

Ibis Hotel, Manchester

Flood Risk Assessment and Drainage Overview

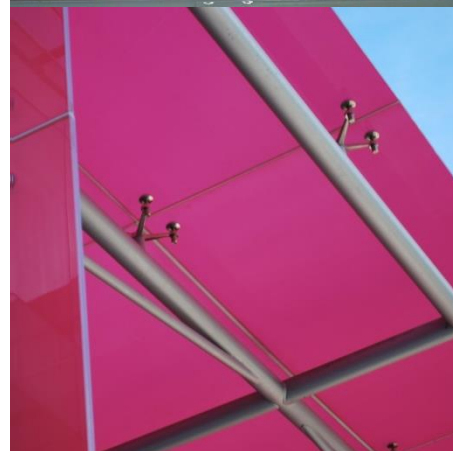
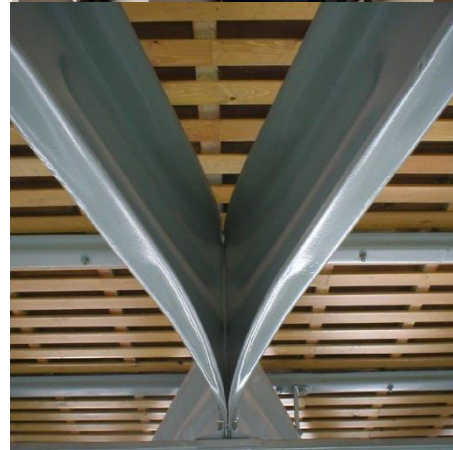
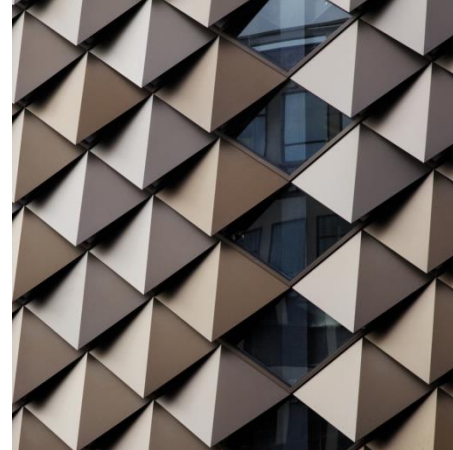
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1.0 Introduction

1.1 Project Background

- 1.1.1 Curtins were appointed by ACCORNINVEST to provide a Flood Risk Assessment (FRA) for the refurbishment of a hotel. The refurbishment will consist of renovating the existing ground floor to provide accommodation at this level.
- 1.1.2 The report provides information on the nature of flood risk at the site and follows EA guidance regarding development and flood risk.
- 1.1.3 The report is based on currently available information and preliminary discussions.
- 1.1.4 Where the proposed works to which this report refers are undertaken more than twelve months following the issue of this report, Curtins shall reserve the right to re-validate the findings and conclusions by undertaking appropriate further investigations at no cost to Curtins.

1.2 Scope of Assessment

- 1.2.1 The assessment is to be undertaken in accordance with the standing advice and requirements of the Environment Agency (EA) for Flood Risk Assessments as outlined in the Communities and Local Governments Planning Policy Guidance to the National Planning Policy Framework (NPPF).
- 1.2.2 The assessment will:
 - Investigate all potential risks of flooding to the site,
 - Consider the impact the development may have elsewhere with regards to flooding,
 - Consider design proposals to mitigate any potential risk of flooding determined to be present; and
 - Consider foul & surface water drainage proposals for the proposed development.
- 1.2.3 The site is approximately 606m² and therefore smaller than 1ha however the site is positioned with a Flood Zone 2 area and is located within a critical drainage area therefore a Flood Risk Assessment is required.
- 1.2.4 This Flood Risk Assessment and Drainage Strategy reviews the following information:
 - Environment Agency flood maps for rivers and sea flooding.
 - UK Government Flood Warning Information Service maps for surface water flooding and reservoir flooding.
 - Strategic Flood Risk Assessment (SFRA) for Manchester City, Salford City and Trafford Councils. Dated April 2010.
 - British Geological Survey (BGS).
 - Topographical Survey

- Existing Drainage Layout

1.3 Proposed Development

1.3.1 The refurbishment is expected to comprise of:

- 6 additional ground floor hotel rooms
- A staff and linen room

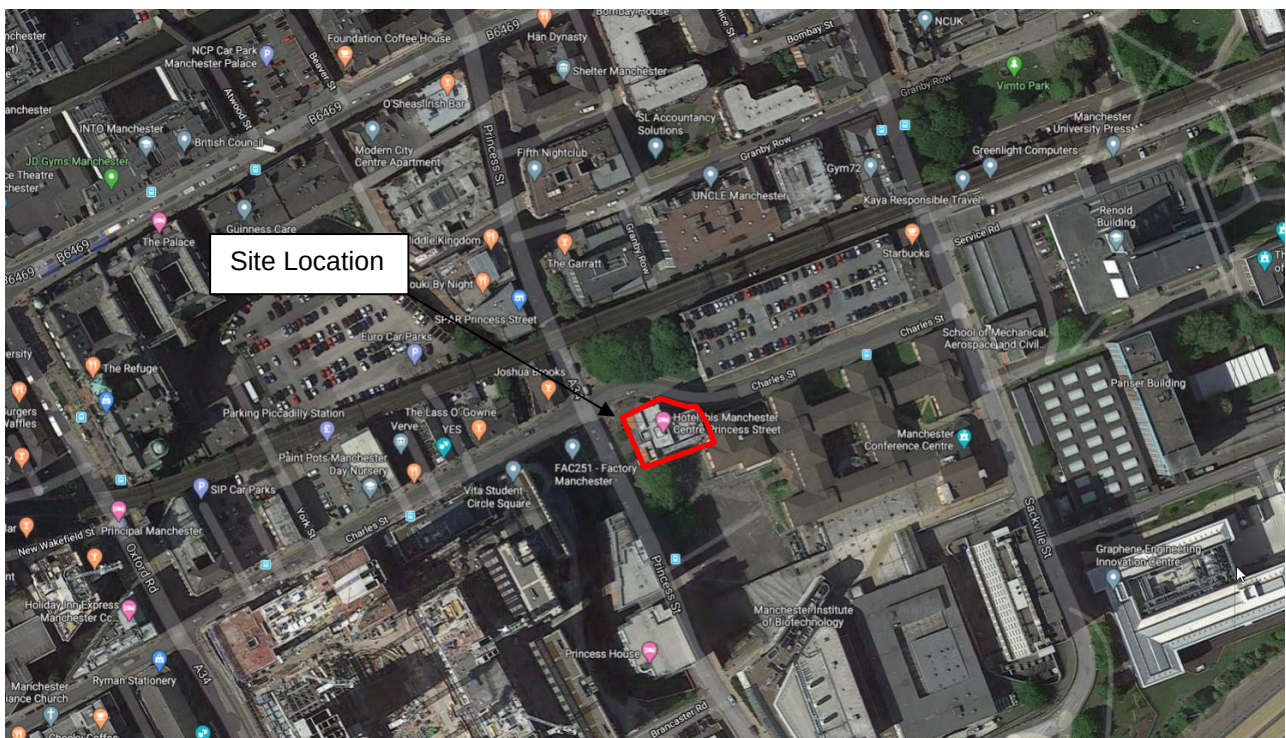
1.3.2 A site layout can be found in *Appendix A*.

2.0 Existing Site Details

2.1 History and Current Use

- 2.1.1 The site is located on Charles Street, Princess Street, Manchester, M17DG, GR: 384383 397507.
- 2.1.2 The site is bound by Charles Street to the North, a residential building to the East, a car park to the South, Princess Street to the West and beyond this the River Medlock.
- 2.1.3 Figure 1 shows the site location.

Figure 1: Aerial Photograph (© Google 2020)



2.2 Existing Watercourses and Other Waterbodies

- 2.2.1 The River Medlock is located approximately 27m to the West of the site.
- 2.2.2 The River Medlock is classified by the Environment Agency to be a 'Main River'.
- 2.2.3 The Rochdale Canal is located approximately 231m to the North.
- 2.2.4 According to the OS maps there are no other watercourses close to the site boundaries.

2.3 Existing Drainage

- 2.3.1 An existing drainage layout is shown in *Appendix D*.

- 2.3.2 Appendix D highlights that there is an existing drainage system internally within the building. This drainage is shown to discharge to an external manhole located in the footway on Princess Street. This manhole is assumed to drain into the wider public sewer network.
- 2.3.3 The sewer maps have been reviewed. The records show a 900mm diameter culvert flowing from Charles Street into the River Medlock. The records also show a 225mm diameter combined sewer flowing Northwards up Princess Street.

2.4 Topography

- 2.4.1 A topographical survey has been carried out for external areas of the site (see *Appendix B*).
- 2.4.2 A measured survey has been carried out for the existing ground floor (see *Appendix B*).
- 2.4.3 The data shows that the existing ground floor level of the building sits at 32.904m AOD.
- 2.4.4 The external areas surrounding the existing ibis building are approximately 150mm below the existing internal ground floor level and generally fall from North East to South West.

2.5 Geology

- 2.5.1 The British Geological Survey maps indicate that the superficial deposits of the site consist of Till, Devensian - Diamicton. The bedrock of the site is shown on the BGS to be made up of Chester Formation (Sandstone).
- 2.5.2 The site is not shown on the government maps to be located within a Groundwater Source Protection Zone.

3.0 Development and Flood Risk

3.1 National Planning Policy Framework (NPPF) and Planning Practice Guidance

- 3.1.1 In February 2019, the Department of Communities and Local Government published the National Planning Policy Framework document (NPPF) and the Planning Practice Guidance was published in March 2014 which provides guidance on how flood risk should be assessed during the planning and development process.

Table 1: (Extract from Planning Practice Guidance) Flood Zone Classifications

These Flood Zones refer to the probability of river and sea flooding, ignoring the presence of defences. They are shown on the Environment Agency's [Flood Map for Planning \(Rivers and Sea !\[\]\(a69696d69cfd88b51cbd02e5288eca32_img.jpg\)](#)), available on the Environment Agency's web site, as indicated in the table below.

Flood Zone	Definition
Zone 1 Low Probability	Land having a less than 1 in 1,000 annual probability of river or sea flooding. (Shown as 'clear' on the Flood Map – all land outside Zones 2 and 3)
Zone 2 Medium Probability	Land having between a 1 in 100 and 1 in 1,000 annual probability of river flooding; or Land having between a 1 in 200 and 1 in 1,000 annual probability of sea flooding. (Land shown in light blue on the Flood Map)
Zone 3a High Probability	Land having a 1 in 100 or greater annual probability of river flooding; or Land having a 1 in 200 or greater annual probability of sea flooding. (Land shown in dark blue on the Flood Map)
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)

Table 2: (Extract from Planning Practice Guidance) Flood Risk Vulnerability Classification

Essential Infrastructure • Essential transport infrastructure (including mass evacuation routes) which has to cross the area at risk. • Essential utility infrastructure which has to be located in a flood risk area for operational reasons, including electricity generating power stations and grid and primary substations; and water treatment works that need to remain operational in times of flood. • Wind turbines.
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.

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 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.

Table 3: (Extract from Planning Practice Guidance) Flood Risk Vulnerability and Flood Zone Compatibility

Flood Zones	Flood Risk Vulnerability Classification				
	Essential infrastructure	Highly vulnerable	More vulnerable	Less vulnerable	Water compatible
Zone 1	✓	✓	✓	✓	✓
Zone 2	✓	Exception Test required	✓	✓	✓
Zone 3a †	Exception Test required †	✗	Exception Test required	✓	✓
Zone 3b *	Exception Test required *	✗	✗	✗	✓*

Key:

✓ Development is appropriate

✗ Development should not be permitted.

Notes to table 3:

- This table does not show the application of the Sequential Test which should be applied first to guide development to Flood Zone 1, then Zone 2, and then Zone 3; nor does it reflect the need to avoid flood risk from sources other than rivers and the sea;
- The Sequential and Exception Tests do not need to be applied to minor developments and changes of use, except for a change of use to a caravan, camping or chalet site, or to a mobile home or park home site;
- Some developments may contain different elements of vulnerability and the highest vulnerability category should be used, unless the development is considered in its component parts.

† In Flood Zone 3a essential infrastructure should be designed and constructed to remain operational and safe in times of flood.

* In Flood Zone 3b (functional floodplain) essential infrastructure that has to be there and has passed the Exception Test, and water-compatible uses, should be designed and constructed to:

- remain operational and safe for users in times of flood;
- result in no net loss of floodplain storage;
- not impede water flows and not increase flood risk elsewhere.

3.2 Site Specific NPPF Flood Risk Categorisation

- 3.2.1 To assess the NPPF flood risk classification for the site, the first step was to inspect the UK Government web based 'Flood Map for Planning' which is used to inform planning of a site's Flood Zone(s) and the probability of flooding from rivers or seas (not taking into account the presence of flood defences or climate change). However, the web based 'Long Term Flood Risk Assessment for Locations in England' should also be used to identify the long-term flood risks from rivers and seas, surface water and reservoirs.
- 3.2.2 The Flood Map for Planning report is enclosed in *Appendix C*, and it can be seen that the site is within a Flood Zone 2.
- 3.2.3 Further site-specific review of the flood risk to the site is provided in section 4.

3.3 Site Specific Flood Zone Compatibility

- 3.3.1 The proposal for the development site is likely to fall within the following category:
- Buildings for dwelling (hotel)
- 3.3.2 'Building for dwelling' is classed as 'More Vulnerable' in the Flood Risk Vulnerability Classification (Table 2).
- 3.3.3 In accordance with Table 3, as the development is within Flood Zone 2 and classed as 'More Vulnerable' an exception test is not required.

4.0 Hydrological Assessment

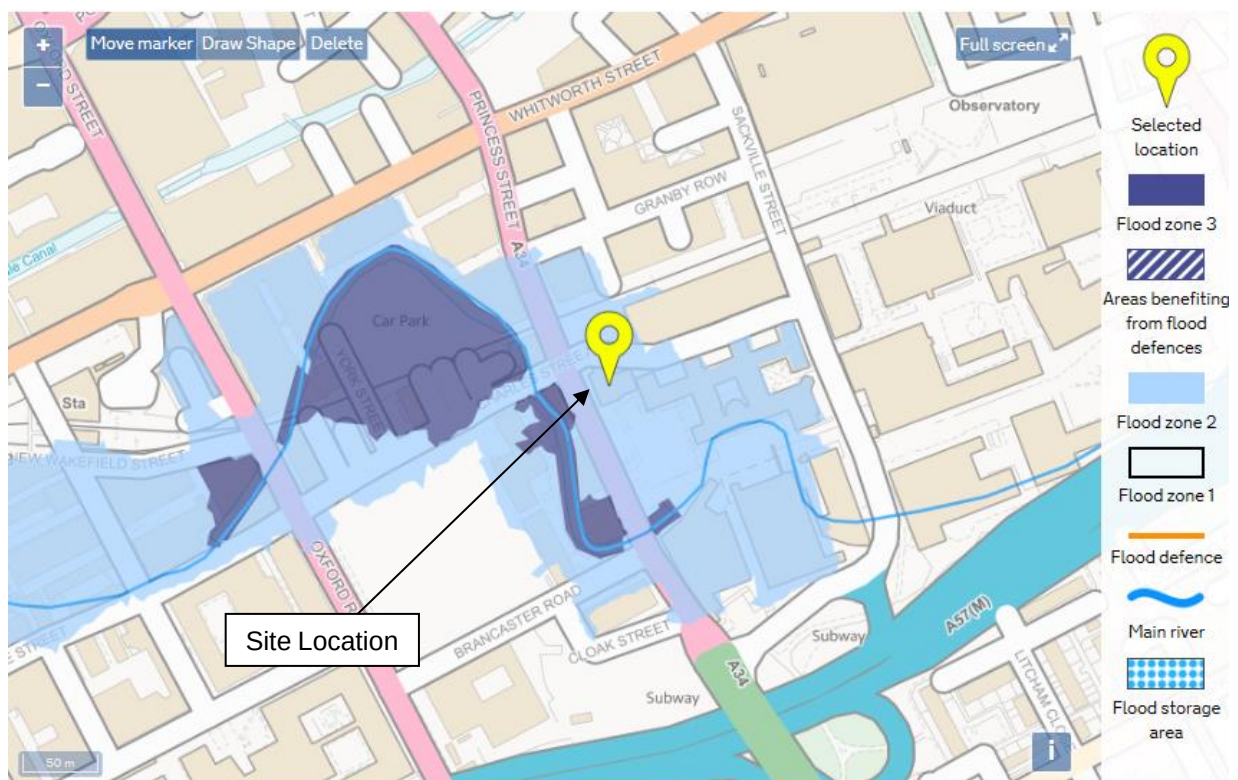
4.1 Sources of Flood Risk

- 4.1.1 This study assesses the risk from different types of flooding to the development and the risk of flooding from the development, taking into consideration climate change, as well as how flood risks should be managed. The approach to assessing flood risk at the development site was informed by the requirements of NPPF in conjunction with the client and Environment Agency requirements.

4.2 Fluvial Flooding (Rivers and Streams)

- 4.2.1 Flooding to the site from rivers and seas is indicated below in Figure 2, taken from the UK Government's Long-Term Flood Risk Information.
- 4.2.2 A copy of the EA Long Term Flood Risk Assessment Map can be seen in *Appendix C*.

Figure 2: Long Term Flood Risk Assessment Map – Flood Risk from Rivers or Sea (© Crown Copyright)



- 4.2.3 It can be seen in Figure 2 that the whole site area is within a Flood Zone 2 and therefore at a 'medium' risk of fluvial flooding (see Figure 3).

Figure 3: Long Term Flood Risk Assessment (Detailed Information) – Flood Risk from Rivers or Sea (© Crown Copyright)

Flood risk from rivers or the sea



Medium risk means that each year this area has a chance of flooding of between 1% and 3.3%. This takes into account the effect of any flood defences in the area. These defences reduce but do not completely stop the chance of flooding as they can be overtopped, or fail.

- 4.2.4 The site is not shown to be in an area which benefits from flood defences (according to the EA Flood maps).
- 4.2.5 The flood level data and mapping has been provided by the EA and is enclosed in *Appendix C*.
- 4.2.6 The Environment Agency released updated climate change allowances for peak river flows for catchments across the UK in February 2016 which should be applied to new developments.
- 4.2.7 Based on the site being classed as 'More Vulnerable', within a Flood Zone 2 and as a 'minor development' (as the site is under 0.5ha) a 'basic' assessment approach is required.
- 4.2.8 As a 'basic' assessment approach can be used for the site the 'local precautionary allowances' have been used as the climate change factor. As a precaution the 'Upper' climate change allowance of 0.48m will be used to assess the River flood levels risk to the site.
- 4.2.9 The climate change allowance (of 0.48m) should be applied to the flood event that most closely represents the lifetime of the development which is assumed to be 100 years (this is based on the EA Climate Change Allowance guidance).
- 4.2.10 The EA have calculated the flood levels for the 1 in 100 year event. The node which is closest to the site is '5' and has a 1 in 100 year flood level of 31.48m AOD. Adding the allowance for climate change gives a total flood level figure for the 1 in 100 year of 31.96m AOD. The climate allowance which should be used to assess the flood level should be confirmed with the EA.
- 4.2.11 A summary of the flood levels derived from the EA data is presented in Table 4 and are also enclosed in *Appendix C*.

Table 4: Summary of Flood Levels

Node	100 Year (1%)	100 Year +35% cc	100 Year +70% cc	100 Year +0.48m cc (Upper)	Existing Ground Floor Level
5	31.48	32.77	32.76	31.96	32.904

4.2.12 Table 4 identifies that the sites existing ground floor level is above the 1 in 100 year flood level, including all allowances for climate change.

4.2.13 This would therefore indicate that the development is at a low risk of flooding during its lifetime.

4.2.14 If the flood level was to exceed the levels illustrated in table 4 mitigation methods have been specified within section 5 to ensure that the risk of fluvial flooding to the site and to adjacent sites/structures are minimised.

4.3 Tidal Flooding (Coastal or Estuarine)

4.3.1 There is currently no flood risk identified on the Environment Agency flood maps for the site and it is therefore regarded to be at low risk from tidal flooding.

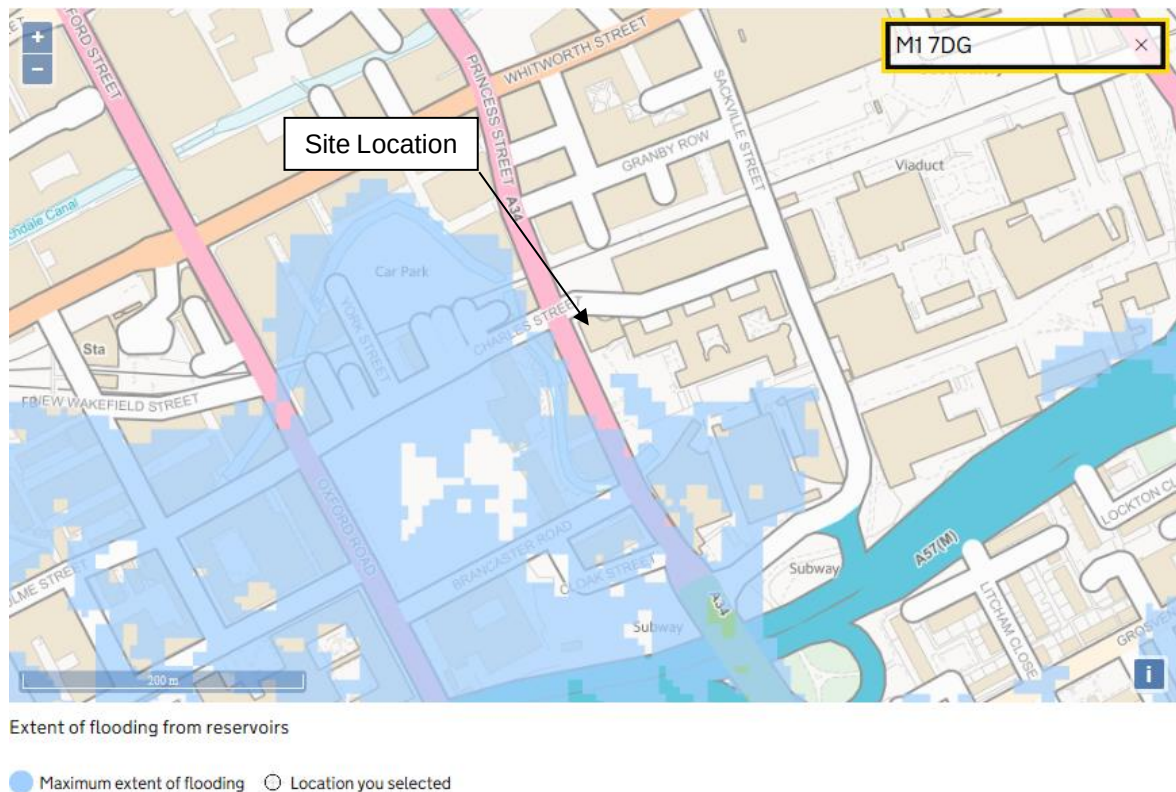
4.4 Reservoir Flooding

4.4.1 Reservoir flooding is extremely unlikely to happen and there has been no loss of life in the UK from reservoir flooding since 1925. The Environment Agency is the enforcement authority and ensures that reservoirs are inspected regularly, and essential safety work is carried out.

4.4.2 The site is not located next to a reservoir.

4.4.3 The Long-Term Flood Risk Assessment (Flood Risk from Reservoirs) map shows the largest area that might be flooded if a reservoir were to fail and release the water it holds (see Figure 4).

Figure 4: Long Term Flood Risk Assessment Map – Flood Risk from Reservoirs
(© Crown Copyright)



4.4.4 The site is not located within the extent of a reservoir flood risk according to the EA maps.

4.4.5 Based on this information the site is considered to be at a low risk of reservoir flooding.

4.5 Canal Flooding

4.5.1 The Rochdale Canal is located approximately 231m to the North.

4.5.2 Canals are identified in the SFRA as not generally posing a direct flood risk as they are a controlled water body. Therefore, the residual risk of canal flooding is usually associated with lower probability events such as overtopping and/or the breaching of embankments.

4.5.3 Given the above information, it is considered that there is a low risk of canal flooding to the site.

4.6 Groundwater Flooding

4.6.1 The Manchester City, Salford City and Trafford SFRA highlights that the site is not within an area at risk of groundwater flooding.

4.6.2 Based on the current information it is assumed that the site is at a low risk of groundwater flooding.

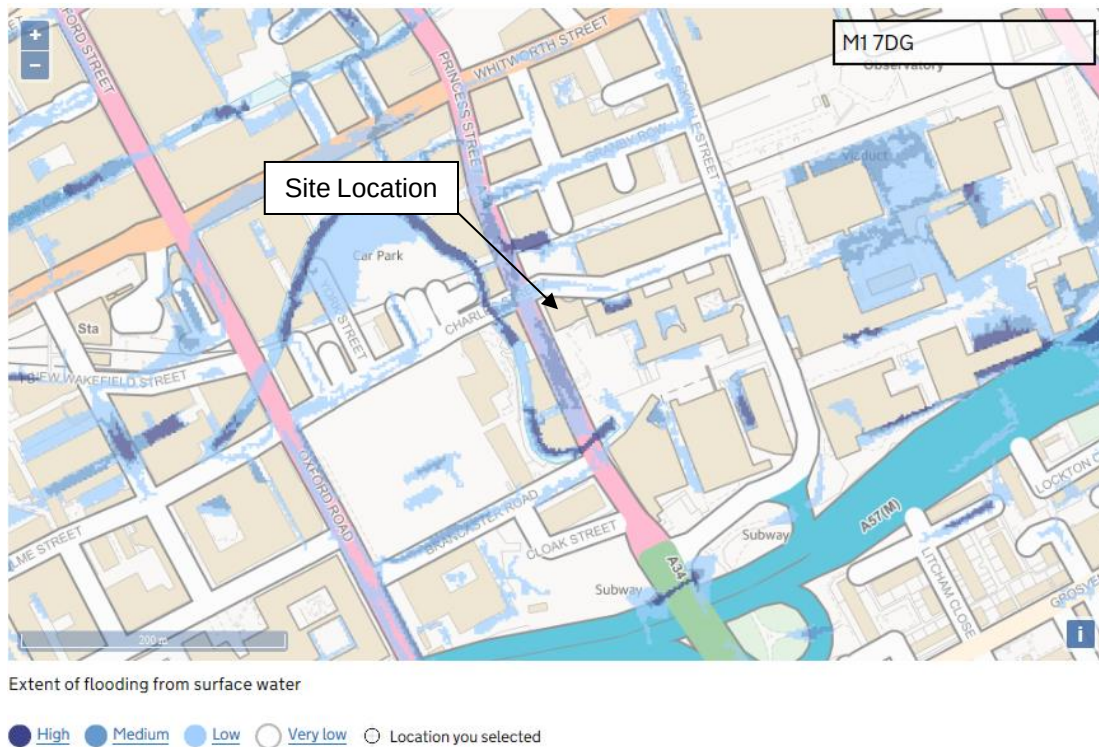
4.7 Public Sewers or Highway Drainage Flooding (Infrastructure Failure)

- 4.7.1 The sewer maps have been reviewed. The records show a 900mm diameter culvert flowing from Charles Street into the River Medlock. The records also show a 225mm diameter combined sewer flowing Northwards up Princess Street.
- 4.7.2 Providing UU and Manchester City Council maintain their drainage assets within and in the vicinity of the site, the risk of flooding to the proposed development site from public sewers or highway drainage is considered as low.

4.8 Surface Water Flooding to the site

- 4.8.1 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 with flooding occurring, principally from manholes and gullies. Surcharging sewers can result in overland flows which if originating at a higher elevation than a development site can potentially pose a flood risk.
- 4.8.2 From the UK Government's Flood Risk from Surface Water (extent of flooding) map;
- Where a site is located in a dark blue shaded zone, this indicates that the site is at high risk of flooding, where flooding occurs as a result of rainfall with a greater than 1 in 30 (3.3%) chance in any given year.
 - Where a site is located in a mid-blue shaded zone, this indicates that the site is at medium risk of flooding, where flooding occurs as a result of rainfall of between 1 in 100 (1%) and 1 in 30 (3.3%) chance in any given year.
 - Where a site is located in a light blue shaded zone, this indicates that the site is at low risk of flooding, where flooding occurs as a result of rainfall of between 1 in 1000 (0.1%) and 1 in 100 (1%) chance in any given year.
 - Where a site is located in a clear (unshaded) area; this indicates that the site is at very low risk of flooding, where flooding occurs as a result of rainfall with less than 1 in 1000 (0.1%) chance in any given year.

Figure 5: Long Term Flood Risk Assessment Map – Flood Risk from Reservoirs (© Crown Copyright)



- 4.8.3 The whole of the site is shown on Figure 5 to be within an area having a 'very low' risk of surface water flooding.
- 4.8.4 Considering the above information, the risk of surface water flooding to the site is generally considered very low.

4.9 Surface Water Flooding from the site

- 4.9.1 Developers are responsible for ensuring that new development does not increase the flood risk elsewhere. Where new development is proposed, the proposed surface water drainage network shall be designed to not flood for the critical 1 in 30-year storm event and flood water generated up to the critical 1 in 100-year plus climate change storm event shall be constrained within areas on site so as not to cause damage to buildings, essential services or adjoining developments and services.
- 4.9.2 The development is an internal refurbishment, external areas will not be altered. Therefore, surface water run-off will not be increased.
- 4.9.3 Overall, the surface water flooding from the site to surrounding areas post development is not expected to increase from existing.

4.10 Historical Flooding

4.10.1 The Environment Agency have no records of flooding affecting the site (see *Appendix C*).

4.11 Summary of Flood Risk

4.11.1 From the evidence collated and subsequent negotiations the main types of flooding that may apply to the proposed development site are as follows:

- Fluvial Flooding
- Surface water flooding to the site
- Surface water flooding from the site

5.0 Mitigation

5.1 Fluvial Flood Mitigation

- 5.1.1 The site is located within an area classified as Flood Zones 2. The extents of the flood zoning have been informed by the flood levels taken from the Environment Agency.
- 5.1.2 The 1 in 100 year event (including all allowances for climate change) does not exceed the level of the existing ground floor level therefore, the risk of the site flooding in this event is low.
- 5.1.3 The existing ground floor level is situated a minimum of 144mm above the 1 in 100 year flood level (including all climate change allowances). This is deemed as sufficient mitigation against fluvial flooding. However, this will need to be confirmed by the Environment Agency.

Flood Compensation

- 5.1.4 The site is within a Flood Zone 2 and the existing ground floor level is above the 1 in 100 year (plus climate change) flood level therefore compensatory storage is not required.

Access and Egress

- 5.1.5 The site is within a Flood Zone 2. In a flood exceeding the 1 in 100 year event (plus climate change) the ground floor level may be flooded.
- 5.1.6 On the EA flood maps Charles Street to the North East of the site is identified as being within a Flood Zone 1 as it is at a higher level above the site. Therefore, access to and from the site from Charles Street can be a safe access point in a flood event less than the 1 in 1000 year. Alternatively, if access from the site to Charles Street is not feasible then occupants can move to the upper floors away from the flood water.

5.2 Surface Water Flooding to the site Mitigation

- 5.2.1 The UK Government Long Term Flood Risk Assessment surface water flood maps indicate that the whole site is at very low to low risk of surface water flooding.
- 5.2.2 The site will drain as existing (shown in *Appendix D*).
- 5.2.3 The surface water discharge rate will not change.
- 5.2.4 It is assumed that all surface water drainage outside of the site boundary will be subject to the relevant landowner's regular drainage maintenance schedule.
- 5.2.5 Providing the above measures are implemented the flooding risk to the development site from surface water is therefore considered low post development.

5.3 Surface Water Flooding from the site Mitigation

- 5.3.1 The existing development site drainage should be designed in accordance with current best practice to provide adequate capacity not to flood for the critical 1 in 30-year storm event and flood water generated from up to the critical 1 in 100-year plus climate change storm event shall be constrained within the areas on site so not to cause damage to buildings, essential services or adjoining developments & services.
- 5.3.2 Section 6 reviews the surface water discharge options, and it is proposed that the site will drain via the existing internal drainage network.
- 5.3.3 The external areas of the site will not be altered and will drain as existing.
- 5.3.4 Assuming that the existing drainage system has been designed to provide adequate capacity, and that the private and adopted sewers will be maintained by their adopted authority, it can be assumed risk of flood from blockage or overloading is minimal.

6.0 Drainage Design

6.1 Existing Drainage

- 6.1.1 Appendix D highlights that there is an existing drainage system internally within the building. This drainage is shown to discharge to an external manhole located in the footway. This manhole is assumed to drain into the wider public sewer network.
- 6.1.2 The sewer maps have been reviewed. The records show a 900mm diameter culvert flowing from Charles Street into the River Medlock. The records also show a 225mm diameter combined sewer flowing Northwards up Princess Street.
- 6.1.3 It is recommend that the site outfalls as existing.

6.2 Proposed Foul Water Drainage

- 6.2.1 The proposed refurbishment will utilise the existing internal drainage beneath the building.
- 6.2.2 The refurbishment is expected to consist of the construction of 6 new hotel rooms at ground floor level.
- 6.2.3 The foul drainage beneath the building will remain. As long as the existing drainage network is in an acceptable condition then the additional downpipes from the new toilets and bathrooms will connect directly into this system.
- 6.2.4 The outfall of the sites existing drainage network will not be altered.
- 6.2.5 The additional foul water flows created by the development have been calculated using the discharge unit method. It has been calculated that the development will add an additional foul water flow of 2.1l/s. It is assumed that the existing drainage network on the site will have capacity to cope with these additional flows, however this needs to be confirmed at detailed design.
- 6.2.6 Foul water pumping is not expected to be required for the site.
- 6.2.7 As additional foul water flows are being discharged from the site a Section 106 Agreement with United Utilities may be required.
- 6.2.8 The existing drainage layout is enclosed in *Appendix D* this will be updated with further detail at later stages.

6.3 Proposed Surface Water Drainage

- 6.3.1 Any new development site drainage should be designed in accordance with current best practice to provide adequate capacity not to flood for the critical 1 in 30-year storm event and flood water generated for up to the critical 1 in 100-year plus climate change storm event shall be constrained within the areas on site so not to cause damage to buildings, essential services or adjoining developments and services.

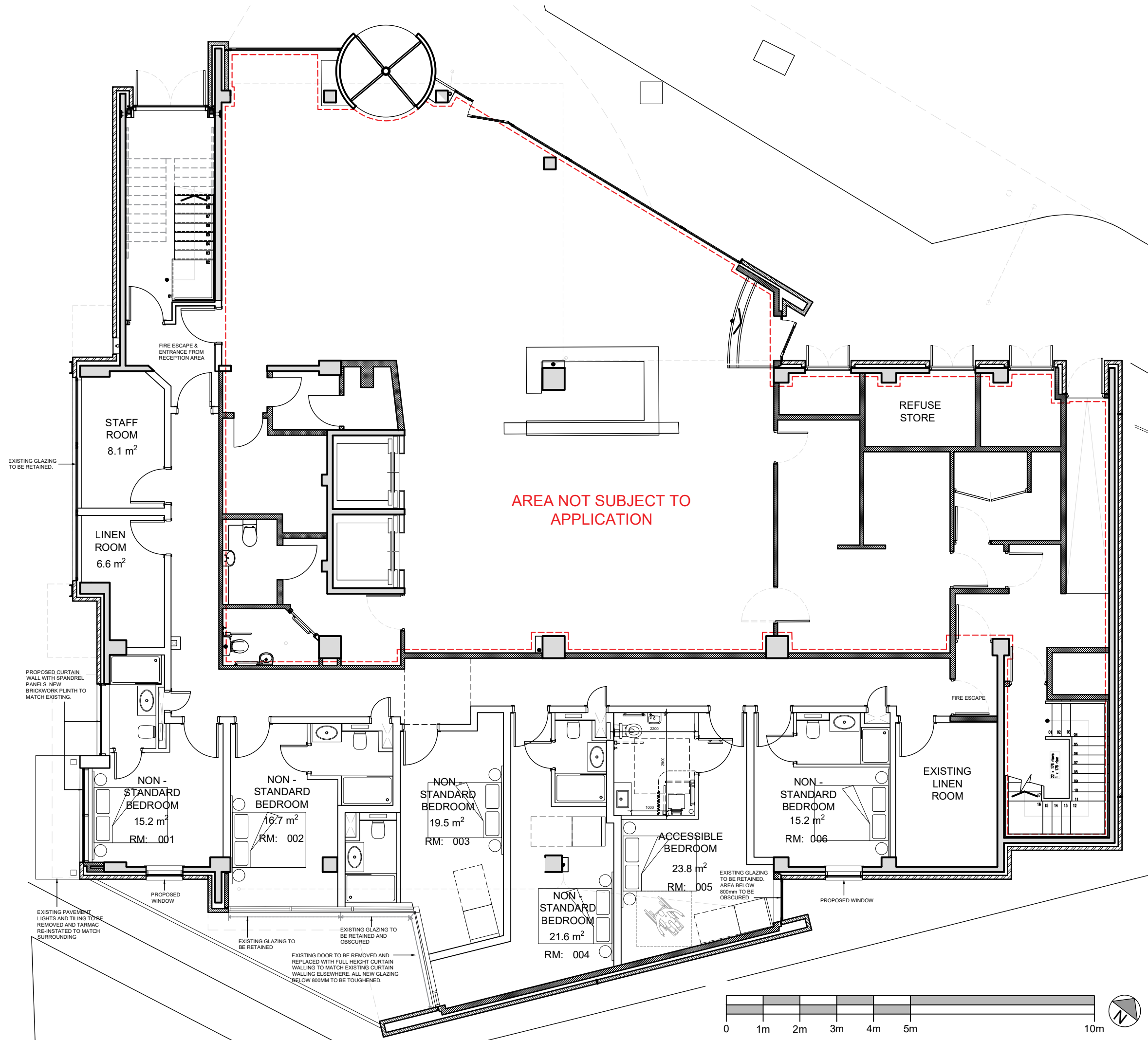
- 6.3.2 Proposed developments should follow the standard hierarchy of drainage solutions, consideration should firstly be given to the discharge of surface water runoff by sustainable methods such as infiltration, then connection to a watercourse and finally connection to the surface water sewer and combined water sewer.
- 6.3.3 However, the site has an existing drainage network beneath the existing building. The proposed works are to refurbish the ground floor of the building therefore the site will drain as existing.
- 6.3.4 The refurb will require constructing a few additional foul connection points to the existing network beneath the existing building. However, the surface water run-off rate will not be increased as no works are proposed for the external areas of the site.
- 6.3.5 The existing drainage layout is enclosed in *Appendix D*, and this will be updated with further detail at detailed design.
- 6.3.6 The final design of the drainage networks shall be in accordance with the legislation set by the Environment Agency, Manchester City Council and United Utilities.

6.4 Maintenance

- 6.4.1 A suitable maintenance strategy should be adopted to ensure the drainage network is cleaned regularly and the routine maintenance and cleansing regime should be documented.
- 6.4.2 It is recommended that the drainage system is inspected as a minimum twice a year, with the system also being inspected after any major storm event. Significant sediment deposition is likely in areas used for storage, so a post clean-up operation may be required including the removal of litter, vegetation, sewerage debris and larger objects.
- 6.4.3 A management company may be required for maintenance of attenuation facilities.

Appendix A

Site Layout



DO NOT SCALE OFF THIS DRAWING © LEACH RHODES WALKER 2001

LeachRhodesWalker
Architects

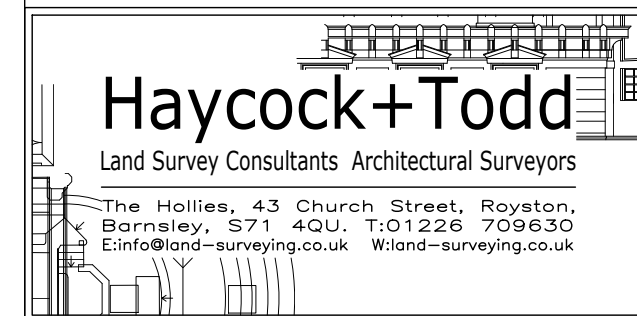
info@lrw.co.uk | www.lrw.co.uk
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Manchester +44 (0)161 833 0211 **London** +44 (0)207 993 1363 **Bucharest** +40 (21)650 4026

client ACCORINVEST			
project IBIS MANCHESTER			
project no 7989	drawing no L(00)04	rev B	
description - PROPOSED GROUND FLOOR PLAN			
scale 1:100@ A3	date drawn 22.11.19	drawn by MM	authorised by SA
File: L:\7989\Ibis Manchester\Ground Floor\RM_7989_00046\Proposed Ground Floor Plan.rvt			Project Gallery
purpose of issue planning ☒ building regs ☐ tender ☐ comment ☐ approval ☐ construction ☐			

Appendix B

Topographical Survey

Measured Survey Ground Floor

[illegible]

MEASURED SURVEY
IBIS Charles Street, Manchester, M1 7DL.

Sheet Diagram	Datum	Sheet 1 of 3	Survey Job No. S9605	Scale 1/50
	GRID= Local Grid	Surveyed by PBT	Date of Survey January, 2020	S9605
		Drawn by PBT		
		Checked by PF		
LEVEL= Related to TBM on Ground Floor, FFL in front of Lifts. Value 100.00m	Ground Floor			

Appendix C

Environment Agency Flood Map for Planning

Environment Agency Correspondence

Environment Agency Flood Levels

Environment Agency Node Locations Map

Flood map for planning

Your reference
ibis#

Location (easting/northing)
384381/397509

Created
12 Mar 2020 12:23

Your selected location is in flood zone 2, an area with a medium probability of flooding.

This means:

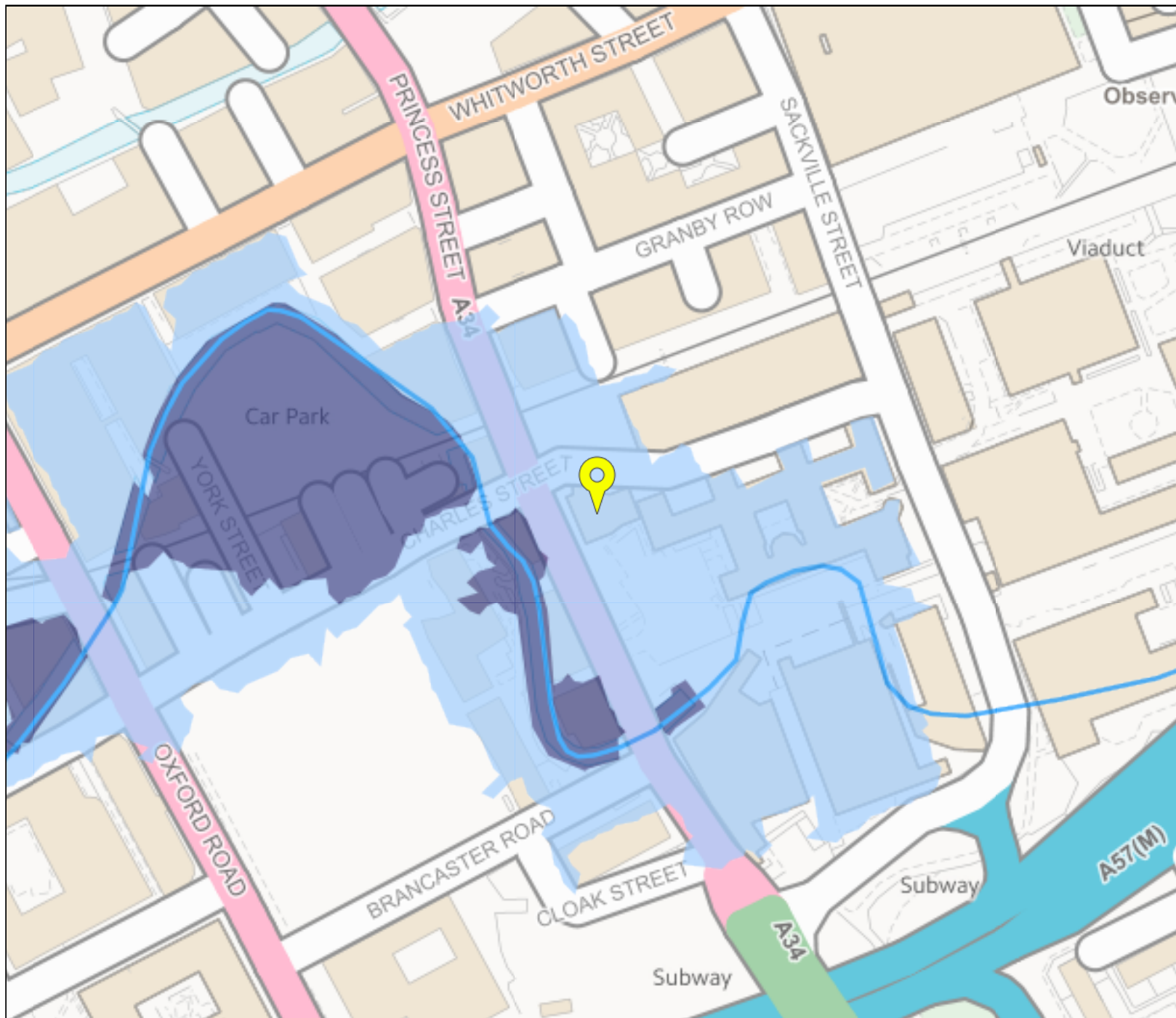
- you must complete a flood risk assessment for development in this area
- you should follow the Environment Agency's standing advice for carrying out a flood risk assessment (see www.gov.uk/guidance/flood-risk-assessment-standing-advice)

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.

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



Flood map for planning

Your reference

ibis#

Location (easting/northing)

384381/397509

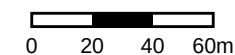
Scale

1:2500

Created

12 Mar 2020 12:23

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



Oliver Timmins

From: GMMC Info Requests <InfoRequests.GMMC@environment-agency.gov.uk>
Sent: 28 February 2020 12:10
To: Oliver Timmins
Subject: GMMC162217AB Response attached from the Environment Agency
Attachments: GMMC162217AB - Res.pdf; GMMC162217AB - Table.pdf; GMMC162217AB - DFM.PDF

Dear Oliver,

Thank you for your enquiry which was received on 19/2/20.

We respond to requests under the Freedom of Information Act 2000 and Environmental Information Regulations 2004.

I enclose the data requested.

Defences - There are no flood defences in the vicinity of the site.

Historic - We have no records of flooding affecting the site. However, this does not mean flooding has not occurred in the past or that it will not flood in future. We recommend that you also contact United Utilities and Manchester Council who may hold additional information (the former especially in relation to sewer flooding).

Here are some useful links below:

<https://www.gov.uk/guidance/flood-risk-assessment-local-planning-authorities>

<https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances>

Please refer to the [Open Government Licence](#) which explains the permitted use of this information.

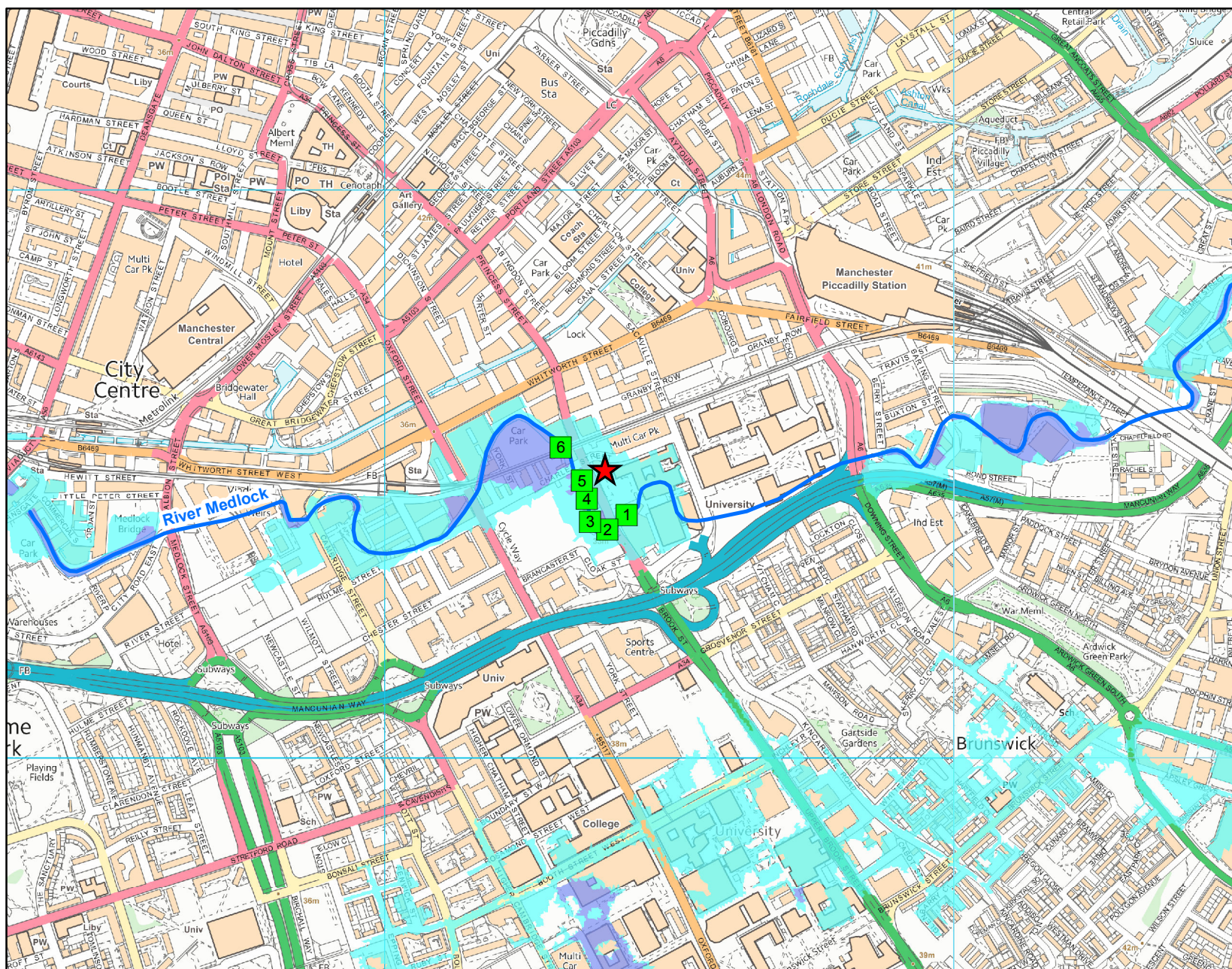
Please get in touch if you have any further queries or contact us within two months if you'd like us to review the information we have sent.

Kind regards,

Anne Ball
Customer and Engagement Officer
Greater Manchester, Merseyside and Cheshire
External: 020 302 51232
Mobile: 07769285094
Email: inforequests.gmmc@environment-agency.gov.uk

Information in this message may be confidential and may be legally privileged. If you have received this message by mistake, please notify the sender immediately, delete it and do not copy it to anyone else. We have checked this email and its attachments for viruses. But you should still check any attachment before opening it. We may have to make this message and any reply to it public if asked to under the Freedom of Information Act, Data Protection Act or for litigation. Email messages and attachments sent to or from any Environment Agency address may also be accessed by someone other than the sender or recipient, for business purposes.

Detailed Flood Map centred on Princess Street, Manchester, M1 7DG. Created on 27/02/2020 [GMMC162217AB]



1:10,001



Legend

-  Site Location
-  Model Measurements
-  Main River
-  Flood Zone 2
-  Flood Zone 3

					Undefended				
Map Reference	Model Node Reference	Easting	Northing	Data	4 % AEP (1 in 25 year)	1 % AEP (1 in 100 year)	1 % AEP (1 in 100 year) + 35% increase in flow	1 % AEP (1 in 100 year) + 70% increase in flow	0.1 % AEP (1 in 1000 year)
1	ea013_Model_Medlock_00089	384425	397427	Modelled Water Level (m aodN)	31.11	32.08	33.45	33.62	33.91
				Modelled Flow (cumecs)	50.76	60.19	74.43	87.51	
2	ea013_Model_Medlock_00091	384391	397401	Modelled Water Level (m aodN)	30.84	31.63	32.83	33.29	33.84
				Modelled Flow (cumecs)	50.77	60.17	67.08	67.54	68.60
3	ea013_Model_Medlock_00169	384360	397415	Modelled Water Level (m aodN)	30.76	31.58	32.80	33.28	33.82
				Modelled Flow (cumecs)	50.80	59.97	65.78	66.20	67.10
4	ea013_Model_Medlock_00172	384354	397456	Modelled Water Level (m aodN)	30.70	31.53	32.76	33.26	33.79
				Modelled Flow (cumecs)	50.83	59.98	66.62	67.06	67.75
5	ea013_Model_Medlock_00173	384346	397488	Modelled Water Level (m aodN)	30.63	31.48	32.77	32.76	33.82
				Modelled Flow (cumecs)	50.86	59.87	63.04	64.72	63.97
6	ea013_Model_Medlock_00096	384307	397545	Modelled Water Level (m aodN)	30.50	31.29	32.62	32.76	34.10
				Modelled Flow (cumecs)	51.33	60.00	64.45	64.72	65.42

Model data taken from Medlock 2011 Study

AEP - Annual Exceedence Probability

m aodN - metres above ordnance datum Newlyn

cumecs - cubic metres per second

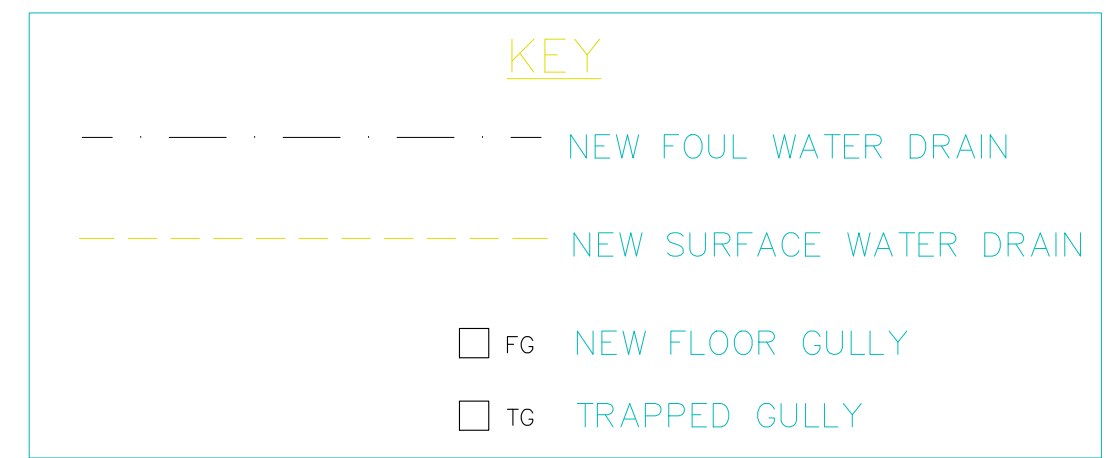
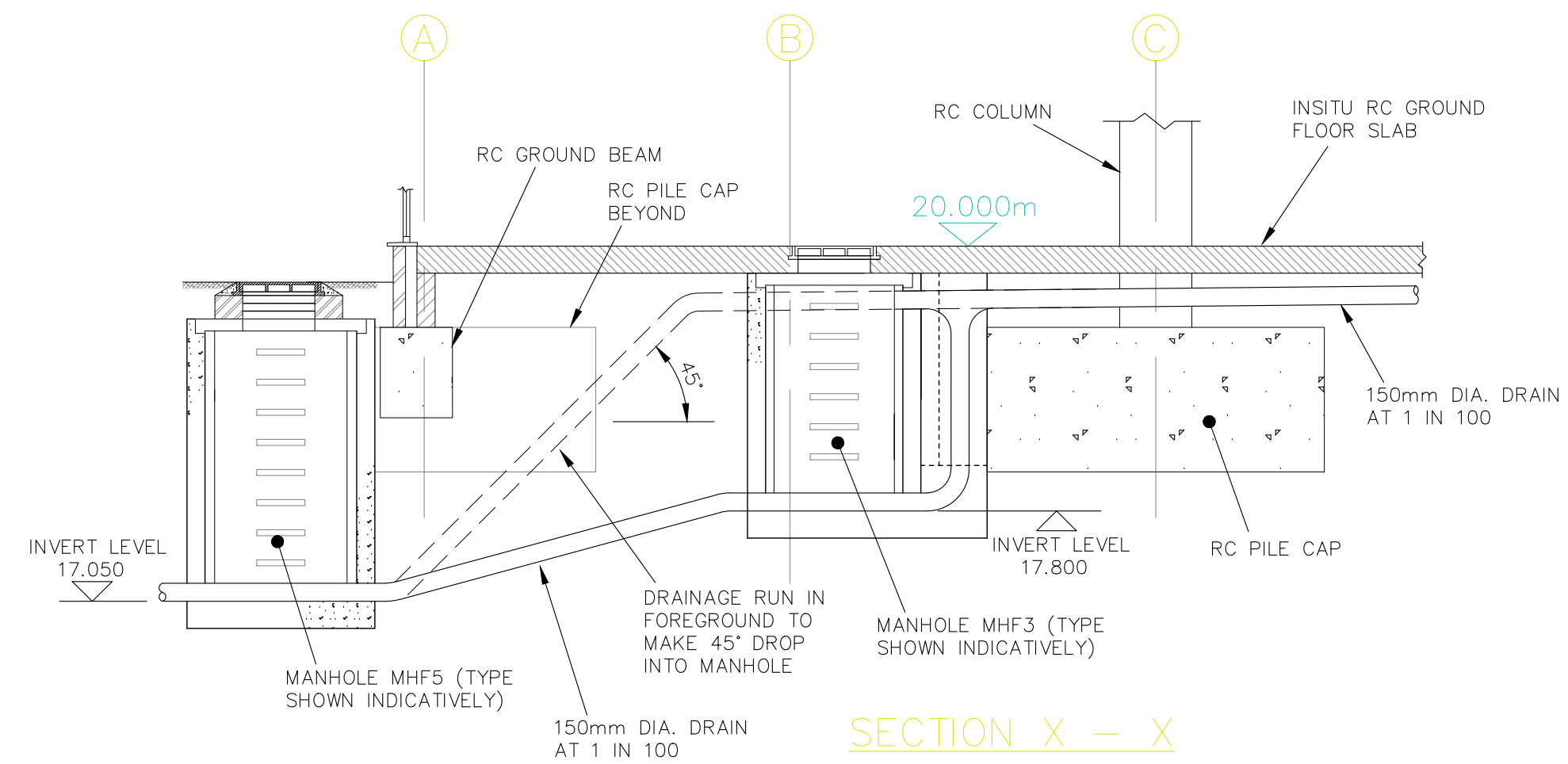
Notes: *Climate Change Scenario - 35% and 70% increases in flow calculated for the 2080's (2070 - 2115). Please see <https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances> for more information regarding the new climate change guidance. The location of the site and the type (vulnerability) of development determine the climate change allowances to consider in any flood risk assessment.

Appendix D

Existing Drainage Layout

PRINCESS STREET

CHARLES STREET



NOTES

- DO NOT SCALE THIS DRAWING. WORK FROM FIGURED DIMENSIONS ONLY.
- NO DEVIATION FROM THE DETAILS SHOWN ON THIS DRAWING IS ALLOWED WITHOUT OUR PRIOR PERMISSION IN WRITING.
- THIS DRAWING TO BE READ WITH ALL ASSOCIATED LAYOUTS AND DETAILS ALONG WITH ALL RELEVANT ARCHITECTS AND SERVICE ENGINEERS DETAILS.
- ALL DRAINAGE CONNECTIONS AT HIGH LEVEL TO BE DESIGNED AND DETAILED BY OTHERS.
- GREASE TRAPS FROM KITCHEN AREAS TO BE INCORPORATED AS ACCOR STANDARD REQUIREMENTS AND AS CLAUSE R12-811L.
GREASE TRAPS TO BE AS FOLLOWS:
GT F7: WADE 5060XT
GT F8: WADE 5060XT
- ALL DRAINAGE BELOW SLAB TO BE FULLY ENCASED IN CONCRETE TYPE E10:104 (GEN3).
ALL OTHER DRAINAGE RUNS TO HAVE CLASS F GRANULAR BED R12:300 UNDER HEAVY TRAFFIC ROAD AREAS AND CLASS N AS DUG BED R12:360 UNDER LIGHT TRAFFIC AND LANDSCAPED AREAS.
- ALL DRAINAGE RUNS TO BE R12:121L, DN100; R12:122L, DN150 AND DN225. RUNS TO BE DN100 UNLESS NOTED OTHERWISE.
- MANHOLES TO BE EITHER BRICK CONSTRUCTION TO R12:710L OR CIRCULAR CONCRETE RING CONSTRUCTION TO R12:721L. SIZES TO BE AS TABLE 9. BUILDING REG'S APPROVED DOCUMENT H1. ALSO SEE DWGS 99003/D/11 TO D/17 FOR DETAILS.
- CAST IRON ACCESS COVERS AND SEATING TO BE AS R12-811L TO SUIT USE CLASS IN EACH AREA.

ISSUED FOR CONSTRUCTION

G	OVERALL GROUND FLOOR LAYOUT REVISED IN ACCORDANCE WITH ARCHITECTS DETAILS. DRAINAGE LAYOUT AMENDED ACCORDINGLY. SURFACE WATER DRAINAGE IN ABEYANCE. NOTE 6 AMENDED, NOTES 7 TO 9 ADDED.	25.02.00	KS
F	GREASE TRAPS ADDED, NOTE 5 AMENDED.	07.12.99	KS
E	DRAINAGE CONNECTIONS/RUNS ADDED IN SUBLET RESTAURANT AREA.	19.11.99	KS
D	STAIR 'B' MIRRORED TO SUIT ARCHITECT'S LAYOUT.	20.10.99	KS
C	FLOOR GULLYS ADDED TO BACK OF HOUSE AREA. DRAINAGE CONNECTION POINTS IN TOILETS RELOCATED TO CORNER OF ROOMS AS REQUESTED BY ARCHITECT/MECHANICAL ENGINEER.	13.10.99	AM
B	FOUNDATIONS UPDATED FOR FULLY SUSPENDED GROUND SLAB. DRAINAGE RUNS AMENDED TO SUIT.	04.10.99	KS
A	FOUNDATIONS UPDATED.	16.06.99	AM
-	BOQ AND TENDER ISSUE.	JUNE '99	KS
REV	AMENDMENT	DATE	BY

ILA

Iain Lydon Associates Ltd
Consulting Civil & Structural Engineers

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Tel: 0161-440 0166 Fax: 0161-440 9707
Email: ILAL@netcomuk.co.uk

Client ACCOR (UK) LTD

Job Title IBIS HOTEL, MANCHESTER

DRAINAGE LAYOUT

drawn KS, checked IL, date FEBRUARY '00, scale 1:50 U.N.O., Dwg.No. 99003/L/31, rev G

SURFACE WATER DRAINAGE OMITTED AT PRESENT. AWAITING ABOVE GROUND DESIGN INFORMATION FROM DAVID McLEANS

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