



SOCIAL SPORTS SOCIETY

FLOOD RISK ASSESSMENT AND DRAINAGE STRATEGY

Land at Peary Street, Manchester





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PUBLIC

PROJECT NO. 70109728

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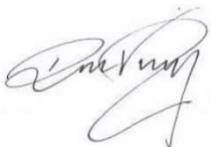
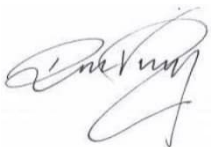
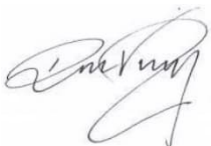
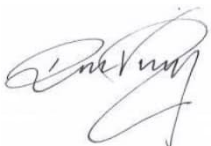
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EXECUTIVE SUMMARY

This Flood Risk Assessment and Drainage Strategy Report has been written on behalf of Social Sports Society to support and inform a full planning application for temporary use of land for a mixed-use sports facility for a period of three years at land bounded by Burstock Street, Bilbrook Street, Peary Street and Back St George's Road, Manchester, M4 4HZ. The site forms part of the Victoria North Strategic Regeneration Area.

The report has been written in due cognisance of the National Planning Policy Framework (NPPF) and relevant local planning policies and supporting documents including the Manchester Strategic Flood Risk Assessment (SFRA).

The Environment Agency Flood Map for Planning locates the site within Flood Zone 1. Land located in Flood Zone 1 is assessed as having less than a 1 in 1,000 annual probability of flooding from river or sea flooding. The proposed development site is therefore assessed to have a very low risk of fluvial flooding.

The assessment has identified that there is a very low risk of surface water flooding within the site. Other sources of flood risk have been considered and present a low or insignificant risk to the site.

There are currently no positive drainage systems on the site with runoff from impermeable surface s draining north-west towards areas of scrub within the northern boundary or onto Bilbrook Street and Burstock Street. The site is currently 84% impermeable with an existing peak runoff calculated at 60.4 l/s.

Given the temporary nature of the proposals, it is intended to retain the existing drainage regime. Construction of new permeable surfacing shall be provided, building up from existing levels. The construction of 2 no. canopy structures for the covered courts potentially increases runoff where they cover existing permeable surfaces. However, it is proposed to limit discharge from these canopies to match existing rates. Attenuation will be provided using an above ground tank system with orifice controlled outlets. The tanks will be designed for the 1 in 100 year rainfall event.

There are no proposals for permanent installation of foul drainage facilities on the site. Toilet facilities are to be provided by way of portaloos with waste removed and disposed off-site.

It is not considered appropriate to apply climate change to the calculations given the development lifespan as determined by the planning application is for 3 years only.

This Flood Risk Assessment and Drainage Strategy has concluded that the development is appropriate in terms of flood risk and that the site can be developed without increasing flood risk overall.

1. PROJECT BACKGROUND

1.1. APPOINTMENT

This Flood Risk Assessment and Drainage Strategy Report has been written on behalf of Social Sports Society to support and inform a full planning application for temporary use of land for a mixed-use sports facility for a period of three years at land bounded by Burstock Street, Bilbrook Street, Peary Street and Back St George's Road, Manchester, M4 4HZ. The site forms part of the Victoria North Strategic Regeneration Area.

1.2. AIM OF STUDY

- 1.2.1. The aim of this study is to assess flood risk both to and from the proposed development in sufficient details to support a full planning applications for the site.

1.3. PROPOSED DEVELOPMENT

- 1.3.1. The proposed development will be a 'meanwhile use' for a temporary period of three years, ahead of the site coming forward for residential-led development in the future.
- 1.3.2. The development comprises full planning application for the temporary use of land, comprising padel courts, multi-use courts, boule/pétanque courts, a bouldering wall and kids' Obstacle Course Racing; the erection of canopies; the installation of containers to include ancillary food and beverage use, portaloos, and reception area; and the inclusion of car and cycle parking, outdoor seating area, refuse area, lighting, and associated infrastructure."
- 1.3.3. Bilbrook Street is partially included within the application red line boundary. Although Bilbrook Street is currently closed, the street will be re-opened and access to the proposed development will be obtained via this route.

1.4. CONSULTATION

- 1.4.1. Manchester City Council (MCC) as Lead Local Flood Authority (LLFA) were consulted in the preparation of this report. However, a response was not received as MCC had suspended their pre-application advice service.

1.5. REFERENCE

- 1.5.1. This FRA and Drainage Strategy has been developed in due cognisance of all relevant local and national planning policy information as detailed in section 2 of this report, along with any additional requirements as specified by statutory consultees.

1.6. LIMITATIONS

- 1.6.1. This report has been written using data provided by third parties. Whilst every care has been taken to ensure this information is accurate and up to date, WSP cannot guarantee the accuracy of third-party data, and the findings of this report are subject to change if the data is amended or updated after consultation. The recommendations made within this report are subject to review on receipt of further consultation responses.

2. PLANNING POLICY AND CONSULTATION

2.1. RELEVANT NATIONAL AND LOCAL PLANNING POLICY AND STRATEGY DOCUMENTS

2.1.1. The following documents were reviewed as part of this Flood Risk Assessment:

- National Planning Policy Framework (Updated September 2023) and Planning Practice Guidance (Updated July 2021)
- Defra Sustainable Drainage Systems Non-Statutory Technical Standards for Sustainable Drainage Systems (March 2015)
- Environment Agency Climate Change Guidance (May 2022)
- Manchester, Salford and Trafford Hybrid Strategic Flood Risk Assessment (March 2011)
- Manchester, Salford and Trafford Hybrid Strategic Flood Risk Assessment User Guide (March 2011)
- Flood and Water Management Act (April 2010)

2.2. NATIONAL PLANNING POLICY

NATIONAL PLANNING POLICY FRAMEWORK

- 2.2.1. The National Planning Policy Framework (NPPF) ensures that flood risk is considered at all stages in the planning process to avoid inappropriate development in areas at risk of flooding and to direct development away from areas of highest flood risk.
- 2.2.2. Where new development is necessary in such areas, policy aims to make it safe without increasing flood risk elsewhere and, where possible, reducing flood risk overall.
- 2.2.3. Chapter 14 of The National Planning Policy Framework (NPPF) ensures that flood risk is considered at all stages in the planning process to avoid inappropriate development in areas at risk of flooding and to direct development away from areas of highest flood risk. Where new development is exceptionally necessary in such areas, policy aims to make it safe without increasing flood risk elsewhere and, where possible, reducing flood risk overall.
- 2.2.4. This report has been written particularly in respect of paragraph 167 (avoiding increasing flood risk elsewhere) and paragraph 169 (inclusion of SuDS).

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

- 2.2.5. This document sets out non-statutory technical standards for sustainable drainage systems. It should be used in conjunction with the National Planning Policy Framework and Planning Practice Guidance.
- 2.2.6. For developments which were previously developed, the peak run-off rate from the development to any drain, sewer or surface water body for the 1 in 1-year rainfall event and the 1 in 100-year rainfall event must be as close as reasonably practicable to the greenfield run-off rate from the development for the same rainfall event but should never exceed the rate of discharge from the development prior to redevelopment for that event.

- 2.2.7. Where reasonably practicable, for developments which have been previously developed, the run-off volume from the development to any highway drain, sewer or surface water body in the 1 in 100-year, 6 hour rainfall event must be constrained to a value as close as is reasonably practicable to the greenfield run-off volume for the same event but should never exceed the run-off volume from the development site prior to redevelopment for that event.
- 2.2.8. The drainage system must be designed so that, unless an area is designated to hold and/or convey water as part of the design, flooding does not occur on any part of the site for a 1 in 30-year rainfall event.
- 2.2.9. The drainage system must be designed so that, unless an area is designated to hold and/or convey water as part of the design, flooding does not occur during a 1 in 100-year rainfall event in any part of: a building (including a basement); or in any utility plant susceptible to water, (e.g. Pumping Station or Electricity Substation) within the development.
- 2.2.10. The design of the site must ensure that, so far as is reasonably practicable, flows resulting from rainfall in excess of a 1 in 100-year rainfall event is managed in exceedance routes that minimise the risks to people and property.

2.3. CONSIDERATION OF CLIMATE CHANGE

- 2.3.1. The Environment Agency 'Flood Risk Assessments: Climate Change Allowances' guidance was updated on 27th May 2022.
- 2.3.2. Peak river flow allowances show the anticipated changes to peak flow by management catchment. Management catchments are sub-catchments of river basin districts. The range of allowances is based on percentiles. The latest guidance for peak river flows states that the flood risk vulnerability classification for the development should be used to determine whether the central allowance or higher central allowance should be applied.
- 2.3.3. For peak rainfall the latest EA guidance peak rainfall allowances are now provided for the 1% and 3.3% annual exceedance probability events (AEP), and for two epochs rather than three.
- 2.3.4. The guidance on how to apply peak rainfall allowances has changed, using the central allowance for development with a lifetime up to 2100 and the upper end allowance for development with a lifetime from 2100 to 2125.
- 2.3.5. The updated guidance for peak rainfall intensities states that for developments with a lifetime beyond 2100 "For flood risk assessments and strategic flood risk assessments assess the upper end allowances. You must do this for both the 1% and 3.3% annual exceedance probability events for the 2070s epoch (2061 to 2125). Design your development so that for the upper end allowance in the 1% annual exceedance probability event: there is no increase in flood risk elsewhere and your development will be safe from surface water flooding."
- 2.3.6. For development with a lifetime of between 2061 and 2100 the same approach should be taken but use the central allowance for the 2070s epoch.
- 2.3.7. Sea levels allowances reflect the previous guidance and vary on a regional basis and for each epoch as shown in Table 1 of the EA guidance.

DEVELOPMENT LIFESPAN AND APPLICABLE ALLOWANCES

- 2.3.8. As this development is for a meanwhile use for up to 3 years, it is not considered appropriate to apply climate change projections to either river flow or rainfall in respect of the design and surface water management proposals.

2.4. LOCAL PLANNING POLICY AND GUIDANCE

MANCHESTER CITY COUNCIL LOCAL DEVELOPMENT FRAMEWORK CORE STRATEGY

- 2.4.1. This report has been written in due cognisance of the Manchester City Council Local Development Framework Core Strategy (Adopted July 2012) in particular, policies:
- EN8 – Adaptation to Climate Change;
 - EN9 – Green Infrastructure;
 - EN14 – Flood Risk and
 - EN17 – Water Quality

MANCHESTER, SALFORD AND TRAFFORD STRATEGIC FLOOD RISK ASSESSMENT

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

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

Managing surface water discharges from new development is therefore crucial in managing and reducing flood risk to new and existing development downstream. Carefully planned development can also play a role in reducing the amount of properties that are directly at risk from surface water flooding. The Planning System has a key role to play in setting standards for sustainable drainage from new developments and ensuring that developments are designed to take account of the risk from surface water flooding.

All development should seek to reduce existing local flooding problems and not add to them. The

AGMA authorities are currently developing drainage standards for developments within Critical Drainage Areas and for all other areas. Over time, it is envisaged that local authorities will commission drainage strategies (see below) to determine in more detail, and establish the evidence base for, set reductions in surface water runoff from development sites. These will be used to inform the incorporation of targets and standards in Development Plan Documents, supported by Supplementary Planning Documents, as appropriate. With regard to this, the developer should liaise closely with the Environment Agency, United Utilities and the LPA as soon as possible to determine an appropriate reduction in runoff rate and volume with reference to discharge limits as laid down by any completed SWMP, drainage strategy or local development document for that area. Minimising surface water runoff rates within catchments should be the starting point for negotiations with Developers. In the interim, and based on the technical work undertaken for the SFRA, the following guidance is provided:

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

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

3. EXISTING SITE

3.1. SITE LOCATION

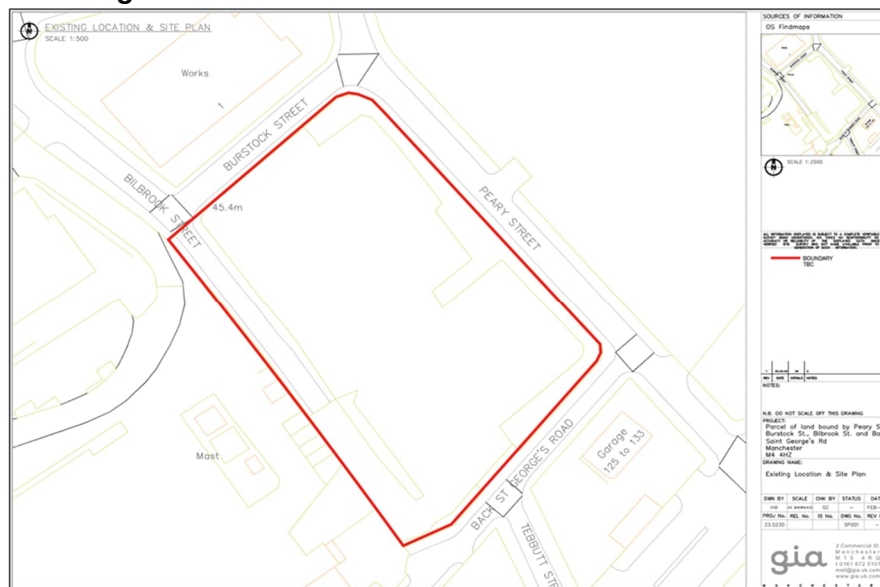
- 3.1.1. The Site is located adjacent to Peary Street with an area of 0.52ha north of Manchester town centre.
- 3.1.2. The Site is bound by Burstock Street to the north-west, to the south-east by Back St. Georges Road and located approximately 50m north-west of A664 as shown in Figure 3-1. The OS Grid Reference for the approximate centre of the Site is National Grid Reference 384779, 399294. The postcode of the Site is M4 4HZ.

Figure 3-1 – Site Location Satellite Image



- 3.1.3. The site red line boundary partially encompasses Bilbrook Street as shown in Figure 3-2, but this street is currently closed to traffic. The site is within the administrative boundary of Manchester City Council ('MCC').

Figure 3-2 – Existing Site Plan



- 3.1.4. The site forms part of the 'Victoria North' regeneration scheme, within which 15,000 new homes are expected to be delivered, in addition to a range of physical and social infrastructure. Therefore, it is expected that the site and surrounding area will undergo considerable change over the next 15-20 years. The site is located within the 'New Town' Neighbourhood, which is identified for residential-led development.

Table 3-1 – General Site Characteristics

Characteristic	Description
Site address (Approximate)	Land adjacent to Peary Street
Grid reference	384779, 399294
Area (Ha)	0.52
Existing / previous site usage	The site is currently used as a car park. Previous site usage is understood to have been industrial / commercial, although the site has been derelict for some time. There are remnants of building and hardstandings within the site.
Surroundings	The site is surrounded by similarly derelict areas following demolition of previous structures. Rochdale Road is to the south-east and the railway line into Manchester Victoria into the north.
Topography	Topographical survey information shows the site falls by approximately 5.0m from the south-east to north-west. There are two former building floor slabs at the southern end of the site which provide flat areas with retaining walls along the northern sides.

3.2. SITE DESCRIPTION

- 3.2.1. The Site's most recent use is as a car park and the majority of the site comprises concrete slabs and hardstandings of varying conditions. Retaining walls are present along the northern ends of two of the concrete slabs at the southern end of the site. Areas of scrub / vegetation are also present, particularly along the eastern and northern boundaries.
- 3.2.2. The Site has 3 separate concrete slabs indicating historical building use for the land. The slab to the south-east of the site is at 51.29m AOD; the slab to the south-west of the site is at 50.35m AOD; and the slab to the north-east of the site is at 48.30m AOD. Other hardstanding areas area between the concrete slabs is a mix of rough tarmac, indicating previous road use, and scattered shrubs. The site topography has a general fall to a low point at the corner at the west of the site.

Figure 3-3 – Existing Site Features



3.3. EXISTING SEWERS/ DRAINAGE

PUBLIC SEWERS

- 3.3.1. The United Utilities Records shown in Figure 3-4 outline the drainage information around the site. The records show that there is a 225mm dia. Combined sewer heading northwest on Peary Street which then connects into a 600mm dia. Combined sewer in Bromley Street.
- 3.3.2. There is a 500mm x 750mm combined sewer in Back St. Georges Road which flows south-west joining a 300mm dia. Combined sewer in Bilbrook Street. The 300mm dia. Combined sewer flows north-west along Bilbrook Street towards Bromley Street back to Bromley Street.
- 3.3.3. A short length of 225mm dia. Combined sewer is located in Burstock Street, discharging onto the 300mm dia. Combined sewer in Bilbrook Street.
- 3.3.4. No public foul or surface water sewers are located within the vicinity of the site.

4. DEFINITION OF FLOOD RISK

- 4.1.1. The risk of flooding to the site from all potential sources has been assessed in accordance with the National Planning Policy Framework.
- 4.1.2. Table 5-1 below summarises the findings of the assessment. It should be noted that the designation of risk outlined in Table 5-1 is prior to the inclusion of any mitigation measures, which may subsequently act to reduce the risk.

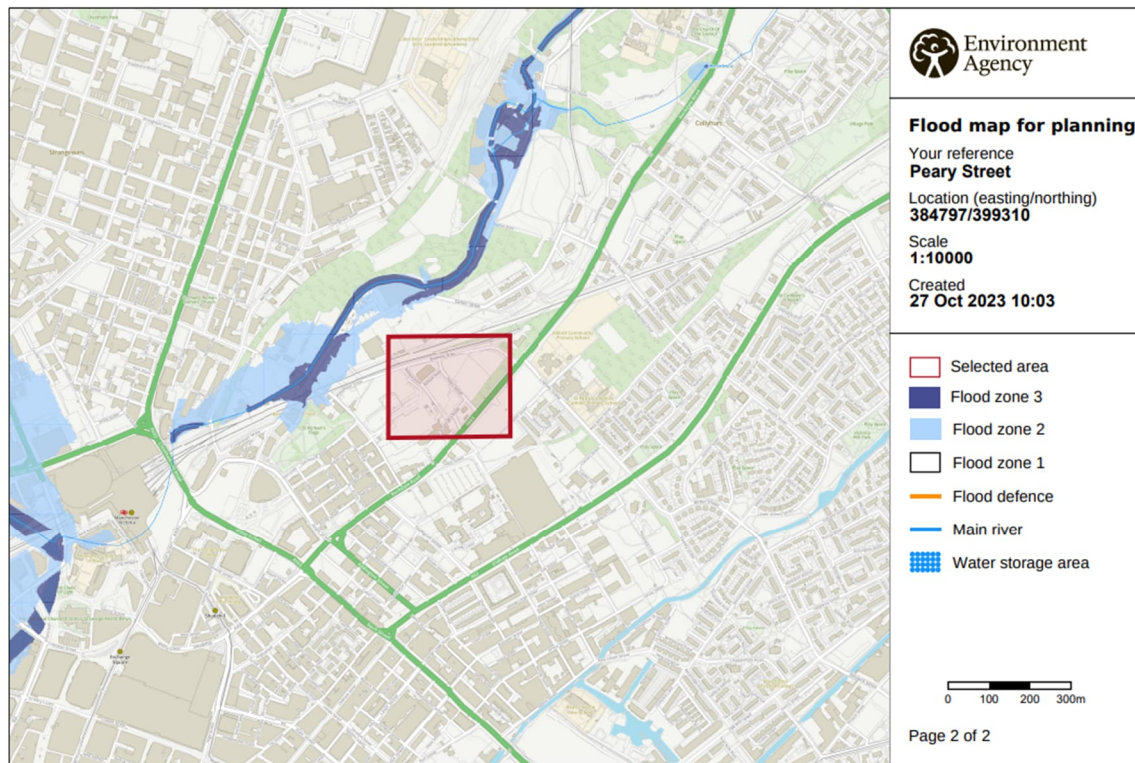
Table 4-1 – Degree of Risk from Each Source of Flooding

Source		Risk
Fluvial		Very Low
Surface Water		Very Low
Sewer		Low
Groundwater		Not at risk
Tidal		Not at risk
Artificial Sources	Reservoir	Unlikely

4.2. FLUVIAL FLOOD RISK

- 4.2.1. The National Planning Policy Framework (NPPF) categorises flood risk as follows:
- **Zone 1 (low probability)** – Land assessed as having less than a 1 in 1,000 annual probability of river or sea flooding (<0.1%);
 - **Zone 2 (medium probability)** – Land assessed as having between a 1 in 100 and 1 in 1,000 annual probability of river flooding (1% – 0.1%), or between a 1 in 200 and 1 in 1,000 annual probability of sea flooding (0.5% – 0.1%); and
 - **Zone 3a (high probability)** – Land assessed as having a 1 in 100 or greater annual probability of river flooding (>1%), or a 1 in 200 or greater annual probability of flooding from the sea (>0.5%).
 - **Zone 3b The Functional Floodplain** – This zone comprises land where water has to flow or be stored in times of flood. Local planning authorities should identify in their Strategic Flood Risk Assessments areas of functional floodplain and its boundaries accordingly, in agreement with the Environment Agency. (Not separately distinguished from Zone 3a on the Flood Map).
- 4.2.2. The site lies within Flood Zone 1 according to the Environmental Agency's Flood Map for Planning (Figure 4-1) which indicates that the site is at low risk of flooding from rivers or the sea. The source of any potential flooding would be from the River Irk which lies approximately 250m north-west of the site, however it is extremely unlikely that any flooding would affect the site given the distance, topography and presence of the railway viaduct.

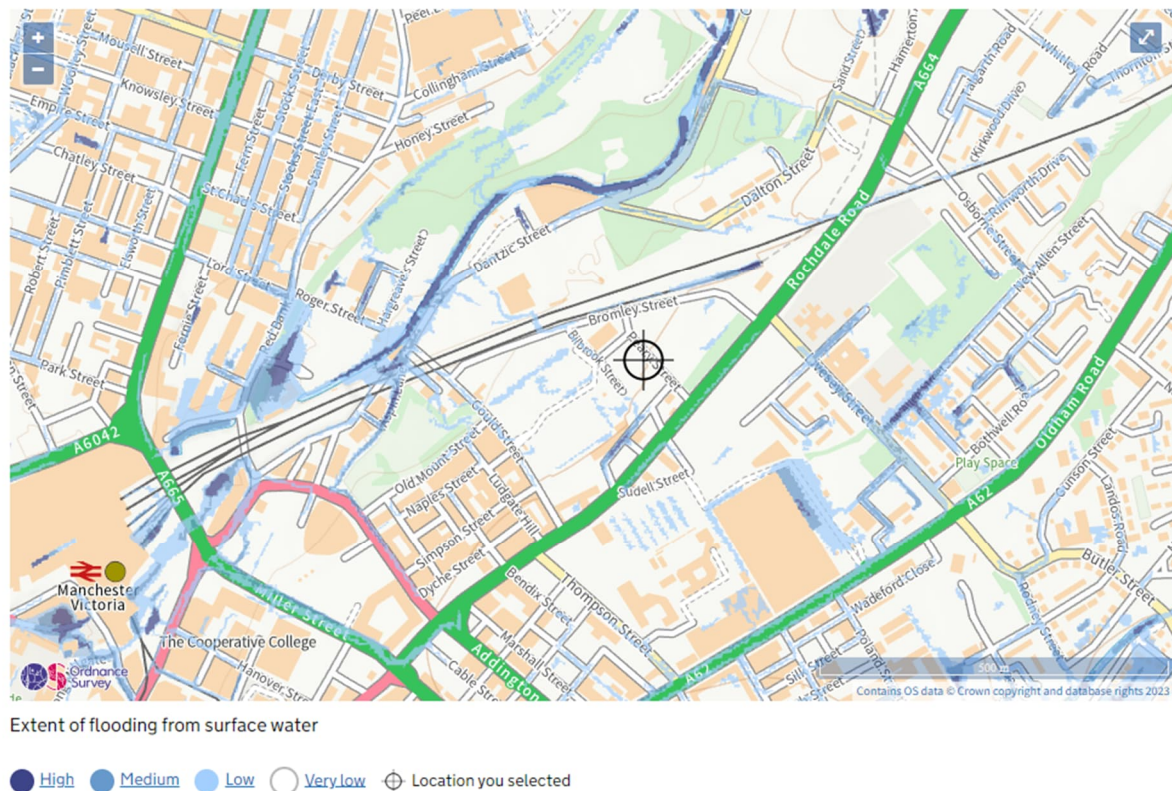
Figure 4-1 – Flood Map for Planning



4.3. SURFACE WATER FLOODING

- 4.3.1. The EA descriptions for the High, Medium and Low risk scenarios for surface water flooding are as follows:
- **High risk** means that each year this area has a chance of flooding of greater than 3.3%.
 - **Medium risk** means that each year this area has a chance of flooding of between 1% and 3.3%.
 - **Low risk** means that each year this area has a chance of flooding of between 0.1% and 1%.
 - **Very Low risk** means that each year this area has a chance of flooding of less than 0.1%.
- 4.3.2. The site is shown to be at very low risk from surface water flooding according to the Environment Agency's Surface Water Flood Map, as shown in Figure 4-2.
- 4.3.3. This is supported by the topography which shows the site falls relatively steeply from south-east to north-west.

Figure 4-2 – Surface Water Flood Map



4.4. GROUNDWATER FLOODING

- 4.4.1. Groundwater flooding occurs when the water table rises above the ground surface or into cellars and basements. Groundwater flooding is most likely to occur in low-lying areas underlain by permeable rocks (aquifers). These may be extensive, regional aquifers, such as chalk or sandstone, or may be localised sands or river gravels in valley bottoms underlain by less permeable rocks.
- 4.4.2. The Manchester City, Salford City and Trafford Councils Level 2 SFRA Groundwater Flood Map (2011) indicates that the site is not at risk of groundwater flooding.

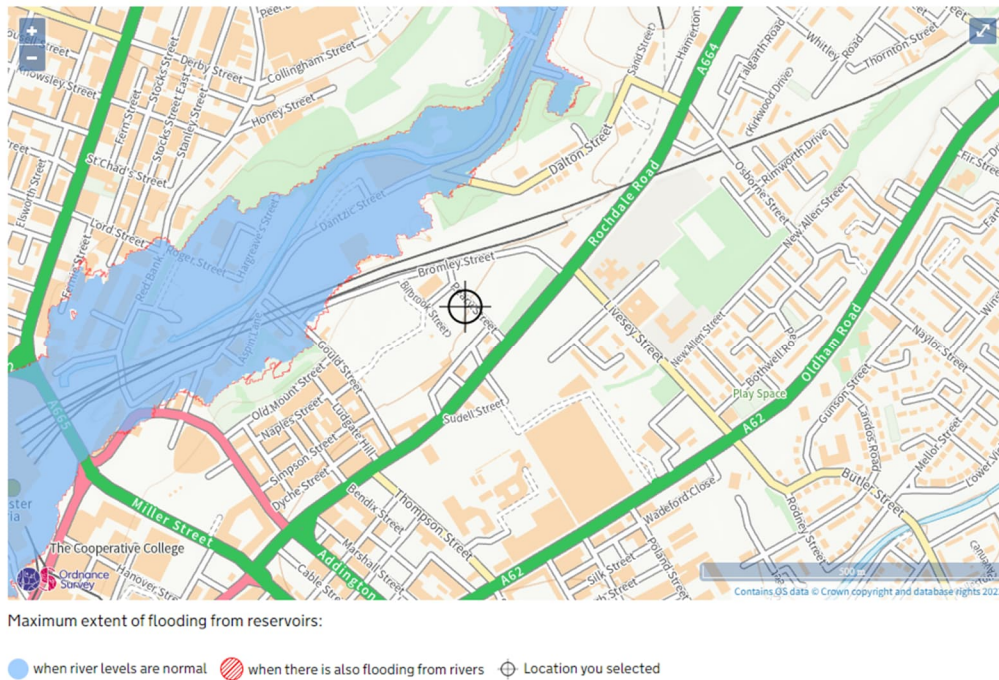
4.5. ARTIFICIAL SOURCES OF FLOODING

- 4.5.1. Non-natural or artificial sources of flooding can include canals, reservoirs, lakes, etc. The potential effects of flood risk management infrastructure and other structures need to be considered.

RESERVOIRS

- 4.5.2. The Environment Agency's Reservoir Flood Risk Map indicates that the site is not at risk of flooding in the event of reservoir failure, as shown in figure 4-3.
- 4.5.3. With the above in mind, it is considered that the site is at a low risk of reservoir flooding.

Figure 4-3 – Reservoir Flood Map



5. NPPF SEQUENTIAL AND EXCEPTION TEST

5.1. THE SEQUENTIAL TEST

- 5.1.1. The Sequential Test, within the National Planning Policy Framework, aims to steer all new developments to areas at the lowest risk of flooding and to ensure that the development type proposed is appropriate by reference to the flood risk.
- 5.1.2. As the site is within Flood Zone 1, the development is deemed to meet the requirements of the Sequential Test as it is located in an area of lowest flood risk.

5.2. THE EXCEPTION TEST

- 5.2.1. The site at Peary Street is located entirely within Flood Zone 1 and therefore the exception test is not required based on Table 2 in the EA's Flood risk and coastal change guidance.

6. SURFACE WATER DRAINAGE STRATEGY

6.1. EXISTING DRAINAGE ARRANGEMENTS

- 6.1.1. There are currently no positive drainage features serving the site. Runoff is generated from impermeable surfaces on the site and drains towards either permeable scrub at the northern site boundary where partial infiltration occurs, or onto Bilbrook Street and Burstock Street where it is collected by highway drainage gullies connected to the public combined sewerage system.

EXISTING RUNOFF

- 6.1.2. The existing brownfield site area is 0.52ha and is approximately 84% impermeable (0.43ha) as shown in Figure 6-1. The remaining area comprises scrub and vegetation which is considered permeable.
- 6.1.3. Using this area, the existing peak runoff rate has been estimated using the Rational Method (Lloyd-Davies Formula) as follows:
- $Q = 2.78.C.i.A$, where
 - Runoff co-efficient, $C = 1$
 - Rainfall intensity, $i = 50\text{mm/hr}$
 - $A = 0.435\text{ha}$
 - $Q = 60.4 \text{ l/s}$.

Figure 6-1 – Existing Site Impermeable Area



6.2. PROPOSED DRAINAGE ARRANGEMENTS

- 6.2.1. The proposals introduce some uncovered and covered padel / multi-use courts, car parking and pedestrian walkways. The general approach is to build upwards over existing surfacing, using permeable material, thus not increasing overall runoff rates. This is with the exception of the covered courts which require 2 no. canopies to be erected, thus potentially increasing runoff from these areas where they cover existing permeable surfaces.

PROPOSED RUNOFF

- 6.2.2. Through introduction of the proposed canopy structures, the proposed impermeable area of the site increases from existing to 0.462ha. This represents a 6% increase.
- 6.2.3. Consequently, the proposed peak runoff rate also increases to 64.2 l/s. However, in accordance with the NPPF, it is required to not increase flood risk to the site or elsewhere as a result of the development. It is therefore intended to limit runoff rates to match existing.

ATTENUATION

- 6.2.4. Attenuation to existing rates shall be achieved using above ground attenuation and storage features serving the canopy structures only. Other areas of the site shall drain as existing with surface treatment built up over existing levels using permeable construction.
- 6.2.5. The proposed canopies cover areas of 0.117ha and 0.089ha for the North and South canopy structures respectively (Figure 6-2).

Figure 6-2 – Proposed Canopy Areas



- 6.2.6. The canopies cover existing impermeable areas of 0.095ha and 0.083ha. Using the Rational Method, the existing peak runoff rates from these areas are 13.2 l/s (North) and 11.5 l/s (South).
- 6.2.7. It is therefore proposed to attenuate discharge from the canopies to the existing rates as described in para. 6.2.6 above.
- 6.2.8. Approximate attenuation storage volumes for storms up to the 1 in 100 year rainfall event have been calculated using InfoDrainage software as follows:
- Canopy 1 (North) = 9 m³– 22 m³
 - Canopy 2 (South) = 5 m³– 15 m³
- 6.2.9. No allowance for future climate change has been applied as discussed in para 2.3.8.
- 6.2.10. A summary of the calculations is provided in Table 6-1 below. Final storage volumes will be confirmed in detailed design.

Table 6-1 – Calculation of Discharge Rates

Area Ref.	Proposed Impermeable Area (m ²)	Existing Impermeable Area (m ²)	Discharge Rate, Q (L/s)	Attenuation Volume 1 in 100yr (m ³)
Canopy 1 (North)	1169	953.36	13.25	9 – 22
Canopy 2 (South)	885	827.96	11.51	5 – 15

- 6.2.11. Attenuation and storage will be provided in an above ground tank or tanks(s) connected directly to the rainwater pipes serving each canopy. A suitable product has been identified in Enduramaxx Rainwater Tanks. The tanks have a restricted orifice on the outlet to limit discharge to the required rate.
- 6.2.12. The exact configuration of tanks will depend on the roof profile of the canopy and arrangement of rainwater pipes.

FOUL DRAINAGE

- 6.2.13. There are no proposals for permanent installation of foul drainage facilities on the site. Toilets are to be provided by way of “portaloo” with waste to be collected and disposed off-site.

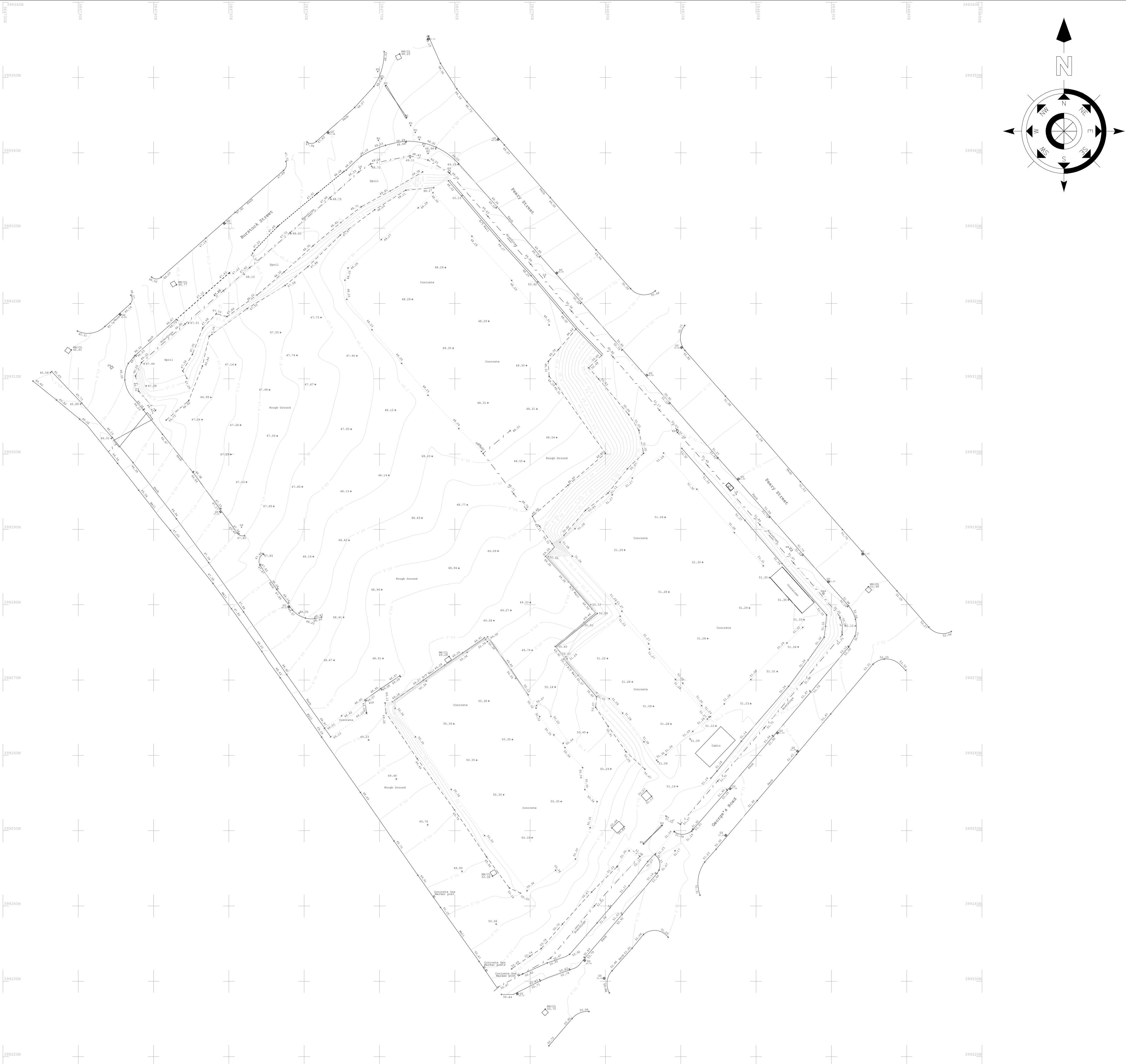
7. CONCLUSION

- 7.1.1. This Flood Risk Assessment and Drainage Strategy has been prepared with due cognisance of relevant national and local planning, policy, and has considered the temporary nature of the proposals. The proposed drainage strategy attenuates to existing runoff rates.
- 7.1.2. It is concluded that the development is appropriate in terms of flood risk and that the site can be developed without increasing flood risk overall.

Appendix A

TOPOGRAPHICAL SURVEY





SOURCES OF INFORMATION

ABBREVIATIONS

BOL	Bollard
BT	BT Cover
CB	Control Box
CH	Ceiling Height
CL	Cover Level
DK	Drop Kerb
EH	Eaves Height
FH	Fire Hydrant
FFL	Finished Floor Level
FP	Flag Pole
GAS	Gas Valve
GY	Gully
IC	Inspection Cover
LC	Lighting Cover
LP	Lamp Post
MH	Man Hole
PH	Parapet Height
RH	Ridge/Roof Height
RWP	Rain Water Pipe
SP	Sign Post
SV	Stop Valve
TF	Top of Fence
TL	Threshold Level
TP	Telegraph Pole
TS	Traffic Signal
TH	Top of Hedge
TOW	Top of Wall
U/S	Under Side
WP	Water Pipe
WV	Water Valve

ALL INFORMATION DISPLAYED IS SUBJECT TO A COMPLETE VERIFIABLE SITE SURVEY BEING UNDERTAKEN. GIA TAKES NO RESPONSIBILITY ON THE ACCURACY OR RELIABILITY OF THE DISPLAYED DATA. SINCE A VERIFIED SITE SURVEY WAS NOT MADE AVAILABLE PRIOR TO THE GENERATION OF SUCH INFORMATION.

NOTES:
The survey grid shown on this drawing is positioned on Ordnance Survey (OS) National Grid, obtained by multiple network RTK GPS observations
All levels are in metres and are above Ordnance Survey Newlyn Datum derived by multiple network RTK GPS observations
Levels defining edge of carriageway are observed at channel (bottom of kerb).

N.B. DO NOT SCALE OFF THIS DRAWING

PROJECT:

Land at Peary Street,
Manchester,
M4 4HZ.

DRAWING NAME:

TOPOGRAPHICAL SURVEY

DWN BY	SCALE	CHK BY	STATUS	DATE
JW	1:250@A1	PST	—	03/02/23
PROJ No.	REL No.	IS No.	DWG No.	REV No.



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L O N D O N
T E R • M A N C H E S

Appendix B

PROPOSED SITE LAYOUT





Hollaway

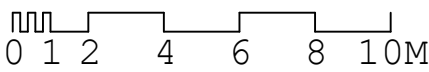
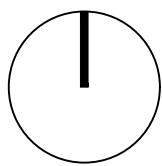
Project | PEARY STREET
MANCHESTER

Client | SOCIAL SPORT SOCIETY

Title | SITE PLAN

Status | PLANNING

Project Number 23.0050 Drawing Number 200.00 Revision P0
Bim Number



Appendix C

ATTENUATION VOLUME CALCULATIONS



Infodrainage Quick Storage Estimate FSR Input

Parameters

Return Periods

Storm Durations

Parameters

Region

England And Wales

Storm Profile

☒ Summer

☒ Winter

M5-60 (mm)

18.0

Ratio R

0.359

Map

Parameters

Return Periods

Storm Durations

Return Periods

Use	Return Period (years)	Increase Rainfall (%)
☒	100	0

Add

Delete

Clear All

Deselect All

Select All

Parameters

Return Periods

Storm Durations

Storm Durations

Use	Duration (mins)	Run Time (mins)
☒	15	30
☒	30	60
☒	60	120
☒	120	240
☐	180	360
☒	240	480
☒	360	720
☒	480	960
☐	600	1200
☐	720	1440
☒	960	1920
☒	1440	2880
☐	2160	4320
☐	2880	5760
☐	4320	8640

Add

Delete

Clear All

Deselect All

Select All

Default

Infodrainage Quick Storage Estimate Calculation for North Canopy

Quick Storage Estimate

Input

Input Type

User Input

Area (ha)

0.117

Volumetric Runoff Coefficient

0.750

Discharge Rate (L/s)

13.25

Infiltration Rate (m/hr)

0.0

Safety Factor

2.0

Quick

Calculate

Create New

From Library

All

FSR

Method

FSR

Number of Storms

18

Max. Run Time (mins)

2880

Input

Results

2D Graph

OK

Cancel

Quick Storage Estimate

Results

Quick Storage Estimate variables require approximate storage of between 9m³ - 22m³.

These values are estimates only and should not be used for final design purposes.

Input

Results

2D Graph

OK

Cancel

Infodrainage Quick Storage Estimate Calculation for South Canopy

Quick Storage Estimate

Input

Input Type

User Input

Area (ha)

0.088

Volumetric Runoff Coefficient

0.750

Discharge Rate (L/s)

11.51

Infiltration Rate (m/hr)

0.0

Safety Factor

2.0

Quick

Calculate

Create New

From Library

All

FSR

Method

FSR

Number of Storms

18

Max. Run Time (mins)

2880

Input

Results

2D Graph

OK

Cancel

Quick Storage Estimate

Results

Quick Storage Estimate variables require approximate storage of between 5m³ - 15m³.

These values are estimates only and should not be used for final design purposes.

Input

Results

2D Graph

OK

Cancel



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