

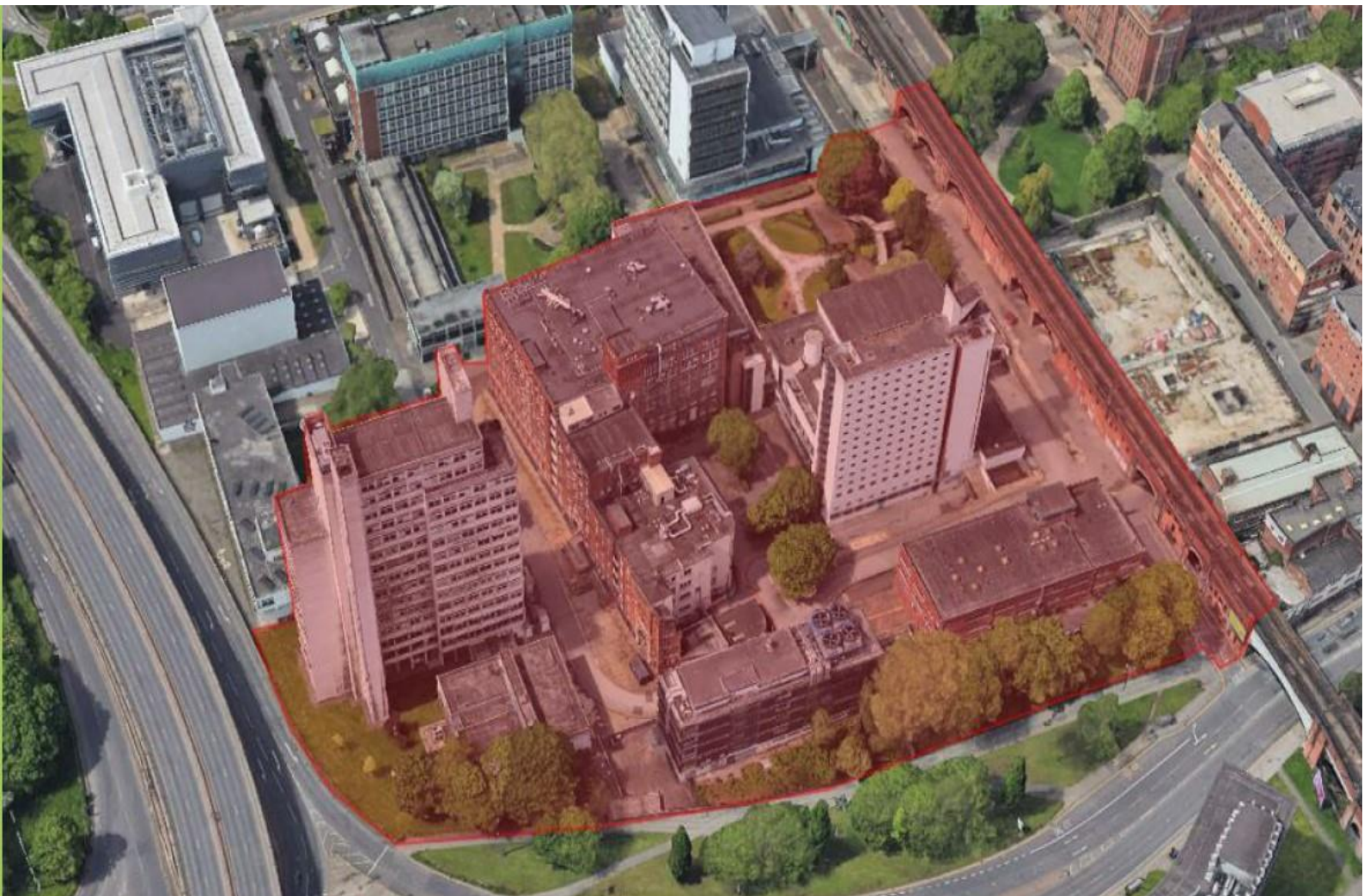
Sister – Plot C

Flood Risk Assessment

APRIL 2025

PREPARED FOR

ID Manchester Ltd. & University of Manchester



Flood Risk Assessment

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CONTENTS

CONTENTS.....	1
1. Introduction.....	1
1.1. Scope and Objectives	1
2. Existing Site Details	2
2.1. Location	2
2.2. Site Historical Development	2
2.3. Topography	3
2.4. Geology	3
2.5. Hydrology and Drainage Infrastructure	3
2.6. Existing Watercourses and Waterbodies	4
3. Development Proposals	4
4. Relevant Legislation, Policy and Guidance.....	5
4.1. National Planning Policy Framework (NPPF)	5
4.2. Site Specific NPPF Flood Risk Categorisation.....	7
4.3. Site Specific Flood Zone Compatibility.....	7
4.4. Manchester City Council Strategic Flood Risk Assessment (SFRA) and Manchester Core Strategy 2024	8
4.5. Places for Everyone Joint Development Plan 2024 Policy JP-S4	9
5. Flood Risk Assessment.....	9
5.1. Criteria for Assessment	9
5.2. Historical Flooding	10
5.3. Tidal/ Fluvial (Rivers and Sea) Flood Risk	10
5.4. Reservoir Flood Risk	12
5.5. Surface Water Flooding to the Site	13
5.6. Sewer Flood Risk	14
5.7. Summary of Flood Risk	14
6. Conclusion.....	15
Appendix A: Topographical Survey.....	16
Appendix B: Existing Sewer Records	17
Appendix C: Proposed Site Plan.....	18

1. Introduction

1.1. Scope and Objectives

Civic Engineers Ltd has been appointed by ID Manchester Ltd. And University of Manchester to prepare a Flood Risk Assessment to support a full planning application for Stage 2 on Plot C of Sister development. The proposals comprise the demolition of Barnes-Wallis, Wright Robinson, Manchester Meeting Place, Morton, Moffat Buildings and the construction of two office buildings (Use Class E). At the base of the building, the buildings will be connected via an open shared lobby space, which shall comprise a variety of uses, including social amenity spaces, as well as food and beverage establishments (Use Class E, Sui Generis – drinking establishment). The proposals will also include interventions to the Hollaway Wall, incorporating it into the new commercial element. Additionally, the proposals will involve the change of use of the railway arches to retail and food and beverage uses (Use Class E and Sui Generis – drinking establishment). The proposals will also include the creation of a new public square, access and other associated works. The development is located just inside the Mancunian Way motorway to the south of Manchester City Centre.

As the red line boundary of the proposed development exceeds 1 ha, a site-specific FRA has been produced as per the requirements of the National Planning Policy Framework (NPPF). The Flood Risk Assessment presented herein will demonstrate that the proposed development will be safe from flooding and will not pose a flood risk to sites elsewhere.

This Flood Risk Assessment will:

- Investigate all potential risks of flooding to the site.
- Consider the impact the development may have elsewhere regarding flooding.
- Consider proposals to mitigate any potential risk of flooding determined to be present; and,
- Consider drainage proposals to mitigate flood risk from the site.

This report reviews the following information:

- Environment Agency Online Flood mapping.
- UK Government Long Term Flood Risk Information for surface water flooding and reservoir flooding.
- CCTV Survey output information.
- GPR survey.
- United Utilities Asset Location Search Sewer Map.
- Preliminary results from Phase 2 Ground Investigation.

This document is based on currently available information held by Civic Engineers and all comments and conclusions contained within are based upon the assumption that the sourced data is reliable. Civic Engineers accepts no liability for any inaccurate conclusions or assumptions resulting from inaccurate information. Proposals presented in this report represent the design intent and may be subject to alteration or adjustment in finalising the detailed design for this project.

2. Existing Site Details

2.1. Location

The location of the proposed development is shown in Figure 1.

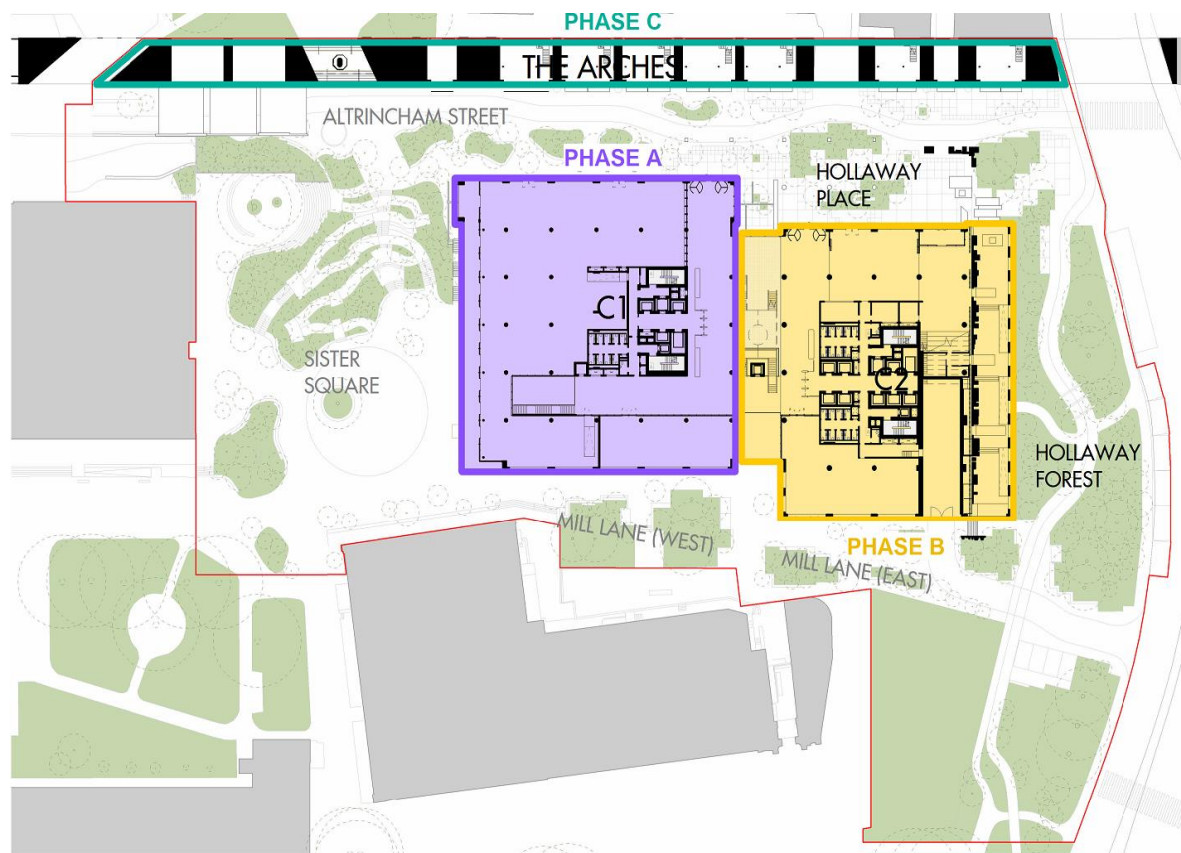


Figure 1: Site location with indicative site boundary in red

The site is located approximately 200m to the southwest of Piccadilly Station. Bounded by an elevated section of the Mancunian Way to the south, a Network Rail viaduct structure to the north, the A6 London Road to the east and Sackville Street to the west.

The site has an approximate National Grid Reference 384694, 397642 and the nearest postcode is M1 3AL. The proposed site red line boundary has an area of 2.173ha, and the proposed Sister Plot C development site is approximately 0.59ha.

2.2. Site Historical Development

The earliest available mapping dated 1848 indicates that the site was historically occupied by residential properties and small structures in the eastern and central areas of the site, with Temple Street Mill (Cotton) located in the west of the site. The River Medlock meandered across the west of the site to the east of the cotton mill. Altrincham Street and the railway viaduct were indicated in the north of the site in their present-day positions.

By circa 1890, Manchester Nut & Bolt Works were indicated on the northern bank of the River Medlock in the centre of the site and London Road Iron Works (later becoming a smaller Iron Foundry) encroached onto the west of the site on the west bank of the River Medlock in the northwest of the site. A warehouse was later developed in the west of the site circa 1948 and by 1955-1956, several residential structures towards the centre of the site were no longer indicated, potentially associated with bomb damage during the Second World War.

By 1965, the site was extensively redeveloped. The central and eastern areas of the site were cleared to open space, and a Depot was indicated in the east of the site in the present-day Moffat Building position. The River Medlock was also no longer indicated to flow in its original location, “disappearing” from the historical mapping off-site to the southeast and “reappearing” off-site to the southwest on mapping dated 1965. By the late 1960s the site was established as the University of Manchester campus.

2.3. Topography

A topographical survey was undertaken by Survey & Engineering Projects in April 2022 and is contained in Appendix B of this report. Based on the topographical survey the site is 80% impermeable.

A copy of the topographic survey is enclosed in Appendix A.

2.4. Geology

A ground investigation, carried out by Civic Earth in 2024, has confirmed that the ground conditions are largely consistent with those described above. For a more detailed assessment of the ground conditions and any potential contamination, please refer to document 51019-CE-02-XX-R-G-1001, Factual Site Investigation Report, dated April 2025, prepared by Civic Earth.

2.5. Hydrology and Drainage Infrastructure

The United Utilities public sewer records that have been obtained, indicate combined sewers on Whitworth Street, Coburg Street, Altrincham Street, London Road, Water Street, Sackville Street and Granby Row.

The sewer records are enclosed within Appendix B.

In consultation with the Lead Local Flood Authority (LLFA), an ordinary watercourse known as the Shooters Brook has been identified along the stretches of Granby Row and Sackville Street, ultimately flowing underneath the Charles Street Multistorey Carpark and connecting to the River Medlock. The route of Shooters Brook is illustrated in Figure 2.

It is recommended that a comprehensive CCTV survey of the Shooters Brook culvert be conducted during the subsequent design phase.

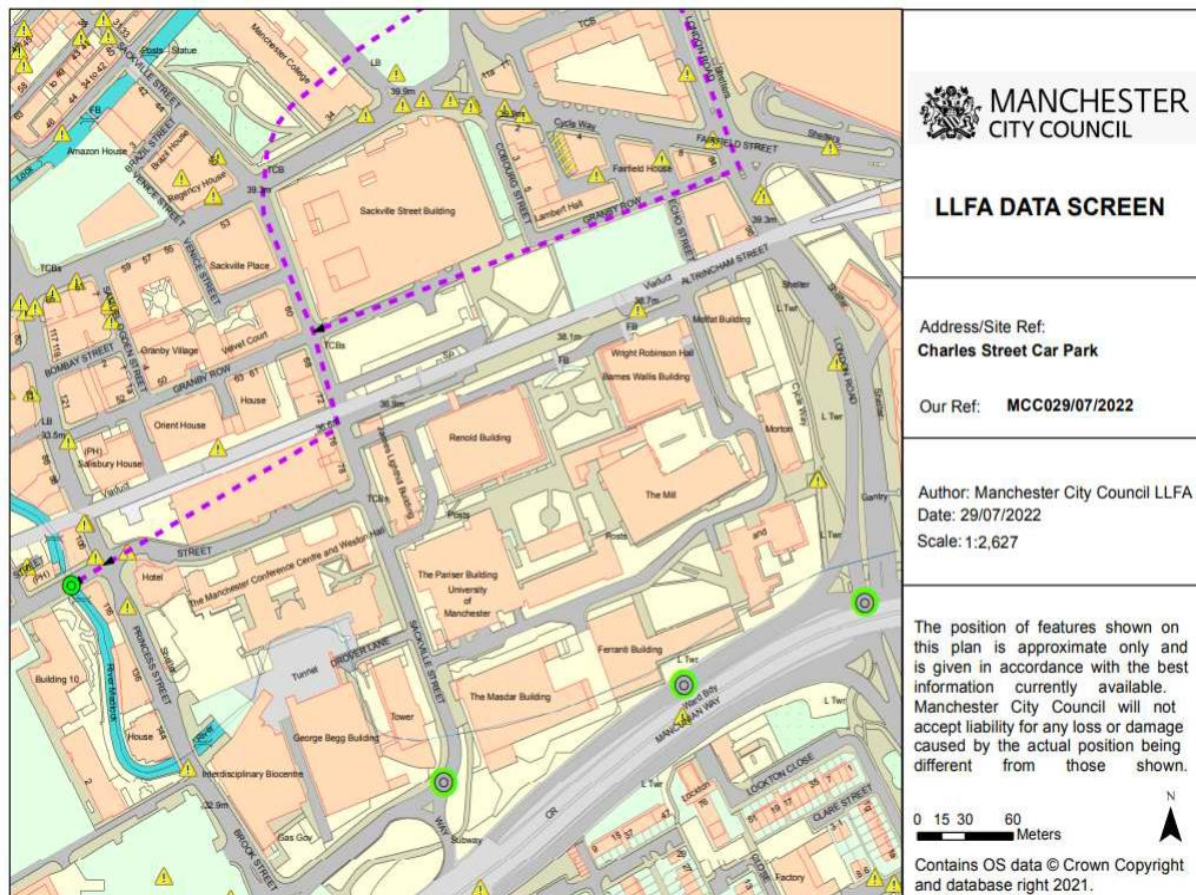


Figure 2: Shooters Brook provided from Manchester City Council LLFA map

According to United Utilities records, this culverted ordinary watercourse comprises a 900mm circular concrete culvert. Despite its presence in UU records, it has been clarified that UU does not hold ownership of this infrastructure. In the event of any discharge into this watercourse, consultation with the LLFA is imperative. Moreover, the LLFA stipulates a minimum 3m easement from the structure.

A survey of the existing utilities has been conducted by Buro Happold in March 2024, indicating the location of the existing sewers and Shooters Brook culvert.

2.6. Existing Watercourses and Waterbodies

The nearest waterbody to the site is a culverted section of River Medlock flowing from the southeast to southwest below the slip roads of the Mancunian Way and the soft landscaped areas south of the Masdar and Ferranti buildings. The culvert is a twin concrete box, each 3.7m high x 3.8m wide, with a dry flow channel in each (1.4m wide x 500mm deep). The culverted section is 536m in length and is reported to be in 'fair condition' (WML Report, August 2010).

The Masdar (GEIC) building made a connection to the culvert at 30.90m (invert level).

3. Development Proposals

The proposals comprise the demolition of Barnes-Wallis, Wright Robinson, Manchester Meeting Place, Morton, Moffat Buildings and the construction of two office buildings (Use Class E). At the base of the building, the buildings will be connected via an open shared lobby space, which shall comprise a variety of uses including social amenity spaces, as well as food and beverage establishments (Use Class E, Sui Generis – drinking establishment). The proposals will also include interventions to the Holloway Wall, incorporating it into the new commercial element. Additionally, the proposals will involve the change of use of the railway arches to retail and food and beverage uses (Use Class E and Sui Generis – drinking establishment). The proposals will also include the creation of a new public square, access and other associated works.

A significant external public realm is proposed, the majority of which shall be part of a Sustainable Drainage System in the form of bioretention systems (rain gardens and tree pits) and pervious pavements. The proposed site plan covers an area of 2.173ha and is included in Appendix C.

4. Relevant Legislation, Policy and Guidance

This FRA has been produced following the requirements of the NPPF and Planning Practice Guidance (PPG), as well as complying with or referencing the following regional or local policy and documentation:

- Greater Manchester Combined Authority (GMCA) Level 1 Strategic Flood Risk Assessment (SFRA) 2019
- GMCA Hybrid Level 2 SFRA 2021
- Greater Manchester Surface Water Management Plan 2012
- Manchester Core Strategy Development Plan 2024
- Places for Everyone (PfE) Policy JP-S4 Flood Risk and the Water Environment
- Policy EN8 Adapting to Climate Change
- Policy EN14 Flood Risk
- Policy EN17 Water Quality

Particularly relevant aspects of these documents and frameworks are presented in the following sections.

4.1. National Planning Policy Framework (NPPF)

The National Planning Policy Framework document (NPPF) and the Planning Practice Guidance 2024 provide guidance on how flood risk should be assessed during the planning and development process.

The NPPF refers to the Flood Zones which are shown on the Environment Agency Flood Map, and establishes the range of uses which are appropriate, or compatible, land uses for each Flood Zone.

Annex 3 of the National Planning Policy Framework (NPPF) lists these land uses in the context of their flood risk vulnerability. The following extract below outlines the NPPF Flood Risk Vulnerability Classifications and their associated land uses:

HIGHLY VULNERABLE

- Police and ambulance stations; fire stations and command centres; telecommunications installations required to be operational during flooding.
- Emergency dispersal points.
- Basement dwellings.
- Caravans, mobile homes and park homes intended for permanent residential use.
- Installations requiring hazardous substances consent. (Where there is a demonstrable need to locate such installations for bulk storage of materials with port or other similar facilities, or such installations with energy infrastructure or carbon capture and storage installations, that require coastal or water-side locations, or need to be located in other high flood risk areas, in these instances the facilities should be classified as 'Essential Infrastructure'.)

MORE VULNERABLE

- Hospitals
- Residential institutions such as residential care homes, children's homes, social services homes, prisons and hostels.
- Buildings used for dwelling houses, student halls of residence, drinking establishments, nightclubs and hotels.
- Non-residential uses for health services, nurseries and educational establishments.
- Landfill* and sites used for waste management facilities for hazardous waste.
- Sites used for holiday or short-let caravans and camping, subject to a specific warning and evacuation plan.

LESS VULNERABLE

- Police, ambulance and fire stations which are not required to be operational during flooding.

- Buildings used for shops; financial, professional and other services; restaurants, cafes and hot food takeaways; offices; general industry, storage and distribution; non-residential institutions not included in the 'more vulnerable' class; and assembly and leisure.
- Land and buildings used for agriculture and forestry.
- Waste treatment (except landfill* and hazardous waste facilities).
- Minerals working and processing (except for sand and gravel working).
- Water treatment works which do not need to remain operational during times of flood.
- Sewage treatment works, if adequate measures to control pollution and manage sewage during flooding events are in place.
- Car parks.

WATER-COMPATIBLE DEVELOPMENT

- Flood control infrastructure.
- Water transmission infrastructure and pumping stations.
- Sewage transmission infrastructure and pumping stations.
- Sand and gravel working.
- Docks, marinas and wharves.
- Navigation facilities.
- Ministry of Defence installations.
- Ship building, repairing and dismantling, dockside fish processing and refrigeration and compatible activities requiring a waterside location.
- Water-based recreation (excluding sleeping accommodation).
- Lifeguard and coastguard stations.
- Amenity open space, nature conservation and biodiversity, outdoor sports and recreation and essential facilities such as changing rooms.
- Essential ancillary sleeping or residential accommodation for staff required by uses in this category, subject to a specific warning and evacuation plan.

The Flood Zones can be summarised as follows:

- Zone 1: Low Probability. This zone comprises land assessed as having a less than 1 in 1000 annual probability of river or sea flooding in any one year. (<0.1%)
- Zone 2: Medium Probability. This zone comprises land assessed as having between 1 in 100 and 1 in 1000 annual probability of river flooding (1%-0.1%) or between a 1 in 200 and 1 in 1000 annual probability of sea flooding (0.5% - 0.1%) in any year.
- Zone 3a: High Probability. This zone comprises land assessed as having 1 in 100 or greater annual probability of river flooding (>1%) or a 1 in 200 or greater annual probability of flooding from the sea (>0.5%) in any year.
- Zone 3b: Functional Flood Plain. This zone comprises land where water must flow or be stored in times of flood. Strategic Flood Risk Assessments should identify this zone.

The flood risk vulnerability and flood zone 'compatibility' has been summarised in Table 1 below. The EA presents a set of recommendations based on the level of vulnerability of a proposed structure and its flood zone.

Table 1: Flood Risk vulnerability and Flood Zone compatibility from NPPF Technical Guide

Flood Risk Vulnerability Classification		Essential Infrastructure	Highly Vulnerable	More Vulnerable	Less Vulnerable	Water Compatible
Flood Zone (See Table 1)	Zone 1	√	√	√	√	√
	Zone 2	√	Exception Test Required	√	√	√
	Zone 3a	Exception Test Required	×	Exception Test Required	√	√
	Zone 3b (functional floodplain)	Exception Test Required	×	×	×	√
		√ Development is appropriate × Development should not be permitted.				

The flood zone categorisation for the site and evaluation of whether the development is appropriate is carried out in Section 3.1.3.

4.1.1. Sequential Test

A sequential test is one of the primary measures of mitigating flood risk and considers alternative available sites within the vicinity of a proposed development, assessing whether these have a lower risk of flooding than the currently proposed development location with the intention of prioritising development within areas with reduced flood risk.

The latest EA flood maps for planning indicate localised pockets of the site are at high risk of flooding from surface water. The development is for the regeneration of this existing brownfield site and a review of the Environment Agency Flood Map for Planning indicates extensive localised pockets of surface water flooding in the wider vicinity of the development site. It is therefore considered that a comparable site with a lower risk of flooding from surface water will not be available and therefore the sequential test has been satisfied.

4.2. Site Specific NPPF Flood Risk Categorisation

To assess the NPPF flood risk classification for the site, the Government web-based 'Flood Map for Planning' is reviewed. The flood map identifies the probability of flooding from rivers or sea (not considering the presence of flood defences). The Government web-based 'Long Term Flood Risk Assessment for Locations in England' was also used to identify the flood risks from rivers and seas, surface water and reservoirs. The Flood Map for Planning and surrounding areas is shown in Figure 3 below.



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Figure 3: Flood Map for Planning

4.3. Site Specific Flood Zone Compatibility

The proposed development sits within Flood Zone 1, meaning there is a low probability of annual flooding from rivers and sea. As per Table 1 above, given that the development is within Flood Zone 1 and is considered as 'less vulnerable' the development is deemed appropriate and additionally does not require an exception test.

4.4. Manchester City Council Strategic Flood Risk Assessment (SFRA) and Manchester Core Strategy 2024

Manchester City Council SFRA states:

“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.”

Policy EN 8 (Adapting to Climate Change) of the Manchester Core Strategy requires that:

- Expecting developments to manage surface water run-off through sustainable drainage systems and as close to source as possible. Development should achieve greenfield run-off rates unless it is demonstrated to be impracticable. District local plans should consider setting more detailed surface water drainage policies to reflect local circumstances, including alternative surface water discharge rates, such as in areas with critical drainage issues.

Policy EN 14 (Flood Risk) of the Manchester Core Strategy requires that:

- In line with the risk-based sequential approach contained within PPS25, development should be directed away from sites at the greatest risk of flooding, and towards sites with little or no risk of flooding; this should take account all sources of flooding identified in the Manchester-Salford-Trafford Strategic Flood Risk Assessment (SFRA).
- In addition to the requirements for site-specific Flood Risk Assessments (FRAs) set out in PPS25, an appropriate FRA will also be required for all development proposals, including changes of use, on sites greater than 0.5ha within Critical Drainage Areas (CDAs) and Canal Hazard Zones identified in the SFRA.
- All new development should minimise surface water run-off, including through Sustainable Drainage Systems (SuDS) and the appropriate use of Green Infrastructure. Developers should have regard to the surface water run-off rates in the SFRA User Guide. In CDAs, evidence to justify the surface water run-off approach / rates will be required.
- The City of Manchester contains many sections of rivers which are culverted or ‘hidden’. Where these are indicated in the SFRA beneath the proposed development site, further investigation will be required and the development proposal should take this into account; where feasible and appropriate development should seek to open up culverted/hidden rivers to reduce the associated flood risk and danger of collapse, taking advantage of opportunities to enhance biodiversity and Green Infrastructure.

Policy EN 17 (Water Quality) of the Manchester Core Strategy requires that:

- 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;
- Development close to a watercourse should also ensure that waste or litter cannot enter the watercourse from the site;

- Development should, where feasible and appropriate, seek to open up any culverted or hidden watercourse beneath the site to improve the ecological status of that watercourse.

4.5. Places for Everyone Joint Development Plan 2024 Policy JP-S4

The Places for Everyone Joint Development Plan is the Development Plan of nine Greater Manchester local authorities. It forms part of the council's statutory development plan following its adoption on 13th March 2024.

Policy JP-S4 (Flood Risk and the Water Environment) does not provide additional requirements for FRAs, however, the following aspects of the policy are relevant to the development of the drainage strategy for the proposed development.

- Developments are expected to utilise SuDS and source control, working with natural processes and adopting a natural flood management approach to slow runoff and intercept pollutants.
- SuDS should be designed to:
 - Provide multifunctional benefits (e.g., for water quality, nature conservation and recreation), wherever possible,
 - Be delivered in a holistic and integrated manner, including on larger sites split into separate phases, and
 - Be managed and maintained appropriately over the lifetime of the development.
- Developments should achieve greenfield runoff rates unless it is demonstrated to be impracticable.

5. Flood Risk Assessment

5.1. Criteria for Assessment

5.1.1. Design Flood

Estimation of probable flood levels across the site following a flood event is based on the 'design flood'. This is considered to be the following flood events with associated annual probabilities:

- River flooding with an annual probability of 1 in 100 (1%) in any given year.
- Tidal flooding with an annual probability of 1 in 200 (0.5%) in any given year.
- Surface water flooding with an annual probability of 1 in 100 (1%) in any given year.

The above events should include an allowance for climate change, as discussed in Section 5.1.2.

As the site is located in Flood Zone 1 and has less than 1 in 1000 (<0.1%) annual probability of flooding from rivers and seas, the design flood is considered to be the 1 in 100-year surface water flood event (incorporating the relevant climate change allowance).

5.1.2. Climate Change Allowances

To account for changes to peak river flow, peak rainfall intensity, sea level rise, offshore wind speed and extreme wave height as a result of climate change, the EA publishes climate change allowances to enable future flood risk to sites to be assessed and to facilitate resilient design of developments.

EA guidance on the application of climate change allowances provides the following recommendations:

- Residential development should be considered to have a minimum lifetime of 100 years.
- FRAs should assess the upper-end allowances for peak rainfall for events with an annual probability of 1 in 30 (3.3%) and 1 in 100 (1%) in any given year.
- Assessment of peak river flow allowances is not required where a development is located in Flood Zone 1 and is not at an increased risk of flooding from rivers and seas in the future.

- Developments should be designed to be safe from surface water flooding and not increase flood risk elsewhere based on the upper-end allowance for peak rainfall for events with an annual probability of 1 in 100 (1%) in any given year.

The peak river flow (supplied for reference) and rainfall allowances for the site are provided in

Table 4 and Table 5 below, respectively. An upper-end allowance of 40% is adopted for peak rainfall in the assessment of surface water flood risk in the 1 in 30-year event, with an upper-end allowance of 45% adopted for peak rainfall in the assessment of surface water flood risk in the 1 in 100-year event. Furthermore, an upper-end allowance of 45% is adopted for peak rainfall in the design of the proposed drainage system for the 1 in 100-year.

Table 2: Peak river flow allowances for the Irwell Management Catchment.

ALLOWANCE CATEGORY	TOTAL POTENTIAL CHANGE ANTICIPATED FOR THE '2020S' (2015 TO 2039)	TOTAL POTENTIAL CHANGE ANTICIPATED FOR THE '2050S' (2040 TO 2069)	TOTAL POTENTIAL CHANGE ANTICIPATED FOR THE '2080S' (2070 TO 2115)
Upper	24%	43%	75%
Higher	15%	26%	46%
Central	12%	19%	35%

Table 3: Peak rainfall allowances for the Irwell Management Catchment.

ALLOWANCE CATEGORY	TOTAL POTENTIAL CHANGE ANTICIPATED FOR THE '2050S' (UP TO 2060)	TOTAL POTENTIAL CHANGE ANTICIPATED FOR THE '2070S' (2061 TO 2125)
3.3% AEP rainfall event		
Upper end	35%	40%
Central	25%	30%
1% AEP rainfall event		
Upper end	40%	45%
Central	25%	30%

The potential sources of flooding to the development have been assessed and are discussed below.

5.2. Historical Flooding

A review of the EA's Recorded Flood Outlines and Historic Flood Map datasets and the Manchester City Council Strategic Flood Risk Assessment (SFRA) indicates that there have been no recorded incidents of flooding on the site.

5.3. Tidal/ Fluvial (Rivers and Sea) Flood Risk

Fluvial (main river) flooding occurs when the capacity of a main river is exceeded, resulting in water overtopping its banks. Heavy or prolonged rainfall, melting of ice and snow and – in rivers subjected to tidal processes – high tides and storm surges are the primary causes of this source of flooding.

The EA Flood Map for Planning (Rivers and Sea) highlights the risk of flooding to the site from fluvial sources:

- Where a site is located in a dark blue shaded zone, this indicates that the site is within Flood Zone 3 where there is a chance of flooding of 1 in 100 (1%) or greater.
- Where a site is located in a light blue shaded zone; this indicates that the site is within Flood Zone 2 where there is a chance of flooding between 1 in 1000 (0.1%) and 1 in 100 (1%).

- Where a site is located in a white (unshaded) area, it is generally deemed to be classified as Flood Zone 1 where there is a chance of flooding of less than 1 in 1000 (0.1%).

The map, shown in Figure 4 below, indicates a very low probability of annual flooding from rivers and sea.

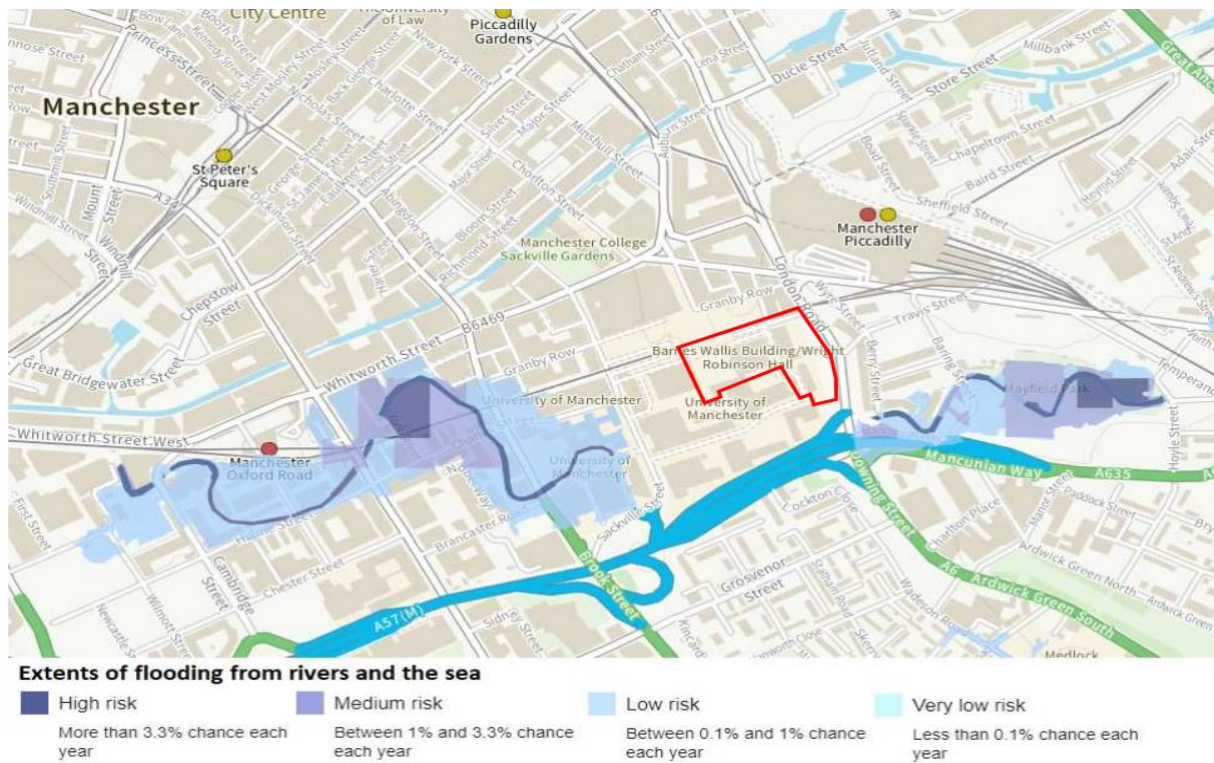


Figure 4: Flood Risk Map from rivers or sea

5.3.1. Impacts of Climate Change

The RoFRS map additionally indicates flood risk extents accounting for the impacts of climate change on peak river flow. This mapping incorporates the central climate change allowance for the 2050s epoch (19%) and is presented in Figure 5.

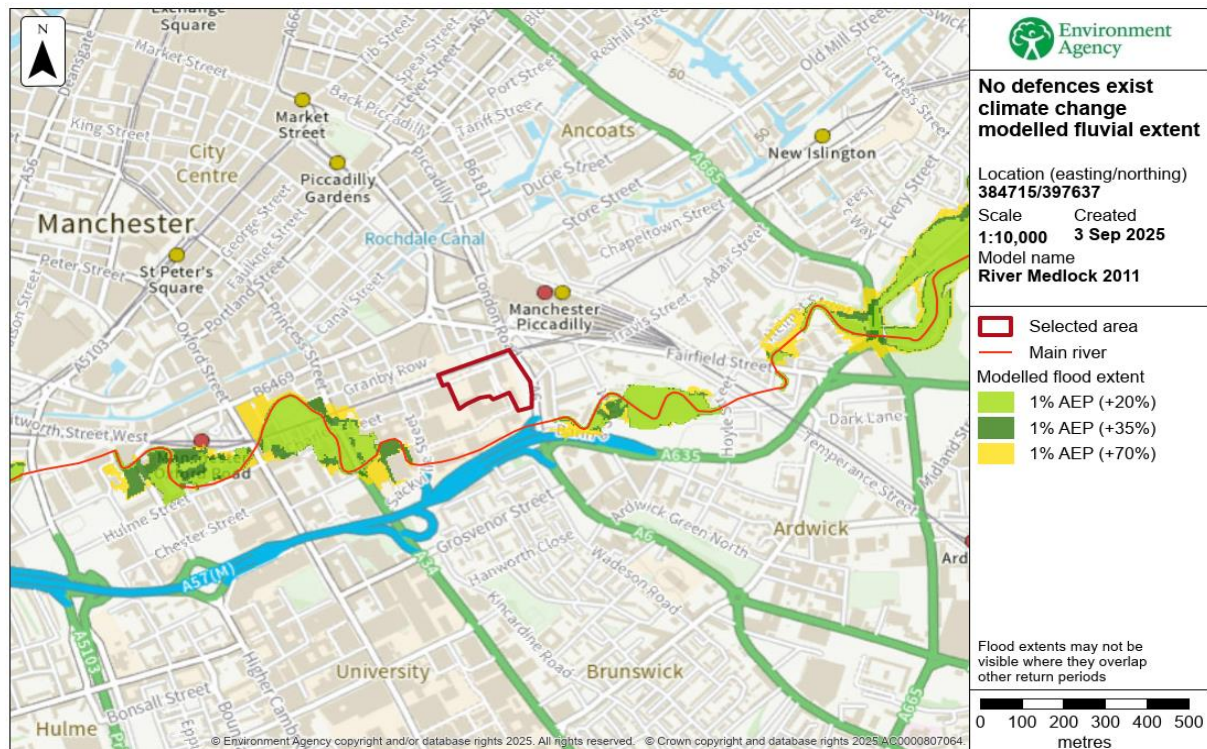


Figure 5: Environment Agency Risk of Flooding from Rivers and Sea map, incorporating the central climate change allowance for peak river flow.

No discernible change in flood risk to the development is identified in this scenario. Whilst further increases in river flow are anticipated to occur throughout the lifetime of the development based on climate change allowances for the 2080s epoch, this is not expected to affect the development's existing flood risk based on the almost negligible impact of climate change on flood risk for the 2050s epoch.

The assessment references the most recent EA Flood Map for Planning, including updated modelling outputs and climate change scenarios. The proposed development levels have been reviewed against the modelled flood extents and demonstrate that all built elements remain outside the floodplain extents for both the present-day and climate change scenarios. Finished floor levels are set at a minimum of 34.10m AOD, providing a freeboard of 0.33m above the predicted flood levels associated with the 1% AEP (1 in 100-year) flood event for both present-day and future climate change projections.

5.4. Reservoir Flood Risk

The 'Flood Risk Map from reservoirs', shown in Figure 6 below, indicates the probability of flooding from reservoirs.



Figure 6: Flood Risk Map from reservoirs

Reservoirs may flood in the event of a dam collapse resulting in the release of a significantly large volume of water, however, reservoirs in the UK have an excellent safety record and the probability of such an event is considered extremely low.

5.5. Surface Water Flooding to the Site

Surface water flooding can be caused when rainwater, during extreme rainfall events, does not drain away through the normal drainage system or soak into the ground. Surcharging sewers can result in overland flows which if originating at a higher elevation than a development site can potentially pose a flood risk.

Surface water flooding is dependant primarily on topography which dictates either the flow path of overland flow which is not contained within public sewers, or areas in which ponding may occur. Surface water flooding is more difficult to predict than the risk of flooding from Rivers or Sea as it is dependent on the amount of rain which will fall in a very localised area, the specific topography of that region and the capacity and functionality of the drainage network within that section.

From the UK Government's Flood Risk from Surface Water (extent of flooding) map.

- Where a site is in a dark blue shaded zone, this indicates that the site is at high risk of flooding where there is a chance of flooding of greater than 1 in 30 (3.3%).
- Where a site is in a mid-blue shaded zone, this indicates that the site is at medium risk of flooding where there is a chance of flooding of between 1 in 100 (1%) and 1 in 30 (3.3%).
- Where a site is in a light blue shaded zone; this indicates that the site is at low risk of flooding where there is a chance of flooding between 1 in 1000 (0.1%) and 1 in 100 (1%).

- Where a site is in a white (unshaded) area; this indicates that the site is at very low risk of flooding where there is a chance of flooding of less than 1 in 1000 (0.1%).

The extent of flooding to the site from surface water is indicated in Figure 7. It shows that various small portions of the site to be at medium or high risk of surface water flooding.

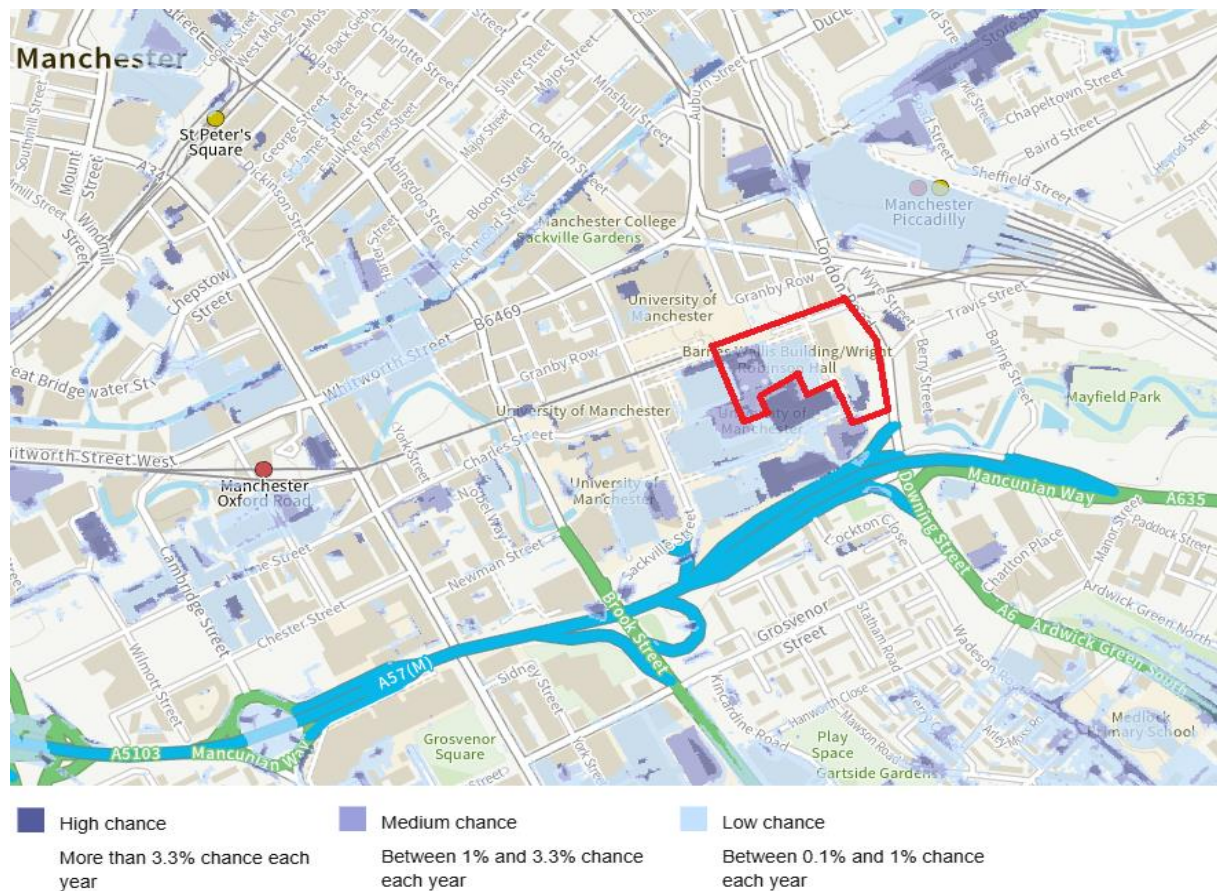


Figure 7: Surface Water Flood Risk Map

5.6. Sewer Flood Risk

Sewers may also flood due to exceeded capacity or blockages outside of major storm events. No data on the site's existing flood risk from sewers, including any historic records of sewer flood events, have been found as part of this Flood Risk Assessment. Data will be required from United Utilities to confirm this risk. Nevertheless, sewers are man-made infrastructure and are regularly monitored and maintained by the statutory undertaker United Utilities; the risk of sewer flooding is considered to be low.

5.7. Summary of Flood Risk

From the evidence collated and subsequent negotiations, the flood risk for the proposed development can be summarised as follows:

- Rivers and Sea – Very low risk
- Reservoir – Very low risk
- Groundwater – Low risk. To be confirmed by site investigation
- Surface Water – Low risk (whilst areas of higher risk are present, these affect only a small portion of the development and thus the overall risk is deemed to be low).
- Public Sewers – To be confirmed by UU, presumed low

6. Conclusion

This report has assessed the current and future risk of flooding to a proposed multiple-phase, commercial development on the site of the former University campus of UMIST, located just inside the Mancunian Way motorway to the south of Manchester City Centre. The assessment has been undertaken in accordance with the National Planning Policy Framework (NPPF) and associated guidance on flood risk and coastal change contained within the Planning Practice Guidance, in addition to the requirements of regional and local guidance and policy.

The development is to comprise the construction of two office buildings to be brought forward which will include major new commercial developments. The plot shall comprise a variety of uses, including social amenity spaces, as well as food and beverage establishments (Use Class E, Sui Generis – drinking establishment).

The proposals will also include interventions to the Hollaway Wall, incorporating it into the new commercial element. Additionally, the proposals will involve the change of use of the railway arches to retail and food and beverage uses (Use Class E and Sui Generis – drinking establishment). The proposals will also include the creation of a new public square, access and other associated works.

The site resides within Flood Zone 1 and is at very low risk of fluvial flooding. The northern-east section of the site from London Road is identified as being at generally low risk of surface water flooding, with a section to the south-west possessing a medium risk. All other sources of flooding, including groundwater, canals, reservoirs and local sewer networks, are deemed from very low risk to medium. Climate change is anticipated to exacerbate occurrences of surface water flooding and result in a heightened surface water flood risk to the existing site in future.

Overall, the site is deemed to have a low overall flood risk, which is to be mitigated as part of the proposals. Furthermore, the development is not expected to have a detrimental impact on wider flood risk in the area and is anticipated to reduce flood risk within the immediate vicinity owing to the reduction of existing discharge rates to equivalent greenfield values targeted by the proposals.

Appendix A: Topographical Survey

Appendix B: Existing Sewer Records

Appendix C: Proposed Site Plan

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