

BRIAN CLANCY HIGBY PARTNERSHIP
CHARTERED STRUCTURAL & CIVIL ENGINEERS

DRAINAGE STRATEGY

By

BRIAN CLANCY HIGBY PARTNERSHIP

For

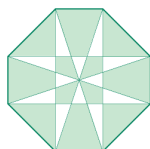
EXTENSION

at

474 BOLTON RD

BURY

14th October 2022



PETER HIGBY B.Sc.(Hons), C.Eng., M.I.Struct.E.

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Brian Clancy Higby Partnership is the trading name of Brian Clancy Higby Partnership Limited – Registered Office: 5 Brooklands Place, Brooklands Road, Sale, M33 3SD – Registered Company No. 5467369



1.0 INTRODUCTION

- Brian Clancy Higby Partnership Ltd have been appointed to prepare a drainage strategy in support of a proposed extension of the existing property, 474 Bolton Rd., Bury
- The property is on a piece of land, where the general topography of the land falls down from the rear to the front and from the left down to the right, such that the existing house is raised above the road level in front of the property.
- The extension is predominantly to the right hand side of the property, and extends out to the rear beyond the current rear wall line.
- The purpose of the report is to appraise the Local Planning Authority of the drainage implications of the proposed extension.
- The existing and proposed site plans are Appended to this report.

2.0 PROPOSED DRAINAGE STRATEGY

- In order to demonstrate the development is of low risk, the report will show that it will be feasible to continue to discharge the main surface water run-off from the site at a flow rate to meet the existing rate that the property currently discharges, but for increased footprint, for all events up to the 1 in 100 year storm (including a 45% allowance for climate change) and set out how this will be achieved. This includes the front driveway.
- For the extension, it will be necessary to provide surface water storage to limit and reduce both the peak rate of discharge from the site and the total volume discharged from the site, which will utilize the existing discharge route off the site.

3.0 EXISTING SITE DRAINAGE

- The existing property has a combined drainage system, that discharges out to the right hand side to connect the public sewer in Colville Drive, via a 150mm dia. Clay pipe at a depth of approx.2.25m.
- United Utilities records can be found within the Appendix.

4.0 CONSIDERATION OF THE SUSTAINABLE DRAINAGE SYSTEMS

- Following the Hierarchy of Sustainable Drainage Systems (SUDS) the following options must be considered
 - (a) Soakaways for roof run-off and permeable surfacing for roads, drives, car parks and private access roads.
 - (b) Discharge to local watercourse.
 - (c) Discharge to local sewer.
 - (d) Discharge to adjacent land drains and ponds.



- Considering ground infiltration into the ground, having reviewed the geological drift map for the location, this confirms the ground to be CLAY, i.e., not be suitable for infiltration
- There is no available watercourse local to the site.
- There is a public sewer combined drainage network adjacent to the site, to which the existing property is connected. It is proposed to discharge the extended property into this public sewer network, via a new manhole within the site, to be formed over the existing drain.. In order to prevent an increase in flood risk to adjacent land and downstream of the site, flow rates from the surface water discharge from the proposed development will be restricted to the existing flow rate from the existing building (1.4 l/s), which will necessitate the requirement of a hydrobrake/ orifice plate and attenuation “tank”, to withstand the design storms, up to 1 in 100 years plus 45%.

5.0 PROPOSED DRAINAGE DESIGN

- It is proposed to provide attenuation storage via cellular storage tanks within the rear garden areas
- The existing roof area of the property is 100m². This would generate a 2yr 360min 50mm/hr. run-off rate of 1.4l/s. The extended property, plus hardstanding is 520m².
- To limit all storms up to 1 in 100 year plus 45% CCF to 1.4L/sec an attenuation volume of 24.0 m³ has been established with a 26mm orifice plate.
- The surface and foul water around the extended property will be new and will drain on separate systems, prior to connecting to the final (new) combined manhole over the existing combined drain.
- Drainage calculations are Appended.

6.0 FOUL DRAINAGE

- It is proposed that the foul drainage be discharged into the existing combined drain, connected at the last manhole.

Signed:

Peter Higby
B.Sc. (Hons.) C. Eng. M.I.Struct.E.
Director

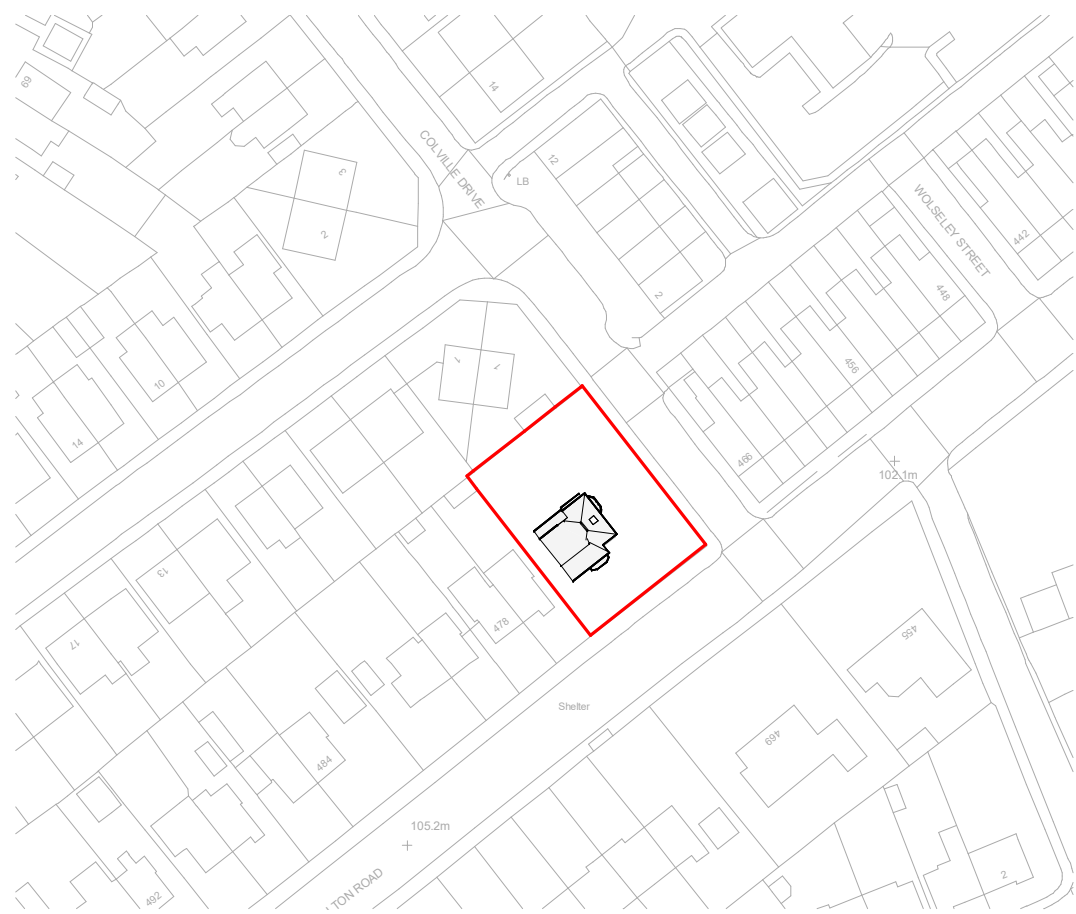
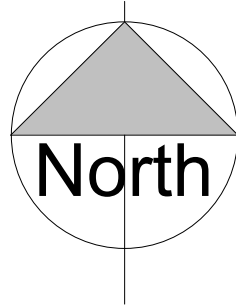
NOTES

ALL DIMENSIONS AND LEVELS ARE TO BE CHECKED ON SITE

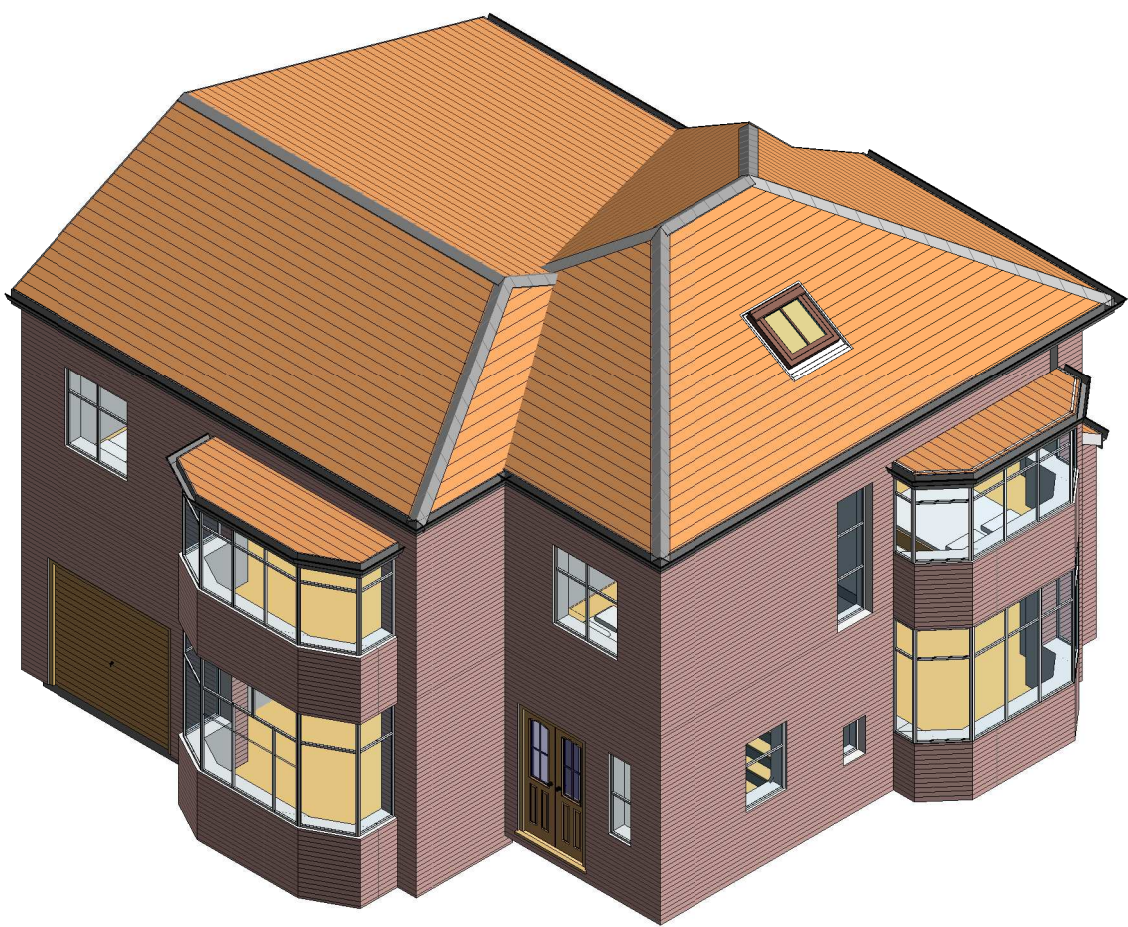
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1 Location Plan
1 : 1250



9 Existing 3D

P2 03.01.22 BC Existing street elevation added
P1 11.01.21 BC First issue

Rev No.	Rev Date	Rev By	Description
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474 Bolton road

474 Bolton Road,
Bury, BL8 2DU

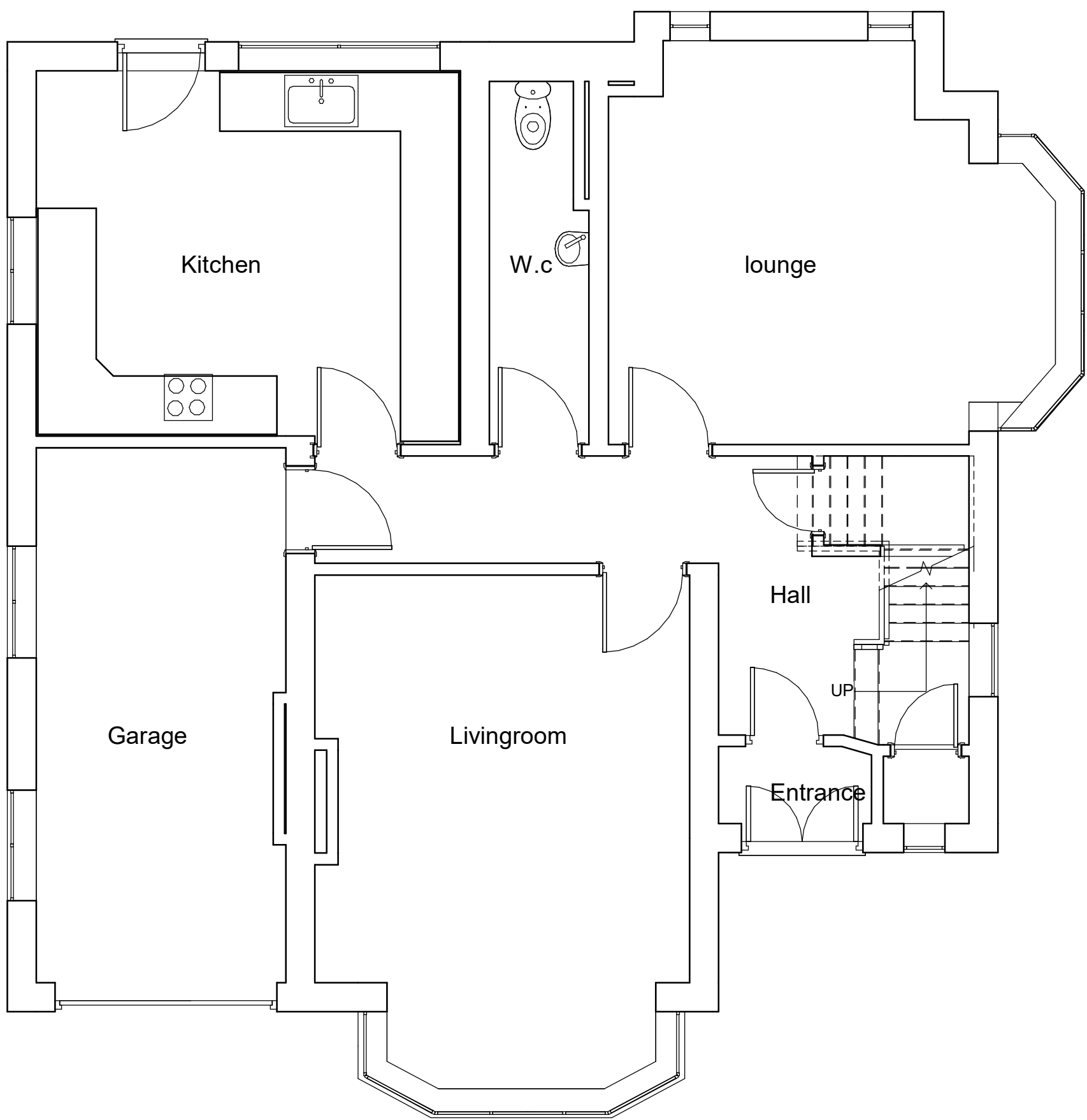
Luxe Design

LUXE
DESIGN BUILD

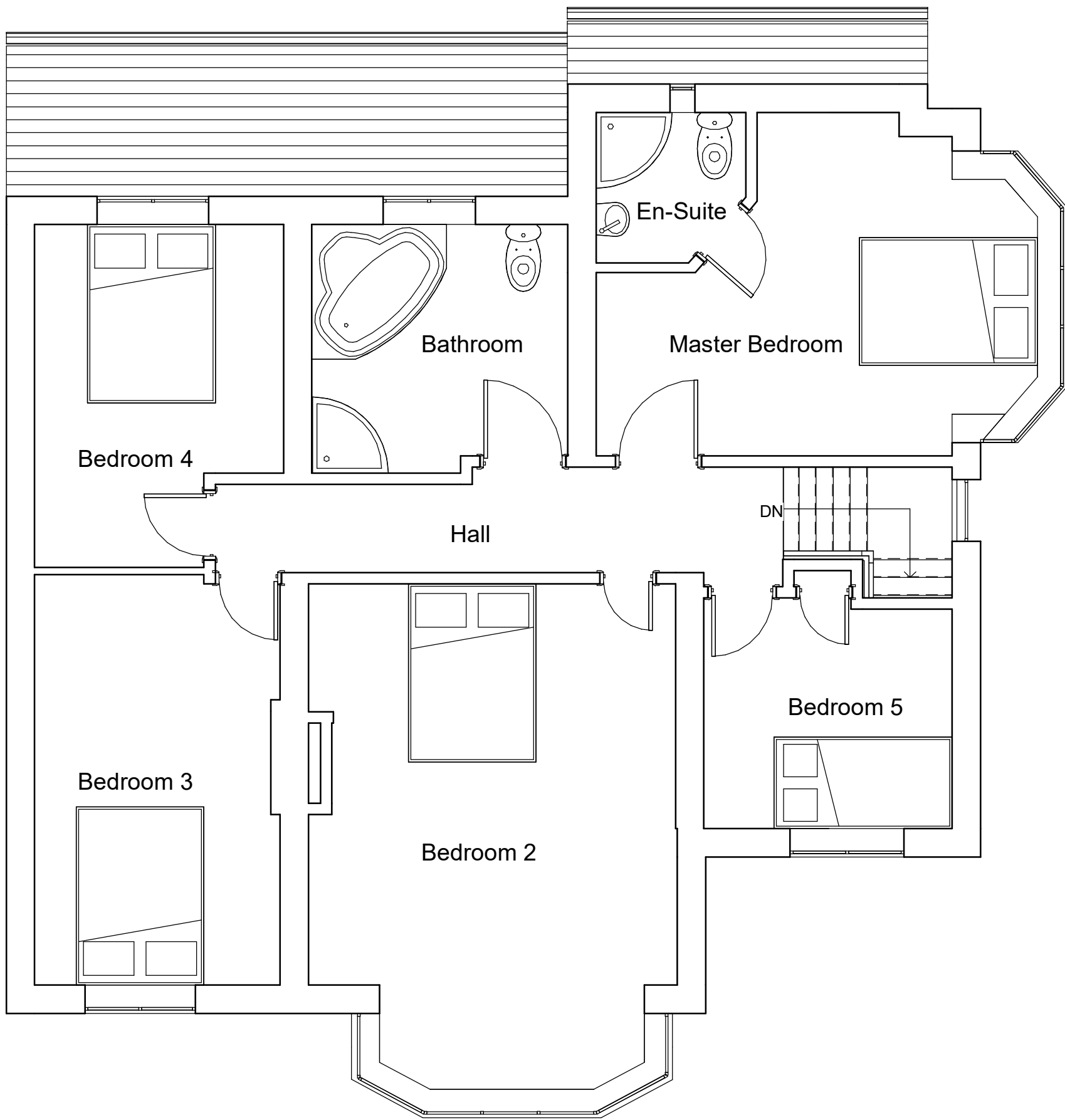
Location Plan and As Existing
Plans

dwg purpose

scale As indicated @ sheet size A1	drawn BC rev date 03.01.22	checked BC
21-008 job number	PL-001 drawing number	P2 revision



3 Existing Ground Floor
1 : 50



8 Existing 1st Floor
1 : 50



6 Existing Front Elevation
1 : 100



5 Existing RHS Elevation
1 : 100



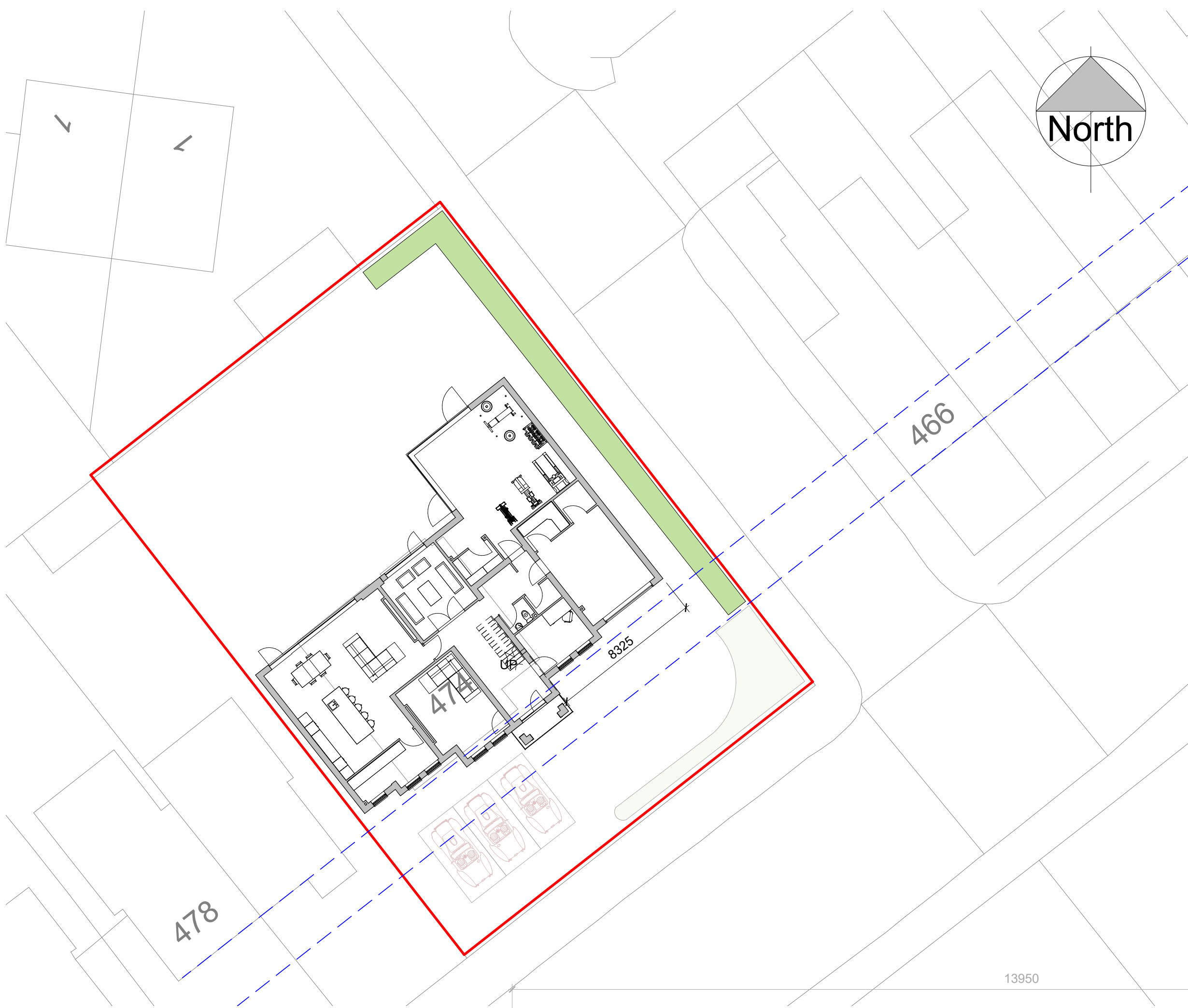
4 Existing Rear Elevation
1 : 100



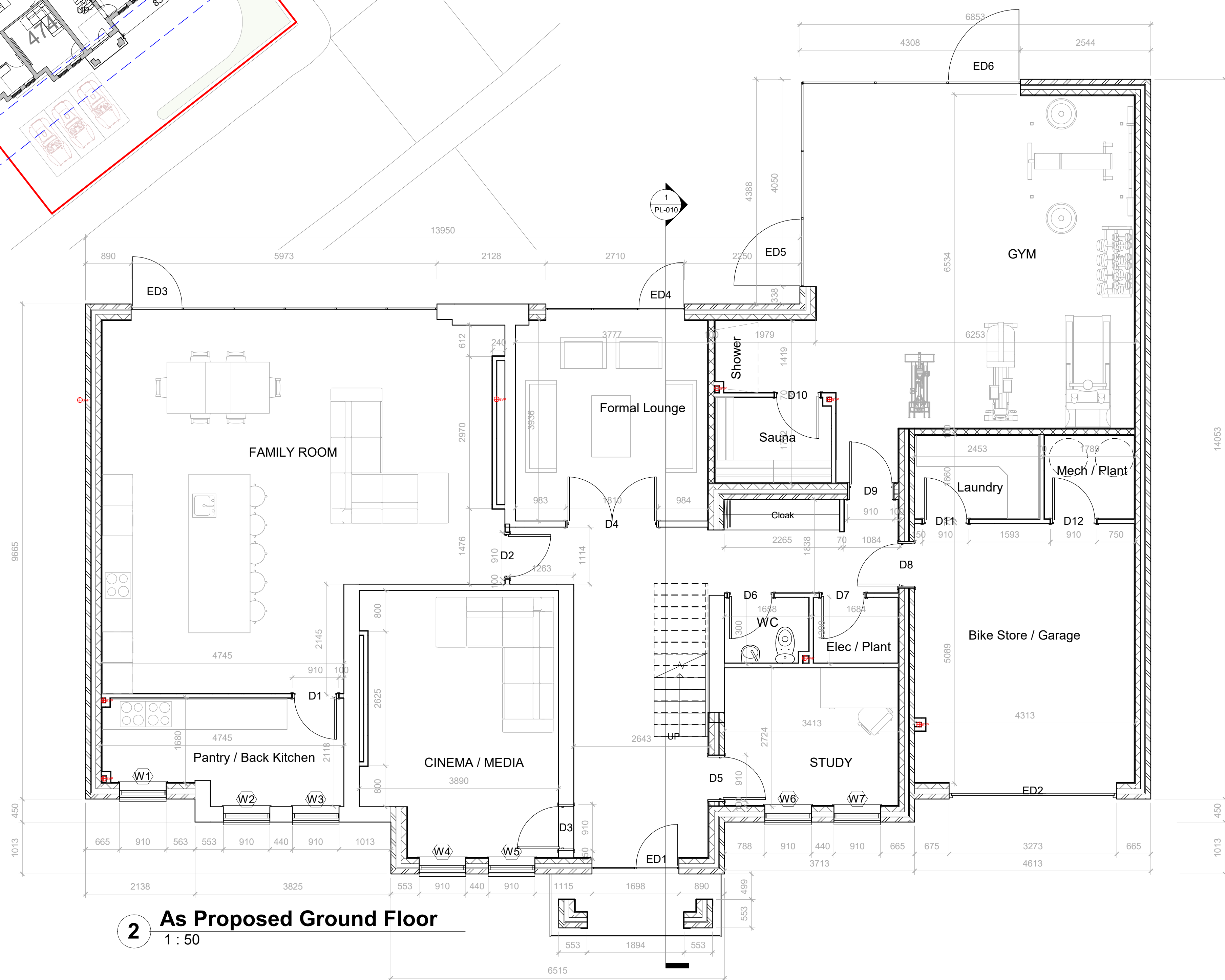
7 Existing LHS Elevation
1 : 100



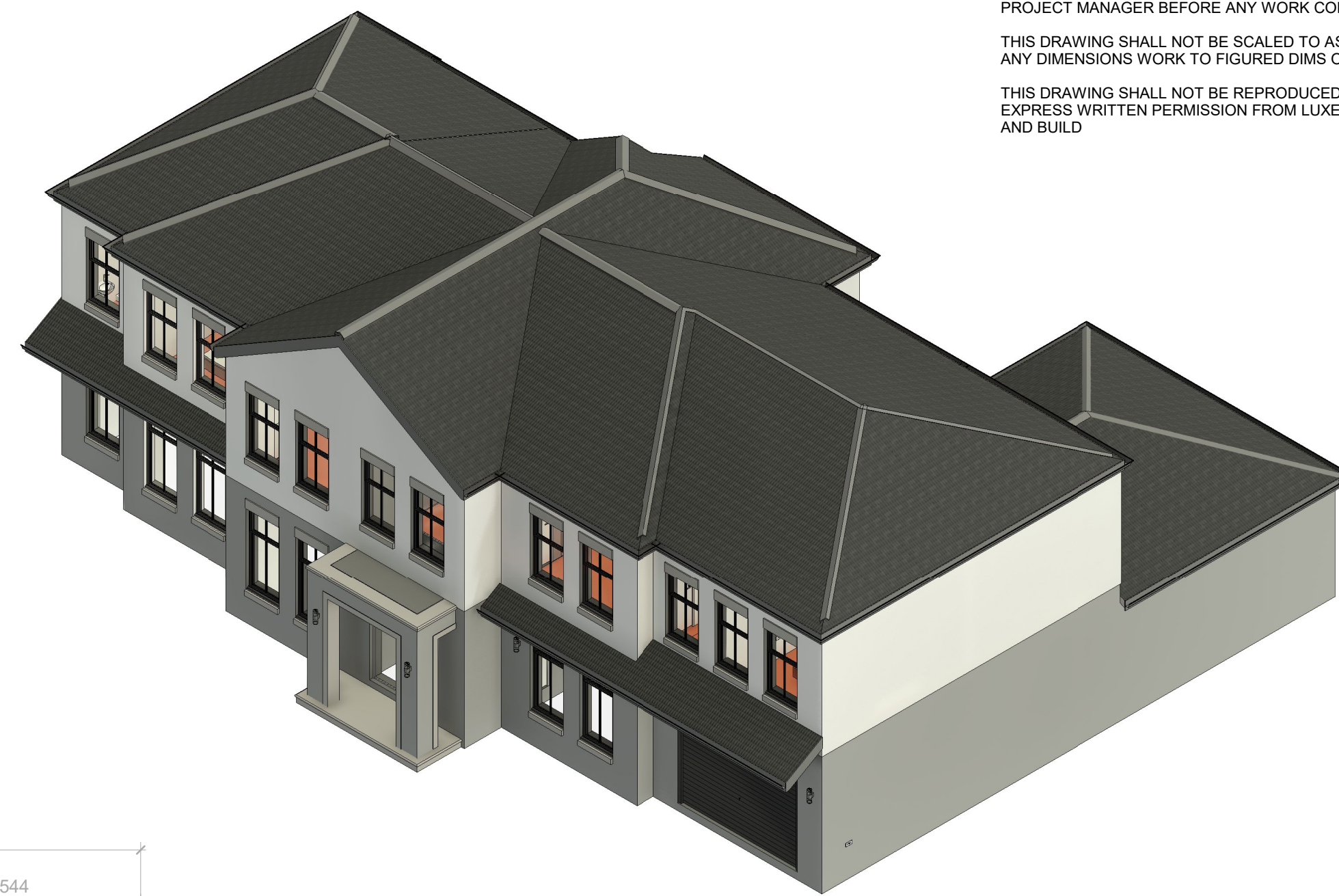
2 Existing Street Scene Elevation
1 : 100



1 Block Plan
1 : 200



2 As Proposed Ground Floor
1 : 50



8 Proposed 3D

NOTE
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BR1	20.08.22	BC	First issue
PS	20.06.22	BC	Planning comments
P3	25.10.21	BC	Planning comments
P2	15.09.21	BC	Client Comments
P1	11.01.21	BC	First Issue

Rev No.	Rev Date	Rev By	Description
project			

474 bolton road

location
474 Bolton Road,
Bury, BL8 2DU

client
Luxe Design

LUXE
DESIGN BUILD

drawing title
As Proposed Ground Floor and
Block Plan

dwg purpose
PRELIMINARY

scale As indicated	drawn BC	checked BC
@ sheet size A1	rev date 20.08.22	

21-008	PL-002	BR1
job number	drawing number	revision

Luxe Design and Build

ALL DIMENSIONS & LEVELS ARE TO BE CONFIRMED ON SITE.

6m x 5m x 0.80m DEEP
OFF-LINE ATTENUATION TANK
MADE FROM WAVIN AQUACELL OR SIMILAR
APPROVED WRAPPED IN 1mm
POLYPROPYLENE GEOMEMBRANE AND LAID
IN ACCORDANCE WITH THE
MANUFACTURERS INSTRUCTIONS.
GROUND LEVEL +199.850m. IL AT
INLET/OUTLET PIPE +198.550 1:500
SLOPE TOWARDS INLET/OUTLET PIPE

FOR ALL SETTING OUT DIMENSIONS & LEVELS
REFER TO THE ARCHITECTS DRAWINGS

- KEY
- EXISTING FOUL SEWER
 - EXISTING SURFACE WATER SEWER
 - PROPOSED SURFACE DRAINS
 - PROPOSED FOUL
 - PROPOSED MH SURFACE
 - PROPOSED MH - FOUL
 - TRAPPED BACK INLET GULLY- RODDABLE
 - YARD GULLY
 - RODDING EYE
 - SVP
 - BD
 - RWP
 - STG
 - SLOT DRAIN
 - LEVEL THRESHOLD DRAINAGE CHANNEL DRAIN

This scale bar is for microfilming purposes only.

0 10 20 30 40 50 60 70

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All dimensions to be checked on site prior to commencement of work.

Figured dimensions to be used in preference to scale.

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- ALL WORK IS TO COMPLY WITH ALL RELEVANT HEALTH AND SAFETY LEGISLATION AND REGULATIONS AND THE SAFETY PLAN.

CDM NOTES.

ALL THE WORKS IS TO BE CARRIED OUT IN ACCORDANCE WITH THE CONTRACTORS HEALTH & SAFETY PLAN & 'CONSTRUCTION DESIGN & MANAGEMENT (CDM) REGULATIONS - 2015

CONSTRUCTION DESIGN MANAGEMENT (CDM) RISK ASSESSMENT'S RELATING TO STRUCTURAL & CIVIL WORKS DETAILED ON THIS DRAWING. REFERENCE SHOULD BE MADE TO THE PROJECT RISK ASSESSMENTS FOR COMPREHENSIVE DETAIL.

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SHORING TO EXCAVATIONS OVER 12M DEEP REQUIREMENTS. POTENTIAL FOR EXCAVATION COLLAPSE.

WORK IN CONFINED SPACES PRECAUTIONS NECESSARY. MECHANICAL & MANUAL HANDLING PRECAUTIONS NECESSARY.

BURIED SERVICES EXIST ON & OFF SITE. REFER TO STATUTORY SERVICES INFORMATION.

GENERAL DRAINAGE NOTES

ALL NEW MANHOLES TO BE TO AS PER DETAIL DRAWING- 450 PPIC UNLESS NOTED OTHERWISE

ALL NEW PIPEWORK TO BE WAVIN OSMADRAIN OR WAVIN ULTRARIB UPVC PIPEWORK UNLESS OTHERWISE NOTED.

ALL PIPEWORK TO BE 100 DIA AT MINIMUM 180 FALL FW AND 100 SW UNLESS NOTED OTHERWISE

ALL PIPEWORK AT COVER LEVELS LESS THAN 900MM IN TRAFFICKED AREAS 400MM IN OTHER AREAS SHOULD BE ENCASED IN CONCRETE (CLASS 2 BEDDING)

ALL OTHER PIPEWORK TO BE IN CLASS 5 BEDDING

PIPEWORK PASSING THROUGH BUILDING WALLS SHOULD BE FITTED WITH ROCKER PIPES AS PER STANDARD DETAIL

ALL EXTERNAL MANHOLE COVERS TO BE TO EN124:1994 TRAFFICKED AREAS - GRADE D400 OTHER AREAS - GRADE A14

ALL RWP LOCATIONS AND NUMBERS TO BE CONFIRMED FROM ARCHITECTS DRAWINGS. ALL RWP'S TO ENTER SYSTEM VIA TRAPPED GULLY WITH GRATE TO ALLOW OVERFLOW IN EXTREME EVENT

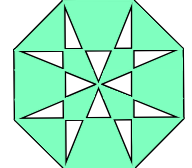
EXACT SVP AND GULLY LOCATIONS TO BE CONFIRMED FROM ARCHITECTS DRAWINGS

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Rev.	Date		Rev.	Chgd. by



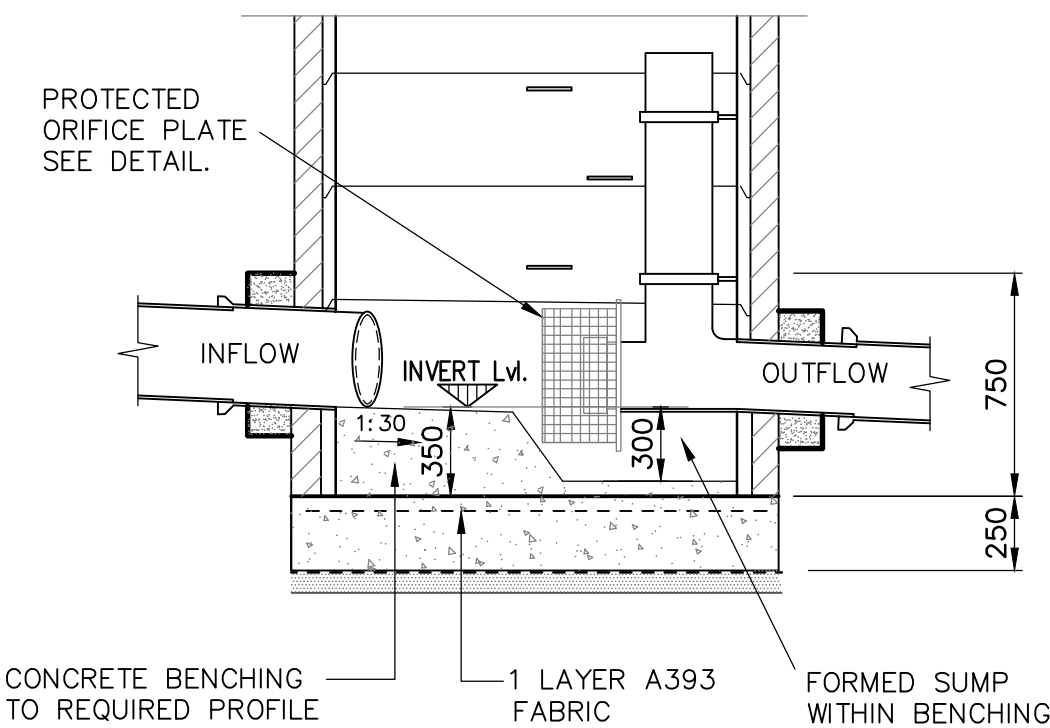
BRIAN CLANCY HIGBY PARTNERSHIP
Springwood Broomfield Hall, Chelwood Road, Knarborough, Walsley B62 9JZ
Tel: 01565 757790

Client:
LUXE DESIGN

Project Title:
**474 BOLTON ROAD
BURY, BL8 2DU**

Draw Title:
**PROPOSED DRAINAGE
LAYOUT SCHEME**

Draw No.:	22090493-020	Revision:	P1
Scale:	1:100	Drawn By / Date:	@ A1 IS OCT 2022



TYPICAL MANHOLE DETAIL AT ATTENUATION TANK

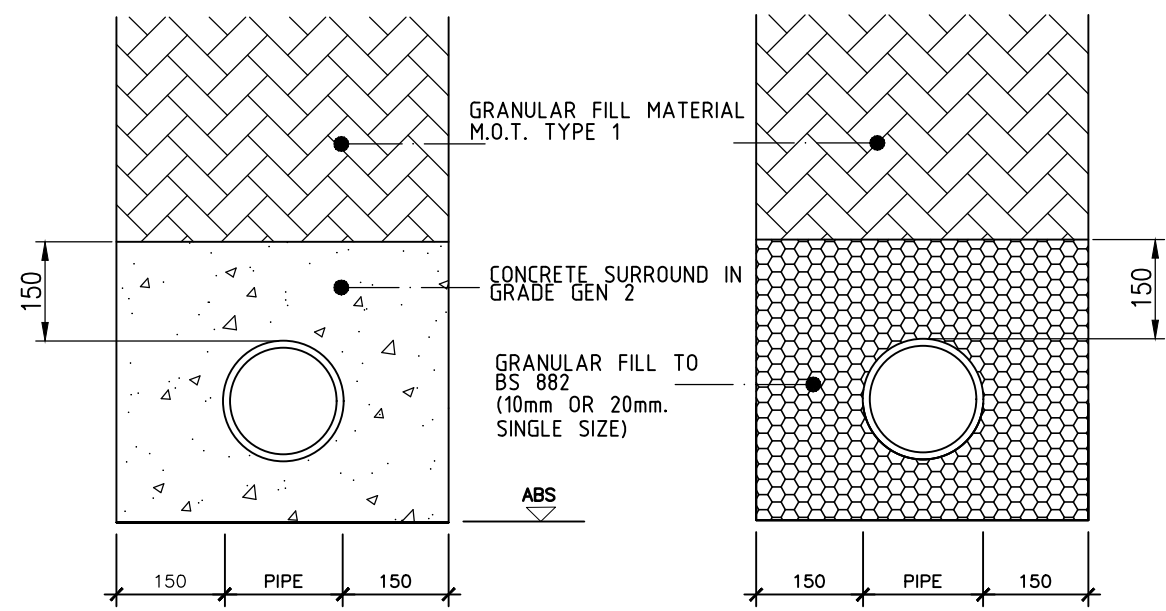
N.B - EXISTING RE-USED DRAINS

THE CONTRACTOR WILL INCORPORATE SOME OF THE EXISTING DRAINAGE SYSTEM, ALONG WITH NEW, IN THE PROPOSED WORKS.
HE IS TO REPORT TO THE CLIENT THAT HE IS SATISFIED WITH THE INTEGRITY OF THESE PIPES & MANHOLES.

EXISTING 525 DIA CONCRETE COMBINED PUBLIC SEWER DRAIN

EXISTING 450 DIA V.C COMBINED SEWER DRAIN

MH-6002
CL= +103.020m
IL= +98.110m
DEPTH= 4910mm



CLASS Z BEDDING

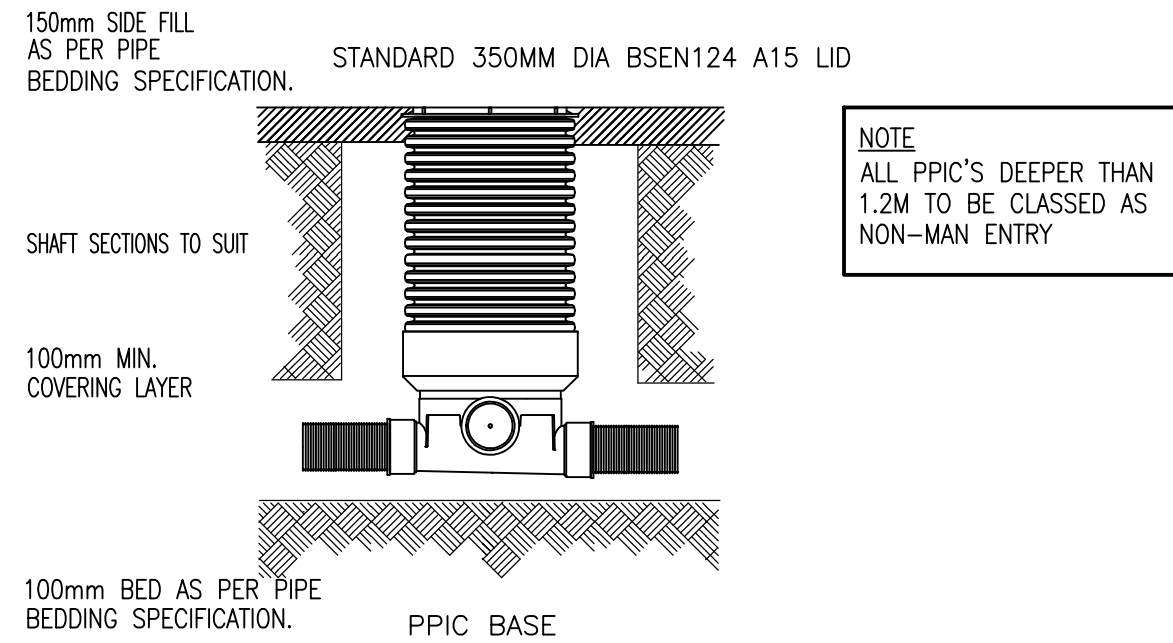
UNDER EXTERNAL AREAS WHERE PIPE CROWN IS LESS THAN 750mm BELOW SURFACE OF AREAS ACCESSIBLE TO TRAFFIC OR LESS THAN 400mm BELOW SURFACE IN ANY OTHER AREAS.
(N.B. FORM VERTICAL CONSTRUCTION JOINTS AT FACE OF ALL FLEXIBLE PIPE JOINTS IN 18mm COMPRESSIBLE BOARD)

CLASS S BEDDING

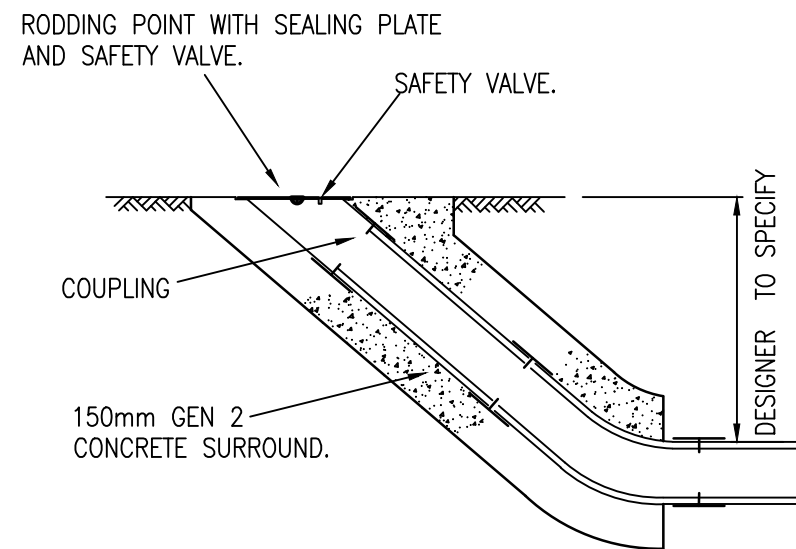
ALL AREAS NOT REQUIRING CLASS Z BEDDING.

PIPE DIAMETER	WIDTH
100	550
150	600
225	700
300	750
375	1050
450	1150
525	1200
600	1350
675	1450
750	1500
825	1600
900	1900
1050	2050
1200	2300

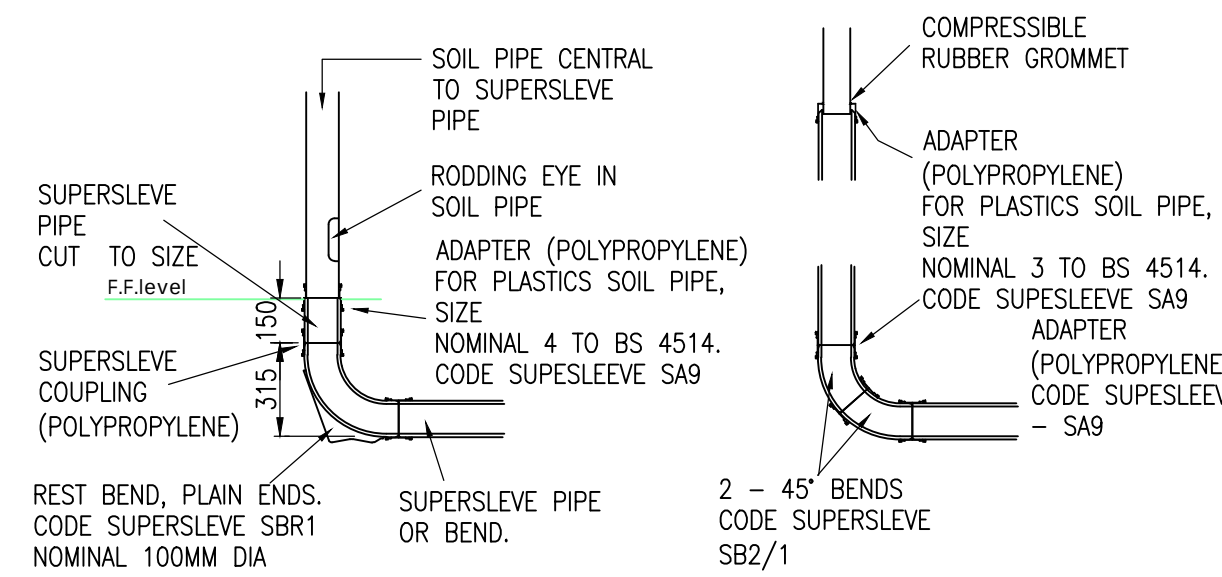
TRENCH WIDTHS



TYPICAL SHALLOW 450mm PPIC DETAIL OUTSIDE BUILDING PERIMETER

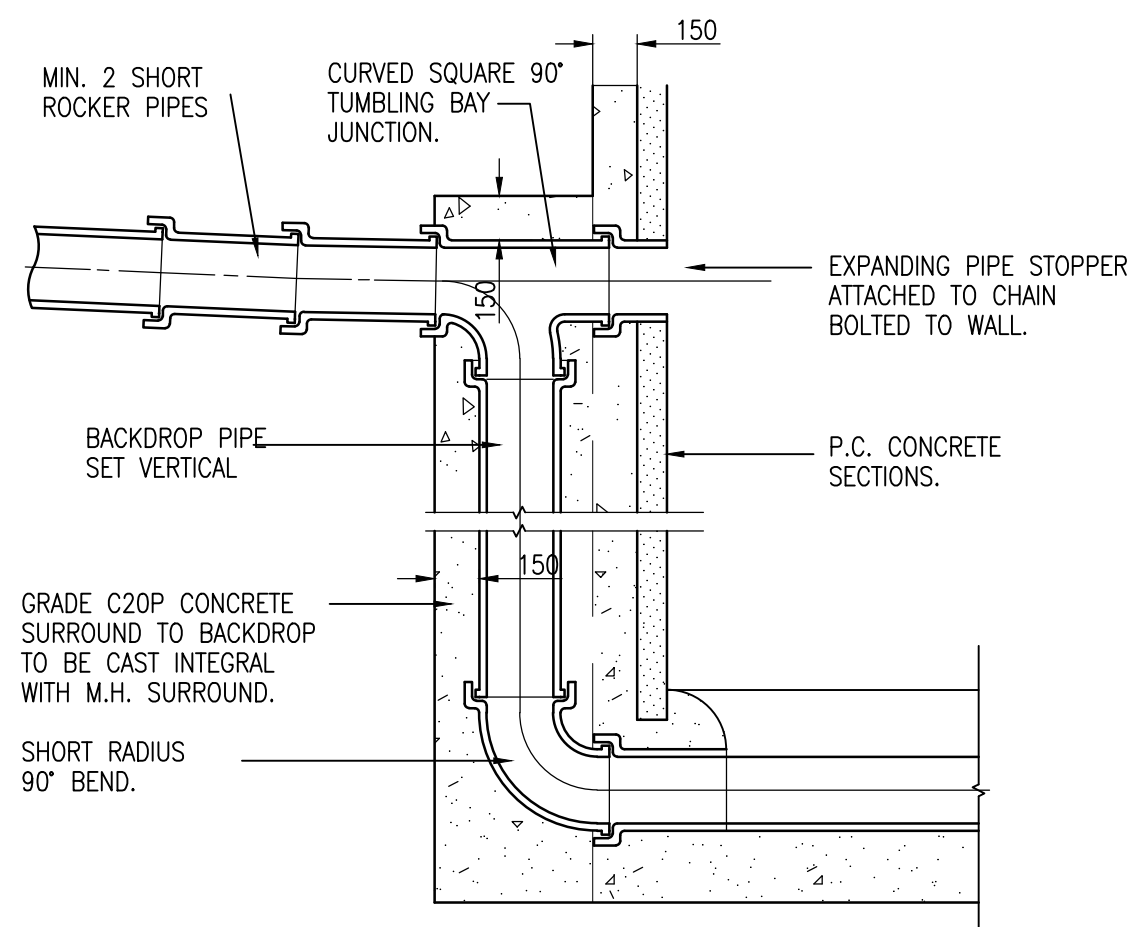


RODDING EYE

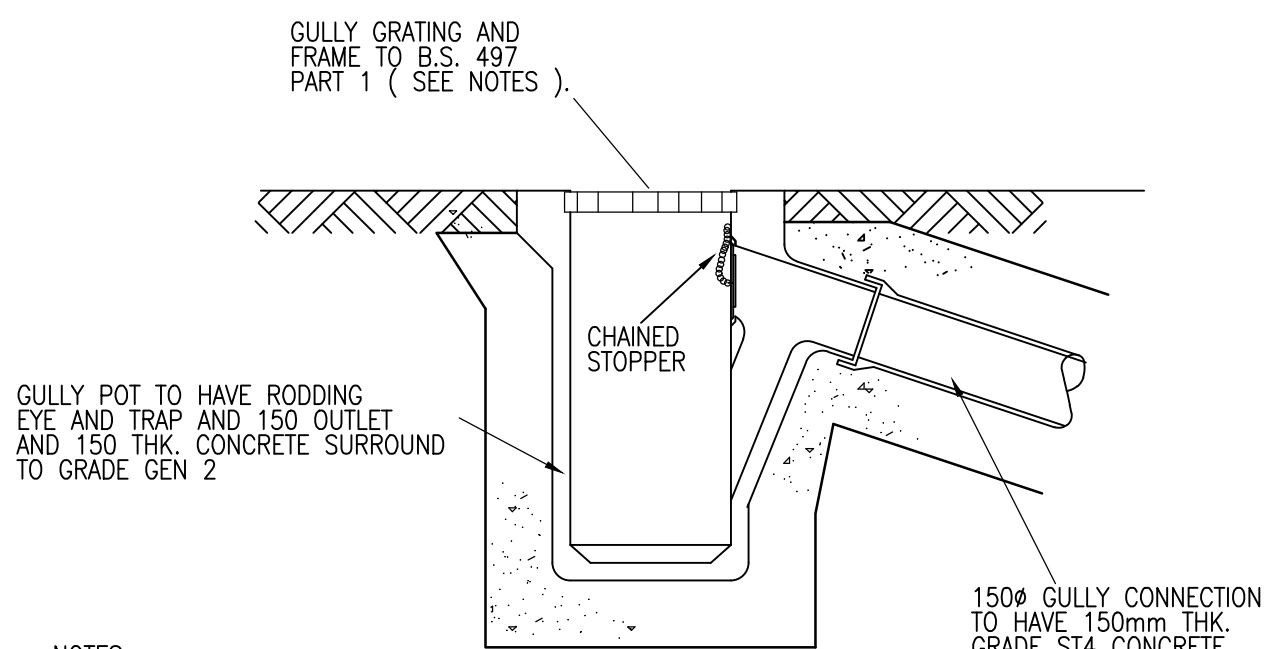


RWP OR SOIL AND VENT PIPE WITH RODDING EYE

Scale 1: 20

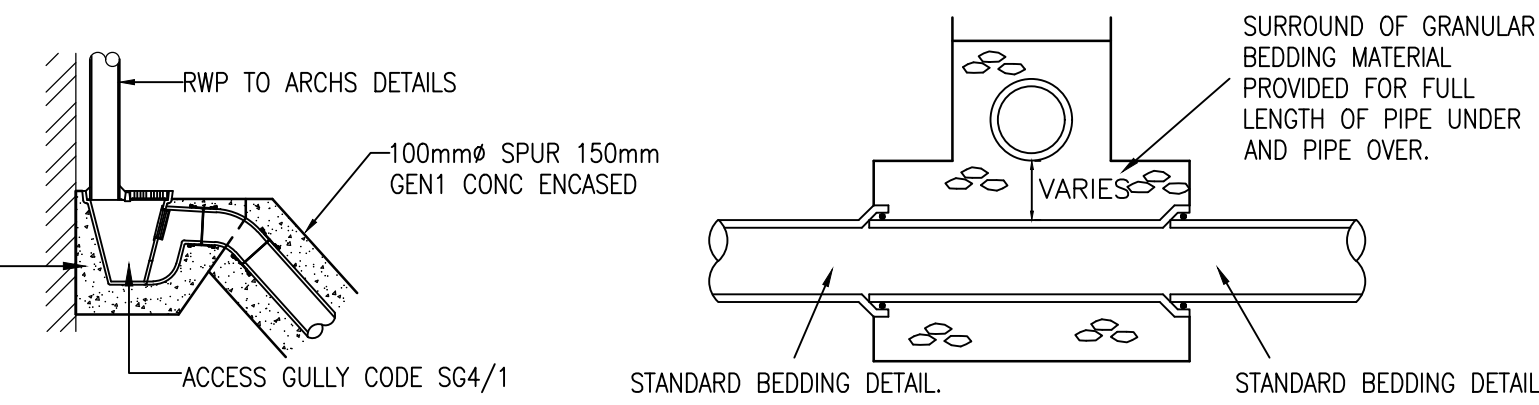


TYPICAL VERTICAL BACKDROP DETAIL



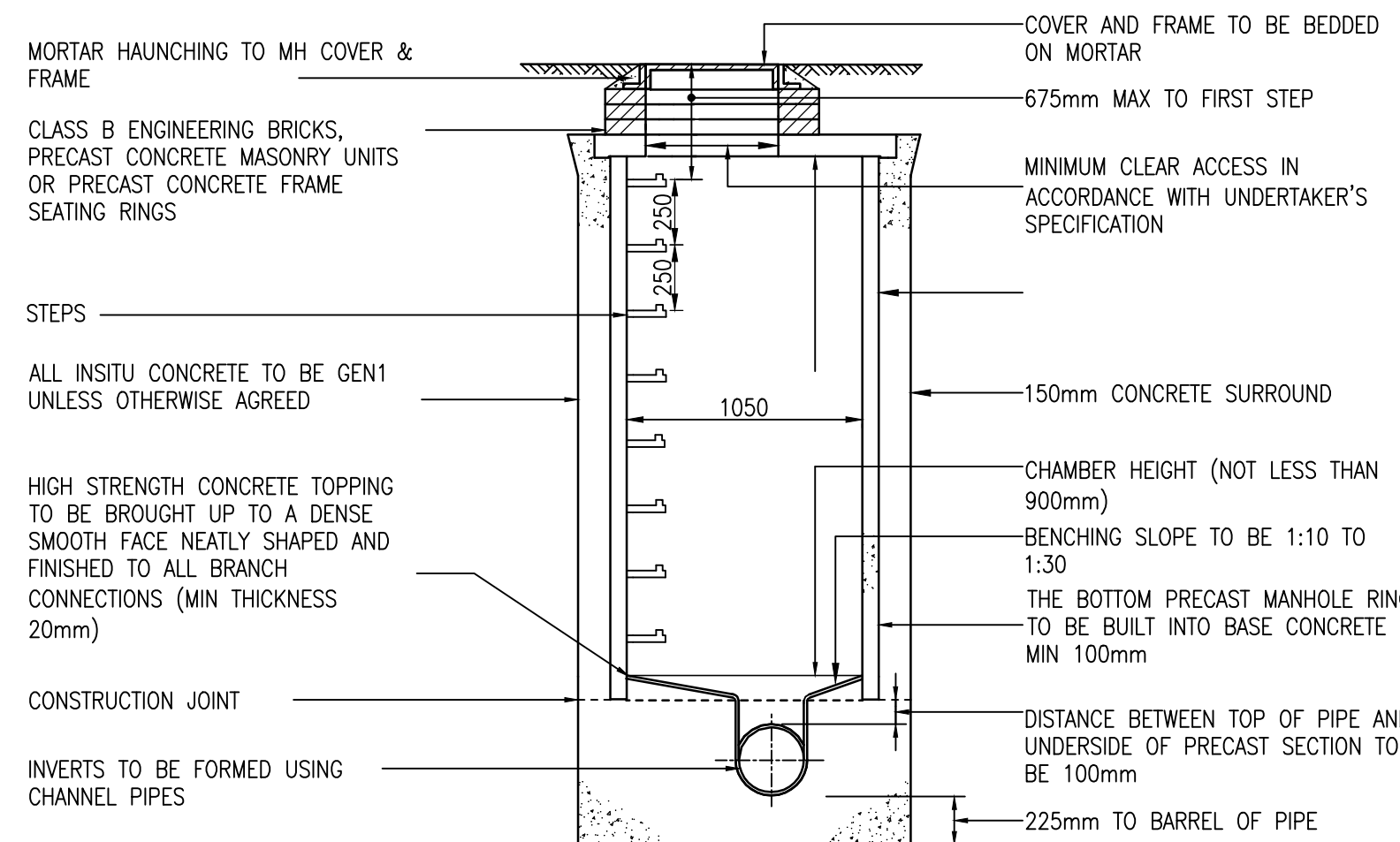
- NOTES
1 GULLY CHAMBERS TO BE P.C.C. TO BS5911, 450mm x 900 DEEP
2 GULLY GRATINGS TO BE CAST IRON TO BS497, GRADE A REF GA1-450

YARD GULLY DETAIL



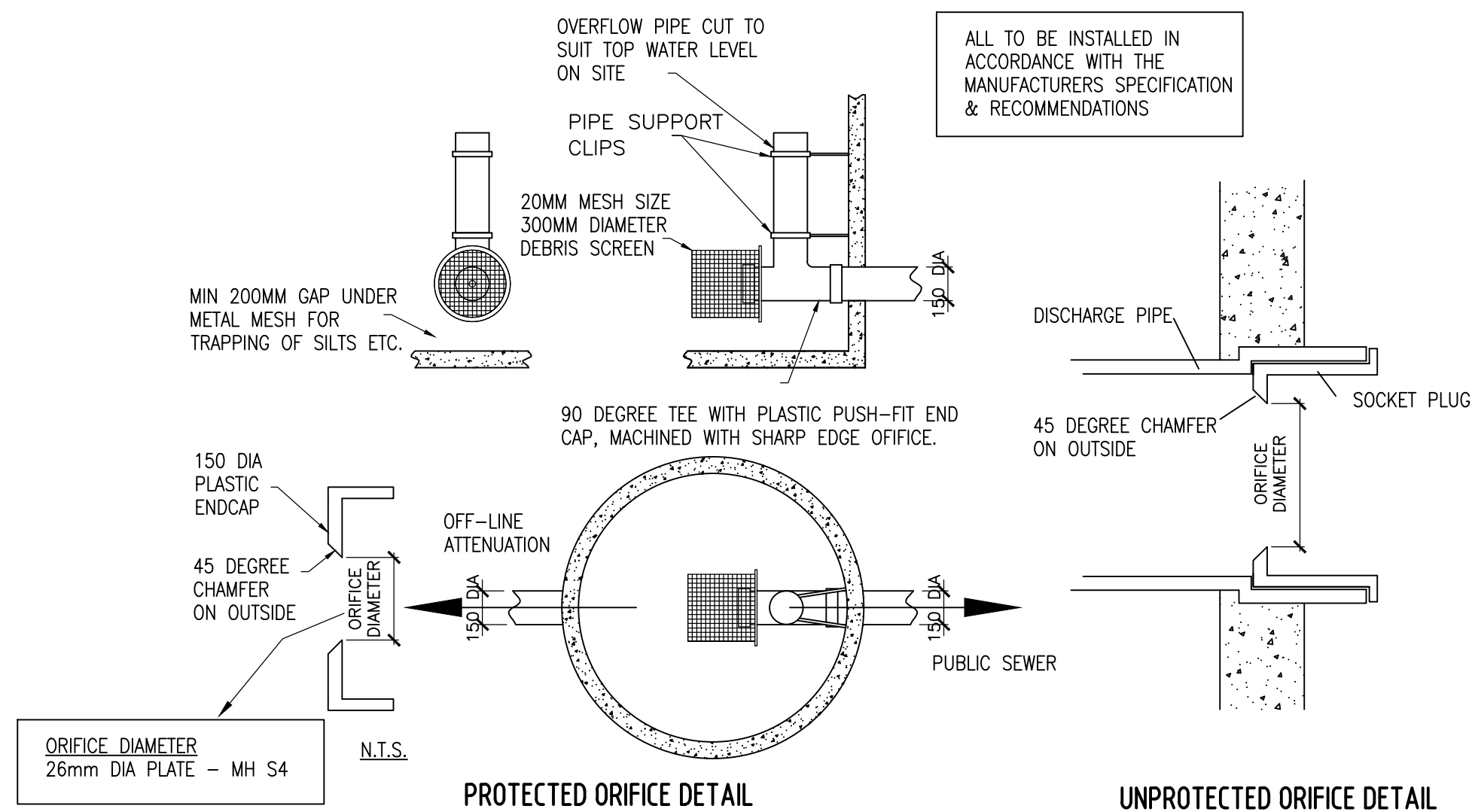
BACK INLET GULLY DETAIL AT RWPs

PIPE CROSSES OVER



TYPICAL MANHOLE DETAIL-1050 CONC

(SCALE 1:25)



PROTECTED ORIFICE DETAIL

UNPROTECTED ORIFICE DETAIL

TYPICAL STORM CHAMBER CONTROL DETAILS - MH-S4

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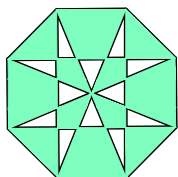
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Rev.	Date		Rev.	by



BRIAN CLANCY HIGBY PARTNERSHIP
Springwood Broomfield Hall, Chelwood Road, Knechtols, Walsley W62 8JZ
Tel: 01565 757790

Client:
LUXE DESIGN

Project Title:
**474 BOLTON ROAD
BURY, BL8 2DU**

Dwg Title:
**PROPOSED DRAINAGE
DETAILS**

Dwg No.:	22090493-021	Revision:	P1
Scale:	1:25	Drawn By / Date:	@ A1 IS OCT 2022

Brian Clancy Higby Partnership Ltd

**Springwood, Booths Hall
Chelford Road,
Knutsford, Cheshire
WA16 8QZ**

FAO:

How to contact us:

**United Utilities Water Limited
Property Searches
Haweswater House
Lingley Mere Business Park
Great Sankey
Warrington
WA5 3LP**

Telephone: 0370 7510101

E-mail: propertysearches@uuplc.co.uk

**Your Ref: 0493
Our Ref: UUPS-ORD-435198
Date: 03/10/2022**

Dear Sirs

Location: 474 BOLTON ROAD, BURY, BL8 2DU

I acknowledge with thanks your request dated 27/09/2022 for information on the location of our services.

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

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

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

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

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

Yours Faithfully,



Karen McCormack
Property Searches Manager

TERMS AND CONDITIONS - WASTEWATER AND WATER DISTRIBUTION PLANS

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

TERMS AND CONDITIONS:

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



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

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Refo	Cover	Func	Invert	Size x	Size y	Shape	Matl	Length	Grad	Refo	Cover	Func	Invert	Size x	Size y	Shape	Matl	Length	Grad
7211		FO	0	225		VC	25.27783	VC	35.45331	7209		FO	0	150		VC	21.8167	1 in 100	
8302		FO	0	225		VC	27.76489	VC	35.45331	7208		FO	0	150		VC	21.8167	1 in 100	
8304		FO	0	225		VC	26.40076	VC	35.45331	7207		FO	0	150		VC	21.8167	1 in 100	
8306		FO	0	225		VC	26.40076	VC	35.45331	7206		FO	0	150		VC	21.8167	1 in 100	
8308		FO	0	225		VC	26.40076	VC	35.45331	7205		FO	0	150		VC	21.8167	1 in 100	
8310		FO	0	225		VC	26.40076	VC	35.45331	7204		FO	0	150		VC	21.8167	1 in 100	
8312		FO	0	225		VC	26.40076	VC	35.45331	7203		FO	0	150		VC	21.8167	1 in 100	
8314		FO	0	225		VC	26.40076	VC	35.45331	7202		FO	0	150		VC	21.8167	1 in 100	
8316		FO	0	225		VC	26.40076	VC	35.45331	7201		FO	0	150		VC	21.8167	1 in 100	
7918	98.39	SW	0	225		VC	55.29434	VC	35.45331	7917	98.39	SW	0	225		VC	55.29434	VC	35.45331
8903		FO	0	525		CO	21.39458	CO	21.39458	8902		FO	0	525		CO	21.39458	CO	21.39458
8902		FO	0	525		CO	24.62777	CO	24.62777	8901		FO	0	525		CO	24.62777	CO	24.62777
8906		CO	0	300		VC	9.556196	VC	16.45109	8905		CO	0	300		VC	9.556196	VC	16.45109
8904		CO	0	300		VC	16.45109	VC	16.45109	8903		CO	0	300		VC	16.45109	VC	16.45109
7101	98.61	CO	0	95.20	450	VC	30	30	1 in 70	7100	98.61	CO	0	95.20	450	VC	30	30	1 in 70
6201	100.41	SW	98.31	225		VC	42.7277	VC	130.103	6200	100.41	SW	98.31	225		VC	42.7277	VC	130.103
6203		SW	0	225		VC	72.34639	VC	72.34639	6202		SW	0	225		VC	72.34639	VC	72.34639
6204	101.58	SW	99.37	225		VC	67.62596	VC	113	6203	101.58	SW	99.37	225		VC	67.62596	VC	113
6205		SW	0	225		VC	45.80702	VC	10.4	6204		SW	0	225		VC	45.80702	VC	10.4
7204	98.57	SW	96.92	300		CO	31.88044	CO	31.88044	7203	98.57	SW	96.92	300		CO	31.88044	CO	31.88044
6104		SW	0	225		VC	24.41311	VC	11.159	6103		SW	0	225		VC	24.41311	VC	11.159
7203		SW	0	225		VC	11.2918	VC		7202		SW	0	225		VC	11.2918	VC	
7206		SW	0	225		VC	83.979	VC		7205		SW	0	225		VC	83.979	VC	
7105	97.99	SW	96.37	375		CO	16.27882	CO	11.181	7104	97.99	SW	96.37	375		CO	16.27882	CO	11.181
7471		FO	150			VC	82.18269	VC		7470		FO	150			VC	82.18269	VC	
6901	101.52	CO	99.38	225		VC	81.76879	VC	1 in 60	6900	101.52	CO	99.38	225		VC	81.76879	VC	1 in 60
6903		CO	100	225		VC	44.55334	VC	1 in 93	6902		CO	100	225		VC	44.55334	VC	1 in 93
6902	101.76	SW	100.54	225		VC	30.88689	VC	1 in 61	6901	101.76	SW	100.54	225		VC	30.88689	VC	1 in 61
6903	102.98	CO	101.15	225		VC	68.15434	VC	1 in 39	6902	102.98	CO	101.15	225		VC	68.15434	VC	1 in 39
6901	97.86	CO	95.46	225		VC	43.1361	VC	1 in 120	6900	97.86	CO	95.46	225		VC	43.1361	VC	1 in 120
5703	97.71	FO	97.23			VC	23.76973	VC	1 in 63	5702	97.71	FO	97.23			VC	23.76973	VC	1 in 63
6824		FO	100			VC	18.10287	VC		6823		FO	100			VC	18.10287	VC	
6830		FO	100			VC	25.83441	VC		6829		FO	100			VC	25.83441	VC	
5704	99.92	SW	97.83	225		VC	53.82379	VC	1 in 26	5703	99.92	SW	97.83	225		VC	53.82379	VC	1 in 26
4800	102.31	SW	100.47	225		VC	60.46487	VC	1 in 29	4799	102.31	SW	100.47	225		VC	60.46487	VC	1 in 29
4801		SW	0	225		VC	10.27533	VC		4800		SW	0	225		VC	10.27533	VC	
5801	98.33	FO	97.38	225		VC	69.959	VC	1 in 205	5800	98.33	FO	97.38	225		VC	69.959	VC	1 in 205
4800	106.85	SW	100.74	225		VC	56.61272	VC	1 in 145	4799	106.85	SW	100.74	225		VC	56.61272	VC	1 in 145
5907		FO	150			VC	10.73109	VC		5906		FO	150			VC	10.73109	VC	
3702	102.26	SW	100.99	225		VC	59.9026	VC	1 in 30	3701	102.26	SW	100.99	225		VC	59.9026	VC	1 in 30
3704	104.64	SW	102.99	225		VC	23.85372	VC	1 in 40	3703	104.64	SW	102.99	225		VC	23.85372	VC	1 in 40
3801	110.33	SW	108.65	225		VC	71.11259	VC	1 in 109	3800	110.33	SW	108.65	225		VC	71.11259	VC	1 in 109
8027		CO	0	225		VC	7.47698	VC		8026		CO	0	225		VC	7.47698	VC	
8013		CO	100.29	100.35	450	VC	6.429237	VC	1 in 68	8012		CO	100.29	100.35	450	VC	6.429237	VC	1 in 68
8215		CO	0	225		VC	68.24564	VC		8214		CO	0	225		VC	68.24564	VC	
4104		CO	0	100		VC	12.28862	VC		4103		CO	0	100		VC	12.28862	VC	
5102		CO	0	150		VC	5.66604	VC		5101		CO	0	150		VC	5.66604	VC	
4900	110.09	SW	108.39	225		VC	30.3526	VC		4899	110.09	SW	108.39	225		VC	30.3526	VC	
4900	109.12	CO	107.43	375		VC	63.60032	VC	1 in 68	4899	109.12	CO	107.43	375		VC	63.60032	VC	1 in 68
3001	114.66	CO	113.15	225		VC	70.62071	VC	1 in 50	3000	114.66	CO	113.15	225		VC	70.62071	VC	1 in 50
3002	112.24	CO	110.43	300		VC	83.47727	VC	1 in 36	3001	112.24	CO	110.43	300		VC	83.47727	VC	1 in 36
4100	108.89	CO	108.18	225		VC	88.60023	VC	1 in 41	4099	108.89	CO	108.18	225		VC	88.60023	VC	1 in 41
8203	97.42	CO	93.81	225		VC	31.76476	VC	1 in 29	8202	97.42	CO	93.81	225		VC	31.76476	VC	1 in 29
8103	96.64	CO	94.24	225		VC	69.30754	VC	1 in 140	8102	96.64	CO	94.24	225		VC	69.30754	VC	1 in 140
3255		FO	150			VC	55.44366	VC	1 in 129	3254		FO	150			VC	55.44366	VC	1 in 129
3206		FO	150			VC	16.18564	VC		3205		FO	150			VC	16.18564	VC	
8113	95.53	CO	93.56	225		VC	6.666606	VC		8112	95.53	CO	93.56	225		VC	6.666606	VC	
8207		CO	0	225		VC	8.602325	VC		8206		CO	0	225		VC	8.602325	VC	
7301		FO	0	225		VC	4.271781	VC		7300		FO	0	225		VC	4.271781	VC	
8901		FO	0	225		VC	47.47502	VC		8900		FO	0	225		VC	47.47502	VC	
8911		SW	0	100		VC	8.98827	VC		8910		SW	0	100		VC	8.98827	VC	
7807		CO	0	300		VC	17.27447	VC		7806		CO	0	300		VC	17.27447	VC	
8012		SW	0	225		VC	33.07831	VC		8011		SW	0	225		VC	33.07831	VC	
8903		CO	0	300		VC	17.24277	VC		8902		CO	0	300		VC	17.24277	VC	
8012		SW	0	225		VC	16.39302	VC		8011		SW	0	225		VC	16.39302	VC	
7203		CO	0	225		VC	16.21263	VC		7202		CO	0	225		VC	16.21263	VC	
7011		SW	0	225		VC	16.54284	VC		7010		SW	0	225		VC	16.54284	VC	
7203		SW	0	600		VC	20.61563	VC		7202		SW	0	600		VC	20.61563	VC	
7208	98.58	SW	97.83	225		VC	47.24484	VC		7207	98.58	SW	97.83	225		VC	47.24484	VC	
7210		SW	96.49	375		VC	22.08702	VC	1 in 276	7209		SW	96.49	375		VC	22.08702	VC	1 in 276
7214		SW	0	225		VC	10.82364	VC		7213		SW	0	225		VC	10.82364	VC	
7216	98.55	CO	96.99	225		VC	6.62689	VC		7215	98.55	CO	96.99	225		VC	6.6268		



BRIAN CLANCY HIGBY PARTNERSHIP
CHARTERED STRUCTURAL & CIVIL ENGINEERS

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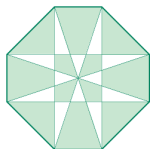
for

EXTENSION

to

474 BOLTON ROAD

BURY



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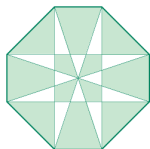
Brian Clancy Higby Partnership is the trading name of Brian Clancy Higby Partnership Limited - Registered Office: 5 Brooklands Place, Brooklands Road, Sale, M33 3SD - Registered Company No. 5467369



Introduction

The following calculations are for the surface water drainage calculations for the proposed extension to the above property. The existing property is a detached property, discharging into a 150mm drain, which runs from the rear right hand corner of the property, out to the right, into the public sewer network in Colville Rd.

The current run-off from the house has been evaluated in the following calculations and the additional total drainage established for all storms up to 1 in 100 year plus 45% climate change factor established, restricting the new flow rate, to match the existing. This requires a restricting orifice plate to be provided to limit the flow rate to the existing flow rate, requiring attenuation within the new drainage system, for storage during the storm events.



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		Page 3
		Bolton Road Existing SW Network
Date 18/10/2022	Designed by BCH	
File Existing SW 19-10-22.MDX	Checked by	

XP Solutions

Network 2020.1.3

Manhole Schedules for EXISTING SW 19-10-22.SWS

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)
101	199.850	0.700	Open Manhole	600	1.000	199.150	100				
102	199.850	0.800	Open Manhole	600	1.001	199.050	100	1.000	199.050	100	
103	199.850	0.700	Open Manhole	600	2.000	199.150	100				
104	199.850	0.800	Open Manhole	600	2.001	199.050	100	2.000	199.050	100	
105	199.850	1.350	Open Manhole	600	1.002	198.500	150	1.001	198.550	100	
								2.001	198.550	100	
106	199.850	1.400	Open Manhole	1200	1.003	198.450	150	1.002	198.450	150	
107	199.850	1.550	Open Manhole	0		OUTFALL		1.003	198.300	150	

MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
101	2918.561	1015.471	2918.561	1015.471	Required	
102	2914.923	1020.164	2914.923	1020.164	Required	
103	2927.486	1014.205	2927.486	1014.205	Required	
104	2930.490	1019.236	2930.490	1019.236	Required	
105	2923.976	1028.492	2923.976	1028.492	Required	
106	2925.988	1037.722	2925.988	1037.722	Required	
107	2930.175	1045.713			No Entry	

		Bolton Road Existing SW Network		Page 4	
Date 18/10/2022		Designed by BCH			
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PIPELINE SCHEDULES for EXISTING SW 19-10-22.SWS

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	100	101	199.850	199.150	0.600	Open Manhole	600
1.001	o	100	102	199.850	199.050	0.700	Open Manhole	600
2.000	o	100	103	199.850	199.150	0.600	Open Manhole	600
2.001	o	100	104	199.850	199.050	0.700	Open Manhole	600
1.002	o	150	105	199.850	198.500	1.200	Open Manhole	600
1.003	o	150	106	199.850	198.450	1.250	Open Manhole	1200

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	5.938	59.4	102	199.850	199.050	0.700	Open Manhole	600
1.001	12.301	24.6	105	199.850	198.550	1.200	Open Manhole	600
2.000	5.859	58.6	104	199.850	199.050	0.700	Open Manhole	600
2.001	11.318	22.6	105	199.850	198.550	1.200	Open Manhole	600
1.002	9.446	188.9	106	199.850	198.450	1.250	Open Manhole	1200
1.003	9.021	60.1	107	199.850	198.300	1.400	Open Manhole	0

Free Flowing Outfall Details for EXISTING SW 19-10-22.SWS

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D, L (mm)	W (mm)
1.003	107	199.850	198.300	0.000	0	0

Simulation Criteria for EXISTING SW 19-10-22.SWS

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 Coefficient	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 Storage Structures 0
Number of Online Controls 0 Number of Time/Area Diagrams 0
Number of Offline Controls 0 Number of Real Time Controls 0

Synthetic Rainfall Details

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		Page 5																				
	Bolton Road Existing SW Network																					
Date 18/10/2022	Designed by BCH																					
File Existing SW 19-10-22.MDX	Checked by																					
XP Solutions	Network 2020.1.3																					
<u>Synthetic Rainfall Details</u> <table> <tr> <td>Rainfall Model</td> <td>FSR</td> <td>Profile Type</td> <td>Summer</td> </tr> <tr> <td>Return Period (years)</td> <td>2</td> <td>Cv (Summer)</td> <td>0.750</td> </tr> <tr> <td>Region</td> <td>England and Wales</td> <td>Cv (Winter)</td> <td>0.840</td> </tr> <tr> <td>M5-60 (mm)</td> <td>19.000</td> <td>Storm Duration (mins)</td> <td>30</td> </tr> <tr> <td>Ratio R</td> <td>0.304</td> <td></td> <td></td> </tr> </table>			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	0.304		
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		Page 6																																																																						
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<u>Simulation Criteria</u> 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 Storage Structures 0 Number of Online Controls 0 Number of Time/Area Diagrams 0 Number of Offline Controls 0 Number of Real Time Controls 0 <u>Synthetic Rainfall Details</u> Rainfall Model FSR Ratio R 0.300 Region England and Wales Cv (Summer) 0.750 M5-60 (mm) 19.000 Cv (Winter) 0.840 Margin for Flood Risk Warning (mm) 450.0 Analysis Timestep 2.5 Second Increment (Extended) DTS Status ON DVD Status ON Inertia Status OFF <u>Profile(s) Winter</u> Duration(s) (mins) 360 Return Period(s) (years) 2 Climate Change (%) 0 <table border="1"> <thead> <tr> <th>PN</th> <th>US/MH Name</th> <th>Storm Rank</th> <th>Water Level (m)</th> <th>Surcharged Depth (m)</th> <th>Flooded Volume (m³)</th> <th>Flow / Overflow Cap. (l/s)</th> <th>Half Drain Time (mins)</th> <th>Pipe Flow (l/s)</th> <th>Status</th> </tr> </thead> <tbody> <tr> <td>1.000</td> <td>101</td> <td>1</td> <td>199.163</td> <td>-0.087</td> <td>0.000</td> <td>0.04</td> <td></td> <td>0.3</td> <td>OK</td> </tr> <tr> <td>1.001</td> <td>102</td> <td>1</td> <td>199.064</td> <td>-0.086</td> <td>0.000</td> <td>0.05</td> <td></td> <td>0.6</td> <td>OK</td> </tr> <tr> <td>2.000</td> <td>103</td> <td>1</td> <td>199.163</td> <td>-0.087</td> <td>0.000</td> <td>0.04</td> <td></td> <td>0.3</td> <td>OK</td> </tr> <tr> <td>2.001</td> <td>104</td> <td>1</td> <td>199.064</td> <td>-0.086</td> <td>0.000</td> <td>0.05</td> <td></td> <td>0.6</td> <td>OK</td> </tr> <tr> <td>1.002</td> <td>105</td> <td>1</td> <td>198.535</td> <td>-0.115</td> <td>0.000</td> <td>0.12</td> <td></td> <td>1.4</td> <td>OK</td> </tr> <tr> <td>1.003</td> <td>106</td> <td>1</td> <td>198.476</td> <td>-0.124</td> <td>0.000</td> <td>0.07</td> <td></td> <td>1.4</td> <td>OK</td> </tr> </tbody> </table>			PN	US/MH Name	Storm Rank	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m ³)	Flow / Overflow Cap. (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	1.000	101	1	199.163	-0.087	0.000	0.04		0.3	OK	1.001	102	1	199.064	-0.086	0.000	0.05		0.6	OK	2.000	103	1	199.163	-0.087	0.000	0.04		0.3	OK	2.001	104	1	199.064	-0.086	0.000	0.05		0.6	OK	1.002	105	1	198.535	-0.115	0.000	0.12		1.4	OK	1.003	106	1	198.476	-0.124	0.000	0.07		1.4	OK
PN	US/MH Name	Storm Rank	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m ³)	Flow / Overflow Cap. (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status																																																															
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Network Design Table for SW 18-10-22.SWS

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
1.002	1.780	0.050	35.6	0.013	0.00	0.0	0.600	o	150	Pipe/Conduit	
1.003	9.021	0.150	60.1	0.000	0.00	0.0	0.600	o	150	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)
1.002	50.00	5.50	198.500	0.052	0.0	0.0	0.0	1.69	29.9	7.0
1.003	50.00	5.62	198.450	0.052	0.0	0.0	0.0	1.30	23.0	7.0

		Page 3
	Bolton Road SW Network Calcs	
Date 18/10/2022 File SW 18-10-22.MDX	Designed by BCH Checked by PH	

Manhole Schedules for SW 18-10-22.SWS

MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam., L*W (mm)	PN	Pipe Out Invert Level (m)	Diameter (mm)	Pipes In PN	Invert Level (m)	Diameter (mm)	Backdrop (mm)
2	199.850	0.750	Open Manhole	600	1.000	199.100	150				
3	199.850	0.950	Open Manhole	600	1.001	198.900	150	1.000	198.900	150	
1	199.850	0.750	Open Manhole	600	2.000	199.100	150				
5	199.850	1.300	Open Manhole	600	3.000	198.550	150				
4	199.850	1.350	Open Manhole	1200	1.002	198.500	150	1.001	198.500	150	
								2.000	198.500	150	
								3.000	198.500	150	
6	199.850	1.400	Open Manhole	1200	1.003	198.450	150	1.002	198.450	150	
7	199.850	1.550	Open Manhole	0		OUTFALL		1.003	198.300	150	

MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
2	3024.686	1010.767	3024.686	1010.767	Required	
3	3038.594	1021.731	3038.594	1021.731	Required	
1	3013.265	1021.975	3013.265	1021.975	Required	
5	3018.039	1032.395	3018.039	1032.395	Required	
4	3027.090	1036.324	3027.090	1036.324	Required	
6	3025.988	1037.722	3025.988	1037.722	Required	
7	3030.175	1045.713			No Entry	

		Bolton Road SW Network Calcs		Page 4																																																																																																																																																																																	
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<u>PIPELINE SCHEDULES for SW 18-10-22.SWS</u> <u>Upstream Manhole</u> <table><tr><th>PN</th><th>Hyd Sect</th><th>Diam (mm)</th><th>MH Name</th><th>C.Level (m)</th><th>I.Level (m)</th><th>D.Depth (m)</th><th>MH Connection</th><th>MH DIAM., L*W (mm)</th></tr><tr><td>1.000</td><td>o</td><td>150</td><td>2</td><td>199.850</td><td>199.100</td><td>0.600</td><td>Open Manhole</td><td>600</td></tr><tr><td>1.001</td><td>o</td><td>150</td><td>3</td><td>199.850</td><td>198.900</td><td>0.800</td><td>Open Manhole</td><td>600</td></tr><tr><td>2.000</td><td>o</td><td>150</td><td>1</td><td>199.850</td><td>199.100</td><td>0.600</td><td>Open Manhole</td><td>600</td></tr><tr><td>3.000</td><td>o</td><td>150</td><td>5</td><td>199.850</td><td>198.550</td><td>1.150</td><td>Open Manhole</td><td>600</td></tr><tr><td>1.002</td><td>o</td><td>150</td><td>4</td><td>199.850</td><td>198.500</td><td>1.200</td><td>Open Manhole</td><td>1200</td></tr><tr><td>1.003</td><td>o</td><td>150</td><td>6</td><td>199.850</td><td>198.450</td><td>1.250</td><td>Open Manhole</td><td>1200</td></tr></table> <u>Downstream Manhole</u> <table><tr><th>PN</th><th>Length (m)</th><th>Slope (1:X)</th><th>MH Name</th><th>C.Level (m)</th><th>I.Level (m)</th><th>D.Depth (m)</th><th>MH Connection</th><th>MH DIAM., L*W (mm)</th></tr><tr><td>1.000</td><td>17.710</td><td>88.6</td><td>3</td><td>199.850</td><td>198.900</td><td>0.800</td><td>Open Manhole</td><td>600</td></tr><tr><td>1.001</td><td>18.583</td><td>46.5</td><td>4</td><td>199.850</td><td>198.500</td><td>1.200</td><td>Open Manhole</td><td>1200</td></tr><tr><td>2.000</td><td>19.926</td><td>33.2</td><td>4</td><td>199.850</td><td>198.500</td><td>1.200</td><td>Open Manhole</td><td>1200</td></tr><tr><td>3.000</td><td>9.867</td><td>197.3</td><td>4</td><td>199.850</td><td>198.500</td><td>1.200</td><td>Open Manhole</td><td>1200</td></tr><tr><td>1.002</td><td>1.780</td><td>35.6</td><td>6</td><td>199.850</td><td>198.450</td><td>1.250</td><td>Open Manhole</td><td>1200</td></tr><tr><td>1.003</td><td>9.021</td><td>60.1</td><td>7</td><td>199.850</td><td>198.300</td><td>1.400</td><td>Open Manhole</td><td>0</td></tr></table> <u>Free Flowing Outfall Details for SW 18-10-22.SWS</u> <table><tr><th>Outfall Pipe Number</th><th>Outfall Name</th><th>C. Level (m)</th><th>I. Level (m)</th><th>Min I. Level (m)</th><th>D,L (mm)</th><th>W (mm)</th></tr><tr><td>1.003</td><td>7</td><td>199.850</td><td>198.300</td><td>0.000</td><td>0</td><td>0</td></tr></table> <u>Simulation Criteria for SW 18-10-22.SWS</u> <table><tr><td>Volumetric Runoff Coeff</td><td>0.750</td><td>Additional Flow - % of Total Flow</td><td>0.000</td></tr><tr><td>Areal Reduction Factor</td><td>1.000</td><td>MADD Factor * 10m³/ha Storage</td><td>2.000</td></tr><tr><td>Hot Start (mins)</td><td>0</td><td>Inlet Coefficient</td><td>0.800</td></tr><tr><td>Hot Start Level (mm)</td><td>0</td><td>Flow per Person per Day (l/per/day)</td><td>0.000</td></tr><tr><td>Manhole Headloss Coeff (Global)</td><td>0.500</td><td>Run Time (mins)</td><td>60</td></tr><tr><td>Foul Sewage per hectare (l/s)</td><td>0.000</td><td>Output Interval (mins)</td><td>1</td></tr><tr><td>Number of Input Hydrographs</td><td>0</td><td>Number of Storage Structures</td><td>1</td></tr><tr><td>Number of Online Controls</td><td>1</td><td>Number of Time/Area Diagrams</td><td>0</td></tr><tr><td>Number of Offline Controls</td><td>0</td><td>Number of Real Time Controls</td><td>0</td></tr></table>						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	150	2	199.850	199.100	0.600	Open Manhole	600	1.001	o	150	3	199.850	198.900	0.800	Open Manhole	600	2.000	o	150	1	199.850	199.100	0.600	Open Manhole	600	3.000	o	150	5	199.850	198.550	1.150	Open Manhole	600	1.002	o	150	4	199.850	198.500	1.200	Open Manhole	1200	1.003	o	150	6	199.850	198.450	1.250	Open Manhole	1200	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	17.710	88.6	3	199.850	198.900	0.800	Open Manhole	600	1.001	18.583	46.5	4	199.850	198.500	1.200	Open Manhole	1200	2.000	19.926	33.2	4	199.850	198.500	1.200	Open Manhole	1200	3.000	9.867	197.3	4	199.850	198.500	1.200	Open Manhole	1200	1.002	1.780	35.6	6	199.850	198.450	1.250	Open Manhole	1200	1.003	9.021	60.1	7	199.850	198.300	1.400	Open Manhole	0	Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)	1.003	7	199.850	198.300	0.000	0	0	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 Coefficient	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 Storage Structures	1	Number of Online Controls	1	Number of Time/Area Diagrams	0	Number of Offline Controls	0	Number of Real Time Controls	0
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		Page 5																				
	Bolton Road SW Network Calcs																					
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		Page 6
	Bolton Road SW Network Calcs	
Date 18/10/2022	Designed by BCH	
File SW 18-10-22.MDX	Checked by PH	
XP Solutions	Network 2020.1.3	
<u>Online Controls for SW 18-10-22.SWS</u> <u>Orifice Manhole: 4, DS/PN: 1.002, Volume (m³): 2.3</u> Diameter (m) 0.026 Invert Level (m) 198.500 Discharge Coefficient 0.600		
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		Page 7																																																																																				
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<u>Storage Structures for SW 18-10-22.SWS</u> <u>Cellular Storage Manhole: 5, DS/PN: 3.000</u> Invert Level (m) 198.550 Safety Factor 2.0 Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95 Infiltration Coefficient Side (m/hr) 0.00000 <table><tr><th>Depth (m)</th><th>Area (m²)</th><th>Inf. Area (m²)</th><th>Depth (m)</th><th>Area (m²)</th><th>Inf. Area (m²)</th></tr><tr><td>0.000</td><td>30.0</td><td>30.0</td><td>1.300</td><td>0.0</td><td>48.6</td></tr><tr><td>0.100</td><td>30.0</td><td>32.2</td><td>1.400</td><td>0.0</td><td>48.6</td></tr><tr><td>0.200</td><td>30.0</td><td>34.4</td><td>1.500</td><td>0.0</td><td>48.6</td></tr><tr><td>0.300</td><td>30.0</td><td>36.6</td><td>1.600</td><td>0.0</td><td>48.6</td></tr><tr><td>0.400</td><td>30.0</td><td>38.8</td><td>1.700</td><td>0.0</td><td>48.6</td></tr><tr><td>0.500</td><td>30.0</td><td>41.0</td><td>1.800</td><td>0.0</td><td>48.6</td></tr><tr><td>0.600</td><td>30.0</td><td>43.1</td><td>1.900</td><td>0.0</td><td>48.6</td></tr><tr><td>0.700</td><td>30.0</td><td>45.3</td><td>2.000</td><td>0.0</td><td>48.6</td></tr><tr><td>0.800</td><td>30.0</td><td>47.5</td><td>2.100</td><td>0.0</td><td>48.6</td></tr><tr><td>0.900</td><td>0.0</td><td>48.6</td><td>2.200</td><td>0.0</td><td>48.6</td></tr><tr><td>1.000</td><td>0.0</td><td>48.6</td><td>2.300</td><td>0.0</td><td>48.6</td></tr><tr><td>1.100</td><td>0.0</td><td>48.6</td><td>2.400</td><td>0.0</td><td>48.6</td></tr><tr><td>1.200</td><td>0.0</td><td>48.6</td><td>2.500</td><td>0.0</td><td>48.6</td></tr></table>			Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	0.000	30.0	30.0	1.300	0.0	48.6	0.100	30.0	32.2	1.400	0.0	48.6	0.200	30.0	34.4	1.500	0.0	48.6	0.300	30.0	36.6	1.600	0.0	48.6	0.400	30.0	38.8	1.700	0.0	48.6	0.500	30.0	41.0	1.800	0.0	48.6	0.600	30.0	43.1	1.900	0.0	48.6	0.700	30.0	45.3	2.000	0.0	48.6	0.800	30.0	47.5	2.100	0.0	48.6	0.900	0.0	48.6	2.200	0.0	48.6	1.000	0.0	48.6	2.300	0.0	48.6	1.100	0.0	48.6	2.400	0.0	48.6	1.200	0.0	48.6	2.500	0.0	48.6
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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 Coeffiecient 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 Storage Structures 1 Number of Online Controls 1 Number of Time/Area Diagrams 0 Number of Offline Controls 0 Number of Real Time Controls 0 Synthetic Rainfall Details Rainfall Model FSR Ratio R 0.307 Region England and Wales Cv (Summer) 0.750 M5-60 (mm) 18.900 Cv (Winter) 0.840 Margin for Flood Risk Warning (mm) 450.0 Analysis Timestep 2.5 Second Increment (Extended) DTS Status ON DVD Status ON Inertia Status OFF Profile(s) Winter Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960 Return Period(s) (years) 100 Climate Change (%) 45																																																																											
<table><tr><td></td><td>US/MH</td><td></td><td>Return</td><td>Climate</td><td>First (X)</td><td>First (Y)</td><td>First (Z)</td><td>Overflow</td></tr><tr><td>PN</td><td>Name</td><td>Storm</td><td>Period</td><td>Change</td><td>Surcharge</td><td>Flood</td><td>Overflow</td><td>Act.</td></tr><tr><td>1.000</td><td>2</td><td>240 Winter</td><td>100</td><td>+45%</td><td>100/120 Winter</td><td></td><td></td><td></td></tr><tr><td>1.001</td><td>3</td><td>240 Winter</td><td>100</td><td>+45%</td><td>100/15 Winter</td><td></td><td></td><td></td></tr><tr><td>2.000</td><td>1</td><td>240 Winter</td><td>100</td><td>+45%</td><td>100/120 Winter</td><td></td><td></td><td></td></tr><tr><td>3.000</td><td>5</td><td>240 Winter</td><td>100</td><td>+45%</td><td>100/15 Winter</td><td></td><td></td><td></td></tr><tr><td>1.002</td><td>4</td><td>240 Winter</td><td>100</td><td>+45%</td><td>100/15 Winter</td><td></td><td></td><td></td></tr><tr><td>1.003</td><td>6</td><td>240 Winter</td><td>100</td><td>+45%</td><td></td><td></td><td></td><td></td></tr></table>					US/MH		Return	Climate	First (X)	First (Y)	First (Z)	Overflow	PN	Name	Storm	Period	Change	Surcharge	Flood	Overflow	Act.	1.000	2	240 Winter	100	+45%	100/120 Winter				1.001	3	240 Winter	100	+45%	100/15 Winter				2.000	1	240 Winter	100	+45%	100/120 Winter				3.000	5	240 Winter	100	+45%	100/15 Winter				1.002	4	240 Winter	100	+45%	100/15 Winter				1.003	6	240 Winter	100	+45%				
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