

Document Issue Record

Location:	38 Townley St, Middleton, Manchester, M24 1BF				
Application:	Demolition of existing building and erection of 8 no. 1 and 2 bedroom self-contained apartment block with associated parking				
Prepared for:	Universal Bargain Ltd				
Title:	Surface Water and Foul Drainage Technical Note				
Project No.:	91873	Date:	17 th April 2023	Issue No.:	1.0
Written By:	H. Doran, MEng (Hons)	Checked By:	A. Rousou, BSc (Hons)	Authorised By:	E. Bouet, BSc (Hons)

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Commercial in Confidence

1. Introduction

- 1.1. This Surface Water and Foul Drainage Technical Note has been prepared by Unda Consulting Limited on behalf of Universal Bargain Ltd, to address Conditions 7 and 8 of planning application reference 20/00681/FUL.
- 1.2. *Planning application 20/00681/FUL relates to the demolition of existing building and erection of 8 no. 1 and 2 bedroom self-contained apartment block with associated parking.* These works are proposed to be undertaken at 38 Townley Street, Middleton, Manchester, M24 1BF.
- 1.3. Post development the total new roof and paved area will be approximately 492.8m².
- 1.4. This report assesses the surface water and foul drainage arrangement for the proposed development, which forms Conditions 7 and 8 of Decision Notice 20/00681/FUL. Conditions 7 and 8 state the following:

Condition 7

No development shall commence until a surface water drainage scheme has been submitted to and approved in writing by the Local Planning Authority. The drainage scheme must include:

- *An investigation of the hierarchy of drainage options in the National Planning Practice Guidance (or any subsequent amendment thereof). This investigation shall include evidence of an assessment of ground conditions and the potential for infiltration of surface water;*
- *A restricted rate of discharge of surface water agreed with the local planning authority (if it is agreed that infiltration is discounted by the investigations); and*
- *A timetable for its implementation.*

The approved scheme shall also be in accordance with the Non-Statutory Technical Standards for Sustainable Drainage Systems (March 2015) or any subsequent replacement national standards.

The development hereby permitted shall be carried out only in accordance with the approved drainage scheme.

Reason: To prevent an increased risk of flooding as a result of the development and to ensure satisfactory disposal of surface water from the site in accordance with Policy G8 of the adopted Rochdale Core Strategy and the National Planning Policy Framework.

Reason for pre-commencement condition: Drainage infrastructure will need to be implemented prior to commencement of above ground works and a scheme therefore needs to be agreed in advance.

Condition 8

Foul and Surface water shall be drained on separate systems.

Reason: To ensure satisfactory disposal of surface water from the site in accordance with Policy G8 of the adopted Rochdale Core Strategy and the National Planning Policy Framework.

- 1.5. This Technical Note provides the information required to address the surface water and foul drainage elements of planning application 20/00681/FUL.

2. Existing Site:

- 2.1. The existing site consists of derelict commercial units. The site is approximately 492.8m² in size and is accessed from both Townley and Adelaide Street. The existing site location plan can be found in the appendix.
- 2.2. The surrounding area is characterised by residential and commercial units.



Figure 1: Site location (Source: Google Earth)

Site Topography:

- 2.3. Environment Agency LiDAR has been used to assess the topography across the site and wider area. Light Detection and Ranging (LiDAR) is an airborne mapping technique, which uses a laser to measure the distance between the aircraft and the ground surface. Up to 100,000 measurements per second are made of the ground, allowing highly detailed terrain models to be generated at high spatial resolutions. The EA's LiDAR data archive contains digital elevation data derived from surveys carried out by the EA's specialist remote sensing team. Accurate elevation data is available for over 70% of England. The LiDAR technique records an elevation accurate to +0.15m every 1m. This dataset is derived from a combination of our full dataset which has been merged and re-sampled to give the best possible coverage. The dataset can be supplied as a Digital Surface Model (DSM) produced from the signal returned to the LiDAR (which includes heights of objects, such as vehicles, buildings and vegetation, as well as the terrain surface) or as a Digital Terrain Model (DTM) produced by removing objects from the Digital Surface Model. 1.0m horizontal resolution DTM LiDAR data has been used for the purposes of this study.
- 2.4. 1m LiDAR remotely sensed digital elevation data suggests that the ground topography on the site ranges between approximately 82.7mAOD at the rear of the site to approximately 93.9.0mAOD at the front of the site.

Existing Ground Conditions:

- 2.5. The 1:50,000 BGS map shows the site to be located upon the bedrock of Penninne Lower Coal Measures Formation- Mudstone, Siltstone, and Sandstone.
- 2.6. The 1:50,000 BGS mapping indicates the site sits on superficial deposits of Glaciofluvial Sheet Deposits, Devensian- Sand and Gravel.
- 2.7. The soil type taken from the UK Soil Observatory website shows deep soils from Riverine Clay, Sands and Gravels parent material. The soil texture is Clay to Sandy Loam.
- 2.8. There are no BGS borehole logs in proximity to the site.

- 2.9. According to the Contamination Assessment (Report No. 22005/1) undertaken by The Arley Consulting Company Limited in January 2023 "The site does not represent a significant potential hazard to any of the possible receptors listed in the planning condition ie human health, property (existing or proposed) including buildings, crops, livestock, pets, woodland, and service lines and pipes, adjoining land, groundwaters and surface waters, ecological systems, archeological sites and ancient monuments."
- 2.10. The published Environment Agency Groundwater Vulnerability map shows the site is not located within a Groundwater Source Protection Zone

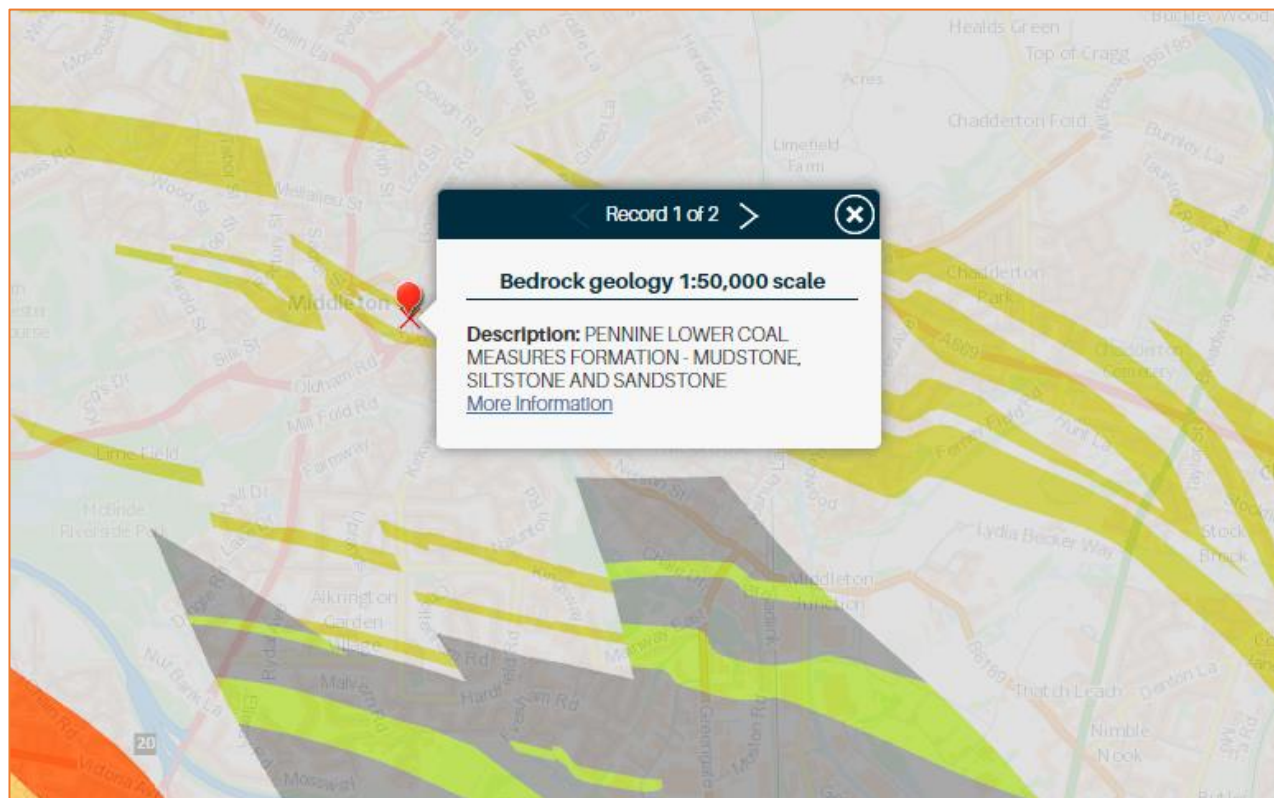


Figure 2: BGS Bedrock Geology (Source: BGS)

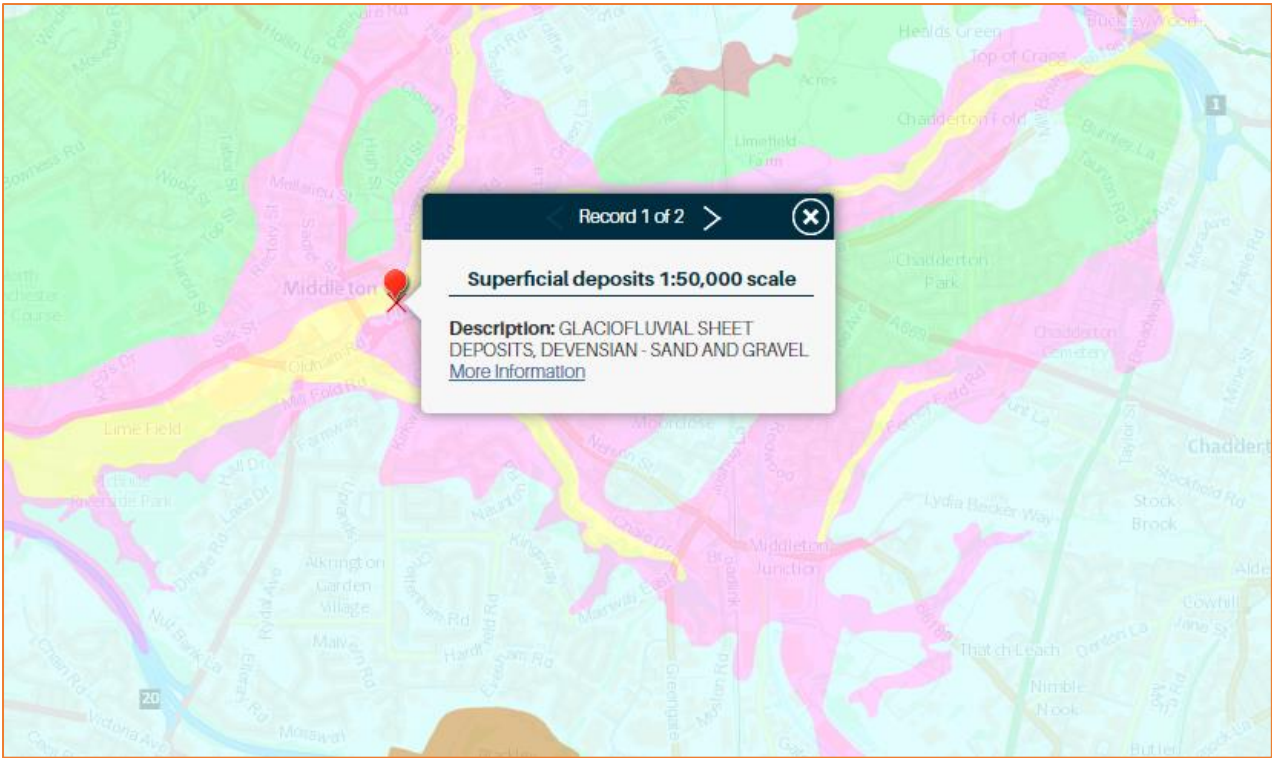


Figure 3: BGS Superficial Deposits (Source: BGS)

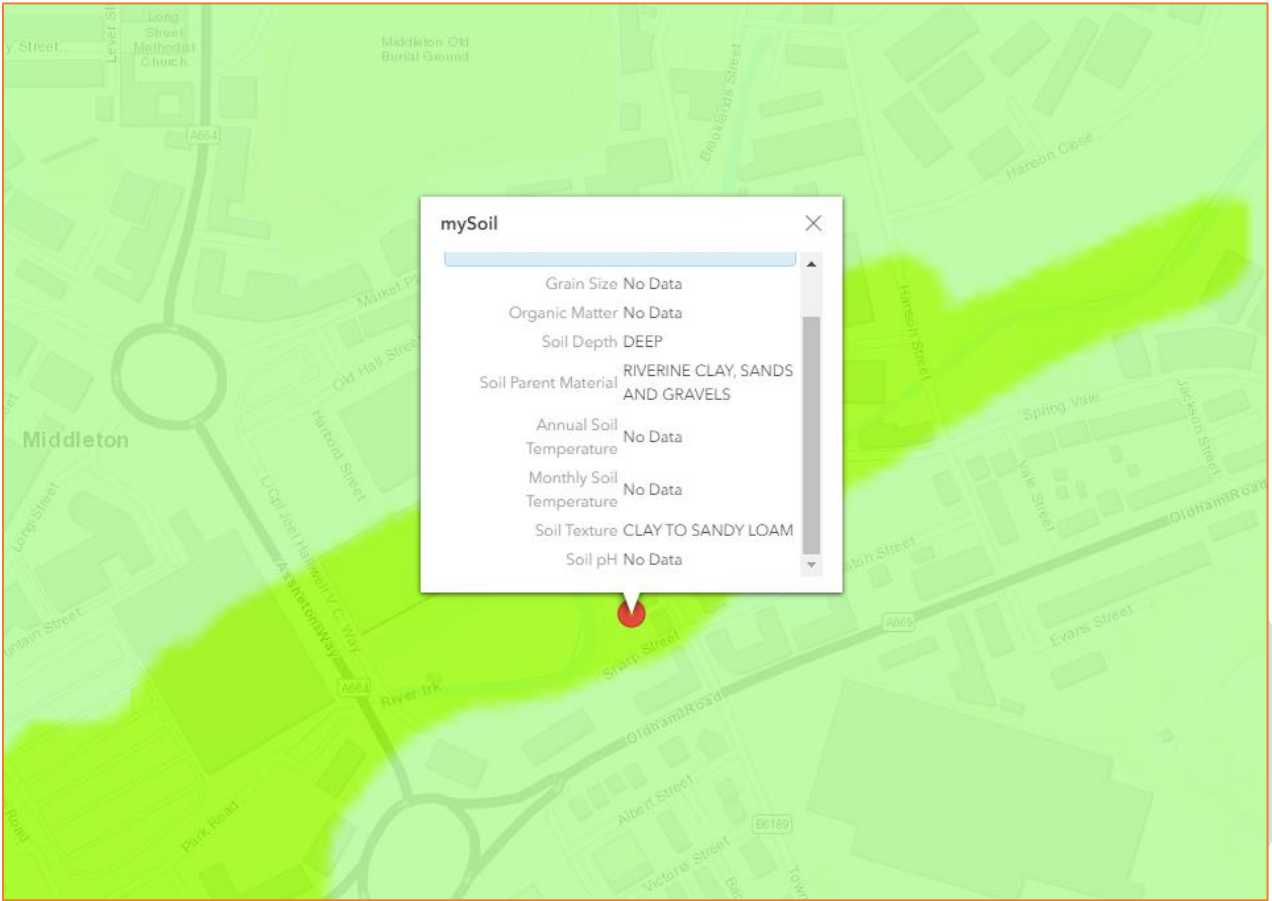


Figure 4: Soil Map (Source: UK Soils, BGS)

Nearby Watercourses / Drainage Features:

- 2.11. The nearest watercourse to the site is the River Irk located approximately 8.2m away from the rear boundary of the site.

3. Development Proposals:

Proposed Development:

- 3.1. The proposed application is for the demolition of existing building and erection of 8 no. 1 and 2 bedroom self-contained apartment block with associated parking. Post development the total impermeable area onsite will cover approximately 492.8m². Proposed site plans can be found in the appendix.
- 3.2. Due to the site being previously developed and this strategy being based on the whole site, significant betterment will be provided post development.



Figure 5: Proposed Site Layout Plan (Source: Greenfield Design Services)

4. Surface Water Drainage Strategy:

- 4.1. In order to mitigate flood risk posed by post development runoff, adequate control measures will need to be considered within the site. This will ensure that surface water runoff is dealt with at source and flood risk is not increased elsewhere.

Drainage Hierarchy:

- 4.2. The drainage strategy for the site has been prepared according to the drainage discharge hierarchy from CIRIA C753 The Suds Manual, as follows:
- Infiltration to the maximum extent that is practical;
 - Discharge to surface waters;
 - Discharge to surface water sewer.

Infiltration Potential:

- 4.3. The 1:50,000 BGS map shows the site to be located upon the bedrock of Penninne Lower Coal Measures Formation- Mudstone, Siltstone, and Sandstone.
- 4.4. Infiltration testing was carried out by Your Environment on the 29th of March 2023. The infiltration rate of 4.3×10^{-5} m/s has been utilised within this strategy.
- 4.5. No groundwater was found at a depth of 2m below the surface.

Proposed Discharge Rate:

- 4.6. Greenfield runoff rates for the whole site (492.8m²) have been calculated as 0.3 l/s for the 1:1 annual runoff event, 0.5 l/s for the 1:30 year event and 0.6 l/s for the 1:100-year event. Refer to calculations in appendix.
- 4.7. Surface water runoff from the whole site, will be directed into Permeable Paving sub-base. This will then be gradually discharged to ground via infiltration.

Permeable Paving:

- 4.8. The proposed parking area and bike store access will be constructed using Permeable Pavement amounting to approximately 197m².
- 4.9. Surface water runoff from the whole site (492.8m²) will be directed to an area of Permeable Paving 197m² in size. Runoff from these areas will be collected and stored within a 0.25m gravel sub-base beneath the Permeable Paving surface.
- 4.10. The area we are going to be attenuating is a total of 492.8m². In order to comply with CIRIA C753 The SuDS Manual, a 10% allowance will be added to take into account future urban creep. Applying a 10% allowance to all surface areas being attenuated (492.8m²) gives a value of 542.08m². Therefore, all drainage calculations have been made on the basis of a total impermeable area of 542.08m².
- 4.11. Preliminary calculations indicate that sufficient storage required to attenuate runoff from the proposed impermeable areas arising from the critical 1:100 year + 45% climate change event can be provided within the substrate base of Permeable Paving area of dimensions 197m² x 0.25m deep x 0.3 (voids).
- 4.12. Preliminary calculations indicated that some 14.775m³ of storage is required to attenuate the runoff for all storms up to and including the 1:100 year + 45% climate change event.
- 4.13. *Please note that the levels of the permeable paving within the Micro drainage calculations are arbitrary for modelling purposes.*
- 4.14. All preliminary surface water drainage calculations have been undertaken using MicroDrainage software. Refer to the Appendix.

Water Quality:

- 4.15. Water quality has been assessed in line with the Simple Index approach from Chapter 26 of CIRIA C753 The SuDS Manual: Step 1 – Allocate suitable pollution hazard indices for the proposed land use.

Step 2 – Select SuDS with a total pollution mitigation index that equals or exceeds the pollution hazard index.

- 4.16. The highest pollution hazard level for the proposed land use is Low (residential car parks and low trafficked roads). The pollution hazard indices for this land use are shown in Table 1 below.

Total suspended solids (TSS)	Metals	Hydrocarbons
0.5	0.4	0.4

Table 1: Pollution Hazard Indices for the proposed site (from Table 26.2 of CIRIA C753 The SuDS Manual)

- 4.17. All SuDS components are assessed for their effectiveness in pollutant removal prior to discharge to ground in Table 26.3 in CIRIA C753 The SuDS Manual. The pollution mitigation indices for permeable pavements are shown in Table 2 below.

Total suspended solids (TSS)	Metals	Hydrocarbons
0.7	0.6	0.7

Table 2: Pollution Mitigation Indices for permeable pavements (from Table 26.3 of CIRIA C753 The SuDS Manual)

- 4.18. The Pollution Mitigation Indices for permeable pavement are greater than the Pollution Hazard Indices for car parks and low trafficked roads. Therefore, permeable pavements will provide sufficient water quality treatment prior to discharge to ground.

Design Exceedance:

- 4.19. Should the onsite drainage system fail under extreme rainfall events or blockage, flooding may occur within the site. In the event of the drainage system failure, the runoff flow can be managed through detailing the new external levels to direct water away from structures.

Adoption and Maintenance:

- 4.20. It is proposed that all SuDS facilities will be maintained jointly by the end users.

- 4.21. A draft Maintenance Schedule is outlined in the Table below.

Permeable Paving

- 4.22. Permeable surfaces need to be regularly cleaned of silt and other sediments to preserve their infiltration capability. A brush and suction cleaner, which can be a lorry-mounted device or a smaller precinct sweeper, should be used and the sweeping regime should be as follows:

1. End of winter (April) – to collect winter debris.
2. Mid-summer (July/August) – to collect dust, flower and grass-type deposits.
3. After autumn leaf fall (November).

- 4.23. If reconstruction is necessary, the following procedure should be followed:

1. Lift surface layer and laying course.
2. Remove any geotextile filter layer.
3. Inspect sub-base and remove, wash and replace if required.
4. Renew any geotextile layer.
5. Renew laying course, jointing material and concrete block paving.

- 4.24. Materials removed from the voids or the layers below the surface of the paving may contain hazardous substances such as heavy metals and hydrocarbons which may need to be disposed of as controlled waste.

Pipework and Catchpits:

- 4.25. It is not envisaged that silt build up within the pipework systems will require a rigorous maintenance regime so long as silt is removed from upstream catch pits on a regular basis. Notwithstanding this, a suitable maintenance regime for the systems will comprise of routine inspection (every three months) and silt removal (as necessary).

Drainage Element	Maintenance Requirement	Frequency
Permeable Paving	Sweeping/vacuuming to remove build-up of silt or other sediments	Three times a year or as necessary
	- Removal of weeds - Replacement of cracked paving blocks - Remedial work to cracks and depressions	As required
Pipework and Catchpits	Silt removal from upstream catchpits and gullies	Every 6 months

Table 3: Suggested Maintenance Regime for Elements of the Drainage Infrastructure

Note: In addition to the above maintenance requirements, it is recommended that all drainage elements are inspected:

- Following the first storm event;
- Monthly for the first 3 months following commissioning.

5. Proposed Foul Drainage:

Foul Drainage Hierarchy:

- 5.1. The drainage strategy for the site has been prepared according to the drainage discharge hierarchy from the NPPF, as follows:
- Connection to public sewer;
 - Installation of a package sewage treatment works;
 - Installation of a septic tank.

Proposed foul drainage:

- 5.2. Post development foul flows will be discharged into the existing public combined sewer located underneath Townley Street. The proposed development is for the construction of 8 dwellings. Full sewer records can be found in the appendix.
- 5.3. Refer to plans 91873-01 [Proposed drainage Layout].

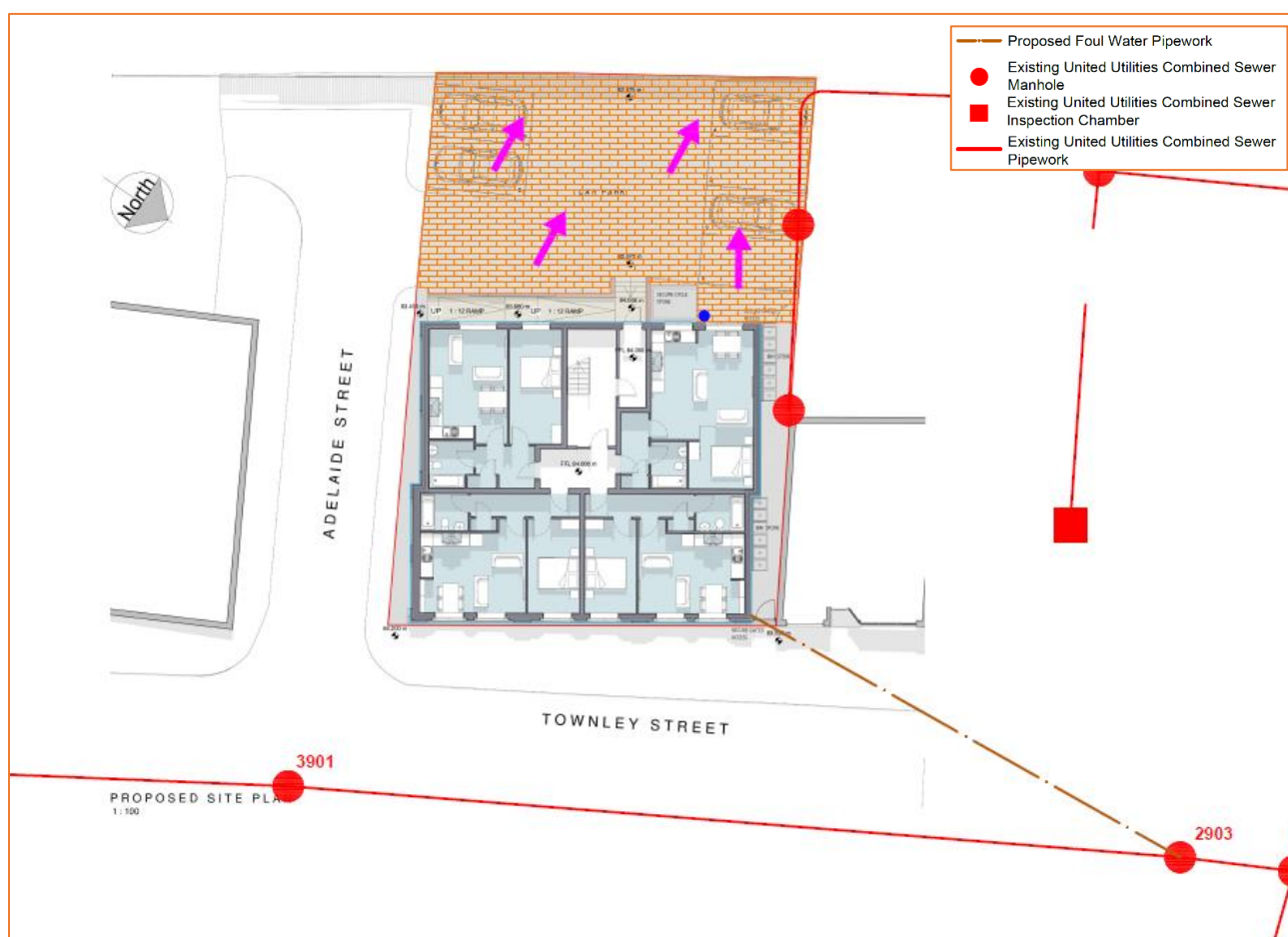


Figure 6: Proposed foul water drainage strategy (Source: plans 91873 - 01 & United Utilities)

Adoption and Maintenance:

- 5.4. The sewers will be designed to sewers for adoption standard.

6. Discussion and Conclusions:

- 6.1. This Surface Water and Foul Drainage Technical Note has been prepared by Unda Consulting Limited on behalf of Universal Bargain Ltd, to address Conditions 7 and 8 of planning application reference 20/00681/FUL.
- 6.2. *Planning application 20/00681/FUL relates to the demolition of existing building and erection of 8 no. 1 and 2 bedroom self-contained apartment block with associated parking.* These works are proposed to be undertaken at 38 Townley St, Middleton, Manchester, M24 1BF.
- 6.3. This report assesses the surface water and foul drainage arrangement for the proposed development, which forms Conditions 7 and 8 of Decision Notice 20/00681/FUL. Conditions 7 and 8 state the following:

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- 6.5. 1m LiDAR remotely sensed digital elevation data suggests that the ground topography on the site ranges between approximately 82.7mAOD at the rear of the site to approximately 93.9mAOD at the front of the site.
- 6.6. The proposed application is for the demolition of existing building and erection of 8 no. 1 and 2 bedroom self-contained apartment block with associated parking. Post development the total impermeable area onsite will cover approximately 492.8m².
- 6.7. Due to the site being previously developed and this strategy being based on the whole site, significant betterment will be provided post development.
- 6.8. The 1:50,000 BGS map shows the site to be located upon the bedrock of Penninne Lower Coal Measures Formation- Mudstone. Siltstone, and Sandstone. The 1:50,000 BGS mapping indicates the site sits on superficial deposits of Glaciofluvial Sheet Deposits, Devensian- Sand and Gravel
- 6.9. The soil type taken from the UK Soil Observatory website shows deep soils from Riverine Clay, Sands and Gravels parent material. The soil texture is Clay to Sandy Loam.

Surface Water Drainage Discussion

- 6.10. Infiltration testing was carried out by Your Environment on the 29th of March 2023. The infiltration rate of 4.3×10^{-5} m/s has been utilised within this strategy.
- 6.11. Greenfield runoff rates for the whole site (492.8m^2) have been calculated as 0.3 l/s for the 1:1 annual runoff event, 0.5 l/s for the 1:30 year event and 0.6 l/s for the 1:100-year event. Refer to the calculations in appendix.
- 6.12. Surface water runoff from the whole site, will be directed into Permeable Paving sub-base. This will then be gradually discharged to ground via infiltration.
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- 6.14. Surface water runoff from the whole site (492.8m^2) will be directed to an area of Permeable Paving 197m^2 in size. Runoff from these areas will be collected and stored within a 0.25m gravel sub-base beneath the Permeable Paving surface
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- 6.16. Preliminary calculations indicate that sufficient storage required to attenuate runoff from the proposed impermeable areas arising from the critical 1:100 year + 45% climate change event can be provided within the substrate base of Permeable Paving area of dimensions $197\text{m}^2 \times 0.25\text{m}$ deep $\times 0.3$ (voids).
- 6.17. Preliminary calculations indicated that some 14.775m^3 of storage is required to attenuate the runoff for all storms up to and including the 1:100 year + 45% climate change event.
- 6.18. The highest pollution hazard level for the proposed land use is Low (residential car parks and low trafficked roads). The Pollution Mitigation Indices for permeable pavement are greater than the Pollution Hazard Indices for car parks and low trafficked roads. Therefore, permeable pavements will provide sufficient water quality treatment prior to discharge to ground. Nevertheless, it is suggested to include debris / sediment traps on any new drainage.
- 6.19. Should the onsite drainage system fail under extreme rainfall events or blockage, flooding may occur within the site. In the event of the drainage system failure, the runoff flow can be managed through detailing the new external levels to direct water away from structures.
- 6.20. It is proposed that all SuDS facilities will be maintained jointly by the end users. A draft Maintenance Schedule has been outlined.

Foul Drainage Discussion

- 6.21. Post development foul flows will be discharged into the existing public combined sewer located underneath Townley Street. The proposed development is for the construction of 8 dwellings.
- 6.22. This drainage strategy has been undertaken in accordance with the principles set out in NPPF. We can conclude that providing the development adheres to the conditions advised above, the said development proposals can be accommodated without increasing flood risk within the locality in accordance with objectives set by Central Government and the EA.

Unda Consulting Limited
April 2023

7. Appendix

A - Plans by others:

- Location/Existing Layout Site Plan – OS Maps;
- Proposed Site Plans – Greenfield Design Services LTD.

B - MicroDrainage Calculations:

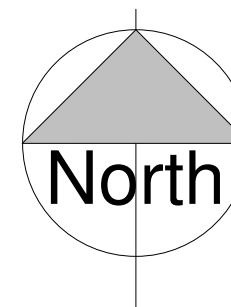
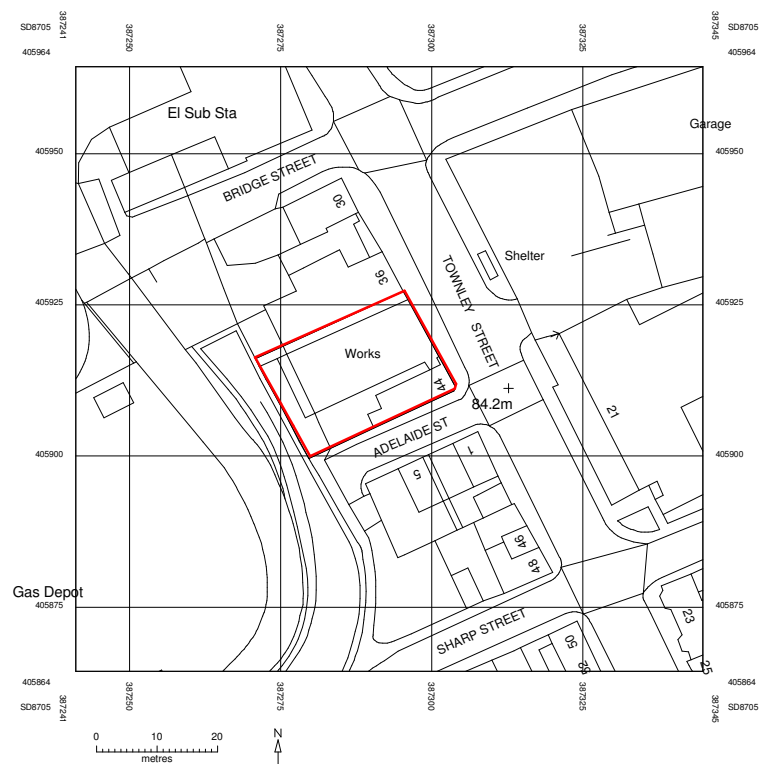
- ICP SUDS Rural Runoff Calculations;
- Permeable Paving Calculations.

C - Plans:

- Proposed Drainage Layout.

D – Sewer Records

- United Utilities Local Sewer Records.



LOCATION PLAN

1 : 1250

DENOTES: SITE BOUNDARY
SITE AREA = 495M²

DENOTES: BUILDING AREA
BUILDING AREA = 240M²



PROPOSED SITE PLAN
1 : 100

Unda Consulting Ltd		Page 1																								
Southpoint Old Brighton Road Gatwick RH11 0PR	91873 Greenfield Runoff Rate																									
Date 17/04/2023 File 91873INFPP.SRCX	Designed by HD Checked by AR																									
Innovyze	Source Control 2020.1.3																									
<u>ICP SUDS Mean Annual Flood</u> Input <table><tr><td>Return Period (years)</td><td>100</td><td>Soil</td><td>0.450</td></tr><tr><td>Area (ha)</td><td>0.049</td><td>Urban</td><td>0.000</td></tr><tr><td>SAAR (mm)</td><td>912</td><td>Region Number</td><td>Region 10</td></tr></table> Results 1/s <table><tr><td>QBAR Rural</td><td>0.3</td></tr><tr><td>QBAR Urban</td><td>0.3</td></tr><tr><td>Q100 years</td><td>0.6</td></tr><tr><td>Q1 year</td><td>0.3</td></tr><tr><td>Q30 years</td><td>0.5</td></tr><tr><td>Q100 years</td><td>0.6</td></tr></table>			Return Period (years)	100	Soil	0.450	Area (ha)	0.049	Urban	0.000	SAAR (mm)	912	Region Number	Region 10	QBAR Rural	0.3	QBAR Urban	0.3	Q100 years	0.6	Q1 year	0.3	Q30 years	0.5	Q100 years	0.6
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<u>Summary of Results for 100 year Return Period (+45%)</u> Half Drain Time : 30 minutes. <table><thead><tr><th>Storm Event</th><th>Max Level (m)</th><th>Max Depth (m)</th><th>Max Infiltration (l/s)</th><th>Max Volume (m³)</th><th>Status</th></tr></thead><tbody><tr><td>15 min Summer</td><td>9.903</td><td>0.153</td><td>4.2</td><td>9.1</td><td>Flood Risk</td></tr><tr><td>30 min Summer</td><td>9.940</td><td>0.190</td><td>4.2</td><td>11.2</td><td>Flood Risk</td></tr><tr><td>60 min Summer</td><td>9.958</td><td>0.208</td><td>4.2</td><td>12.3</td><td>Flood Risk</td></tr><tr><td>120 min Summer</td><td>9.947</td><td>0.197</td><td>4.2</td><td>11.6</td><td>Flood Risk</td></tr><tr><td>180 min Summer</td><td>9.922</td><td>0.172</td><td>4.2</td><td>10.2</td><td>Flood Risk</td></tr><tr><td>240 min Summer</td><td>9.895</td><td>0.145</td><td>4.2</td><td>8.6</td><td>Flood Risk</td></tr><tr><td>360 min Summer</td><td>9.850</td><td>0.100</td><td>4.2</td><td>5.9</td><td>Flood Risk</td></tr><tr><td>480 min Summer</td><td>9.819</td><td>0.069</td><td>4.2</td><td>4.1</td><td>Flood Risk</td></tr><tr><td>600 min Summer</td><td>9.802</td><td>0.052</td><td>4.2</td><td>3.1</td><td>Flood Risk</td></tr><tr><td>720 min Summer</td><td>9.795</td><td>0.045</td><td>3.8</td><td>2.7</td><td>Flood Risk</td></tr><tr><td>960 min Summer</td><td>9.787</td><td>0.037</td><td>3.2</td><td>2.2</td><td>Flood Risk</td></tr><tr><td>1440 min Summer</td><td>9.778</td><td>0.028</td><td>2.4</td><td>1.7</td><td>Flood Risk</td></tr><tr><td>2160 min Summer</td><td>9.771</td><td>0.021</td><td>1.8</td><td>1.2</td><td>Flood Risk</td></tr><tr><td>2880 min Summer</td><td>9.767</td><td>0.017</td><td>1.4</td><td>1.0</td><td>Flood Risk</td></tr><tr><td>4320 min Summer</td><td>9.762</td><td>0.012</td><td>1.0</td><td>0.7</td><td>Flood Risk</td></tr><tr><td>5760 min Summer</td><td>9.760</td><td>0.010</td><td>0.8</td><td>0.6</td><td>Flood Risk</td></tr><tr><td>7200 min 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Unda Consulting Ltd				Page 2	
Southpoint Old Brighton Road Gatwick RH11 0PR		91873 Permeable Paving Calculation			
Date 17/04/2023 File 91873INFPP.SRCX		Designed by HD Checked by AR			
Innovyze		Source Control 2020.1.3			
<u>Summary of Results for 100 year Return Period (+45%)</u>					
Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
30 min Winter	9.969	0.219	4.2	13.0	Flood Risk
60 min Winter	9.987	0.237	4.2	14.0	Flood Risk
120 min Winter	9.963	0.213	4.2	12.6	Flood Risk
180 min Winter	9.922	0.172	4.2	10.2	Flood Risk
240 min Winter	9.880	0.130	4.2	7.7	Flood Risk
360 min Winter	9.817	0.067	4.2	3.9	Flood Risk
480 min Winter	9.796	0.046	3.9	2.7	Flood Risk
600 min Winter	9.789	0.039	3.3	2.3	Flood Risk
720 min Winter	9.784	0.034	2.9	2.0	Flood Risk
960 min Winter	9.778	0.028	2.4	1.6	Flood Risk
1440 min Winter	9.770	0.020	1.7	1.2	Flood Risk
2160 min Winter	9.765	0.015	1.3	0.9	Flood Risk
2880 min Winter	9.762	0.012	1.0	0.7	Flood Risk
4320 min Winter	9.759	0.009	0.7	0.5	Flood Risk
5760 min Winter	9.757	0.007	0.6	0.4	Flood Risk
7200 min Winter	9.756	0.006	0.5	0.4	Flood Risk
8640 min Winter	9.755	0.005	0.4	0.3	Flood Risk
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Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)		
30 min Winter	83.370	0.0	29		
60 min Winter	54.167	0.0	48		
120 min Winter	33.999	0.0	86		
180 min Winter	25.500	0.0	120		
240 min Winter	20.636	0.0	152		
360 min Winter	15.252	0.0	204		
480 min Winter	12.305	0.0	252		
600 min Winter	10.407	0.0	310		
720 min Winter	9.071	0.0	372		
960 min Winter	7.295	0.0	490		
1440 min Winter	5.355	0.0	738		
2160 min Winter	3.921	0.0	1104		
2880 min Winter	3.139	0.0	1464		
4320 min Winter	2.289	0.0	2168		
5760 min Winter	1.827	0.0	2928		
7200 min Winter	1.535	0.0	3632		
8640 min Winter	1.332	0.0	4320		
10080 min Winter	1.181	0.0	4880		
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Unda Consulting Ltd		Page 3
Southpoint Old Brighton Road Gatwick RH11 0PR	91873 Permeable Paving Calculation	
Date 17/04/2023 File 91873INFPP.SRCX	Designed by HD Checked by AR	
Innovyze Source Control 2020.1.3		

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)	18.500	Shortest Storm (mins)	15
Ratio R	0.329	Longest Storm (mins)	10080
Summer Storms	Yes	Climate Change %	+45

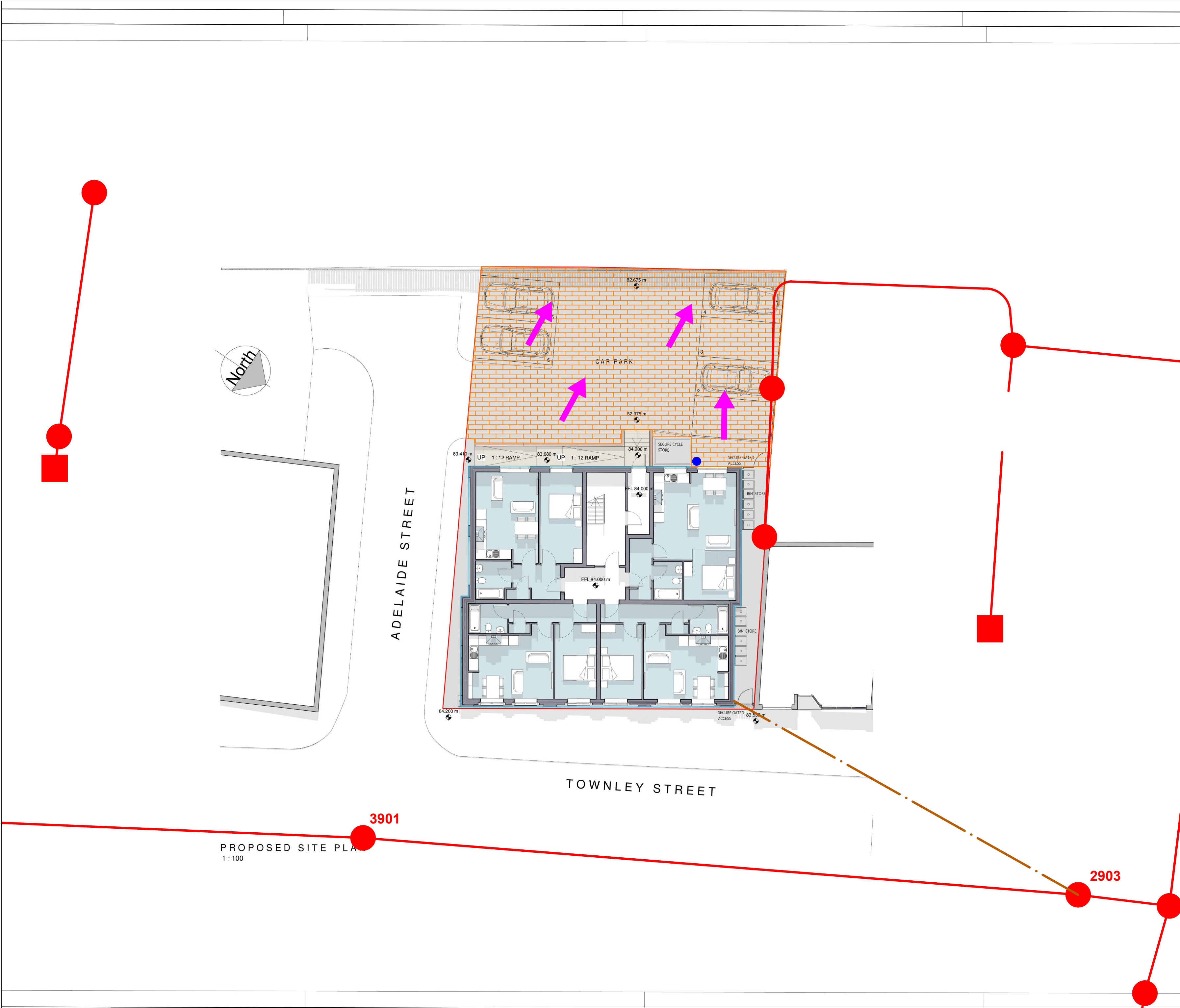
Time Area Diagram

Total Area (ha) 0.055

Time (mins)	Area
From:	To: (ha)
0	4 0.055

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Southpoint Old Brighton Road Gatwick RH11 0PR	91873 Permeable Paving Calculation																									
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<u>Model Details</u> Storage is Online Cover Level (m) 10.000 <u>Porous Car Park Structure</u> <table><tr><td>Infiltration Coefficient Base (m/hr)</td><td>0.15480</td><td>Width (m)</td><td>19.7</td></tr><tr><td>Membrane Percolation (mm/hr)</td><td>1000</td><td>Length (m)</td><td>10.0</td></tr><tr><td>Max Percolation (l/s)</td><td>54.7</td><td>Slope (1:X)</td><td>0.0</td></tr><tr><td>Safety Factor</td><td>2.0</td><td>Depression Storage (mm)</td><td>5</td></tr><tr><td>Porosity</td><td>0.30</td><td>Evaporation (mm/day)</td><td>3</td></tr><tr><td>Invert Level (m)</td><td>9.750</td><td>Cap Volume Depth (m)</td><td>0.250</td></tr></table>			Infiltration Coefficient Base (m/hr)	0.15480	Width (m)	19.7	Membrane Percolation (mm/hr)	1000	Length (m)	10.0	Max Percolation (l/s)	54.7	Slope (1:X)	0.0	Safety Factor	2.0	Depression Storage (mm)	5	Porosity	0.30	Evaporation (mm/day)	3	Invert Level (m)	9.750	Cap Volume Depth (m)	0.250
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Notes:

1. Discharge of surface water via Permeable Paving. Preliminary calculations indicate that sufficient storage required to attenuate runoff arising from the proposed impermeable areas, during the critical 1 in 100 year + 45% Climate Change event, can be provided within Permeable Paving sub base of dimensions 197m² x 0.25m deep x 0.3 (voids).

- Legend**
- Proposed Surface Water Downpipe
 - Proposed Permeable Paving
 - Proposed Foul Water Pipework
 - Existing United Utilities Combined Sewer Manhole
 - Existing United Utilities Combined Sewer Inspection Chamber
 - Existing United Utilities Combined Sewer Pipework
 - Design Exceedance Route

UNDA

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Tel: 01293 214444
Email: info@unda.co.uk
Web: www.unda.co.uk

Client:
Universal Bargins Ltd

Site Address:
38 Townley St
Middleton
Manchester
M24 1BF

Job Reference: 91873-PlansDrawn-Townley	Date: 17-04-23
Drawing Number: 91873-01	Revision: v1.0

Designed by: HD	Drawn by: HD	Checked by: AR
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Scale:
1:150@A2

Disclaimer:
The drawings provided are for planning purposes only.

Unda Consulting Limited

**Southpoint
Old Brighton Road,
Gatwick, East Sussex
RH110PR**

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: 91873
Our Ref: UUPS-ORD-479557
Date: 14/04/2023**

Dear Sirs

Location: 38-42 TOWNLEY STREET, MIDDLETON, MANCHESTER, M24 1AS

I acknowledge with thanks your request dated 14/04/2023 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,



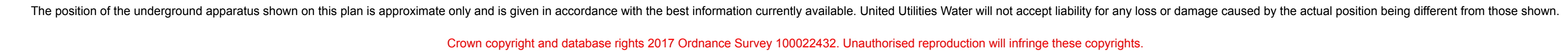
Karen McCormack
Property Searches Manager

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.



**SEWER
RECORDS**

 **United
Utilities**
Water for the North West