



**CROUCH
WATERFALL**

43-47 PICCADILLY NEW HOTEL

Drainage Strategy

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DOCUMENT REFERENCE: 19256G-REP-500 P3

REVISION: P3

ISSUE DATE: December 2020

PROJECT TITLE: 43-47 Piccadilly New Hotel

DOCUMENT TITLE: Drainage Strategy

02 December 2020

Document Control Sheet

Issued by: Crouch Waterfall and Partners Limited

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Client: TRAFALGAR LEISURE

Project Number: 19256G

Project Title: 43-47 Piccadilly New Hotel

Document Title: Drainage Strategy Report

Document Ref: 19256G-REP-500 P3

Status: First Issue

Date: 02 December 2020

Document Production Record

Issue Number:	03	Name	Signature
Prepared		John Ward	
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Document Revision Record

Issue number	Date	Revision Details
01	07 August 2020	First Issue.
02	13 August 2020	Second Issue – Drainage Strategy Updated
03	02 November 2020	Third Issue – Drainage Strategy Updated

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1. Introduction

1.1.Appointment and Brief

Crouch Waterfall was commissioned by Trafalgar Leisure in April 2020 to undertake the design of the foul and surface water drainage strategy to support the redevelopment of 43 – 47 Piccadilly, Manchester, M1 2AP.

1.2.Objectives

The design detailed within this report has been developed on the following requirements outlined in National and Regional policy and guidance.

The drainage strategy must:

- Ensure that flood risk to the site and the surrounding area is not increased over the lifetime of the Proposed Development.
- Conform with all relevant national and local flood risk policies.
- Adopt current design standards; and
- Consider the long-term maintenance of the strategy with respect to practicality, ownership, and funding.

The drainage strategy should:

- Mimic the existing drainage characteristics of the site as far as is practical.
- Look for opportunities to provide a reduction in flood risk to the site and the surrounding area.
- Adhere to current best practice guidance.
- Contribute to the enhanced amenity and aesthetic value of the site; and,
- Propose opportunities for biological enhancement and provide habitats for wildlife in urban areas.

The drainage strategies contained within this document provides additional information for the Proposed Development detailed in Section 1.1.

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1.3. Available Information

The following information listed below has been made available at this time to aid in the production of the drainage design detailed within this document:

- Drawings produced by Stephenson Studios¹
- Utility record information, obtained in August 2019²
- Topographical Site Survey undertaken by Malcolm Hughes Land Surveyors in July 2013³
- Phase one geotechnical desk study undertaken by GeoAssist Limited in January 2018⁴

1.4. Site Location and Description

The Application Site is in Manchester City Centre, within the Piccadilly District and comprises of 43 – 47 Piccadilly. The Ordnance Survey (OS) grid reference for the Application Site is 384474, 398305 and the nearest postcode is M1 2AP.

The Application Site has a gross area of 491m² (0.05 hectares) and is bound by Back Piccadilly to the north, existing retail units to the east, Piccadilly to the south and Elver Street to the west. The Application Site is a brownfield development site. For further details refer to Figure 1

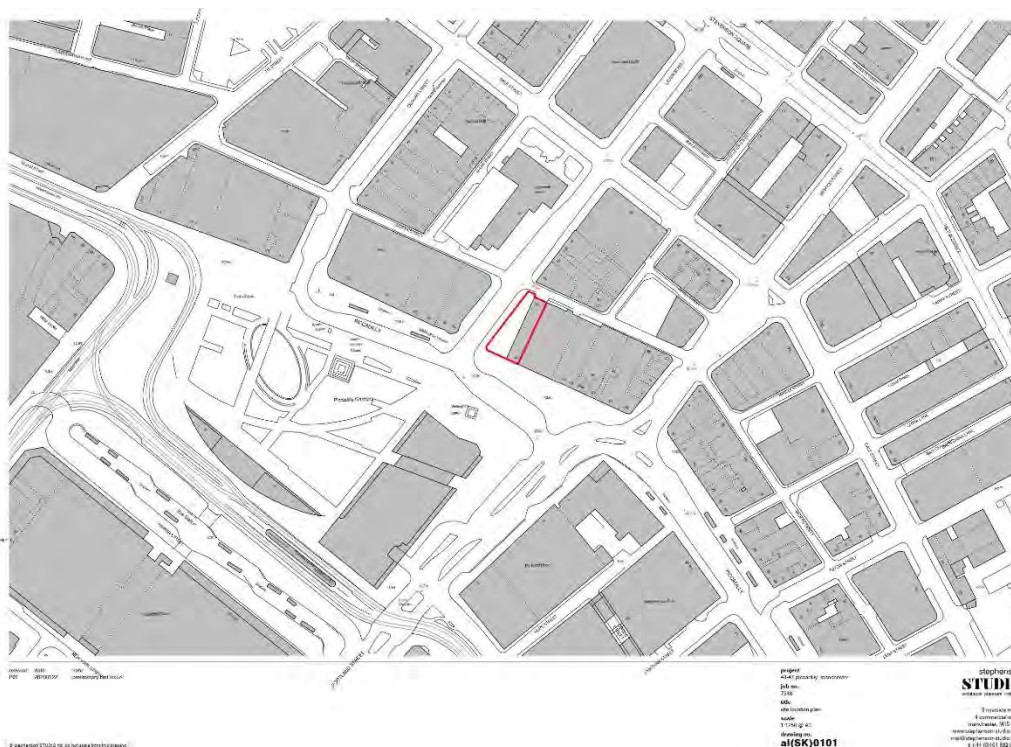


Figure 1 - Site Location Plan⁵

¹ Received in November 2020, refer to Appendix A.

² Refer to Appendix B.

³ Refer to Appendix C.

⁴ Refer to Appendix D.

⁵ Source, Stephenson Studio Drawing No. al(SK)0101.

1.5. Proposed Development

Construction of a new 129 bed hotel and associated restaurant (Use Class C1) in a building of 12 storeys above a retail unit (flexible within Use Classes A1-A3 and A5 and B1) to the ground floor and basement, including the partial demolition of existing building, the façade retention of the existing warehouse facing Back Piccadilly and the refurbishment of a listed townhouse at 47 Piccadilly.

1.6. Topography

A topographical survey for the Application Site was undertaken by Malcom Hughes Land Surveyors.

Reviewing the information provided, the site falls from the north to the south, with levels falling from circa. 46.60 meters Above Ordnance Datum (mAOD) to circa 46.40 m AOD.

1.7. Geology and Hydrogeology

GeoAssist Limited completed a phase one desk study for the Application Site on behalf of the Client in 2018.

Stated within this document the site is situated upon drift deposits of Boulder Clay (Glacial Till) which is anticipated to be 10m thick. The document advised the bedrock to be Bunter (Sherwood) Sandstone.

A review of Magic Maps⁶ shows that the site is not located within a Source Protection Zone nor is it located within a drinking water safeguard zone. However, the underlying Superficial Drift and Bedrock deposits are identified to be a Secondary and Principal Aquifer respectively.

1.8. Hydrology

Reviewing Ordnance Survey (OS) mapping, there are no exiting watercourse or water bodies within the immediate vicinity (100m) of the Application Site. Also reviewing Manchester City Council Core Strategy, there are no hidden rivers or culverted watercourse identified either beneath the site or within the immediate vicinity of the Application Site.

1.9. Existing Drainage Infrastructure

The Water Authority responsible for the public infrastructure within the vicinity of the Application Site is United Utilities. In August 2019, Crouch Waterfall received asset plans from the Water Authority identifying the location of known public sewers.

The records received identified the following public sewers located within the immediate vicinity of the Application Site:

- 300x406mm diameter combined sewer to the north;
- 550x950mm diameter combined sewer to the west; and
- 1500mm diameter combined sewer to the south of the site.

Detailed regarding the routing, size and point of connection from the existing private drainage to the public sewer are currently unknown at this time. However, it is assumed the Application Site drains

⁶ Accessed in August 2020 by Crouch Waterfall; <https://magic.defra.gov.uk/>

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via an existing private gravity system, which connects to the public combined public sewer to the north of the Application Site.

In September 2019, Crouch Waterfall submitted a pre-development enquiry to United Utilities (refer to correspondence dated 30 September 2019, within Appendix B). In summary the Water Authority advised that the foul water from the Proposed Development can discharge at an unrestricted rate, whereas the surface water from the Proposed Development would not be allowed to exceed 5 l/s.

Regarding the point of connection to the Public Sewer, it was advised in September 2019 that there are no restrictions regarding the point of connection to the existing public sewer.

1.10. Flood Risk

As detailed in the National Planning Policy Framework (NPPF) a Flood Risk Assessment (FRA) is required when an Application Site is located within Flood Zone 2 or 3, a Critical Drainage Area (CDA) notified by the Environment Agency or within Flood Zone 1 with a gross area greater than or equal to 1 hectare (ha) in size.

The Application Site is located within Flood Zone 1, with a gross area of 0.05 ha. Therefore a FRA is not required to support the planning application for the Proposed Development. This has also been confirmed by Manchester City Council, refer to correspondence dated 30 April 2020 within Appendix E.

1.11. Discharge Rates

Greenfield Discharge Rate

In accordance with The SuDS Manual (C753) Flood Estimation Handbook (FEH) rainfall data is the preferred approach for developing runoff estimates for use in surface water management design. Therefore, the FEH rainfall data set has been used to calculate the runoff rate for the Application Site.

Table 1 sets out the FEH rainfall parameters used in the estimation of Greenfield run off rates for the Application Site based on the proposed impermeable area only.

Table 1 – FEH Rainfall Parameters

Parameter	Value
Coordinates	384471, 398301
NGR	SJ 84471 98301
BFIhot19	0.345
SAAR	893 mm

Table 2 summarises the Greenfield discharge rates for one hectare of developable area. For full calculations using the FEH Statistical method refer to Appendix F.

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Table 2 -FEH Statistical Method Greenfield Runoff Rates (1ha)

Rainfall Event	Peak Runoff Rate (l/s/ha)
QBAR	8.42
100% AEP ⁷ Event	7.33
3.3% AEP Event	14.32
1% AEP Event	17.52
0.5% AEP Event	19.96

Table 3 pro ratas the Greenfield runoff rates to the gross site area provided by the Architect.

Table 3 – Pro Rated FEH Statistical Method Greenfield Runoff Rates

Rainfall Event	Peak Runoff rate (l/s/ha)	Development Area (ha)	Peak Runoff Rate (l/s)
QBAR	8.42	0.05	0.42
100% AEP Event	7.33		0.37
3.3% AEP Event	14.32		0.72
1% AEP Event	17.52		0.88
0.5% AEP Event	19.96		1.00

The peak greenfield runoff rate for the site is considered to be less than 1 l/s.

Brownfield Discharge Rates

The current discharge rate from the Application Site has been calculated using the Modified Rational Method in accordance with the Building Regulations Part H. It has been calculated that the discharge from the existing development is circa 6.95 l/s. For details on the full calculations refer to Appendix F

1.12. Regional Policy

1.12.1. National Planning Policy Framework (NPPF)

The NPPF requires planning applications to demonstrate that a development will be safe for the duration of its design life, taking account of the vulnerability of its users, without increasing floor risk elsewhere, and where possible, that it will reduce flood risk overall.

1.12.2. Flood Risk Assessments: Climate Change Allowances (March 2020)

In March 2020, the Environment Agency updated the 'Flood risk assessments: climate change allowances' guidance to support the NPPF which was originally published in February 2016. Within this guidance the appropriate allowances for increases in peak rainfall intensity and peak river flow are stated.

The appropriate allowance for increases in peak rainfall intensity over the next 100 years are the central and upper end allowance of 20% and 40% respectively.

⁷ Annual Exceedance Probability

1.13. Regional Guidance

1.13.1. Non-Statutory Technical Standard for Sustainable Drainage Systems (March 2015)

The non-statutory technical standards for sustainable drainage systems state that the peak rate of discharge from a redevelopment during the 100% Annual Exceedance Probability (AEP) and 1% AEP rainfall events should be as close as reasonably practicable to the corresponding greenfield runoff rate but should never exceed that of the predevelopment rate.

1.13.2. Building Regulations Approved Document Part H (March 2015)

Part H of the Building Regulations: Drainage and Waste Disposal, establishes a hierarchy for surface water disposal, which encourages the use of Sustainable Drainage Solutions (SuDS) approach. This hierarchy stipulates that surface runoff not collected for reuse must be discharge to one or more of the following in order of priority:

- Discharge directly to ground via infiltration; or, where not reasonably practicable,
- Discharge to a surface water body; or, where not reasonably practicable,
- Discharge to a surface water sewer, highway drain, or another drainage system; or where not reasonably practicable,
- Discharge to a combined sewer.

As discussed within Section 1.7 the site is under laid by Boulder Clay and a bedrock of Bunter (Sherwood) Sandstone. Therefore, at this time it is envisaged infiltration techniques are deemed not viable at the Application Site.

Undertaking a desktop survey, no surface water bodies, or surface water sewer have been identified within a 100m buffer of the Application Site. Therefore, the strategies contained within this report have been designed to discharge to Public Sewer network, which is a combined system.

1.14. Local Policy

1.14.1. Manchester City: Core Strategy (July 2012)

The core strategy is a planning document that set out the long-term vision, spatial strategy and strategic policies with an implementation plan from 2012 up to 2027 to deliver sustainable development.

Strategic Policy 14 sets out Manchester City Council vision and requirements for Flood Risk and summarised below:

- In line the sequential approach contained within NPPF, development should be directed away from sites with the greatest risk of flooding, and towards sites with little or no risk of flooding.
- In addition to the requirements for site-specific FRA as detailed in the NPPF a FRA will be required for all development proposals, including changes of use, on sites greater than 0.5ha within CDAs and Canal Hazard Zones.
- All new development should minimise surface water run-off, through Sustainable Drainage Systems (SuDS) and take regard of the SFRA User Guide. In addition, for sites within CDAs, evidence will be required to justify approach to ascertain the surface water run-off rate.

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- Where culverted or 'hidden' rivers are identified in the SFRA which are beneath the Application Site, further investigation will be required and be taken into account as part of the development proposal. Where feasible and appropriate the opportunity to open up the watercourse should be investigated.

Strategic Policy 17 sets out Manchester City Council vision and requirements for Water Quality and summarised below:

- Development should avoid any adverse impact on water quality, and wherever possible should seek to enhance water quality.
- Development should maximise the use of SuDS to avoid pollutants including litter from reaching receiving waterbodies.
- Development should, where feasible and appropriate, seek to open up any culverted or hidden watercourse beneath the site to improve the ecological status of that watercourse.

1.15. Local Guidance

1.15.1. Manchester City, Salford City and Trafford Councils Level 2 SFRA User Guide

This document provides guidance for Policy Planners, Development Control Officers and Emergency Planners on their responsibilities within regional and local flood risk management.

However, this document also provides guidance on drainage for new developments, including recommended discharge rates for developments within CDAs. The guide states that the developer should liaise closely with the Environment Agency, Water Authority and Lead Local Flood Authority to determine the appropriate discharge restrictions for the Proposed Development. In the interim, the user guide advises on the following guidance:

- Greenfield runoff rates should be achieved for greenfield development up to 1% ARP event including an allowance for climate change.
- A minimum reduction in surface water runoff rates of 50% for Brownfield sites, with an aim of reducing runoff to Greenfield rates up to 1% AEP event including an allowance or climate change.

There is no flooding to the development for the 3.3% AEP event or property flooding during the 1% AEP event including an allowance for climate change.

2. Project Opportunities

There are opportunities for the architect/building designer, to assist with the surface water management system for the Proposed Development. This can be achieved by using green infrastructure, such as green/blue roofs and rainwater harvesting.

Discussing these options with the Architect it was advised it was not possible to implement green/blue roofs for the Proposed Scheme as this would have an impact on the agreed building height with Manchester City Council. Regarding rainwater harvesting, at this time, the guidance for storing rainwater for later use has not been provided by the Client team.

Therefore, the use of these solutions has not been developed further at this time as part of the Surface Water Drainage Design.

3. Surface Water Design

3.1. Introduction

The following section of the report provides details on the surface water management for the Proposed Development and how this will be undertaken in accordance with National and Regional policy and design guidance.

As discussed within Section 1.7 it is deemed infiltration is not viable at the Application Site, also as there are no surface water features including surface water sewer, it is therefore, proposed the strategy will discharge to the Public Combined Sewer with the immediate vicinity of the Site. Crouch Waterfall have developed the strategy on this basis.

For details on the drainage design refer to drawing numbers 19256G-500 within Appendix G and full calculations are contained within Appendix F.

3.2. Drainage Catchments

Reviewing the information made available at this time, it is considered the site is contained within a single catchment. It is assumed the existing point of connection for 43 – 47 Piccadilly is to the north and connects to the public sewer within Back Piccadilly Road.

3.3. Discharge Rates and Locations

As discussed within Section 1.4, the Proposed Development is a Brownfield Development Site.

The existing discharge rates for the Application Site have been calculated (refer to Section 1.11) in accordance with national design guidance. The greenfield rate for the Proposed Development was calculated to be less than 1 l/s.

It is deemed not feasible to attenuate the Proposed Development to greenfield rates due to the quantum of storage required and it being unfeasible to control discharge to a rate this low. Therefore, the surface water drainage design will be developed at the next stage to achieve a 50% betterment over existing rates whilst not exceeding the permitted discharge rate set by United Utilities.

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The Proposed Development is not restricted to a single point of connection, refer to Section 1.9. Therefore, as the scheme develops the drainage design will be fully coordinated with the wider design team to agree a suitable point of connection to the public sewer located within the vicinity of the Proposed Development.

However, to develop the drainage strategy, it has been assumed the Proposed Development will connect upstream of the existing chamber on the junction of Back Piccadilly and Lever Street. At the time of writing this report the levels of the existing public sewer are unknown. Reviewing the topographical survey, the existing ground level is anticipated to be circa. 46.7 mAOD in this location. Assuming the sewer has a minimum cover of 1,200mm it is anticipated the invert level of the public sewer in this location to be 44.6 mAOD. This is subject to confirmation at the detailed design stage and further coordination with the wider design team.

3.4. Proposed Drainage Design

The Application Site has a gross area of 491m² (0.05 ha) which the Proposed Development fills completely and is 100% impermeable.

As the development is not for residential use, no uplift has been applied to account for urban creep. This is in line with the definition of urban creep given by British Standard BS 8582:2013 - Code of Practice for surface water management for development sites, which defines it as property enhancements including patios, conservatories and small extensions.

At the time of writing it is envisaged that all above ground drainage will route all flows to the basement and it will be attenuated beneath the basement slab prior to being discharged at 3.45 l/s for all storm events.

Reviewing the Architects drawings, the proposed structural slab level for the basement is to be 41.710 mAOD. Therefore, it is envisaged the discharge from the surface water network would need to be lifted by an internal package pump, lifting flows to an internal/external gravity run prior to connecting to the existing public infrastructure located to the north of the Proposed Development.

Using the design tool Quick Storage Estimate within MicroDrainage, the storage volume for the Proposed Development is summarised within Table 4 for the 1% Annual Exceedance Probability (AEP) rainfall event including an allowance for climate change.

Table 4 - Anticipated attenuation requirement

Rainfall Event	Required Circa. Attenuation Volume (m³)
1% AEP Event including an allowance for climate change 20%	20
1% AEP Event including an allowance for climate change 40%	24

The volume of attenuation storage required prior to the discharge point has been estimated using the design tool contained with the Source Control module of MicroDrainage and is summarised within Table 4 for the proposed discharge rate of 3.45 l/s.

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To provide the required attenuation it is envisaged this will be provided by an attenuation feature beneath the structural slab, either via a reinforced concrete tank or a GPR tank. Assuming the storage was to be provided within a GPR tank, the anticipated volume can be accommodated within a tank with an internal diameter of 2.6m and a length of 5.25m, which would provide a total volume of 25m³. Reviewing the Architects and Structural Engineers drawings there is sufficient space to provide the required attenuation.

Modelling a tank with an internal diameter of 2.6m within Source Control (a design suite in MicroDrainage) the tank was shown to have sufficient volume to attenuate the 1%AEP Rainfall Event including an allowance for climate change.

3.5. Water Quality

Table 26.2 of The SuDS Manual, identifies the pollution hazard level associated with the land use (other roof, typically commercial/industrial roofs) for the Proposed Development as being 'Low'.

A 'Low' hazard level relates to the following pollution indices for the above type of development as detailed in Table 26.2 of The SuDS Manual.

- Total Suspended Solids = 0.3.
- Metals = 0.2 (up to 0.8 where there is potential for metals to leach from the roof).
- Hydrocarbons = 0.05.

However, as the pollution hazard indices is classified as low, and the risk to the receiving water body (combined sewer) is considered to be low. It is envisaged that no further treatment of the surface water runoff is required.

3.6. Surface Water Drainage Summary

The surface water strategy for the Proposed Development demonstrates that, the scheme can be drained to the existing public sewer in accordance with best practices and guidance and that an offsite connection can be achieved.

The strategy detailed in this report has been prepared to support the Proposed Development as part of the planning application. It should be noted that this report presents only one possible solution. However, other solutions may become feasible, whilst also meeting the required criteria, at the next design stage. Therefore, the strategy above should not be interpreted as the definitive scheme or solution.

4. Foul Water Design

4.1. Introduction

The following section of the report provides details on the foul water management for the Proposed Development and how this will be undertaken in accordance with National and Regional policy and design guidance.

It is proposed the foul water drainage will discharge to the Public Combined Sewer within the immediate vicinity of the Site. Crouch Waterfall have developed the strategy on this basis.

For details on the drainage design refer to drawing numbers 19256G-500 within Appendix G and full calculations are contained within Appendix F.

4.2. Drainage Catchments

Reviewing the information made available at this time, it is considered the site is contained within a single catchment. It is assumed the existing point of connection for 43 – 47 Piccadilly Gardens is to the north and connects to the public sewer within Back Piccadilly Road.

4.3. Discharge Rates and Locations

United Utilities is the Sewerage Undertaker for the area within the vicinity of the Proposed Development. For further details of the existing public sewerage infrastructure refer to Section 1.9 of this report.

It is proposed for the foul flows from the ground floor and above, will be routed to the proposed external drainage via internal high-level drainage, and discharge via gravity. Whereas the foul flows for the basement will need to be routed to an internal package pump located beneath the basement slab which will lift flows to the internal high-level drainage.

The Proposed Development is not restricted to a single point of connection, refer to Section 1.9. Therefore, as the scheme develops the drainage design will be fully coordinated with the wider design team to agree a mutually beneficial point of connection to the public sewer located within the vicinity of the Proposed Development.

However, to develop the drainage strategy, it has been assumed the Proposed Development will connect upstream of the existing chamber on the junction of Back Piccadilly and Lever Street. At the time of writing this report the levels of the existing public sewer are unknown. Reviewing the topographical survey, the existing ground level is anticipated to be circa. 46.7 mAOD in this location. Assuming the sewer has a minimum cover of 1,200mm it is anticipated the invert level of the public sewer in this location to be 44.6 mAOD. Subject to confirmation at the detailed design stage and further coordination with the wider design team.

4.4. Foul Water Drainage Summary

The foul water strategy for the Proposed Development demonstrates that, the scheme can be drained to the existing public sewer in accordance with best practices and guidance and that an offsite connection can be achieved.

The strategy detailed in this report has been prepared to support the Proposed Development as part of the planning application. It should be noted that this report presents only one possible solution.

However, other solutions may become feasible, whilst also meeting the required criteria, at the next design stage. Therefore, the strategy above should not be interpreted as the definitive scheme or solution.

5. Adoption and Maintenance

5.1. Introduction

The following section sets out the anticipated ownership/adoption routes for each drainage feature within the Proposed Development and their maintenance requirement(s).

Onsite Private Sewer Network

- Ownership / adoption: Private Management Firm
- Maintenance requirements: Operational and maintenance requirements for the private sewer network will be undertaken in accordance with maintenance companies' specification.

6. Residual Risks

6.1. Introduction

Following a review of the flood risks to and arising from the Proposed Development; the following section discusses the mitigation measures necessary to reduce the residual risk, and ensure the Proposed Development remains safe over its lifetime and does not exacerbate flood risk to neighbouring property (including allowances for the effects of climate change).

6.2. Surface Water

Onsite levels should be engineered to provide positive drainage and prevent ponding. Gradients of external areas should be designed to fall away from buildings, such that any overland flow resulting from extreme events will follow the path of least resistance, follow natural topography and be channelled away from the entrances of the Proposed Development. The accumulation of standing water will therefore be minimised and thus not a significant risk.

To further mitigate the residual risk from Surface Water flooding finished floor levels should be set a minimum of 150mm above the adjacent finished external levels of the Proposed Development.

6.3. Pump Failure

The design of the package pump station, associated infrastructure including the rising main are to be developed by the nominated specialist. However, for details regarding the mitigation of residual risk of the package pumps refer to the below.

Foul Water

The internal package pump is private drainage, and will need to comply with the requirements of Building Regulation Part H.

In April 2020, it was advised the cold-water intake for the Proposed Development would be controlled via a 32mm ball valve. This would allow a maximum cold-water intake of 3.3 l/s. It was advised that the intake to the building would be less than this, but for the purposes of calculating the flow within the basement 1% of the maximum intake was advised to be used. Therefore, the cold-water intake to

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the basement is assumed to be 0.033 l/s⁸. Table 5 summarises the required volume of storage for a 24 hour period to mitigate a disruption in service.

Table 5 - Emergency Storage Requirement, Foul Drainage

Input	Output
Cold water intake	0.033 l/s
24 hour emergency storage requirements	2851.2 l/day
24 hour emergency storage requirements	2.85 m ³

At this time, it is assumed for the purpose of this design, that the emergency storage will be provided within the wet well of the package pumping station at this time, subject to detailed design.

Surface Water

Currently there is no national or local guidance regarding the emergency storage requirement for surface water package pumping station. Therefore, at the detailed design stage, the system will be designed to ensure the basement does not flood during the 100-year rainfall event including an allowance for climate change, this could be achieved by ensure the package pumping station was fitted with a standby pump to mitigate the risk of the duty pump failing.

In addition, live monitoring and alarm system linked to the Building Management System will be provided.

⁸ To be confirmed by the project Public Health Engineer prior to the detailed design stage.

7. Conclusion

7.1.Introduction

Crouch Waterfall was commissioned by Trafalgar Leisure in April 2020 to undertake the design of the foul and surface water drainage design to support the redevelopment of 43 – 47 Piccadilly, Manchester, M1 2AP.

The Proposed Development consists of a new 129 bed hotel and associated restaurant (Use Class C1) in a building of 12 storeys above a retail unit (flexible within Use Classes A1-A3 and A5 and B1) to the ground floor and basement, including the partial demolition of existing building, the façade retention of the existing warehouse facing Back Piccadilly and the refurbishment of a listed townhouse at 47 Piccadilly.

It is proposed that both the foul and surface water drainage design for the Proposed Development will discharge to the existing United Utilities combined sewer network, located adjacent to the site. At this time, it is anticipated that both networks will require internal package pumping stations to lift the flows from the basement prior to discharging to the public sewer via gravity. The foul pumping station will only take the flows generated in the basement, with flows from the ground floor and above draining via the internal gravity system.

In accordance with national and local design guides, the surface water drainage strategy has been designed to accommodate the 1% AEP event plus an allowance for climate change (40%). It is proposed that the site will have a total surface water discharge rate of 3.50 l/s. This is a betterment over the requirement to provide a 50% betterment to brownfield rates and complies with United Utilities discharge requirements.

Attenuation onsite will be provided, via an underground attenuation system located beneath the basement slab. Hydraulic modelling undertaken by Crouch Waterfall indicates that a volume of 24m³ will be required to attenuate up to the 1% AEP event including an allowance for climate change (40%). It is anticipated this will be provided in a tank system with the following dimensions 2.6mØx5.22m. Reviewing the masterplan there is sufficient space within the Proposed Development to install this requirement.

It is proposed that attenuation features, package pumps and private drainage within the development will be adopted by a private management firm. All elements of the proposed drainage will be maintained in accordance with the manufacturer's and management firm's specification.

As the Proposed Development discharges to a combined sewer, water quality is not considered an issue for the site, and no treatment of the surface water will be required. All the surface water is low risk as it is generated from the roof drainage.

The proposed designs have been prepared such that they are robust, comply with the requirements of national and local policy and do not increase flood risk either to or from the Proposed Development or neighbouring properties and therefore can be used to support the proposed development as a part of the planning application.



PROJECT TITLE: 43-47 Piccadilly New Hotel	
DOCUMENT TITLE: Drainage Strategy	02 December 2020

It should be noted the proposed strategies contained in this document only presents one possible solution. Other solutions may be feasible that would also meet the required criteria, and these may become apparent during the next design stage. Therefore, the proposed strategies should not therefore be interpreted as the definitive scheme solution.

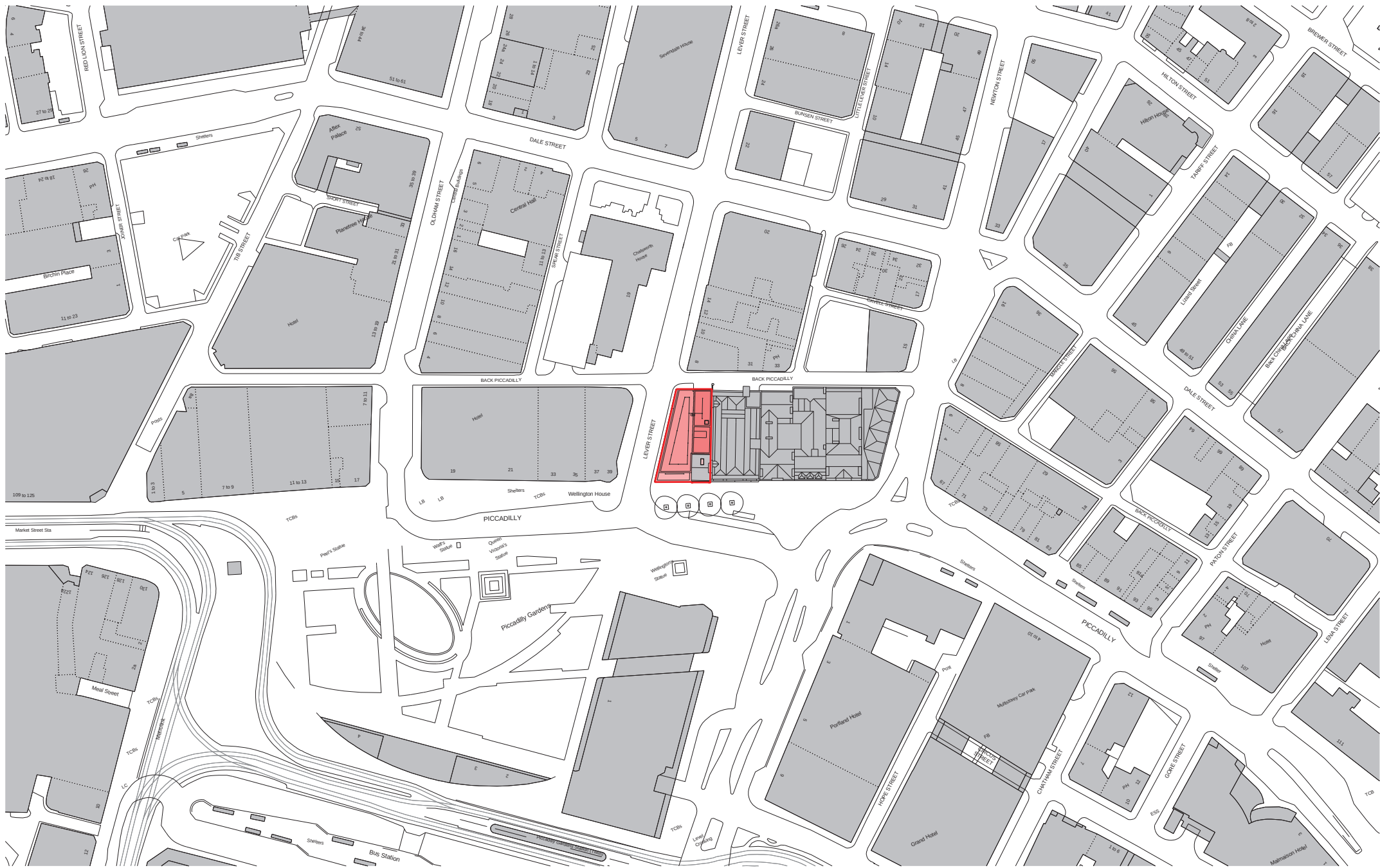
PROJECT TITLE: 43-47 Piccadilly New Hotel	
DOCUMENT TITLE: Drainage Strategy	02 December 2020

Appendix A – Architect Drawings

Hotel at 43-47 Piccadilly

30th July 2020





revision: date: note:
P01 2020 05 21 preliminary first issue
P02 2020 07 09 updated

planning application boundary



project
43-47 piccadilly, manchester
job no.
7546

title
proposed site location plan

scale
1:1250 @ A3

drawing no.
7546-al(04)0001

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Back Piccadilly

Back Piccadilly

Lever Street

Piccadilly

hotel GIA
235.08 m²

retail
170.76 m²

revision:	date:	note:
P01	2020.06.02	preliminary first issue
P02	2020.06.29	structure added
P03	2020.07.01	updated
P04	2020.07.09	updated



project
43-47 piccadilly, manchester

job no.
7546

title
proposed basement plan

scale
1:200 @ A3

drawing no.
7546-al(04)0009

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Back Piccadilly

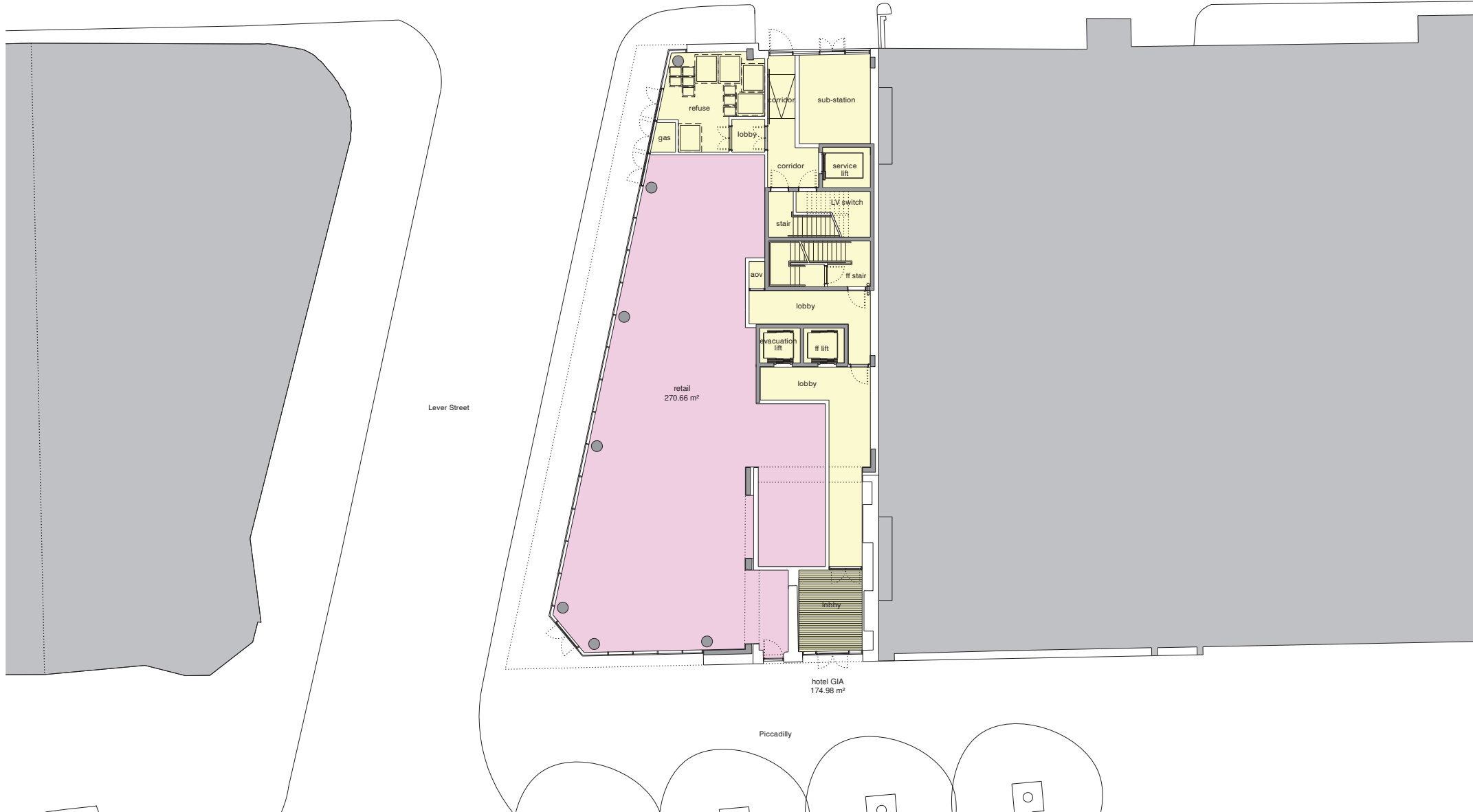
Back Piccadilly

Lever Street

Piccadilly

revision:	date:	note:
P01	2020.06.02	preliminary first issue
P02	2020.06.17	updated
P03	2020.06.29	structure added
P04	2020.07.01	updated
P05	2020.07.09	updated

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project
43-47 piccadilly, manchester

job no.
7546

title
proposed ground floor plan

scale
1:200 @ A3

drawing no.
7546-al(04)0010

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Back Piccadilly

Lever Street

Age Group	Percentage
18-24	15%
25-34	25%
35-44	30%
45-54	20%
55-64	10%
65-74	5%
75-84	2%
85+	1%

[illegible]

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drawing no.
7546-al(04)0011

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Back Piccadilly

Back Piccadilly

Lever Street

Piccadilly

revision:	date:	note:
P01	2020.06.02	preliminary first issue
P02	2020.06.17	updated
P03	2020.06.29	structure added
P04	2020.07.01	updated
P05	2020.07.09	updated

GIA
498.52 m²

corridor

listed
staircase

riser

riser

corridor

UA

non-std
(see al(04)0101)

non-std
(see al(04)0102)

linen
21.60 m²

lobby

corridor

non-std
(see al(04)0103)

non-std
(see al(04)0104)

project
43-47 piccadilly, manchester
job no.
7546

title
proposed 2nd floor plan

scale
1:200 @ A3

drawing no.
7546-al(04)0012

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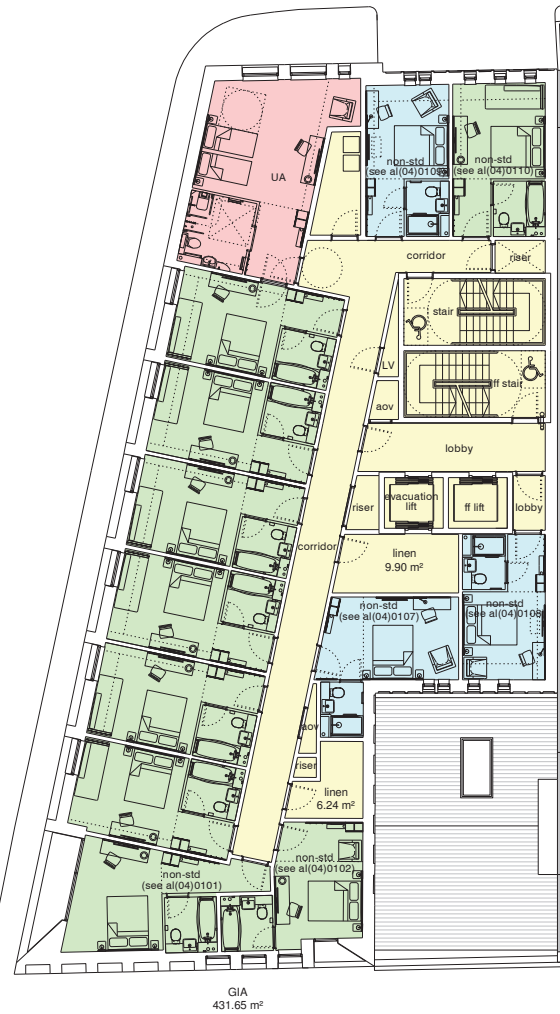
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Back Piccadilly

Back Piccadilly

Lever Street

Piccadilly



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P01	2020.06.02	preliminary first issue
P02	2020.06.17	updated
P03	2020.06.29	structure added
P04	2020.07.09	updated



project
43-47 piccadilly, manchester
job no.
7546

title
proposed 3rd to 7th floor plan

scale
1:200 @ A3

drawing no.
7546-al(04)0013

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Back Piccadilly

Lever Street

Piccadilly

revision:	date:	note:
P01	2020.06.02	preliminary first issue
P02	2020.06.17	updated
P03	2020.06.29	structure added
P04	2020.07.09	updated



project
43-47 piccadilly, manchester
job no.
7546

title
proposed 8th to 10th floor plan

scale
1:200 @ A3

drawing no.
7546-al(04)0018

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Back Piccadilly

Back Piccadilly

Lever Street

GIA
374.23 m²

Piccadilly

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P01	2020.06.02	preliminary first issue
P02	2020.06.29	structure added
P03	2020.07.09	updated

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project
43-47 piccadilly, manchester
job no.
7546

title
proposed 11th floor plan

scale
1:200 @ A3

drawing no.
7546-al(04)0021

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Back Piccadilly

Back Piccadilly

Lever Street

GIA
71.63 m²

Piccadilly

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P01	2020.06.02	preliminary first issue
P02	2020.06.29	structure added
P03	2020.07.09	updated

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project
43-47 piccadilly, manchester
job no.
7546

title
proposed 12th floor plan

scale
1:200 @ A3

drawing no.
7546-al(04)0022

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Back Piccadilly

Back Piccadilly

Lever Street

Piccadilly

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P01	2020.06.02	preliminary first issue
P02	2020.06.29	structure added
P03	2020.07.09	updated

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project
43-47 piccadilly, manchester
job no.
7546

title
proposed roof plan

scale
1:200 @ A3

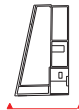
drawing no.
7546-al(04)0023

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revision:	date:	note:
P01	2020.06.11	preliminary first issue
P02	2020.06.29	structure added
P03	2020.07.06	updated
P04	2020.07.09	updated



project
43-47 piccadilly, manchester

job no.
7546

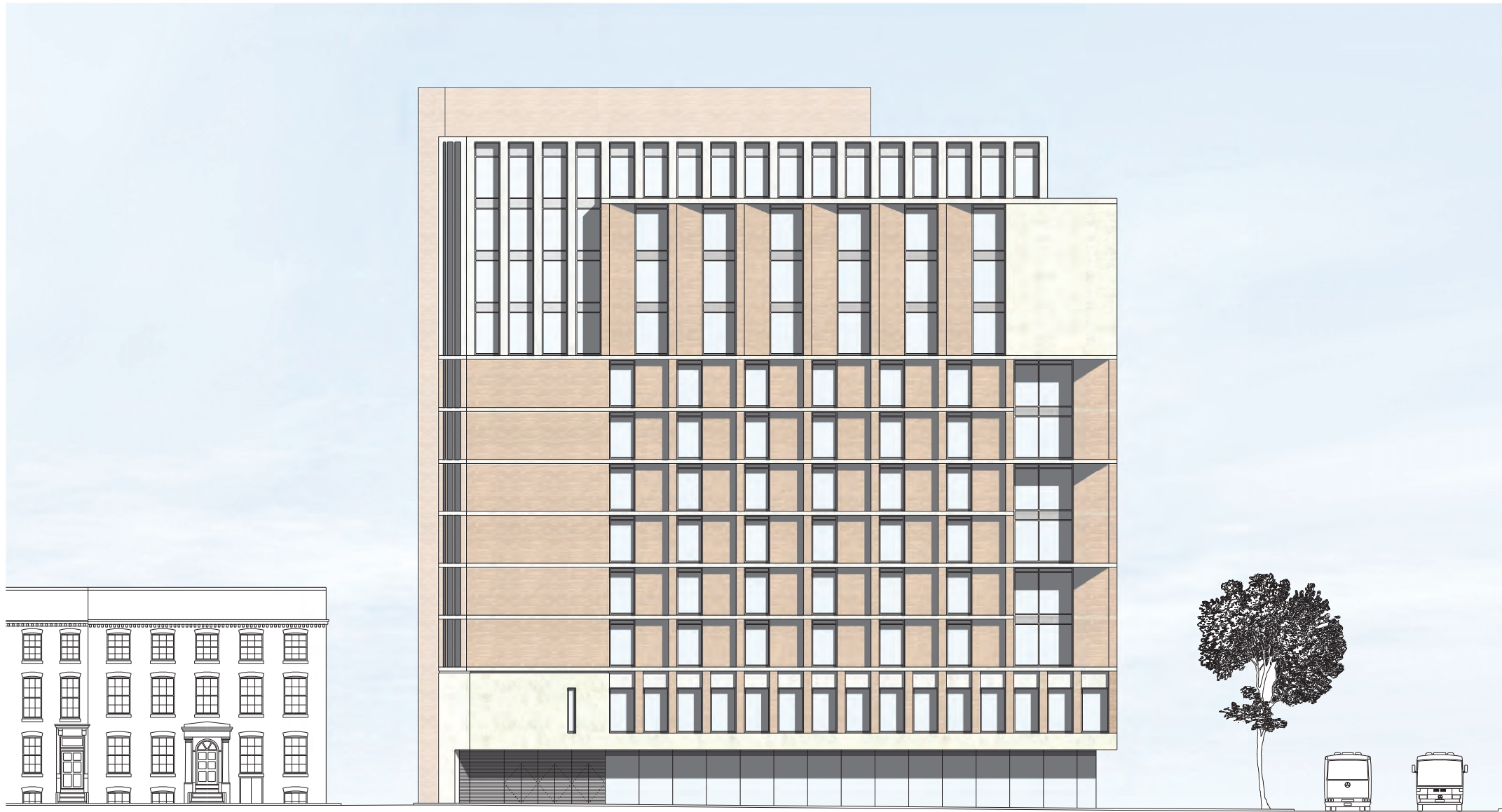
title
proposed Piccadilly elevation

scale
1:200 @ A3

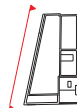
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7546-al(04)0030

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revision:	date:	note:
P01	2020.06.11	preliminary first issue
P02	2020.06.29	structure added
P03	2020.07.06	preliminary third issue
P04	2020.07.09	updated



project
43-47 piccadilly, manchester
job no.
7546

title
proposed Lever Street elevation

scale
1:200 @ A3

drawing no.
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revision:	date:	note:
P01	2020.06.11	preliminary first issue
P02	2020.06.29	structure added
P03	2020.07.06	updated
P04	2020.07.09	updated



project
33-35 piccadilly, manchester

job no.
7546

title
proposed Back Piccadilly elevation

scale
1:200 @ A3

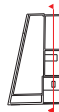
drawing no.
7546-al(04)0032

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revision: date: note:
P01 2020.07.15 preliminary first issue



project
43-47 piccadilly, manchester

job no.
7546

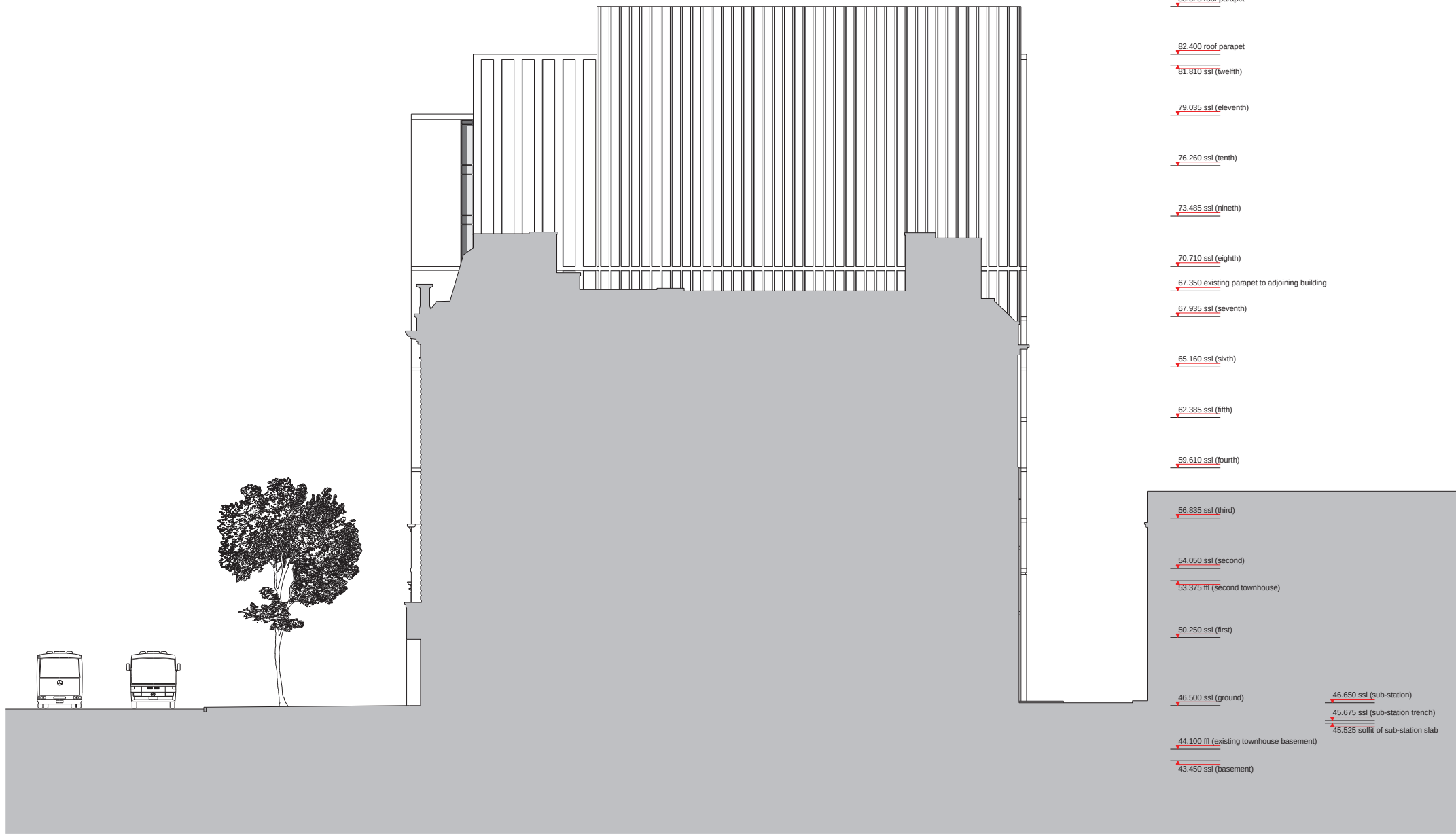
title
proposed sectional elevation B-B

scale
1:200 @ A3

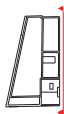
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7546-al(04)0034

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revision: date: note:
P01 2020.07.15 preliminary first issue



project
43-47 piccadilly, manchester

job no.
7546

title
proposed sectional elevation C-C

scale
1:200 @ A3

drawing no.
7546-al(04)0035

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PROJECT TITLE: 43-47 Piccadilly New Hotel	
DOCUMENT TITLE: Drainage Strategy	02 December 2020

Appendix B – Water Authority Records & Correspondence

Tony Cochrane

**Thornley & Lumb Partnership
Century House, 257 Cutler Heights Lane
Bradford,
BD4 9JG**

FAO:

How to contact us:

**United Utilities Water Limited
Property Searches
Haweswater House
Lingley Mere Business Park
Great Sankey
Warrington
WA5 3LP**

Telephone: 0370 7510101

E-mail: propertysearches@uuplc.co.uk

**Your Ref: C7296 Gardens Hotel
Our Ref: UUPS-ORD-58275
Date: 25/09/2018**

Dear Sirs

Location: C7296 Gardens Hotel 55 Piccadilly, Manchester, M1 2AP

I acknowledge with thanks your request dated 21/09/2018 for information on the location of our services.

Please find enclosed plans showing the approximate position of United Utilities' apparatus known to be in the vicinity of this site.

The enclosed plans are being provided to you subject to the United Utilities terms and conditions for both the wastewater and water distribution plans which are shown attached.

If you are planning works anywhere in the North West, please read United Utilities' access statement before you start work to check how it will affect our network. <http://www.unitedutilities.com/work-near-asset.aspx>.

I trust the above meets with your requirements and look forward to hearing from you should you need anything further.

If you have any queries regarding this matter please [contact us](#).

Yours Faithfully,



Karen McCormack
Property Searches Manager

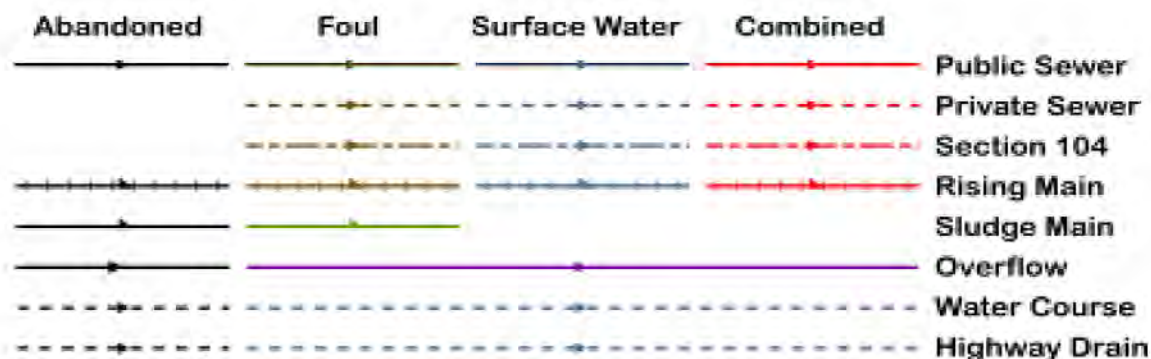
TERMS AND CONDITIONS - WASTERWATER AND WATER DISTRIBUTION PLANS

These provisions apply to the public sewerage, water distribution and telemetry systems (including sewers which are the subject of an agreement under Section 104 of the Water Industry Act 1991 and mains installed in accordance with the agreement for the self construction of water mains) (UUWL apparatus) of United Utilities Water Limited "(UUWL)".

TERMS AND CONDITIONS:

- This Map and any information supplied with it is issued subject to the provisions contained below, to the exclusion of all others and no party relies upon any representation, warranty, collateral contract or other assurance of any person (whether party to this agreement or not) that is not set out in this agreement or the documents referred to in it.
- This Map and any information supplied with it is provided for general guidance only and no representation, undertaking or warranty as to its accuracy, completeness or being up to date is given or implied.
- In particular, the position and depth of any UUWL apparatus shown on the Map are approximate only. UUWL strongly recommends that a comprehensive survey is undertaken in addition to reviewing this Map to determine and ensure the precise location of any UUWL apparatus. The exact location, positions and depths should be obtained by excavation trial holes.
- The location and position of private drains, private sewers and service pipes to properties are not normally shown on this Map but their presence must be anticipated and accounted for and you are strongly advised to carry out your own further enquiries and investigations in order to locate the same.
- The position and depth of UUWL apparatus is subject to change and therefore this Map is issued subject to any removal or change in location of the same. The onus is entirely upon you to confirm whether any changes to the Map have been made subsequent to issue and prior to any works being carried out.
- This Map and any information shown on it or provided with it must not be relied upon in the event of any development, construction or other works (including but not limited to any excavations) in the vicinity of UUWL apparatus or for the purpose of determining the suitability of a point of connection to the sewerage or other distribution systems.
- No person or legal entity, including any company shall be relieved from any liability howsoever and whensoever arising for any damage caused to UUWL apparatus by reason of the actual position and/or depths of UUWL apparatus being different from those shown on the Map and any information supplied with it.
- If any provision contained herein is or becomes legally invalid or unenforceable, it will be taken to be severed from the remaining provisions which shall be unaffected and continue in full force and affect.
- This agreement shall be governed by English law and all parties submit to the exclusive jurisdiction of the English courts, save that nothing will prevent UUWL from bringing proceedings in any other competent jurisdiction, whether concurrently or otherwise.

Wastewater Symbolology



All point assets follow the standard colour convention: **red** – combined **brown** - foul
blue – surface water **purple** - overflow

- | | |
|------------------|--------------------------|
| Manhole | Side Entry Manhole |
| Head of System | Outfall |
| Extent of Survey | Screen Chamber |
| Rodding Eye | Inspection Chamber |
| Inlet | Bifurcation Chamber |
| Discharge Point | Lamp Hole |
| Vortex | T Junction / Saddle |
| Penstock | Catchpit |
| Washout Chamber | Valve Chamber |
| Valve | Vent Column |
| Air Valve | Vortex Chamber |
| Non Return Valve | Penstock Chamber |
| Soakaway | Network Storage Tank |
| Gully | Sewer Overflow |
| Cascade | Ww Treatment Works |
| Flow Meter | Ww Pumping Station |
| Hatch Box | Septic Tank |
| Oil Interceptor | Control Kiosk |
| Summit | |
| Drop Shaft | Change of Characteristic |
| Orifice Plate | |



SEWER RECORDS

Address or Site Reference

C7296 Gardens Hotel 55 Piccadilly,
Manchester,
M1 2AP

Scale: 1:1250
Date: 25/09/2018

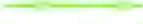
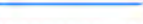
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The position of the underground apparatus shown on this plan is approximate only and is given in accordance with the best information currently available. United Utilities Water will not accept liability for any loss or damage caused by the actual position being different from those shown.

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Clean Water Symbolology

Proposed	Abandoned	Live	
			Distribution Main
			Trunk Main
			Comms Pipe
			Private Pipe
			Concessionary Service
			Raw Water
			LDTM Raw Water
			LDTM Treated Water
			Air Valve
			AC Valve, open
			AC Valve, closed
			CC Valve, open
			CC Valve, closed
			Non Return Valve
			Pressure Management Valve
			OMS Valve
			Stop Tap
			Flow Meter
			Domestic Meter
			Commercial Meter
			Pump
			Hydrant
			Fire Hydrant
			Anode
			Chlorination Point
			De-chlorination Point
			Strainer Point
			Access Point
			Hatch Box
			IP Point
			Sampling Station
			Logger Box
			Bore Hole
			Inlet Point
			Bulk Supply Point
			End Cap
			Site Termination
			Change of Characteristic
			Condition Report
			<u>Property Types</u>
			Water Tower
			Valve House
			Booster Pumping Station
			Intake Pumping Station
			Water Treatment Works
			Supply Reservoir
			Service Reservoir
			Impounding Reservoir
			Pipe Bridge

Symbology for proposed assets is the same as above, but shown in **green**
Symbology for abandoned assets is the same as above, but shown in **black**



WATER MAIN RECORDS

Address or Site Reference

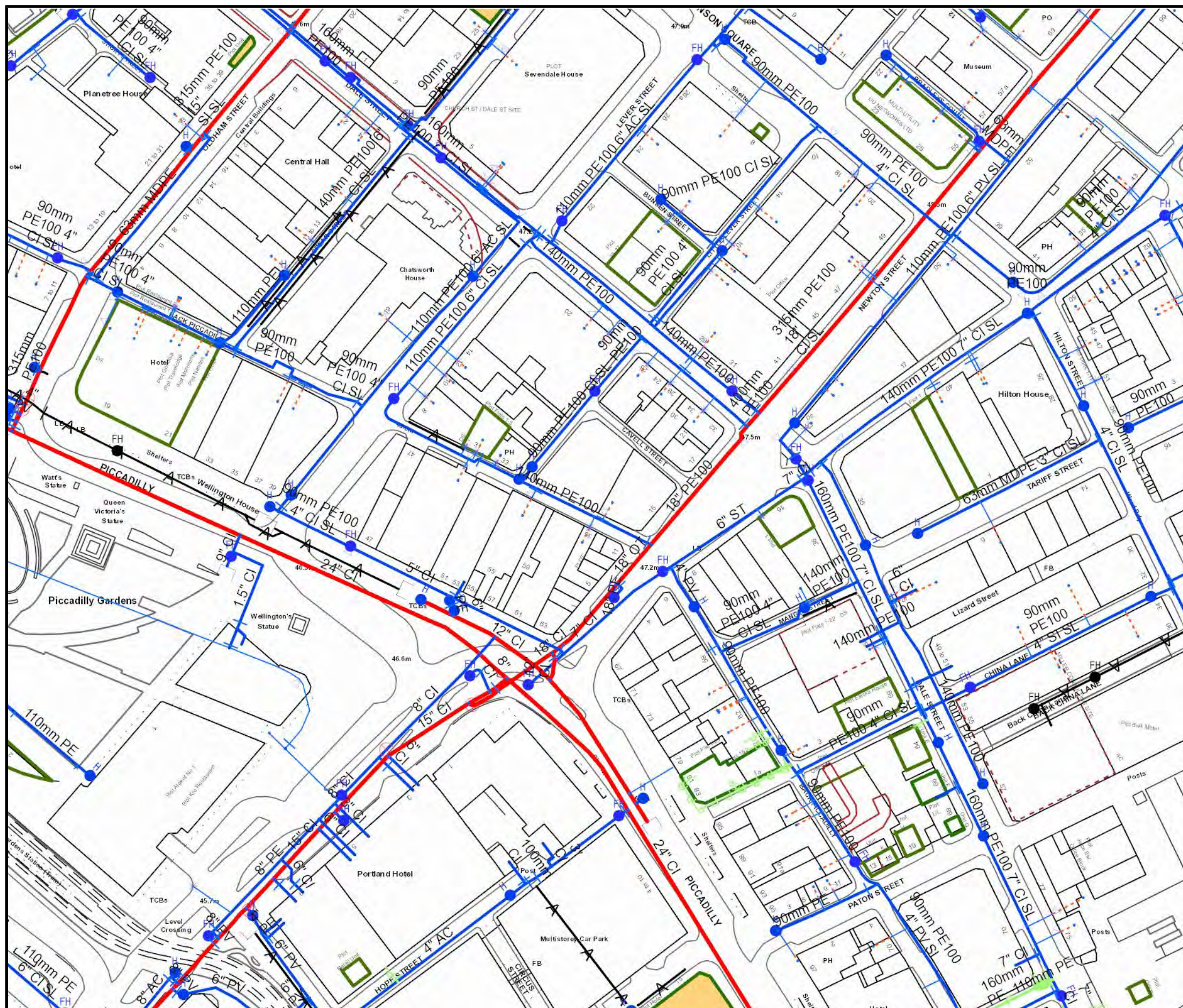
C7296 Gardens Hotel 55 Piccadilly,
Manchester,
M1 2AP

Scale: 1:1250
Date: 25/09/2018

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John Ward

From: Mura, Marie <Marie.Mura@uuplc.co.uk>
Sent: 30 September 2019 11:00
To: Rob Barker
Cc: Wastewater Developer Services
Subject: FW: Wastewater Pre-development Enquiry 43-47 Piccadilly Gardens M1 2AP 4200028170
Attachments: 7973h---wastewater-pre-development-enquiry-2018-web-acc2.pdf; 2074_PA_SP_01.pdf; 2074_PA_SP_02.pdf; 2074_GA_00.pdf; 2074_GA_01.pdf

Dear Rob,

Our reference for this pre-development enquiry: 4200028170

We have carried out an assessment of your application which is based on the information provided; this pre development advice will be valid for 12 months

Foul

Foul will be allowed to drain to the public combined sewer network at an unrestricted rate, and at any convenient point.

Surface Water

In order to follow the drainage hierarchy outlined in Building Regulations part H3 and National Planning Practice Guidance (NPPG), surface water should be drained via infiltration systems/soakaways wherever possible. However having reviewed your plans we believe due to insufficient space we believe a soakaway would not be a viable option therefore we are willing to allow a connection to the combined sewer with a maximum pass forward flow rate of 5 l/s.

General Information:

Please be aware that on site drainage must be designed in accordance with Building Regulations, National Planning Policy, and local flood authority guidelines, we would recommend that you speak and make suitable agreements with the relevant statutory bodies.

Connection Application

Although we may discuss and agree discharge points & rates in principle, please be aware that you will have to apply for a formal sewer connection. This is so that we can assess the method of construction, Health & Safety requirements and to ultimately inspect the connection when it is made. Details of the application process and the form itself can be obtained from our website by following the link below

<http://www.unitedutilities.com/connecting-public-sewer.aspx>

Sewer Adoption Agreement

You may wish to offer the proposed new sewers for adoption. United Utilities assess adoption application based on Sewers adoption 6th Edition and for any pumping stations our company addenda document. Please refer to link below to obtain further guidance and application pack:

<http://www.unitedutilities.com/sewer-adoption.aspx>

Please note, if you intend to put forward your wastewater assets for adoption by United Utilities, the proposed detail design will be subject to a technical appraisal by an Adoption Engineer as we need to be sure that the proposals meets the requirements of Sewers for adoption and United Utilities Asset Standards. The proposed design should give consideration to long term operability and give United Utilities a cost effective proposal for the life of the assets. Therefore, further to this enquiry should you wish to progress a Section 104 agreement, we strongly recommend that no construction commences until the detailed drainage design, submitted as part of the Section 104 agreement, has been assessed and accepted in writing by United Utilities. Any works carried out prior to the technical assessment being approved is done entirely at the developers own risk and could be subject to change.

Kind regards,

Marie Mura

Assistant Developer Engineer
Developer Services & Metering
Customer Services
United Utilities
Ext: 01925 537745 **Int:** 37745
unitedutilities.com

From: Rob Barker [<mailto:Rob.Barker@crouchwaterfall.co.uk>]
Sent: 17 September 2019 17:32
To: Wastewater Developer Services <WastewaterDeveloperServices@uuplc.co.uk>
Subject: Wastewater Pre-development Enquiry

Please find attached wastewater pre-development enquiry form and associated drawings for a new hotel in Manchester.

Please contact me if you need further information.

Regards,

Rob Barker

MEng CEng MICE
Associate
rob.barker@crouchwaterfall.co.uk



Crouch Waterfall

Suite 5.01
Network House
Basing View
Basingstoke
RG21 4HG

Mob: 07967 631737

Tel: 01256 479203 / 01483 425314

www.crouchwaterfall.co.uk

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Registered Office: 15 Apex Court, Woodlands, Bradley Stoke, Bristol, BS32 4JT



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EMGateway3.uuplc.co.uk made the following annotations

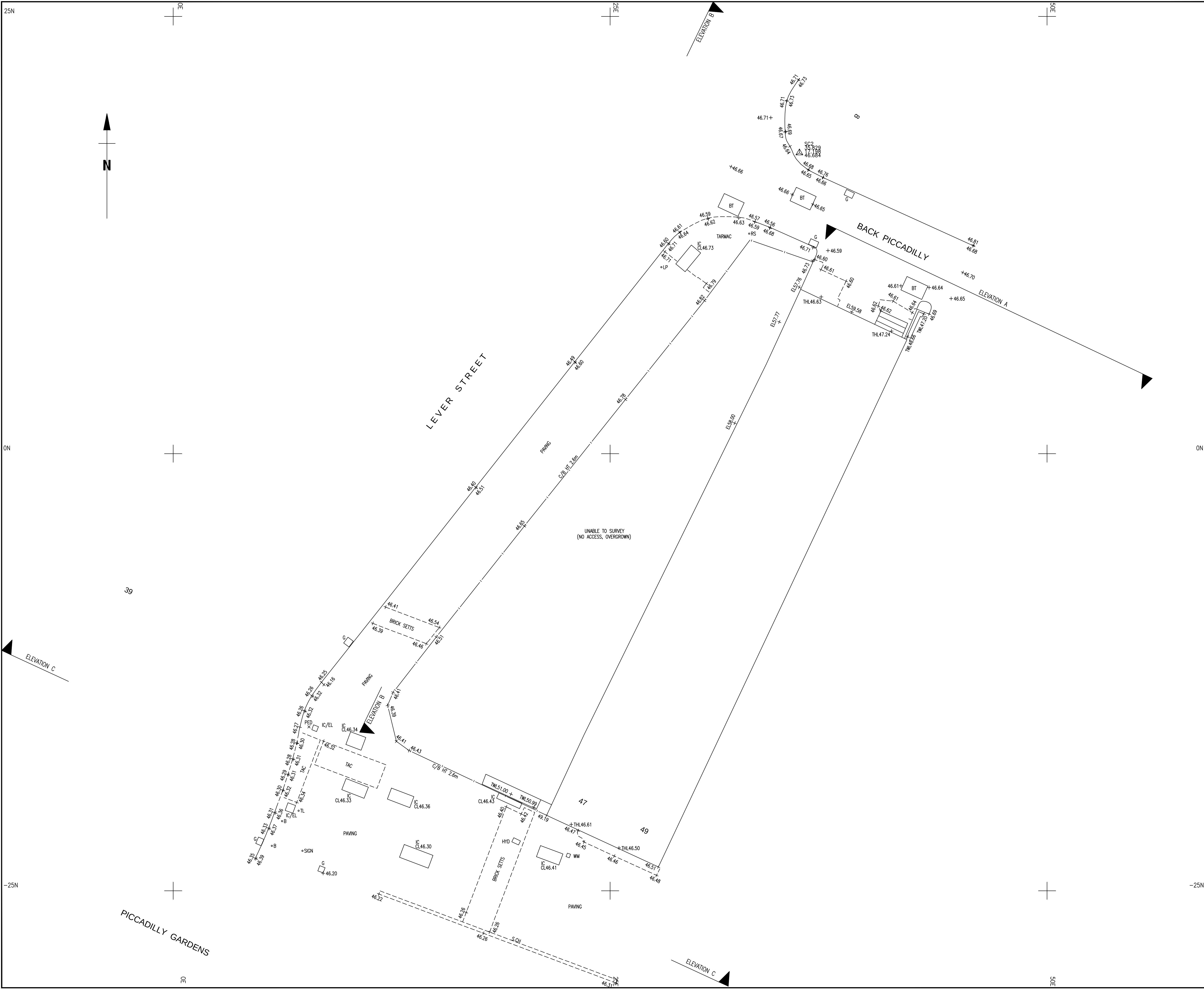
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PROJECT TITLE: 43-47 Piccadilly New Hotel	
DOCUMENT TITLE: Drainage Strategy	02 December 2020

Appendix C – Topographical Survey



Survey Notes

Grid: Local plane metric

Levels: Related to OSBM 47.832m

Located on No 22 Lever Street

Notes

Topographical Survey Legend

BUILDINGS AND WALLS	GENERAL INFORMATION
Building	Petrol Pump
Open	Basement Light
Run	Footbridge
Passage	Drain Type Channel
Wall with Height	Slit Type Channel
Retaining Wall	Grate Type Channel
	Tactile Paving
	Cross Barrier
	Column
	Stanchion
	Car Vacuum
	Offset
	Air Valve
	Chimney
	Telephone Call Box

FENCE STYLES AND DESCRIPTIONS	OVERHEAD FEATURES
Close Boarded	Electricity Pylon
Corrugated Iron	Electricity
Concrete Panel	Telephone
Chainlink	
Handrail	
Iron Bollards	
Lattice	
Miscellaneous	
Post & Chain	
Post & Rail	
Post & Wire	
Post & Barbed Wire	
Wire mesh	
Sole	
Gate	
Fence line style	

ROADS	WATER FEATURES
Kerbs	Canal
Edge of Surfacing	Stream
Pedestrian Crossing	Ditch
Track	Weir
Footpath	Culvert
	Grip (Land Drain)
	Spring

STREET FURNITURE	RELIEF AND VEGETATION
Belted Beacon	Hedge
Bus Stop	Edge of wood/Bushes
Barriers	Stump
Car Eye	Individual Tree
Coal Chute	Slopes with Height Greater than 1m
Closed Circuit TV	Cliff Face
Drain	Marsh
Flag Staff	Reeds
Flood Light	
Lamp Post	
Letter Box	
Name Plate (street)	
Mourning Ring	
Mail Post or Mooring Post	
Service Marker	
Mail Stone	
Post	
Parking Meter	
Reflector Post	
Road Sign	
Road Sign	
Speed Camera	
Information Sign	
Stop	
Traffic Light	
Telegraph Pole	
Traffic Light Push Button Post	
Traffic Light Control	
Control Box	
British Telecom Box	
Electricity Box	
Gas Box	

INSPECTION CHAMBERS AND PIPES	LEVEL AND HEIGHT INFORMATION
Inspection Cover	Standard Spot Height
Inspection Cover (Duct)	Precision Spot Height
Manhole	Bed Level
British Telecom Cover	Weir Level
Inspection Cover (Comms)	Soffit Level
Cable TV	Threshold Level
Inspection Cover Traffic Signals	Cover Level
Gully	Invert Level
Kerbs Outlet	Pipe Soffit Level
Vent Pipe	Window Sill Level
Down Pipe	Finished Floor Level
Rain Water Pipe	Springing Level
Soil Pipe	Eave Level
Gas Pipe	Ridge Level
Unable to lift cover	Roof Hip Level
UTL	Flat Roof Level
Slope Top	Top of Canopy Level
Slope Valve	Window Head Level
Lamp Pole	Springing Level
Grate	Ach Level
Gas Valve	Cable Level
Water Meter	Top of Wall Level
Washout	Underneath of Beam Level
Road Sign	General Height

SURVEY INFORMATION SIGNS	GEOTECHNICAL INFORMATION
Permanent Ground Marker	Borehole
O.S. Trip Station	Test Pit
O.S. Bench Mark	Monitor Pin
	Probe Hole
	Window Sample

Rev.	Date	Description

Chartered Land Surveyors

65 Cross Street, Sale, Manchester

M33 7HF, Tel: 0161 905 1265

www.malcolmthughes.co.uk

survey@mthls.co.uk

Accreditations

RICS

ICES

THE SURVEY ASSOCIATION

FS 14126

UKAS

Client

DAKOTA HOUSE OF DESIGN LTD

THE COACH HOUSE, 1A CLAYTON ROAD, JESMOND

NEWCASTLE UPON TYNE, NE2 4RP

Project

43, 45 & 47 PICCADILLY GARDENS

MANCHESTER

M1 2AP

Drawing Title

TOPOGRAPHICAL SURVEY

Drawn By

AS

22/07/13

Checked by

BM

22/07/13

Survey Date

July 2013

Scale

1 : 100

Drawing No

15547/1

Revision

PROJECT TITLE: 43-47 Piccadilly New Hotel	
DOCUMENT TITLE: Drainage Strategy	02 December 2020

Appendix D – Geotechnical Report

Refer to GeoAssist Limited Report No. 5902/PIX Jan 2018.

PROJECT TITLE: 43-47 Piccadilly New Hotel	
DOCUMENT TITLE: Drainage Strategy	02 December 2020

Appendix E – Correspondence with Manchester City Council

John Ward

From: e.ainsworth@manchester.gov.uk on behalf of floodriskmanagement@manchester.gov.uk
Sent: 30 April 2020 16:12
To: John Ward
Subject: Re: ONLINE CONTACT FORM (PLANNING): Other (please say what below)
Attachments: Manchester City Council - SuDS Requirement for Developers.pdf

Hi John,

We confirm that a FRA is not required but a Surface Water Drainage Strategy should be submitted as part of the planning application. Our SuDS Guidance for Developers is attached for reference.

Kind regards

Flood Risk Management
Highways Service, Growth and Neighbourhoods Directorate
Manchester City Council
Tel: 0161 219 6295
Email: floodriskmanagement@manchester.gov.uk
Web: <http://www.manchester.gov.uk/>

POSTAL ADDRESS: Manchester City Council, Public Realm, The Neighbourhood Service, PO Box 532, Town Hall, Manchester M60 2LA

From: Angela Leckie <a.leckie@manchester.gov.uk>
To: John Ward <JohnWard@crouchwaterfall.co.uk>, floodriskmanagement@manchester.gov.uk,
Date: 21/04/2020 08:56
Subject: Re: ONLINE CONTACT FORM (PLANNING): Other (please say what below)

Hi Zorica

See e-mail trail below. Can you please advise John what your requirements are on a site of this size in this location. I think we are in flood zone 1.

Regards

Angela

Angela Leckie
Senior Planner
City Centre Team

Tel (External) 0161 234 4651
Tel (Internal) 80034651
email a.leckie@manchester.gov.uk
www.manchester.gov.uk

I am currently working from home if you need me to contact you please drop me an e-mail and I will call

you.

I am available to dial into pre -arranged meetings via Zoom.

Postal Address
Angela Leckie
City Centre Team
Planning
Growth and Development
Manchester City Council
Floor 6 Town Hall Extension
Albert Square
P.O Box 532,
Manchester, M60 2LA

On Tue, 21 Apr 2020 at 08:50, John Ward <JohnWard@crouchwaterfall.co.uk> wrote:
Morning Angela,

Thank you for your reply that's really helpful and gratefully appreciated. I would just like to clarify one thing in relation to the requirement of undertaking a FRA. Our site has a gross area of circa 500m², based on your email below it is my understanding that a Flood Risk Assessment will not be required as part of the planning application. I would be grateful if you can advise accordingly, by way of reply.

Regarding communication with the Water Authority, yes a pre development enquired has been undertaken to reach an agreement in principle regarding a permitted discharge rate to the existing public sewers.

Kind Regards

John

John Ward

BEng GMICE

Senior Engineer

	Crouch Waterfall	
	Suite 5.01 Network House Basing View Basingstoke RG21 4HG www.crouchwaterfall.co.uk	

Registered in England and Wales No: 4705546

Registered Office: 15 Apex Court, Woodlands, Bradley Stoke, Bristol, BS32 4JT



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From: Angela Leckie <a.leckie@manchester.gov.uk>

Sent: 16 April 2020 13:25

To: John Ward <JohnWard@crouchwaterfall.co.uk>

Subject: Re: ONLINE CONTACT FORM (PLANNING): Other (please say what below)

Hi John

See below our Validation requirements and Guidance. The site is in a Critical Drainage Area

Flood Risk

Under the requirements of section 14 of the National Planning Policy Framework, if the application site is either located within a designated Flood Zone or is over 1 hectare in size, you will need to provide a Flood Risk Assessment. In Critical Drainage Areas, Flood Risk Assessment need to be provided for sites over 0.5 hectare in size.

Have you considered the impact of development upon foul sewerage and utilities?

SUDs Strategy

MCC encourages use of green types of sustainable drainage systems as part of the green infrastructure on site. SuDS (infiltration or attenuation) should be considered in the context of the SuDs Hierarchy and reasons for not utilising them needs to be provided if alternative solutions are proposed. Surface water drainage works need to be designed in accordance with Non-Statutory Technical Standards for Sustainable Drainage Systems (March 2015) or any subsequent replacement national standards should be submitted to ensure proper drainage and to manage the risk of flooding and pollution. (Core Strategy Policy EN14, EN17, NPPF).

We would be particularly keen to look at the possibilities for Green / Blue Roof or Bio-solar roof attenuation as a starting point for consideration.

Hope this helps

Regards

Angela

Angela Leckie

Senior Planner

City Centre Team

Tel (External) 0161 234 4651

Tel (Internal) 80034651

email a.leckie@manchester.gov.uk

www.manchester.gov.uk

I am currently working from home if you need me to contact you please drop me an e-mail and I will call you.

I am available to dial into pre -arranged meetings via Zoom.

Postal Address

Angela Leckie

City Centre Team

Planning

Growth and Development

Manchester City Council

Floor 6 Town Hall Extension

Albert Square

P.O Box 532,

Manchester, M60 2LA

On Thu, 16 Apr 2020 at 13:16, John Ward <JohnWard@crouchwaterfall.co.uk> wrote:

Afternoon Angela,

Thankyou for getting back to me the address for the site is 43-47 Piccadilly Gardens, Manchester, M1 2AP.

Kind Regards

John

John Ward

BEng GMICE

Senior Engineer

JohnWard@CrouchWaterfall.co.uk

	Crouch Waterfall	
	Suite 5.01	
	Network House	
	Basing View	
	Basingstoke	
	RG21 4HG	
	www.crouchwaterfall.co.uk	

Registered in England and Wales No: 4705546

Registered Office: 15 Apex Court, Woodlands, Bradley Stoke, Bristol, BS32 4JT



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From: Angela Leckie <a.leckie@manchester.gov.uk>

Sent: 16 April 2020 07:58

To: John Ward <JohnWard@crouchwaterfall.co.uk>

Cc: Anthony Mitchell <a.mitchell@manchester.gov.uk>; Lucy Harrison <l.harrison1@manchester.gov.uk>; David Brettell <d.brettell@manchester.gov.uk>; Emily Booth <e.booth@manchester.gov.uk>; Carolyn

Parry <c.parry@manchester.gov.uk>

Subject: Re: ONLINE CONTACT FORM (PLANNING): Other (please say what below)

Hi John

Can we have an address for the site / property please so that we can identify the right officer to deal with this.

Regards

Angela

Angela Leckie

Senior Planner

City Centre Team

Tel (External) 0161 234 4651

Tel (Internal) 80034651

email a.leckie@manchester.gov.uk

www.manchester.gov.uk

I am currently working from home if you need me to contact you please drop me an e-mail and I will call you.

I am available to dial into pre -arranged meetings via Zoom.

Postal Address

Angela Leckie

City Centre Team

Planning

Growth and Development

Manchester City Council

Floor 6 Town Hall Extension

Albert Square

P.O Box 532,

Manchester, M60 2LA

On Thu, 16 Apr 2020 at 07:32, Planning MCC <planning@manchester.gov.uk> wrote:
An enquiry below please

Thanks

Technical Support Team (Planning)

Planning, Building Control & Licensing

Growth & Development Directorate

Postal address: Manchester City Council, P O Box 532, Town Hall, Manchester M60 2LA

Location address: Level 6 Town Hall Extension, Manchester M2 5DB

Tel: 0161 234 4516

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----- Forwarded message -----

From: <planning@manchester.gov.uk>

Date: Wed, 15 Apr 2020 at 16:59

Subject: ONLINE CONTACT FORM (PLANNING): Other (please say what below)

To: <planning@manchester.gov.uk>

Please reply to: JohnWard@crouchwaterfall.co.uk

Question	Response
<i>First name:</i>	John
<i>Surname:</i>	Ward
<i>Email address:</i>	JohnWard@crouchwaterfall.co.uk
<i>House or flat number or building name:</i>	
<i>Street:</i>	Suite 5.01
<i>Area:</i>	Basingstoke
<i>Postcode:</i>	RG21 4HJ
<i>What do you want to contact us about? :</i>	Other (please say what below)
<i>Put your question, or tell us what you were looking for or trying to do.:</i>	Afternoon I am currently producing a drainage strategy for a development just off Piccadilly Gardens. I was wondering if Manchester City Council had and specific policies or guidance for developers in relation to drainage designs. Kind Regards, John.

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Appendix F – Crouch Waterfall Drainage Calculations

Greenfield runoff rate estimation for sites

www.uksuds.com | Greenfield runoff tool

Calculated by:

Site name:

Site location:

This is an estimation of the greenfield runoff rates that are used to meet normal best practice criteria in line with Environment Agency guidance "Rainfall runoff management for developments", SC030219 (2013), the SuDS Manual C753 (Ciria, 2015) and the non-statutory standards for SuDS (Defra, 2015). This information on greenfield runoff rates may be the basis for setting consents for the drainage of surface water runoff from sites.

Site Details

Latitude:

Longitude:

Reference:

Date:

Runoff estimation approach

FEH Statistical

Site characteristics

Total site area (ha):

Methodology

Q_{MED} estimation method:

BFI and SPR method:

HOST class:

BFI / BFIHOST:

Q_{MED} (l/s):

Q_{BAR} / Q_{MED} factor:

Notes

(1) Is $Q_{BAR} < 2.0$ l/s/ha?

When Q_{BAR} is < 2.0 l/s/ha then limiting discharge rates are set at 2.0 l/s/ha.

(2) Are flow rates < 5.0 l/s?

Where flow rates are less than 5.0 l/s consent for discharge is usually set at 5.0 l/s if blockage from vegetation and other materials is possible. Lower consent flow rates may be set where the blockage risk is addressed by using appropriate drainage elements.

(3) Is $SPR/SPRHOST \leq 0.3$?

Where groundwater levels are low enough the use of soakaways to avoid discharge offsite would normally be preferred for disposal of surface water runoff.

Hydrological characteristics

	Default	Edited
SAAR (mm):	891	893
Hydrological region:	10	10
Growth curve factor 1 year:	0.87	0.87
Growth curve factor 30 years:	1.7	1.7
Growth curve factor 100 years:	2.08	2.08
Growth curve factor 200 years:	2.37	2.37

Greenfield runoff rates

	Default	Edited
Q_{BAR} (l/s):		8.42
1 in 1 year (l/s):		7.33
1 in 30 years (l/s):		14.32
1 in 100 year (l/s):		17.52
1 in 200 years (l/s):		19.96

This report was produced using the greenfield runoff tool developed by HR Wallingford and available at www.uksuds.com. The use of this tool is subject to the UK SuDS terms and conditions and licence agreement, which can both be found at www.uksuds.com/terms-and-conditions.htm. The outputs from this tool are estimates of greenfield runoff rates. The use of these results is the responsibility of the users of this tool. No liability will be accepted by HR Wallingford, the Environment Agency, CEH, Hydrosolutions or any other organisation for the use of this data in the design or operational characteristics of any drainage scheme.

Calculation Sheet

CROUCH
WATERFALL

Project Title

43-47 PICCADILLY
NEW HOTEL
MANCHESTER

Job No

19-256

By

J. WARD

Date

7/8/20

Checked

Date

Page

01

of

1

References

Results

MODIFIED RATIONAL METHOD

$$Q = 2.78 \times C \times i \times A$$

where

Q = Design exit peak rate of runoff (l/s)

C = non-dimensional runoff coefficient which is dependent on catchment characteristics.

i = rainfall intensity

A = total catchment area being drained (ha).

C = ASSUMED TO BE 1

i = 50 mm/hr IN ACCORDANCE WITH BUILDING REGULATIONS PART H.

A = 0.05 HA

$$Q = 2.78 \times C \times i \times A$$

$$Q = 2.78 \times 1 \times 50 \times 0.05 \text{ HA}$$

$$Q = 6.95 \text{ l/s}$$

Crouch Waterfall		Page 1
15 Apex Court Woodland, Bradley Stoke Bristol, BS32 4JT	19256G- Piccadilly Gardens SW Attenuation Tank Solution	
Date 05/08/2020 13:50 File 19256G-MDSC-500-P01.SRCX	Designed by JohnWard Checked by	
Innovyze	Source Control 2020.1	

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

Storm Event	Max Level (m)	Max Depth (m)	Max Control (l/s)	Max Volume (m³)	Status
15 min Summer	98.005	1.005	3.5	10.9	O K
30 min Summer	98.146	1.146	3.5	12.9	O K
60 min Summer	98.184	1.184	3.5	13.5	O K
120 min Summer	98.089	1.089	3.5	12.1	O K
180 min Summer	97.980	0.980	3.5	10.6	O K
240 min Summer	97.868	0.868	3.5	9.0	O K
360 min Summer	97.655	0.655	3.5	6.1	O K
480 min Summer	97.473	0.473	3.5	3.9	O K
600 min Summer	97.329	0.329	3.5	2.4	O K
720 min Summer	97.231	0.231	3.5	1.4	O K
960 min Summer	97.173	0.173	3.0	1.0	O K
1440 min Summer	97.126	0.126	2.2	0.6	O K
2160 min Summer	97.091	0.091	1.6	0.4	O K
2880 min Summer	97.073	0.073	1.3	0.3	O K
4320 min Summer	97.053	0.053	0.9	0.2	O K
5760 min Summer	97.043	0.043	0.8	0.1	O K
7200 min Summer	97.037	0.037	0.6	0.1	O K
8640 min Summer	97.032	0.032	0.6	0.1	O K
10080 min Summer	97.029	0.029	0.5	0.1	O K
15 min Winter	98.119	1.119	3.5	12.6	O K
30 min Winter	98.296	1.296	3.5	15.1	O K
60 min Winter	98.343	1.343	3.5	15.8	O K
120 min Winter	98.200	1.200	3.5	13.7	O K
180 min Winter	98.027	1.027	3.5	11.2	O K
240 min Winter	97.851	0.851	3.5	8.8	O K
360 min Winter	97.524	0.524	3.5	4.5	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
15 min Summer	148.126	0.0	13.9	17
30 min Summer	98.872	0.0	18.5	30
60 min Summer	62.959	0.0	23.6	48
120 min Summer	37.779	0.0	28.3	82
180 min Summer	27.856	0.0	31.3	114
240 min Summer	22.379	0.0	33.6	148
360 min Summer	16.365	0.0	36.8	210
480 min Summer	13.060	0.0	39.2	266
600 min Summer	10.945	0.0	41.0	322
720 min Summer	9.465	0.0	42.6	374
960 min Summer	7.515	0.0	45.1	490
1440 min Summer	5.419	0.0	48.8	734
2160 min Summer	3.912	0.0	52.8	1100
2880 min Summer	3.115	0.0	56.1	1468
4320 min Summer	2.276	0.0	61.5	2192
5760 min Summer	1.834	0.0	66.0	2912
7200 min Summer	1.559	0.0	70.2	3648
8640 min Summer	1.371	0.0	74.0	4248
10080 min Summer	1.234	0.0	77.7	5096
15 min Winter	148.126	0.0	15.6	17
30 min Winter	98.872	0.0	20.8	30
60 min Winter	62.959	0.0	26.4	50
120 min Winter	37.779	0.0	31.7	88
180 min Winter	27.856	0.0	35.1	124
240 min Winter	22.379	0.0	37.6	158
360 min Winter	16.365	0.0	41.2	218

Crouch Waterfall		Page 2
15 Apex Court Woodland, Bradley Stoke Bristol, BS32 4JT	19256G- Piccadilly Gardens SW Attenuation Tank Solution	
Date 05/08/2020 13:50 File 19256G-MDSC-500-P01.SRCX	Designed by JohnWard Checked by	
Innovyze	Source Control 2020.1	

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

Storm Event	Max Level (m)	Max Depth (m)	Max Control (l/s)	Max Volume (m ³)	Status
480 min Winter	97.264	0.264	3.5	1.7	O K
600 min Winter	97.183	0.183	3.2	1.0	O K
720 min Winter	97.159	0.159	2.8	0.8	O K
960 min Winter	97.127	0.127	2.2	0.6	O K
1440 min Winter	97.091	0.091	1.6	0.4	O K
2160 min Winter	97.066	0.066	1.2	0.2	O K
2880 min Winter	97.053	0.053	0.9	0.2	O K
4320 min Winter	97.039	0.039	0.7	0.1	O K
5760 min Winter	97.031	0.031	0.5	0.1	O K
7200 min Winter	97.027	0.027	0.5	0.1	O K
8640 min Winter	97.023	0.023	0.4	0.1	O K
10080 min Winter	97.021	0.021	0.4	0.1	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m ³)	Discharge Volume (m ³)	Time-Peak (mins)
480 min Winter	13.060	0.0	43.9	266
600 min Winter	10.945	0.0	46.0	308
720 min Winter	9.465	0.0	47.7	368
960 min Winter	7.515	0.0	50.5	488
1440 min Winter	5.419	0.0	54.6	734
2160 min Winter	3.912	0.0	59.2	1096
2880 min Winter	3.115	0.0	62.8	1464
4320 min Winter	2.276	0.0	68.8	2144
5760 min Winter	1.834	0.0	73.9	2864
7200 min Winter	1.559	0.0	78.6	3656
8640 min Winter	1.371	0.0	82.9	4320
10080 min Winter	1.234	0.0	87.1	5008

Crouch Waterfall		Page 3
15 Apex Court Woodland, Bradley Stoke Bristol, BS32 4JT	19256G- Piccadilly Gardens SW Attenuation Tank Solution	
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Innovyze	Source Control 2020.1	

Rainfall Details

Rainfall Model	FEH	Winter Storms	Yes
Return Period (years)	100	Cv (Summer)	0.750
FEH Rainfall Version	2013	Cv (Winter)	0.840
Site Location	GB 384471 398301 SJ 84471 98301	Shortest Storm (mins)	15
Data Type	Point	Longest Storm (mins)	10080
Summer Storms	Yes	Climate Change %	+40

Time Area Diagram

Total Area (ha) 0.050

Time (mins)	Area
From: To:	(ha)

0	4	0.050
---	---	-------

Model Details

Storage is Online Cover Level (m) 100.000

Pipe Structure

Diameter (m) 2.600 Slope (1:X) 1000.000 Length (m) 5.250 Invert Level (m) 97.000

Pump Outflow Control

Invert Level (m) 97.000

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.200	3.5000	1.400	3.5000	2.600	3.5000	3.800	0.0000	5.000	0.0000
0.400	3.5000	1.600	3.5000	2.800	3.5000	4.000	0.0000	5.200	0.0000
0.600	3.5000	1.800	3.5000	3.000	3.5000	4.200	0.0000	5.400	0.0000
0.800	3.5000	2.000	3.5000	3.200	0.0000	4.400	0.0000	5.600	0.0000
1.000	3.5000	2.200	3.5000	3.400	0.0000	4.600	0.0000	5.800	0.0000
1.200	3.5000	2.400	3.5000	3.600	0.0000	4.800	0.0000	6.000	0.0000

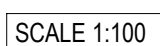


PROJECT TITLE: 43-47 Piccadilly New Hotel

DOCUMENT TITLE: Drainage Strategy

02 December 2020

Appendix G – Crouch Waterfall Drawings



Suite 5.01
Network House
Basing View
Basingstoke
RG21 4HG

Tel 01256 479203
Basingstoke@crouchwaterfall.co.uk

**CROUCH
WATERFALL**

CLIENT _____

PROJECT TITLE

DRAWING TITLE

DRAWN JW	CHK RB	APP MB	DATE AUGUST 2020	SCALE AS SHOWN AT A1
JOB NUMBER 19-256		DRAWING NUMBER 500		REVISION P03

PROJECT TITLE: 43-47 Piccadilly New Hotel	
DOCUMENT TITLE: Drainage Strategy	02 December 2020