

ENVIRONMENT

Express Solicitors
Northenden
Greater Manchester
Sustainable Drainage Statement

ENVIRONMENT

Express Solicitors Northenden Greater Manchester Sustainable Drainage Statement

Birmingham
Livery Place, 35 Livery Street, Colmore Business District, Birmingham, B3 2PB
T: 0121 233 3322

Cambridge
14-16 High Street, Histon, Cambridge
CB24 9JD
T: 01223 235 173

Leeds
Whitehall Waterfront, 2 Riverside Way, Leeds
LS1 4EH
T: 0113 233 8000

London
11 Borough High Street
London, SE1 9SE
T: 0207 407 3879

Manchester
11 Portland Street, Manchester, M1 3HU
0161 233 4260

Market Harborough
12a Woodcock House, Compass Point Market Harborough, Leicestershire, LE16 9HW
T: 01858 455020

Nottingham
Waterfront House, Station Street, Nottingham NG2 3DQ
T: 0115 924 1100

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P01	23/08/23	S2	Louis Ream BEng (Hons)	Catherine Thorpe BSc (Hons) MCIInstCES	Keith Alger BSc (Hons) MSc

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CONTENTS

1. INTRODUCTION..... 1

 Sustainable Drainage Guidance.....3

2. EXISTING CONDITIONS 5

 Existing Runoff Rates 6

 Existing Runoff Volume 7

3. SURFACE WATER DRAINAGE STRATEGY 9

 Drainage Hierarchy 9

 Peak Flow Control..... 10

 Drainage Strategy 11

 Parcel A 11

 Parcel B 12

 Runoff Volume Control 12

 Sustainable Drainage Systems 13

 Residual Risk and Designing for Exceedance 13

4. MAINTENANCE 14

5. FOUL WATER DRAINAGE..... 15

6. SUMMARY 16

FIGURES

Figure 1.1: Site Location
Figure 2.1: Rational Method
Figure 2.2: 1 in 100-Year, 6 Hour Runoff Volume
Figure 2.3: 100-Year 6 Hour Rainfall Intensity

TABLES

Table 1.1: Site Summary
Table 1.2: Upper Mersey Management Catchment Peak Rainfall Allowances
Table 2.1: Existing Runoff Rates from the Site
Table 2.2: Equivalent Greenfield Runoff Rates from the Site
Table 3.1: Existing & Proposed Runoff Rates
Table 3.2: Outline Attenuated Storage Requirements- Parcel A
Table 6.1: Sustainable Drainage Statement Summary

APPENDICES

Appendix 1: Proposed Site Layout
Appendix 2: North West SuDS Pro Forma
Appendix 3: United Utilities Sewer Asset Records
Appendix 4: Topographical Survey
Appendix 5: Greenfield Runoff Rate Calculations
Appendix 6: Impermeable Areas Plan
Appendix 7: United Utilities Pre-Development Enquiry Responses
Appendix 8: LLFA Correspondence
Appendix 9: MicroDrainage Calculations
Appendix 10: Outline Drainage Strategy

1. INTRODUCTION

- 1.1 A Sustainable Drainage Statement (SDS) sets out the principles of drainage design for a development and summarises the reasoning behind the chosen design. This includes consideration of national and local guidance, justification of specific flow rates, volumes of attenuated storage, as well as the appropriate level of treatment to be provided to surface water runoff.
- 1.2 This SDS has been produced by BWB Consulting on behalf of Express Solicitors in respect of a planning application for mixed use development on two parcels of land off Palatine Road and Brett Street, Northenden, Greater-Manchester.
- 1.3 A Flood Risk Assessment (FRA) has been produced for the site (reference NDM-BWB-ZZ-XX-RP-YE-0002_FRA) and this SDS accompanies this overarching document.
- 1.4 This SDS is intended to support an outline planning application and as such the level of detail included is commensurate and subject to the nature of the proposals.
- 1.5 A proposed site development plan is included as **Appendix 1**.
- 1.6 The location of the site is illustrated within **Figure 1.1**, with contextual information provided within **Table 1.1**.



Figure 1.1: Site Location

Table 1.1: Site Summary

Site Name	Northenden	
Parcel	A	B
Location	Manchester	
NGR (approx.)	SJ830903	SJ830902
Application Site Area (ha)	0.19 (approx.)	0.04 (approx.)
Development Type	Residential	Residential
Sewerage Undertaker	United Utilities	
Lead Local Flood Authority (LLFA)	Manchester City Council	
Local Planning Authority	Manchester City Council	

Sustainable Drainage Guidance

- 1.7 Sustainable Drainage Systems (SuDS) aim to reduce the impact of development by mimicking the natural runoff regime and treating and discharging water close to where it falls. They should be designed with the four pillars of SuDS in mind: water quality, water quantity, amenity, and biodiversity.
- 1.8 Within the Manchester City, Salford City and Trafford Council Level 2 Strategic Flood Risk Assessment (SFRA), the site has been identified as falling within the Critical Drainage Area (CDA). The SFRA sets out certain drainage requirements for sites that fall within a CDA which area summarised as follows:
- Development should aim to deliver Greenfield runoff on Greenfield sites up to a 1 in 100 year storm event, considering climate change.
 - 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.
- 1.9 Local authorities within the Greater Manchester area also require the North West SuDS Pro Forma to be filled out and accompany any planning application. This has been filled out for both parcels and is included as **Appendix 2**.
- 1.10 The LLFA do not have any further specific SuDS guidance to inform planning applications and in the absence of further information, the Non-Statutory Technical Standards for Sustainable Drainage Systems¹ as published by DEFRA have been utilised to inform the strategy.
- 1.11 Table 2 from the Environment Agency's (EA) 'Flood risk assessments: climate change allowances'², included as **Table 1.2**, shows the anticipated changes in peak rainfall intensity for the site.

¹ 2015, DEFRA. Non-statutory technical standards for sustainable drainage systems

² <https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances>

Table 1.2: Upper Mersey Management Catchment Peak Rainfall Allowances

Upper Mersey Management Catchment Allowance	Total Potential Change Anticipated for the '2050s' (Lifetime up to 2060)	Total Potential Change Anticipated for the '2070s' (2061 to 2125)
1 in 30-Year Rainfall Event		
Upper End	35%	40%
Central	20%	30%
1 in 100-Year Rainfall Event		
Upper End	40%	45%
Central	25%	30%

- 1.12 It is anticipated that the lifetime of the Proposed Development will be up to 100 years, therefore the Proposed Development falls into the '2070s' epoch.
- 1.13 Based on the guidance detailed above, a 45% climate change allowance will be applied to the 1 in 100-year rainfall event and a 40% climate change allowance should be applied to the 1 in 30-year rainfall event, as part of the detailed design.

2. EXISTING CONDITIONS

- 2.1 The site is located within the Northenden area of Greater-Manchester, approximately 8km south of Manchester City centre and comprises two entirely brownfield parcels of land.
- 2.2 For the purpose of this report the two land parcels have been defined as 'Parcel A' (the northern parcel) and 'Parcel B' (the southern parcel).
- 2.3 Parcel A (0.19ha) is situated off Palatine Road which forms the western boundary of the site and Allanson Road which forms the eastern boundary, the parcel is bound by commercial and residential development along the remaining boundaries.
- 2.4 Parcel B (0.04ha) is located off Brett Street to the south. Residential development binds the western and northern boundaries of the parcel. The eastern boundary is bound by Allanson Road.
- 2.5 Both parcels are shown to be situated with Flood Zone 2 of the EA's Flood Map for Planning. This is defined as land having between a 1 in 100 and 1 in 1000 annual probability of river flooding (1% - 0.1% AEP).
- 2.6 However, hydraulic modelling undertaken for the area as part of the Flood Risk Assessment, has identified both parcels to also be impacted by the 1 in 100+41% climate change event.
- 2.7 As the proposals are for both parcels to be residential use, it is proposed at this time to mitigate the potential flood risk posed to the parcels, by raising finished floor levels of both developments a minimum of 600mm above the maximum modelled, 1 in 100 year climate change flood level for the area. Should there be any changes to the proposals, then potentially the FFL could be reviewed. Further details on this can be found in the accompanying FRA (NDM-BWB-ZZ-XX-RP-YE-0002_FRA).
- 2.8 Both parcels are expected to currently drain surface and foul water to the United Utilities combined sewers which surround both parcels. The United Utilities Asset Records are included as **Appendix 3**.
- 2.9 A topographical survey of the site has been undertaken and is included as **Appendix 4**. Both land parcels demonstrate generally flat topography. Ground levels at Parcel A range between approximately 29.30 metres Above Ordnance Datum (mAOD) and 29.60mAOD. Levels at Parcel B range between approximately 29.50m AOD and 29.70mAOD.
- 2.10 Both sites are overlain entirely by made ground, with BGS mapping showing the bedrock beneath to be a mixture of Helsby Sandstone Formation – Sandstone, Pebbly (Gravelly) and Tarporley Siltstone Formation – Siltstone, Mudstone and Sandstone.

Existing Runoff Rates

- 2.11 The contributing runoff rates from the two parcels have been estimated using the Rational Method, as described within **Figure 2.1** and summarised within **Table 2.1**.

$$Q = 2.78 \times A_p \times i$$

Where:
 Q = runoff rate (l/s)
 A_p = impermeable area (ha)
 i = rainfall intensity (mm/hr)

Figure 2.1: Rational Method

Table 2.1: Existing Runoff Rates from the Site

Return Period (Yrs.)	Average Rainfall Intensity (mm/hr)	Existing Discharge Rate from the Site (l/s)	
		Parcel A (0.19ha)	Parcel B (0.039ha)
1	17.9	9.5	1.9
2	23.1	12.2	2.5
30	44.0	23.2	4.8
100	57.4	30.3	6.2

- 2.12 The SFRA requires discharge rates from new brownfield developments in Critical Drainage Areas to 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.
- 2.13 The runoff rates have been estimated using the IH124 method, with appropriate prorated adjustments for a site of less than 50ha, as recommended in Interim Code of Practice for Sustainable Drainage³. This was undertaken within Micro Drainage, which makes the necessary adjustments for small sites automatically.
- 2.14 An assessment of the equivalent greenfield surface water runoff rates from the parcels has been undertaken and are summarised within **Table 2.2**. Calculations based upon the greenfield runoff for 1 ha, are included within **Appendix 5**.

³ The National SUDS Working Group (2004), Interim Code of Practice for Sustainable Drainage

Table 2.2: Equivalent Greenfield Runoff Rates from the Site

Return Period (Yrs.)	Runoff Rate (l/s)	
	Parcel A (0.19ha)	Parcel B (0.039ha)
1	0.3	0.1
Mean Annual Flow Rate (QBAR)	0.4	0.1
30	0.8	0.2
100	1.1	0.2

Existing Runoff Volume

- 2.15 An assessment of the existing surface water runoff rates from the two parcels has been made for a 1 in 100-year, 6 hour storm.
- 2.16 As the existing site is impermeable, the runoff volume has been calculated using an average rainfall intensity of 11.1mm/hr as calculated using FEH rainfall data within Micro Drainage, and multiplied by the impermeable area, as described within **Figure 2.2**. The 100-year, 6 hour rainfall profile is shown in **Figure 2.3**.

Av. Rainfall (m/hr) x 6 (hours) x Impermeable Area (m ²) = Runoff Volume (m ³)
<u>Parcel A</u>
0.0111 x 6 x 1900 = 126.5m³
<u>Parcel B</u>
0.0111 x 6 x 390 = 26.0m³

Figure 2.2: 1 in 100-Year, 6 Hour Runoff Volume

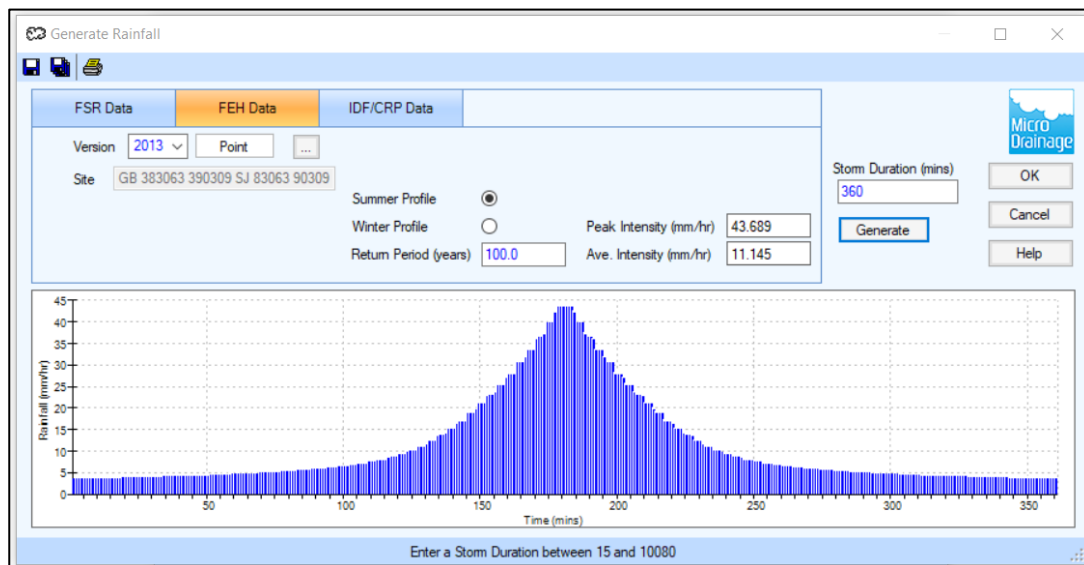


Figure 2.3: 100-Year 6 Hour Rainfall Intensity

3. SURFACE WATER DRAINAGE STRATEGY

- 3.1 The development proposals include the redevelopment of two brownfield parcels of land into residential units.
- 3.2 The existing site for Parcel A is entirely impermeable (0.19ha) and the proposed development is a mixture of residential housing and an apartment block. The proposed impermeable area for this parcel is 0.17ha.
- 3.3 The existing site for Parcel B is also entirely impermeable (0.039ha) and the proposed development includes two residential houses with gardens and has an impermeable area of 0.015ha.
- 3.4 The housing areas of both parcels of land have a dwelling density of approximately 75 dwellings/ha. Therefore a 2% urban creep allowance has been applied to these impermeable areas, based upon general available guidance.
- 3.5 A plan showing the existing and proposed impermeable areas is included as **Appendix 6**.

Drainage Hierarchy

- 3.6 The Planning Policy Guidance⁴ and the SuDS Manual⁵ identify that surface water runoff from a development should be disposed of as high up the following hierarchy as reasonably practicable:
 - i. into the ground (infiltration);
 - ii. to a surface water body;
 - iii. to a surface water sewer, highway drain, or another drainage system;
 - iv. to a combined sewer.
- 3.7 The aim of this approach is to manage surface water runoff close to where it falls and mimic natural drainage as closely as possible.
- 3.8 Due to the presence of made ground and impermeable bedrock, disposal of surface water via infiltration is not feasible in this instance.
- 3.9 There are no existing watercourses in the vicinity which would be suitable for the site to discharge to and this method is therefore not achievable.
- 3.10 United Utilities sewer asset records, included as **Appendix 3**, show no public surface water sewers in the vicinity of the site and hence the only available surface water outfall from the site is to the combined sewers that run adjacent to both parcels, as per the existing conditions.

⁴ Planning Practice Guidance, <http://planningguidance.planningportal.gov.uk/>.

⁵ The SuDS Manual (C753). CIRIA 2015.

- 3.11 An S106 (Water Industry Act 1991) application should be made to United Utilities for approval prior to the connection being made.

Peak Flow Control

- 3.12 For previously developed sites, the proposed runoff rate must be “as close as reasonably practicable” to the greenfield runoff rates but should never exceed the rate of discharge prior to redevelopment for that event.
- 3.13 As the equivalent greenfield rates for both parcels are very low, it would be unfeasible to discharge at the greenfield rates.
- 3.14 Pre-development enquiries were submitted to United Utilities for both parcels to determine appropriate points of connection and discharge rates. Their response is included as **Appendix 7**, with them requesting that the agreed rate for the discharge of surface water from both parcels does not exceed 5l/s.
- 3.15 Manchester City Council, as the LLFA, were also consulted. In their response (included as **Appendix 8**), they reference the SFRA guidance previously stated, as well as requesting that an appraisal is included to determine whether a rate of less than 5l/s could be viable for Parcel A.
- 3.16 It is therefore proposed to discharge surface water from Parcel A at a rate of 4.2l/s which is a 50% betterment to the existing, calculated brownfield, 1 in 1 year runoff rate.
- 3.17 For Parcel B, the development proposals are such that there will be approximately a 62% reduction in impermeable area, due to the introduction of the gardens and therefore naturally this will introduce a greater than 50% betterment in runoff rate, compared. to the existing conditions.
- 3.18 The existing and proposed runoff rates from each parcel are summarised within **Table 3.1**.

Table 3.1: Existing & Proposed Runoff Rates

Return Period (Yr.)	Existing Runoff Rate (l/s)		Proposed Discharge Rate (l/s)	
	Parcel A	Parcel B	Parcel A	Parcel B*
-				
1	9.5	1.9	4.2	0.7
QBAR	12.2	2.5		1.0
30	23.2	4.8		1.8
100	30.3	6.2		2.4
100 + 45%	-	-		-

NB: * based upon 62% reduction in the existing runoff rates.

- 3.19 This approach fulfils the necessary peak runoff control criteria and meets the Manchester City Council and United Utilities requirements.

Drainage Strategy

Parcel A

- 3.20 As the development proposals require a restricted runoff rate, it will be necessary to provide attenuated storage to balance the excess volume in a safe manner within the site.
- 3.21 The surface water storage should be located within the site in a position where it can receive runoff from the development and discharge from the site by gravity, as well as being freely accessible for maintenance purposes.
- 3.22 Sufficient storage for events up to the 1 in 100-year storm with a 45% allowance for climate change should be provided.
- 3.23 After considering the site constraints and development aspirations it is suggested that the necessary surface water storage volume is found within a cellular storage tank located within the car park area.
- 3.24 For the purpose of this outline assessment, it has been assumed that the tank will accommodate all of the necessary storage, but it may be possible to redistribute a portion of the storage within other drainage components during the detailed design of the development (e.g.: in the pipe network, permeable paving, tree pits, etc).
- 3.25 A simulation has been run using Micro Drainage 'Source Control' to identify the necessary storage provision. Using a restriction of 4.2l/s, and a proposed impermeable area of 0.17ha, the volume of attenuated storage required for the development has been calculated for storm events up to the 100 year + 45% storm. The results are summarised in **Table 3.2** and calculations are included as **Appendix 9**.

Table 3.2: Outline Attenuated Storage Requirements- Parcel A

Rainfall Method	Critical Storm	Maximum Volume (m ³)
FSR	120 min Winter	69.5
FEH	120 min Winter	88.2

- 3.26 At this outline design stage, it is expected that a minimum of 88.2m³ of attenuated storage will be provided to cater for the maximum anticipated runoff volume for all storm durations up to the 1 in 100-year return period storm, including a 45% climate change allowance and future urban creep.
- 3.27 It is envisaged that the final required attenuated storage volume will be determined during the detailed design stage, once the development layout and drainage areas are fixed.

Parcel B

- 3.28 Due to the nature of the development, there will be an approximate 62% reduction in impermeable areas within the site, and hence a 62% reduction in surface water flows leaving the site. This meets the LLFA guidance and hence is it not proposed to restrict or attenuate surface water leaving the site.
- 3.29 Drainage from this parcel should utilise existing connections and features where possible and should be designed in accordance with Building Regulations⁶.
- 3.30 United Utilities asset records show a public combined sewer which originates adjacent to the site, close to the western boundary of the site. This should be fully surveyed to determine its alignment and correspondence should be made within United Utilities to determine an appropriate easement/diversion, should it be required.

Runoff Volume Control

- 3.31 The Non-Statutory Technical Standards for Sustainable Drainage Systems S4-S6⁷ states that where reasonably practical the runoff volume from a development for the 1 in 100-year 6 hour rainfall event should not exceed the runoff volume prior to development or redevelopment. Additionally, if practicable on previously developed sites, the runoff volume should not exceed the equivalent greenfield runoff volume. Where it is not reasonably practicable to constrain the volume of runoff from a development at or below the existing volume, then the runoff must be discharged in a manner that does not adversely affect flood risk, i.e.:
- i. The additional runoff volume resulting from the development (the 'long term storage volume') should be discharged separately from the site at a rate of 2l/s/ha or less.
- Or,

⁶ 2010, Building and Buildings, England and Wales, The Building Regulations 2010

⁷ 2015, DEFRA. Non-statutory technical standards for sustainable drainage systems

- ii. All the runoff volume from the development should be discharged at a rate equivalent to the mean annual flow rate (QBAR) rate under greenfield conditions or less. Or,
 - iii. All the runoff volume from the development should be discharged at a rate of 2l/s/ha or less.
- 3.32 As both parcels include a reduction in impermeable areas, there will be a reduction in runoff volume. Due to the site constraints and the nature of the development, it is not deemed practical to restrict the surface water to accommodate the pre-development greenfield runoff volume.

Sustainable Drainage Systems

- 3.33 It is recommended that permeable paving is included in the parking area of Parcel A, to provide treatment/water quality and storage benefits.
- 3.34 Consideration should be given to further SuDS features such as tree pits, water butts, filter drains etc to provide amenity and biodiversity benefits at detailed design stage.
- 3.35 An indicative surface and foul water layout for the development is shown on BWB Dwg No.NDM-BWB-ZZ-XX-DR-CD-0001 which is included as **Appendix 10**.

Residual Risk and Designing for Exceedance

- 3.36 In the event that the capacity of the attenuation is exceeded, flood water will be directed away from buildings and pool within the car parking areas.
- 3.37 In addition to the volume of storage provided within the main attenuation, there will be capacity within upstream pipes and manholes which has not been accounted for at this stage and a further level of redundancy to the network will therefore be provided.

4. MAINTENANCE

- 4.1 For Parcel A, a suitable management company should be appointed to maintain the SuDS features.
- 4.2 Requirements for ongoing maintenance of the drainage network for Parcel A should form part of the Operation and Maintenance manual for the site and should be undertaken by the site management. Any specialist or proprietary products that are specified at detailed design should have a manufacturer specific maintenance regime which should be included within the document.
- 4.3 It is envisaged that the Operation and Maintenance manual will be developed at the detailed design stage, but some examples are included below.
- i. All drainage features should be located in open areas which are readily accessible.
 - ii. Gullies should be inspected and de-silted at least once a year, where necessary.
 - iii. Pipes, manholes and silt traps should be inspected and de-silted at least once a year, where necessary.
 - iv. If permeable paving is incorporated within the layout, it should be swept a minimum of every 6 months to maintain flow capacity of the joints between blocks.
 - v. Regular inspections of the attenuation tank should be undertaken to remove litter/debris, invasive/colonising vegetation and silt build up as necessary. Inlet and outlet structures to be regularly inspected, with remedial work as required to maintain water flows and prevent silt/vegetation build up.
 - vi. Hydro-brakes should be inspected every 6 months, litter/debris and silt build up should be removed as necessary.
- 4.4 The drainage features within Parcel B will remain to be the maintenance responsibility of the individual homeowners.

5. FOUL WATER DRAINAGE

- 5.1 Foul flows from both parcels are currently expected to drain to the public combined sewers that run adjacent to the parcels, as shown on the United Utilities sewer asset records, included as **Appendix 3**.
- 5.2 Pre-development enquiries were submitted to United Utilities for both parcels to determine appropriate connection points and whether the existing network has capacity. The responses are included as **Appendix 5**.
- 5.3 For Parcel A, a new foul run is proposed in the car park area, which connects to the surface water pipe downstream of the tank and then a combined sewer is proposed to carry both flows to a new connection in the existing public sewer within Allanson Road. In the developer enquiry response, United utilities state that a connection into the sewer to the west of the site, within Palatine Road, would be acceptable. We have responded to this to propose the alternative point of connection with Allanson Road, but a response has not yet been received at the time of writing.
- 5.4 The foul flows from Parcel B are proposed to reuse the existing connections and discharge into the combined public sewers within Brett Street, just south of the parcel. The developer enquiry response states that a connection would be allowed to the public sewers just south of the site, within Brett Street.
- 5.5 Both points of connection will be subject to a formal Section 106 agreement with United Utilities.

6. SUMMARY

- 6.1 This statement and supporting appendices demonstrate that the drainage design for the development will comply with the relevant local and national standards, specifically the hierarchy of discharge, runoff rate and volume criterion.
- 6.2 This SDS is intended to support an outline planning application and as such the level of detail included is commensurate and subject to the nature of the proposals.

Table 6.1: Sustainable Drainage Statement Summary

		Existing Site		Proposed Development	
Parcel		A	B	A	B
Site Area (Ha)		0.19	0.039	0.19	0.039
Impermeable Area (Ha)		0.19	0.039	0.17	0.015
Outfall Location		Combined Sewer	Combined Sewer	Combined Sewer	Combined Sewer
Peak Runoff Rate (l/s)	1 in 1-Year	9.5	1.9	4.2	0.7
	1 in 30-Year	23.2	4.8		1.8
	1 in 100-Year	30.3	6.2		2.4
	1 in 100-Year + 45%	-	-		-
Runoff Volume (100yr RP 6 hour Storm)		126.5m ³	26.0m ³	113.5 m ³	9.9m ³
Flow Control Type		-	-	Vortex	N/A
SuDS Features		-	-	Potential for: Permeable Block Paving Tree Pits Filter Drains	N/A
Maintenance Responsibility		-	-	Management Company	Homeowner

- 6.3 It is envisaged that the final drainage strategy will be determined during the detailed design stage, as the development layout is finalised.

APPENDICES

Appendix 1: Proposed Site Layout



- NOTES
- All dimensions and levels are to be checked on site.
 - Any discrepancies are to be reported to the architect before any work commences
 - This drawing shall not be scaled to ascertain any dimensions. Work to figured dimensions only.
 - This drawing shall not be reproduced without express written permission from AEW.
 - Title overlay drawings and ownership boundaries are produced using all reasonable endeavors. AEW cannot be responsible for the accuracy or scale discrepancy of base plans supplied to them.
 - All works are to be undertaken in accordance with Building Regulations and the latest British Standards.
 - All proprietary materials and products are to be used strictly in accordance with the manufacturers recommendations.

CDM 2015

Client notified of duties: **TBC**
Principal Designer: **TBC**

Unless noted below, all known hazards have been highlighted on the drawing:

0 5 10 15 20 25m



Scale 1:500 @ A3



Application Boundary
0.2 ha / 0.56 ac

P02	24/07/23	RP	BR
Initial issue			
P01	21/07/23	RP	BR
Initial issue			
REV	Date	Drawn by: -	Checked by: -
Status	Purpose of Issue		
S2	For Comment		
drawing stage	Planning		
client	RPC Planning		
project	Northenden, Palatine Road		
drawing title	Proposed Site Plan		
date	19/07/2023	drawn	RP
scale@A3	1:500	checked	BR

Rev

P02

12165-AEW-SI-XX-DR-A-0502

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0161 214 4370
www.aewarchitects.com



Appendix 2: North West SuDS Pro Forma

[PLEASE ADD LOCAL AUTHORITY LOGO TO THIS PAGE]

[*LOCAL AUTHORITY*] SuDS PRO-FORMA

This Pro-forma is endorsed by the North West Regional Flood and Coastal Committee, including representatives from Lead Local Flood Authorities, Highway Authorities, United Utilities and the Environment Agency

[Amend as appropriate]

NORTH WEST SuDS PRO-FORMA

This pro-forma is a requirement for any planning application for major development¹.

It supports applicants in summarising and confirming how surface water from a development will be managed sustainably under current and future conditions.

Your sustainable drainage system should be designed in accordance with [CIRIA The SuDS Manual C753](#) and any necessary adoption standards.

HOW TO COMPLETE

Blue Box	Instruction/ Question
Orange Box	Evidence Required
White Box	To be completed by Developer / Consultant

1. Complete ALL white boxes
2. Submit this pro-forma to the Local Planning Authority, along with:
 - Sustainable Drainage Strategy
 - Site Specific Flood Risk Assessment (if required)
 - Minimum supporting evidence, as indicated in orange boxes of this pro-forma.

GUIDANCE TO SUPPORT YOU

The pro-forma should be completed in conjunction with ‘Completing your SuDS Pro Forma Guide.’

The pro-forma can be completed using freely available tools such as [Tools for Sustainable Drainage Systems](#) or appropriate industry standard surface water management design software.

¹ as defined in Section 2 of [Statutory Instrument 2015 No. 595](#) or on sites in Critical Drainage Areas.

SECTION 1. APPLICATION & DEVELOPMENT DETAILS

Planning Application Reference <i>(if available)</i>		
State type of planning application <i>i.e. Pre-application, Outline, Full, Hybrid, Reserved Matters*</i> <i>*Information only required if drainage is to be considered as part of reserved matters application</i>	Outline	
Developer(s) Name:	Express Solicitors	
Consultant(s) Name:	BWB Consulting	
Development Address <i>(including postcode)</i>	317 Palatine Rd, Northenden , Wythenshawe, Manchester M22 4HH	
Development Grid Reference <i>(Eastings/Northings)</i>	383076 , 390309	
Total Development Site Area (Ha)	0.19ha	
Drained Area (Ha)* of Development	0.17ha	
Please indicate the flood zone that your development is in. Tick all that apply. <i>Based on the Environment Agency Flood Map for Planning and the relevant Local Authority Strategic Flood Risk Assessment (to identify Flood Zones 3a/3b).</i>	Flood Zone 1 ☐ Flood Zone 2 ☒ Flood Zone 3a ☐ Flood Zone 3b ☐	
What is the surface water risk of the site? Tick all that apply. <i>Based on the Environment Agency Surface Water Flood Map.</i>	High ☐ Medium ☐ Low ☒	
Have you submitted a Site Specific Flood Risk Assessment (FRA)? <i>See separate guidance notes for clarification on when a FRA is required</i>	Yes ☒ No ☐	
Have you submitted a Sustainable Drainage Strategy?	Yes ☒ No ☐	
Does your drainage proposal provide multi-functional benefits via SuDS?	Yes ☐ No ☒	
Expected Lifetime of Development <i>(years)</i> <i>Refer to Planning Practice Guidance "Flood Risk and Coastal Change" Paragraph 026</i>	100+ years	
Development Type:		State Proposed Number of Units
Greenfield Site Site is wholly undeveloped, and a new drainage system will be installed	☐	
Previously Developed/ Brownfield Site - Site is already developed, and the <u>entirety</u> of the existing surface water drainage system will be used to serve the new development (evidence must be provided to prove existing surface water drainage system is reusable); <u>OR</u> - Where records of the previously developed system are not available so that the hydraulic characteristics of the system cannot be determined or where the drainage system is not in reasonable working order i.e. broken, blocked or no longer operational for other reasons.	☒	36
Please list any relevant document and or drawing numbers (including revision reference) to support your answers to Section 1.	NDM-BWB-ZZ-XX-RP-YE-0003_SDS	

SECTION 2: IMPERMEABLE AREA AND EXISTING DRAINAGE

	Existing (E)	Proposed (P)	Change (P – E)
State Impermeable Area (Ha)	0.19	0.17	0.02
Evidence Required: Plans showing development layout of site with existing and proposed impermeable areas.			X

Are there existing sewers, watercourses, water bodies, highway drains, soakaways or filter drains on the site?	Yes ☐ No ☐ Don't Know X
Evidence Required: Plan(s) showing existing layout to include all: - Watercourses, open and culverted - Water bodies – ponds, swales etc. - Sewers, including manholes - Highway drains, include manholes, gullies etc. - Infiltration features - soakaways, filter drains etc.	☐

Drainage Design <u>Outline planning applications</u> should be able to demonstrate that a suitable drainage system is achievable. <u>All other type of planning application</u> should provide full details or reference to previous planning application where drainage details have been submitted or approved.	
Select which design approach you are taking to manage water quantity (refer to Section 3.3 SuDS Manual)	
Approach 1 – Volume control / Long Term Storage (Technical Standards S2/3, S4/5) - The attenuated runoff volume for the 1 in 100 year 6 hour event (plus climate change allowance) is limited to the greenfield runoff volume for the 1 in 100 year 6 hour event, with any additional runoff volume utilising long term storage and either infiltrated or released at 2 l/s/ha - The discharge rate for the critical duration 1 in 1 year event is restricted to the 1 in 1 year greenfield runoff rate - The discharge rate for the critical duration 1 in 100 year event (plus climate change allowance) is restricted to the 1 in 100 year greenfield runoff rate	☐
Approach 2 – Qbar (Technical Standards S6) Justification has been provided that the provision of volume control/long term storage is not appropriate and an attenuation only approach is proposed. All events up to the critical duration 1 in 100 year event (plus climate change allowance) are limited to Qbar (1 in 2 year greenfield rate) or 2 l/s/ha, whichever is greater.	X
Evidence Required: Plans showing: - Existing flow routes and flood risks - Modified flow routes - Contributing and impermeable areas - Current (if any) and proposed 'source control' and 'management train' locations of sustainable drainage components (C753 Chapter 7) - Details of drainage ownership - Details of exceedance routes (Technical Standards S9) - Topographic survey - Locations and number of existing and proposed discharge points	X

Note consideration should be given to manage surface water from both impermeable and permeable surfaces (including gardens and verges) likely to enter the drainage system.

Please list any relevant document and or drawing numbers (including revision reference) to support your answers to Section 2.

NDM-BWB-ZZ-XX-RP-YE-0003_SDS

SECTION 3: PEAK RUNOFF RATES – TECHNICAL STANDARDS S2, S3 AND S6 (UNLESS S1 APPLIES)

Rainfall Event	Existing Rate (l/s)	Greenfield Rate (l/s)	Proposed Rate (l/s) <i>Previously developed sites - In line with S3 should be equivalent to Greenfield runoff rates – discuss with LLFA if this is not achievable pre-application</i>
Qbar (Approach 2)			
1 in 1 Year Event (Approach 1)	9.5	0.3	4.2
1 in 30 Year Event	23.2	0.8	4.2
1 in 100 Year Event* (Approach 1)	30.3	1.1	4.2
* Total discharge at the 1 in 100 year rate should be restricted to the greenfield runoff volume for the 1 in 100 Year 6 hour event with additional volumes (long-term storage volume) released at a rate no greater than 2 l/s/ha where infiltration is not possible. The climate change allowance should only be applied to the proposed rate and not the existing or greenfield rate.			
Evidence Required:			
Methodology used to calculate peak runoff rate clearly stated and justified.			X
Impermeable areas plan, supported by topographical survey confirming positive drainage.			X
Hydraulic calculations and details of software used.			X

State the hydraulic method used in your calculations
(Refer to Table 24.1 of The SuDS Manual)

FEH

Please list any relevant document and or drawing numbers (including revision reference) to support your answers to Section 3.

NDM-BWB-ZZ-XX-RP-YE-0003_SDS

SECTION 4: DISCHARGE VOLUME – TECHNICAL STANDARDS S4, S5 AND S6 (UNLESS S1 APPLIES)

Rainfall Event	Existing Volume (m ³)	Greenfield Volume (m ³)	Proposed Volume (m ³)
1 in 100 Year 6 Hour Event (Approach 1)	126.5	23.8	113.5
Does the below statement apply to your development proposal? Long term storage is not achievable on this site and, in accordance with S6 of the Non Statutory Technical Standards for SuDS, the surface water discharge rates for events up to and including the 1 in 100 year critical event are limited to Qbar (Approach 2)			Yes ☐ No ☒
Evidence Required: Approach to managing the quantity of surface water leaving the site clearly stated and justified Methodology used to calculate discharge volume clearly stated and justified. Hydraulic calculations and details of software used.			X X X

Please list any relevant document and or drawing numbers (including revision reference) to support your answers to Section 4.	NDM-BWB-ZZ-XX-RP-YE-0003_SDS
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SECTION 5: STORAGE – TECHNICAL STANDARDS S7 AND S8

State climate change allowance used (%)	45
State housing density (houses per ha)	75
State urban creep allowance used (%)	2
Evidence Required: State / used in appropriate industry standard surface water management design software.	X

State storage volume required (m³) (excluding non-void spaces) <i>Must include an allowance for climate change and urban creep</i>	84.8
Have you incorporated interception into your design? (Refer to Chapter 24 of The SuDS Manual C753) <i>Where possible, infiltration or other techniques are to be used to try and achieve zero discharge to receiving waters for rainfall depths up to 5mm.</i>	Yes ☐ No ☒
Evidence Required: Drainage plans showing location of attenuation and all flow control devices and supporting calculations.	X

Summarise how storage will be provided for 1 in 30 year event on site. <i>Storage must be designed to ensure that at no flooding occurs onsite in a 1 in 30 year event except in designed areas and no flooding occurs offsite in a 1 in 100 year (plus climate change allowance) event.</i>	Cellular storage tank
Summarise how storage will be provided for 1 in 100 year (plus climate change) event on site. <i>Where storage above the 1 in 30 year rainfall event is provided in designated areas designed to accommodate excess surface water volumes, plans showing storage locations and surface water depths and supported by calculations used in appropriate industry standard surface water management design software. It is important to run a range of duration events to ensure the worst case condition is found for each drainage element on the site</i>	Cellular storage tank
Evidence Required: Plans showing size and location of storage and supporting calculations. Where there is controlled flooding, extents and depths must be indicated.	X

Please list any relevant document and or drawing numbers (including revision reference) to support your answers to Section 5.	NDM-BWB-ZZ-XX-RP-YE-0003_SDS
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SECTION 6: WATER QUALITY PROTECTION

Contaminated surface water run-off can have negative impacts on the quality of receiving water bodies. The potential level of contamination will influence final the design of an appropriate treatment train as part of your sustainable drainage system.

Is the proposal site known to be or potentially contaminated?	Yes ☐	No ☒
If the site is contaminated, it should be demonstrated that the sustainable drainage system will not increase the risk of pollution to controlled waters through the mobilisation of contaminants and/or creation of new pollution pathways.		

Confirm the Pollution Hazard Level of the proposed development - Tick <u>ALL</u> that apply <i>Refer to Pollution Hazard Indices for different Land Use Classifications in Table 26.2 of The SuDS Manual C753 for further guidance.</i>		
Pollution Hazard Level <i>Tick <u>ALL</u> that apply</i>		Surface water run-off from the proposed development will drain from:
VERY LOW	☒	Residential roofs
LOW	☒	- Other roofs (typically commercial/industrial roofs) - Individual property driveways, residential car parks, low traffic roads (e.g. cul de sacs, home-zones and general access roads) - Non-residential car parking with infrequent change (e.g. schools, offices) i.e. < 300 traffic movements/day
MEDIUM	☐	- Commercial yard and delivery areas - Non-residential car parking with frequent change (e.g. hospitals, retail) - All roads except low traffic roads and trunk roads/motorways²
HIGH	☐	- Sites with heavy pollution (e.g. haulage yards, lorry parks, highly frequented lorry approaches to industrial estates, waste sites) - Sites where chemicals and fuels (other than domestic fuel oil) are to be delivered, handled, stored, used or manufactured - Industrial sites - Trunk roads and motorways¹

If the development's Pollution Hazard Level is 'Very Low' or 'Low', has the sustainable drainage design been risk assessed and appropriate mitigation measures included?	Yes ☒	No ☐
If the proposed development has a very low or low polluting potential, you should design your sustainable drainage system to include an appropriate treatment train in accordance with The SuDS Manual (C753).		

If the development's Pollution Hazard Level is 'Medium' or 'High', is the application supported by a detailed water quality risk assessment?	Yes ☐	No ☐
- If the proposed development has a high polluting potential, a detailed risk assessment <u>will</u> be required to identify an appropriate SuDS treatment train and ensure compliance with Paragraph 170 of the National Planning Policy Framework. - If the proposed development has a medium polluting potential, a detailed risk assessment <u>may</u> be required depending on the nature, scale and location of the development.		

Has pre-application advice on water quality been obtained from the Environment Agency?	Yes ☐	No ☒
If YES, provide details:		

² Motorways and trunk roads should follow the guidance and risk assessment process set out in Highways Agency (2009).

Please list any relevant document and or drawing numbers (including revision reference) to support your answers to Section 6.

NDM-BWB-ZZ-XX-RP-YE-0003_SDS

SECTION 7: DETAILS OF YOUR SUSTAINABLE DRAINAGE SYSTEM

a) Function of your Sustainable Drainage System

Do your proposals store rainwater for later use (as a resource)?	Yes ☐ No ☐
Evidence Required: Please provide a brief sentence in the adjacent white box to describe how this function has been achieved.	It is recommended this is explored at detailed design stage

Do your proposals promote source control to manage rainfall close to where it falls? (e.g. promoting natural losses through soakage, infiltration and evapotranspiration)	Yes ☐ No ☐
Evidence Required: Please provide a brief sentence in the adjacent white box to describe how this function has been achieved.	It is recommended permeable paving is explored at detailed design stage

Please list any relevant document and or drawing numbers (including revision reference) to support your answers to Section 7a.	NDM-BWB-ZZ-XX-RP-YE-0003_SDS
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b) Hierarchy of Drainage Options – Planning Practice Guidance

The proposed method of discharge are set out within order of priority. Generally, the aim should be to discharge surface run off as high up the following hierarchy of drainage options as reasonably practicable.

Proposed method of surface water discharge		Is this proposed?	
Hierarchy Level 1: Into the ground (via infiltration)		Yes ☐ No ☒	
If YES - Evidence Required		If NO – Evidence Required Tick ALL that apply	
☐	A. Completed Infiltration Checklist from The SuDS Manual (C753) Appendix B <i>An editable version of this form is available on SusDrain website.</i>	☐	A. Site investigation to demonstrate that the ground is not free draining. Test results to be provided in accordance with: - The methodology within BRE 365 (2016), OR - Falling head permeability tests BS EN ISO 22282-2: 2012
☐	B. British Geological Survey (BGS) Infiltration SuDS Map	☒	B. NOTE: where an applicant is unable to access a site to undertake testing, e.g. where unable to access a site for an outline application, they can submit a SuDS GeoReport or similar.
☐	C. Infiltration testing to BRE 365 (2016) or falling head permeability tests to BS EN ISO 22282-2: 2012 (optional for outline)	☐	C. Evidence to confirm that infiltration to ground would result in a risk of deterioration to ground water quality.
☐	'Plan B' sustainable drainage plan and statement of approach with an alternative discharge method, in case infiltration proposals are proven not feasible upon	☐	D. Geotechnical advice from a competent person* which determines that infiltration of water to ground would pose an unacceptable risk of geohazards to the site and/or local area.

	further site specific ground investigation e.g. to consider seasonal variations to groundwater.		<i>*Note: Competent person may include a Chartered Engineer, Chartered Geologists, Registered Ground Engineering Professionals (RoGEP).</i>
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Proposed method of surface water discharge		Is this proposed?	
Hierarchy Level 2: To a surface water body <i>(select type)</i> NOTE: Consent from LLFA or Permit from Environment Agency may be required – refer to guidance		Yes ☐ No ☒ N/A ☐	
		☐ Main river ☐ Canal ☐ Ordinary watercourse ☐ Other water body	
If YES - Evidence Required		If NO – Evidence Required Tick ALL that apply	
☐	Surface water body / watercourse survey and report	☐	Plan showing nearby watercourses and waterbodies
		☒	AND Statement providing justification in your Sustainable Drainage Strategy Note: Where discharge of any element in the hierarchy is discounted, an applicant should provide justification. If the reasoning for discounting a discharge of surface water to watercourse relates to issues associated with third party land or the securing of any other required consent, it may be necessary for the applicant to provide evidence to the local planning authority to support their proposed approach.

Proposed method of surface water discharge		Is this proposed?	
Hierarchy Level 3: To a surface water sewer or highway drain <i>(select type)</i>		Yes ☐ No ☒ N/A ☐	
		☐ Surface water sewer ☐ Highway drain	
If YES - Evidence Required		If NO – Evidence Required Tick ALL that apply	
☐	Written correspondence from Water and Sewerage Company/ Highway Authority regarding proposed connection.	☒	Plan showing nearby sewers and highway drains
		☒	AND Statement providing justification in your Sustainable Drainage Strategy

Proposed method of surface water discharge		Is this proposed?	
Hierarchy Level 4: To combined sewer		Yes ☒ No ☐ N/A ☐	
If YES - Evidence Required		If NO – Evidence Required	
☒	Written correspondence from Water and Sewerage Company	N/A	

Please list any relevant document and or drawing numbers (including revision reference) to support your answers to Section 7b.	NDM-BWB-ZZ-XX-RP-YE-0003_SDS
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c) Proposed SuDS Component Types

	Tick ALL that apply				
Within property boundary	☐ Rainwater harvesting	☐ Green/ blue roofs	☐ Pervious pavements [Type: A ☐ B ☐ C ☐	☐ Soakaway	☐ Bio retention systems

	Tick ALL that apply				
Within development site boundary (not property)	☐ Infiltration system [Type: ☐ Surface level ☐ Below ground]		☐ Filter strips	☐ Filter drains	☐ Swales
	☐ Bio retention system	☐ Detention basins	☐ Ponds and wetlands	X Attenuation tanks/ Oversized pipes	☐ Other (state below)
	If 'Other' please state:				

Off site (not within the boundary of the proposed development)	Please state:
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I confirm that the above selected components have been designed in accordance with The SuDS Manual (C753).	I confirm X
I confirm that the management of flows resulting from rainfall in excess of a 1 in 100 year plus climate change rainfall event, and their exceedance route(s), has been fully considered in order to minimise the risks to people, property (new and existing) and infrastructure.	I confirm X

Please list any relevant document and or drawing numbers (including revision reference) to support your answers to Section 7c.	NDM-BWB-ZZ-XX-RP-YE-0003_SDS
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The applicant is responsible to ensure that ALL components selected in Section 7 can be maintained for the design life of the development. This information is required so the Local Planning Authority can ensure the maintenance and management of the sustainable drainage system. The Local Planning Authority will discuss how this will be secured (e.g. via planning condition or planning obligation).

	Information Provided?
Management Plan	Yes ☐ No X
Evidence Required: Plan/ drawing provided to show the position of the different SuDS components with: - Key included to identify any of the adopting bodies that you will be offering your sustainable drainage components for adoption (<i>relates to maintenance and management arrangements below</i>). - Plan/ drawing to identify any areas where certain activities are prohibited, detailing reasons why.	☐
Action plan for accidental pollutant spillages.	☐

		Information Provided?
Maintenance Schedule		Yes ☐ No ☒
Evidence Required: A copy of the maintenance schedule including: Proactive and preventative maintenance Detailing regular, occasional and remedial maintenance activities including recommendations for inspection and monitoring. This should include recommended frequencies, advice on plant/ machinery required and an explanation of the objectives for the maintenance proposed and potential implications of not meeting them. Reactive and corrective maintenance (e.g. product repair and replacement). Including advice on excavations, or similar works, in locations that could affect the SuDS components/ adjacent structures.		☐

		Information Provided?
Maintenance and Management Arrangements		Yes X No ☐
Evidence Required: Evidence of formal agreement with the party responsible for undertaking maintenance. Please select any of the adopting bodies that you will be offering your sustainable drainage components for adoption. Tick all that apply. ☐ Water and Sewerage Company <i>Section 104 agreement (Water Industry Act 1991)</i> ☐ Highway Authority <i>Section 278/38 agreement (Highways Act 1980)</i> ☐ Local Authority Public Open Space <i>[Refer to Local Authority Policy]</i> Please select the arrangement(s) for all non-adopted sustainable drainage components. Tick all that apply. X Management Company X Property Owner <i>(for SuDS components within property boundary only)</i> ☐ Other (please state)		☐

Please list any relevant document and or drawing numbers (including revision reference) to support your answers to Section 8.

NDM-BWB-ZZ-XX-RP-YE-0003_SDS

DECLARATION AND SUBMISSION

This pro-forma has been completed using evidence from information which has been submitted with the planning application.

The information submitted in the Sustainable Drainage Strategy and site-specific Flood Risk Assessment (FRA), where submitted, is proportionate to the site conditions, flood risks and magnitude of development and I agree that this information can be used as evidence to this sustainable drainage approach.

Submitter Details			
Completed by	Louis Ream	Email Address	Louis.Ream@bwbconsulting.com
		Telephone Number(s)	01158517425
Signed off by	Keith Alger	Accreditation(s) and/or Qualification(s) of Signatory	BSc (Hons) MSc
Date (dd/mm/yyyy)	17/08/23	Company	BWB Consulting

Client Details			
Name	James Maxey	Company	Express solicitors

[PLEASE ADD LOCAL AUTHORITY LOGO TO THIS PAGE]

[*LOCAL AUTHORITY*] SuDS PRO-FORMA

This Pro-forma is endorsed by the North West Regional Flood and Coastal Committee, including representatives from Lead Local Flood Authorities, Highway Authorities, United Utilities and the Environment Agency

[Amend as appropriate]

NORTH WEST SuDS PRO-FORMA

This pro-forma is a requirement for any planning application for major development¹.

It supports applicants in summarising and confirming how surface water from a development will be managed sustainably under current and future conditions.

Your sustainable drainage system should be designed in accordance with [CIRIA The SuDS Manual C753](#) and any necessary adoption standards.

HOW TO COMPLETE

Blue Box	Instruction/ Question
Orange Box	Evidence Required
White Box	To be completed by Developer / Consultant

1. Complete ALL white boxes
2. Submit this pro-forma to the Local Planning Authority, along with:
 - Sustainable Drainage Strategy
 - Site Specific Flood Risk Assessment (if required)
 - Minimum supporting evidence, as indicated in orange boxes of this pro-forma.

GUIDANCE TO SUPPORT YOU

The pro-forma should be completed in conjunction with ‘Completing your SuDS Pro Forma Guide.’

The pro-forma can be completed using freely available tools such as [Tools for Sustainable Drainage Systems](#) or appropriate industry standard surface water management design software.

¹ as defined in Section 2 of [Statutory Instrument 2015 No. 595](#) or on sites in Critical Drainage Areas.

SECTION 1. APPLICATION & DEVELOPMENT DETAILS

Planning Application Reference (if available)		
State type of planning application i.e. Pre-application, Outline, Full, Hybrid, Reserved Matters* *Information only required if drainage is to be considered as part of reserved matters application	Outline	
Developer(s) Name:	Express Solicitors	
Consultant(s) Name:	BWB Consulting	
Development Address (including postcode)	12-6 Brett St, Northenden, Wythenshawe, Manchester M22 4EX	
Development Grid Reference (Eastings/Northings)	383063 , 390241	
Total Development Site Area (Ha)	0.039ha	
Drained Area (Ha)* of Development	0.039ha	
Please indicate the flood zone that your development is in. Tick all that apply. Based on the Environment Agency Flood Map for Planning and the relevant Local Authority Strategic Flood Risk Assessment (to identify Flood Zones 3a/3b).	Flood Zone 1 ☐ Flood Zone 2 ☒ Flood Zone 3a ☐ Flood Zone 3b ☐	
What is the surface water risk of the site? Tick all that apply. Based on the Environment Agency Surface Water Flood Map.	High ☐ Medium ☐ Low ☒	
Have you submitted a Site Specific Flood Risk Assessment (FRA)? See separate guidance notes for clarification on when a FRA is required	Yes ☒ No ☐	
Have you submitted a Sustainable Drainage Strategy?	Yes ☒ No ☐	
Does your drainage proposal provide multi-functional benefits via SuDS?	Yes ☐ No ☒	
Expected Lifetime of Development (years) Refer to Planning Practice Guidance "Flood Risk and Coastal Change" Paragraph 026	100+ years	
Development Type:		State Proposed Number of Units
Greenfield Site Site is wholly undeveloped, and a new drainage system will be installed	☐	
Previously Developed/ Brownfield Site - Site is already developed, and the <u>entirety</u> of the existing surface water drainage system will be used to serve the new development (evidence must be provided to prove existing surface water drainage system is reusable); OR - Where records of the previously developed system are not available so that the hydraulic characteristics of the system cannot be determined or where the drainage system is not in reasonable working order i.e. broken, blocked or no longer operational for other reasons.	☒	2
Please list any relevant document and or drawing numbers (including revision reference) to support your answers to Section 1.	NDM-BWB-ZZ-XX-RP-YE-0003_SDS	

SECTION 2: IMPERMEABLE AREA AND EXISTING DRAINAGE

	Existing (E)	Proposed (P)	Change (P – E)
State Impermeable Area (Ha)	0.039	0.015	0.024
Evidence Required: Plans showing development layout of site with existing and proposed impermeable areas.			X

Are there existing sewers, watercourses, water bodies, highway drains, soakaways or filter drains on the site?	Yes ☐ No ☐ Don't Know X
Evidence Required: Plan(s) showing existing layout to include all: - Watercourses, open and culverted - Water bodies – ponds, swales etc. - Sewers, including manholes - Highway drains, include manholes, gullies etc. - Infiltration features - soakaways, filter drains etc.	☐

Drainage Design <u>Outline planning applications</u> should be able to demonstrate that a suitable drainage system is achievable. <u>All other type of planning application</u> should provide full details or reference to previous planning application where drainage details have been submitted or approved.	
Select which design approach you are taking to manage water quantity (refer to Section 3.3 SuDS Manual)	
Approach 1 – Volume control / Long Term Storage (Technical Standards S2/3, S4/5) - The attenuated runoff volume for the 1 in 100 year 6 hour event (plus climate change allowance) is limited to the greenfield runoff volume for the 1 in 100 year 6 hour event, with any additional runoff volume utilising long term storage and either infiltrated or released at 2 l/s/ha - The discharge rate for the critical duration 1 in 1 year event is restricted to the 1 in 1 year greenfield runoff rate - The discharge rate for the critical duration 1 in 100 year event (plus climate change allowance) is restricted to the 1 in 100 year greenfield runoff rate	☐
Approach 2 – Qbar (Technical Standards S6) Justification has been provided that the provision of volume control/long term storage is not appropriate and an attenuation only approach is proposed. All events up to the critical duration 1 in 100 year event (plus climate change allowance) are limited to Qbar (1 in 2 year greenfield rate) or 2 l/s/ha, whichever is greater.	As there is a reduction in impermeable area, there is a natural decrease in runoff rate (62%) and hence attenuation is not required
Evidence Required: Plans showing: - Existing flow routes and flood risks - Modified flow routes - Contributing and impermeable areas - Current (if any) and proposed 'source control' and 'management train' locations of sustainable drainage components (C753 Chapter 7) - Details of drainage ownership - Details of exceedance routes (Technical Standards S9) - Topographic survey - Locations and number of existing and proposed discharge points	X

Note consideration should be given to manage surface water from both impermeable and permeable surfaces (including gardens and verges) likely to enter the drainage system.

Please list any relevant document and or drawing numbers (including revision reference) to support your answers to Section 2.

NDM-BWB-ZZ-XX-RP-YE-0003_SDS

SECTION 3: PEAK RUNOFF RATES – TECHNICAL STANDARDS S2, S3 AND S6 (UNLESS S1 APPLIES)

Rainfall Event	Existing Rate (l/s)	Greenfield Rate (l/s)	Proposed Rate (l/s) <i>Previously developed sites - In line with S3 should be equivalent to Greenfield runoff rates – discuss with LLFA if this is not achievable pre-application</i>
Qbar (Approach 2)			
1 in 1 Year Event (Approach 1)	1.9	0.1	0.7
1 in 30 Year Event	4.8	0.2	1.8
1 in 100 Year Event* (Approach 1)	6.2	0.2	2.4
* Total discharge at the 1 in 100 year rate should be restricted to the greenfield runoff volume for the 1 in 100 Year 6 hour event with additional volumes (long-term storage volume) released at a rate no greater than 2 l/s/ha where infiltration is not possible. The climate change allowance should only be applied to the proposed rate and not the existing or greenfield rate.			
Evidence Required:			
Methodology used to calculate peak runoff rate clearly stated and justified.			X
Impermeable areas plan, supported by topographical survey confirming positive drainage.			X
Hydraulic calculations and details of software used.			X

State the hydraulic method used in your calculations
(Refer to Table 24.1 of The SuDS Manual)

FEH

Please list any relevant document and or drawing numbers (including revision reference) to support your answers to Section 3.

NDM-BWB-ZZ-XX-RP-YE-0003_SDS

SECTION 4: DISCHARGE VOLUME – TECHNICAL STANDARDS S4, S5 AND S6 (UNLESS S1 APPLIES)

Rainfall Event	Existing Volume (m ³)	Greenfield Volume (m ³)	Proposed Volume (m ³)
1 in 100 Year 6 Hour Event <i>(Approach 1)</i>	126.5	4.3	9.9
Does the below statement apply to your development proposal? Long term storage is not achievable on this site and, in accordance with S6 of the Non Statutory Technical Standards for SuDS, the surface water discharge rates for events up to and including the 1 in 100 year critical event are limited to Qbar (Approach 2)			Yes ☐ No ☒
Evidence Required: Approach to managing the quantity of surface water leaving the site clearly stated and justified Methodology used to calculate discharge volume clearly stated and justified. Hydraulic calculations and details of software used.			X X X

Please list any relevant document and or drawing numbers (including revision reference) to support your answers to Section 4.	NDM-BWB-ZZ-XX-RP-YE-0003_SDS
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SECTION 5: STORAGE – TECHNICAL STANDARDS S7 AND S8

State climate change allowance used (%)	40
State housing density (houses per ha)	75
State urban creep allowance used (%)	2
Evidence Required: State / used in appropriate industry standard surface water management design software.	X

State storage volume required (m³) (excluding non-void spaces) <i>Must include an allowance for climate change and urban creep</i>	N/A
Have you incorporated interception into your design? <i>(Refer to Chapter 24 of The SuDS Manual C753)</i> <i>Where possible, infiltration or other techniques are to be used to try and achieve zero discharge to receiving waters for rainfall depths up to 5mm.</i>	Yes ☐ No ☒
Evidence Required: Drainage plans showing location of attenuation and all flow control devices and supporting calculations.	X

Summarise how storage will be provided for 1 in 30 year event on site. <i>Storage must be designed to ensure that at no flooding occurs onsite in a 1 in 30 year event except in designed areas <u>and</u> no flooding occurs offsite in a 1 in 100 year (plus climate change allowance) event.</i>	As there is a reduction i impermeable area, there is a natural decrease in runoff rate (62%) and hence attenuation is not required
Summarise how storage will be provided for 1 in 100 year (plus climate change) event on site. <i>Where storage above the 1 in 30 year rainfall event is provided in designated areas designed to accommodate excess surface water volumes, plans showing storage locations and surface water depths and supported by calculations used in appropriate industry standard surface water management design software. It is important to run a range of duration events to ensure the worst case condition is found for each drainage element on the site</i>	N/A
Evidence Required: Plans showing size and location of storage and supporting calculations. Where there is controlled flooding, extents and depths must be indicated.	X

Please list any relevant document and or drawing numbers (including revision reference) to support your answers to Section 5.	NDM-BWB-ZZ-XX-RP-YE-0003_SDS
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SECTION 6: WATER QUALITY PROTECTION

Contaminated surface water run-off can have negative impacts on the quality of receiving water bodies. The potential level of contamination will influence final the design of an appropriate treatment train as part of your sustainable drainage system.

Is the proposal site known to be or potentially contaminated?	Yes ☐	No ☒
If the site is contaminated, it should be demonstrated that the sustainable drainage system will not increase the risk of pollution to controlled waters through the mobilisation of contaminants and/or creation of new pollution pathways.		

Confirm the <i>Pollution Hazard Level</i> of the proposed development - Tick <u>ALL</u> that apply <i>Refer to Pollution Hazard Indices for different Land Use Classifications in Table 26.2 of The SuDS Manual C753 for further guidance.</i>		
Pollution Hazard Level <i>Tick <u>ALL</u> that apply</i>		Surface water run-off from the proposed development will drain from:
VERY LOW	☒	Residential roofs
LOW	☐	- Other roofs (typically commercial/industrial roofs) - Individual property driveways, residential car parks, low traffic roads (e.g. cul de sacs, home-zones and general access roads) - Non-residential car parking with infrequent change (e.g. schools, offices) i.e. < 300 traffic movements/day
MEDIUM	☐	- Commercial yard and delivery areas - Non-residential car parking with frequent change (e.g. hospitals, retail) - All roads except low traffic roads and trunk roads/motorways²
HIGH	☐	- Sites with heavy pollution (e.g. haulage yards, lorry parks, highly frequented lorry approaches to industrial estates, waste sites) - Sites where chemicals and fuels (other than domestic fuel oil) are to be delivered, handled, stored, used or manufactured - Industrial sites - Trunk roads and motorways¹

If the development's Pollution Hazard Level is 'Very Low' or 'Low', has the sustainable drainage design been risk assessed and appropriate mitigation measures included?	Yes ☒	No ☐
If the proposed development has a very low or low polluting potential, you should design your sustainable drainage system to include an appropriate treatment train in accordance with The SuDS Manual (C753).		

If the development's Pollution Hazard Level is 'Medium' or 'High', is the application supported by a detailed water quality risk assessment?	Yes ☐	No ☐
- If the proposed development has a high polluting potential, a detailed risk assessment <u>will</u> be required to identify an appropriate SuDS treatment train and ensure compliance with Paragraph 170 of the National Planning Policy Framework. - If the proposed development has a medium polluting potential, a detailed risk assessment <u>may</u> be required depending on the nature, scale and location of the development.		

Has pre-application advice on water quality been obtained from the Environment Agency?	Yes ☐	No ☒
If YES, provide details:		

² Motorways and trunk roads should follow the guidance and risk assessment process set out in Highways Agency (2009).

Please list any relevant document and or drawing numbers (including revision reference) to support your answers to Section 6.

NDM-BWB-ZZ-XX-RP-YE-0003_SDS

SECTION 7: DETAILS OF YOUR SUSTAINABLE DRAINAGE SYSTEM

a) Function of your Sustainable Drainage System

Do your proposals store rainwater for later use (as a resource)?	Yes ☐ No ☐
Evidence Required: Please provide a brief sentence in the adjacent white box to describe how this function has been achieved.	It is recommended this is explored at detailed design stage

Do your proposals promote source control to manage rainfall close to where it falls? (e.g. promoting natural losses through soakage, infiltration and evapotranspiration)	Yes ☐ No ☐
Evidence Required: Please provide a brief sentence in the adjacent white box to describe how this function has been achieved.	

Please list any relevant document and or drawing numbers (including revision reference) to support your answers to Section 7a.	NDM-BWB-ZZ-XX-RP-YE-0003_SDS
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b) Hierarchy of Drainage Options – Planning Practice Guidance

The proposed method of discharge are set out within order of priority. Generally, the aim should be to discharge surface run off as high up the following hierarchy of drainage options as reasonably practicable.

Proposed method of surface water discharge		Is this proposed?	
Hierarchy Level 1: Into the ground (via infiltration)		Yes ☐ No ☒	
If YES - Evidence Required		If NO – Evidence Required Tick ALL that apply	
☐	A. Completed Infiltration Checklist from The SuDS Manual (C753) Appendix B <i>An editable version of this form is available on SusDrain website.</i>	☐	A. Site investigation to demonstrate that the ground is not free draining. Test results to be provided in accordance with: - The methodology within BRE 365 (2016), OR - Falling head permeability tests BS EN ISO 22282-2: 2012
☐	B. British Geological Survey (BGS) Infiltration SuDS Map	☒	B. NOTE: where an applicant is unable to access a site to undertake testing, e.g. where unable to access a site for an outline application, they can submit a SuDS GeoReport or similar.
☐	C. Infiltration testing to BRE 365 (2016) or falling head permeability tests to BS EN ISO 22282-2: 2012 (optional for outline)	☐	C. Evidence to confirm that infiltration to ground would result in a risk of deterioration to ground water quality.
☐	'Plan B' sustainable drainage plan and statement of approach with an alternative discharge method, in case infiltration proposals are proven not feasible upon	☐	D. Geotechnical advice from a competent person* which determines that infiltration of water to ground would pose an unacceptable risk of geohazards to the site and/or local area.

	further site specific ground investigation e.g. to consider seasonal variations to groundwater.		<i>*Note: Competent person may include a Chartered Engineer, Chartered Geologists, Registered Ground Engineering Professionals (RoGEP).</i>
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Proposed method of surface water discharge		Is this proposed?	
Hierarchy Level 2: To a surface water body <i>(select type)</i> NOTE: Consent from LLFA or Permit from Environment Agency may be required – refer to guidance		Yes ☐ No ☒ N/A ☐	
		☐ Main river ☐ Canal ☐ Ordinary watercourse ☐ Other water body	
If YES - Evidence Required		If NO – Evidence Required Tick ALL that apply	
☐	Surface water body / watercourse survey and report	☐	Plan showing nearby watercourses and waterbodies
		☒	AND Statement providing justification in your Sustainable Drainage Strategy Note: Where discharge of any element in the hierarchy is discounted, an applicant should provide justification. If the reasoning for discounting a discharge of surface water to watercourse relates to issues associated with third party land or the securing of any other required consent, it may be necessary for the applicant to provide evidence to the local planning authority to support their proposed approach.

Proposed method of surface water discharge		Is this proposed?	
Hierarchy Level 3: To a surface water sewer or highway drain <i>(select type)</i>		Yes ☐ No ☒ N/A ☐	
		☐ Surface water sewer ☐ Highway drain	
If YES - Evidence Required		If NO – Evidence Required Tick ALL that apply	
☐	Written correspondence from Water and Sewerage Company/ Highway Authority regarding proposed connection.	☒	Plan showing nearby sewers and highway drains
		☒	AND Statement providing justification in your Sustainable Drainage Strategy

Proposed method of surface water discharge		Is this proposed?	
Hierarchy Level 4: To combined sewer		Yes ☒ No ☐ N/A ☐	
If YES - Evidence Required		If NO – Evidence Required	
☒	Written correspondence from Water and Sewerage Company	N/A	

Please list any relevant document and or drawing numbers (including revision reference) to support your answers to Section 7b.	NDM-BWB-ZZ-XX-RP-YE-0003_SDS
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c) Proposed SuDS Component Types

	Tick ALL that apply				
Within property boundary	☐ Rainwater harvesting	☐ Green/ blue roofs	☐ Pervious pavements [Type: A ☐ B ☐ C ☐	☐ Soakaway	☐ Bio retention systems

	Tick ALL that apply				
Within development site boundary (not property)	☐ Infiltration system [Type: ☐ Surface level ☐ Below ground]		☐ Filter strips	☐ Filter drains	☐ Swales
	☐ Bio retention system	☐ Detention basins	☐ Ponds and wetlands	☐ Attenuation tanks/ Oversized pipes	☐ Other (state below)
	If 'Other' please state:				

Off site (not within the boundary of the proposed development)	Please state:
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I confirm that the above selected components have been designed in accordance with The SuDS Manual (C753).	I confirm ☐
I confirm that the management of flows resulting from rainfall in excess of a 1 in 100 year plus climate change rainfall event, and their exceedance route(s), has been fully considered in order to minimise the risks to people, property (new and existing) and infrastructure.	I confirm X

Please list any relevant document and or drawing numbers (including revision reference) to support your answers to Section 7c.	NDM-BWB-ZZ-XX-RP-YE-0003_SDS
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The applicant is responsible to ensure that ALL components selected in Section 7 can be maintained for the design life of the development. This information is required so the Local Planning Authority can ensure the maintenance and management of the sustainable drainage system. The Local Planning Authority will discuss how this will be secured (e.g. via planning condition or planning obligation).

	Information Provided?
Management Plan	Yes ☐ No X
Evidence Required: Plan/ drawing provided to show the position of the different SuDS components with: - Key included to identify any of the adopting bodies that you will be offering your sustainable drainage components for adoption (<i>relates to maintenance and management arrangements below</i>). - Plan/ drawing to identify any areas where certain activities are prohibited, detailing reasons why.	☐
Action plan for accidental pollutant spillages.	☐

		Information Provided?
Maintenance Schedule		Yes ☐ No ☒
Evidence Required: A copy of the maintenance schedule including: Proactive and preventative maintenance Detailing regular, occasional and remedial maintenance activities including recommendations for inspection and monitoring. This should include recommended frequencies, advice on plant/ machinery required and an explanation of the objectives for the maintenance proposed and potential implications of not meeting them. Reactive and corrective maintenance (e.g. product repair and replacement). Including advice on excavations, or similar works, in locations that could affect the SuDS components/ adjacent structures.		☐

Information Provided?	
Maintenance and Management Arrangements	Yes ☐ No X
Evidence Required: Evidence of formal agreement with the party responsible for undertaking maintenance. Please select any of the adopting bodies that you will be offering your sustainable drainage components for adoption. Tick all that apply. ☐ Water and Sewerage Company <i>Section 104 agreement (Water Industry Act 1991)</i> ☐ Highway Authority <i>Section 278/38 agreement (Highways Act 1980)</i> ☐ Local Authority Public Open Space <i>[Refer to Local Authority Policy]</i> Please select the arrangement(s) for all non-adopted sustainable drainage components. Tick all that apply. ☐ Management Company X Property Owner <i>(for SuDS components within property boundary only)</i> ☐ Other (please state)	☐

Please list any relevant document and or drawing numbers (including revision reference) to support your answers to Section 8.

NDM-BWB-ZZ-XX-RP-YE-0003_SDS

DECLARATION AND SUBMISSION

This pro-forma has been completed using evidence from information which has been submitted with the planning application.

The information submitted in the Sustainable Drainage Strategy and site-specific Flood Risk Assessment (FRA), where submitted, is proportionate to the site conditions, flood risks and magnitude of development and I agree that this information can be used as evidence to this sustainable drainage approach.

Submitter Details			
Completed by	Louis Ream	Email Address	Louis.Ream@bwbconsulting.com
		Telephone Number(s)	01158517425
Signed off by	Keith Alger	Accreditation(s) and/or Qualification(s) of Signatory	BSc (Hons)MSc
Date (dd/mm/yyyy)	17/08/23	Company	BWB Consulting

Client Details			
Name	James Maxey	Company	Express solicitors

Appendix 3: United Utilities Sewer Asset Records

BWB Consulting Limited**35
Station Street,
Nottingham, Nottinghamshire
NG2 3DQ****FAO:****How to contact us:****United Utilities Water Limited
Property Searches
Haweswater House
Lingley Mere Business Park
Great Sankey
Warrington
WA5 3LP****Telephone: 0370 7510101****E-mail: propertysearches@uuplc.co.uk****Your Ref: 221105 - Northenden
Our Ref: UUPS-ORD-475372
Date: 28/03/2023****Dear Sirs****Location: 295A PALATINE ROAD, MANCHESTER, M22 4HH**

I acknowledge with thanks your request dated 28/03/2023 for information on the location of our services.

Please find enclosed plans showing the approximate position of United Utilities' apparatus known to be in the vicinity of this site.

The enclosed plans are being provided to you subject to the United Utilities terms and conditions for both the wastewater and water distribution plans which are shown attached.

If you are planning works anywhere in the North West, please read United Utilities' access statement before you start work to check how it will affect our network. <http://www.unitedutilities.com/work-near-asset.aspx>.

I trust the above meets with your requirements and look forward to hearing from you should you need anything further.

If you have any queries regarding this matter please [contact us](#).

Yours Faithfully,



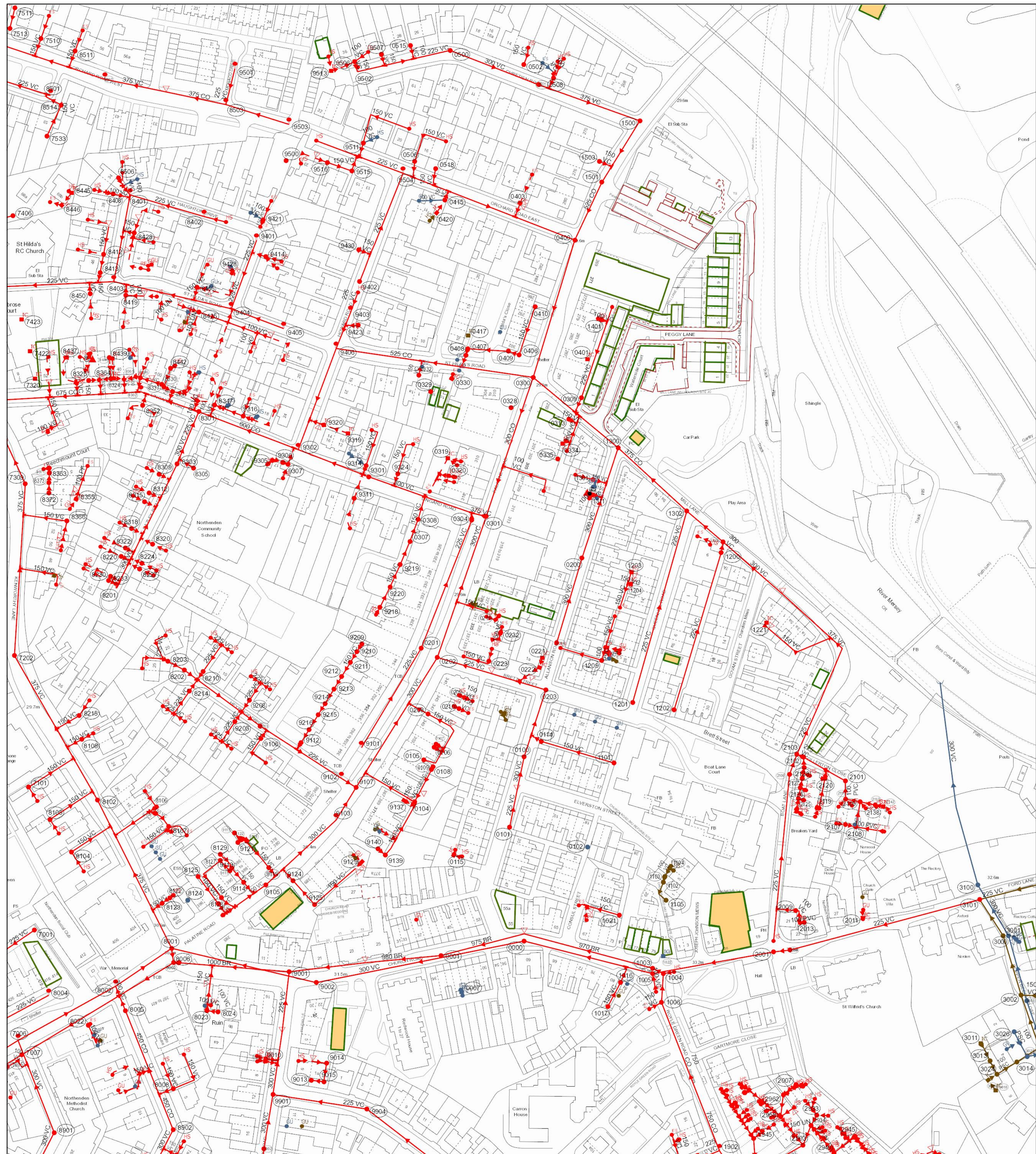
Karen McCormack
Property Searches Manager

TERMS AND CONDITIONS - WASTEWATER AND WATER DISTRIBUTION PLANS

These provisions apply to the public sewerage, water distribution and telemetry systems (including sewers which are the subject of an agreement under Section 104 of the Water Industry Act 1991 and mains installed in accordance with the agreement for the self construction of water mains) (UUWL apparatus) of United Utilities Water Limited "(UUWL)".

TERMS AND CONDITIONS:

- This Map and any information supplied with it is issued subject to the provisions contained below, to the exclusion of all others and no party relies upon any representation, warranty, collateral contract or other assurance of any person (whether party to this agreement or not) that is not set out in this agreement or the documents referred to in it.
- This Map and any information supplied with it is provided for general guidance only and no representation, undertaking or warranty as to its accuracy, completeness or being up to date is given or implied.
- In particular, the position and depth of any UUWL apparatus shown on the Map are approximate only. UUWL strongly recommends that a comprehensive survey is undertaken in addition to reviewing this Map to determine and ensure the precise location of any UUWL apparatus. The exact location, positions and depths should be obtained by excavation trial holes.
- The location and position of private drains, private sewers and service pipes to properties are not normally shown on this Map but their presence must be anticipated and accounted for and you are strongly advised to carry out your own further enquiries and investigations in order to locate the same.
- The position and depth of UUWL apparatus is subject to change and therefore this Map is issued subject to any removal or change in location of the same. The onus is entirely upon you to confirm whether any changes to the Map have been made subsequent to issue and prior to any works being carried out.
- This Map and any information shown on it or provided with it must not be relied upon in the event of any development, construction or other works (including but not limited to any excavations) in the vicinity of UUWL apparatus or for the purpose of determining the suitability of a point of connection to the sewerage or other distribution systems.
- No person or legal entity, including any company shall be relieved from any liability howsoever and whensoever arising for any damage caused to UUWL apparatus by reason of the actual position and/or depths of UUWL apparatus being different from those shown on the Map and any information supplied with it.
- If any provision contained herein is or becomes legally invalid or unenforceable, it will be taken to be severed from the remaining provisions which shall be unaffected and continue in full force and affect.
- This agreement shall be governed by English law and all parties submit to the exclusive jurisdiction of the English courts, save that nothing will prevent UUWL from bringing proceedings in any other competent jurisdiction, whether concurrently or otherwise.

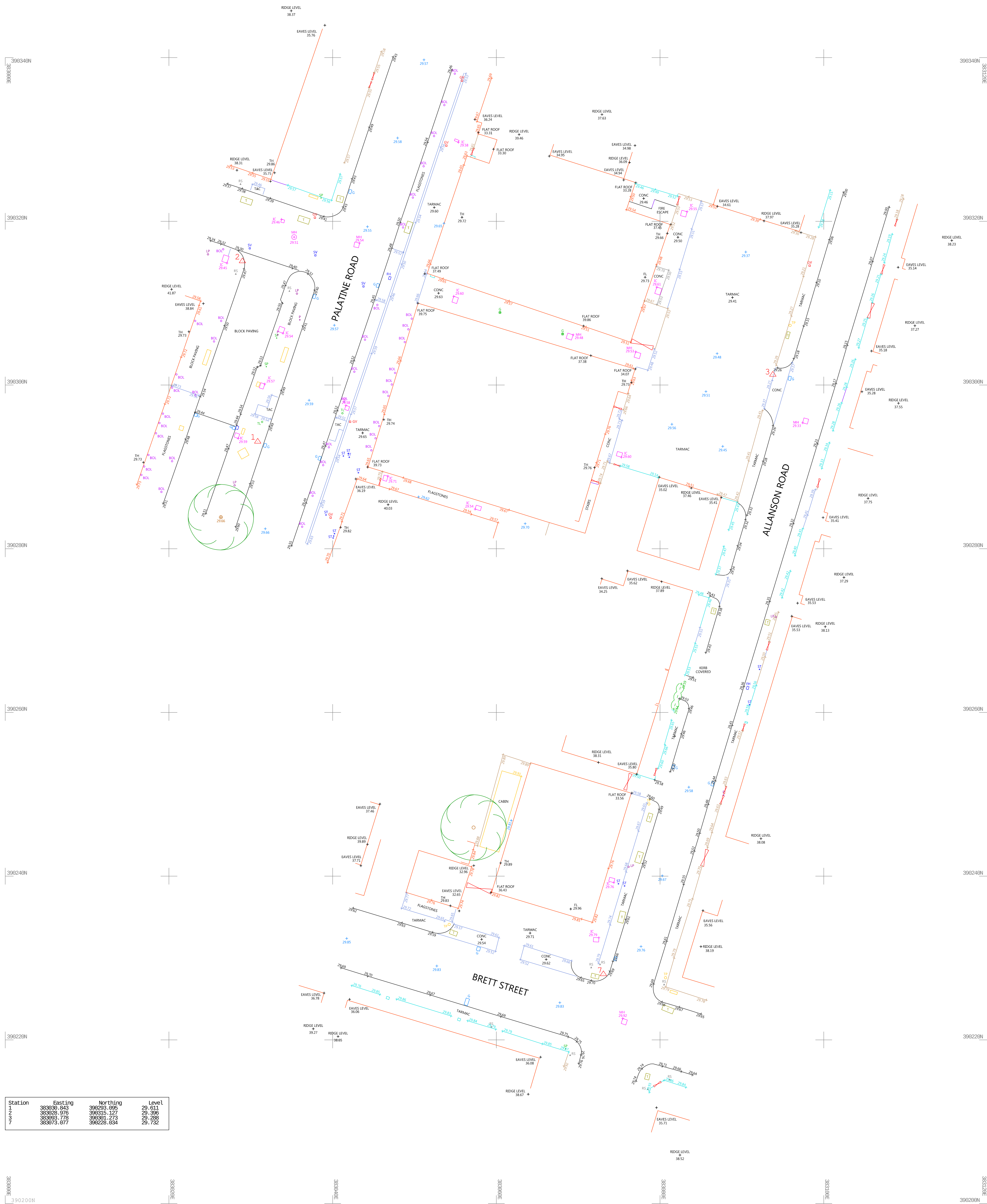


The position of the underground apparatus shown on this plan is approximate only and is given in accordance with the best information currently available. United Utilities Water will not accept liability for any loss or damage caused by the actual position being different from those shown.

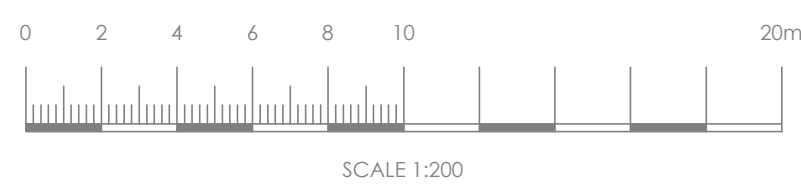
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Refno	Cover	Func	Invert	Size x	Size y	Shape	Mat	Length	Grad
9421		CO	150	150			VC	3.781797	
9904	34.09	CO	31.68	225			VC	4.128489	
9216		VC	0	150			VC	52.51179	1 in 88
0406		CO	0	150			VC	8.418973	
9214		CO	0	150			VC	6.375649	
9203		CO	0	150			VC	7.186689	
3025	28.77	SW	26.25	225			PSC	9.888889	
9203		CO	0	150			VC	36.07192	1 in 3609
8403	27.95	CO	26.4	225			VC	88.09086	1 in 1762
1282	29.64	CO	28.31	225			VC	50.81188	1 in 83
3101	33.24	CO	31.17	225			VC	108.6992	1 in 68
9301		CO	0	150			VC	41.75516	1 in 28
9107		CO	0	300			VC	84.00833	
8126		CO	0	150			VC	7.188332	
0006		CO	0	150			VC	6.320006	
1101		CO	0	150			VC	41.8866	
8114		CO	0	150			VC	10.3297	
9401	28.37	CO	27.23	225			VC	40.49091	1 in 119
2001	32.66	CO	29.87	300			VC	8.00615	1 in 155
8128		CO	0	150			VC	9.330466	
8005	31.5	CO	27.8	450			CO	8.982993	1 in 888
0309		CO	0	225			VC	6.699121	
2120		CO	0	100			UN	4.648556	
8001	30.96	CO	27.71	150			VC	6.902358	
0408		CO	0	150			VC	8.820599	
0332		CO	0	150			VC	8.07244	
9324		CO	0	150			VC	8.869614	
9210		CO	0	150			VC	6.782686	
8311		CO	0	100			PF	2.834328	
0400	29.69	CO	26.13	525			CO	79.40403	1 in 331
1500	29.62	CO	26.38	525			CO	39.95248	1 in 402
1005	33.01	CO	29.42	300			VC	73.24618	1 in 156
0223		CO	0	150			VC	3.94153	
0104		CO	0	150			VC	31.0972	
2107		CO	0	100			PVC	6.001225	
2119		UN	0	150			VC	16.44445	
3026		SW	100	225			PSC	15.47309	
1104		CO	0	100			VC	5.385539	
0108		CO	0	100			VC	13.43441	
2126		UN	0	150			UN	5.272593	
9102	30.22	CO	27.86	225			VC	9.433981	
9211		CO	0	150			VC	9.329331	
9212		CO	0	150			VC	9.091211	
8004	32.84	CO	31.04	225			VC	59.05029	1 in 102
0300	29.49	CO	25.86	525			VC	110.1681	1 in 153
3014		CO	0	150			VC	14.7989	
9516		CO	0	150			VC	14.8079	
8301	28.86	CO	24.56	675			CO	33.8785	1 in 121
0000	30.99	CO	28.95	300			VC	117.2775	1 in 192
9106		CO	0	150			VC	4.862963	
7101		CO	0	150			VC	29.49034	
7202	29.7	CO	27.42	375			VC	86.19929	
9106		CO	0	150			VC	5.625227	
0307		CO	0	150			VC	13.01874	
2100	29.82	CO	28.32	225			VC	11.8683	
9515		CO	0	150			VC	9.793022	
9501	29.13	CO	26.72	375			VC	59.46426	1 in 283
8108		CO	0	150			VC	2.981077	
1210		CO	0	150			VC	7.420393	
0001	27.87	CO	26.17	225			VC	36.69787	1 in 160
0001	30.87	CO	27.48	980			VC	42.10004	1 in 210
1503		CO	0	150			VC	7.326347	
3003	31.63	CO	31.61	300			VC	37.30528	1 in 133
0518		CO	0	150			VC	8.667844	
9406	28.99	CO	25.27	525			CO	99.80003	1 in 214
9115		CO	0	150			VC	10.04355	
9213		CO	0	150			VC	9.607693	
9203	30.32	CO	26.83	300			VC	63.59533	1 in 71
8352		CO	0	150			VC	6.814192	
3000	34.24	SW	31.28	150			VC	32.75668	1 in 86
8511		CO	0	150			VC	9.663353	
3001	34.24	CO	31.83	225			VC	23.8372	1 in 108
0114		CO	0	150			VC	6.61661	
7513		CO	0	150			VC	18.11158	
0101	30.36	CO	0	150			VC	20.36068	
9114		CO	0	150			VC	8.825279	
8023		CO	0	100			VC	3.47705	
8002	31.42	CO	28.16	300			VC	37.44329	1 in 84
1016		CO	0	150			VC	9.36618	
2933		UN	0	150			UN	6.601655	
1004	33.02	CO	27.73	750			CO	6.700204	
8002		CO	0	100			VC	1.432066	
1902	33.63	CO	29.6	750			CO	88.02273	1 in 326
7511		CO	0	100			VC	11.73976	
8419		CO	0	100			VC	6.049555	
9101	30	CO	28.2	225			VC	94.16047	
0304	24.44	CO	0	225			VC	4	
8367		CO	0	100			VC	6.99049	
2101		CO	0	150			VC	85.5485	
9218		CO	0	150			VC	12.53447	
9122		CO	0	150			VC	2.237866	
8006		CO	0	1000			BR	35.06937	
7001	32.85	CO	31.43	225			VC	26.07205	1 in 95
1401		CO	0	150			VC	3.789927	
8008		CO	0	150			VC	8.467424	
2940		CO	0	150			UN	2.170977	
2000	32.81	CO	29.95	300			VC	9.055386	1 in 226
0109		CO	0	100			VC	1.791038	
7533		CO	0	150			VC	18.94094	
9400		CO	0	150			VC	5.290875	
1302	28.7	CO	26.78	375			CO	51.66236	1 in 161
8502	27.94	CO	25.96	375			VC	63.24555	1 in 287
7510		CO	0	150			VC	10.28825	
2958		CO	0	150			UN	5.58458	
3002	34.59	CO	32.12	150			VC	34.48188	1 in 144
9112		CO	0	150			VC	4.556185	
9015		CO	0	150			VC	6.884402	
8202	30.29	CO	29.05	225			VC	8.987265	
0204		CO	0	300			VC	49.0459	
9124		CO	0	150			VC	8.559769	
0205	33.2	CO	30.79	150			VC	12.17111	
3100		SW	0	300			VC	114.4136	
8233		CO	0	150			UN	5.082087	
8230		CO	0	150			UN	8.975233	
8220		CO	0	150			UN	5.263953	
8322		UN	0	150			UN	5.336445	
8227		CO	0	150			VC	6.913589	
8008		CO	0	150			VC	6.74984	
8318		CO	0	150			UN	6.909597	
8320		CO	0	150			UN	7.249003	
8315		UN	0	150			UN	7.004949	
8428		CO	0	150			VC	6.046971	
1945		UN	0	150			VC	16.57167	
0107		CO	0	150			VC	4.967554	
0200	29.27	CO	27.22	150			VC	94.19501	1 in 401
8129		CO	0	150			VC	11.33033	
0201	29.66	CO	26.86	225			VC	73.22169	
1303	28.76	CO	26.86	375			CO	26.24881	1 in 328
9119		CO	0	150			VC	5.950077	
0515		CO	0	150			VC	7.472983	
2102		CO	0	225			VC	4.003847	
8215		CO	0	150			VC	14.17444	
9404	28.2	CO	26.88	225			VC	66.70832	1 in 145
0415		CO	0	150			VC	5.324394	
1501	29.6	CO	26.24	525			CO	30.34119	1 in 505
9902	33.03	CO	31.09	300			VC	30.41381	1 in 434
9113		CO	0	150			VC	7.67065	
8105		CO	0	150			VC	28.21193	
0301	29.48	CO	26.46	375			VC	41.12106	
9103	30.32	CO	27.06	300			VC	21.09502	
8413		CO	0	150			VC	5.432846	
2125		CO	0	150			UN	6.020431	
2834		CO	0	150			UN	11.75205	
8338		CO	0	150			VC	6.732666	
2103		CO	0	225			VC	26.46077	
0203	29.85	CO	27.45	300			VC	31.30902	1 in 104
8514		CO	0	150			VC	10.91267	
1301		CO	0	150			VC	7.785741	
1006	33.32	CO	29.31	750			PF	16.03122	1 in 107
8373		CO	0	150			VC	14.14294	
9302	29.17	CO	24.92	600			VC	56.87275	1 in 184
2903		CO	0	225			CO	28.89718	
7406		CO	0	100			VC	23.95346	
8114		CO	0	150			VC	3.444449	
7007	32.38	CO	27.3	1000			BR	72.34493	
0210		CO	0	150			VC	5.615971	
8333		CO	0	100			PSC	6.869713	
3024	FO	CO	100	100			VC	12.94817	
7006	32.4	CO	28.78	300			VC	61.77378	1 in 103
8314		CO	0	150			VC	5.168443	
9506		CO	0	150			VC	5.745263	
0209		CO	0	150			VC	4.695156	
8401	28.1	CO	26.71	225			VC	48.83646	1 in 163
9501	28.61	CO	26.46	225			VC	20.61553	1 in 103
8003	31.04	CO	27.33	1000			BR	3	
1017									

Appendix 4: Topographical Survey



Station	Easting	Northing	Level
380030	380030.943	390293.095	29.613
380031	380030.976	390315.177	29.586
380032	380031.773	390331.273	29.598
380033	380032.077	390325.034	29.732



Abbreviations/Symbols (Measured Building Surveys):

C:	Window Cill Height
H:	Window Head Height
BH:	Beam Height
DH:	Door Height
COL:	Column
SVP:	Soil Vent Pipe
FL:	Floor Level
TH:	Threshold Level
2.50	Floor to Ceiling Height
	Vaulted Ceiling

Line types

	Hedge Lines
	Drainage Runs
	Overhead Electricity Cables
	Overhead Telephone Cables

Symbols

	Tree/Bush		Glass House
	Control Station		Osbn
	Borehole		
	Trial Hole		

Abbreviations (Topographic Survey):

AV:	Arch Height
BB:	Bellina Beacon
BOX:	Electricity Box, Cables Box, Etc.
BT/C:	British Telecom Inspection Chamber
BS:	Bus Stop
BS/UP:	Bus Stop / Lamp Post
CATV:	CATV Inspection Chamber
CCTV:	Closed Circuit Television
CL:	Cellar Light
C.PIT:	Catch Pit
ER:	Earth Rod
EC:	Electricity Inspection Chamber
EP:	Electricity Pole
FH:	Fire Hydrant
FP:	Flag Pole
GV:	Gas Valve
G:	Gully
IC:	Inspection Chamber
KO:	Kerb Outlet
LP:	Lamp Post
LB:	Letter Box
LC:	Lighting Column
MKR:	Marker
MH:	Manhole
MPT:	Measuring Point
MS:	Mile Stone
NYNEX:	Nynex Inspection Chamber
OJH:	Over Hanging Post
P:	Post
PO/IC:	Post Office Inspection Chamber
R/S:	Road Sign
RE:	Rodding Eye
RTW:	Retaining Wall
S/P:	Sign Post
SNP:	Street Name Plate
ST:	Shop Top
SV:	Shop Valve
T:	Telecom Inspection Chamber
TCB:	Telephone Call Box
TH:	Threshold Level
TL:	Traffic Light
TP:	Telegraph Pole
TROUGH:	Trough
WO:	Water Outlet
WM:	Water Meter

Fence Descriptions:

B/W:	Barbed Wire
C/B:	Close Boarded
C/BARRIER:	Crash Barrier
C/L:	Chain Link
C/P:	Chestnut Paving
C/I:	Corrugated Iron
I/R:	Iron Rolling
MBC:	Miscellaneous
P/R:	Post & Rail
P/W:	Post & Wire
P/C:	Post & Chain
S/PAL:	Steel Palisade
W/M:	Wire Mesh

Survey Notes:

Coordinates and Levels related to Ordnance Survey Datum - GPS OSGB36.

Revision	Date	Description



44a Green Lane
Sale
Cheshire
M33 5PP
t: 0161 976 1194
www.cpls.co.uk e:survey@cpls.co.uk

Client
AEW Architects and Designers LTD

Project
Express Solicitors, Palatine Road, Northenden
Site Survey

Scale 1:200	Surveyed By J C	Date 12.04.23
Drawing No. 120423JC-01	Checked By CPLS	Date 13.04.23
	Drawn By J C	Date 13.04.23

Appendix 5: Greenfield Runoff Rate Calculations

BWB Consulting Ltd		Page 1
5th Floor, Waterfront House 35 Station Street Nottingham, NG2 3DQ	Northenden	
Date 16/08/2023 File	Designed by L Ream Checked by R Jobling	
Innovyze Source Control 2020.1		

ICP SUDS Mean Annual Flood

Input

Return Period (years)	2	Soil	0.300
Area (ha)	1.000	Urban	0.000
SAAR (mm)	816	Region Number	Region 4

Results 1/s

QBAR Rural	2.2
QBAR Urban	2.2
Q2 years	2.0
Q1 year	1.8
Q30 years	4.3
Q100 years	5.6

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Appendix 6: Impermeable Areas Plan



Existing Impermeable Areas

Parcel A (0.19ha)



Proposed Impermeable Areas

Parcel A (0.17ha)

Notes

- Do not scale this drawing. All dimensions must be checked/ verified on site. If in doubt ask.
- This drawing is to be read in conjunction with all relevant architects, engineers and specialists drawings and specifications.
- All dimensions in millimetres unless noted otherwise. All levels in metres unless noted otherwise.
- Any discrepancies noted on site are to be reported to the engineer immediately.
- This Impermeable Areas Plan should be read in conjunction with BWB report NDM-BWB-ZZ-XX-RP-YE-0003_SDS.

Legend

- Application Boundary
- Existing Impermeable Area
- Proposed Impermeable Area

P01	06.08.23	Preliminary Issue			LDR RJ
Rev	Date	Details of issue / revision			Dw Rev

Issues & Revisions



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☒ Manchester | 0161 233 4260
☐ Nottingham | 0115 924 1100
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Client
EXPRESS SOLICITORS

Project Title
NORTHENDEN

Drawing Title
IMPERMEABLE AREAS PLAN

Drawn:	L Ream	Reviewed:	R Jobling
BWB Ref:	221105	Date:	16.08.23
Scale@A1:	1:200		
Drawing Status PRELIMINARY			
Project - Originator - Zone - Level - Type - Role - Number NDM-BWB-ZZ-XX-DR-CD-0002			Status Rev S2 P01

Appendix 7: United Utilities Pre-Development Enquiry Reponses

Louis Ream

From: seweradoptions@uuplc.co.uk
Sent: 21 June 2023 10:04
To: Louis Ream
Subject: Pre Development Enquiry for: Allanson Rd, Northenden, M22 4HH UU Reference Number : 04172871

Follow Up Flag: Follow up
Flag Status: Flagged

This email originated from outside of our organisation. Please exercise caution with content, links and attachments.

Good morning Louis,

I note this is for two phases, I would request that a second pre development enquiry is submitted for the south phase as the preferred point of discharge will differ due to the location of this phase.

Pre Development Enquiry for: Allanson Rd, Northenden, M22 4HH UU Reference Number : 04172871

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 6723 723 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.

Our preferred point of discharge would be to the 300mm diameter public combined sewer within Palatine Road located to the West of your proposed development at an unrestricted rate.

If you are able to identify an alternative, more suitable point of discharge, we request that you contact us at your earliest convenience so that we can assess suitability.

In accordance with our infrastructure plans we may ask you to change your point of connection. Therefore please contact us when you are ready to formalise your drainage proposals, we would suggest before you submit for Full Planning.

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.

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.

Highway Drainage

If an evidence based assessment has been carried out and confirms that infiltration is not feasible, we recommend that you investigate the possibility of draining surface water to the highway drain where this ultimately discharges to a watercourse, by contacting the relevant Highway Authority.

Public Sewer

In accordance with the hierarchy of drainage options within the National Planning Practice Guidance, both discharge to ground via infiltration and discharge to a waterbody should be discounted prior to consideration of discharging surface water to the public sewer system. Evidence should be provided to demonstrate how these have been discounted, as outlined in the North West SuDS pro-forma.

Once evidence is provided as outlined above, United Utilities will consider a connection to the 300mm diameter public combined sewer within Palatine Road located West of the proposed site at a pass forward flow to be agreed by the Lead Local Flood Authority. United Utilities request that any agreed rate does not exceed 5l/s.

As a Water Company, we have no obligation to accept highway drainage into our public sewer network. However, should your proposals include runoff from highways, we would request that consideration is given to SuDS components that deliver source control are incorporated within the design of the scheme to reduce the volume and frequency of discharges of these flows to the public sewer.

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.

Land drainage / Overland flows / track drainage

United Utilities have no obligation, and furthermore we do not accept land drainage, overland flows or track drainage into the public sewerage network under any circumstances

Existing Wastewater Assets Crossing the Site

We have reviewed our records and can confirm that there does not appear to be any charted public sewers located within the boundary of proposed development. However, due to the accuracy of the records and the public sewer

transfer legislation in 2011, not all public sewers are shown on our records so we would ask that you proceed with caution and carry out your own site investigation works. If any uncharted sewers are identified while carrying out your works we would ask that you contact United Utilities at the earliest opportunity so that we can offer guidance and update our records.

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/wastewater-services/sewer-connections/sewer-connection/>

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.

Many thanks and kind regards,



Ashleigh Bellerby
Assistant Developer Engineer
Developer Services & Metering
Customer Services
T: 07826891650
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----- Original Message -----

From: seweradoptions@uuplc.co.uk [seweradoptions@uuplc.co.uk]

Sent: 13/06/2023 09:39

To:

Subject: 04172871 - Northenden, Manchester pre development enquiry

Dear Louis

PRE DEVELOPMENT APPLICATION AT: Allanson Rd, Northenden, M22 4HH – UU Ref 04172871

Please accept this email as receipt of your application received on 9 June 2023 for the above development. This has now been logged on our system and the job reference is 04172871 we would ask that you quote this reference in all future correspondence.

I have reviewed your application (and attachments) and can confirm this is suitable to be passed to Ashleigh Bellerby for technical assessment. Her contact number is 078 You will receive their response on or before 23 June 2023.

Kind regards



Water for the North West

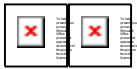
Jayne Guest

Customer Advisor Advanced
Developer Services & Metering
Customer Services
Tel: 0345 072 6067
unitedutilities.com

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and one of our advisors will be ready to chat to
you and help you with your
enquiry [https://www.unitedutilities.com/builders-
developers/](https://www.unitedutilities.com/builders-developers/) or you can email us at
WastewaterDeveloperServices@uuplc.co.uk



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Louis Ream

From: seweradoptions@uuplc.co.uk
Sent: 07 July 2023 15:16
To: Louis Ream
Subject: Pre Development Enquiry for: Allanson Rd, Northenden, M22 4HH UU Reference Number : 04249001

This email originated from outside of our organisation. Please exercise caution with content, links and attachments.

Good afternoon Louis,

Pre Development Enquiry for: Allanson Rd, Northenden, M22 4HH UU Reference Number : 04249001

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 6723 723 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.

Our preferred point of discharge would be in line with your proposal to the 100mm diameter public combined sewer just to the South of your proposed development at an unrestricted rate.

If you are able to identify an alternative, more suitable point of discharge, we request that you contact us at your earliest convenience so that we can assess suitability.

In accordance with our infrastructure plans we may ask you to change your point of connection. Therefore please contact us when you are ready to formalise your drainage proposals, we would suggest before you submit for Full Planning.

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.

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.

Highway Drainage

If an evidence based assessment has been carried out and confirms that infiltration is not feasible, we recommend that you investigate the possibility of draining surface water to the highway drain where this ultimately discharges to a watercourse, by contacting the relevant Highway Authority.

Public Sewer

In accordance with the hierarchy of drainage options within the National Planning Practice Guidance, both discharge to ground via infiltration and discharge to a waterbody should be discounted prior to consideration of discharging surface water to the public sewer system. Evidence should be provided to demonstrate how these have been discounted, as outlined in the North West SuDS pro-forma.

Once evidence is provided as outlined above, United Utilities will consider a connection to the 100mm diameter public combined sewer to the South of the proposed development, within Brett Street at a pass forward flow to be agreed by the Lead Local Flood Authority. United Utilities request that any agreed rate does not exceed 5l/s.

As a Water Company, we have no obligation to accept highway drainage into our public sewer network. However, should your proposals include runoff from highways, we would request that consideration is given to SuDS components that deliver source control are incorporated within the design of the scheme to reduce the volume and frequency of discharges of these flows to the public sewer.

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.

Land drainage / Overland flows / track drainage

United Utilities have no obligation, and furthermore we do not accept land drainage, overland flows or track drainage into the public sewerage network under any circumstances

Existing Wastewater Assets Crossing the Site

We have reviewed our records and can confirm that there does not appear to be any charted public sewers located within the boundary of proposed development. However, due to the accuracy of the records and the public sewer transfer legislation in 2011, not all public sewers are shown on our records so we would ask that you proceed with caution and carry out your own site investigation works. If any uncharted sewers are identified while carrying out your works we would ask that you contact United Utilities at the earliest opportunity so that we can offer guidance and update our records.

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/wastewater-services/sewer-connections/sewer-connection/>

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.

Many thanks and kind regards,



Ashleigh Bellerby
Assistant Developer Engineer
Developer Services & Metering
Customer Services
T: 07826891650
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----- Original Message -----

From: seweradoptions@uuplc.co.uk [seweradoptions@uuplc.co.uk]

Sent: 27/06/2023 09:11

To:

Subject: 04249001 - Allanson Rd / Brett St Northenden, Manchester

Dear Louis

PRE DEVELOPMENT APPLICATION AT: Allanson Rd, Northenden, M22 4HH– UU Ref 04249001

Please accept this email as receipt of your application received on 23 June 2023 for the above development. This has now been logged on our system and the job reference is 04249001 we would ask that you quote this reference in all future correspondence.

I have reviewed your application (and attachments) and can confirm this is suitable to be passed to Ashleigh Bellerby for technical assessment. Her contact number is 07826891650. You will receive her response on or before 7 July 2023.

Kind regards



Water for the North West

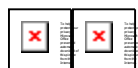
Jayne Guest

Customer Advisor Advanced
Developer Services & Metering
Customer Services
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Appendix 8: LLFA Correspondence

Louis Ream

From: Flood Risk Management <floodriskmanagement@manchester.gov.uk>
Sent: 28 July 2023 14:15
To: Robert Griffin
Cc: Louis Ream
Subject: RE: Northenden pre application advice
Attachments: NMC-BWB-ZZ-XX-SK-YE-0001_RFI SITE LOCATION PLAN_S2-P01.pdf

This email originated from outside of our organisation. Please exercise caution with content, links and attachments.

Good afternoon Rob,

Thank you for the below request.

We would request the developer follows National Planning Practice Guidance, in line with part H of the Building Regulations listed below:

1. Into the ground (infiltration);
2. To a surface water body;
3. To a surface water sewer
4. To a combined sewer

In the instance discharging to the public sewer is the only option, the submission should contain details of surface water attenuation that offers a reduction in surface water runoff rate in line with the Manchester Trafford and Salford Strategic Flood Risk Assessment: provide at least a 50% reduction in runoff rate compared to the existing rates, as the site is located within Conurbation Core Critical Drainage Area. The planning application will need to include; An existing and proposed impermeable areas drawing to accompany all discharge rate calculations, and an existing drainage layout. We would be unable to comment without further detail.

Regarding Brett St, the acceptable flow will be no greater than 5l/s, however we would want to see the strategy include an appraisal of whether alternative flow controls to orifice controls could be used to reduce flows below 5l/s, e.g. vortex control. This should be combined with an assessment of blockage risk, and whether the scheme could safely achieve lower flows if anti-blockage design was embedded. Please evidence your conclusions on selection of appropriate flow control and achievable discharge rate. Approval from United Utilities will also be required regarding any connection onto their network.

Surface water attenuation will be required to accommodate 1 in 100 years + CC% event within appropriate on site storage. We would encourage maximised use of green SuDS components where practicable.

It should be noted that both development area sits within flood zone 3/2, a visual illustration of the risk outlines can be found via the following link; [Learn more about flood risk - GOV.UK \(check-long-term-flood-risk.service.gov.uk\)](https://www.gov.uk/check-long-term-flood-risk). Any planning application submissions will need to be accompanied by a detailed Flood Risk Assessment (FRA) for both Lead Local Flood Authority and Environment Agency review.

Note: The comments made above are based on the limited information provided by BWB Consulting. Manchester City Councils Lead Local Flood Authority position may change subject to further detail being submitted through the planning application process.

Kind Regards,

Owen Beddow
Flood Risk Management Engineer
Neighbourhoods Directorate

Telephone: Please use Microsoft Teams

Email: Owen.beddow@manchester.gov.uk

Web: <http://www.manchester.gov.uk>

POSTAL ADDRESS: Manchester City Council, The Highways Service, PO Box 532, Town Hall, Manchester, M60 2LA



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From: Robert Griffin <robert.griffin@manchester.gov.uk>

Sent: 21 July 2023 12:16

To: Flood Risk Management <floodriskmanagement@manchester.gov.uk>

Cc: louis.ream@bwbconsulting.com

Subject: Fw: Northenden pre application advice

Dear FRMT,

Are you able to respond to the request from Louis for some pre-app advice please.

Regards

Rob Griffin
Principal Planner
Development Management South
Planning, Licensing and Building Control
Growth and Development Directorate
Manchester City Council
PO Box 532
Manchester
M60 2LA

T: 0161 234 4527

e: robert.griffin@manchester.gov.uk

From: Louis Ream <louis.ream@bwbconsulting.com>

Sent: 20 July 2023 16:34

To: Planning <Planning@manchester.gov.uk>

Cc: Keith Alger <keith.alger@manchester.gov.uk>

Subject: Northenden pre application advice

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FAO: MCC Flood Risk Management Team

Hello,

We are currently undertaking a flood risk study and sustainable drainage statement at a brownfield site in at Palatine Road, Northenden, location plan attached.

The southern parcel of the site is only 390m² and the proposed development consists of two houses with gardens at the rear. The existing site is 100% impermeable and therefore the proposed development includes an approximate 50% reduction in impermeable area. Therefore, due to the small nature of the site and a betterment to the existing conditions, we are proposing to reuse the existing surface water drainage connections and discharge into the United Utilities sewers at an unrestricted rate. Do you deem this approach to be acceptable?

A larger parcel off Brett St is also being proposed for development. This is expected to be comprised of 3 residential dwellings and an apartment block. The nature of the development is such that we would be looking to restrict surface water flows from the development and provide attenuation sized up to and including the 1 in 100 year+CC event. The size of the site is such that the calculated greenfield runoff rate is less than 1 l/s. We are therefore looking to progress the drainage strategy based upon a restriction rate of 5 l/s. This is of course a significant betterment in runoff rate compared to the existing scenario. United Utilities have also confirmed via a Pre-development Enquiry, that their network could accommodate such a rate. Please can you confirm that such an approach would be acceptable to you ?

Thanks,

Louis Ream

Graduate Engineer | BWB Consulting Limited

5th Floor, Waterfront House, Station Street, Nottingham, NG2 3DQ

T D W www.bwbconsulting.com



Registered in England and Wales

Registered Office: 5th Floor, Waterfront House, Station Street, Nottingham, NG2 3DQ

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Appendix 9: MicroDrainage Calculations

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<u>Summary of Results for 100 year Return Period (+45%)</u> Half Drain Time : 144 minutes. <table><tr><th>Storm Event</th><th>Max Level (m)</th><th>Max Depth (m)</th><th>Max Infiltration (l/s)</th><th>Max Control (l/s)</th><th>Max Σ Outflow (l/s)</th><th>Max Volume (m³)</th><th>Status</th></tr><tr><td>15 min Summer</td><td>98.405</td><td>0.405</td><td>0.0</td><td>4.2</td><td>4.2</td><td>36.5</td><td>O K</td></tr><tr><td>30 min Summer</td><td>98.524</td><td>0.524</td><td>0.0</td><td>4.2</td><td>4.2</td><td>47.3</td><td>O K</td></tr><tr><td>60 min Summer</td><td>98.623</td><td>0.623</td><td>0.0</td><td>4.2</td><td>4.2</td><td>56.2</td><td>O K</td></tr><tr><td>120 min Summer</td><td>98.670</td><td>0.670</td><td>0.0</td><td>4.2</td><td>4.2</td><td>60.5</td><td>O K</td></tr><tr><td>180 min Summer</td><td>98.667</td><td>0.667</td><td>0.0</td><td>4.2</td><td>4.2</td><td>60.2</td><td>O K</td></tr><tr><td>240 min Summer</td><td>98.652</td><td>0.652</td><td>0.0</td><td>4.2</td><td>4.2</td><td>58.9</td><td>O K</td></tr><tr><td>360 min Summer</td><td>98.611</td><td>0.611</td><td>0.0</td><td>4.2</td><td>4.2</td><td>55.1</td><td>O K</td></tr><tr><td>480 min Summer</td><td>98.566</td><td>0.566</td><td>0.0</td><td>4.2</td><td>4.2</td><td>51.1</td><td>O K</td></tr><tr><td>600 min Summer</td><td>98.517</td><td>0.517</td><td>0.0</td><td>4.2</td><td>4.2</td><td>46.6</td><td>O K</td></tr><tr><td>720 min Summer</td><td>98.466</td><td>0.466</td><td>0.0</td><td>4.2</td><td>4.2</td><td>42.0</td><td>O K</td></tr><tr><td>960 min Summer</td><td>98.379</td><td>0.379</td><td>0.0</td><td>4.2</td><td>4.2</td><td>34.2</td><td>O K</td></tr><tr><td>1440 min Summer</td><td>98.248</td><td>0.248</td><td>0.0</td><td>4.2</td><td>4.2</td><td>22.4</td><td>O K</td></tr><tr><td>2160 min Summer</td><td>98.145</td><td>0.145</td><td>0.0</td><td>4.0</td><td>4.0</td><td>13.1</td><td>O K</td></tr><tr><td>2880 min Summer</td><td>98.109</td><td>0.109</td><td>0.0</td><td>3.6</td><td>3.6</td><td>9.9</td><td>O K</td></tr><tr><td>4320 min Summer</td><td>98.084</td><td>0.084</td><td>0.0</td><td>2.7</td><td>2.7</td><td>7.5</td><td>O K</td></tr><tr><td>5760 min Summer</td><td>98.071</td><td>0.071</td><td>0.0</td><td>2.2</td><td>2.2</td><td>6.4</td><td>O K</td></tr><tr><td>7200 min Summer</td><td>98.064</td><td>0.064</td><td>0.0</td><td>1.8</td><td>1.8</td><td>5.7</td><td>O K</td></tr><tr><td>8640 min Summer</td><td>98.058</td><td>0.058</td><td>0.0</td><td>1.6</td><td>1.6</td><td>5.2</td><td>O K</td></tr><tr><td>10080 min Summer</td><td>98.054</td><td>0.054</td><td>0.0</td><td>1.4</td><td>1.4</td><td>4.9</td><td>O K</td></tr><tr><td>15 min Winter</td><td>98.458</td><td>0.458</td><td>0.0</td><td>4.2</td><td>4.2</td><td>41.3</td><td>O K</td></tr></table> <table><tr><th>Storm Event</th><th>Rain (mm/hr)</th><th>Flooded Volume (m³)</th><th>Discharge Volume (m³)</th><th>Time-Peak (mins)</th></tr><tr><td>15 min 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Summer</td><td>4.733</td><td>0.0</td><td>144.7</td><td>806</td></tr><tr><td>2160 min Summer</td><td>3.431</td><td>0.0</td><td>157.4</td><td>1132</td></tr><tr><td>2880 min Summer</td><td>2.727</td><td>0.0</td><td>166.8</td><td>1472</td></tr><tr><td>4320 min Summer</td><td>1.971</td><td>0.0</td><td>180.8</td><td>2204</td></tr><tr><td>5760 min Summer</td><td>1.563</td><td>0.0</td><td>191.3</td><td>2936</td></tr><tr><td>7200 min Summer</td><td>1.305</td><td>0.0</td><td>199.7</td><td>3648</td></tr><tr><td>8640 min Summer</td><td>1.126</td><td>0.0</td><td>206.7</td><td>4328</td></tr><tr><td>10080 min Summer</td><td>0.994</td><td>0.0</td><td>212.7</td><td>5096</td></tr><tr><td>15 min Winter</td><td>125.543</td><td>0.0</td><td>44.6</td><td>21</td></tr></table>								Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Control (l/s)	Max Σ Outflow (l/s)	Max Volume (m³)	Status	15 min Summer	98.405	0.405	0.0	4.2	4.2	36.5	O K	30 min Summer	98.524	0.524	0.0	4.2	4.2	47.3	O K	60 min Summer	98.623	0.623	0.0	4.2	4.2	56.2	O K	120 min Summer	98.670	0.670	0.0	4.2	4.2	60.5	O K	180 min Summer	98.667	0.667	0.0	4.2	4.2	60.2	O K	240 min Summer	98.652	0.652	0.0	4.2	4.2	58.9	O K	360 min Summer	98.611	0.611	0.0	4.2	4.2	55.1	O K	480 min Summer	98.566	0.566	0.0	4.2	4.2	51.1	O K	600 min Summer	98.517	0.517	0.0	4.2	4.2	46.6	O K	720 min Summer	98.466	0.466	0.0	4.2	4.2	42.0	O K	960 min Summer	98.379	0.379	0.0	4.2	4.2	34.2	O K	1440 min Summer	98.248	0.248	0.0	4.2	4.2	22.4	O K	2160 min Summer	98.145	0.145	0.0	4.0	4.0	13.1	O K	2880 min Summer	98.109	0.109	0.0	3.6	3.6	9.9	O K	4320 min Summer	98.084	0.084	0.0	2.7	2.7	7.5	O K	5760 min Summer	98.071	0.071	0.0	2.2	2.2	6.4	O K	7200 min Summer	98.064	0.064	0.0	1.8	1.8	5.7	O K	8640 min Summer	98.058	0.058	0.0	1.6	1.6	5.2	O K	10080 min Summer	98.054	0.054	0.0	1.4	1.4	4.9	O K	15 min Winter	98.458	0.458	0.0	4.2	4.2	41.3	O K	Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)	15 min Summer	125.543	0.0	39.8	21	30 min 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Date 15/08/2023 File SITE 1 TANK FSR.SRCX	Designed by L Ream Checked by R Jobling	
Innovyze	Source Control 2020.1	

Rainfall Details

Rainfall Model	FSR	Winter Storms	Yes
Return Period (years)	100	Cv (Summer)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	18.000	Shortest Storm (mins)	15
Ratio R	0.383	Longest Storm (mins)	10080
Summer Storms	Yes	Climate Change %	+45

Time Area Diagram

Total Area (ha) 0.170

Time (mins) Area			Time (mins) Area		
From:	To:	(ha)	From:	To:	(ha)
0	4	0.085	4	8	0.085

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Model Details Storage is Online Cover Level (m) 100.000 Cellular Storage Structure Invert Level (m) 98.000 Safety Factor 2.0 Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95 Infiltration Coefficient Side (m/hr) 0.00000 <table><tr><th>Depth (m)</th><th>Area (m²)</th><th>Inf. Area (m²)</th><th>Depth (m)</th><th>Area (m²)</th><th>Inf. Area (m²)</th></tr><tr><td>0.000</td><td>95.0</td><td>0.0</td><td>0.801</td><td>0.0</td><td>0.0</td></tr><tr><td>0.800</td><td>95.0</td><td>0.0</td><td></td><td></td><td></td></tr></table> Hydro-Brake® Optimum Outflow Control Unit Reference MD-SHE-0100-4200-0800-4200 Design Head (m) 0.800 Design Flow (l/s) 4.2 Flush-Flo™ Calculated Objective Minimise upstream storage Application Surface Sump Available Yes Diameter (mm) 100 Invert Level (m) 98.000 Minimum Outlet Pipe Diameter (mm) 150 Suggested Manhole Diameter (mm) 1200 <table><tr><th>Control Points</th><th>Head (m)</th><th>Flow (l/s)</th></tr><tr><td>Design Point (Calculated)</td><td>0.800</td><td>4.2</td></tr><tr><td>Flush-Flo™</td><td>0.238</td><td>4.2</td></tr><tr><td>Kick-Flo®</td><td>0.525</td><td>3.5</td></tr><tr><td>Mean Flow over Head Range</td><td>-</td><td>3.6</td></tr></table> The hydrological calculations have been based on the Head/Discharge relationship for the Hydro-Brake® Optimum as specified. Should another type of control device other than a Hydro-Brake Optimum® be utilised then these storage routing calculations will be invalidated <table><tr><th>Depth (m)</th><th>Flow (l/s)</th><th>Depth (m)</th><th>Flow (l/s)</th><th>Depth (m)</th><th>Flow (l/s)</th><th>Depth (m)</th><th>Flow (l/s)</th></tr><tr><td>0.100</td><td>3.3</td><td>1.200</td><td>5.1</td><td>3.000</td><td>7.8</td><td>7.000</td><td>11.6</td></tr><tr><td>0.200</td><td>4.2</td><td>1.400</td><td>5.4</td><td>3.500</td><td>8.4</td><td>7.500</td><td>12.0</td></tr><tr><td>0.300</td><td>4.1</td><td>1.600</td><td>5.8</td><td>4.000</td><td>8.9</td><td>8.000</td><td>12.4</td></tr><tr><td>0.400</td><td>4.0</td><td>1.800</td><td>6.1</td><td>4.500</td><td>9.4</td><td>8.500</td><td>12.7</td></tr><tr><td>0.500</td><td>3.6</td><td>2.000</td><td>6.4</td><td>5.000</td><td>9.9</td><td>9.000</td><td>13.1</td></tr><tr><td>0.600</td><td>3.7</td><td>2.200</td><td>6.7</td><td>5.500</td><td>10.4</td><td>9.500</td><td>13.5</td></tr><tr><td>0.800</td><td>4.2</td><td>2.400</td><td>7.0</td><td>6.000</td><td>10.8</td><td></td><td></td></tr><tr><td>1.000</td><td>4.7</td><td>2.600</td><td>7.3</td><td>6.500</td><td>11.2</td><td></td><td></td></tr></table>			Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	0.000	95.0	0.0	0.801	0.0	0.0	0.800	95.0	0.0				Control Points	Head (m)	Flow (l/s)	Design Point (Calculated)	0.800	4.2	Flush-Flo™	0.238	4.2	Kick-Flo®	0.525	3.5	Mean Flow over Head Range	-	3.6	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	0.100	3.3	1.200	5.1	3.000	7.8	7.000	11.6	0.200	4.2	1.400	5.4	3.500	8.4	7.500	12.0	0.300	4.1	1.600	5.8	4.000	8.9	8.000	12.4	0.400	4.0	1.800	6.1	4.500	9.4	8.500	12.7	0.500	3.6	2.000	6.4	5.000	9.9	9.000	13.1	0.600	3.7	2.200	6.7	5.500	10.4	9.500	13.5	0.800	4.2	2.400	7.0	6.000	10.8			1.000	4.7	2.600	7.3	6.500	11.2		
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Parcel A FEH
Northenden

Designed by L Ream
Checked by R Jobling

Source Control 2020.1

Page 1



Summary of Results for 100 year Return Period (+45%)

Half Drain Time : 185 minutes.

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Control (l/s)	Max Σ Outflow (l/s)	Max Volume (m³)	Status
15 min Summer	98.413	0.413	0.0	4.2	4.2	47.1	O K
30 min Summer	98.535	0.535	0.0	4.2	4.2	61.0	O K
60 min Summer	98.642	0.642	0.0	4.2	4.2	73.2	O K
120 min Summer	98.677	0.677	0.0	4.2	4.2	77.1	O K
180 min Summer	98.664	0.664	0.0	4.2	4.2	75.7	O K
240 min Summer	98.646	0.646	0.0	4.2	4.2	73.6	O K
360 min Summer	98.604	0.604	0.0	4.2	4.2	68.9	O K
480 min Summer	98.562	0.562	0.0	4.2	4.2	64.0	O K
600 min Summer	98.516	0.516	0.0	4.2	4.2	58.9	O K
720 min Summer	98.471	0.471	0.0	4.2	4.2	53.7	O K
960 min Summer	98.393	0.393	0.0	4.2	4.2	44.8	O K
1440 min Summer	98.273	0.273	0.0	4.2	4.2	31.2	O K
2160 min Summer	98.168	0.168	0.0	4.1	4.1	19.1	O K
2880 min Summer	98.120	0.120	0.0	3.9	3.9	13.7	O K
4320 min Summer	98.091	0.091	0.0	3.0	3.0	10.4	O K
5760 min Summer	98.078	0.078	0.0	2.5	2.5	8.8	O K
7200 min Summer	98.069	0.069	0.0	2.1	2.1	7.9	O K
8640 min Summer	98.064	0.064	0.0	1.8	1.8	7.3	O K
10080 min Summer	98.060	0.060	0.0	1.6	1.6	6.8	O K
15 min Winter	98.466	0.466	0.0	4.2	4.2	53.1	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
15 min Summer	158.753	0.0	50.3	21
30 min Summer	104.813	0.0	66.5	36
60 min Summer	66.078	0.0	84.1	64
120 min Summer	38.834	0.0	98.9	122
180 min Summer	28.210	0.0	107.7	162
240 min Summer	22.418	0.0	114.2	192
360 min Summer	16.160	0.0	123.5	258
480 min Summer	12.798	0.0	130.4	328
600 min Summer	10.678	0.0	136.0	396
720 min Summer	9.209	0.0	140.7	458
960 min Summer	7.297	0.0	148.7	582
1440 min Summer	5.271	0.0	161.1	822
2160 min Summer	3.817	0.0	175.1	1152
2880 min Summer	3.041	0.0	186.0	1480
4320 min Summer	2.215	0.0	203.1	2204
5760 min Summer	1.775	0.0	217.2	2936
7200 min Summer	1.499	0.0	229.3	3672
8640 min Summer	1.309	0.0	240.1	4400
10080 min Summer	1.168	0.0	249.9	5136
15 min Winter	158.753	0.0	56.4	21

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Checked by R Jobling

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Page 2



Summary of Results for 100 year Return Period (+45%)

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Control (l/s)	Max Σ Outflow (l/s)	Max Volume (m³)	Status
30 min Winter	98.605	0.605	0.0	4.2	4.2	68.9	O K
60 min Winter	98.727	0.727	0.0	4.2	4.2	82.9	O K
120 min Winter	98.774	0.774	0.0	4.2	4.2	88.2	O K
180 min Winter	98.765	0.765	0.0	4.2	4.2	87.2	O K
240 min Winter	98.739	0.739	0.0	4.2	4.2	84.2	O K
360 min Winter	98.686	0.686	0.0	4.2	4.2	78.3	O K
480 min Winter	98.628	0.628	0.0	4.2	4.2	71.6	O K
600 min Winter	98.568	0.568	0.0	4.2	4.2	64.8	O K
720 min Winter	98.499	0.499	0.0	4.2	4.2	56.9	O K
960 min Winter	98.376	0.376	0.0	4.2	4.2	42.9	O K
1440 min Winter	98.209	0.209	0.0	4.2	4.2	23.9	O K
2160 min Winter	98.113	0.113	0.0	3.7	3.7	12.9	O K
2880 min Winter	98.092	0.092	0.0	3.0	3.0	10.4	O K
4320 min Winter	98.073	0.073	0.0	2.2	2.2	8.3	O K
5760 min Winter	98.063	0.063	0.0	1.8	1.8	7.2	O K
7200 min Winter	98.057	0.057	0.0	1.5	1.5	6.5	O K
8640 min Winter	98.053	0.053	0.0	1.3	1.3	6.0	O K
10080 min Winter	98.049	0.049	0.0	1.2	1.2	5.6	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
30 min Winter	104.813	0.0	74.5	35
60 min Winter	66.078	0.0	94.2	64
120 min Winter	38.834	0.0	110.8	120
180 min Winter	28.210	0.0	120.7	174
240 min Winter	22.418	0.0	127.9	202
360 min Winter	16.160	0.0	138.3	276
480 min Winter	12.798	0.0	146.0	354
600 min Winter	10.678	0.0	152.3	430
720 min Winter	9.209	0.0	157.6	500
960 min Winter	7.297	0.0	166.5	622
1440 min Winter	5.271	0.0	180.4	842
2160 min Winter	3.817	0.0	196.1	1128
2880 min Winter	3.041	0.0	208.3	1476
4320 min Winter	2.215	0.0	227.5	2204
5760 min Winter	1.775	0.0	243.3	2936
7200 min Winter	1.499	0.0	256.8	3672
8640 min Winter	1.309	0.0	269.0	4360
10080 min Winter	1.168	0.0	280.0	5056

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Innovyze Source Control 2020.1		

Rainfall Details

Rainfall Model	FEH
Return Period (years)	100
FEH Rainfall Version	2013
Site Location	GB 383063 390309 SJ 83063 90309
Data Type	Point
Summer Storms	Yes
Winter Storms	Yes
Cv (Summer)	0.750
Cv (Winter)	0.840
Shortest Storm (mins)	15
Longest Storm (mins)	10080
Climate Change %	+45

Time Area Diagram

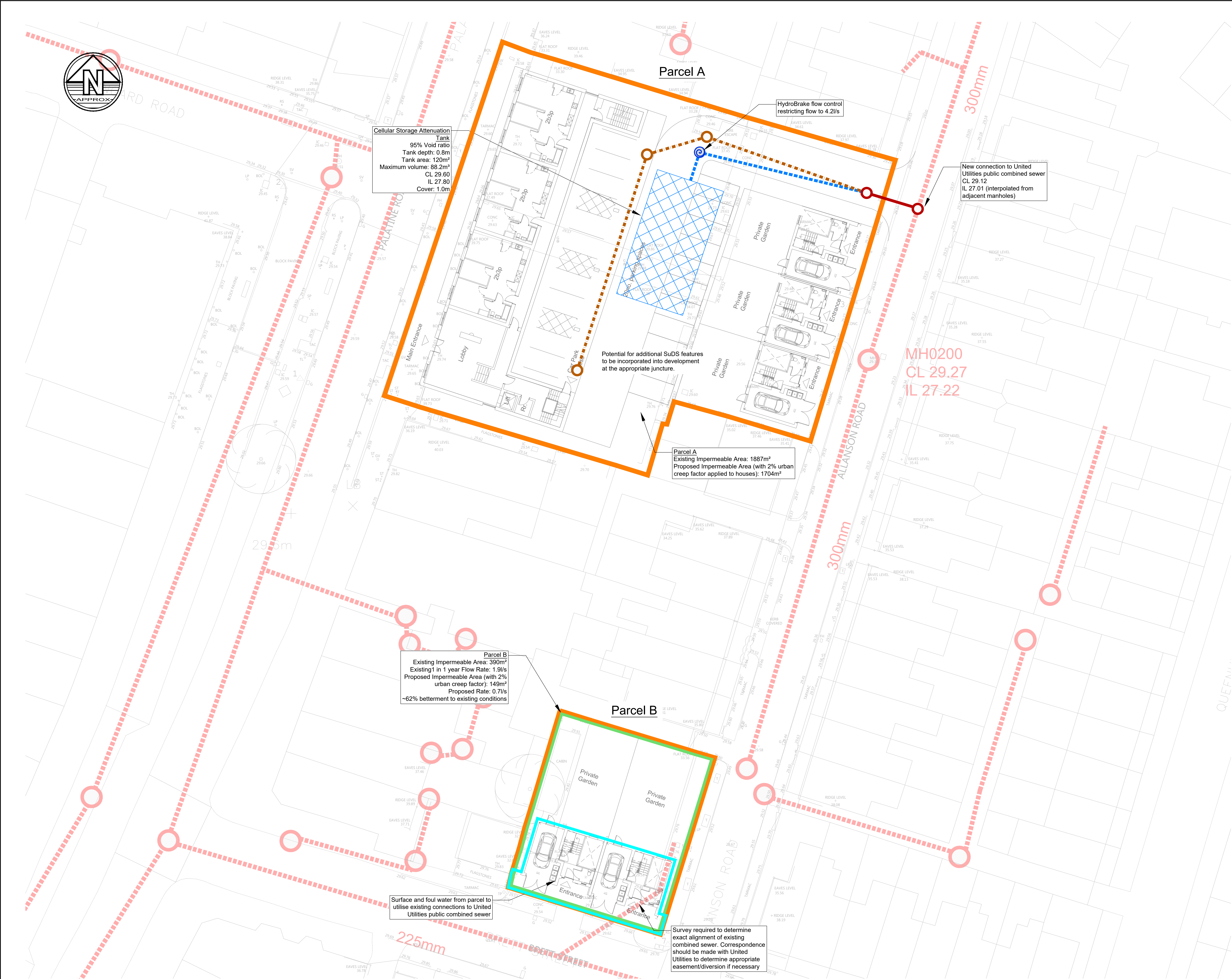
Total Area (ha) 0.170

Time (mins)	Area	Time (mins)	Area
From: To:	(ha)	From: To:	(ha)
0 4	0.085	4 8	0.085

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Appendix 10: Outline Drainage Strategy



- Notes**
- Do not scale this drawing. All dimensions must be checked/ verified on site. If in doubt ask.
 - This drawing is to be read in conjunction with all relevant architects, engineers and specialists drawings and specifications.
 - All dimensions in millimetres unless noted otherwise. All levels in metres unless noted otherwise.
 - Any discrepancies noted on site are to be reported to the engineer immediately.
 - Enclosed Topographical Survey based on CPLS drawing 120423JC-01 dated 13.04.23.
 - United Utilities asset records received 29.03.23. All relevant assets should be surveyed prior to construction to confirm levels and locations.
 - Enclosed Masterplan based on AEW Architects drawing 12165-AEW-SI-XX-DR-A-0502 dated 24.07.23.
 - Attenuation for Parcel A sized to accommodate the 1 in 100 year a storm event plus a 45% allowance for climate change for an estimated impermeable area of 0.17ha discharging at a maximum rate of 4.2l/s. Subject to LLPA approval.
 - The proposed drainage strategy should be read in conjunction with BWB report NDM-BWB-ZZ-XX-RP-YE-0003_SDS.
 - This strategy is a proof of concept only and all details are to be confirmed at the detailed design stage in agreement with all relevant statutory consultees.
 - Do not construct or cost from this drawing.

- Legend**
- Indicative Application Boundary
 - Proposed Surface Water Drainage
 - Surface Water Flow Control Chamber
 - Cellular Attenuation Tank
 - Proposed Foul Sewer Drainage
 - Proposed Combined Sewer Drainage
 - Existing Public Combined Sewer Drainage
 - Parcel B
 - Existing Impermeable Area
 - Proposed Impermeable Area

P01	06.08.23	Preliminary Issue	LDR	CT
Rev	Date	Details of issue / revision	Drw	Rev

Issues & Revisions

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Client

EXPRESS SOLICITORS

Project Title

NORTHENDEN

Drawing Title

OUTLINE DRAINAGE STRATEGY

Drawn:	L Ream	Reviewed:	C Thorpe
BWB Ref:	221105	Date:	16.08.23
Scale@A1:	1:200	Status	Rev
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