



- Consultancy
- Project Management
- Site Regeneration

DRAINAGE STRATEGY

**Proposed Development at
Brunswick St.
Manchester**

Client:

**Brunswick Living Limited
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Manchester**

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Document History and Status

Revision	Date	Purpose/Status	Author	File Ref	Check	Review
F1	18.01.16	Final	Charles Townsend	F1	George Isles	George Isles
F2	01.02.17	Final	Charles Townsend	F2	George Isles	George Isles
F3	21.04.21	Final	Matthew Price	F3	Stuart Fraser	Stuart Fraser

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Document Details

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ABBREVIATIONS

Term	Meaning / Definition
AEP	Annual Exceedence Probability
BGL	Below ground level
BGS	British Geological Society
CFMP	Catchment Flood Management Plan
CIRIA	Construction Industry Research and Information Association
CoP	Code of Practice
EA	Environment Agency
EFO	Extreme Flood Outline (Boundary of floodplain associated with a flood event with a probability of occurrence of 0.1%, 1 in 1000 years)
FDA	Flood Defence Agency (e.g. Environment Agency)
FERS	Flood Event Recording System
FFL	Finished Floor Level
FRA	Flood Risk Assessment
FW	Foul Water
GPZ	Groundwater Protection Zone
LDD	Local Development Document
LDF	Local Development Framework
LHA	Local Highway Authority
LPA	Local Planning Authority
m AOD	Metres above Ordnance Datum
MAF	Mean Annual Flood
NGR	National Grid Reference
OS	Ordnance Survey
PPG	Planning Policy Guidance
PPS	Planning Policy Statement
SFRA	Strategic Flood Risk Assessment
SSSI	Site of Special Scientific Interest
SuDS	Sustainable Drainage Systems
SW	Surface Water
WFD	Water Framework Directive

1.0 INTRODUCTION

- 1.1. Brunswick Living Limited are proposing a new building. The building is approximately 220m². The total area of the site is approximately 0.0359ha and has been cleared, excavated & backfilled.
- 1.2. The Local Planning Authority has requested that a Drainage Statement is undertaken to assess the risk of drainage to the site.
- 1.3. ELLUC Projects Limited have been commissioned by Brunswick Living Limited to prepare a formal Drainage Strategy (statement) to accompany an Full Planning Application for the building.

2.0 SITE CONTEXT

SITE LOCATION

- 2.1. The site is located at Brunswick Street, Manchester. The entire site is approximately 0.0359ha. The new building is for approximately 220m².
- 2.2. At grid reference E405711 N280046. Ref. Figures 5.1 and Figure 5.2:

Figure 5.1 Site Location Plan

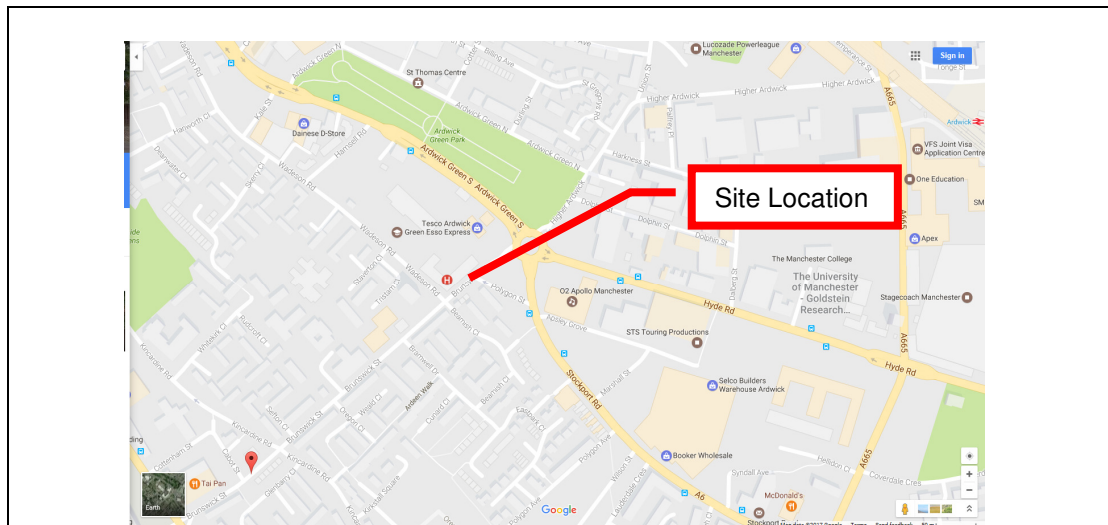




Figure 5.2: Aerial Image

EXISTING SITE CHARACTERISATION / LAND-USE

- 2.3. The site and surrounding boundary conditions are shown on the Aerial Image in Figure 5.2.
- 2.4. To the North the site is bounded by the Medlock Primary School .
- 2.5. To the East the site is bounded by the Tesco Ardwick Green Esso Express
- 2.6. To the South the site is bounded by Brunswick Street.
- 2.7. To the West the site is bounded by Vallance Centre.
- 2.8. The existing site has been cleared, excavated & backfilled.

EXISTING SITE TOPOGRAPHY

- 2.9. The site is at an approximate elevation of 41.54mAOD at the North Western border and slopes to the South Eastern border which is approximately 40.51mAOD.

EXISTING WATERCOURSES / WATER BODIES / DRAINAGE INFRASTRUCTURE

- 2.10. There is no watercourse within the vicinity of the site.

EXISTING GROUND CONDITIONS

- 2.11. According to the British Geological Society website 1:50,000 maps, the bedrock is of Chester Pebble Beds. The superficial deposits are Till Devensian in this area.
- 2.12. The site is not within a groundwater source total catchment zone.

3.0 PROPOSED DEVELOPMENT

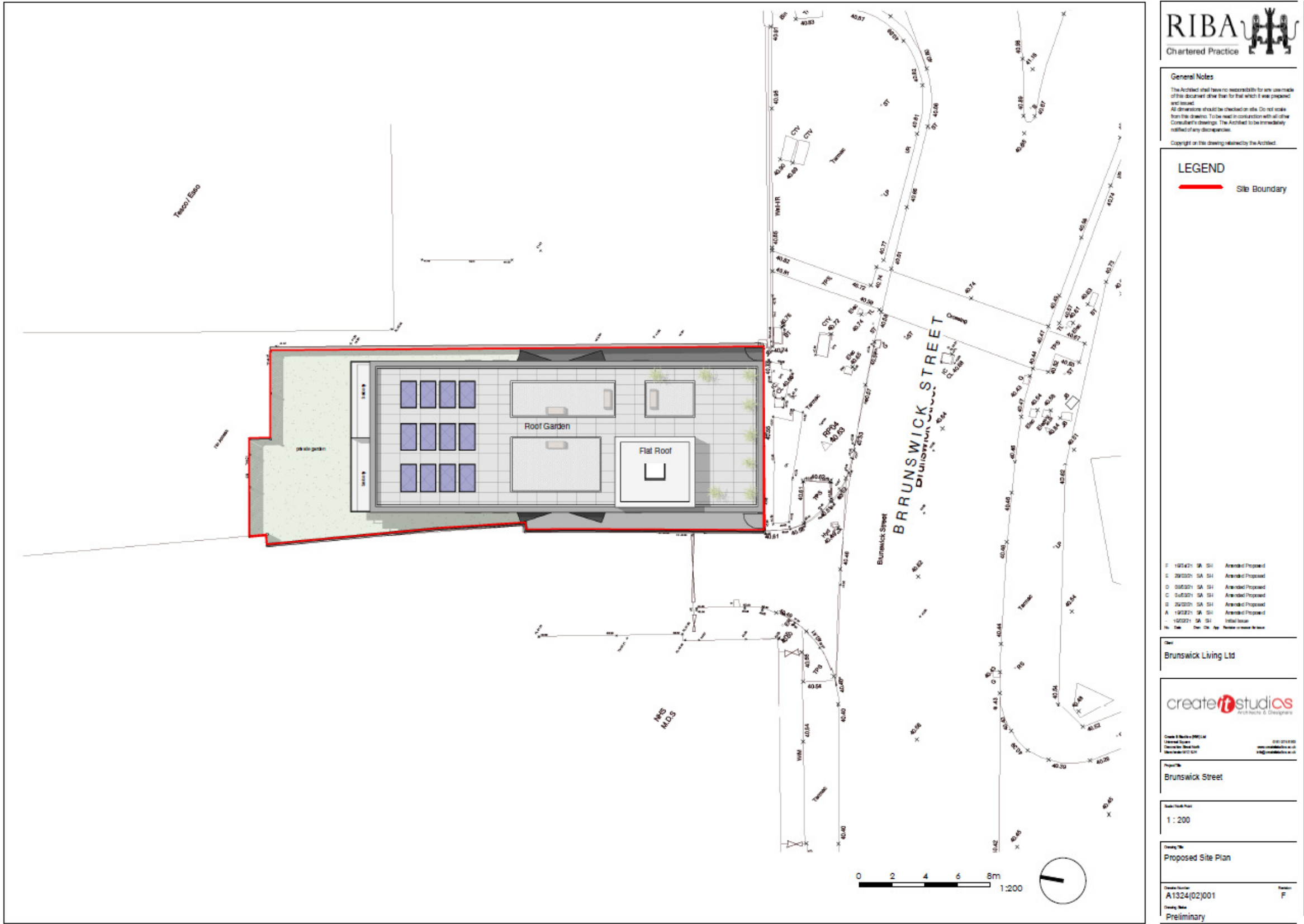
PROPOSED LAYOUT

- 3.1. The proposed site layout is shown in Figure 6.1 and the full version is in Appendix C
- 3.2. The proposed development is a building of 220m².

PROPOSED LEVELS

- 3.3. The preliminary proposed levels surround the building will be kept as close as possible to the existing levels.

Figure 6.1 Proposed Layout



4.0 PROPOSED DRAINAGE

SURFACE WATER DRAINAGE OPTIONS

- 4.1. Redevelopment of the site will result in no increase in impermeable area as the new building will be placed on hard standing. The proposed building will be 220m². It has been agreed with United Utilities and Manchester City Council that it is acceptable to discharge at 5l/s into the sewer infrastructure, if ground conditions are not conducive for soakaway.
- 4.2. In order to ensure that post-development run-off volumes and peak flow rates discharging from the site do not exceed current levels, it may be necessary to employ SuDS (Sustainable Drainage Systems) methods and source control techniques, including flow control devices to restrict flows and to store attenuated water on site. The provision of such techniques will ensure that the maximum discharge from the site does not exceed the agreed rates with the statutory bodies. In addition, where practicable, opportunities for reducing flood risk through the management of surface water run-off from the site should be included.
- 4.3. Storage of attenuated flows within the site could be provided in a number of ways:
- under ground – over-sized pipes / tanks or proprietary storage systems such as ‘Stormcell’;
 - above ground – storage / balancing pond, designated surface areas (low risk areas such as car parks, open space);
 - combination of underground and above ground;
- 4.4. Proposed SW drainage systems are generally designed in accordance with ‘Sewers for Adoption’¹, which requires that any surface water drainage system, which is proposed to be Adopted after construction, should not surcharge during the 1 in 5 year storm event, and should not produce any surface flooding during a 1 in 30 year storm event (i.e. all run-off contained wholly within the sewerage system during the 1 in 30 year event).
- 4.5. It is generally accepted that a degree of surface flooding can be permitted during extreme storm events, subject to specific surface areas being designated as flood-susceptible and subject to flooding of these areas posing little or no risk to human life and/or damage to property. Examples of surface areas which might be permitted to flood during extreme events are:
- Agricultural land;
 - Recreational land (playing fields etc.);
 - Landscaped areas;
 - Car parks;
 - Other non-inhabited, designated areas.
- 4.6. In all cases where surface flooding might be permitted or designed in to a scheme, due diligence needs to be given to NPPF and the need to make potential users of such areas aware of their functionality and purpose, and the requirement to maintain safe access and egress at all times.

¹ ‘Sewers for Adoption’ 6th Edition, published by WRc Plc., March 2006

4.7. The Building Regulations Approved Document H (2002) outlines a hierarchy of potential methods of disposing of surface water from a site:

- A soakaway; or where that is not practicable
- A watercourse or river; or where that is not practicable,
- A sewer.

4.8. The viability of this hierarchy has been assessed below:

SOAKAWAY

4.9. According to the BGS the super deposits are Devensian Till. Till is not permeable and therefore soakaways are unlikely to work in this area.

4.10. It is not recommended that this type of drainage is used on this site.

WATERCOURSES / WATER BODIES

4.11. There are no watercourses in the vicinity of the site.

SEWERS

4.12. There are existing public sewers flowing down Brunswick Street. With agreement from United Utilities and Manchester City Council the surface water and foul can be discharge to the public sewers in Brunswick Road.

4.13. Below is a chart based on table 1.1 typical SuDS components within CIRIA Guidance 697 SuDS manual. This discusses the viable SuDS components and whether they are useable for this site.

Component	Description	Is it viable
Filter Strips	These are wide, gently sloping areas of grass or other dense vegetation that treat runoff from adjacent impermeable areas.	Infiltration is likely to be unsuccessful therefore this type of SuDS system should not be viable.
Swales	Swales are broad, shallow channels covered by grass or other suitable vegetation. They are designed to convey and/or store runoff, and can infiltrate the water into the ground (if ground conditions allow)	Infiltration is likely to be unsuccessful therefore this type of SuDS system should not be viable.
Infiltration Basins	Infiltration basins are depressions in the surface that are designed to store runoff and infiltrate the water to the ground. They may also be landscaped to provide aesthetic and amenity value	Infiltration is likely to be unsuccessful therefore this type of SuDS system should not be viable.
Wet Ponds	Wet ponds are basins that have a permanent pool of water for water quality treatment. They provide temporary storage for additional storm runoff above the permanent water level. Wet ponds may provide amenity and wildlife benefits	Wet ponds are suitable for this site. However the proposed development is a building and a pond would take too much space. Therefore this type of SuDS is unsuitable
Extended detention basins	Extended detention basins are normally dry, though they may have small permanent pools at the inlet and outlet. They are designed to detain a certain volume of runoff as well as providing water quality treatment.	Extended detention basins would not be possible due to the ground not being permeable. Therefore this type of SuDS is unsuitable
Constructed Wetland	Constructed wetlands are ponds with shallow areas and wetland vegetation to improve pollutant removal and enhance wildlife habitat	Constructed wetland would be possible Therefore this type of SuDS is suitable
Filter drains and perforated pipes	Filter drains are trenches that are filled with permeable material. Surface water from the edge of paved areas flows into the trenches, is filtered and conveyed to other parts of the site. A slotted or	Infiltration is likely to be unsuccessful therefore this type of SuDS system should not be viable.

	perforated pipe may be built into the base of the trench to collect and convey the water.	
Infiltration devices	Infiltration devices temporarily store runoff from a development and allow it to percolate into the ground.	Infiltration is likely to be unsuccessful therefore this type of SuDS system should not be viable.
Pervious surfaces	Pervious surface allow rainwater to infiltrate through the surface into an underlying storage layer, where water is stored before infiltration to the ground, reuse, or release to surface water	Infiltration is likely to be unsuccessful therefore this type of SuDS system should not be viable.
Green Roofs	Green roofs are system which cover a building's roof with vegetation. They are laid over a drainage layer, with other layers providing protection, waterproofing and insulation.	The green roofs are not to be used in this development as there is no space on the roofs. Therefore this type of SuDS is unsuitable
Geo cellular storage	Geo cellular are tanks below ground that hold surface water	This type of SuDS will be feasible on the site. It will not take up land. Therefore this type of SuDS is suitable.

4.14. Following the above exercise a manhole will be used for attenuation

SURFACE WATER DRAINAGE STRATEGY

- 4.15. There is no increase in impermeable area. The discharge from the proposed building will be set at 5l/s and discharge into the existing public sewers.
- 4.16. The proposed surface water network has been designed using Micro drainage flow simulation software to ensure the following:
- 4.17. No surcharging of drainage network for Design Storm of 1 in 2 years.
- 4.18. No flooding for design flood frequency of 1 in 30 years.
- 4.19. 1:100 year + 30% model should be duly reviewed and flood routing plans prepared as part of the detailed site designs
- 4.20. The discharge from the site is 5 l/s to the existing drainage network. The attenuation up to and including the 1 in 100 year event is 3.5m³. This will be kept within a manhole.
- 4.21. Maintenance of the drainage will be undertaken by Brunswick Living Limited.

5.0 CLIMATE CHANGE

- 5.1. Below are the recommended rainfall intensity increases from the Flood Risk Assessment climate change allowance report dated 19th February 2016.

Table 2 peak rainfall intensity allowance in small and urban catchments (use 1961 to 1990 baseline)

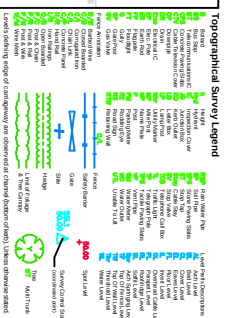
Applies across all of England	Total potential change anticipated for 2010 to 2039	Total potential change anticipated for 2040 to 2059	Total potential change anticipated for 2060 to 2115
Upper End	10%	20%	40%
Central	5%	10%	20%

- 5.2. For practical reasons it is difficult to define the lifetime of a development as each development has different characteristics. However, residential development is considered to have a minimum lifetime horizon of 100 years, unless there is specific justification for considering a shorter period (e.g. development controlled by a time-limited Planning Condition). This development lifetime is approximately 100 year design life
- 5.3. Therefore, over the next 100 years, the recommendations contained in table 2 Flood Risk assessments: climate change allowance document in terms of increased rainfall, would equate to an increase of between 20% and 40% in peak rainfall intensity.
- 5.4. A rainfall intensity of 30% has been used for designing this development. At detailed design the drainage will be investigated to ensure there is no flooding at 40% rainfall intensity.
- 5.5. The preliminary design of the proposed SW drainage system has taken account of this increase in peak rainfall intensity over the lifetime of the proposed development and has demonstrated that surface water run-off can be managed in a sustainable manner on the site, including the effects of climate change. It is therefore considered that the proposed development has taken account of climate change effects

6.0 CONCLUSIONS AND RECOMMENDATIONS

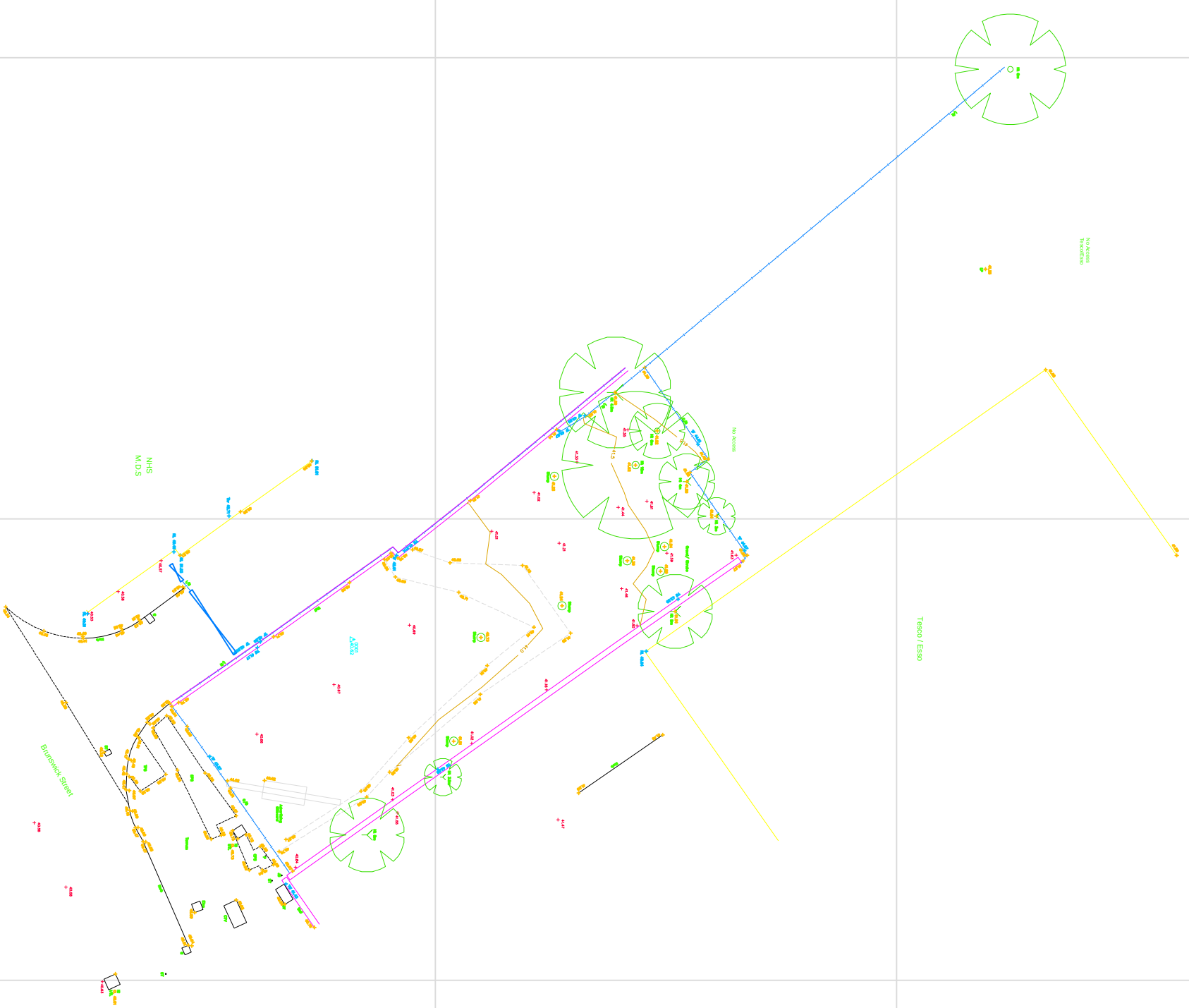
- 6.1. Brunswick Living Limited are proposing a new building. The proposed size of the new building is approximately 220m². There is no increase in impermeable area.
- 6.2. The Local Planning Authority has requested that the drainage is formally assessed through a Drainage Strategy.
- 6.3. Redevelopment of the site will not be expected to displace any flood waters.
- 6.4. It is proposed the building will discharge at 5l/s into the existing UU infrastructure in Brunswick Street. This has been agreed with UU. The storage required is 3.5m³.
- 6.5. Based on the information provided to ELLUC Projects Ltd to accompany this Drainage Strategy, redevelopment of the site would be considered sustainable in terms of Drainage as per the existing site.

APPENDIX A:



Stn	Easting	Northing	Level
0001	481.53	530.51	40.02
0002	500.00	500.00	40.50
0003	511.49	553.26	40.90
0004	493.99	578.47	40.98
OSBM	636.18	601.87	41.45

Survey Station Coordinates



Levels are related to OSGM
Value: **41.25m**
Situated on No.2 Higher A1400.
Coordinates are related to Local Grid

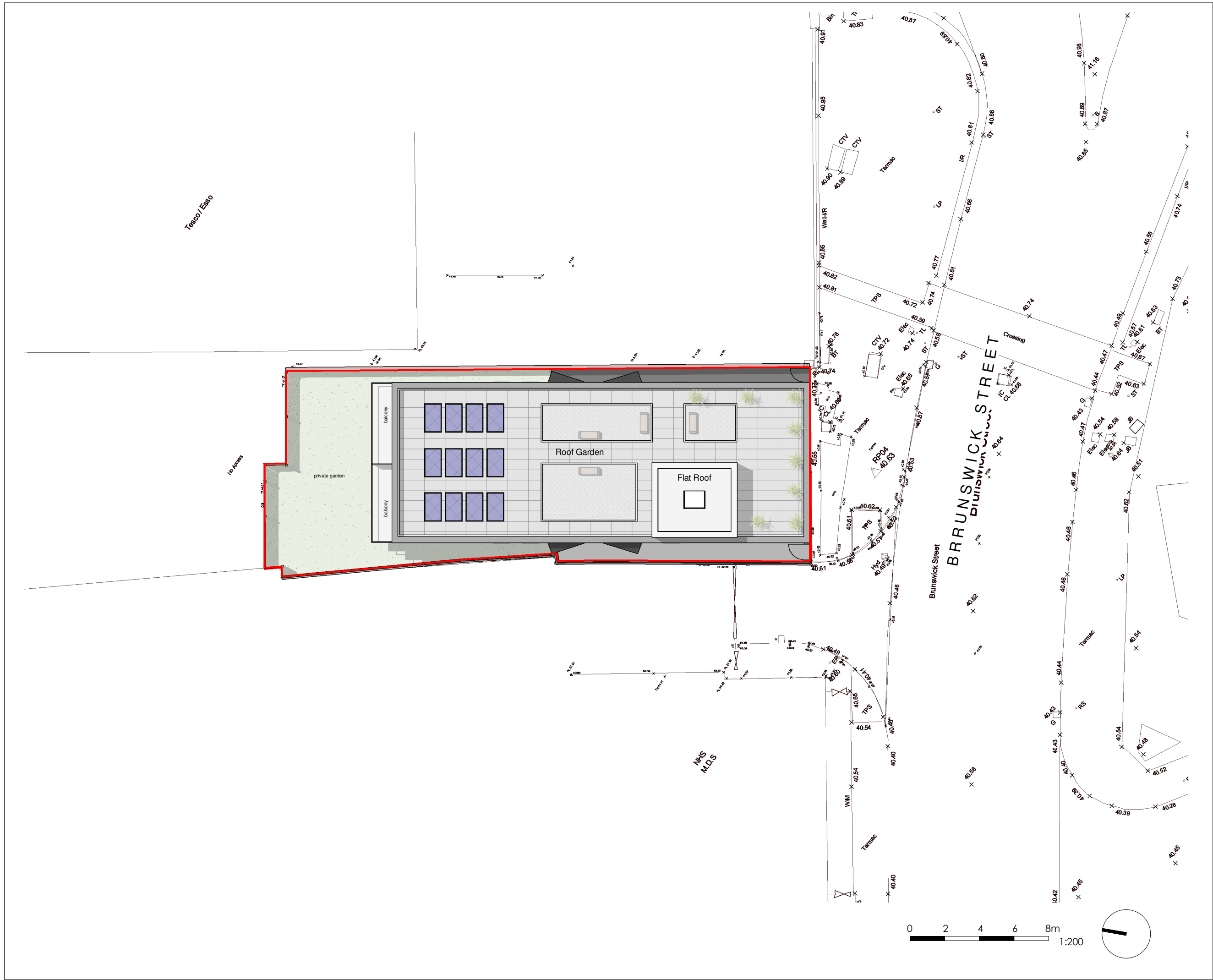
Head and Ring Laboratories
Survey Systems Ltd
Willow Brook House
Ole Road
Hindforth • Wilton
Cheshire SK9 3AE
Tel. 01625 536444
Fax 01625 526844
mailto:survey.sys.co.uk

**Topographical Survey
Brunswick Street
Manchester**

SSL:16392:100:1.1



APPENDIX B:



General Notes

The Architect shall have no responsibility for any use made of this document other than for that which it was prepared and issued.
All dimensions should be checked on site. Do not scale from this drawing. To be read in conjunction with all other Consultant's drawings. The Architect to be immediately notified of any discrepancies.

Copyright on this drawing retained by the Architect.

LEGEND

Site Boundary

F	16/04/21	SA	SH	Amended Proposed	
E	28/03/21	SA	SH	Amended Proposed	
D	08/03/21	SA	SH	Amended Proposed	
C	04/03/21	SA	SH	Amended Proposed	
B	25/02/21	SA	SH	Amended Proposed	
A	19/02/21	SA	SH	Amended Proposed	
-	16/02/21	SA	SH	Initial Issue	
No.	Date	Dwn	Chk	App	Revision or reason for issue

Client
Brunswick Living Ltd

createitstudios
Architects & Designers

Create It Studios (NW) Ltd
Universal Square
Devonshire Street North
Manchester M12 6JH
0161 974 6165
www.createitstudios.co.uk
info@createitstudios.co.uk

Project Title
Brunswick Street

Scale / North Point

1 : 200

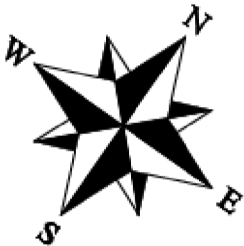
Drawing Title
Proposed Site Plan

Drawing Number
A1324(02)001
Drawing Status
Preliminary

Revision
F

APPENDIX C:

Key:



Existing Combined Sewer

New Storm Connection

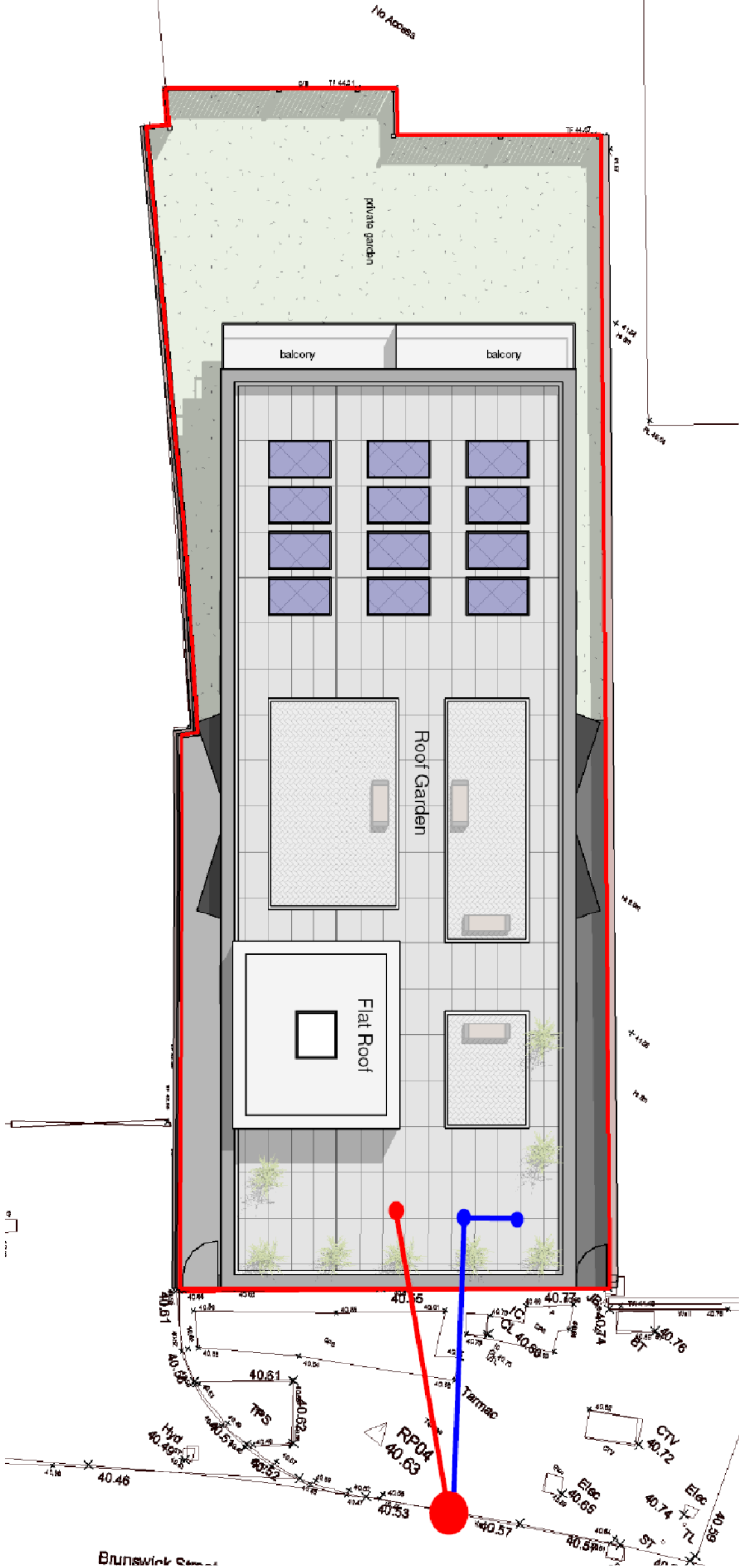
New Foul Connection

Storm Access Chamber

Foul Access Chamber

Notes:

1. DETAILED DESIGN INFORMATION TO BE OBTAINED FROM FULL DESIGN.
2. BOTH THE SURFACE AND FOUL WATER ARE DISCHARGED INTO EXISTING COMBINED SEWER AT A DISCHARGE RATE 5 l/s.
3. POSITIONS AND LEVELS OF ALL EXISTING DRAINS AND SEWERS ARE TO BE CONFIRMED ON SITE BY THE CONTRACTOR IN ADVANCE OF ANY CONSTRUCTION INCLUDING THOSE PIPELINES WHICH ENTER ADVANCE TRAIL FITTING TO CONFIRM DETAILS.
4. ANY VARIATION FOUND TO THE INFORMATION ON THIS DRAWING IS TO BE REPORTED TO THIS OFFICE FOR FURTHER INSTRUCTION.
5. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO CHECK ALL ON-SITE EXISTING GROUND LEVELS PRIOR TO COMMENCING ANY WORKS. IF THERE ARE ANY DISCREPANCIES THE CONTRACTOR MUST REPORT TO THE ENGINEER IMMEDIATELY.
6. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO NOTIFY THE DRAINAGE AUTHORITY OF THE COMMENCEMENT OF ANY DRAINAGE WORKS AND TO COMPLETE ANY REQUIRED SEWER CONNECTION FORMS INCLUSIVE OF PAYING ANY REQUIRED FEES. THE CONTRACTOR MUST ALLOW FOR THE SUPERVISION OF THE SEWER CONSTRUCTION WORKS BY THE LOCAL AUTHORITY AND NOTIFY THE SUPERVISING OFFICER, GIVING NOTICE WHICH IN ACCORDANCE WITH THE L.A REQUIREMENTS.
7. BEFORE COMMENCING ANY WORKS ON-SITE, THE CONTRACTOR MUST CONTACT THE RELEVANT UTILITY COMPANY AND BE IN POSSESSION OF THE LATEST AVAILABLE DRAININGS DETAILING THEIR SERVICES/APPARATUS.
8. THE CONTRACTOR MUST CONFIRM THE EXACT LOCATION AND DEPTH OF ALL SERVICES/APPARATUS THIS CAN BE DONE BY THE USE OF ELECTRO-LOCATION OR SIMILAR DEVICES OR WHERE NECESSARY BY HAND DUG TRIAL HOLES. IN ACCORDANCE WITH THE AFFECTED UTILITY COMPANY SAFETY PROCEDURES, MECHANICAL EXCAVATOR, POWER TOOLS ETC. MUST NOT BE USED TO LOCATE EXISTING SERVICES/APPARATUS.



B		SITE LAYOUT UPDATED	21/04/21	IMP L SE
A		SITE LAYOUT UPDATED	01/02/17	IMA L CT
Rev:		Description:	Date:	By: Chkd:
Status:				

PRELIMINARY

REC

Project: BRUNSWICK STREET
MANCHESTER

Org Title: CONCEPT DRAINAGE DESIGN

ELLUC Projects

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Scale:	Site:	From Issue:	Owner:	Contractor:	Rev:
1:50	A1	20/11/2017	IMA	CT	8

Drawing No:

EL-617-REC-B-100

APPENDIX D

Charles Townsend - Elluc Projects

From: Harrison, William <William.Harrison1@uuplc.co.uk>
Sent: 13 January 2017 08:13
To: Charles Townsend - Elluc Projects
Cc: Wastewater Developer Services
Subject: Repeat DE3031: 17 Brunswick, Ardwick, Manchester

Morning Charles,

Apologies. In light of your reply I would be willing to accept both the surface and foul water into the combined sewer network at a rate of no more than 6.5 l/s.

Kind Regards,

Will Harrison BSc (Hons)
Assistant Developer Engineer
Developer Services & Planning
Operational Services
United Utilities

T : 01925 679319
E : Wastewaterdeveloperservices@uuplc.co.uk

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United Utilities Water Ltd. - Developer Services and Planning
Warrington North Wastewater Treatment Works
Barnard Street Off Old Liverpool Road
Gatewarth Industrial Estate
Warrington
WA5 1DS

From: Charles Townsend - Elluc Projects [mailto:charles@ellucprojects.co.uk]
Sent: 11 January 2017 10:39
To: Harrison, William <William.Harrison1@uuplc.co.uk>
Cc: Wastewater Developer Services <WastewaterDeveloperServices@uuplc.co.uk>
Subject: RE: DE3031: 17 Brunswick, Ardwick, Manchester

Hi Will, thank you very much for your speedy response it got me out of a bind, so thank you.

I think I sent not a very good location plan. Please see below the site, in light of this does it make any difference to you comments:

Sorry for the confusion.

Kind regards
Charles

Cheshire
WA1 1GG

Tel: (01925) 243333

Email: charles@ellucprojects.co.uk

Web: www.ellucprojects.co.uk

Also offices in:

ELLUC Projects Ltd (Midlands)

7 Regents Courts, Far Moor Lane, Redditch, West Midlands, B98 0SD



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From: Harrison, William [<mailto:William.Harrison1@uuplc.co.uk>]

Sent: 11 January 2017 10:20

To: Charles Townsend - Elluc Projects <charles@ellucprojects.co.uk>

Cc: Wastewater Developer Services <WastewaterDeveloperServices@uuplc.co.uk>

Subject: DE3031: 17 Brunswick, Ardwick, Manchester

Good Morning Charles,

Happy new year to you also, I hope you had a good one.

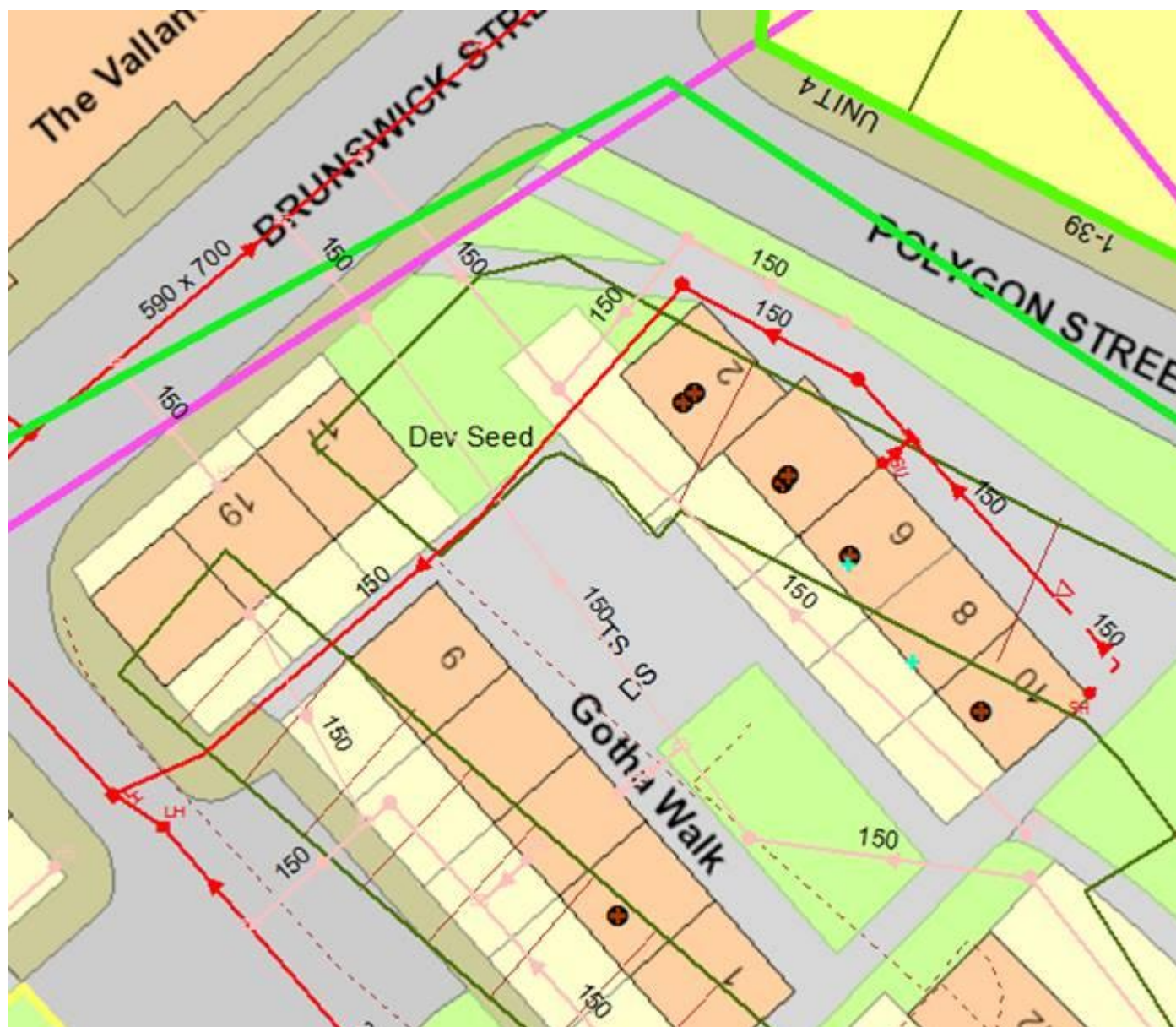
Foul will be allowed to drain to the public combined sewer network at a unrestricted rate and at a point convenient to yourself.

Surface water from this site must drain to soak away or some other form of infiltration system but if ground conditions confirm that this is not a viable solution all surface water can drain to the public combined sewerage system at a point that is convenient to yourself but at a restricted rate of 6.5 l/s.

Although we may discuss and agree discharge points & 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:

<http://www.unitedutilities.com/connecting-public-sewer.aspx>

A public sewer crosses this site and we will require unrestricted access to the sewer for maintenance purposes, we would ask that you maintain a minimum clearance of 3m as per building regulations which is measured from the centre line of the pipe. If you cannot achieve this then you may wish to consider diverting the public sewer. From our sewer records I note that there is a number of existing small diameter sewers crossing the site as per the sewer extract below (indicative only)



Please refer to the link below to obtain full details of the processes involved in sewer diversion:

<http://www.unitedutilities.com/sewer-diversion.aspx>

Please be aware that on site drainage must be designed in accordance with Building Regulations, National Planning Policy, and local flood authority guidelines, we would recommend that you speak and make suitable agreements with the relevant statutory bodies.

Kind Regards

Will Harrison BSc (Hons)

Assistant Developer Engineer
Developer Services & Planning
Operational Services
United Utilities
T : 01925 679319

E : Wastewaterdeveloperservices@uuplc.co.uk

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**United Utilities Water Ltd. - Developer Services and Planning
Warrington North Wastewater Treatment Works
Garnard Street Off Old Liverpool Road
Gatewarth Industrial Estate
Warrington
WA5 1DS**

From: Wastewater Developer Services

Sent: 06 January 2017 11:39

To: Harrison, William <William.Harrison1@uuplc.co.uk>

Subject: DE3031: Brunwick, due 27/1/17

Samantha Mottram

Key Developer Manager
Developer Services & Planning
Operational Services
United Utilities
T: 01925 679313 (internal 79313)
M: 07920 819509 (mobex 80889)
unitedutilities.com

From: Charles Townsend - Elluc Projects [<mailto:charles@ellucprojects.co.uk>]

Sent: 06 January 2017 11:35

To: Wastewater Developer Services <WastewaterDeveloperServices@uuplc.co.uk>

Subject: Brunwick,

Dear all, hope you all had a good Christmas.

Please can I agree a discharge for a new site I have at 17 Brunswick Street, Manchester, M13 9SU. I would like to discharge 5l/s into your infrastructure.

I have investigated soakaways however we believe they will not work because there is a petrol station next door so it is likely that the ground is contaminated.

If you have any further questions please do not hesitate to contact me.

Kind regards
Charles

Charles Townsend
Senior Hydrologist



Charles Townsend
Senior Hydrologist

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Centre Park
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