



29th January 2025

Ref: Bury Market & Flexihall – UU Ref DC/24/2652v2 – Planning Ref: 69580

Planning Conditions 10 & 12.

In response to recent queries regarding the discharge of planning conditions 10 & 15 I hereby attach a pack of information to aid in the discharge of these conditions for the Bury Market & Flexihall project.

Included in the pack is the Outline Drainage Plan showing the proximity of any United Utilities assets in relation to the proposed build. The plan shows the location of a United Utilities sewer that runs below the market canopy. Also included is the pre-construction CCTV drainage survey verifying the location of said sewer. It is our aim to conduct a post construction CCTV survey of the sewer to confirm its condition.

Also included in the pack is the United Utilities asset map, clean water diversion proposal and a services coordination plan showing the newly diverted route in relation to the build.

I trust this information is adequate to recommend discharge of conditions 10 & 15.

Regards,

J. Cottam (Design Manager)

On behalf of Vinci Building.

- ALL SURFACE / FOUl WATER CONNECTIONS ARE TO HAVE RODDABLE ACCESS FROM ABOVE GROUND
- ALL POP-UP AND RWP SETTING OUT IS TO BE PROVIDED BY THE ARCHITECT
- LANDSCAPE ARCHITECT TO CONFIRM IF RECESSED MANHOLE COVERS ARE REQUIRED
- MANHOLES WITH INCOMING SIPHONIC RAINWATER PIPES ARE TO HAVE A VENTED MANHOLE COVER IN ACCORDANCE WITH BS EN 124
- SIPHONIC RAINWATER PIPE FLOW RATES IS BASED ON INFORMATION PROVIDED BY FULLFLOW.
- INTERNAL FOUl MANHOLES WILL REQUIRE DOUBLE SEALED & LOCKABLE MANHOLE COVERS

LIVE TRAFFIC ADJACENT TO SITE.
ALL SERVICES MUST BE VERIFIED BY THE CONTRACTOR THROUGH LIAISON WITH THE VARIOUS UNDERTAKERS AND BY USING DETECTION EQUIPMENT PRIOR TO ANY EXCAVATIONS TAKING PLACE. PERMIT TO WORK REQUIRED.
SILICA DUST TO BE COMPRESSED WHEN USING CUTTING EQUIPMENT
DEEP EXCAVATION REQUIRED FOR DRAINAGE WORKS. CONTRACTOR TO UTILISE BANKSMEN AND EMPLOY APPROPRIATE CONSTRUCTION TECHNIQUES TO PROTECT ALL WORKERS WITHIN DEEP EXCAVATIONS.
INSTALLATION OF ATTENUATION TANK IN CLOSE PROXIMITY TO EXISTING BUILDING FOUNDATIONS.



- SETTING OUT SHALL BE UNDERTAKEN USING ONLY THE INFORMATION GIVEN. DISTANCES SHOULD NOT BE SCALED FROM THIS DRAWING.
- ALL SEWERS SHALL BE DESIGNED IN ACCORDANCE WITH DESIGN CONSTRUCTION GUIDANCE AND UNITED UTILITIES DETAILS & GUIDELINES
- THE MINIMUM GRAVITY PIPE DIAMETER UNDER VERIFIABLE HIGHWAYS SHALL BE 150mm.
- IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY ALL INFORMATION GIVEN WITH REGARDS TO EXISTING SERVICES AND DRAINAGE CONNECTIONS ETC. PRIOR TO COMMENCING THE WORKS. THE RATES SHALL INCLUDE FOR HAD IRON AROUND SERVICES WHERE NECESSARY. THE CONTRACTOR SHALL ADHERE TO THE COM REGULATIONS AT ALL TIMES.
- THE OUSTIDES OF ALL SEWERS SHALL BE A MINIMUM OF 1.0m FROM KERB LINES AND THE OUTSIDE OF MANHOLES SHALL BE A MINIMUM OF 0.5m FROM KERB LINES.
- EXISTING FLOWS IN WATERCOURSES, SEWERS AND LAND DRAINS SHALL BE MAINTAINED AT ALL TIMES.
- ONLY TRAINED PERSONNEL SHALL BE PERMITTED TO ENTER CONFINED SPACES.
- ALL MATERIALS TO BEAR THE RELEVANT BS 3 KITEMARK AND COMPLY FULLY WITH THE SPECIFICATIONS. ALL CONCRETE & CONCRETE PRODUCTS MUST USE SULPHATE RESISTANT CEMENT. THE SITE INVESTIGATION REPORT PROVES THAT SULPHATE ATTACK FROM SOILS AND GROUNDWATER WILL NOT OCCUR TO WITHIN A CLASS.
- ALL OPENING NOUNCES ETC. AS REQUIRED UNDER HIGHWAYS ACTS ARE TO BE OBTAINED PRIOR TO COMMENCEMENT OF WORKS. ALL WORKS ARE TO BE INSPECTED BY A L, NHBC OR THE NETWORK OPERATOR AS APPLICABLE.
- WHERE "ULTRA RIB" UPVC PIPES (OR SIMILAR APPROVED) ARE USED IN ADAPTABLE DRAINAGE THEY SHALL BE HANDLED AND LAID IN ACCORDANCE WITH THE SPECIFICATION AND GUIDANCE ISSUED BY THE HIGH PERFORMANCE PIPE ASSOCIATION.
- A CLASS 8 BED AND SURROUND MUST BE USED FOR SUCH PIPES. TRENCH BACKFILL IN HIGHWAY LOCATIONS MUST BE HANDLED AND LAID IN ACCORDANCE WITH THE SPECIFICATION AND GUIDANCE ISSUED BY THE HIGH PERFORMANCE PIPE ASSOCIATION. A SUITABLE GRANULAR MATERIAL LAID IN ACCORDANCE WITH SEWERS FOR ADOPTION CL. 4.3.4
- SLAB LEVELS SHALL NOT BE VARIED WITHOUT REFERENCE TO THE ENGINEER FOR GUIDANCE.
- ALL GULLY CONNECTIONS TO BE 150mm VTRIFIED PLUG UNLESS NOTED OTHERWISE.
- ALL MANHOLE COVERS TO BE DESIGNED TO ACCEPT FINISH AS DETAILED BY LANDSCAPE ARCHITECT.
- SLOW REST BEDS MUST BE USED IN ALL LOCATIONS MADE UP FROM 2%+ 45 DEG BEDDING (450mm TO INVERT FROM FFL).
- MANHOLE POSITIONS AND ACCESS COVERS TO BE ACCURATELY SET-OUT BY LANDSCAPE ARCHITECT TO SUIT EXTERNAL FINISHES.
- ALL DRAINS CAST THROUGH FOUNDATIONS TO HAVE ROCKER PIPES ON BOTH SIDES OF FOUNDATION.
- ALL POP UP POSITIONS TO BE CONFIRMED SET OUT DIMENSIONS TO BE AGREED & PROVIDED BY OTHERS.
- ALL FW DISCHARGE RATES TO BE CONFIRMED BY M&E DESIGNER.
- ALL SURFACE WATER COLLECTION FEATURES TO BE CONFIRMED BY THE LANDSCAPE ARCHITECT.
- STORAGE HAS BEEN PROVIDED IN A CELLULAR STORAGE TANK AND USIZED MANHOLES AND PIPES.
- EXISTING SEWER DEPTHS HAVE BEEN APPROXIMATED FROM LIMITED INFORMATION. NEW CONNECTIONS TO BE CONFIRMED PRIOR TO CONSTRUCTION OF ANY DRAINAGE WORKS.
- LANDSCAPE ARCHITECT TO CONFIRM GULLY AND DRAINAGE CHANNEL LOCATIONS TO LANDSCAPED AREAS.
- FOLL NETWORK TO BE CONFIRMED FOLLOWING CONFIRMATION OF BRANCH CONNECTION POINTS FROM BUILDING M&E DESIGNER.
- CCTV SURVEY OF EXISTING SITE DRAINAGE REQUIRED PRIOR TO THE COMMENCEMENT OF ANY WORKS STARTING ON SITE.
- MINIMUM COVER TO DRAINAGE SLOTT LEAF & ACCESS CHAMBERS ;
LANDSCAPING TRAFFICKED AREAS HIGHWAYS
0.600m 0.900m
- CLASS 3' BEDDING AND SURROUND TO BE USED WHERE MINIMUM COVER IS ACHIEVED.
WHERE MINIMUM COVER IS NOT ACHIEVED CLASS 2' BEDDING AND SURROUND (CONCRETE) CLASS 5' IS TO BE USED.

	PROPOSED SURFACE WATER MANHOLE
	PROPOSED FOUL WATER MANHOLE
	PROPOSED COMBINED WATER MANHOLE
	PROPOSED SURFACE WATER PPC
	PROPOSED FOUL WATER PPC
	PROPOSED SURFACE WATER DRAINAGE
	PROPOSED SURFACE WATER DRAINAGE
	PROPOSED BELOW GROUND CELLULAR ATTENUATION TANK WITH VENT PIPE. VENT PIPE LOCATION TO BE CONFIRMED BY LANDSCAPE ARCHITECT
	ACO DRAINAGE CHANNEL WITH ACCESS UNTOUCHED CHANNEL
	GULLY
	THRESHOLD DRAIN WITH ACCESS UNIT
	FLOOR GULLY
	PROPOSED RAINWATER DOWNSPIPE
	PROPOSED SIPHONIC RAINWATER DOWNSPIPE BY FULLFLOW
	PROPOSED RAIN GARDEN
	AREAS TO DRAIN AS PER EXISTING
	EXISTING PRIVATE SURFACE WATER DRAINAGE
	EXISTING PRIVATE FOUL WATER DRAINAGE
	EXISTING PRIVATE COMBINED WATER DRAINAGE
	EXISTING PRIVATE DRAINAGE TO BE ABANDONED
	EXISTING UNITED UTILITIES COMBINED WATER SEWER
	EXISTING UNITED UTILITIES COMBINED WATER SEWER TO BE ABANDONED SUBJECT TO S116 AGREEMENT
	EXISTING TUNNEL
	EXISTING DRAIN

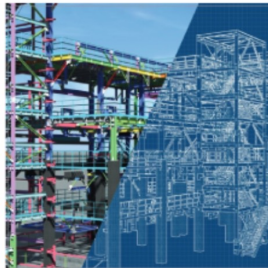
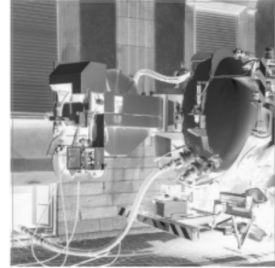
DATE	DESCRIPTION	BY	CHK	APP
04/12/2024	UPDATED FOR PLANNING	JLR	PT	PT
01/18/2024	CONSTRUCTION ISSUE	JLR	PT	PT
02/28/2024	SURFACE WATER FLOW RATE UPDATED	JLR	PT	PT
03/08/2024	EXISTING PAVING DRAWING TO BE ABANDONED AMENDED TO BE SHOWN AS THE LEGEND LAYOUT APPLIED TO LATEST CANOPY MARKING AND SITE LAYOUT	JLR	PT	PT
08/17/2024	UPDATED TO SLT NEW CANOPY ARRANGEMENT	JLR	PT	PT
07/18/2023	UPDATED TO SLT NEW POP-UP LOCATIONS IN CAFETERIA AREA	JLR	PT	PT
06/01/2023	UPDATED TO SLT SITE COMMENTS	JLR	PT	PT
05/28/2023	RIBA STAGE 4 (TECHNICAL DESIGN)	JLR	JRS	PT
04/24/2023	RIBA STAGE 4 (UPDATE)	JLR	JRS	PT
03/20/2023	RIBA STAGE 4 (UPDATE)	JLR	JRS	PT
02/16/2023	RIBA STAGE 4 (DEVELOPED DESIGN)	JLR	JRS	JRS
01/09/2023	RIBA STAGE 4 (DEVELOPED DESIGN)	JLR	JRS	JRS

CLIENT: BURY COUNCIL

ARCHITECT: JUST H ARCHITECTS

BELOW GROUND DRAINAGE OUTLINE DRAINAGE STRATEGY

STATUS	PROJECT No.	PROJECT	ORIGINATOR	YOLSYS	LEVEL	TYPE	ROLE	DRAWING No.	REV.
S3	221-144	BURMAR-AJP-V2-ZZ-DR - C - 0001							C02
DATE @ AD:	DESIGNED:	DRAWN:	CHECKED:	APPROVED:		DATE:			
1:2000	JUR	JUR	JRS	JRS		AUG 2022			



LAYER SURVEYS LTD
SEE THE COMPLETE PICTURE

DRAINAGE SURVEY



Job Number
LAYERSERV0001888

Surveyed by (Operator)
Joe COLLINS

Base Unit
DJVV56JNNH

Date
24/08/2023

Client Details:

Alan Johnston Partnership
1 Dale Street,
Liverpool,
L2 2ET

Client Contact Name: Danny Sinclair
Client Contact Tel: 07801 439133

Site Details:

Bury Market,
Murray Rd,
Bury,
BL9 0BJ

Site Contact Name: Rob Symons
Site Contact Tel: 07816511187

Contractor Details:

Layer Surveys Ltd
Francis House
Meadowcroft Business Park
Pope Lane
Preston
Lancashire
PR4 4BA

Office Contact Number: 01772 611634

Purpose of Survey:



Job Number LAYERSERV0001888	Surveyed by (Operator) Joe COLLINS	Base Unit DJVV56JNNH	Date 24/08/2023
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Report Contents

Page 1	Cover Page
Page 2	Job Overview
Page 3	Contents Page
Page 4	Survey Run Sheet(Survey 1 - 6505 to 6512)
Page 6	Survey Run Sheet(Survey 2 - 6512 to 5592)
Page 8	Final Page



Surveyed by (Operator) Joe COLLINS	Job Number LAYERSERV0001888	Pipe Length Reference(PLR) 6505 X	Date 24/08/2023	Pre Cleaned HPWJ to clean prior to survey
Weather 1 - Dry	Customer Present	Service Grade/Structural Grade 0/0	Base Unit DJVV56JNNH	Section Number 1

Road Bury Market, Place Murray Rd, Location Bury,	Division District Location Details
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Purpose Duty Combined Catchment	Shape/Size 900610mm Material Brick Category	Start Node 6505 End Node 6512 Total length 42 metres
--	---	---

Scale 1:2.20 Direction Downstream
--

Start Node Ref:6505 I/L :mm Depth: 11.9mm					
Position	Code	Description	Photo	Type/Grade	
0.00	MH	Start node type, manhole, reference 6505	8431542	Comment / 0	
0.00	WL	Water level 5% height/diameter	8431543	Comment / 0	
40.85	CN	Connection other than junction at 2 o'clock, diameter 225mm	8431544	Comment / 0	
42.00	OCF	Finish node type, other special chamber, reference 6512	8431545	Comment / 0	
End Node Ref:6512 I/L :mm					



Job Number LAYERSERV0001888	Surveyed by (Operator) Joe COLLINS	Base Unit DJVV56JNNH	Date 24/08/2023
			
Start node type, manhole, reference 6505			
			
Water level 5% height/diameter			
			
From: 6505 / To: 6512 Size: 900610mm Connection other than junction at 2 o'clock, diameter 225mm			
			
From: 6505 / To: 6512 Size: 900610mm Finish node type, other special chamber, reference 6512			



Surveyed by (Operator) Joe COLLINS	Job Number LAYERSERV0001888	Pipe Length Reference(PLR) 6512 X	Date 24/08/2023	Pre Cleaned HPWJ to clean prior to survey
Weather 1 - Dry	Customer Present	Service Grade/Structural Grade 0/0	Base Unit DJVV56JNNH	Section Number 2

Road Bury Market, Place Murray Rd, Location Bury,	Division District Location Details
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Purpose Duty Combined Catchment	Shape/Size 900610mm Material Brick Category	Start Node 6512 End Node 5592 Total length 68.38 metres
--	---	--

Scale 1:3.59 Direction Downstream
--

Start Node Ref:6512 I/L :mm					
Position	Code	Description	Photo	Type/Grade	
	0.00 SN	Start node type: Connection	8431546	Comment / 0	
	0.00 WL	Water level 5% height/diameter	8431548	Comment / 0	
					
	68.38 MHF	Finish node type, manhole, reference 5592	8431549	Comment / 0	
End Node Ref:5592 I/L :mm					



Job Number
LAYERSERV0001888

Surveyed by (Operator)
Joe COLLINS

Base Unit
DJVV56JNNH

Date
24/08/2023



Start node type: Connection



Water level 5% height/diameter



Finish node type, manhole, reference 5592



LAYER SURVEYS LTD

SEE THE COMPLETE PICTURE

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Francis House, Meadowcroft Business Park,
Pope Lane, Preston, PR4 4BA

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Aldridge WS9 8PT

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LinkedIn



Constructionline
Silver Member

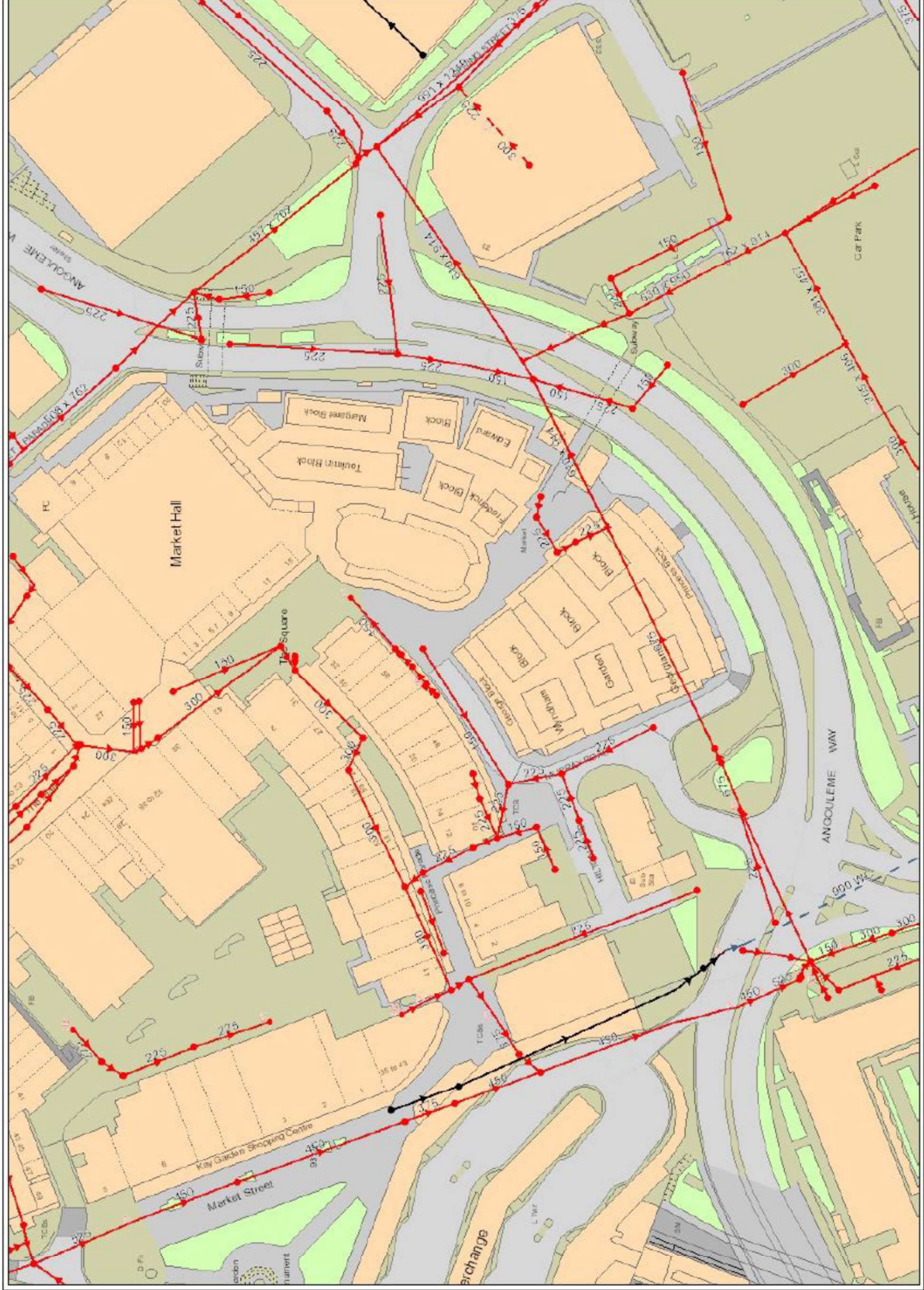
United Utilities Maps for SafeDig

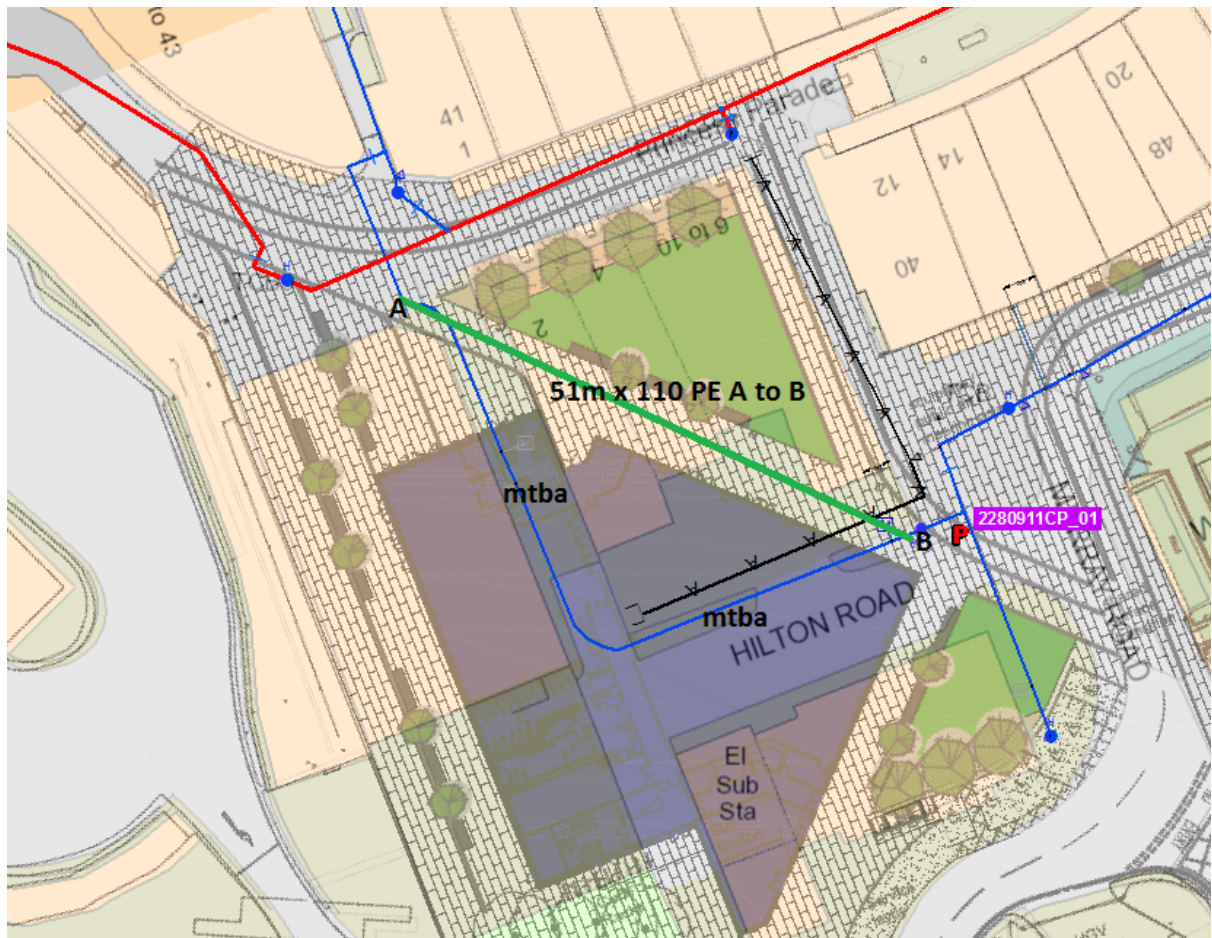
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 Centre Y: 410575
 Scale : 1000
 UserName: A430NDU

Extract from maps of United Utilities* Underground Assets

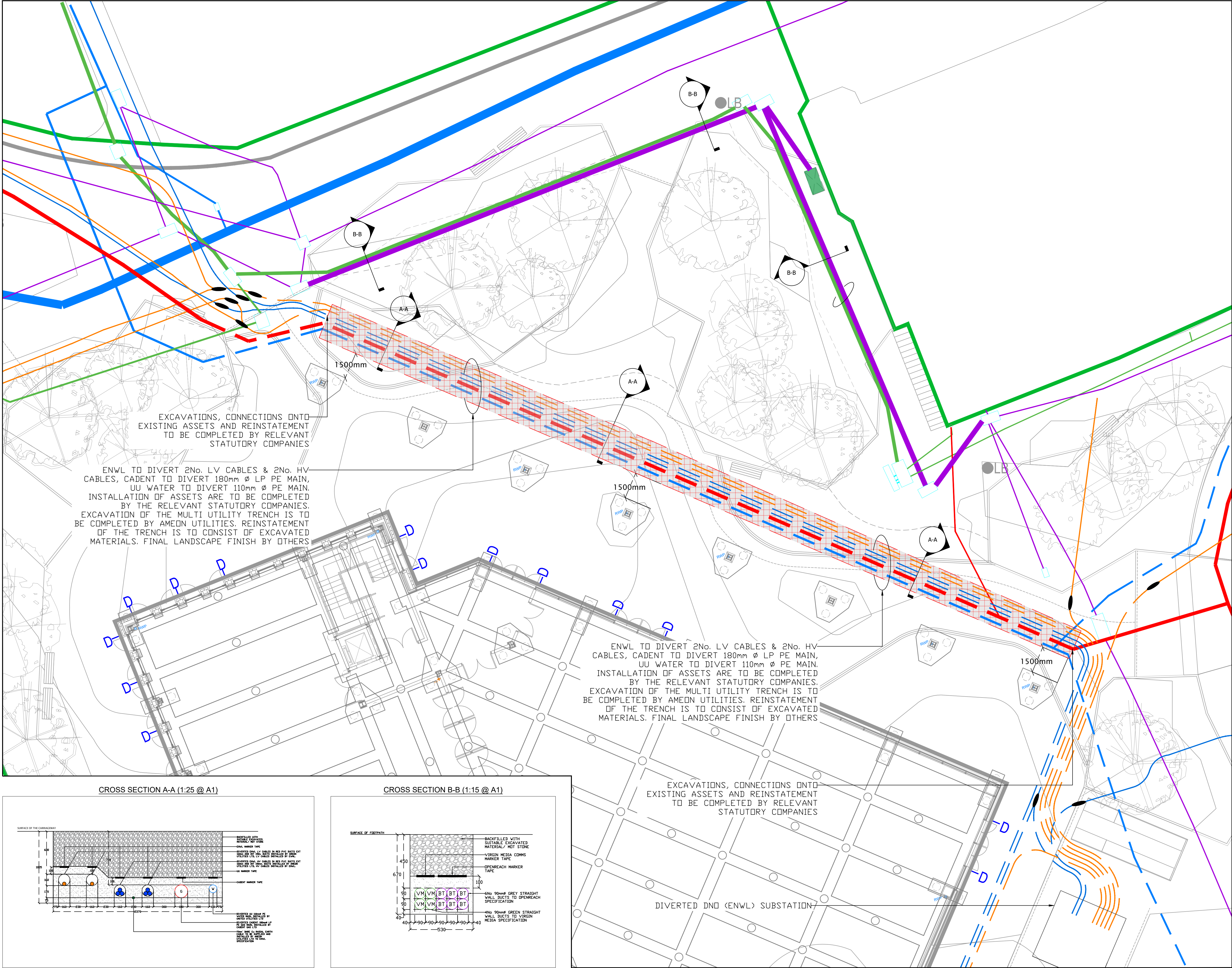
The position of the underground apparatus shown on this plan is approximate only and is given in accordance with the best information available. The actual positions may be different from those shown on the plan and private service pipes may be shown by a blue broken line. United Utilities Water will not accept liability for any damage caused by the actual position being different from those shown.

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NOTES:
All dimensions must be checked on site and not scaled from this drawing.



EXCAVATIONS, CONNECTIONS ONTO EXISTING ASSETS AND REINSTATEMENT TO BE COMPLETED BY RELEVANT STATUTORY COMPANIES

ENWL TO DIVERT 2No. LV CABLES & 2No. HV CABLES, CADENT TO DIVERT 180mm Ø LP PE MAIN, UU WATER TO DIVERT 110mm Ø PE MAIN. INSTALLATION OF ASSETS ARE TO BE COMPLETED BY THE RELEVANT STATUTORY COMPANIES. EXCAVATION OF THE MULTI UTILITY TRENCH IS TO BE COMPLETED BY AMEON UTILITIES. REINSTATEMENT OF THE TRENCH IS TO CONSIST OF EXCAVATED MATERIALS. FINAL LANDSCAPE FINISH BY OTHERS

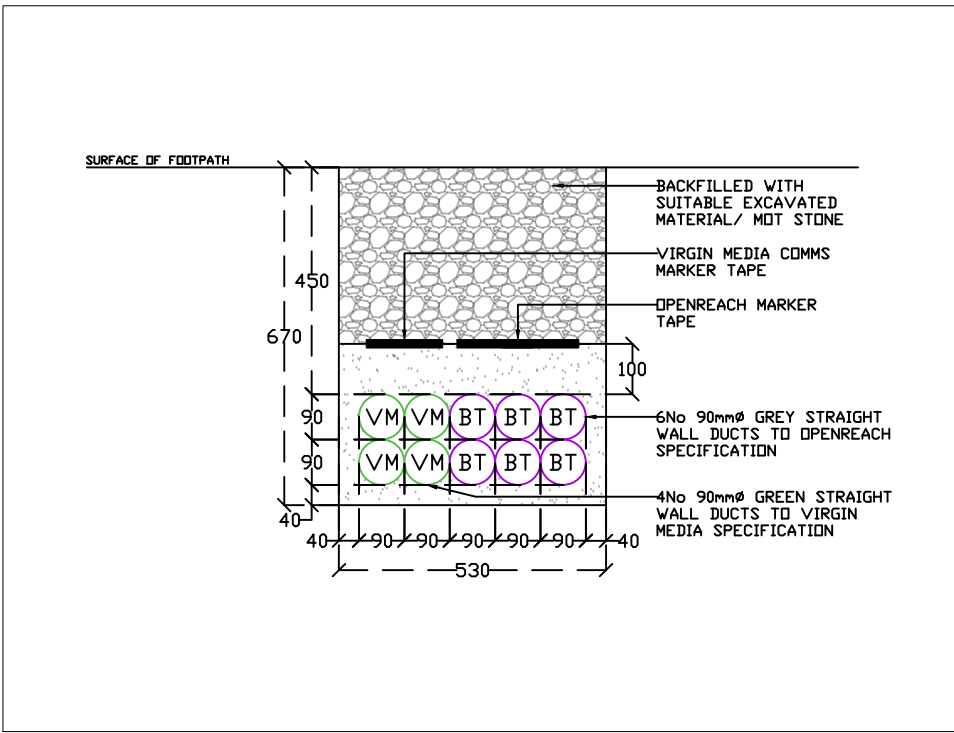
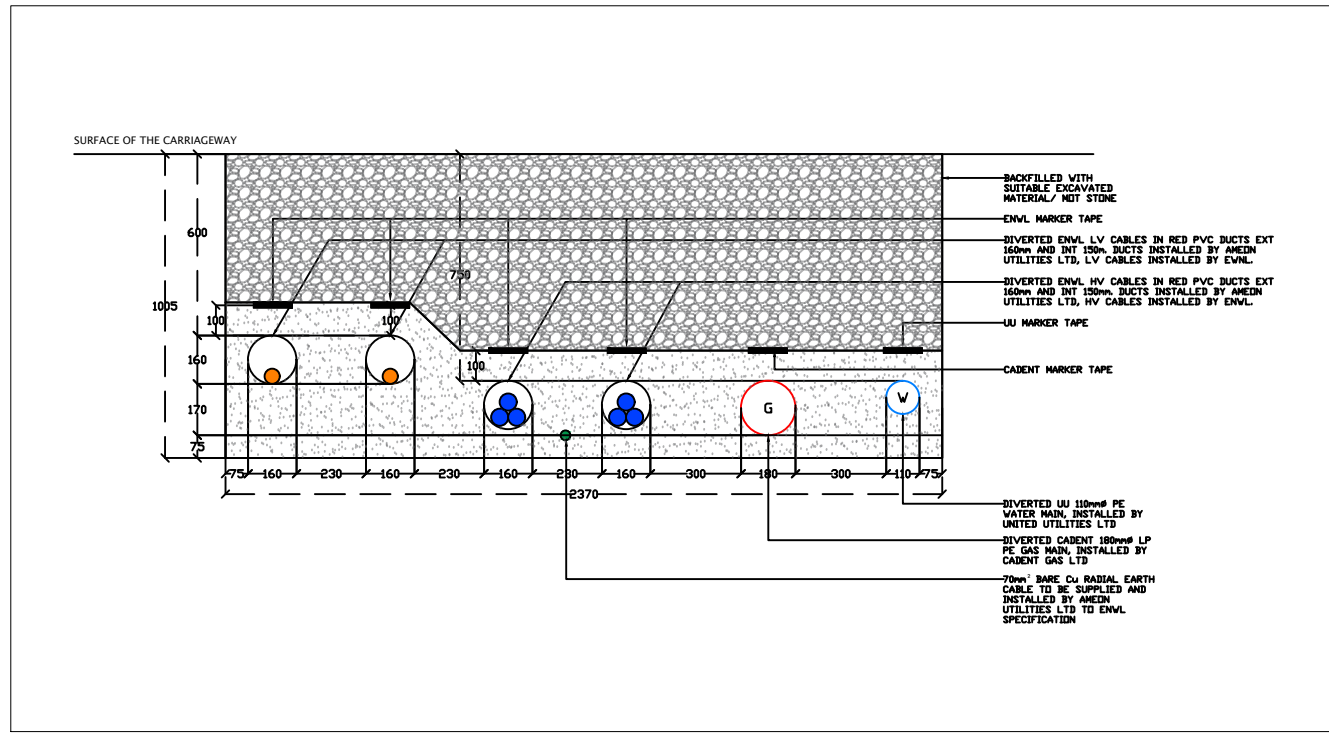
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EXCAVATIONS, CONNECTIONS ONTO EXISTING ASSETS AND REINSTATEMENT TO BE COMPLETED BY RELEVANT STATUTORY COMPANIES

DIVERTED DNO (ENWL) SUBSTATION

CROSS SECTION A-A (1:25 @ A1)

CROSS SECTION B-B (1:15 @ A1)



PRELIMINARY

KEY	
LV EXISTING	---
LV PROPOSED	---
HV 6.6kV EXISTING	---
HV 6.6kV PROPOSED	---
HV 11kV EXISTING	---
HV 11kV PROPOSED	---
HV 33kV EXISTING	---
HV 33kV PROPOSED	---
EARTH PROPOSED	---
INSULATED EARTH PROPOSED	---
SHORT CAP END/EARTH ROD	---
BOTTLE END	---
OPENREACH EXISTING	---
OPENREACH PROPOSED	---
VIRGIN MEDIA EXISTING	---
VIRGIN MEDIA PROPOSED	---
CABLE TRAY/LADDER RACKING	---
DUCTED CABLE	---
POINT OF CONNECTION	---
WATER EXISTING	---
WATER PROPOSED	---
WATER DUCTED	---
POINT OF CONNECTION	---
WASH OUT	---
FIRE HYDRANT	---
LP GAS EXISTING	---
MP GAS EXISTING	---
IP GAS EXISTING	---
HP GAS EXISTING	---
LP GAS PROPOSED	---
MP GAS PROPOSED	---
IP GAS PROPOSED	---
HP GAS PROPOSED	---
DECOMMISSIONED PIPE	---
TO BE DECOMMISSIONED	---
DIAMETER CHANGE	---
CAP END	---
VALVE	---
GAS METER BOX/KIOSK	---
GAS RISER	---
GAS METER	---
CATHODIC PROTECTION	---
PRESSURE REDUCTION	---
MP SERVICE EXCESS FLOW VALVE	---
PRESSURE POINT	---
RIDER PURGE POINT	---
MULTI UTILITY TRENCH	---

Ref.	Date	R/By	Revisions	D/By
P1	15.02.23	R.H.	Issued for comments.	K.B.
P2	20.03.23	R.H.	Drainage Overlay Incorporated	K.B.
P3	30.03.23	R.H.	Drainage Overlay Excluded Moved to AU/1943/UC001	K.B.
P4	10.09.24	K.B.	Utilities Trench moved away from the Pile Caps	M.P.

Client

VINCI CONSTRUCTION UK LIMITED

ameon
Utilities Engineering

Ameon Utilities
Olympic Court, Boardmans Way,
Whitehills Business Park, Blackpool, FY4 5GU
Tel: 01253 760160
E-mail: info@ameon.co.uk

Job Title

BURY MARKET & FLEXI HALL

Drawing Title

MULTI UTILITY STATS DIVERSIONS

Scale	Designed by
1:100 @ A1	KB
Date	Drawn by
FEBRUARY 2023	KB

Drawing Number	Revision
AU/1943/MU001	P4

The Alan Johnston Partnership		Page 1
1 Dale Street Liverpool L2 2ET	221-144 BURY MARKET SW NETWORK	
Date 28/11/2024 17:28 File SW NETWORK.MDX	Designed by JJR Checked by JRS	
Micro Drainage	Network 2019.1	

STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for Storm

Pipe Sizes STANDARD Manhole Sizes STANDARD

FSR Rainfall Model - England and Wales

Return Period (years)	2	PIMP (%)	100
M5-60 (mm)	19.000	Add Flow / Climate Change (%)	0
Ratio R	0.283	Minimum Backdrop Height (m)	0.200
Maximum Rainfall (mm/hr)	50	Maximum Backdrop Height (m)	1.500
Maximum Time of Concentration (mins)	30	Min Design Depth for Optimisation (m)	1.200
Foul Sewage (l/s/ha)	0.000	Min Vel for Auto Design only (m/s)	1.00
Volumetric Runoff Coeff.	0.750	Min Slope for Optimisation (1:X)	500

Designed with Level Soffits

Time Area Diagram for Storm

Time (mins)	Area (ha)	Time (mins)	Area (ha)
0-4	0.500	4-8	0.373

Total Area Contributing (ha) = 0.873

Total Pipe Volume (m³) = 26.197

Network Design Table for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
1.000	29.398	0.200	147.0	0.135	5.00	0.0	0.600	o	375	Pipe/Conduit	
1.001	27.144	0.190	142.9	0.019	0.00	0.0	0.600	o	375	Pipe/Conduit	
1.002	22.657	0.155	146.2	0.026	0.00	0.0	0.600	o	375	Pipe/Conduit	
2.000	3.140	0.060	52.3	0.367	5.00	0.0	0.600	o	375	Pipe/Conduit	
1.003	19.630	0.060	327.2	0.017	0.00	0.0	0.600	o	375	Pipe/Conduit	
3.000	6.570	0.080	82.1	0.000	5.00	0.0	0.600	o	225	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
1.000	50.00	5.33	92.085	0.135	0.0	0.0	0.0	1.49	164.8	18.3
1.001	50.00	5.63	91.885	0.154	0.0	0.0	0.0	1.51	167.2	20.9
1.002	50.00	5.88	91.695	0.180	0.0	0.0	0.0	1.50	165.3	24.4
2.000	50.00	5.02	91.600	0.367	0.0	0.0	0.0	2.51	277.2	49.7
1.003	50.00	6.21	91.540	0.564	0.0	0.0	0.0	1.00	110.0	76.4
3.000	50.00	5.08	92.605	0.000	0.0	0.0	0.0	1.44	57.4	0.0

The Alan Johnston Partnership		Page 2
1 Dale Street Liverpool L2 2ET	221-144 BURY MARKET SW NETWORK	
Date 28/11/2024 17:28	Designed by JJR	
File SW NETWORK.MDX	Checked by JRS	
Micro Drainage	Network 2019.1	

Network Design Table for Storm

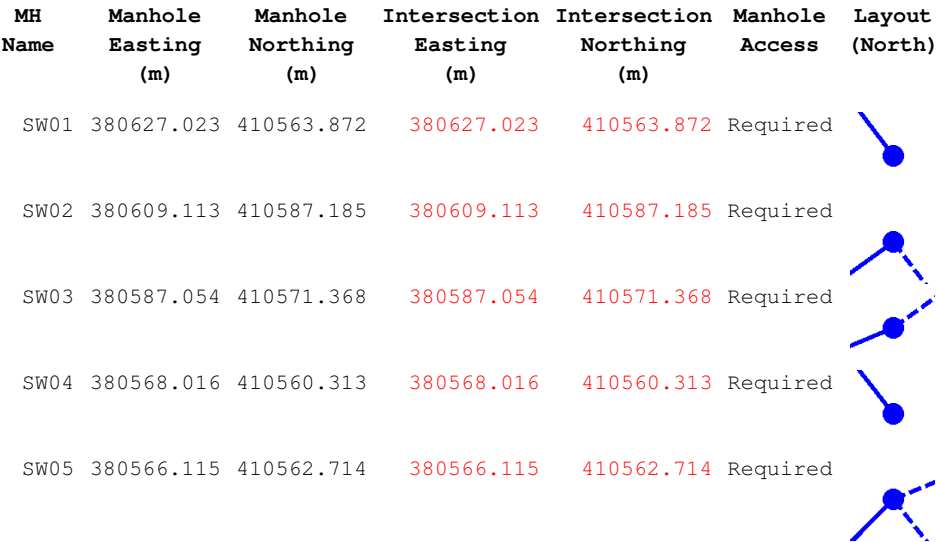
PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
3.001	40.220	0.775	51.9	0.179	0.00	0.0	0.600	o	225	Pipe/Conduit	
3.002	6.117	0.120	51.0	0.002	0.00	0.0	0.600	o	375	Pipe/Conduit	
1.004	29.867	0.175	170.7	0.017	0.00	0.0	0.600	o	450	Pipe/Conduit	
4.000	14.600	0.200	73.0	0.009	5.00	0.0	0.600	o	150	Pipe/Conduit	
1.005	4.613	0.035	131.8	0.000	0.00	0.0	0.600	o	450	Pipe/Conduit	
1.006	9.018	0.010	901.8	0.003	0.00	0.0	0.600	o	450	Pipe/Conduit	
1.007	9.018	0.010	901.8	0.000	0.00	0.0	0.600	o	450	Pipe/Conduit	
5.000	30.962	0.205	151.0	0.061	5.00	0.0	0.600	o	225	Pipe/Conduit	
5.001	4.382	0.035	125.2	0.021	0.00	0.0	0.600	o	225	Pipe/Conduit	
1.008	10.575	0.075	141.0	0.000	0.00	0.0	0.600	o	450	Pipe/Conduit	
6.000	2.824	0.040	70.6	0.017	5.00	0.0	0.600	o	150	Pipe/Conduit	
1.009	4.093	0.030	136.4	0.000	0.00	0.0	0.600	o	450	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
3.001	50.00	5.44	92.525	0.179	0.0	0.0	0.0	1.82	72.4	24.2
3.002	50.00	5.48	91.600	0.181	0.0	0.0	0.0	2.54	280.9	24.5
1.004	50.00	6.53	91.405	0.762	0.0	0.0	0.0	1.55	247.0	103.2
4.000	50.00	5.21	92.500	0.009	0.0	0.0	0.0	1.18	20.8	1.2
1.005	50.00	6.57	91.230	0.771	0.0	0.0	0.0	1.77	281.4	104.4
1.006	49.44	6.80	91.195	0.774	0.0	0.0	0.0	0.67	106.4	104.4
1.007	48.76	7.02	91.185	0.774	0.0	0.0	0.0	0.67	106.4	104.4
5.000	50.00	5.49	92.500	0.061	0.0	0.0	0.0	1.06	42.2	8.3
5.001	50.00	5.55	92.295	0.082	0.0	0.0	0.0	1.17	46.4	11.1
1.008	48.46	7.12	91.175	0.856	0.0	0.0	0.0	1.71	272.0	112.3
6.000	50.00	5.04	92.300	0.017	0.0	0.0	0.0	1.20	21.2	2.3
1.009	48.34	7.16	91.100	0.873	0.0	0.0	0.0	1.74	276.5	114.3

Manhole Schedules for Storm

MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam., L*W (mm)	PN	Pipe Out Invert Level (m)	Diameter (mm)	PN	Pipes In Invert Level (m)	Diameter (mm)	Backdrop (mm)
SW01	93.800	1.715	Open Manhole	1500	1.000	92.085	375				
SW02	93.900	2.015	Open Manhole	1500	1.001	91.885	375	1.000	91.885	375	
SW03	93.800	2.105	Open Manhole	1500	1.002	91.695	375	1.001	91.695	375	
SW04	93.750	2.150	Open Manhole	1500	2.000	91.600	375				
SW05	93.800	2.260	Open Manhole	1500	1.003	91.540	375	1.002	91.540	375	
								2.000	91.540	375	
SW06	93.820	1.215	Open Manhole	1500	3.000	92.605	225				
SW07	93.900	1.375	Open Manhole	1350	3.001	92.525	225	3.000	92.525	225	
SW08	93.850	2.250	Open Manhole	1350	3.002	91.600	375	3.001	91.750	225	
SW09	93.800	2.395	Open Manhole	1500	1.004	91.405	450	1.003	91.480	375	
								3.002	91.480	375	
SW10	93.700	1.200	Open Manhole	1350	4.000	92.500	150				
SW11	93.800	2.570	Sealed Manhole	1350	1.005	91.230	450	1.004	91.230	450	770
								4.000	92.300	150	
SW12	93.800	2.605	Open Manhole	1350	1.006	91.195	450	1.005	91.195	450	
Tank 1	93.800	2.615	Open Manhole	1200	1.007	91.185	450	1.006	91.185	450	
SW13	93.900	1.400	Open Manhole	1350	5.000	92.500	225				
SW14	94.050	1.755	Open Manhole	1350	5.001	92.295	225	5.000	92.295	225	
SW15	93.680	2.505	Open Manhole	1350	1.008	91.175	450	1.007	91.175	450	
								5.001	92.260	225	860
SW16	93.800	1.500	Open Manhole	1350	6.000	92.300	150				
SW17 HB	93.800	2.700	Open Manhole	2100	1.009	91.100	450	1.008	91.100	450	
								6.000	92.260	150	860
CW01	93.700	2.630	Open Manhole	1800		OUTFALL		1.009	91.070	450	



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Manhole Schedules for Storm

MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
SW06	380535.762	410511.071	380535.762	410511.071	Required	
SW07	380542.110	410509.379	380542.110	410509.379	Required	
SW08	380557.929	410546.358	380557.929	410546.358	Required	
SW09	380552.305	410548.764	380552.305	410548.764	Required	
SW10	380533.503	410573.214	380533.503	410573.214	Required	
SW11	380525.164	410561.230	380525.164	410561.230	Required	
SW12	380521.046	410563.310	380521.046	410563.310	Required	
Tank 1	380512.676	410559.952	380512.676	410559.952	Required	
SW13	380515.111	410523.581	380515.111	410523.581	Required	
SW14	380503.505	410552.286	380503.505	410552.286	Required	
SW15	380504.306	410556.594	380504.306	410556.594	Required	
SW16	380498.804	410565.501	380498.804	410565.501	Required	
SW17 HB	380496.557	410563.790	380496.557	410563.790	Required	
CW01	380492.982	410565.784			No Entry	

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PIPELINE SCHEDULES for Storm

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
1.000	o	375	SW01	93.800	92.085	1.340	Open Manhole	1500
1.001	o	375	SW02	93.900	91.885	1.640	Open Manhole	1500
1.002	o	375	SW03	93.800	91.695	1.730	Open Manhole	1500
2.000	o	375	SW04	93.750	91.600	1.775	Open Manhole	1500
1.003	o	375	SW05	93.800	91.540	1.885	Open Manhole	1500
3.000	o	225	SW06	93.820	92.605	0.990	Open Manhole	1500
3.001	o	225	SW07	93.900	92.525	1.150	Open Manhole	1350
3.002	o	375	SW08	93.850	91.600	1.875	Open Manhole	1350
1.004	o	450	SW09	93.800	91.405	1.945	Open Manhole	1500
4.000	o	150	SW10	93.700	92.500	1.050	Open Manhole	1350
1.005	o	450	SW11	93.800	91.230	2.120	Sealed Manhole	1350
1.006	o	450	SW12	93.800	91.195	2.155	Open Manhole	1350
1.007	o	450	Tank 1	93.800	91.185	2.165	Open Manhole	1200
5.000	o	225	SW13	93.900	92.500	1.175	Open Manhole	1350
5.001	o	225	SW14	94.050	92.295	1.530	Open Manhole	1350

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
1.000	29.398	147.0	SW02	93.900	91.885	1.640	Open Manhole	1500
1.001	27.144	142.9	SW03	93.800	91.695	1.730	Open Manhole	1500
1.002	22.657	146.2	SW05	93.800	91.540	1.885	Open Manhole	1500
2.000	3.140	52.3	SW05	93.800	91.540	1.885	Open Manhole	1500
1.003	19.630	327.2	SW09	93.800	91.480	1.945	Open Manhole	1500
3.000	6.570	82.1	SW07	93.900	92.525	1.150	Open Manhole	1350
3.001	40.220	51.9	SW08	93.850	91.750	1.875	Open Manhole	1350
3.002	6.117	51.0	SW09	93.800	91.480	1.945	Open Manhole	1500
1.004	29.867	170.7	SW11	93.800	91.230	2.120	Sealed Manhole	1350
4.000	14.600	73.0	SW11	93.800	92.300	1.350	Sealed Manhole	1350
1.005	4.613	131.8	SW12	93.800	91.195	2.155	Open Manhole	1350
1.006	9.018	901.8	Tank 1	93.800	91.185	2.165	Open Manhole	1200
1.007	9.018	901.8	SW15	93.680	91.175	2.055	Open Manhole	1350
5.000	30.962	151.0	SW14	94.050	92.295	1.530	Open Manhole	1350
5.001	4.382	125.2	SW15	93.680	92.260	1.195	Open Manhole	1350

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PIPELINE SCHEDULES for Storm

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
1.008	o	450	SW15	93.680	91.175	2.055	Open Manhole	1350
6.000	o	150	SW16	93.800	92.300	1.350	Open Manhole	1350
1.009	o	450	SW17 HB	93.800	91.100	2.250	Open Manhole	2100

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
1.008	10.575	141.0	SW17 HB	93.800	91.100	2.250	Open Manhole	2100
6.000	2.824	70.6	SW17 HB	93.800	92.260	1.390	Open Manhole	2100
1.009	4.093	136.4	CW01	93.700	91.070	2.180	Open Manhole	1800

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Network Classifications for Storm

PN	USMH Name	Pipe Dia (mm)	Min Cover Depth (m)	Max Cover Depth (m)	Pipe Type	MH Dia (mm)	MH Width (mm)	MH Ring Depth (m)	MH Type
1.000	SW01	375	1.340	1.640	Unclassified	1500	0	1.340	Unclassified
1.001	SW02	375	1.640	1.730	Unclassified	1500	0	1.640	Unclassified
1.002	SW03	375	1.730	1.885	Unclassified	1500	0	1.730	Unclassified
2.000	SW04	375	1.775	1.885	Unclassified	1500	0	1.775	Unclassified
1.003	SW05	375	1.885	1.945	Unclassified	1500	0	1.885	Unclassified
3.000	SW06	225	0.990	1.150	Unclassified	1500	0	0.990	Unclassified
3.001	SW07	225	1.150	1.875	Unclassified	1350	0	1.150	Unclassified
3.002	SW08	375	1.875	1.945	Unclassified	1350	0	1.875	Unclassified
1.004	SW09	450	1.945	2.120	Unclassified	1500	0	1.945	Unclassified
4.000	SW10	150	1.050	1.350	Unclassified	1350	0	1.050	Unclassified
1.005	SW11	450	2.120	2.155	Unclassified	1350	0	2.120	Unclassified
1.006	SW12	450	2.155	2.165	Unclassified	1350	0	2.155	Unclassified
1.007	Tank 1	450	2.055	2.165	Unclassified	1200	0	2.165	Unclassified
5.000	SW13	225	1.175	1.530	Unclassified	1350	0	1.175	Unclassified
5.001	SW14	225	1.195	1.530	Unclassified	1350	0	1.530	Unclassified
1.008	SW15	450	2.055	2.250	Unclassified	1350	0	2.055	Unclassified
6.000	SW16	150	1.350	1.390	Unclassified	1350	0	1.350	Unclassified
1.009	SW17 HB	450	2.180	2.250	Unclassified	2100	0	2.250	Unclassified

Free Flowing Outfall Details for Storm

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
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1.009	CW01	93.700	91.070	89.440	1800	0
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Simulation Criteria for Storm

Volumetric Runoff Coeff	0.750	Additional Flow - % of Total Flow	0.000
Areal Reduction Factor	1.000	MADD Factor * 10m³/ha Storage	2.000
Hot Start (mins)	0	Inlet Coeffiecient	0.800
Hot Start Level (mm)	0	Flow per Person per Day (l/per/day)	0.000
Manhole Headloss Coeff (Global)	0.500	Run Time (mins)	60
Foul Sewage per hectare (l/s)	0.000	Output Interval (mins)	1

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 6
Number of Online Controls 1 Number of Storage Structures 1 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model	FSR	Profile Type	Summer
Return Period (years)	2	Cv (Summer)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	19.000	Storm Duration (mins)	30
Ratio R	0.283		

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Online Controls for Storm

Hydro-Brake® Optimum Manhole: SW17 HB, DS/PN: 1.009, Volume (m³): 10.8

Unit Reference	MD-SHE-0314-6500-2200-6500
Design Head (m)	2.200
Design Flow (l/s)	65.0
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	314
Invert Level (m)	91.100
Minimum Outlet Pipe Diameter (mm)	375
Suggested Manhole Diameter (mm)	Site Specific Design (Contact Hydro International)

Control Points	Head (m)	Flow (l/s)	Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	2.200	65.0	Kick-Flo®	1.459	53.3
Flush-Flo™	0.666	64.9	Mean Flow over Head Range	-	55.9

The hydrological calculations have been based on the Head/Discharge relationship for the Hydro-Brake® Optimum as specified. Should another type of control device other than a Hydro-Brake Optimum® be utilised then these storage routing calculations will be invalidated

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	9.4	0.800	64.6	2.000	62.0	4.000	86.8	7.000	114.0
0.200	32.1	1.000	63.3	2.200	65.0	4.500	91.9	7.500	117.9
0.300	55.9	1.200	60.9	2.400	67.8	5.000	96.8	8.000	121.7
0.400	62.1	1.400	55.9	2.600	70.4	5.500	101.4	8.500	125.3
0.500	64.0	1.600	55.7	3.000	75.5	6.000	105.7	9.000	128.9
0.600	64.8	1.800	59.0	3.500	81.4	6.500	110.0	9.500	132.3

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1 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 0.000
 Hot Start (mins) 0 MADD Factor * 10m³/ha Storage 2.000
 Hot Start Level (mm) 0 Inlet Coefficient 0.800
 Manhole Headloss Coeff (Global) 0.500 Flow per Person per Day (l/per/day) 0.000
 Foul Sewage per hectare (l/s) 0.000

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 6
 Number of Online Controls 1 Number of Storage Structures 1 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FSR M5-60 (mm) 19.000 Cv (Summer) 0.750
 Region England and Wales Ratio R 0.283 Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 300.0
 Analysis Timestep 2.5 Second Increment (Extended)
 DTS Status ON
 DVD Status ON
 Inertia Status OFF

Profile(s) Summer and Winter
 Duration(s) (mins) 15, 30, 60, 120, 240, 360, 480, 960, 1440
 Return Period(s) (years) 1, 2, 30, 100
 Climate Change (%) 0, 0, 0, 40

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level	Surcharged Depth	Flooded Volume
									(m)	(m)	(m ³)
1.000	SW01	15 Winter	1	+0%	100/15 Summer				92.168	-0.292	0.000
1.001	SW02	15 Winter	1	+0%	100/15 Summer				91.972	-0.288	0.000
1.002	SW03	15 Winter	1	+0%	30/15 Summer				91.807	-0.263	0.000
2.000	SW04	15 Winter	1	+0%	30/15 Summer				91.775	-0.200	0.000
1.003	SW05	15 Winter	1	+0%	30/15 Summer				91.767	-0.148	0.000
3.000	SW06	120 Winter	1	+0%	100/15 Summer				92.619	-0.211	0.000
3.001	SW07	15 Winter	1	+0%	100/15 Summer				92.603	-0.147	0.000
3.002	SW08	15 Winter	1	+0%	30/15 Summer				91.691	-0.284	0.000
1.004	SW09	15 Winter	1	+0%	30/15 Summer				91.610	-0.245	0.000
4.000	SW10	120 Winter	1	+0%	100/30 Winter				92.530	-0.120	0.000
1.005	SW11	15 Winter	1	+0%	30/15 Summer				91.543	-0.137	0.000
1.006	SW12	15 Winter	1	+0%	30/15 Summer				91.532	-0.113	0.000
1.007	Tank 1	30 Winter	1	+0%	30/15 Summer				91.432	-0.203	0.000
5.000	SW13	120 Winter	1	+0%	100/60 Winter				92.523	-0.202	0.000
5.001	SW14	120 Winter	1	+0%	100/30 Winter				92.325	-0.195	0.000
1.008	SW15	30 Winter	1	+0%	30/15 Winter				91.398	-0.227	0.000
6.000	SW16	120 Winter	1	+0%	100/30 Winter				92.331	-0.119	0.000
1.009	SW17 HB	30 Winter	1	+0%	30/15 Summer				91.383	-0.167	0.000

PN	US/MH Name	Pipe		Level Exceeded
		Flow / Overflow Cap.	Flow (l/s)	
1.000	SW01	0.11	15.6	OK
1.001	SW02	0.12	17.6	OK

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1 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Flow / Cap.	Overflow (l/s)	Pipe	Status	Level Exceeded
				Flow (l/s)		
1.002	SW03	0.14		20.0	OK	
2.000	SW04	0.39		42.2	OK	
1.003	SW05	0.67		61.6	OK	
3.000	SW06	0.01		0.5	OK	
3.001	SW07	0.26		17.8	OK	
3.002	SW08	0.13		18.1	OK	
1.004	SW09	0.37		78.4	OK	
4.000	SW10	0.09		1.7	OK	
1.005	SW11	0.49		75.9	OK	
1.006	SW12	0.91		76.3	OK	
1.007	Tank 1	0.58		48.6	OK	
5.000	SW13	0.02		0.9	OK	
5.001	SW14	0.04		1.3	OK	
1.008	SW15	0.29		48.3	OK	
6.000	SW16	0.09		1.2	OK	
1.009	SW17 HB	0.33		47.9	OK	

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2 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 0.000
 Hot Start (mins) 0 MADD Factor * 10m³/ha Storage 2.000
 Hot Start Level (mm) 0 Inlet Coefficient 0.800
 Manhole Headloss Coeff (Global) 0.500 Flow per Person per Day (l/per/day) 0.000
 Foul Sewage per hectare (l/s) 0.000

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 6
 Number of Online Controls 1 Number of Storage Structures 1 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FSR M5-60 (mm) 19.000 Cv (Summer) 0.750
 Region England and Wales Ratio R 0.283 Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 300.0
 Analysis Timestep 2.5 Second Increment (Extended)
 DTS Status ON
 DVD Status ON
 Inertia Status OFF

Profile(s) Summer and Winter
 Duration(s) (mins) 15, 30, 60, 120, 240, 360, 480, 960, 1440
 Return Period(s) (years) 1, 2, 30, 100
 Climate Change (%) 0, 0, 0, 40

										Water	Surcharged	Flooded
	US/MH			Return	Climate	First (X)	First (Y)	First (Z)	Overflow	Level	Depth	Volume
PN	Name	Storm	Period	Change	Surcharge	Flood	Overflow	Act.		(m)	(m)	(m³)
1.000	SW01	15 Winter	2	+0%	100/15 Summer					92.179	-0.281	0.000
1.001	SW02	15 Winter	2	+0%	100/15 Summer					91.984	-0.276	0.000
1.002	SW03	15 Winter	2	+0%	30/15 Summer					91.838	-0.232	0.000
2.000	SW04	15 Winter	2	+0%	30/15 Summer					91.821	-0.154	0.000
1.003	SW05	15 Winter	2	+0%	30/15 Summer					91.812	-0.103	0.000
3.000	SW06	60 Winter	2	+0%	100/15 Summer					92.624	-0.206	0.000
3.001	SW07	15 Winter	2	+0%	100/15 Summer					92.615	-0.135	0.000
3.002	SW08	15 Winter	2	+0%	30/15 Summer					91.742	-0.233	0.000
1.004	SW09	15 Winter	2	+0%	30/15 Summer					91.737	-0.118	0.000
4.000	SW10	60 Winter	2	+0%	100/30 Winter					92.535	-0.115	0.000
1.005	SW11	15 Winter	2	+0%	30/15 Summer					91.675	-0.005	0.000
1.006	SW12	15 Summer	2	+0%	30/15 Summer					91.598	-0.047	0.000
1.007	Tank 1	30 Winter	2	+0%	30/15 Summer					91.487	-0.148	0.000
5.000	SW13	60 Winter	2	+0%	100/60 Winter					92.526	-0.199	0.000
5.001	SW14	60 Winter	2	+0%	100/30 Winter					92.330	-0.190	0.000
1.008	SW15	30 Winter	2	+0%	30/15 Winter					91.463	-0.162	0.000
6.000	SW16	60 Winter	2	+0%	100/30 Winter					92.336	-0.114	0.000
1.009	SW17	HB 30 Winter	2	+0%	30/15 Summer					91.443	-0.107	0.000

PN	US/MH Name	Pipe Flow / Overflow		Pipe Flow (l/s)	Level Status
		Cap.	(l/s)		
1.000	SW01	0.14		20.2	OK
1.001	SW02	0.16		22.8	OK

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2 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Flow / Cap.	Overflow (l/s)	Pipe	Status	Level Exceeded
				Flow (l/s)		
1.002	SW03	0.18		25.9	OK	
2.000	SW04	0.50		54.0	OK	
1.003	SW05	0.86		78.8	OK	
3.000	SW06	0.02		0.7	OK	
3.001	SW07	0.34		23.1	OK	
3.002	SW08	0.17		23.5	OK	
1.004	SW09	0.45		95.6	OK	
4.000	SW10	0.12		2.4	OK	
1.005	SW11	0.55		84.3	OK	
1.006	SW12	1.00		83.7	OK	
1.007	Tank 1	0.74		61.5	OK	
5.000	SW13	0.03		1.3	OK	
5.001	SW14	0.06		1.8	OK	
1.008	SW15	0.35		58.8	OK	
6.000	SW16	0.13		1.6	OK	
1.009	SW17 HB	0.40		57.6	OK	

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30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 0.000
 Hot Start (mins) 0 MADD Factor * 10m³/ha Storage 2.000
 Hot Start Level (mm) 0 Inlet Coefficient 0.800
 Manhole Headloss Coeff (Global) 0.500 Flow per Person per Day (l/per/day) 0.000
 Foul Sewage per hectare (l/s) 0.000

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 6
 Number of Online Controls 1 Number of Storage Structures 1 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FSR M5-60 (mm) 19.000 Cv (Summer) 0.750
 Region England and Wales Ratio R 0.283 Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 300.0
 Analysis Timestep 2.5 Second Increment (Extended)
 DTS Status ON
 DVD Status ON
 Inertia Status OFF

Profile(s) Summer and Winter
 Duration(s) (mins) 15, 30, 60, 120, 240, 360, 480, 960, 1440
 Return Period(s) (years) 1, 2, 30, 100
 Climate Change (%) 0, 0, 0, 40

PN	US/MH		Return Period	Climate Change	First (X)		First (Y)		First (Z)		Water Level	Surcharged Depth	Flooded Volume
	Name	Storm			Surcharge	Flood	Overflow	Act.	Overflow	Act.	(m)	(m)	(m ³)
1.000	SW01	15 Winter	30	+0%	100/15	Summer					92.251	-0.209	0.000
1.001	SW02	15 Winter	30	+0%	100/15	Summer					92.221	-0.039	0.000
1.002	SW03	15 Winter	30	+0%	30/15	Summer					92.151	0.081	0.000
2.000	SW04	15 Winter	30	+0%	30/15	Summer					92.123	0.148	0.000
1.003	SW05	60 Winter	30	+0%	30/15	Summer					92.068	0.153	0.000
3.000	SW06	15 Winter	30	+0%	100/15	Summer					92.666	-0.164	0.000
3.001	SW07	15 Winter	30	+0%	100/15	Summer					92.677	-0.073	0.000
3.002	SW08	15 Winter	30	+0%	30/15	Summer					92.038	0.063	0.000
1.004	SW09	60 Winter	30	+0%	30/15	Summer					92.009	0.154	0.000
4.000	SW10	30 Winter	30	+0%	100/30	Winter					92.551	-0.099	0.000
1.005	SW11	60 Winter	30	+0%	30/15	Summer					91.879	0.199	0.000
1.006	SW12	60 Winter	30	+0%	30/15	Summer					91.813	0.168	0.000
1.007	Tank 1	60 Winter	30	+0%	30/15	Summer					91.799	0.164	0.000
5.000	SW13	60 Winter	30	+0%	100/60	Winter					92.537	-0.188	0.000
5.001	SW14	60 Winter	30	+0%	100/30	Winter					92.347	-0.173	0.000
1.008	SW15	60 Winter	30	+0%	30/15	Winter					91.786	0.161	0.000
6.000	SW16	60 Winter	30	+0%	100/30	Winter					92.351	-0.099	0.000
1.009	SW17	HB 60 Winter	30	+0%	30/15	Summer					91.720	0.170	0.000

PN	US/MH Name	Pipe Flow / Overflow		Pipe Flow (l/s)	Status	Level Exceeded
		Cap.	(l/s)			
1.000	SW01	0.26		38.2	OK	
1.001	SW02	0.24		35.0	OK	

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30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Flow / Cap.	Overflow (l/s)	Pipe	Status	Level
				Flow (l/s)		Exceeded
1.002	SW03	0.29		41.2	SURCHARGED	
2.000	SW04	0.93		99.8	SURCHARGED	
1.003	SW05	0.93		85.9	SURCHARGED	
3.000	SW06	0.02		0.9	OK	
3.001	SW07	0.79		54.4	OK	
3.002	SW08	0.37		49.9	SURCHARGED	
1.004	SW09	0.56		118.0	SURCHARGED	
4.000	SW10	0.24		4.7	OK	
1.005	SW11	0.79		121.8	SURCHARGED*	
1.006	SW12	1.46		121.7	SURCHARGED	
1.007	Tank 1	0.76		63.6	SURCHARGED	
5.000	SW13	0.06		2.6	OK	
5.001	SW14	0.12		3.6	OK	
1.008	SW15	0.39		65.8	SURCHARGED	
6.000	SW16	0.25		3.2	OK	
1.009	SW17 HB	0.44		64.5	SURCHARGED	

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100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 0.000
 Hot Start (mins) 0 MADD Factor * 10m³/ha Storage 2.000
 Hot Start Level (mm) 0 Inlet Coefficient 0.800
 Manhole Headloss Coeff (Global) 0.500 Flow per Person per Day (l/per/day) 0.000
 Foul Sewage per hectare (l/s) 0.000

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 6
 Number of Online Controls 1 Number of Storage Structures 1 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FSR M5-60 (mm) 19.000 Cv (Summer) 0.750
 Region England and Wales Ratio R 0.283 Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 300.0
 Analysis Timestep 2.5 Second Increment (Extended)
 DTS Status ON
 DVD Status ON
 Inertia Status OFF

Profile(s) Summer and Winter
 Duration(s) (mins) 15, 30, 60, 120, 240, 360, 480, 960, 1440
 Return Period(s) (years) 1, 2, 30, 100
 Climate Change (%) 0, 0, 0, 40

										Water	Surcharged	Flooded
	US/MH			Return	Climate	First (X)	First (Y)	First (Z)	Overflow	Level	Depth	Volume
PN	Name	Storm	Period	Change		Surcharge	Flood	Overflow	Act.	(m)	(m)	(m³)
1.000	SW01	60 Winter	100	+40%	100/15	Summer				93.303	0.843	0.000
1.001	SW02	60 Winter	100	+40%	100/15	Summer				93.298	1.038	0.000
1.002	SW03	60 Winter	100	+40%	30/15	Summer				93.292	1.222	0.000
2.000	SW04	60 Winter	100	+40%	30/15	Summer				93.290	1.315	0.000
1.003	SW05	60 Winter	100	+40%	30/15	Summer				93.286	1.371	0.000
3.000	SW06	15 Winter	100	+40%	100/15	Summer				93.390	0.560	0.000
3.001	SW07	15 Winter	100	+40%	100/15	Summer				93.399	0.649	0.000
3.002	SW08	60 Winter	100	+40%	30/15	Summer				93.209	1.234	0.000
1.004	SW09	60 Winter	100	+40%	30/15	Summer				93.206	1.351	0.000
4.000	SW10	60 Winter	100	+40%	100/30	Winter				93.106	0.456	0.000
1.005	SW11	60 Winter	100	+40%	30/15	Summer				93.077	1.397	0.000
1.006	SW12	60 Winter	100	+40%	30/15	Summer				93.021	1.376	0.000
1.007	Tank 1	60 Winter	100	+40%	30/15	Summer				93.010	1.375	0.000
5.000	SW13	60 Winter	100	+40%	100/60	Winter				93.006	0.281	0.000
5.001	SW14	60 Winter	100	+40%	100/30	Winter				93.001	0.481	0.000
1.008	SW15	60 Winter	100	+40%	30/15	Winter				92.999	1.374	0.000
6.000	SW16	60 Winter	100	+40%	100/30	Winter				92.913	0.463	0.000
1.009	SW17	HB 60 Winter	100	+40%	30/15	Summer				92.909	1.359	0.000

PN	US/MH Name	Pipe Flow / Overflow		Pipe Flow (l/s)	Status	Level Exceeded
		Flow Cap.	Overflow (l/s)			
1.000	SW01	0.24		35.3	SURCHARGED	
1.001	SW02	0.25		36.8	SURCHARGED	

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100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Flow / Cap.	Overflow (l/s)	Pipe	Status	Level Exceeded
				Flow (l/s)		
1.002	SW03	0.29		41.3	SURCHARGED	
2.000	SW04	0.96		103.0	SURCHARGED	
1.003	SW05	1.55		142.7	SURCHARGED	
3.000	SW06	0.21		8.4	SURCHARGED	
3.001	SW07	1.07		73.6	SURCHARGED	
3.002	SW08	0.37		50.2	SURCHARGED	
1.004	SW09	0.89		188.1	SURCHARGED	
4.000	SW10	0.44		8.5	SURCHARGED	
1.005	SW11	1.25		193.5	SURCHARGED*	
1.006	SW12	2.30		192.0	SURCHARGED	
1.007	Tank 1	1.02		85.3	SURCHARGED	
5.000	SW13	0.12		4.7	SURCHARGED	
5.001	SW14	0.26		7.9	SURCHARGED	
1.008	SW15	0.46		77.5	SURCHARGED	
6.000	SW16	0.55		6.9	SURCHARGED	
1.009	SW17 HB	0.45		64.9	SURCHARGED	