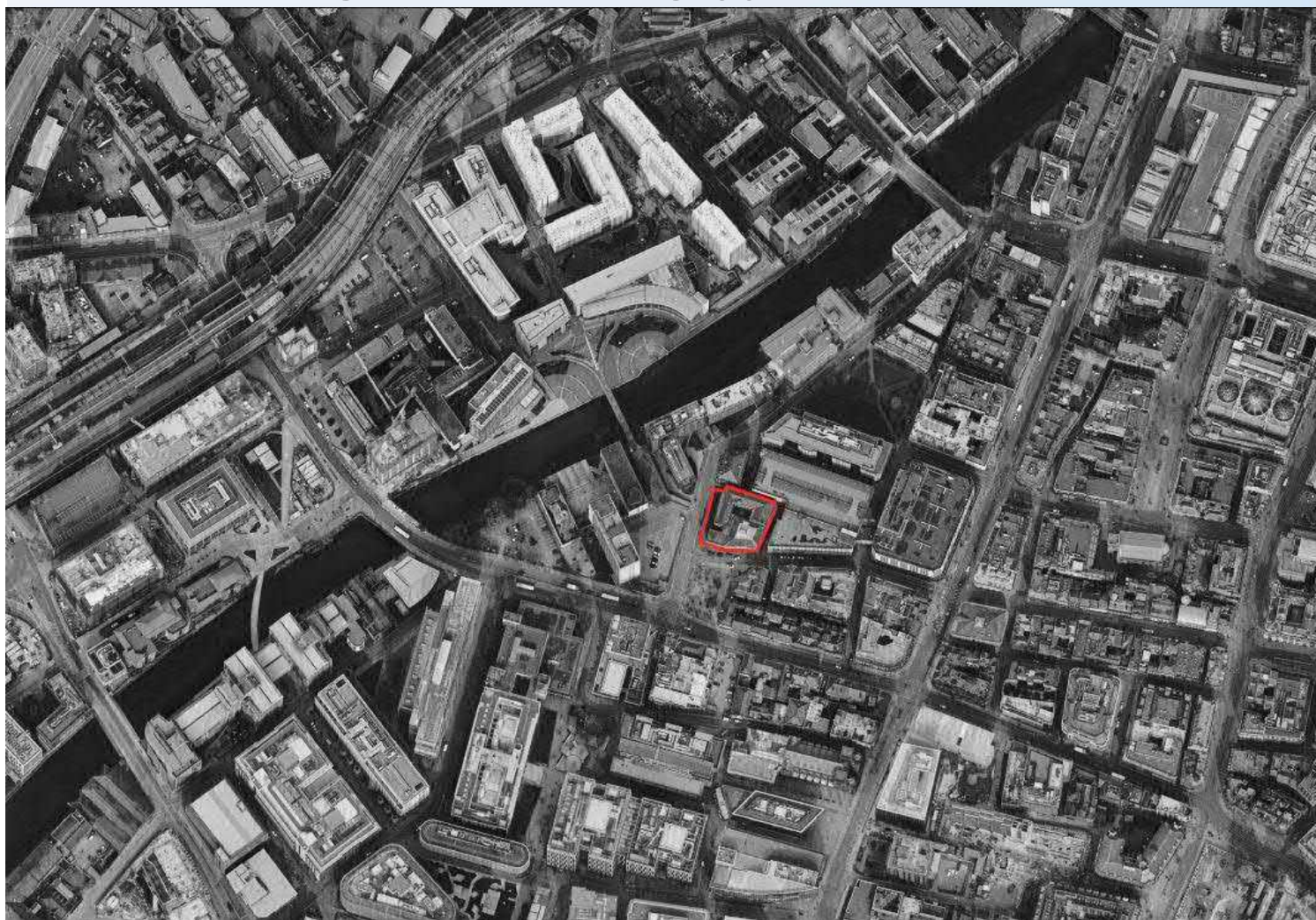




27-33 KING STREET WEST & THE
CARRIAGE WORKS, MANCHESTER

FLOOD RISK ASSESSMENT AND OUTLINE DRAINAGE STRATEGY

RDH-WSP-XX-XX-RP-C-001





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FRA (REV P03) PUBLIC

PROJECT NO. 70093869

OUR REF. NO. RDH-WSP-XX-XX-RP-C-001

DATE: NOVEMBER 2022

27-33 KING STREET WEST & THE CARRIAGE WORKS, MANCHESTER

FLOOD RISK ASSESSMENT AND OUTLINE DRAINAGE STRATEGY

RDH-WSP-XX-XX-RP-C-001

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EXECUTIVE SUMMARY

WSP has been commissioned by Property Alliance Group to undertake this Flood Risk Assessment (FRA) and Outline Drainage Strategy (ODS) to accompany the Full Planning Application and Listed Building Consent for the development named '27-33 King Street West and The Carriage Works' (hereafter referred to as the 'Proposed Development') located at Land bound by King Street West, St Mary's Parsonage, Garden Lane and Smithy Lane, M3 2JP (hereafter referred to as the 'Site'). This report relates solely to the above Site.

The proposed development is comprised of the erection of 14 storey building and the refurbishment of the existing buildings at 3 Smithy Lane and Carriage Works on Garden Lane / St Mary's Parsonage with ground flood extension to comprise office accommodation (Class E) with front of house and commercial floorspace at ground flood (Class E) with associated landscaping and other works following demolition of existing buildings at 27-29 King Street West and 31-33 King Street West and link bridge from Carriage Works on Garden Lane / St Mary's Parsonage to 3 St Mary's Parsonage.

This report has been written in due cognisance of the National Planning Policy Framework (NPPF) and Manchester, Salford and Trafford Strategic Flood Risk Assessment as well as other relevant local and national planning policy and guidance documents.

The Environment Agency's Flood Map for Planning indicates that the Site is wholly located within Flood Zone 1 and therefore has a low risk of flooding from rivers or the sea. Risk of flooding from other sources has also been considered, with flooding from surface water, sewers or groundwater presenting possible flood risk.

A range of flood risk mitigation measures have been proposed including raising ground levels to fall away buildings and new drainage to reduce the risk of flooding from surface water and sewer. Due to the risk of groundwater flooding, any proposed basements will be required to provide the necessary degree of watertightness.

The hierarchy of drainage options has been considered in line with local and national policy. It is likely not feasible to dispose of surface water to soakaways. United Utilities recognised during consultation that the Site is not located in proximity to a watercourse, surface water or highway drain and will therefore consider a connection to the public combined sewer in Garden Lane, north of the Site, to retain the site's existing method of disposal.

The existing drainage catchments have been identified and existing peak runoff rates calculated using the Modified Rational Method. Manchester City Council, acting as the Lead Local Flood Authority, advised that a 50% reduction from brownfield peak runoff rates is expected for both proposed and existing buildings where below ground works are required.

It is proposed that two existing roof catchments continue to discharge at an unrestricted rate to their respective public combined sewers. Other regenerated building drainage catchments where below ground works are required have been identified. Here surface water will be directed to drainage combined with the proposed buildings and attenuation designed to provide the 50% reduction in peak runoff, to a total of 8.45 l/s, before discharge.

The provision of Sustainable Drainage Systems (SuDS) has been considered and surface water runoff generated from the buildings will be drained to a reinforced concrete tank located in the basement. Discharge from the tank will be pumped to ultimately connect to the existing public combined sewer. Opportunities to incorporate green and blue roof systems, allowing a reduction in tank footprint within the basement can be considered at the site.

MicroDrainage has been used to calculate the required amount of storage for each SuDS strategy to accommodate the 1 in 100 year plus 45% climate change storm event. It demonstrates that surface water can be contained with the site safely, without causing a risk of flooding to the property or elsewhere in the catchment.

In respect to foul water, United Utilities have confirmed that foul drainage from the proposed development can be discharged to the public sewer in Garden Lane at an unrestricted discharge rate. An assessment of the anticipated peak foul flow from the Site has been calculated as 16.0 l/s, using the probability / discharge unit method outlined in EN 12056-2:2000.

A Drainage Maintenance and Management Strategy has been produced by WSP to ensure that all components of the drainage system can be maintained for the design life of the development. It is expected that the maintenance for the development will be under the management of the Developer.

This Flood Risk Assessment and Outline Drainage Strategy has concluded that the development is appropriate, can be occupied safely and has no negative offsite effects in regard to flooding, subject to the implementation of the flood risk mitigation and management recommendations being carried out.

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1. INTRODUCTION

1.1. APPOINTMENT AND BRIEF

- 1.1.1. WSP has been commissioned by Property Alliance Group to undertake this Flood Risk Assessment (FRA) and Outline Drainage Strategy (ODS) to accompany the Full Planning Application and Listed Building Consent for the development named '27-33 King Street West and The Carriage Works' (hereafter referred to as the 'Proposed Development') located at Land bound by King Street West, St Mary's Parsonage, Garden Lane and Smithy Lane, M3 2JP (hereafter referred to as the 'Site'). This report relates solely to the above Site.
- 1.1.2. This report is intended for the sole benefit of the parties named above and shall not be capable of assignment. WSP shall not be liable for any use of the report for any reasons other than that for which the report was originally prepared and provided.
- 1.1.3. Although this report was prepared using the degree of skill and care ordinarily exercised by engineers practicing under similar circumstances please note that WSP cannot take responsibility for errors in the information provided by third parties.

1.2. OBJECTIVE OF STUDY & METHODOLOGY

- 1.2.1. This report investigates flood risk on Site and in the area and establishes the mitigation measures required to ensure the sustainability and safety of the Proposed Development over its lifetime.
- 1.2.2. The report has been produced in line with the requirements of the NPPF and the Environment Agency (EA) Standing Advice, as well as through consultation with United Utilities (UU) and Manchester City Council as the Lead Local Flood Authority (LLFA).
- 1.2.3. In undertaking this study, the local policies discussed in Section 2 have also been considered.
- 1.2.4. This report makes use of third-party information.
- 1.2.5. The insurance industry applies its own assessments to properties in terms of determining premiums and the insurability for flood risk. Those intending to undertake development in areas which may be at risk of flooding are advised to contact their insurers or the Association of British Insurers (ABI) to seek further guidance prior to commencement.
- 1.2.6. WSP does not warrant that the advice in this flood risk assessment will guarantee the availability of flood insurance either now or in the future.

2. PLANNING POLICY AND GUIDANCE

2.1. RELEVANT NATIONAL AND LOCAL PLANNING POLICY AND STRATEGY DOCUMENTS

2.1.1. The following documents and policies have been reviewed to inform this report:

- Manchester City, Salford City and Trafford Councils Level 2 Hybrid Strategic Flood Risk Assessment (2011);
- Manchester, Salford and Trafford Hybrid Strategic Flood Risk Assessment User Guide (March 2011)
- Manchester City Council Local Flood Risk Management Strategy (2014);
- Manchester's Local Development Framework Core Strategy Development Plan Document (2012);
- Lead Local Flood Authority – Manchester City Council SuDS Requirements for New Developments (Update 2019);
- North West SuDS Pro-forma Template (2021);
- North West SuDS Pro-forma Template for Supporting Guidance (2021);
- Sustainable Drainage Systems Written Statement HCWS161 (December 2014);
- National Planning Policy Statement 25 : Development and Flood Risk (PPS25) Annex B Climate Change
- Climate Change Allowances for Peak River Flow in England
- Non-statutory technical standards for sustainable drainage systems, DEFRA (2015);
- The SuDS Manual (CIRIA C753), CIRIA (2015);
- Part H of the Building Regulations HM Government (2015);
- The Design and Construction Guidance (DCG) in Appendix C of the Sewerage Sector Guidance (SSG), Water UK (2019);
- Hollis Topographical Survey (August 2021);
- United Utilities Asset Records (2019);
- British Geological Society (BGS) Online Viewer, 1:50,000 Bedrock and Superficial deposits;
- DEFRA's online Magic Map; and
- GOV.UK's online Long Term Flood Maps.

2.2. NATIONAL PLANNING POLICY

NATIONAL PLANNING POLICY FRAMEWORK

2.2.1. The National Planning Policy Framework (NPPF) was published in February 2019 (updated in June 2019) with the aim of protecting the environment and to promote sustainable growth. There is an overarching presumption in favour of sustainable development that should be the basis of every plan and every decision.

2.2.2. The following paragraphs/policies within the NPPF are considered relevant to this assessment:

- Paragraph 155: Requires that *"Inappropriate development in areas at risk of flooding should be avoided by directing development away from areas at highest risk (whether existing or future). Where development is necessary in such areas, the development should be made safe for its lifetime without increasing flood risk elsewhere."*;

- Paragraph 158: Explains that “the aim of the Sequential Test is to steer development to areas with the lowest probability of flooding”; and
- Paragraph 163: Explains that “When determining any planning applications, local planning authorities should ensure that flood risk is not increased elsewhere [...]”;
- Paragraph 165: Recommends that “major development should incorporate sustainable drainage systems unless there is clear evidence that this would be inappropriate. The systems used should:
 - a) take account of advice from the lead local flood authority;
 - b) have appropriate proposed minimum operational standards;
 - c) have maintenance arrangements in place to ensure an acceptable standard of operation for the lifetime of the development; and
 - d) where possible, provide multifunctional benefits”.

DEFRA NON-STATUTORY TECHNICAL STANDARDS FOR SUSTAINABLE DRAINAGE SYSTEMS (2015)

- 2.2.3. This document sets out non-statutory technical standards for sustainable drainage systems. It should be used in conjunction with the National Planning Policy Framework and Planning Practice Guidance.
- 2.2.4. For developments which were previously developed, the peak run-off rate from the development to any drain, sewer or surface water body for the 1 in 1 year rainfall event and the 1 in 100 year rainfall event must be as close as reasonably practicable to the greenfield run-off rate from the development for the same rainfall event, but should never exceed the rate of discharge from the development prior to redevelopment for that event.
- 2.2.5. Where reasonably practicable, for developments which have been previously developed, the run-off volume from the development to any highway drain, sewer or surface water body in the 1 in 100 year, 6 hour rainfall event must be constrained to a value as close as is reasonably practicable to the greenfield run-off volume for the same event, but should never exceed the run-off volume from the development site prior to redevelopment for that event.
- 2.2.6. The drainage system must be designed so that, unless an area is designated to hold and/or convey water as part of the design, flooding does not occur on any part of the site for a 1 in 30 year rainfall event.
- 2.2.7. The drainage system must be designed so that, unless an area is designated to hold and/or convey water as part of the design, flooding does not occur during a 1 in 100 year rainfall event in any part of: a building (including a basement); or in any utility plant susceptible to water (e.g Pumping Station or Electricity Substation) within the development.
- 2.2.8. The design of the site must ensure that, so far as is reasonably practicable, flows resulting from rainfall in excess of a 1 in 100 year rainfall event is managed in exceedance routes that minimise the risks to people and property.

SUSTAINABLE DRAINAGE SYSTEMS WRITTEN STATEMENT HCWS161 (2014)

- 2.2.9. The Secretary of State for Communities and Local Government laid a Written Ministerial Statement in the House of Commons on 18th December 2014 setting out changes to planning that will apply for major development from 6th April 2015. This confirms that in considering planning applications, local planning authorities should consult the relevant Lead Local Flood Authority on the management of surface water; satisfy themselves that the proposed minimum standards of operation are appropriate

and ensure through the use of planning conditions or obligations that there are clear arrangements in place for ongoing maintenance over the lifetime of the development.

- 2.2.10. Therefore, from 6th April 2015 local planning policies and decisions on planning applications relating to major development are required to ensure that sustainable drainage systems (SuDS) are used for the management of surface water.
- 2.2.11. Major development is development involving any one or more of the following:
- The winning and working of minerals or the use of land for mineral-working deposits;
 - Waste development;
 - The provision of 10 dwellings or more;
 - The provision of a building or buildings where the floor space to be created by the development is 1,000 square metres or more; or
 - Development carried out on a site having an area of 1 hectare or more.

2.3. CONSIDERATION OF CLIMATE CHANGE

- 2.3.1. As explained in the Climate Change Adaptation Sub-Committee Progress Report 2014, increased flood risk is the greatest threat to the UK from climate change. Models of the climate system suggest floods of the type experienced in England and Wales in autumn 2000, and between December 2013 and February 2014, have become more likely as a consequence of increased concentrations of greenhouse gases in the atmosphere.
- 2.3.2. More frequent short-duration, high intensity rainfall and more frequent periods of long-duration rainfall could be expected. Sea levels are also expected to continue to rise.
- 2.3.3. This Environment Agency 'Flood Risk Assessments: Climate Change Allowances' guidance was updated on 27th May 2022. The change focussed on the peak river flow allowances, with them now being based on management catchments rather than river basin districts and also amendments being made to the values of these allowances using the UK Climate Projections 18 (UKCP18).
- 2.3.4. The updated guidance for peak river flows states that, *"You now use (a) the central allowance for all assessments except for essential infrastructure, where you use the higher central allowance, (b) the upper end for 'credible maximum scenario' assessments, and (c) the central allowance to calculate flood storage compensation, except for where essential infrastructure is affected, where you use the higher central allowance"*
- 2.3.5. For peak rainfall the EA Guidance provides an upper end and central allowance depending on epoch; the guidance recommends assessment of both the central and upper end allowances to understand the range of impact. These allowances are detailed in Table 2 (Peak Rainfall Intensity Allowance in Small and Urban Catchments) of the EA guidance.
- 2.3.6. Sea levels allowances reflect the previous guidance and vary on a regional basis and for each epoch as shown in Table 2 of the EA guidance.
- 2.3.7. The EA have provided guidance to assess the impact of climate change on fluvial flooding. Technical assessment of climate change impacts on fluvial flooding appropriate for new developments depending on their scale and location (see following section).
- 2.3.8. For peak rainfall the EA Guidance provides an upper end and central allowance depending on epoch; the guidance recommends assessing both the central and upper end allowances to understand the

range of possible impacts. These allowances are detailed in Table 2 (Peak rainfall intensity allowance in small and urban catchments) of the EA guidance.

DEVELOPMENT LIFESPAN

2.3.9. The contingency allowances for climate change that are potentially applicable to this site are:

Peak River Flows (Northwest);

- Upper End – 75% for 2070 to 2115
- Higher Central – 46% for 2070 to 2115
- Central – 35% for 2070 to 2115

Peak Rainfall;

- Upper End – 45% for 2070 to 2115
- Central – 30% for 2070 to 2115

Sea Level Rise;

- 0.99 m by 2115

IMPACT OF CLIMATE CHANGE ON THE PROPOSED DEVELOPMENT

- 2.3.10. The Site is located within Flood Zone 1 where the probability of fluvial and tidal flooding is lower than 0.1% in any year. Fluvial and tidal flooding is therefore not expected to become a significant issue even when the impact of climate change is taken into account.
- 2.3.11. Surface water runoff could in theory represent a risk to the Site, especially when the effects of climate change are considered. An outline drainage strategy (ODS) has been produced as part of this study which takes into account the potential impact of climate change.
- 2.3.12. The ODS demonstrates that the drainage network at the Site is designed to accommodate runoff during all events up to and including the 100 year plus 45% climate change allowance.

2.4. LOCAL PLANNING POLICY

MANCHESTER'S LOCAL DEVELOPMENT FRAMEWORK CORE STRATEGY (2012)

- 2.4.1. The Core Strategy was adopted by Manchester City Council in July 2012. It is the key document in Manchester's Local Development Framework and covers a period of 15 years from 2012 to 2027. It describes Manchester today and outlines the Council's vision for Manchester in 2027 along with the planning policies that will be used to deliver that vision. The policies relevant to this Flood Risk Assessment are as follows:

Policy DM 1 Development Management

- 2.4.2. All development should have regard to the following specific issues which include:
- Effects relating to biodiversity, landscape, archaeological or built heritage;
 - Green Infrastructure; and
 - Flood risk and drainage.

Policy EN 08 Adaptation to Climate Change

- 2.4.3. In achieving developments which are adaptable to climate change developers should have regard to the following:

- Minimisation of flood risk by appropriate siting, drainage, and treatment of surface areas to ensure rain water permeability; and
- Reduction in urban heat island effect through the use of Green Infrastructure such as green roofs, green walls, increased tree cover and waterways.

Policy EN 14 Flood Risk

2.4.4. The MST SFRA informs policies in the Core Strategy:

- All new development should minimise surface water run-off, including through Sustainable Drainage Systems (SUDS) and appropriate use of Green Infrastructure. Developers should have regard to the surface water run-off rates in the SFRA User Guide. In Critical Drainage Areas (CDAs), evidence to justify the surface water run-off approach / rates will be required.

Policy EN 17 Water Quality

2.4.5. With reference to the MST SFRA and other relevant documents:

- Development should avoid any adverse impact on water quality, including during the construction phase, and wherever possible should seek to enhance water quality, both chemical and ecological;
- Development should minimise surface water run-off from development and associated roads, and maximise the use of appropriate sustainable drainage systems, to minimise groundwater contamination, and to avoid pollutants reaching watercourses.

MANCHESTER, SALFORD AND TRAFFORD STRATEGIC FLOOD RISK ASSESSMENT (2011)

- 2.4.6. The combined Manchester, Salford & Trafford Strategic Flood Risk Assessment (SFRA) and accompanying User Guide was prepared by JBA Consulting in March 2011, in accordance with PPS 25.
- 2.4.7. *“The SFRA was prepared to inform the preparation of the Local Development Framework and assist the Local Planning Authority in the allocation of sites for future development and general decision making. In addition, the SFRA provides detailed development control recommendations in order to achieve a positive reduction in flood risk within these council areas”.*
- 2.4.8. The site is shown to be located within the Conurbation Core Critical Drainage Area, *“an area within Flood Zone 1 which has critical drainage problems, and which has been notified... [to].... The local planning authority by the Environment Agency”.*
- 2.4.9. The SFRA gives the following guidance in relation to surface water runoff from development sites in the area:

“Development has the potential to cause an increase in impermeable area, an associated increase in surface water runoff rates and volumes, and a consequent potential increase in downstream flood risk due to overloading of sewers, watercourses, culverts and other drainage infrastructure. It should be borne in mind that the sewer network in places across the Greater Manchester area was designed to drain less development than exists today. Development (both planned for and urban creep such as windfall development and paving over gardens) has increased the coverage of impermeable surfaces and added flow over time and the network is known to be at capacity in many places.

Managing surface water discharges from new development is therefore crucial in managing and reducing flood risk to new and existing development downstream. Carefully planned development can

also play a role in reducing the number of properties that are directly at risk from surface water flooding. The Planning System has a key role to play in setting standards for sustainable drainage from new developments and ensuring that developments are designed to take account of the risk from surface water flooding.

All development should seek to reduce existing local flooding problems and not add to them. The AGMA authorities are currently developing drainage standards for developments within Critical Drainage Areas and for all other areas. Over time, it is envisaged that local authorities will commission drainage strategies (see below) to determine in more detail, and establish the evidence base for, set reductions in surface water runoff from development sites. These will be used to inform the incorporation of targets and standards in Development Plan Documents, supported by Supplementary Planning Documents, as appropriate. With regard to this, the developer should liaise closely with the Environment Agency, United Utilities and the LPA as soon as possible to determine an appropriate reduction in runoff rate and volume with reference to discharge limits as laid down by any completed SWMP, drainage strategy or local development document for that area. Minimising surface water runoff rates within catchments should be the starting point for negotiations with Developers. In the interim, and based on the technical work undertaken for the SFRA, the following guidance is provided:

- Development should aim for a minimum reduction in surface water runoff rates of 50% for Brownfield sites, with an aim of reducing runoff to Greenfield rates up to a 1 in 100-year storm event, considering climate change
- Development should be designed so that there is no flooding to the development in a 1 in 30-year event and so that there is no property flooding in a 1 in 100 year plus climate change event

Wherever possible, this should be achieved through the implementation of SUDS. Source control should be considered first. There may be opportunities to deliver SUDS through integrated solutions for collections of strategic sites. The future ownership and maintenance of SUDS systems should be discussed at the planning application stage with the relevant sections of the LPA (including Highways and Drainage), United Utilities and the Environment Agency. This approach should be taken unless the developer can demonstrate that this is not feasible and that there will be no adverse impact caused by the development elsewhere.”³. Any exceedance flows within the site should be retained within the site boundaries for all events up to a 1 in 100-year event”.

MANCHESTER’S LOCAL FLOOD RISK MANAGEMENT STRATEGY (2014)

2.4.10. The Local Flood Risk Management Strategy’s overall aim is to ensure that local flood risk is properly managed. It sets out the roles and responsibilities of key stakeholders in flood risk management as well as aims and objectives to reduce flood risk.

2.4.11. Chapter 4 sets out the different types of local flood risk that the Council as Lead Local Flood Authority is responsible for leading the management of, together with known area of risk in Manchester. Maps of the City of Manchester are provided with areas of risk identified from the following sources:

- Rivers;
- Canals, Ponds and Reservoirs;
- Groundwater;
- Surface Water Runoff from 1 in 30 year storm;
- Surface Water Runoff from a 1 in 200 year storm; and
- Flood risk from Ordinary Watercourses.

MANCHESTER CITY COUNCIL – SUDS REQUIREMENTS FOR NEW DEVELOPMENTS (UPDATE 2019)

2.4.12. The 2019 update to the SuDS Requirements for New Developments document strengthens the planning policy on the provision of sustainable drainage systems for major planning applications.

2.4.13. Key advice is extracted below, note requirements that are sufficiently detailed in the above national and local policy has not been repeated:

Developers submitting the planning application to Manchester City Council are advised to:

- *“Implement strategy that supports surface water runoff control as near to its source as possible through a sustainable drainage approach to surface water management, preferably through green types of SuDS wherever practicable.”*
- *“Maximise use of Green Infrastructure to manage surface water runoff... as feasibility of use of green types of SuDS will be evaluated by LLFA during planning application stage [...]”*
- *“Submit hydraulic calculations and drawings to support the design along with proposed standards of operation and maintenance in accordance with paragraph 081 of NPF (PPG).”*

2.4.14. Minimum requirements for approval are also outlined. In order to avoid objection, the following three element of evidence are required:

- *“Surface Water Management Statement for the site is submitted that is in line with requirement of NPPF PPF Paragraph 079;”*
- *“Evidence that drainage hierarchy has been applied in line with NPPF PPG Paragraph 080. The aim should be to discharge surface run off as high up the hierarchy of drainage options as reasonable practicable [...]”*
- *“Evidence that one viable solution for draining the site is secured and agree in principle with relevant authority.”*

2.4.15. The document also provides more in-depth guidance for avoiding or discharging drainage condition and SuDS maintenance.

NORTH WEST SUDS PRO-FORMA TEMPLATE (2021)

2.4.16. The pro-forma is a requirement for any planning application for major development. It supports applicants in summarising and confirming how surface water from a development will be managed sustainably under current and future conditions.

3. EXISTING SITE

3.1. SITE LOCATION

- 3.1.1. The Site is located off King Street West in Manchester City Centre approximately 80m southeast of the River Irwell. The indicative postcode of the site is M3 2JP and the OS Grid Reference for the approximate centre of the Site is National Grid Reference 383528, 398369.
- 3.1.2. The Site location is shown in Figure 3-1 below, which is also included as **Appendix A**.

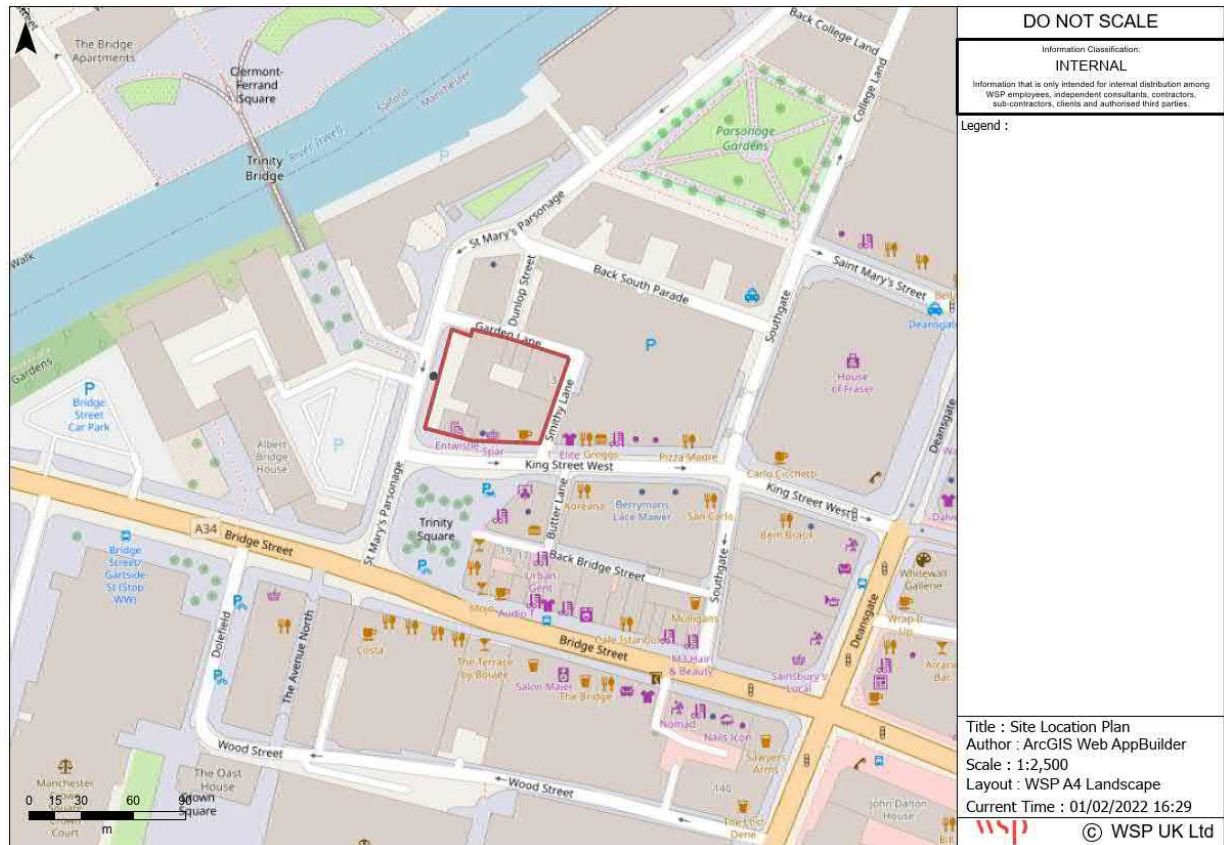


Figure 3-1 - Indicative Site Location Plan

3.2. SITE DESCRIPTION

- 3.2.1. The Site comprises an area of 0.14 hectares (ha) within the Parsonage Gardens Conservation Area. The Site is bound by St Mary's Parsonage to the East, Garden Lane to the north, Smithy Lane to the east and King Street West to the south and located approximately 80m southeast of the River Irwell.
- 3.2.2. The Site consists of four existing buildings on a tightly bounded plot joined by a more modern staircase at the core, as seen in Figure 3-2 below. 27-29 King Street West and 28 King Street West (Reedham House) to the front are currently a mixture of retail and office buildings. The historic carriage manufacturing and warehouse buildings to the rear are listed.

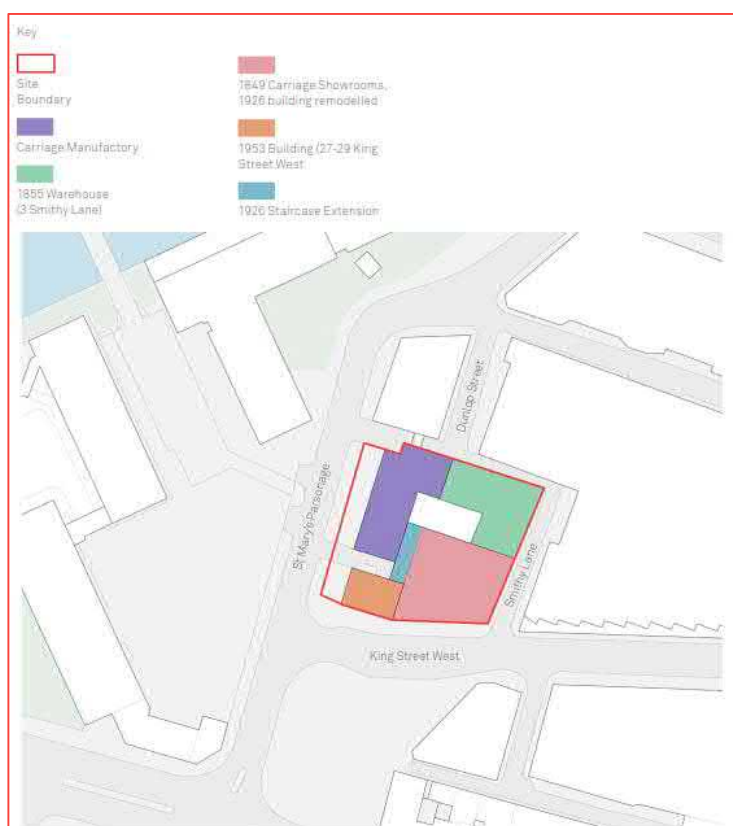


Figure 3-2 - Present Day Building Configuration

3.3. SITE TOPOGRAPHY

- 3.3.1. The Site is generally flat with a high point of 34.95m AOD in the northeast corner with levels falling away east and south along Garden Lane and Smithy Lane respectively. The inner courtyard area is 34.00 to 34.20m AOD, approximately 600-700mm lower than the adjoining street, Garden Lane to the north. The surrounding streets fall to a low point of 33.06m AOD at the junction of St Mary's Parsonage and King Street West.
- 3.3.2. Refer to **Appendix B** for the Topographical Survey.

3.4. GEOLOGY AND HYDROGEOLOGY

- 3.4.1. The British Geological Survey (BGS) mapping indicates the site is underlain by sandstone bedrock of the Chester Formation. Immediately east of the Site glaciofluvial sheet deposits of sand and gravel are present.
- 3.4.2. Two BGS borehole logs are available in King Street West south of the site:
- BGS borehole (SJ89NW3771) records show made ground comprising medium dense to dense gravel, housebrick fragments and ashes etc to a depth of 4.10m BGL before striking an existing sewer
 - BGS borehole (SJ89NW3774) records show made ground to a depth of 1.2m BGL, dense claybound sand and gravel to 4.70m BGL and very dense red/brown fine/medium grained sandstone to its extents at 6.375m BGL.

- 3.4.3. The superficial geology is classified as a Secondary (A) aquifer – permeable layers; indicating it comprises permeable layers capable of supporting water supplies at a local scale rather than strategic scale, and in some cases forming an important source of base flow to rivers.
- 3.4.4. The underlying Chester Formation is classified as a Principal Aquifer, indicating it provides high level of water storage with intergranular or fracture flow.
- 3.4.5. According to the DEFRA's online Magic Map for Source Protection Zones, the nearest Source Protection Zone is located over 650m southeast of the Site.

3.5. EXISTING WATERCOURSES, FLOOD DEFENCES AND STRUCTURES

- 3.5.1. The closest identified watercourse to the site is the River Irwell (80m northwest). The River Irk joins the River Irwell 660m north of the Site. Other watercourses in the vicinity are the River Medlock (1.0km south), the Manchester Ship Canal (1.5km southwest) and the Rochdale Canal (1.9km northeast).
- 3.5.2. Flood defence on the Manchester Ship Canal is provided by the operation of water control structures (sluices) on the Manchester Ship Canal within the study area at; Mode Wheel Locks, Barton Locks, and Irlam Locks.
- 3.5.3. There are no other watercourses in the vicinity of the Site.

3.6. EXISTING DRAINAGE

PUBLIC SEWERS

- 3.6.1. The United Utilities Public Sewer Records, an extract of which is shown in Figure 3-3 below, indicate that there are several combined public sewers in the vicinity of the site. A full copy is included in **Appendix C**.
- 3.6.2. A 300mm combined sewer runs west within Garden Lane to St Mary's Parsonage where it combines with a 225mm combined sewer before falling south back along St Mary's Parsonage in a sewer of unknown size.
- 3.6.3. A 225mm combined sewer falls south within Smithy Lane where it connects to a 1500mm concrete sewer in King Street West. The King Street West sewer falls west, changing to 560x960mm sewer before discharging to the sewer within St Mary's Parsonage.
- 3.6.4. The St Mary's Parsonage sewer falls south towards Bridge Street where it becomes a 525mm concrete sewer falling west out of the extents of records provided by United Utilities

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- 3.6.7. It is assumed that the Site connects to the United Utilities combined sewer within Garden Lane in two locations; one from the internal courtyard and one further west from the existing toilet block. It is likely these connections are combined foul water and surface water.
- 3.6.8. Given the collection of rainwater pipes it is assumed that surface water from part of the Site discharges to the United Utilities combined sewer within St Mary's Parsonage.
- 3.6.9. It is assumed that multiple connections exist to the United Utilities sewer within Smith Lane as multiple rainwater downpipes, gullies and a sanitary pipe stack are visible on the eastern frontage of the Site.

4. THE PROPOSED DEVELOPMENT

4.1. SUMMARY

- 4.1.1. The Proposed Development is comprised of the erection of 14 storey building and the refurbishment of the existing buildings at 3 Smithy Lane and Carriage Works on Garden Lane / St Mary's Parsonage with ground floor extension to comprise office accommodation (Class E) with front of house and commercial floorspace at ground floor (Class E) with associated landscaping and other works following demolition of existing buildings at 27-29 King Street West and 31-33 King Street West and link bridge from Carriage Works on Garden Lane / St Mary's Parsonage to 3 St Mary's Parsonage.
- 4.1.2. For full details of the proposed development refer to the architects floor plans included in **Appendix D**. The figure below shows the ground floor plan.

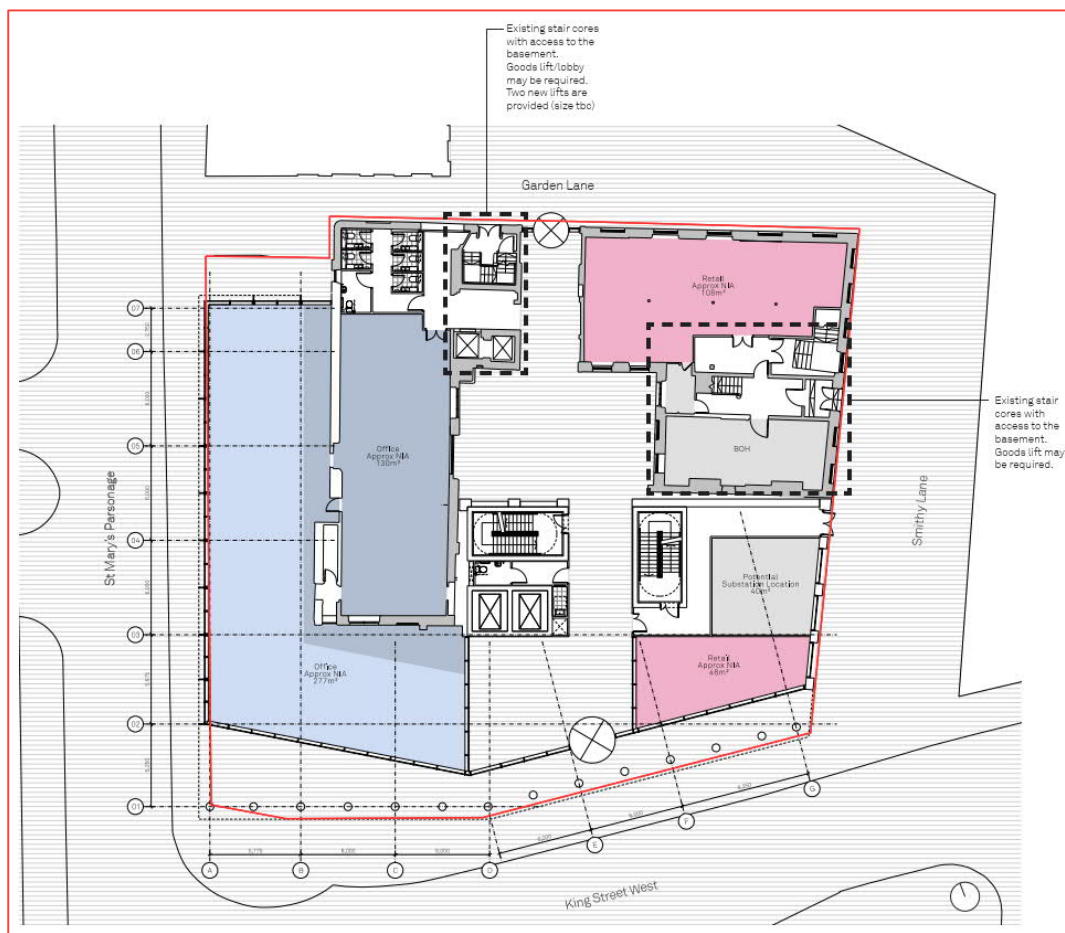


Figure 4-1 - Proposed Ground Floor Plan

4.2. VULNERABILITY CLASSIFICATION

- 4.2.1. Considering the scale of the Site and based on Table 2 in the PPG, the Proposed Development will have uses which are classified as 'less vulnerable'.

4.3. SEQUENTIAL AND EXCEPTION TESTS

- 4.3.1. As stated in the NPPF, a sequential risk-based approach to determine the suitability of land for development in flood risk areas should be applied at all stages of the planning process giving precedence to low flood risk areas wherever possible.
- 4.3.2. The Site is within Flood Zone 1 and as such the development is considered appropriate and automatically meets the requirements of the sequential test.

4.4. EXCEPTION TEST

- 4.4.1. Table 3 of the Flood Risk and Coastal Change Chapter of the Planning Practice Guidance (2014) shows that all land uses are appropriate in Flood Zone 1 and therefore an Exception Test is not required for this site.

5. FLOOD HAZARD

5.1. SOURCES AND MECHANISMS OF FLOODING

- 5.1.1. The potential risk of flooding to the Site from all current and future sources of flooding has been assessed in accordance with National Planning Policy Framework.
- 5.1.2. Table 5-1 below summarises the findings of the assessment. It should be noted that the designation of risk outlined in Table 5-1 is prior to the inclusion of any mitigation measures, which may subsequently act to reduce the risk.
- 5.1.3. A detailed explanation of the flood risk issues on the site and determination of flood risk ratings are presented in Sections 5.2 to 5.6.

Table 5-1 - Degree of Risk from Each Source of Flooding

Source		Risk
Fluvial & Tidal		Low
Surface Water		Low / Medium
Sewer		Medium
Groundwater		Low
Artificial Sources	Reservoir	Low
	Canal	Low

- 5.1.4. The Environment Agency flood mapping is included in **Appendix E**.
- 5.1.5. Flood Risk Maps extracted from the Local Flood Risk Management Strategy (LFRMS) are included in **Appendix F**.

5.2. FLUVIAL AND TIDAL FLOOD RISK

FLOOD MAPS

- 5.2.1. The National Planning Policy Framework (NPPF) categorises flood risk as follows:
- **Zone 1 (low probability)** – Land assessed as having less than a 1 in 1,000 annual probability of river or sea flooding (<0.1%);
 - **Zone 2 (medium probability)** – Land assessed as having between a 1 in 100 and 1 in 1,000 annual probability of river flooding (1% – 0.1%), or between a 1 in 200 and 1 in 1,000 annual probability of sea flooding (0.5% – 0.1%) in any year; and
 - **Zone 3a (high probability)** - Land assessed as having a 1 in 100 or greater annual probability of river flooding (>1%), or a 1 in 200 or greater annual probability of flooding from the sea (>0.5%) in any year.
 - **Zone 3b The Functional Floodplain** - This zone comprises land where water has to flow or be stored in times of flood. Local planning authorities should identify in their Strategic Flood Risk

Assessments areas of functional floodplain and its boundaries accordingly, in agreement with the Environment Agency. (Not separately distinguished from Zone 3a on the Flood Map).

- 5.2.2. Based on the online Environment Agency Flood Map for Planning, see **Figure 3-1** below, the Site is located in Flood Zone 1 and therefore has a Low probability (less than 0.1% (1 in 1000)) of flooding from rivers or the sea.

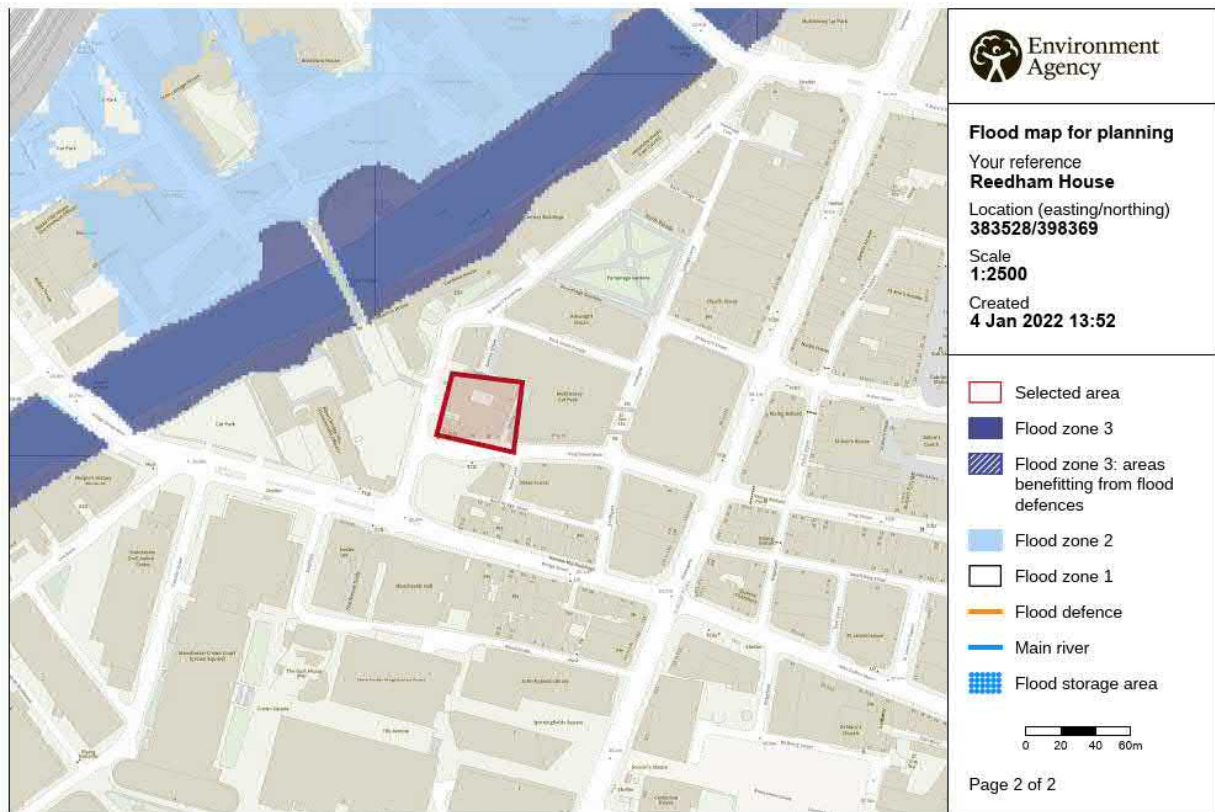


Figure 5-1 - EA Flood Map for Planning

- 5.2.3. Figure 2 in Chapter 4 of the LFRMS shows that the Site is not included in Fluvial Food Zone 2 or 3.
- 5.2.4. Based on the information available, the probability of fluvial and tidal flooding can be assessed as **low**.

5.3. SURFACE WATER FLOODING

- 5.3.1. The EA descriptions for the High, Medium and Low risk scenarios for surface water flooding are as follows:
- **High risk** means that each year this area has a chance of flooding of greater than 3.3%.
 - **Medium risk** means that each year this area has a chance of flooding of between 1% and 3.3%.
 - **Low risk** means that each year this area has a chance of flooding of between 0.1% and 1%.
 - **Very Low risk** means that each year this area has a chance of flooding of less than 0.1%.
- 5.3.2. The Environment Agency Map of long-term flood risk from surface water, shown in Figure 5-2, indicates that the site is entirely at very low risk of surface water flooding (depths up to 300mm).

- 5.3.3. Figure 5-2 shows an increased risk of surface water flooding within the highways adjacent to the Site. St Mary's Parsonage has medium risk; depths 300-900 mm flowing north to south with water velocity over 0.25 m/s. King Street West has low risk; depths up to 300 mm flowing east to west with water velocity less than at 0.25 m/s. These are consistent with the local topography.



Figure 5-2 - GOV.UK's Long Term Flood Risk Map for Surface Water Flooding Extract

- 5.3.4. The topographical survey indicates a low point at northeast quadrant of the St Mary's Parsonage intersection with King Street West. Highway flood waters may accumulate adjacent to the southwest corner of the Site, potentially impacting the development.
- 5.3.5. The existing levels of the courtyard area at the centre of the Site are 0.6-0.7 m lower than the adjacent street, Garden Lane. This could present a risk of surface water flooding to the buildings during a storm event that exceeds the design return period or if the drainage network becomes blocked.
- 5.3.6. Figures 6A and 6B in Chapter 4 of the LFRMS show no surface water flooding within the Site for both the 1 in 30 and 1 in 200 year storm. An area of 300 deep flooding is shown for the 1 in 200 year storm event southwest of the Site, in the vicinity of the Manchester College of Arts building.
- 5.3.7. Based on the above, the risk of flooding to the site from surface water is consider to be **low / medium**. Mitigation measures for the avoidance of surface water flooding on the redeveloped site are discussed in Section 6 of this report.

5.4. SEWER FLOODING

- 5.4.1. United Utilities were contacted and confirmed that they have no current record of sewer flooding within the vicinity of the proposed development. A copy of the correspondence is included in **Appendix G**.
- 5.4.2. The existing levels in the courtyard area are approximately 0.6-0.7m lower than the adjoining street, Garden Lane. Therefore there is a risk of sewer flooding from the private combined sewer inspection chamber located in the courtyard area.
- 5.4.3. There is also a risk of backflow into the basement via new connections to the public sewer.
- 5.4.4. Based on the above, it is considered the risk of sewer flooding is **medium**. Consideration of mitigation measures are included in Section 6 of this report.

5.5. GROUNDWATER FLOODING

- 5.5.1. Groundwater flooding occurs when the water table, the level of water below the ground, rises above the ground surface or into cellars and basements. Groundwater flooding is most likely to occur in low-lying areas underlain by permeable rocks (aquifers). These may be extensive, regional aquifers, such as chalk or sandstone, or may be localised sands or river gravels in valley bottoms underlain by less permeable rocks.
- 5.5.2. Figure 4 in Chapter 4 of the LFRMS shows widespread areas susceptible to groundwater flooding across much of Manchester, including the Site. The document states that “The likelihood of groundwater flooding occurring in Manchester is considered to be generally low however the increasing use of infiltration SuDS may have the potential to increase groundwater flood risk locally, so careful consideration and design will be needed.”
- 5.5.3. As described in Section 3.6 of this report, the site is underlain by impermeable Glacial Till. It is therefore unlikely that the natural groundwater table will impact this development. Therefore, it is anticipated that only localised perched groundwater may affect this development.
- 5.5.4. However, at this stage, there is no site-specific data regarding the natural groundwater level or the level of any perched water and given that the development does include an existing proposed basement, it is unlikely that groundwater will affect the development.
- 5.5.5. Based on the above, it is considered that the risk of groundwater flooding to the site is **low**.

5.6. ARTIFICIAL SOURCES OF FLOODING

- 5.6.1. Non-natural or artificial sources of flooding can include canals, reservoirs, lakes, etc. The potential effects of flood risk management infrastructure and other structures need to be considered.
- 5.6.2. According to the online GOV.UK's Long Term Flood Risk Map and Figure 3 in Chapter 4 of the LFRMS, the Site is not shown to be within the maximum extent of flooding from any canal, pond or reservoir.
- 5.6.3. Based on the above, it is considered the risk of flooding from artificial sources is **low**.



Figure 5-3 - EA Reservoir Flood Map Extract

6. FLOOD RISK MITIGATION MEASURES

- 6.1.1. This section of the report details the flood risk mitigation measures required to manage the identified risk of flooding from different sources. The below is based on best practice.

6.2. FINISHED FLOOR LEVELS

- 6.2.1. The Site is located in Environment Agency Flood Zone 1 and all access points will be set above the critical 1,000 year event level. Therefore, a safe means of access / egress is available to the site at all times.
- 6.2.2. It is recommended that where possible all threshold levels at ground floor are set 150mm above the external ground level to encourage any surface water runoff to be directed away from buildings.

6.3. DRAINAGE & EXCEEDANCE FLOW ROUTES

- 6.3.1. The proposed surface water drainage system will be designed in accordance with the drainage strategy set out in Section 7 of this report. This will ensure that there is no increase in flood risk to the site or elsewhere in the local catchment for all storm events up to and including the 100 year storm plus 45% climate change.
- 6.3.2. It should be noted that if storm events in excess of the 100 year storm plus 45% climate change or blockages occur, this will result in flood water arising from the site drainage system. If the site drainage system were to flood, it is considered that any surface water arising from the site drainage system for the external areas should be drained towards the existing public highways which surround the site.
- 6.3.3. It is a requirement of UU that the cover level of any private inspection chambers / manholes be set higher than the receiving public sewer. The levels in the central part of the Site around the courtyard should be raised such that any surface water arising from the site drainage system be drained towards Garden Lane to the north.
- 6.3.4. If the proposed attenuation tanks in the proposed basements were to flood this flood water would be contained within the basement.

6.4. BASEMENTS

- 6.4.1. Due to the risk of groundwater flooding, the proposed basement will be required to provide the necessary degree of water tightness. Such structures should be designed in full accordance with BS 8102:2009.
- 6.4.2. It is proposed to install a non-return valve on each drainage connection from the proposed basement in order to prevent backflow into the basement via new connections into the public sewer.
- 6.4.3. A sump should be provided at the lowest basement level for a portable pumping unit to be used in the event of flooding within the basement.

6.5. FLOOD WARNING

- 6.5.1. The site is not located within a Flood Warning or Flood Alert Area as designated by the Environment Agency.

6.6. MAINTENANCE

- 6.6.1. Reference should be made to the Drainage Inspection and Maintenance Schedule, included in Section 9 of this report.

6.7. GENERAL COMMENTS

- 6.7.1. As discussed in Section 5.3 there are surface water flow paths along the roads surrounding the Site. It is recommended that the Site's external levels remain slightly elevated compared to the surrounding roads to reduce risk of these surface water flow paths entering the site.
- 6.7.2. In order to mitigate against off-site surface water flooding, it is proposed that the external ground levels of the Site comprise of a gentle slope falling away from the building, this will allow any external surface water runoff to naturally flow away from the building rather than towards it. It is also recommended that the building itself will also have raised thresholds.

6.8. FLOOD RISK POST MITIGATION

- 6.8.1. Table 6-1 below summarises the risk of all sources of flooding post mitigation.

Table 6-1 - Degree of Risk from Each Source of Flooding Post Mitigation

Source		Risk
Fluvial & Tidal		Low
Surface Water		Low
Sewer		Low
Groundwater		Low
Artificial Sources	Reservoir	Low
	Canal	Low

7. OUTLINE SURFACE WATER DRAINAGE STRATEGY

- 7.1.1. This outline drainage strategy has been carried out in due cognisance of the Defra Sustainable Drainage Systems Non-Statutory Technical Standards for Sustainable Drainage Systems (March 2015) and all other relevant national and local planning policy and guidance documents.
- 7.1.2. Reference should be made to the WSP Outline Drainage Strategy layout drawing (RDH-WSP-XX-XX-DR-C-002), which is included in **Appendix J** of this report.

7.2. METHOD OF DISPOSAL

- 7.2.1. Best practise for the management of surface water based NPPF PPG Paragraph 080 states that surface water runoff from a Site shall discharge as high up the following hierarchy of drainage options as reasonably practicable:
- Into the ground (infiltration);
 - Discharge to a watercourse;
 - Connection to a surface water sewer, highway drain, or another drainage system;
 - Connection to a combined sewer.

INFILTRATION

- 7.2.2. An initial assessment of the underlying geology indicates that discharge into the ground is unlikely to be feasible where the Site is underlain by sandstone bedrock.
- 7.2.3. Historic borehole logs located within King Street West, south of the Site, indicate that known superficial deposits of sand and gravel might extend further west than the BGS mapping indicates. However, these were found to be dense and clay bound and unlikely to be free draining.
- 7.2.4. Given the Site's historic uses and the presence of made ground containing ash, it is possible that the ground is contaminated. As the superficial geology is classified as a Secondary (A) aquifer, it is likely that infiltration to ground would result in a risk of deterioration to groundwater quality through contamination.
- 7.2.5. Lastly, the existing buildings and proposed development include basements that extend beneath almost the entire footprint of the Site. The Site is therefore very constrained spatially and is unlikely to be able to accommodate soakaways.
- 7.2.6. Based on the above, it is anticipated soakaways and other means of infiltration will not be feasible as a means of disposing of surface water runoff. This will be reviewed and confirmed upon completion of site-specific investigations.

WATERCOURSE

- 7.2.7. The nearest watercourse is the River Irwell, located approximately 80 m northwest of the Site.
- 7.2.8. UU acknowledge that *"the nearest watercourse is a significant distance off-site"*.
- 7.2.9. A connection directly to the nearest watercourse is not considered to be feasible due to the distance, issues associated with third party land and the disruption that would be caused to the local highway network if a new drain was laid from the Site directly to the River Irwell.

SURFACE WATER SEWER OR HIGHWAY DRAIN

- 7.2.10. There are no known existing surface water sewers or highway drains in the vicinity of the Site. Therefore, discharge to a surface water sewer or highway drain is not considered to be feasible for this development.
- 7.2.11. It is noted that the Site sits within the St Mary's Parsonage Strategic Regeneration Framework which includes major public realm improvements. It is possible that these public realm improvements could incorporate new drainage to separate the existing combined drainage system across the wider catchment area. Consultation should be undertaken with the SRF Delivery Partners once the design progresses beyond the Masterplanning stage.

COMBINED SEWER

- 7.2.12. The assessment above demonstrates that drainage options higher up the drainage hierarchy are not likely to be considered feasible for discharge of surface water from the development, though site-specific testing and consultation is required to confirm this. It is proposed to discharge surface water drainage from the site to its existing point of discharge which is understood to be to the combined public sewerage systems surrounding the site.
- 7.2.13. During consultation UU confirmed that they will consider a connection to the 300 mm diameter public combined sewer in Garden Lane located north of the Site. A copy of the correspondence with UU is included in **Appendix G**.

7.3. IMPERMEABLE AREA AND EXISTING DRAINAGE

- 7.3.1. The existing site area is 1,437m² and is 100% impermeable. No change to impermeable area is proposed for the development.

Table 7-1 - Existing and Proposed Impermeable Areas

	Existing (E)	Proposed (P)	Change (P-E)
Impermeable Area (m ²)	1,437	1,437	0

- 7.3.2. Analysis of the existing drainage network reveals the Site can be divided in drainage catchments based on the public sewer each discharges to. The existing drainage catchment areas are identified in Table 7-2 below and in drawing number RDH-WSP-XX-XX-DR-C-001 included in **Appendix H**.

Table 7-2 - Existing Surface Water Catchments

Catchment Name	Catchment Description	Impermeable Area (m ²)	Discharge Location
Garden Lane Catchment	Roof discharge from part of the: - Carriage Manufactory, - Warehouse (3 Smithy Lane), - Stairwell adjacent to courtyard - and Carriage Showrooms adjacent to courtyard Hardstanding discharge from: - Courtyard	650	Numerous connections to UU 300mm dia combined sewer within Garden Lane
Smithy Lane Catchment	Roof discharge from: Part of the Warehouse Building (3 Smithy Lane) adjacent to Smithy Lane	86	UU 225mm dia combined sewer within Smithy Lane
King Street West Catchment	Roof discharge from: Majority of the Carriage Showrooms (28 King Street West)	324	Unknown, no visible rainwater pipes. Assume discharges to UU 560x960mm combined sewer within King Street West
St Mary's Parsonage Catchment	Roof discharge from: - The 1953 Building (27-29 King Street West) Hardstanding discharge from: - Gated access from St Mary's Parsonage	223	UU unknown dia combined sewer within St Mary's Parsonage
St Mary's Parsonage Highway Catchment	Hardstanding discharge from: St Mary's Parsonage street frontage within site boundary	154	Various highway gullies located in St Mary's Parsonage. Assume connected to UU combined sewer within St Mary's Parsonage
TOTAL		1,437	UU combined sewer in St Mary's Parsonage south of the Site

7.4. PEAK RUNOFF RATES

EXISTING

- 7.4.1. The Modified Rational Method ($2.78CiA$, where $C = 1.0$ and $i = 50\text{mm/hour}$) has been used to calculate the peak runoff rates from each of the existing catchments identified in Table 7-2. The results of the calculation are shown in Table 7-3 below.
- 7.4.2. It is assumed that no existing attenuation or flow control devices are in place, and that the capacity of the existing lateral connections to the public sewer is not limiting the peak runoff rate.

PROPOSED

- 7.4.3. In respect to proposed surface water runoff rates, the MST SFRA advises that:

“Development should aim for a minimum reduction in surface water runoff rates of 50% for Brownfield sites, with an aim of reducing runoff to Greenfield rates up to a 1 in 100-year storm event, considering climate change”

- 7.4.4. The development includes regeneration and refurbishment of two listed buildings. Clarification was sought from the LLFA as to whether the minimum reduction in surface water runoff rates must be achieved where existing buildings are being retained. A copy of the correspondence is provided in **Appendix G**.

The LLFA advised that generally:

“If below-ground works are taking place for the refurbishments we would expect the 50% betterment to be achieved if possible. If only internal alterations are being made to the existing buildings then we are unlikely to request the 50% betterment. However that being said, any betterment to the existing run-off scenario would be encouraged where feasible.”

- 7.4.5. UU advised the flow rate must be agreed with the LLFA, however, UU request that the agreed rate does not exceed the 50% reduction from brownfield peak runoff rate.

- 7.4.6. The proposed catchment areas are described as follows:

- Existing areas where no below ground works are proposed and surface water will continue to discharge at the unrestricted, existing rate:
 - North facing roof of the Carriage Manufactory and Warehouse buildings served by rainwater pipes discharging directly to the adjacent public sewers within Garden Lane. Area: 133 m².
 - East facing roof of the Warehouse buildings served by a rainwater pipe discharging directly to the adjacent public sewers within Smithy Lane. Area: 86 m².
- Existing areas where below ground works are required and surface water will be restricted to 50% of existing:
 - Courtyard hardstanding and adjacent roof areas as levels must be raised within the courtyard and existing combined drainage separated into foul water and surface water. Area: 323 m².
 - Carriage Manufactory roof falling west towards St Mary's Parsonage. Part of the roof is discharged to St Mary's Parsonage through a lateral connection located under the proposed building. The other part of the roof discharges to a lower-level roof west of the building that is earmarked for demolition. Area: 107 m².
- Proposed development where surface water will be restricted to 50% of existing Area: 1,218 m²:
 - New 12 storey commercial building with roof terrace.
 - New single storey commercial building with roof terrace.
 - Proposed hardstanding areas.

- 7.4.7. The Modified Rational Method ($2.78CiA$, where $C = 1.0$ and $i = 50\text{mm/hour}$) has been used to calculate the peak runoff rate from each of the proposed catchments outline above and a 50% reduction applied where required.

- 7.4.8. Table 7-3 below summaries the existing and proposed peak runoff rates for the development.

Table 7-3 - Existing and Proposed Peak Surface Water Runoff Rates

Catchment	Existing Impermeable Area (m ²)	Existing Peak Runoff Rate (l/s)	Proposed Impermeable Area (m ²)	Proposed Peak Runoff Rate (l/s)	Comments
Garden Lane Catchment	650	9.1	133	1.85	No reduction from Brownfield - no below ground works
			1,218	8.45	50% reduction from 16.9 l/s
Smithy Lane Catchment	86	1.2	86	1.2	No reduction from Brownfield - no below ground works
King Street West Catchment	324	4.5	0	0	Proposed to discharge development to UU preferred location – 300mm dia combined sewer within Garden Lane
St Mary's Parsonage Catchment	223	3.1	0	0	
St Mary's Parsonage Highway Catchment	154	2.1	0	0	
TOTAL	1,437	20.0	1,437	11.5	

7.5. SURFACE WATER SUDS FEATURES

- 7.5.1. National and Local Policy requires the implementation of a sustainable drainage strategy that supports surface water control as near to its source as possible, preferably through green types of SuDS wherever practical.
- 7.5.2. The SuDS appraisal method defined in the SuDS Manual C753 has been used to identify appropriate methods for control of surface water runoff, conveyance and attenuation. Potential SuDS features that could be incorporated into the development plans are summarised in Table 7-4 below.

Table 7-4 – Potential SuDS Features

Type of SuDS	Suitability for Development Proposals	
Rainwater harvesting	No	Potential solution to capture rainfall from proposed roof area and store in basement to supply the development. Initial calculations reveal the runoff yield is insufficient to supply the estimated non-potable water demand. Based on employment density of: 12 m² per FTE of general office space, 19 m² per FTE of retail space = 550 FTE. Average daily non-potable water consumption of 10 litres/capita/day.
Green roofs	Yes	Potential for proposed roof area. Added benefit of contributing to reduction in urban heat island effect, provide surface water volume control/long term storage, treatment and biodiversity gain.
Blue roofs	Yes	Potential for geo-cellular storage system under roof terraces with either bedded paving or paving/decking on a pedestal support system. Would reduce storage requirement in basement and reduce long-term operational costs associated with pumping surface water.
Permeable Paving	Yes	Potential for small scale application within courtyard area only. Unlikely to provide significant surface water management.
Soakaway	No	Unlikely to be possible due to geology of site, groundwater contamination risk and presence of basements. Refer to Section 7.1 for more details.
Bio retention systems	Yes	Potential for very small scale above ground bioretention systems within roof terrace areas. Design for amenity and biodiversity, unlikely to provide significant surface water management.
Detention basins	No	Large scale above ground SuDS features located within the site boundary are not suited to high density developments. A significant reduction in building footprint would be required in order to accommodate, making the development unviable.
Ponds and wetlands	No	
Swales	No	
Lined Geo-cellular Storage	No	Large building footprint coupled with presence of existing utilities in courtyard area means below ground storage systems cannot be utilised.
Precast Concrete Tank	Yes	Potential solution for full proposed development. Tank could be incorporated into the basement of either existing or proposed buildings with surface water pumped to ground level. Strengthening of building structure may be required.
In Pipe Storage	No	Limited pipe length and space restrictions due to existing utilities in courtyard area and link to Garden Lane.

7.6. PROPOSED SUDS STRATEGY

- 7.6.1. In order to achieve the restriction in peak runoff, on-site surface water attenuation will be required to temporarily store the residual volume of surface water for rainfall events with a peak rainfall intensity over and above the agreed discharge rate.
- 7.6.2. The attenuation storage will be designed to ensure that surface water runoff for storm events up to and including the 100-year storm plus a 45% allowance for climate change, can be contained within the site safely without causing a risk of flooding to property or a risk of flooding elsewhere in the catchment.
- 7.6.3. The proposed SuDS strategy can be summarised as follows:

Precast Concrete Tank

- 7.6.4. A single surface water storage tank would be incorporated into the basement of either the proposed or existing buildings to provide all of the required attenuation for both proposed buildings and areas of the existing buildings where below ground works are required.

A pumping station will be required to pump surface water from the basement up to a gravity drain at ground level. Flow control will be provided by the pumping rate.

Green Roof System (Optional)

- 7.6.5. A green roof system could potentially be provided for G+12 storey commercial building adjacent to King Street West to reduce the size of the precast concrete basement tank. An extensive green roof system is likely to be more appropriate, given that it is more lightweight and requires less management of vegetation than an intensive green roof.
- 7.6.6. In summer months the green roof system would intercept rainfall, reducing runoff frequency from 1 year events and reducing depth of runoff by as much as 12-15 mm. In winter months the system is likely to be saturated due to antecedent events. Attenuation capacity would therefore be incorporated into the underlying drainage layers, either in the form of a granular substrate or a geocellular system.
- 7.6.7. Flow control would be achieved through an engineering outlet with a calculated number of restrictive holes in the base plate.

Blue Roof System (Optional)

- 7.6.8. There is potential to utilise two blue roof systems: the single storey commercial building adjacent to St Mary's Parsonage and the G+12 storey commercial building adjacent to King Street West. Geocellular storage would be installed on the roof terrace of both proposed buildings with a surface finish of either bedded paving or paving/decking on a pedestal support system.
- 7.6.9. The rainwater pipes from the west facing Carriage Manufactory roof would be connected to the blue roof system of the adjacent single storey commercial building. The system would be sized with capacity for both areas.
- 7.6.10. Flow control would be achieved through an engineering outlet with a calculated number of restrictive holes in the base plate.

7.7. ATTENUATION STORAGE

- 7.7.1. The “Source Control” module in MicroDrainage has been used to determine the required amount of attenuation to accommodate the 1:100 year +45% climate change storm event to ensure the surface water can be contained within the site safely without causing a risk of flooding to property or elsewhere in the catchment. Modelling results are available in **Appendix I** with the critical storm highlighted in red text.
- 7.7.2. The proposed drainage catchment areas, SuDS features and drainage are identified in drawing number RDH-WSP-XX-XX-DR-C-002, included in **Appendix J**.
- 7.7.3. The drainage strategy identified in Section 7.5 is based on discharging surface water to the UU combined sewer in Garden Lane at a rate of 8.45 l/s. The MicroDrainage modelling results are summarised in Table 7-5 below.

Table 7-5 - Attenuation Storage Requirements

Catchment Name	Concrete Tank
Catchment description	All proposed and existing where below ground works will be carried out
Impermeable Area (m ²)	1,218
Discharge rate (l/s)	8.45
Storage Feature	Precast Concrete Tank
Flow Control	Pump
Estimated SuDS Footprint (m ²)	17
Design Depth (m)	2
Storage Volume (m ³)	28.0

7.8. WATER QUALITY

7.8.1. The SuDS Manual (C753) notes that the risk posed by surface water runoff to the receiving environment is a function of:

- the pollution hazard at a particular site (ie the pollutant source)
- the effectiveness of SuDS treatment components in reducing levels of pollutants to environmentally acceptable levels, and/or the effectiveness of underlying soil layers in protecting the receiving groundwater (ie the pollutant pathway)
- the sensitivity of the receiving environment (ie the environmental receptor)

7.8.2. Table 26.2 of The SuDS Manual (C753) outlines pollution hazard indices for the expected land uses and the hazard indices for the site are summarised in the table below.

Table 7-6 - Pollution hazard indices

Land use	Pollution Hazard Level	Total Suspended Solids (TSS)	Metals	Hydro-carbons
Other roofs (typically commercial/industrial roofs)	Low	0.3	0.2	0.05

7.8.3. Roof runoff is significantly less polluted than runoff from road surfaces and with the runoff discharging to the public combined sewer, the risk posed to the receiving environment is assessed to be low.

8. OUTLINE FOUL WATER DRAINAGE STRATEGY

- 8.1.1. A pre-development enquiry to identify if capacity is available within the existing public sewer network for the discharge of foul water flows from the Site was submitted to United Utilities (UU). The feedback received is provided in correspondence **Appendix G**.

8.2. DISCHARGE RATE

- 8.2.1. UU have confirmed that foul drainage from the proposed development can be discharged to the public sewer at an unrestricted discharge rate.
- 8.2.2. An assessment of the anticipated peak foul flow from the Site has been calculated based on the probability / discharge unit method outlined in EN 12056-2:2000 using the maximum typical values associated with each appliance. The results of this calculation are summarised in Table 8-1 below.

Table 8-1 - Proposed Foul Water Flows from Building

Appliance	No. of Appliances	DU per Appliance (l/s)	DU Subtotal (l/s)	$\sum DU$	K	$Q_{ww} \text{ (l/s)}$ $Q_{ww} = K \sqrt{\sum DU}$
Wash Basin (Accessible)	17	0.3	5.1	40.8	0.5	3.2
Wash Basin (Maintenance Use)	17	0.3	5.1			
WC (4l Cistern, Accessible)	17	1.8	30.6			
Wash Basin (Office Use)	77	0.3	23.1	186.9	0.7	9.6
WC (4l Cistern, Office Use)	77	1.8	138.6			
Dishwasher	21	0.6	12.6			
Kitchen Sink	21	0.6	12.6			
Wash Basin (Public Use)	5	0.3	1.5	10.5	1.0	3.2
WC (4l Cistern, Public Use)	5	1.8	9			
Q _{TOT} (l/s)						16.0

- 8.2.3. In addition to appliances identified in the proposed floor plans, it has been assumed that each office and retail space with back of house space will have a kitchenette consisting of a sink and dishwasher.
- 8.2.4. For each appliance a typical frequency factor has been applied for each usage as follows:
- Intermittent use of accessible toilets and basins associated with maintenance activities, $k = 0.5$;

- Frequent use of facilities associated with private office spaces, $k = 0.7$;
- Congested use of facilities open to public (ground floor only), $k = 1.0$.

8.3. CONNECTION TO PUBLIC NETWORK

- 8.3.1. United Utilities' preferred point of discharge is the 300 mm diameter public combined sewer within Garden Lane located north of the proposed development.
- 8.3.2. The proposed connection is a 150mm foul sewer from the courtyard area, refer to Outline Drainage Strategy drawings number RDH-WSP-XX-XX-DR-C-002 in **Appendix J**.
- 8.3.3. To prevent any internal flooding as a result of overloaded public sewers, non-return valves will be utilised to prevent sewer flooding entering the Site.

9. DRAINAGE MAINTENANCE AND MANAGEMENT STRATEGY

9.1.1. The Drainage Maintenance and Management Strategy (Table 9-1) has been produced by WSP to ensure that all components of the drainage system can be maintained for the design life of the development. It is expected that the maintenance for the entire scheme will be under private management by the developer, in which a suitably qualified maintenance specialist will undertake the work.

Table 9-1 - Proposed Drainage Maintenance and Management Strategy

Drainage Feature	Regular Maintenance	Occasional Maintenance	Monitoring
Drainage Channels and Gullies	Inspections will be frequent and regular, depending on local conditions, but at least annually by Site management. Inspections will include gratings; covers including their locking bolts; sumps and sump buckets; exposed concrete surround and adjacent paving. Channels will be flushed with water or high-pressure jetting (no boiling water or cleaning agent will be used). All silt buckets and sumps will be cleaned out replaced back into the units ensuring they are correctly fitted.	All channel surfaces and joints will be checked and repaired as necessary.	Inspect every 6 months or after large storm.
Precast Concrete Tank and Pump	Inspection chambers, pumps, inlets, outlets vents and overflows will be checked to ensure that they are in good condition and operating as designed. Survey inside of the tank for sediment build-up and remove if necessary by jetting.	Replacement of malfunction pump parts as required.	Inspect every 6 months or after large storm.
Blue Roof System	Inspection chambers will be checked every 6 months for the accumulation of debris and silt and cleaned as necessary. Remove debris from the catchment surface where it may cause risk to performance (monthly).		Inspect every 6 months or after large storm.
Green Roof System	Inspect all components including soil substrate, vegetation, drains, irrigation systems (if applicable), membranes, integrity of waterproofing and structural stability. Inspect drain inlets to ensure unrestricted runoff from the drainage layer. Remove debris and litter to prevent clogging of inlet drains and inference with plant growth.	Replace dead plants as required Remove invasive and nuisance vegetation including weeds.	Inspect every 6 months or after large storm.

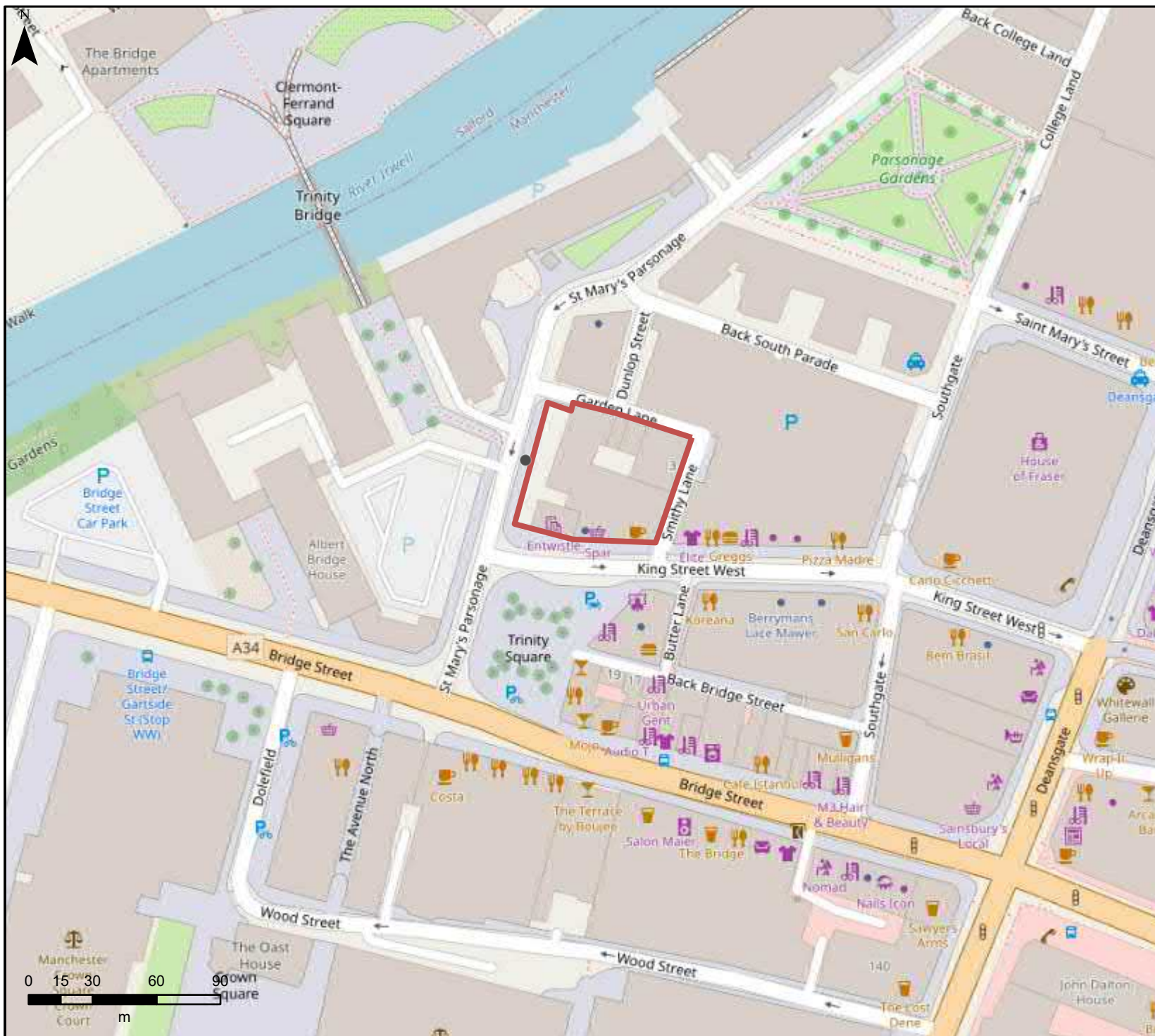
10. OFFSITE EFFECTS

- 10.1.1. It has been confirmed that the public combined sewer network will be able to accommodate the proposed flows for both foul and surface water discharge from the Proposed Development.
- 10.1.2. The proposed surface water drainage strategies demonstrate that the drainage network at the Site is designed to accommodate runoff during all events up to and including the 100 year plus 45% climate change allowance and therefore does not increase the risk of flooding elsewhere in the catchment.

Appendix A

SITE LOCATION PLAN

wsp



DO NOT SCALE

Information Classification:

INTERNAL

Information that is only intended for internal distribution among WSP employees, independent consultants, contractors, sub-contractors, clients and authorised third parties.

Legend :

Title : Site Location Plan
Author : ArcGIS Web AppBuilder
Scale : 1:2,500
Layout : WSP A4 Landscape
Current Time : 01/02/2022 16:29



© WSP UK Ltd

Appendix B

TOPOGRAPHICAL SURVEY PLAN

wsp



DATE 06.08.2021		DRAWN BY TG		
SCALE 1:200 @A2		CHECKED LR		
PROJECT	LINE	ORIGINATOR	VOLUME/ ZONE/BLDG	LEVEL
111468	102	HLS	00	Z0
FILE TYPE	DISCIPLINE/ ROLE	NUMBER	STATUS	REVISION
M2	G	10100	A7	---

Appendix C

WSP
WATER AUTHORITY ASSET RECORDS

Commercial Drainage and Water Enquiry

Responses to a drainage and water enquiry for commercial premises or development sites.

This document was ordered by: -

Searchflow Ltd

**42 Kings Hill Avenue
Kings Hill
West Malling, Kent
ME19 4AJ**

Client Ref: SF27378815000

FAO:

This document was produced by: -

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

Telephone 0370 7510101

e-mail - property.searches@uuplc.co.uk

The information in this document refers to: -

**Property: (KNOWN TO US AS 29-33) REEDHAM HOUSE 27-33 KING STREET AND
3 SMITHY LANE MANCHESTER M3 2PN**

For any queries relating to this report please e-mail, write or phone our Customer Liaison Team at the above address quoting United Utilities' Reference Number: 1404759

1. Section one: Introduction

The following records were searched in compiling this report:-

- * The map of the public sewers
- * The map of the waterworks
- * Water and Sewerage connection records
- * Adoption of public sewer records
- * Building over public sewers records
- * The properties subject to internal foul flooding
- * Adoption of public water mains records
- * The properties subject to poor water pressure and
- * Water supply clarification.

All these are held by United Utilities Water Limited, Haweswater House, Lingley Mere Business Park, Lingley Green Avenue, Great Sankey, Warrington, WA5 3LP.

Please Note - We must make you aware that due to the introduction of the open market with effect from 1st April 2017 for commercial customers, Property Searches will no longer be able to resolve issues regarding some discrepancies within the report. Due to the change in the structure of the market the retailer is now responsible for taking ownership of certain issues, particularly relating to billing/tariff charges as well as, but not limited to change of usage of a property.

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

United Utilities Water Limited
Registered In England & Wales No. 2366678
Registered Office Haweswater House, Lingley Mere Business Park, Lingley Green Avenue, Great Sankey, Warrington, WA5 3LP.

Interpretation of Drainage and Water Enquiry

Appendix 1 of this report contains definitions of terms and expressions used in the report.

Enquiries and Responses

The records were searched by Nathan Vaughan for United Utilities who does not have, nor is likely to have, any personal or business relationship with any person involved in the sale of the property.

This search report was prepared by Nathan Vaughan for United Utilities who does not have, nor is likely to have, any personal or business relationship with any person involved in the sale of the property.

Appendix 2 of this report contains the terms and conditions of sale

Appendix 3 of this report contains our formal complaints procedures

Commercial drainage and water search complaint procedure

In the event of any queries relating to this report please e-mail, write or phone our Customer Liaison Team at the address above quoting United Utilities reference. We will endeavour to resolve any telephone contact or complaint at the time of the call

Whilst we always try to resolve all complaints straightaway, if this is not possible and you are not happy with the course of action taken by us, you can ask us to escalate the issues internally or take your complaint to an independent third party.

We will listen to your complaint and do our best to deal with it immediately.

If we fail to give you a written substantive response within 5 working days Property Searches will compensate our client the original fee paid for a Property Searches Commercial Drainage and Water enquiry, regardless of the outcome of your complaint.

If it is a complex issue requiring more time, we will still get back to you within 5 days and notify you of progress and update you with the new timescales.

If we consider your complaint to be justified we will or we have made any errors that substantially change to outcome of the search we will-

- Refund your search fee
- Provide you with a revised search
- Take the necessary action within our power to put things right
- Keep you informed of any action required

If we cannot resolve your complaint or have failed to comply with the complaints procedure you can:

- Let us know and we can escalate your complaint
- Refer the issue to an independent body of your choice.

To help understand the implications of the Drainage and Water Enquiries Report a summary guide to the content of the full report is provided below.

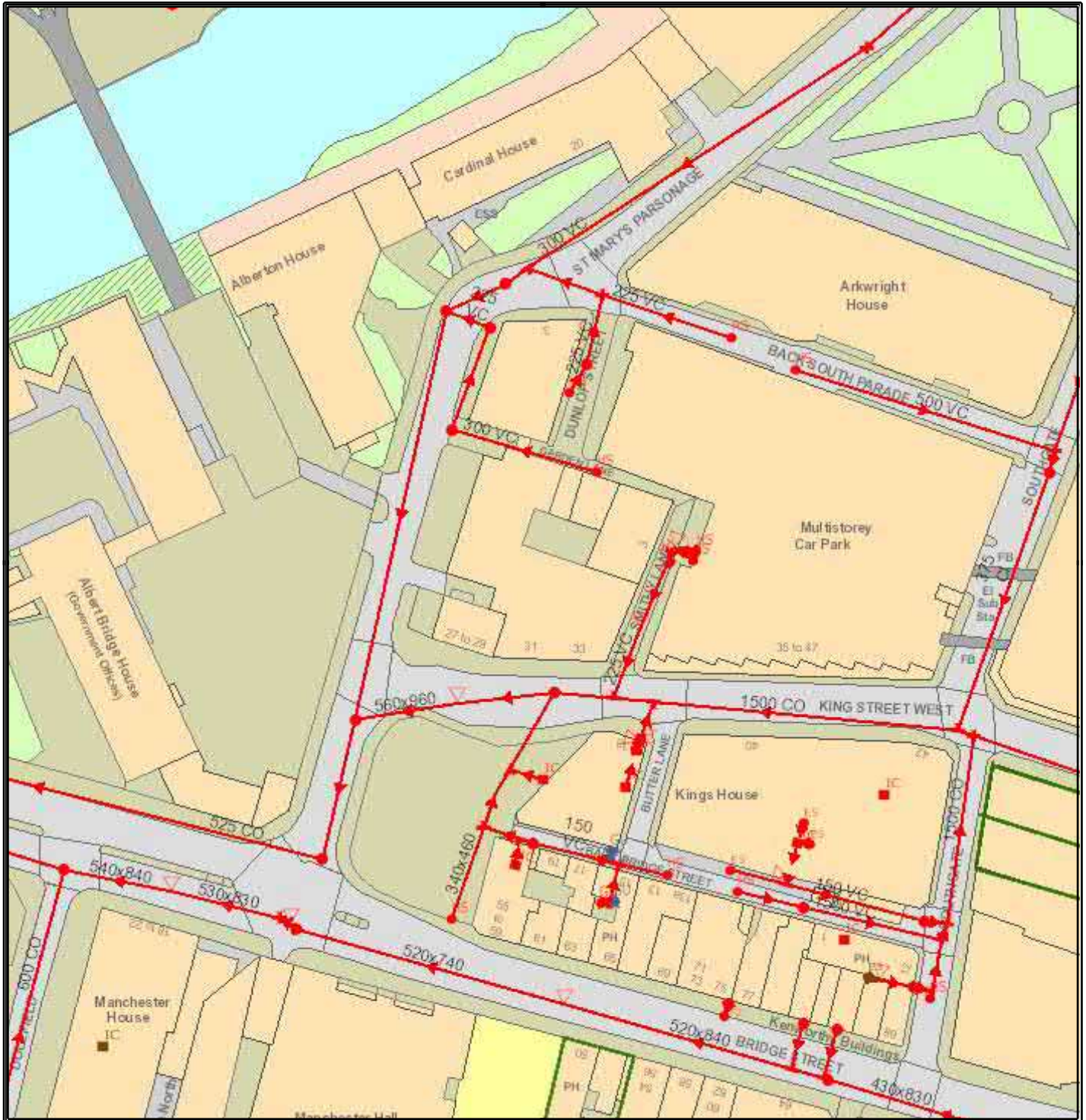
 *The attention of the purchaser is drawn to this response. The purchaser may wish to make further investigations into this situation.*

 *This response represents the typical situation for a property.*

 *This response represents an uncommon situation for a property and the purchaser should carefully consider its implications.*

Question	Report Schedule	Answer
1	Where relevant, please include a copy of an extract from the public sewer map.	Yes & in vicinity 
2	Where relevant, please include a copy of an extract from the map of waterworks.	Yes & in vicinity 
3	Does foul water from the property drain to a public sewer?	Public 
4	Does surface water from the property drain to a public sewer?	Public 
5	Is a surface water drainage charge payable?	Commercial Reform - Yes 
6	Does the public sewer map indicate any public sewer, disposal main or lateral drain within the boundaries of the property?	None 
6.1	Does the public sewer map indicate any pumping station or any other ancillary apparatus within the boundaries of the property?	None 
7	Does the public sewer map indicate any public sewer within 30.48 metres (100 feet) of any buildings within the property?	Public 
7.1	Does the public sewer map indicate any public pumping station or any other ancillary apparatus within 50 metres of any buildings within the property?	None 
8.1	Are any sewers or lateral drains serving or which are proposed to serve the property the subject of an existing adoption agreement or an application for such an agreement?	Not applicable 
8.2	Are any sewers or lateral drains serving, or which are proposed to serve the property, the subject of an existing adoption agreement or an application for such an agreement?	Not applicable 
9	Has a sewerage undertaker approved or been consulted about any plans to erect a building or extension on the property over or in the vicinity of a public sewer, disposal main or drain?	None 
10	Is the property, or part of the property, at risk of internal foul flooding due to overloaded public sewers?	No 
11	Please state the distance from the property to the nearest boundary of the nearest sewage treatment works.	Yes 
12	Is the property connected to mains water supply?	Connected 
13	Are there any water mains, resource mains or discharge pipes within the boundaries of the property?	No 
14	Is any water main or service pipe serving or which is proposed to serve the property the subject of an existing adoption agreement or an application for such an agreement?	No 
15	Is the building at risk of receiving low water pressure or flow?	No 
16	What is the clarification of the water supply for the property?	Very Soft 
18	Please include details of the location of any water meter serving the property.	Commercial - Internal 
19	Who is responsible for providing the sewerage services for the property?	United Utilities 
19	Who is responsible for providing the water services for the property?	United Utilities 
20	Who bills the property for sewerage services?	Retailer Sewer 
21	Who bills the property for water services?	Retailer Water 
AQ1	Has a customer been granted a trade effluent consent at this property?	No 
AQ2	Is there an easement affecting the property?	No 

SEWER RECORD (KNOWN TO US AS 29-33) REEDHAM HOUSE 27-33 KING STREET AND 3 SMITHY LANE MANCHESTER M3 2PN



The position of underground apparatus shown on this plan is approximate only and is given in accordance with the best information currently available. The actual positions may be different from those shown on the plan and private pipes, sewers or drains may not be recorded. United Utilities Water Limited will not accept any liability for any damage caused by the actual positions being different from those shown.

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Waste Water Symbolology

Combined	Foul	Surface	Overflow					
				Manhole				WW pumping station
				Manhole, side entry				Inspection chamber
				Public sewer				Extent of survey
				Private sewer				Head of system
				S104 sewer				Soakaway
				Rising main, public				Rodding eye
				Rising main, private				Lamp hole
				Rising main, S104				T junction/saddle
				Highway drain, private				Gully
				Screen chamber				Air valve
				Discharge point				Non return valve
				Outfall				Sewer overflow
				Control kiosk				Cascade
				Sludge main				Flow meter
								Hatch box
								Hydrobrake
								Inlet
								Bifurcation
								Catchpit
								Oil interceptor
								Penstock
								Summit
								Valve
								Valve chamber
								Washout chamber
								Drop shaft
								WW treatment works
								Septic tank
								Vent column
								Network storage tank
								Orifice plate
								Vortex chamber
								Penstock chamber

Abandoned pipe		Manhole function	
	Public sewer	FO	Foul
	Rising main	SW	Surface Water
	Private sewer	CO	Combined
	Sludge main	OV	Overflow

Sewer shape		U	Unspecified
CI	Circular	SQ	Square
EG	Egg	TR	Trapezoidal
OV	Oval	AR	Arch
FT	Flat top	BA	Barrel
RE	Rectangular	HO	Horse shoe

Sewer material			
AC	Asbestos cement	DI	Ductile iron
BR	Brick	VC	Vitrified clay
CO	Concrete	PP	Polypropylene
CSB	Concrete segment	PF	Pitched fibre
CSU	Concrete segment	MA	Masonry, coursed
CC	Concrete box culverted	MA	Masonry, random
PSC	Plastic	RP	Reinforced plastic
GR	Glass reinforced	CI	Cast iron
GRP	Glass reinforced	SI	Spun iron
PVC	Polyvinyl chloride	ST	Steel
PE	Polyethylene	U	Unspecified

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

Bulk Supply Point

Inlet Point

End Cap

Site Termination

Change of Characteristic

Property Types

Water Tower

Valve House

Booster Pumping Station

Intake Pumping Station

Water Treatment Works

Supply Reservoir

Service Reservoir

Impounding Reservoir

Pipe Bridge

Condition Report

Matertial Types

AC	Asbestos Cement
CI	Cast Iron
CU	Copper
CO	Concrete
DI	Ductile Iron
GI	Galvanised Iron
GR	Grey Iron
OT	Others
PB	Lead
PV	uPVC
SI	Spun Iron
ST	Steel
UN	Unknown
PE	Ployethelene

Lining Types

CL	Cement Lining
TB	Tar or Bitumen
ERL	Epoxy Resin

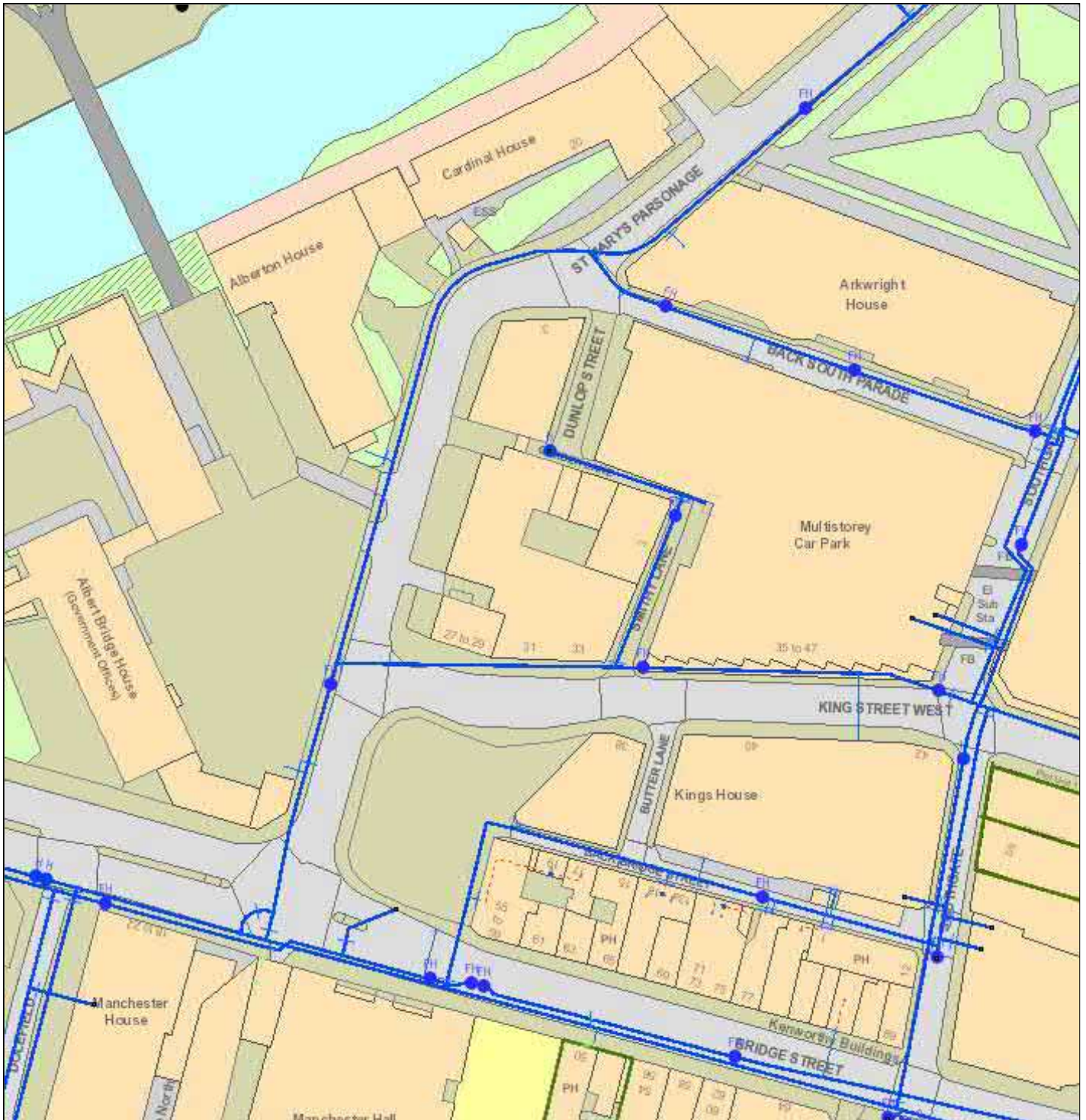
Insertion Types

DD	Die Drawn
DR	Directional Drilling
MO	Moling
PI	Pipeline
SL	Slip Lined

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 RECORD (KNOWN TO US AS 29-33) REEDHAM HOUSE 27-33 KING STREET AND 3 SMITHY LANE MANCHESTER M3 2PN



The position of underground apparatus shown on this plan is approximate only and is given in accordance with the best information currently available. The actual positions may be different from those shown on the plan and private pipes, sewers or drains may not be recorded. United Utilities Water Limited will not accept any liability for any damage caused by the actual positions being different from those shown.

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Question 1 **Where relevant, please include a copy of an extract from the public sewer map.**

Answer **A copy of an extract of the public sewer map within the vicinity of the property is included.**

Informative 1. The Water Industry Act 1991 defines Public Sewers as those which (United Utilities) have responsibility for. Other assets and rivers, water courses, ponds, culverts or highway drains may be shown for information purposes only.

2. 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.

3. The Sewerage Undertaker has a statutory right of access to carry out work on its assets, subject to notice. This may result in employees of the Sewerage Undertaker or its contractors needing to enter the property to carry out work.

Question 2 **Where relevant, please include a copy of an extract from the map of waterworks.**

Answer **A copy of an extract of the map of waterworks is included, showing water mains, resource mains or discharge pipes in the vicinity of the property.**

Informative The "water mains" in this context are those which are vested in and maintainable by the Water Undertaker under statute.

Assets other than public water mains may be shown on the plan, for information only. Water Undertakers are not responsible for private supply pipes connecting the property to the public water main and do not hold details of these. These may pass through land outside of the control of the seller, or may be shared with adjacent properties. The buyer may wish to investigate whether separate rights or easements are needed for their inspection, repair or renewal.

If an extract of the public water main record is enclosed, it 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.

The presence of a public water main running within the boundary of the property may restrict further development within it. Water Undertakers have a statutory right of access to carry out work on their assets, subject to notice. This may result in employees of the Water Undertaker or its contractors needing to enter the property to carry out work.

Question 3 Does foul water from the property drain to a public sewer?**Answer** **Records indicate that foul water from the property drains to a public sewer.**

Informative Sewerage Undertakers are not responsible for any private drains or sewers that connect the property to the public sewerage system, and do not hold details of these.

The property owner will normally have sole responsibility for private drains serving the property and may have shared responsibility, with other users, if the property is served by a private sewer which also serves other properties. These may pass through land outside of the control of the seller and the buyer may wish to investigate whether separate rights or easements are needed for their inspection, repair or renewal.

If foul water does not drain to the public sewerage system the property may have private facilities in the form of a cesspit, septic tank or other type of treatment plant.

If an extract from the public sewer map is enclosed, this will show known public sewers in the vicinity of the property and it should be possible to estimate the likely length and route of any private drains and/or sewers connecting the property to the public sewerage system.

Question 4 Does surface water from the property drain to a public sewer?**Answer** **Records indicate that surface water from the property does drain to a public sewer.**

Informative Sewerage Undertakers are not responsible for any private drains or sewers that connect the property to the public sewerage system and do not hold details of these.

The property owner will normally have sole responsibility for private drains serving the property and may have shared responsibility with other users, if the property is served by a private sewer which also serves other properties. These may pass through land outside of the control of the seller and the buyer may wish to investigate whether separate rights or easements are needed for their inspection, repair or renewal.

In some cases, Sewerage Undertakers' records do not distinguish between foul and surface water connections to the public sewerage system. If on inspection the buyer finds that the property is not connected for surface water drainage, the property may be eligible for a rebate of the surface water drainage charge. Details can be obtained from the Sewerage Undertaker.

If surface water does not drain to the public sewerage system the property may have private facilities in the form of a soakaway or private connection to a watercourse.

If an extract from the public sewer map is enclosed, this will show known public sewers in the vicinity of the property and it should be possible to estimate the likely length and route of any private drains and/or sewers connecting the property to the public sewerage system.

Question 5 Is a surface water drainage charge payable?

Answer **Records indicate that a surface water drainage charge is applicable for the property.**

Informative Since 1st April 2017 commercial customers can choose their retailer for clean, waste or both services. For more information on any applicable surface water charges you will need to contact the current owner of the property to find out who the current retailer is. Details of the retailer for a property can be found on the current occupiers bill. For a list of all potential retailers of water and waste water services for the property please visit www.open-water.org.uk.

Please note if the property was constructed after 6th April 2015 the Surface Water drainage may be served by a Sustainable Drainage System. Further information may be available from the Developer.

Question 6 Does the public sewer map indicate any public sewer, disposal main or lateral drain within the boundaries of the property?

Answer **The public sewer map included indicates that there are no public sewers, disposal mains or lateral drains within the boundary of the property. However from the 1st October 2011 there may be additional public sewers, disposal mains or lateral drains which are not recorded on the public sewer map which may further prevent or restrict development of the property. If you are considering any future development at this property which may require build over consent, please complete the enquiry form by accessing the following link**
<http://www.unitedutilities.com/planning-wastewater-guidance.aspx>.

Informative The approximate boundary of the property has been determined by reference to the Ordnance Survey record or the map supplied.
The presence of a public sewer running within the boundary of the property may restrict further development.

United Utilities has a statutory right of access to carry out work on its assets, subject to notice. This may result in employees of United Utilities or its contractors needing to enter the property to carry out work.

Sewers 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 that these details be checked with the developer, if any.

Assets other than public sewers may be shown on the copy extract, for information only. Please note if the property was constructed after 1st July 2011 any sewers and/or lateral drains within the boundary of the property are the responsibility of the householder.

Question 6.1 Does the public sewer map indicate any pumping station or any other ancillary apparatus within the boundaries of the property?

Answer The public sewer map included indicates that there is no public pumping station or other ancillary apparatus within the boundaries of the property. However, from the 1st October 2016 private pumping stations which serve more than one property will be transferred into public ownership but may not be recorded on the public sewer map until that time

Informative From 1 October 2016 United Utilities will be responsible for private pumping stations (though we may take ownership of some stations before this date) that either:

- serve a single property, and are outside the property boundary or
- serves two or more properties

Only private pumping stations installed before 1st July 2011 will be transferred into our ownership. United Utilities will be responsible for all associated costs, maintenance, repairs and any necessary upgrade work.

United Utilities has rights of access to maintain this asset on a regular basis.

Question 7 Does the public sewer map indicate any public sewer within 30.48 metres (100 feet) of any buildings within the property?

Answer The public sewer map included indicates that there are public sewers within 30.48 (100 feet) of a building within the boundary of the property. However from the 1st October 2011 there may be additional public sewers, disposal mains or lateral drains which are not recorded on the public sewer map which may further prevent or restrict development of the property. Please refer to the answer of the question "sewer in boundary" for further details.

Informative From 1st October 2011 there may be additional lateral drains and/or public sewers which are not recorded on the public sewer map but are also within 30.48 metres (100 feet) of a building within the property.

The presence of a public sewer within 30.48 metres (100 feet) of the building(s) within the property can result in the Local Authority requiring a property to be connected to the public sewer.

The measure is estimated from the Ordnance Survey record, between the building(s) within the boundary of the property and the nearest public sewer.

Sewers 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 that these details are checked with the developer, if any.

Assets other than public sewers may be shown on the copy extract for information only.

Where the property is part of a very recent or ongoing development and the sewers/pumping station are not the subject of an adoption application, buyers should consult with the developer to ascertain the extent of private drains, sewers and pumping stations for which they will hold maintenance and renewal liabilities.

Question 7.1 Does the public sewer map indicate any public pumping station or any other ancillary apparatus within 50 metres of any buildings within the property?

Answer The public sewer map included indicates that there is no public pumping station or other ancillary apparatus within 50 metres of any buildings within the property. However, from 1st October 2016 private pumping stations which serve more than one property will be transferred into public ownership but may not be recorded on the public sewer map until that time.

Informative From 1 October 2016 United Utilities will be responsible for private pumping stations (though we may take ownership of some stations before this date) that either:
" serve a single property, and are outside the property boundary or
" serves two or more properties
Only private pumping stations installed before 1st July 2011 will be transferred into our ownership. United Utilities will be responsible for all associated costs, maintenance, repairs and any necessary upgrade work.

Where the property is part of a very recent or ongoing development and the sewers/pumping station are not the subject of an adoption application, buyers should consult with the developer to ascertain the extent of private drains, sewers and pumping stations for which they will hold maintenance and renewal liabilities.

Question 8.1 Are any sewers or lateral drains serving or which are proposed to serve the property the subject of an existing adoption agreement or an application for such an agreement?

Answer The property is part of an established development and is not subject to an adoption agreement

Informative This enquiry is of interest to purchasers of new property who will want to know whether or not the property will be linked to a public sewer.

Where the property is part of a very recent or ongoing development and the sewers are not the subject of an adoption application, buyers should consult with the developer to ascertain the extent of private drains and sewers for which they will hold maintenance and renewal liabilities.

Final adoption is subject to the developer complying with the terms of the adoption agreement under Section 104 of the Water Industry Act 1991.

Question 8.2 Are any sewers or lateral drains serving, or which are proposed to serve the property, the subject of an existing adoption agreement or an application for such an agreement?

Answer **The property is part of an established development and is not subject to an adoption agreement**

Informative This enquiry is of interest to purchasers of new property who will want to know whether or not the property will be linked to a public sewer.

Where the property is part of a very recent or ongoing development and the sewers are not the subject of an adoption application, buyers should consult with the developer to ascertain the extent of private drains and sewers for which they will hold maintenance and renewal liabilities.

Final adoption is subject to the developer complying with the terms of the adoption agreement under Section 104 of the Water Industry Act 1991.

Question 9 Has a sewerage undertaker approved or been consulted about any plans to erect a building or extension on the property over or in the vicinity of a public sewer, disposal main or drain?

Answer **There are no records in relation to any approval or consultation about plans to erect a building or extension on the property over or in the vicinity of a public sewer, disposal main or drain. However, the sewerage undertaker might not be aware of a building or extension on the property over or in the vicinity of a public sewer, disposal main or drain.**

Informative From the 1st October 2011 private sewers, disposal mains and lateral drains were transferred into public ownership and the sewerage undertaker may not have granted approval or been consulted about any plans to erect a building or extension on the property over or in the vicinity of these assets.

Prior to 2003 United Utilities Water Limited had sewerage agency agreements with the local authorities therefore details of any agreements/consents or rejections may not have been forwarded on to our offices before this date.

Buildings or extensions erected over a sewer in contravention of building controls may have to be removed or altered.

Question 10 Is the property, or part of the property, at risk of internal foul flooding due to overloaded public sewers?

Answer **The building is not recorded as being at risk of internal flooding due to overloaded public sewers. From the 1st October 2011 private sewers, disposal mains and lateral drains were transferred into public ownership it is therefore possible that a property may be at risk of internal flooding due to an overloaded public sewer which the sewerage undertaker is not aware of. For further information it is recommended that enquiries are made of the vendor.**

Informative

1. A sewer is "overloaded" when the flow from a storm is unable to pass through it due to a permanent problem (e.g. flat gradient, small diameter). Flooding as a result of temporary problems such as blockages, siltation, collapses and equipment or operational failures are excluded.
2. "Internal flooding" from public sewers is defined as flooding, which enters a building or passes below a suspended floor. For reporting purposes, buildings are restricted to those normally occupied and used for residential, public, commercial, business or industrial purposes.
3. These are defined as properties that have suffered or are likely to suffer internal flooding from public foul, combined or surface water sewers due to overloading of the sewerage system more frequently than the relevant reference period (either once or twice in ten years) as determined by the Sewerage Undertaker's reporting procedure.
4. Flooding as a result of storm events proven to be exceptional and beyond the reference period of one in ten years are not included.
5. Properties may be at risk of flooding but not included where flooding incidents have not been reported to the Sewerage Undertaker.
6. Public sewers are defined as those for which the Sewerage Undertaker holds statutory responsibility under the Water Industry Act 1991.
7. It should be noted that flooding can occur from private sewers and drains which are not the responsibility of the Sewerage Undertaker.
8. This report excludes flooding from private sewers and drains and the Sewerage Undertaker makes no comment upon this matter. For reporting purposes buildings are restricted to those normally occupied and used for residential, public, commercial, business or industrial purposes.

Question 11 Please state the distance from the property to the nearest boundary of the nearest sewage treatment works.

Answer The nearest Sewage Treatment Works is 2.43 miles (3.91 km), South West of the property. The name of the Sewage treatment works is SALFORD WWTW.

The owner is United Utilities

Informative The nearest sewage treatment works will not always be the sewage treatment works serving the catchment within which the property is situated i.e. the property may not necessarily drain to this works.

The Sewerage Undertaker's records were inspected to determine the nearest sewage treatment works.

It should be noted therefore that there may be a private sewage treatment works closer than the one detailed above that has not been identified. As a responsible utility operator, United Utilities Water Limited seeks to manage the impact of odour from operational sewage works on the surrounding area.

This is done in accordance with the "Code of Practice on Odour Nuisance from Sewage Treatment Works" issued via the Department of Environment, Food and Rural Affairs (DEFRA).

This Code recognises that odour from sewage treatment works can have a detrimental impact on the quality of the local environment for those living close to works.

However DEFRA also recognises that sewage treatment works provide important services to communities and are essential for maintaining standards in water quality and protecting aquatic based environments. For more information visit www.unitedutilities.com.

Question 12 Is the property connected to mains water supply?

Answer Records indicate that the property is connected to mains water supply.

Informative If the property is supplied by private water mains please note that details of private supplies are not kept by the Water Undertaker. The situation should be checked with the current owner of the property.

Question 13 Are there any water mains, resource mains or discharge pipes within the boundaries of the property?

Answer The map of waterworks does not indicate any water mains, resource mains or discharge pipes within the boundaries of the property.

Informative The boundary of the property has been determined by reference to the Ordnance Survey record.

The presence of a public water main within the boundary of the property may restrict further development within it. Water Undertakers have a statutory right of access to carry out work on their assets, subject to notice.

This may result in employees of the Water Undertaker or its contractors needing to enter the property to carry out work.

Question 14 Is any water main or service pipe serving or which is proposed to serve the property the subject of an existing adoption agreement or an application for such an agreement?

Answer Records confirm that water mains or service pipes serving the property are not the subject of an existing adoption agreement or an application for such an agreement.

Informative This enquiry is of interest to purchasers of new premises who will want to know whether or not the property will be linked to the mains water supply.

Question 15 Is the building at risk of receiving low water pressure or flow?

Answer **Records confirm that the building is not recorded by the water undertaker as being at risk of receiving low water pressure or flow.**

Informative The boundary of the property has been determined by reference to the Ordnance Survey record. "Low water pressure" means water pressure below the regulatory reference level which is the minimum pressure when demand on the system is not abnormal.

Water Undertakers report properties receiving pressure below the reference level, provided that allowable exclusions do not apply (i.e. events which can cause pressure to temporarily fall below the reference level).

The reference level of service is a flow of 9 litres/minute at a pressure of 10 metres head on the customer's side of the main stop tap. The reference level of service must be applied on the customer's side of a meter or any other company fittings that are on the customer's side of the main stop tap. The reference level applies to a single property.

Allowable exclusions:

The Water Undertaker to include in the properties receiving pressure below the reference level, provided that allowable exclusions listed below do not apply.

Abnormal demand:

This exclusion is intended to cover abnormal peaks in demand and not the daily, weekly or monthly peaks in demand, which are normally expected. Water Undertakers exclude from figures properties which are affected by low pressure only on those days with the highest peak demands. During the report year Water Undertakers may exclude, for each property, up to five days of low pressure caused by peak demand.

Planned maintenance:

Water Undertakers will not report low pressures caused by planned maintenance.

It is not intended that Water Undertakers identify the number of properties affected in each instance. However, Water Undertakers must maintain sufficiently accurate records to verify that low-pressure incidents that are excluded because of planned maintenance, are actually caused by maintenance.

One-off incidents:

This exclusion covers a number of causes of low pressure; mains bursts; failures of company equipment (such as pressure reducing valves or booster pumps); fire fighting and action by a third party.

However, if problems of this type affect a property frequently, they cannot be classed as one-off events and further investigation will be required before they can be excluded.

Low pressure incidents of short duration:

Properties affected by low pressures that only occur for a short period, and for which there is evidence that incidents of a longer duration would not occur during the course of the year, may be excluded.

It should be noted that low water pressure can occur from private water mains, private supply pipes (the pipework from the external stop cock to the property) or internal plumbing which are not the responsibility of the Water Undertaker. This report excludes low water pressure from private water mains, supply pipes and internal plumbing and the Water Undertaker makes no comment upon this matter.

Question 16
What is the clarification of the water supply for the property?
Answer

The water supplied to the property has an average water hardness of 28 mg/l calcium carbonate which is defined as very soft by United Utilities.

Informative

The hardness of water is due to the presence of calcium and magnesium minerals that are naturally present in the water. The usual signs of a hard water supply are scaling inside kettles, poor lathering of soaps and scum.

What is water hardness?

Hard water is formed when water passes through or over limestone or chalk areas and calcium and magnesium ions dissolve into the water. The hardness is made up of two parts: temporary (carbonate) and permanent (non-carbonate) hardness. When water is boiled, calcium carbonate scale can form, which can deposit on things like kettle elements. The scale will not stick to kettles that have a plastic polypropylene lining but will float on the surface. The permanent hardness that comprises calcium and magnesium sulphate does not go on to form scale when heated or boiled.

How is water hardness measured?

Hardness is usually expressed in terms of the equivalent quantity of calcium carbonate (CaCO₃) in milligrams per litre or parts per million. You may also see hardness expressed as degrees of hardness in Clark (English) degrees, French or German degrees. Interconversion between the different measurements can be made by using the appropriate conversion factors below.

There are no standard levels as to what constitutes a hard or a soft water. Table 1 gives an indication of the equivalents of calcium and calcium carbonate and the relative degree of hardness.

Water quality standards

There are no regulatory standards for water hardness in drinking water.

Water hardness in the North West

The majority of raw water in the United Utilities region comes from upland surface water reservoirs. The water in the reservoirs has little chance of passing through rocks and to dissolve the minerals that make water hard. Therefore, the majority of water in this region is soft or very soft. We supply water from a number of boreholes in the south of the region that are reasonably hard, but these tend to be blended with softer sources to meet demand. No water supply in the North West is artificially softened.

Can hard water be softened?

Yes, water can be softened artificially by the installation of a water softener or the use of 'jug type' filters. Medical experts recommend that a non-softened supply is maintained for drinking purposes because softened water may contain high levels of sodium. Softeners should be fitted after the drinking water tap and comply with the requirements of the Water Supply (Water Fittings) Regulations 1999. They should be maintained in accordance with manufacturers' instructions.

If you're interested in finding out more about the quality of your drinking water, please visit www.unitedutilities.com/waterquality and enter your postcode..

The Drinking Water Inspectorate is responsible for ensuring the quality of public water supplies. Visit their website at: www.dwi.defra.gov.uk

Table 1 Drinking water hardness

mg Ca/l	mg CaCO ₃ /l	Clark Degrees	French Degrees	German Degrees	Hardness
<30	<75	<5.3	<7.5	<4.2	Very soft
30-50	75 – 125	5.3 – 8.8	7.5 – 12.5	4.0 – 7.0	Soft
50-100	125 – 250	8.8 – 17.5	12.5 – 25.0	7.0 – 14.0	Mod. hard
100-150	250 – 375	17.5 – 26.3	25.0 – 37.5	14.0 – 21.0	Hard
>150	>375	>26.3	>37.5	>21.0	Very hard

Question 18 Please include details of the location of any water meter serving the property.

Answer Records indicate that the property is served by a water meter, which is located inside the building which is located within the property boundary. We have the location as in the frame shop in the cellar.

Informative Where the property is not served by a meter the current occupier can contact the retailer directly to advise on the current charging method, details of the retailer can also be found on the current occupiers bill.

Question 19 Who is responsible for providing the sewerage services for the property?

Answer United Utilities Water Limited, Haweswater House, Lingley Mere Business Park, Lingley Green Avenue, Great Sankey, Warrington, WA5 3LP is the sewerage undertaker for the area and United Utilities Water Limited, Haweswater House, Lingley Mere Business Park, Lingley Green Avenue, Great Sankey, Warrington, WA5 3LP is the water undertaker for the area.

Informative Not Applicable

Question 20 Who bills the property for sewerage services?

Answer Since 1st April 2017 commercial customers can choose their retailer. If you wish to know who currently bills the property for sewerage services you will need to contact the current owner of the property to find out who the current retailer is.

Informative Details of the retailer for a property can be found on the current occupiers bill. For a list of all potential retailers of waste water services for the property please visit www.open-water.org.uk

Question 21 Who bills the property for water services?

Answer Since 1st April 2017 commercial customers can choose their retailer. If you wish to know who currently bills the property for water services you will need to contact the current owner of the property to find out who the current retailer is.

Informative Details of the retailer for a property can be found on the current occupiers bill. For a list of all potential retailers of water services for the property please visit www.open-water.org.uk

Additional Questions

Additional Question 1 Answer

Has a customer been granted a trade effluent consent at this property?

There is no record of a Trade Effluent consent at this property. Applications for Trade Effluent consents should be submitted via your retailer for info please visit <https://www.unitedutilities.com/services/wholesale-services/trade-effluent/>

Informative

The owner/occupiers of Trade Premises do not have the right to discharge Trade Effluent to the public wastewater network. Any Trade Effluent Discharge Consent will be issued under Section 118 of the Water Industry Act 1991 and will be subject to conditions set by the Sewerage Undertaker.

Generally these conditions are to ensure:

- a) The Health and Safety of staff working within the wastewater network and at wastewater treatment plants.
- b) The apparatus of the wastewater network is not damaged.
- c) The flow of the contents of the wastewater network is not restricted.
- d) Equipment, plant, and processes at treatment works are not disrupted or damaged.
- e) Treatment of sewage sludge is not impeded and sludges are disposed of in an environmentally friendly manner.
- f) Final effluent discharge from wastewater treatment plants has no impact on the environment or prevents the receiving waters from complying with EU Directives.
- g) Potential damage to the environment via storm water overflows is minimised.

Disputes between an occupier of a Trade Premise and the Sewerage Undertaker can be referred to the Director General of Water Services (OFWAT).

Protecting Public Sewers - Discharges Section 111 of the Water Industry Act 1991, places prohibition on the discharge of the following into a public sewer, drain or a sewer that communicates with a public sewer.

- i) Any matter likely to injure the sewer or drain, to interfere with the free flow of its contents or to affect prejudicially the treatment or disposal of its contents.
- ii) Any chemical refuse or waste steam or any liquid of temperature higher than 43.3 degrees Celsius (110 degrees Fahrenheit).
- iii) Any petroleum spirit or carbide of calcium.

On summary conviction offences under this Section carry a fine not exceeding the statutory maximum or a term of imprisonment not exceeding two years, or both.

Please note any existing consent is dependant on the business being carried out at the property and will not transfer automatically upon change of ownership.

Additional Question 2 Answer

Is there an easement affecting the property?

There is no record of a formal easement agreement affecting this property.

Informative

Not Applicable.

Appendix 1 - General Interpretation

1. (1) In this Schedule-

"the 1991 Act" means the Water Industry Act 1991(a);

"the 2000 Regulations" means the Water Supply (Water Quality) Regulations 2000(b);

"the 2001 Regulations" means the Water Supply (Water Quality) Regulations 2001(c);

"adoption agreement" means an agreement made or to be made under Section 51A(1) or 104(1) of the 1991 Act (d);

"bond" means a surety granted by a developer who is a party to an adoption agreement;

"bond waiver" means an agreement with a developer for the provision of a form of financial security as a substitute for a bond;

"calendar year" means the twelve months ending with 31st December;

"discharge pipe" means a pipe from which discharges are made or are to be made under Section 165(1) of the 1991 Act;

"disposal main" means (subject to Section 219(2) of the 1991 Act) any outfall pipe or other pipe which-
(a) is a pipe for the conveyance of effluent to or from any sewage disposal works, whether of a sewerage undertaker or of any other person; and
(b) is not a public sewer;

"drain" means (subject to Section 219(2) of the 1991 Act) a drain used for the drainage of one building or any buildings or yards appurtenant to buildings within the same curtilage;

"effluent" means any liquid, including particles of matter and other substances in suspension in the liquid;

"financial year" means the twelve months ending with 31st March;

"lateral drain" means-

- (a) that part of a drain which runs from the curtilage of a building (or buildings or yards within the same curtilage) to the sewer with which the drain communicates or is to communicate; or
- (b) (if different and the context so requires) the part of a drain identified in a declaration of vesting made under Section 102 of the 1991 Act or in an agreement made under Section 104 of that Act (e);

"licensed water supplier" means a company which is the holder for the time being of a water supply licence under Section 17A(1) of the 1991 Act(f);

"maintenance period" means the period so specified in an adoption agreement as a period of time-

- (a) from the date of issue of a certificate by a Sewerage Undertaker to the effect that a developer has built (or substantially built) a private sewer or lateral drain to that undertaker's satisfaction; and
- (b) until the date that private sewer or lateral drain is vested in the Sewerage Undertaker;

"map of waterworks" means the map made available under Section 198(3) of the 1991 Act (g) in relation to the information specified in subsection (1A);

"private sewer" means a pipe or pipes which drain foul or surface water, or both, from premises, and are not vested in a Sewerage Undertaker;

"public sewer" means, subject to Section 106(1A) of the 1991 Act(h), a sewer for the time being vested in a Sewerage Undertaker in its capacity as such, whether vested in that undertaker-

- (a) by virtue of a scheme under Schedule 2 to the Water Act 1989(i);
- (b) by virtue of a scheme under Schedule 2 to the 1991 Act (j);

(c) under Section 179 of the 1991 Act (k); or
(d) otherwise;

"public sewer map" means the map made available under Section 199(5) of the 1991 Act (l);

"resource main" means (subject to Section 219(2) of the 1991 Act) any pipe, not being a trunk main, which is or is to be used for the purpose of-

- (a) conveying water from one source of supply to another, from a source of supply to a regulating reservoir or from a regulating reservoir to a source of supply; or
- (b) giving or taking a supply of water in bulk;

"sewerage services" includes the collection and disposal of foul and surface water and any other services which are required to be provided by a Sewerage Undertaker for the purpose of carrying out its functions;

"Sewerage Undertaker" means the company appointed to be the Sewerage Undertaker under Section 6(1) of the 1991 Act for the area in which the property is or will be situated;

"surface water" includes water from roofs and other impermeable surfaces within the curtilage of the property;

"water main" means (subject to Section 219(2) of the 1991 Act) any pipe, not being a pipe for the time being vested in a person other than the water Undertaker, which is used or to be used by a Water Undertaker or licensed water supplier for the purpose of making a general supply of water available to customers or potential customers of the undertaker or supplier, as distinct from for the purpose of providing a supply to particular customers;

"water meter" means any apparatus for measuring or showing the volume of water supplied to, or of effluent discharged from any premises;

"Water Undertaker" means the company appointed to be the Water Undertaker under Section 6(1) of the 1991 Act for the area in which the property is or will be situated.

(2) In this Schedule, references to a pipe, including references to a main, a drain or a sewer, shall include references to a tunnel or conduit which serves or is to serve as the pipe in question and to any accessories for the pipe.

- (a) 1991 c. 56.
- (b) S.I. 2000/3184. These Regulations apply in relation to England.
- (c) S.I. 2001/3911. These Regulations apply in relation to Wales.
- (d) Section 51A was inserted by Section 92(2) of the Water Act 2003 (c. 37). Section 104(1) was amended by Section 96(4) of that Act.
- (e) Various amendments have been made to Sections 102 and 104 by Section 96 of the Water Act 2003.
- (f) Inserted by Section 56 of and Schedule 4 to the Water Act 2003.
- (g) Subsection (1A) was inserted by Section 92(5) of the Water Act 2003.
- (h) Section 106(1A) was inserted by Section 99 of the Water Act 2003.
- (i) 1989 c. 15.
- (j) To which there are various amendments made by Section 101(1) of and Schedule 8 to the Water Act 2003.
- (k) To which there are various amendments made by Section 101(1) of and Schedule 8 to the Water Act 2003.
- (l) Section 199 was amended by Section 97(1) and (8) of the Water Act 2003.

Appendix 2 - DRAINAGE AND WATER ENQUIRY (COMMERCIAL) AGREEMENT

The Customer, the Client and the Purchaser are asked to note this Agreement which governs the basis on which this drainage and water report is supplied

Definitions

'Company' means United Utilities Water Limited who produce the Report; its registered office being at Haweswater House, Lingley Mere Business Park, Lingley Green Avenue, Great Sankey, Warrington WA5 3LP, company number 2366678.

'Order' means any request completed by the Customer requesting the Report.

'Report' means the drainage and water report prepared by the Company in respect of the Property.

'Property' means the address or location supplied by the Customer in the Order.

'Customer' means the person, company, firm or other legal body placing the Order, either on their own behalf as Client, or, as an agent for a Client.

'Client' means the person, company or body who is the intended recipient of the Report with an actual or potential interest in the Property.

'Purchaser' means the actual or potential purchaser of the Property including their mortgage lender.

Agreement

1.1 The Company agrees to supply the Report to the Customer and the Client subject to this Agreement. The scope and limitations of the Report are described in clause 2 of this Agreement.

Where the Customer is acting as an agent for the Client then the Customer shall be responsible for bringing this Agreement to the attention of the Client and the Purchaser.

1.2 The Customer, the Client and the Purchaser agree that the placing of an Order for a Report and the subsequent provision of a copy of the Report to the Client and/ or the Purchaser indicates their acceptance of this Agreement.

The Report

Whilst the Company will use reasonable care and skill in producing the Report, it is provided to the Customer, the Client and the Purchaser on the basis that they acknowledge and agree to the following:

2.1 The information contained in the Report can change on a regular basis so the Company cannot be responsible to the Customer, the Client and the Purchaser for any change in the information contained in the Report after the date on which the Report was produced and sent to the Client.

2.2 The Report does not give details about the actual state or condition of the Property nor should it be used or taken to indicate or exclude actual suitability or unsuitability of the Property for any particular purpose, or relied upon for determining saleability or value, or used as a substitute for any physical investigation or inspection. Further advice and information from appropriate experts and professionals should always be obtained.

2.3 The information contained in the Report is based upon the accuracy, completeness and legibility of the address and/or plans supplied by the Customer or Client or Purchaser.

2.4 The Report provides information as to the location and connection status of existing services and other information in relation to drainage and water enquiries and should not be relied on for any other purpose. The Report may contain opinions or general advice to the Customer, the Client and the Purchaser. The Company cannot ensure that any such opinion or general advice is accurate, complete or valid and therefore accepts no liability in relation thereto.

2.5 The position and depth of apparatus shown on any maps attached to the Report are approximate and are furnished as a general guide only, and no warranty as to its correctness is given or implied. The exact positions and depths should be obtained by excavation trial holes and the maps must not be relied on in the event of excavation or other works made in the vicinity of the Company's apparatus.

Liability

3.1 The Company shall not be liable to the Client or the Purchaser for any failure defect or non-performance of its obligations arising from any failure to provide or delay in providing the Report to the extent that such failure or delay is due to an event or circumstance beyond the reasonable control of the Company including but not limited to any delay, failure of or defect in any machine, processing system or transmission link or any failure or default of a supplier or sub-contractor of the Company or any provider of any third party Information except to the extent that such failure or delay is caused by the negligence of the Company.

3.2 Where a Report is requested for an address falling within a geographical area where two different companies separately provide Water and Sewerage Services, then it shall be deemed that liability for the information given by either company will remain with that company in respect of the accuracy of the information supplied.

A company supplying information which has been provided to it by another company for the purposes outlined in this agreement will therefore not be liable in any way for the accuracy of that information and will supply that information as an agent for the company from which the information was obtained.

3.2 The Report is produced for use in relation to individual commercial property transactions where the property is used solely for carrying on a trade or business, the property is intended to be developed for commercial gain or the property is not a single residential, domestic property. The Company's entire liability (except to the extent provided by clause 3.5) in respect of all causes of action arising by reason of or in connection with the Report (whether for breach of contract, negligence or any other tort, under statute or statutory duty or otherwise at all) shall be limited to £2,000,000.

3.3 In any event, the Company shall not have any liability in contract, negligence or any other tort or for breach of statutory duty or otherwise in respect of any loss of profit, loss of revenue, loss of opportunity or anticipated savings, or any indirect or consequential loss or damage that may be suffered by the Customer, the Client or the Purchaser howsoever arising. The plans attached to the report are provided pursuant to the Company's statutory duty to make such plans available for inspection (notwithstanding the provisions of this clause) and attention is drawn to the notice on the plan(s) attached to the report which applies to the plan and its contents.

3.4 Where the Customer sells this Report to a Client or Purchaser under its own name or as a reseller of the Company (other than in the case of a bona fide legal adviser recharging the cost of the Report as a disbursement) the Company shall not in any circumstances (whether for breach of contract, negligence or any other tort, under statute or statutory duty, restitution or otherwise at all) be liable to the Customer for any loss (whether direct, indirect or consequential loss (all three of which terms include without limitation, pure economic loss, loss of profit, loss of business, depletion of goodwill and like loss)) or damage whatsoever caused in respect of the Report or any use of the Report or reliance placed upon it and the Customer shall indemnify and keep indemnified the Company in respect of any claim by the Client or the Purchaser that the Company may incur or suffer.

3.5 Nothing in this Agreement shall exclude the Company's liability for death or personal injury arising from its negligence or for fraud.

Copyright and Confidentiality

4.1 The Customer, the Client and the Purchaser acknowledge that the Report is confidential and is intended for the personal use of the Client and the Purchaser. The copyright and any other intellectual property rights in the Report shall remain the property of the Company. No intellectual or other property rights are transferred or licensed to the Customer, the Client or the Purchaser except to the extent expressly provided herein.

4.2 The Customer or the Client or the Purchaser is entitled to make copies of the Report but may only copy Ordnance Survey mapping or data contained in or attached to the Report if they have an appropriate licence from the originating source of that mapping or data.

4.3 The Customer, The Client and the Purchaser agree (in respect of both the original and any copies made) to respect and not to alter any part of the Report including but not limited to the trademark, copyright notice or other property marking which appears on the Report.

4.4 The maps contained in the Report are protected by Crown Copyright and must not be used for any purpose outside the context of the Report.

4.5 The enquiries in the Report are protected by copyright by the Law Society of 113 Chancery Lane, London WC2A 1PL and must not be used for any purpose outside the context of the Report.

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5.2 Payment must be received in advance unless an account has been set up with the Company. In these cases, payment terms will be as agreed with the Company, but in any event any invoice must be paid within 30 days.

5.3 The Company reserves the right to increase fees on reasonable prior written notice at any time.

Appendix 2 continued - DRAINAGE AND WATER ENQUIRY (COMMERCIAL) AGREEMENT

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7.1 If any provision of this Agreement is or becomes invalid or unenforceable, it will be taken to be removed from the rest of this Agreement to the extent that it is invalid or unenforceable. No other provision of this Agreement shall be affected.

7.2 This Agreement shall be governed by English law and all parties submit to the exclusive jurisdiction of the English courts.

7.3 Nothing in this Agreement and conditions shall in any way restrict the Customer's the Client's or the Purchaser's statutory or any other rights of access to the information contained in the Report.

7.4 This Agreement and conditions may be enforced by the Customer, the Client and the Purchaser.

7.5 Before you agree to this Agreement, please note it is your responsibility to ensure your client/customer is aware of them and that any objections are raised accordingly.

Appendix D

PROPOSED FLOOR PLANS

wsp



01 Existing Stair 03 Main Reception 05 Building Management 07 Courtyard 09 Generator 11 Substation 13 Refuse Store
 02 Lift 04 Retail Unit 06 Comms' Room 08 Gym 10 Secondary Services 12 Accessible WC

Title:
Proposed Ground
Floor Plan

Status:
Information

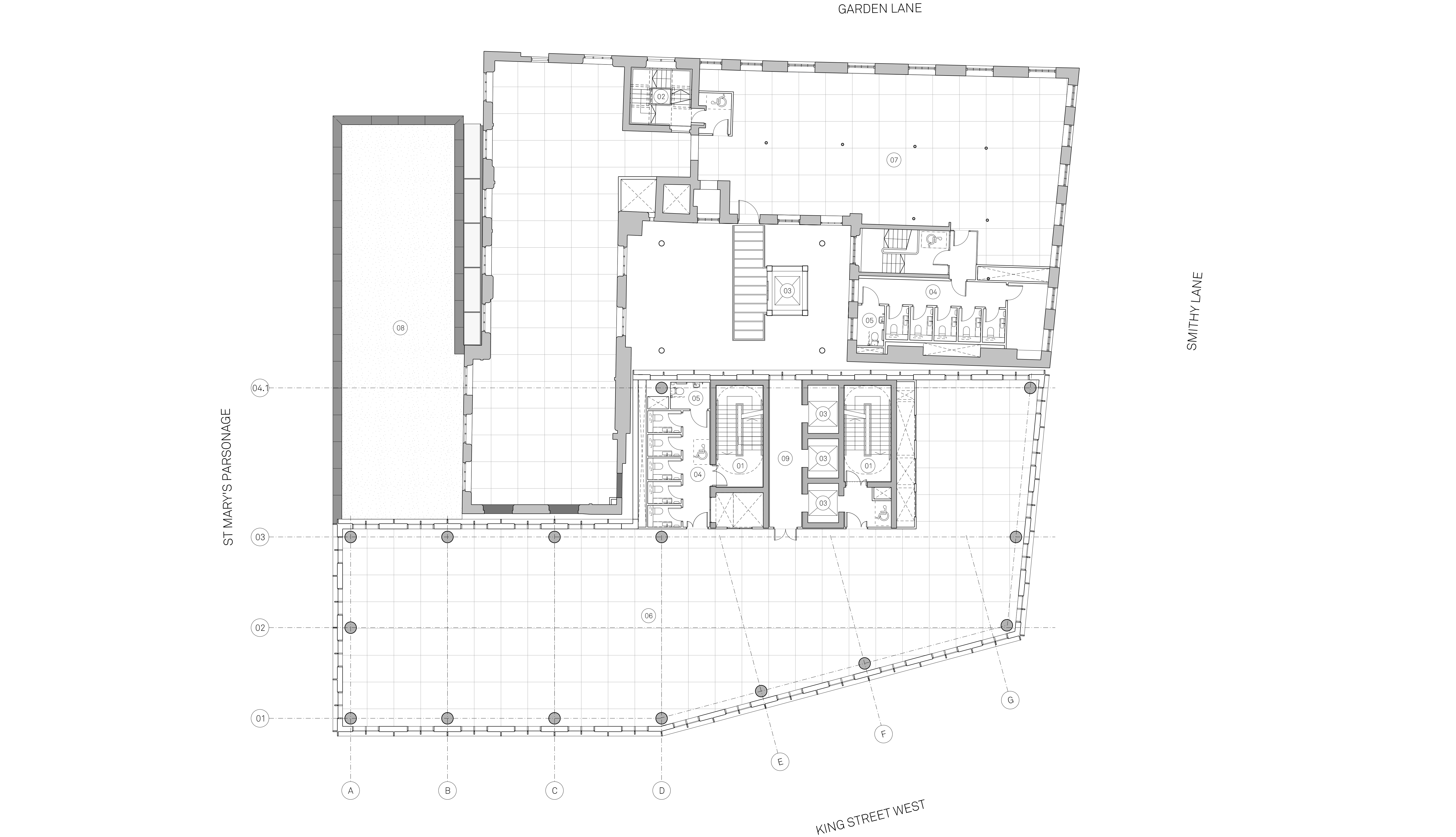
Scale:
1:100 @ A1

Drawing No: B1_02_2200

Rev: -

Union, 2-10 Albert Square, Manchester, M2 6LW 0161 974 3690

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Notes:
Site Boundary

PLAN KEY:

- 01

Proposed Stair
- 02

Existing Stair
- 03

Proposed Lift
- 04

WC
- 05

Accessible WC
- 06

Office A
- 07

Office B
- 08

Proposed Retail Unit Roof
- 09

Lift Lobby
- 10

Roof Terrace
- 11

Amenity
- 12

Plant External
- 13

Plant Internal
- 14

Provisions for PV
- 15

Roof
- 16

Proposed Glazed Courtyard Roof
- 17

Bird and Bat Box Location

Project Name:
27-31 King St
West & The
Carriage Works
Drawn: RW
Checked: JC
Details:

Title:
Proposed Level 01-03
Floor Plan
Status:
Planning

Scale:
1:100 @ A1
Project:
107
Drawing No:
B1_02_2201
Rev:
-

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Notes:
Site Boundary

PLAN KEY:

- | | | | | | | | |
|---------------------------------|-------------------------------------|------------------------|-------------------|-------------------|-----------------------|-------------------|-------------|
| 01 Cycle Storage | 03 Accessible WC/Shower | 05 Proposed Lift Shaft | 07 Existing Stair | 09 Core | 11 Attenuation Tank | 13 LV Switch Room | 15 Lift Pit |
| 02 Changing & Shower Facilities | 04 Gender Neutral Shower & Changing | 06 Drying Room | 08 Proposed Stair | 10 Sprinkler Tank | 12 Potable Water Tank | 14 Plant | |



Project Name:
27-31 King St
West & The
Carriage Works
Drawn: RW
Checked: FM
Status: Planning

Title:
Proposed Basement Level
Floor Plan
Status: Planning

Scale:
1:100 @ A1
Project: 107
Drawing No: B1_02_2199
Rev: -

Jon Matthews Architects

Union, 2-10 Albert Square, Manchester, M2 6LW

0161 974 3690

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Notes:
Site Boundary

PLAN KEY:

- | | | | | | | | | |
|-------------------|------------------|------------------|------------------------------|-----------------|-------------------|----------------------|-----------------------------------|------------------------------|
| 01 Proposed Stair | 03 Proposed Lift | 05 Accessible WC | 07 Office B | 09 Lift Lobby | 11 Amenity | 13 Plant Internal | 15 Roof | 17 Bird and Bat Box Location |
| 02 Existing Stair | 04 WC | 06 Office A | 08 Proposed Retail Unit Roof | 10 Roof Terrace | 12 Plant External | 14 Provisions for PV | 16 Proposed Glazed Courtyard Roof | |



Project Name:
27-31 King St
West & The
Carriage Works
Drawn: RW
Checked: JC
Details:

Title:
Proposed Roof Plan
Floor Plan
Status:
Planning

Scale:
1:100 @ A1
Project:
107
Drawing No:
B1_02_2213
Rev:
-

Jon Matthews Architects

Union, 2-10 Albert Square, Manchester, M2 6LW

0161 974 3690

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Appendix E

EA FLOOD MAPS

wsp

Flood map for planning

Your reference
Reedham House

Location (easting/northing)
383528/398369

Created
4 Jan 2022 13:52

Your selected location is in flood zone 1, an area with a low probability of flooding.

This means:

- you don't need to do a flood risk assessment if your development is smaller than 1 hectare and not affected by other sources of flooding
- you may need to do a flood risk assessment if your development is larger than 1 hectare or affected by other sources of flooding or in an area with critical drainage problems

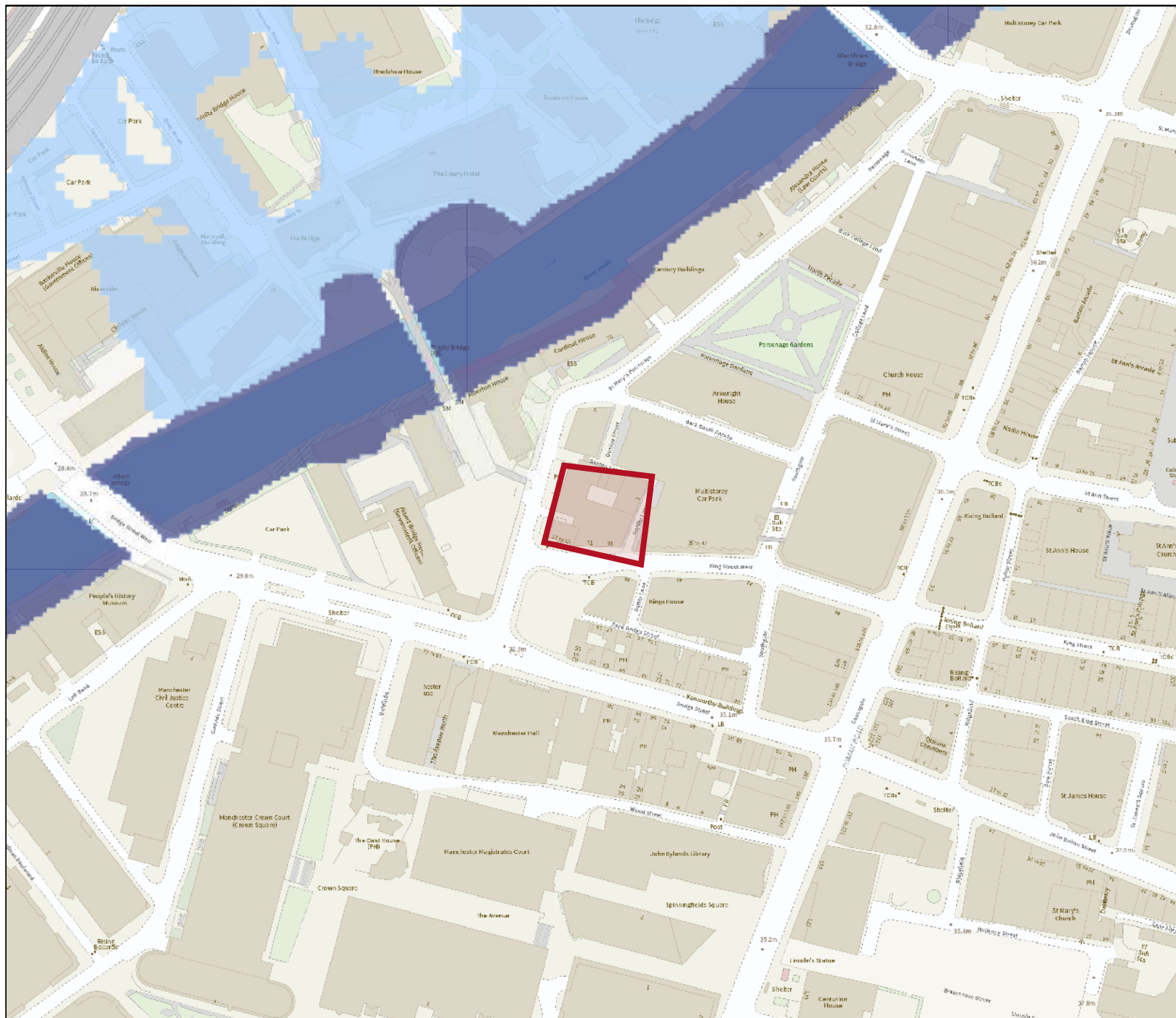
Notes

The flood map for planning shows river and sea flooding data only. It doesn't include other sources of flooding. It is for use in development planning and flood risk assessments.

This information relates to the selected location and is not specific to any property within it. The map is updated regularly and is correct at the time of printing.

Flood risk data is covered by the Open Government Licence which sets out the terms and conditions for using government data. <https://www.nationalarchives.gov.uk/doc/open-government-licence/version/3/>

Use of the address and mapping data is subject to Ordnance Survey public viewing terms under Crown copyright and database rights 2021 OS 100024198. <https://flood-map-for-planning.service.gov.uk/os-terms>



Flood map for planning

Your reference
Reedham House

Location (easting/northing)
383528/398369

Scale
1:2500

Created
4 Jan 2022 13:52

-  Selected area
-  Flood zone 3
-  Flood zone 3: areas benefitting from flood defences
-  Flood zone 2
-  Flood zone 1
-  Flood defence
-  Main river
-  Flood storage area

0 20 40 60m



Extent of flooding from surface water

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



Maximum extent of flooding from reservoirs:

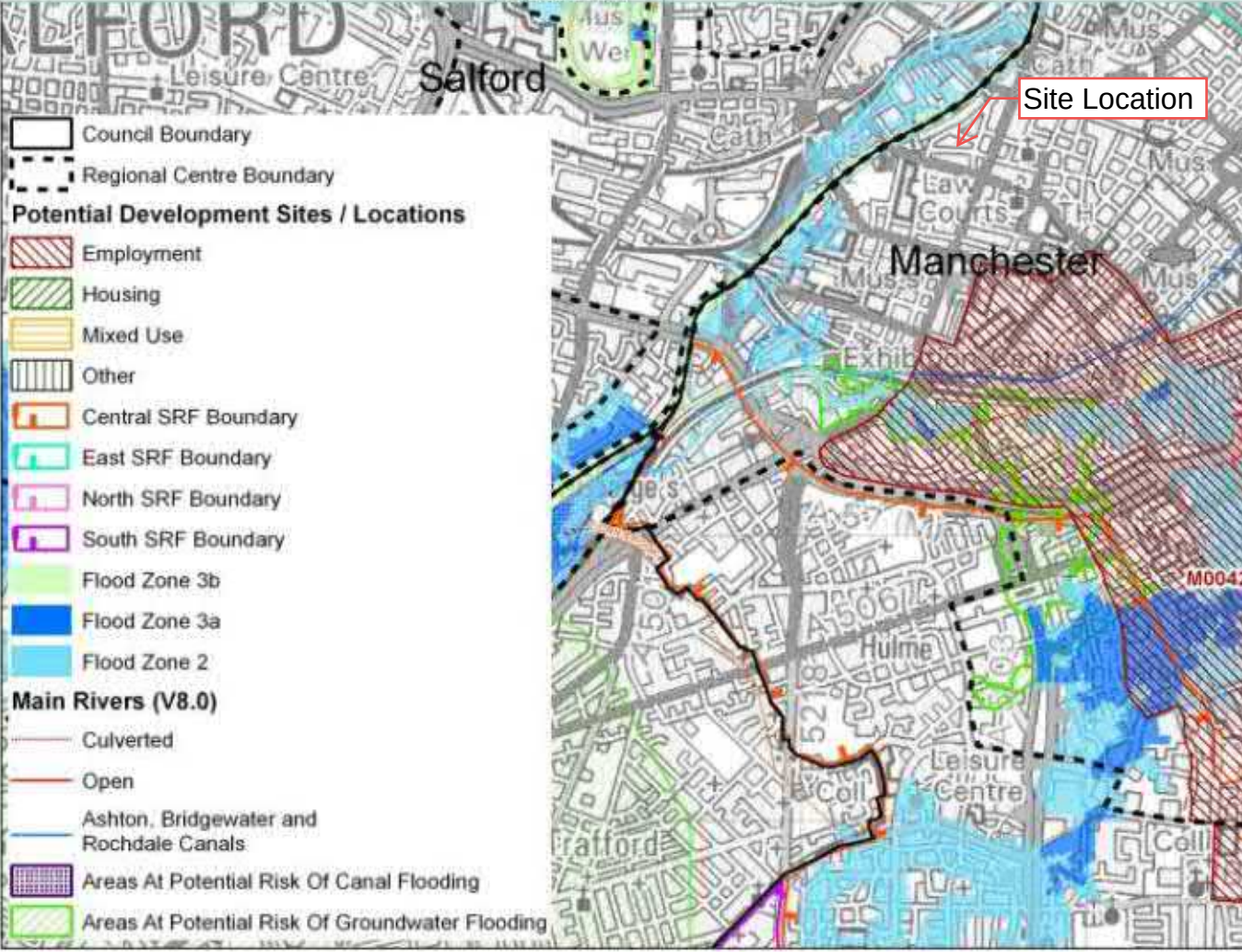
● when river levels are normal
 ▨ when there is also flooding from rivers
 ⊕ Location you selected

Appendix F

LLFA FLOOD MAPS

wsp

Strategic Location	Regional Centre and Inner Areas South						
Primary Source of Flood Risk	Medlock (Med), Corn Brook (CB)						
Secondary Sources of Flood Risk	Bridgewater Canal (BC), Ashton Canal (AC), Surface water (SW), Groundwater (GW) Lost watercourses (LW)						
Development Sites	Environment Agency Flood Maps						
	Proposed Land Use	Sources of Flooding	Total area (km²)	Flood Zone 1 (%)	Flood Zone 2 (%)	Flood Zone 3a (%)	Flood Zone 3b (%)
Eastern Gateway (M0001)	Employment	Med, AC, SW, LW	0.46	92.33	4.30	1.18	2.20
Sport City (M0002)	Employment	Med, AC, SW	0.43	100.00	0.00	0.00	0.00
West Gorton (M0010)	Housing	CB, SW	0.57	62.20	22.26	13.67	1.87
Brunswick (M0011)	Housing	CB, SW	0.27	65.59	10.12	24.29	0.00
Coverdale Crescent/New Bank Street (M0012)	Housing	SW, LW	0.41	100.00	0.00	0.00	0.00
Holt Town (M0024)	Housing	Med, AC, SW	0.35	93.24	1.41	1.27	4.08
Chancellors Place (M0025)	Housing	Med, SW	0.16	99.44	0.01	0.00	0.55
Lower Medlock (M0026)	Housing	Med, AC, SW, LW	0.49	81.71	8.57	3.54	6.18
Oxford Road Corridor (M0042)	Employment	Med, CB, BC, SW, GW, LW	2.31	77.79	14.17	7.27	0.77



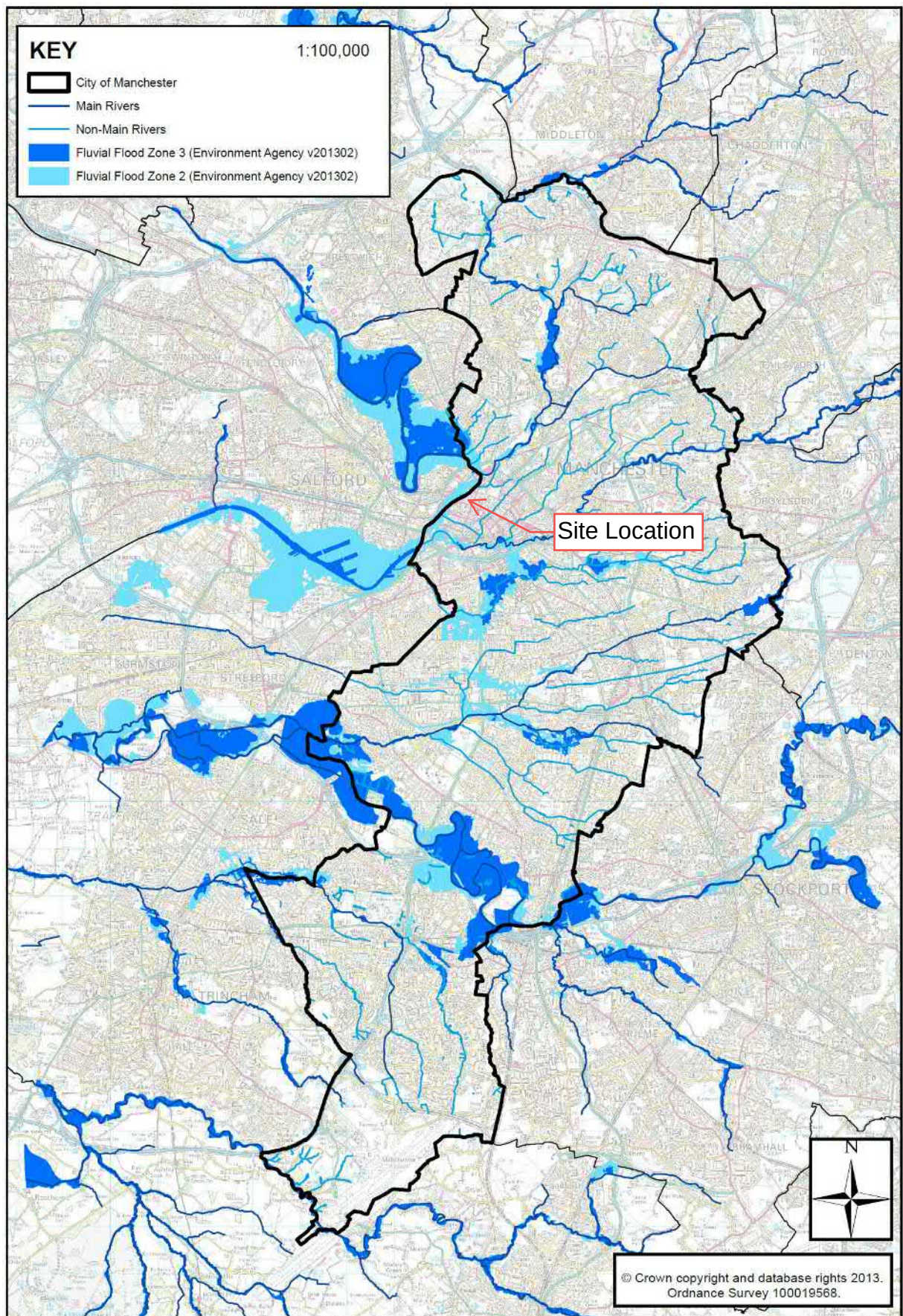


Figure 2: Rivers

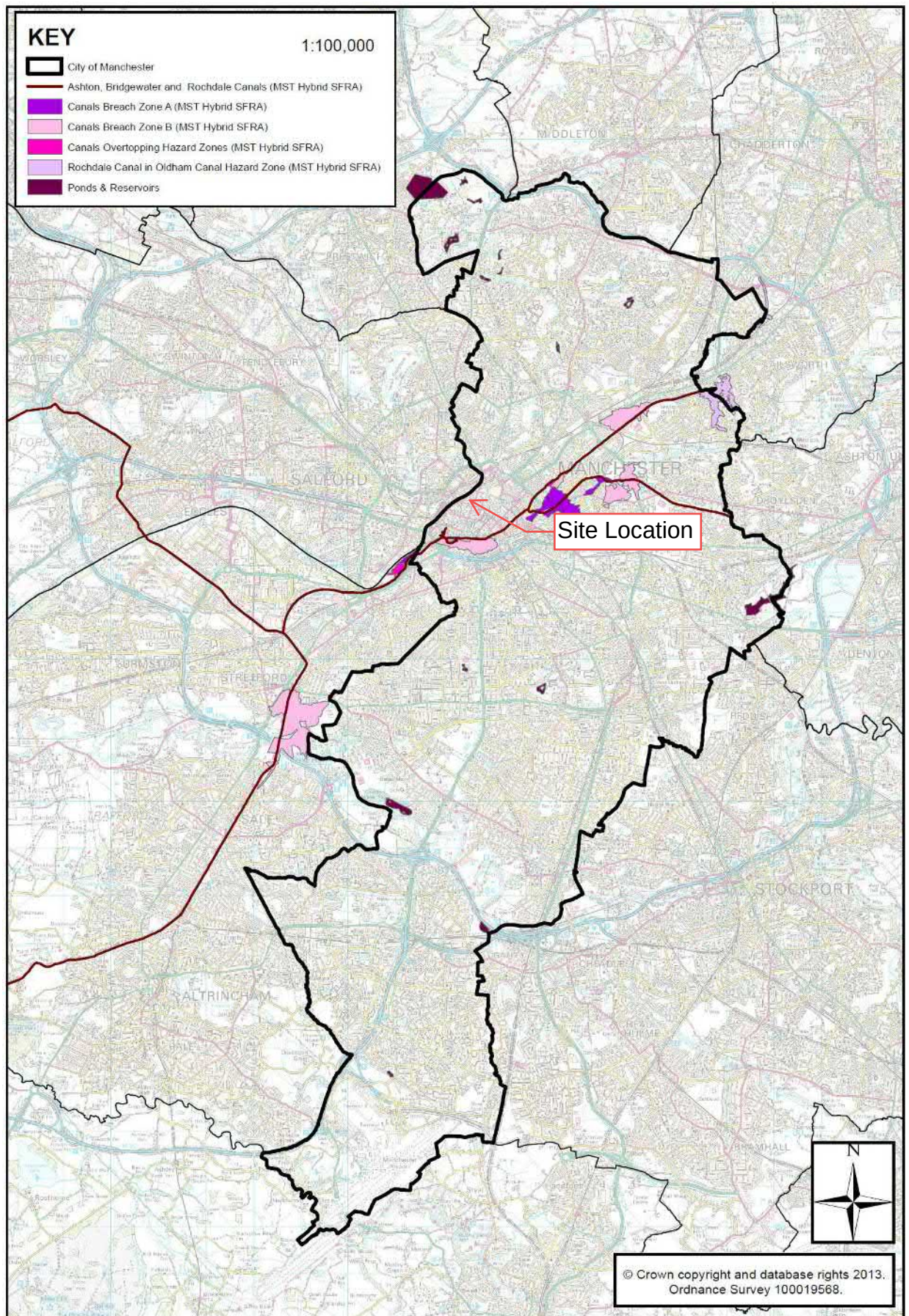


Figure 3: Canals, Ponds and Reservoirs

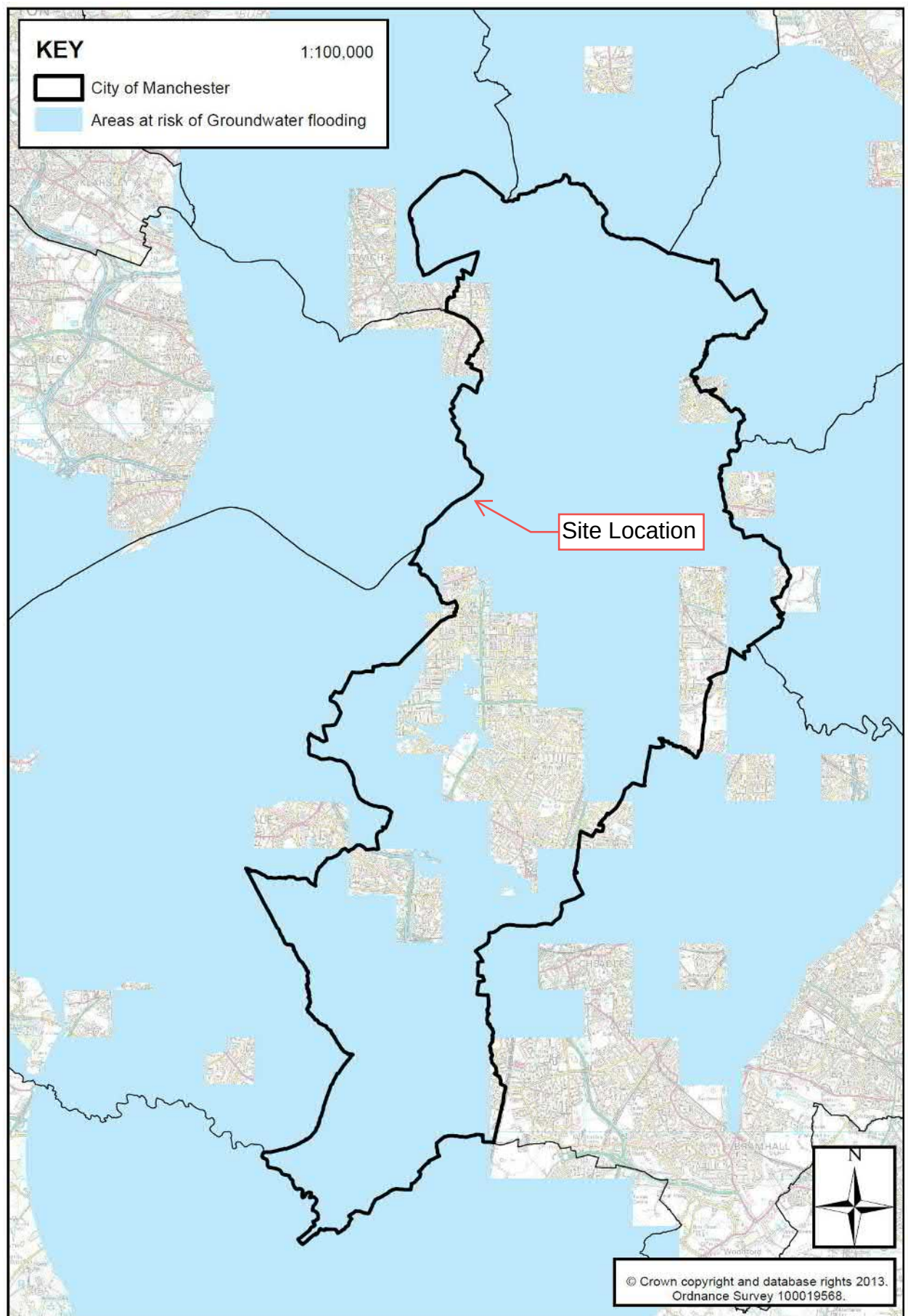


Figure 4: Groundwater

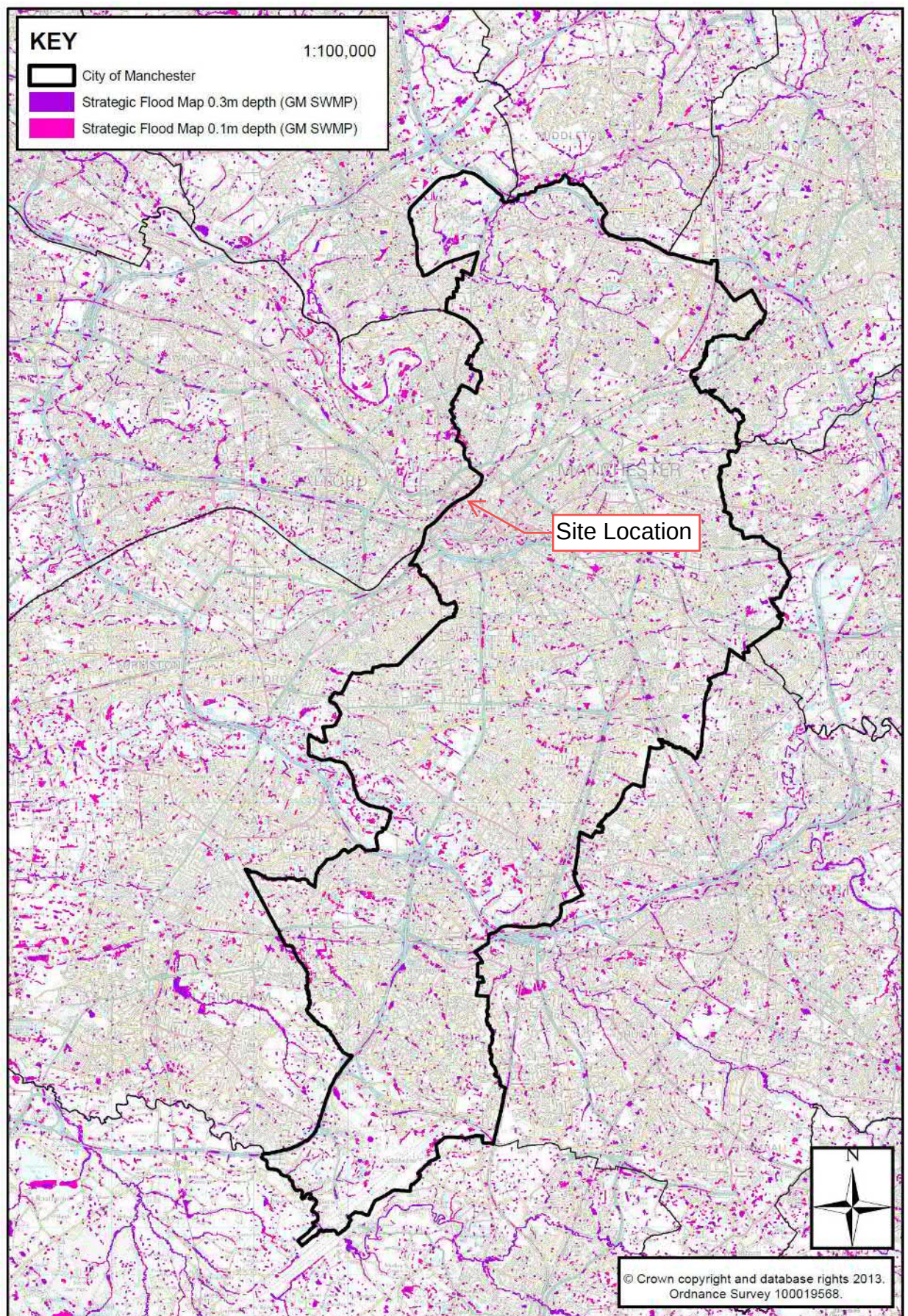


Figure 6A: Surface Water Runoff from 1:30 year storm

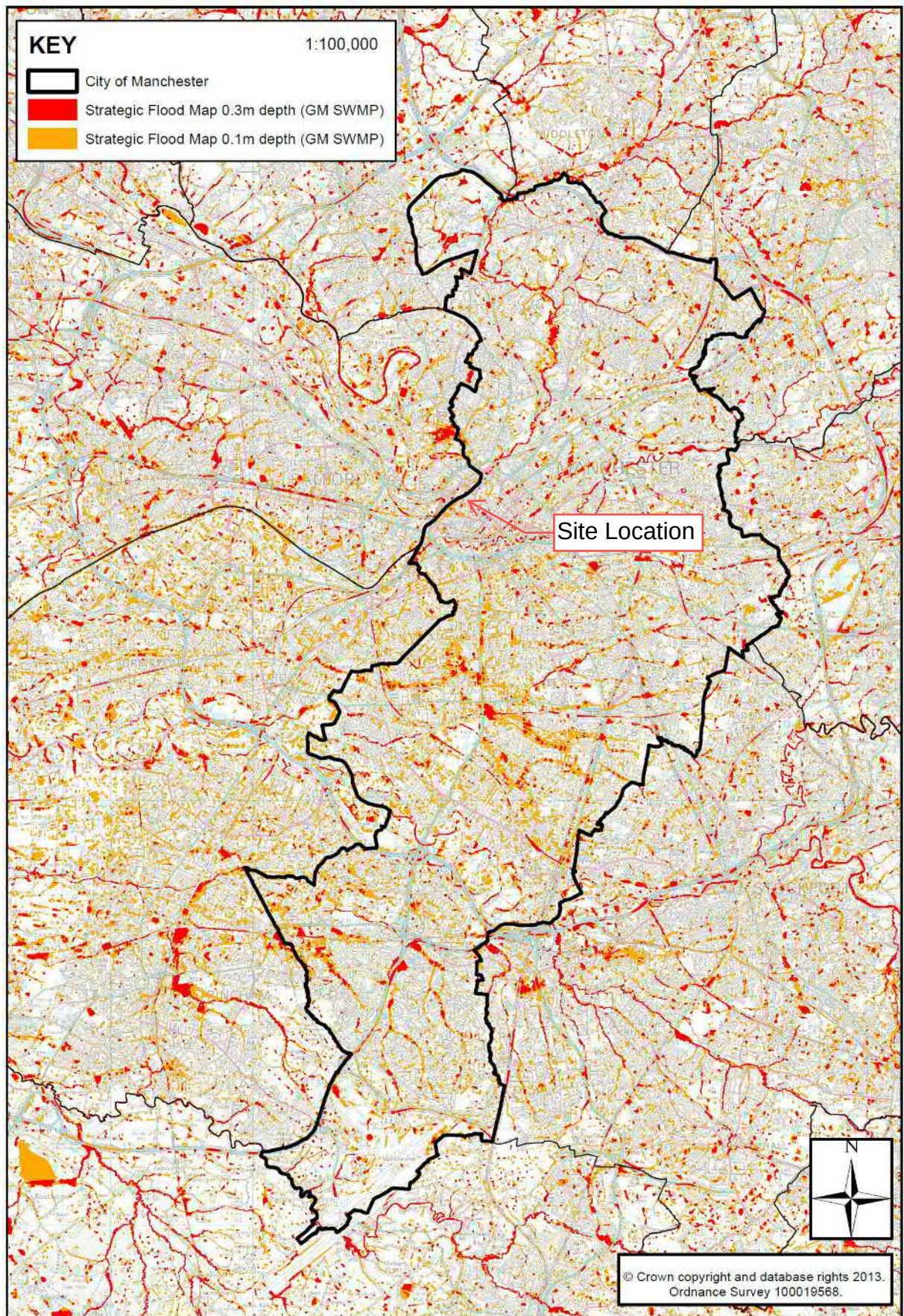


Figure 6B: Surface Water Runoff from a 1:200 year storm

Appendix G

CONSULTATION CORRESPONDENCE

wsp

Douglass, Vicky

From: Valla, Deepika
Sent: 07 March 2022 18:04
To: Douglass, Vicky
Subject: FW: PDE 4200047550 Reedham House King Street and Smithy Lane Manchester M3 2PN

From: Wastewater Developer Services <WastewaterDeveloperServices@uuplc.co.uk>
Sent: 07 March 2022 17:14
To: Valla, Deepika <Deepika.Valla@wsp.com>
Cc: Wastewater Developer Services <WastewaterDeveloperServices@uuplc.co.uk>
Subject: FW: PDE 4200047550 Reedham House King Street and Smithy Lane Manchester M3 2PN

Good afternoon Deepika,

Pre Development Enquiry for: Reedham House King Street UU Reference Number : 4200047550

We have carried out an assessment of your application which is based on the information provided. This pre-development advice on your drainage strategy will be valid for 12 months. Your drainage strategy will need to be reviewed by other competent authorities as part of the planning process, and we advise that you carry out the necessary site investigations to confirm the viability of your proposals.

If your investigations require access to our public sewer network, we ask that you contact our network engineers with a request for an access certificate via our main contact telephone number 0345 3723223 or refer to the link below:

<https://www.unitedutilities.com/builders-developers/working-near-our-assets/>

I can confirm that we have no current record of sewer flooding on our DG5 register within the vicinity of the proposed development. The DG5 register is a register of properties that have flooded as a result of hydraulic inadequacy of the public sewer network.

Please note that United Utilities Water Limited (UW) can only record and check flooding events which are reported to us and we have to comply with our Regulators instructions on the qualification of flooding events to place on the register.

Our response does not include:

- any sewer flooding events caused by blockages or collapses which are the result of third party actions, natural events or other actions over which UW has no control and not a facet of sewer capacity; or
- any historical sewer flooding events that have been removed from the register as a result of investment in our infrastructure.

Foul Water

Foul flow from this site will be allowed to drain into the public foul water/combined sewer system.

Our preferred point of discharge would be to the 300mm diameter public combined sewer within Garden Lane located to the North of your proposed development at an unrestricted rate.

If you are able to identify an alternative, more suitable point of discharge, we request that you contact us at your earliest convenience so that we can assess suitability.

Please ensure all proposed manhole chambers cover levels and finished floor levels are higher than the receiving public sewer.

In accordance with our infrastructure plans we may ask you to change your point of connection. Therefore please contact us when you are ready to formalise your drainage proposals, we would suggest before you submit for Full Planning.

Surface Water

All surface water flow from the proposed development should drain in-line with the drainage hierarchy, as outlined in Paragraph 80, (Reference ID: 7-080-20150323), of the National Planning Practice Guidance. We also recommend you prioritise the use of multi-functional sustainable drainage systems for the management of surface water in accordance with national planning policy.

Generally, the aim should be to discharge surface run off as high up the following hierarchy of drainage options as reasonably practicable.

This is outlined as follows, in order of priority:

1. into the ground (infiltration);
2. to a surface waterbody;
3. to a surface water sewer or highway drain;
4. to a combined sewer.

For guidance, The [North West SuDS Pro-Forma](#) provides information on the appropriate evidence required at each stage of the hierarchy, to demonstrate how each level has been discounted.

The Lead Local Flood Authority has responsibility for all surface water drainage concerns and their input to your proposal is critical. You should also consider whether it is necessary to discuss your proposal with the Environment Agency, or Internal Drainage Board (if operating in your area).

The Local Planning Authority are the determining authority for any application for planning permission and the appropriate authority for determining cost viability of a proposed drainage scheme, such assessments are outside of the jurisdiction of United Utilities.

Infiltration

Surface water runoff generated from this development should discharge to the ground via infiltration system where feasible.

A detailed evidence based feasibility assessment must be carried out in line with Chapter 25 of the CIRIA SuDS Manual 2015 to determine whether infiltration is a suitable method of surface water disposal.

Particular attention must be paid to Ground Water Source Protection Zones to ensure that the risk of pollution to these valuable resources is not compromised. Details can be obtained from the government website:

<https://www.gov.uk/guidance/groundwater-source-protection-zones-spzs#find-groundwater-spzs>

If your site is in a Groundwater Source Protection Zone, you should have regard to the Environment Agency's approach to Groundwater Protection. Information on this is available via the link below:

<https://www.gov.uk/government/publications/groundwater-protection-position-statements>

Please note that such a location could have implications for the principle of your development and the need for additional mitigating measures to protect the groundwater environment and public water supply in the detailed design of your site.

Waterbody

United Utilities acknowledge that the nearest watercourse is a significant distance off-site.

Public Sewer

In accordance with the hierarchy of drainage options within the National Planning Practice Guidance, both discharge to ground via infiltration and discharge to a waterbody should be discounted prior to consideration of discharging surface water to the public sewer system. Evidence should be provided to demonstrate how these have been discounted, as outlined in the North West SuDS pro-forma.

Once evidence is provided as outlined above, United Utilities will consider a connection to the 300mm diameter public combined sewer within Garden Lane located North of the proposed site at a pass forward flow to be agreed by the Lead Local Flood Authority. United Utilities request that any agreed rate does not exceed 9.7l/s.

As a Water Company, we have no obligation to accept highway drainage into our public sewer network. However, should your proposals include runoff from highways, we would request that consideration is given to SuDS components that deliver source control are incorporated within the design of the scheme to reduce the volume and frequency of discharges of these flows to the public sewer.

Levels

For low-lying sites, (where the ground level of the site or the level of a basement is below the ground level at the point where the drainage connects to the public sewer), care should be taken to ensure that the property is not at increased risk of flooding. If these circumstances exist, we recommend that you contact us to discuss further. It could affect the detailed design of your site and result in the need to incorporate appropriate mitigating measures in your drainage scheme.

Land drainage / Overland flows / track drainage

United Utilities have no obligation, and furthermore we do not accept land drainage, overland flows or track drainage into the public sewerage network under any circumstances

Existing Water Assets Crossing the Site

It is the developer responsibility to identify utilities on-site. Where clean water assets are shown on our records, we recommend that you contact our Water Pre-Development Team, via the following email address: DeveloperServicesWater@uuplc.co.uk. Further information for this service can be found on our website via the link below:

<https://www.unitedutilities.com/builders-developers/larger-developments/pre-development/water-pre-dev/>

Connection Application

Although we may discuss and agree discharge points and 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:

<https://www.unitedutilities.com/builders-developers/wastewater-services/sewer-connections/sewer-connection/>

We recommend that the detailed design should confirm the locations of all utilities in the area and ensure that any proposed drainage solution considers routing and clash checks where required.

If we can be of any further assistance please don't hesitate to contact us further.

Kind regards,



Mohammed Aljafarawi
Developer Engineer
Developer Services & Metering
Customer Services
Email: Mohammed.Aljafarawi@uuplc.co.uk
unitedutilities.com

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Did you know we now have a live chat facility available to you Mon to Friday 8 -5pm. You just click on the orange live chat box on our webpage and one of our advisors will be ready to chat to you and help you with your enquiry <https://www.unitedutilities.com/builders-developers/> or you can email us at developerserviceswater@uuplc.co.uk

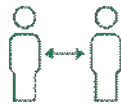
Coronavirus | Prevent the spread



Wash your hands



Disinfect common surfaces



Practise social distancing



Stay home if you have symptoms

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From: Valla, Deepika [<mailto:Deepika.Valla@wsp.com>]

Sent: 23 February 2022 09:08

To: Wastewater Developer Services <WastewaterDeveloperServices@uuplc.co.uk>

Subject: Reedham House, Manchester - Wastewater Pre-Development Enquiry

EXTERNAL EMAIL This email originated outside of the organisation. Do not click links or open attachments unless you recognise the sender and know the content is safe.

Good Morning,

Please find attached wastewater pre development enquiry form for a proposed commercial redevelopment on an existing brownfield site in Manchester. We are presently preparing a flood risk assessment and drainage strategy report for the development at Reedham House, King Street and Smithy Lane, Manchester, M3 2PN. See attached location plan and topo survey for the site.

Also attached is an email sent to the Manchester LLFA outlining the proposed strategy (max discharge rates and points of connection) for surface water runoff from the proposed development.

Can United Utilities confirm whether the outline approach to surface water drainage strategy set out in the attached email is acceptable in principle or whether they have any site specific requirements for surface water discharge rates or points of connection?

Also, can United Utilities confirm that foul drainage can discharge to the public combined sewer at an unrestricted flow rate?

Finally, can United Utilities confirm whether they hold any records of flooding from their sewers in the vicinity of the site either as a result of the hydraulic capacity of the sewer or from blockages or other operational issues?

Please do not hesitate to contact me if you require further information.

Regards,
Deepika



Deepika Valla

Principal Engineer
BEng (Hons)

T+ 44 0113 3956234

WSP in the UK
Three White Rose Office Park,
Millshaw Park Lane, Leeds,
LS11 0DL

wsp.com

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Douglass, Vicky

From: Flood Risk Management <floodriskmanagement@manchester.gov.uk>
Sent: 21 March 2022 10:55
To: Douglass, Vicky
Cc: Valla, Deepika
Subject: RE: Reedham House, Manchester - Pre Development Consultation

Filed: -1
Filed Location: \\uk.wspgroup.com\central data\Projects\70093xxx\70093869 - Reedham House, Manchester - FRA\01 Comms\1A Emails\LLFA\220321 105436 - Flood Risk Management - RE Reedham House, Manchester - Pre Development Co.msg
Filed Location Folder: \\uk.wspgroup.com\central data\Projects\70093xxx\70093869 - Reedham House, Manchester - FRA\01 Comms\1A Emails\LLFA

Hi Vicky,

In principle this concept seems appropriate, however this will need to be backed up by a breakdown of existing and proposed discharge rate calculations before this can be formally agreed.

Kind Regards,

Oliver

Oliver Timmins
Engineer (Flood Risk Management)

Lead Local Flood Authority
Highways
Growth & Development and Neighbourhoods Directorate
Manchester City Council
PO Box 532 Town Hall
Manchester
M60 2LA

Web: <http://www.manchester.gov.uk>

From: Douglass, Vicky <Vicky.Douglass2@wsp.com>
Sent: 11 March 2022 11:28
To: Flood Risk Management <floodriskmanagement@manchester.gov.uk>
Cc: Valla, Deepika <Deepika.Valla@wsp.com>
Subject: RE: Reedham House, Manchester - Pre Development Consultation

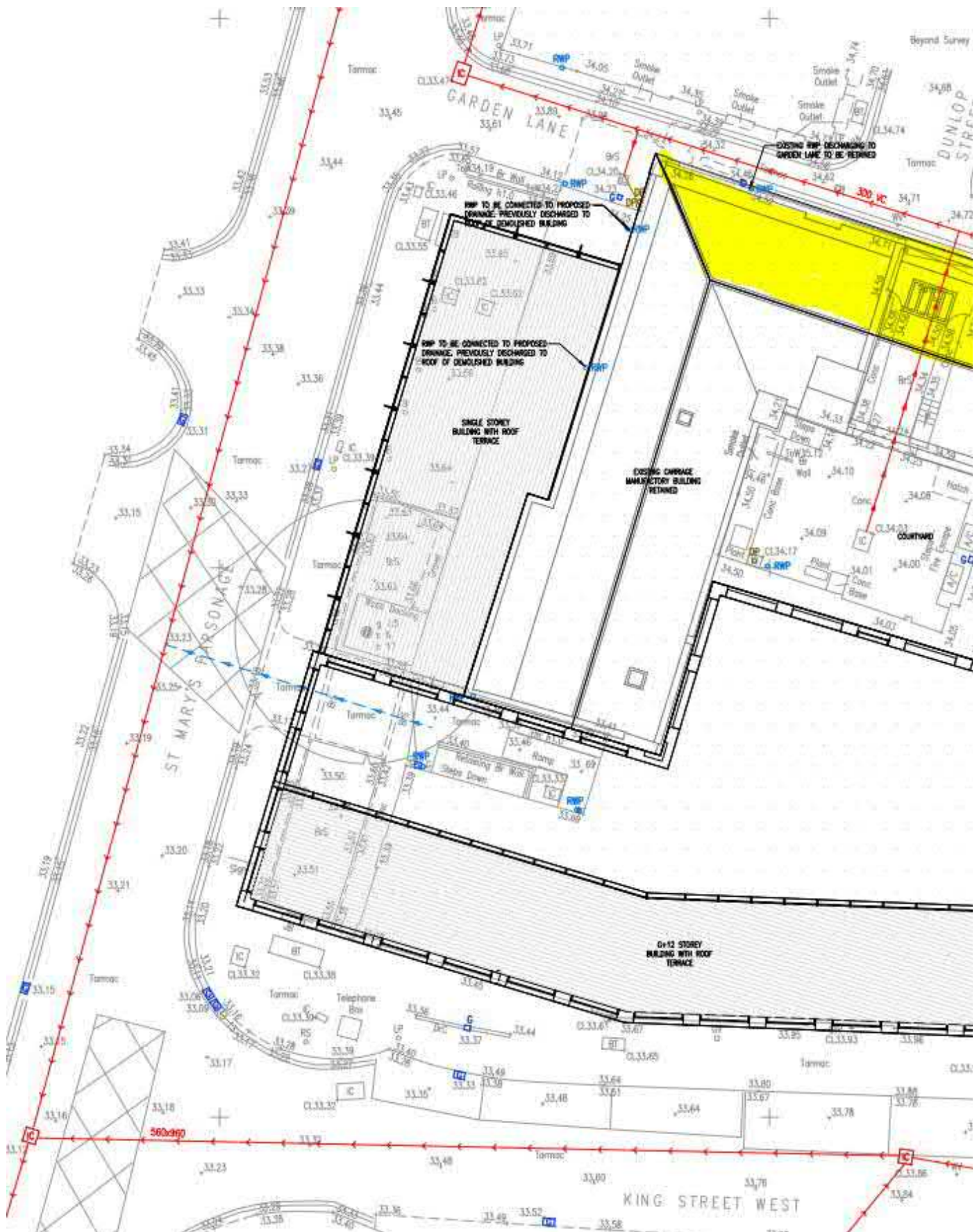
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Hi Oliver

Thank you for your response. I've attached the Architect's Workbook showing the existing and proposed layouts. I am in the process of compiling these into a sensible drawing at the moment. Please excuse the crude screenshot, I only work Tues, Weds, Thurs and didn't want to leave responding until next week.

We have developed a bit of a strategy around the response we received on Monday from UU: "Once evidence is provided as outlined above, United Utilities will consider a connection to the 300mm diameter public combined sewer within Garden Lane located North of the proposed site at a pass forward flow to be agreed by the Lead Local Flood Authority. United Utilities request that any agreed rate does not exceed 9.7l/s."

As per your guidance we believe we can leave the existing area highlighted in yellow below as is, discharging to Garden Lane and Smithy Lane at the current rates of 1.85 and 1.2 l/s respectively. Elsewhere below ground drainage works are likely required to the existing buildings. Therefore we are proposing to provide the 50% reduction on the remaining areas: existing buildings/courtyard - 430m² & proposed buildings - 766m². This would reduce runoff from these areas from 16.6 l/s to 8.3 l/s. Is something along these lines likely to be acceptable?



Vicky Douglass *BEngTech NZDE GMICE*

Engineer



T +44 (0)113 301 6236

Three White Rose Office Park
Millshaw Park Lane
Leeds
LS11 0DL

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From: Flood Risk Management <floodriskmanagement@manchester.gov.uk>

Sent: 10 March 2022 14:23

To: Douglass, Vicky <Vicky.Douglass2@wsp.com>

Subject: RE: Reedham House, Manchester - Pre Development Consultation

Hi Vicky,

Thanks for the email.

Would it be possible for you to send over a proposed site layout so I can better understand the proposed development?

Generally I would advise that if any below ground works are taking place for the refurbishments then we would expect the 50% betterment to be achieved if possible. If only internal alterations are being made to the existing buildings then we are unlikely to request the 50% betterment. However that being said, any betterment to the existing run-off scenario would be encouraged where feasible.

For the new proposed building we would expect a minimum of 50% betterment.

Kind Regards,

Oliver

Oliver Timmins
Engineer (Flood Risk Management)

Lead Local Flood Authority
Highways
Growth & Development and Neighbourhoods Directorate
Manchester City Council
PO Box 532 Town Hall
Manchester
M60 2LA

Web: <http://www.manchester.gov.uk>

From: Douglass, Vicky <Vicky.Douglass2@wsp.com>
Sent: 03 March 2022 10:32
To: Flood Risk Management <floodriskmanagement@manchester.gov.uk>
Cc: Valla, Deepika <Deepika.Valla@wsp.com>
Subject: RE: Reedham House, Manchester - Pre Development Consultation

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Good morning Oliver

Thank you for your response below. I will discuss whether we wish to proceed with the data screen with Deepika and our Client and get back to you.

In regards to the most sustainable discharge point, we will of course ensure our strategy follows the drainage hierarchy and, if concluded that the only option is to discharge to a combined sewer, we will agree this with UU.

This is a brownfield development where two of the existing listed buildings are being retained and refurbished. Would we need to aim for a 50% reduction in runoff for these retained buildings or only for the proposed new buildings? We do not have a comprehensive drainage survey at this stage but I believe the existing buildings currently discharge to three different UU combined sewers. Reconfiguring the drainage around these listed buildings could be a challenge. We can provide more detailed calculations and plans, however, a little more detail than what is provided in the published strategies and guidance for developers is needed to ensure we're heading in the right direction.

Kind regards

Vicky Douglass *BEngTech NZDE GMICE*
Engineer



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From: Valla, Deepika <Deepika.Valla@wsp.com>
Sent: 03 March 2022 09:08
To: Douglass, Vicky <Vicky.Douglass2@wsp.com>
Subject: FW: Reedham House, Manchester - Pre Development Consultation

From: Flood Risk Management <floodriskmanagement@manchester.gov.uk>
Sent: 02 March 2022 16:31

To: Valla, Deepika <Deepika.Valla@wsp.com>
Subject: RE: Reedham House, Manchester - Pre Development Consultation

Good Afternoon Deepika,

As part of the new MCC data screening process, we are able to supply copies of maps illustrating known/historic culverts and open watercourses within close proximity to the concerning site, as well as known local flood incidents and identifying critical drainage areas. I will advise you that MCC now charges for delivery of this information. Therefore, I have attached a prepayment letter which summarises what information will be included as part of the data screening.

If you would like us to progress with the data screen then we would request that you please follow the below link to formally submit the request (note, the form should also take you through to the payment section).
<https://manchester.civicapayforms.co.uk/Sales/LaunchInternet.aspx?saleform=llfa>

In regards to agreeing discharge rates, we would require a breakdown of the calculations for both the existing and proposed run-off rates before any agreement can be reached. The required discharge rate would also fundamentally depend on where surface water is proposed to outfall too, therefore proposed flow rates cannot be formally agreed until investigations have been completed in order to establish the most sustainable point of outfall (in accordance with the drainage hierarchy set out in Building Regulations Document H).

I have attached MCC SuDS Requirement for Developers, which should be reviewed and followed as part of the Drainage Strategy, in addition I would also recommend reviewing the MCC Strategic Flood Risk Assessment and Local Flood Risk Management Strategy both of which can be found on the MCC website.

Kind Regards,

Oliver

Oliver Timmins
Engineer (Flood Risk Management)

Lead Local Flood Authority
Highways
Growth & Development and Neighbourhoods Directorate
Manchester City Council
PO Box 532 Town Hall
Manchester
M60 2LA

Web: <http://www.manchester.gov.uk>

From: Valla, Deepika <Deepika.Valla@wsp.com>
Sent: 23 February 2022 08:01
To: Flood Risk Management <floodriskmanagement@manchester.gov.uk>
Subject: Reedham House, Manchester - Pre Development Consultation

You don't often get email from deepika.valla@wsp.com. [Learn why this is important](#)

Good Morning,

We are presently preparing a flood risk assessment and drainage strategy report for a proposed commercial redevelopment at Reedham House, King Street and Smithy Lane, Manchester, M3 2PN (see attached location plan).

According to the EA Flood Map for Planning the site lies in flood zone 1. The development is for mixed commercial use, primarily offices, and requires the demolition of Reedham House to the front of the site with preservation and regeneration of two listed buildings to the rear. The total site area is approximately 1400 m². The site is currently fully impermeable and is understood to drain to the existing combined public sewer system surrounding the site (see attached topo and UU sewer records).

The maximum peak runoff rate from the existing site has been calculated using the Rational Method (50 mm/hr rainfall intensity) as 19.5 l/s. It is therefore proposed that when taking into account the 50% reduction required by the Manchester SFRA the maximum surface water discharge rate to the existing combined public sewer will be 9.7 l/s.

A detailed assessment of whether infiltration will be feasible will be carried out once more information is available on anticipated ground conditions but given spatial constraints and likely presence of made ground in this city centre location it is currently considered that soakaways are unlikely to be a feasible means for the disposal of surface water drainage from the site. The River Irwell is located approximately 75 metres from the western boundary of the site, but there is no known existing natural water course, culverted watercourse main river or surface water public sewer in close proximity to the site.

It is therefore proposed to connect foul and surface water from the proposed development into the existing combined public sewer systems in the immediate vicinity of the site, using existing connections.

Can the Manchester LLFA confirm whether they hold on records of existing culverted or ordinary watercourses in close proximity to the site and whether the approach set out above for maximum discharge rates and points of connection for surface water drainage are acceptable in principle, subject to further evidence being provided for soakaways etc.

Can Manchester LLFA also confirm whether they hold any records or are aware of any historical flooding problems (including highways flooding) at or in close proximity to the site or are aware of any potential risk of flooding from any other source which may impact the site now or in the future?

Thanks in advance and look forward to hearing from you soon.

Regards,
Deepika



Deepika Valla

Principal Engineer
BEng (Hons)

T+ 44 0113 3956234

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Millshaw Park Lane, Leeds,
LS11 0DL

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-LAEhHhHdzJzBITWfa4Hgs7pbKI

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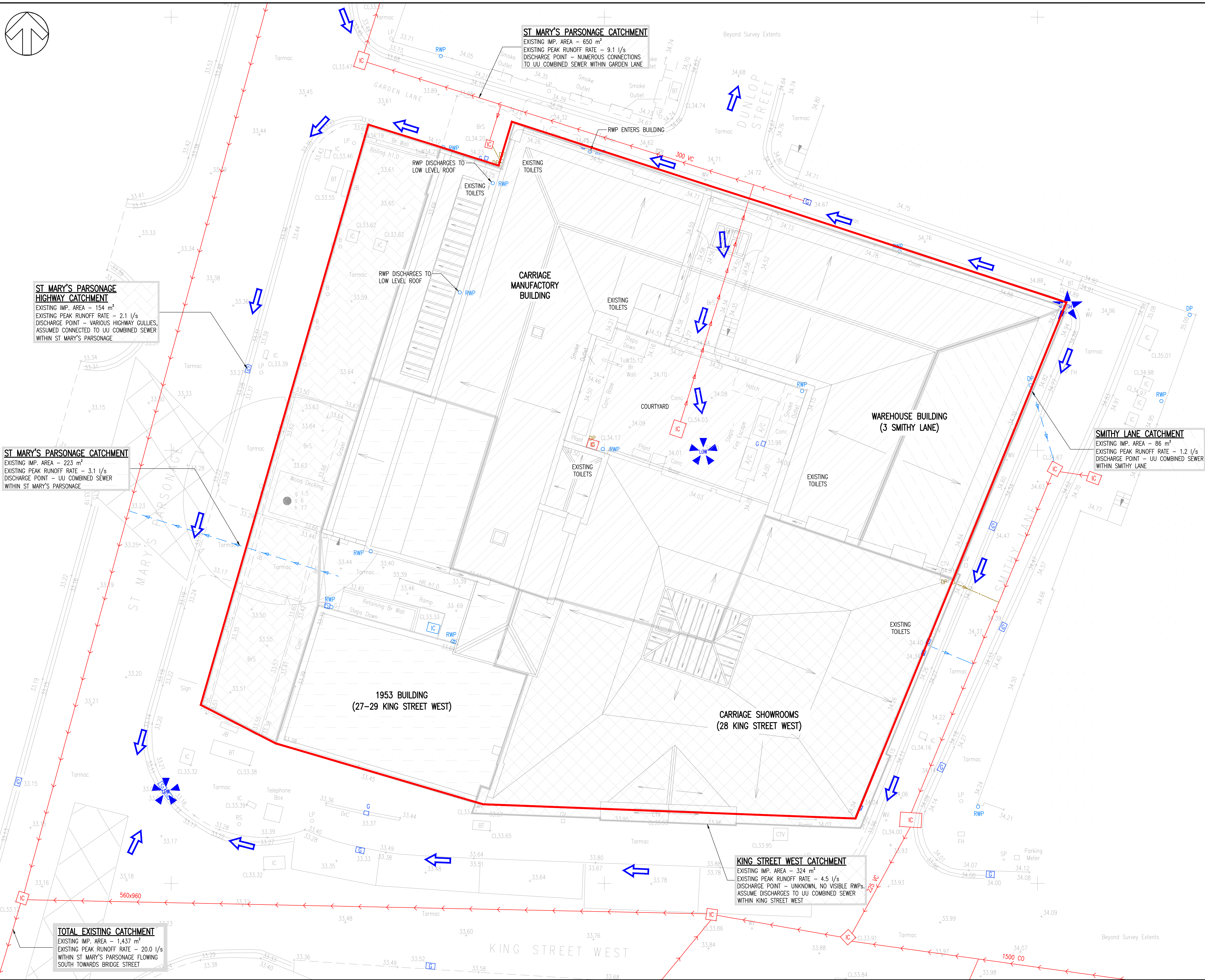
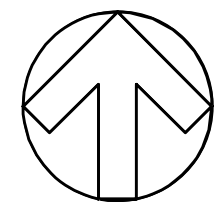
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Appendix H

EXISTING DRAINAGE CATCHMENT AREA PLAN





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NOTES

- ALL DIMENSIONS ARE SHOWN IN MILLIMETRES AND ALL LEVELS ARE SHOWN IN METRES UNLESS NOTED OTHERWISE.
- THIS DRAWING IS BASED ON THE FOLLOWING INFORMATION:
 - TOPOGRAPHICAL SURVEY REF 111468-102-HLS-00-Z0-M2-G-10100-A7 BY HOLLIS DATED AUGUST 2021
 - EXISTING ROOF PLAN REF 107_REEDHAM HOUSE_WORKBOOK_DTM 01 BY JON MATTHEWS ARCHITECTS DATED DECEMBER 2021.
 - SEWER RECORD DRAWINGS FROM UNITED UTILITIES DATED JANUARY 2019
- THIS DRAWING IS IN THE OUTLINE PLANNING STAGE AND IS SUBJECT TO CHANGE.
- CONNECTIONS TO PUBLIC SEWERS ARE ASSUMED BASED ON VISIBLE DRAINAGE FEATURES. IT IS RECOMMENDED THAT A CCTV DRAINAGE SURVEY IS UNDERTAKEN TO CONFIRM THE LOCATION, CONNECTIVITY AND CONDITION OF ALL EXISTING PRIVATE DRAINAGE ON-SITE.
- PEAK RUNOFF RATES HAVE BEEN CALCULATED USING THE MODIFIED RATIONAL METHOD, Q = CIA WHERE I = 50 mm/hr AND C = 1.

KEY

- SITE BOUNDARY (AS DEFINED BY ARCHITECT)
- EXISTING LEVELS
- DIRECTION OF OVERLAND FLOW ROUTE
- SITE HIGH POINT FROM TOPO
- SITE LOW POINT(S) FROM TOPO
- EXISTING DRAINAGE
 - UNITED UTILITIES COMBINED SEWER
 - PRIVATE COMBINED DRAIN (ASSUMED)
 - PRIVATE SURFACE WATER DRAIN (ASSUMED)
 - PRIVATE FOUL WATER DRAIN (ASSUMED)
- COMBINED SEWER MANHOLE / INSPECTION CHAMBER
- GULLY
- RAINWATER PIPE
- FOUL SEWER DOWNPIPE

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P02	25/08/2022	VD	REISSUED FOR PLANNING	DV	DV
P01	15/06/2022	VD	ISSUED WITH FRA	DV	DV
REV	DATE	BY	DESCRIPTION	CHK	APP

DRAWING STATUS: S2 - FOR INFORMATION

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CLIENT: PROPERTY ALLIANCE GROUP

ARCHITECT: JON MATTHEWS ARCHITECTS

SITE/PROJECT: 27-33 KING STREET WEST & THE CARRIAGE WORKS MANCHESTER

TITLE: EXISTING DRAINAGE CATCHMENT AREA PLAN

SCALE @ A1: 1:100	CHECKED: DV	APPROVED: DV
PROJECT NO: 70093869	DESIGNED: VD	DRAWN: VD
DATE: April 22		REV: P02

DRAWING NO: RDH-WSP-XX-XX-DR-C-001

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Appendix I

MICRODRAINAGE SOURCE CONTROL MODELLING RESULTS



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Date 18/11/2022 12:29		Designed by UKVJD001			
File Source Control - Option ...		Checked by			
XP Solutions		Source Control 2019.1			
<u>Summary of Results for 100 year Return Period (+45%)</u>					
Storm Event	Max Level (m)	Max Depth (m)	Max Control (l/s)	Max Volume (m³)	Status
15 min Summer	99.355	1.355	8.5	20.3	O K
30 min Summer	99.544	1.544	8.5	23.2	O K
60 min Summer	99.594	1.594	8.5	23.9	O K
120 min Summer	99.431	1.431	8.5	21.5	O K
180 min Summer	99.203	1.203	8.5	18.1	O K
240 min Summer	98.974	0.974	8.5	14.6	O K
360 min Summer	98.557	0.557	8.5	8.4	O K
480 min Summer	98.267	0.267	8.5	4.0	O K
600 min Summer	98.084	0.084	8.5	1.3	O K
720 min Summer	98.015	0.015	8.5	0.2	O K
960 min Summer	98.003	0.003	8.5	0.1	O K
1440 min Summer	98.001	0.001	6.3	0.1	O K
2160 min Summer	98.001	0.001	6.3	0.2	O K
2880 min Summer	98.000	0.000	2.9	0.2	O K
4320 min Summer	98.000	0.000	2.1	0.0	O K
5760 min Summer	98.000	0.000	1.7	0.0	O K
7200 min Summer	98.000	0.000	1.4	0.0	O K
8640 min Summer	98.000	0.000	1.2	0.0	O K
10080 min Summer	98.000	0.000	1.1	0.0	O K
15 min Winter	99.573	1.573	8.5	23.6	O K
30 min Winter	99.852	1.852	8.5	27.8	Flood Risk
Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)	
15 min Summer	123.719	0.0	28.3	16	
30 min Summer	82.788	0.0	38.0	28	
60 min Summer	52.935	0.0	48.1	44	
120 min Summer	32.756	0.0	60.1	80	
180 min Summer	24.412	0.0	66.6	112	
240 min Summer	19.695	0.0	71.8	146	
360 min Summer	14.431	0.0	78.6	206	
480 min Summer	11.581	0.0	84.0	262	
600 min Summer	9.756	0.0	87.7	314	
720 min Summer	8.476	0.0	92.3	356	
960 min Summer	6.784	0.0	98.1	532	
1440 min Summer	4.947	0.0	105.8	608	
2160 min Summer	3.601	0.0	114.6	988	
2880 min Summer	2.871	0.0	122.7	1504	
4320 min Summer	2.082	0.0	137.2	0	
5760 min Summer	1.656	0.0	145.5	0	
7200 min Summer	1.386	0.0	152.1	0	
8640 min Summer	1.197	0.0	157.7	0	
10080 min Summer	1.058	0.0	162.6	0	
15 min Winter	123.719	0.0	31.9	16	
30 min Winter	82.788	0.0	42.5	30	
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WSP Group Ltd				Page 2	
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Date 18/11/2022 12:29		Designed by UKVJD001			
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XP Solutions		Source Control 2019.1			
<u>Summary of Results for 100 year Return Period (+45%)</u>					
Storm Event	Max Level (m)	Max Depth (m)	Max Control (l/s)	Max Volume (m³)	Status
60 min Winter	99.870	1.870	8.5	28.0	Flood Risk
120 min Winter	99.597	1.597	8.5	24.0	O K
180 min Winter	99.225	1.225	8.5	18.4	O K
240 min Winter	98.866	0.866	8.5	13.0	O K
360 min Winter	98.275	0.275	8.5	4.1	O K
480 min Winter	98.016	0.016	8.5	0.2	O K
600 min Winter	98.005	0.005	8.5	0.1	O K
720 min Winter	98.001	0.001	6.3	0.1	O K
960 min Winter	98.001	0.001	8.5	0.1	O K
1440 min Winter	98.001	0.001	6.3	0.1	O K
2160 min Winter	98.000	0.000	2.6	0.3	O K
2880 min Winter	98.000	0.000	2.1	0.0	O K
4320 min Winter	98.000	0.000	1.5	0.0	O K
5760 min Winter	98.000	0.000	1.2	0.0	O K
7200 min Winter	98.000	0.000	1.0	0.0	O K
8640 min Winter	98.000	0.000	0.9	0.0	O K
10080 min Winter	98.000	0.000	0.8	0.0	O K
Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)	
60 min Winter	52.935	0.0	54.4	48	
120 min Winter	32.756	0.0	67.3	86	
180 min Winter	24.412	0.0	74.6	122	
240 min Winter	19.695	0.0	80.2	154	
360 min Winter	14.431	0.0	88.0	210	
480 min Winter	11.581	0.0	93.7	240	
600 min Winter	9.756	0.0	99.2	180	
720 min Winter	8.476	0.0	102.4	438	
960 min Winter	6.784	0.0	108.5	540	
1440 min Winter	4.947	0.0	113.8	840	
2160 min Winter	3.601	0.0	128.6	1004	
2880 min Winter	2.871	0.0	141.2	0	
4320 min Winter	2.082	0.0	153.6	0	
5760 min Winter	1.656	0.0	162.9	0	
7200 min Winter	1.386	0.0	170.4	0	
8640 min Winter	1.197	0.0	176.7	0	
10080 min Winter	1.058	0.0	182.1	0	
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Date 18/11/2022 12:29	Designed by UKVJD001																																		
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<u>Rainfall Details</u> <table> <tr> <td>Rainfall Model</td> <td>FSR</td> <td>Winter Storms</td> <td>Yes</td> </tr> <tr> <td>Return Period (years)</td> <td>100</td> <td>Cv (Summer)</td> <td>0.750</td> </tr> <tr> <td>Region</td> <td>England and Wales</td> <td>Cv (Winter)</td> <td>0.840</td> </tr> <tr> <td>M5-60 (mm)</td> <td>18.100</td> <td>Shortest Storm (mins)</td> <td>15</td> </tr> <tr> <td>Ratio R</td> <td>0.361</td> <td>Longest Storm (mins)</td> <td>10080</td> </tr> <tr> <td>Summer Storms</td> <td>Yes</td> <td>Climate Change %</td> <td>+45</td> </tr> </table> <u>Time Area Diagram</u> Total Area (ha) 0.122 <table> <thead> <tr> <th colspan="2">Time (mins)</th> <th>Area</th> </tr> <tr> <th>From:</th> <th>To:</th> <th>(ha)</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>4</td> <td>0.122</td> </tr> </tbody> </table>			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)	18.100	Shortest Storm (mins)	15	Ratio R	0.361	Longest Storm (mins)	10080	Summer Storms	Yes	Climate Change %	+45	Time (mins)		Area	From:	To:	(ha)	0	4	0.122
Rainfall Model	FSR	Winter Storms	Yes																																
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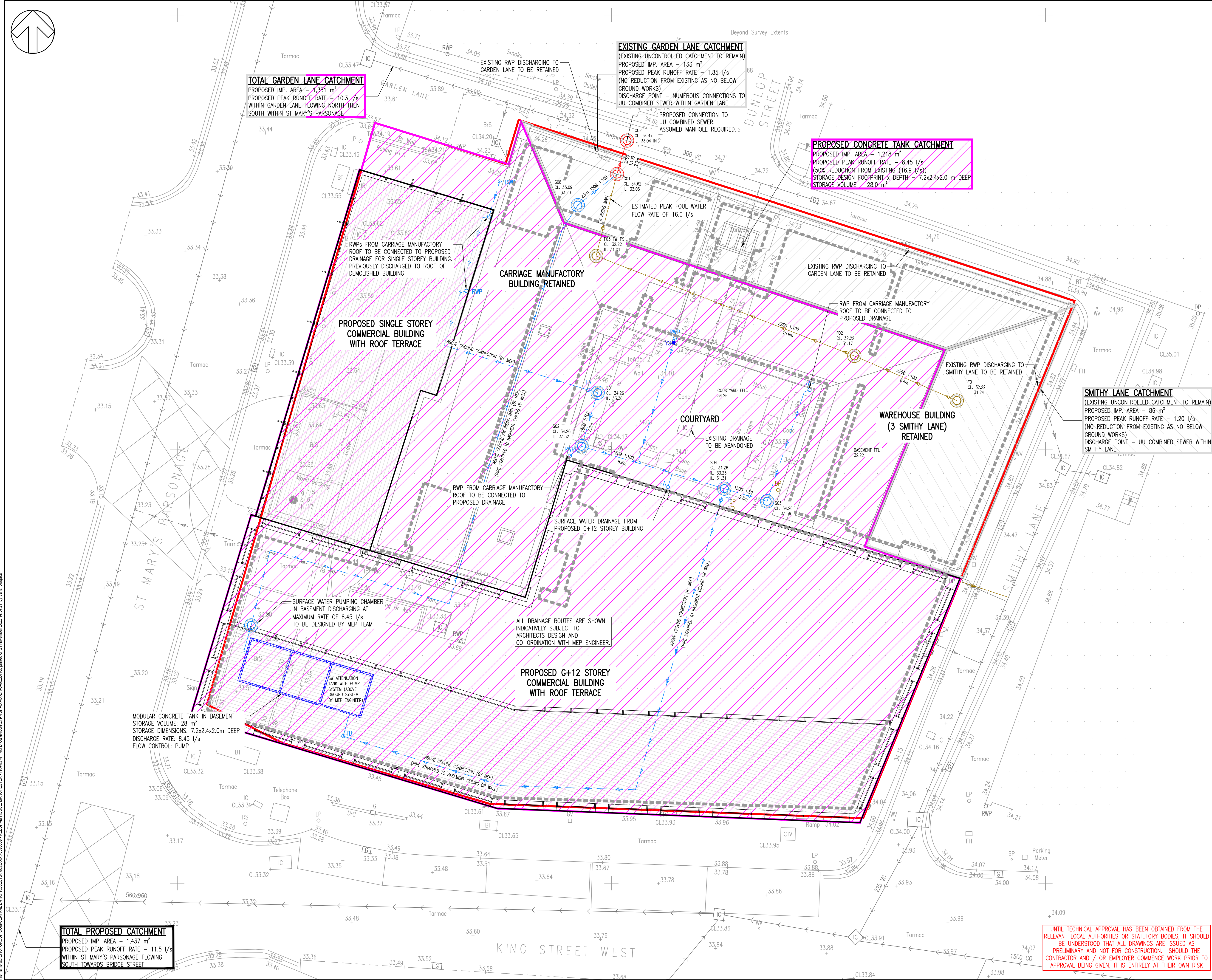
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Date 18/11/2022 12:29	Designed by UKVJD001																	
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XP Solutions		Source Control 2019.1																
Model Details Storage is Online Cover Level (m) 100.000 Tank or Pond Structure Invert Level (m) 98.000 <table><tr><th>Depth (m)</th><th>Area (m²)</th><th>Depth (m)</th><th>Area (m²)</th></tr><tr><td>0.000</td><td>15.0</td><td>2.000</td><td>15.0</td></tr></table> Pump Outflow Control Invert Level (m) 98.000 <table><tr><th>Depth (m)</th><th>Flow (l/s)</th><th>Depth (m)</th><th>Flow (l/s)</th></tr><tr><td>0.001</td><td>8.4500</td><td>2.000</td><td>8.4500</td></tr></table>			Depth (m)	Area (m²)	Depth (m)	Area (m²)	0.000	15.0	2.000	15.0	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	0.001	8.4500	2.000	8.4500
Depth (m)	Area (m²)	Depth (m)	Area (m²)															
0.000	15.0	2.000	15.0															
Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)															
0.001	8.4500	2.000	8.4500															
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Appendix J

OUTLINE DRAINAGE STRATEGY PLANS



File name: \\UK.VSPGROUP.COM\CENTRAL DATA\PROJECTS\00303000\RDH-WSP-XX-XX-DR-C-002.DWG, issued on 21 November 2022 14:54:21, by Valla, Deepika



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NOTES

1. ALL DIMENSIONS ARE SHOWN IN MILLIMETRES AND ALL LEVELS ARE SHOWN IN METRES UNLESS NOTED OTHERWISE.

2. THIS DRAINAGE STRATEGY LAYOUT IS PREPARED IN OUTLINE ONLY TO DEMONSTRATE THE DEVELOPMENT CAN MEET NATIONAL AND LOCAL REQUIREMENTS. FURTHER DEVELOPMENT OF THE STRATEGY WILL BE UNDERTAKEN AT THE DETAILED DESIGN STAGE.

3. THIS DRAWING IS BASED ON THE FOLLOWING INFORMATION:

- TOPOGRAPHICAL SURVEY REF 111468-102-HLS-00-20-M2-6-10100-47 BY HOLLIS DATED AUG 2021
- EXISTING ROOF PLAN REF 107_REEDHAM HOUSE_WORKBOOK_DTM 01 BY JON MATTHEWS ARCHITECTS DATED DEC 2021.
- SEWER RECORD DRAWINGS FROM UNITED UTILITIES DATED JAN 2019

3. THIS DRAWING IS IN DEVELOPMENT AND IS SUBJECT TO CHANGE.

4. CONNECTIONS TO PUBLIC SEWERS ARE ASSUMED BASED ON VISIBLE DRAINAGE FEATURES. IT IS RECOMMENDED THAT A CCTV DRAINAGE SURVEY IS UNDERTAKEN TO CONFIRM THE LOCATION, CONNECTIVITY AND CONDITION OF ALL EXISTING PRIVATE DRAINAGE ON-SITE.

5. PEAK RUNOFF RATES HAVE BEEN CALCULATED USING THE MODIFIED RATIONAL METHOD, $Q = CIA$ WHERE $I = 50 \text{ mm/hr}$ AND $C = 1$.

KEY

SITE BOUNDARY (AS DEFINED BY ARCHITECT)

PROPOSED BASEMENT FOOTPRINT

EXISTING LEVELS

EXISTING DRAINAGE

- UNITED UTILITIES COMBINED SEWER
- PRIVATE COMBINED DRAIN (ASSUMED)
- PRIVATE SURFACE WATER DRAIN (ASSUMED)

COMBINED SEWER MANHOLE / INSPECTION CHAMBER

GULLY

RAINWATER PIPE

FOUL SEWER DOWNPIPE

PROPOSED DRAINAGE

- PRIVATE COMBINED DRAIN
- PRIVATE SURFACE WATER DRAIN
- PRIVATE SURFACE WATER RISING MAIN
- PRIVATE FOUL WATER DRAIN

PRIVATE COMBINED / SURFACE/ FOUL WATER MANHOLE / INSPECTION CHAMBER

PRIVATE YARD GULLY

PRECAST CONCRETE TANK IN BASEMENT

P04	21/11/2022	DV	UPDATED TO SUIT CURRENT ARCHITECTS PLANS	DV	DV
P03	18/11/2022	VF	UPDATED TO ADDRESS PLANNING COMMENTS	DV	DV
P02	25/08/2022	VD	REISSUED FOR PLANNING	DV	DV
P01	15/06/2022	VD	ISSUED WITH FRA	DV	DV
REV	DATE	BY	DESCRIPTION	CHK	APP

DRAWING STATUS: S2 - FOR INFORMATION

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CLIENT: PROPERTY ALLIANCE GROUP

ARCHITECT: JON MATTHEWS ARCHITECTS

SITE/PROJECT: 27-33 KING STREET WEST & THE CARRIAGE WORKS MANCHESTER

TITLE: OUTLINE DRAINAGE STRATEGY LAYOUT

SCALE @ A1: 1:100	CHECKED: DV	APPROVED: DV
PROJECT NO: 70093869	DESIGNED: VD	DRAWN: VD
DATE: November 22		REV: P04

RDH-WSP-XX-XX-DR-C-002

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