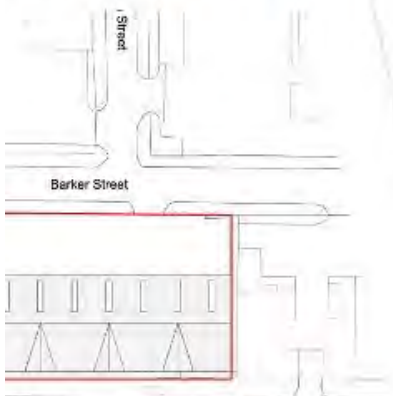
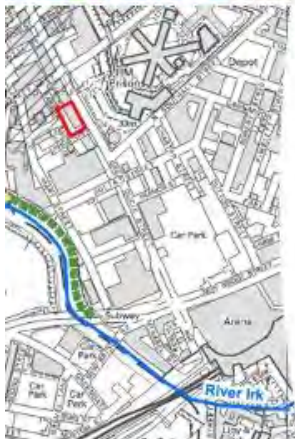




Earth Environmental
& Geotechnical



Great Ducie Street - A56



EARTH ENVIRONMENTAL
& GEOTECHNICAL

Flood Risk Assessment

163 Great Ducie Street

Manchester

On behalf of

ZNA Holdings Ltd

Earth Environmental & Geotechnical Ltd
Houldsworth Mill Business Centre
Houldsworth Street
Stockport
SK5 6DA

Tel : 01619756088

Email
headoffice@earthenvironmental.co.uk

www.earthenvironmental.co.uk



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Drafted By:	Nicola Sugg
Reviewed By:	Adam Czarnecki
Authorised By:	Adam Czarnecki

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1. Introduction

Earth Environmental and Geotechnical Ltd, has prepared a Flood Risk Assessment (FRA) for the extension of an existing commercial/retail building at 163 Great Ducie Street, Manchester, M3 1FF.

The Environment Agency (EA) and Manchester City Council (MCC) need to be satisfied that the granting of planning permission will address any risk of flooding to the development, and that the proposals will not in turn increase the risk of flooding to neighbouring land and property.

This Flood Risk Assessment (FRA) has been prepared to the national guidance and requirements set out in the National Planning Policy Framework, 2019 (NPPF), National Planning Practice Guidance (NPPG), which sets out the guidance for preparation of site specific FRA's.

The FRA has also been prepared to the local guidance and requirements set out in Manchester City Council's Local Development Framework (2012); and Manchester City, Salford City and Trafford Councils Level 1 Strategic Flood Risk Assessment (March 2010) and Level 2 Strategic Flood Risk Assessment (March 2011).

This flood risk assessment has therefore been prepared to identify and evaluate the various possible sources of flood risk to which the proposed site might be subjected to; to identify any mitigation or protection measures deemed necessary or feasible; and to ensure the development does not increase the probability of flooding within, or near the site.

2. Site Setting and Description

2.1. Site Location

The development site is within the predominantly commercial area of Strangeways, Manchester, approximately 500m north of Manchester City centre. The site is bound by the A56, Great Ducie Street to the east with HMP Manchester beyond; Langston Street to the south, Barker Street to the west with commercial/retail units beyond and by the existing row of retail units off Great Ducie Street directly to the north.

The address of the site being 163 Great Ducie Street, Manchester, M3 1FF, and the co-ordinates of the centre of the site are: Easting: 383606, Northing: 399444. A site location plan is included in Appendix A

2.2. Existing Site

As detailed on the site layout plan in Appendix B, the existing site consists of a row of seven retail units with a rear delivery yard. The area of proposed development is limited to the yard located to the immediate south of the retail units; this area is currently occupied by a car dealership. Vehicular access is available from Langston Street to the south.

2.3. Proposed Development

The proposed site is shown on the development plan in Appendix C, with a full description of the development being stated by the Architect.

In brief, and in relation to this flood risk assessment, the proposal comprises a two storey extension of the existing row of retail units on Great Ducie Street to create an additional retail unit. The design and scale of the extension is in keeping with the existing, adjacent units. The footprint of the proposed extension is approximately 132m². The existing (rear) vehicular access and yard area will remain.

2.4. Topography

Ordnance Survey mapping indicates that the local topography falls gently towards the west and south-west towards the River Irwell, with ground levels at the site in the region of 30mAOD. Topographic Lidar data are included as Appendix D. This confirms ground levels within the area of proposed development of 28.0mAOD, falling towards the south-west, to 27.5mAOD on the site's south-western boundary adjacent to Barker Street.

2.5. Coast / Rivers / Canals / Artificial Waterbodies

The nearest waterbody to the development site is the River Irwell (classified as a main river), which meanders in a general southerly direction, passing within approximately 200m to the south-west of the site. The River Irk (main river) flows in a south-westerly direction and discharges into the River Irwell approximately 500m south of the site; beyond this point the River Irwell is known as the Grey Irwell, which drains into the Manchester Ship Canal (the canalised lower section of the River Irwell). There are no other known canals or artificial waterbodies in the vicinity of the development site.

2.6. Drains and Sewers

The exact location of any water main or drains within the development site are to be confirmed. However, due to the urban nature of the development site it is assumed that public drains and water mains are located in the immediate vicinity.

2.7. Ground Conditions

The ground conditions for the site can be determined via the British Geological Survey (BGS) website, where it indicates the site is underlain by superficial deposits of Alluvium (clay, silt, sand and gravel) and Glacial Till, over bedrock sandstone of the Triassic Chester Formation. Due to the relatively low permeability superficial deposits and

urban nature of the application site, the majority of surface water runoff will discharge to the urban drainage network.

3. National & Local Policy and Water Management Guidance

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

NPPF 2019 sets out the Government's national policy on development and flood risk, and seeks to provide clarity on what is required at regional and local levels, to ensure that flood risk is taken into account at all stages in the planning process to avoid inappropriate development in areas at risk of flooding, and to direct development away from areas at highest risk.

NPPF Paragraphs 149 to 150 provide guidance for developments for the plans to take a proactive approach to mitigating and adapting to climate change, taking into account the long-term implications for flood risk.

NPPF Paragraphs 155 to 165 provides guidance for planning and flood risk, where are plans should apply a sequential, risk-based approach to the location of development taking into account current and future impacts of climate change; to ensure that flood risk is not increased elsewhere due to the development; and to incorporate sustainable drainage systems.

NPPG, Paragraph 030, outlines that the objectives of this FRA are to establish whether a proposed development is likely to be affected by current or future flooding from any source; whether it will increase flood risk elsewhere; whether the measures proposed to deal with these effects and risks are appropriate; whether the evidence for the local planning authority to apply (if necessary) the Sequential Test; and whether the development will be safe and pass the Exception Test, if applicable.

3.2. Flood and Water Management Act

The Flood and Water Management Act takes forward some of the proposals from three previous strategy documents published by the UK Government - Future Water (2008), Making Space for Water (2008) and the UK Government's response to the Sir Michael Pitt's Review of the summer 2007 floods. In doing so it gives the EA a strategic overview role for flood risk, and gives local authorities responsibility for preparing and putting in place strategies for managing flood risk from groundwater, surface water and ordinary watercourses in their areas.

3.3. SFRA

Manchester City, Salford City and Trafford Councils 2010 Level 1 Strategic Flood Risk Assessment (SFRA) and 2011 Level 2 SFRA review the risk of flooding from all sources and provides evidence for local developers and LPA officers to apply the Sequential Test and identify the need to pass the Exception Test where required.

3.4. Manchester City Council's Local Development Framework

The Core Strategy (Adopted July 2012) presents local planning policies for the period 2012 to 2027. Policy EN14 Flood Risk, states:

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 of 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.

4. Sources of Flooding

In accordance with the NPPF, flood risk must be assessed for all sources of flooding and development of the site should be carried out in such a way as to mitigate any potential flood risk to both the site and third parties and their property. This section identifies all possible sources of flooding.

4.1. Fluvial Flooding

Fluvial flooding results from watercourses / rivers surcharging and flooding the surrounding areas.

4.2. Coastal Flooding

Coastal flooding results from high tides from the sea.

4.3. Pluvial Flooding

'Pluvial' flooding is that which results from rainfall generated overland flow before the run-off enters any watercourse, drain or sewer. It is more often linked to high intensity rainfall events (typically in excess of 30mm per hour). However, it can also result from lower intensity rainfall or melting snow where the ground is saturated, frozen, developed or has low permeability. This results in overland flow and ponding in depressions in the topography. In urban areas 'pluvial' flows are likely to follow the routes of highways and other surface connectivity to low spots where flooding can occur. In some cases, it can deviate from this route into adjacent developments via dropped kerbs (either for access to driveways or disability access).

4.4. Groundwater Flooding

Groundwater flooding is caused by the emergence of water from sub-surface permeable strata. Fluctuations in the groundwater table can cause flooding should the table rise above the existing ground level. Groundwater flooding events tend to have long durations, lasting days or weeks.

4.5. Flooding from Drains and Sewers

Flooding from drains and sewers is caused when the capacity of the drains and sewers is exceeded and will result in flooding from the manholes.

4.6. Canals, Reservoirs and Other Artificial Sources

Flooding from canals, reservoirs and artificial sources is caused when the capacity of the sources is exceeded, or if there is, an infrastructure failure.

5. Sourced Data

Data from the Environment Agency; local Strategic Flood Risk Assessments; and information from other parties are to be studied to establish which sources of flooding are at the site.

5.1. Environment Agency Flood Maps for Planning

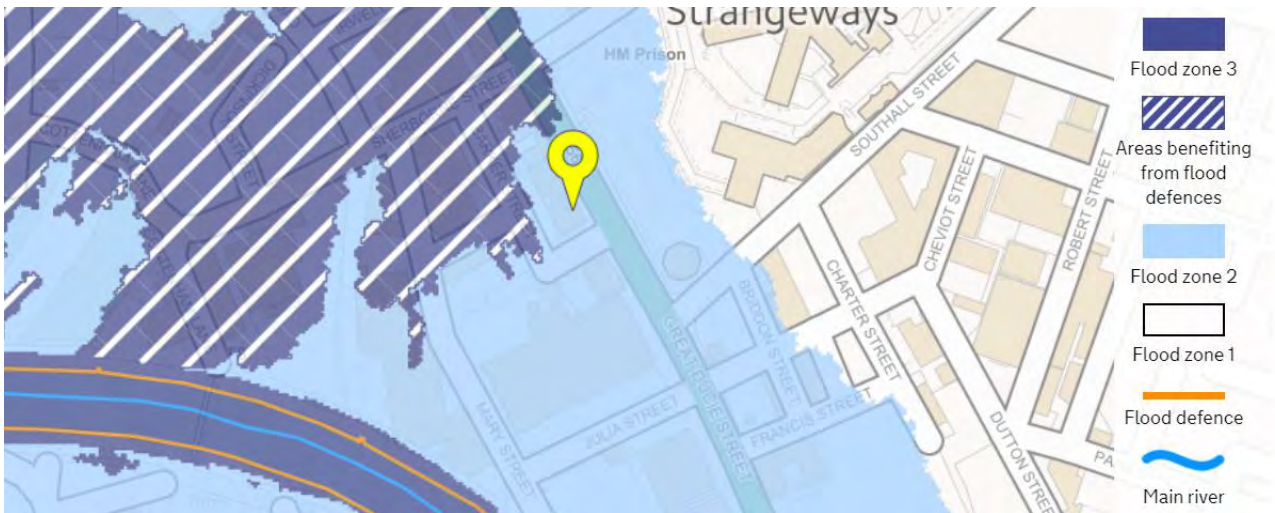
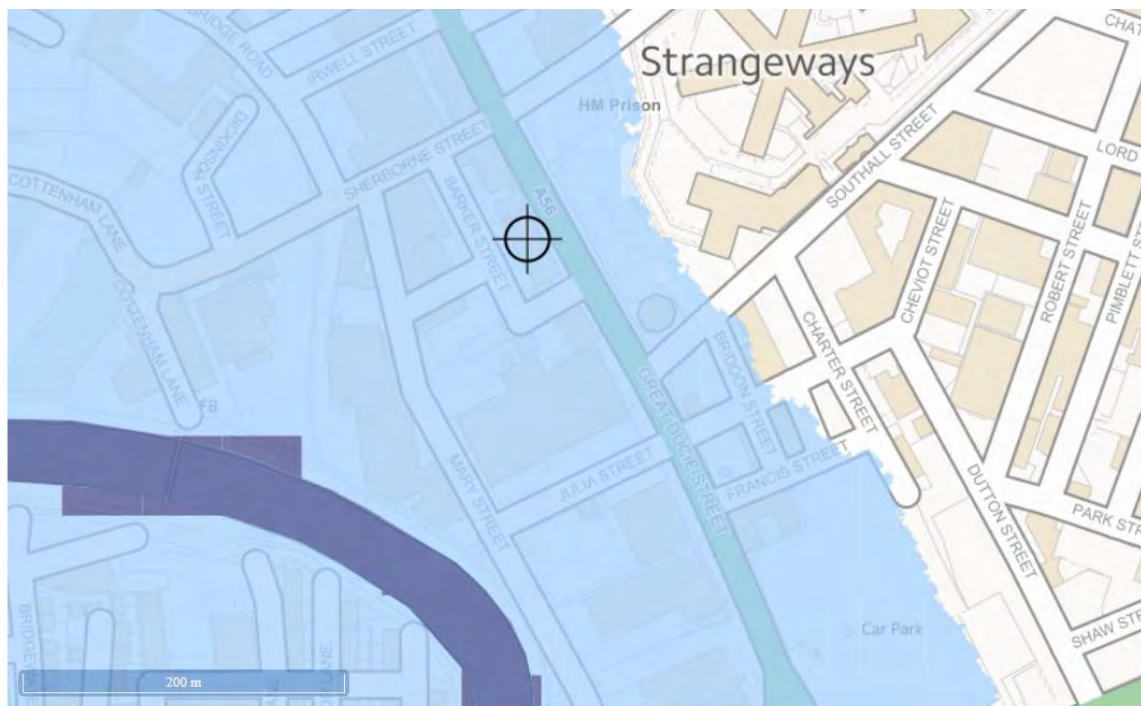


Figure 1 – EA Flood Zone Map

The Environment Agency (EA) fluvial flood map shown in Figure 1, indicates that the development site is in Flood Zone 2 associated with the River Irwell, which is defined as having a medium probability of flooding (0.1% to 1.0% annual probability of flooding from rivers).

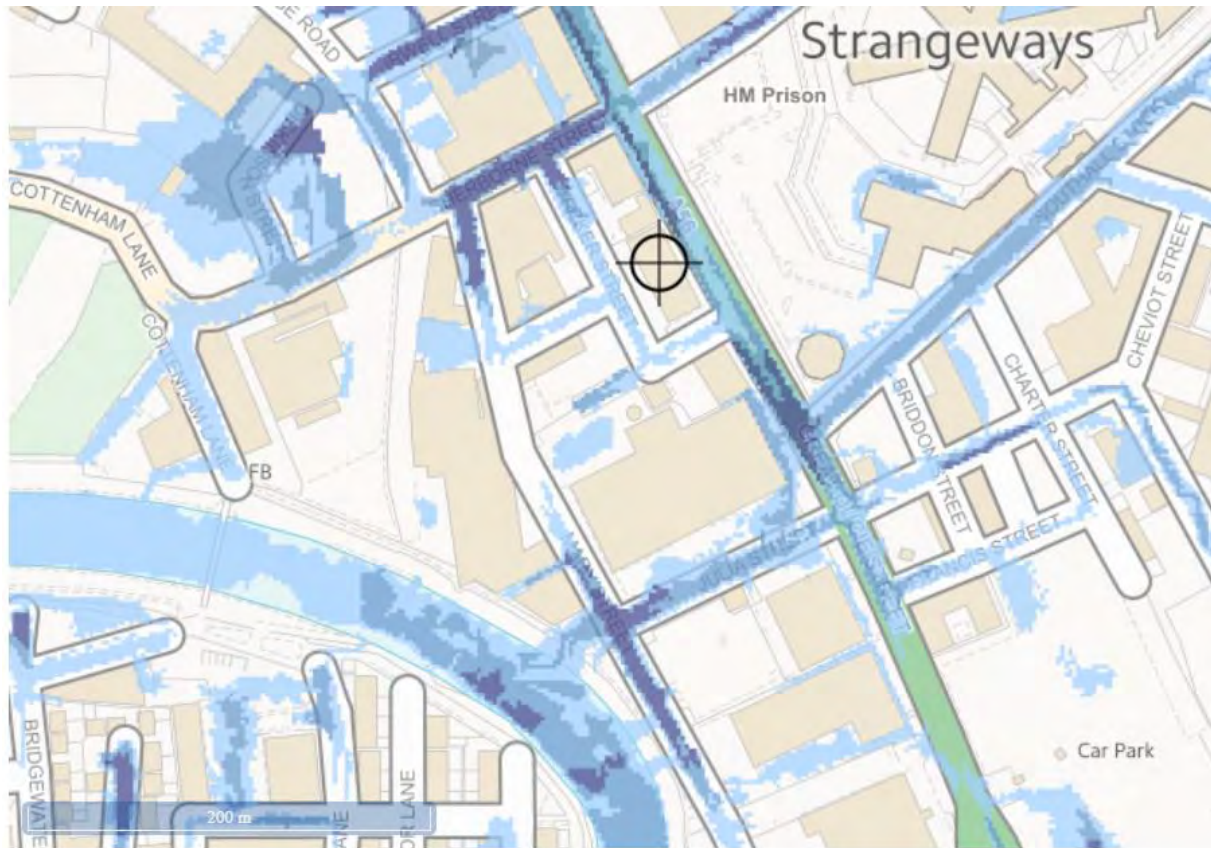


Extent of flooding from rivers or the sea

High Medium Low Very low Location you selected

Figure 2 – EA Fluvial Flood Map

The EA fluvial flood map shown in Figure 2, indicates that the site has a low risk of fluvial flooding (0.1% to 1.0% annual probability of flooding from rivers). This takes into account the presence of local flood defences.



Extent of flooding from surface water

● [High](#)
● [Medium](#)
● [Low](#)
● [Very low](#)
⊕ Location you selected

Figure 3 – EA Pluvial Flood Map

The EA pluvial flood map shown in Figure 3, indicates that the site has a very low probability of pluvial flooding (<0.1% annual probability). It is noted that the access roads, including Langston Street and Great Ducie Street have a higher pluvial flood risk, although predicted flood water depths remain <300mm.

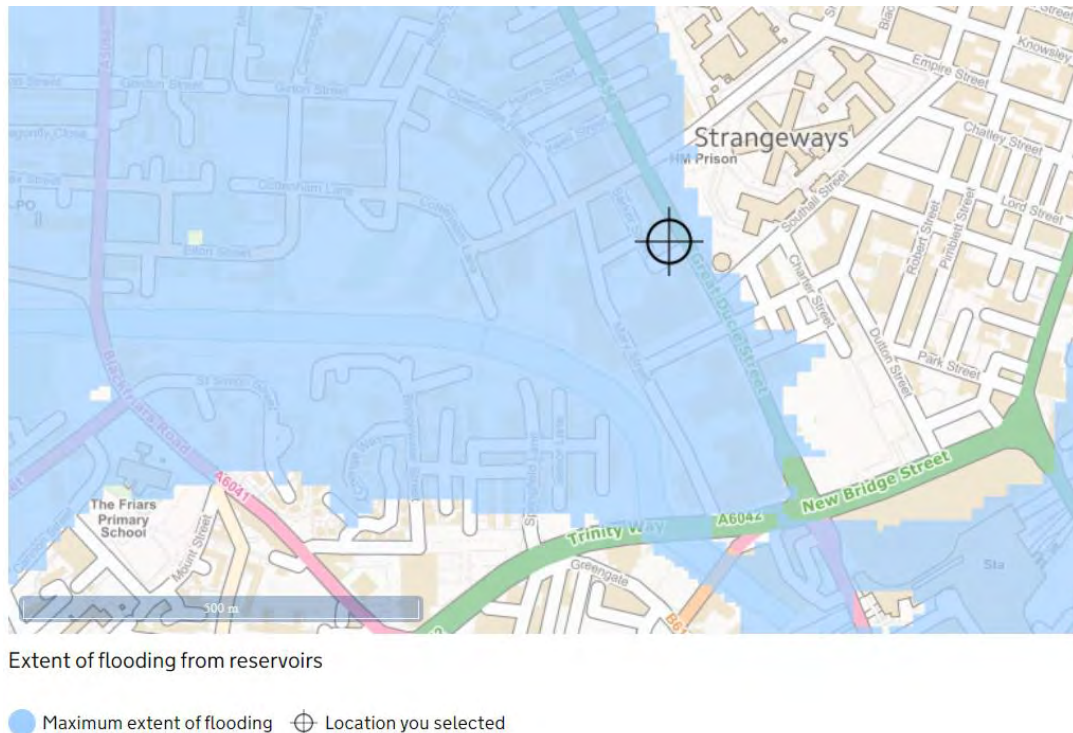


Figure 4 – EA Reservoir Flood Map

The EA reservoir flood map shown in Figure 4, indicates that the development site lies within the predicted maximum extent of flooding in the event of local reservoir failure. The predicted flood water depth at the site, in the event of reservoir failure, is between 0.3m and 2.0m.

5.2. Environment Agency Climate Change Allowances

Environment Agency guidance on climate change allowances (February 2016) presents predictions of anticipated changes for peak river flows and rainfall intensities by river basin district. Manchester is located within the North West river basin district. The proposed development is classified as 'Less Vulnerable' in flood risk terms and the EA guidance recommends applying the central and higher central climate change allowances for such developments. For the North West, the central allowance is 30% and the higher central allowance is 35%; these are applied within the assessment of predicted flood water levels in Section 5.4 below.

5.3. Strategic Flood Risk Assessment (SFRA)

The Manchester City, Salford City and Trafford Councils SFRA and associated flood maps present an assessment of flood risk from local watercourses, surface water runoff and drains and groundwater; a summary of each of the drawings is as follows:

Fluvial Flooding

Drawing FL_1.2E of the SFRA confirms that the development site is within Flood Zone 2, associated with the River Irwell. Drawing FL_1.5E confirms the development site is outside of the 1 in 100 year (1% annual probability) flood extent (Flood Zone 3).

Drawing FL_1.7B confirms that the development site remains outside of the predicted 1 in 100 year (1% annual probability) flood extent, with allowance for long term climate change.

Drawings FL_1.8B and FL_1.9B present predicted flood water depths for the 1 in 1000 year (0.1% annual probability) flood event and the 1 in 1000 year event with allowance for long term climate change respectively. These indicate predicted worse-case flood depths of >2m within the development site for both flood events (taking into

account existing flood defences).

The Level 2 SFRA concludes that for the M004 Strategic Employment Site (Strangeways), which includes the development site:

The SFRA modelling shows that the 1 in 100 year flood event will remain in bank. Taking climate change into account, the defences will overtop in Lower Broughton, with flooding affecting the west of the site between Rugby Street and Irwell Street to a maximum depth of 1m in places.

There is significant residual risk to the site in the 1 in 1000 year and 1 in 1000 year plus climate change flood events. Flooding is predicted to affect around a quarter of the site in the west, bordering the prison and encroaching on the brewery. The majority of flooding is shown to be in excess of 2m in these events, resulting in hazards of 'danger for all'.

Fluvial Flooding - Flood Defence Breach

The SFRA includes an assessment of a breach of flood defences on the River Irwell at Lower Kersal and Lower Broughton; the breaches were positioned at locations considered to result in the most extensive flooding. Drawing FL_1.12 presents the predicted flood extent in the event of breaches of the flood defences at these locations during the 100 year event and confirms that the development site remains outside of the predicted flood extent.

Pluvial Flooding

Drawing SS_4.5 of the SFRA confirms that virtually the entire Greater Manchester urban area is designated a Critical Drainage Area, with the development site located within Conurbation Core Critical Drainage Area. Critical Drainage Areas are defined within the SFRA as areas where:

There is a high risk of localised flooding from ordinary watercourses, including culverts surcharging and overland surface water flows, including the potential for flooding from the sewer network due to failure/ blockage or exceedance events when the storm return period is greater than the sewer was designed for; or

Where there are areas of significant redevelopment planned that could have a significant impact on surface water runoff to local watercourses and the sewer network.

Reasons for designating the broad Conurbation Core Critical Drainage Area include:

- *Localised flooding problems in central Manchester and Salford.*
- *Focus of major regeneration and redevelopment that could have a significant impact on surface water runoff to local watercourses and the sewer network.*
- *Many lost watercourses that are interconnected with the sewers, canals and open channel watercourses that pose a significant risk.*
- *5 postcode areas with over 10 properties affected in the DG5 register.*

Drawing SS_4.1E of the SFRA confirms that the development site currently has a very low susceptibility to surface water flooding. Drawing SS_4.2E presents the future risk of surface water flooding, taking account of long term climate change, and indicates that the susceptibility of surface water flooding to the development site remains very low.

Canals and Reservoirs

The Level 2 SFRA (Executive Summary) confirms that local canals are not considered sources of significant flood risk to the development site (M004 Strategic Employment Site, Strangeways). The SFRA has not considered the risks associated with reservoir failure due to implications for national security.

Groundwater Flooding

Drawing GW_2.1 indicates that the development site is just located within an area identified as being at risk of groundwater flooding. However, Section 2.5.1 of the SFRA confirms there are no known reports of groundwater flooding within the region.

Historic Flooding

Table 2-5 of the SFRA presents a summary of historical recorded flood events within the region. There are no recorded flood events associated with the River Irwell in the vicinity of the site since 1946 when 5300 properties and 243 hectares flooded. This event pre-dates local flood defences.

Summary

The Level 2 SFRA summarises the flood risk development constraints for the wider M004 Strategic Employment Site (Strangeways), which includes the development site, as follows:

Primary risk from the Lower Irwell and Grey Irwell. Secondary risk from surface water, groundwater and lost watercourses. Most at risk from breach or overtopping in an extreme 1 in 1000 year event.

Development should be acceptable on flood risk grounds. Residual risk from these sources needs to be taken into account when planning developments, including the careful consideration of urban design at Strangeways.

A limited range of land uses could be put forward after careful consideration and detailed FRA, but more vulnerable uses should be steered to lower risk areas. Flood risk is an important influence on how the area could be developed, both spatially and in the design response (1st floor accommodation may be necessary).

5.4. Environment Agency Product 4 Data

A Product 4 flood level data request was issued to the EA for the development site, to determine the predicted, modelled flood levels for the site. In response to the request (email dated 14th January 2021), the EA has provided a flood zone map, maps confirming historic flood extents and predicted flood water level data; the response is included as Appendix E. The EA information can be summarised as follows:

- The development site lies within the recorded flood outline for the 01/11/1866 and 20/09/1946 flood events. It is noted that the River Irwell flood defences were constructed subsequent to these events. The EA response (table) indicates that the flood defences offer a standard of protection of up to the 1 in 75 year event.
- Predicted flood water level data are provided from the Lower Irwell 2017 Study. Results from the 2-D defended model for grid reference 383594 399449 (within the development footprint) indicate the following predicted flood water levels:
 - 1% annual probability (1 in 100 year) + 30% climate change (central allowance): 27.91mAOD
 - 1% annual probability (1 in 100 year) + 35% climate change (higher central allowance): 27.91mAOD
 - 0.1% annual probability (1 in 1000 year): 30.24mAOD
- Predicted flood water levels for nodes within the River Irwell adjacent to the development site are summarised below. The model nodes closest to the development site are: ea013_0208_IRW_13746 located upstream of the site at grid reference 383290 399340 (near Bridgewater Street) and ea013_0208_IRW_13476 located downstream of the site at grid reference 383552 399239 (near Sandywell Lane). Predicted flood water levels for these model nodes for a range of rainfall events are summarised below. Appropriate climate change allowances are presented for the North West river basin district of 30% (central allowance) and 35% (higher central allowance).

Predicted Flood Water Levels		
Model Scenario	Predicted Water Level (mAOD) - Defended	
	Node 13746 (upstream)	Node 13476 (downstream)
1% AEP (1 in 100 year)	26.70	26.58
1% AEP (1 in 1000 year) + 30% climate change	27.56	27.40
1% AEP (1 in 1000 year) + 35% climate change	27.73	27.56
0.1% AEP (1 in 1000 year)	30.27	30.19

6. Probability of Flooding

Now that the extents of the sources of flooding are known from the above data, an assessment is to be made of the probability of flooding from each of the sources.

6.1. Fluvial Flooding (Sea and River) - *Probability: Low*

The source of the fluvial flooding is from the River Irwell that passes approximately 200m to the south-west of the site. The assessed flood maps indicate that the development site is in Flood Zone 2, which is classified as having a medium probability of flooding (between 0.1% and 1.0% annual probability).

Data provided by the Environment Agency indicates predicted flood water levels of up to 27.91mAOD within the development site for the 1% AEP (1 in 100 year) event plus 35% allowance for climate change. The Lidar data (Appendix D) confirms ground levels within the area of proposed development of 28.0mAOD. Therefore, the development would remain safe and dry during the 1 in 100 year event with allowance for climate change.

Predicted flood water depths within the site during the extreme, 0.1% AEP (1 in 1000 year) event are significant (approximately 2.2m), as a result of overtopping of local flood defences. However, there are no records of recent (post 1946) flooding within the development site.

6.2. Pluvial Flooding - *Probability: Very Low*

The EA flood map and SFRA mapping indicate that the development site is at very low risk of pluvial flooding, defined as <0.1% annual probability (<1 in 1000 year).

6.3. Groundwater Flooding - *Probability: Low*

The SFRA mapping indicates that the site is within an area identified as being at risk of groundwater flooding. However, there are no known reports of groundwater flooding within the region and no below ground (basement) development is proposed. Therefore, it is concluded that the probability of groundwater flooding to the development is low.

6.4. Flooding from Drains and Sewers - *Probability: Low*

The exact location of any water main or drains within the development site are to be confirmed. Section 2.4 of the Level 1 SFRA does not identify Strangeways as an area with reported drainage and sewer problems. Therefore, based on this, the probability of flooding from drains and sewers is deemed to be low.

6.5. Canals, Reservoirs and Other Artificial Sources - *Probability: Very Low*

EA flood maps indicate that the development site is within the predicted flood extent of local reservoirs.

In England, large reservoirs that are capable of holding 25,000m³ or more of water are regulated under the Reservoirs Act 1975, as amended by the Flood and Water Management Act, 2010. These reservoirs are registered with the Environment Agency and subject to inspection and supervision by reservoir engineers.

Whilst the consequences of reservoir failure could be significant, with the Environment Agency's online map predicting flood water depths of over 2m within the development site, the risk of failure is extremely low.

The SFRA does not identify local canals as a potential flood risk source to the region.

Therefore, it is concluded that the probability of flooding from canals and reservoirs is very low.

7. Flood Risk and Vulnerability

The NPPG Paragraphs 065 to 067 sets out the flood risk for a site by assessing the flood zones, flood risk vulnerability classification, and flood risk vulnerability and flood zone 'compatibility'.

7.1. Flood Zones

There are four classifications for flood zones, as defined in Table 1 of the NPPF and NPPG document.

Table 1 – Flood Zones	
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 should 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)

The available flood map data has identified that the development site is within Flood Zone 2.

7.2. Flood Risk Vulnerability Classification

NPPG Paragraph 066, Table 2 stated the flood risk vulnerability classifications as:

Table 2 - Flood Risk Vulnerability Classification
Essential Infrastructure Essential transport infrastructure (including mass evacuation routes) which should 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 centers; 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.
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.
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.

The development is classed as a 'Less Vulnerable' in flood risk terms, as the development comprises retail units.

7.3. Flood Risk Vulnerability and Flood Zone 'Compatibility'

NPPG Paragraph 067 Table 3, gives guidance on flood risk vulnerability compared with flood zone, to determine the compatibility.

NPPF – Table 3 - 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	✗	✗	✗	✓*

In accordance with Table 3 of the NPPF, 'Less Vulnerable' development is acceptable within Flood Zone 2.

8. The Sequential Test and Exception Test

8.1. Applicability of the Sequential and Exception Test

The Sequential Test does not need to be applied for individual developments on sites which have been allocated in development plans through the Sequential Test, or for applications for minor development. The development site is located within M004 Strategic Employment Site (Strangeways) identified within Manchester City Council's Local Development Framework.

In addition, the proposed development comprises an extension to existing retail units, with a development footprint of approximately 132m²; this is classified as minor development in relation to flood risk.

Therefore, the Sequential Test does not apply to the proposed development. Table 3 above confirms that 'Less Vulnerable' development is acceptable within Flood Zone 2 and therefore the Exception Test does not apply.

8.2. Safe Development

For the development to be safe for its lifetime taking account of the vulnerability of its users, there are several design principles for the development, which include:

- Analysis of the finished floor level against predicted flood water levels;
- Appropriate flood resilience and flood resistance within the design, to minimise the entry and flood water and to minimise damage caused by flood water if it does enter the development;
- Safe and access and egress from the development;
- Effective flood warning systems for the development, with appropriate flood evacuation plan;
- Consideration of surface water drainage to ensure there is no increased flood risk elsewhere.

Each of the design principles to be applied for the development are detailed below.

8.3. Finished Floor Level Analysis

With regards to the finished floor level of the building, the NPPF states that to reduce the probability of flooding, the finished floor level should be a minimum of whichever is higher of:

- 300mm above the general ground level of the site;
- 600mm above the estimated 1% AEP river flood level.

The predicted 1% AEP flood water level is 26.7mAOD (worse-case); the ground level is 28.0mAOD; therefore the recommended finished floor level is 28.3mAOD (equivalent to 300mm above ground level).

If raising floor levels to this elevation is not feasible, passive flood proofing measures should be incorporated within the site design to exclude water to an elevation of 28.3mAOD.

8.4. Safe Access and Egress

The risk of fluvial flooding decreases from the development site towards the north-east, away from the River Irwell and towards higher ground. Safe access and egress, within low probability Flood Zone 1, can be gained via Southall Street.

8.5. Flood Resilience and Flood Resistance

NPPF Guidance, Paragraph 059 states:

'Flood resilient: Flood-resilient buildings are designed and constructed to reduce the impact of flood water entering the building so that no permanent damage is caused, structural integrity is maintained and drying, and cleaning is easier. The Department for Communities and Local Government has published Improving the Flood Performance of New Buildings: flood resilient construction (2007). This provides guidance on how to improve the resilience of new properties in low or residual flood risk areas using suitable materials and construction details.

Flood resistance: Flood-resistant construction can prevent entry of water or minimise the amount that may enter a building where there is short duration flooding outside with water depths of 0.6 metres or less. This form of construction should be used with caution and accompanied by resilience measures, as effective flood exclusion may depend on occupiers ensuring some elements, such as barriers to doorways, are put in place and maintained in a good state'.

Whilst the development is within medium probability Flood Zone 2 and would remain safe and dry during the 1% AEP event including allowance for long term climate change, predicted flood water levels during the extreme 0.1% AEP event are approximately 2.2m.

Therefore, based on the NPPF guidance, and to ensure the flood resilience of the development, the following flood resilience measures are to be incorporated into the new development design:

- to include non-return valves on sewer pipes;
- to ensure flood resilient floor coverings are applied where feasible (e.g. ceramic tiles or a sand/cement screed);
- to have all cable to run down the wall from first floor level;
- and to have all service meters to be at high level; to have all service entry points to be sealed with bitumen.

8.6. Flood Warning and Evacuation Plan

it is advised that the owners / tenant sign up to, and are aware of various flood warnings so that they can take appropriate action (such as installing flood barriers), and ensure safe egress from the dwelling, in the unlikely event of flooding of the proposed development. There are several flood warnings codes which are:

ONLINE FLOOD RISK FORECAST

Meaning

Be aware.
Keep an eye on the weather situation.

General advice

- Check weather conditions.
- Check for updated flood forecasts on the Environment Agency website.



FLOOD ALERT

Meaning

Flooding is possible
Be prepared.

General advice

- Be prepared to act on your flood plan.
- Prepare a flood kit of essential items.
- Monitor local water levels and the flood forecast on our website.



FLOOD WARNING

Meaning

Flooding is expected.
Immediate action required.

General advice

- Move family, pets and valuables to a safe place.
- Turn off gas, electricity and water supplies if safe to do so.
- Put flood protection equipment in place.



SEVERE FLOOD WARNING

Meaning

Severe flooding.
Danger to life.

General advice

- Stay in a safe place with a means of escape.
- Be ready should you need to evacuate.
- Co-operate with the emergency services.
- Call 999 if you are in immediate danger.

WARNING NO LONGER IN FORCE

Meaning

No further flooding is currently expected in your area.

General advice

- Be careful. Flood water may still be around for several days.
- If you've been flooded, ring your insurance company as soon as possible.

The owners / occupants of the development are to sign up to the EA and local authority flood warning system, where they can be alerted to any of the above warning codes by either phone; fax; mobile; or email. There is also to be a flood plan in the event of a flood defence breach or overtopping, for the owners / occupants of the development to take appropriate actions for any of the flood warning codes detailed above.

A flood plan is to be put together prior to the occupation of the development, and given to the new owners / occupants as part of the property deeds / information. Details of how the flood plan is to be put together is stated in the 'EA Business Flood Plan' (Appendix F).

8.7. Surface Water Management

The proposed development is limited to a 132m² footprint extension of existing retail units, with the area of proposed development currently a car sales yard. Therefore, post-development surface water runoff rates would be comparable to pre-development rates, and runoff will continue to be managed via the site's existing drainage system.

9. Residual Risk

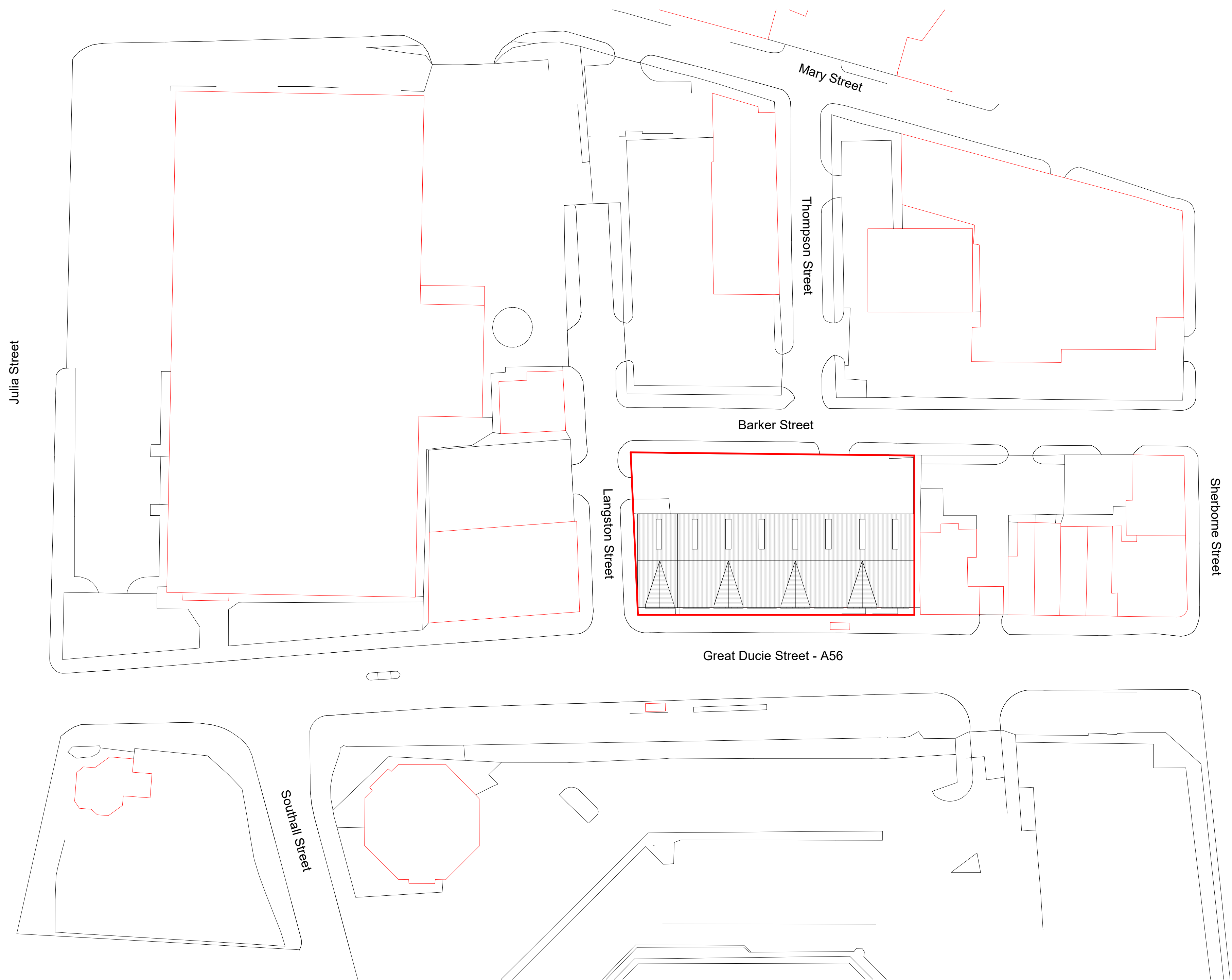
It is difficult to completely guard against flooding since extreme events greater than the design standard event are always possible, however, there are practicable ways to minimise the risk such as by allowing a freeboard (safety margin) and by using suitable construction and management techniques.

This flood risk assessment has been prepared in accordance with the NPPF, Local Planning Policy and the NPPG. Any recommendations regarding floor levels are based on the relevant British Standards (BS8533), the standing advice provided by the EA or based on common practice.

Earth Environmental and Geotechnical Ltd do not warrant that the advice in this report will guarantee the availability of flood insurance either now or in the future.

It will be the owner's /occupier's responsibility to regular upkeep the drainage network on site throughout the lifetime of the development to ensure that flood risk on and off site is managed effectively.

Appendix A - Site Location Plan



Site Plan
1 : 500

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NOTES:

Revision Number	Date	Description of Revision	Chkd	Appr
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Architects!

The Old Police Station
62 Chapel St
Manchester
M3 7AA
● Tel: 0161 832 5750 ● E: office@seedarchitects.co.uk ●

status

Planning

job title

163 Great Ducie Street

Location

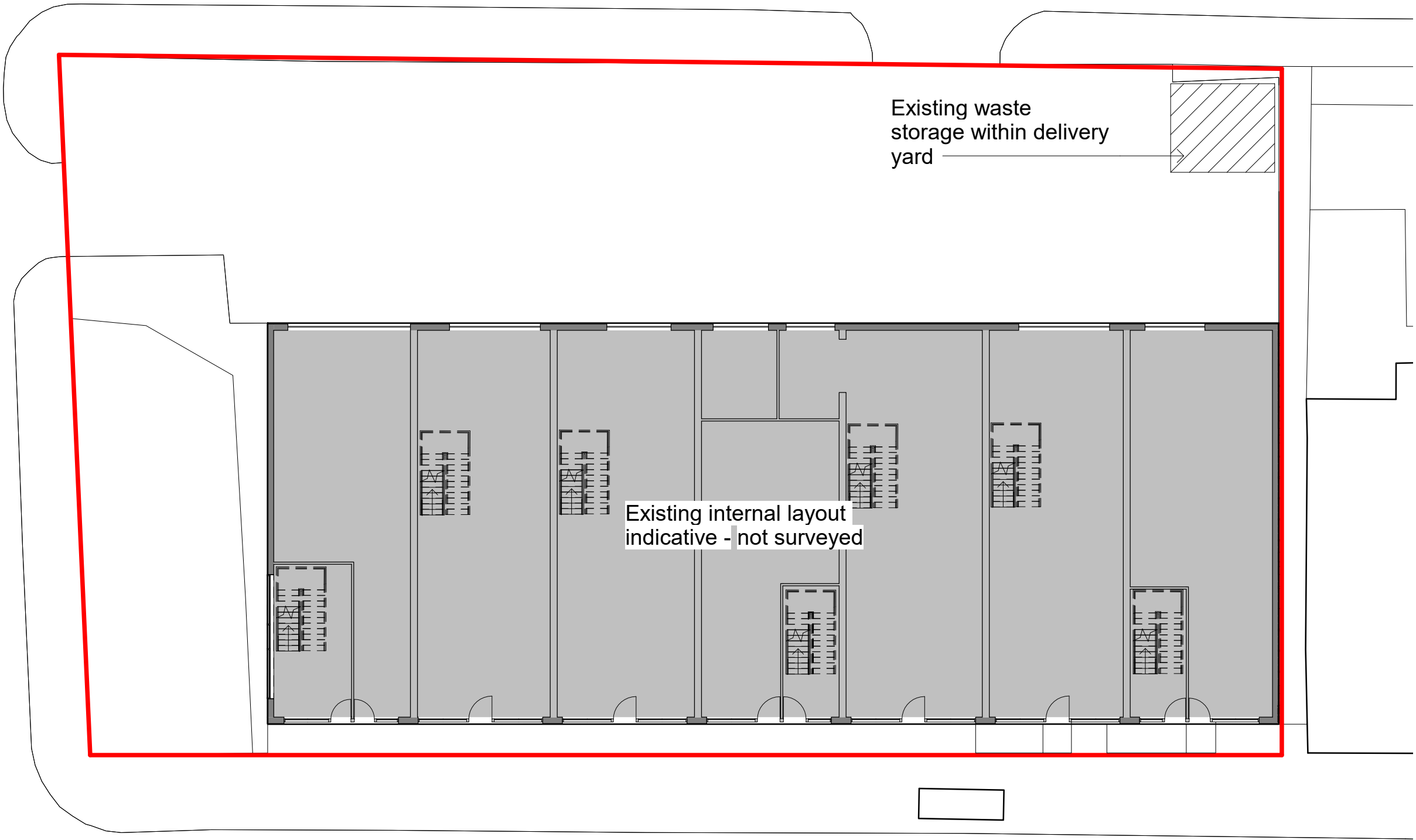
drawing title

Site Location Plan

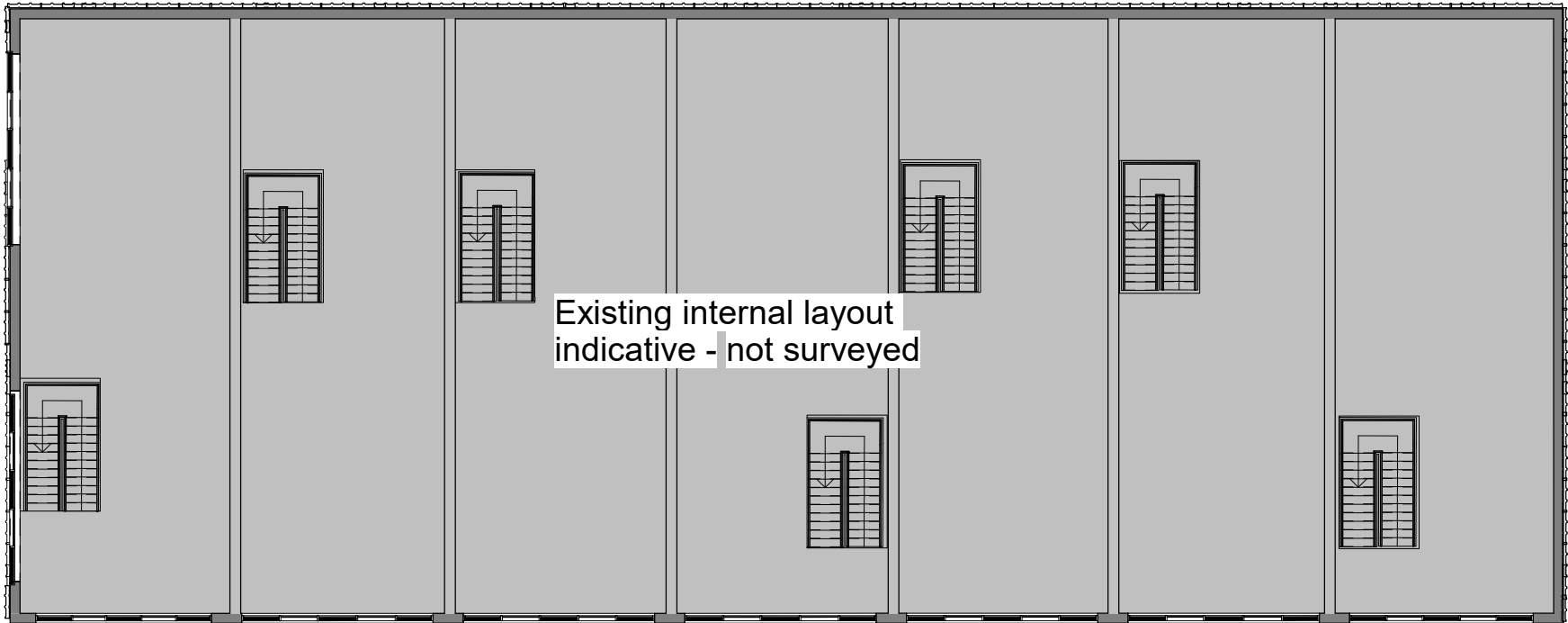
author MD	date 07-12-2020
checker RH	date 07-12-2020
scale 1 : 500	paper size A1

Project no.	Cont.	Seed drawing no.	Rev.
3217		A100	

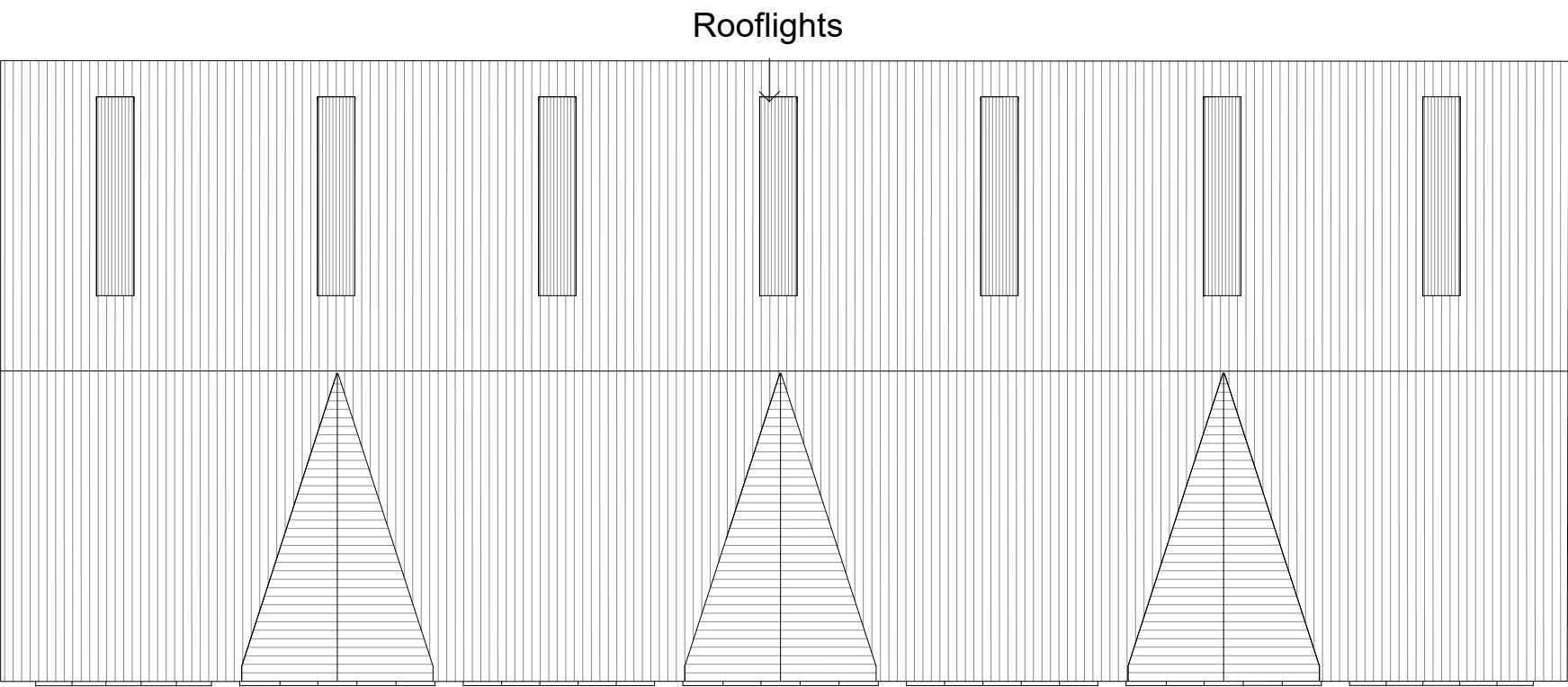
Appendix B - Existing Site Layout Plan



Existing Ground Floor Plan
1 : 200



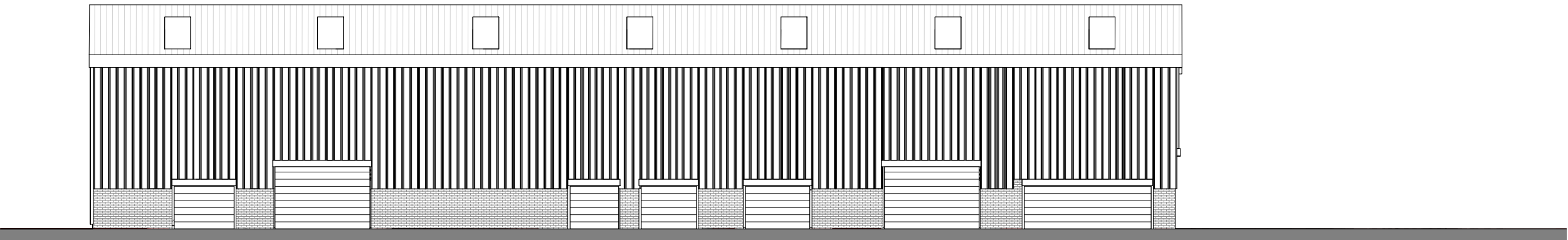
Existing First Floor Plan
1 : 200



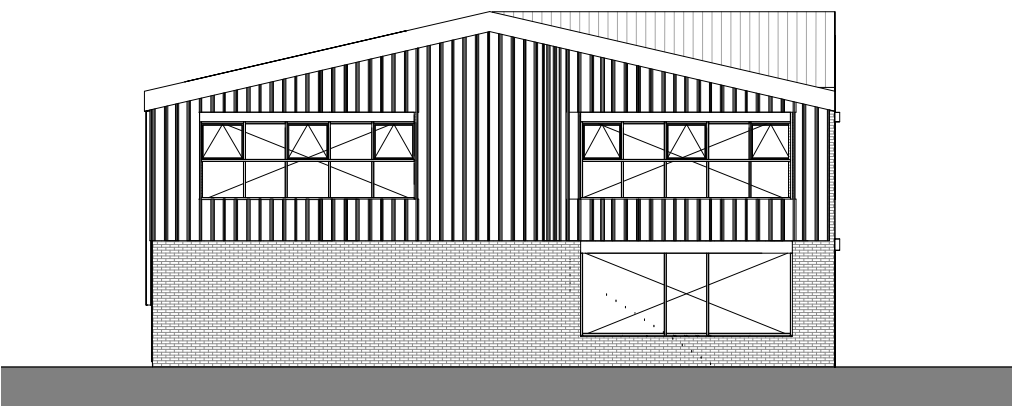
Existing Roof Plan
1 : 200



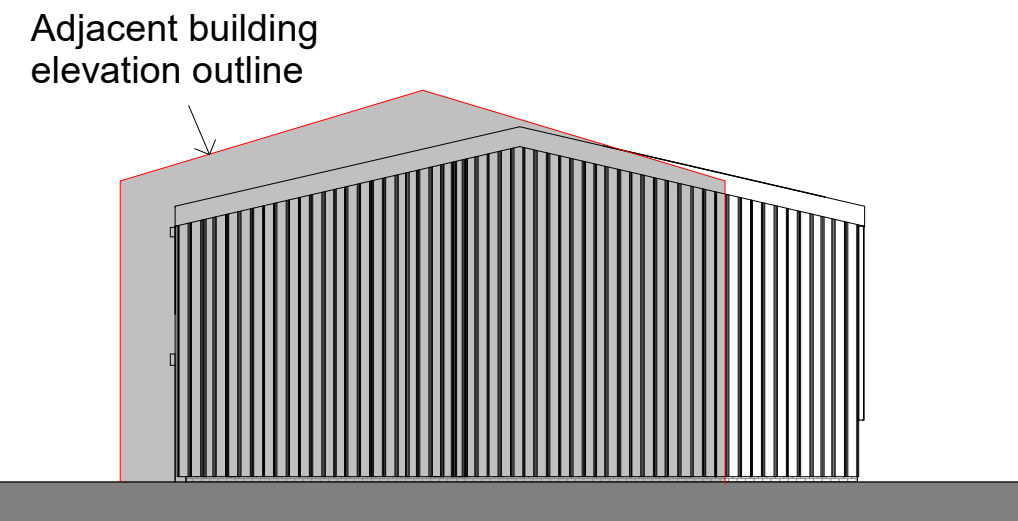
Existing East Elevation - Great Ducie Street
1 : 200



Existing West Elevation - Barker Street
1 : 200



Existing South Elevation - Langston Street
1 : 200



Existing North Elevation
1 : 200



Existing Isometric View

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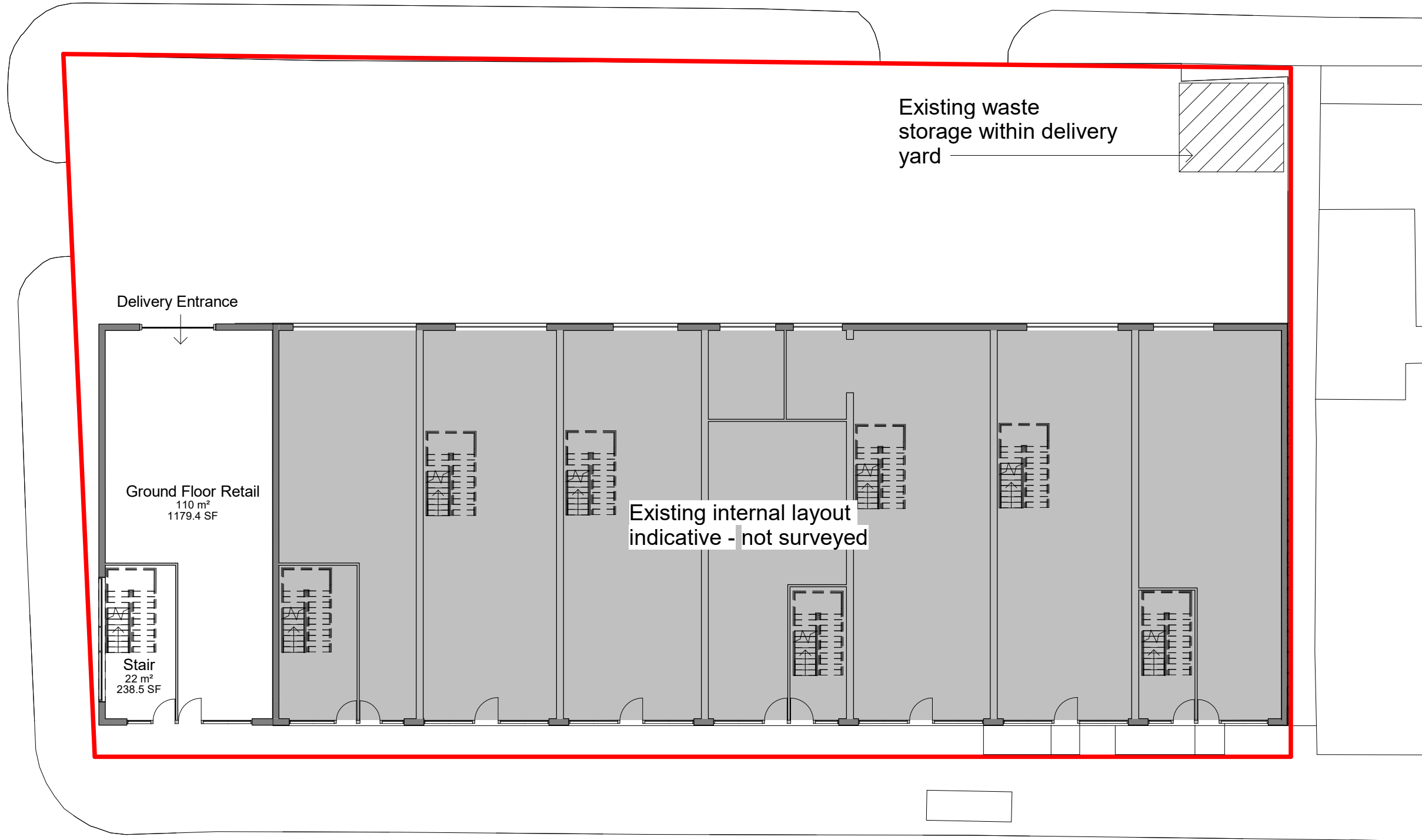
Revision Number	Date	Description of Revision	Chkd	Appr

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Manchester
M3 7AA
● Tel: 0161 832 5750 ● E: office@seedarchitects.co.uk ●

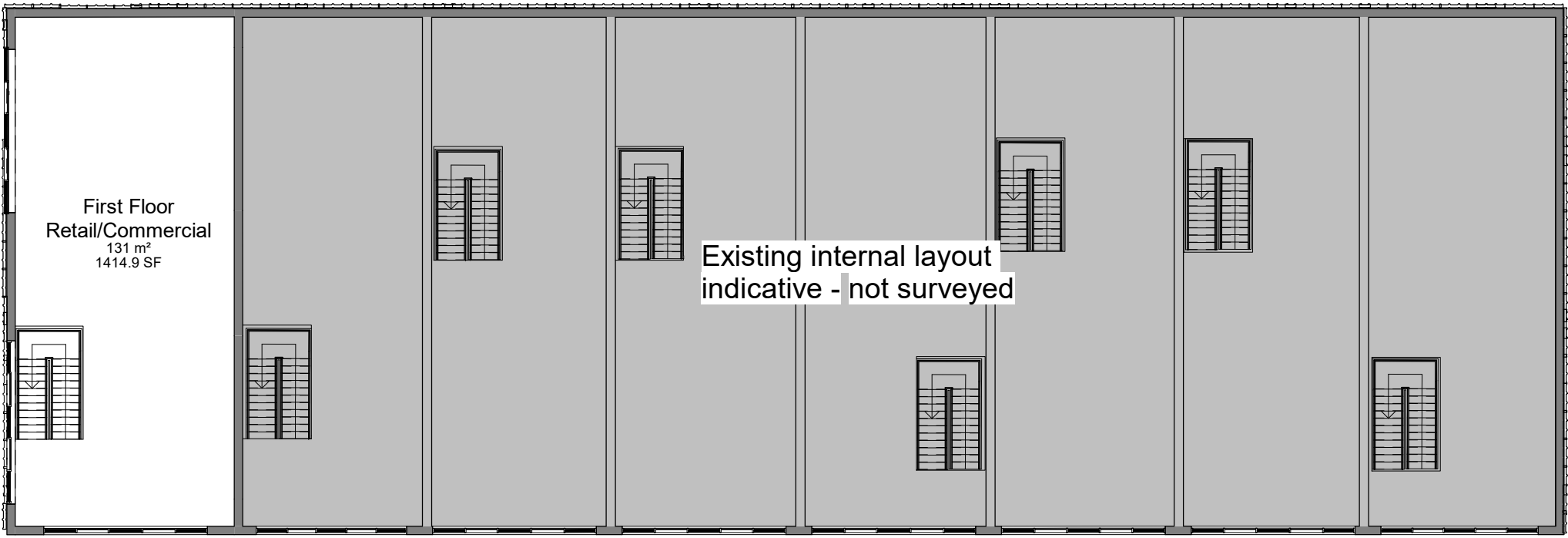
status
Planning

job title			
163 Great Ducie Street			
Location			
drawing title			
Existing Floor Plans and Elevations			
author		date	
MD		07-12-2020	
checker		date	
RH		07-12-2020	
scale		paper size	
1 : 200		A1	
Project no.	Cont.	Seed drawing no.	Rev.
3217		A101	

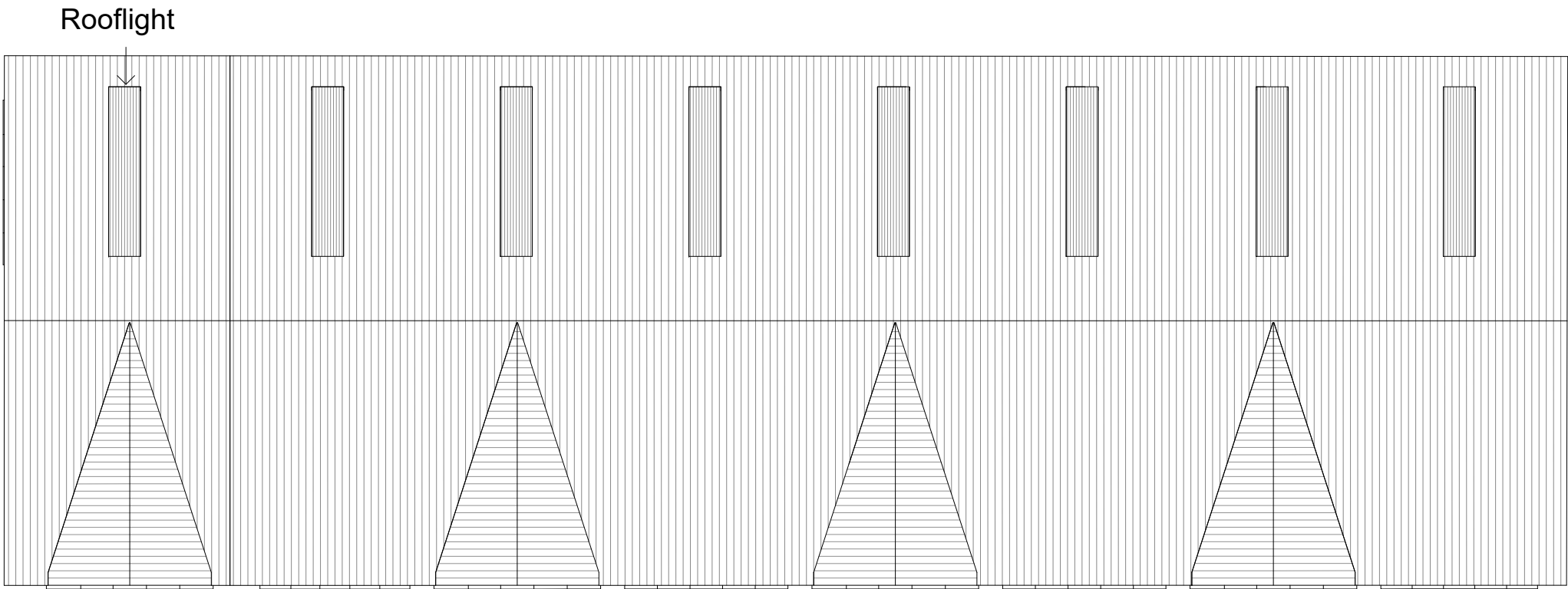
Appendix C - Proposed Site Plan



Proposed Ground Floor Plan
1 : 200



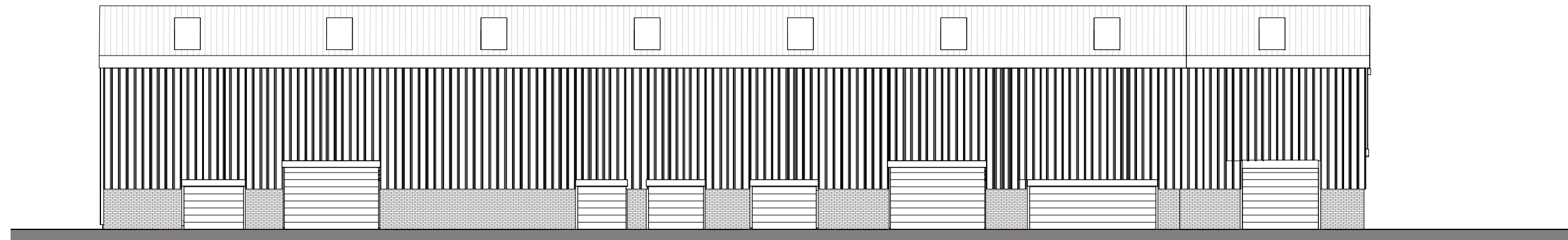
Proposed First Floor Plan
1 : 200



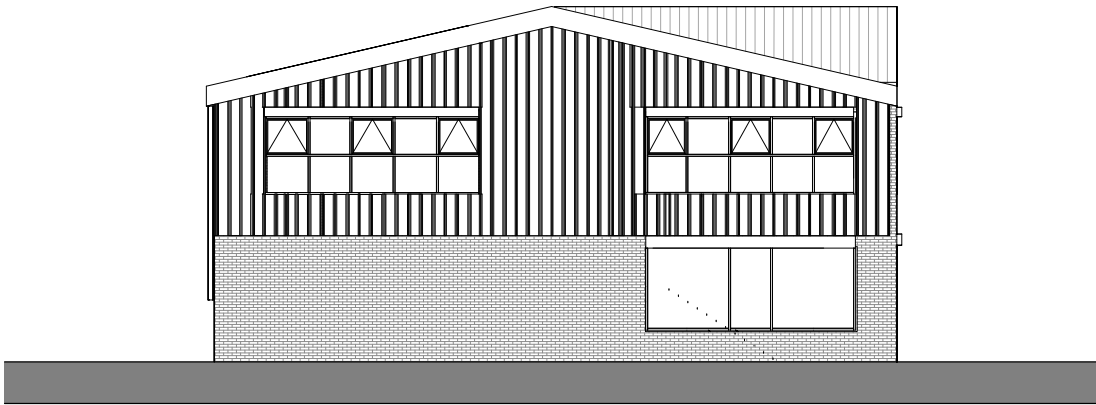
Proposed Roof Plan
1 : 200



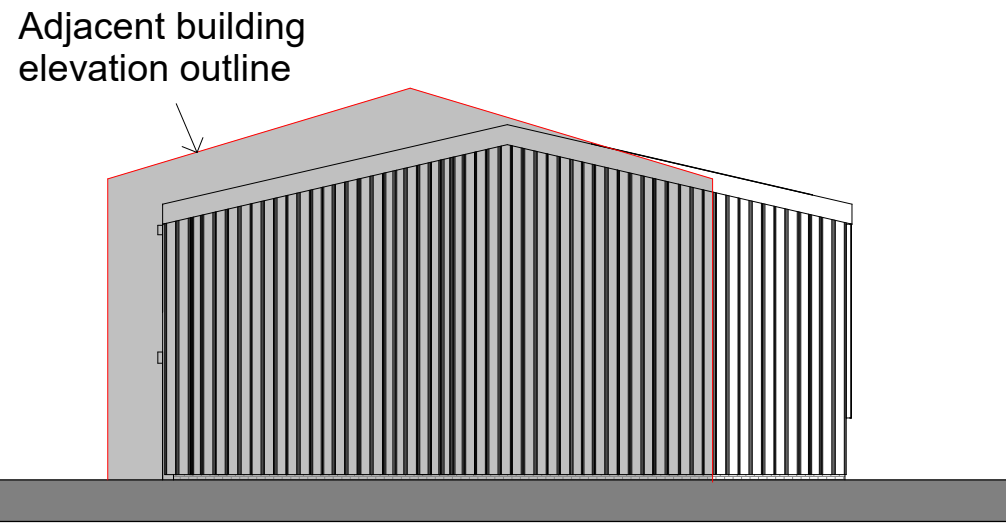
Proposed East Elevation - Great Ducie Street
1 : 200



Proposed West Elevation - Barker Street
1 : 200



Proposed South Elevation - Langston Street
1 : 200



Proposed North Elevation
1 : 200



Proposed Isometric View

©
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NOTES:

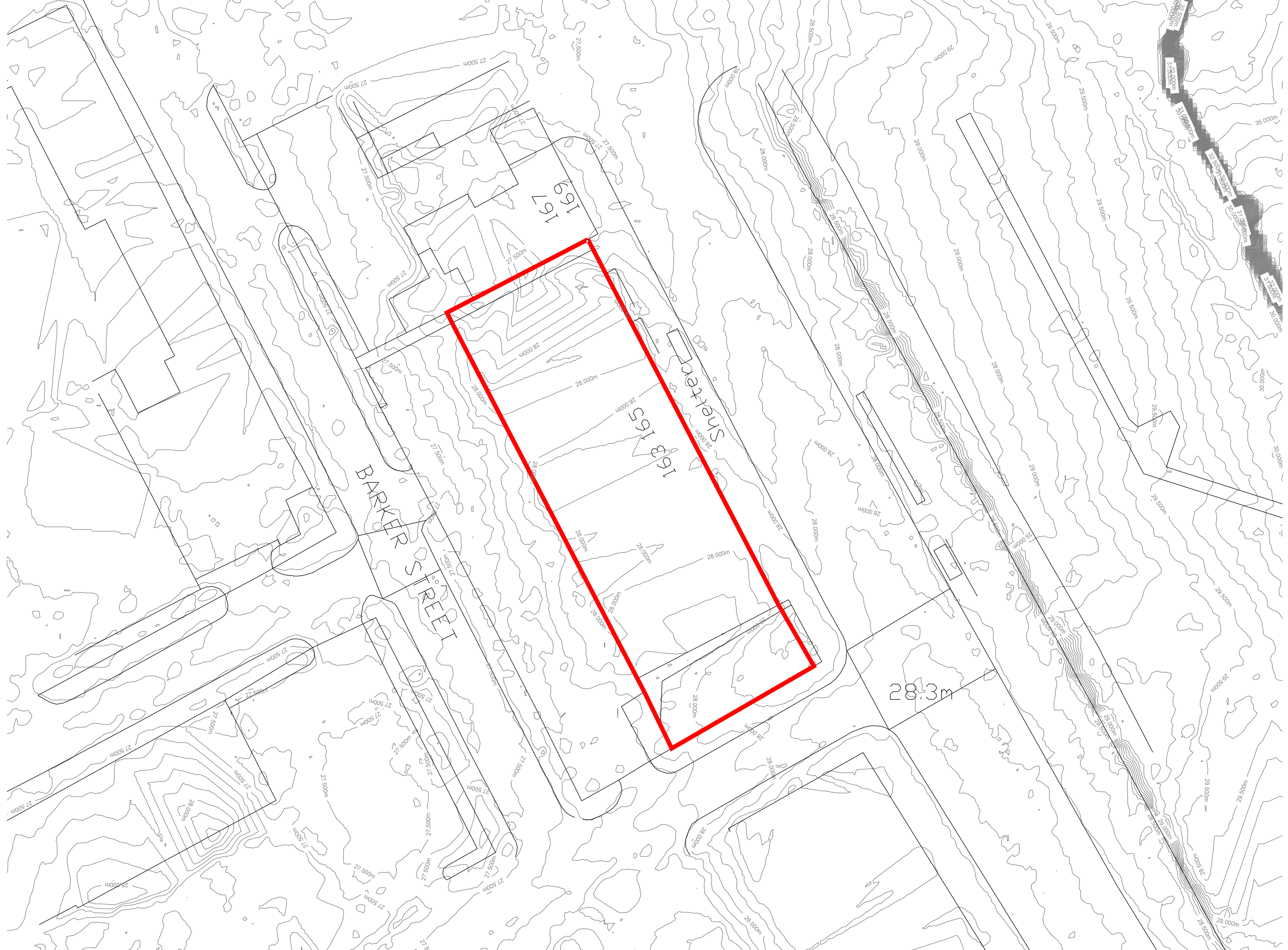
Revision Number	Date	Description of Revision	Chkd	Appr

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status
Planning

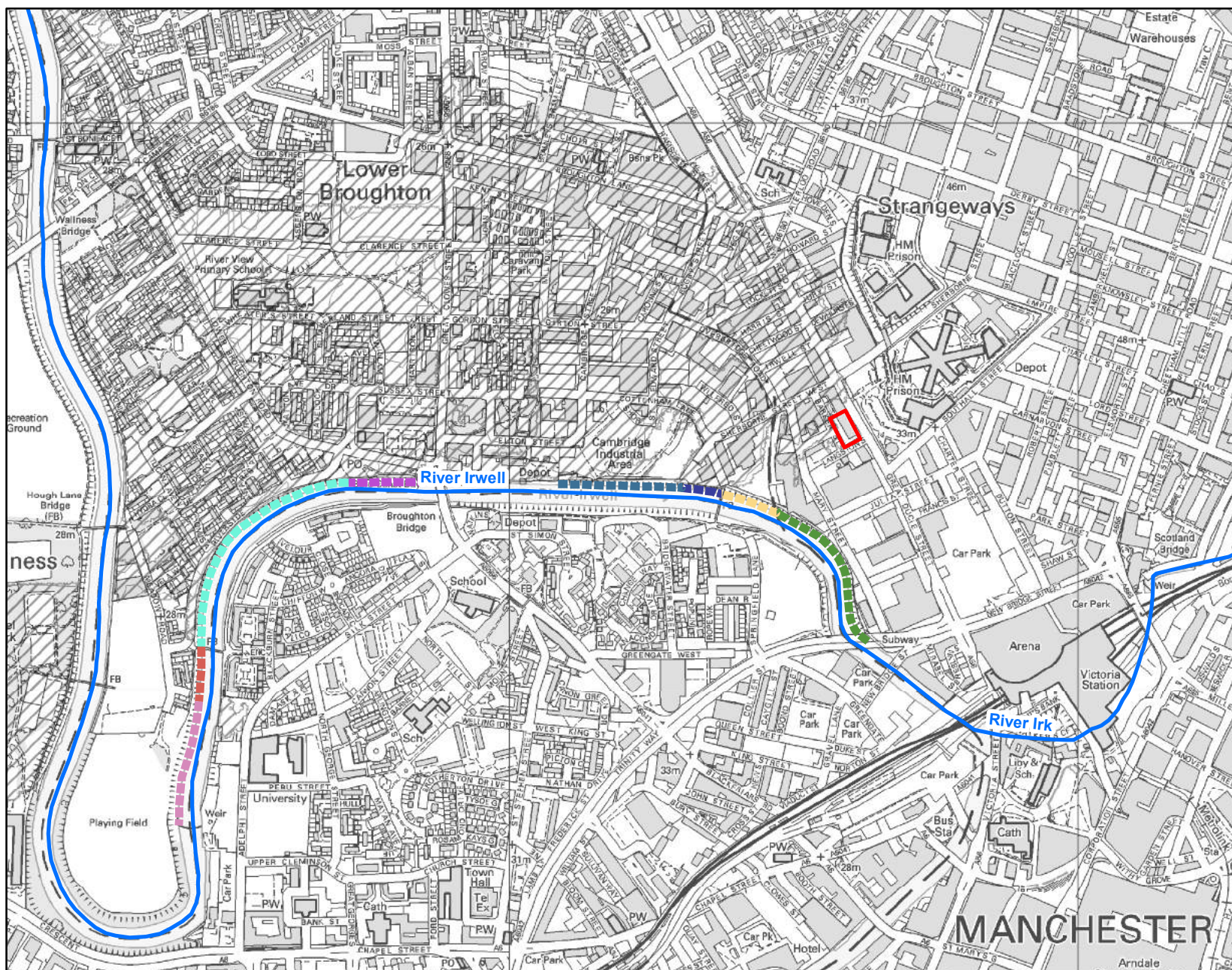
job title			
163 Great Ducie Street			
Location			
drawing title			
Proposed Floor Plans and Elevations			
author		date	
MD		07-12-2020	
checker		date	
RH		07-12-2020	
scale		paper size	
1 : 200		A1	
Project no.	Cont.	Seed drawing no.	Rev.
3217		A102	

Appendix D - Lidar Topographic Survey Data



Appendix E - Environment Agency Product 4

Flood Defence Map centred on Great Ducie Street, Manchester, M3 1FF. Created on 12/01/2021 [GMMC199861AB]



1:10,001



Legend

 Site Location

 Main River

Defences (EA maintained)

Asset ID

 88831

 88843

 88845

 88893

 89056

 123679

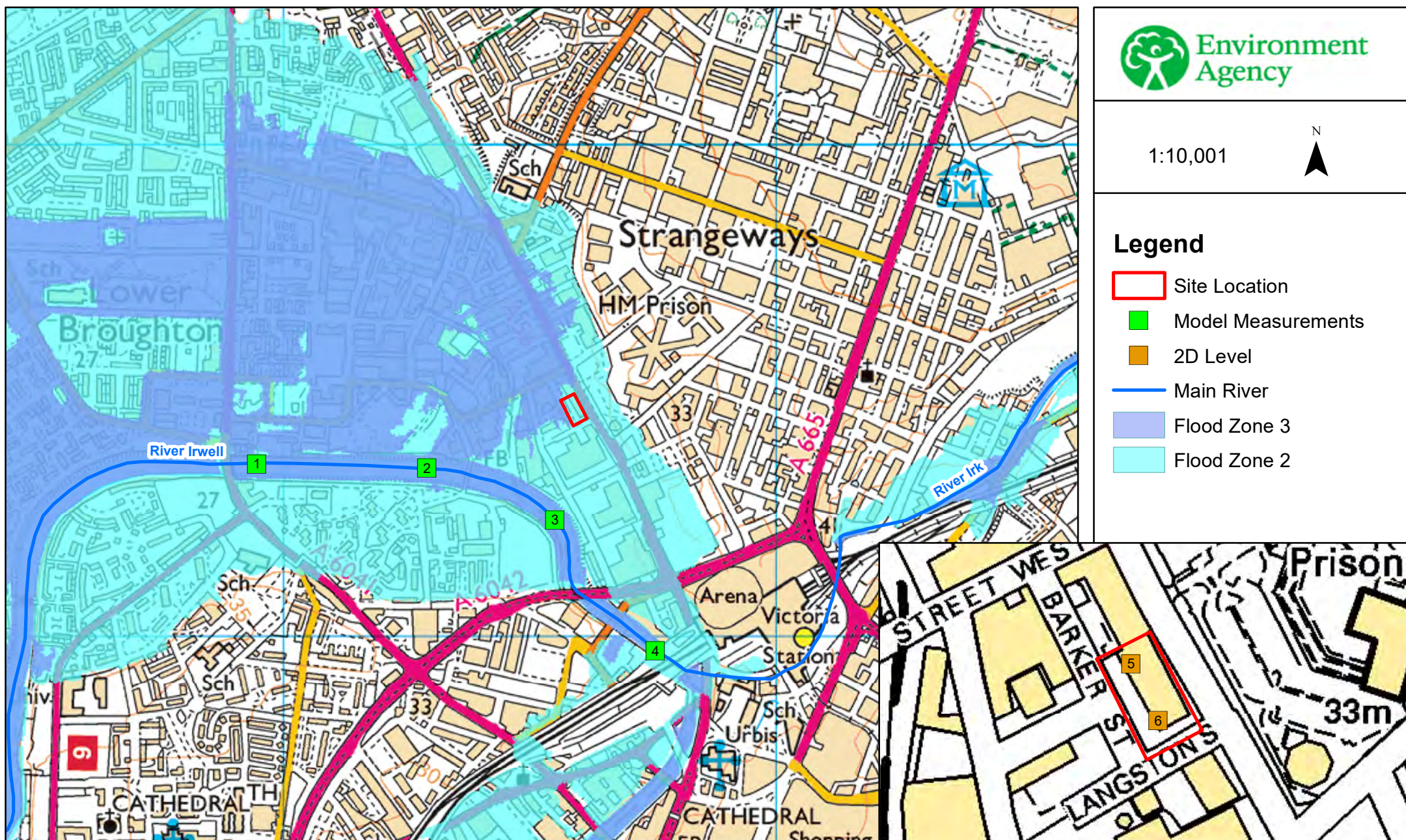
 181081

 185864

 452758

 Areas Benefiting

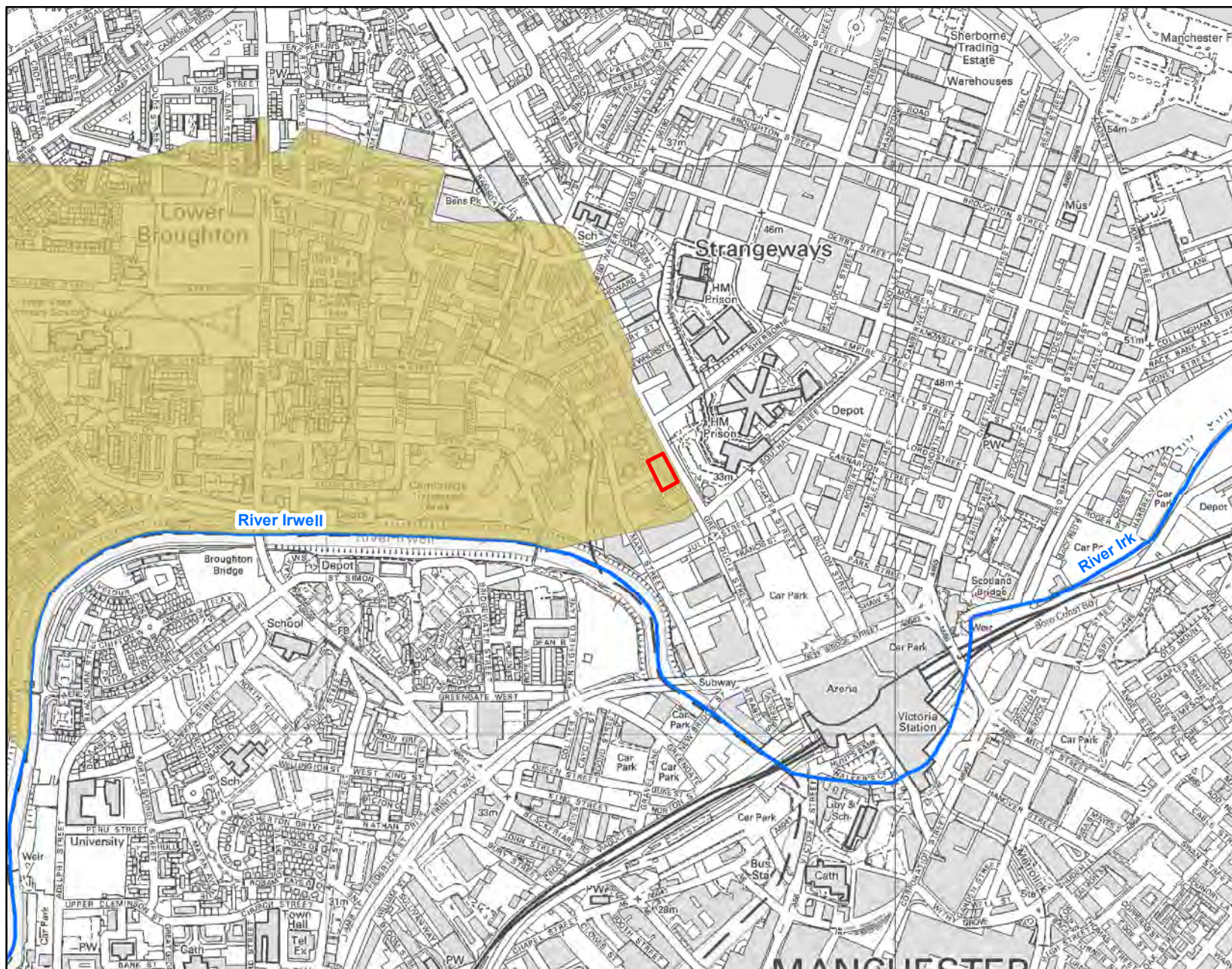
Detailed Flood Map centred on Great Ducie Street, Manchester, M3 1FF. Created on 12/01/2021 [GMMC199861AB]



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Contact Us: National Customer Contact Centre, PO Box 544, Rotherham, S60 1BY. Tel: 08708 506 506 (Mon-Fri 8-6). Email: enquiries@environment-agency.gov.uk

**Recorded Flood Outline Map centred on Great Ducie Street, Manchester, M3 1FF.
Created on 12/01/2021 [GMMC199861AB]**



1:10,001



Legend

 Site Location

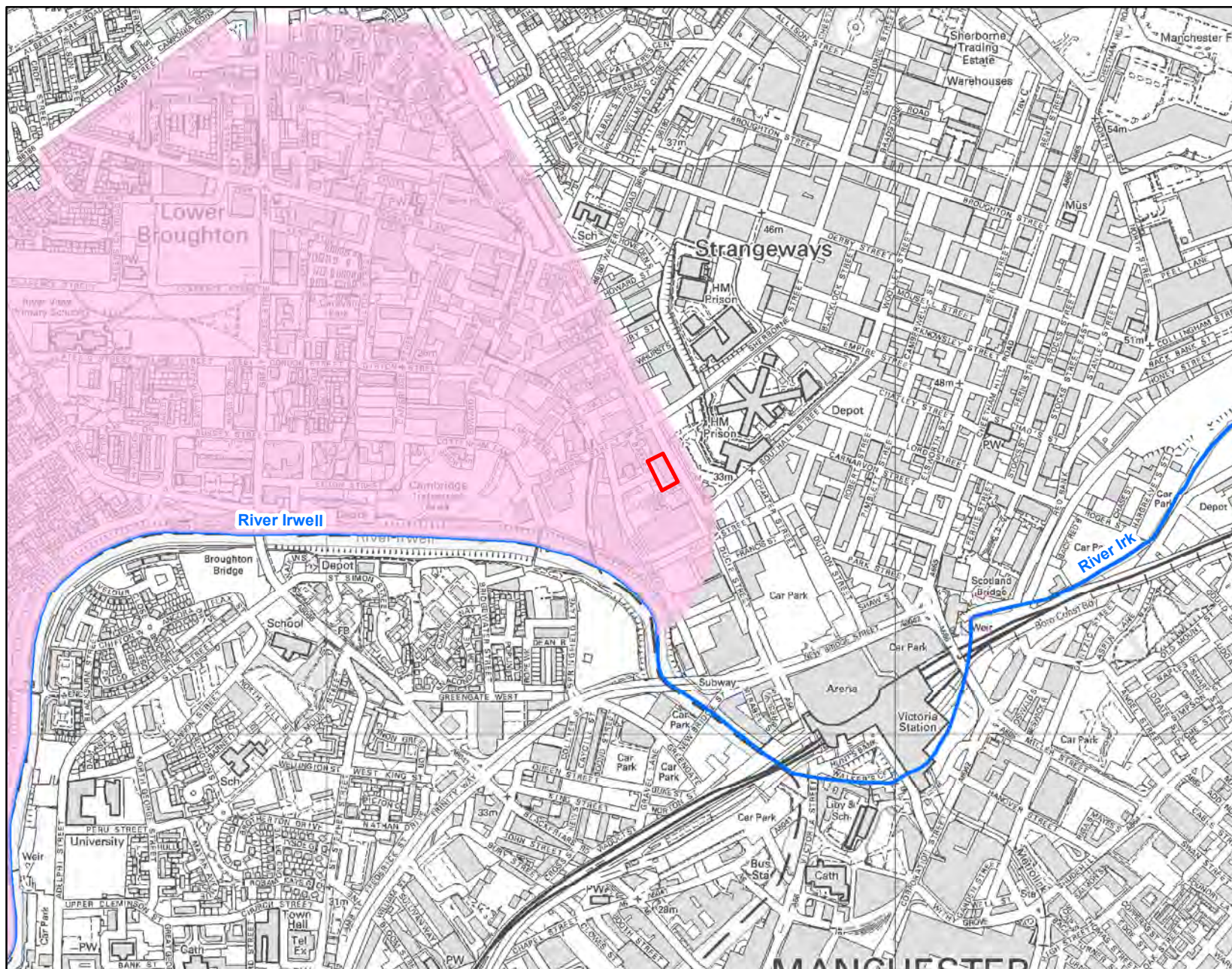
 Main River

Recorded Flood Outline

Start Date

 20/09/1946

**Recorded Flood Outline Map centred on Great Ducie Street, Manchester, M3 1FF.
Created on 12/01/2021 [GMMC199861AB]**



1:10,001



Legend

 Site Location

 Main River

Recorded Flood Outline

Start Date

 01/11/1866

Risk Reduction	Mean Water Reduction	Fencing	Sealing	Data	Unflooded								Flooded							
					1% ADF (1 in 100 years)	1% ADF (1 in 100 years)	1% ADF (1 in 100 years)	1% ADF (1 in 100 years)	1% ADF (1 in 100 years)	1% ADF (1 in 100 years)	1% ADF (1 in 100 years)	1% ADF (1 in 100 years)	1% ADF (1 in 100 years)	1% ADF (1 in 100 years)	1% ADF (1 in 100 years)	1% ADF (1 in 100 years)	1% ADF (1 in 100 years)	1% ADF (1 in 100 years)	1% ADF (1 in 100 years)	1% ADF (1 in 100 years)
1	44711_2018_2019 10190	38284	38233	Modelled Water Level (in a/cft)	26.58	26.68	26.78	26.87	26.96	27.06	26.49	26.59	26.78	26.94	26.49	26.57	26.76	27.02	26.94	27.16
2	44711_2018_2019 10190	38284	38233	Modelled Water Level (in a/cft)	26.58	26.68	26.78	26.87	26.96	27.06	26.49	26.59	26.78	26.94	26.49	26.57	26.76	27.02	26.94	27.16
3	44711_2018_2019 10190	38284	38233	Modelled Water Level (in a/cft)	26.58	26.68	26.78	26.87	26.96	27.06	26.49	26.59	26.78	26.94	26.49	26.57	26.76	27.02	26.94	27.16
4	44711_2018_2019 10190	38284	38233	Modelled Water Level (in a/cft)	26.58	26.68	26.78	26.87	26.96	27.06	26.49	26.59	26.78	26.94	26.49	26.57	26.76	27.02	26.94	27.16
5	44711_2018_2019 10190	38284	38233	Modelled Water Level (in a/cft)	26.58	26.68	26.78	26.87	26.96	27.06	26.49	26.59	26.78	26.94	26.49	26.57	26.76	27.02	26.94	27.16

Risk Reduction	Mean Water Reduction	Fencing	Sealing	Data	Unflooded				Flooded			
					1% ADF (1 in 100 years)	1% ADF (1 in 100 years)	1% ADF (1 in 100 years)	1% ADF (1 in 100 years)	1% ADF (1 in 100 years)	1% ADF (1 in 100 years)	1% ADF (1 in 100 years)	1% ADF (1 in 100 years)
6	20' Level	38284	38233	Modelled Water Level (in a/cft)	26.58	26.68	26.78	26.87	27.06	27.06	26.49	26.59
7	20' Level	38284	38233	Modelled Water Level (in a/cft)	26.58	26.68	26.78	26.87	27.06	27.06	26.49	26.59

Model data taken from Lower Trent 2017 Study

ADF - Annual Exceedance Probability

in a/cft - metric above ordinary datum (height)

current - cubic metres per second

Notes: *Climate Change Scenario - 30%, 50% and 70% increases in flow calculated for the 2050s (2070 - 2110). Please see https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/544444/climate-change-advice-for-rivers-information-regarding-the-new-climate-change-guidance. The location of the site and the type of development determine the climate change allowance to be added in any flood risk assessment.

Recorded Flood Outlines					
Flood Event Code	Name	Start Date	End Date	Source of Flooding	Cause of Flooding
178	0500	2009-10-05	2009-10-05	Main River	Channel capacity exceeded (in a/cft)
000	01111000	2011-10-05	2011-10-05		

Flood References					
Event Date	Asset Type	Asset ID	Direction of Protection	Upstream Actual Crest Level (in a/cft)	Downstream Actual Crest Level (in a/cft)
20101005	Embankment	00001	75	27.77	27.46
20101005	Wall	00002	75	27.76	27.57
20101005	Embankment	00003	75	28.19	27.59
20101005	Embankment	00004	75	27.76	27.76
20101005	High Ground	00005	75	27.46	27.46
20101005	High Ground	00006	75	27.56	27.56
20101005	High Ground	00007	75	27.56	27.56
20101005	High Ground	00008	75	27.56	27.56
20101005	High Ground	00009	75	27.56	27.56
20101005	High Ground	00010	75	27.56	27.56

Appendix F - Flood Plan Template



Environment
Agency

would your business stay afloat?

A guide to preparing your
business for flooding



Flooding is the most common and widespread natural disaster in the UK. Since 1998 there has been at least one serious flood every year. Businesses like yours are more likely to be flooded than destroyed by fire. As our climate changes we can expect to see more extreme weather – and more floods.

We aim to reduce the likelihood of flooding by managing land, rivers, coastal systems and flood defences. While we do everything we can to reduce the chance of flooding, it is a natural process and can never be completely eliminated.

By taking action to prepare in advance for flooding, most businesses can save between 20 and 90 per cent on the cost of lost stock and movable equipment, as well as some of the trouble and stress that goes with such an event.

This is a simple guide to some of the easy actions that you can take to make sure that your business is as well prepared as possible.

It tells you about how to find out if your business is at risk, our flood warning service and what our flood warning codes mean. It also has a simple template to use to design a flood plan for your company.

For more information about flooding, visit our website at **www.gov.uk/flood** or call Floodline on **0345 988 1188**.

Make sure that your business is prepared for flooding.

How do I find out if my business is at risk from flooding?

There are two quick and easy ways for you to find out if you're at risk.

call us on
0345 988 1188

Our Floodline service is open 24 hours, calls are charged at local rate. By taking your postcode, our operators will check and see if your business is in a flood risk area.

Look at our website
www.gov.uk/flood

You need to be aware of flooding and keep an eye on the water levels and weather situation at all times. You can do this by checking the flood forecasts and the river and sea levels on our website.

Our online flood map uses the latest technology and data gathered over many years to give the most accurate view of flooding in your area.

By entering your postcode you can find out if your business is at risk. Areas at risk from flooding are shown in dark blue and areas at risk from extreme flooding in light blue.

My business is at risk from flooding. What should I do now?

Start preparing now. If the weather conditions are right, flooding can happen at any time.

Remember, floods can happen at any time and any day – make sure you provide a number that can be contacted at all times – even out of working hours.

Sign up for flood warnings.

The first thing you should do is find out if you can receive flood warnings. In areas of high flood risk, we offer a service called Floodline Warnings Direct. This is a free, 24 hour service that sends automated flood warnings by telephone, SMS text, email, fax or pager.

To find out if you can receive this service, call Floodline on 0345 988 1188.

If your business isn't in an area covered by our warnings you can still check the latest flood warnings in force on our website.

When the situation is serious, flood warnings will also be broadcast on local television and radio news.

What practical steps can I take to protect my business?

Now that you've checked your risk and found out about flood warnings, it's time to start thinking about preparing a flood plan specifically for your business.

Taking simple steps can go a long way to protecting your business from flooding. Preparing a flood plan could:

- Significantly reduce financial losses, damage to property and business interruption;
- Help compliance with regulatory requirements (for example, Occupier's Liability Act 1984);
- Reduce exposure to civil or criminal liability;
- Enhance your company's image and credibility with employees, customers, suppliers and the community;
- Help fulfil your moral responsibility to protect employees, the community and the environment;
- Help you to obtain insurance cover.

What is a flood plan?

Just as many businesses have health and safety policies and contingency plans for an emergency, they should also have flood plans.

A flood plan is a written document that outlines how your business will respond to a flood.

This might include a list of steps you will take in case of a flood and the order you will take them in. It could also include the purchase of flood products and insurance.

A written plan can make information **easy** to access during a flood, **easy** to communicate to staff, and **easy** to remember.

Small businesses should make sure there is a plan of action in case of flooding. As the business owner, this may be your responsibility.

If your business is **medium sized**, flood preparation might be the responsibility of a team of people from different areas of the business.

If your business decides to have a flood planning team, this could be led by the business owner or Managing Director.

The leader of the flood planning team will need to let staff know about the plan once it is finished.

All members of the team should also keep a copy of important flood contacts at home for easy access.

Key areas to consider in your flood plan are:

- human resources;
- maintenance/facilities;
- finance and purchasing.

Once you have completed your plan don't forget about it. Look at it regularly and make sure it is up to date and in the event of a flood **use it**.



business flood plan



A written flood plan is recommended for businesses.

It should include:

- A list of important contacts, including Floodline, building services, suppliers and evacuation contacts for staff;
- A description or map showing locations of key property, protective materials and service shut-off points;
- Basic strategies for protecting property, preventing business disruption and assisting recovery;
- Checklists of procedures that can be quickly accessed by staff during a flood.

If a flood is imminent, your main priority is to make sure that your staff are safe. However there may be other actions that you can take to prepare your building and it's contents to minimise damage and post-flood repair and restoration costs.

Business flood plan

Flood plan for _____ dated _____

Registered address _____

Postcode _____

Staff contact list

Name	Address	Telephone/mobile	Emergency contact	Emergency telephone and address

Note staff who may require assistance in the event of a flood.

Name	Office location

Key locations

Service cut-off	Description of location
Electricity	
Gas	
Water	

Answer the following if applicable

	Description of location	How to protect from a flood (for example, move, cover, tie down)
First Aid Kit		
Oil based products (gasoline, oil, cooking oil etc.)		
Chemicals (including cleaning products)		

Protective actions

Identify stock, equipment and possessions that may need special protective measures, and describe the actions you will take to prevent damage in the event of a flood. We have suggested items and ways to protect them, but make sure you follow through on your plans.

think about:

- Computers;
- Tables / heavy furniture;
- Vehicles;
- Paper files;
- Electrical items;
- Chairs / stools;
- Databases;
- Soft furnishings;
- Computer files;
- Staff files.

ways to protect items

- Make a copy of important documentation and store in safe location;
- Raise items above ground level;
- Buy flood protection products;
- Buy new flood-resistant items;
- Move items to a safer location if possible – to an upper level of the building or off site.

Valuable item	Protective action	New location (if applicable)	Done
			☐
			☐
			☐
			☐
			☐
			☐
			☐
			☐
			☐

Suggested basic building materials to help protect your property

If materials are not needed, leave the relevant section blank

Materials	Used for	Items to protect / where to use	Storage location	Done
Sand and sand bags (unfilled), shovel	Creating flood barriers (used with plastic sheeting)			☐
Tools – hammer, nails, saw	Boarding up doors, windows and openings, creating shelves			☐
Wood – plywood, blocks of wood	Boarding up doors, windows and openings, creating shelves			☐
Sturdy plastic sheeting	Sandbag barriers, pulling up around furniture and appliances			☐
Strong plastic bags	Putting around legs of tables and chairs			☐
Pallets	Raising stored stock above flood level			☐
Emergency power generator	Maintaining function of air conditioning units (can help dry out a building), running fridges and freezers, medical equipment if appropriate			☐

Identify people who can help you before, during and after a flood, and what they can do.

We have suggested ways they might be able to help, but you'll need to discuss this with them.

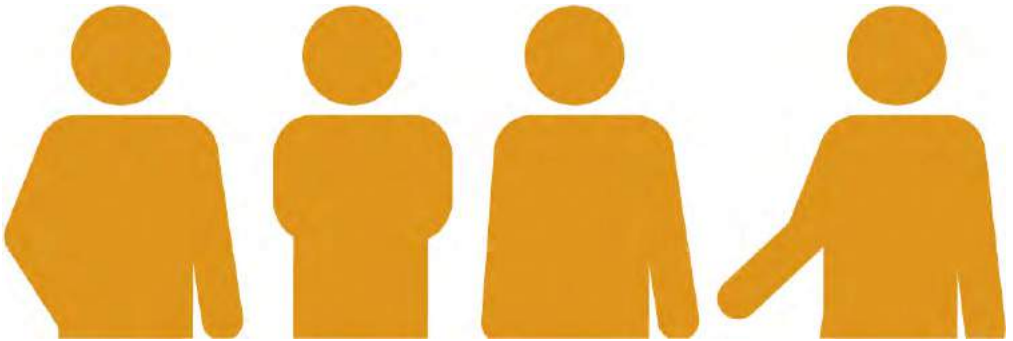
Name	Address	Telephone day	Telephone evening	Mobile

Ways people can help

- assistance with installing flood products;
- assistance with transporting stock/materials to new location if possible;
- provision of emergency storage;
- provision of emergency supplies or medical support if required.

discussion guide

This discussion guide sums up the key areas of flood planning. Some of this information can be found in this pack to help get you started.



Research

- Look at your existing business policies, and think about whether they are appropriate in the event of a flood.

Staff

- Make a list of **employees' contact details in the event of an evacuation**. This might include mobile telephone numbers, or numbers for their home or the home of a friend or relative;
- Think about staff who **may need special assistance** in the event of a flood (for example, elderly, deaf, blind etc.)

Security procedures

- **Locking windows, doors and setting the alarm**. You might need more than one person to help do this;
- Insurance policies – **Are you insured for flood damage**, business interruption and lost revenue?
- Employee manuals – You might **add flood safety to staff information packs**, or adapt job descriptions to include flood warden duties;
- Hazardous materials plan – You must ensure that **chemicals, oils and other substances in your possession are kept safe** and do not contaminate flood water;
- Health and safety assessment – Plan to **check the functioning of flood products and flood warning systems regularly**, just as you do for fire safety equipment.

Check codes and regulations that might apply to your business in the event of a flood. The following could provide guidance on the right actions to take:

- Occupational health and safety regulations;
- Environmental regulations.



Important contacts

Make a list of important telephone numbers, including contacts for gas, electricity, water and telephone providers.

Key locations

- **Know the location** of cut-off points for gas, electricity and water. Ideally, these should be marked on a map that is stored with your flood plan;
- Know the location of chemicals, oils or other materials that could be dangerous or contaminate flood water. These should be stored safe from floods and other damage.

Protective actions

- Note key stock, equipment and possessions that may need special protection from flood water;
- Consider things you may need during or after a flood (for example, sandbags, plastic sheeting, loudspeaker);
- See if it's **possible to move key operations**, such as shipping or customer services, to another building.

Suppliers and external links

- Identify products and services you won't need in the event of a flood, or which suppliers may not be able to provide. **Make back-up plans** or arrangements for short-notice cancellation of deliveries;
- Consider contracting in advance with companies whose help you may need after a flood.

business checklist

Are you prepared for flooding?

If you answer no to any of the questions overleaf, there may be more you can do to protect your business.

The individual sections will give you valuable information on effective actions you can take to prepare for a flood.



If you can answer yes, please ☒, otherwise leave blank for no.

Know if you're at risk

- ☐ Do you know if you're at risk of flooding?
- ☐ Are flood warnings available in your area?
- ☐ Do you know how you can receive flood warnings?

Preparing a flood plan

- ☐ Do you know how your business will respond to a flood?
- ☐ Do you have a list of useful numbers including Floodline, local authority and insurance company?
- ☐ Do you know how to shut off your gas/electric/water supplies?
- ☐ Are your stock, fittings and valuable equipment stored above flood level?
- ☐ Have you developed flood contingency plans with suppliers and/or clients?
- ☐ Can you call someone to help you in the event of a flood?

Staff training and evacuation

- ☐ Are you aware of correct flood safety procedures for you and your staff?
- ☐ Have you trained your staff on flood safety procedures?
- ☐ Can your staff work quickly and efficiently to protect your business in the event of a flood?

Protecting your property

- ☐ Have you installed flood protection products?
- ☐ Do you have a stockpile of useful materials including plywood, plastic sheeting, sandbags (unfilled), sand, nails, hammer, shovel, blocks of wood and a saw?
- ☐ Have you installed non return valves in your toilets and drains?
- ☐ Do you and your staff have high ground where you can park your cars?
- ☐ Are your electrical sockets above flood level?
- ☐ Do you have computer equipment in the basement?

Flood insurance

- ☐ Do you have sufficient insurance cover in the event of a flood situation?
- ☐ Do you know what information your insurer will require to support a claim?

Evacuation

- ☐ Do you have an easy way to let your staff know about an evacuation?
- ☐ Do you know which roads will stay open in your area during a flood?
- ☐ Have you identified where staff can shelter in the event of a flood?
- ☐ Could you control staff panic during a flood?

understand your flood warning codes

Our warning service has three types of warnings - Flood Alert, Flood Warning and Severe Flood Warning - that will help you prepare for flooding and take necessary actions.

ONLINE FLOOD RISK FORECAST

What it means

Be aware.
Keep an eye on the weather situation.

When it's used

Forecasts of flooding on the Environment Agency website are updated at least once a day.

What to do

- Check weather conditions.
- Check for updated flood forecasts on our website.



FLOOD ALERT

What it means

Flooding is possible.
Be prepared.

When it's used

Two hours to two days in advance of flooding.

What to do

- Be prepared to act on your flood plan.
 - Prepare a flood kit of essential items.
 - Monitor local water levels and the flood forecast on our website.
-



FLOOD WARNING

What it means

Flooding is expected.
Immediate action required.

When it's used

Half an hour to one day
in advance of flooding.

What to do

- Move staff, stock and valuables to a safe place.
 - Turn off gas, electricity and water supplies if safe to do so.
 - Put flood protection equipment in place.
-



SEVERE FLOOD WARNING

What it means

Severe flooding.
Danger to life.

When it's used

When flooding poses a
significant risk to life.

What to do

- Stay in a safe place with means of escape.
 - Be ready should you need to evacuate.
 - Co-operate with the emergency services.
 - Call 999 if you are in immediate danger.
-

WARNING NO LONGER IN FORCE

What it means

No further flooding is
currently expected in
you area.

When it's used

When river or sea
conditions begin to
return to normal.

What to do

- Be careful. Flood water may still be around for several days.
 - If you've been flooded, ring your insurance company as soon as possible.
-

useful contacts

Fill in the contact details you may need if your business floods.
Keep it in a safe place, where you can hold of it quickly.

	Company name	Telephone number/s
Environment Agency Floodline		0345 988 1188
Electricity supplier and meter number		
Gas supplier and meter number		
Water supplier and meter number		
Telephone provider		
Local authority emergency services		
Insurance company 24-hour number and policy number		
Insurance agent		
Local radio station for news alerts and weather updates		
Companies that may be able to help you after a flood		
Electrician		
Plumber		
Builder		
Equipment repair/suppliers		
Security services		
Water pumping services		
Emergency power suppliers		

**Would you like to find out more about us,
or about your environment?**

Then call us on

08708 506 506* (Mon-Fri 8-6)

email

enquiries@environment-agency.gov.uk

or visit our website

www.gov.uk/environment-agency

incident hotline 0800 80 70 60 (24hrs)

floodline 0345 988 1188 (24hrs)

*** Weekday Daytime calls cost 8p plus up to 6p/min from BT Weekend Unlimited. Mobile and other providers' charges may vary.**



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