DRAINAGE DESIGN - TECHNICAL NOTE

172-XOS-XX-XX-RP-C-5100

PLYMOUTH GROVE

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15 May 2023

DOCUMENT ISSUE RECORD

Document Number		**172-XOS-XX-XX-DR-C-5100**			
Status	**Revision**	**Date of Issue**	**Author**	**Checked**	**Approved**
Planning	P1	15.05.23	U.Malik	M. Walsh	E. Parry

Report Limitation

All comments and proposals contained in this report are based on information available to XOsquare Limited during recent investigations.

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1 INTRODUCTION & SITE LOCATION

This report has been prepared by XOsquare on behalf of WUKPG to support a full planning application for a purpose-built student accommodation (PBSA) development (hereafter referred to as the 'Proposed Development') at Plymouth Grove, Manchester (hereafter referred to as 'the Site').

The site is located at the following address:

Vacant Land

3-5 Plymouth Grove

Manchester

M13 9NT



Figure 1 - Site Location

A copy of the proposed site plan is included in **Appendix A.**

The site extends approximately 0.15ha and currently consists of vacant previously developed land. It is located within the Oxford Road Corridor area and shares a frontage with both Plymouth Grove and Dryden Street. The site is within easy walking distance to both University campuses and the City Centre, making the site highly sustainable and accessible to the rest of the city.

The scheme proposals have been designed by DAY Architects. The proposed development would transform the currently vacant site, re-establishing its important role in the area by creating a high quality and sustainable building design, and providing a resource to cater for Manchester's growing student population.

The purpose-built student accommodation (PBSA) provides 263 student bedspaces; comprising 215 x 1-bedroom studio flats and 24 x 2-bedroom 'premium studio' flats. In addition to this, student amenities are proposed on the ground floor (communal space and roof terrace / laundry room) together with supporting ancillary space (bike store, waste collection areas and plant facilities).

There is also a communal roof terrace proposed at sixth floor level. The proposed building is ground plus part five, part seven storeys in height and is designed around one 'L' shaped building with central cores.

This Drainage Technical Note sets out the principles of the drainage design for the proposed development and summarizes the reasoning behind the chosen design. This includes justification of specific flow rates, volumes of attenuation and the level of treatment provided for site run-off.

A site summary and summary of the local agencies is found below in Table 1

Site Name	Plymouth Grove
Location	3-5 Plymouth Grove, M13 9NT
Application Site Area phase 1	Circa 0.15 hectares
Development	Residential
Environment Agency Office	MCC
Lead Local Flood Authority	MCC
Local Planning Authority	MCC
Water Supplier	United Utilities

Table 1 - Development Summary

2 DRAINAGE SUMMARY

The site is overlaid with made ground and the historical use is currently unknown.

GPR survey has unveiled an existing manhole on site which appears to connect to the existing combined United Utility public sewer beneath Dryden Street. It is assumed that this drain served the site prior, and it is propose re-use of this connection. The GPR survey and United Utility plans are included in **Appendix E**.

Due to the unknown historical use of the site, and considering it is currently overlaid with made ground/soft landscaping, the site is considered greenfield for the purpose of estimating run-off and discharge rates.

Table 2.1 summarizes the findings of this document.

Outfall Location	It is proposed that both surface water and foul water is combined on site and connected to the existing 225mm drain on-site which will be used as a combined sewer connection the public system.
Existing Site Peak Run-off Rate	N/A
Infiltration Rate	N/A
Proposed Site Peak Run-off Rate	5 l/s
Proposed Storage Volume	40.40m^3
Flow Control Type	Oriflow Flow Control Chamber
SuDS Features	Silt Trap Manholes Attenuation Tank Flow Control devices

Table 2.1 - Drainage Summary

2.1 Existing Site

The site is a notionally triangular and occupies an area of approximately 0.15ha.

The site is currently vacant but was historically developed.

There is existing drainage on site as evidenced by the GPR survey in **Appendix E**.

The site is elevated in the range of 38 mAOD to 41 mAOD, with regular grading sloping north to south.

The existing topographical survey is included in **Appendix B.**

In terms of surrounding area, Dryden Street forms the northern site boundary.

Beyond this and immediately across the road is South Manchester Cemetery and Holyrood Nursery.

To the east is an area of open green space with a public right of way (PRoW) running through it.

The south-eastern site boundary is shared with 23 Plymouth Grove, a large brick-building 3 storeys in height, beyond which is Plymouth Lodge, a Grade II listed building comprising residential apartments. This is the only listed building within the immediate vicinity of the site in all directions.

The western site boundary is formed by Plymouth Grove beyond which is Grafton Street Sanctuary Students accommodation, which provides a large number of student beds to cater for the surrounding Universities.

2.2 Proposed Development

The proposed development is purpose-built student accommodation (PBSA) providing 263 student bedspaces; comprising 215 x 1-bedroom studio flats and 24 x 2-bedroom ‘premium studio’ flats. In addition to this, student amenities are proposed on the ground floor (communal space and roof terrace / laundry room) together with supporting ancillary space (bike store, waste collection areas and plant facilities).

There is also a communal roof terrace proposed at sixth floor level. The proposed building is ground plus part five, part seven storeys in height and is designed around one ‘L’ shaped building with central cores.

The proposed site plan is provided in **Appendix A.**



Figure 2 – Site Plan

3 Surface Water Management

As the site area is appx. 0.15ha, and flow rates lower than 5 l/s can increase risk of blockages, it is proposed to limit discharge rate to 5 l/s for this site.

The additional run-off from site will be attenuated in a geo-cellular attenuation system for all events up to the 100 year + 45% climate change.

3.1 Methods of Surface Water Managements

There are four methods that have been reviewed for the management and discharge of surface water which are detailed below; these may be applied individually or collectively to form a complete strategy. They should be applied in the order of priority as listed;

- Infiltration via soakaways
- Watercourse
- Surface Water Sewer
- Combined Water Sewer

A Phase 1 site investigation has been carried out and has determined that the site is underlain by Made Ground over cohesive glacial till which is typically highly impermeable. In addition, any infiltration system would have to be placed 5m away from and building foundations to satisfy paragraph 3.24 of Approved Document H. This would not be feasible due to spatial constraints and the existing root protection areas shown on the drainage plans provided in **Appendix C**.

There were no watercourses identified within practical reach of the site and as such discharge of surface water to watercourse is dismissed as an option.

There is a public combined water sewer located beneath Dryden Street and Plymouth Grove. It is proposed to discharge surface water to this public sewer at a rate of 5 l/s for all events. A pre-development enquiry has been carried out and preliminary acceptance of this proposal from United Utilities has been received. Correspondence is provided in **Appendix F**.

Roof water will discharge via an internal roof drainage system into silt trap manholes and ultimately conveyed to an attenuation tank adjacent to the building. The full design proposal is provided in **Appendix C**.

3.2 Attenuation Requirements

The proposed restricted discharge rates outlined above and development runoff generated by proposed impermeable roof and hard standing areas results in a storage requirement during periods of intense rainfall.

The primary form of attenuation proposed for the site is through the use of a geo-cellular tank system.

An Infodrainage model has been constructed for the entire site to ensure that below ground pipework and volumes of attenuation are sized accurately. The table below summarizes the attenuation volumes and restricted discharge rates.

Attenuation Location	Maximum Volume (m^3)	Discharge Rate (l/s)
Amenity Landscaping	40.4	5

Table 2 - Attenuation Requirements

Detailed calculations are to be found in **Appendix D.**

3.3 CLIMATE CHANGE

The issue of climate change is discussed in the NPPF Technical guidance with impacts likely on sea levels, peak rainfall intensities, peak river flows, wind speeds and wave heights. The current DEFRA and EA recommended allowances for possible future climate change are summarized on in Table 2 on Gov.uk website (https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances) and are summarized below.

Applies across all of England	Total potential change anticipated for the '2050s' (2060 to 2070)	Total potential change anticipated for the '2070s' (2061 to 2125)
Upper end	40%	45%
Central	25%	30%

Table 3 - Climate Change

Planning Practice Guidance current advice on Climate Change for peak rainfall intensity allowance in small and urban catchments for a development with a lifespan of greater than 50 years '2070s' (2061 to 2125) is Central 30% and Upper End 45%

The attenuation volumes above and current drainage strategy includes an allowance of **45%.**

3.4 Sustainable Drainage Systems

As discussed earlier in this document, infiltration-based drainage is considered unsuitable due to the nature of the ground conditions.

It is therefore proposed that non-infiltration-based SuDS solutions alongside traditional drainage measures will be employed across the site, these include:

- Filter Drains/ Strips.
- Silt traps & Catchpits.
- Flow control devices
- Geo-cellular Tank System

3.5 Residual Risk and Designing for Exceedance

In the event that the capacity of the attenuation is exceeded, flood water will be retained on site up to the 100 year event + 45% allowance for climate change.

Beyond this storm event exceedance will be safely directed away from buildings and allowed to leave the site where it will follow natural flow paths.

3.6 Maintenance

Requirements for ongoing maintenance of the drainage network will form part of the Operation and Maintenance manual for the site and will be undertaken by the building management. Any specialist or proprietary products that are specified at detailed design will have a manufacturer specific maintenance regime which will be included within the document.

All drainage features should be in open areas which are accessible. All surface water arrangements outlined above are subject to detailed design.

3.7 Water Quality

As the site has no access to vehicles it is considered low risk from a pollution hazard perspective. Surface water discharge will only be received from the roof and pedestrian footpath areas surrounding the building. It is proposed that the use of silt trap manholes will be a suitable means of dealing with any potential sediment from roof/pedestrian areas.

4 Management and Maintenance Plan

Based on Chapter 32 on the CIRIA report C753 The SuDS Manual and manufacturer recommendations a maintenance strategy has been outlined. The responsibility for maintenance will lie with the Facilities management.

System	Maintenance Type	Action	Frequency
General Drainage Systems: - Surface Water Drains	Routine Maintenance	Remove debris from catchment surface – any debris entering system may cause risks to performance.	Monthly or as required by inspection.
- Silt Traps		Inspect sediment and silt accumulation rates.	Six monthly.
- Channel Drains		Clearing of silt traps.	Annually or as required by inspection.
- Rain Water Pipe Connections		Clearing of drainage channels and their outlets.	Annually or as required by inspection.
	Remedial Actions	Repair pipework and manholes.	As required from inspection.
	Monitoring	CCTV survey of drainage system in full.	As required by inspection

Table 4 - Maintenance Frequency: General Drainage System

System	Maintenance Type	Action	Frequency
Storage Tanks *Manufacturers O&M manual maintenance requirements are to take precedent to this document	Routine maintenance	Inspect and identify any areas that are not operating correctly. If required, take remedial action	Monthly
		Remove debris from the catchment surface (where it may cause risks to performance	Monthly
		For systems where rainfall infiltrates into the tank from above, check surface of filter for blockage by sediment, algae or other matter; remove and replace surface infiltration medium as necessary	Annually
		Remove sediment from pre-treatment structures and/or internal forebays	As required.
	Monitoring	Inspect/check all inlets, outlets, vents and overflows to ensure that they are in good condition and operating as designed	Annually
		Survey inside of tank for sediment build-up and remove if necessary	Every 5 years.
	Remedial Actions	Repair/rehabilitate inlets, outlet, overflows and vents	As required

Table 5 - Maintenance frequency: Storage Tanks

System	Maintenance Type	Action	Frequency
Green Roof *Manufacturers O&M manual maintenance requirements are to take precedent to this document	Regular Inspections	Inspect all components including soil substrate, vegetation, drains, irrigation systems, membranes and roof structure	Annually and after severe storms
		Inspect soil substrate for evidence of erosion channels and identify any sediment sources	Annually and after severe storms
		Inspect drain inlets to ensure unrestricted runoff from the drainage layer.	Annually and after severe storms
	Regular Maintenance	Remove debris and litter to prevent clogging of inlet drains and interference with plant growth	Six monthly or as required.
		Mow grasses, prune shrubs and manage other planting such as removing weeds and other invasive vegetation.	Six monthly or as required.
		Remove fallen leaves and debris from deciduous plant foliage	Six monthly or as required.
	Remedial Actions	If erosion channels are evident, these should be stabilized with extra soil substrate similar to the original material, and sources of erosion damage should be identified and controlled.	As required.
		If drain inlet has settled, cracked or moved, investigate and repair as appropriate.	As required.

Table 7 - Maintenance frequency: Green Roofs

5 Foul Water Management

It is proposed to install a new foul drainage system to serve the proposed development.

The foul water system will be designed and constructed in accordance with the current Building Regulations, BS EN:752 ‘Drainage and Sewer Systems Outside Buildings’, the Local Authority Building Control specifications and requirements, Sewerage Sector Guidance (Appendix C) and the Civil Engineering Specification for the Water Industry.

Foul water will discharge from the site via a gravity system to the existing combined water public sewer in Dryden Street. This will be done by reusing an existing connection available from out site.

Invert level of receiving sewer should be checked prior to pipe laying on site and care is needed to avoid the potential clashes with existing drainage running north to south along the eastern side of the site.

The proposed foul network is presented on the drainage general arrangement drawings located in **Appendix C**.

6 Summary

1. This statement and supporting appendices demonstrate that the drainage design for the development will satisfy the discharge requirements of Manchester City Council as LLFA.
2. Infiltration is considered unsuitable for the site due to the prevailing hard standing.
3. On site attenuation is proposed in the form of a cellular system.
4. The site will connect foul sewerage to the public combined drainage network via an existing manhole to the west of the site.
5. The site will connect surface water to the public combined drainage network.

APPENDIX A – Site Masterplan



GENERAL NOTES:

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1. All boundaries, dimensions and levels are to be checked on site before construction and any discrepancies reported to the Architect / Designer.
2. Partial Service: Any discrepancies with site or other information is to be advised to the Architect / Designer and direction and or approval is to be sought before the implementation of the detail.
3. Block and site plans are reproduced under license from the Ordinance Survey.
4. Do not scale this drawing.
5. For the purpose of coordination, all relevant parties must check this information prior to implementation and report any discrepancies to the Architect / Designer.

REV	DESCRIPTION	DATE	REV BY	CHKD BY
E	SCHEME UPDATED	02.05.23	JRB	NOO
D	SCHEME UPDATED	19.04.23	JRB	NOO
C	RED LINE BOUNDARY AND LAYOUT REVISIONS	29.03.23	JRB	GH
B	RED LINE BOUNDARY UPDATED	23.03.23	JRB	GH
A	ISSUED FOR INFORMATION	20.02.23	JRB	NOO
-	ISSUED FOR INFORMATION	31.10.22	IM	MH

CLIENT: WUKPG

PROJECT: Plymouth Grove

DRAWING: Proposed Site Plan

SCALE: 1:500 @A4

DATE ISSUED: 31.10.22

PROJECT	DRAWN BY	CHECKED BY
1441+21	IM	MH

ORIGIN	VOLUME	LEVEL	TYPE	ROLE	NUMBER	REVISION
DAY	XX	00	DR	A	XX	F

DRAWING STATUS: INFORMATION

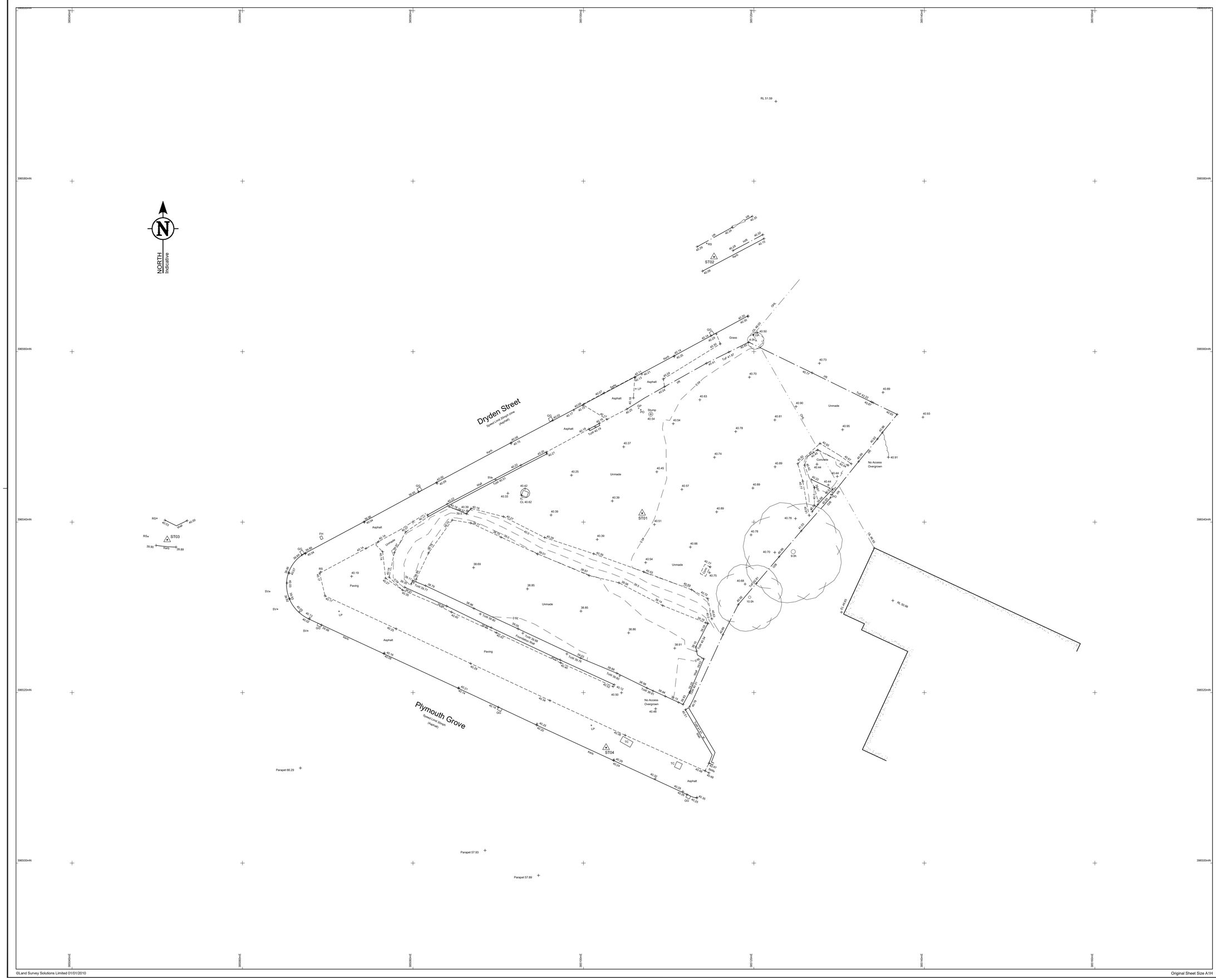
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APPENDIX B – Topographic Survey



TOPOGRAPHICAL & MEASURED BUILDING SURVEYS

ABBREVIATIONS & SYMBOLS

AH	Arch Head Height	ER	Earth Rod	RSD	Roller Shutter Door
A/B	Air Brick	ET	EP+Transformer	RSJ	Rolled Steel Joist
AR	Assumed Route	FB	Flower Bed	SI	Sign Post
AV	Air Valve	FBD	Floor Board Direction	SP	Arch Spring Point Height
BB	Bellsha Beacon	FH	Fire Hydrant	SV	Stop Valve
BH	Bore Hole	FL	Floor Level	SW	Surface Water
BL	Bed Level	FP	Flag Pole	SY	Cable Stay
BO	Bollard	FW	Foul Water	Tac	Tactile Paving
B/P	Brace Post	GG	Gully Grate	TC	Telecom Cover
BS	Bus Stop	GV	Gas Valve	TH	Trial Pit
BU	Bush	HH	Head Height	THL	Threshold Level
B/W	Barbed Wire Fence	IC	Inspection Cover	TL	Traffic Light
BX	Box (Utilities)	IL	Invert Level	ToW	Top of Wall
C/B	Close Board Fence	I/R	Iron Railings	TP	Telegraph Pole
CH	Cill Height	KO	Kerb Outlet	TS	Traffic Signal Cover
CL	Cover Level	LP	Lamp Post	TV	Cable TV Cover
C/L	Chain Link Fence	MH	Manhole	UB	Universal Beam
C-Lev	Ceiling Level	MP	Marker Post	UC	Unknown Cover
Col	Column	NB	Name Board	UK	Unknown Tree
C/P	Chestnut Paling Fence	OHL	Overhead Line (approx)	UMG	Unmade Ground
CR	Cable Riser	Pan	Panel Fence	USB	Under Side Beam
C/W	Chicken Wire	PB	Post Box	UTL	Unable To Lift
DC	Drainage Channel	PM	Parking Meter	UTS	Unable To Survey
DH	Door Head Height	PO	Post	VP	Vent Pipe
Dil.	Dilapidated	P/R	Post & Rail Fence	WB	Waste Bin
DP	Down Pipe	P/W	Post & Wire Fence	WH	Weep Hole
DR	Drain	P/Wall	Partition Wall	WL	Water Level
EBx	Electric Box	RE	Rodding Eye	WM	Water Meter
EC	Electric Supply Cover	RL	Ridge Level	WO	Wash Out
EL	Eaves Level	RP	Reflector Post	CH	Floor to Ceiling Height
EP	Electric Pole	RS	Road Sign	FC	Floor to False Ceiling Ht
					Survey Control Station

DRAWING NOTES

Topographical Surveys

Trees are drawn to scale showing the average canopy spread. Descriptions and heights should be used as a guide only.

All building names, descriptions, number of storeys, construction type including roof line details are indicative only and taken externally from ground level.

All below ground details including drainage, voids and services have been identified from above ground and therefore all details relating to these features including; sizes, depth, description etc will be approximate only. All critical dimensions and connections should be checked and verified prior to starting work.

Detail, services and features may not have been surveyed if obstructed or not reasonably visible at the time of the survey.

Surveyed physical features may not necessarily represent the legal boundary line.

Measured Building Surveys

Measurements to internal walls are taken to the wall finishes at approx 1m above the floor level and the wall assumed to be vertical.

Cill heights are measured as floor to the cill and head heights are measured from cill to the top of window.

General

The contractor must check and verify all site and building dimensions, levels, utilities and drainage details and connections prior to commencing work. Any errors or discrepancies must be notified to Survey Solutions immediately.

The accuracy of the digital data is the same as the plotting scale implies. All dimensions are in metres unless otherwise stated.

The survey control listed is only to be used for topographical surveys at the stated scale. All control must be checked and verified prior to use.

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Do not scale from this drawing.

SURVEY CONTROL CO-ORDINATES

STATIONS	EASTINGS	NORTHINGS	LEVEL
ST02	385115.325	396571.111	40.258
ST03	385051.166	396537.923	39.981
ST01	385106.887	396541.046	40.613
ST04	385102.660	396513.547	40.333

SURVEY GRID AND LEVEL DATUM

The coordinate system established for this survey is related to Ordnance Survey (OS) national grid at a single point using Smartnet, then orientated to grid north with a scale factor of 1.000.

The level datum established for this survey is related to Ordnance Survey (OS) using GPS Smartnet.

To avoid discrepancies any coordinated data used in conjunction with this survey must be derived directly from this control data.

REV	DESCRIPTION	DRAWN	APPR	DATE

SURVEY SOLUTIONS

LAND SURVEYING
BUILDING SURVEYING
UNDERGROUND SURVEYING
SITE ENGINEERING
MONITORING

0845 040 5969
survey-solutions.co.uk

IPSWICH BEDFORD COVENTRY GLASGOW LONDON MANCHESTER NORWICH NOTTINGHAM YEOVIL

PROJECT TITLE
3 PLYMOUTH GROVE, MANCHESTER M13 9PZ

DRAWING DETAIL
TOPOGRAPHICAL SURVEY
Sheet 1 of 1

CLIENT				SCALE
RECOM SOLUTIONS LTD				1:200
SURVEYOR	SURVEY DATE	CHECKED BY	APPROVED BY	DWG STATUS
JC TH	20/03/23	AG	AG	FINAL
DRAWING NUMBER			REVISION	ISSUE DATE
47361MCLS-01				23/03/23

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Original Sheet Size A1H

APPENDIX C –Drainage General Arrangements



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2. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT DRAWINGS.
3. SHOULD THERE BE ANY DISCREPANCY BETWEEN DETAILS INDICATED ON THIS DRAWING AND THOSE INDICATED ON OTHER DRAWINGS THE ENGINEER SHOULD BE INFORMED PRIOR TO CONSTRUCTION ON SITE.
4. UNTIL TECHNICAL APPROVAL HAS BEEN OBTAINED FROM THE RELEVANT AUTHORITIES IT SHOULD BE UNDERSTOOD THAT ALL DRAWINGS ISSUED ARE PRELIMINARY AND NOT FOR CONSTRUCTION. SHOULD THE CONTRACTOR START SITE WORK PRIOR TO APPROVAL BEING GIVEN, IT IS ENTIRELY AT HIS OWN RISK.
5. ALL DIMENSIONS SHOWN ARE IN MILLIMETERS UNLESS NOTED OTHERWISE.
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7. THIS DRAWING HAS BEEN DEVELOPED USING THE TOPOGRAPHICAL SURVEY CARRIED OUT BY SURVEY SOLUTIONS ON 23.03.23, DRAWING NO. 47361MCLS-01.

LEGEND

- SITE BOUNDARY
- EXISTING FW CARRIER DRAIN
- PROPOSED SURFACE WATER DRAIN & MANHOLE
- PROPOSED FOUL WATER DRAIN & MANHOLE
- PROPOSED HYDROBRAKE FLOW CONTROL CHAMBER
- PROPOSED COMBINED DRAIN & MANHOLE
- ROOT PROTECTION AREA

Rev	Date	By	Description
P1	12.05.23	JKF	PRELIMINARY ISSUE

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Client

WESTERN UK ESTATES (NE) LTD

Project Name

PLYMOUTH GROVE

Drawing Title

PROPOSED DRAINAGE

Drawing Status	Project No
PLANNING	172

Drawn	Approved	Scale	First Issue	Size
UM	EP	1:150	12.05.23	A1

JOB No.	COMPANY	ZONE	LEVEL	TYPE	ROLE	DRAWING No.	REVISION
172	XOS	XX	XX	DR	C	5571	P1

APPENDIX D – Infodrainage Calculations

Project:	Date:		
Plymouth Grove	11/05/2023		
	Designed by:	Checked by:	Approved By:
	UM	MW	EP
Report Details:	Consultant:		
Type: Inflows Storm Phase: Phase	XOsquare Limited		



Catchment Area

Type : Catchment Area

Area (km²)	0.00063

Dynamic Sizing

Runoff Method	Time of Concentration
Summer Volumetric Runoff	0.750
Winter Volumetric Runoff	0.840
Time of Concentration (mins)	5
Percentage Impervious (%)	100



Catchment Area (1)

Type : Catchment Area

Area (km²)	0.00039

Dynamic Sizing

Runoff Method	Time of Concentration
Summer Volumetric Runoff	0.750
Winter Volumetric Runoff	0.840
Time of Concentration (mins)	5
Percentage Impervious (%)	100

Project:	Date:		
Plymouth Grove	11/05/2023		
	Designed by:	Checked by:	Approved By:
	UM	MW	EP
Report Details:	Consultant:		
Type: Stormwater Controls Storm Phase: Phase	XOsquare Limited		



Cellular Storage

Type : Cellular Storage

Dimensions

Exceedence Level (m)	40.320
Depth (m)	1.200
Base Level (m)	38.620
Number of Crates Long	7
Number of Crates Wide	10
Number of Crates High	3
Porosity (%)	95
Crate Length (m)	1
Crate Width (m)	0.5
Crate Height (m)	0.4
Total Volume (m³)	40.400

Inlets

Inlet

Inlet Type	Point Inflow
Incoming Item(s)	S1.001
Bypass Destination	(None)
Capacity Type	No Restriction

Inlet (1)

Inlet Type	Point Inflow
Incoming Item(s)	S2.001
Bypass Destination	(None)
Capacity Type	No Restriction

Outlets

Outlet

Outgoing Connection	S1.002
Outlet Type	Free Discharge

Project:	Date:		
Plymouth Grove	11/05/2023		
	Designed by:	Checked by:	Approved By:
	UM	MW	EP
Report Details:	Consultant:		
Type: Network Design Criteria Storm Phase: Phase	XOsquare Limited		

Flow Options

Peak Flow Calculation	Rational Method
Min. Time of Entry (mins)	5
Max. Travel Time (mins)	30

FSR

Type: FSR

Return Period (years)	30.0
Region	England and Wales
M5-60 (mm)	18.0
Ratio R	0.362

Lock Slope Options	None
Design Level	Level Soffits
Min. Cover Depth (m)	0.500
Min. Slope (1:x)	1000.00
Max. Slope (1:x)	40.00
Min. Velocity (m/s)	1.0
Max. Velocity (m/s)	3.0
Use Flow Restriction	☑
Reduce Channel Depths	☑

Runoff Type	Dynamic
Output Interval (mins)	5
Time Step	Default
Urban Creep	Apply Global Value
Urban Creep Global Value (%)	0
Junction Flood Risk Margin (mm)	300
Perform First Flush Analysis	☐

Rainfall

FSR

Type: FSR

Region	England and Wales
M5-60 (mm)	18.0
Ratio R	0.362
Summer	☑
Winter	☑

Return Period

Return Period (years)	Increase Rainfall (%)
1.0	0
30.0	0
100.0	45

Storm Durations

Duration (mins)	Run Time (mins)
15	30
30	60
60	120
120	240
240	480
360	720
480	960
960	1920
1440	2880

Project: Plymouth Grove	Date: 11/05/2023		
	Designed by: UM	Checked by: MW	Approved By: EP
Report Details: Type: Junctions Summary Storm Phase: Phase	Consultant: XOsquare Limited		

FSR: 1 years: Increase Rainfall (%): +0: Critical Storm Per Item

Junction	Storm Event	Cover Level (m)	Invert Level (m)	Max. Level (m)	Max. Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Status
S1	FSR: 1 years: +0 %: 15 mins: Winter	40.502	39.777	39.844	0.067	7.7	0.019	0.000	7.4	3.561	OK
S2	FSR: 1 years: +0 %: 60 mins: Winter	40.612	38.700	38.780	0.080	3.9	0.023	0.000	3.9	6.031	OK
S3	FSR: 1 years: +0 %: 15 mins: Winter	40.499	39.774	39.827	0.053	4.8	0.015	0.000	4.7	2.209	OK
S4	FSR: 1 years: +0 %: 15 mins: Winter	40.650	39.651	39.704	0.054	4.7	0.015	0.000	4.3	2.202	OK
S5	FSR: 1 years: +0 %: 60 mins: Winter	40.280	38.594	38.777	0.183	3.0	0.208	0.000	3.0	7.412	OK
S6	FSR: 1 years: +0 %: 60 mins: Winter	40.181	38.536	38.583	0.047	3.0	0.000	0.000	3.0	7.402	OK

Project: Plymouth Grove	Date: 11/05/2023		
	Designed by: UM	Checked by: MW	Approved By: EP
Report Details: Type: Junctions Summary Storm Phase: Phase	Consultant: XOsquare Limited		

FSR: 30 years: Increase Rainfall (%): +0: Critical Storm Per Item

Junction	Storm Event	Cover Level (m)	Invert Level (m)	Max. Level (m)	Max. Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Status
S1	FSR: 30 years: +0 %: 15 mins: Winter	40.502	39.777	39.888	0.111	18.8	0.031	0.000	18.2	8.732	OK
S2	FSR: 30 years: +0 %: 60 mins: Winter	40.612	38.700	39.096	0.396	9.4	0.112	0.000	9.0	14.545	Surcharged
S3	FSR: 30 years: +0 %: 15 mins: Winter	40.499	39.774	39.860	0.085	11.7	0.024	0.000	11.4	5.424	OK
S4	FSR: 30 years: +0 %: 15 mins: Winter	40.650	39.651	39.738	0.088	11.4	0.025	0.000	10.7	5.413	OK
S5	FSR: 30 years: +0 %: 60 mins: Winter	40.280	38.594	39.095	0.501	4.3	0.566	0.000	3.9	15.948	Surcharged
S6	FSR: 30 years: +0 %: 30 mins: Summer	40.181	38.536	38.590	0.054	3.9	0.000	0.000	3.9	7.053	OK

Project: Plymouth Grove	Date: 11/05/2023		
	Designed by: UM	Checked by: MW	Approved By: EP
Report Details: Type: Junctions Summary Storm Phase: Phase	Consultant: XOsquare Limited		

FSR: 100 years: Increase Rainfall (%): +45: Critical Storm Per Item

Junction	Storm Event	Cover Level (m)	Invert Level (m)	Max. Level (m)	Max. Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Status
S1	FSR: 100 years: +45 %: 15 mins: Winter	40.502	39.777	39.947	0.170	35.0	0.048	0.000	33.9	16.371	OK
S2	FSR: 100 years: +45 %: 120 mins: Winter	40.612	38.700	39.662	0.962	11.8	0.272	0.000	11.3	34.154	Surcharged
S3	FSR: 100 years: +45 %: 15 mins: Winter	40.499	39.774	39.899	0.124	21.7	0.035	0.000	21.3	10.161	OK
S4	FSR: 100 years: +45 %: 15 mins: Winter	40.650	39.651	39.778	0.127	21.3	0.036	0.000	20.2	10.151	OK
S5	FSR: 100 years: +45 %: 120 mins: Winter	40.280	38.594	39.660	1.066	4.0	1.206	0.000	3.9	41.813	Surcharged
S6	FSR: 100 years: +45 %: 360 mins: Winter	40.181	38.536	38.590	0.054	4.0	0.000	0.000	4.0	71.756	OK

Project: Plymouth Grove	Date: 11/05/2023		
	Designed by: UM	Checked by: MW	Approved By: EP
Report Details: Type: Stormwater Controls Summary Storm Phase: Phase	Consultant: XOsquare Limited		

FSR: 1 years: Increase Rainfall (%): +0: Critical Storm Per Item

Stormwater Control	Storm Event	Max. US Level (m)	Max. DS Level (m)	Max. US Depth (m)	Max. DS Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Total Lost Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Half Drain Down Time (mins)	Percentage Available (%)	Status
Cellular Storage	FSR: 1 years: +0 %: 60 mins: Winter	38.779	38.779	0.159	0.159	6.3	5.303	0.000	0.000	3.0	7.460	35	87	OK

Project: Plymouth Grove	Date: 11/05/2023		
	Designed by: UM	Checked by: MW	Approved By: EP
Report Details: Type: Stormwater Controls Summary Storm Phase: Phase	Consultant: XOsquare Limited		

FSR: 30 years: Increase Rainfall (%): +0: Critical Storm Per Item

Stormwater Control	Storm Event	Max. US Level (m)	Max. DS Level (m)	Max. US Depth (m)	Max. DS Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Total Lost Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Half Drain Down Time (mins)	Percentage Available (%)	Status
Cellular Storage	FSR: 30 years: +0 %: 60 mins: Winter	39.096	39.096	0.476	0.476	14.9	15.808	0.000	0.000	4.3	16.596	34	61	OK

Project: Plymouth Grove	Date: 11/05/2023		
	Designed by: UM	Checked by: MW	Approved By: EP
Report Details: Type: Stormwater Controls Summary Storm Phase: Phase	Consultant: XOsquare Limited		

FSR: 100 years: Increase Rainfall (%): +45: Critical Storm Per Item

Stormwater Control	Storm Event	Max. US Level (m)	Max. DS Level (m)	Max. US Depth (m)	Max. DS Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Total Lost Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Half Drain Down Time (mins)	Percentage Available (%)	Status
Cellular Storage	FSR: 100 years: +45 %: 120 mins: Winter	39.662	39.662	1.042	1.042	18.6	34.632	0.000	0.000	4.0	42.697	80	14	OK

APPENDIX E – Utility Records

PAS 128: 2014 QUALITY LEVEL GUIDE

Q-LEVEL	DESCRIPTION	ACC.	Q-LEVEL	DESCRIPTION
QL-D	Service positions taken from records.	Undefined	QL-B2	Horizontal & vertical location using only one geophysical technique.
QL-C	Visual evidence of service existence but undetectable by geophysical technology.	Undefined	QL-B1	Horizontal & vertical location using multiple geophysical techniques.
QL-B4	Undetectable service present shown as an assumed route (AR)	+/- 500mm	QL-A	Horizontal & vertical position verification by open excavation, manholes and/or inspection chambers.
QL-B3	Detected location by one geophysical technique but with none or poor depth information.	+/- 250mm		

DETECTION METHOD

IN ACCORDANCE WITH PAS 128: 2014 SURVEY TYPE B

DRAINAGE SURVEY

All accessible Manholes and Inspection chambers have had their respective covers lifted with pipe sizes, inverts, chamber sizes/types and service data recorded from ground level. All connections from DPs, Gullies, Drains, VP's, RE's and lamp holes have been proven wherever possible using audible connections (AC) and/or sonde instrumentation where applicable. Where these methods have proved unsuccessful then assumed (AR) straight line connections will be shown.

CCTV DRAINAGE SURVEY

All accessible Manholes and Inspection chambers have had their respective covers lifted with pipe sizes, inverts, chamber sizes/type and service data recorded from ground level. Pipework has been traced, accessed and collected for post processing. Drainage layout, including manhole covers not located by topographical survey, may be taken from CCTV chainage and will be shown as indicative only.

Electricity

Elec cables will have been predominantly located using EML methodology with electronically derived depths shown. GPR techniques will be employed to achieve greater quality levels as required.

British Telecoms

BT cables will have been predominantly located using EML methodology with electronically derived depths shown. GPR techniques will be employed to achieve greater quality levels as required. Due to current laws and legislation protecting all BT apparatus, cabling can only be located remotely. We therefore compare all our telecom findings against record information to produce the final service layout. In some instances, where high amount of cable ducts are present, we may only be able to identify a linear centre peak signal rather than identifying all the individual duct positions. For further information regarding Telecoms apparatus, please contact Openreach directly.

Cable TV & Communications

CTV and/or Com cables will have been predominantly located using EML methodology with electronically derived depths shown. GPR techniques will be employed to achieve greater quality levels as required.

Fibre Optic

FO cables will have been predominantly located using GPR methodology. This is due to the materials used within fibre optic cabling. In some rare instances, tracer cabling or conductible non fibre optic cabling will be present within some or all ducting. When this is the case, both EML and GPR methodology will be combined to identify service network and achieve greater quality levels.

Lighting, Traffic Signal & Security Cables

LC, TS and/or Sec cables will have been predominantly located using EML methodology with electronically derived depths shown. GPR techniques will be employed to achieve greater quality levels as required.

Gas & Water Inc. Fuel Pipes and Hot Water Pipes

GM/GS and/or WM/WS pipe work will have been attempted and located using both EML & GPR methodology with electronically derived depths shown for the former and depths to crown levels shown for the latter.
When the Gas/Water pipe work is constructed using conductible materials, then we are able to to employ multiple geophysical techniques to identify service network and achieve greater quality levels. When a non conductible material is used, GPR methodology will be employed to locate and plot the final service layout.

Ground Penetrating Radar

GPR methodology is used to identify and locate all non metallic, non conductible piping and cabling. We also employ GPR to obtain a greater accuracy levels on EML located services. The GPR has a greater success rate on pipe or service diameter upward of Ø63mm,C63mm, as size increments increase, so does the chance of detection. The GPR can produces varying results and as such, wouldn't be used as an independent utility surveying instrument.

Unidentified Traces

All UITs will have been predominantly located using EML methodology with electronically derived depths shown. GPR techniques will be employed to achieve greater quality levels as required. Every effort has been made to identify the service but in this instance, is not achievable. We recommend excavation work to determine identity and depth where applicable.

Scarring (QL-C)

Scarring has been identified on site with a potential of an undetectable service present.

Assumed Routes & Taken from Records (QL-B4/D)

Assumed routes (AR) are shown if there is evidence that a service exists but we are unable to trace it whilst on site. The surveyor will attempt to locate various risers/ics/valves/meters (service evidence) etc. around site area to successfully determine an assumed route between these points. If there is little evidence on site but they believe a service is still present, then a common sense approach to an assumed route shall be employed.

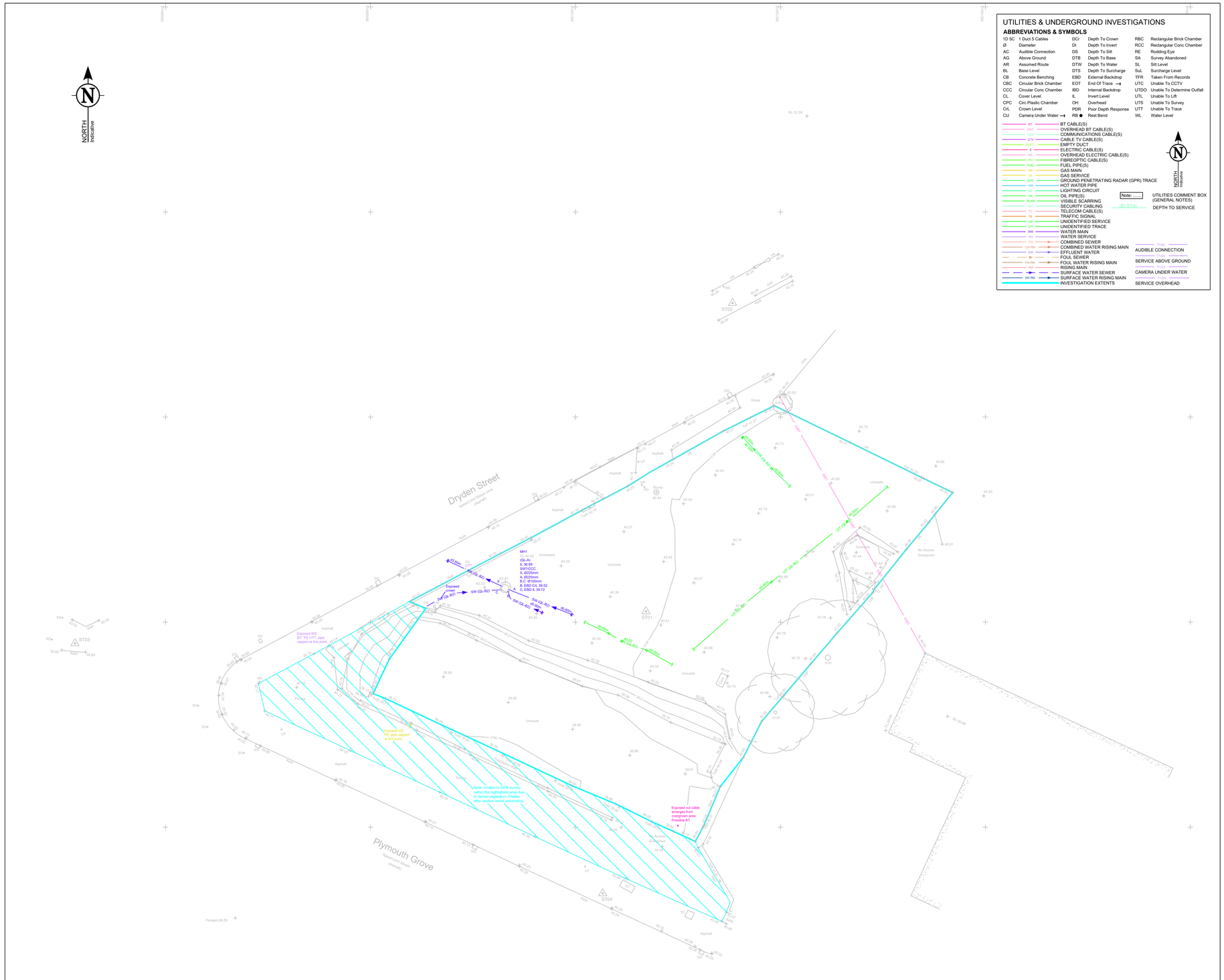
Taken from records (TFR) are service routes that are taken from STAT record plans or previous survey information and overlaid onto our drawings.

SURVEY RECOMMENDATIONS

We recommend full statutory record information be obtained to confirm site findings and to position undetectable which may be present.

Due to the geophysical nature of subsurface technology, we always recommend excavation works to be carried out within critical areas for verification and to eliminate the possibility of undetectable services present.

Area of vegetation to be cleared to complete GPR survey.



UTILITIES & UNDERGROUND INVESTIGATIONS

ABBREVIATIONS & SYMBOLS

1D 5C	1 Duct 5 Cables	DC↑	Depth To Crown	RBC	Rectangular Brick Chamber
Ø	Diameter	DI	Depth To Invert	RCC	Rectangular Conc Chamber
AC	Audible Connection	DS	Depth To Silt	RE	Rodding Eye
AG	Above Ground	DTB	Depth To Base	SA	Survey Abandoned
AR	Assumed Route	DTW	Depth To Water	SL	Silt Level
BL	Base Level	DTS	Depth To Surcharge	SuL	Surcharge Level
CB	Concrete Benching	EBD	External Backdrop	TFR	Taken From Records
CBC	Circular Brick Chamber	EOT	End Of Trace →|	UTC	Unable To CCTV
CCC	Circular Conc Chamber	IBD	Internal Backdrop	UTDO	Unable To Determine Outfall
CL	Cover Level	IL	Invert Level	UTL	Unable To Lift
CPC	Circ Plastic Chamber	OH	Overhead	UTS	Unable To Survey
C/L	Crown Level	PDR	Poor Depth Response	UTT	Unable To Trace
CU	Camera Under Water →|	RB ◆	Rest Bend	WL	Water Level

BT CABLE(S)
OVERHEAD BT CABLE(S)
COMMUNICATIONS CABLE(S)
CABLE TV CABLE(S)
EMPTY DUCT
ELECTRIC CABLE(S)
OVERHEAD ELECTRIC CABLE(S)
FIBREOPTIC CABLE(S)
FUEL PIPE(S)
GAS MAIN
GAS SERVICE
GROUND PENETRATING RADAR (GPR) TRACE
HOT WATER PIPE
LIGHTING CIRCUIT
OIL PIPE(S)
VISIBLE SCARRING
SECURITY CABLING
TELECOM CABLE(S)
TRAFFIC SIGNAL
UNIDENTIFIED SERVICE
UNIDENTIFIED TRACE
WATER MAIN
WATER SERVICE
COMBINED SEWER
COMBINED WATER RISING MAIN
EFFLUENT WATER
FOUL SEWER
FOUL WATER RISING MAIN
RISING MAIN
SURFACE WATER SEWER
SURFACE WATER RISING MAIN
INVESTIGATION EXTENTS

Note: .....
UTILITIES COMMENT BOX (GENERAL NOTES)
dtf 3.7 m
DEPTH TO SERVICE
AUDIBLE CONNECTION
SERVICE ABOVE GROUND
CAMERA UNDER WATER
SERVICE OVERHEAD

NORTH
Indicative

UTILITIES & UNDERGROUND INVESTIGATIONS

DRAWING NOTES

All below ground details shown have been identified from above ground without excavation. Survey Solution use electro-magnetic and/or ground penetrating radar (GPR) methods to investigate for underground utilities, services and features. Results using these methods are not infallible and we recommend trial excavations are carried out to confirm any identifications, positions and depths.

Any areas on the drawing where services or features have not been shown are not necessarily clear of services or features but are an indication that no items have been identified during our investigations. All reasonable care and normal good practice should still be employed during design and construction processes.

Certain types of services such as plastic or concrete pipes, some conduit and ducting where direct access can not be achieved for tracing may not be shown and alternative locating methods should be used.

Survey Solutions has used all reasonable care to research available service records but the completeness or use of the service records supplied to or by Survey Solutions cannot be guaranteed. Therefore Survey Solutions cannot be held responsible for any features annotated as 'taken from records' (TFR).

Depths obtained using electro-magnetic or GPR are effected by ground conditions and should be treated as indicative only. Electro-magnetic depths to utilities and services are generally taken to the centre of a feature, GPR depths to the top of a feature and drainage depth shown to inverts, unless otherwise indicated.

Drainage pipe sizes will be obtained without entering the chamber and therefore should be treated as approximate. Pipe dimensions which have not been obtained visually will be taken from records when available.

All services, drainage and utilities routes are assumed straight between access points, unless otherwise stated. The numbers of cables in runs will not be shown unless specifically requested. All services are below ground unless indicated.

Services, utilities and features may not have been surveyed if obstructed or not reasonably visible or accessible at the time of survey.

Survey Solutions accept no responsibility for the completeness or accuracy of either the topographical survey or base mapping on this project.

All critical dimensions and measurements should be checked and verified with any errors or discrepancies notified to Survey Solutions immediately. The accuracy of the digital data is the same as the plotting scale implies. All dimensions are in metres unless otherwise stated.

The contractor must check and verify all site and building dimensions, levels, utilities and drainage details and connections prior to commencing work.

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Do not scale from this drawing.

GENERAL SYNOPSIS

This survey has been carried out in accordance with PAS 128: 2014 & our version of the Royal Institution of Chartered Surveyors (RICS) specification for Measured Surveys of Land, Buildings and Utilities. Our survey extents have been agreed and confirmed with formal acceptance of 65835 from Recom Solutions Ltd. If you have any queries regarding the final services layout, please may we ask you to carefully read all the information within this title block in its entirety before continuing to do so.

TOPOGRAPHICAL/ DWG DRAWING INFORMATION

TOPOGRAPHICAL SURVEY DATE 20/03/2023

SURVEY TYPE	DESCRIPTION	EFFECT ON SURVEY RESULTS
TOPO	Survey Solutions	
OUTDATED		
OS		
NTS		

GENERAL SITE CONDITIONS

AVERAGE

ADDITIONAL INFORMATION	EFFECT ON SURVEY RESULTS

DESKTOP UTILITY RECORDS (PAS 128: 2014 SURVEY TYPE D)
PREREQUISITE FOR PAS 128: 2014 SURVEY TYPE B
COMMISSIONED: NO

UTILITY	AVAILABILITY	UTILITY COMPANY PROVIDER
SEWER	NO	N/A
WATER MAIN	NO	N/A
GAS MAIN	PUBLIC	CADENT GAS
TELECOM	PUBLIC	BRITISH TELECOMS
CABLE TV	NO	N/A
ELECTRICITY	NO	N/A
OIL PIPES	NO	N/A
OTHER	NO	N/A

REV	DESCRIPTION	DRAWN	CHECKED	APPR	SURVEY DATE

SURVEY SOLUTIONS

LAND SURVEYING
BUILDING SURVEYING
UNDERGROUND SURVEYING
SITE ENGINEERING
MONITORING

0845 040 5969
survey-solutions.co.uk

IPSWICH BEDFORD COVENTRY GLASGOW LONDON MANCHESTER NORWICH NOTTINGHAM YEOVIL

PROJECT TITLE
3 PLYMOUTH GROVE
MANCHESTER M13 9PZ

DRAWING DETAIL
UTILITIES AND CCTV DRAINAGE SURVEY.
SHEET 1 OF 1

CLIENT	SCALE
RECOM SOLUTIONS LTD	1:200

SURVEYOR	SURVEY DATE	CHECKED BY	APPROVED BY	DWG STATUS
NB/DR	17/04/2023	DWR	DWR	FINAL

DRAWING NUMBER	REVISION	ISSUE DATE
47361MCUG-01		27/04/2023

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Original Sheet Size A1H

United Utilities Maps for SafeDig

Date :	22/03/2023 10:12:51
Centre X:	385145
Centre Y:	396516
Scale :	1000
UserName:	GMPTMT

Extract from maps of United Utilities' Underground Assets

The position of the 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 service pipes may be shown by a blue broken line. United Utilities Water will not accept liability for any damage caused by the actual position being different from those shown.

Crown copyright and database rights 2023.Ordnance Survey 100022432 This plan is based on the Ordnance Survey Map with the sanction of the Controller of H.M. Stationary Office. Crown and United Utilities Water copyrights are reserved. Unauthorised reproduction will infringe these copyrights.

United Utilities
Water for the North West

APPENDIX F – United Utilities Correspondence

Umar Malik

From: seweradoptions@uuplc.co.uk
Sent: 11 May 2023 15:28
To: Umar Malik
Subject: RE: 03880605 Plymouth Grove 1/3/5 Plymouth Grove Ardwick Manchester M13 9LW

Good afternoon Umar,

Thank you for your enquiry.

United Utilities would not object to this pipe being re used once investigations are carried out and the pipe is proven to be in good condition and connected to the public network.

Please note you will require section 106 approval for this. I have linked the application form and some guidance below.

https://www.unitedutilities.com/builders-developers/wastewater-services/sewer-connections/sewer-connection/

https://www.unitedutilities.com/globalassets/documents/builders--developers-docs/9768n-sewer-connection-application-part-1-2022-web-acc-v4.pdf

https://www.unitedutilities.com/globalassets/documents/builders--developers-docs/guide-to-applying-for-a-sewer-connection-web-acc.pdf

If I can be of any further assistance please do get in touch.

Kind regards

United Utilities
Water for the North West

Ashleigh Bellerby
Assistant Developer Engineer
Developer Services & Metering
Customer Services
T: 07826891650
unitedutilities.com

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---------- Original Message ----------
From: seweradoptions@uuplc.co.uk [seweradoptions@uuplc.co.uk]
Sent: 04/05/2023 14:22
To: umar@xosquare.co.uk
Subject: RE: 03880605 Plymouth Grove 1/3/5 Plymouth Grove Ardwick Manchester M13 9LW

Good Afternoon,

Thank you for your email. This is currently with your engineer Ashleigh Bellerby who can be contacted on 07826891650. You can expect to receive a response on or before 11/05/2023.

Kind regards,

Tonicha Wilde
Customer Advisor Advanced
Developer Services & Metering
Customer Services
Direct Tel: N/A
Tel: 0345 026 8989 (option 4)
unitedutilities.com

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Did you know we now have a live chat facility available to you Mon to Friday 8 -5pm. You just click on the orange live chat box on our webpage and one of our advisors will be ready to chat to you and help you with your enquiry https://www.unitedutilities.com/builders-developers/ or you can email us at WastewaterDeveloperServices@uuplc.co.uk

---------- Original Message ----------
From: Umar Malik [umar@xosquare.co.uk]
Sent: 03/05/2023 13:19
To: seweradoptions@uuplc.co.uk
Subject: RE: 03880605 Plymouth Grove 1/3/5 Plymouth Grove Ardwick Manchester M13 9LW

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.

Hi Ashleigh,

Just wondering if you had the chance to review the below.

Kind regards,

Umar Malik EngTech MICE

Civil Engineer

M: 07360022668

XOsquare Limited Consulting Engineers

www.XOsquare.co.uk

From: Umar Malik
Sent: Thursday, April 27, 2023 11:57 AM
To: seweradoptions@uuplc.co.uk
Subject: RE: 03880605 Plymouth Grove 1/3/5 Plymouth Grove Ardwick Manchester M13 9LW

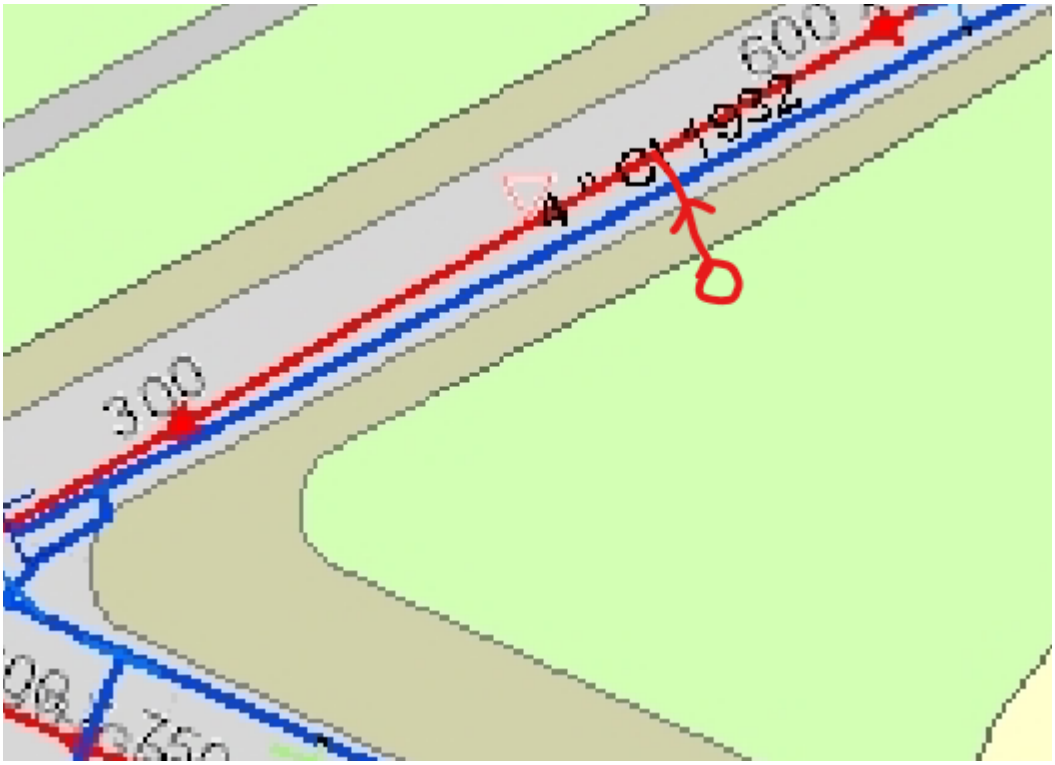
Hi Ahsleigh,

We've had a utility survey done on our site (attached).

There appears to be an existing (now redundant) 225mm connection to the east of the site which presumably connects to the 600x750 combined sewer in Dryden street.

If we can prove the connection through CCTV survey, would we be able to reuse this as a combined connection from our site?

I mark up location below



Kind regards,

Umar Malik EngTech MICE

Civil Engineer

M: 07360022668

XO SQUARE

XOsquare Limited Consulting Engineers

www.XOsquare.co.uk

From: seweradoptions@uuplc.co.uk <seweradoptions@uuplc.co.uk>
Sent: Monday, April 17, 2023 3:27 PM
To: Umar Malik <umar@xosquare.co.uk>
Subject: RE: 03880605 Plymouth Grove 1/3/5 Plymouth Grove Ardwick Manchester M13 9LW

Good afternoon Umar,

Pre Development Enquiry for: Plymouth Grove 1/3/5 Plymouth Grove Ardwick Manchester M13 9LW UU Reference Number : 03880605

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 660 x 760mm diameter public combined sewer within Plymouth Grove located 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 600 x 750mm diameter public combined sewer within Plymouth Grove located South 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 pubic 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: seweradoptions@uuplc.co.uk [seweradoptions@uuplc.co.uk]
Sent: 12/04/2023 11:29
To: umar@xosquare.co.uk
Subject: 03880605 Plymouth Grove 1/3/5 Plymouth Grove Ardwick Manchester M13 9LW

Dear Umar

PRE DEVELOPMENT APPLICATION AT: – UU Ref 03880605

Please accept this email as receipt of your application received on 12.4.2023 for the above development. This has now been logged on our system and the job reference is 03880605 we would ask that you quote this reference in all future correspondence.

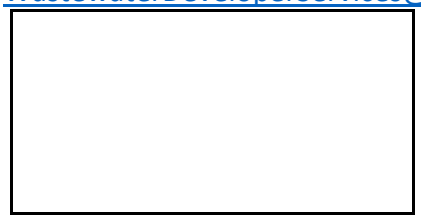
I have reviewed your application (and attachments) and can confirm this is suitable to be passed to Ashleigh Bellerby for technical assessment. You will receive their response within 8 working days.

Kind regards Jill

Jill Ellis
Customer Advisor Advanced
Developer Services & Metering
Customer Services
Direct Tel: 01925 233 064
Tel: 0345 072 6067
unitedutilities.com

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