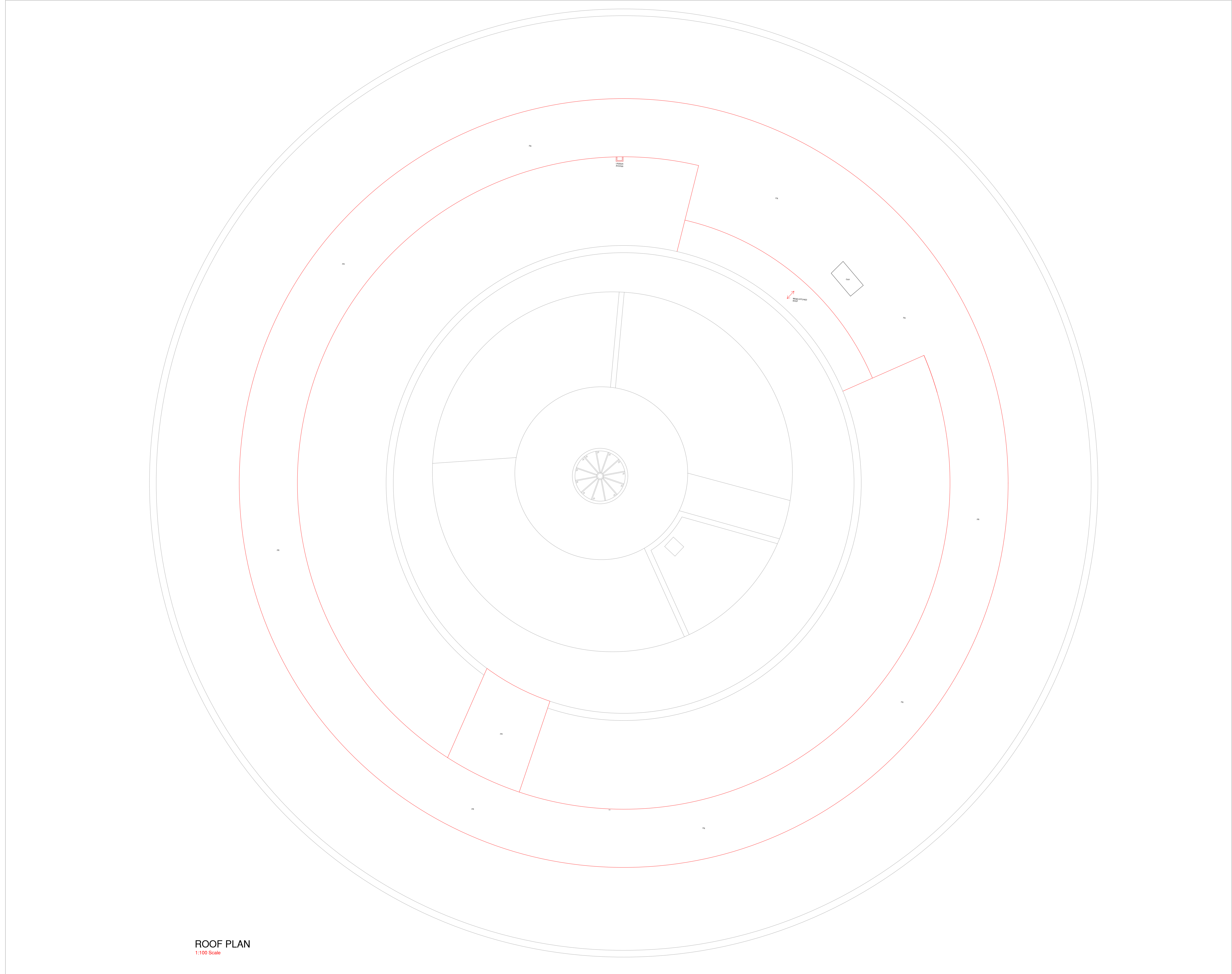
REV DATE AMENDMENTS

PROJECT: MEASURED BUILDING SURVEY
ADDRESS: BEST WESTERN LONDON
HEATHROW ARIEL HOTEL,
BATH ROAD, HARLINTON,
HAYES, UB5 5AJ

DWG NO.: 3777-07
DWG TITLE: PLANT ROOM PLAN
DWG DATE: APRIL 2023
DWG SIZE: 1:100 @ A1
DRAWN: AL
CHECKED: JW
ISSUE: 1

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LEVEL DATUM & ORIENTATION

LEVELS & DRAWING ORIENTATION CO-ORDINATED TO WORLD CO-ORDINATES USING GPS EQUIPMENT. PERMANENT STATIONS LOCATED IN POSITIONS INDICATED ON PLAN AS FOLLOWS:-

STN 01-	E-508802.114,	N-177225.375,	HT - 24.981m
STN 02-	E-508804.796,	N-177225.375,	HT - 24.984m
STN 03-	E-508897.152,	N-177186.649,	HT - 24.924m
STN 04-	E-508835.853,	N-177181.254,	HT - 24.978m
STN 05-	E-508835.254,	N-177221.265,	HT - 24.969m
STN 06-	E-508837.350,	N-177254.378,	HT - 25.135m

ABBREVIATIONS & LEGEND:

LEVELS & HEIGHTS CL - COVER LEVEL IL - INVERT LEVEL LT - LEVEL HT - HEIGHT STN - SURVEY STATION BM - BENCH CE - CEILING J - JOISTS RA - RAFTERS E - EAVES F - FENCE UIS - UNDERSIDE OF RL - RIDGE LINE FR - FLAT ROOF HL - HIP LINE VL - VALLEY LINE PW - PARAPET WALL SL - SLAB SF - SOFFIT T - TREE THR - THRESHOLD To - TOP OF W - WALL HH - HEAD HEIGHT OH - OPENING HEIGHT SH - SILL HEIGHT	SERVICES BT - BRITISH TELECOMS CATV - CABLE TELEVISION ER - EARTHING ROD ES - ELECTRICAL SUPPLY FH - FIRE HYDRANT GAS - GAS SUPPLY PO - POST OFFICE TELEPHONE SV - STOP VALVE TSSU - TRAFFIC LIGHT SIGNALS	DRAINAGE DC - DRAINAGE CHANNEL G - GULLY IC - INSPECTION CHAMBER MH - MANHOLE RE - RIDDING EYE RWP - RAIN WATER PIPE UTL - UNABLE TO LIFT SVP - SOL & VENT PIPE ST - STOP TAP WM - WATER METER
GENERAL NOTES AB - ADVERTISING BOARD AC - AIR CONDITIONING UNIT AHU - AIR HANDLING UNIT AP - INTRUDER ALARM PANEL B - BOLLARD BA - BARRIER BE - BENCH BS - BUS STOP BLR - BOILER BXO - BOXING OUT CAH - CEILING ACCESS HATCH CHY - CHIMNEY CPD - CUPBOARD DB - DOG WASTE BIN DW - DWAP WALL DK - DROP KERB EDB - ELECTRICAL DISTRIBUTION BOARD EG - EXTRACT GRILLE EM - ELECTRIC METER FB - FUSE BOX FP - FIREPLACE FU - FLUE FAP - FIRE ALARM PANEL GR - GRASS GU - GUARDING GM - GAS METER HWC - HOT WATER CYLINDER LB - LITTER BIN LP - LAMP POST PC - PELICAN CROSSING PS - PAVING SLABS PL - PAVEMENT LIGHT PLT - PLANTING PB - POST BOX RS - RAILING RS - ROAD SIGN RFL - ROOF LIGHT SB - SPEED BUMP SG - SIGNAGE SN - STREET NAME SIGN SWR - SHOWER SHV - SHELVEING TB - TELEPHONE BOX THR - THRESHOLD TL - TRAFFIC LIGHT TM - TICKET MACHINE TP - TELEGRAPH POLE VE - VEGETATION WA - WATER WD - WARDROBE WH - WATER HEATER ZC - ZEBRA CROSSING	TYPICAL DRAWING SYMBOLS SPOT LEVEL SURVEY STATION MANHOLE / INSPECTION CHAMBER SURVEY HEIGHT WINDOW TAG DOOR TAG RADIATOR TAG TOP & BOTTOM OF KERB TOPOGRAPHICAL SYMBOLS OVERHEAD ELECTRICAL OVERHEAD TELEPHONE FENCE LINE VEGETATION OUTLINE SINGLE GATE DOUBLE GATE TREE CONTOURS SLOPING DIRECTION LINE	

REV	DATE	AMENDMENTS

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London Office:
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PROJECT: MEASURED BUILDING SURVEY

ADDRESS: BEST WESTERN LONDON
HEATHROW ARIEL HOTEL,
BATH ROAD, HARLINTON,
HAYES, UB5 5AJ

DWG NO.: 3777 - 08

DWG TITLE: ROOF PLAN

DWG DATE: APRIL 2023

DWG SIZE: 1:100 @ A1

DRAWN: AL

CHECKED: JW

ISSUE:

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ABBREVIATIONS & LEGEND:	
LEVELS & HEIGHTS CL - COVER LEVEL IL - INVERT LEVEL L - LEVEL HT - HEIGHT STN - SURVEY STATION BM - BENCHMARK CE - CEILING J - JOISTS RA - RAFTERS E - EAVES F - FENCE UIS - UNDERSIDE OF RL - ROOF LINE FR - FLAT ROOF HL - HIP LINE VL - VALLEY LINE PW - PARAPET WALL SL - SLAB SF - SOFFIT T - TREE THR - THRESHOLD To - TOP OF W - WALL HH - HEAD HEIGHT OH - OPENING HEIGHT SH - SILL HEIGHT	SERVICES BT - BRITISH TELECOMS CATV - CABLE TELEVISION ER - EARTHING ROD ES - ELECTRICAL SUPPLY PH - FIRE HYDRANT SV - STOP VALVE TSU - TRAFFIC LIGHT SIGNALS DRAINAGE DC - DRAINAGE CHANNEL G - GULLY IC - INSPECTION CHAMBER MH - MANHOLE RE - RIDDING EYE RW - RAIN WATER PIPE UTL - UNABLE TO LIFT SVP - SOL & VENT PIPE ST - STOP TAP WM - WATER METER TYPICAL DRAWING SYMBOLS SPOT LEVEL × 96.256 STN 01 E: 232193.251 N: 615743.694 HT: 55.142 DC × 14.26, 256 IL: 94.824 RADIOGRAPH R94.754 ELEVATION 900 R94.754 R94.754 TOP & BOTTOM OF KERB × 34.350 34.350 TOPOGRAPHICAL SYMBOLS OVERHEAD ELECTRICAL OVERHEAD TELEPHONE FENCE LINE VEGETATION OUTLINE SINGLE GATE DOUBLE GATE TREE CONTOURS - 92.000m SLOPING DIRECTION LINE
GENERAL NOTES AB - ADVERTISING BOARD AC - AIR CONDITIONING UNIT AHU - AIR HANDLING UNIT AP - INTRUDER ALARM PANEL B - BOLLARD BA - BARRIER BE - BENCH BS - BUS STOP BLR - BOILER BXO - BOXING OUT CAN - CEILING ACCESS HATCH CHY - CHIMNEY CPD - CLIPBOARD DB - DOG WASTE BIN DW - DWAP WALL DK - DROP KERB EDB - ELECTRICAL DISTRIBUTION BOARD EG - EXTRACT GRILLE EM - ELECTRIC METER FB - FUSE BOX FP - FIREPLACE FU - FLUE FAP - FIRE ALARM PANEL GR - GRASS GU - GUARDING GM - GAS METER HWC - HOT WATER CYLINDER LB - LITTER BIN LP - LAMP POST PC - PELICAN CROSSING PS - PAVING SLABS PLT - PLANTING PB - POST BOX RG - RAILING RS - ROAD SIGN RFL - ROOF LIGHT SB - SPEED BUMP SG - SIGNAGE SN - STREET NAME SIGN SWR - SHOWER SHV - SHELVING TB - TELEPHONE BOX THR - THRESHOLD TL - TRAFFIC LIGHT TM - TICKET MACHINE TP - TELEGRAPH POLE VE - VEGETATION WA - WATER WD - WARDROBE WH - WATER HEATER ZC - ZEBRA CROSSING	

SOUTH ELEVATION
1:100 Scale
23m Line

WEST ELEVATION
1:100 Scale
23m Line

A 25.04.2023 INDICATIVE OUTLINE OF ROOF ADDED
REV DATE AMENDMENTS



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London Office:
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PROJECT: MEASURED BUILDING SURVEY
ADDRESS: BEST WESTERN ARIEL HOTEL,
BATH ROAD, HARLINGTON,
HAYES, UB8 5AJ

DWG NO.: 3777 - 09
DWG TITLE: SOUTH & WEST ELEVATIONS
DWG DATE: APRIL 2023
DWG SIZE: 1:100 @ A1

DRAWN: AL
CHECKED: JW
ISSUE: A

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LEVELS & HEIGHTS	SERVICES
CL - COVER LEVEL	BT - BRITISH TELECOMS
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J - JOISTS	SV - STOP VALVE
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SL - SLAB	RWP - RAIN WATER PIPE
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T - TREE	SvP - SOL & VENT PIPE
THR - THRESHOLD	ST - STOP TAP
To - TOP OF	WM - WATER METER
W - WALL	
HH - HEAD HEIGHT	
OH - OPENING HEIGHT	
SH - SILL HEIGHT	
TYPICAL DRAWING SYMBOLS	
SPOT LEVEL	× 96.256
SURVEY STATION	STN 01 E: 232193.251 N: 615743.694 HT: 55.142
MANHOLE / INSPECTION CHAMBER	IC × 64.266, 256 IL=94.824
SURVEY HEIGHT	× 96.256
WINDOW TAG	WINDOW TAG ELEVATION 000 Height 000 Width 000
DOOR TAG	DOOR TAG ELEVATION 000 Height 000 Width 000
RADIATOR TAG	RADIATOR TAG ELEVATION 000 Height 000 Width 000
TOP & BOTTOM OF KERB	× 34.350
TOPOGRAPHICAL SYMBOLS	
OVERHEAD ELECTRICAL	— — — — —
OVERHEAD TELEPHONE	— — — — —
FENCE LINE	— — — — —
VEGETATION OUTLINE	— — — — —
SINGLE GATE	— — — — —
DOUBLE GATE	— — — — —
TREE	— — — — —
CONTOURS	— — — — —
SLOPING DIRECTION LINE	— — — — —

NORTH ELEVATION

1:100 Scale
23m Line

EAST ELEVATION

1:100 Scale
23m Line

REV A 25.04.2023 INDICATIVE OUTLINE OF ROOF ADDED
DATE AMENDMENTS



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Surveying Solutions

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01977 525 076

Project: MEASURED BUILDING SURVEY
Address: BEST WESTERN LONDON
HEATHROW ARIEL HOTEL,
BATH ROAD, HARLINGTON,
HAYES, UB8 5AJ

DWG NO.: 3777 - 10
DWG TITLE: NORTH & EAST ELEVATIONS
DWG DATE: APRIL 2023
DWG SIZE: 1:100 @ A1

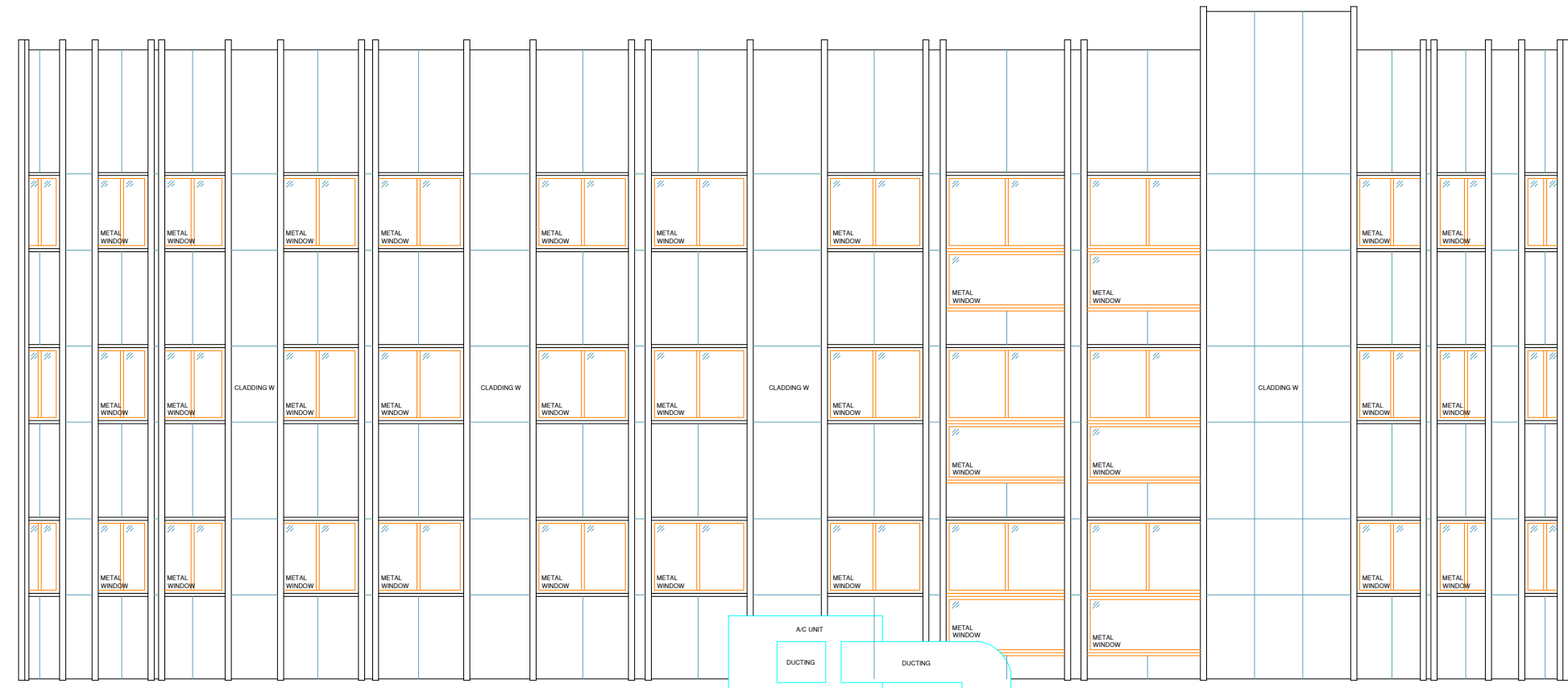
Drawn: AL
Checked: JW
Issue: A

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ABBREVIATIONS & LEGEND:	
LEVELS & HEIGHTS CL - COVER LEVEL IL - INVERT LEVEL L - LEVEL HT - HEIGHT STN - SURVEY STATION BM - BENCHMARK CE - CEILING J - JOISTS RA - RAFTERS E - EAVES F - FENCE UIS - UNDERSIDE OF RL - RIDGE LINE FR - FLAT ROOF HL - HIP LINE VL - VALLEY LINE PW - PARAPET WALL SL - SLAB SF - SOFFIT T - TREE THR - THRESHOLD To - TOP OF W - WALL HH - HEAD HEIGHT OH - OPENING HEIGHT SH - SILL HEIGHT	SERVICES BT - BRITISH TELECOMS CATV - CABLE TELEVISION ER - EARTHING ROD ES - ELECTRICAL SUPPLY PH - FIRE HYDRANT GAS - GAS SUPPLY PO - POST OFFICE TELEPHONE SV - STOP VALVE TSSU - TRAFFIC LIGHT SIGNALS DRAINAGE DC - DRAINAGE CHANNEL G - GULLY IC - INSPECTION CHAMBER MH - MANHOLE RE - RIDDING EYE RW - RAIN WATER PIPE UTL - UNABLE TO LIFT SVP - SOL & VENT PIPE ST - STOP TAP WM - WATER METER TYPICAL DRAWING SYMBOLS SPOT LEVEL SURVEY STATION MANHOLE / INSPECTION CHAMBER SURVEY HEIGHT WINDOW TAG DOOR TAG RADIATOR TAG TOP & BOTTOM OF KERB TOPOGRAPHICAL SYMBOLS OVERHEAD ELECTRICAL OVERHEAD TELEPHONE FENCE LINE VEGETATION OUTLINE SINGLE GATE DOUBLE GATE TREE CONTOURS SLOPING DIRECTION LINE
GENERAL NOTES AB - ADVERTISING BOARD AC - AIR CONDITIONING UNIT AHU - AIR HANDLING UNIT AP - INTRUDER ALARM PANEL B - BOLLARD BA - BARRIER BE - BENCH BS - BUS STOP BLR - BOILER BXO - BOXING OUT CAH - CEILING ACCESS HATCH CHY - CHIMNEY CPD - CURB/BOARD DB - DOG WASTE BIN DW - DWAP WALL DK - DROP KERB EDB - ELECTRICAL DISTRIBUTION BOARD EG - EXTRACT GRILLE EM - ELECTRIC METER FB - FUSE BOX FP - FIREPLACE FU - FLUE FAP - FIRE ALARM PANEL GR - GRASS GU - GUARDING GM - GAS METER HWC - HOT WATER CYLINDER LB - LITTER BIN LP - LAMP POST PC - PELICAN CROSSING PS - PAVING SLABS PL - PAVEMENT LIGHT PLT - PLANTING PB - POST BOX RG - RAILING RS - ROAD SIGN RFL - ROOF LIGHT SB - SPEED BUMP SG - SIGNAGE SN - STREET NAME SIGN SWR - SHOWER SHV - SHELVING TB - TELEPHONE BOX THR - THRESHOLD TL - TRAFFIC LIGHT TM - TICKET MACHINE TP - TELEGRAPH POLE VE - VEGETATION WA - WATER WD - WARDROBE WH - WATER HEATER ZC - ZEBRA CROSSING	STN 01 E: 234193.251 N: 515743.694 HT: 55.142 IC E: 54.256, 256 N: 54.824, 824 SPOT LEVEL × 96.256 SURVEY STATION STN 01 E: 234193.251 N: 515743.694 HT: 55.142 MANHOLE / INSPECTION CHAMBER IC E: 54.256, 256 N: 54.824, 824 SURVEY HEIGHT × 96.256 WINDOW TAG E: 54.256, 256 N: 54.824, 824 DOOR TAG E: 54.256, 256 N: 54.824, 824 RADIATOR TAG E: 54.256, 256 N: 54.824, 824 TOP & BOTTOM OF KERB × 94.500 94.500 TOPOGRAPHICAL SYMBOLS OVERHEAD ELECTRICAL OVERHEAD TELEPHONE FENCE LINE VEGETATION OUTLINE SINGLE GATE DOUBLE GATE TREE CONTOURS SLOPING DIRECTION LINE



NORTH FACING COURTYARD ELEVATION

1:100 Scale

23m Line



EAST FACING COURTYARD ELEVATION

1:100 Scale

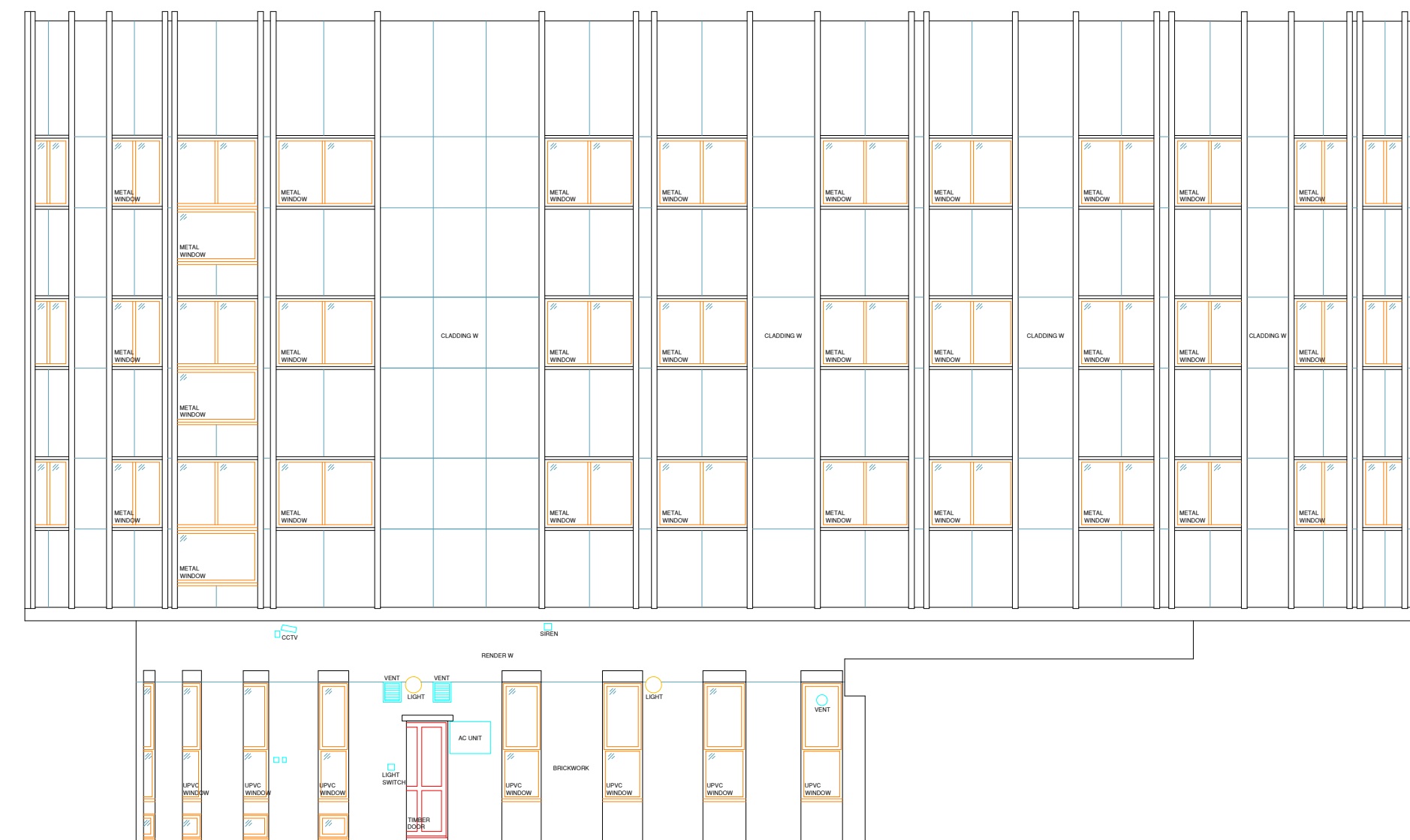
23m Line



SOUTH FACING COURTYARD ELEVATION

1:100 Scale

23m Line



WEST FACING COURTYARD ELEVATION

1:100 Scale

23m Line

REV DATE AMENDMENTS

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PROJECT: MEASURED BUILDING SURVEY
ADDRESS: BEST WESTERN LONDON
HEATHROW ARIEL HOTEL,
BATH ROAD, HARLINGTON,
HAYES, UB3 5AJ

DWG NO.: 3777-11
DWG DATE: APRIL 2023
DWG SIZE: 1:100 @ A1

DRAWN: AL
CHECKED: JW
ISSUE: 1

Appendix 5

1. Project & Site Details	Project / Site Name (including sub-catchment / stage / phase where appropriate)	Proposed Commercial Redevelopment
	Address & post code	Ariel Hotel, 118 Bath Road, Heathrow, UB3 5AJ
	OS Grid ref. (Easting, Northing)	E 508854 N 176988
	LPA reference (if applicable)	
	Brief description of proposed work	Proposals comprise the alteration of the existing hotel to provide 129 new hotel rooms and a new hotel building to the rear of the site
	Total site Area	8019 m ²
	Total existing impervious area	8019 m ²
	Total proposed impervious area	7539 m ²
	Is the site in a surface water flood risk catchment (ref. local Surface Water Management Plan)?	Site is at very low risk of surface water flooding according to the West London Strategic Flood Risk Assessment
	Existing drainage connection type and location	As the site is an existing hotel development it is presumed to be connected to public sewer.
Designer Name	Benjamin Thornton	

2. Proposed Discharge Arrangements	2a. Infiltration Feasibility		
	Superficial geology classification	Langley Silt Member: Clay and Silt	
	Bedrock geology classification	London Clay Formation: Clay, silt and sand	
	Site infiltration rate	Unknown m/s	
	Depth to groundwater level	Unknown m below ground level	
	Is infiltration feasible?	No, impermeable geology present	
	2b. Drainage Hierarchy		
		Feasible (Y/N)	Proposed (Y/N)
	1 store rainwater for later use	Y	N
	2 use infiltration techniques, such as porous surfaces in non-clay areas	N	N
	3 attenuate rainwater in ponds or open water features for gradual release	N	N
	4 attenuate rainwater by storing in tanks or sealed water features for gradual release	Y	Y
	5 discharge rainwater direct to a watercourse	N	N
	6 discharge rainwater to a surface water sewer/drain	Y	Y
	7 discharge rainwater to the combined sewer.	N	N
2c. Proposed Discharge Details			
Proposed discharge location	25mm public surface water sewer to the east of site		
Has the owner/regulator of the			

3. Drainage Strategy	Designer Position		Flood Risk and Drainage Engineer		
	Designer Company		Cole Easdon Consultants Limited		
	3a. Discharge Rates & Required Storage				
		Greenfield (GF) runoff rate (l/s)	Existing discharge rate (l/s)	Required storage for GF rate (m ³)	Proposed discharge rate (l/s)
	Q _{bar}				
	1 in 1		8.3	52.7	3.5
	1 in 30		20.4	52.7	3.5
	1 in 100		26.5	52.7	3.5
	1 in 100 + CC			52.7	3.5
	Climate change allowance used		40%		
	3b. Principal Method of Flow Control		Orifice flow control shall be used to restrict flows		
	3c. Proposed SuDS Measures				
		Catchment area (m ²)	Plan area (m ³)	Storage vol. (m ³)	
	Rainwater harvesting	0		0	
	Infiltration systems	0		0	
Green roofs	0	0	0		
Blue roofs	0	0	0		
Filter strips	0	0	0		
Filter drains	0	0	0		
Bioretention / tree pits	0	0	0		
Pervious pavements	0	0	0		
Swales	0	0	0		

4. Supporting Information	discharge location been consulted?	Form has been submitted to Thames Water, a re
	4a. Discharge & Drainage Strategy	<i>Page/section of drainage report</i>
	Infiltration feasibility (2a) – geotechnical factual and interpretive reports, including infiltration results	Infiltration testing has not been undertaken on site. Due to the impermeable nature of the underlying strata it is presumed infiltration would not be possible. The
	Drainage hierarchy (2b)	ge to surface water sewers has been pr
	Proposed discharge details (2c) – utility plans, correspondence / approval from owner/regulator of discharge location	
	Discharge rates & storage (3a) – detailed hydrologic and hydraulic calculations	Discharge will be restricted to 3.5l/s
	Proposed SuDS measures & specifications (3b)	Cellular attenuation tank
	4b. Other Supporting Details	<i>Page/section of drainage report</i>
	Detailed Development Layout	Appendix 4
	Detailed drainage design drawings, including exceedance flow routes	Appendix 1
Detailed landscaping plans	-	
Maintenance strategy	Pages 15 - 17	
Demonstration of how the proposed SuDS measures improve:		

Basins/ponds	0	0	0
Attenuation tanks	1190		52.7
Total	1190	0	52.7

a) water quality of the runoff?	
b) biodiversity?	
c) amenity?	