J Allcock & Sons Ltd

Ambrose Street, Manchester

Flood Risk Assessment

LM3005–AAS-LE-GEN-XX-RP-CE-FRA01-Flood Risk Assessment

January 2021

linkeng.co.uk

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1 INTRODUCTION

1.1 Background

1.1.1 Link were commissioned by J Allcock & Sons Limited to prepare a Flood Risk Assessment and associated Drainage Strategy in respect to a proposed development off Ambrose Street, Manchester. As required by Manchester City Council (MCC), the Local Planning Authority, this report has been prepared to provide a site specific Flood Risk Assessment and Drainage Management Plan in support of a planning application.

1.1.2 The proposed development is the construction of a new commercial unit and covered storage area in place of an existing unit and area of external hardstanding. The site is currently occupied by a number of existing commercial units which are currently operational as part of the J Allcock & Sons works.

1.2 Site Location

1.2.1 The proposed site is located approximately 3.5km to the west of Manchester city centre in the Openshaw area of the city. The site is situated between Ambrose Street to the north and Textile Street to the south, the Corn Brook runs through the centre of the site from east to west. There are existing commercial units to the west, with residential dwellings to the south on the opposite side of Textile Street.

- The Nearest Post Code is M12 5DD.

1.3 Topography

1.3.1 A detailed topographical survey of the site has been completed and this is included at Appendix A of this report. It shows that the site falls towards the centre of the site where the Corn Brook runs through the site. The site is retained against the adjoining Textile Street to the south which is approximately 2m higher than the level of the site. There are a number of existing commercial units on the site and as such the site can be considered to be 100% impermeable in its current state.

1.4 Ground conditions

1.4.1 Previous ground investigation works have been undertaken on the site and these found that the site was underlain by clays on top of a mudstone bedrock. These ground investigation works reaffirm the publicly available BGS data, which indicates that the site is likely to be underlain by Mudstone of the Etruria Formation. Due to the cohesive nature of these clays and mudstone it is not considered that infiltration shall provide a suitable means of disposal for the surface water runoff from the proposed development and as such this has not be explored further.

1.5 Watercourses

1.5.1 The nearest watercourse to the site is the Corn Brook that runs through the site in a westerly direction. The Corn Brook is a tributary of the Manchester Ship Canal. Other watercourses in the area include the Rive Medlock, 1.4km to the north and the River Tame 5.5km to the east. The Audenshaw Reservoir is 3.5km to the east, beyond both the Upper & Lower Gorton Reservoir approximately 2km to the east.

1.6 Drainage

1.6.1 A drainage survey has been undertaken which demonstrates that the existing foul drainage within the site drains to the foul sewer in Ambrose Street, with the surface water draining either to the Corn Brook or to the surface water sewer in Textile Street. The surface water from the area of the site to be developed currently drains to the surface water sewer in Textile Street. These existing outfalls shall be utilised by the proposed unit.

1.7 Flood Zones and Vulnerability Classification

1.7.1 The formal flood zone mapping approved by the government and prepared for use in the planning process, identifies areas potentially at risk of flooding from fluvial or tidal sources without taking into account the presence of flood defences or structures such as culverts or minor watercourses. An extract from the mapping is included in Figure 1 below:

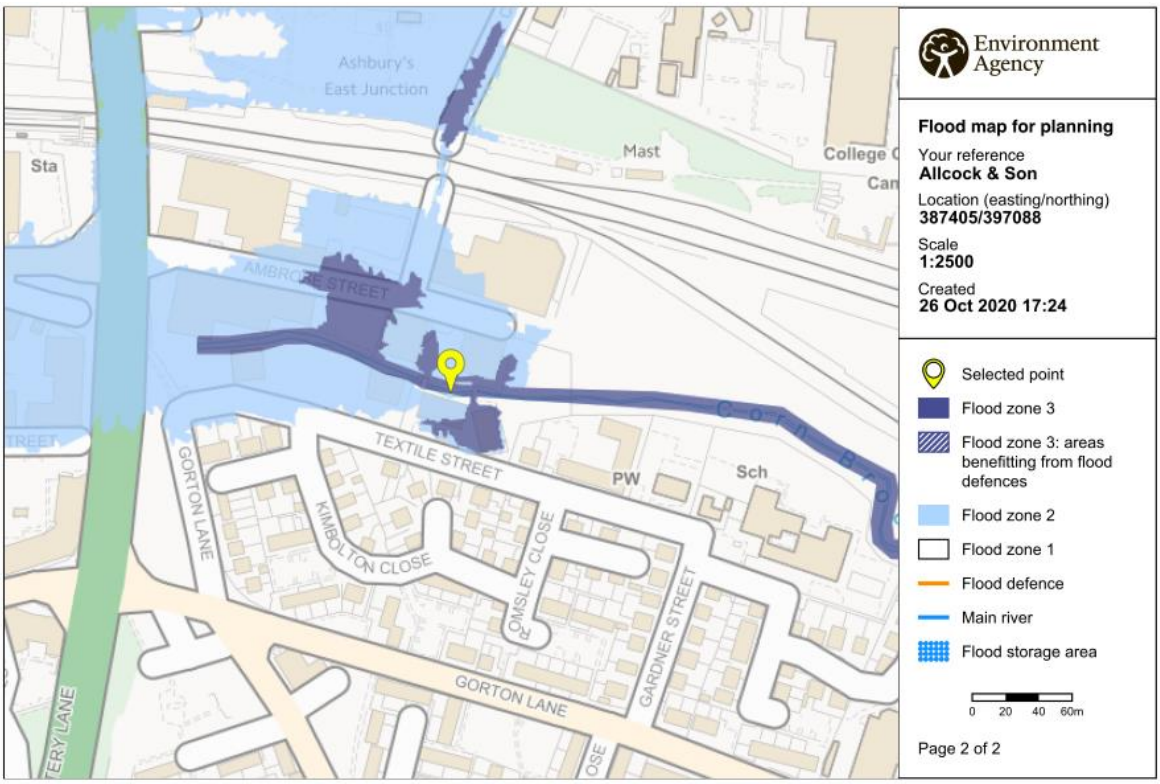


Figure 1: Flood Map for Planning

1.7.2 The formal flood zone mapping shows that the site is situated in a mixture of Flood Zones 2 & 3. As such the Product 4 data was requested off the Environment Agency to establish the modelled river levels and as such determine the true extent of these flood zones. The modelled river levels were plotted against the topographical survey of the site and this demonstrated that the existing building proposed to be replaced is situated within Flood Zone 3. Table 1 below indicates what uses of land are appropriate for each flood zone. This is set out within Table 3 – Flood risk vulnerability and flood zone 'compatibility' of the NPPF. The proposed use would be defined as Less Vulnerable so hence the current proposed use is deemed acceptable within the Flood Zone 2 & 3a areas of the site.

	Essential Infrastructure	Highly Vulnerable	More Vulnerable	Less Vulnerable	Water Compatible
Zone 1	✓	✓	✓	✓	✓
Zone 2	✓	Exception Test	✓	✓	✓
Zone 3a	Exception Test	✗	Exception Test	✓	✓
Zone 3b	Exception Test	✗	✗	✗	✓

Table 1 - Flood risk vulnerability and flood zone 'compatibility'

1.8 National Planning Flood Risk Policies Relevant to this Development

1.8.1 The National Planning Policy Framework (NPPF) was last revised by the Ministry of Housing, Communities & Local Government (MHCLG) on 19th June 2019. The NPPF is supported by the Planning Practice Guidance (PPG) with specific advice set out on how to take account of and address the risks associated with flooding in the planning process.

1.8.2 The requirement for conducting a FRA as part of a planning application is set out in Footnote 50 on page 47 of the NPPF, which states:

"A site-specific flood risk assessment should be provided for all development in Flood Zones 2 and 3. In Flood Zone 1, an assessment should accompany all proposals involving: sites of 1 hectare or more; land which has been identified by the Environment Agency as having critical drainage problems; land identified in a strategic flood risk assessment as being at increased flood risk in future; or land that may be subject to other sources of flooding, where its development would introduce a more vulnerable use."

1.8.3 In this case a site specific FRA is required due to part of the site being situated within Flood Zone 3.

1.8.4 Paragraphs 30-32 of the PPG clarifies the scope and detail that is required in relation to a flood risk assessment, as follows:

"A site-specific flood risk assessment is carried out by (or on behalf of) a developer to assess the flood risk to and from a development site. Where necessary (see footnote 5 in the National Planning Policy

Framework), the assessment should accompany a planning application submitted to the local planning authority. The assessment should demonstrate to the decision-maker how flood risk will be managed now and over the development's lifetime, taking climate change into account, and with regard to the vulnerability of its users (see Table 2 – Flood Risk Vulnerability).

- *The objectives of a site-specific flood risk assessment 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;*
- *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.*

The information provided in the flood risk assessment should be credible and fit for purpose. Site-specific flood risk assessments should always be proportionate to the degree of flood risk and make optimum use of information already available, including information in a Strategic Flood Risk Assessment for the area, and the interactive flood risk maps available on the Environment Agency's web site.

A flood risk assessment should also be appropriate to the scale, nature and location of the development. For example, where the development is an extension to an existing house (for which planning permission is required) which would not significantly increase the number of people present in an area at risk of flooding, the local planning authority would generally need a less detailed assessment to be able to reach an informed decision on the planning application. For a new development comprising a greater number of houses in a similar location, or one where the flood risk is greater, the local planning authority would need a more detailed assessment.

To assist the developer, the local planning authority should set out and agree the scope of the flood risk assessment, using the Environment Agency Standing Advice on flood risk, or in direct consultation with the Agency and/or any other relevant flood risk management bodies. Applicants for planning permission (or prior approval in the case of certain permitted development rights) will find the Agency's advice on assessing flood risk for planning applications helpful when preparing a site-specific flood risk assessment for, and before designing, a development that raises lower risk concerns."

1.8.5 For certain types of flood sensitive development, NPPF describes how the Local Planning Authority (LPA) should check that the site proposed has the lowest frequency of flooding of those available for the development. This check is called the "Sequential Test". All development that is identified in the Development Plan has been Sequentially Tested using the LPA's Strategic Flood Risk Assessment (SFRA).

1.8.6 As Paragraph 162 of the NPPF goes on to state:

"Where planning applications come forward on sites allocated in the development plan through the sequential test, applicants need not apply the sequential test again."

1.8.7 "Non-Statutory Technical Standards for Sustainable Drainage Systems" published by Department for Environment, Food and Rural Affairs in March 2015 sets out Government expectations for surface water drainage systems serving major developments to restrict discharges to green field rates. The standards do not address the quality of surface water discharges and state circumstances when the discharge rate can be higher than green field, up to the existing flow in the case of redevelopment of brown field sites.

1.9 Local Planning Policy Guidance

1.9.1 The local development plan for the region is set out in Manchester's Local Development Framework Core Strategy document. This sets out the planning policy for the area for the period 2012 to 2027 and was formally adopted on 11th July 2012.

1.9.2 The above mentioned documents include the following relevant planning policies as set out below:

1.9.3 Policy EN8 – Adaption to Climate Change:

"All new development will be expected to be adaptable to climate change in terms of the design, layout, siting and function of both buildings and associate external spaces. In achieving developments which are adaptable to climate change developers should have regard to the following, although this is no an exhaustive list:

- *Minimisation of flood risk by appropriate siting, drainage, and treatment of surface areas to ensure rain water permeability.*
- *Reduction in urban heat island effect through the use of Green Infrastructure such as green roofs, green walls, increased tree cover and waterways*
- *The need to control overheating of buildings through passive design*
- *The opportunity to provide linked and diverse green space to enhance natural habitats which will assist species adaption*

Developers will be permitted to use green infrastructure elements such as green roofs, green walls, street trees and waterways to contribute to compliance with CO_2 mitigation under Policy EN6, subject to sufficient evidence to quantify their contribution to compliance."

2 FLOOD RISK

2.1 Flood Risk from Rivers and Watercourses

2.1.1 The site is shown on the government approved flood maps, see Figure 1 above, to be located in a combination of Flood Zones 2 & 3. The extent of flooding from watercourses is demonstrated in the flood map reproduced in Figure 2 below. This demonstrates that the site is at risk of flooding from this source and as such the modelled flood data for the watercourse was requested off the Environment Agency. This data is included at **Appendix C**. This data was then plotted against the topographical survey undertaken for the site to demonstrate the true extent of the flood zones.

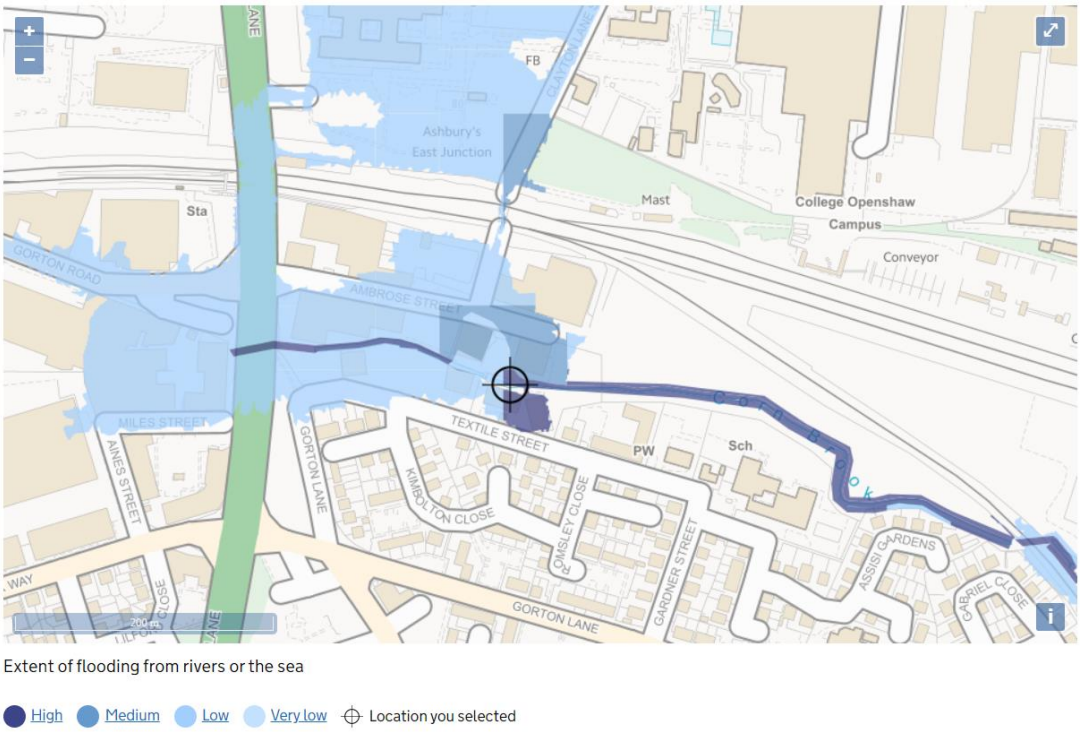


Figure 2 - Flooding from Watercourses

The Flood Zones are defined as follows:

- Flood Zone 1 – Land assessed as having less than 1 in 1,000 annual probability of river or sea flooding;
- Flood Zone 2 – Land assessed as having between 1 in 100 and 1 in 1,000 annual probability of flooding from rivers or between 1 in 200 and 1 in 1,000 annual probability of flooding from the sea;
- Flood Zone 3 – Land assessed as having greater than 1 in 100 annual probability of flooding from rivers or greater than 1 in 200 year probability of flooding from the sea.

2.1.2 On the basis of the plotted flood data, the existing unit is shown to be located within Flood Zone 3.

2.1.3 In line with Environment Agency advice an allowance for climate change should be added to the river model in order to ensure flood resilience in design of any proposals. As the site use is considered to be

'Less Vulnerable' this allowance should be a freeboard of 150mm above the 1% annual probability of flooding. In this case this would mean a FFL of 51.76m AOD in comparison to a 1 in 100 year flood level of 51.607m AOD, at the access to the proposed unit. This is 330mm higher than the existing building currently in this location which has an FFL of 51.43m AOD.

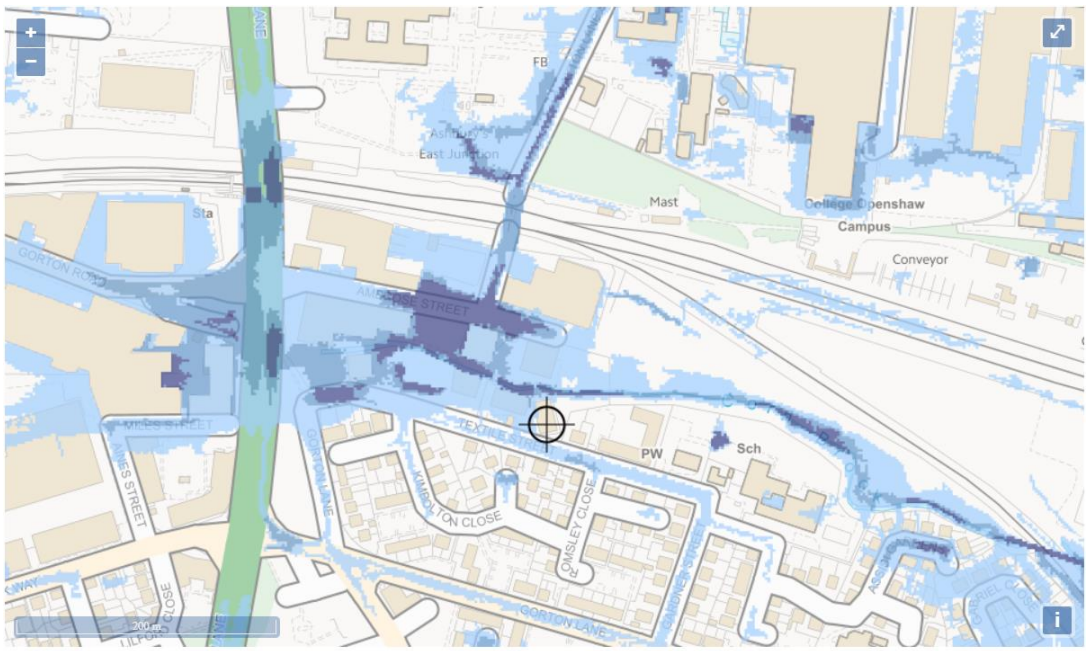
2.1.4 A drawing demonstrating the true extent of the flood zones and the proposed finished floor level of the unit is included at Appendix D.

2.2 Flooding from the Sea

2.2.1 The site is situated approximately 35km away from the closest tidal waters and as such is a considerable distance from the sea, and at an elevation well above sea level, to mitigate any risk of flooding from the sea.

2.3 Flooding from Land

2.3.1 A principle source of flood risk to the site could be from surface water flooding created by the site itself or adjacent areas. Based on the Surface Water Maps available, see Figure 3 below, there are a few areas of the site that are shown to be at risk of surface water flooding. This is to be expected as the water will try to make its way to the low point of the catchment, the Corn Brook that runs through the middle of the site. It should be noted that the external levels on the site shall be designed as such to guide water away from the buildings and towards the brook in order to minimise the flood risk to the proposed building. Furthermore the proposed unit shall be served by a positive surface water drainage network that shall intercept the surface water flows and discharge them off site. Finally, existing overland flow routes between buildings shall be retained within the proposed scheme.



Extent of flooding from surface water

High Medium Low Very low Location you selected

Figure 3 - Flooding from Surface Water

2.4 Flooding from Groundwater

2.4.1 According to The Manchester City SFRA (March 2011) produced by JBA references groundwater flooding in the area, however this tends to be limited to areas underlain by alluvium. As our site is underlain by cohesive clays, and it is not proposed to reduce the ground levels on the site, it is expected that the site shall be at low risk of flooding from groundwater.

2.5 Flooding from Sewers

2.5.1 Flooding can occur from other sources such as blocked drains and sewers. The Manchester City SFRA (March 2011) makes reference to Local Drainage Issues identifying inundation (flooding) due to poor maintenance associated with United Utilities maintenance regimes. Once reported these incidents are recorded by United Utilities and funding is put in place to address the issues under their obligations as local water authority. The sewers within Ambrose Street would have been designed to adoptable standards and are maintained in perpetuity by the local water company, reducing the risk of flooding from this source. As such the risk of flooding from sewers is considered low.

2.6 Flooding from Reservoirs, Canals and Other Artificial Sources

2.6.1 The reservoir flood map shown in Figure 4 shows the extent of flooding should a canal, reservoir or other artificial source breach upstream of the development. This shows that the site would be at risk of flooding from this source. It should be noted that a reservoir breach is a rare occurrence and as such the probability of a breach is extremely low. In order to mitigate this flood risk it is suggested that the occupier of the site sign up for flood warnings and an appropriate evacuation plan is put in place so that in the event of a breach the occupiers of the site can evacuate the site.

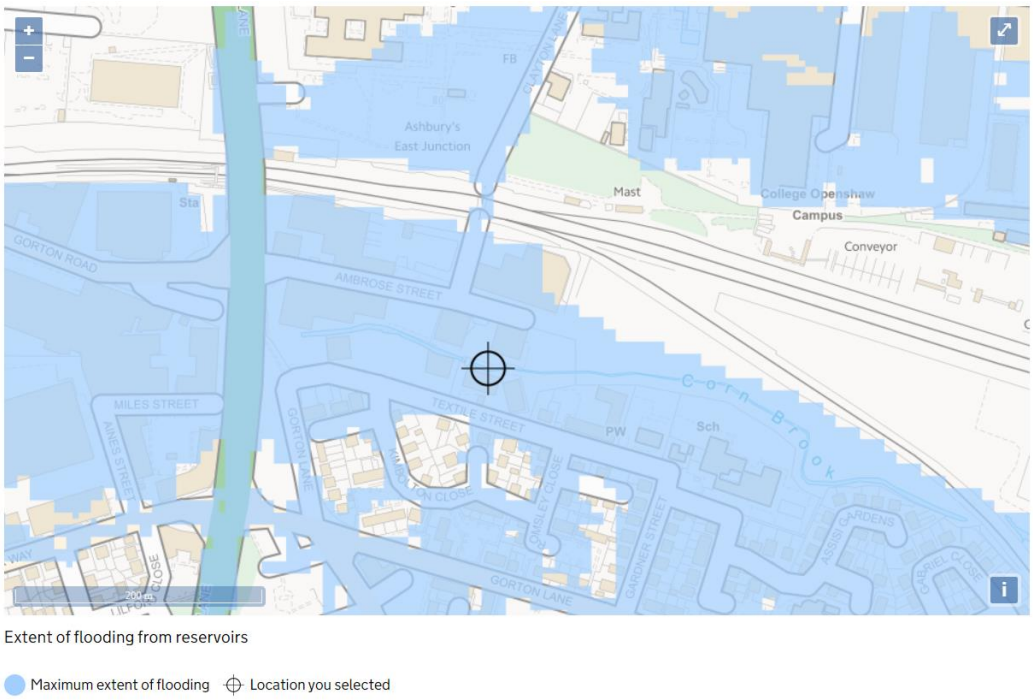


Figure 4: Flooding from Reservoirs

3 MITIGATION

3.1 Flood Risk Management

3.1.1 The following flood risk management measures are considered to mitigate the risks identified above:

- Wherever possible, the external ground profile in the development will ensure that surface water is directed away from the buildings towards the Corn Brook, with particular focus to ensure surface water flood risk, as noted in 2.3, is directed away from the buildings.
- The finished floor level of the unit shall be set 150mm above the 1 in 100 year level of the Corn Brook.
- The proposed development will incorporate a positive surface water drainage system, described further in Section 4, which will intercept runoff from roofs and paved areas before discharging flows offsite.
- A flood evacuation plan should be produced so that in times of flood the occupiers of the units know how to evacuate areas vulnerable to flooding and make their way to safety.

3.2 Residual Risks

3.2.1 Residual risks are the risks that remain once the flood risk management measures described above have been implemented. These are typically associated with extreme rainfall events that overwhelm drainage systems, exceeding the water levels used to design mitigation measures. The primary residual risks that will affect this development are:

- An extreme rainfall event which exceeds the capacity of the proposed surface water drainage system to both intercept and convey the flows. During such an event, water that is unable to enter the formal drainage system will flow over the ground through the development. The risk can be reduced by designing site levels to direct any runoff towards the brook; and,
- A rainfall event that exceeds the capacity of surrounding off-site drainage networks could also result in runoff entering the site via routes other than the highways.

3.2.2 As the unit is still situated in Flood Zone 2 a Flood Warning & Evacuation Plan has been produced to advise the occupants of the unit on the actions they should take in order to be prepared for a flood scenario. This document should be considered as a live document and amended as time passes to better suit the requirements of the occupants and to adapt to any changes in circumstances. This document is included at Appendix E.

4 PROPOSED DRAINAGE STRATEGY

4.1 Outfall Assessment

4.1.1 As required by Part H of Building Regulations and paragraph 7-080 of the PPG, the required Drainage Hierarchy has been considered in the development of this strategy as summarised in Table 2 below.

Outfall Option	Available Option	Comment
Infiltration Drainage	×	The use of infiltration outfall has been discounted due to the underlying cohesive ground on the site.
Watercourse	×	The use of a watercourse as a storm drainage outfall has been considered. However, as there is an existing drainage network in the site that drains to the surface water sewer in Textile Street, this has been discounted due to cost and to maintain the status quo of surface water flows.
Surface Water Sewer	✓	An existing outfall to a surface water sewer in Textile Street has been picked up on the drainage survey. It is therefore proposed to re-use this existing drainage network and outfall to serve the proposed development.
Combined Sewer	×	This has not been considered for this development.

Table 2 – Outfall Assessment

4.2 Proposed Surface Water Drainage Strategy

4.2.1 The existing surface water from the area is collect via a drainage system comprising of gutters, down pipes, channels, gullies and pipes. This collects all rainwater on the site from the existing roof areas, hard landscaping and car parking. It is then discharged offsite to a surface water sewer in Textile Street.

4.2.2 Due to the small scale of the development area, approximately 0.05ha, and the existing 100% impermeability, it is not proposed to restrict the discharge from the development or provide any attenuation. As the development proposals for the site do not increase the impermeable area draining offsite the level of flood risk to the wider catchment shall not increase.

4.2.3 The re-use of the outfall to the surface water sewer in Textile Street is preferred to a new outfall to the Corn Brook in order to maintain the status quo of surface water catchments and reduce the risk of increasing the flood risk associated with the Corn Brook by discharging flows directly to the watercourse.

4.2.4 Surface water treatment shall be provided by the following measures that are to be included within the surface water drainage system to improve water quality prior to discharge offsite.

- Trapped gullies.

4.3 Exceedance Flows

4.3.1 As discussed in Section 3 above, in an extreme rainfall event the drainage network could become overwhelmed and surface water may begin to flow across the surface of the development. It is advised that the external levels around the unit are designed to direct surface water away from the unit and towards the Corn Brook. This shall help reduce the flood risk to the unit.

4.4 Foul Water Drainage Strategy

4.4.1 The existing site is brownfield with existing buildings situated on the site. It is therefore expected that the site shall be served by existing foul water infrastructure that connects into the UU foul water network in Ambrose Street.

4.4.2 Based on the size of the development any proposed foul flows from the unit would be negligible and as such it is anticipated that due to the likely existing connectivity to the sewers in Ambrose Street that the UU network shall have sufficient capacity to accommodate these flows. However, at this stage no foul provision is considered to be required for the new unit.

4.4.3 It should be noted that in line with the Water Industry Act (1991), a developer has a right to connect to a public sewer and should one not be available, UU, as local water company, are obligated to provide one subject to appropriate timescales and costs.

4.4.4 Based on the above it is anticipated that a suitable outfall to the sewers in Ambrose Street could be accommodated to serve the development.

5 Drainage Management Plan

5.1 Responsibility

5.1.1 J Allcock & Sons Ltd shall be responsible for the maintenance and operation of the private drainage within the development.

5.2 Maintenance of Pipe Networks

5.2.1 Maintenance and management of main storm drains and chambers inclusive of pipework from paved areas and buildings (but excluding internal building drainage) should be visually inspected and jetted/cleaned as required. As a minimum, this should be carried out every 5 years. Methods of inspection to give indications of blockages etc. may include:

- Pulling a mandrel through the pipe to identify physical faults (e.g. disjointed pipes).
- A sumped catchpit upstream of the attenuation structure;
- Flushing/jetting.
- CCTV.
- Measurement of water depths in pipe entries, catchpits or interceptors along a drain run may identify potentially blocked pipes.

5.2.2 Gully gratings, manhole gratings and channel gratings shall be visually inspected at least once every year and replaced or re-set if damaged or dislodged. Gullies should be inspected at least once every year, ideally during spring time as the autumn and winter seasons produce the most detritus build up in the form of leaves, litter and silt. This material should be removed from the channels and disposed of at a licensed tip; it should not be tipped in other areas of the development as it may pose a pollution threat to the surrounding drainage system.

5.2.3 Jetting should only be carried out after removal of the silt and debris, as jetting alone will simply wash the debris further downstream without removing the problem.

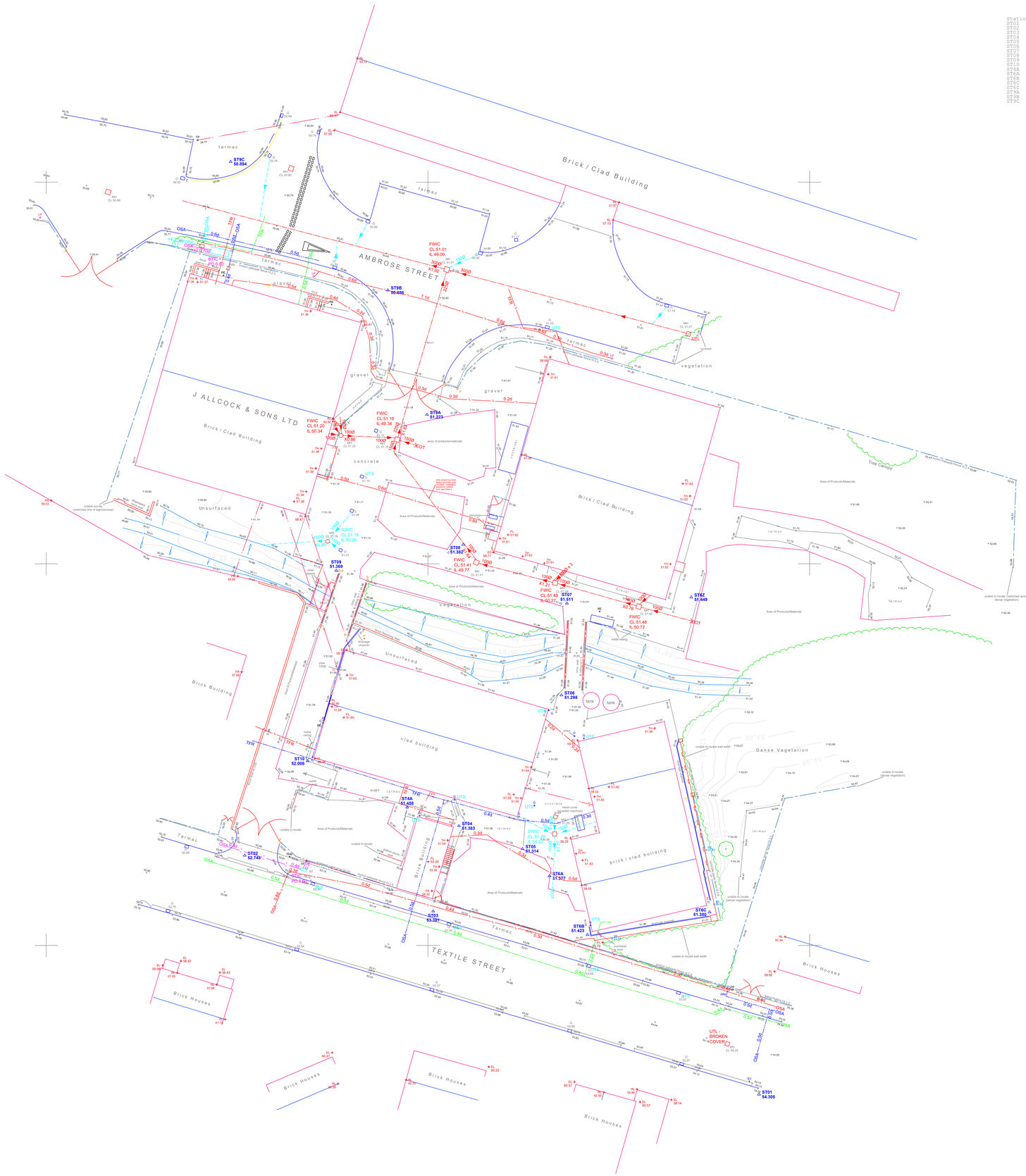
6 CONCLUSION

6.1.1 This site-specific FRA has been prepared in accordance with the NPPF and its associated guidance, as well as local planning policy. The flood risk to the site has been assessed against its intended use and the flood zone within which it sits. This has concluded that the site is at risk of flooding from the Corn Brook but suitable mitigation measures can be put in place to ensure that the proposals for the site can be brought forward in a safe manner. Furthermore as the site is already developed no additional hardstanding shall be added and as such the flood risk to the adjacent properties shall not increase.

6.1.2 The drainage strategy demonstrates that an appropriate drainage system for both foul and surface water can be provided. The surface water catchment from the developable area of the site has been maintained as existing, ensuring that the site shall not increase flood risk to the wider catchment.

APPENDICES

APPENDIX A – Topographical Survey



Station	Easting	Northing	Level
ST01	387443.366	397030.491	54.305
ST02	387375.993	397061.793	52.748
ST03	387400.684	397054.488	53.381
ST04	387404.021	397065.832	51.383
ST05	387412.386	397062.968	51.314
ST06	387416.183	397066.568	51.298
ST07	387418.193	397034.930	51.511
ST08	387404.622	397102.527	51.362
ST09	387387.989	397099.121	51.369
ST10	387384.242	397074.170	52.008
ST4A	387397.282	397068.107	51.458
ST6A	387415.916	397059.110	51.377
ST6B	387420.894	397051.403	51.423
ST6C	387436.887	397054.365	51.380
ST6Z	387434.498	397085.630	51.449
ST9A	387399.879	397119.542	51.223
ST9B	387394.749	397132.852	50.856
ST9C	387374.157	397152.690	50.894

Electromagnetic and/or Ground Penetrating Radar techniques have been used to locate/map underground utilities and features on this drawing. Intersect Surveys Ltd has made every endeavour to make sure that the information contained within this drawing is accurate and of the highest quality. Intersect Surveys Ltd has used any record drawings provided by the client or by the Statutory Utility Providers, at the client's request, at the time of the survey. Any information taken from these drawings (e.g. pipe sizes and position) is not guaranteed. Historic record information is often incomplete and inaccurate and cannot be relied upon. Intersect Surveys Ltd is not liable for any topographical survey that has not been undertaken by us. Any inaccuracies relating to topographical plans/development plans/Ordnance Survey data that we have no control over is the liability of the customer. Where quoted, depth information of underground services/features is stated. Depths are generally within +/10% accurate, but cannot be guaranteed. Any depths shown on drains are usually to invert (base of drainage channel) unless otherwise stated. At Intersect Surveys Ltd we use skilled staff and modern, calibrated equipment to perform our surveys. However, the completeness of any underground survey cannot be 100% guaranteed and the results from these types of surveys are not infallible. If the location or depth of services/features is of particular importance to a project then it is strongly recommended that discussions are held with Intersect Surveys Ltd regarding any possible limitations or anomalies. It is also strongly advised that trial excavations should be undertaken to confirm survey results. We cannot be held responsible for any inaccuracies beyond those that could be reasonably expected by a competent company.

ABBREVIATIONS (Land & Utilities)

AR	ASSUMED ROUTE	AO	HDRB OUTLET	Sig	SIGNAL LOST
AV	AIR VALVE	Ltx	LATERALT	SP	SIGN POST
BB	BELISHA BEACON	LG	LOCK GATE	SPS	SWEET PLIND
BH	BORE HOLE	LP	LAMP POST	SV	SLUICE VALVE
Bol	BED LEVEL	LT	LAMP HOLE	SPL	SAMPLING POINT
BOL	BOLLARD	LV	LOW VOLTAGE	Sq	SQUARE
BWM	BASEMENT HATCH COVER	LV	LOW VOLTAGE	St	STILE
BT	BT TEST POINT / LINE	Lvl	LEVEL TO TOP	STL	STRUCTURE TOP LEVEL
BL	BASEMENT LIGHT	MT	METERS HIGH	Stp	STUMP (TREE)
Bol	BOLLARD	Mcy	MACHINERY	SP	STAND PIPE
BP	BUS PASSENGER POST	Mkr	MARKER	SP	STAND PIPE
BS	BUS STOP	Mkr	MARKER POST	SW	STAY WIRE
BTO	BRITISH TELECOM CHAMBER	Mkr	MARKER POST (ELECTRIC)	SV	STOP VALVE
CAB	CABINET (GENERAL)	Mkr	MARKER POST (GAS)	Sym	SYMPATHETIC
CATV	CABLE TV COVER	Mkr	MARKER POST (RAILWAY)	TBM	TEMPORARY BENCH MARK
CB	CATCH BASIN	Mkr	MARKER POST (TELECOM)	TC	TRAFFIC CONTROL BOX
CBr	CONVEYOR BELT	Mkr	MARKER POST (WATER)	TEL	TELECOM CHAMBER COVER
CC	CABLE CONDUIT	MS	MILE STONE	Tm	TIMBER PILE (GENERAL)
Cctv	CATTLE GRID	NE	NILE STONE	Tm	TIMBERS (CLIFFS)
CN	CHANNEL LEVEL	NL	NOT LOCATED	TL	TRAFFIC LIGHT
CO	CLEAN OUT	OB	OBSERVATION	TP	TELEGRAPH POLE
CI	CAST IRON	OGA	OUTSIDE SURVEY AREA	Tpl	TRIAL PIT
CL	COVER LEVEL	OSBM	O.S BENCH MARK	T	TRENCH
CP	CONCRETE POST	OHCL	OH CABLE (UNIDENTIFIED)	UTA	UNABLE TO FIND
CP	CABLE PIT	OHCL	OH CABLE (UNIDENTIFIED)	UTGA	UNABLE TO GAIN ACCESS
Cpn	CAPSTAN (ELECTRIC)	OHCL	OVERHEAD CABLE (ELECTRIC)	UTH	UNABLE TO HEAR
Cpn	CAPSTAN	OHCL	OVERHEAD CABLE	UTS	UNABLE TO SEE
CR	CABLE RISER (GAS)	OHCL	OVERHEAD CABLE	UTT	UNABLE TO TRACE
CR	CABLE RISER	OHCL	OVERHEAD CABLE (TELECOM)	UTO	UNABLE TO TRACE
Cs	CROWN (EVE)	OP	OUTLET PIPE	VC	VITRIFIOUS CLAY
CW	CATCH WATER	P	PIPE	VP	VENT PIPE
CWM	CABLE WINDING MACHINERY	Ph	PARK BENCH	VR	VAPOUR RECOVERY
d	DEPTH	PB	POST BOX	VS	VENTILATION SHAFT
DC	DIRECTION COVER	PC	POLYCARBONATE	WC	WATER CONTROL WHEEL
DS	DIRECTION SIGN	PS	POLYSTYRENE	WB	WHOSEBRIDGE
DTC	DIRECTION CONNECTION COVER	PL	PLANTER	WL	WATER LEVEL
EAC	EDGE OF CANOPY	PL	PILE	WM	WATER METER
EAT	EDGE OF TARMAC	Plmt	PLANMENT DETECTOR	WO	WASTE OUT VALVE
EOT	END OF TRACE	Pmot	PLANT MOTOR DRIVE	WC	WEIR
EP	ELECTRICITY POLE	PP	PETROL / DIESEL PUMP	WL	WEIR LEVEL
ER	ELECTRIC RISER	PS	PLANT SHED	WMP	WHITE MARKER POST
EWM	EMERGENCY WASHER	Pw	PENSTOCK	WWP	WHITE WASTER PIPE
ESP	ELECTRICITY SUPPLY POINT	PU	PUMP		
FB	FOOTBRIDGE (GENERAL)	PVC	POLYVINYL CHLORIDE	FENCE TYPES	
FB	FOOTBRIDGE	PVC	POLYVINYL CHLORIDE	AWF	ARMCO
FL	FLOOR LEVEL	R	RODDING	BWF	BARBED WIRE
FL	FLOOR LEVEL	R	PRECOMETER	BBF	BARRIER BOARDED
FP	FLAG PLATT / POLE	RC	RECTANGULAR	CLF	CORRUGATED IRON
G	GULLY	RG	RAIN GAUGE	CHF	CHAIN LINK
GY	GRITH	RMP	RESERVOIR MONITORING PNT	CPF	CHESTNUT PALING
GP	GUIDE POST (FIRE)	RO	ROAD OUTLET	HF	HERRINGBONE
GP	GUIDE POST	RS	ROAD SIGN	IWF	INTERWOVEN
GPR	TRACES BY G.P.R	RSP	RAILWAY SIGNAL POST	PCF	POST & CHAIN
GV	GAS VALVE	SB	SIGNAL BOX (RAIL)	PIF	POST & INTERNAL
GV	GAS VALVE	S	SPRING	PWF	POST & WIRE
HgE	HEIGHT	SA	SURVEY ABANDONED	PRF	POST & RAIL
HP	HYDRANT POST	SB	SOIL BORING	SBF	SHEEP & BARBED
HV	HIGH VOLTAGE	SH	STILE HOLE (BULL TRAIL)	WMF	WIRE MESH
HVC	HIGH VOLTAGE CHAMBER	SL	SLEEPER		
L	WAYBIT LEVEL	SL	SOFFIT LEVEL		
LB	LAMP BRACKET	SMP	SOIL MONITORING PNT		
JN	JUNCTION	SMP	SETTLEMENT MONITORING PNT		

KEY

TV	CCTV / CABLE TELEVISION
450	COMBINED DRAINAGE
COM	COMMUNICATIONS CABLE
A	COMPRESSED AIR
	DUCTING
E	EARTH CABLE
	ELECTRIC CABLE
EOT	END OF TRACE
150	FOUL DRAINAGE
F	FUEL PIPE
	GAS PIPE
G	GAUGE LINE
H	HEATING
O	OFFSET FILL PIPE
	PUMPING MAIN
M	RADAR AREA ANOMALY
R	RADAR UTILITY TRACE
300	SURFACE DRAINAGE
	SURVEY BOUNDARY
	TELECOM CABLE
TL	TRAFFIC LIGHTS
U	UNIDENTIFIED
VR	VAPOUR RECOVERY
V	VENT PIPE
	WATER PIPE
	O.S BENCH MARK
	SURVEY CONTROL STATION

Revision	Description	Date

Drawing Status:
INFORMATION

INTERSECT SURVEYS
T: 0208 399 3851 M: 07535 236 812
www.intersectsurveys.co.uk

Client:
ENGINEERED SOLUTIONS

Project:
J. ALLCOCK & SONS
MANCHESTER

Title:
UNDERGROUND UTILITY SERVICES LAYOUT

Drawn	Surveyed:	Date
A.J.O.	A.S.	DEC'20
Cad File: 96009-002		Scale 1:200@A0
Drawing Number 96009-002		Revision A

APPENDIX B – United Utilities Correspondence

Matt Clutton

From: Wastewater Developer Services <WastewaterDeveloperServices@uuplc.co.uk>
Sent: 04 November 2020 11:05
To: Matt Clutton
Cc: Wastewater Developer Services
Subject: FW: J Allcock & Sons, Ambrose Street, Manchester - 4200034559
Attachments: Wastewater Pre-development Enquiry - Signed.pdf; Location Plan - UU.pdf; 20200810141104.pdf; 20200810141439.pdf

Good Morning Matt,

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

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

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

Foul Water

Foul flow from this site will be allowed to drain into the public foul water/combined sewer system using the existing connection at an unrestricted rate.

Surface Water

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

Generally, the aim should be to discharge surface run off as high up the following hierarchy of drainage options as reasonably practicable.
This is outlined as follows, in order of priority:

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

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

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

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

Infiltration

Surface water runoff generated from this development should discharge to the ground via infiltration system where feasible. We can see from the ground investigation report, infiltration at this site may not be possible.

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

Particular attention must be paid to Ground Water Source Protection Zones to ensure that the risk of pollution to these valuable resources is not compromised. Details can be obtained from the government website:
https://www.gov.uk/guidance/groundwater-source-protection-zones-spzs#find-groundwater-spzs

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

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

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

Waterbody

If an evidence based assessment has been carried out and confirms that infiltration is not feasible, we recommend that you contact the Lead Local Flood Authority and/or Environment Agency to discuss a point of discharge to the open watercourse located 2m North of the proposed site.

We would encourage you to identify and engage with any third party landowner and riparian owner to agree access and discharge rights to the water body if this is not in your ownership.

Levels

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

Existing Water Assets Crossing the Site

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

Connection Application

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

https://www.unitedutilities.com/builders-developers/larger-developments/wastewater/sewer-connections/

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

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

Kind regards,

Marie Mura
Assistant Developer Engineer
Developer Services & Metering
Customer Services
T: 01925 537745
unitedutilities.com

If you have received a great service today why not tell us?
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Did you know we now have a live chat facility available to you Mon to Friday 8 -5pm. You just click on the orange live chat box on our webpage and one of our advisors will be ready to chat to you and help you with your enquiry https://www.unitedutilities.com/builders-developers/ or you can email us at developerserviceswater@uuplc.co.uk

---

From: Matt Clutton [mailto:matt.clutton@linkeng.co.uk]
Sent: 27 October 2020 13:46
To: Wastewater Developer Services <WastewaterDeveloperServices@uuplc.co.uk>
Subject: J Allcock & Sons, Ambrose Street, Manchester

Dear Sir/Madam,

Please find attached our predevelopment enquiry for the redevelopment of a site to the south of Ambrose Street in Manchester. The surface water shall drain to the Corn Brook.

Kind regards,

Matt Clutton MEng (Hons)
Principal Engineer
Link Engineering

Lombard House | 145 Great Charles Street | Birmingham | B3 3LP
t: 0121 716 0100 | **m:** 07500 525 979 | **e:** matt.clutton@linkeng.co.uk

Noise and Air Quality | Engineering | Transportation

www.linkeng.co.uk

be green, keep it on the screen!

EMGateway3.uuplc.co.uk made the following annotations

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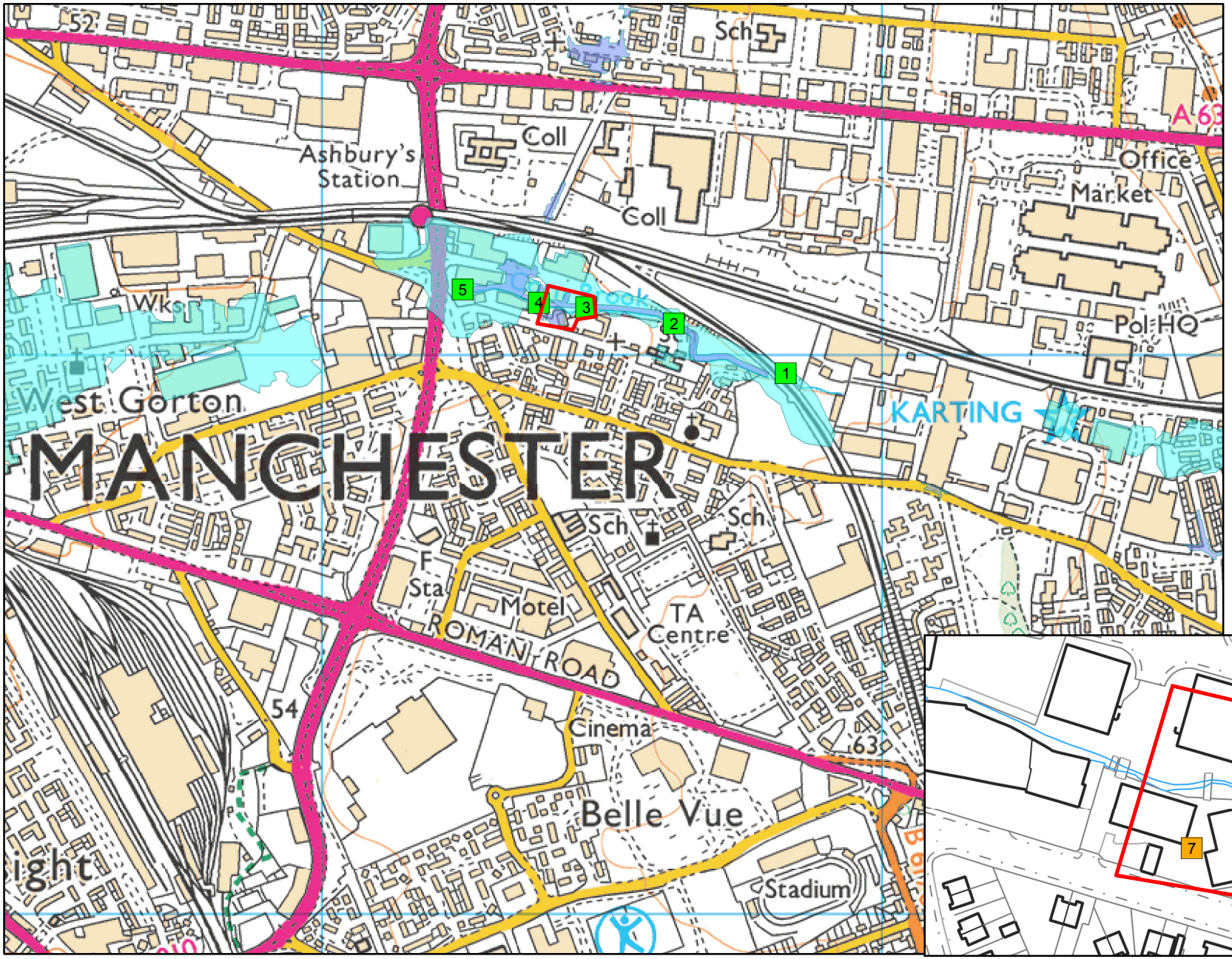
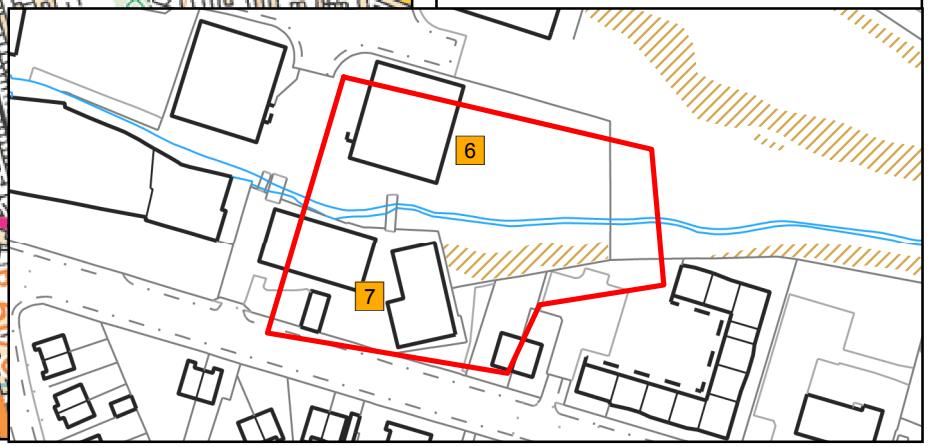
APPENDIX C – EA Flood Data

Detailed Flood Map centred on Ambrose Street, Manchester, M12 5DD. Created on 26/10/2020 [GMMC189935CC]





Environment Agency

1:10,001

N

Legend

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

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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

Extract from EA Corn Brook 2017 Study Modelled Levels

Map Reference	Model Node Reference	Easting	Northing	1% AEP (1 in 100 year)	0.5 % AEP (1 in 200 year)	0.1 % AEP (1 in 1000 year)
3	ea013_0249_mill0164	387472	397084	52.01	52.17	52.49
4	ea013_0249_mill0080	387391	397093	51.31	51.48	51.93
5	ea013_0249_corn7640	387251	397117	49.93	50.82	-

Flood risk assessments: Climate change allowances

Application of the allowances and local considerations

Greater Manchester, Merseyside & Cheshire

1) The climate change allowances

The National Planning Practice Guidance refers planners, developers and advisors to the Environment Agency guidance on considering climate change in Flood Risk Assessments (FRAs). This guidance was updated in February 2016 and is available on Gov.uk and should be read in conjunction with this document. The guidance can be used for planning applications, local plans, neighbourhood plans and other projects. It provides climate change allowances for peak river flow, peak rainfall, sea level rise, wind speed and wave height. The guidance provides a range of allowances to assess fluvial flooding, rather than a single national allowance. It advises on what allowances to use for assessment based on vulnerability classification, flood zone and development lifetime.

2) Assessment of climate change impacts on fluvial flooding

Table A below indicates the level of technical assessment of climate change impacts on fluvial flooding appropriate for new developments depending on their scale and location. This should be used as **a guide only**. Ultimately, the agreed approach should be based on expert local knowledge of flood risk conditions, local sensitivities and other influences. **For these reasons we recommend that applicants and / or their consultants should contact the Environment Agency at the pre-planning application stage to confirm the assessment approach, on a case by case basis**. **Table A** defines three possible approaches to account for flood risk impacts due to climate change, in new development proposals:

- **Basic:** Developer can add an allowance to the 'design flood' (i.e. 1% annual probability) peak levels to account for potential climate change impacts. The allowance should be derived and agreed locally by Environment Agency teams.
- **Intermediate:** Developer can use existing modelled flood and flow data to construct a stage-discharge rating curve, which can be used to interpolate a flood level based on the required peak flow allowance to apply to the 'design flood' flow.
- **Detailed:** Perform detailed hydraulic modelling, through either re-running Environment Agency hydraulic models (if available) or construction of a new model by the developer.

Table A – Indicative guide to assessment approach

VULNERABILITY CLASSIFICATION	FLOOD ZONE	DEVELOPMENT TYPE		
		MINOR	SMALL-MAJOR	LARGE-MAJOR
ESSENTIAL INFRASTRUCTURE	Zone 2	Detailed		
	Zone 3a	Detailed		
	Zone 3b	Detailed		
HIGHLY VULNERABLE	Zone 2	Intermediate/ Basic	Intermediate/ Basic	Detailed
	Zone 3a	Not appropriate development		
	Zone 3b	Not appropriate development		
MORE VULNERABLE	Zone 2	Basic	Basic	Intermediate/ Basic
	Zone 3a	Basic	Detailed	Detailed
	Zone 3b	Not appropriate development		
LESS VULNERABLE	Zone 2	Basic	Basic	Intermediate/ Basic
	Zone 3a	Basic	Basic	Detailed
	Zone 3b	Not appropriate development		
WATER COMPATIBLE	Zone 2	None		
	Zone 3a	Intermediate/ Basic		
	Zone 3b	Detailed		

NOTES:

- Minor: 1-9 dwellings/ less than 0.5 ha | Office / light industrial under 1ha | General industrial under 1 ha | Retail under 1 ha | Gypsy/traveller site between 0 and 9 pitches
- Small-Major: 10 to 30 dwellings | Office / light industrial 1ha to 5ha | General industrial 1ha to 5ha | Retail over 1ha to 5ha | Gypsy/traveller site over 10 to 30 pitches
- Large-Major: 30+ dwellings | Office / light industrial 5ha+ | General industrial 5ha+ | Retail 5ha+ | Gypsy/traveller site over 30+ pitches | any other development that creates a non residential building or development over 1000 sq m.

The assessment approach should be agreed with the Environment Agency as part of pre-planning application discussions to avoid abortive work.

3) Specific local considerations

Where the Environment Agency and the applicant and / or their consultant has agreed that a '**basic**´ level of assessment is appropriate the figures in Table B below can be used as a precautionary allowance for potential climate change impacts on peak 'design' (i.e. 1% annual probability) fluvial flood level rather than undertaking detailed modelling.

Table B – Local precautionary allowances for potential climate change impacts

Watercourse	Central	Higher Central	Upper
All	0.15m	0.24m	0.48m

Use of these allowances will only be accepted after discussion with the Environment Agency.

4) Fluvial food risk mitigation

Read the guidance on Gov.uk to find out which allowances to use to **assess** the impact of climate change on flood risk.

For planning consultations where we are a statutory consultee and our Flood risk standing advice **does not** apply we use the following benchmarks to inform flood risk **mitigation** for different vulnerability classifications. **These are a guide only**. **We strongly recommend you contact us at the pre-planning application stage to confirm this on a case by case basis. Please note you may be charged for this advice.** For planning consultations where we are not a statutory consultee or our Flood risk Standing advice applies we recommend local planning authorities and developers use these benchmarks but we do not expect to be consulted.

- For development classed as '**Essential Infrastructure**' our benchmark for flood risk mitigation is for it to be designed to the '**upper end**' climate change allowance for the epoch that most closely represents the lifetime of the development, including decommissioning.

- For **highly vulnerable** in flood zone 2, the '**higher central'** climate change allowance is our minimum benchmark for flood risk mitigation. In sensitive locations it may be necessary to use the **upper end** allowance.

- For **more vulnerable developments** in flood zone 2, the '**central**' climate change allowance is our minimum benchmark for flood risk mitigation, and in flood zone 3 the '**higher central**' climate change allowance is our minimum benchmark for flood risk

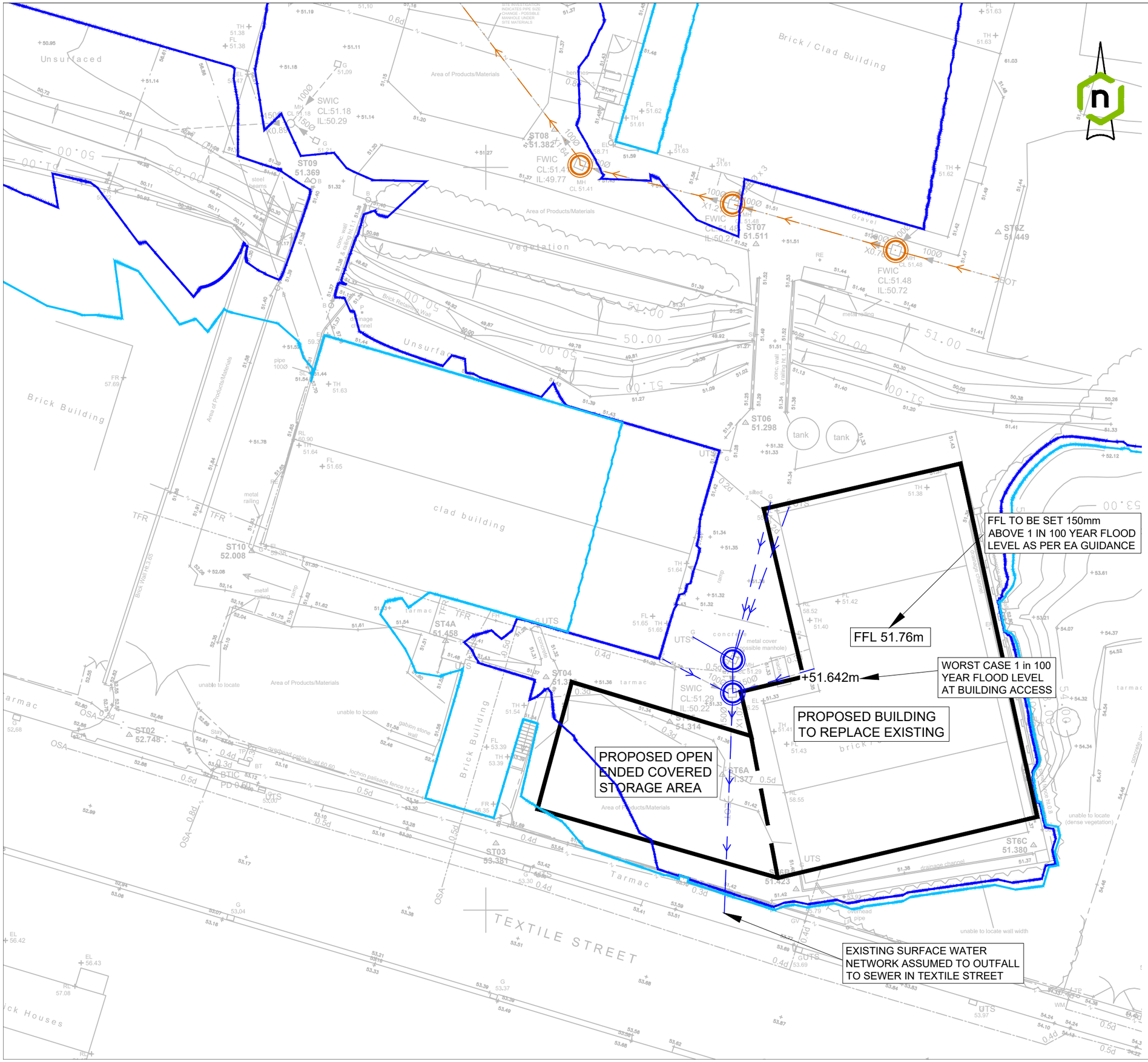
mitigation. In sensitive locations it may be necessary to use the **higher central** (in flood zone 2) and the **upper end** allowance (in flood zone 3).

- For **water compatible** or **less vulnerable** development (e.g. commercial), the '**central**' climate change allowance for the epoch that most closely represents the lifetime of the development is our minimum benchmark for flood risk mitigation. In sensitive locations it may be necessary to use the **higher central** (particularly in flood zone 3) to inform built in resilience.

There may be circumstances where local evidence supports the use of other data or allowances. Where you think this is the case we may want to check this data and how you propose to use it.

END.

APPENDIX D – Flood Zone Extent Plan



GENERAL NOTES

1. THIS DRAWING SHOULD NOT BE REPRODUCED IN WHOLE OR PART WITHOUT THE WRITTEN CONSENT OF LINK ENGINEERING.
2. DO NOT SCALE FROM THIS DRAWING. UNITS ARE IN METRES UNLESS OTHERWISE SPECIFIED.
3. THE CONTRACTOR IS TO CHECK ALL INFORMATION PROVIDED PRIOR TO COMMENCING WORKS AND SEEK CLARIFICATION FROM THE ENGINEER IN RESPECT TO ANY AMBIGUITIES FOUND.
4. THIS DRAWING SHOULD BE READ IN CONJUNCTION WITH ALL OTHER SCHEME SPECIFIC DRAWINGS.

KEY

- FLOOD ZONE 3 EXTENT
- FLOOD ZONE 2 EXTENT
- EXISTING FOUL DRAINAGE
- EXISTING SURFACE WATER DRAINAGE

Rev.	Amendments	Date	By
-	INITIAL ISSUE.	20.01.21	MTC

Revisions

Client
J ALLCOCK & SONS LTD

Link ENGINEERING
Find us @ www.linkeng.co.uk

Project
J ALLCOCK & SONS
AMBROSE STREET

Drawing
FLOOD ZONE EXTENT PLAN

Scale @ A3	Drawn	Checked	Rev
1:250	MTC	NHM	-

DWG No AAS-LE-GEN-XX-DR-CE-002

Status DRAFT (S0)

APPENDIX E – Flood Evacuation Management Plan

J Allcock & Sons Ltd

Flood Warning & Evacuation Plan

For Commercial Premises – Ambrose Street, Manchester

Flood Evacuation Management Plan
January 2021

This document adopts a practicable approach to meeting the requirements of the National Planning Policy Framework with regards to flood risk and flood evacuation principles.

Document Control

This plan has been prepared by Link Engineering on behalf of J Allcock & Sons Ltd as part of the overall management plan to inform the occupiers/workers of the proposed commercial unit off Ambrose Street, Manchester on the responsibilities of the occupiers/workers to prepare for and respond promptly to flood warnings. It is suitable for distribution to Manchester City Council.

A copy of this plan will be made available to all workers:

- On first occupation; and
- In response to lessons learnt.

Plan Produced by: Link Engineering
106 Albert Mill
10 Hulme Hall Road
Manchester
M15 4LY

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Annex C – Accommodation Flood Warning Activation Procedures 8
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Introduction

This Flood Warning & Evacuation Plan (FWEP) has been produced by Link Engineering for the proposed commercial unit at Ambrose Street in Manchester for J Allcock & Sons Ltd, who will ultimately be responsible for its implementation, dissemination and annual review.

This FWEP captures a summary of the site's flood risk, taking into account flood mitigation measures incorporated in the design of the site and properties, and provides all relevant information, contact details and procedures to prepare for, respond to and recover from a flood event.

Link Engineering have given due regard to the safety of occupiers, responding organisations, available best practice, relevant legislation and advice provided by the emergency services.

Objectives

In the production of this FWEP, Link Engineering have identified the following key objectives:

- To encourage the management team to sign up to Flood Warnings Direct and Weather Warnings;
- To encourage the management team to develop flood plans;
- To provide for and signpost clear evacuation routes for workers;
- To ensure adequate ingress and egress for the emergency services; and
- Reduce the risk to life and damage to property.

Flood Risk

A summary of all the potential flood risks to the proposed unit is included in Annex A, with the main focus being fluvial flooding from the nearby Corn Brook, which is covered by the EA's Flood Warning Systems.

The development is located within Flood Zones 2 & 3 according to the Environment Agency's (EA) flood maps, an extract of which is included in Appendix 1 to Annex A. This flood zone represents a probability of flooding of greater than 1%. It should be noted that this flood risk represents pre and post development conditions.

The levels of the development have been designed such that the units will not flood during an event up to 1% annual probability.

As shown in Appendix 2 to Annex A, the site is shown to also be at risk of flooding from surface water. Like the mitigations for fluvial flooding, the floor level design for the development will ensure that the unit is protected from flooding during extreme events.

Flood Warnings

The EA operate a flood forecasting and warning service in areas at risk of flooding from rivers or the sea, which relies on direct measurements of rainfall, river levels, tide levels, in-house predictive models, rainfall radar data and information from the Met Office. This service operates 24 hours a day, 365 days a year.

If flooding is forecast, warnings are issued using a set of easily recognisable codes. A description of the codes is shown in Annex C.

Floodline Register

Floodline Warnings is a free service operated by the EA that provides flood warnings direct to you by phone, email or text message. The J Allcock & Sons Ltd management team can sign up for Flood Warnings by calling Floodline on 0345 988 1188 or online by following the link included in the Additional Guidance Section at the end of this Plan.

J Allcock & Sons Ltd shall be responsible for activating this plan and registering with the EA Flood Warnings Service and should receive a warning through this system.

The management team should identify the individual who will be responsible for monitoring this service and actions to cascade warnings to employees.

It should be noted that employees should also be encouraged to register with the EA Flood Warnings directly.

Evacuation

The decision to evacuate or take shelter ultimately rests with the management team but must be made to allow sufficient time to conduct the evacuation before flooding occurs. Flood waters contain hidden dangers and will impede, if not prevent, a safe evacuation.

The emergency access route, and evacuation routes for workers are given in Annex B. The red arrow represents the route that should be taken by emergency vehicles to access the commercial units. The blue arrows show the routes that employees should take if instructed to evacuate, which includes routes for disabled access. The assembly point for the employees is located on Textile Street public footway.

Employees are advised not to assume that the emergency services will be able to assist with the evacuation; their focus will be directed to those in greatest need.

Where evacuation is not a feasible option, or has been delayed, employees should move to the upper floors of the units; taking with them any important documents, bottled water, essential medicines and food sufficient to support themselves until rescue is possible (see information related to Grab Bags).

Warning & informing

Manchester City Council and the emergency services encourages people to sign up to Flood Warnings Direct (FWD) from the Environment Agency and to Weather Alerts from the Meteorological Office and to act upon the guidance provided.

Annex C provides the means for the management team to record their planned actions in relation to the flood alert levels. Alternatively, they may wish to make their own emergency plan for their own specific need.

Collective Resilience

The successful implementation of any plan is dependent on all employees being familiar with its content and to have rehearsed, where possible, the procedures contained within it.

Resilience is achieved when individuals and groups cooperate to prepare for, respond to and recovery from emergencies. This begins with engagement with employees, and culminates in a collective approach to management of risk.

Recovery

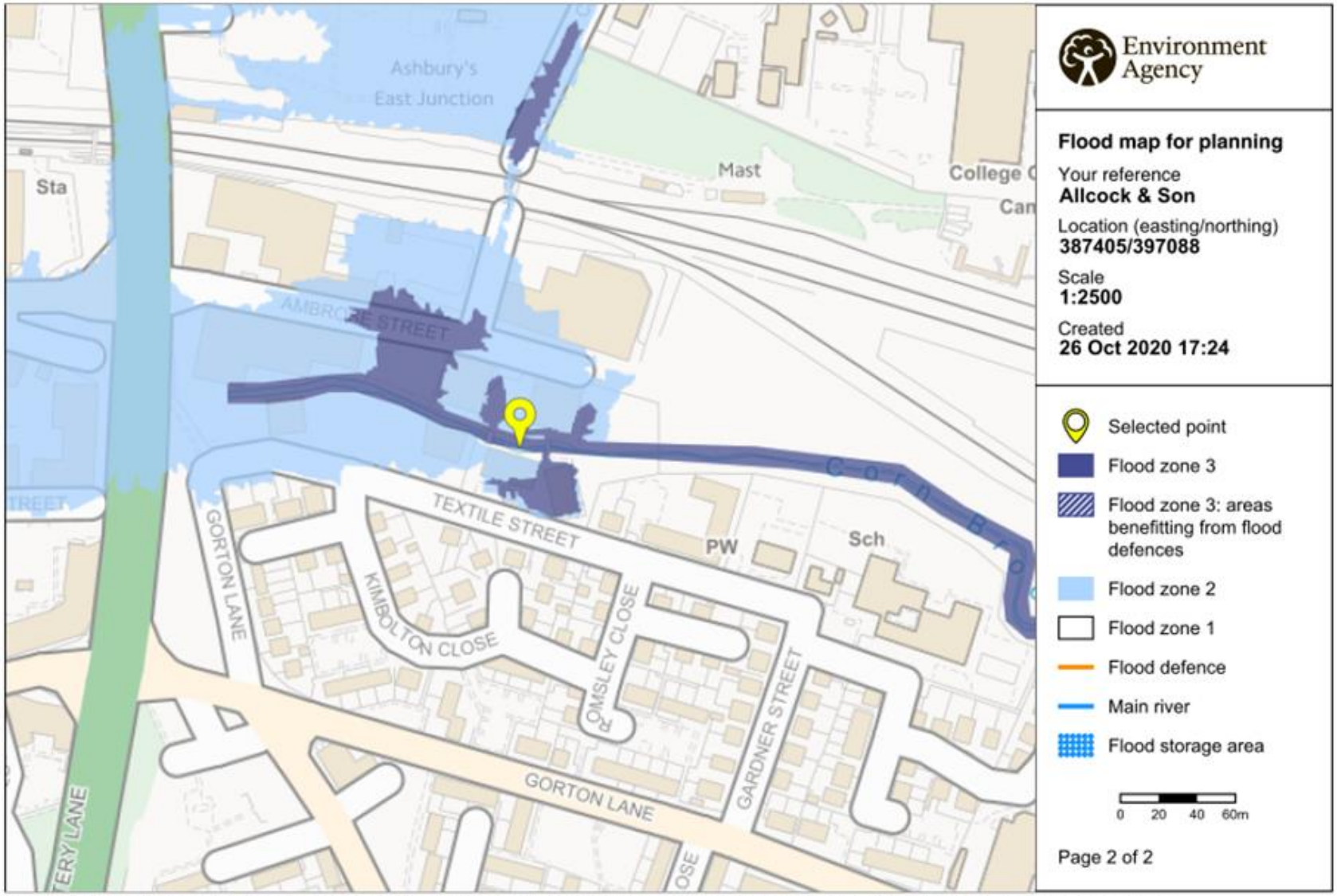
If the unit is subjected to flooding the employees should not return to it until it has been declared safe to do so.

In the event that the employees did not evacuate, it is possible that they will be encouraged to do so, as insurance companies may insist upon it in order to ensure their protection and to effect necessary repairs.

Annex A - Flood Risk Exposure

Flood Risk Source:	Warning Systems in Place (Flood Warnings Direct etc.)	Estimated Flood Depth	Frequency / Probability	Site and Property Defence Measures
Fluvial:	EA Flood Warnings	51.607mAOD – no Flooding 52.169mAOD – no flooding.	1% Annual Exceedance probability 0.1% Annual Exceedance probability	The finished floor level of the unit is set above this flood level. This flood level is 409mm above the finished floor level of the unit as such internal flooding is likely. The building should therefore incorporate flood resilience measures such as locating electrical sockets above 600mm and using flood resilient materials.
Tidal:	N/A	N/A	N/A	N/A
Ground Water:	N/A	N/A	N/A	N/A
Surface Water:	EA Flood Warnings	N/A	N/A	Existing storm drainage infrastructure to be reused to convey surface water to the surface water sewer in Textile Street and where practical to do so development levels shall be designed to mitigate against risk of surface water flooding by directing surface water away from buildings towards the Corn Brook.
Other:	N/A	N/A	N/A	N/A

Appendix 1 to Annex A – Fluvial Flood Risk Map



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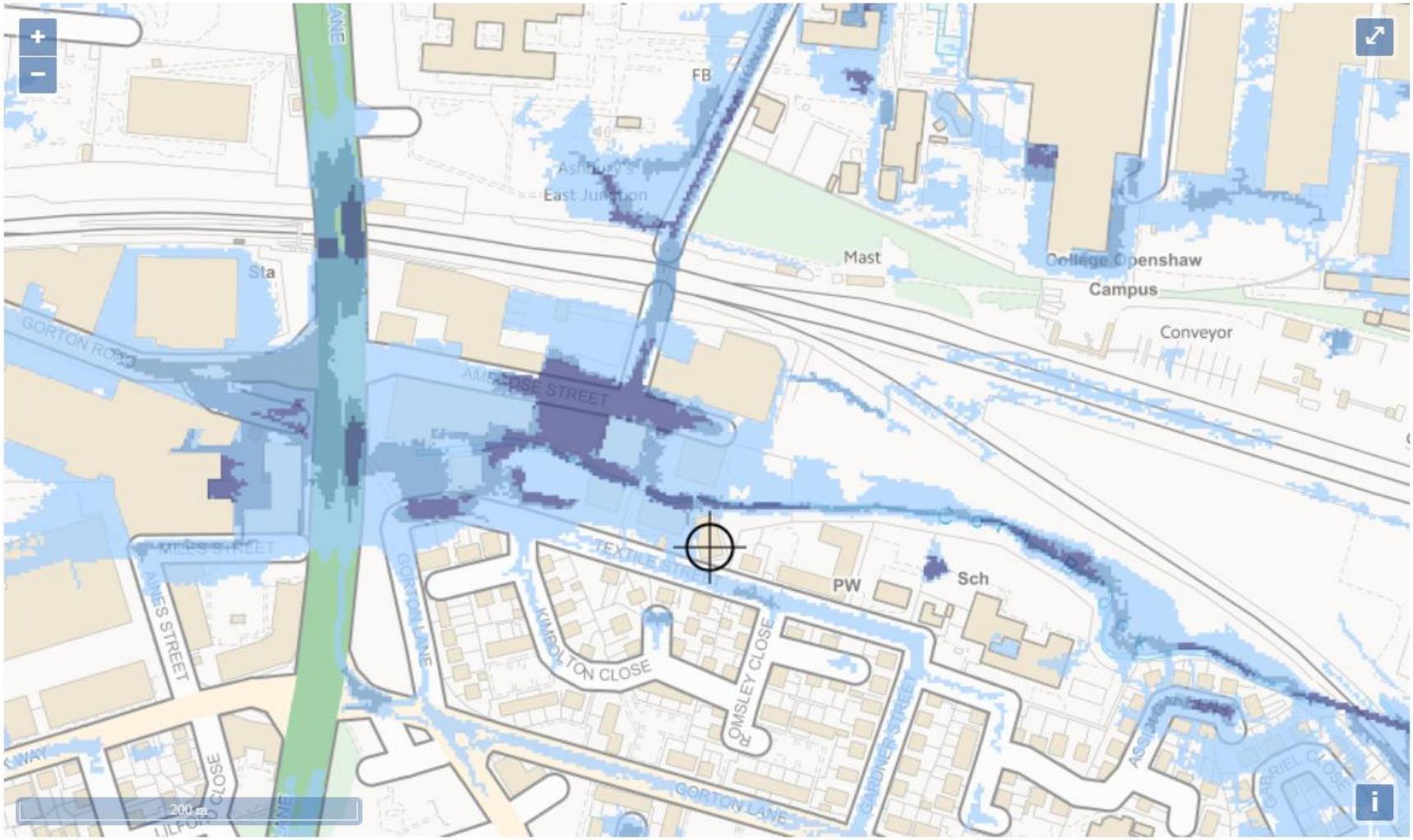
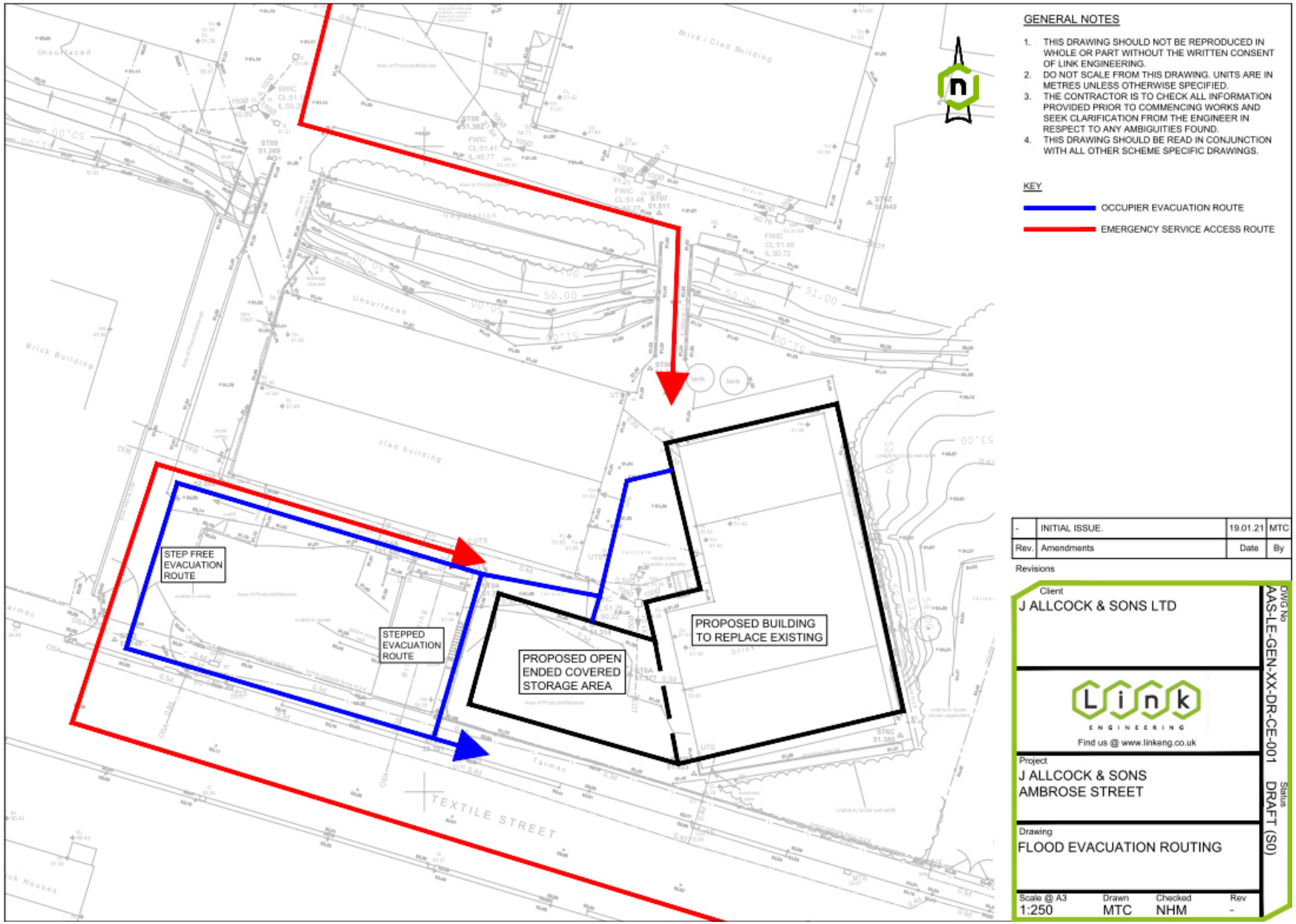
Appendix 2 to Annex A – Surface Water Flood Risk Map



Extent of flooding from surface water

High Medium Low Very low Location you selected

Annex B – Emergency Access and Flood Evacuation Routes



Annex C – Accommodation Flood Warning Activation Procedures

Warnings		EA Recommended Actions	Household Actions	
			Actions	Resources [Record the flood resources available and when you will deploy/utilise them]
 FLOOD ALERT	What it means: Flooding is possible. Be prepared. When it's used: Two hours to two days in advance of flooding.	Be prepared to act on your FWEP. Prepare a flood kit of essential items. Monitor local water levels and the flood forecast on our website.	Follow EA recommended actions	
 FLOOD WARNING	What it means: Flooding is expected. Immediate action required. When it's used: ½ an hour to one day in advance of flooding.	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.	Follow EA recommended actions. Ground floor employees to ensure that no valuables or electronics are retained within 500mm of the floor.	
 SEVERE FLOOD WARNING	What it means: Severe flooding. Danger to life. When it's used: When flooding poses a significant threat to life.	Stay in a safe place with a means of escape. Be ready should you need to evacuate from your home. Co-operate with the emergency services. Call 999 if you are in immediate danger.	Follow EA recommended actions. Where appropriate make arrangements for employees to evacuate.	
EA Flood Warnings No longer in force	What it means: No further flooding is currently expected in your area. When it's used: When river or sea conditions begin to return to normal.	Be careful. Flood water may still be around for several days. If you've been flooded, ring your insurance company as soon as possible.	Follow EA recommended actions. Coordinate safe use of facilities with all employees.	
Meteorological Office Weather Warnings	Warnings of heavy rainfall. Warnings of severe winter weather e.g. hail, snow, freezing rain.	Consider the impact of this type of weather – e.g. this could lead to surface water flooding, ground water flooding, increased river and sea levels.	Follow EA recommended actions	

Additional Guidance

Gov.UK: Prepare for a Flood

https://www.gov.uk/prepare-for-flooding/future-flooding

Gov.UK: Preparing for Emergencies

https://www.gov.uk/government/publications/preparing-for-emergencies/preparing-for-emergencies

Gov.UK: Flood Warnings Direct

https://www.gov.uk/sign-up-for-flood-warnings

Meteorological Office: Weather Warnings

https://www.metoffice.gov.uk/weather/warnings-and-advice/uk-warnings

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