

FLOOD RISK ASSESSMENT AND DRAINAGE STRATEGY REPORT

SITE ADJACENT DALTON AVENUE

FALLOWFIELD

MANCHESTER

M14 7NR

for

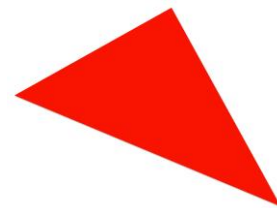
MSV HOUSING



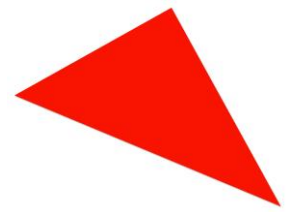
22.B.13672 REPORT REVISIONS	
APRIL 2023	Original report.

22-B-13509/Dalton Avenue

Carley Daines And Partners Ltd
11, Bridgewater Road Walkden Worsley
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EXECUTIVE SUMMARY	
Site Parameters	Site Area – 500m ² Present Impermeable Area – 490m ² Post Development Impermeable Area – 475m ² DECREASE in Impermeable Area – 15m ² NGR of Site Centre– 384370 (E); 394810 (N) Nearest Post Code – M14 7NR
Flooding	This report has considered flooding from a variety of sources in accordance with NPPF guidelines, and it is believed that the site is not at risk of flooding, nor does the proposed development create a risk of flooding elsewhere. The site is in FZ1.
Surface Water Drainage	The SuDS drainage hierarchy indicates that ground infiltration should always be the first consideration. The Phase 1 PRA indicates drift geology to be impermeable clay suggesting infiltration is unlikely to be possible. However, even if ground conditions did prove suitable, the site is very small with insufficient space available to accommodate a soakaway. There are no watercourses near site nor are there any surface water sewers. United Utilities indicate that connection to the existing combined sewer in Dalton Avenue would be permitted subject to a discharge rate of 5 l/s. This is achievable with attenuation provision and will provide a reduction in the rate of surface water compared with the pre-development situation which is believed to generate unrestricted run-off.
Foul Drainage	United Utilities indicate that connection to the existing combined sewer in Dalton Avenue would be permitted at an uncontrolled rate at a convenient position.



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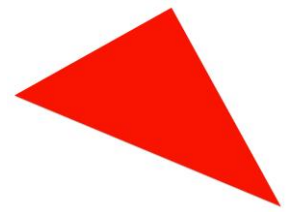
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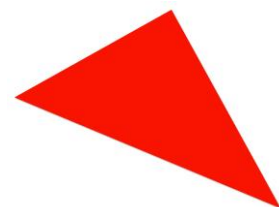


1.0 INTRODUCTION

- 1.1 Carley Daines and Partners Limited have been commissioned by MSV Housing to undertake a Flood Risk Assessment (FRA) and Drainage Strategy Report for this site in accordance with the requirements of Policies EN8, EN14, EN17 and DM1 of the Manchester Core Strategy (2012), the National Planning Policy Framework (NPPF) (2021) and National Planning Practice Guidance (NPPG) published March 2014 and last updated August 2022.

2.0 EXISTING SITE DETAILS

- 2.1 The site is located in the Fallowfield district of Manchester, approximately 2km south of Manchester City Centre at postcode M14 7NR. The centre of site is at National Grid Reference 384370, 394810. The site is almost rectangular in shape, with maximum dimensions of approximately 50m x 13m. The site is enclosed on the north, west and south sides by terraced housing fronting onto Dalton Avenue and Thornton Avenue. To the east is a school with open ground and playing fields closest to the site. The site appears near level at an altitude of 32mAOD.
- 2.2 The site is presently occupied by two adjoining buildings which appear to have been used for light industry or activities related to the motor trade. The buildings cover almost the full area of the site, except for small strips at the north and south ends. The surrounding area comprises dense older terraced housing, with recent housing on the nearby former site of MCFC football stadium.
- 2.3 There are no obvious open watercourses in the nearby vicinity.
- 2.4 The nearest public sewer is in Dalton Avenue and is 225mm diameter. All public sewers in the area appear to be combined.
- 2.5 There are no surface water sewers in the immediate area.
- 2.6 The Lead Local Flood Authority (LLFA) is Manchester City Council.
- 2.7 The Phase 1 PRA indicates that superficial Drift deposits consist of Devensian Till (Diamicton) overlying Cheshire Sandstone (which is a principal aquifer).



3.0 PROPOSED DEVELOPMENT

- 3.1 Preliminary plans have been made available to us prepared by TADW Architects. These indicate the proposed development to comprise of 8 flats in low rise two storey buildings.
- 3.2 Any residential development of this type is classified in Annex 3 of the NPPF below, as within the "More Vulnerable" category in consideration of flood risk and should be guided to Flood Zone 1 (FZ1) – an area with low risk of flooding. FZ1 has a less than 1 in 1000 year (0.1% AEP) risk of flooding.

Table 1: Flood Risk Vulnerability Classification (based on Annex 3 of the NPPF)

Essential Infrastructure • Essential transport infrastructure (including mass evacuation routes) which has to cross the area at risk. • Essential utility infrastructure which has to be located in a flood risk area for operational reasons, including electricity generating power stations and grid and primary substations; and water treatment works that need to remain operational in times of flood. • Wind turbines • Solar Farms
Highly Vulnerable • Police stations, ambulance stations and fire stations and command centres and telecommunications installations required to be operational during flooding. • Emergency dispersal points. • Basement dwellings. • Caravans, mobile homes and park homes intended for permanent residential use. • Installations requiring hazardous substances consent. (Where there is a demonstrable need to locate such installations for bulk storage of materials with port or other similar facilities, or such installations with energy infrastructure or carbon capture and storage installations, that require coastal or water-side locations, or need to be located in other high flood risk areas, in these instances the facilities should be classified as "essential infrastructure").
More Vulnerable • Hospitals • Residential institutions such as residential care homes, children's homes, social services homes, prison and hostels. • Buildings used for dwelling houses, student halls of residence, drinking establishments, nightclubs and hotels. • Non-residential uses for health services, nurseries and educational establishments. • Landfill and sites used for waste management facilities for hazardous waste. • Sites used for holiday or short-let caravans and camping, subject to a specific warning and evacuation plan.
Less Vulnerable • Police, ambulance and fire stations which are not required to be operational during flooding. • Buildings used for shops, financial, professional and other services, restaurants and cafes, hot food takeaways, offices, general industry, storage and distribution, non-residential institutions not included in "more vulnerable" and assembly and leisure. • Land and buildings used for agriculture and forestry. • Waste treatment (except landfill and hazardous waste facilities). • Minerals working and processing (except for sand and gravel working). • Water treatment works which do not need to remain operational during times of flood. • Sewage treatment works if adequate measures to control pollution and manage sewage during flooding events are in place. • Car Parks
Water-compatible development • Flood control infrastructure. • Water transmission infrastructure and pumping stations. • Sewage transmission infrastructure and pumping stations • Sand and gravel working. • Docks, marinas and wharves. • Navigation facilities. • Ministry of Defence installations. • Ship building, repairing and dismantling, dockside fish processing and refrigeration and compatible activities requiring a waterside location. • Water-based recreation (excluding sleeping accommodation). • Lifeguard and coastguard stations.

- Amenity open space, nature conservation and biodiversity, outdoor
- sports and recreation and essential facilities such as changing rooms.
- Essential ancillary sleeping or residential accommodation for staff required by uses in this category subject to a specific warning and evacuation plan.

3.3 Table 2 of the NPPG states that “more vulnerable” development is considered appropriate within FZ1. Therefore, any residential development such as this and located in FZ1 passes the flood risk Sequential Test & the Exception Test does not need to be applied.

Table 2: Flood Risk Vulnerability and Flood Zone "Incompatibility"

Flood risk vulnerability classification (see Table 2)		Essential Infrastructure	Highly Vulnerable	More Vulnerable	Less Vulnerable	Water Compatible
Zone (see table 1)	Zone 1	✓	✓	✓	✓	✓
	Zone 2	✓	Exception Test required	✓	✓	✓
	Zone 3a	Exception Test required	✗	Exception Test required	✓	✓
	Zone 3b functional floodplain	Exception Test required	✗	✗	✗	✓

Key: ✓ Development is appropriate
✗ Development should not be permitted.

4.0 EFFECTS OF CLIMATE CHANGE

4.1 Reference is made to the Environment Agency document: Flood Risk Assessments: Climate Change Allowances dated February 2016 & updated in May 2022.

Table 3: Peak rainfall intensity uplift allowance (Greater Manchester)

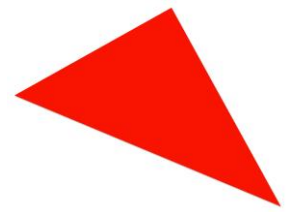
Allowance	2050's	2070's
Upper end	40%	45%
Central	25%	30%

EA data also indicates that sea levels are anticipated to rise in northwest England by up to 1.01m for the total period of 125 years from 2000 to 2125 though this development is clearly unaffected.

In view of the proposed lifetime of the development the “2070's” epoch should be used.

5.0 PROBABILITY OF FLOODING

5.1 It is a requirement of the NPPG that flooding from all possible sources should be assessed. Accordingly, consideration must be given to the possibility of flooding from the following sources:



- rivers and watercourses
- sewers
- sea
- overland flows
- ground water
- reservoirs, canals and artificial sources

Consideration must also be given to the possibility of transferring flooding to other locations off site. In consideration of the above possible flood sources, the assessed risks are as follows:

5.2 Flooding from Rivers/Watercourses

The Environment Agency Flood Map shows the site to be in FZ1 and there are no nearby rivers or watercourses that might be a source of flooding. Flood risk from this source is considered to be VERY LOW.

5.3 Flooding from the Sea

The site is at an elevation of 32mAOD and is 55km from the sea. Flood risk is therefore ZERO.

5.4 Flooding from Land

There are no obvious overland paths of flood water, nor is there any known history of flooding in the area. Flooding from land is therefore assessed as NEGLIGIBLE.

5.5 Flooding from Groundwater

The possibility of flooding from groundwater has been considered. However, the proposed development does not incorporate basements and therefore risk from ground water is considered VERY LOW.

5.6 Flooding from Sewers

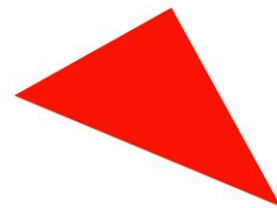
Flooding from sewers can occur when a sewer is overwhelmed by heavy rainfall, becomes blocked, is damaged or of inadequate capacity. The UU consultation does not highlight any considerations of flooding to sewers in the area. Therefore, it may be concluded that the risk of sewer flooding is VERY LOW.

5.7 Flooding from Reservoirs, Canals and Artificial Sources

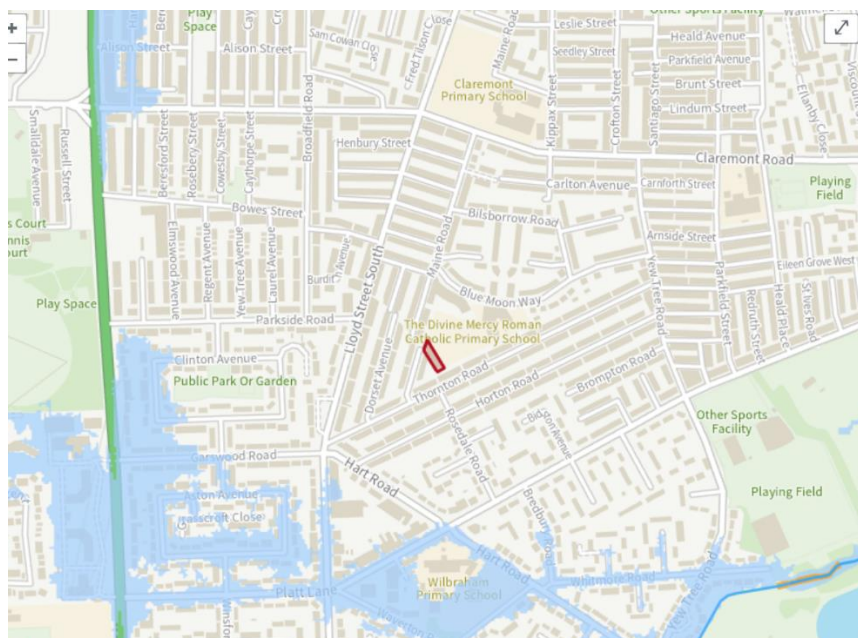
There are no reservoirs, canals or other major artificial bodies of water near the site and the risk is assessed as ZERO.

5.8 Flooding Elsewhere

This flood risk assessment also requires consideration to be given to the possibility of flooding being caused elsewhere. A properly designed and maintained site drainage system will meet the requirements of the sewerage provider, in that the pipelines will not flood at the critical 30-year rainfall event. Furthermore, NPPG guidelines require that all exceedance flows either infiltrate into



the ground or are safely contained on site within underground or above ground safe storage areas such that there will be no risk of flooding of vulnerable or critical areas on site or other nearby areas. It is proposed to mitigate any potential flooding by appropriate below ground attenuation. The risk, therefore, of transferring flooding elsewhere is VERY LOW.



Environment Agency Flood Map

6.0 MITIGATION MEASURES

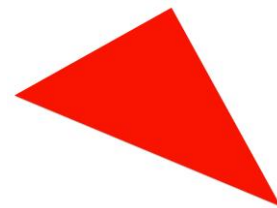
In view of the site being in FZ1 and the very low risk of causing flooding elsewhere off site (see above) there are no further major mitigating measures proposed, though placing finished floor levels a minimum of 150mm above surrounding ground levels would be prudent.

7.0 SURFACE WATER DRAINAGE STRATEGY

7.1 It is Environment Agency, United Utilities, Building Regulations, the Lead Local Flood Authority, Manchester Core Strategy and NPPF policy for all surface water systems for development sites to be designed using Sustainable Drainage Systems (SuDs) wherever possible.

7.2 Rainfall intensities, see profiles in Appendix D, are as indicated in the table below.

	YR 2	YR 30	YR 100	YR 100 + 45%
Rainfall Intensity mm/hr	80.8	153.8	200.5	290.7



The pre-development run-off rates based on an impermeable area of 490m² are:

	YR 2	YR 30	YR 100
Peak Run-Off Litres/sec	11.0	20.9	27.3

Post-development, with a decreased impermeable area on site of 475m², peak run-off rates are predicted to be as follows:

	YR 2	YR 30	YR 100	YR 100 + 45% CC
Peak Run-Off Litres/sec	10.7	20.3	26.5	38.4

7.3 Discharge Rates

Surface water discharge from this site will be governed by the maximum forward pass of 5 l/s that United Utilities are prepared to accept to the nearby combined public sewer. See the UU Consultation Response in Appendix F.

7.4 Discharge Method

Paragraph 056 of the NPPG: Flood Risk & Coastal Change sets out the following hierarchy of drainage options:

- Into the ground (infiltration)
- To a surface water body
- To a surface water sewer, highway drain or other drainage system
- To a combined sewer

7.5 Infiltration

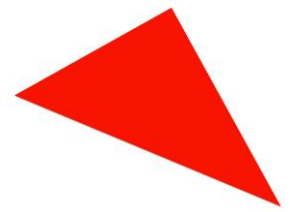
The first consideration for the disposal of surface water is infiltration via soakaway. However, geological information appears to be unfavourable. The superficial deposits are indicated as Diamicton more commonly known as clay which is likely to be impermeable. There is a further difficulty with infiltration, as this is a very small site with near total building development. Even if geological conditions were to prove suitable, there is insufficient space on site to contain a soakaway that would need to be a minimum of 5m distant from the proposed buildings.

7.6 Watercourse

There is no suitable nearby watercourse.

7.7 Surface Water Sewer & Combined Sewer

There are no dedicated surface water sewers in the area, therefore the sole remaining option is discharge to the combined sewer which would be permitted by United Utilities subject to



acceptance of the low discharge rate outlined above.

7.8 Attenuation Storage

Attenuation storage will be required, and storage estimates are included in Appendix E. In line with current best practice, storage volumes have been assessed for the 1:30yr return (the design criteria as per Sewers for Adoption) and for the exceedance event of 1:100yr + 45% cc allowance. The respective volumes are a maximum of 6m³ and 16m³. These volumes are based on a discharge rate of 5l/s. These volumes would be stored in underground pipes and tanks. Further consideration should be made at detailed design stage. Attenuation volumes are indicative only and should also be verified at detailed design stage.

7.9 Sustainable Drainage Systems

Other options considered are as follows:

Swales, detention basins and ponds

These are not considered to be suitable as this is a small site with no significant area of available public open space.

Rainwater Harvesting

The attenuation benefits of rainwater harvesting have been shown to be minimal and can only be realised when the tanks are not full. Similarly, rainwater butts would only provide minor benefits.

Green Roofs

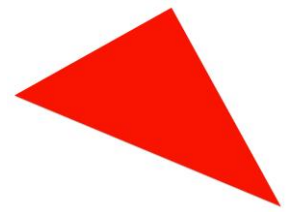
Green roofs are not identified on preliminary plans. Given the nature of residential development, the significant additional costs involved in installing and maintaining green roofing, plus the additional dead load are not considered to be a practical option. Any benefits would be disproportionate to the likely significant construction and ongoing maintenance costs involved.

Porous / Permeable Paving

This may be possible if ground conditions prove suitable for infiltration.

8.0 FOUL WATER DRAINAGE STRATEGY

- 8.1 There are existing public sewers in the area owned and maintained by United Utilities. Guidance contained within Sewers for Adoption Edition 8 states that design foul flows should be 4,000 litres per dwelling per 24-hour period. With proposed apartments on the site, the design foul flow will be $4,000 \times 8 \div 24 = 1,333$ l/s.
- 8.2 Connection would be to the 225mm combined sewer in Dalton Avenue.



9.0 FLOOD RISK MANAGEMENT MEASURES

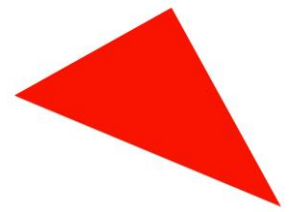
- 9.1 In the event of extreme emergency, the local authority and other emergency services have contingency plans for dealing with consequences of flooding.
- 9.2 Setting finished floor levels of the buildings at least 150mm above surrounding external ground, and shedding surface water away from the buildings, will avoid the risk of damage to buildings and contents from overland flood flows around the site.
- 9.3 The design of surface water drainage should ensure that there are no uncontrolled off-site overland flood flows created by the proposed development. Where possible, site surfaces should be modelled so that flood flows generated on site from events beyond the stipulated drainage design criteria will flow to and be contained on site within landscaped or paved areas such that there is no increased risk of flooding to buildings and other vulnerable areas. Such flood flows should not be allowed to flow from the site onto adjoining / adjacent property or highways.
- 9.4 Home owners and landlords will be responsible for the maintenance of private drainage systems on site to ensure satisfactory performance. United Utilities will be responsible for the maintenance of any public sewers on the site.
- 9.5 Any flood flows onto the site from adjoining property will either be retained on site safely or be encouraged to pass across the site such that there is no increased risk of flooding to buildings and other vulnerable areas.

10.0 OFF-SITE IMPACTS

- 10.1 Proposed on-site drainage will be designed and constructed in accordance with Part H of The Building Regulations, Sewers for Adoption, and any additional requirements of United Utilities, the LLFA, and the Environment Agency, as appropriate.
- 10.2 All on-site roofs and pavings are to drain into the design surface water drainage system, thereby ensuring there will be no off-site flood flows generated by the development.
- 10.3 The risk of flood flows entering and leaving the site will remain after development though are considered minimal. Any risk will be further reduced because the drainage design will be such that there will be no flooding during all rainfall events up to and including the critical 30 year storm, and no overland flows from the critical 100 year storm. The volume of water discharged to the public sewer system post-development will be far less than exists pre-development due to either infiltration or the attenuation to be provided.
- 10.4 By implementation of the flood procedures and by careful design of the flood protection measures as described above, all residual flood-related risks will be minimised as far as possible after the development has been completed.

11.0 UNITED UTILITIES CONSULTATION RESPONSE

- 11.1 United Utilities response dated 13th April 2023 is attached in Appendix F. In summary it states the following: -
 - 1) Foul water will be allowed to drain into the 225mm public combined sewer to the west of the



site at an unrestricted rate.

2) In order to comply with the drainage hierarchy outlined in Building Regulations H3 and National Planning Practice Guidance (NPPG), surface water should be drained via infiltration systems / soakaways wherever possible. If this is not possible then confirming professional evidence will be required. UU also state that if infiltration is not possible due to unsuitable ground conditions, then connection to the 225mm combined sewer to the west of the site would be permitted, with run-off restricted to 5l/s, subject also to LLFA approval.

11.2 United Utilities do not record any instances of flooding in the immediate area.

12.0 RESIDUAL RISKS

12.1 This Flood Risk Assessment, prepared in accordance with relevant policies from the Manchester Core Strategy, NPPF and NPPG demonstrates that the risk of on-site flooding from all sources resulting from the proposed development can generally be regarded as being zero to negligible.

12.2 Careful design of the future drainage system suggests that any risks of flooding will be minimised.

12.3 Furthermore, it is believed that the risk of transferring flooding elsewhere is negligible and on-site infiltration or attenuation will reduce this to a level far below that which currently exists.

12.4 Adoption of the new surface water system by UU should ensure satisfactory functioning and maintenance.

12.5 Accordingly, and notwithstanding any other planning issues, it is not considered that the proposed development has any adverse effects on the current site, or the surrounding area in respect of flooding. Providing the advice contained within the Flood Risk Assessment is implemented, there are no adverse residual risks to either the development or the surrounding area.

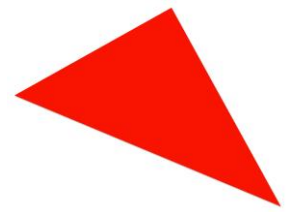
13.0 CONCLUSIONS

13.1 The proposed re-development of the site involves the construction of 8 new apartments in two storey blocks on a very small site.

13.2 The site is in FZ1 on the EA Flood Map – an area considered to have the lowest probability of fluvial flooding.

13.3 The proposed development will lead to a decrease of impermeable area and hence surface water run-off.

13.4 If ground conditions are unsuitable for infiltration or the site is too small for a soakaway system, the discharge rate will be reduced to 5 l/s as per UU guidance and attenuation provided on site to accommodate all storm events up to and including the 1 in 100yr + 45% cc event.



- 13.5 Other SuDS systems and methods have been considered but are believed to be unsuitable or inappropriate for this development.
- 13.6 Foul water connection to the existing combined sewer in Dalton Avenue should be achievable by gravity.

14.0 RECOMMENDATIONS

- 14.1 Submit this Flood Risk Assessment and Drainage Strategy to the Planning Authority in support of the Planning Application.
- 14.2 Ensure that floor levels are 150mm above surrounding ground levels
- 14.3 If attenuation is to be provided, check the attenuation volumes included in this report when undertaking the detailed drainage design.
- 14.4 Complete the detailed drainage design and offer the new drainage system to UU for adoption under a Section 104 Agreement.

SIGNED (electronically)

A Mulligan

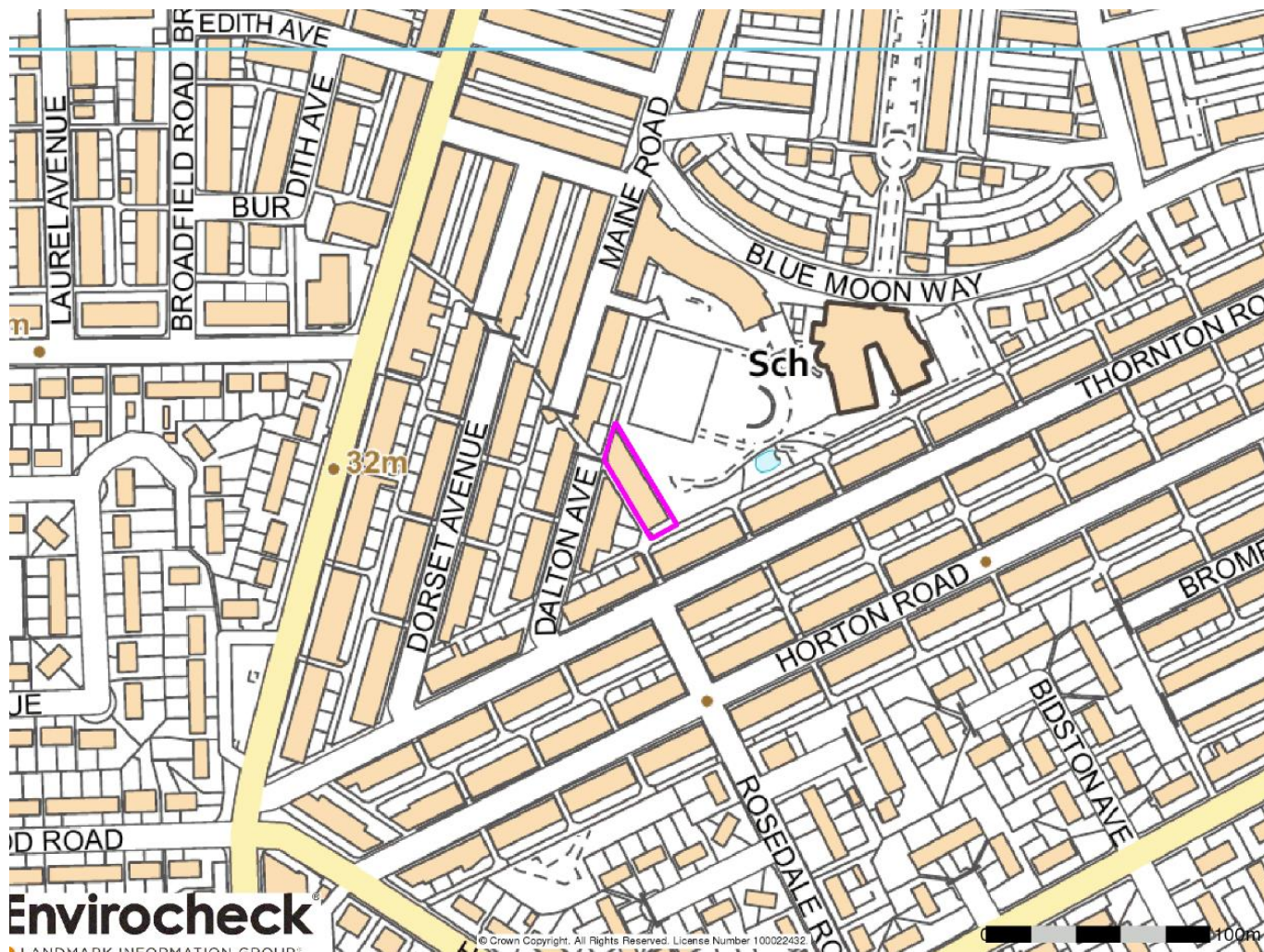
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CARLEY DAINES AND PARTNERS LTD**

AUTHORISED (electronically)

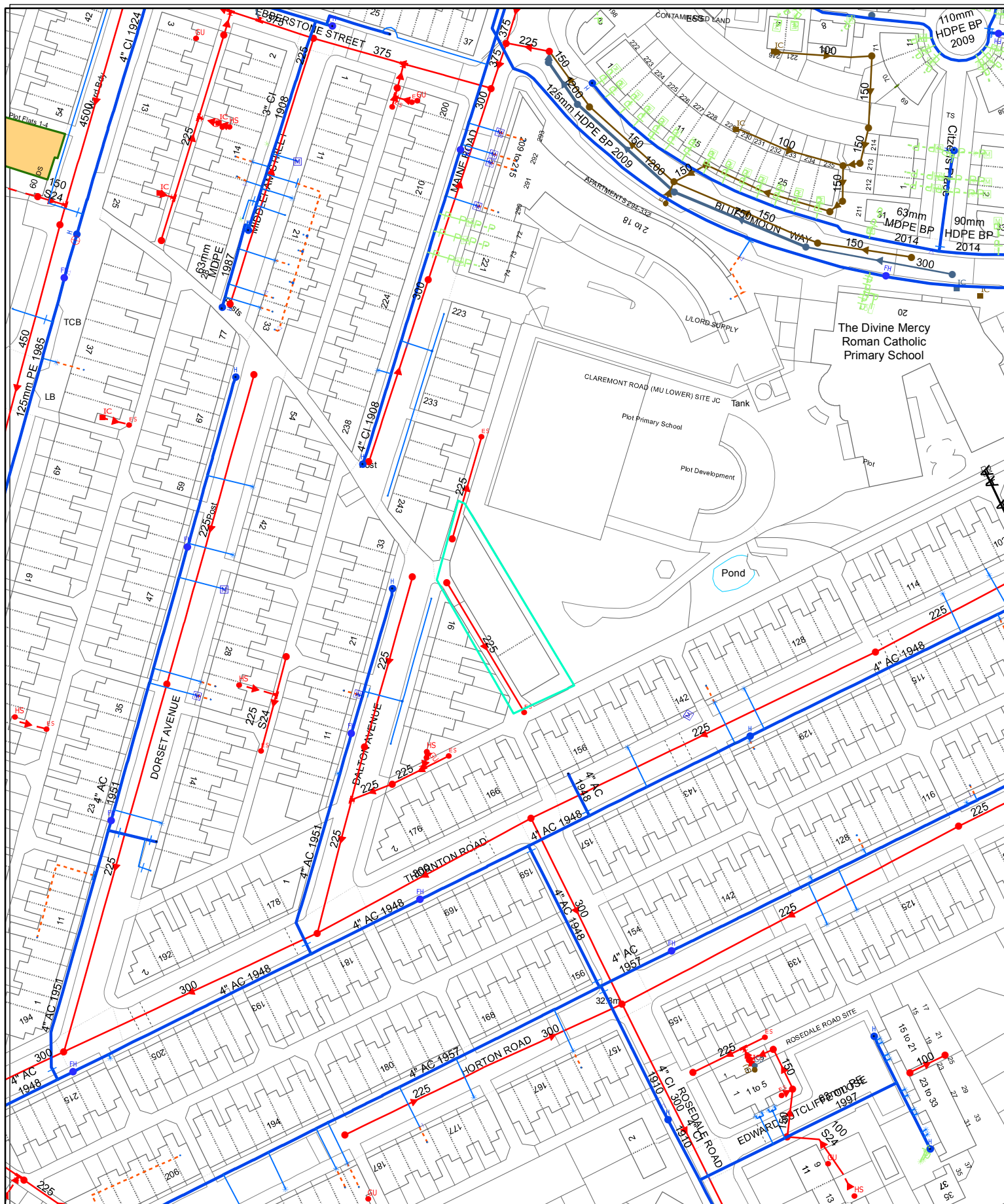
C R Carley

**C R Carley JP MSc CEng MICE (Consultant)
CARLEY DAINES AND PARTNERS LTD**

APPENDIX A
LOCATION AND SITE PLAN



APPENDIX B
UNITED UTILITIES SEWER RECORDS



Date: 21/11/2022

Extract from maps of public sewers and water mains

Printed By:
Property Searches

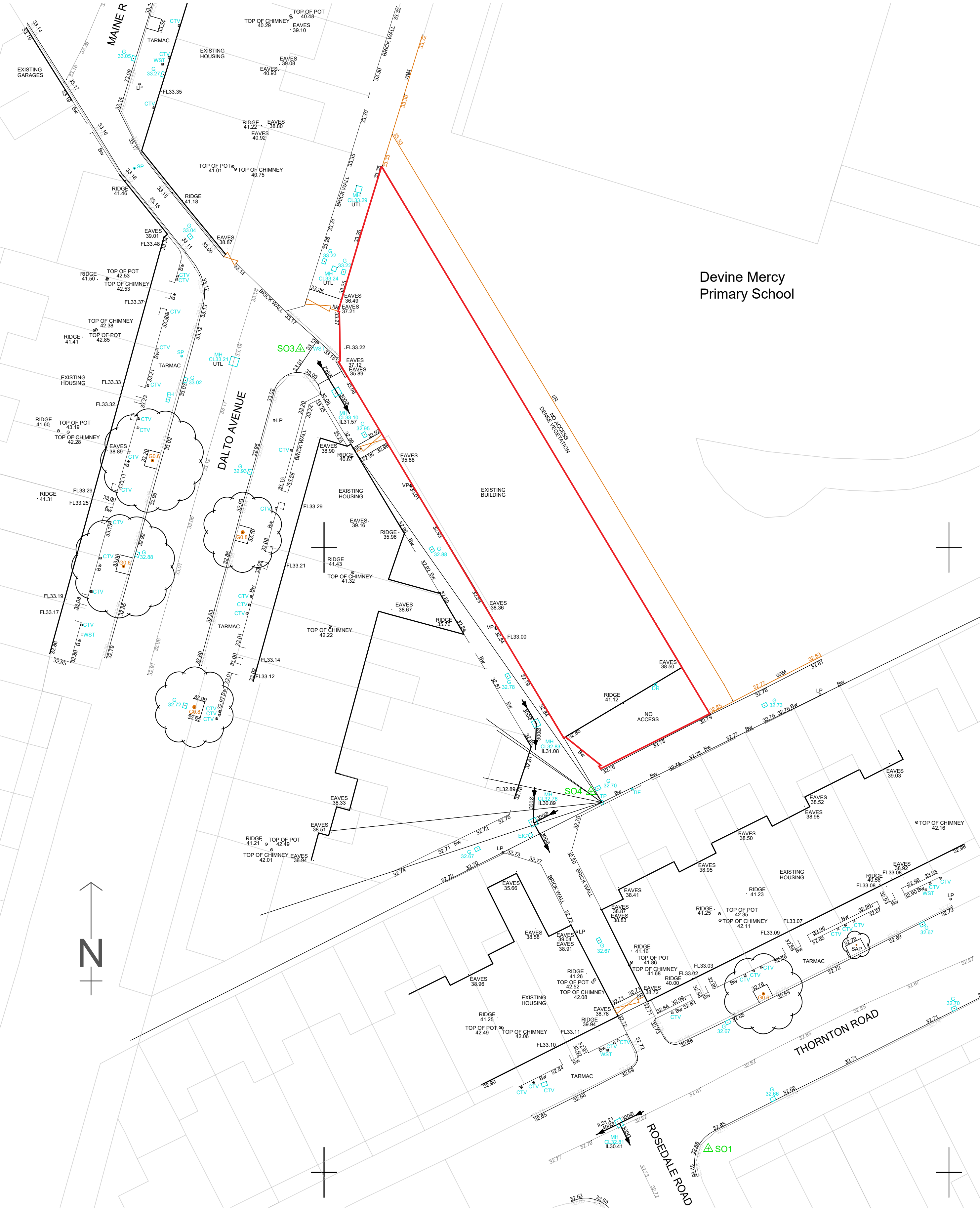
Site at Dalton Avenue Manchester



Water for the North West

The position of underground apparatus shown on this plan is approximate only and is given in accordance with the best information currently available. The actual positions may be different from those shown on the plan and private pipes, sewers or drains may not be recorded. United Utilities Water PLC will not accept any liability for any damage caused by the actual positions being different from those shown.

APPENDIX C
PROPOSED SITE PLAN



01 Existing Topographical Site Plan
02 Scale 1:200 @ A1

- Boundary /Wall Types**
- TYPE A**
New 2.1m high boundary consisting of 2.1m high brick piers and 600mm high brick wall, topped with 1500mm high black powder coated metal railings
- TYPE B**
New 2.1m high boundary consisting of 2100mm high brick wall with brick piers as required by structural engineer, topped with artstone coping
- TYPE C**
(Separation of rear gardens)
1.8 m high boundary comprising 1.5m high close boarded timber fence infill panel on 300mm concrete base panel between concrete posts - height of timber fence panels and concrete base panels may vary - Refer to Structural Engineer's drawings.
- TYPE D**
(Boundary fence adjacent to site perimeter)
2.1 m high boundary comprising 1.8m high close boarded timber fence infill panel on 300mm concrete base panel between concrete posts - height of timber fence panels and concrete base panels may vary - Refer to Structural Engineer's drawings.

Devine Mercy
Primary School



02 Proposed Site Plan
02 Scale 1:200 @ A1

Design Considerations

- Arranged as two storey cottage flat style accommodation
- No car parking provision
- Predominantly brick elevations
- Generally timber fencing to rear and party fencing in line with SBD.
- Communal bin store for cottage flats

SCHEDULE OF PROPERTIES

- 3 no. 1 Bed GF Flats @ 39.2 m²
- 1 no. 1 Bed GF Flat @ 41.2 m²
- 3 no. 1 Bed 1F Flats @ 47.8 m²
- 1 no. 1 Bed 1F Flat @ 49.8 m²

TOTAL 8 no. dwellings

General Notes				
01: Dimensions must not be scaled from this drawing. If in doubt, please ask.				
02: All dimensions are in millimetres unless noted otherwise.				
03: Floor plans updated. Schedule of properties updated				
04: TADW Architects shall be notified in writing of any discrepancies.				
05: © TADW Limited (UK) 2015				
Legend				
P4	Site plan updated. Proposed boundary treatments added	14.03.23	KM	MH
P3	Floor plans updated. Schedule of properties updated	02.03.23	KM	MH
P2	Updated	19.12.22	KM	MH
P1	Issued for comment	21.11.22	KM	MH
Issue	Description	Date	Drawn	Checked
Drawing Status				
P - Planning T - Tender C - Construction R - As Record				
For Approval				

tadw architects



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Client MSV Housing

Job Dalton Avenue
Fallowfield

Title Existing and Proposed Plans

Scale 1:200 @ A1

Note - Prints from PDF files may not be to scale, check accuracy against scale

Job Number
221319

Drawing Number
02

Issue
P4

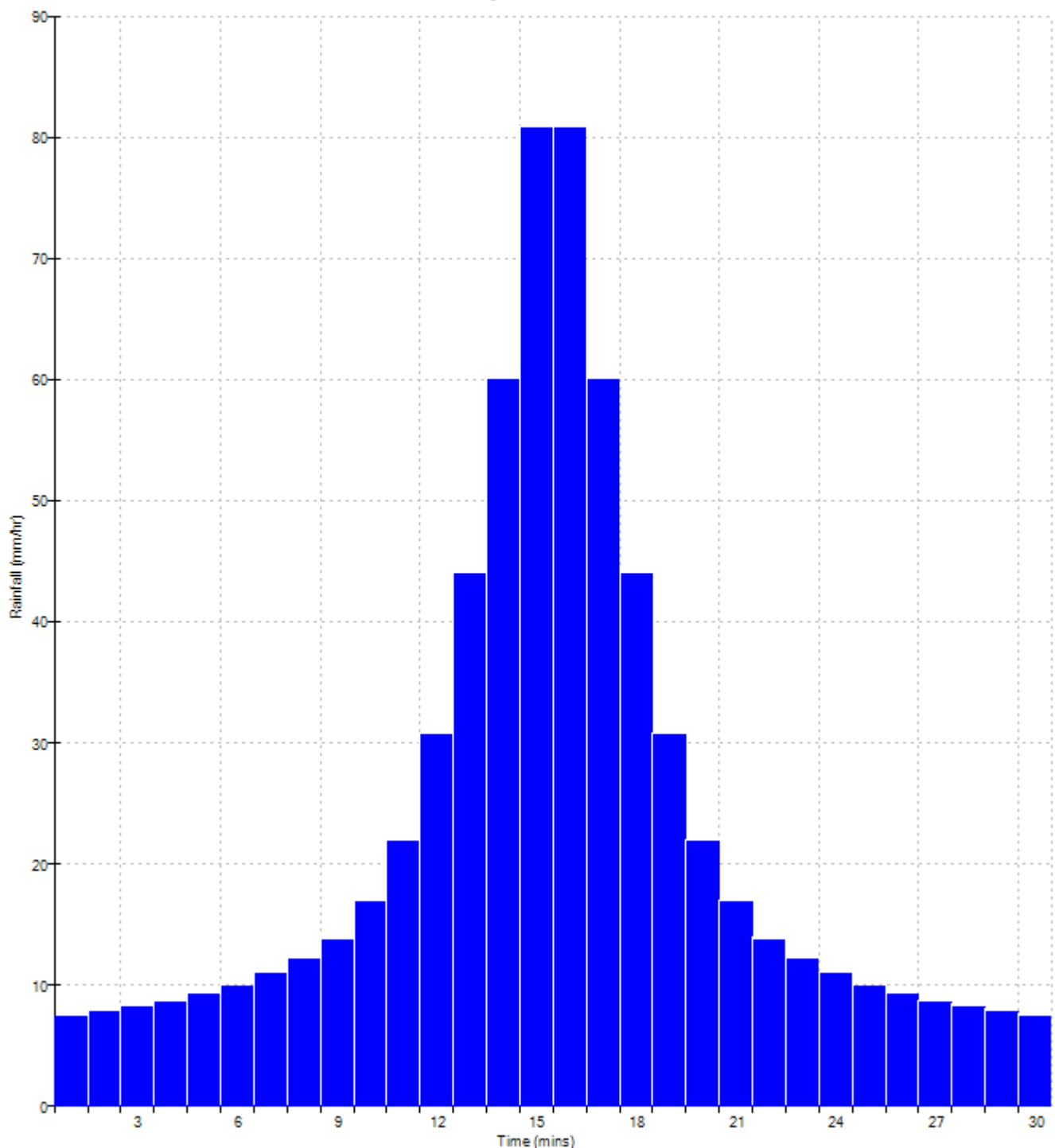
APPENDIX D
RAINFALL INTENSITIES

Carley Daines and Partners Limited		Page 1
11 Bridgewater Road Worsley Manchester, M28 3JE	Rainfall Profile Manchester 1 in 2 Year Storm Event	
Date 15/11/2021 File	Designed by A Mulligan Checked by A Mulligan	
Innovyze	Network 2019.1	

Rainfall profile

Storm duration (mins) 30

FSR Data
Region England and Wales
M5-60 (mm) 18.000
Ratio R 0.360
Peak Intensity (mm/hr) 80.767
Ave. Intensity (mm/hr) 22.854
Return Period (years) 2.0

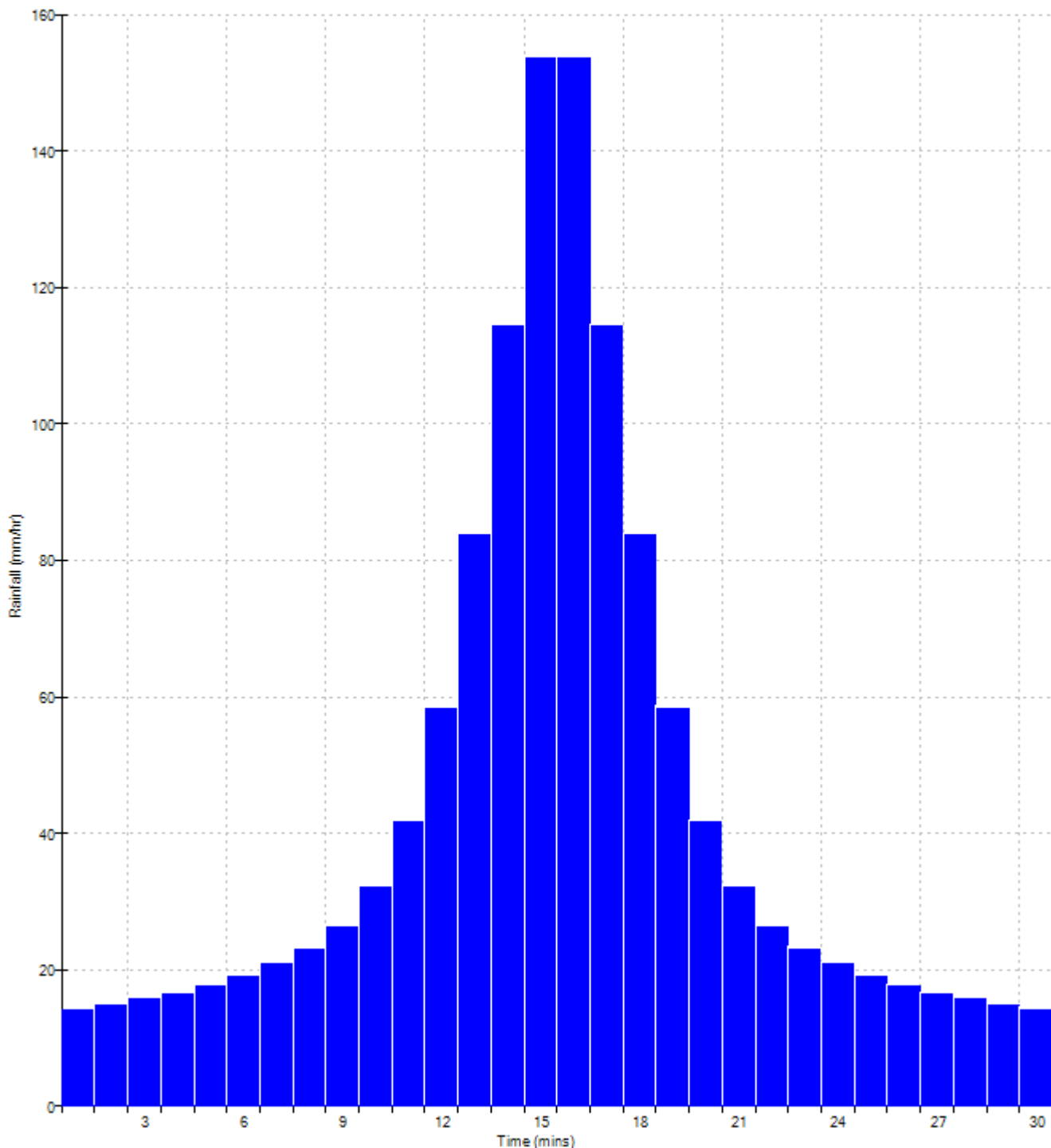


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11 Bridgewater Road Worsley Manchester, M28 3JE	Rainfall Profile Manchester 1 in 30 Year Storm Event	
Date 15/11/2021 File	Designed by A Mulligan Checked by A Mulligan	
Innovyze	Network 2019.1	

Rainfall profile

Storm duration (mins) 30

FSR Data
Region England and Wales
M5-60 (mm) 18.000
Ratio R 0.360
Peak Intensity (mm/hr) 153.752
Ave. Intensity (mm/hr) 43.507
Return Period (years) 30.0

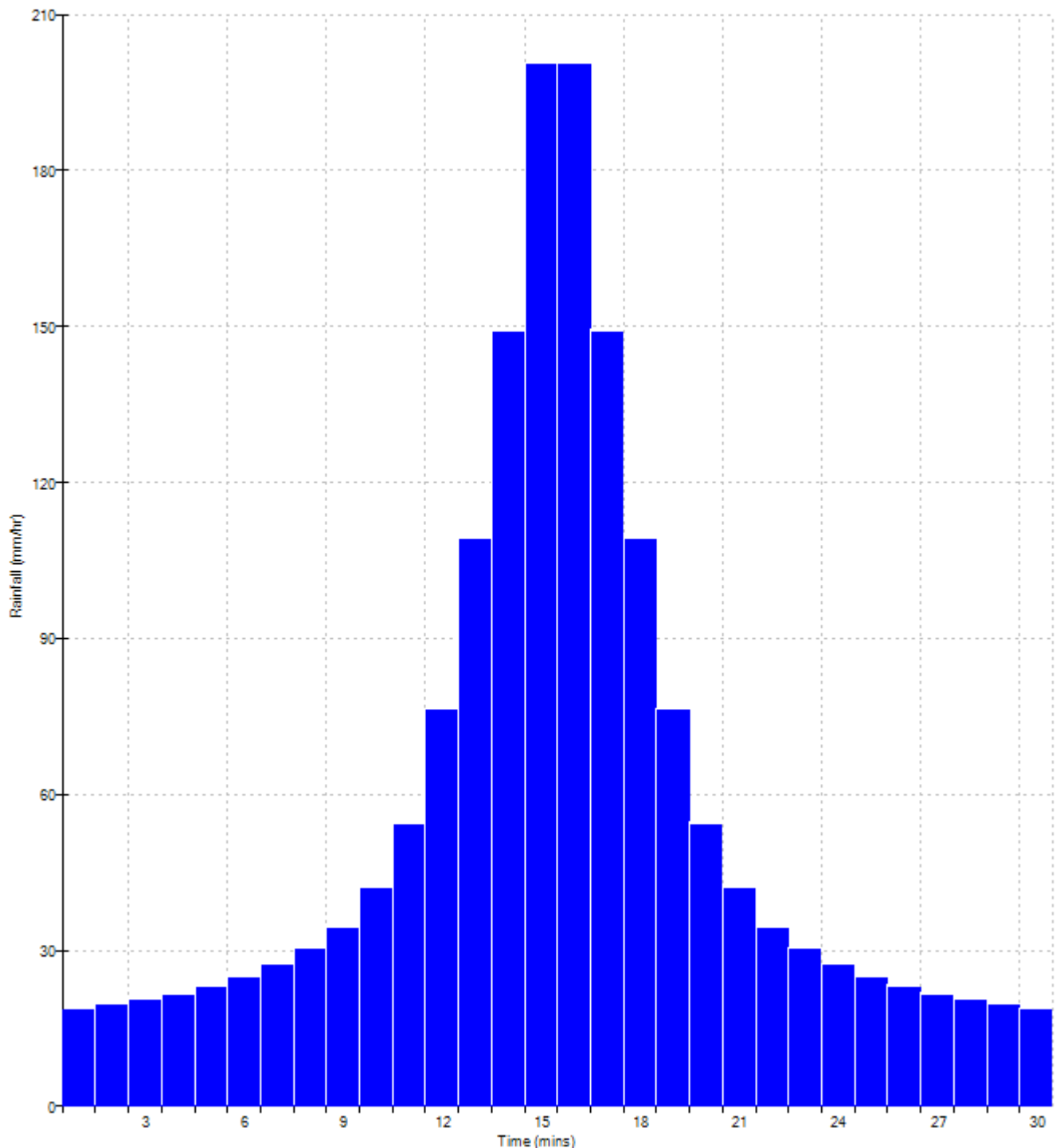


Carley Daines and Partners Limited		Page 1
11 Bridgewater Road Worsley Manchester, M28 3JE	Rainfall Profile Manchester 1 in 100 Year Storm Event	
Date 15/11/2021 File	Designed by A Mulligan Checked by A Mulligan	
Innovyze	Network 2019.1	

Rainfall profile

Storm duration (mins) 30

FSR Data
Region England and Wales
M5-60 (mm) 18.000
Ratio R 0.360
Peak Intensity (mm/hr) 200.462
Ave. Intensity (mm/hr) 56.724
Return Period (years) 100.0



APPENDIX E
PRELIMINARY STORAGE VOLUME ESTIMATE

Quick Storage Estimate

Micro Drainage

Variables

FSR Rainfall

Return Period (years) 30

Region England and Wales

Map M5-60 (mm) 18.000

Ratio R 0.360

Cv (Summer) 0.750

Cv (Winter) 0.840

Impervious Area (ha) 0.048

Maximum Allowable Discharge (l/s) 5

Infiltration Coefficient (m/hr) 0.00000

Safety Factor 2.0

Climate Change (%) 0

Analyse OK Cancel Help

Enter Maximum Allowable Discharge between 0.0 and 999999.0

30yr input

Quick Storage Estimate

Micro Drainage

Results

Global Variables require approximate storage of between 2.0 m³ and 6.2 m³.

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

Analyse OK Cancel Help

Enter Maximum Allowable Discharge between 0.0 and 999999.0

30yr results

Quick Storage Estimate

Micro Drainage

Variables

FSR Rainfall

Return Period (years) 100

Region England and Wales

Map M5-60 (mm) 18.000

Ratio R 0.360

Cv (Summer) 0.750

Cv (Winter) 0.840

Impervious Area (ha) 0.048

Maximum Allowable Discharge (l/s) 5.0

Infiltration Coefficient (m/hr) 0.00000

Safety Factor 2.0

Climate Change (%) 45

Analyse OK Cancel Help

Enter Climate Change between -100 and 600

100yr + cc input

Quick Storage Estimate

Micro Drainage

Results

Global Variables require approximate storage of between 8.2 m³ and 16 m³.

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

Analyse OK Cancel Help

Enter Climate Change between -100 and 600

100yr + cc results

APPENDIX F
UNITED UTILITIES CONSULTATION RESPONSE

From: seweradoptions@uuplc.co.uk
Sent: 13 April 2023 16:37
To: Andrew Mulligan
Subject: Pre Development Enquiry for: Dalton Road, Fallowfield Dalton Road, Fallowfield, Manchester. M14 7SH UU Reference Number : 03831513

Good afternoon Andrew,

Pre Development Enquiry for: Dalton Road, Fallowfield Dalton Road, Fallowfield, Manchester. M14 7SH UU Reference Number : 03831513

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 225mm diameter public combined sewer 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 225mm diameter public combined sewer 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
unitedutilities.com

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----- Original Message -----

From: Andrew Mulligan [andrew.mulligan@carleydaines.co.uk]

Sent: 30/03/2023 12:07

To: seweradoptions@uuplc.co.uk

Subject: Automatic reply: 03831513 Dalton Road, Fallowfield Dalton Road, Fallowfield, Manchester. M14 7SH

EXTERNAL EMAIL This email originated outside of the organisation. Do not click links or open attachments unless you recognise the sender and know the content is safe.

Thank you for your email,

I am out of the office until Monday 3rd April and will not have access to my emails in this time. I will respond to all emails upon my return.

If your enquiry is urgent, or is regarding an existing project, please call the office on 0161 799 2720 where another member of staff may be able to assist you with your query.

Thanks,

Andrew.

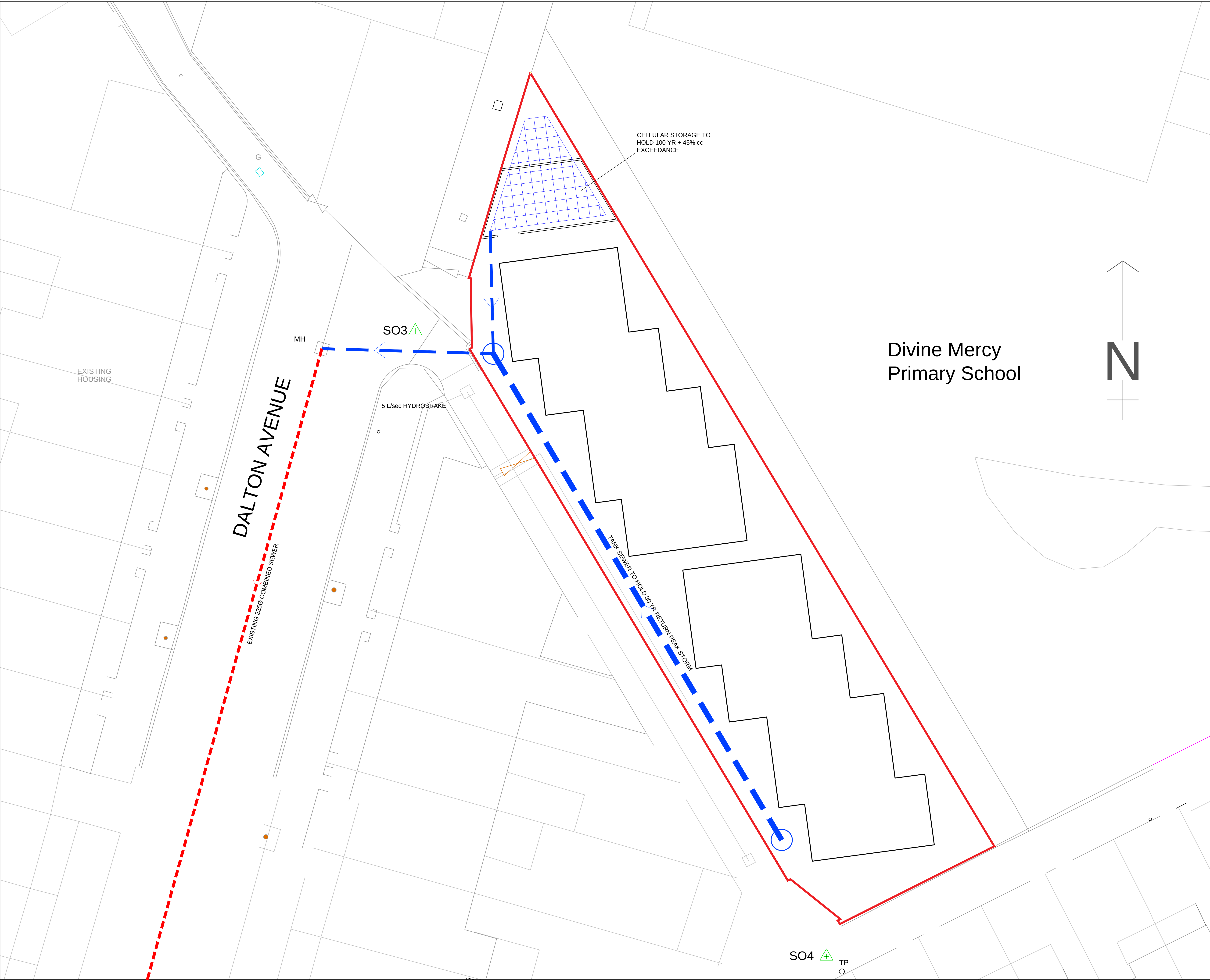


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Warrington, WA5 3LP
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www.unitedutilities.com/subsidiaries

APPENDIX G
DRAINAGE STRATEGY DRAWING



NOTES		
DO NOT SCALE OFF THIS DRAWING IF IN DOUBT - ASK		
REV.	DATE	DESCRIPTION
CLIENT		
Carley Daines and Partners Limited Consulting Civil and Structural Engineers 11 Bridgewater Road Walkden Worsley Manchester M28 3JE Tel 0161 799 2720 Fax 0161 790 3474 E-mail mail@carleydaines.co.uk		
TITLE		
NEW HOUSING DALTON AVENUE FALLOWFIELD MANCHESTER		
DRAINAGE STRATEGY		
Drawn	M.HOLE	Checked
Date	APRIL 2023	Date
Scale	1:200 @ A1	
Drawing No.	22.B.13509/200	