APPENDIX A – PROPOSED DEVELOPMENT



LEGEND

- BIN STORE
- AFFORDABLE UNITS
- GRAY TO GREEN CORRIDOR
- EASEMENT
- EASEMENT
- HUTCHINSONS GOIT
- Proposed dwelling
- Proposed dwelling to be built opposite hand
- Proposed brick built garage
- Propsed garage space
- Common areas of shared drives in contrasting material or kerb edgings to delineate shared drive area
- SF1 — Proposed 1.8m high feather edge boarded timber screen fence
- SF2 — Proposed 1.8m high feather edge boarded timber screen fence with P.C.C. posts & gravel boards
- SW — Proposed 1.8m high/0.44m square brick piers at 2.0m ctrs with 0.65m high brick dwarf wall/feather edged borded infill panels
- Proposed 1.2m high Contemporary railings
- Proposed 1.25m high Post & Rail Fence
- Existing hedge to be retained / Existing hedge to be removed
- Existing tree to be retained
- Existing tree to be removed

Acoustic Insulation Requirements for Dwellings Fronting onto the A6053

For facades shown in red:

Glazing: 29 dB (Rw+Ctr)
Ventilators: 37 dB (Dn,e,w+Ctr)

EAST LANCS PAPER MILL

SCHEDULE OF ACCOMMODATION

AFFORDABLE

NAME	DESCRIPTION	SIZE (sqft)	Units	TOTAL (sqft)
GRASSMERE	1 BED MAISONETTE + PARKING	504	16	8064
WINDERMERE	1 BED MAISONETTE + PARKING	543	22	11946
AMBLESIDE	1 BED MAISONETTE + PARKING	605	16	9680
BUXTON SP	3 BED MEWS + PARKING	921	1	921
BUXTON	3 BED MEWS + PARKING	963	32	30816
BRAMLEY	3 BED MEWS + PARKING	986	4	3944
CALDBECK	4 BED MEWS + PARKING	1062	9	9558
		Total	100	74929

PRIVATE APARTMENTS

NAME	DESCRIPTION	SIZE (sqft)	Units	TOTAL (sqft)
ABBEY	2 BED APARTMENT + PARKING	738	21	15498
KENSINGTON	2 BED APARTMENT + PARKING	711	16	11376
EDGEWARE	2 BED FLY OVER APT + PARKING	685	9	6165
ROSEBERRY	2 BED DUPLEX APT + PARKING	703	9	6327
		Total	55	39366

PRIVATE HOUSING - MEWS + SEMIS

NAME	DESCRIPTION	SIZE (sqft)	Units	TOTAL (sqft)
CAMBERLEY	2 BED MEWS + PARKING	753	12	9036
BAKEWELL	2 BED S/A MEWS + PARKING	770	1	770
DIDSBURY	3 BED SEMI-DET + SINGLE GARAGE	874	14	12236
DISLEY	3 BED SEMI-DET + SINGLE GARAGE	934	15	14010
DISLEY +	3 BED SEMI-DET + SINGLE GARAGE	1140	4	4560
TIMPERLEY	3 BED SEMI-DET + SINGLE GARAGE	902	3	2706
TIMPERLEY +	3 BED SEMI-DET + SINGLE GARAGE	1164	17	19788
CAPESTHORPE	3 BED SEMI-DET + SINGLE GARAGE	947	12	11364
DISLEY	3 BED MEWS + PARKING	934	11	10274
LYMM	3 BED 3 ST MEWS + CARPORT	1111	16	17776
CHICHESTER	3 BED 3 ST S/A MEWS + CARPORT	1158	2	2316
DALTON	3 BED SEMI-DET + GARAGE	938	12	11256
		Total	119	116092

PRIVATE HOUSING - DETACHED - 3 BEDS

NAME	DESCRIPTION	SIZE (sqft)	Units	TOTAL (sqft)
COTSWOLD / RYDALE	3 BED DET + DET SINGLE GARAGE	947	7	6629
DAVENHAM	3 BED DET + DET SINGLE GARAGE	957	30	28710
KNUTSFORD	3 BED DET + INT SINGLE GARAGE	1056	16	16896
DAVENHAM +	3 BED DET + DET SINGLE GARAGE	1176	2	2352
		Total	55	54587

PRIVATE HOUSING - DETACHED - 4 BEDS

NAME	DESCRIPTION	SIZE (sqft)	Units	TOTAL (sqft)
BROXTON / BRANCASTER	4 BED DET + DET SINGLE GARAGE	1170	14	16380
MALHAM	4 BED DET + DET SINGLE GARAGE	1189	3	3567
ADLINGTON	4 BED DET + INT SINGLE GARAGE	1119	22	24618
CRANLEIGH	4 BED DET + DET SINGLE GARAGE	1358	16	21728
ABINGDON	4 BED DET + INT SINGLE GARAGE	1407	16	22512
		Total	71	88805
		Total	400	373779

REV	DESCRIPTION	DATE	INIT
B	SF2 FENCES ADDED TO ALL BACK GARDENS & RAILINGS CHANGED TO CONTEMPORARY RAILINGS	16.11.23	CW
A	LAYOUT AMENDED FOLLOWING SLIGHT REPLAN	07.09.23	CW

Morris Homes (North) Limited
Morland House
Altrincham Road
Wilmslow
Cheshire SK9 5NW
Tel: (01625) 544 444
Fax: (0845) 833 1845

Job. Title

EAST LANCS PAPER MILL
RADCLIFFE

Dwg. Title

PLANNING LAYOUT

date	drawn	checked	scale	dwg.no	rev
14.03.23			1:1000 @ A0	PL0-P4	B

APPENDIX B – TOPOGRAPHIC SURVEY

N

W E

S

SURVEY ORIENTATED TO OS GRID (OSGB36-15)

SURVEY LEGEND

FEATURES

TOP OF BANK
BOTTOM OF BANK
SURVEY STATION
TREE
HEDGE
TREE CANOPY
BUSHES
VEGETATION

SURVEY ANNOTATIONS

AV	AIR VALVE
B	BOLLARD
BS	BUS STOP
BT	BRITISH TELECOM IC
CPS	CONCRETE PAVING SLABS
CP	CATCH PIT
DR	DRAIN
EB	ELECTRIC CONTROL BOX
EL	ELECTRICAL IC
EP	ELECTRICITY POLE
ER	EARTH ROD
FH	FIRE HYDRANT
FP	FLAG POLE
G	GULLY
GH	GREENHOUSE
GP	GATE POST
GV	GAS VALVE
IC	INSPECTION COVER
JB	JUNCTION BOX
JKW	JAPANESE KNOT WEED
KO	KERB OUTLET
LH	LAMP HOLE
LP	LAMP POST/LIGHT COLUMN
MH	MANHOLE
MP	MONITOR POINT
NP	NAME PLATE
OHC	OVERHEAD CABLES
PB	POST BOX
PM	PARKING METER
PS	POST
PYL	ELECTRICITY PYLON
RE	RODDING EYE
RS	ROAD SIGN
RWP	RAIN WATER PIPE
ST	STOP TAP
SM	SERVICE MARKER
SW	SOIL VENT
SV	STOP VALVE / SLUICE VALVE
SVP	SOIL VENT PIPE
TB	TELEPHONE BOX
TL	TRAFFIC LIGHTS
TM	TELEPHONE MAST
TP	TELEGRAPH POLE
TPS	TACTILE PAVING SLABS
VP	VENT PIPE
WM	WATER METER
WO	WASH OUT
UTL	UNABLE TO LIFT
UTE	UNABLE TO SURVEY

BOUNDARY ANNOTATIONS

BARB WIRE FENCE	BW/F
CHAIN LINK FENCE	CL/F
CONC POST AND PANEL	CP&P/F
CONC POST TIMB PANEL	CP&TP/F
ELECTRIC FENCE	EL/F
HERAS FENCE	HER/F
IRON RAIL FENCE	IR/F
KNEE RAIL FENCE	KR/F
MISCELLANEOUS FENCE	MISC/F
POST AND WIRE FENCE	P&W/F
RANCH STYLE FENCE	RS/F
SECURITY FENCE	SEC/F
TIMBER FENCE	T/F
BRICK WALL	B.W
BLOCK WALL	BL.W
CONCRETE WALL	C.W
GABION WALL	G.W
MISCELLANEOUS WALL	MISC.W
RETAINING WALL	R.W
RETAINING LOG WALL	RL.W
STONE WALL	S.W

LEVEL PREFIX ANNOTATIONS

ASL	ARCH SPRING LEVEL
BL	BED LEVEL
BD	BACK DROP
CL	COVER LEVEL
DH	TOP OF DOOR
DTC	DEPTH TO CROWN
FFL	FINISHED FLOOR LEVEL
IL	INVERT LEVEL
PL	PARAPET LEVEL
RL	ROOF/RIDGE LEVEL
SL	SOFFIT LEVEL
TOF	TOP OF FENCE
TOP	TOP OF PIPE
TOW	TOP OF WALL
TRH	TREE HEIGHT
THR	THRESHOLD LEVEL
WL	WATER LEVEL
WS	WINDOW SILL
WSF	WINDOW SOFFIT

GEOTECHNICAL INFORMATION

TRIAL HOLE / PIT — TH
BORE HOLE — BH
WINDOW SAMPLE — WS
MONITORING POINT — MP
PROBE HOLE — PH

DISCLAIMER:

ONLY MANHOLES AND SERVICES SHOWN WERE VISIBLE AT THE TIME OF SURVEY.

MAN ENTRY TO SEWERS HAS NOT BEEN UNDERTAKEN, DEPTHS, PIPESIZES ETC ARE MEASURED FROM GROUND LEVEL.

DRAINAGE INFORMATION MUST BE CHECKED AND VERIFIED PRIOR TO ANY WORK COMMENCING.

BOUNDARIES SHOWN ARE PHYSICAL AND MAY NOT REPRESENT LEGALLY CONVEYED OWNERSHIP.

TREE SPREADS ARE SYMBOLIC ONLY AND ARE REPRESENTATIVE OF THE AVERAGE SPREAD, THE TREE CANOPY LAYER DENOTES THE TREES EXTREMITY.

SURVEY NOTES

ALL LEVELS ARE RELATED TO O.S DATUM (OSGB36-15)
ESTABLISHED AT SE1 USING THE LEICA SMARTNET GPS NETWORK

1 2 3 4

SURVEY STATIONS

Name	Easting	Northing	Height
SE1	379563.183	407544.871	67.479
SE2	379541.907	407627.911	68.185
SE3	379394.827	407808.251	69.988
SE4	379191.111	407595.671	69.582
SE5	379050.763	407482.588	66.162
SE6	379102.406	407371.890	65.134
SE6A	379041.869	407229.295	64.048
SE7	379276.913	407471.590	67.825
SE8	379333.026	407463.116	67.340
SE9	379468.285	407514.762	67.514
SE10	379468.285	407514.762	67.514
CT10	379244.628	407565.169	69.809
CT11	379318.029	407740.086	69.975
SE1	379080.763	407502.724	69.129
SE4	379191.111	407595.671	69.582
SE5	379050.763	407482.588	66.162

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DESCRIPTION	REV	DATE	DRWN	APPR
TOPO EXTENSION ADDED	D	07.10.22	MP	-
TOPO SURVEY UPDATED, DRAINAGE UPDATED	C	22.09.22	BM	-
BED LEVEL SURVEY ADDED	B	23.08.22	LG	-
TRIAL HOLE SETTING OUT ADDED	A	04.08.22	BM	-

SurveyEng Ltd
Land Surveyors & Engineers
14 GREEN MILL
WESTHOUGHTON
BOLTON
LANCS
BL5 3GE
TEL/FAX: 0800 772 3040
MOB: 07850068065
info@surveyeng.co.uk

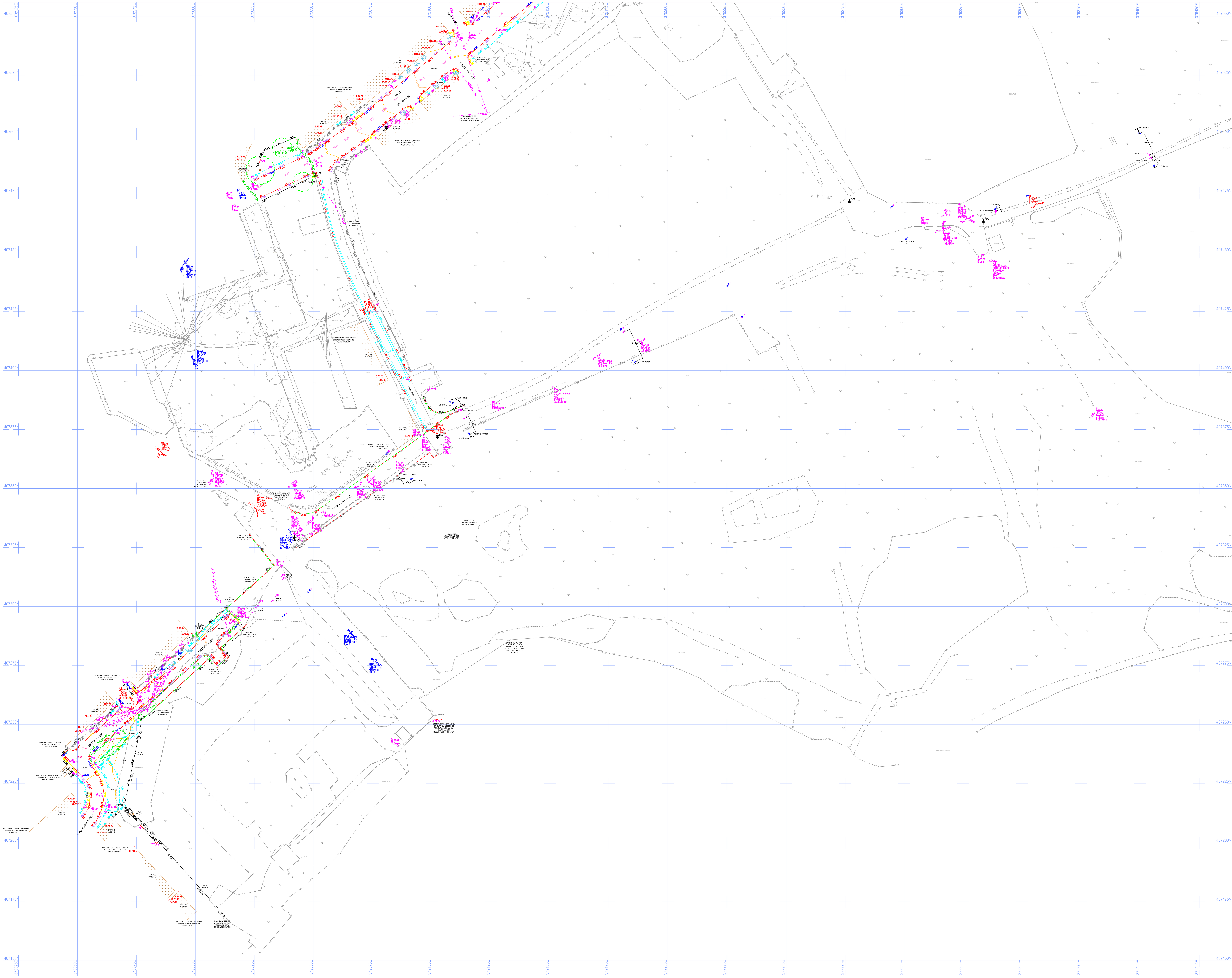
CLIENT
MORRIS HOMES

PROJECT TITLE
CHURCH EAST STREET, RADCLIFFE

DRAWING DETAIL
TOPOGRAPHICAL LAND SURVEY
SHEET 1 OF 2

PROJECT ENGINEER	AS	DATE	09.06.2022
DRAWN	MP	SCALE	1:500@A1

DRAWING NUMBER	REVISION
MH.TS.103	D



N / E / S / W

SURVEY ORIENTATED TO OS GRID (OSGB36-15)

SURVEY LEGEND

FEATURES

TOP OF BANK
BOTTOM OF BANK
SURVEY STATION
TREE
HEDGE
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VEGETATION

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KNEE RAIL FENCE — KR.F
MISCELLANEOUS FENCE — MISC.F
POST AND WIRE FENCE — P&W.F
RANCH STYLE FENCE — RS.F
SECURITY FENCE — SEC.F
TIMBER FENCE — T.F
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BLOCK WALL — BL.W
CONCRETE WALL — C.W
GABIEN WALL — G.W
MISCELLANEOUS WALL — MISC.W
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RETAINING LOG WALL — RL.W
STONE WALL — S.W

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BL BED LEVEL
BD BACK DROP
CL COVER LEVEL
DH TOP OF DOOR
DTC DEPTH TO CROWN
FFL FINISHED FLOOR LEVEL
IL INVERT LEVEL
PL PARAPET LEVEL
RL ROOF/RIDGE LEVEL
SL SOFFIT LEVEL
TOF TOP OF FENCE
TOP TOP OF PIPE
TOW TOP OF WALL
TRH TREE HEIGHT
THR THRESHOLD LEVEL
WL WATER LEVEL
WS WINDOW SILL
WSF WINDOW SOFFIT

SURVEY ANNOTATIONS

AV AIR VALVE
B BOLLARD
BS BUS STOP
BT BRITISH TELECOM IC
CPS CONCRETE PAVING SLABS
CP CATCH PIT
DR DRAIN
EB ELECTRIC CONTROL BOX
EL ELECTRICAL IC
EP ELECTRICITY POLE
ER EARTH ROD
FH FIRE HYDRANT
FP FLAG POLE
G GULLY
GH GREENHOUSE
GP GATE POST
GV GAS VALVE
IC INSPECTION COVER
JB JUNCTION BOX
JKW JAPANESE KNOT WEED
KO KERB OUTLET
LH LAMP HOLE
LP LAMP POST/LIGHT COLUMN
MH MANHOLE
MP MONITOR POINT
NP NAME PLATE
OHC OVERHEAD CABLES
PB POST BOX
PM PARKING METER
PS POST
PYL ELECTRICITY PYLON
RE RODDING EYE
RS ROAD SIGN
RWP RAIN WATER PIPE
ST STOP TAP
SM SERVICE MARKER
SP SIGN POST
SV STOP VALVE / SLUICE VALVE
SVP SOIL VENT PIPE
TB TELEPHONE BOX
TL TRAFFIC LIGHTS
TM TELEPHONE MAST
TP TELEGRAPH POLE
TPS TACTILE PAVING SLABS
VP VENT PIPE
WM WATER METER
WO WASH OUT
UTL UNABLE TO LIFT
UTS UNABLE TO SURVEY

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SE9	379333.626	407463.116	67.340
SE99	379468.285	407514.762	67.514
AH10	379203.671	407584.897	69.806
CT10	379246.628	407666.569	69.809
CT11	379318.029	407740.096	69.975
RE1	379080.763	407502.724	69.129
SE4	379191.111	407595.671	69.582
SE5	379050.793	407482.588	66.162

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SurveyEng Ltd
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TEL/FAX: 0800 772 3040
MOB: 07850069993
info@surveyeng.co.uk

CLIENT
MORRIS HOMES

PROJECT TITLE
CHURCH EAST STREET, RADCLIFFE

DRAWING DETAIL
TOPOGRAPHICAL LAND SURVEY
SHEET 2 OF 2

PROJECT ENGINEER	AS	DATE	09.06.2022
DRAWN	MP	SCALE	1:500@A1
DRAWING NUMBER	MH.TS.103	REVISION	D

APPENDIX C – SEWER RECORDS

United Utilites Water Limited
Property Searches
Ground Floor Grasmere House
Lingley Mere Business Park
Great Sankey
Warrington
WA5 3LP
DX 715568 Warrington
Telephone 0370 751 0101

Property.searches@uuplc.co.uk

Your Ref: A090070-193
Our Ref: 16/ 1254069
Date: 5/12/2016

White Young Green

Arndale Court
Headingley
Leeds
LS6 2UJ

FAO: **Tom Beavis**

Dear Sirs

Location: **THE E LANCS PAPER MILL CO CHURCH ST. EAST RADCLIFFE MANCHESTER M26 2PG**

I acknowledge with thanks your request dated 02/12/16 for information on the location of our services.

Please find enclosed plans showing the approximate position of our 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 our 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 you requirements and look forward to hearing from you should you need anything further.

If you have any queries regarding this matter please telephone us on 0370 7510101.

Yours Faithfully,

ASimmonds

Amanda Simmonds
Property Searches Manager

UUWaterLimited 2014

United Utilities Water Limited
Registered in England & Wales No. 2366678
Registered Office: Haweswater House,
Lingley Mere Business Park, Lingley Green Avenue,
Great Sankey, Warrington, WA5 3LP

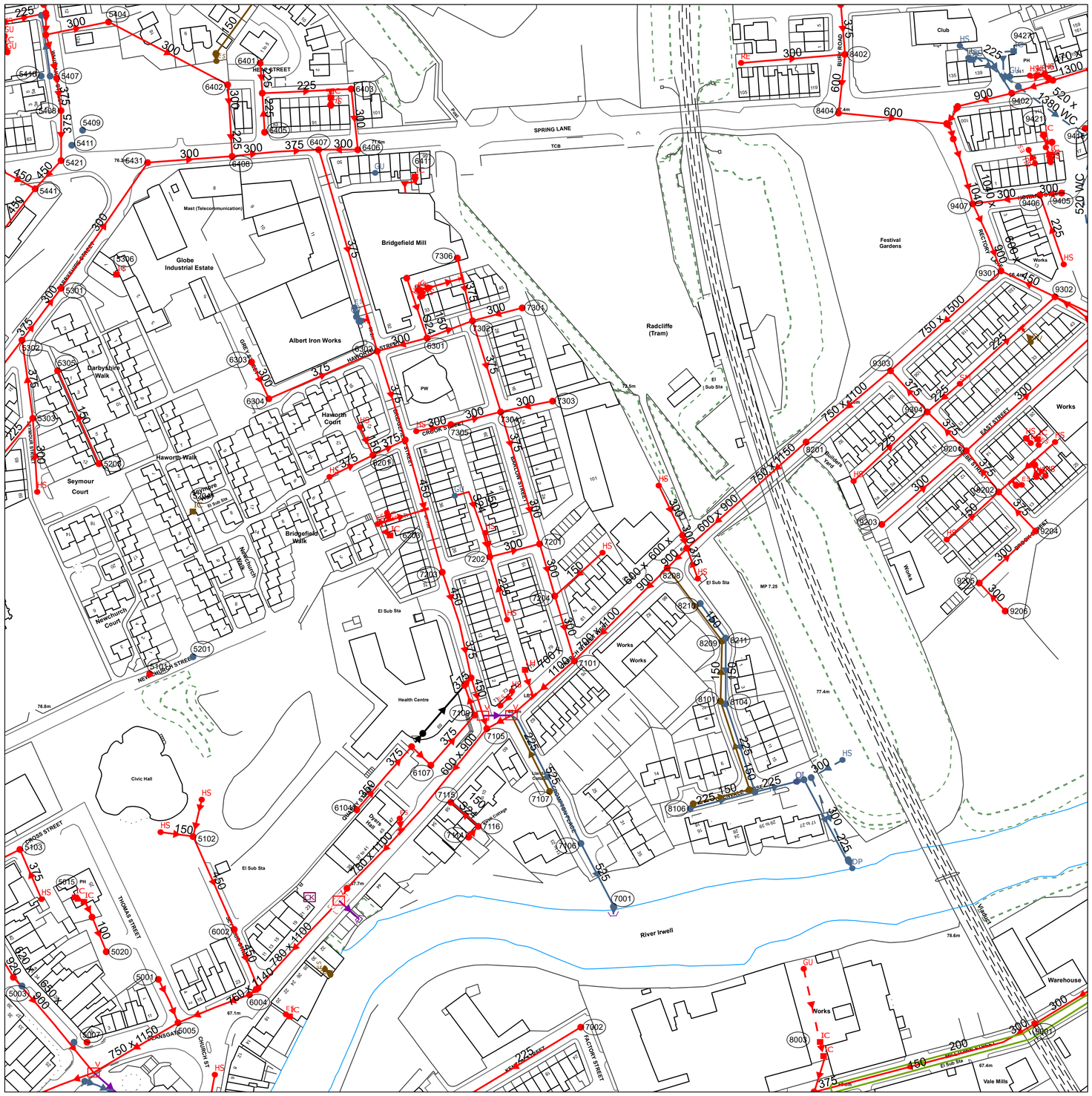
TERMS AND CONDITIONS - WASTERWATER & WATER DISTRIBUTION PLANS

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:

1. 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.
2. 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.
3. In particular, the position and depth of any UUWL apparatus shown on the Map are approximate only and given in accordance with the best information available. The nature of the relevant system and/or its actual position may be different from that shown on the plan and UUWL is not liable for any damage caused by incorrect information provided save as stated in section 199 of the Water Industry Act 1991. 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.
4. 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.
5. 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.
6. 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.
7. 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.
8. 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.
9. 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.

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Refno	Cover	Func	Invert	Size.x	Size.y	Shape	Mati	Length	Grad
5001	68.59	CO	65.76	450		CI	VC	11.18	25
5002	68.72	CO							
5003		SW							
5005	67.28	CO	60.96	750	1150	EG	BR	45.28	1509
5006	66.34	SW							
5007		CO							
5009	65.73	SW	63.75	300		CI	VC	6.32	4
5015		CO							
5017		CO		100		CI	VC	17.32	
5019		CO							
5020		CO							
5101	76.68	CO							
5102	72.06	CO							
5103	74.19	CO	71.24	375		CI	VC	33.54	
5201	76.53	SW		150		CI	VC	47.05	
5203		CO							
5204		FO	73.71	300		CI	VC	70.46	
5301	76.73	CO							
5302	77.06	CO							
5303	77.53	CO							
5305		CO							
5306		CO							
5401	76.32	CO							
5402	76.31	SW							
5403	76.66	CO	74.33	225		CI	VC	19.42	216
5404	75.58	CO							
5405	76.37	CO	73.88	300		CI	CO	10.44	
5406	76.4	CO	73.58	300		CI	VC	28.28	135
5407	76.48	CO							
5408	76.45	CO	74.24	375		CI	VC	23	
5409		SW							
5411	76.35	SW							
5414		FO							
5416		SW							
5421	76.36	CO	74.19	450		CI	VC	17.69	
5431	75.39	CO	0	300		CI	VC	39.12	
5441	76.67	CO							
6001	67.54	CO		780	1100	EG	BR	3.04	
6002	68.36	CO							
6003	67.1	CO							
6004		CO	0	800	1100	EG	BR	17.09	
6007		CO							
6102	67.2	CO							
6104		CO							
6107	67.05	CO	64.71	375		CI	VC	30.8	39
6201	69.82	CO							
6203		CO							
6204		CO							
6301	69.26	CO	66.79	300		CI	VC	23.77	792
6302	69.27	CO							
6303	73.11	CO	70.72	300		CI	VC	18.79	42
6304	72.72	CO							
6305	68.45	CO							
6308		SW		150		CI	VC	4.18	
6312		CO							
6313		CO		150		CI	VC	29.18	
6401		CO	0	225		CI	VC	14.04	
6402	74.05	CO	71.88	300		CI	VC	16.03	46
6403		CO	0	300		CI	VC	28.16	
6404		CO							
6405		CO	0	225		CI	VC	18.03	
6406	71.77	CO							
6407	72.37	CO							
6408	73.78	CO							
6411		CO							
6417		CO							
7001	59.99	SW							
7002		CO	0	225		CI	VC	71.34	
7101	65.04	CO	61.65	700	1100	EG	BR	38.34	274
7102	65.89	CO	63.27	450		CI	VC	18.45	56
7106	64.36	SW	62.6	525		CI	VC	32.68	12
7107	64.78	FO	62.68	225		CI	VC	39.33	
7108	66.03	CO							
7109	66.44	CO							
7114		CO		150		CI	VC	6.63	
7115		CO							
7116		CO		150		CI	VC	16.8	
7201	66.57	CO	63.01	300		CI	VC	25	71
7202	66.68	CO							
7203	66.4	CO							
7204	65.79	CO							
7301		CO	0	300		CI	VC	23.77	
7302	69.27	CO	65.01	375		CI	VC	43.97	48
7303		CO	0	300		CI	VC	24.52	
7304	67.98	CO	64.07	375		CI	VC	31.32	61
7305	68.21	CO							
7306		CO	0	375		CI	VC	29.83	
8002		CO							
8003		CO							
8101	64.28	FO							
8102	64.44	FO							
8103	64.45	FO							
8104	64.25	SW	62.72	225		CI	VC	42.82	116
8105	64.45	SW	62.35	225		CI	VC	19.56	
8106	64.45	SW	62.68	225		CI	VC	30.82	93
8107	64.03	SW							
8108	61.75	SW							
8109		SW							
8201	65.95	CO	61.57	750	1150	EG	BR	36.12	
8202	65.3	CO							
8203	65.31	CO							
8208	65.15	CO	62.4	600	900	EG	BR	23.85	33
8209	64.5	FO	62.7	150		CI	VC	42.15	140
8210	64.76	SW							
8211	64.51	SW							
8402	67.38	CO							
8404	66.94	CO	62.73	600		CI	CO	50.25	144
9001	67.68	CO	64.35	300		CI	VC	17.01	
9201		CO	0	300		CI	VC	75.74	
9202	65.64	CO							
9203		CO	0	300		CI	VC	51.74	
9204		CO	0	375		CI	VC	24.76	
9205		CO	0	300		CI	VC	35.38	
9206		CO	0	300		CI	VC	17.69	
9209		CO		150		CI	VC	1.74	
9215		CO		100		CI	VC	3.11	
9301	66.57	CO							
9302	65.47	CO							
9303	66.1	CO							
9304	65.8	CO	62.37	375		CI	VC	25.5	255
9313		CO							
9401		SW		520	1380	RE	CO	43.6	
9402	65.27	CO							
9403	65.67	CO	61.83	900		CI	VC	4.47	
9404	66.08	CO	62.19	730	960	EG	BR	3.61	0
9405	65.75	CO	0	300		CI	VC	10.05	
9406	66.02	CO							
9407	66.43	CO							
9408		CO	0	700	1100	EG	BR	15.81	
9415		CO		225		CI	VC	8.49	
9419		CO							
9420		CO							
9421		CO							
9422		CO							
9424		CO							
9427		SW							
9437		CO		150		CI	VC	1.64	
5004		CO							
5010		SW							
5011		CO	0	750	1150	EG	BR	18.38	
5012		CO	0	300		CI	VC	40.57	
5013		CO	0	750		CI	CO	45.7	
5014		CO	0	375		CI	VC	25.08	
5016		CO							
5018		CO							
5104		CO	0	150		CI	VC	15.13	
5105		CO	0	450		CI	VC	8.25	
5106		CO	0	375		CI	VC	9.22	
5202		CO	0	300		CI	VC	34.06	

Refno	Cover	Func	Invert	Size.x	Size.y	Shape	Mati	Length	Grad
5304		CO							
5410		CO							
5412		CO							
5413		CO							
5417		CO							
6005		CO							
6009		CO							
6010		CO							
6103		CO	61.32	780	1100	EG	BR	50.95	566
6105		CO							
6202		CO							
6210		CO							
6305		CO							
6306		CO	0	150		CI	VC	14.32	
6307		CO	0	300		CI	VC	16.28	
6309		SW							
6310		CO							
6315		CO							
6409		CO							
6410		CO	71.53	225		CI	VC	17.03	50
6412		CO							
6413		SW							
6415		CO							
6416		CO							
7112		CO							
7205		CO							
7206		CO	0	150		CI	VC	29.73	
7207		CO	0	225		CI	VC	30.08	
7208		CO							
7209		CO	0	225		CI	VC	11.56	
7210		CO	61.67	700	1100	EG	BR	36.77	1838
7211		CO	63.67	375		CI	VC	25.23	65
7212		SW							
8001		CO		150		CI	VC	26.93	
8004		CO							
8111		SW		300		CI	VC	16.54	
8112		SW							
8204		CO	0	300		CI	VC	25.5	
8205		CO	0	375		CI	VC	14.87	
8206		CO	0	225		CI	VC	46.69	
8207		CO	61.64	600	900	EG	BR	37.54	
9002		CO	0	375		CI	VC	90.19	
9207		CO	0	150		CI	VC	34.71	
9208		CO	0	150		CI	VC	32.56	
9210		CO		150		CI	VC	7.03	
9211		CO							
9212		CO							
9218		CO							
9305		CO	61.78	600	900	EG	BR	17.09	570
9306		CO							
9307		CO	0	225		CI	VC	33.84	
9308		CO	61.93	300		CI	VC	11.66	
9309		CO	0	225		CI	VC	59.46	
9312		FO							
9314		SW							
9409		SW		900		CI	CO	33.02	
9410		CO		100		CI	VC	6.92	
9412		CO	63.3	150		CI	VC	5	
9413		CO	29.15	900		CI	CO	4.12	
9414		CO	28.88	1040	1040	EG	BR	15.52	
9416		CO							
9418		CO							
9423		CO							
9425		SW							
9426		SW		150		CI	VC	3.59	
9428		SW							
9434		CO		150		CI	VC	2.85	
9435		CO		150		CI	VC	1.19	
9436		CO		150		CI	VC	8.48	
0311		CO	0	375		CI	VC	8.06	
6101		CO							
6206		CO							
6207		CO							
6211		CO							
6311		CO		100		CI	VC	4.62	
6317		SW							
6318		CO							
6414		CO							
7110		CO		225		CI	VC	13.32	
7111		CO							
7307		CO							
9213		CO							
9216		CO							
9310		CO							
9430		SW							
9431		SW							
9432		SW							
9433		SW							
9438		CO							
9439		CO							
9440		CO							
6101	67.14	CO							
6106		CO							
5008		CO							
6011	67.3	CO							
7103		CO	62.94	450		CI	VC	6.25	33
7104		CO	61.51	730	1060	EG	BR	12.92	215

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OS Sheet No: SD7807SE

Scale: 1:1250 Date: 05/12/2016

WASTE WATER SYMBOLOGY

Foul Surface Combined Overflow

Manhole
Manhole, Side Entry
MainSewer, Public
MainSewer, Private
MainSewer, S104
Rising Main, Public
Rising Main, Private
Rising Main, S104
Highway Drain, Private

Foul Surface Combined

WW Site Termination
Air Valve
Cascade
Non Return Valve
Extent of Survey
Flow Meter
Gulley
Hatch Box
Head of System
Hydrobrake / Vortex
Inlet
Inspection Chamber
Bifurcation
Catchpit
Contaminated Surface Water
WW Pumping Station
Sludge Pumping Station
Sewer Overflow
TJunction/Saddle
LampHole
OilInterceptor
PenStock
Pump
RoddingEye
Soakaway
Summit
Valve
Valve Chamber
Washout Chamber
DropShaft
WW Treatment Works
Septic Tank
Vent Column
Network Storage Tank
Orifice Plate
Vortex Chamber
Penstock Chamber
Blind Manhole
Foul Surface Combined Overflow
Screen Chamber
Discharge Point
Outfall

Sludge Main, Public
Sludge Main, Private
Sludge Main, S104

ABANDONED PIPE

MainSewer
Rising Main
Highway Drain
Sludge Main

Control Kiosk
Unspecified

LEGEND

MANHOLE FUNCTION

FO	Foul
SW	Surface Water
CO	Combined
OV	Overflow

SEWER SHAPE

CI	Circular	TR	Trapezoidal
EG	Egg	AR	Arch
OV	Oval	BA	Barrel
FT	Flat Top	HO	HorseShoe
RE	Rectangular	UN	Unspecified
SQ	Square		

SEWER MATERIAL

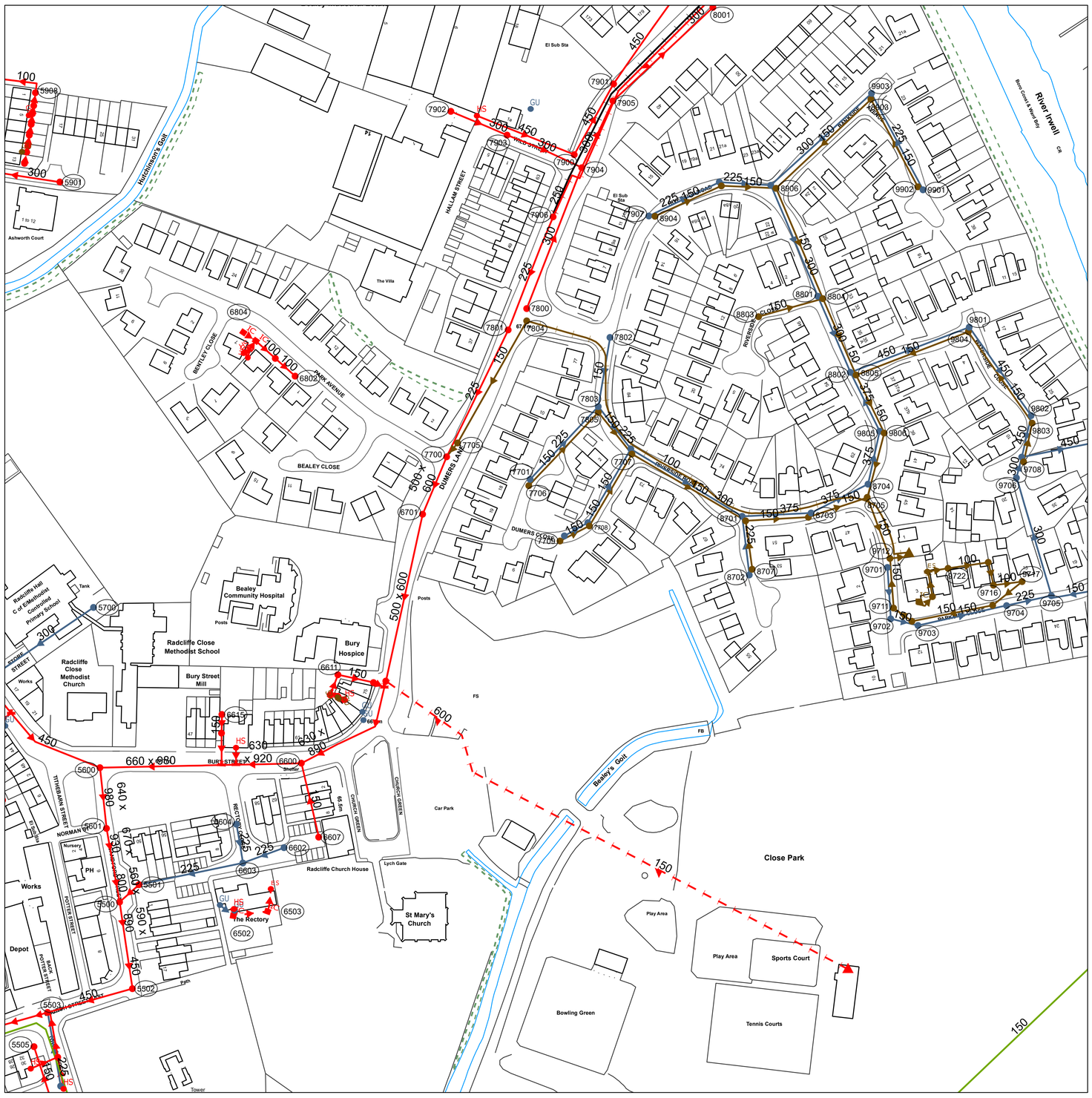
AC	Asbestos Cement	DI	Ductile Iron
BR	Brick	PVC	Polyvinyl Chloride
PE	Polyethylene	CI	Cast Iron
RP	Reinforced Plastic Matrix	SI	Spun Iron
CO	Concrete	ST	Steel
CSB	Concrete Segment Bolted	VC	Vitrified Clay
CSU	Concrete Segment Unbolted	PP	Polypropylene
CC	Concrete Box Culverted	PF	Pitch Fibre
PSC	Plastic/Steel Composite	MAC	Masonry, Coursed
GRC	Glass Reinforced Concrete	MAR	Masonry, Random
GRP	Glass Reinforced Plastic	U	Unspecified

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OS Sheet No: SD7807SE
Scale: 1:1250 Date: 05/12/2016
247 Nodes
Sheet 1 of 1

United Utilities
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SEWER RECORDS



Refno	Cover	Func	Invert	Size.x	Size.y	Shape	Mati	Length	Grad
5500	67.55	CO	63.36	590	890	EG	BR	20.22	1011
5501	67.63	CO	64.6	225		CI	VC	12.04	36
5502	67.39	CO	63.45	450		CI	CO	40.73	582
5503	67.59	CO							
5504	67.12	CO							
5505		CO							
5506	67.01	SW	63.95	225		CI	VC	34.58	102
5600	68.25	CO	63.39	640	980	EG	BR	28.16	
5601	67.87	CO	64.05	670	930	EG	BR	17.26	49
5700		SW	0	300		CI	VC	60.46	
5901		CO	0	300		CI	VC	42.71	
5902		CO							
5904		CO		100		CI	VC	5.15	
5905		CO							
5906		CO							
5907		CO							
5908		CO							
5910		CO		100		CI	VC	6.04	
5911		CO							
6502		CO							
6503		CO							
6600	66.75	CO	63.72	630	920	EG	BR	46.01	271
6601		CO							
6602	66.57	SW	65.76	225		CI	VC	20.25	96
6603	67.4	SW							
6604	67.38	SW	65.97	225		CI	VC	18.25	43
6607	66.39	CO	64.65	150		CI	VC	34.93	70
6608		CO		150		CI	VC	9.99	
6611		CO							
6612		CO		150		CI	VC	5.44	
6615		CO		150		CI	VC	8.63	
6616		CO							
6617		CO							
6701	66.69	CO	65.15	500	600	EG	CI	78.85	
6802		CO							
6803		CO							
6804		CO							
6805		CO							
7700	66.96	CO	66.21	500	600	EG	CI	28.8	28
7701		SW		225		CI	VC	46.07	
7702		SW							
7703		SW							
7704		SW		150		CI	VC	12.43	
7705		FO		150		CI	VC	8.17	
7706		FO		150		CI	VC	46.64	
7707		FO							
7708		FO							
7709		FO		150		CI	VC	15.29	
7800	67.71	CO	65.06	300		CI	VC	69.91	291
7801	67.67	CO							
7802		SW		150		CI	VC	32.34	
7803		SW							
7804		FO							
7805		FO							
7900	68.35	CO							
7901	68.14	CO	64.74	450		CI	VC	144.97	
7902	68.91	CO	65.75	300		CI	VC	28.23	101
7903	68.67	CO							
7904	68.24	CO							
7905	68.11	CO	64.63	300		CI	VC	63.24	703
7907		SW							
8701		SW							
8702		SW		225		CI	VC	27.17	
8703		SW		375		CI	VC	29.48	
8704		SW							
8705		FO		150		CI	VC	30.06	
8706		FO		150		CI	VC	28.98	
8707		FO		150		CI	VC	22.54	
8708		FO		150		CI	VC	28.69	
8801		SW		300		CI	VC	38.19	
8802		SW		450		CI	VC	58.71	
8803		FO		150		CI	VC	30.81	
8804		FO		150		CI	VC	38.47	
8805		FO							
8901		SW							
8902		SW							
8903		FO		150		CI	VC	60.03	
8904		FO		150		CI	VC	33.67	
8905		FO							
8906		FO							
9701		SW		150		CI	VC	23.75	
9702		SW		150		CI	VC	13.06	
9703		SW							
9704		SW							
9705		SW							
9706		SW		300		CI	VC	9.78	
9707		SW							
9708		FO							
9709		FO		150		CI	VC	38.1	
9710		FO							
9711		FO							
9712		FO							
9715		FO		100		CI	VC	10.88	
9716		FO		100		CI	VC	13.36	
9717		FO		100		CI	VC	17.41	
9718		FO							
9721		FO							
9722		FO							
9801		SW		450		CI	VC	49.88	
9802		SW							
9803		FO		150		CI	VC	51.39	
9804		FO							
9805		SW		375		CI	VC	30.31	
9806		FO							
9901		SW		225		CI	VC	50.49	
9902		FO		150		CI	VC	45.91	
9903		SW		300		CI	VC	62.85	
8001	67.52	CO							
5507		CO	0	300		CI	VC	14.92	
5508		CO	0	225		CI	VC	13.67	
5509		CO	63.34	450		CI	CO	20.22	1011
5510		CO	63.31	450		CI	VC	14.43	206
5511		CO							
5512		SW							
5602		SW							
5604		CO	63.7	560	800	EG	BR	17.26	48
5605		CO							
5903		CO							
5909		CO							
5912		FO							
6501		SW							
6504		CO							
6605		CO	0	630	890	EG	BR	19.24	
6606		SW							
6609		CO							
6618		FO							
6621		FO							
6622		CO		100		CI	VC	3.55	
6623		SW							
6806		CO							
6807		CO							
6808		CO							
7600		CO	0	600		CI	PVC	60.73	
7908		CO	0	450		CI	VC	48.44	
7909		SW							
9719		FO		100		CI	VC	5.88	
5603		CO							
6505		CO							
6610		CO							
6613		CO							
6614		CO							
6619		CO							
6620		CO							
6801		CO							
9720		FO							
8501		CO	0	150		CI	PVC	195.88	
9713		FO	0	100		CI	CI	240.46	

WASTE WATER SYMBOLOGY

Foul Surface Combined Overflow

Manhole
Manhole, Side Entry
MainSewer, Public
MainSewer, Private
MainSewer, S104
Rising Main, Public
Rising Main, Private
Rising Main, S104
Highway Drain, Private

Foul Surface Combined

WW Site Termination
Air Valve
Cascade
Non Return Valve
Extent of Survey
Flow Meter
Gulley
Hatch Box
Head of System
Hydrobrake / Vortex
Inlet
Inspection Chamber
Bifurcation
Catchpit
Contaminated Surface Water
WW Pumping Station
Sludge Pumping Station
Sewer Overflow
TJunction/Saddle
LampHole
OilInterceptor
PenStock
Pump
RoddingEye
Soakaway
Summit
Valve
Valve Chamber
Washout Chamber
DropShaft
WW Treatment Works
Septic Tank
Vent Column
Network Storage Tank
Orifice Plate
Vortex Chamber
Penstock Chamber
Blind Manhole
Screen Chamber
Discharge Point
Outfall
Control Kiosk
Unspecified

Sludge Main, Public
Sludge Main, Private
Sludge Main, S104

ABANDONED PIPE

MainSewer
Rising Main
Highway Drain
Sludge Main

LEGEND

MANHOLE FUNCTION

FO	Foul
SW	Surface Water
CO	Combined
OV	Overflow

SEWER SHAPE

CI	Circular	TR	Trapezoidal
EG	Egg	AR	Arch
OV	Oval	BA	Barrel
FT	Flat Top	HO	HorseShoe
RE	Rectangular	UN	Unspecified
SQ	Square		

SEWER MATERIAL

AC	Asbestos Cement	DI	Ductile Iron
BR	Brick	PVC	Polyvinyl Chloride
PE	Polyethylene	CI	Cast Iron
RP	Reinforced Plastic Matrix	SI	Spun Iron
CO	Concrete	ST	Steel
CSB	Concrete Segment Bolted	VC	Vitrified Clay
CSU	Concrete Segment Unbolted	PP	Polypropylene
CC	Concrete Box Culverted	PF	Pitch Fibre
PSC	Plastic/Steel Composite	MAC	Masonry, Coursed
GRC	Glass Reinforced Concrete	MAR	Masonry, Random
GRP	Glass Reinforced Plastic	U	Unspecified

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OS Sheet No: SD7907NE
Scale: 1:1250 Date: 05/12/2016
148 Nodes
Sheet 1 of 1

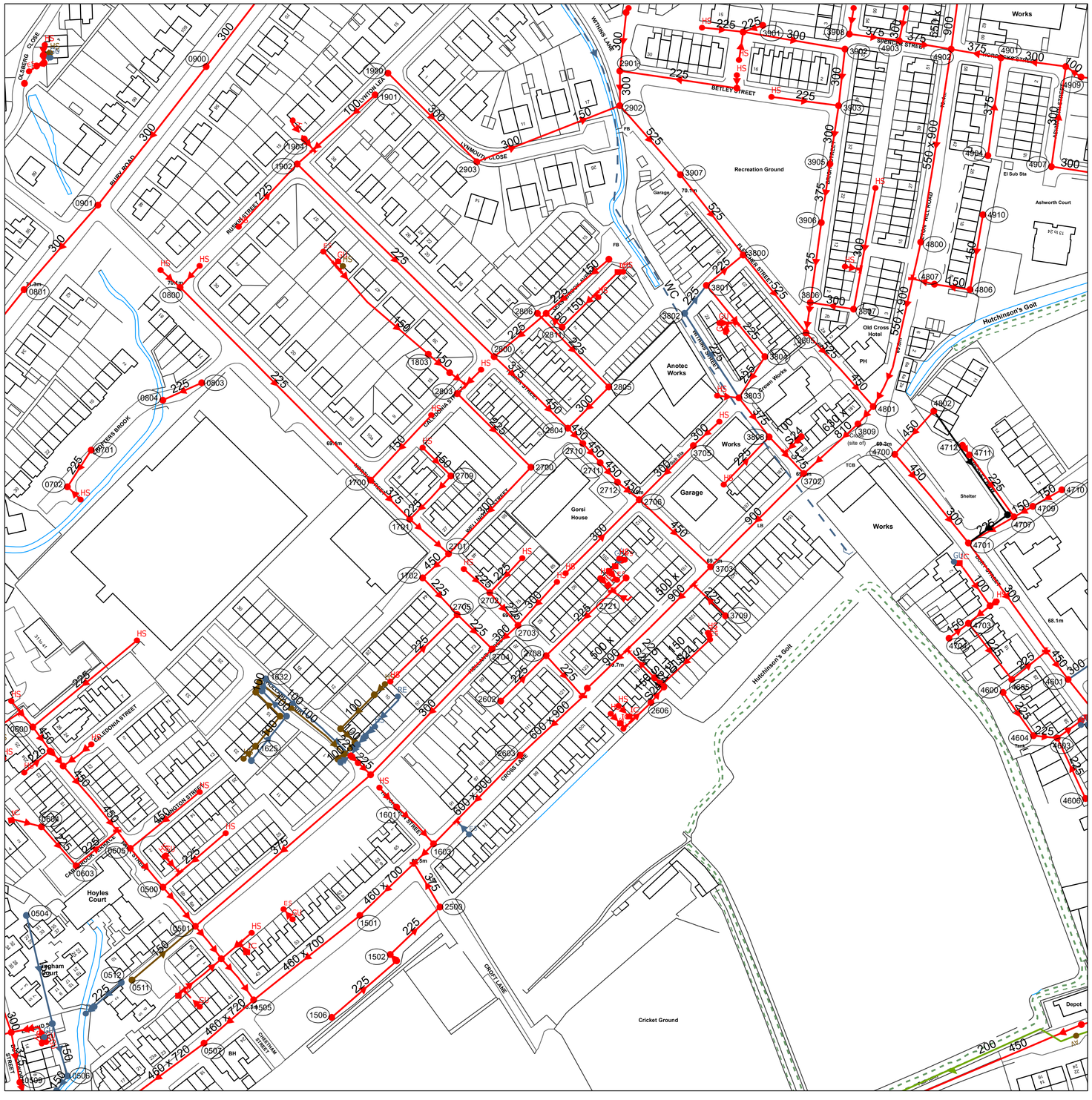
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SEWER RECORDS

Printed By: Property Searches

OS Sheet No: SD7907NE

Scale: 1:1250 Date: 05/12/2016



Refno	Cover	Func	Invert	Size.x	Size.y	Shape	Matl	Length	Grad
0500	68.77	CO							
0501	68.69	CO							
0504		SW							
0505		SW	0	150		CI	VC	25	
0506		SW	0	150		CI	VC	8.6	
0507	67.74	CO							
0508	67	CO	64.66	375		CI	VC	23.35	24
0509	66.29	CO	63.65	375		CI	VC	6.32	126
0511		FO	0	150		CI	VC	38.3	
0512		SW	0	225		CI	VC	16.75	
0513		SW	0	225		CI	VC	5.17	
0600	68.7	CO	65.6	450		CI	VC	13.6	124
0601	68.69	CO	65.45	450		CI	VC	4.24	141
0602	68.69	CO							
0603	68.3	CO							
0604	68.35	CO							
0605	68.68	CO							
0614		CO							
0701		CO	0	225		CI	VC	20.25	
0702		CO							
0800	70.2	CO	68.01	225		CI	VC	125.16	122
0801	71.29	CO							
0803		CO	0	225		CI	VC	19.7	
0804		CO							
0900	71.73	CO							
0901	71.46	CO	68.33	300		CI	VC	51.74	185
0902		CO		150		CI	VC	3.81	
0903		CO		150		CI	VC	3.62	
0904		CO		150		CI	VC	1.64	
0910		CO							
1501	69.23	CO	65.57	460	700	EG	BR	62.63	44
1502		CO							
1503	69.14	CO							
1505	68.61	CO	64.16	460	720	EG	BR	30.48	90
1506		CO	0	225		CI	VC	39.7	
1508		CO	0	450		CI	VC	12.04	
1512		CO							
1600	69.28	CO							
1601	69.38	CO	67.16	225		CI	VC	12.04	23
1603	69.7	CO	65.93	610	880	EG	BR	12.73	
1609		FO	0	100		CI	VC	22.07	
1610		FO	0	100		CI	PVC	9.2	
1611		FO							
1612		FO	0	100		CI	VC	3.78	
1613		FO							
1615		CO							
1618		SW	0	100		CI	PVC	5.43	
1619		SW	0	150		CI	VC	6.02	
1620		SW	0	100		CI	VC	5.46	
1622		SW							
1625		FO							
1626		FO							
1627		FO							
1628		FO		100		CI	VC	39.37	
1629		SW		100		CI	VC	26.21	
1630		SW							
1631		SW							
1632		SW		100		CI	VC	35.3	
1700	69.45	CO	66.94	375		CI	VC	25.46	134
1701	69.36	CO	66.73	375		CI	VC	12.04	120
1702		CO	0	225		CI	VC	23.35	
1803		CO							
1900	70.2	CO	68.4	300		CI	VC	57.98	290
1901	70.09	CO	69.07	100		CI	VC	24.08	105
1902	69.75	CO	68.28	225		CI	VC	127.29	122
1904		CO		150		CI	VC	6.44	
2500	69.59	CO							
2601	69.78	CO	66.18	500	900	EG	BR	2.24	
2602		CO							
2603	69.65	CO							
2606		CO		150		CI	VC	9.35	
2607		CO							
2608		CO							
2700	69.38	CO	0	300		CI	VC	55.17	
2701	69.31	CO							
2702	69.36	CO	66.65	225		CI	VC	19.85	76
2703	69.51	CO	66.27	300		CI	VC	16.28	163
2704	69.35	CO							
2705	69.05	CO	66.71	225		CI	VC	22.63	
2706	69.6	CO							
2707		CO	0	225		CI	VC	51.62	
2708	69.69	CO							
2709		CO	0	150		CI	VC	13.45	
2710		CO	0	450		CI	VC	12.04	
2711		CO	0	450		CI	VC	12.04	
2712		CO	0	450		CI	VC	12.81	
2721		CO							
2722		CO							
2726		CO		150		CI	VC	5.27	
2728		CO							
2800	69.62	CO							
2801	69.93	CO	68.1	225		CI	VC	31.24	49
2802	69.89	CO	68.76	150		CI	VC	18.44	58
2803	69.54	CO	67.29	225		CI	VC	48.08	
2804	69.57	CO							
2805		CO	0	300		CI	VC	26.87	
2806		CO	0	225		CI	VC	47.38	
2811		CO		150		CI	VC	9.69	
2812		CO							
2815		CO							
2900		CO							
2901	70.68	CO	0	300		CI	VC	16	
2902	70.58	CO	67.84	525		CI	VC	42.52	112
2903	69.77	CO							
3601		CO							
3602		CO							
3603		CO		150		CI	VC	4.66	
3702	69.8	CO	66.47	900		CI	BR	60.81	304
3703	69.86	CO							
3705	69.52	CO	67.09	300		CI	VC	35.36	147
3709		CO		225		CI	VC	20.73	
3713		CO		150		CI	VC	8.55	
3800	70	CO							
3801		CO	0	225		CI	VC	22.02	
3802	70.09	SW	0	225		CI	VC	16.4	
3803	69.56	CO							
3804	69.64	CO							
3805	69.81	CO							
3806	69.89	CO							
3807	69.94	CO							
3808	69.58	CO							
3809	69.88	CO							
3812		CO		100		CI	VC	2.34	
3900	70.64	CO							
3901	70.62	CO	68.64	225		CI	VC	9.49	237
3902	70.63	CO							
3903	70.36	CO							
3904	70.58	CO							
3905	70.13	CO	67.27	375		CI	VC	27.29	
3906	70.02	CO	67.31	375		CI	VC	37.34	622
3907	70.26	CO	67.41	525		CI	VC	47.01	427
3908	70.79	CO	67.92	375		CI	VC	23.19	
4600		CO	0	225		CI	VC	24.41	
4601	68.12	CO	64.85	450		CI	VC	68.55	86
4602	68.03	CO							
4603		CO							
4604		CO							
4605	68.08	CO							
4606		CO	0	225		CI	VC	30.87	
4700	69.26	CO	66.47	450		CI	VC	26.25	57
4701	68.3	CO							
4702	68.3	CO							
4703	68.44	CO							
4704	68.56	CO	67.41	150		CI	VC	11.4	34
4707		CO	0	225		CI	VC	24.24	
4709		CO	0	150		CI	VC	9.91	
4710		CO	0	150		CI	VC	15.41	
4711		CO							
4712		CO							
4715		CO							

Refno	Cover	Func	Invert	Size.x	Size.y	Shape	Matl	Length	Grad
4800	69.89	CO	67.1	550	900	EG	BR	59.44	
4801	69.59	CO	66.61	630	870	EG	BR	10.63	
4802		CO							
4806		CO							
4807		CO							
4900	70.42	CO							
4901		CO							
4902	70.78	CO							
4903	70.74	CO	67.81	375		CI	VC	24.33	811
4904		CO							
4907		CO							
4909		CO							
4910		CO		150		CI	VC	35.1	
5505	67.51	CO	63.26	450		CI	VC	19.64	
0502		CO	65.04	525		CI	VC	11.4	
0503		CO	30.41	450		CI	VC	10	
0510		CO							
0514		SW							
0517		CO							
0518		CO							
0520		CO							
0520		SW							
0521		SW							
0521		CO							
0522		CO							
0522		CO							
0524		CO							
0524		CO							
0525		CO							
0606		CO	0	450		CI	VC	15.62	
0607		CO	0	225		CI	VC	15.62	
0608		CO	0	375		CI	VC	7.81	
0610		CO	0	450		CI	VC	41.23	
0611		CO							
0612		CO							
0613		CO	0	375		CI	CO	8.6	
0615		CO							
0617		CO							
0618		CO							
0703		CO	0	225		CI	VC	8.49	
0704		CO	0	225		CI	VC	62.48	
0805		CO	0	225		CI	VC	12.04	
0806		CO	0	225		CI	VC	13.45	
0905		CO		150		CI	PVC	2.66	
0906		CO							
0907		CO							
0908		SW							
0909		CO							
1504		CO	30.47	225		CI	VC	12.21	
1507		CO	0	300		CI	VC	18.44	
1510		CO		100		CI	VC	6.2	
1511		CO							
1602		CO	66.64	300		CI	VC	12.04	24
1604		CO	0	225		CI	VC	38.29	
1605		CO	0	225		CI	VC	12.04	
1607		CO	0	225		CI	VC	43.84	
1608		FO	0	100		CI	VC	6.92	
1614		FO	0	150		CI	VC	12.02	
1617		SW	0	100		CI	PVC	6.22	
1621		SW	0	225		CI	VC	17.74	
1624		FO	0	100		CI	VC	8.37	
1703		CO	0	150		CI	VC	18.38	
1704		CO	0	225		CI	VC	14.14	
1705		CO	66.63	300		CI	VC	12.04	120
1801		CO	0	225		CI	VC	39.62	
1802		CO	0	150		CI	VC	41.04	
1804		CO		100		CI	VC	2.1	
1807		FO							
1809		CO							
1903		CO							
1906		CO							
2605		CO	0	600	900	EG	BR	41.86	
2609		CO							
2610		CO							
2611		CO							
2612		CO							
2713		CO	0	300		CI	VC	48.08	
2714		CO	0	300		CI	VC	26.91	
2715		CO	0	225		CI	VC	16.28	
2716		CO	0	225		CI	VC	21.93	
2717		CO							
2719		CO		100		CI	VC	10.76	
2723		CO							
2725		SW		100		CI	VC	1.42	
2727		CO							
2729		CO							
2730		CO							
2807		CO	0	225		CI	VC	15.56	
2808		CO							
2809		CO	68.44	225		CI	VC	19.85	60
2810		CO		150		CI	VC	34.25	
2814		CO							
2816		CO							
2912		CO	0	300		CI	VC	2.24	
2913		CO							
3704		CO							
3706		CO	0	225		CI	VC	30.41	
3707		CO							
3810		CO	0	300		CI	VC	16.28	
3811		CO	0	375		CI	VC	10.05	
3813		CO							
3814		CO							
3815		CO	67.2	300		CI	VC	7.07	
3816		CO	66.98	450		CI	CI	22.67	227
3819		CO							
3820		CO		100		CI	VC	7.4	
3909		CO	0	300		CI	VC	12.17	
3910		CO	0	225		CI	VC	13.15	
3911		CO	0	225		CI	VC	19.1	
3912		CO	0	225		CI	VC	6	
3913		CO	0	225		CI	VC	31.26	
4501		CO	0	450		CI	CO	202.17	
4607		SW							
4705		SW							
4708		CO							
4713		CO	0	150		CI	VC	3.61	
4714		CO		100		CI	VC	21.58	
4803		CO	0	700	970	EG	BR	9.85	
4805		CO	0	630	820	EG	BR	10.3	
4905		CO	0	300		CI	VC	56.89	
4906		CO	0	300		CI	VC	15.3	
0516		CO							
0519		CO		150		CI	VC	15.96	
0523		CO							
0523		CO							
0526		CO							
0609		CO							
0616		CO							
0619		CO							
1513		CO							
1606		CO	0	460	700	EG	GRP	34.66	
1805		CO							
1806		CO							
1905		CO							
2604		CO							
2613		CO							
2615		CO							
2616		CO							
2718		CO							
2720		CO							
2731		CO							
2813		CO							
2817		CO							
3710		CO							
3712		CO							
3817		CO							
3818		CO							
3821		CO							
4503		CO							
4706		CO	0	200		CI	DI	124.55	

WASTE WATER SYMBOLOGY

Foul Surface Combined Overflow

Manhole
Manhole, Side Entry
MainSewer, Public
MainSewer, Private
MainSewer, S104
Rising Main, Public
Rising Main, Private
Rising Main, S104
Highway Drain, Private

Foul Surface Combined

WW Site Termination
Air Valve
Cascade
Non Return Valve
Extent of Survey
Flow Meter
Gulley
Hatch Box
Head of System
Hydrobrake / Vortex
Inlet
Inspection Chamber
Bifurcation
Catchpit
Contaminated Surface Water
WW Pumping Station
Sludge Pumping Station
Sewer Overflow
TJunction/Saddle
LampHole
OilInterceptor
PenStock
Pump
RoddingEye
Soakaway
Summit
Valve
Valve Chamber
Washout Chamber
DropShaft
WW Treatment Works
Septic Tank
Vent Column
Network Storage Tank
Orifice Plate
Vortex Chamber
Penstock Chamber
Blind Manhole

Foul Surface Combined Overflow

Screen Chamber
Discharge Point
Outfall

Control Kiosk
Unspecified

Sludge Main, Public
Sludge Main, Private
Sludge Main, S104

ABANDONED PIPE

MainSewer
Rising Main
Highway Drain
Sludge Main

LEGEND

MANHOLE FUNCTION

FO	Foul
SW	Surface Water
CO	Combined
OV	Overflow

SEWER SHAPE

CI	Circular	TR	Trapezoidal
EG	Egg	AR	Arch
OV	Oval	BA	Barrel
FT	Flat Top	HO	HorseShoe
RE	Rectangular	UN	Unspecified
SQ	Square		

SEWER MATERIAL

AC	Asbestos Cement	DI	Ductile Iron
BR	Brick	PVC	Polyvinyl Chloride
PE	Polyethylene	CI	Cast Iron
RP	Reinforced Plastic Matrix	SI	Spun Iron
CO	Concrete	ST	Steel
CSB	Concrete Segment Bolted	VC	Vitrified Clay
CSU	Concrete Segment Unbolted	PP	Polypropylene
CC	Concrete Box Culverted	PF	Pitch Fibre
PSC	Plastic/Steel Composite	MAC	Masonry, Coursed
GRC	Glass Reinforced Concrete	MAR	Masonry, Random
GRP	Glass Reinforced Plastic	U	Unspecified

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OS Sheet No: SD7907NW
Scale: 1:1250 Date: 05/12/2016
302 Nodes
Sheet 1 of 2

United Utilities
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SEWER RECORDS

OS Sheet No: SD7907NW

Scale: 1:1250 Date: 05/12/2016

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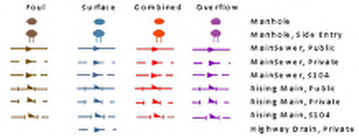
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4808		CO																	
4705		CO																	

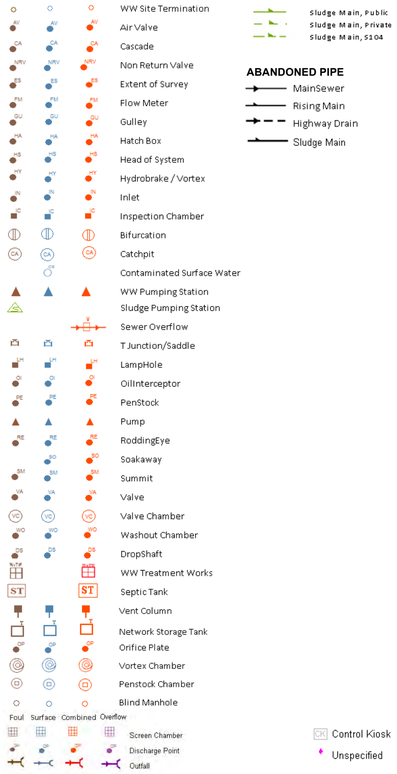
OS Sheet No: SD7907NW

Scale: 1:1250 Date: 05/12/2016

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WASTE WATER SYMBOLOGY





LEGEND

MANHOLE FUNCTION

FO	Foul
SW	Surface Water
CO	Combined
OV	Overflow

SEWER SHAPE

CI	Circular	TR	Trapezoidal
EG	Egg	AR	Arch
OV	Oval	BA	Barrel
FT	Flat Top	HO	HorseShoe
RE	Rectangular	UN	Unspecified
SQ	Square		

SEWER MATERIAL

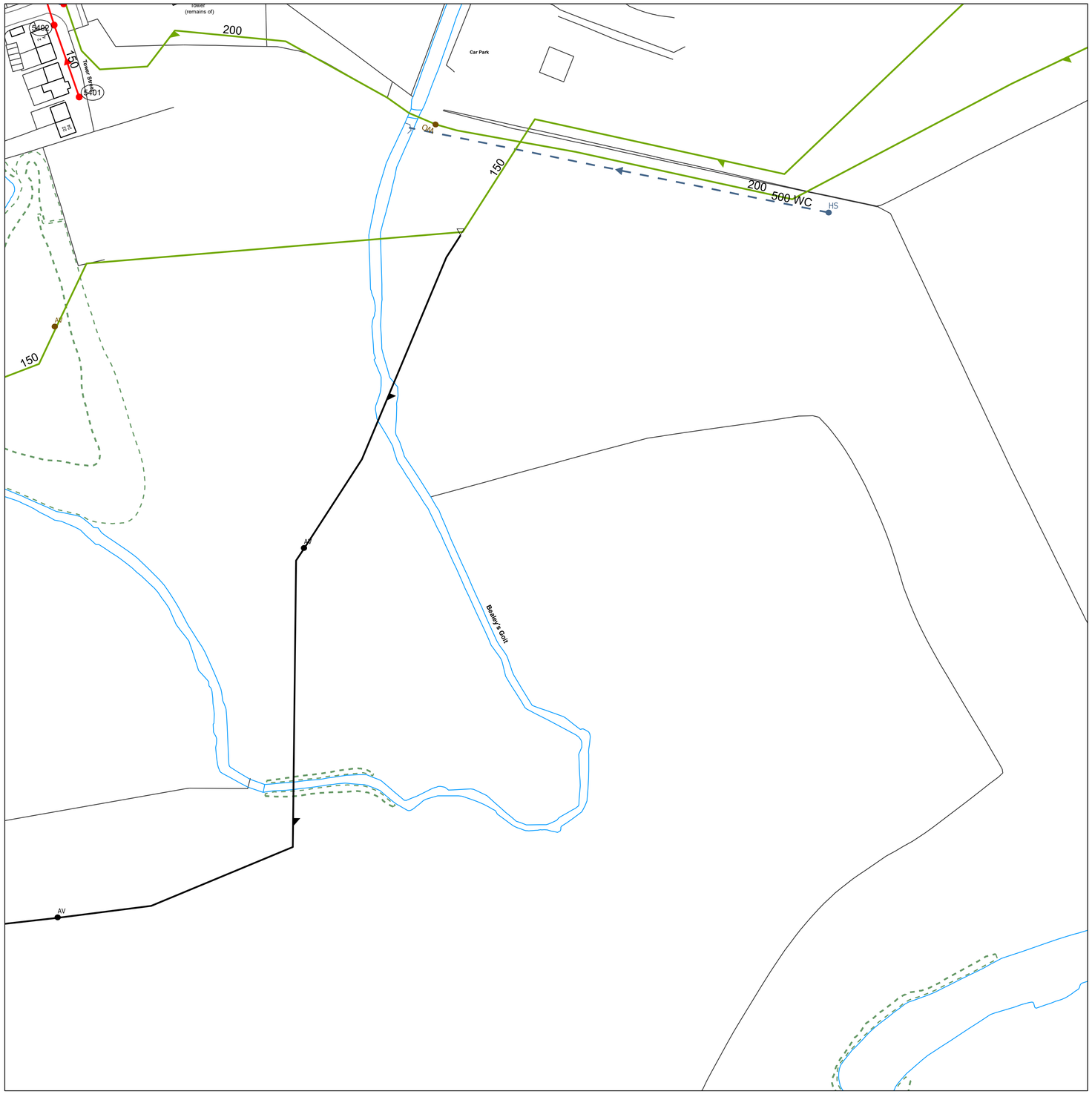
AC	Asbestos Cement	DI	Ductile Iron
BR	Brick	PVC	Polyvinyl Chloride
PE	Polyethylene	CI	Cast Iron
RP	Reinforced Plastic Matrix	SI	Spun Iron
CO	Concrete	ST	Steel
CSB	Concrete Segment Bolted	VC	Vitrified Clay
CSU	Concrete Segment Unbolted	PP	Polypropylene
CC	Concrete Box Culverted	PF	Pitch Fibre
PSC	Plastic/Steel Composite	MAC	Masonry, Coursed
GRC	Glass Reinforced Concrete	MAR	Masonry, Random
GRP	Glass Reinforced Plastic	U	Unspecified

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OS Sheet No: SD7907NW
Scale: 1:1250 Date: 05/12/2016
302 Nodes
Sheet 2 of 2

United Utilities
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SEWER RECORDS



Refno	Cover	Func	Invert	Size.x	Size.y	Shape	Matl	Length	Grad
5401		CO		150		CI	VC	35.32	
5402		CO							
8401		SW		500				197.65	
5301		FO	69.85	150		CI	DI	534.9	42
5001		FO							
6201		FO							
7301		FO							

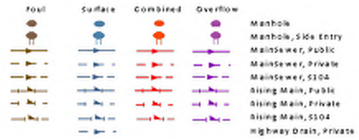
Refno	Cover	Func	Invert	Size.x	Size.y	Shape	Matl	Length	Grad

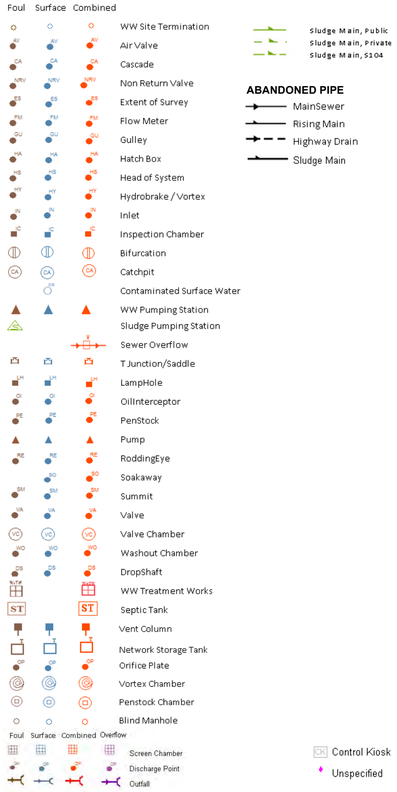
OS Sheet No: SD7907SE

Scale: 1:1250 Date: 05/12/2016

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WASTE WATER SYMBOLOGY





LEGEND

MANHOLE FUNCTION

FO	Foul
SW	Surface Water
CO	Combined
OV	Overflow

SEWER SHAPE

CI	Circular	TR	Trapezoidal
EG	Egg	AR	Arch
OV	Oval	BA	Barrel
FT	Flat Top	HO	HorseShoe
RE	Rectangular	UN	Unspecified
SQ	Square		

SEWER MATERIAL

AC	Asbestos Cement	DI	Ductile Iron
BR	Brick	PVC	Polyvinyl Chloride
PE	Polyethylene	CI	Cast Iron
RP	Reinforced Plastic Matrix	SI	Spun Iron
CO	Concrete	ST	Steel
CSB	Concrete Segment Bolted	VC	Vitrified Clay
CSU	Concrete Segment Unbolted	PP	Polypropylene
CC	Concrete Box Culverted	PF	Pitch Fibre
PSC	Plastic/Steel Composite	MAC	Masonry, Coursed
GRC	Glass Reinforced Concrete	MAR	Masonry, Random
GRP	Glass Reinforced Plastic	U	Unspecified

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OS Sheet No: SD7907SE
Scale: 1:1250 Date: 05/12/2016
7 Nodes
Sheet 1 of 1

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SEWER RECORDS



Refno	Cover	Func	Invert	Size.x	Size.y	Shape	Matl	Length	Grad
0003	66.89	CO							
0300	64.86	CO	62.24	450		CI	CO	34.16	213
0301	64.31	CO							
0302	63.93	CO	62.06	450		CI	CO	71.08	7108
0303	64.11	CO	62.33	300		CI	VC	26.83	383
0304	63.67	CO							
0305	64.55	CO	61.84	450		CI	VC	11.4	
0306	65.13	SW	62.22	225		CI	VC	37	23
0307	64.93	SW	62.78	300		CI	VC	30.01	97
0308	64.44	SW	61.9	300		CI	VC	8.1	
0309	64.06	FO							
0310	64.07	SW	62.06	225		CI	VC	98.24	
0321	64.3	CO							
0324	64.1	CO							
0400		CO	0	480	800	EG	GRP	13.93	
0401	65.35	CO							
0402	66.02	CO	63.6	375		CI	VC	22.14	
0403		CO	0	225		CI	BR	13.93	
0404	65.65	CO							
0405	66.13	CO							
0406	66.65	SW	0	225		CI	VC	20.25	
0407	66.6	CO							
0409		SW							
0413		CO		225		CI	VC	21.25	
0414		FO							
1101	62.06	SW							
1103		OV	0	225		CI	PVC	1	
1200		SW	0	500		CI	VC	47.54	
1300	66.73	CO							
1301	66.13	SW							
1302	65.12	CO	62.22	450		CI	CO	4.1	
1303	64.93	SW							
1304		SW	0	500		CI	VC	8.94	
1305		SW	0	500		CI	VC	21.1	
1306	65.21	SW	63.47	660	760	EG	BR	2.24	13
1400	66.73	CO	65.77	150		CI	VC	25.08	28
1401	65.98	CO	64.87	150		CI	VC	19.31	
1402	66.89	CO							
1403	66.59	CO							
1404	67.44	CO	62.38	450		CI	CO	21.93	
2400	67.22	CO							
0001		CO	64.85	300		CI	VC	50.73	106
0004		SW	0	225		CI	PVC	177.8	
0200		CO	0	150		CI	VC	44.6	
0203		FO	0	200		CI	DI	55.62	
0311		SW							
0314		SW							
0315		CO	0	300		CI	VC	9.95	
0322		SW	0	300		CI	VC	20.71	
0326		SW		150		CI	VC	7.79	
0410		SW		520			CO	117.71	
0411		CO	0	600	900	EG	BR	4.12	
0412		CO							
0415		FO							
0418		CO							
1104		CO							
1308		SW	63.78	600	780	EG	BR	14.32	65
1309		SW							
1405		CO	0	300		CI	VC	10.3	
1406		CO							
1407		CO	63.23	580	790	EG	BR	22.85	
2402		SW		600		CI	CO	22	
2403		SW		600		CI	BR	162.21	
0002		FO							
0312		FO							
0313		SW		450		CI	VC	112.27	
0317		CO							
0319		SW							
0328		CO							
0408		CO							
0417		SW							
1107		SW							
1206		FO							
2002		FO	60.9	150		CI	DI	241.42	
3406		FO	0	200		CI	DI	339.5	
0314		SW							
0326		CO							
3001		FO							
0325		CO	46.55	150		CI	DI	5	0
0327		CO	46.55	150		CI	DI	4.27	
0316	64.5	CO	0	150		CI	VC	5.37	
0318		CO	61.95	450		CI	CO	10.32	129
0320	64.3	CO							
1100		CO	0	150		CI	VC	81.52	
1102		CO	0	100		CI	AC	71.97	

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OS Sheet No: SD7907SW

Scale: 1:1250 Date: 05/12/2016

WASTE WATER SYMBOLOGY

Foul Surface Combined Overflow

Manhole
Manhole, Side Entry
MainSewer, Public
MainSewer, Private
MainSewer, S104
Rising Main, Public
Rising Main, Private
Rising Main, S104
Highway Drain, Private

Foul Surface Combined

WW Site Termination
Air Valve
Cascade
Non Return Valve
Extent of Survey
Flow Meter
Gulley
Hatch Box
Head of System
Hydrobrake / Vortex
Inlet
Inspection Chamber
Bifurcation
Catchpit
Contaminated Surface Water
WW Pumping Station
Sludge Pumping Station
Sewer Overflow
TJunction/Saddle
LampHole
OilInterceptor
PenStock
Pump
RoddingEye
Soakaway
Summit
Valve
Valve Chamber
Washout Chamber
DropShaft
WW Treatment Works
Septic Tank
Vent Column
Network Storage Tank
Orifice Plate
Vortex Chamber
Penstock Chamber
Blind Manhole
Foul Surface Combined Overflow
Screen Chamber
Discharge Point
Outfall

Sludge Main, Public
Sludge Main, Private
Sludge Main, S104

ABANDONED PIPE

MainSewer
Rising Main
Highway Drain
Sludge Main

Control Kiosk
Unspecified

LEGEND

MANHOLE FUNCTION

FO	Foul
SW	Surface Water
CO	Combined
OV	Overflow

SEWER SHAPE

CI	Circular	TR	Trapezoidal
EG	Egg	AR	Arch
OV	Oval	BA	Barrel
FT	Flat Top	HO	HorseShoe
RE	Rectangular	UN	Unspecified
SQ	Square		

SEWER MATERIAL

AC	Asbestos Cement	DI	Ductile Iron
BR	Brick	PVC	Polyvinyl Chloride
PE	Polyethylene	CI	Cast Iron
RP	Reinforced Plastic Matrix	SI	Spun Iron
CO	Concrete	ST	Steel
CSB	Concrete Segment Bolted	VC	Vitrified Clay
CSU	Concrete Segment Unbolted	PP	Polypropylene
CC	Concrete Box Culverted	PF	Pitch Fibre
PSC	Plastic/Steel Composite	MAC	Masonry, Coursed
GRC	Glass Reinforced Concrete	MAR	Masonry, Random
GRP	Glass Reinforced Plastic	U	Unspecified

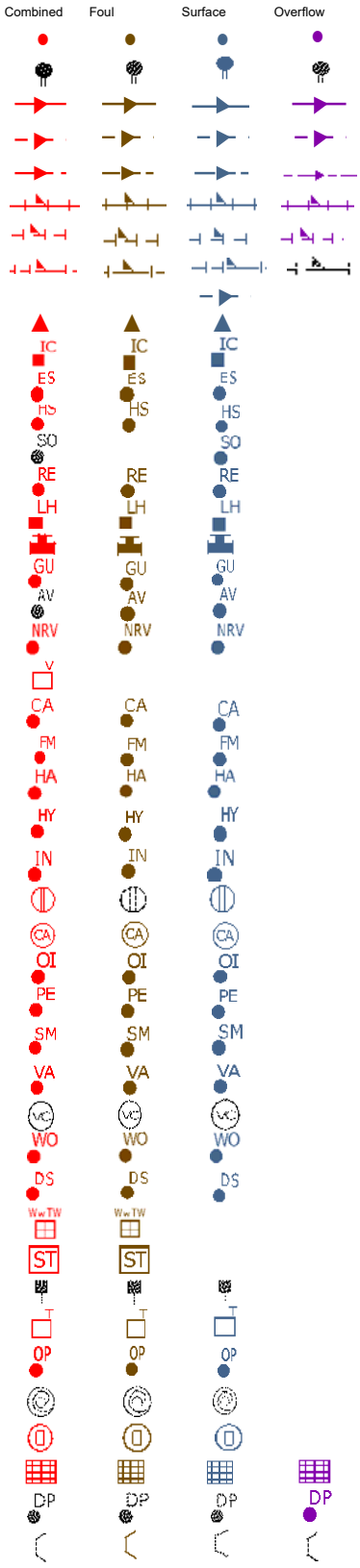
The position of the underground apparatus shown on this plan is approximate only and is given in accordance with the best information currently available. United Utilities Water will not accept liability for any loss or damage caused by the actual position being different from those shown.
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OS Sheet No: SD7907SW
Scale: 1:1250 Date: 05/12/2016
85 Nodes
Sheet 1 of 1

United Utilities
helping life flow smoothly

SEWER RECORDS

WASTE WATER SYMBOLOGY



MANHOLE FUNCTION		SEWER SHAPE			
FO	Foul	CI	Circular	SQ	Square
SW	Surface Water	EG	Egg	TR	Trapezoidal
CO	Combined	OV	Oval	AR	Arch
OV	Overflow	FT	Flat Top	BA	Barrel
		RE	Rectangular	HO	Horse Shoe
SEWER MATERIAL				U	Unspecified
AC	Asbestos Cement	DI	Ductile Iron		
BR	Brick	VC	Vitrified Clay		
CO	Concrete	PP	Polypropylene		
CSB	Concrete Segment	PF	Pitched Fibre		
CSU	Concrete Segment	MA	Masonary, Coursed		
CC	Concrete Box Culverted	MA	Masonary, Random		
PSC	Plastic	RP	Reinforced Plastic		
GR	Glass Reinforced	CI	Cast Iron		
GRP	Glass Reinforced	SI	Spun Iron		
PVC	Polyvinyl Chloride	ST	Steel		
PE	Polyethtlene	U	Unspecified		



ABANDONED PIPE



Cleanwater Symbology

Pipework

Live	Proposed	
		Distribution Main - Pressurised Main
		LDTM Treated Water Distribution - Pressurised main
		LDTM Treated Water Distribution - Gravity main
		Trunk Main - Pressurised main
		Raw Water Aqueduct - Pressurised Main
		Raw Water Aqueduct - Gravity Main
		LDTM Raw Water Distribution - Pressurised main
		LDTM Raw Water Distribution - Gravity main
		Private Pipe
		Comms Pipe
		Concessionary Service

Abandoned

	LDTM Treated Water Distribution
	Trunk Main
	Raw Water Aqueduct
	LDTM Raw Water Distribution
	Distribution main
	Private Pipe
	Comms Pipe
	Concessionary Service

Property Types

Live	Proposed	
		Condition Report
		Pumping Station
		Water Treatment Works
		Valve House
		Water Tower
		Service Reservoir
		Supply Reservoir
		Pipe Bridges

Nodes

Live	Proposed	
		End Cap
		CC Valve open
		CC Valve closed
		AC Valve open
		AC Valve closed
		Air Valve
		Sluice Valve
		Non Return Valve
		Pressure Management Valve
		Change of Characterisitcs
		Anode
		Chlorination Point
		De Chlorination Point
		Bore Hole
		Inlet Point
		Bulk Supply Point
		Fire Hydrant
		Hydrant
		Pump
		Site Termination
		Service Start
		Service End
		Commercial Meter
		Domestic Meter
		Strainer Point
		Access Point
		Hatch Box
		IP Point
		Sampling Station
		Logger Box
		Stop Tap

Matertial Types		Lining Types	
AC	Asbestos Cement	CL	Cement Lining
CI	Cast Iron	TB	Tar or Bitumen
CU	Copper	ERL	Epoxy Resin
CO	Concrete		
DI	Ductile Iron	**Insertion Types**	
GI	Galvanised Iron		
GR	Grey Iron	DD	Die Drawn
OT	Others	DR	Directional Drilling
PB	Lead	MO	Moling
PV	uPVC	PI	Pipeline
SI	Spun Iron	SL	Slip Lined
ST	Steel		
UN	Unknown		
PE	Ployethelene		

APPENDIX D – DRAINAGE STRATEGY

The Contractor is to check and verify in conjunction with the Architects details all setting out points, building and site dimensions, levels and sewer invert levels at connection points and ensure that they are fully conversant with the contents and requirements of the site investigation report before work starts. The Contractor is to comply in all respects with current building legislation, British Standard Specifications, Building Regulations etc, whether or not specifically stated on this drawing.

This drawing is not intended to show details of ground conditions or ground contaminants. Each area of ground taken upon to support any foundation or drainage structure shall be inspected and approved by the Building Control Officer to ensure that they are in accord with the anticipated conditions as described in the site investigation report and to be immediately notified to the Engineer, where applicable. Any suspect fluid ground or ground contaminants on or within the ground should be further investigated by a suitable expert. Any earthworks shown include typical slopes for guidance only and should be investigated further by a suitable geotechnical expert.

Where existing trees are shown to be retained they should be subject to a full Arboricultural inspection for safety. All trees are to be planted so as to ensure they are a minimum of 5 metres from buildings and 3 metres from all below ground services where applicable. A foundation is to be provided to accommodate the proposed tree planting, where applicable.

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GENERAL NOTES

- This drawing is to be read in conjunction with relevant architectural and engineering drawings.
- Levels indicated in blocks are Finished floor levels and are 150mm above adjacent finished ground levels unless otherwise shown.
- Levels of the existing road at the point of be-in with proposed site road must be checked prior to commencement of works.
- Any discrepancies between the details shown and actual on site conditions to be reported immediately to the engineer prior to commencement of works.
- The Contractor is to check and verify in conjunction with the Architects details all setting out points, building and site dimensions, levels and sewer invert levels at connection points and ensure that they are fully conversant with the contents and requirements of the site investigation report before work starts. The Contractor is to comply in all respects with current building legislation, British Standard Specifications, Building Regulations etc, whether or not specifically stated on this drawing.
- This drawing is not intended to show details of ground conditions or ground contaminants. Each area of ground taken upon to support any foundation or drainage structure shall be inspected and approved by the Contractor any areas of formation for said structures which do not accord with the anticipated conditions as described in the site investigation report are to be immediately notified to the Engineer, where applicable. Any suspect fluid ground or ground contaminants on or within the ground should be further investigated by a suitable expert. Any earthworks shown include typical slopes for guidance only and should be investigated further by a suitable geotechnical expert.
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ADOPTABLE ROADS AND SEWERS

- Roads, footways and parking bays which form part of the highway to be adopted under Section 38 of the Highways Act 1980 shall comply with the requirements of the Adopting Authority.
- Sewers to be adopted under Section 104 of the Water Industries Act 1991 shall comply with the Water Authority's requirements and the current edition of the Design and Construction Guidance Under Code For Adoption - 2020" with any amendments specified by the Adopting Water Authority.
- All pipes to be used in adoptable sewerage shall be either clayware to BS EN 295 or concrete to BS EN 1916 and BS 5911: Part 1 with Class S bedding unless otherwise stated. With approval of the Adopting Authority, uPVC pipes with a smooth external rib reinforced uPVC pipes complying with the relevant provisions of BS EN 13476 may be used.
- Where cover to a pipe is more than 1200mm under adoptable carriageway the trench shall be filled to formation of the carriageway with well compacted DTp Type 1 material.
- Where cover to a pipe is less than 1200mm under adoptable carriageway it shall be provided with concrete protection in accordance with the specification of the adopting authority and back filled to formation of the carriageway with well compacted DTp Type 1 material. Where concrete bed and surround is specified flexibility of joints is to be maintained by using compressible bitumen impregnated fibreboard at each pipe joint.
- All existing drainage invert levels, diameters and locations are to be checked by the Contractor prior to commencement of any construction drainage work. Any difference between actual and drawn details is to be reported to the Engineer immediately.
- Positions of existing services/statutory undertakers apparatus adjacent to or crossing proposed sewers is to be checked by the Contractor prior to starting work.
- Trench backfill to be stone backfill, excavated material is not accepted & trenches to be backfilled in 250mm layers.

Drainage Strategy Legend

- Storm Water Network
- Foul Water Network
- Combined Water S185 Sewer Diversion
- Storm Water Carlow Tank
- Hutchinsons Govt Realignment Culvert
- Existing Public Combined Sewer
- Existing Storm Water Drainage
- Existing Culverted Water Course
- Existing Public Sludge Main
- Existing Sewer To Be Abandoned
- Proposed Development Platform Contours (Provided By Tetra Tech)
- Development Boundary

EXISTING SEWERS/ UTILITIES HAVE BEEN SHOWN BASED ON PROVIDED SEWER RECORDS, CCTV, DRAINAGE SURVEYS & INTERPOLATION BETWEEN ALL INFORMATION AVAILABLE. EXACT LOCATION, SIZE, IL & CL OF EXISTING ASSETS NEEDS TO BE CONFIRMED PRIOR TO DETAILED DESIGN.

Rev.	Description	Date	By
G	Drainage strategy amended to suit latest layout.	22/10/2024	LJ
F	Drainage strategy amended to suit latest layout.	23/07/2024	LJ
E	FFL to plots 335,344 & 352-367 amended.	31/11/2023	CA
D	Reservoir note amended to suit client request.	17/11/2023	LJ
C	Drainage amended to remove northern suds features & catchment areas revised to go into reservoir & to suit latest layout as per client request.	25/10/2023	LJ
B	Hutchinson's Govt banks amended to 1:3 to suit client request.	10/02/2023	LJ
A	Drainage strategy plan amended to suit latest layout changes & to suit Tetra-Tech information provided.	20/01/2023	LJ
-	First Issue	12/12/2022	LJ

Drawing Status: **PLANNING**

Please note while these drawings may be used for tender purposes, drawings are subject to the United Utilities & Highways approval as part of ongoing consultations and design checks. Amendments may therefore be requested.

Client: MORRIS

Project: Papermills, Bury, Lancashire

Title: Drainage Strategy - Layout Plan - Sheet 1 of 2

BANNERS GATE
CIVIL, STRUCTURAL & ARCHITECTURAL DESIGN SERVICES
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Scale	1:500 @ A0
Drawn	LJ
Date	December 2022
Checked	
File	22166 / dwgs / civils / current
Drawing	22166 / PL111 - G

The Contractor is to check and verify in conjunction with the Architects details all setting out points, building and site dimensions, levels and sewer invert levels at connection points and ensure that they are fully conversant with the contents and requirements of the site investigation report before work starts. The Contractor is to comply in all respects with current building legislation, British Standard Specifications, Building Regulations etc. whether or not specifically stated on this drawing.

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- The Contractor is to check and verify in conjunction with the Architects details all setting out points, building and site dimensions, levels and sewer invert levels at connection points and ensure that they are fully conversant with the contents and requirements of the site investigation report before work starts. The Contractor is to comply in all respects with current building legislation, British Standard Specifications, Building Regulations etc. whether or not specifically stated on this drawing.
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- Sewers to be adopted under Section 104 of the Water Industries Act 1991 shall comply with the Water Industry Specification and the Code for Adoption Agreements for Water Mains and Services Under Code For Adoption - 2020" with any amendments specified by the Adopting Water Authority.
- All pipes to be used in adoptable sewerage shall be either clayware to BS EN 295 or concrete to BS EN 1916 and BS 5911: Part 1 with Class S bedding unless otherwise stated. With approval of the Adopting Authority, pipes manufactured from external rib reinforced uPVC pipes complying with the relevant provisions of BS EN 13476 may be used.
- Where cover to a pipe is more than 1200mm under adoptable carriageway the trench shall be filled to formation of the carriageway with well compacted DTp Type 1 material.
- Where cover to a pipe is less than 1200mm under adoptable carriageway it shall be provided with concrete protection in accordance with the specification of the adopting authority and back filled to formation of the carriageway with well compacted DTp Type 1 material. Where concrete bed and surround is specified flexibility of joints is to be maintained by using compressible bitumen impregnated fibreboard at each pipe joint.
- All existing drainage invert levels, diameters and locations are to be checked by the Contractor prior to commencement of any construction or drainage work. Any difference between actual and drawn details is to be reported to the Engineer immediately.
- Positions of existing services/statutory undertakers apparatus adjacent to or crossing proposed sewers is to be checked by the Contractor prior to starting work.
- Trench backfill to be stone backfill, excavated material is not accepted & trenches to be backfilled in 250mm layers.

Drainage Strategy Legend

- Storm Water Network
- Foul Water Network
- Combined Water S185 Sewer Diversion
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- Existing Public Sludge Main
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- Proposed Development Platform Contours (Provided By Tetra Tech)
- Development Boundary

EXISTING SEWERS/ UTILITIES HAVE BEEN SHOWN BASED ON PROVIDED SEWER RECORDS, CCTV, DRAINAGE SURVEYS & INTERPOLATION BETWEEN ALL INFORMATION AVAILABLE. EXACT LOCATION, SIZE, IL & CL OF EXISTING ASSETS NEEDS TO BE CONFIRMED PRIOR TO DETAILED DESIGN.

Rev.	Description	Date	By
G	Drainage strategy amended to suit latest layout.	22/10/2024	LJ
F	Drainage strategy amended to suit latest layout.	31/07/2024	LJ
E	Minimum FFL's on western side of site raised to suit client comments.	05/04/2024	LJ
D	FFL to plots 333-334 & 353-367 amended.	23/11/2023	DA
C	Drainage amended to remove northern suds features & catchment areas revised to go into reservoir & to suit latest layout as per client request.	25/10/2023	LJ
B	Hutchinson's Goyt banks amended to 1:3 to suit client requirements.	10/02/2023	LJ
A	Drainage strategy plan amended to suit latest layout changes & to suit Tetra-Tech information provided.	20/01/2023	LJ
-	First issue	12/12/2022	LJ

Drawing Status

PLANNING

Please note while these drawings may be used for tender purposes, drawings are subject to the United Utilities & Highways approval as part of ongoing consultations and design checks. Amendments may therefore be requested.

Client

MORRIS

Project

Papermills, Bury,
Lancashire

Title

Drainage Strategy -
Layout Plan - Sheet 2 of 2

BANNERS GATE
CIVIL, STRUCTURAL & ARCHITECTURAL DESIGN SERVICES
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Scale	1:500 @ A0
Drawn	LJ
Date	December 2022
Checked	
File	22166 / dwgs / civils / current
Drawing	22166 / PL112 - G

APPENDIX E – CATCHMENT PLAN



The Contractor is to check and verify in conjunction with the Architects details all setting out points, building and site dimensions, levels and sewer invert levels at connection points and ensure that they are fully conversant with the contents and requirements of the site investigation report before work starts. The Contractor is to comply in all respects with current building legislation, British Standard Specifications, Building Regulations etc, whether or not specifically stated on this drawing.

GENERAL NOTES

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- This drawing is not intended to show details of ground conditions or ground contaminants. Each area of ground relied upon to support any structure depicted (including drainage) must be investigated by the Contractor any areas of formation for said structures which do not accord with the anticipated conditions as described in the site investigation report are to be immediately notified to the Engineer, where applicable. Any suspect fluid ground or ground contaminants on or within the ground should be further investigated by a suitable expert. Any earthworks shown indicate typical slopes for guidance only and should be investigated further by a suitable geotechnical expert.
- Where existing trees are shown to be retained they should be subject to a full Arboricultural inspection for safety. All trees are to be planted so as to ensure they are a minimum of 5 metres from buildings and 3 metres from drainage and services, where applicable. A foundation is to be provided to accommodate the proposed tree planting, where applicable.

Rev.	Description	Date	By
-	First Issue	17/07/2023	LJ

Drawing Status

DISCUSSION ONLY

Please note while these drawings may be used for tender purposes, drawings are subject to the LLFA approval as part of ongoing consultations and design checks. Amendments may therefore be requested.

Client

MORRIS

Project

Paper Mills, Bury,
Lancashire

Title

Surface Water Reservoir Drainage Strategy -
Layout Plan

BANNERS GATE
CIVIL, STRUCTURAL & ARCHITECTURAL DESIGN SERVICES
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Scale	1:1000 @ A1	Drawn	LJ
Date	July 2023	Checked	SM
File	22166 / dwgs / civils / current	Drawing	22166 / PL125

APPENDIX F – DISCHARGE CALCULATIONS

Print | Close Report

Greenfield runoff rate estimation for sites

www.uksuds.com | Greenfield runoff tool

Calculated by:	Liam Stewart
Site name:	ELPM
Site location:	East Lancs

This is an estimation of the greenfield runoff rates that are used to meet normal best practice criteria in line with Environment Agency guidance "Rainfall runoff management for developments", SC030219 (2013) , the SuDS Manual C753 (Ciria, 2015) and the non-statutory standards for SuDS (Defra, 2015). This information on greenfield runoff rates may be the basis for setting consents for the drainage of surface water runoff from sites.

Site Details

Latitude:	53.56293° N
Longitude:	2.3129° W
Reference:	3338342741
Date:	Dec 05 2022 08:26

Runoff estimation approach IH124

Site characteristics

Total site area (ha): 2.12

Methodology

Q_{BAR} estimation method:	Calculate from SPR and SAAR
SPR estimation method:	Calculate from SOIL type

Soil characteristics	Default	Edited
SOIL type:	4	4
HOST class:	N/A	N/A
SPR/SPRHOST:	0.47	0.47

Hydrological characteristics	Default	Edited
SAAR (mm):	1028	1028
Hydrological region:	10	10
Growth curve factor 1 year:	0.87	0.87
Growth curve factor 30 years:	1.7	1.7
Growth curve factor 100 years:	2.08	2.08
Growth curve factor 200 years:	2.37	2.37

Notes

(1) Is Q_{BAR} < 2.0 l/s/ha?

When Q_{BAR} is < 2.0 l/s/ha then limiting discharge rates are set at 2.0 l/s/ha.

(2) Are flow rates < 5.0 l/s?

Where flow rates are less than 5.0 l/s consent for discharge is usually set at 5.0 l/s if blockage from vegetation and other materials is possible. Lower consent flow rates may be set where the blockage risk is addressed by using appropriate drainage elements.

(3) Is SPR/SPRHOST ≤ 0.3?

Where groundwater levels are low enough the use of soakaways to avoid discharge offsite would normally be preferred for disposal of surface water runoff.

Greenfield runoff rates	Default	Edited
Q_{BAR} (l/s):	16.05	16.05
1 in 1 year (l/s):	13.96	13.96
1 in 30 years (l/s):	27.28	27.28
1 in 100 year (l/s):	33.37	33.37
1 in 200 years (l/s):	38.03	38.03

This report was produced using the greenfield runoff tool developed by HR Wallingford and available at www.uksuds.com. The use of this tool is subject to the UK SuDS terms and conditions and licence agreement , which can both be found at www.uksuds.com/terms-and-conditions.htm. The outputs from this tool are estimates of greenfield runoff rates. The use of these results is the responsibility of the users of this tool. No liability will be accepted by HR Wallingford, the Environment Agency, CEH, Hydrosolutions or any other organisation for the use of this data in the design or operational characteristics of any drainage scheme.

Print | Close Report

Greenfield runoff rate estimation for sites

www.uksuds.com | Greenfield runoff tool

Calculated by:	Liam Stewart
Site name:	ELPM
Site location:	East Lancs

This is an estimation of the greenfield runoff rates that are used to meet normal best practice criteria in line with Environment Agency guidance "Rainfall runoff management for developments", SC030219 (2013) , the SuDS Manual C753 (Ciria, 2015) and the non-statutory standards for SuDS (Defra, 2015). This information on greenfield runoff rates may be the basis for setting consents for the drainage of surface water runoff from sites.

Site Details

Latitude:	53.56298° N
Longitude:	2.31376° W
Reference:	1000250378
Date:	Dec 05 2022 15:51

Runoff estimation approach IH124

Site characteristics

Total site area (ha): 5.01

Methodology

Q_{BAR} estimation method:	Calculate from SPR and SAAR
SPR estimation method:	Calculate from SOIL type

Soil characteristics	Default	Edited
SOIL type:	4	4
HOST class:	N/A	N/A
SPR/SPRHOST:	0.47	0.47

Hydrological characteristics	Default	Edited
SAAR (mm):	1028	1028
Hydrological region:	10	10
Growth curve factor 1 year:	0.87	0.87
Growth curve factor 30 years:	1.7	1.7
Growth curve factor 100 years:	2.08	2.08
Growth curve factor 200 years:	2.37	2.37

Notes

(1) Is Q_{BAR} < 2.0 l/s/ha?

When Q_{BAR} is < 2.0 l/s/ha then limiting discharge rates are set at 2.0 l/s/ha.

(2) Are flow rates < 5.0 l/s?

Where flow rates are less than 5.0 l/s consent for discharge is usually set at 5.0 l/s if blockage from vegetation and other materials is possible. Lower consent flow rates may be set where the blockage risk is addressed by using appropriate drainage elements.

(3) Is SPR/SPRHOST ≤ 0.3?

Where groundwater levels are low enough the use of soakaways to avoid discharge offsite would normally be preferred for disposal of surface water runoff.

Greenfield runoff rates	Default	Edited
Q_{BAR} (l/s):	37.92	37.92
1 in 1 year (l/s):	32.99	32.99
1 in 30 years (l/s):	64.46	64.46
1 in 100 year (l/s):	78.87	78.87
1 in 200 years (l/s):	89.87	89.87

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Greenfield runoff rate estimation for sites

www.uksuds.com | Greenfield runoff tool

Calculated by:	Liam Stewart
Site name:	ELPM
Site location:	East Lancs

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Site Details

Latitude:	53.56293° N
Longitude:	2.3129° W
Reference:	3528214726
Date:	Dec 05 2022 08:30

Runoff estimation approach IH124

Site characteristics

Total site area (ha): 3.35

Methodology

Q_{BAR} estimation method: Calculate from SPR and SAAR

SPR estimation method: Calculate from SOIL type

Soil characteristics	Default	Edited
SOIL type:	4	4
HOST class:	N/A	N/A
SPR/SPRHOST:	0.47	0.47

Hydrological characteristics	Default	Edited
SAAR (mm):	1028	1028
Hydrological region:	10	10
Growth curve factor 1 year:	0.87	0.87
Growth curve factor 30 years:	1.7	1.7
Growth curve factor 100 years:	2.08	2.08
Growth curve factor 200 years:	2.37	2.37

Notes

(1) Is Q_{BAR} < 2.0 l/s/ha?

When Q_{BAR} is < 2.0 l/s/ha then limiting discharge rates are set at 2.0 l/s/ha.

(2) Are flow rates < 5.0 l/s?

Where flow rates are less than 5.0 l/s consent for discharge is usually set at 5.0 l/s if blockage from vegetation and other materials is possible. Lower consent flow rates may be set where the blockage risk is addressed by using appropriate drainage elements.

(3) Is SPR/SPRHOST ≤ 0.3?

Where groundwater levels are low enough the use of soakaways to avoid discharge offsite would normally be preferred for disposal of surface water runoff.

Greenfield runoff rates	Default	Edited
Q_{BAR} (l/s):	25.36	25.36
1 in 1 year (l/s):	22.06	22.06
1 in 30 years (l/s):	43.1	43.1
1 in 100 year (l/s):	52.74	52.74
1 in 200 years (l/s):	60.09	60.09

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Site name:	ELPM
Site location:	East Lancs

This is an estimation of the greenfield runoff rates that are used to meet normal best practice criteria in line with Environment Agency guidance "Rainfall runoff management for developments", SC030219 (2013) , the SuDS Manual C753 (Ciria, 2015) and the non-statutory standards for SuDS (Defra, 2015). This information on greenfield runoff rates may be the basis for setting consents for the drainage of surface water runoff from sites.

Site Details

Latitude:	53.56293° N
Longitude:	2.3129° W
Reference:	1126575655
Date:	Dec 05 2022 08:32

Runoff estimation approach IH124

Site characteristics

Total site area (ha): 0.96

Methodology

Q_{BAR} estimation method:	Calculate from SPR and SAAR
SPR estimation method:	Calculate from SOIL type

Soil characteristics	Default	Edited
SOIL type:	4	4
HOST class:	N/A	N/A
SPR/SPRHOST:	0.47	0.47

Hydrological characteristics	Default	Edited
SAAR (mm):	1028	1028
Hydrological region:	10	10
Growth curve factor 1 year:	0.87	0.87
Growth curve factor 30 years:	1.7	1.7
Growth curve factor 100 years:	2.08	2.08
Growth curve factor 200 years:	2.37	2.37

Notes

(1) Is Q_{BAR} < 2.0 l/s/ha?

When Q_{BAR} is < 2.0 l/s/ha then limiting discharge rates are set at 2.0 l/s/ha.

(2) Are flow rates < 5.0 l/s?

Where flow rates are less than 5.0 l/s consent for discharge is usually set at 5.0 l/s if blockage from vegetation and other materials is possible. Lower consent flow rates may be set where the blockage risk is addressed by using appropriate drainage elements.

(3) Is SPR/SPRHOST ≤ 0.3?

Where groundwater levels are low enough the use of soakaways to avoid discharge offsite would normally be preferred for disposal of surface water runoff.

Greenfield runoff rates	Default	Edited
Q_{BAR} (l/s):	7.27	7.27
1 in 1 year (l/s):	6.32	6.32
1 in 30 years (l/s):	12.35	12.35
1 in 100 year (l/s):	15.11	15.11
1 in 200 years (l/s):	17.22	17.22

This report was produced using the greenfield runoff tool developed by HR Wallingford and available at www.uksuds.com. The use of this tool is subject to the UK SuDS terms and conditions and licence agreement , which can both be found at www.uksuds.com/terms-and-conditions.htm. The outputs from this tool are estimates of greenfield runoff rates. The use of these results is the responsibility of the users of this tool. No liability will be accepted by HR Wallingford, the Environment Agency, CEH, Hydrosolutions or any other organisation for the use of this data in the design or operational characteristics of any drainage scheme.

Greenfield runoff rate estimation for sites

www.uksuds.com | Greenfield runoff tool

Calculated by:	Liam Stewart
Site name:	ELPM
Site location:	East Lancs

This is an estimation of the greenfield runoff rates that are used to meet normal best practice criteria in line with Environment Agency guidance "Rainfall runoff management for developments", SC030219 (2013) , the SuDS Manual C753 (Ciria, 2015) and the non-statutory standards for SuDS (Defra, 2015). This information on greenfield runoff rates may be the basis for setting consents for the drainage of surface water runoff from sites.

Site Details

Latitude:	53.56293° N
Longitude:	2.3129° W
Reference:	1340921036
Date:	Dec 05 2022 08:34

Runoff estimation approach IH124

Site characteristics

Total site area (ha): 0.26

Methodology

Q_{BAR} estimation method: Calculate from SPR and SAAR

SPR estimation method: Calculate from SOIL type

Soil characteristics	Default	Edited
SOIL type:	4	4
HOST class:	N/A	N/A
SPR/SPRHOST:	0.47	0.47

Hydrological characteristics	Default	Edited
SAAR (mm):	1028	1028
Hydrological region:	10	10
Growth curve factor 1 year:	0.87	0.87
Growth curve factor 30 years:	1.7	1.7
Growth curve factor 100 years:	2.08	2.08
Growth curve factor 200 years:	2.37	2.37

Notes

(1) Is Q_{BAR} < 2.0 l/s/ha?

When Q_{BAR} is < 2.0 l/s/ha then limiting discharge rates are set at 2.0 l/s/ha.

(2) Are flow rates < 5.0 l/s?

Where flow rates are less than 5.0 l/s consent for discharge is usually set at 5.0 l/s if blockage from vegetation and other materials is possible. Lower consent flow rates may be set where the blockage risk is addressed by using appropriate drainage elements.

(3) Is SPR/SPRHOST ≤ 0.3?

Where groundwater levels are low enough the use of soakaways to avoid discharge offsite would normally be preferred for disposal of surface water runoff.

Greenfield runoff rates	Default	Edited
Q_{BAR} (l/s):	1.97	1.97
1 in 1 year (l/s):	1.71	1.71
1 in 30 years (l/s):	3.35	3.35
1 in 100 year (l/s):	4.09	4.09
1 in 200 years (l/s):	4.66	4.66

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APPENDIX G – UU RESPONSE

oliver.chard

From: O'Brien, Neil <Neil.O'Brien@uuplc.co.uk>
Sent: 12 December 2016 09:54
To: francisco.aguilar
Cc: Wastewater Developer Services
Subject: RE: Pre development enquiry: Former Lancashire Paper Mills, DE2966

Dear Customer

We have carried out an assessment of your application which is based on the information provided; this pre development advice will be valid for 12 months

Foul will be allowed to drain to the public combined sewer network at an unrestricted rate. The connection(s) to the public sewer can be at a point(s) convenient to yourself

Surface water from this site should drain to either soak away or directly to watercourse. Discharge rates and consents must be discussed and agreed with all interested parties.

Connection Application

Although we may discuss and agree discharge points & 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 ultimatley 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

http://www.unitedutilities.com/connecting-public-sewer.aspx

Please be aware that on site drainage must be designed in accordance with Building Regulations, National Planning Policy, Planning Conditions and local flood authority guidelines, we would recommend that you laise and make suitable agreements with the relevant statutory bodies.

Regards

Neil O'Brien

Developer Engineer
Developer Services and Planning

From: francisco.aguilar [mailto:francisco.aguilar@wyg.com]
Sent: 05 December 2016 13:43
To: Wastewater Developer Services <WastewaterDeveloperServices@uuplc.co.uk>
Cc: tom.beavis <tom.beavis@wyg.com>
Subject: Pre development enquiry: Former Lancashire Paper Mills, Church St, Radcliffe M26 2PG

Dear Sir/Madame,

Please find attached a predevelopment enquiry form in relation to an outline planning application for the site above. The site covers an area of 18.84ha, a plan showing the location and site boundary is attached for your convenience.

The application seeks approval for 450 dwellings and therefore a peak foul discharge into UU sewer network of 21l/s is proposed. We seek your views on whether there is capacity in the 450mm combined public sewer under Church Lane to accommodate this flows and as to the location of the connection point to your network, as there are a few foul sewers within the area according to your records (attached).

It is expected that surface water can be disposed via soakaways or discharged into the River Irwell or Bealey's Goit.

Thank you

Regards

Francisco Aguilar
Flood Risk & Drainage Engineer

WYG
Arndale Court, Headingley, Leeds, West Yorkshire, LS6 2UJ
Tel: +44 113 219 2284
Fax: +44 113 278 3487

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APPENDIX H – CROW TREES FARM BROOK TECHNICAL NOTE

Technical Note

Project:	East Lancashire Papermill	**Office:**	Manchester
Project №:	784-B038963	**Prepared by:**	Alex Walsh
Client:	Morris Homes	**Approved by:**	Robert Carr
Date:	26/07/2022	**Status:**	For Submission
Subject:	Discharge of condition 30 for the Crow Trees Farm Brook		

1.0 BACKGROUND

1.1 Outline planning permission was granted for the East Lancashire Papermill (ELPM) site (application number 62969) by Bury Borough Council (BBC) on 29/06/2018 for the development of up to 400 new homes, supported by a number of conditions. This has since been superseded by a Section 73 Decision notice on 25/10/2021 (application number 67597).

1.2 The original Condition 30 reads '*Details of the exact position of the Crow Trees Farm Brook culvert beneath the site shall be submitted as part of the first reserved matters application affecting the area. The proposed dwellings and structures shall not be sited within 8m of the existing culvert structure*'.

1.3 Within the S73 notice, Condition 30 was updated to read '*No dwellings or structures shall be sited within 8m of Crow Trees Brook Culvert*'.

1.4 The Crow Trees Farm Brook (the Brook) is classified as a Main River and believed to have been initially culverted in the 1800s.

1.5 The original Flood Risk Assessment (FRA) for planning proposals included for the partial opening up of the Brook to allow surface water discharge from the development.

1.6 Feedback received by BBC and the Environment Agency (EA) dated 07/08/2018, required that the proposals consider the need for hydraulic modelling of the Brook and avoid development within its easement. A meeting was held with the EA on 21/08/2018 and follow up letter received 24/08/2018 with updated advice. A record of these communications is found in Flood Risk Addendum Report dated 05/11/2018 which was submitted following the initial objections raised. Planning was subsequently approved following the submission of the Addendum.

1.7 The Addendum Report concluded that following engagement with the EA, no modelling would be required if no modifications were to be made to the Brook. This engagement also confirmed that finished flood levels (FFLs) must be set to +600mm above the 100 year + 35% climate change event. The EA noted that FFLs were set more than this so raised no objection. They also advised that infrastructure should not be placed in flow routes of the Brook flood plain.

1.8 The Addendum also identifies that in areas which may still experience flooding from the Brook, flood resilience measures should be provided for the 100 year + 70% climate change event, level set at 66.27m AOD.

1.9 Within the Addendum, the masterplan was revised to provide public open space above the Brook.

1.10 It should be noted that a separate application is being led by Bury Borough Council for the construction of a new footbridge across the River Irwell on this site. The new footbridge will be located near the outfall of the Crow Trees Farm Brook and landing by the Pioneer Mills site. This work will be subject to a bespoke permit with the Environment Agency and does not form part of this Condition or application.

1.11 This Technical Note will demonstrate the location of the Brook, including the required easement to allow for the Condition to be discharged in accordance with the National Planning Policy Framework (NPPF).

2.0 ASSESSMENT OF CONDITION 30

2.1 The FRA Addendum identified a detailed CCTV survey carried out by Aquajet in January 2012.

2.2 The survey includes a detailed manhole survey of the Brook from Cross Lane through the ELPM site to where it discharges into the River Irwell.

2.3 Each manhole is referenced by Easting, Northing and the culverts cover level.

2.4 Whilst the age of data is now over 10 years old, the data is considered accurate and representative of the culverts current position below the site. The site has been fully abandoned for a longer period than this, and no works have been carried out to the culvert during this time.

2.5 A copy of the Aquajet surveys can be found in Appendix A.

2.6 The results from the Aquajet survey have been plotted in GIS with the accurate geospatial references for each manhole location and the route of the culvert linked between manholes. An 8m easement has plotted to enable the development area to maintain the requirements set out in Condition 30.

2.7 The mapped outputs for the 8m easement can be found in Appendix B.

3.0 CONCLUSION

3.1 Survey data was provided in the previous FRA Addendum report, summarised again in this note. This survey data is considered accurate and representative of conditions on the ground today.

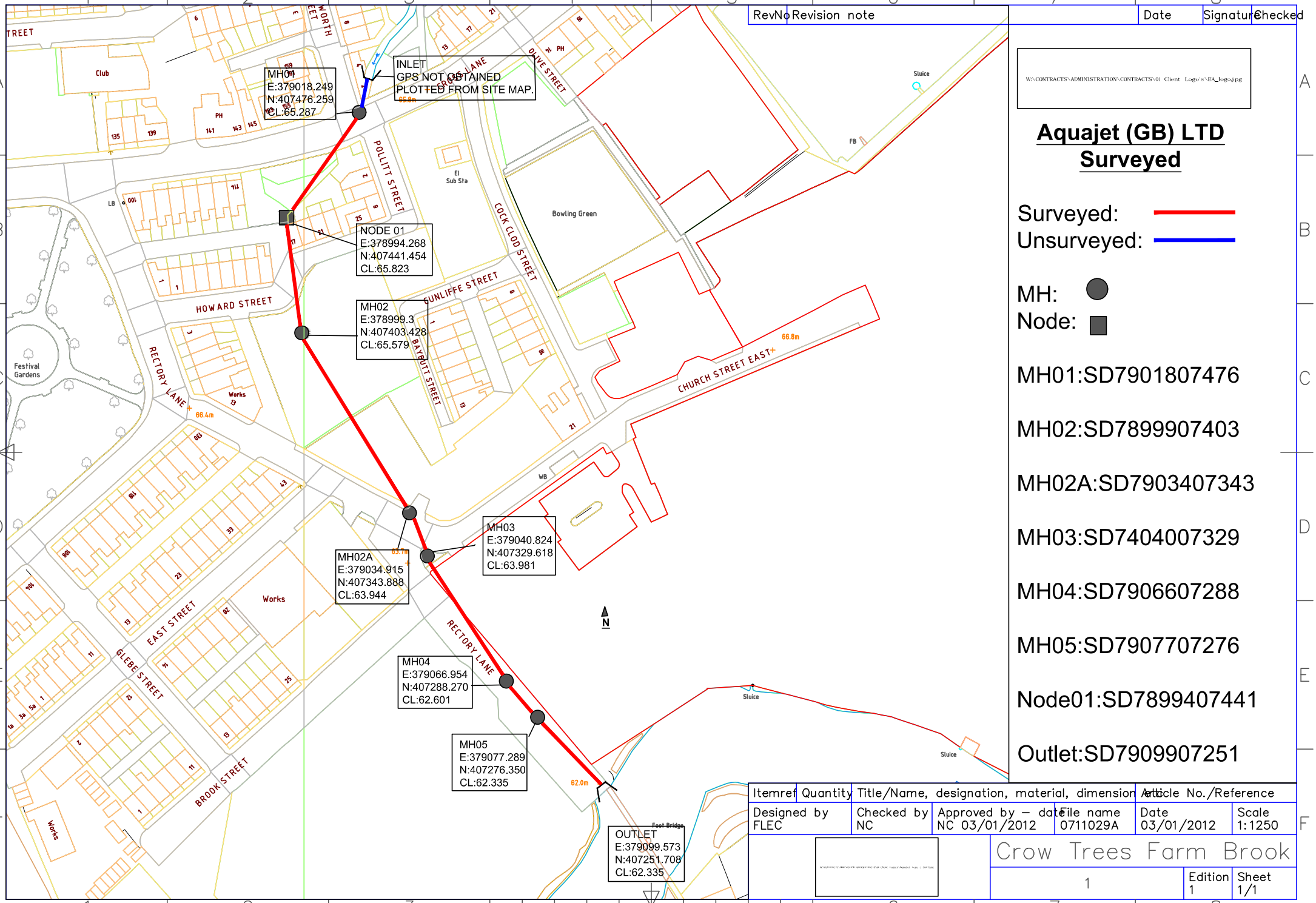
3.2 The 8m easement has been mapped and provided in Appendix B of this Technical Note.

3.3 It is recommended Condition 30 be discharged and the development proposals work to the mapped 8m easement to ensure no development takes place within this area.

3.4 The background summary outlines the historic discussions related to the Crow Trees Brook. Critically, it confirms that following engagement with the EA, it is accepted that the Brook can remain culverted throughout the site providing that there is green open space above it and within its 8m easement.

3.5 It is noted that Condition 32 requires details of the culvert opening designs to be submitted for approval. Given this will not be required, it is recommended that no further action be taken for this part of the condition.

APPENDIX A – AQUAJET SURVEY


MH01
E:379018.249
N:407476.259
CL:65.287
INLET
GPS NOT OBTAINED
PLOTTED FROM SITE MAP.
NODE 01
E:378994.268
N:407441.454
CL:65.823
MH02
E:378999.3
N:407403.428
CL:65.579
MH02A
E:379034.915
N:407343.888
CL:63.944
MH03
E:379040.824
N:407329.618
CL:63.981
MH04
E:379066.954
N:407288.270
CL:62.601
MH05
E:379077.289
N:407276.350
CL:62.335
OUTLET
E:379099.573
N:407251.708
CL:62.335
Aquajet (GB) LTD
Surveyed
Surveyed:
Unsurveyed:
MH:
Node:
MH01:SD7901807476
MH02:SD7899907403
MH02A:SD7903407343
MH03:SD7404007329
MH04:SD7906607288
MH05:SD7907707276
Node01:SD7899407441
Outlet:SD7909907251
RevNo Revision note
Date
Signature
Checked
Itemref
Quantity
Title/Name, designation, material, dimension etc.
Article No./Reference
Designed by FLEC
Checked by NC
Approved by – date NC 03/01/2012
File name 0711029A
Date 03/01/2012
Scale 1:1250
Crow Trees Farm Brook
1
Edition 1
Sheet 1/1
HOWARD STREET
POLLITT STREET
GUNLIFFE STREET
COCK CLOD STREET
BAYBUTT STREET
CHURCH STREET EAST
RECTORY LANE
EAST STREET
GLEBE STREET
BROOK STREET
OLIVE STREET
Bowling Green
Festival Gardens
Works
Sluice
Foot Bridge

APPENDIX B – CROW TREES FARM BROOK EASEMENT



Crow Trees Farm Brook Culvert
Radcliffe, Greater Manchester
Morris Homes

N

Legend

- Site Boundary
- Crow Trees Farm Brook Culvert
- Crow Trees Farm Brook Manholes
- Crow Trees Farm Brook Culvert Easement

0 25 50 75 100 m

1:2000

26 July 2022

Contains OS data © Crown copyright and database right 2022

Notes:
Plan of the Crow Trees Brook Culvert alignment. This shows the alignment of the culvert and loction of manholes as identified in the Aquajet GB LTD survey from January 2012. An 8m culvert easement is also identified.

Drawn by: A Walsh
Checked by: R Carr
Office: Manchester

TETRA TECH

APPENDIX I – ADDITIONAL FLOOD MODELLING REPORT JUNE 2021

Proposed Residential Development, Former East Lancashire Paper Mills, Radcliffe

Additional Flood Modelling Report

A112428-68

First Issue

Homes England & Bury Metropolitan Borough Council

June 2021

Prepared on Behalf of Tetra Tech Limited.

Registered in England number: 01959704

Document Control

Document:	Additional Flood Modelling Report
Project:	Former East Lancashire Paper Mills, Radcliffe
Client:	Homes England & Bury Metropolitan Borough Council
Job Number:	A112428-68
File Origin:	N:\Projects\A090001-A095000\A090070-193\reports\2021 Modelling Report\ELPM Additional Hydraulic Modelling Report May 2021.docx

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Description of revision:			

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Description of revision:			

Revision:		**Status:**	
Date:			
Prepared by:		**Checked by:**	**Approved By:**
Description of revision:			

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Registered Office: 3 Sovereign Square, Sovereign Street, Leeds, United Kingdom, LS1 4ER

Contents

Document Control 1
1.0 INTRODUCTION 1
1.1 Purpose of this Report 1
1.2 Proposed Development 1
1.3 Scope of this Report 1
1.4 Limitations of This Report 1
2.0 SITE DESCRIPTION 3
2.1 Existing Site 3
2.2 Watercourses 5
2.2.1 Main Rivers 5
2.2.2 Ordinary and Manmade Watercourses 5
3.0 FLUVIAL FLOOD RISK 6
3.1 Introduction 6
3.1.1 Climate Change 7
3.1.2 Previous Hydraulic Modelling 7
3.1.3 Crow Trees Farm Brook 8
3.2 Outline Planning Proposals 8
3.2.1 Minimum Finished Floor Levels & Flood Resilience Requirements 8
3.2.1.1 Proposed Flood Resilience Measures 8
3.2.2 Proposed Re-Contouring 9
3.2.3 River Model 9
3.3 Revised Hydraulic Modelling 10
3.3.1 Hutchinson's Goit 10
3.3.2 Retained Pond 10
3.3.3 Floodable Gardens 11
3.3.4 River Wall Height 11
3.4 Modelling Results 13
3.4.1 Functional Floodplain – 1 in 20 year return period event (5% AEP) 13
3.4.2 1 in 100 year return period event (1% AEP) 13
3.4.3 1 in 1000 year return period event (0.1% AEP) 14
4.0 CONSENTS REQUIRED 15
4.1 Land Drainage Act 1991 15
4.2 Environmental Permit 15
5.0 CONCLUSIONS AND RECOMMENDATIONS 16

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6.0 APPENDICES 17

6.1 Appendix A – Indicative Masterplan 17

6.2 Appendix B – Proposed Contours 18

6.3 Appendix C – EA Correspondence 19

6.4 Appendix D – Revised Hydraulic Modelling Report 20

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Registered Office: 3 Sovereign Square, Sovereign Street, Leeds, United Kingdom, LS1 4ER

1.0 INTRODUCTION

1.1 PURPOSE OF THIS REPORT

Homes England (HE) and Bury Metropolitan Borough Council (BC) have commissioned Tetra Tech Ltd (formerly WYG Engineering Ltd) to undertake additional hydraulic modelling in respect of a proposed development on a 22.98 ha site on the former site of the East Lancashire Paper Mills in Radcliffe, Bury.

This report has been prepared to provide additional information on the flood risk to the site to remove risk from future developers.

1.2 PROPOSED DEVELOPMENT

Outline planning application referenced 62969 was approved for the development of up to 400 dwellings, and associated works including relocation of cricket pitch, including a pavilion, provision of open space and sports facilities and demolition of existing building and structures.

The proposed Indicative Masterplan is included in Appendix A.

1.3 SCOPE OF THIS REPORT

This report has been prepared in support of the additional modelling completed which included:

1. Preliminary review of the optimum height of wall to be retained along the River Irwell frontage
2. Removal of floodable gardens from the model
3. Reduction of flows into the site via Hutchinson's Goit to levels agreed with the Environment Agency
4. Preliminary review of the proposed retained pond weir control
5. Run the model for the Q10, Q20, Q100, Q100+CC1, Q100+CC2, Q1000 events with the existing site topography in place
6. Run the model for the Q10, Q20, Q100, Q100+CC1, Q100+CC2, Q1000 events with the proposed development in place as amended by items 1 – 4 above
7. Review results of the above and prepare reporting

1.4 LIMITATIONS OF THIS REPORT

This report has been prepared by Tetra Tech Ltd (formerly WYG Engineering Ltd) on behalf of HE & BC in connection with the scope of the report as described in Section 1.3 above and takes into account the particular instructions and requirements set out in our fee proposal and the acceptance. It is not intended for and should not be relied on by any third party and no responsibility is undertaken to any third party.

Tetra Tech accepts no duty or responsibility (including in negligence) to any party other than HE & Bury MBC and disclaims all liability of any nature whatsoever to any such party in respect of this report.

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2.0 SITE DESCRIPTION

2.1 EXISTING SITE

The application site covers an area of 22.98 ha and is located to the south of Cross Lane, Radcliffe at grid reference SD 79279 07408. The nearest postcode is M26 2PG. A location and site plan are shown in Figure 1 and Figure 2 below.

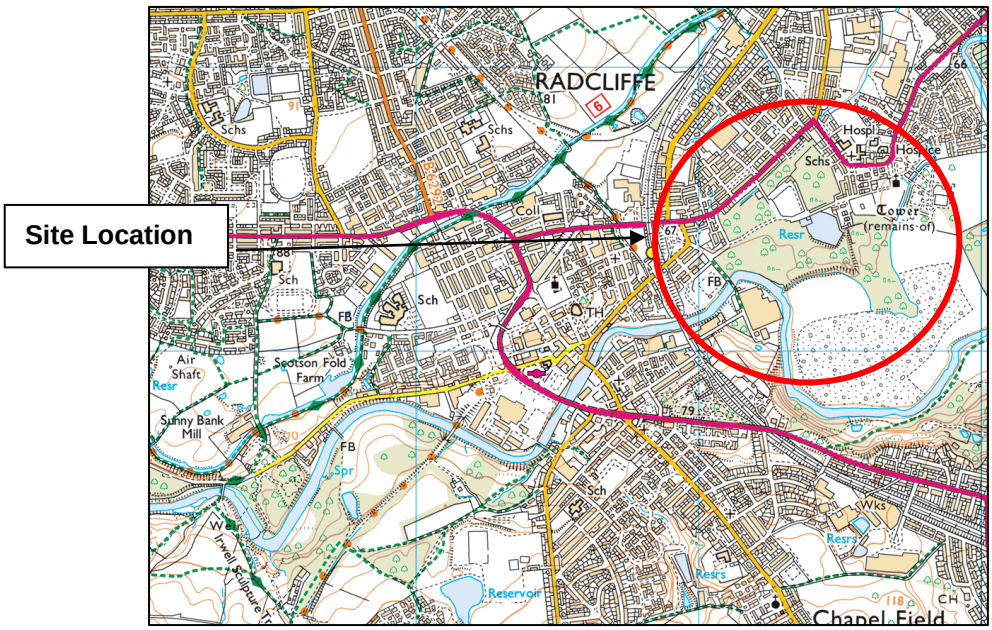


Figure 1 – Site Location Plan

The application site is bounded to the north by Cross Lane and residential developments, to the east by Bury Street and undeveloped land, to the south by a largely abandoned watercourse known as Bealey's Goit, and by the River Irwell.

Due to the former nature of the site, it is considered brownfield in planning terms. However, most of the land is undeveloped, and therefore in terms of surface hydrology it is considered as a greenfield site.

A topographical survey of the site was undertaken. It shows that the highest point lies on the south eastern corner of the application site at a level of 76.20m AOD; whereas the lowest point of the application site is located by the River Irwell and lies at 62.26m AOD. The general direction of the falls and the high and low points across the entirety of the application boundary are illustrated in Figure 3 below.

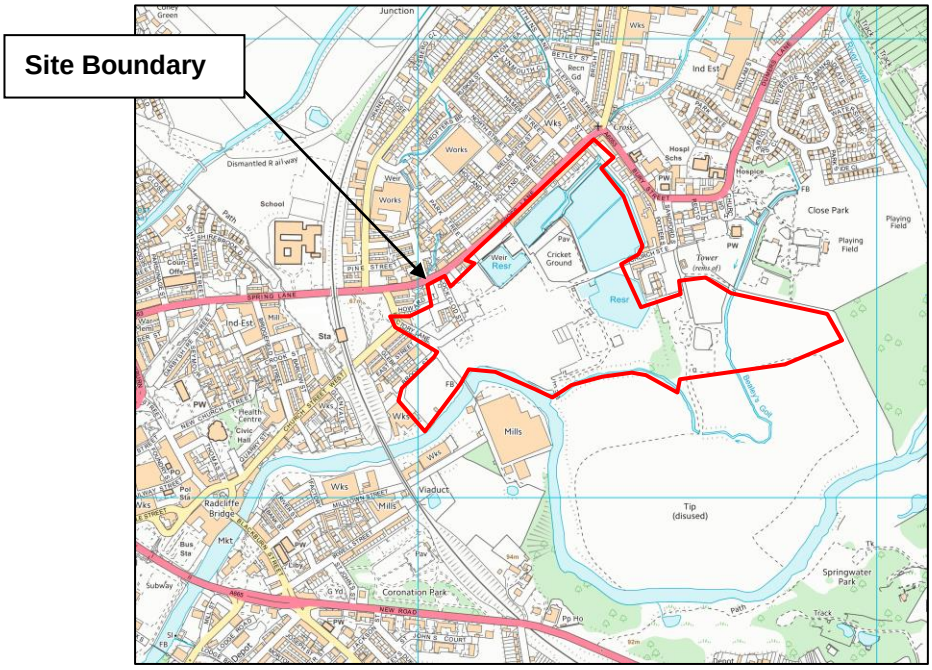


Figure 2 – Site Boundary

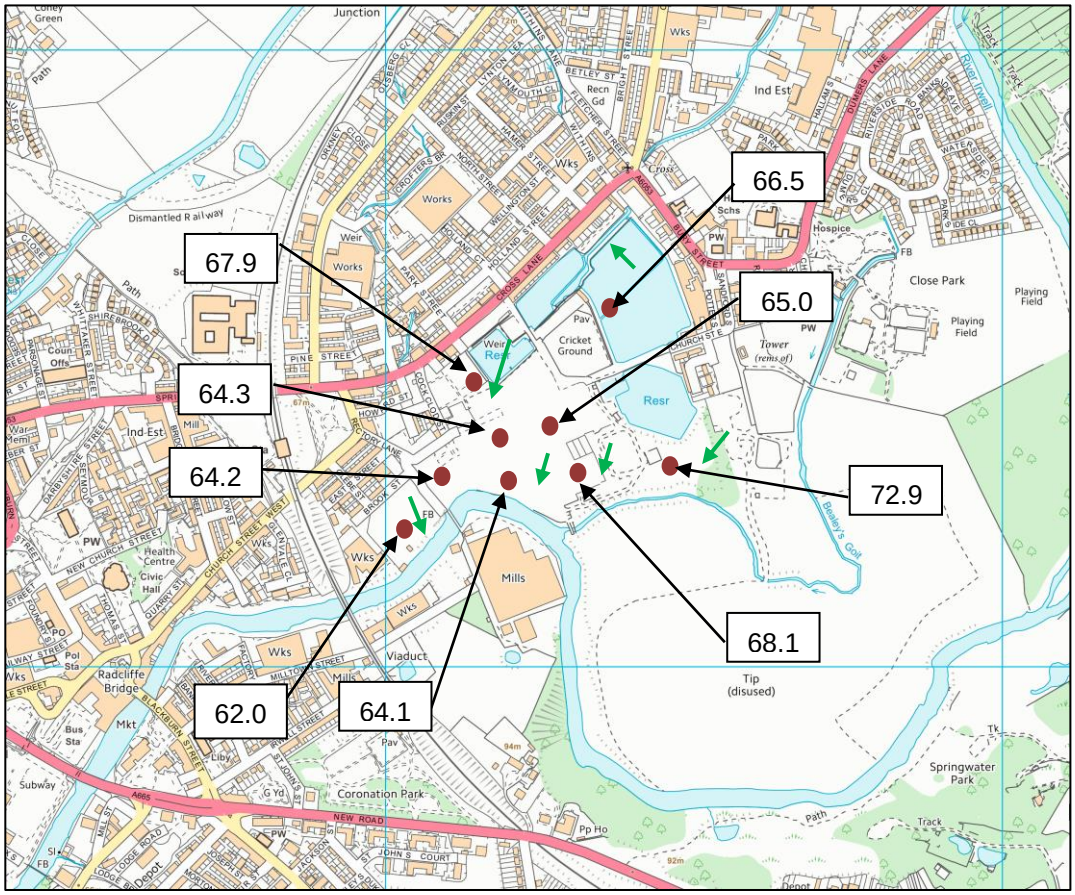


Figure 3 – Ground Levels within the Application Site (m AOD)

2.2 WATERCOURSES

2.2.1 Main Rivers

The nearest Main River to the application site is the River Irwell, which forms the western boundary of the site as explained above.

Crow Trees Farm Brook is classified as main river and it flows culverted from north to south through the western part of the application site. As indicated above, Crow Trees Farm Brook was culverted in the 1800s. Information about the culvert provided by the EA confirmed that the culvert is located within the undeveloped land between Howard Street and Rectory Lane, then continuing under Rectory Lane into the River Irwell.

2.2.2 Ordinary and Manmade Watercourses

In addition to the River Irwell, there are a number of ordinary watercourses within the site.

The Hutchinson's Goit is a manmade ordinary watercourse which was created to supply the paper mills with water from the Irwell. It flows in an open channel from the abstraction point 1.5 km to the north east of the site. The Goit enters the site from the north east, then becomes culverted under the Cricket Club, where it turns south. CCTV surveys were undertaken in 2020 to investigate further the route of the Goit through the site, however these were unable to determine the route of the culvert as it was found to be collapsed within the existing cricket club. Therefore, the exact route by which Hutchinson's Goit flows back to the Irwell is unknown. This is not considered an issue for the site as the preferred solution within the design will be to divert the Goit and create a new channel therefore further investigations to locate the channel to maintain flow will not be required.

Bealey's Goit forms the south eastern boundary of the site. Bealey's Goit fed former industries and allowed the resultant water to be treated prior to its return to the Irwell. Remnants of the open Goit can be seen to the south east of the site. It no longer follows the route shown on the OS mapping; it is diverted back to the Irwell to the east of the site.

3.0 FLUVIAL FLOOD RISK

3.1 INTRODUCTION

Fluvial flood risk is the risk arising from rivers and watercourses.

A floodplain is the area that would naturally be affected by flooding if a river rises above its banks. In England, floodplains are divided into flood zones (FZ) for planning purposes. These areas show the extent of the natural floodplain if there were no flood defences or certain other manmade structures and channel improvements. They are divided as follows:

- Flood Zone 3 shows Land having a 1 in 100 (1%) or greater annual exceedance probability (AEP) of river flooding.
- Flood Zone 2 shows land having between a 1 in 100 and 1 in 1,000 annual exceedance probability of river flooding (1% > AEP> 0.1%).
- Flood Zone 1 is the area where flooding from rivers and the sea is very unlikely. There is less than a 0.1% (1 in 1000) chance of flooding occurring each year in Flood Zone 1.

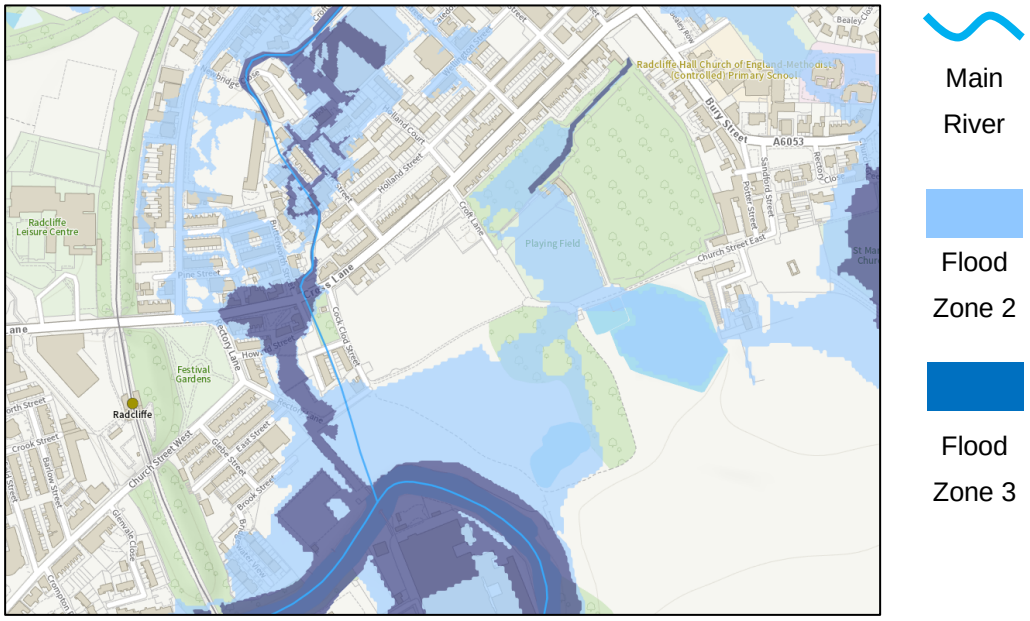


Figure 4 – Extract of the EA's Flood Map for Planning (May 2021)

According to the EA's Flood Map for Planning, the site is located in Flood Zones 1, 2 and 3; as shown in Figure 4 above. Ongoing work by the Environment Agency has led to a revision of the Flood Map for Planning in the area. Figure 5 shows the previous extent of the flood zones as shown by the EA's Flood Map for Planning at the time of the approval of the outline application.

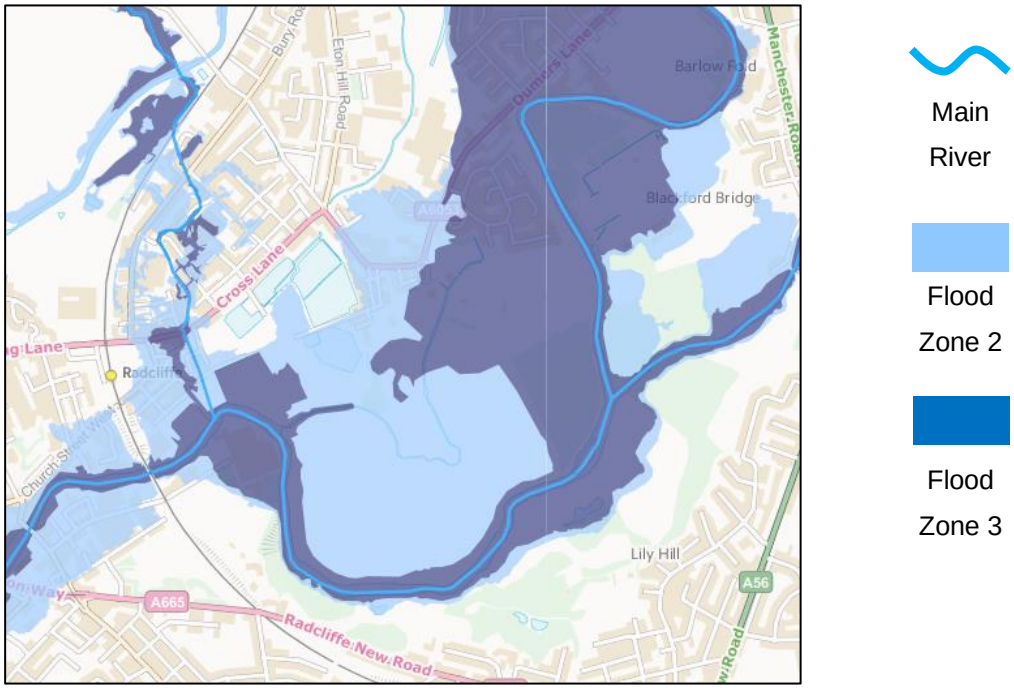


Figure 5 – Extract of the EA's Flood Map for Planning (May 2018)

The EA has confirmed that the flood map outlines were updated in 2019 to reflect the outputs from the initial modelling associated with the Radcliffe & Redvales flood risk management scheme undertaken in 2016. The 2016 model included reviews of hydrology, riverside developments, survey info and included calibration against flood events in 2012 and 2015.

The hydraulic modelling undertaken in support of the outline planning application was based on a version of this model that has been used to update the Flood Map for Planning.

3.1.1 Climate Change

In accordance with the latest EA guidance on Climate Change, 'More Vulnerable' developments located in Flood Zones 2 and 3a need to assess the impact of Climate Change in peak river flows using both the 'higher central' and 'upper end' allowances. The 'higher central' and 'upper end' allowances are +35% and +70% respectively for flow in rivers in the North West of England if the lifetime of the development extends after the 2080s.

The EA indicated in their correspondence that the 'higher central' allowance is sufficient to assess the impact of the proposed development elsewhere. This is discussed in Section 3.3.3 below.

3.1.2 Previous Hydraulic Modelling

Detailed hydraulic modelling was undertaken to investigate the expected impacts of Climate Change within the site both in its current form and with the development proposals in place. A full description of the modelling was

included in the previous FRA and FRA Addendum reports submitted in support of the outline planning application.

3.1.3 Crow Trees Farm Brook

'Cost-recoverable' advice was sought from the Environment Agency in order to obtain further clarification on the risk of flooding from the Brook and any detailed modelling requirements. It was indicated in the meeting that although the EA product 4 data imply that a considerable number of existing properties may be subject to flooding on a 1 in 20 year event, since telemetry and screening at the upstream culvert entry were introduced, there have not been reports of flooding (due to Crow Trees Farm Brook).

It was agreed with the EA that further detailed modelling of the culvert is not required if no modifications to the existing culvert are proposed and finished floor levels (and resilience measures if appropriate) are provided for any properties within the zone of influence of flooding from Crow Trees Farm Brook based on the relevant existing EA model data.

3.2 OUTLINE PLANNING PROPOSALS

3.2.1 Minimum Finished Floor Levels & Flood Resilience Requirements

At the outline planning stage, and as set out in the FRA Addendum, the following was agreed with the Environment Agency:

(i) FFLs are to be set 600mm above the 1 in 100 year return period plus 35% climate change allowance event (in respect of the River Irwell, Hutchinson's Goit and Crow Trees Farm Brook);

(ii) Where existing levels and infrastructure mean compliance with (i) above is not achievable a clear rationale for such departure should be provided;

(iii) It is recommended that consideration of risks and the provision of flood resilience measures be included up to the 1 in 100 year level plus 70% climate change (in respect of the River Irwell, Hutchinson's Goit and Crow Trees Farm Brook) for properties where raising the FFL may not be practical as discussed below in section 3.2.1.1.

3.2.1.1 Proposed Flood Resilience Measures

Flood resilience measures to a level of 65.90m AOD will be provided to the proposed units facing existing streets, as it is not practicable to provide dwellings on one side of an existing street at a higher level than the existing houses. Flood resilience measures include, but are not limited to, providing raised outlets and air bricks, non – return valves in waste and vent pipes, tiled floors, etc. This only applies to approximately 30 units proposed alongside Cross Lane, Rectory Lane and Brook Street.

3.2.2 Proposed Re-Contouring

It was proposed at the outline planning application stage to recontour the site in order to provide higher ground levels in the areas of proposed residential development, whilst providing a larger area of the site dedicated to functional floodplain. This required that flood risk elsewhere does not increase as a result of the proposed development. In order to provide FFLs above 65.90m AOD to all the units, it is proposed to undertake earthworks to realign the boundaries of the flood zones within the site and to reduce the area at risk within the site.

The proposed amendments have been constrained due to the presence of contaminated materials within the site that would not be suitable as fill material in other parts of the site.

The proposed site recontouring strategy is as follows:

1) Increased functional floodplain associated with the River Irwell along the riverside
2) Open up watercourses within the site to create blue corridors and utilise 'soft engineered' solutions to define channels. This includes:
    a. Open up Hutchinson's Goit and provide further flood storage alongside the Goit
    b. Retain the existing pond so it contributes to floodplain storage in large events
3) Take due account of the restrictions arising from the landfill above where sports facilities will be located. The former landfill prevents these areas from being lowered as part of the proposals
4) Raise the residential development platforms so that finished floor levels (FFLs) are above the Q100 plus 35% plus 600mm minimum FFL
5) Permit localised garden flooding on the Q100 plus 70% climate change event in the area to the south of the retained Rectory Lane/Church Street East road (approximately 12 units)

The proposed site contours are included in Appendix B.

3.2.3 River Model

As noted above, the previous model used the model developed in 2016 that included the first phase of the Radcliffe and Redvales Flood Alleviation Scheme (FAS). Further updates to this model have been undertaken by the Environment Agency (EA) as a result of the continuation of the FAS with construction of additional defences starting in 2020 and still ongoing.

The EA were consulted before progressing with additional modelling and confirmed the same model that was used in the modelling work that supported the planning application could be used.

Additional details of the hydraulic modelling are included in the modelling report included in Section 3.3 which reviews the proposed changes to the previous model and in Appendix D.

3.3 REVISED HYDRAULIC MODELLING

3.3.1 Hutchinson's Goit

The previous model included flows over 2 m^3/s through Hutchinson's Goit into the site. Following consultations with the EA, they advised they were planning to restrict flows into the Goit to 1.1 m^3/s as part of the ongoing FAS. Further enquiry was conducted with the EA to review if it would be practical to restrict flows to the Goit beyond 1.1 m^3/s to reduce flood risk across the site. The EA project manager for the FAS confirmed at a meeting with HE and Tetra Tech that a restriction to 0.5 m^3/s would be practical and feasible.

Bury Council (BC) as Lead Local Flood Authority (LLFA) advised that the additional long term cost associated with the higher maintenance that may be required by the smaller orifice restricting flows is negligible and that BC has no objection to the proposed restriction to 0.5 m^3/s.

There is an additional flow of 250 l/s into Hutchinson's Goit to the east of the site from a small tributary.

It can be seen in the proposed layout plan that the flows from Hutchinson's Goit are to be diverted into the retained pond, and then discharged into the Irwell through an area of open space.

Correspondence with the EA regarding the flow restriction is included in Appendix C.

3.3.2 Retained Pond

As a result of the restricted flows into the site through Hutchinson's Goit, the flood storage volume required at the retained pond is lower than previously anticipated. The water level in the pond can be raised to 64.5m AOD.

The flows in and out of the retained pond will be controlled as follows:

- Inlet from Hutchinson's Goit: 450mm pipe under Church St East, with a 1 in 200 gradient falling to an invert level of 64.5m AOD at the pond side.
- Outlet: it is proposed to provide a 375mm pipe with an invert level of 64.5m AOD; and a high-level spillway (modelled as a weir) with a crest level of 65.5m AOD. A flap valve will be required to prevent high water levels in the Irwell from entering the retained pond.

It is anticipated that there will be a 3m wide maintenance track around the retained pond. The outfall is expected to be formed by standard precast concrete headwalls at either side of the track, with a constant level of the track at 65.5m AOD to serve as spillway. The section of track at 65.5m AOD is to be provided with tarmac or concrete as a crushed aggregate path would likely be eroded if the water levels in the pond were to exceed the level of 65.5m AOD. The modelling results indicate that estimated water levels in the retained pond during the 1 in 20 year return period is 65.55m AOD. Any events with return period higher than the 1 in 20 years are expected to cause the pond to overflow through the spillway and onward to the River Irwell.

A cascade panel or energy dissipation blocks are to be included at the downstream end of the pond outfall pipe's headwall.

3.3.3 Floodable Gardens

'Floodable' gardens were included within the proposed site layout in order to avoid an increase in flood depths downstream during the 1 in 100 year return period event plus the 70% upper end climate change allowance. However, following internal discussions within HE it was advised that the floodable gardens may hinder the developability of the site, and would be preferable to remove them.

The gardens had been designed to provide floodplain compensatory storage, flooding up to a depth of 1m and were expected to remain dry during the majority of flood events, only flooding during the 1 in 100 year return period event plus 70% climate change allowance.

The EA's guidance on climate change allowances has been updated since the previous FRA report was undertaken. The latest guidance indicates that '*the appropriate allowance to assess off-site impacts and calculate floodplain storage compensation depends on land uses in affected areas. In most cases use the higher central allowance to calculate floodplain storage compensation.'*

The guidance indicates that the upper end allowance is to be used if:

a) catchment is particularly sensitive to small changes in volume, which could cause significant increases in flood depth or hazard; or
b) affected area contains essential infrastructure or vulnerable uses, such as primary schools, caravans, bungalows or basement dwellings.

The catchment of the River Irwell is not considered to be sensitive to small changes in volume; however it is unclear whether the EA would consider the areas to the west of the site as particularly vulnerable. Further consultation with the EA clarified that the 'higher central' allowance is appropriate at this location to assess impacts off-site.

The correspondence with the EA is included in Appendix C.

3.3.4 River Wall Height

There is an existing stone wall alongside the River Irwell approximately between the former Bealey's Goit outlet and the Crow Trees Farm Brook outlet. Figure 5 shows a recent photograph of the wall taken from the outfall from Crow Trees Farm Brook into the Irwell. The length of the wall is 185m, with Figure 6 below showing the approximate extent of River Wall. The top of the wall level varies between 62.14m AOD at its lowest point and 63.17m AOD at its highest point.

It is proposed to lower the wall to create an additional area of functional flood plain to 61.40m AOD in order to provide the additional storage required. The river bed level is approximately 58.80m AOD.



Figure 5 – View of Existing Wall from Crow Trees Farm Brook outfall

Previous experience in other areas in the North West of England suggests that the wall is likely to have a stepped foundation on the retaining site, with the width of the wall increasing with the depth.

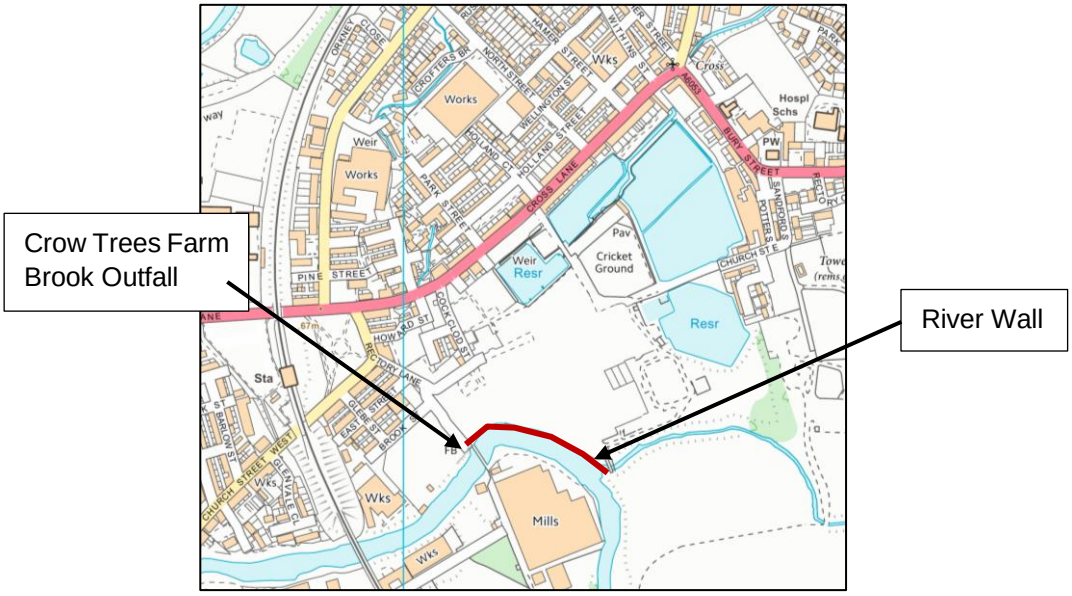


Figure 6 – Extent of River Wall

The reduction in the ground levels retained by the wall is expected to be of benefit as it would significantly reduce the load acting on the wall. It is therefore assumed that the river wall can be lowered and retained in its current condition, however this is to be confirmed by further structural surveys by specialist engineers.

3.4 MODELLING RESULTS

The previous hydraulic model was updated to incorporate the above changes. Appendix D includes the updated hydraulic modelling report. The main results are discussed below.

3.4.1 Functional Floodplain – 1 in 20 year return period event (5% AEP)

The revised modelling results indicate that the proposed development platforms would be at low risk of flooding during this event. Flows from Hutchinson's Goit are shown to be retained within the new proposed opened channel and the retained pond. The results also show greater depths of flooding within the lowered areas of the site proposed to increase the area of functional floodplain. The results show a slight increase in depth within the Irwell between the site and the Pioneers Mill site. This is a complex area as it is the confluence of:

- The outfall of Hutchinson's Goit is re-located upstream to a point opposite the Pioneer Mills
- The opening up of Hutchinson's Goit re-directs water back to the Irwell more directly
- The re-direction of Hutchinson's Goit removes some storage from the Goit system

It is also important to note that the model results show flood depths associated with the retained pond extending into the areas to the west of the retained pond. The proposed contours plan indicates that this area is designed to retain water during flood events and it is dedicated to public open space associated with the retained pond and car parking areas.

3.4.2 1 in 100 year return period event (1% AEP)

a) Present-Day outline

The revised modelling results indicate that the proposed development platforms would be at low risk of flooding during this event. The results show a reduction in flood depths to the east of the southern part of the Pioneer Mills site; with a small increase in the north eastern part of this site. It is important to note that flood depths in the area accepted are expected to be over 1.2m and therefore the small increase of 20mm is considered negligible, particularly as the existing Hazard Rating within this area during this event is 'Danger for Most'. This was also agreed with the EA during the determination of the outline planning application as noted in the FRA addendum report.

b) 35% Climate Change Allowance

Similarly to the results for the lower return period events, the results show that the proposed development platforms would not be affected by flooding during this event, with depths within the lowered area exceeding 2.4m. It can be seen that a small part of the north western part of the site near Cock Clod Street would be at risk, this is associated with Crow Trees Farm Brook and it is proposed to be mitigated with the provision of flood resilience measures as discussed above in section 3.2.1.1.

The results also show a negligible increase in depths in the Pioneers Mill site, for the reasons outlined above. During this event, flood depths in the Pioneers Mill site are expected to exceed 2.4m in the existing situation, with the Hazar Rating indicating 'Danger for All'.

It is important to note that the difference mapping indicates an increase in flood depths to the north east of the site in the business park by the A6053 bridge. This discrepancy is explained further in the modelling report and is a result of a difference in equations used across different versions of the modelling software packages (i.e. a later version was used to run the model for this exercise than the version when the model was produced) as water depths approach the deck of the bridge. It is therefore considered that this is an inconsistency in the model and not expected to take place.

The results confirm that the removal of the floodable gardens does not have an impact on the

c) 70% Climate Change Allowance

As noted above, the EA advised that the use of the 35% allowance for peak river flows would be adequate to assess impacts off-site and to set finished floor levels. However, the EA also requested a check of the 70% peak river flow allowance to confirm whether the proposed FFLs would be sufficient to mitigate against this event. It can be seen in the results that flood waters would not extent into the proposed development platforms, and that the proposed FFLs provide adequate mitigation against this event too.

The results show that during this return period event, with the upper end climate change allowance (which is higher than the EA guidance on climate change requires), there is small increase slightly over 20mm in the modelled depths in the Irwell to the west of the site. This would have a minor impact on the flood depths in the areas affected by flooding, and the results show that the Hazard Rating remains as 'Danger for Most' or 'Danger to All' in these areas.

3.4.3 1 in 1000 year return period event (0.1% AEP)

The results show depths being slightly higher during the 1 in 1000 year return period event in comparison to the 1 in 100 year plus 35% climate change event, but slightly lower than the 1 in 100 year plus 70% climate change allowance. Therefore, the comments made above for the 1 in 100 year plus 70% climate change events apply.

4.0 CONSENTS REQUIRED

4.1 LAND DRAINAGE ACT 1991

Any modifications to the ordinary watercourses within the site that my affect the flows or the channel and any new outfalls into a watercourse will need to obtain Land Drainage Consent as per Section 23 of the Land Drainage Act 1991.

The proposed works to Hutchinson's Goit will require to be consented under the LDA 1991.

4.2 ENVIRONMENTAL PERMIT

Any activity within 8m from a Main River needs to be consented by the Environment Agency. The following activities will require environmental permits:

- Amendments to the banks of the River Irwell;
- Extension and improvement of the functional floodplain of the River Irwell; and
- Proposals to open up and realign Crow Trees Farm Brook.

5.0 CONCLUSIONS AND RECOMMENDATIONS

This report has identified the following conclusions:

1. The development site is shown on the EA Statutory Flood Maps for Planning as being partly in Flood Zones 1, 2 and 3
2. An outline planning application was approved in December 2018 for the development of up to 400 dwellings, sports pitches, landscaping and infrastructure
3. Detailed hydraulic modelling was been undertaken in support of the outline application and this showed a significantly reduced footprint of Flood Zone 3 due to the River Irwell. However, other areas of Flood Zone 3 are identified associated with Hutchinson's Goit
4. The previous hydraulic modelling has been updated as follows:
    a) It has been agreed with the Environment Agency that flows in the inlet of Hutchinson's Goit will be restricted to 0.5m^3/s in the Bury Road bridge as part of the overall Radcliffe and Redvales FAS. The previous modelled flows were in excess of 2 m^3/s
    b) The previously proposed 'floodable gardens' have been removed from the proposals
    c) The water level in the retained pond has been altered to 64.5m AOD
    d) The level of the public open space between the proposed development platforms and the Irwell has been lowered to 61.40m AOD
5. The EA climate change allowances have been updated and indicate that the higher central (35%) climate change allowance is adequate
6. The revised modelling results indicate the following:
    a) The proposed development platforms remains outside the flood extents during both the 1 in 100 year return period event plus 35% and 70% climate change allowances
    b) The results show no increase in flood risk elsewhere during the 1 in 100 year plus 35% climate

Based on the above, the following recommendations are made:

1. Finished Floor Levels of the new buildings are to be set at a level of 65.90m AOD, which is approximately 1.3m above the modelled 1 in 100 year plus 35% climate change allowance fluvial flood level on the River Irwell. This level is also slightly above the modelled 1 in 100 year plus 70% climate change allowance on the River Irwell. The exceptions to the above are in respect of a number of properties to be located alongside existing retained roads, where relative levels make this approach impractical. In these locations FFLs are to be set as high as practically possible and above the 1 in 100 year flood with flood resilience measures provided to a level of 65.90m AOD.

6.0 APPENDICES

6.1 APPENDIX A – INDICATIVE MASTERPLAN



WYG Group

REVISIONS

REV	AMENDMENTS	BY	DATE
-	-	-	-

North

KEY

- Land Ownership Boundary
- Nett Developable Area

Homes England

East Lancashire Paper Mill

Illustrative Masterplan with Nett Developable Area

DATE: 18.03.19 SCALE: 1:1250 @ A1

DRAWN BY / REVIEWED BY: RR / SP

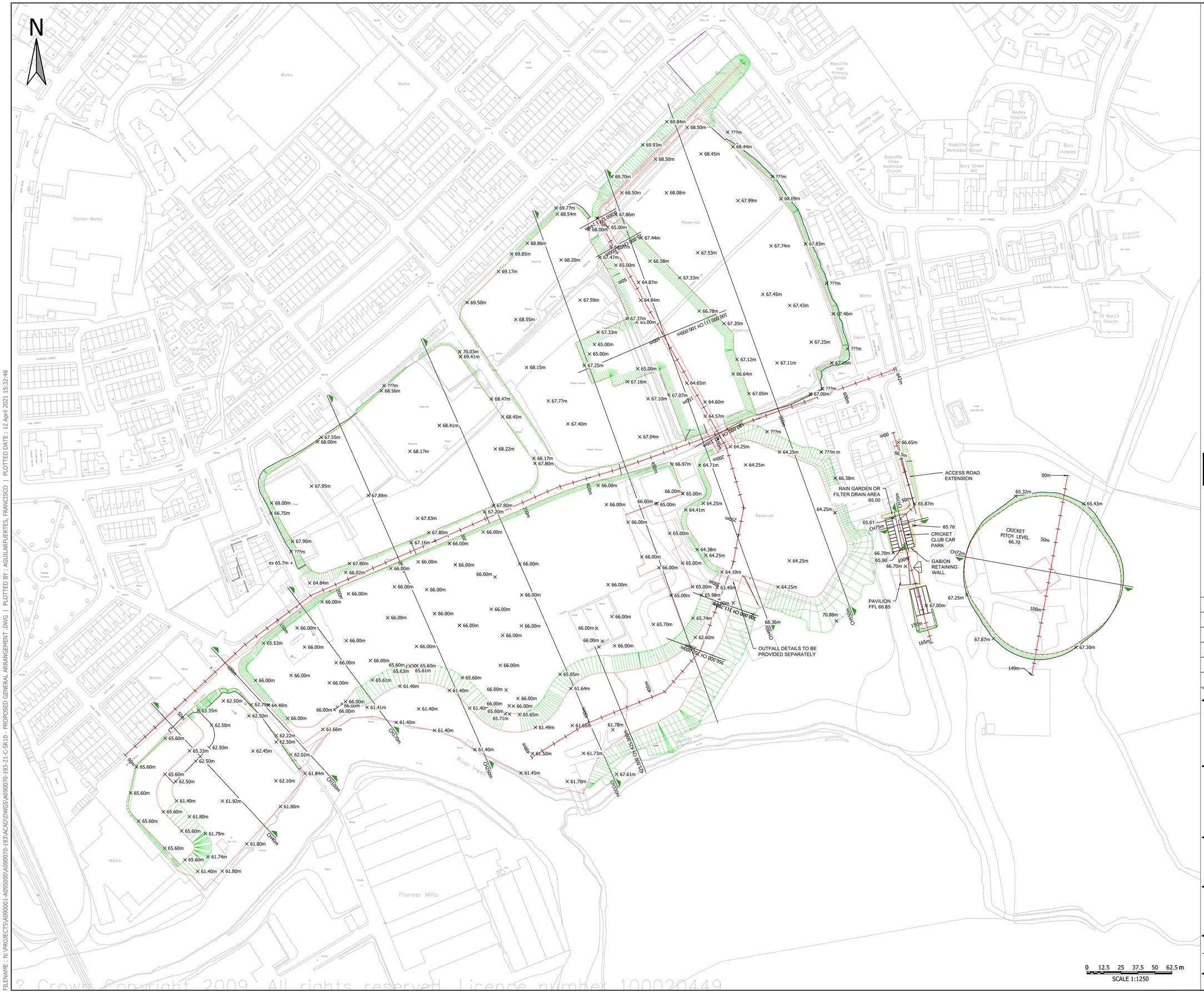
PROJECT NO:	DRAWING NO:	REVISION:
A090070-193	SP-05	-

WYG
Quay West at MediaCityUK, Trafford Wharf Road,
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Tel: +44 (0)20 7250 7500
Email: uld@wyg.com www.**wyg**.com

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2. THIS DRAWING IS TO BE CHECKED WITH ALL OTHER RELEVANT DRAWINGS.
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4. DRAWING TO BE USED FOR PURPOSES OF THE ISSUE AND NOTED ON PLAN

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6.2 APPENDIX B – PROPOSED CONTOURS



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FILENAME - N:\PROJECTS\A090001-A095000\A090070-193\ACAD\DWGS\A090070-193-21-C-SK10 - PROPOSED GENERAL ARRANGEMENT .DWG | PLOTTED BY : AGUILARFUERTES, FRANCISCO | PLOTTED DATE - 12 April 2021 15:32:48

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NOTES

1. ALL LEVELS IN METRES A.O.D.
2. SEE SK40, SK41 AND SK42 FOR SECTIONS THROUGH THE SITE.
3. CRICKET CLUB CAR PARK, PAVILION AND PRACTICE AREA LEVELS LEVELS INDICATIVE ONLY AND SUBJECT TO FURTHER DETAILED DESIGN.
4. DEVELOPMENT PLATFORMS LEVELS SET TO MITIGATE THE RISK OF FLOODING FROM THE RIVER IRWELL.
5. LEVELS WITHIN CROW TREES FARM BROOK CULVERT TO BE AGREED WITH THE ENVIRONMENT AGENCY. RE-OPENING OF THE CULVERT TO BE UNDERTAKEN IF POSSIBLE.
6. HUTCHINSON'S GOIT TO BE DIVERTED THROUGH THE RETAINED POND/RESERVOIR. HUTCHINSON'S GOIT RE-ALIGNMENT TO BE AGREED WITH BURY MBC AS LEAD LOCAL FLOOD AUTHORITY.
7. THIS DRAWING TO BE READ IN CONJUNCTION WITH ALL OTHER WORKS DRAWINGS, SPECIFICATIONS, WORKS AND SITE INFORMATION.
8. ALL DIMENSIONS ARE IN METRES UNLESS OTHERWISE STATED.
9. PROPOSED EARTHWORKS DESIGN HAS BEEN BASED UPON TOPOGRAPHICAL SURVEY INFORMATION OBTAINED BY WYG IN 2016 AND LIDAR CONTOURS, ANY SUBSEQUENT GROUND ALTERATIONS SINCE THE SURVEYS HAVE BEEN CARRIED OUT MAY INVALIDATE THE PROPOSALS.
10. RETAINED POND/RESERVOIR LEVELS ARE ASSUMED LEVELS AND ARE SUBJECT TO FURTHER DESIGN FOLLOWING INVESTIGATIONS ON THE EXISTING RESERVOIR.
11. SURVEYS IDENTIFIED CONTAMINATION BY HYDROCARBONS, ASBESTOS AND OTHER CONTAMINANTS. THESE SOILS ARE ANTICIPATED TO BE SUITABLE FOR RE-USE WITHIN THE SITE SUBJECT TO ADEQUATE MITIGATION MEASURES BEING IMPLEMENTED. SEE WYG FACTUAL AND INTERPRETATIVE SUPPLYMENTARY GROUND INVESTIGATION REPORT FOR DETAILED INFORMATION ON GROUND CONDITIONS AND SUITABILITY OF EXCAVATED MATERIAL.
12. PROPOSED CRICKET PITCH LOCATION IS WITHIN SITE OF FORMER LANDFILL. SEE WYG GROUND INVESTIGATION REPORT FOR SUGGESTED MITIGATION TO ENABLE USE OF SITE WON MATERIAL.

CRICKET PITCH NOTES

- SEE AGRONOMY REPORT BY PSD AGRONOMY DATED JULY 2020 FOR DETAILED REQUIREMENTS FOR CRICKET PITCH CONSTRUCTION.
- EXISTING TOPSOIL COVER WITHIN PROPOSED CRICKET PITCH LOCATION ASSUMED TO BE 150mm AS STATED IN PSD AGRONOMY REPORT DATED JULY 2020.
- 200mm TOPOSOIL COVER REQUIRED FOR PROPOSED CRICKET PITCH.
- SEE SPORTS ENGLAND GUIDANCE AND SPECIFICATION FOR FULL REQUIREMENTS FOR CRICKET PITCH AND TRAINING AREA REQUIREMENTS.

PRELIMINARY ISSUE

ALL LEVELS ARE PRELIMINARY ONLY AND FOR PRELIMINARY DESIGN AND COSTING PURPOSES. ALL LEVELS SUBJECT TO FURTHER DETAILED DESIGN

REV	DESCRIPTION	BY	CHK	APP	DATE
P6	REVISED TO REMOVE FLOODABLE GARDENS	FA	RC	RC	12.04.21
P5	PROPOSED SPORTS PITCHES LAYOUT AMENDED.	RM	MSE	MSE	XXX
P4	PROPOSED EARTHWORKS AMENDMENTS - TO SUIT MAY 2018 EMAILS	RM	MSE	MSE	14.05.18
P3	PROPOSED EARTHWORKS AMENDMENTS	RM	MSE	MSE	14.03.18
P2	ISSUED FOR OPTION 2 - FOR INFORMATION ONLY	RM	TB	MSE	13.02.18
P1	PRELIMINARY ISSUE	RM	MSE	MSE	30.10.17

3 SOVEREIGN SQUARE
SOVEREIGN STREET
LEEDS
LS1 4ER

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FAX: +44 (0)113 278 3487
e-mail: leeds@wyg.com

Project:
FORMER LANCASHIRE PAPER MILLS
RADCLIFFE

Drawing Title:
PROPOSED GENERAL ARRANGEMENT
EARTHWORKS

Scale @ A1	Drawn	Date	Checked	Date	Approved	Date
1:1250	RM	OCT 2017	MSE	OCT 2017	MSE	OCT 2017

Project No.	Office	Type	Drawing No.	Revision
A090070-193	21	C	SK10	P6

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NOTES

1. ALL LEVELS IN METRES A.O.D.
2. REFER TO SK10 FOR GENERAL ARRANGEMENT
3. THE PROPOSED LEVELS ARE INDICATIVE ONLY AND FOR PRELIMINARY DESIGN AND COSTING PURPOSES ONLY.

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FOR INFORMATION ONLY

REV	DESCRIPTION	BY	CHK	APP	DATE
P2	REVISED FOLLOWING REMOVAL OF FLOODABLE GARDENS	FA	RC	RC	12.04.21
P1	PRELIMINARY ISSUE	RM	MSE	MSE	30.10.17

3 SOVEREIGN SQUARE
SOVEREIGN STREET
LEEDS
LS1 4ER

TEL: +44 (0)113 278 7111
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e-mail: leeds@wyg.com

Project:
FORMER LANCASHIRE PAPER MILLS
RADCLIFFE

Drawing Title:
PROPOSED GENERAL ARRANGEMENT
CONTOUR PLAN

Scale @ A1	Drawn Date	Checked Date	Approved Date
1:1250	RM OCT 2017	MSE OCT 2017	MSE OCT 2017

Project No.	Office	Type	Drawing No.	Revision
A090070-193	21	C	SK11	P2

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SCALE 1:1250

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FILENAME : N:\PROJECTS\A090001-A095000\A090070-193\ACAD\DWGS\A090070-193-21-C-SK11 - PROPOSED CONTOUR PLAN.DWG | PLOTTED BY : AGUILARFUERTES, FRANCISCO | PLOTTED DATE : 12 April 2021 12:28:29

6.3 APPENDIX C – EA CORRESPONDENCE

Our ref: SO/2019/119662/02-L01
Your ref: Tetra Tech Limited

Date: 12 February 2021

Tetra Tech Limited
3 Sovereign Square
Unit 3 Sovereign Street
Leeds
LS1 4ER

Dear Sir/Madam

EMAIL ENQUIRY REGARDING CLIMATE CHANGE ALLOWANCE FIGURES EAST LANCS PAPER MILL SITE, RADCLIFFE

Thank you for your email enquiry dated 11 February 2021.

In response to the two points raised in your email:

(i) *Can the EA confirm if the 'compensatory storage' impacts should be based on the Q100 CC1 event or the Q100 CC2 event?*

(ii) *If the latter, can the EA confirm if offsite impacts of the Q100 CC2 results should be taken into account is an increase in the range (25 -50mm) if the floodable gardens are removed acceptable, given that there will be no earlier onset of flooding in terms of event severity required to trigger a flood and given that existing depths of flooding in the areas concerned are of the order of 1.0m, so the percentage increase is small.*

Environment Agency position

The guidance on GOV.UK in relation to compensatory floodplain storage can be somewhat confusing. Our general approach is that compensatory flood plain storage should be based on the "higher central" climate change figure (35% for North West basin). Use of the "upper end" allowance would be an exception if there were very sensitive areas with acute concerns. For the site location the higher central allowance should be acceptable.

Should you wish us to review any technical documents or want further advice to address the environmental issues raised/meet the requirements of the conditions recommended, we may do this as part of our charged for planning advice service.

As part of our charged for service we will provide a dedicated project manager to act as a single point of contact to help resolve any problems. We currently charge £100 per hour, plus VAT. We will provide you with an estimated cost for any further discussions or review of documents. The terms and conditions of our charged for service are available here.

If you would like more information on our planning advice service, including a cost estimate, please contact me on the number below.

I look forward to hearing from you.

Yours faithfully

Mrs SYLVIA WHITTINGHAM
Planning Advisor

Direct dial 0203 0251059
Direct e-mail sylvia.whittingham@environment-agency.gov.uk

End

AguilarFuertes, Francisco

From: Van, Rob <Rob.Van@environment-agency.gov.uk>
Sent: 12 February 2021 15:46
To: Carr, Robert
Cc: Natalie.Webster@homesengland.gov.uk; Shannon, Peter; Hannah.Waite@homesengland.gov.uk; AguilarFuertes, Francisco; Jonathan Starling
Subject: Hutchinson's Goit/ East Lancs Paper Mill [Filed 12 Feb 2021 16:14]

Robert,

Thanks for the meeting earlier, it was useful to discuss the works and a suitable way forward.

I mentioned that I had discussions with Bury Council yesterday and when talking about this goit and increased restrictions, there were concerns about whether this would have any impact on the provision of SuDS or surface water storage on the development site. Are you able to have a discussion with the Council and let me have confirmation that they are supportive of the proposals to restrict the flows through Hutchinson's Goit to 0.5 m^3/s.

In addition, although there might have been a conversation earlier, could I also confirm that Bury Council are fully aware of the increased chance of blockage as a result of the restriction from 1 m^3/s to 0.5 m^3/s. As I've mentioned before, as the goit is not main river, the EA would not be able to clear any blockages that occur during or after flood events.

We plan to submit planning for this structure w/c 15/02/21. If you could let me know that week, we will endeavour to incorporate the increased restriction in our planning submission.

Regards,

Robert Van BSc MSc MCIWEM C.WEM
Project Manager, Programme & Contract Management (PCM)
part of Operations, Assets & Programme Management
Environment Agency | Richard Fairclough House, Knutsford Road, Warrington, WA4 1HT

Next period of leave: Friday 19th February, Friday 5th March, Friday 19th March

rob.van@environment-agency.gov.uk
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Visit the Flood Hub website for information on the Radcliffe and Redvales Flood Alleviation Scheme

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6.4 APPENDIX D – REVISED HYDRAULIC MODELLING REPORT

TETRA TECH

East Lancashire Paper Mill, Radcliffe

Hydraulic Modelling Report

May 2021



Waterco

Assessment | Modelling | Design

Project Information	
Project:	East Lancashire Paper Mill
Report Title:	Hydraulic Modelling Report
Client:	Tetra Tech (Formerly WYG)
Instruction:	The instruction to carry out this Hydraulic Modelling Study was received from Mr Matthew Elliott of Tetra Tech (formerly WYG)
File Ref:	12168-HMR-02.pdf

Approval Record	
Author:	Dr. Sandeep Bomminayuni PhD
Checker:	David Hughes MEng (Hons)
Approver:	Alun Roberts BEng (Hons) CEng MICE

Document History	
Date	**Comment**
11/07/18	First issue
14/11/18	Revised development layout
11/05/21	Hydraulic Modelling and Report updated following revision to the proposed development layout
27/05/21	Report updated to address minor comments from the Client

Form Ref:

W042-F-57.4-Report-HMR-1D2D New Model EXG DEV1

Contents

Introduction....1
Hydraulic Modelling....3
Results & Conclusions....7
Recommendations....11

Appendices

Appendix A Location Plan and Aerial Image
Appendix B Survey Data
Appendix C Proposed Development Details
Appendix D EA Flood Map, Historical Flood map & Photograph
Appendix E 1D/2D Model Extents
Appendix F Flood Mapping
Appendix G Tabulated 1D Model Results Data
Appendix H Tabulated 2D Model Results Data

Tables

Table 1 - Primary Simulation Summary....3
Table 2 - 2D Model Manning's n Roughness Coefficients....5
Table 3 - Blockage Scenario Simulations....6

Introduction

Waterco Consultants have been commissioned to undertake a detailed hydraulic modelling study of the River Irwell through Radcliffe adjacent to a proposed development site on Cross Lane (A6053) Radcliffe, Manchester, M26 2RF.

The outputs of the hydraulic modelling study provide a detailed, up-to-date assessment of the existing fluvial flood risk at the site and quantify the change in flood risk elsewhere as a result of the development (if any). This report also supports the Flood Risk Assessment (FRA) being prepared by TetraTech for the development.

A location plan and an aerial photograph of the site are included in Appendix A. The grid reference of the site is NGR 379200 407400.

Site Description

The site is currently derelict land, previously containing the East Lancashire Paper Mill which has now been demolished. The derelict site is mostly open space covered with grasslands. At the centre of the site is East Lancashire Paper Mill Cricket Club. The site is bordered by open space / grasslands and the River Irwell to the south, and residential areas to the north, east and west. Cross Lane (A6053) borders the site to the north, Rectory Lane / Cock Clod Street to the west, and Bealey Community Hospital to the east.

A topographical survey of the site was undertaken by ELLUC Projects in May 2009 and is provided in Appendix B for information. The survey shows existing site levels fall south-east to south, from a level of approximately 76.35m AOD in south-east corner to 61.09m AOD along the southern side of the site.

Nearby Watercourses and Existing Flood Risk Data

The site is situated on the northern bank of the River Irwell – an Environment Agency (EA) designated 'main river'. Hutchinson's Goit, also a designated EA main river, flows through the site. Hutchinson's Goit is an overflow of the River Irwell (previously feeding the demolished paper mill). Hutchinson's Goit starts immediately downstream of the Ramsbottom to Manchester Victoria railway line (NGR 379670 408950) and flows roughly parallel to the River Irwell through the site. The watercourse is culverted for much of its length through the development site until it discharges into the River Irwell. The culvert is understood to be a 670mm x 590mm box culvert. The exact discharge point into the River Irwell is unknown, however it is estimated to be location at the Pioneer Mills footbridge at NGR 379110 407230. The River Roch, a tributary of the River Irwell and also an EA main river, flows from the north-east and joins the River Irwell at approximately 400m south-east of the site. The River Irwell, Hutchinson's Goit and the River Roch are considered the primary sources of fluvial flood risk at the site.

Tidal flood risk has not been considered during this study given the sites relative elevation (>61m AOD) and distance from the coast (~50km).

The EA Historical Flood Map included in Appendix D do not show past records of flooding at the site. Information publicly available online[1] shows areas local to the south-western site boundary to be flooded

[1] https://www.greatermanchester-ca.gov.uk/downloads/file/199/boxing_day_flood_report_2015

during the Boxing Day flood of 2015. A map of these areas is included in Appendix D. An existing metal footbridge which provides access between the former East Lancashire Paper Mill site and the Pioneer Mills site to the south was severely damaged during this event. An extract from the Boxing Day flood report and photograph is included in Appendix D. There are plans to replace the footbridge but it will be constructed above modelled flood levels and so it has not been included in this assessment.

The current EA Flood Maps for Planning (April 2021) show less than 5% of the site area to be located within Flood Zone 3 – an area considered to be at relatively high risk of fluvial flooding with an annual probability of the flooding greater than 1% (1 in 100) AEP (annual exceedance probability). Nearly half of the site is located within Flood Zone 2 – an area considered to be at medium risk of fluvial flooding with an annual probability of the flooding between 1% and 0.1% (1 in 1000) AEP. The remaining site area is in Flood Zone 1 – an area considered to be at relatively low risk of fluvial flooding with an annual probability of the flooding lower than 0.1% AEP. An extract of the current EA Flood Zones is included in Appendix D for reference.

It is understood that the current River Irwell flood maps are based on the outputs of a detailed EA 1D/2D[2] Flood Modeller Pro (FMP)-TUFLOW model of the River Irwell built in 2017. To provide a site-specific assessment of fluvial flood risk from the River Irwell, the current EA model has been obtained and updated to include detailed site layout and level information. In addition to providing an assessment of fluvial flood risk at the existing site, the change in flood risk elsewhere (if any) arising as a result of the proposed development has also been quantified.

Proposed Development

The proposed development is in the early master planning stages and so final details are not available. The site will likely comprise several residential units including garden areas, maintained grassland, sports fields, access roads and associated parking. It is also proposed to re-align, de-culvert and widen a stretch of Hutchinson's Goit, a tributary of the River Irwell flowing through the site. The newly opened up Hutchinson's Goit will be connected through the existing pond on site to provide flood storage. A flow control structure is proposed at Bury Road culvert (NGR 379660 408965) to limit overflow from the River Irwell into Hutchinson's Goit to a maximum of 0.5m^3/s. Further flow control structures with associated overflow weirs are proposed at both the inlet and outlet locations of the existing pond. In addition to this, a flood storage area (FSA) is proposed near to the southern site boundary to provide flood compensatory storage and mitigate flood risk. The site layout is designed to prevent any proposed properties including garden areas from flooding during all simulated events. Sports pitches are proposed in the far eastern area of the site (NGR 379720 407385 and NGR 379600 407450). These are designed to be flood free up to the 1% AEP event and provide flood storage during the more extreme flood events. A proposed development plan is included in Appendix C. Further detail of the proposed plans is included in the TetraTech FRA.

[2] A 1D/2D hydrodynamic model is comprised of a 1-Dimensional (1D) river network model (based on surveyed river cross-sections) coupled with a 2-Dimensional (2D) Digital Terrain Model (DTM) of the potential floodplain (created from LiDAR).

Hydraulic Modelling

A copy of the current EA River Irwell model produced as part of the 2017 Lower Irwell Flood Mapping Study has been sourced and used as the base for this study.

Following an initial assessment of the existing fluvial flood risk at the development site, simulation outputs will be compared against those generated using the proposed development levels and layout to quantify the change in flood risk elsewhere as a result of the development (if any).

The latest version(s) of hydraulic modelling software FMP and TUFLOW available at the start of the project have been used for all simulations; 4.3 and 2018-03-AA respectively. Although there have been several minor updates to the software since, there have been no significant changes that would impact confidence in the model outputs.

Events considered

To fully investigate the fluvial flood risk at the site during both the existing (EXG) and proposed development (DEV) scenarios, a range of fluvial events have been simulated; namely the 5%, 1% and 0.1% AEP events. The impact of future climate change (CC) has also been investigated during the 1% AEP event by increasing flows by 35% and 70% respectively. A list of simulations completed is given in Table 1. The flow data within the current EA model was calculated by JBA in 2016 and has not been updated for this study**.**

Table 1 - Primary Simulation Summary

Fluvial Event (AEP)	River Irwell Peak Flows (m^3/s)	River Roch Peak Flows (m^3/s)	Development Scenario
5%	211.1	133.7	Existing Site Layout (EXG) & Proposed Site Layout (DEV)
1%	286.6	176.7	
1% + 35% CC	386.9	238.5	
1% + 70% CC	487.2	300.4	
0.1%	504.0	261.2	

1D Model Details

The current EA 1D FMP network includes representation of the River Irwell, Hutchinson's Goit and the River Roch watercourses. The 1D model network of the River Irwell starts near St Gabriel's RC High School (node ref: IRWE05_1363; NGR 379560 410310) and ends approximately 8.75km further downstream, near Outwood Country Park (node ref: IRWE03_3757, NGR 377720 406720). The 1D model network of Hutchinson's Goit starts downstream of the railway line (node ref: HUTC01_1897; NGR 379670 408950) and ends approximately 1.9km downstream at Pioneer Mills footbridge (node ref: IRWE04_0000u, NGR 379110 407230) where it joins the River Irwell. The 1D model network of the River Roch starts immediately downstream of the A56 Road Bridge (node ref: ROCH01_0779; grid ref: NGR 380730 407810) and ends

approximately 800m downstream at the watercourse's confluence with the River Irwell (node ref: ROCH01_0000; grid ref: NGR 380190 407310). In total, approximately 11.1km of the River Irwell, Hutchinson's Goit and the River Roch watercourses is modelled. The extent of the linked 1D/2D model is presented in Appendix E.

Inflows to the 1D network are applied using hydrographs generated by FMP ReFH boundary units fitted to FEH statistical peak flows and are applied at the most upstream nodes of the River Irwell and the River Roch (i.e. node IRWE05_1363 and ROCH01_0779 respectively). Inflow hydrograph data within the EA model remains unchanged.

The downstream boundary of the current EA 1D model is located approximately 2km downstream of the site and utilises a discharge-stage (QH or Rating Curve) as the boundary condition. The existing boundary condition has been kept unchanged and utilised.

Several additional interpolated sections have been added to the model to increase the resolution within the 1D network and improve stability across the 1D/2D model links. The Pioneer Mills footbridge (EA model node ref: IR04_BR0000u) washed away during the 2015 floods has been removed from 1D model. Following a recommendation from the Flood Modeller software developers, the orifice flow option has been enabled for all bridge units in the vicinity of the study area to allow submerged bridges to be represented appropriately. No other changes have been made to the general 1D model data, including lateral inflow locations, hydrographs, structure representation, Manning's n roughness etc for the existing site layout simulations. Any of the modelled structures considered potentially critical to flooding at the site (i.e. proximity to site, blockage potential etc.) have been subject to blockage assessment – discussed further below.

To represent and model the proposed re-alignment of Hutchinson's Goit watercourse through the site, an alternative 1D model network has been created (DEV). For this model, the existing 1D network of Hutchinson's Goit is truncated at the northern site boundary and connected to dummy HT boundary units linked to standard 2D SX links, in order to allow water to spill into the proposed channel modelled within the 2D domain. A constant inflow of 0.25m^3/s from a small, unnamed tributary of Hutchinson's Goit has been included in the DEV model at FMP node HUTC01_1423 (NGR 379565 408586). No other changes have been made to the existing model setup.

2D Model Details

The current EA 2D TUFLOW domain covers a total area of approximately 6.2km^2. The latest EA LiDAR data levels at the site have been compared to the topographical survey of the site and found to be in good agreement with differences generally less than +/-150mm. As the LiDAR offers a significantly higher resolution, this dataset has been utilised in the model. A review of the remaining model extent has been carried out using aerial mapping and it was found that there are no hydraulically significant structures present within the remaining floodplain.

The 2D cell size has been kept unchanged from the EA model, set at 4m. This resolution is adequate to represent the flow paths on site and within the wider floodplain whilst maintaining a reasonable run time.

OS MasterMap data (provided with the current EA model) has been used to classify land use and assign

Manning's n roughness coefficients throughout the floodplain. The coefficients within the existing EA model were reviewed, deemed acceptable and remain unchanged. The coefficients used are given in Table 2.

Table 2 - 2D Model Manning's n Roughness Coefficients

Land Use	Manning's n Roughness Coefficient ($s/m^{1/3}$)
General surface	0.050
Buildings	1.000
Inland water	0.025 – 0.030
Woodland	0.050
Coniferous trees	0.150
Roads, paths, rail	0.025 – 0.100
Structures	0.100
Rough grassland	0.075
Marshland, reeds	0.065
General manmade surfaces	0.040

To simulate and compare the proposed development arrangement (DEV), an alternative 2D TUFLOW model domain has been created using the proposed level data provided (Appendix C). The 2D DEV model setup also includes the following updates:

- Z-shapes have been used to remove the floodable garden elements as they are no longer proposed.
- The representation of existing Bury Road culvert has been updated to include a flow regulating rule which limits overflow from the River Irwell into Hutchinson's Goit to a maximum of $0.5m^3/s$. In practice flows will be restricted by an orifice to be attached to the structure. The 1D FMP network of Hutchinson's Goit which starts immediately downstream of the Bury Road Culvert already includes a sweetner flow of $0.1m^3/s$ for model stability (as per the EA model setup). The rule is therefore designed to limit flow entering the 1D FMP network to a maximum of $0.4m^3/s$.
- Z-shapes have been used to ensure the bed levels of the proposed open channel section of Hutchinson's Goit through the site are accurately represented within the model domain.
- A '2d_iwl' layer has been used to set the initial water levels in the pond to 64.5m AOD.
- The proposed flow control structures at the inlet and outlet of the existing pond are represented as 450mm and 350mm diameter circular culverts respectively using ESTRY. Z-shapes have been used to represent the proposed overflow weirs at these locations.

- Z-shapes have been used to improve the representation of the ground levels at the flood bund located at Church Street East (NGR 379550 407440).
- Z-shapes have been used to represent the proposed FSA at the southern site boundary along the River Irwell frontage (centre NGRs 379235 407275 & 379045 407225). The grounds levels in the proposed FSA have been set to a level of 61.4m AOD.
- The roughness classification within the DEV models has been altered to represent the proposed land use within the site.

Blockage Scenarios

The A6053 Road culvert (model node: HUTC01_0584c; NGR 379415 407820) is considered potentially critical to flooding at the site given its proximity to the site and potential to block.

To investigate the flood risk at the site in the event of a significant blockage of this structure, blockage scenario simulations for both EXG and DEV scenarios have been undertaken and detailed in Table 3.

Table 3 - Blockage Scenario Simulations

Scenario Ref	Structure	Development Scenario	Fluvial Event (AEP)	% Blockage	Model Ref
BL1	A6053 Road Culvert	Existing Site	1% + 35% CC	80	BL1-80
		Proposed Site			

Sensitivity Testing

In the absence of available calibration data, increased significance has been placed on sensitivity testing to improve confidence in the model outputs and assess the sensitivity of the model parameters. Four sensitivity tests have been carried out (ST1-4) with respect to the 1% AEP + 35% CC fluvial event.

Sensitivity tests “ST1” and “ST2” investigate variation (+/- 20%) of Manning’s roughness coefficients in both the River Wey channel and across the floodplain.

Sensitivity tests “ST3” and “ST4” investigate a +/-200mm variation in the stage values used in the existing QH curve of the downstream boundary conditions of 1D model.

Results & Conclusions

This section of the report documents the results obtained from the primary simulations, both EXG and DEV models, sensitivity tests and blockage scenarios.

Maximum flood depth, velocity and hazard mapping has been provided for each primary simulation in Appendix F. Flood hazard ratings have been calculated in accordance with DEFRA document 'FD2320: Flood Risks to People' and EA guidance document 'Supplementary Note on Flood Hazard Ratings and Thresholds'.

In addition to the mapping, calculated maximum water levels were extracted at each node along the 1D network model and compared for each simulation. A table of this data has been provided in Appendix G. Flood depth and water level data has also been extracted at certain node locations across the site in the 2D domain, and represented in tabulated form in Appendix H.

Detailed below is a summary of the flood mechanisms for the simulated events, which is to be read in conjunction with the above detailed information.

EXG Simulations - Existing Site Layout

The results of the hydraulic modelling show the development site to partially flood during all the simulated events.

During the simulated flood events, floodwater is shown to exceed channel capacity on the northern bank of the River Irwell adjacent to the southern site boundary causing inundation of nearby low-lying site areas. Out-of-bank spilling in the River Irwell at approximately 300m east of the site (NGR 380130 407460) causes floodwater to flow in a westerly direction and enter the site causing inundation of site areas near to the eastern site boundary. The Pioneer Mills site (NGR 379190 407200) south of the site, over the River Irwell's southern bank, is almost entirely flooded during all simulated events including the 5% AEP event, with depths reaching over 2.0m throughout the site during the 0.1% AEP event.

Flooding from Hutchinson's Goit occurs due to the low capacity of the existing Hutchinson's Goit culvert (inlet located on site) which causes floodwaters to reach low-lying site areas.

DEV Simulations - Post-Development Site Layout

When the development levels are considered, the proposed development area including the properties and associated garden areas raised to a minimum of 66m AOD is shown to remain flood free during all simulated events.

During all simulated events, flow is shown to generally remain within the proposed Hutchinson's Goit channel, pond and FSAs on site. A small area on the site at the western site boundary near Rectory Lane (379050 407360) is shown to experience flooding during the 1% AEP + 35%CC and greater events. The proposed road located north of the pond which acts as an overflow weir is flooded during all simulated events. The proposed sports pitches in the far eastern area of the site (NGR 379720 407385 and NGR 379600 407450) remain flood free up to and including the 1% AEP event as designed. As designed, the proposed sports pitches experience flooding during the 1% AEP + 35% CC and greater events.

Similar to the EXG scenario, during the simulated flood events, floodwater is shown to exceed channel capacity on the northern bank of the River Irwell at approximately 300m east of the site causing inundation of the low-lying site areas at the southern and eastern site boundaries respectively. The de-culverting of Hutchinson's Goit culvert on site allows water to flow through the proposed open channel and existing pond on site before entering the FSA and eventually discharging into the River Irwell at the southern site boundary.

Flood Risk Elsewhere

The potential impact of the proposed development on flood risk elsewhere has been quantified by comparing the results of the existing (EXG) site layout simulations with the proposed (DEV). To provide a detailed assessment of the relative changes in flood depths throughout the floodplain, a series of water level difference maps comparing the pre- and post-development maximum water levels have been created and are included in the DEV section of Appendix F.

The impact on flood risk as a result of the post development site layout is largely contained within the site boundary during all simulated flood events. During the 1% AEP + 35%CC and lower AEP events the increase in flood depths elsewhere is generally less than 20mm with only a few isolated locations experiencing a greater than 20mm increase. A review of model results at these locations indicated that a <20mm increase in flood depths nearby has caused a few additional grid cells at the edges of flood extents to flood leading to this local increase in flood depths. During the 1% AEP + 70%CC and 0.1% AEP events the increase in flood depths is generally less than 20mm with the exception of few areas local to the Church Street Rd bridge (NGR 378610 406940) which experience an increase in flood depths of up to 45mm. During the 1% AEP + 70%CC event flood depths in an area (center NGR 378795 407165) located downstream of the railway line and on A6053 Rd at the northwestern site boundary (NGR 378985 407465) are shown to increase by up to 25mm and 55mm respectively. The areas which experience an increase flood depths are shown to already experience flooding with depths ranging from 0.5-2.0m so the relative increase may be considered minimal.

There are some areas where a decrease in flooding is shown when compared to the existing scenario. North of the site boundary, the Bealey Community Hospital (NGR 379610 407740) and playgrounds of Radcliffe Hall C of E Methodist primary school (NGR 379500 407750) experience a general reduction in flood levels by 200mm. Flooding on land west of the site (NGR 378930 407200) is also reduced across a localised stretch by less than 100mm depth.

The Pioneer Mills site, south of the development site experiences both a minor increase and decrease of up to 35mm adjacent to the confluence of Hutchinson's Goit and the River Irwell during the 1% AEP and 1% AEP +35% CC flood events. The area where the slight decrease in flooding is shown is significantly larger than the area where a slight increase in shown. The site is severely inundated during all simulated events, with depths generally around 2.5m, but reaching over 3.0m in depth during the 1% AEP +35% CC event. The main building on site is affected by flooding during all scenarios simulated. Buildings to the south of the Pioneer Mills site experiences a reduction in maximum flood level of 25mm during the same event. During the 1% AEP + 70%CC and 0.1% AEP events the Pioneer Mills site experience an increase in flood depths by 15-25mm, however, the site is already flooded to depths greater than 3.0m during these events so the relative increase may be considered minimal.

The 1% AEP + 35% CC event DEV versus EXG flood depth difference map shows an increase in flood depths by up to 75mm at Warth Industrial Park (NGR 380130 408600) just upstream of the A6053 Rd bridge structure. A review of model results suggests that limiting flows from the River Irwell into Hutchinson's Goit to a maximum of 0.5m^3/s in the DEV scenario compared to a peak flow of approximately 2.0m^3/s in EXG causes the difference in flow to enter the River Irwell instead. Whilst the addition of up to 1.5m^3/s into the Irwell with a peak flow of around 280m^3/s is relatively minor (approximately 0.5%), enabling the orifice flow option at the bridge structure has had a minor effect on the conveyance capacity of A6053 Rd bridge structure at peak flows. The modest increase in flow within the River Irwell causes a slight change to the time at which the bridge flow equations switch to orifice flow, which in turn is causing minor differences in water levels upstream and therefore minor depth differences at the Warth Industrial Park. The impact shown to Warth Industrial Park is therefore likely entirely due to a modelling quirk that is not easily resolved and can be considered to be negligible and unrelated to the proposed development at the site.

Blockage Scenario Simulations - EXG

Model outputs from blockage scenario EXG BL1-80 (80% blockage of A6053 Road culvert) show flood depths upstream of the site to increase by approximately 150mm with negligible impact on flood depths at the site during the 1% AEP + 35% CC event relative to the unblocked simulation. This increase in flood risk associated with the blockage upstream of the site can be attributed to the significantly reduced flow capacity of the culvert, leading to additional water levels and spilling upstream of the structure, however, the site remains unaffected.

Blockage Scenario Simulations - DEV

Similar to the EXG BL1-80 scenario, model outputs from blockage scenario DEV-BL1-80 that 80% blockage of A6053 Road culvert has negligible impact on flood depths at the site relative to the unblocked simulation. Although reduced flow capacity of the culvert causes additional spilling upstream of the structure, the site remains unaffected.

Sensitivity Tests

Modelled flood extents during the 1% AEP event match the existing EA Flood Zone 3 (Appendix D) outline well. Although data is limited, comparison with available historical flood map (Appendix D) shows that in general the modelled flood outlines match well with historical flood outlines.

The results of sensitivity tests ST1 and ST2 show that a significant variation (+/-20%) in the Manning's 'n' coefficients used within the channel and floodplain causes an increase/decrease in the maximum water levels by up to 500mm at a small number of 1D nodes, though differences are generally within +/-250mm at most locations throughout the model. Although this maximum level change is significant, the selected roughness coefficients used within the model are based on available, industry standard guidance (Chow 1959[3]) and are still considered to be appropriate. The coefficients are also unchanged from the existing EA model setup. Changes to the flood extent across the site during these tests are minimal.

The results of sensitivity tests ST3 and ST4 show that significantly varying the stage values used at the

[3] Chow, V.T., 1959, Open-channel hydraulics: New York, McGraw-Hill

downstream boundary by +/-200mm does not have any significant effect on the maximum water levels at the site with maximum variation in water levels being less than 20mm at the site. Changes to the flood extent across the site during these tests are minimal.

Recommendations

The hydraulic models and associated report should be submitted to the EA for review and approval as a reasonable representation of the fluvial flood risk at the site from the River Irwell and Hutchinson's Goit when both the existing and proposed development levels / arrangements are considered.

Appendix A Location Plan and Aerial Image

NOTES:
1) ALL DIMENSIONS ARE IN METRES AND ALL LEVELS IN METRES ABOVE ORDNANCE DATUM UNLESS STATED OTHERWISE

LEGEND

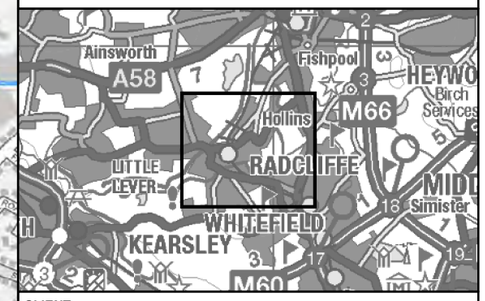
- Site Boundary
- Watercourses / Water Bodies

HUTCHINSON'S GOIT

RIVER ROCH

RIVER IRWELL

0 100 200 400 600 800 1,000 m



CLIENT: TETRA TECH

waterco
www.waterco.co.uk

SCHEME:
EAST LANCASHIRE PAPER MILL

PLOT TITLE:
LOCATION PLAN

PLOT STATUS:	DATE:
FINAL	01/04/2021

DRAWN:	CHECKED:	APPROVED:	PLOT SCALE @ A3:
VJ	SB	APR	1:10,000 (UNLESS STATED OTHERWISE)

PLOT NAME:	REV:
12168-Location_Plan	-

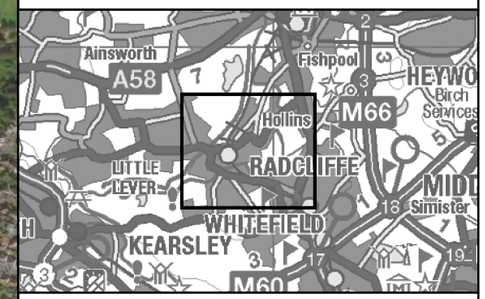
CONTAINS OS DATA © CROWN COPYRIGHT (2021)



NOTES:
1) ALL DIMENSIONS ARE IN METRES AND ALL LEVELS IN METRES ABOVE ORDNANCE DATUM UNLESS STATED OTHERWISE

LEGEND

Site Boundary



CLIENT:

TETRA TECH

waterco

www.waterco.co.uk

SCHEME:

EAST LANCASHIRE PAPER MILL

PLOT TITLE:

AERIAL PLAN

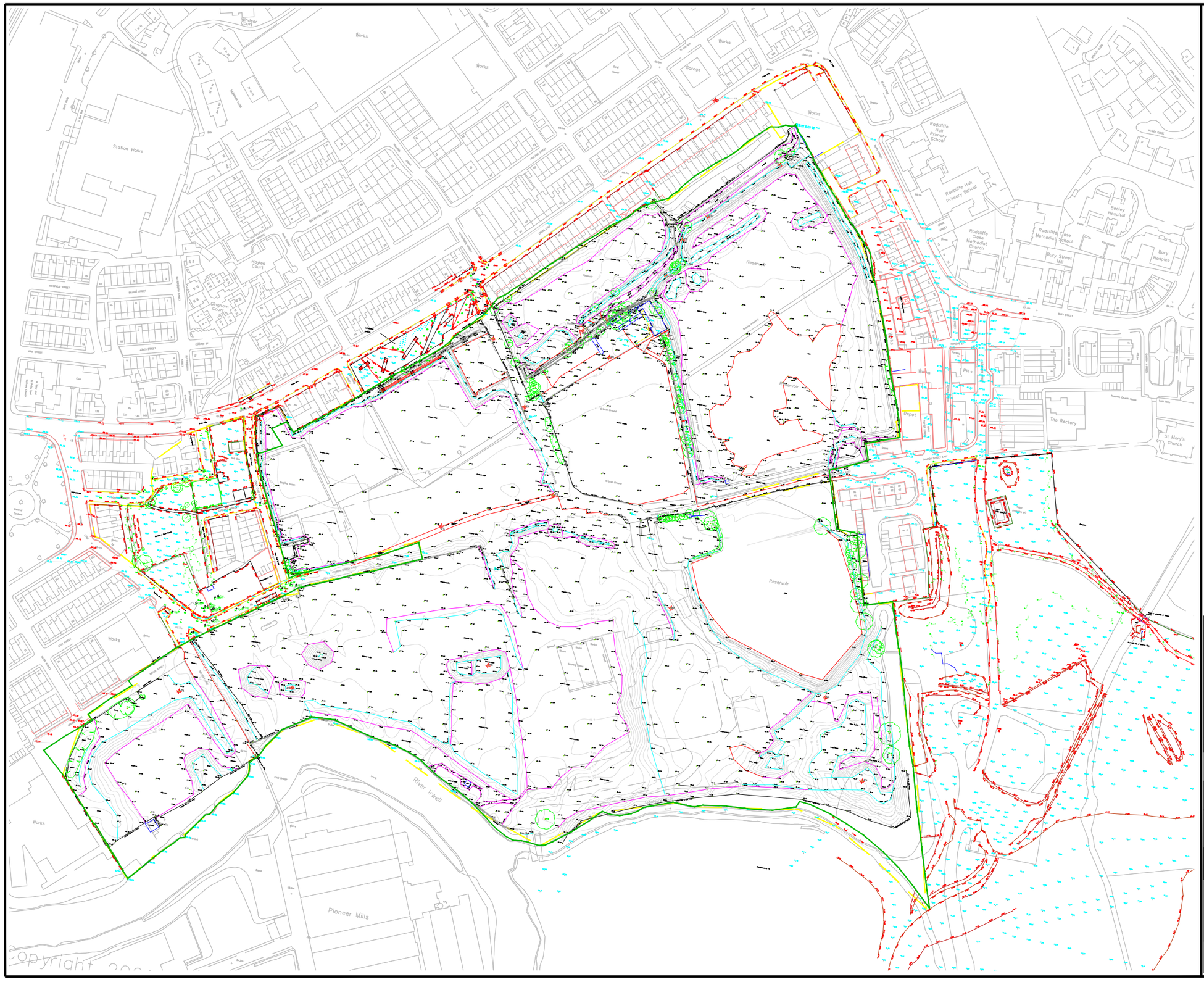
PLOT STATUS:	DATE:
FINAL	01/04/2021

DRAWN:	CHECKED:	APPROVED:	PLOT SCALE @ A3:
VJ	SB	APR	1:10,000 (UNLESS STATED OTHERWISE)

PLOT NAME:	REV:
12168-Aerial_Plan	-

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BASEMAP: WORLD IMAGERY. SOURCES: ESRI, DIGITALGLOBE, GEOEYE, I-CUBED, EARTHSTAR GEOGRAPHICS, CNES/AIRBUS DS, USDA, USGS, AEX, GETMAPPING, AEROGRID, IGN, IGP, SWISSTOPO, GIS USER COMMUNITY

Appendix B Survey Data



Legend

Rev	Date	Drawn	Description	Check by	Approved by

CLIENT
P&F PROPERTIES

PROJECT
EAST LANCASHIRE PAPER MILL

TITLE
SITE AREA
TOPOGRAPHICAL SURVEY

2 Bridgewater Court
Barsbank Lane
Lymm
Cheshire
WA13 0ER

Tel : (01925) 758885
Fax : (01925) 758155
Email : info@ellucprojects.co.uk
Web : www.ellucprojects.co.uk

Drawn by	Scale	Drawing No.	Rev
Elluc	1:1250 @A1	ELL/103/PFP/012	
Date MAY/09			

Appendix C Proposed Development Details

NOTES:
1) ALL DIMENSIONS ARE IN METRES AND ALL LEVELS IN METRES ABOVE ORDNANCE DATUM UNLESS STATED OTHERWISE

LEGEND

- Model Extent
- Site Boundary
- Proposed Flood Storage Area
- Proposed Culverts
- Hutchinsons Goit
- Proposed Weir
- Proposed Pond
- Proposed Road
- Proposed Development Layout
- Proposed Level Changes



CLIENT:
TETRA TECH

Waterco
www.waterco.co.uk

SCHEME:
EAST LANCASHIRE PAPER MILL

PLOT TITLE:
PROPOSED DEVELOPMENT PLAN

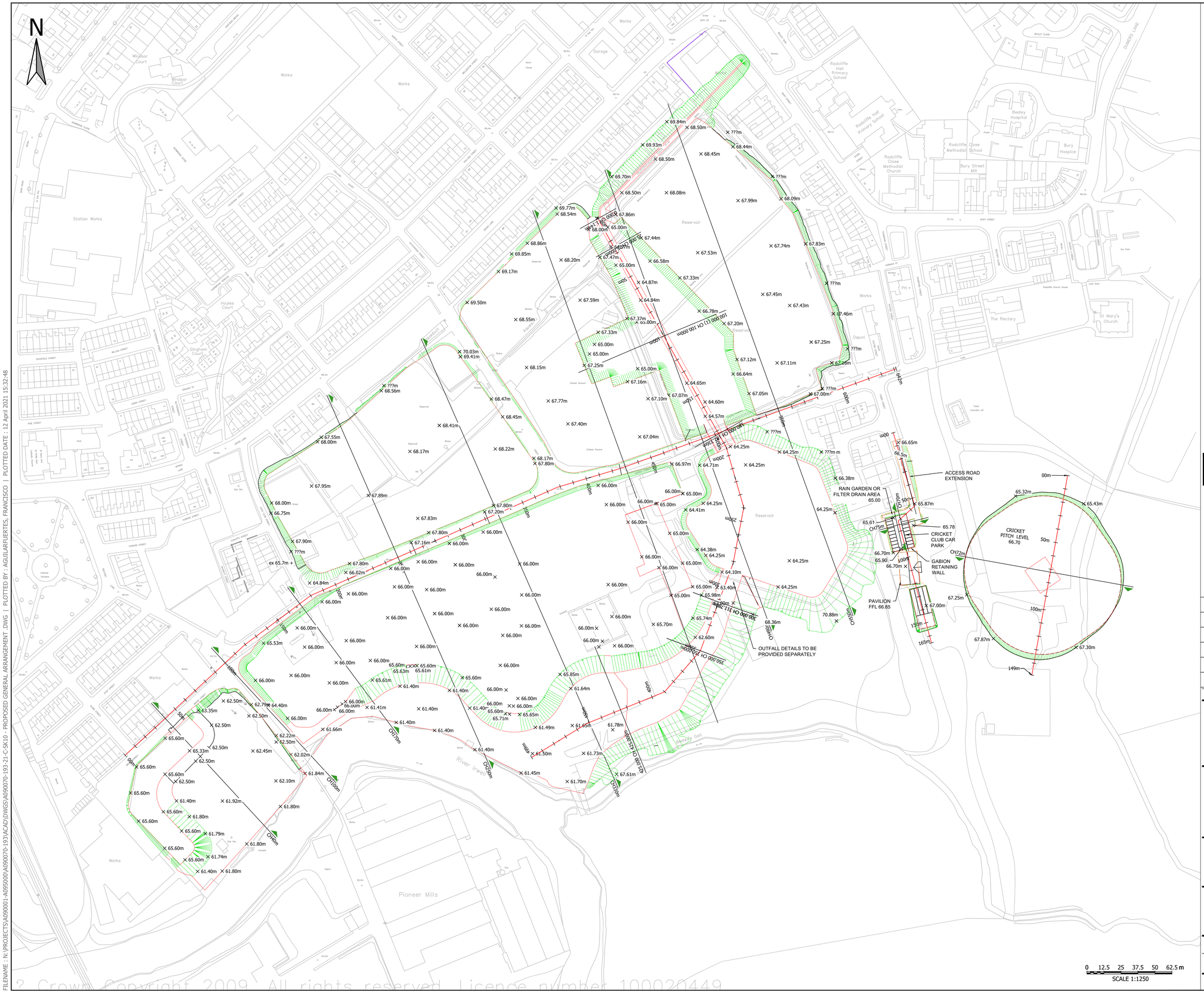
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FINAL	18-May-21

DRAWN:	CHECKED:	APPROVED:	PLOT SCALE @ A3:
AR	SB	DH	1:3,000 (UNLESS STATED OTHERWISE)

PLOT NAME:	REV:
12168-DEV Plan	-

0 30 60 120 180 240 300 m

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FILENAME - N:\PROJECTS\A090001-A095000\A090070-193\ACAD\DWGS\A090070-193-21-C-SK10 - PROPOSED GENERAL ARRANGEMENT .DWG | PLOTTED BY : AGUILARFUERTES, FRANCISCO | PLOTTED DATE - 12 April 2021 15:32:48

DO NOT SCALE: CONTRACTOR TO CHECK ALL DIMENSIONS AND REPORT ANY OMISSIONS OR ERRORS

NOTES

1. ALL LEVELS IN METRES A.O.D.
2. SEE SK40, SK41 AND SK42 FOR SECTIONS THROUGH THE SITE.
3. CRICKET CLUB CAR PARK, PAVILION AND PRACTICE AREA LEVELS LEVELS INDICATIVE ONLY AND SUBJECT TO FURTHER DETAILED DESIGN.
4. DEVELOPMENT PLATFORMS LEVELS SET TO MITIGATE THE RISK OF FLOODING FROM THE RIVER IRWELL.
5. LEVELS WITHIN CROW TREES FARM BROOK CULVERT TO BE AGREED WITH THE ENVIRONMENT AGENCY. RE-OPENING OF THE CULVERT TO BE UNDERTAKEN IF POSSIBLE.
6. HUTCHINSON'S GOIT TO BE DIVERTED THROUGH THE RETAINED POND/RESERVOIR. HUTCHINSON'S GOIT RE-ALIGNMENT TO BE AGREED WITH BURY MBC AS LEAD LOCAL FLOOD AUTHORITY.
7. THIS DRAWING TO BE READ IN CONJUNCTION WITH ALL OTHER WORKS DRAWINGS, SPECIFICATIONS, WORKS AND SITE INFORMATION.
8. ALL DIMENSIONS ARE IN METRES UNLESS OTHERWISE STATED.
9. PROPOSED EARTHWORKS DESIGN HAS BEEN BASED UPON TOPOGRAPHICAL SURVEY INFORMATION OBTAINED BY WYG IN 2016 AND LIDAR CONTOURS, ANY SUBSEQUENT GROUND ALTERATIONS SINCE THE SURVEYS HAVE BEEN CARRIED OUT MAY INVALIDATE THE PROPOSALS.
10. RETAINED POND/RESERVOIR LEVELS ARE ASSUMED LEVELS AND ARE SUBJECT TO FURTHER DESIGN FOLLOWING INVESTIGATIONS ON THE EXISTING RESERVOIR.
11. SURVEYS IDENTIFIED CONTAMINATION BY HYDROCARBONS, ASBESTOS AND OTHER CONTAMINANTS. THESE SOILS ARE ANTICIPATED TO BE SUITABLE FOR RE-USE WITHIN THE SITE SUBJECT TO ADEQUATE MITIGATION MEASURES BEING IMPLEMENTED. SEE WYG FACTUAL AND INTERPRETATIVE SUPPLYMENTARY GROUND INVESTIGATION REPORT FOR DETAILED INFORMATION ON GROUND CONDITIONS AND SUITABILITY OF EXCAVATED MATERIAL.
12. PROPOSED CRICKET PITCH LOCATION IS WITHIN SITE OF FORMER LANDFILL. SEE WYG GROUND INVESTIGATION REPORT FOR SUGGESTED MITIGATION TO ENABLE USE OF SITE WON MATERIAL.

CRICKET PITCH NOTES

- SEE AGRONOMY REPORT BY PSD AGRONOMY DATED JULY 2020 FOR DETAILED REQUIREMENTS FOR CRICKET PITCH CONSTRUCTION.
- EXISTING TOPSOIL COVER WITHIN PROPOSED CRICKET PITCH LOCATION ASSUMED TO BE 150mm AS STATED IN PSD AGRONOMY REPORT DATED JULY 2020.
- 200mm TOPOSOIL COVER REQUIRED FOR PROPOSED CRICKET PITCH.
- SEE SPORTS ENGLAND GUIDANCE AND SPECIFICATION FOR FULL REQUIREMENTS FOR CRICKET PITCH AND TRAINING AREA REQUIREMENTS.

PRELIMINARY ISSUE

ALL LEVELS ARE PRELIMINARY ONLY AND FOR PRELIMINARY DESIGN AND COSTING PURPOSES. ALL LEVELS SUBJECT TO FURTHER DETAILED DESIGN

REV	DESCRIPTION	BY	CHK	APP	DATE
P6	REVISED TO REMOVE FLOODABLE GARDENS	FA	RC	RC	12.04.21
P5	PROPOSED SPORTS PITCHES LAYOUT AMENDED.	RM	MSE	MSE	XXX
P4	PROPOSED EARTHWORKS AMENDMENTS - TO SUIT MAY 2018 EMAILS	RM	MSE	MSE	14.05.18
P3	PROPOSED EARTHWORKS AMENDMENTS	RM	MSE	MSE	14.03.18
P2	ISSUED FOR OPTION 2 - FOR INFORMATION ONLY	RM	TB	MSE	13.02.18
P1	PRELIMINARY ISSUE	RM	MSE	MSE	30.10.17

3 SOVEREIGN SQUARE
SOVEREIGN STREET
LEEDS
LS1 4ER

TEL: +44 (0)113 278 7111
FAX: +44 (0)113 278 3487
e-mail: leeds@wyg.com

Project:
FORMER LANCASHIRE PAPER MILLS
RADCLIFFE

Drawing Title:
PROPOSED GENERAL ARRANGEMENT
EARTHWORKS

Scale @ A1	Drawn	Date	Checked	Date	Approved	Date
1:1250	RM	OCT 2017	MSE	OCT 2017	MSE	OCT 2017

Project No.	Office	Type	Drawing No.	Revision
A090070-193	21	C	SK10	P6

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DO NOT SCALE: CONTRACTOR TO CHECK ALL DIMENSIONS AND REPORT ANY OMISSIONS OR ERRORS

NOTES

1. ALL LEVELS IN METRES A.O.D.
2. REFER TO SK10 FOR GENERAL ARRANGEMENT
3. THE PROPOSED LEVELS ARE INDICATIVE ONLY AND FOR PRELIMINARY DESIGN AND COSTING PURPOSES ONLY.

THIS DRAWING IS FOR PRELIMINARY DESIGN PURPOSES ONLY AND SUBJECT TO FURTHER DETAILED DESIGN

FOR INFORMATION ONLY

REV	DESCRIPTION	BY	CHK	APP	DATE
P2	REVISED FOLLOWING REMOVAL OF FLOODABLE GARDENS	FA	RC	RC	12.04.21
P1	PRELIMINARY ISSUE	RM	MSE	MSE	30.10.17

3 SOVEREIGN SQUARE
SOVEREIGN STREET
LEEDS
LS1 4ER

TEL: +44 (0)113 278 7111
FAX: +44 (0)113 278 3487
e-mail: leeds@wyg.com

Project:
FORMER LANCASHIRE PAPER MILLS
RADCLIFFE

Drawing Title:
PROPOSED GENERAL ARRANGEMENT
CONTOUR PLAN

Scale @ A1	Drawn Date	Checked Date	Approved Date
1:1250	RM OCT 2017	MSE OCT 2017	MSE OCT 2017

Project No.	Office	Type	Drawing No.	Revision
A090070-193	21	C	SK11	P2

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0 12.5 25 37.5 50 62.5 m
SCALE 1:1250

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FILENAME : N:\PROJECTS\A090001-A095000\A090070-193\ACAD\DWGS\A090070-193-21-C-SK11 - PROPOSED CONTOUR PLAN.DWG | PLOTTED BY : AGUILARFUERTES, FRANCISCO | PLOTTED DATE : 12 April 2021 12:28:29

Appendix D EA Flood Map, Historical Flood map & Photograph

Appendix 1.2.2 Pioneer Mill, Radcliffe

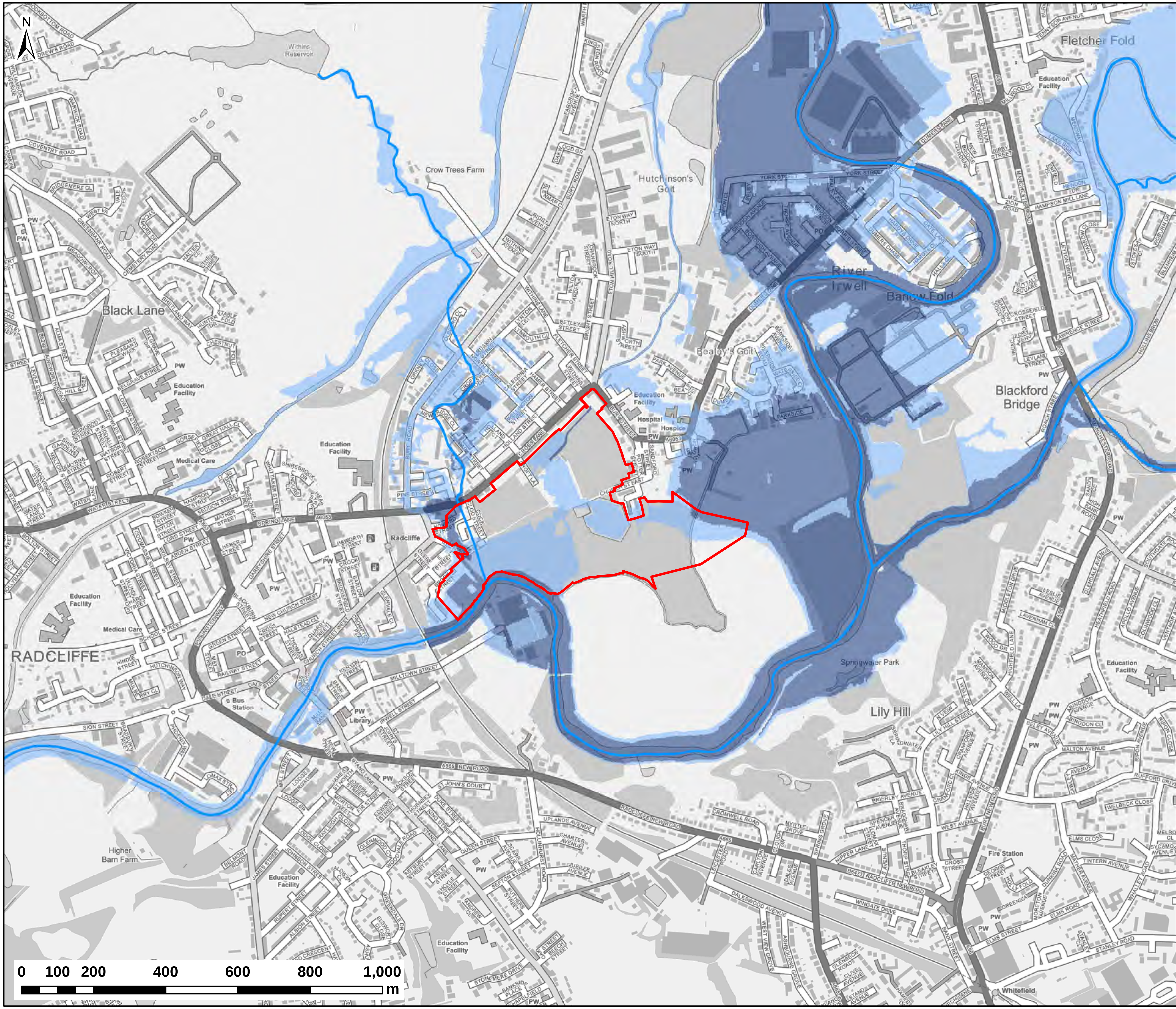


Points shown above indicated clusters of reported flooding and do not represent the exact properties or extents that experienced flooding

Historical Flood Map indicating areas local to the south-western site boundary to be affected by Boxing Day floods in 2015 (website: https://www.greatermanchester-ca.gov.uk/downloads/file/199/boxing_day_flood_report_2015)



Pioneer Mills Footbridge severely damaged during Boxing Day Floods in 2015 (website: http://www.geograph.org.uk/photo/4779740)



NOTES:
1) ALL DIMENSIONS ARE IN METRES AND ALL LEVELS IN METRES ABOVE ORDNANCE DATUM UNLESS STATED OTHERWISE

LEGEND

- Site Boundary
- EA Main Rivers
- EA Flood Zone 3
- EA Flood Zone 2



CLIENT:

TETRA TECH

waterco
www.waterco.co.uk

SCHEME:

EAST LANCASHIRE PAPER MILL

PLOT TITLE:

EA FLOOD MAP FOR PLANNING
DATA ACCESSED APRIL 2021

PLOT STATUS:	DATE:
FINAL	13/04/2021

DRAWN:	CHECKED:	APPROVED:	PLOT SCALE @ A3:
VJ	SB	APR	1:10,000 (UNLESS STATED OTHERWISE)

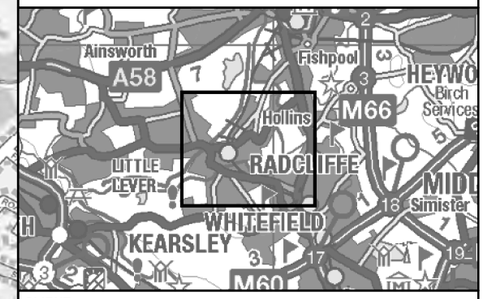
PLOT NAME:	REV:
12168-EA_FZ_FM	-

CONTAINS OS DATA © CROWN COPYRIGHT (2021)
© ENVIRONMENT AGENCY COPYRIGHT AND/OR DATABASE RIGHT 2021. ALL RIGHTS RESERVED. SOME FEATURES OF THIS MAP ARE BASED ON DIGITAL SPATIAL DATA FROM THE CENTRE FOR ECOLOGY AND HYDROLOGY, © NERC (CEH). © CROWN COPYRIGHT AND DATABASE RIGHTS 2004 ORDNANCE SURVEY 100024198

NOTES:
1) ALL DIMENSIONS ARE IN METRES AND ALL LEVELS IN METRES ABOVE ORDNANCE DATUM UNLESS STATED OTHERWISE

LEGEND

- Site Boundary
- Historical Flood Map



CLIENT:

TETRA TECH

waterco

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SCHEME:

EAST LANCASHIRE PAPER MILL

PLOT TITLE:

EA HISTORICAL FLOOD MAP

DATA ACCESSED APRIL 2021

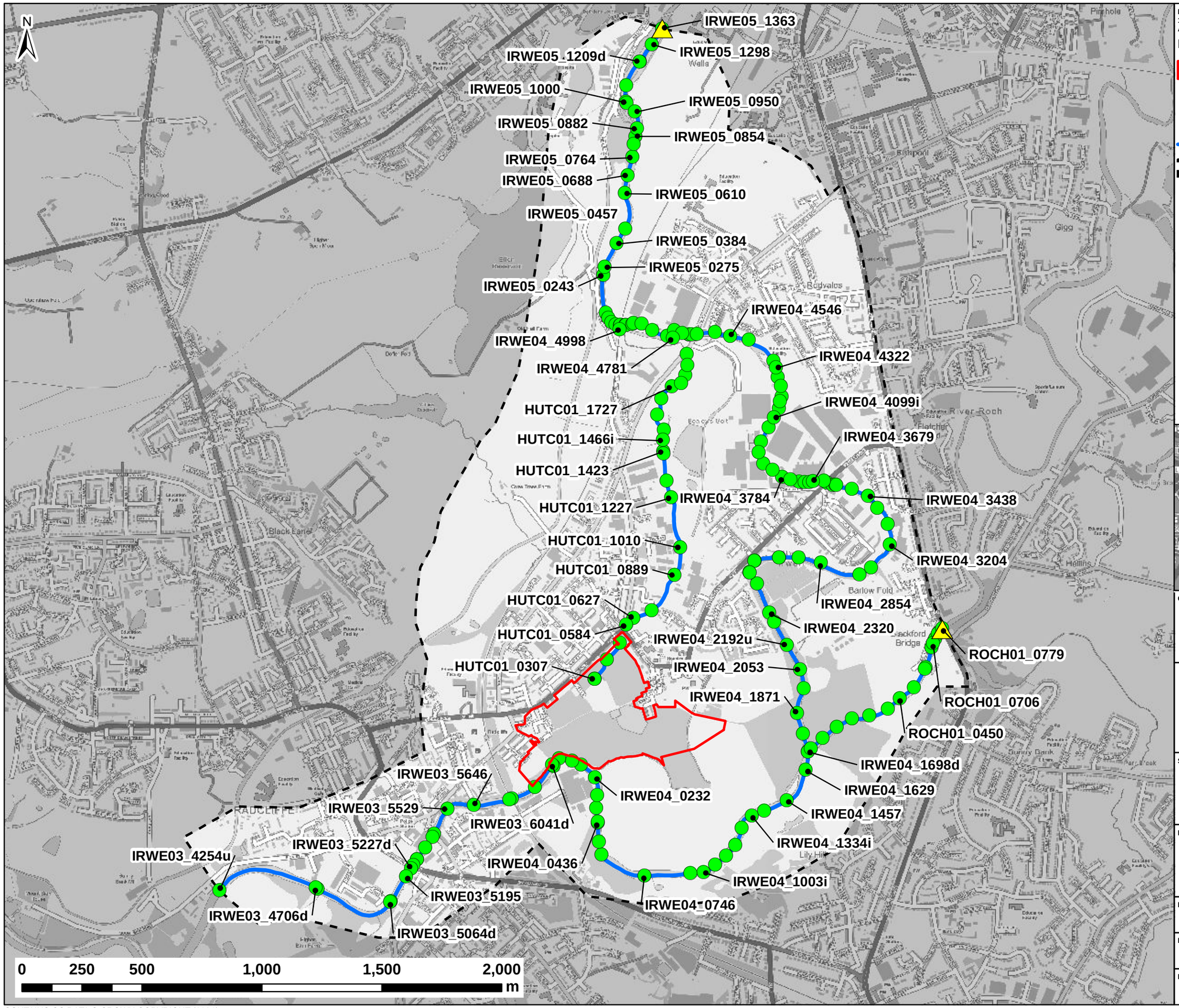
PLOT STATUS:	DATE:
FINAL	13/04/2021

DRAWN:	CHECKED:	APPROVED:	PLOT SCALE @ A3:
VJ	SB	APR	1:10,000 (UNLESS STATED OTHERWISE)

PLOT NAME:	REV:
12168-EA_Hist	-

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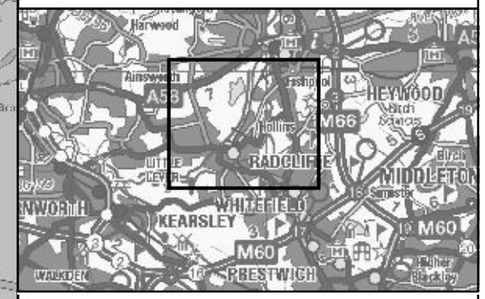
Appendix E 1D/2D Model Extents



NOTES:
1) ALL DIMENSIONS ARE IN METRES AND ALL LEVELS IN METRES ABOVE ORDNANCE DATUM UNLESS STATED OTHERWISE

LEGEND

- Site Boundary
- 1D Model Inflow
- 1D Model Node
- 1D Watercourse Network
- 2D Model Extent



CLIENT: TETRA TECH

waterco consultants
www.waterco.co.uk

SCHEME:
EAST LANCASHIRE PAPER MILL, RADCLIFFE

PLOT TITLE:
MODEL EXTENT

PLOT STATUS:	DATE:
FINAL	27-May-21

DRAWN:	CHECKED:	APPROVED:	PLOT SCALE @ A3:
AR	SB	DH	1:15,000 (UNLESS STATED OTHERWISE)

PLOT NAME:	REV:
w3280-Model_Extent	-

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Appendix F Flood Mapping

NOTES:
1) ALL DIMENSIONS ARE IN METRES AND ALL LEVELS IN METRES ABOVE ORDNANCE DATUM UNLESS STATED OTHERWISE

LEGEND

- Model Extent
- Site Boundary

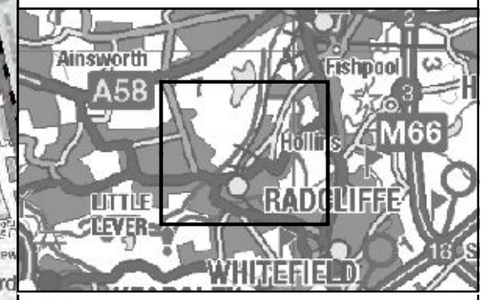
Maximum Flood Depth (m)

- 0 - 0.3
- 0.3 - 0.6
- 0.6 - 1.2
- 1.2 - 2.4
- > 2.4

PLOT SCALE @ A3: 1:5000

0 50 100 200 300 400 500 m

0 100 200 400 600 800 1,000 m



CLIENT: TETRA TECH

waterco
www.waterco.co.uk

SCHEME:
EAST LANCASHIRE PAPER MILL

PLOT TITLE:
MAXIMUM FLOOD DEPTH
5% AEP FLUVIAL EVENT
EXISTING SITE LAYOUT
NORMAL CONDITIONS

PLOT STATUS:			DATE:
FINAL			26-May-21
DRAWN: AR	CHECKED: SB	APPROVED: DH	PLOT SCALE @ A3: 1:10,000 (UNLESS STATED OTHERWISE)

PLOT NAME: 12168-RW_Q20_EXG_NFC_D

REV: -

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NOTES:
1) ALL DIMENSIONS ARE IN METRES AND ALL LEVELS IN METRES ABOVE ORDNANCE DATUM UNLESS STATED OTHERWISE

LEGEND

- Model Extent
- Site Boundary
- Proposed Development Layout (DEV)

Maximum Flood Depth (m)

- 0 - 0.3
- 0.3 - 0.6
- 0.6 - 1.2
- 1.2 - 2.4
- > 2.4

PLOT SCALE @ A3: 1:5000

0 50 100 200 300 400 500 m

0 100 200 400 600 800 1,000 m

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CLIENT: TETRA TECH

Waterco
www.waterco.co.uk

SCHEME:
EAST LANCASHIRE PAPER MILL

PLOT TITLE:
MAXIMUM FLOOD DEPTH
5% AEP FLUVIAL EVENT
PROPOSED SITE LAYOUT (DEV)
NORMAL CONDITIONS

PLOT STATUS:	DATE:
FINAL	26-May-21

DRAWN:	CHECKED:	APPROVED:	PLOT SCALE @ A3:
AR	SB	DH	1:10,000 (UNLESS STATED OTHERWISE)

PLOT NAME: 12168-RW_Q20_DEV9_NFC_D

REV: -

NOTES:
1) ALL DIMENSIONS ARE IN METRES AND ALL LEVELS IN METRES ABOVE ORDNANCE DATUM UNLESS STATED OTHERWISE

LEGEND

- Model Extent
- Site Boundary
- Proposed Development Layout (DEV)

Maximum Depth Variation

- > +100mm
- +50mm to +100mm
- +20mm to +50mm
- No Change (+/-20mm)
- -20mm to -50mm
- -50mm to -100mm
- > -100mm

PLOT SCALE @ A3: 1:5000

0 50 100 200 300 400 500 m

0 100 200 400 600 800 1,000 m

CLIENT: TETRA TECH

Waterco
www.waterco.co.uk

SCHEME:
EAST LANCASHIRE PAPER MILL

PLOT TITLE:
MAXIMUM DEPTH DIFFERENCE
5% AEP FLUVIAL EVENT
DEV-EXG
NORMAL CONDITIONS

PLOT STATUS:	DATE:
FINAL	26-May-21

DRAWN:	CHECKED:	APPROVED:	PLOT SCALE @ A3:
AR	SB	DH	1:10,000 (UNLESS STATED OTHERWISE)

PLOT NAME: 12168-RW_Q20_DEV-EXG_NFC_D_DIFF

REV: -

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NOTES:
1) ALL DIMENSIONS ARE IN METRES AND ALL LEVELS IN METRES ABOVE ORDNANCE DATUM UNLESS STATED OTHERWISE

LEGEND

- Model Extent
- Site Boundary

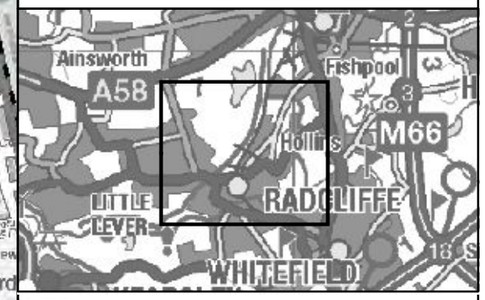
Maximum Flood Depth (m)

- 0 - 0.3
- 0.3 - 0.6
- 0.6 - 1.2
- 1.2 - 2.4
- > 2.4

PLOT SCALE @ A3: 1:5000

0 50 100 200 300 400 500 m

0 100 200 400 600 800 1,000 m



CLIENT: TETRA TECH

waterco
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SCHEME:
EAST LANCASHIRE PAPER MILL

PLOT TITLE:
MAXIMUM FLOOD DEPTH
1% AEP FLUVIAL EVENT
EXISTING SITE LAYOUT
NORMAL CONDITIONS

PLOT STATUS:			DATE:
FINAL			26-May-21
DRAWN: AR	CHECKED: SB	APPROVED: DH	PLOT SCALE @ A3: 1:10,000 (UNLESS STATED OTHERWISE)

PLOT NAME: 12168-RW_Q100_EXG_NFC_D

REV: -

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NOTES:
1) ALL DIMENSIONS ARE IN METRES AND ALL LEVELS IN METRES ABOVE ORDNANCE DATUM UNLESS STATED OTHERWISE

LEGEND

- Model Extent
- Site Boundary
- Proposed Development Layout (DEV)

Maximum Flood Depth (m)

- 0 - 0.3
- 0.3 - 0.6
- 0.6 - 1.2
- 1.2 - 2.4
- > 2.4

PLOT SCALE @ A3: 1:5000

0 50 100 200 300 400 500 m

0 100 200 400 600 800 1,000 m

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CLIENT: TETRA TECH

waterco
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SCHEME:
EAST LANCASHIRE PAPER MILL

PLOT TITLE:
MAXIMUM FLOOD DEPTH
1% AEP FLUVIAL EVENT
PROPOSED SITE LAYOUT (DEV)
NORMAL CONDITIONS

PLOT STATUS:	DATE:
FINAL	26-May-21

DRAWN:	CHECKED:	APPROVED:	PLOT SCALE @ A3:
AR	SB	DH	1:10,000 (UNLESS STATED OTHERWISE)

PLOT NAME: 12168-RW_Q100_DEV9_NFC_D

REV: -

NOTES:
1) ALL DIMENSIONS ARE IN METRES AND ALL LEVELS IN METRES ABOVE ORDNANCE DATUM UNLESS STATED OTHERWISE

LEGEND

- Model Extent
- Site Boundary
- Proposed Development Layout (DEV)

Maximum Depth Variation

- > +100mm
- +50mm to +100mm
- +20mm to +50mm
- No Change (+/-20mm)
- -20mm to -50mm
- -50mm to -100mm
- > -100mm

PLOT SCALE @ A3: 1:5000

0 50 100 200 300 400 500 m

0 100 200 400 600 800 1,000 m

CLIENT: TETRA TECH

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SCHEME:
EAST LANCASHIRE PAPER MILL

PLOT TITLE:
MAXIMUM DEPTH DIFFERENCE
1% AEP FLUVIAL EVENT
DEV-EXG
NORMAL CONDITIONS

PLOT STATUS:	DATE:
FINAL	26-May-21

DRAWN:	CHECKED:	APPROVED:	PLOT SCALE @ A3:
AR	SB	DH	1:10,000 (UNLESS STATED OTHERWISE)

PLOT NAME: 12168-RW_Q100_DEV-EXG_NFC_D_DIFF

REV: -

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NOTES:
1) ALL DIMENSIONS ARE IN METRES AND ALL LEVELS IN METRES ABOVE ORDNANCE DATUM UNLESS STATED OTHERWISE

LEGEND

- Model Extent
- Site Boundary

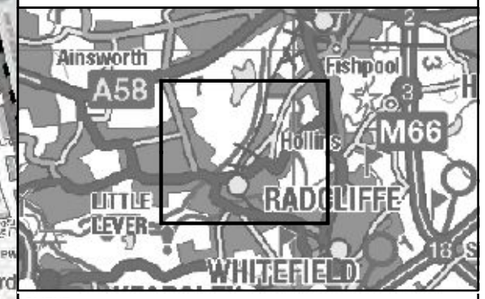
Maximum Flood Depth (m)

- 0 - 0.3
- 0.3 - 0.6
- 0.6 - 1.2
- 1.2 - 2.4
- > 2.4

PLOT SCALE @ A3: 1:5000

0 50 100 200 300 400 500 m

0 100 200 400 600 800 1,000 m



CLIENT: TETRA TECH

waterco
www.waterco.co.uk

SCHEME:
EAST LANCASHIRE PAPER MILL

PLOT TITLE:
MAXIMUM FLOOD DEPTH
1% AEP +35% CC FLUVIAL EVENT
EXISTING SITE LAYOUT
NORMAL CONDITIONS

PLOT STATUS:	DATE:
FINAL	26-May-21

DRAWN:	CHECKED:	APPROVED:	PLOT SCALE @ A3:
AR	SB	DH	1:10,000 (UNLESS STATED OTHERWISE)

PLOT NAME: 12168-RW_Q100CC1_EXG_NFC_D

REV: -

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NOTES:
1) ALL DIMENSIONS ARE IN METRES AND ALL LEVELS IN METRES ABOVE ORDNANCE DATUM UNLESS STATED OTHERWISE

LEGEND

- Model Extent
- Site Boundary
- Proposed Development Layout (DEV)

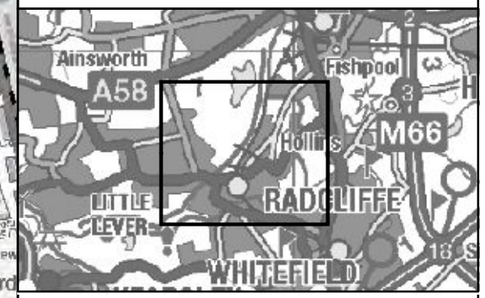
Maximum Flood Depth (m)

- 0 - 0.3
- 0.3 - 0.6
- 0.6 - 1.2
- 1.2 - 2.4
- > 2.4

PLOT SCALE @ A3: 1:5000

0 50 100 200 300 400 500 m

0 100 200 400 600 800 1,000 m



CLIENT: TETRA TECH

www.waterco.co.uk

SCHEME:
EAST LANCASHIRE PAPER MILL

PLOT TITLE:
MAXIMUM FLOOD DEPTH
1% AEP +35% CC FLUVIAL EVENT
PROPOSED SITE LAYOUT (DEV)
NORMAL CONDITIONS

PLOT STATUS:			DATE:
FINAL			26-May-21
DRAWN: AR	CHECKED: SB	APPROVED: DH	PLOT SCALE @ A3: 1:10,000 (UNLESS STATED OTHERWISE)

PLOT NAME: 12168-RW_Q100CC1_DEV9_NFC_D

REV: -

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NOTES:
1) ALL DIMENSIONS ARE IN METRES AND ALL LEVELS IN METRES ABOVE ORDNANCE DATUM UNLESS STATED OTHERWISE

LEGEND

- Model Extent
- Site Boundary
- Proposed Development Layout (DEV)

Maximum Depth Variation

- > +100mm
- +50mm to +100mm
- +20mm to +50mm
- No Change (+/-20mm)
- -20mm to -50mm
- -50mm to -100mm
- > -100mm

PLOT SCALE @ A3: 1:5000

0 50 100 200 300 400 500 m

0 100 200 400 600 800 1,000 m

CLIENT: TETRA TECH

waterco
www.waterco.co.uk

SCHEME:
EAST LANCASHIRE PAPER MILL

PLOT TITLE:
MAXIMUM DEPTH DIFFERENCE
1% AEP +35% CC FLUVIAL EVENT
DEV-EXG
NORMAL CONDITIONS

PLOT STATUS:	DATE:
FINAL	26-May-21

DRAWN:	CHECKED:	APPROVED:	PLOT SCALE @ A3:
AR	SB	DH	1:10,000 (UNLESS STATED OTHERWISE)

PLOT NAME: 12168-RW_Q100CC1_DEV-EXG_NFC_D_DIFF

REV: -

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NOTES:
1) ALL DIMENSIONS ARE IN METRES AND ALL LEVELS IN METRES ABOVE ORDNANCE DATUM UNLESS STATED OTHERWISE

LEGEND

- Model Extent
- Site Boundary
- Blockage of A6053 Road Culvert

Maximum Flood Depth (m)

- 0 - 0.3
- 0.3 - 0.6
- 0.6 - 1.2
- 1.2 - 2.4
- > 2.4

PLOT SCALE @ A3: 1:5000

0 50 100 200 300 400 500 m

0 100 200 400 600 800 1,000 m

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CLIENT: TETRA TECH

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SCHEME:
EAST LANCASHIRE PAPER MILL

PLOT TITLE:
MAXIMUM FLOOD DEPTH
1% AEP +35% CC FLUVIAL EVENT
EXISTING SITE LAYOUT
80% BLOCKAGE SCENARIO (BL1)

PLOT STATUS:			DATE:
FINAL			26-May-21
DRAWN: AR	CHECKED: SB	APPROVED: DH	PLOT SCALE @ A3: 1:10,000 (UNLESS STATED OTHERWISE)

PLOT NAME: 12168-RW_Q100CC1_EXG_BL1-80_D

REV: -

NOTES:
1) ALL DIMENSIONS ARE IN METRES AND ALL LEVELS IN METRES ABOVE ORDNANCE DATUM UNLESS STATED OTHERWISE

LEGEND

- Model Extent
- Site Boundary
- Proposed Development Layout (DEV)
- Blockage of A6053 Road Culvert

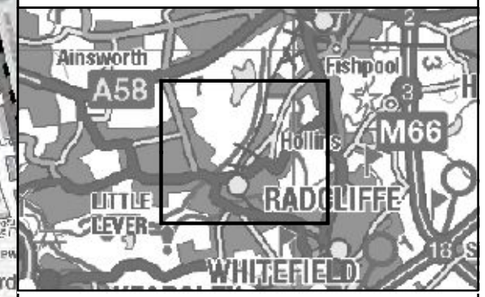
Maximum Flood Depth (m)

- 0 - 0.3
- 0.3 - 0.6
- 0.6 - 1.2
- 1.2 - 2.4
- > 2.4

PLOT SCALE @ A3: 1:5000

0 50 100 200 300 400 500 m

0 100 200 400 600 800 1,000 m



CLIENT: TETRA TECH

waterco
www.waterco.co.uk

SCHEME:
EAST LANCASHIRE PAPER MILL

PLOT TITLE:
MAXIMUM FLOOD DEPTH
1% AEP +35% CC FLUVIAL EVENT
PROPOSED SITE LAYOUT (DEV)
80% BLOCKAGE SCENARIO (BL1)

PLOT STATUS:			DATE:
FINAL			26-May-21
DRAWN: AR	CHECKED: SB	APPROVED: DH	PLOT SCALE @ A3: 1:10,000 (UNLESS STATED OTHERWISE)

PLOT NAME: 12168-RW_Q100CC1_DEV9_BL1-80_D

REV: -

CONTAINS OS DATA © CROWN COPYRIGHT (2021)

NOTES:
1) ALL DIMENSIONS ARE IN METRES AND ALL LEVELS IN METRES ABOVE ORDNANCE DATUM UNLESS STATED OTHERWISE

LEGEND

- Model Extent
- Site Boundary
- Proposed Development Layout (DEV)
- Blockage of A6053 Road Culvert

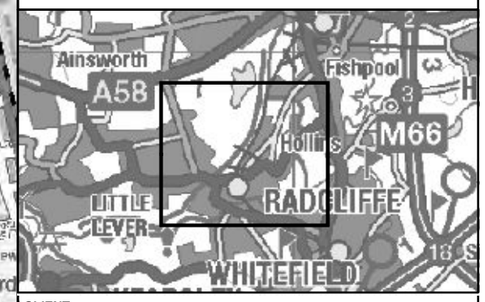
Maximum Depth Variation

- > +100mm
- +50mm to +100mm
- +20mm to +50mm
- No Change (+/-20mm)
- -20mm to -50mm
- -50mm to -100mm
- > -100mm

PLOT SCALE @ A3: 1:5000

0 50 100 200 300 400 500 m

0 100 200 400 600 800 1,000 m



CLIENT: TETRA TECH

waterco
www.waterco.co.uk

SCHEME:
EAST LANCASHIRE PAPER MILL

PLOT TITLE:
MAXIMUM DEPTH DIFFERENCE
1% AEP +35% CC FLUVIAL EVENT
DEV-EXG
80% BLOCKAGE SCENARIO (BL1)

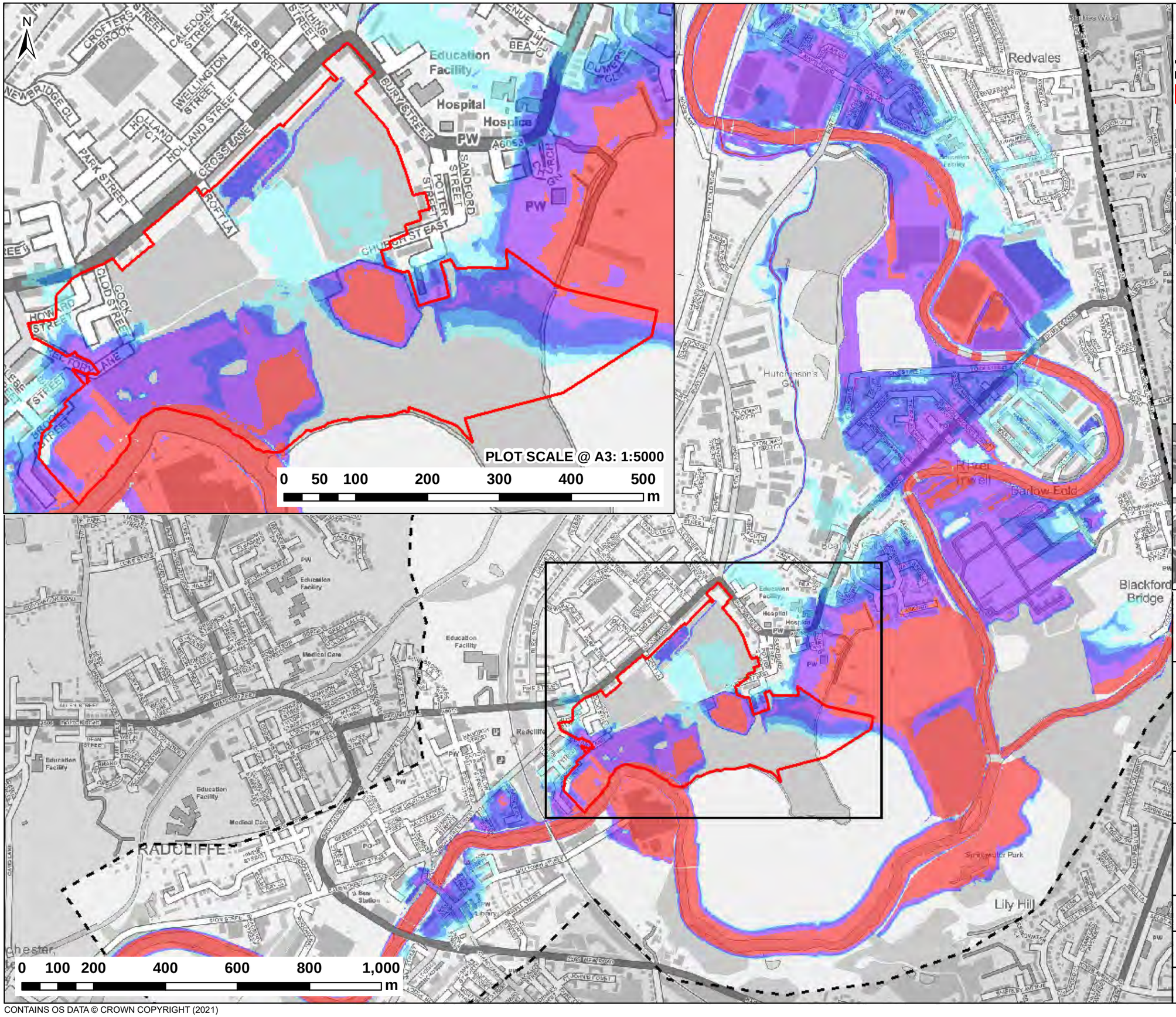
PLOT STATUS:	DATE:
FINAL	26-May-21

DRAWN:	CHECKED:	APPROVED:	PLOT SCALE @ A3:
AR	SB	DH	1:10,000 (UNLESS STATED OTHERWISE)

PLOT NAME: 12168-RW_Q100CC1_DEV-EXG_BL1-80_D_DIFF

REV: -

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NOTES:
1) ALL DIMENSIONS ARE IN METRES AND ALL LEVELS IN METRES ABOVE ORDNANCE DATUM UNLESS STATED OTHERWISE

LEGEND

- Model Extent
- Site Boundary

Maximum Flood Depth (m)

- 0 - 0.3
- 0.3 - 0.6
- 0.6 - 1.2
- 1.2 - 2.4
- > 2.4

CLIENT: TETRA TECH

waterco
www.waterco.co.uk

SCHEME:
EAST LANCASHIRE PAPER MILL

PLOT TITLE:
MAXIMUM FLOOD DEPTH
1% AEP +70% CC FLUVIAL EVENT
EXISTING SITE LAYOUT
NORMAL CONDITIONS

PLOT STATUS:	DATE:
FINAL	26-May-21

DRAWN:	CHECKED:	APPROVED:	PLOT SCALE @ A3:
AR	SB	DH	1:10,000 (UNLESS STATED OTHERWISE)

PLOT NAME:	REV:
12168-RW_Q100CC2_EXG_NFC_D	-

NOTES:
1) ALL DIMENSIONS ARE IN METRES AND ALL LEVELS IN METRES ABOVE ORDNANCE DATUM UNLESS STATED OTHERWISE

LEGEND

- Model Extent
- Site Boundary
- Proposed Development Layout (DEV)

Maximum Flood Depth (m)

- 0 - 0.3
- 0.3 - 0.6
- 0.6 - 1.2
- 1.2 - 2.4
- > 2.4

PLOT SCALE @ A3: 1:5000

0 50 100 200 300 400 500 m

0 100 200 400 600 800 1,000 m

CONTAINS OS DATA © CROWN COPYRIGHT (2021)

CLIENT: TETRA TECH

waterco
www.waterco.co.uk

SCHEME:
EAST LANCASHIRE PAPER MILL

PLOT TITLE:
MAXIMUM FLOOD DEPTH
1% AEP +70% CC FLUVIAL EVENT
PROPOSED SITE LAYOUT (DEV)
NORMAL CONDITIONS

PLOT STATUS:	DATE:
FINAL	26-May-21

DRAWN:	CHECKED:	APPROVED:	PLOT SCALE @ A3:
AR	SB	DH	1:10,000 (UNLESS STATED OTHERWISE)

PLOT NAME:	REV:
12168-RW_Q100CC2_DEV9_NFC_D	-

NOTES:
1) ALL DIMENSIONS ARE IN METRES AND ALL LEVELS IN METRES ABOVE ORDNANCE DATUM UNLESS STATED OTHERWISE

LEGEND

- Model Extent
- Site Boundary
- Proposed Development Layout (DEV)

Maximum Depth Variation

- > +100mm
- +50mm to +100mm
- +20mm to +50mm
- No Change (+/-20mm)
- -20mm to -50mm
- -50mm to -100mm
- > -100mm

PLOT SCALE @ A3: 1:5000

0 50 100 200 300 400 500 m

0 100 200 400 600 800 1,000 m

CONTAINS OS DATA © CROWN COPYRIGHT (2021)

CLIENT: TETRA TECH

waterco
www.waterco.co.uk

SCHEME:
EAST LANCASHIRE PAPER MILL

PLOT TITLE:
MAXIMUM DEPTH DIFFERENCE
1% AEP +70% CC FLUVIAL EVENT
DEV-EXG
NORMAL CONDITIONS

PLOT STATUS:	DATE:
FINAL	26-May-21

DRAWN:	CHECKED:	APPROVED:	PLOT SCALE @ A3:
AR	SB	DH	1:10,000 (UNLESS STATED OTHERWISE)

PLOT NAME:	REV:
12168-RW_Q100CC2_DEV-EXG_NFC_D_DIFF	-

NOTES:
1) ALL DIMENSIONS ARE IN METRES AND ALL LEVELS IN METRES ABOVE ORDNANCE DATUM UNLESS STATED OTHERWISE

LEGEND

- Model Extent
- Site Boundary

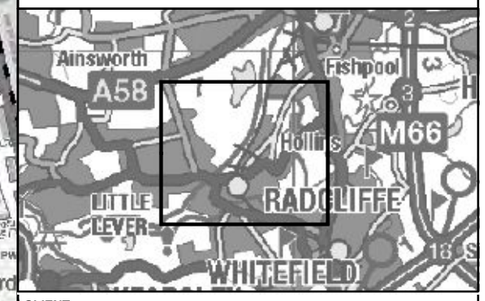
Maximum Flood Depth (m)

- 0 - 0.3
- 0.3 - 0.6
- 0.6 - 1.2
- 1.2 - 2.4
- > 2.4

PLOT SCALE @ A3: 1:5000

0 50 100 200 300 400 500 m

0 100 200 400 600 800 1,000 m



CLIENT: TETRA TECH

waterco
www.waterco.co.uk

SCHEME:
EAST LANCASHIRE PAPER MILL

PLOT TITLE:
MAXIMUM FLOOD DEPTH
0.1% AEP FLUVIAL EVENT
EXISTING SITE LAYOUT
NORMAL CONDITIONS

PLOT STATUS:	DATE:
FINAL	26-May-21

DRAWN:	CHECKED:	APPROVED:	PLOT SCALE @ A3:
AR	SB	DH	1:10,000 (UNLESS STATED OTHERWISE)

PLOT NAME:	REV:
12168-RW_Q1000_EXG_NFC_D	-

CONTAINS OS DATA © CROWN COPYRIGHT (2021)

NOTES:
1) ALL DIMENSIONS ARE IN METRES AND ALL LEVELS IN METRES ABOVE ORDNANCE DATUM UNLESS STATED OTHERWISE

LEGEND

- Model Extent
- Site Boundary
- Proposed Development Layout (DEV)

Maximum Flood Depth (m)

- 0 - 0.3
- 0.3 - 0.6
- 0.6 - 1.2
- 1.2 - 2.4
- > 2.4

PLOT SCALE @ A3: 1:5000

0 50 100 200 300 400 500 m

0 100 200 400 600 800 1,000 m

CONTAINS OS DATA © CROWN COPYRIGHT (2021)

CLIENT: TETRA TECH

waterco
www.waterco.co.uk

SCHEME:
EAST LANCASHIRE PAPER MILL

PLOT TITLE:
MAXIMUM FLOOD DEPTH
0.1% AEP FLUVIAL EVENT
PROPOSED SITE LAYOUT (DEV)
NORMAL CONDITIONS

PLOT STATUS:	DATE:
FINAL	26-May-21

DRAWN:	CHECKED:	APPROVED:	PLOT SCALE @ A3:
AR	SB	DH	1:10,000 (UNLESS STATED OTHERWISE)

PLOT NAME:	REV:
12168-RW_Q1000_DEV9_NFC_D	-

NOTES:
1) ALL DIMENSIONS ARE IN METRES AND ALL LEVELS IN METRES ABOVE ORDNANCE DATUM UNLESS STATED OTHERWISE

LEGEND

- Model Extent
- Site Boundary
- Proposed Development Layout (DEV)

Maximum Depth Variation

- > +100mm
- +50mm to +100mm
- +20mm to +50mm
- No Change (+/-20mm)
- -20mm to -50mm
- -50mm to -100mm
- > -100mm

PLOT SCALE @ A3: 1:5000

0 50 100 200 300 400 500 m

0 100 200 400 600 800 1,000 m

CONTAINS OS DATA © CROWN COPYRIGHT (2021)

CLIENT: TETRA TECH

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SCHEME:
EAST LANCASHIRE PAPER MILL

PLOT TITLE:
MAXIMUM DEPTH DIFFERENCE
0.1% AEP FLUVIAL EVENT
DEV-EXG
NORMAL CONDITIONS

PLOT STATUS:			DATE:
FINAL			26-May-21

DRAWN:	CHECKED:	APPROVED:	PLOT SCALE @ A3:
AR	SB	DH	1:10,000 (UNLESS STATED OTHERWISE)

PLOT NAME: 12168-RW_Q1000_DEV-EXG_NFC_D_DIFF

REV: -

NOTES:
1) ALL DIMENSIONS ARE IN METRES AND ALL LEVELS IN METRES ABOVE ORDNANCE DATUM UNLESS STATED OTHERWISE

LEGEND

- Model Extent
- Site Boundary

Maximum Velocity (m/s)

- < 0.3
- 0.3 - 0.6
- 0.6 - 0.9
- 0.9 - 1.2
- > 1.2

PLOT SCALE @ A3: 1:5000

0 50 100 200 300 400 500 m

0 100 200 400 600 800 1,000 m

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CLIENT: TETRA TECH

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SCHEME:
EAST LANCASHIRE PAPER MILL

PLOT TITLE:
MAXIMUM FLOOD VELOCITY
5% AEP FLUVIAL EVENT
EXISTING SITE LAYOUT
NORMAL CONDITIONS

PLOT STATUS:	DATE:
FINAL	26-May-21

DRAWN:	CHECKED:	APPROVED:	PLOT SCALE @ A3:
AR	SB	DH	1:10,000 (UNLESS STATED OTHERWISE)

PLOT NAME:	REV:
12168-RW_Q20_EXG_NFC_V	-

NOTES:
1) ALL DIMENSIONS ARE IN METRES AND ALL LEVELS IN METRES ABOVE ORDNANCE DATUM UNLESS STATED OTHERWISE

LEGEND

- Model Extent
- Site Boundary
- Proposed Development Layout (DEV)

Maximum Velocity (m/s)

- < 0.3
- 0.3 - 0.6
- 0.6 - 0.9
- 0.9 - 1.2
- > 1.2

PLOT SCALE @ A3: 1:5000

0 50 100 200 300 400 500 m

0 100 200 400 600 800 1,000 m

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CLIENT: TETRA TECH

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SCHEME:
EAST LANCASHIRE PAPER MILL

PLOT TITLE:
MAXIMUM FLOOD VELOCITY
5% AEP FLUVIAL EVENT
PROPOSED SITE LAYOUT (DEV)
NORMAL CONDITIONS

PLOT STATUS:	DATE:
FINAL	26-May-21

DRAWN:	CHECKED:	APPROVED:	PLOT SCALE @ A3:
AR	SB	DH	1:10,000 (UNLESS STATED OTHERWISE)

PLOT NAME:	REV:
12168-RW_Q20_DEV9_NFC_V	-

NOTES:
1) ALL DIMENSIONS ARE IN METRES AND ALL LEVELS IN METRES ABOVE ORDNANCE DATUM UNLESS STATED OTHERWISE

LEGEND

- Model Extent
- Site Boundary

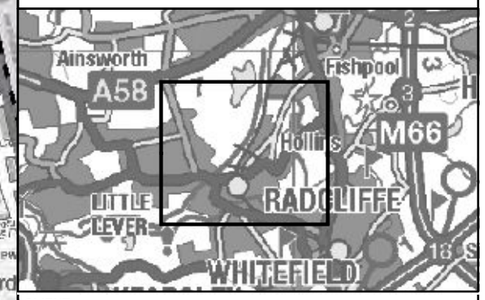
Maximum Velocity (m/s)

- < 0.3
- 0.3 - 0.6
- 0.6 - 0.9
- 0.9 - 1.2
- > 1.2

PLOT SCALE @ A3: 1:5000

0 50 100 200 300 400 500 m

0 100 200 400 600 800 1,000 m



CLIENT: TETRA TECH

waterco
www.waterco.co.uk

SCHEME:
EAST LANCASHIRE PAPER MILL

PLOT TITLE:
MAXIMUM FLOOD VELOCITY
1% AEP FLUVIAL EVENT
EXISTING SITE LAYOUT
NORMAL CONDITIONS

PLOT STATUS:	DATE:
FINAL	26-May-21

DRAWN:	CHECKED:	APPROVED:	PLOT SCALE @ A3:
AR	SB	DH	1:10,000 (UNLESS STATED OTHERWISE)

PLOT NAME: 12168-RW_Q100_EXG_NFC_V

REV: -

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NOTES:
1) ALL DIMENSIONS ARE IN METRES AND ALL LEVELS IN METRES ABOVE ORDNANCE DATUM UNLESS STATED OTHERWISE

LEGEND

- Model Extent
- Site Boundary
- Proposed Development Layout (DEV)

Maximum Velocity (m/s)

- < 0.3
- 0.3 - 0.6
- 0.6 - 0.9
- 0.9 - 1.2
- > 1.2

PLOT SCALE @ A3: 1:5000

0 50 100 200 300 400 500 m

0 100 200 400 600 800 1,000 m

CONTAINS OS DATA © CROWN COPYRIGHT (2021)

CLIENT: TETRA TECH

waterco
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SCHEME:
EAST LANCASHIRE PAPER MILL

PLOT TITLE:
MAXIMUM FLOOD VELOCITY
1% AEP FLUVIAL EVENT
PROPOSED SITE LAYOUT (DEV)
NORMAL CONDITIONS

PLOT STATUS:	DATE:
FINAL	26-May-21

DRAWN:	CHECKED:	APPROVED:	PLOT SCALE @ A3:
AR	SB	DH	1:10,000 (UNLESS STATED OTHERWISE)

PLOT NAME:	REV:
12168-RW_Q100_DEV9_NFC_V	-

NOTES:
1) ALL DIMENSIONS ARE IN METRES AND ALL LEVELS IN METRES ABOVE ORDNANCE DATUM UNLESS STATED OTHERWISE

LEGEND

- Model Extent
- Site Boundary

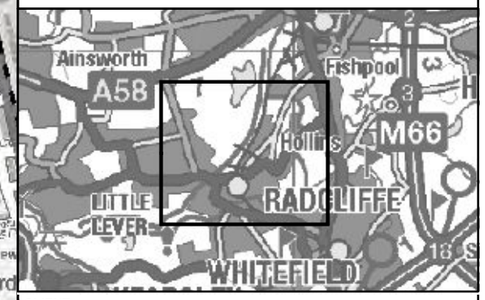
Maximum Velocity (m/s)

- < 0.3
- 0.3 - 0.6
- 0.6 - 0.9
- 0.9 - 1.2
- > 1.2

PLOT SCALE @ A3: 1:5000

0 50 100 200 300 400 500 m

0 100 200 400 600 800 1,000 m



CLIENT:

TETRA TECH

waterco

www.waterco.co.uk

SCHEME:

EAST LANCASHIRE PAPER MILL

PLOT TITLE:

MAXIMUM FLOOD VELOCITY

1% AEP +35% CC FLUVIAL EVENT
EXISTING SITE LAYOUT
NORMAL CONDITIONS

PLOT STATUS:			DATE:
FINAL			26-May-21
DRAWN: AR	CHECKED: SB	APPROVED: DH	PLOT SCALE @ A3: 1:10,000 (UNLESS STATED OTHERWISE)

PLOT NAME: 12168-RW_Q100CC1_EXG_NFC_V

REV: -

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NOTES:
1) ALL DIMENSIONS ARE IN METRES AND ALL LEVELS IN METRES ABOVE ORDNANCE DATUM UNLESS STATED OTHERWISE

LEGEND

- Model Extent
- Site Boundary
- Proposed Development Layout (DEV)

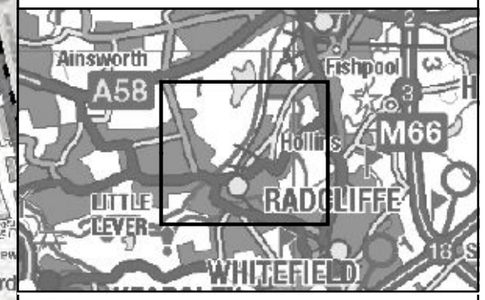
Maximum Velocity (m/s)

- < 0.3
- 0.3 - 0.6
- 0.6 - 0.9
- 0.9 - 1.2
- > 1.2

PLOT SCALE @ A3: 1:5000

0 50 100 200 300 400 500 m

0 100 200 400 600 800 1,000 m



CLIENT: TETRA TECH

waterco
www.waterco.co.uk

SCHEME:
EAST LANCASHIRE PAPER MILL

PLOT TITLE:
MAXIMUM FLOOD VELOCITY
1% AEP +35% CC FLUVIAL EVENT
PROPOSED SITE LAYOUT (DEV)
NORMAL CONDITIONS

PLOT STATUS:	DATE:
FINAL	26-May-21

DRAWN:	CHECKED:	APPROVED:	PLOT SCALE @ A3:
AR	SB	DH	1:10,000 (UNLESS STATED OTHERWISE)

PLOT NAME: 12168-RW_Q100CC1_DEV9_NFC_V

REV: -

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NOTES:
1) ALL DIMENSIONS ARE IN METRES AND ALL LEVELS IN METRES ABOVE ORDNANCE DATUM UNLESS STATED OTHERWISE

LEGEND

- Model Extent
- Site Boundary
- Blockage of A6053 Road Culvert

Maximum Velocity (m/s)

- < 0.3
- 0.3 - 0.6
- 0.6 - 0.9
- 0.9 - 1.2
- > 1.2

PLOT SCALE @ A3: 1:5000

0 50 100 200 300 400 500 m

0 100 200 400 600 800 1,000 m

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CLIENT: TETRA TECH

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SCHEME:
EAST LANCASHIRE PAPER MILL

PLOT TITLE:
MAXIMUM FLOOD VELOCITY
1% AEP +35% CC FLUVIAL EVENT
EXISTING SITE LAYOUT
80% BLOCKAGE SCENARIO (BL1)

PLOT STATUS:	DATE:
FINAL	26-May-21

DRAWN:	CHECKED:	APPROVED:	PLOT SCALE @ A3:
AR	SB	DH	1:10,000 (UNLESS STATED OTHERWISE)

PLOT NAME: 12168-RW_Q100CC1_EXG_BL1-80_V

REV: -

NOTES:
1) ALL DIMENSIONS ARE IN METRES AND ALL LEVELS IN METRES ABOVE ORDNANCE DATUM UNLESS STATED OTHERWISE

LEGEND

- Model Extent
- Site Boundary
- Proposed Development Layout (DEV)
- Blockage of A6053 Road Culvert

Maximum Velocity (m/s)

- < 0.3
- 0.3 - 0.6
- 0.6 - 0.9
- 0.9 - 1.2
- > 1.2

PLOT SCALE @ A3: 1:5000

0 50 100 200 300 400 500 m

0 100 200 400 600 800 1,000 m

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CLIENT: TETRA TECH

Waterco
www.waterco.co.uk

SCHEME:
EAST LANCASHIRE PAPER MILL

PLOT TITLE:
MAXIMUM FLOOD VELOCITY
1% AEP +35% CC FLUVIAL EVENT
PROPOSED SITE LAYOUT (DEV)
80% BLOCKAGE SCENARIO (BL1)

PLOT STATUS:			DATE:
FINAL			26-May-21
DRAWN: AR	CHECKED: SB	APPROVED: DH	PLOT SCALE @ A3: 1:10,000 (UNLESS STATED OTHERWISE)

PLOT NAME: 12168-RW_Q100CC1_DEV9_BL1-80_V

REV: -

NOTES:
1) ALL DIMENSIONS ARE IN METRES AND ALL LEVELS IN METRES ABOVE ORDNANCE DATUM UNLESS STATED OTHERWISE

LEGEND

- Model Extent
- Site Boundary

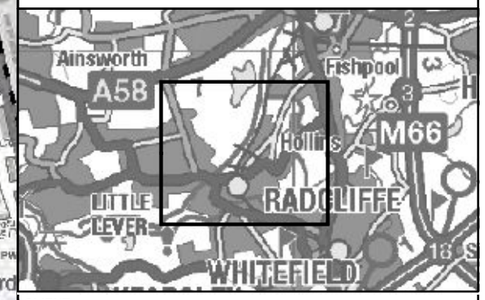
Maximum Velocity (m/s)

- < 0.3
- 0.3 - 0.6
- 0.6 - 0.9
- 0.9 - 1.2
- > 1.2

PLOT SCALE @ A3: 1:5000

0 50 100 200 300 400 500 m

0 100 200 400 600 800 1,000 m



CLIENT: TETRA TECH

waterco
www.waterco.co.uk

SCHEME:
EAST LANCASHIRE PAPER MILL

PLOT TITLE:
MAXIMUM FLOOD VELOCITY
1% AEP +70% CC FLUVIAL EVENT
EXISTING SITE LAYOUT
NORMAL CONDITIONS

PLOT STATUS:	DATE:
FINAL	26-May-21

DRAWN:	CHECKED:	APPROVED:	PLOT SCALE @ A3:
AR	SB	DH	1:10,000 (UNLESS STATED OTHERWISE)

PLOT NAME: 12168-RW_Q100CC2_EXG_NFC_V

REV: -

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NOTES:
1) ALL DIMENSIONS ARE IN METRES AND ALL LEVELS IN METRES ABOVE ORDNANCE DATUM UNLESS STATED OTHERWISE

LEGEND

- Model Extent
- Site Boundary
- Proposed Development Layout (DEV)

Maximum Velocity (m/s)

- < 0.3
- 0.3 - 0.6
- 0.6 - 0.9
- 0.9 - 1.2
- > 1.2

PLOT SCALE @ A3: 1:5000

0 50 100 200 300 400 500 m

0 100 200 400 600 800 1,000 m

CONTAINS OS DATA © CROWN COPYRIGHT (2021)

CLIENT: TETRA TECH

Waterco
www.waterco.co.uk

SCHEME:
EAST LANCASHIRE PAPER MILL

PLOT TITLE:
MAXIMUM FLOOD VELOCITY
1% AEP +70% CC FLUVIAL EVENT
PROPOSED SITE LAYOUT (DEV)
NORMAL CONDITIONS

PLOT STATUS:	DATE:
FINAL	26-May-21

DRAWN:	CHECKED:	APPROVED:	PLOT SCALE @ A3:
AR	SB	DH	1:10,000 (UNLESS STATED OTHERWISE)

PLOT NAME: 12168-RW_Q100CC2_DEV9_NFC_V

REV: -

NOTES:
1) ALL DIMENSIONS ARE IN METRES AND ALL LEVELS IN METRES ABOVE ORDNANCE DATUM UNLESS STATED OTHERWISE

LEGEND

- Model Extent
- Site Boundary

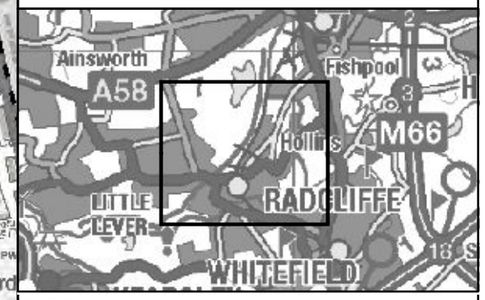
Maximum Velocity (m/s)

- < 0.3
- 0.3 - 0.6
- 0.6 - 0.9
- 0.9 - 1.2
- > 1.2

PLOT SCALE @ A3: 1:5000

0 50 100 200 300 400 500 m

0 100 200 400 600 800 1,000 m



CLIENT: TETRA TECH

waterco
www.waterco.co.uk

SCHEME:
EAST LANCASHIRE PAPER MILL

PLOT TITLE:
MAXIMUM FLOOD VELOCITY
0.1% AEP FLUVIAL EVENT
EXISTING SITE LAYOUT
NORMAL CONDITIONS

PLOT STATUS:	DATE:
FINAL	26-May-21

DRAWN:	CHECKED:	APPROVED:	PLOT SCALE @ A3:
AR	SB	DH	1:10,000 (UNLESS STATED OTHERWISE)

PLOT NAME: 12168-RW_Q1000_EXG_NFC_V

REV: -

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NOTES:
1) ALL DIMENSIONS ARE IN METRES AND ALL LEVELS IN METRES ABOVE ORDNANCE DATUM UNLESS STATED OTHERWISE

LEGEND

- Model Extent
- Site Boundary
- Proposed Development Layout (DEV)

Maximum Velocity (m/s)

- < 0.3
- 0.3 - 0.6
- 0.6 - 0.9
- 0.9 - 1.2
- > 1.2

PLOT SCALE @ A3: 1:5000

0 50 100 200 300 400 500 m

0 100 200 400 600 800 1,000 m

CONTAINS OS DATA © CROWN COPYRIGHT (2021)

CLIENT: TETRA TECH

Waterco
www.waterco.co.uk

SCHEME:
EAST LANCASHIRE PAPER MILL

PLOT TITLE:
MAXIMUM FLOOD VELOCITY
0.1% AEP FLUVIAL EVENT
PROPOSED SITE LAYOUT (DEV)
NORMAL CONDITIONS

PLOT STATUS:	DATE:
FINAL	26-May-21

DRAWN:	CHECKED:	APPROVED:	PLOT SCALE @ A3:
AR	SB	DH	1:10,000 (UNLESS STATED OTHERWISE)

PLOT NAME: 12168-RW_Q1000_DEV9_NFC_V

REV: -

NOTES:
1) ALL DIMENSIONS ARE IN METRES AND ALL LEVELS IN METRES ABOVE ORDNANCE DATUM UNLESS STATED OTHERWISE

LEGEND

- Model Extent
- Site Boundary

Maximum Flood Hazard Rating (FD2320)

- < 0.75 (Caution)
- 0.75 - 1.25 (Danger for Some)
- 1.25 - 2 (Danger for Most)
- > 2.0 (Danger for All)

PLOT SCALE @ A3: 1:5000

0 50 100 200 300 400 500 m

0 100 200 400 600 800 1,000 m

CONTAINS OS DATA © CROWN COPYRIGHT (2021)

CLIENT: TETRA TECH

waterco
www.waterco.co.uk

SCHEME:
EAST LANCASHIRE PAPER MILL

PLOT TITLE:
MAXIMUM FLOOD VELOCITY
5% AEP FLUVIAL EVENT
EXISTING SITE LAYOUT
NORMAL CONDITIONS

PLOT STATUS:			DATE:
FINAL			26-May-21
DRAWN: AR	CHECKED: SB	APPROVED: DH	PLOT SCALE @ A3: 1:10,000 (UNLESS STATED OTHERWISE)

PLOT NAME: 12168-RW_Q20_EXG_NFC_HZ

REV: -

NOTES:
1) ALL DIMENSIONS ARE IN METRES AND ALL LEVELS IN METRES ABOVE ORDNANCE DATUM UNLESS STATED OTHERWISE

LEGEND

- Model Extent
- Site Boundary
- Proposed Development Layout (DEV)

Maximum Flood Hazard Rating (FD2320)

- < 0.75 (Caution)
- 0.75 - 1.25 (Danger for Some)
- 1.25 - 2 (Danger for Most)
- > 2.0 (Danger for All)

PLOT SCALE @ A3: 1:5000

0 50 100 200 300 400 500 m

0 100 200 400 600 800 1,000 m

CONTAINS OS DATA © CROWN COPYRIGHT (2021)

CLIENT: TETRA TECH

Waterco
www.waterco.co.uk

SCHEME:
EAST LANCASHIRE PAPER MILL

PLOT TITLE:
FLOOD HAZARD RATING
5% AEP FLUVIAL EVENT
PROPOSED SITE LAYOUT (DEV)
NORMAL CONDITIONS

PLOT STATUS:	DATE:
FINAL	26-May-21

DRAWN:	CHECKED:	APPROVED:	PLOT SCALE @ A3:
AR	SB	DH	1:10,000 (UNLESS STATED OTHERWISE)

PLOT NAME: 12168-RW_Q20_DEV9_NFC_HZ

REV: -

NOTES:
1) ALL DIMENSIONS ARE IN METRES AND ALL LEVELS IN METRES ABOVE ORDNANCE DATUM UNLESS STATED OTHERWISE

LEGEND

- Model Extent
- Site Boundary

Maximum Flood Hazard Rating (FD2320)

- < 0.75 (Caution)
- 0.75 - 1.25 (Danger for Some)
- 1.25 - 2 (Danger for Most)
- > 2.0 (Danger for All)

PLOT SCALE @ A3: 1:5000

0 50 100 200 300 400 500 m

0 100 200 400 600 800 1,000 m

CONTAINS OS DATA © CROWN COPYRIGHT (2021)

CLIENT: TETRA TECH

waterco
www.waterco.co.uk

SCHEME:
EAST LANCASHIRE PAPER MILL

PLOT TITLE:
FLOOD HAZARD RATING
1% AEP FLUVIAL EVENT
EXISTING SITE LAYOUT
NORMAL CONDITIONS

PLOT STATUS:	DATE:
FINAL	26-May-21

DRAWN:	CHECKED:	APPROVED:	PLOT SCALE @ A3:
AR	SB	DH	1:10,000 (UNLESS STATED OTHERWISE)

PLOT NAME:	REV:
12168-RW_Q100_EXG_NFC_HZ	-

NOTES:
1) ALL DIMENSIONS ARE IN METRES AND ALL LEVELS IN METRES ABOVE ORDNANCE DATUM UNLESS STATED OTHERWISE

LEGEND

- Model Extent
- Site Boundary
- Proposed Development Layout (DEV)

Maximum Flood Hazard Rating (FD2320)

- < 0.75 (Caution)
- 0.75 - 1.25 (Danger for Some)
- 1.25 - 2 (Danger for Most)
- > 2.0 (Danger for All)

PLOT SCALE @ A3: 1:5000

0 50 100 200 300 400 500 m

0 100 200 400 600 800 1,000 m

CONTAINS OS DATA © CROWN COPYRIGHT (2021)

CLIENT: TETRA TECH

Waterco
www.waterco.co.uk

SCHEME:
EAST LANCASHIRE PAPER MILL

PLOT TITLE:
FLOOD HAZARD RATING
1% AEP FLUVIAL EVENT
PROPOSED SITE LAYOUT (DEV)
NORMAL CONDITIONS

PLOT STATUS:	DATE:
FINAL	26-May-21

DRAWN:	CHECKED:	APPROVED:	PLOT SCALE @ A3:
AR	SB	DH	1:10,000 (UNLESS STATED OTHERWISE)

PLOT NAME: 12168-RW_Q100_DEV9_NFC_HZ

REV: -

NOTES:
1) ALL DIMENSIONS ARE IN METRES AND ALL LEVELS IN METRES ABOVE ORDNANCE DATUM UNLESS STATED OTHERWISE

LEGEND

- Model Extent
- Site Boundary

Maximum Flood Hazard Rating (FD2320)

- < 0.75 (Caution)
- 0.75 - 1.25 (Danger for Some)
- 1.25 - 2 (Danger for Most)
- > 2.0 (Danger for All)

PLOT SCALE @ A3: 1:5000

0 50 100 200 300 400 500 m

0 100 200 400 600 800 1,000 m

CONTAINS OS DATA © CROWN COPYRIGHT (2021)

CLIENT: TETRA TECH

Waterco
www.waterco.co.uk

SCHEME:
EAST LANCASHIRE PAPER MILL

PLOT TITLE:
FLOOD HAZARD RATING
1% AEP +35% CC FLUVIAL EVENT
EXISTING SITE LAYOUT
NORMAL CONDITIONS

PLOT STATUS:	DATE:
FINAL	26-May-21

DRAWN:	CHECKED:	APPROVED:	PLOT SCALE @ A3:
AR	SB	DH	1:10,000 (UNLESS STATED OTHERWISE)

PLOT NAME: 12168-RW_Q100CC1_EXG_NFC_HZ

REV: -

NOTES:
1) ALL DIMENSIONS ARE IN METRES AND ALL LEVELS IN METRES ABOVE ORDNANCE DATUM UNLESS STATED OTHERWISE

LEGEND

- Model Extent
- Site Boundary
- Proposed Development Layout (DEV)

Maximum Flood Hazard Rating (FD2320)

- < 0.75 (Caution)
- 0.75 - 1.25 (Danger for Some)
- 1.25 - 2 (Danger for Most)
- > 2.0 (Danger for All)

PLOT SCALE @ A3: 1:5000

0 50 100 200 300 400 500 m

0 100 200 400 600 800 1,000 m

CONTAINS OS DATA © CROWN COPYRIGHT (2021)

CLIENT: TETRA TECH

waterco
www.waterco.co.uk

SCHEME:
EAST LANCASHIRE PAPER MILL

PLOT TITLE:
FLOOD HAZARD RATING
1% AEP +35% CC FLUVIAL EVENT
PROPOSED SITE LAYOUT (DEV)
NORMAL CONDITIONS

PLOT STATUS:	DATE:
FINAL	26-May-21

DRAWN:	CHECKED:	APPROVED:	PLOT SCALE @ A3:
AR	SB	DH	1:10,000 (UNLESS STATED OTHERWISE)

PLOT NAME: 12168-RW_Q100CC1_DEV9_NFC_HZ

REV: -

NOTES:
1) ALL DIMENSIONS ARE IN METRES AND ALL LEVELS IN METRES ABOVE ORDNANCE DATUM UNLESS STATED OTHERWISE

LEGEND

- Model Extent
- Site Boundary
- Blockage of A6053 Road Culvert

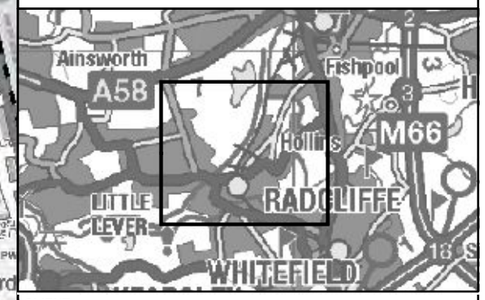
Maximum Flood Hazard Rating (FD2320)

- < 0.75 (Caution)
- 0.75 - 1.25 (Danger for Some)
- 1.25 - 2 (Danger for Most)
- > 2.0 (Danger for All)

PLOT SCALE @ A3: 1:5000

0 50 100 200 300 400 500 m

0 100 200 400 600 800 1,000 m



CLIENT: TETRA TECH

waterco
www.waterco.co.uk

SCHEME:
EAST LANCASHIRE PAPER MILL

PLOT TITLE:
FLOOD HAZARD RATING
1% AEP +35% CC FLUVIAL EVENT
EXISTING SITE LAYOUT
80% BLOCKAGE SCENARIO (BL1)

PLOT STATUS:	DATE:
FINAL	26-May-21

DRAWN:	CHECKED:	APPROVED:	PLOT SCALE @ A3:
AR	SB	DH	1:10,000 (UNLESS STATED OTHERWISE)

PLOT NAME: 12168-RW_Q100CC1_EXG_BL1-80_HZ

REV: -

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NOTES:
1) ALL DIMENSIONS ARE IN METRES AND ALL LEVELS IN METRES ABOVE ORDNANCE DATUM UNLESS STATED OTHERWISE

LEGEND

- Model Extent
- Site Boundary
- Proposed Development Layout (DEV)
- Blockage of A6053 Road Culvert

Maximum Flood Hazard Rating (FD2320)

- < 0.75 (Caution)
- 0.75 - 1.25 (Danger for Some)
- 1.25 - 2 (Danger for Most)
- > 2.0 (Danger for All)

PLOT SCALE @ A3: 1:5000

0 50 100 200 300 400 500 m

0 100 200 400 600 800 1,000 m

CONTAINS OS DATA © CROWN COPYRIGHT (2021)

CLIENT: TETRA TECH

Waterco
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SCHEME:
EAST LANCASHIRE PAPER MILL

PLOT TITLE:
FLOOD HAZARD RATING
1% AEP +35% CC FLUVIAL EVENT
PROPOSED SITE LAYOUT (DEV)
80% BLOCKAGE SCENARIO (BL1)

PLOT STATUS:			DATE:
FINAL			26-May-21
DRAWN: AR	CHECKED: SB	APPROVED: DH	PLOT SCALE @ A3: 1:10,000 (UNLESS STATED OTHERWISE)

PLOT NAME: 12168-RW_Q100CC1_DEV9_BL1-80_HZ

REV: -

NOTES:
1) ALL DIMENSIONS ARE IN METRES AND ALL LEVELS IN METRES ABOVE ORDNANCE DATUM UNLESS STATED OTHERWISE

LEGEND

- Model Extent
- Site Boundary

Maximum Flood Hazard Rating (FD2320)

- < 0.75 (Caution)
- 0.75 - 1.25 (Danger for Some)
- 1.25 - 2 (Danger for Most)
- > 2.0 (Danger for All)

PLOT SCALE @ A3: 1:5000

0 50 100 200 300 400 500 m

0 100 200 400 600 800 1,000 m

CONTAINS OS DATA © CROWN COPYRIGHT (2021)

CLIENT: TETRA TECH

Waterco
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SCHEME:
EAST LANCASHIRE PAPER MILL

PLOT TITLE:
FLOOD HAZARD RATING
1% AEP +70% CC FLUVIAL EVENT
EXISTING SITE LAYOUT
NORMAL CONDITIONS

PLOT STATUS:	DATE:
FINAL	26-May-21

DRAWN:	CHECKED:	APPROVED:	PLOT SCALE @ A3:
AR	SB	DH	1:10,000 (UNLESS STATED OTHERWISE)

PLOT NAME: 12168-RW_Q100CC2_EXG_NFC_HZ

REV: -

NOTES:
1) ALL DIMENSIONS ARE IN METRES AND ALL LEVELS IN METRES ABOVE ORDNANCE DATUM UNLESS STATED OTHERWISE

LEGEND

- Model Extent
- Site Boundary
- Proposed Development Layout (DEV)

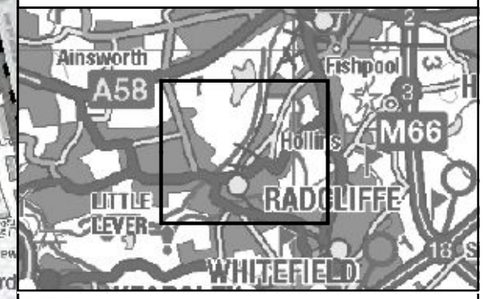
Maximum Flood Hazard Rating (FD2320)

- < 0.75 (Caution)
- 0.75 - 1.25 (Danger for Some)
- 1.25 - 2 (Danger for Most)
- > 2.0 (Danger for All)

PLOT SCALE @ A3: 1:5000

0 50 100 200 300 400 500 m

0 100 200 400 600 800 1,000 m



CLIENT: TETRA TECH

waterco
www.waterco.co.uk

SCHEME:
EAST LANCASHIRE PAPER MILL

PLOT TITLE:
FLOOD HAZARD RATING
1% AEP +70% CC FLUVIAL EVENT
PROPOSED SITE LAYOUT (DEV)
NORMAL CONDITIONS

PLOT STATUS:	DATE:
FINAL	26-May-21

DRAWN:	CHECKED:	APPROVED:	PLOT SCALE @ A3:
AR	SB	DH	1:10,000 (UNLESS STATED OTHERWISE)

PLOT NAME: 12168-RW_Q100CC2_DEV9_NFC_HZ

REV: -

CONTAINS OS DATA © CROWN COPYRIGHT (2021)

NOTES:
1) ALL DIMENSIONS ARE IN METRES AND ALL LEVELS IN METRES ABOVE ORDNANCE DATUM UNLESS STATED OTHERWISE

LEGEND

- Model Extent
- Site Boundary

Maximum Flood Hazard Rating (FD2320)

- < 0.75 (Caution)
- 0.75 - 1.25 (Danger for Some)
- 1.25 - 2 (Danger for Most)
- > 2.0 (Danger for All)

PLOT SCALE @ A3: 1:5000

0 50 100 200 300 400 500 m

0 100 200 400 600 800 1,000 m

CONTAINS OS DATA © CROWN COPYRIGHT (2021)

CLIENT: TETRA TECH

Waterco
www.waterco.co.uk

SCHEME:
EAST LANCASHIRE PAPER MILL

PLOT TITLE:
FLOOD HAZARD RATING
0.1% AEP FLUVIAL EVENT
EXISTING SITE LAYOUT
NORMAL CONDITIONS

PLOT STATUS:	DATE:
FINAL	26-May-21

DRAWN:	CHECKED:	APPROVED:	PLOT SCALE @ A3:
AR	SB	DH	1:10,000 (UNLESS STATED OTHERWISE)

PLOT NAME: 12168-RW_Q1000_EXG_NFC_HZ

REV: -

NOTES:
1) ALL DIMENSIONS ARE IN METRES AND ALL LEVELS IN METRES ABOVE ORDNANCE DATUM UNLESS STATED OTHERWISE

LEGEND

- Model Extent
- Site Boundary
- Proposed Development Layout (DEV)

Maximum Flood Hazard Rating (FD2320)

- < 0.75 (Caution)
- 0.75 - 1.25 (Danger for Some)
- 1.25 - 2 (Danger for Most)
- > 2.0 (Danger for All)

PLOT SCALE @ A3: 1:5000

0 50 100 200 300 400 500 m

0 100 200 400 600 800 1,000 m

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CLIENT: TETRA TECH

Waterco
www.waterco.co.uk

SCHEME:
EAST LANCASHIRE PAPER MILL

PLOT TITLE:
FLOOD HAZARD RATING
0.1% AEP FLUVIAL EVENT
PROPOSED SITE LAYOUT (DEV)
NORMAL CONDITIONS

PLOT STATUS:	DATE:
FINAL	26-May-21

DRAWN:	CHECKED:	APPROVED:	PLOT SCALE @ A3:
AR	SB	DH	1:10,000 (UNLESS STATED OTHERWISE)

PLOT NAME: 12168-RW_Q1000_DEV9_NFC_HZ

REV: -

Appendix G Tabulated 1D Model Results Data

Hydraulic Model Results - East Lancashire Paper Mill, Radcliffe

1D FMP Model Results - Maximum Water Levels (mAOD)

Normal Flow Condition Simulations

Date: 05-04-2021
Model Type: FMP-TUFLOW
FMP Build: 4.3
TUFLOW Build: 2018-03-AA

Normal Flow Condition Simulations - NFC

Model Ref	Event	DTM
Q20 EXG	5% AEP (1 in 20)	Existing Site Layout (EXG)
Q100 EXG	1% AEP (1 in 100)	
Q100CC1 EXG	1% AEP + 35% Climate Change (CC1)	
Q100CC2 EXG	1% AEP + 70% Climate Change (CC2)	
Q1000 EXG	0.1% AEP (1 in 1000)	

Normal Flow Condition Simulations - NFC

Model Ref	Event	DTM
Q20 DEV	5% AEP (1 in 20)	Proposed Development Layout (DEV)
Q100 DEV	1% AEP (1 in 100)	
Q100CC1 DEV	1% AEP + 35% Climate Change (CC1)	
Q100CC2 DEV	1% AEP + 70% Climate Change (CC2)	
Q1000 DEV	0.1% AEP (1 in 1000)	

Notes:
1D/2D model build 021
EXG = Existing site layout
DEV = Proposed site layout
Nodes adjacent to site are highlighted in yellow

	Node Label	Notable Features	NORMAL FLOW CONDITIONS (NFC) - EXG SCENARIO					NORMAL FLOW CONDITIONS (NFC) - DEV SCENARIO									
			Q20	Q100	Q100CC1	Q100CC2	Q1000	Q20		Q100		Q100CC1		Q100CC2		Q1000	
			Q20-EXG-NFC (5% AEP) (mAOD)	Q100-EXG-NFC (1% AEP) (mAOD)	Q100CC1-EXG-NFC (1% AEP +35% CC) (mAOD)	Q100CC2-EXG-NFC (1% AEP +70% CC) (mAOD)	Q1000-EXG-NFC (0.1% AEP) (mAOD)	Q20-DEV-NFC (5% AEP) (mAOD)	WL Diff (DEV vs EXG)	Q100-DEV-NFC (1% AEP) (mAOD)	WL Diff (DEV vs EXG)	Q100CC1-DEV-NFC (1% AEP +35% CC) (mAOD)	WL Diff (DEV vs EXG)	Q100CC2-DEV-NFC (1% AEP +70% CC) (mAOD)	WL Diff (DEV vs EXG)	Q1000-DEV-NFC (0.1% AEP) (mAOD)	WL Diff (DEV vs EXG)
River Irwell	IRWE05_1363		75.64	75.99	76.41	76.82	76.89	75.64	0.00	75.99	0.00	76.41	0.00	76.82	0.00	76.89	0.00
	IRWE05_1298		75.63	75.93	76.28	76.64	76.70	75.63	0.00	75.93	0.00	76.28	0.00	76.64	0.00	76.70	0.00
	IRWE05_1209u		75.55	75.86	76.26	76.64	76.70	75.55	0.00	75.86	0.00	76.26	0.00	76.64	0.00	76.70	0.00
	IRWE05_1209d		75.40	75.65	76.00	76.32	76.37	75.40	0.00	75.65	0.00	76.00	0.00	76.32	0.00	76.37	0.00
	IRWE05_1091		74.83	75.15	75.60	75.97	76.03	74.83	0.00	75.15	0.00	75.60	0.00	75.97	0.00	76.03	0.00
	IRWE05_1007		74.90	75.24	75.75	76.16	76.22	74.90	0.00	75.24	0.00	75.75	0.00	76.16	0.00	76.22	0.00
	IR05_SP1007u		74.90	75.24	75.75	76.16	76.22	74.90	0.00	75.24	0.00	75.75	0.00	76.16	0.00	76.22	0.00
	IR05_SP1000d		74.57	75.11	75.66	76.06	76.12	74.57	0.00	75.11	0.00	75.66	0.00	76.06	0.00	76.12	0.00
	IRWE05_1007u		74.90	75.24	75.75	76.16	76.22	74.90	0.00	75.24	0.00	75.75	0.00	76.16	0.00	76.22	0.00
	IRWE05_1000d		74.57	75.11	75.66	76.06	76.12	74.57	0.00	75.11	0.00	75.66	0.00	76.06	0.00	76.12	0.00
	IRWE05_1000		74.57	75.11	75.66	76.06	76.12	74.57	0.00	75.11	0.00	75.66	0.00	76.06	0.00	76.12	0.00
	IRWE05_0950		74.46	75.00	75.56	75.98	76.04	74.46	0.00	75.00	0.00	75.56	0.00	75.98	0.00	76.04	0.00
	IRWE05_0882		74.30	74.82	75.35	75.83	75.89	74.30	0.00	74.82	0.00	75.35	0.00	75.83	0.00	75.90	0.00
	IRWE05_0854		74.15	74.66	75.18	75.69	75.77	74.15	0.00	74.66	0.00	75.18	0.00	75.70	0.00	75.77	0.01
	IRWE05_0823		74.07	74.54	75.03	75.54	75.64	74.07	0.00	74.54	0.00	75.03	0.00	75.55	0.01	75.65	0.01
	IRWE05_0764		73.70	74.17	74.71	75.32	75.42	73.70	0.00	74.17	0.00	74.71	0.00	75.33	0.01	75.43	0.01
	IRWE05_0688		73.65	74.13	74.66	75.27	75.36	73.65	0.00	74.13	0.00	74.66	0.00	75.27	0.00	75.36	0.00
	IRWE05_0610		73.58	74.07	74.60	75.27	75.37	73.58	0.00	74.07	0.00	74.60	0.00	75.27	0.01	75.33	-0.03
	IRWE05_0457		72.81	73.24	73.81	74.52	74.59	72.81	0.00	73.24	0.00	73.81	0.00	74.52	0.00	74.59	0.00
	IRWE05_0384		72.85	73.31	73.86	74.69	74.76	72.85	0.00	73.31	0.00	73.86	0.00	74.70	0.01	74.76	0.00
	IRWE05_0275		72.82	73.23	73.80	74.48	74.57	72.82	0.00	73.23	0.00	73.80	0.00	74.49	0.01	74.55	-0.02
	IRWE05_0243		72.89	73.33	73.88	74.51	74.58	72.89	0.00	73.33	0.00	73.88	0.00	74.50	0.00	74.58	0.00
	IRWE05_0085		72.37	72.78	73.31	73.94	74.06	72.37	0.00	72.78	0.00	73.31	0.00	73.95	0.00	74.06	0.00
	IRWE05_0064i		72.18	72.39	72.76	73.29	73.41	72.18	0.00	72.39	0.00	72.76	0.00	73.30	0.01	73.41	0.00
	IRWE05_0043i		72.22	72.45	72.77	73.31	73.44	72.22	0.00	72.45	0.00	72.77	0.00	73.32	0.01	73.43	-0.01
	IRWE05_0021i		72.23	72.49	72.84	73.43	73.53	72.23	0.00	72.49	0.00	72.84	0.00	73.43	0.00	73.53	0.00
	IRWE05_0000u		72.23	72.50	72.87	73.48	73.57	72.23	0.00	72.50	0.00	72.87	0.00	73.48	0.00	73.56	0.00
	IR05_BR0000u	Warth Railway Viaduct	72.23	72.50	72.87	73.48	73.57	72.23	0.00	72.50	0.00	72.87	0.00	73.48	0.00	73.56	0.00
	IR04_BR5013d		72.21	72.42	72.58	72.74	72.76	72.21	0.00	72.42	0.00	72.58	0.00	72.74	0.00	72.76	0.00
	RB_Arch_u		72.23	72.50	72.87	73.48	73.57	72.23	0.00	72.50	0.00	72.87	0.00	73.48	0.00	73.56	0.00
	RB_Arch_d		71.98	72.21	72.34	72.39	72.42	71.98	0.00	72.21	0.00	72.34	0.00	72.39	0.00	72.42	0.00
	IRWE04_5013d		72.21	72.42	72.58	72.74	72.76	72.21	0.00	72.42	0.00	72.58	0.00	72.74	0.00	72.76	0.00
	IRWE04_4998		72.24	72.53	72.88	73.24	73.27	72.24	0.00	72.53	0.00	72.88	0.00	73.24	0.00	73.28	0.01
	IR04_SP4998L		72.24	72.53	72.88	73.24	73.27	72.24	0.00	72.53	0.00	72.88	0.00	73.24	0.00	73.28	0.01
	IR04_SP4996L		72.06	72.29	72.46	72.57	72.58	72.06	0.00	72.29	0.00	72.46	0.00	72.57	0.00	72.58	0.00
	IRWE04_4998u		72.24	72.53	72.88	73.24	73.27	72.24	0.00	72.53	0.00	72.88	0.00	73.24	0.00	73.28	0.01
	IRWE04_4996d		72.06	72.29	72.46	72.57	72.58	72.06	0.00	72.29	0.00	72.46	0.00	72.57	0.00	72.58	0.00
	IR04_SP4998R		72.24	72.53	72.88	73.24	73.27	72.24	0.00	72.53	0.00	72.88	0.00	73.24	0.00	73.28	0.01
	IR04_SP4996R		72.06	72.29	72.46	72.57	72.58	72.06	0.00	72.29	0.00	72.46	0.00	72.57	0.00	72.58	0.00
	IRWE04_4996		72.06	72.29	72.46	72.57	72.58	72.06	0.00	72.29	0.00	72.46	0.00	72.57	0.00	72.58	0.00
	IRWE04_4969u		72.05	72.32	72.55	72.73	72.77	72.05	0.00	72.32	0.00	72.55	0.00	72.73	0.00	72.76	0.00
	IRWE04_4957d		71.93	72.17	72.35	72.49	72.52	71.93	0.00	72.17	0.00	72.35	0.00	72.49	0.00	72.52	0.00
	IRWE04_4919		71.88	72.12	72.28	72.42	72.46	71.88	0.00	72.12	0.00	72.28	0.00	72.42	0.00	72.46	0.00
	IRWE04_4874		71.74	72.00	72.20	72.35	72.39	71.74	0.00	72.00	0.00	72.20	0.00	72.35	0.00	72.39	0.00
	IRWE04_4808		71.54	71.76	71.93	72.05	72.08	71.54	0.00	71.76	0.00	71.93	0.00	72.05	0.00	72.07	0.00
	IRWE04_4781		71.57	71.81	72.02	72.19	72.23	71.57	0.00	71.81	0.00	72.02	0.00	72.19	0.00	72.22	0.00
	IRWE04_4781u		71.57	71.81	72.02	72.19	72.23	71.57	0.00	71.81	0.00	72.02	0.00	72.19	0.00	72.22	0.00
	IRWE04_4781d		69.28	70.01	70.79	71.36	71.43	69.29	0.01	70.02	0.01	70.80	0.01	71.37	0.01	71.45	0.02
	IR04_SP4781R		71.57	71.81	72.02	72.19	72.23	71.57	0.00	71.81	0.00	72.02	0.00	72.19	0.00	72.22	0.00
	IR04_SP4784R		69.28	70.01	70.79	71.36	71.43	69.29	0.01	70.02	0.01	70.80	0.01	71.37	0.01	71.45	0.02
	IRWE04_4767		69.28	70.01	70.79	71.36	71.43	69.29	0.01	70.02	0.01	70.80	0.01	71.37	0.01	71.45	0.02
	IRWE04_4748		69.18	69.90	70.68	71.25	71.32	69.19	0.01	69.91	0.01	70.69	0.01	71.26	0.01	71.34	0.02
	IRWE04_4725u		69.13	69.86	70.64	71.23	71.31	69.14	0.01	69.87	0.01	70.65	0.01	71.24	0.01	71.32	0.02
	IRWE04_4725d		69.04	69.76	70.54	71.14	71.22	69.05	0.01	69.77	0.01	70.56	0.01	71.15	0.01	71.23	0.02
	IRWE04_4710u		69.03	69.75	70.52	71.11	71.19	69.04	0.01	69.76	0.01	70.53	0.01	71.12	0.01	71.21	0.02
	IR04_BR4710u	Warth Bridge	69.03	69.75	70.52	71.11	71.19	69.04	0.01	69.76	0.01	70.53	0.01	71.12	0.01	71.21	0.02
	IR04_BR4690d		68.90	69.53	70.10	70.49	70.55	68.91	0.01	69.54	0.01	70.11	0.01	70.50	0.01	70.56	0.01
	IRWE04_4690d		68.90	69.53	70.10	70.49	70.55	68.91	0.01	69.54	0.01	70.11	0.01	70.50	0.01	70.56	0.01
	IRWE04_4614		68.67	69.26	69.77	70.11	70.16	68.68	0.01	69.27	0.01	69.78	0.00	70.12	0.01	70.17	0.01
	IRWE04_4546		68.59	69.14	69.60	69.91	69.96	68.60	0.01	69.14	0.01	69.61	0.00	69.91	0.00	69.96	0.00
	IRWE04_4469		68.51	69.07	69.52	69.81	69.86	68.53	0.01	69.08	0.01	69.52	0.00	69.82	0.00	69.86	0.00
	IRWE04_4360		68.51	69.11	69.61	69.91	69.96	68.53	0.01	69.12	0.01	69.62	0.01	69.92	0.01	69.97	0.00
	IRWE04_4322		68.45	69.06	69.55	69.83	69.88	68.47	0.01	69.06	0.01	69.55	0.00	69.84	0.01	69.88	0.00
	IRWE04_4303		68.43	69.04	69.53	69.81	69.86	68.44	0.02	69.05	0.01	69.54	0.00	69.82	0.01	69.86	0.00
	IRWE04_4261i		68.37	69.01	69.51	69.77	69.81	68.38	0.02	69.02	0.01	69.52	0.00	69.78	0.01	69.82	0.00
	IRWE04_4219		68.28	68.95	69.46	69.72	69.76	68.30	0.02	68.95	0.01	69.46	0.00	69.72	0.01	69.76	0.00
	IRWE04_4182i		68.24	68.91	69.42	69.67	69.71	68.26	0.02	68.92	0.01	69.42	0.00	69.68	0.00	69.71	0.00
	IRWE04_4145		68.19	68.87	69.38	69.64	69.68	68.21	0.02	68.88	0.01	69.38	0.01	69.65	0.00	69.68	0.00
	IRWE04_4099i		68.11	68.78	69.24	69.50	69.54	68.12	0.02	68.79	0.01	69.25	0.00	69.50	0.01	69.55	0.01
	IRWE04_4054		68.02	68.70	69.17	69.45	69.49	68.04	0.02	68.71	0.01	69.17	0.00	69.45	0.01	69.50	0.01
	IRWE04_4011		68.00	68.68	69.14	69.46	69.51	68.02	0.02	68.68	0.01	69.14	0.00	69.47	0.01	69.51	0.01
	IRWE04_3946i		67.91	68.60	69.05	69.41	69.47	67.93	0.02	68.60	0.01	69.05	0.00	69.42	0.01	69.48	0.01
	IRWE04_3882		67.83	68.51	68.94	69.33	69.39	67.85	0.02	68.52	0.01	68.95	0.00	69.34	0.01	69.40	0.01
	IRWE04_3833i		67.72	68.40	68.81	69.19	69.25	67.74	0.02	68.41	0.01	68.81	0.00	69.20	0.01	69.26	0.01
	IRWE04_3784		67.52	68.20	68.56	68.93	68.98	67.54	0.02	68.21	0.01	68.57	0.00	68.94	0.01	68.99	0.01
	IRWE04_3760i		67.46	68.16	68.53	68.89	68.93	67.48	0.03	68.17	0.01	68.54	0.00	68.90	0.01	68.94	0.01
	IRWE04_3736		67.40	68.14	68.52	68.88	68.93	67.43	0.03	68.15	0.01	68.52	0.00	68.89	0.01	68.94	0.01
	IRWE04_3713		67.37	68.14	68.54	68.90	68.94	67.40	0.03	68.15	0.01	68.54	0.00	68.91	0.01	68.95	0.01
	IRWE04_3695		67.35	68.14	68.54	68.88	68.92	67.38	0.03	68.15	0.01	68.55	0.00	68.89	0.01	68.93	0.01
	IRWE04_3679		67.29	68.06	68.44	68.77	68.80	67.32	0.03	68.07	0.01	68.44	0.00	68.78	0.01	68.81	0.00
	IRWE04_3616u		67.44	68.22	68.67	69.04	69.09	67.47	0.03	68.23	0.01	68.67	0.00	69.05	0.01	69.10	0.01
	IR04_SP3616u		67.44	68.22	68.67	69.04	69.09	67.47	0.03	68.23	0.01	68.67	0.00	69.05	0.01	69.10	0.01
	IR04_SP3601d	Hardy's Gate Bridge	67.35	67.79	68.12	68.42	68.45	67.36	0.01	67.80	0.00	68.12	0.00	68.43	0.01	68.45	0.01
	IR04_BR3616u		67.44	68.22	68.67	69.04	69.09	67.47	0.03	68.23	0.01	68.67	0.00	69.05	0.01	69.10	0.01
	IR04_BR3601d		67.35	67.79	68.12	68.42	68.45	67.36	0.01	67.80	0.00	68.12	0.00	68.43	0.01	68.45	0.01
	IRWE04_3601d		67.35	67.79	68.12	68.42	68.45	67.36	0.01	67.80	0.00	68.12	0.00	68.43	0.01	68.45	0.01
	IRWE04_3592		67.23	67.66	67.98	68.28	68.31	67.23	0.01	67.67	0.01	67.98	0.00	68.29	0.01	68.31	0.01
	IRWE04_3581		67.15	67.59	67.91	68.21	68.23	67.16	0.01	67.59	0.01	67.91	0.00	68.22	0.01	68.24	0.00
	IR04_L3574u		67.15	67.59	67.91	68.21	68.23	67.16	0.01	67.59	0.01	67.91	0.00	68.22	0.01	68.24	0.00
	IR04_L3567d		67.00	67.42	67.73	68.04	68.05	67.00	0.01	67.42	0.00	67.73	0.00	68.05	0.01	68.06	0.01
	IRWE04_3574u		67.15	67.59	67.91	68.21	68.23	67.16	0.01	67.59	0.01	67.91	0.00	68.22	0.01	68.24	0.00
	IRWE04_3567d		67.00	67.42	67.73	68.04	68.05	67.00	0.01	67.42	0.00	67.73	0.00	68.05	0.01	68.06	0.01
	IR04_R3574u		67.15	67.59	67.91	68.21	68.23	67.16	0.01	67.59	0.01	67.91	0.00	68.22	0.01	68.24	0.00
	IR04_R3567d		67.00	67.42	67.73	68.04	68.05	67.00	0.01	67.42	0.00	67.73	0.00	68.05	0.01	68.06	0.01
	IRWE04_3567		67.00	67.42	67.73	68.04	68.05	67.00	0.01	67.42	0.00	67.73	0.00	68.05	0.01	68.06	0.01
	IRWE04_3512		66.99	67.43	67.75	68.06	68.07	66.99	0.01	67.43	0.00	67.75	0.00	68.07	0.01	68.08	0.01
	IRWE04_3438		66.95	67.39	67.72	68.03	68.04	66.95	0.01	67.40	0.01	67.72	0.00	68.04	0.01	68.05	0.01
	IRWE04_3376		66.84	67.29	67.62	67.94	67.94	66.85	0.01	67.29	0.01	67.62	0.00	67.94	0.01	67.95	0.01
	IRWE04_3295		66.74	67.21	67.54	67.88	67.88	66.75	0.01	67.21	0.01	67.55	0.00	67.88	0.01	67.89	0.01
	IRWE04_3204		66.63	67.11	67.45	67.80	67.79	66.64	0.01	67.11	0.00	67.45	0.00	67.80	0.01	67.80	0.01
	IRWE04_3079		66.51	67.00	67.36	67.72	67.71	66.52	0.01	67.01	0.00	67.36	0.00	67.72	0.01	67.72	0.01
	IRWE04_3023		66.41	66.92	67.28	67.66	67.65	66.42	0.01	66.93	0.00	67.28	0.00	67.67	0.01	67.66	0.01
	IRWE04_2854		66.23	66.81	67.26	67.72	67.71	66.24	0.01	66.81	0.01	67.26	0.00	67.73	0.01	67.72	0.01
	IRWE04_2777i		66.09	66.74	67.20	67.69	67.68	66.10	0.01	66.74	0.01	67.20	0.00	67.70	0.01	67.69	0.01
	IRWE04_2688u		65.96	66.73	67.27	67.76	67.75	65.97	0.02	66.74	0.01	67.27	0.00	67.77	0.01	67.76	0.01
	IRWE04_2688d		65.83	66.66	67.23	67.74	67.73	65.85	0.01	66.67	0.01	67.23	0.00	67.75	0.01	67.75	0.01
	IRWE04_2570u		65.68	66.54	67.20	67.74	67.72	65.70	0.01	66.55	0.01	67.20	0.00	67.74	0.01	67.74	0.01
	IR04_2570u		65.68	66.54	67.20	67.74	67.72	65.70	0.01	66.55	0.01	67.20	0.00	67.74	0.01	67.74	0.01
	IR04_2570d		65.53	66.38	67.14	67.72	67.70	65.54	0.01	66.39	0.01	67.14	0.00	67.73	0.01	67.72	0.01
	IR04_Sp2570u		65.68	66.54	67.20	67.74	67.72	65.70	0.01	66.55	0.01	67.20	0.00	67.74	0.01	67.74	0.01
	IR04_Sp2570d		65.53	66.38	67.14	67.72	67.70	65.54	0.01	66.39	0.01	67.14	0.00	67.73	0.01	67.72	0.01
	IRWE04_2570d		65.53	66.38	67.14	67.72	67.70	65.54	0.01	66.39	0.01	67.14	0.00	67.73	0.01	67.72	0.01
	IRWE04_2510u		65.38	66.27	67.09	67.70	67.68	65.39	0.01	66.28	0.01	67.09	0.00	67.71	0.01	67.69	0.01
	IR04_2510u		65.38	66.27	67.09	67.70	67.68	65.39	0.01	66.28	0.01	67.09	0.00	67.71	0.01	67.69	0.01
	IR04_2510d		65.38	66.21	66.97	67.62	67.59	65.39	0.01	66.21	0.01	66.97	0.00	67.63	0.01	67.60	0.01
	IR04_Sp2510u		65.38	66.27	67.09	67.70	67.68	65.39	0.01	66.28	0.01	67.09	0.00	67.71	0.01	67.69	0.01
	IR04_Sp2510d		65.38	66.21	66.97	67.62	67.59	65.39	0.01	66.21	0.01	66.97	0.00	67.63	0.01	67.60	0.01
	IRWE04_2510d		65.38	66.21	66.97	67.62	67.59	65.39	0.01	66.21	0.01	66.97	0.00	67.63	0.01	67.60	0.01
	IRWE04_2449		65.25	65.97	66.74	67.51	67.46	65.26	0.01	65.97	0.00	66.73	0.00	67.52	0.01	67.47	0.01
	IRWE04_2320		65.15	65.84	66.61	67.40	67.34	65.15	0.01	65.84	0.00	66.61	0.00	67.41	0.01	67.35	0.01
	IRWE04_2276		65.01	65.69	66.55	67.38	67.31	65.01	0.00	65.69	0.00	66.55	0.00	67.39	0.01	67.32	0.01
	IRWE04_2192u		64.93	65.57	66.38	67.23	67.13	64.93	0.00	65.56	0.00	66.38	0.00	67.24	0.01	67.14	0.01
	IRWE04_2053		64.89	65.56	66.38	67.22	67.12	64.89	0.00	65.55	0.00	66.37	-0.01	67.23	0.01	67.13	0.01
	IRWE04_1974		64.86	65.56	66.38	67.22	67.13	64.86	0.00	65.55	0.00	66.38	0.00	67.23	0.01	67.14	0.01
	IRWE04_1871		64.59	65.31	66.25	67.17	67.06	64.59	0.00	65.31	0.00	66.24	-0.01	67.18	0.01	67.07	0.01
	IRWE04_1792u		64.51	65.27	66.23	67.16	67.04	64.51	0.00	65.26	-0.01	66.22	-0.01	67.17	0.01	67.05	0.01
	IRWE04_1698u		64.54	65.28	66.23	67.15	67.03	64.53	0.00	65.27	0.00	66.22	-0.01	67.16	0.01	67.04	0.01
	IRWE04_1698d		64.54	65.28	66.23	67.15	67.03	64.53	0.00	65.27	0.00	66.22	-0.01	67.16	0.01	67.04	0.01
	IRWE04_1629		64.50	65.26	66.21	67.14	67.02	64.50	0.00	65.25	-0.01	66.21	-0.01	67.15	0.01	67.03	0.01
	IRWE04_1457		64.51	65.28	66.23	67.14	67.03	64.51	0.00	65.27	0.00	66.22	-0.01	67.16	0.01	67.04	0.01
	IRWE04_1382		64.45	65.24	66.20	67.12	67.00	64.44	0.00	65.24	-0.01	66.20	-0.01	67.13	0.01	67.01	0.01
	IRWE04_1334i		64.39	65.22	66.19	67.11	66.99	64.39	0.00	65.21	-0.01	66.18	-0.01	67.12	0.01	67.01	0.01
	IRWE04_1256i		64.29	65.15	66.16	67.09	66.97	64.28	0.00	65.14	-0.01	66.15	-0.01	67.10	0.01	66.98	0.01
	IRWE04_1155u		64.13	64.96	65.97	66.92	66.79	64.13	-0.01	64.96	-0.01	65.96	-0.01	66.93	0.01	66.80	0.01
	IRWE04_1120i		64.06	64.90	65.90	66.86	66.73	64.06	-0.01	64.89	-0.01	65.89	-0.01	66.88	0.01	66.75	0.01
	IRWE04_1061i		63.99	64.82	65.84	66.80	66.67	63.98	-0.01	64.81	-0.01	65.83	-0.01	66.81	0.01	66.68	0.01
	IRWE04_1003i		63.91	64.75	65.77	66.75	66.62	63.90	-0.01	64.73	-0.01	65.76	-0.01	66.77	0.02	66.63	0.01
	IRWE04_0926		63.81	64.66	65.70	66.70	66.56	63.80	-0.01	64.64	-0.01	65.69	-0.01	66.71	0.02	66.58	0.01
	IRWE04_0746		63.55	64.39	65.45	66.46	66.32	63.53	-0.02	64.38	-0.02	65.43	-0.02	66.48	0.02	66.34	0.01
	IRWE04_0559		63.34	64.19	65.27	66.32	66.17	63.32	-0.02	64.17	-0.02	65.25	-0.02	66.34	0.02	66.19	0.02
	IRWE04_0486		63.21	64.05	65.13	66.17	66.03	63.18	-0.03	64.03	-0.03	65.11	-0.02	66.19	0.02	66.04	0.02
	IRWE04_0436		63.25	64.11	65.20	66.25	66.11	63.22	-0.03	64.09	-0.03	65.18	-0.02	66.27	0.02	66.12	0.02
	IRWE04_0432		63.12	63.97	65.04	66.10	65.95	63.09	-0.03	63.94	-0.03	65.02	-0.02	66.12	0.02	65.97	0.02
	IRWE04_0361i		63.04	63.88	64.98	66.05	65.90	63.01	-0.03	63.85	-0.03	64.95	-0.03	66.07	0.02	65.91	0.02
	IRWE04_0312		62.87	63.69	64.82	65.92	65.77	62.83	-0.04	63.65	-0.04	64.79	-0.03	65.95	0.02	65.78	0.02
	IRWE04_0232		62.70	63.56	64.73	65.86	65.70	62.66	-0.05	63.52	-0.05	64.69	-0.04	65.88	0.03	65.72	0.02
	IRWE04_0146		62.44	63.39	64.63	65.84	65.67	62.51	0.08	63.45	0.06	64.66	0.03	65.86	0.02	65.69	0.02
	IRWE04_0100i		62.41	63.36	64.60	65.83	65.66	62.46	0.05	63.42	0.06	64.64	0.04	65.85	0.02	65.68	0.02
	IRWE04_0050i		62.37	63.33	64.58	65.81	65.65	62.38	0.01	63.35	0.01	64.60	0.01	65.83	0.01	65.66	0.01
	IRWE04_0000u		62.35	63.32	64.59	65.82	65.65	62.35	0.00	63.33	0.01	64.59	0.01	65.83	0.01	65.66	0.01
	IRWE03_6041d		62.35	63.32	64.59	65.82	65.65	62.35	0.00	63.33	0.01	64.59	0.01	65.83	0.01	65.66	0.01
	IRWE03_5905i		62.19	63.14	64.40	65.68	65.51	62.19	0.00	63.14	0.00	64.41	0.01	65.71	0.02	65.52	0.02
	IRWE03_5797		62.04	63.00	64.28	65.54	65.36	62.04	0.00	63.00	0.00	64.28	0.00	65.56	0.02	65.38	0.02
	IR03_BR5797		62.04	63.00	64.28	65.54	65.36	62.04	0.00	63.00	0.00	64.28	0.00	65.56	0.02	65.38	0.02
	IR03_BR5787		61.93	62.86	64.15	65.43	65.25	61.93	0.00	62.86	0.00	64.14	0.00	65.45	0.02	65.27	0.02
	IRWE03_5787		61.93	62.86	64.15	65.43	65.25	61.93	0.00	62.86	0.00	64.14	0.00	65.45	0.02	65.27	0.02
	IRWE03_5646		61.71	62.67	63.98	65.30	65.11	61.72	0.00	62.67	0.00	63.98	0.00	65.32	0.02	65.13	0.02
	IRWE03_5529		61.49	62.45	63.79	65.14	64.95	61.49	0.00	62.45	0.00	63.79	0.00	65.16	0.02	64.97	0.02
	IRWE03_5399u		61.33	62.26	63.56	65.06	64.82	61.33	0.00	62.26	0.00	63.56	0.00	65.09	0.03	64.84	0.02
	IR03_SP5399u		61.33	62.26	63.56	65.06	64.82	61.33	0.00	62.26	0.00	63.56	0.00	65.09	0.03	64.84	0.02
	IR03_SP5393d		61.10	61.80	62.57	63.55	63.36	61.10	0.00	61.80	0.00	62.56	0.00	63.57	0.02	63.37	0.02
	IR03_BR5399u		61.33	62.26	63.56	65.06	64.82	61.33	0.00	62.26	0.00	63.56	0.00	65.09	0.03	64.84	0.02
	IR03_BR5393d		61.10	61.80	62.57	63.55	63.36	61.10	0.00	61.80	0.00	62.56	0.00	63.57	0.02	63.37	0.02
	IRWE03_5393d		61.10	61.80	62.57	63.55	63.36	61.10	0.00	61.80	0.00	62.56	0.00	63.57	0.02	63.37	0.02
	IRWE03_5337i		61.04	61.76	62.57	63.41	63.28	61.04	0.00	61.76	0.00	62.57	0.00	63.42	0.01	63.29	0.01
	IRWE03_5281u		60.95	61.70	62.54	63.40	63.27	60.96	0.00	61.70	0.00	62.54	0.00	63.41	0.01	63.28	0.01
	IRWE03_5281d		60.78	61.50	62.31	63.15	63.02	60.78	0.00	61.50	0.00	62.30	0.00	63.16	0.01	63.03	0.01
	IRWE03_5244u		60.74	61.45	62.24	63.06	62.94	60.74	0.00	61.45	0.00	62.24	0.00	63.07	0.01	62.95	0.01
	IR03_SP5244u		60.74	61.45	62.24	63.06	62.94	60.74	0.00	61.45	0.00	62.24	0.00	63.07	0.01	62.95	0.01
	IR03_SP5227d		60.74	61.44	62.23	62.92	62.83	60.74	0.00	61.44	0.00	62.23	0.00	62.93	0.01	62.84	0.01
	IR03_BR5244u		60.74	61.45	62.24	63.06	62.94	60.74	0.00	61.45	0.00	62.24	0.00	63.07	0.01	62.95	0.01
	IR03_BR5227d		60.74	61.44	62.23	62.92	62.83	60.74	0.00	61.44	0.00	62.23	0.00	62.93	0.01	62.84	0.01
	IRWE03_5227d		60.74	61.44	62.23	62.92	62.83	60.74	0.00	61.44	0.00	62.23	0.00	62.93	0.01	62.84	0.01
	IRWE03_5195		60.45	61.10	61.82	62.46	62.37	60.45	0.00	61.10	0.00	61.82	0.00	62.47	0.01	62.38	0.01
	IRWE03_5067u		60.20	60.81	61.47	62.03	61.94	60.20	0.00	60.81	0.00	61.46	0.00	62.03	0.01	61.95	0.01
	IR03_SP5067u		60.20	60.81	61.47	62.03	61.94	60.20	0.00	60.81	0.00	61.46	0.00	62.03	0.01	61.95	0.01
	IR03_SP5064d		60.20	60.81	61.47	62.03	61.94	60.20	0.00	60.81	0.00	61.46	0.00	62.03	0.01	61.95	0.01
	IR03_BR5067u		60.20	60.81	61.47	62.03	61.94	60.20	0.00	60.81	0.00	61.46	0.00	62.03	0.01	61.95	0.01
	IR03_BR5064d		60.20	60.81	61.47	62.03	61.94	60.20	0.00	60.81	0.00	61.46	0.00	62.03	0.01	61.95	0.01
	IRWE03_5064d		60.20	60.81	61.47	62.03	61.94	60.20	0.00	60.81	0.00	61.46	0.00	62.03	0.01	61.95	0.01
	IRWE03_4716u		60.31	60.97	61.71	62.35	62.26	60.31	0.00	60.97	0.00	61.71	0.00	62.35	0.01	62.26	0.01
	IR03_BR4716u		60.31	60.97	61.71	62.35	62.26	60.31	0.00	60.97	0.00	61.71	0.00	62.35	0.01	62.26	0.01
	IR03_BR4706d		60.29	60.95	61.68	62.32	62.23	60.29	0.00	60.95	0.00	61.68	0.00	62.32	0.01	62.23	0.01
	IRWE03_4706d		60.29	60.95	61.68	62.32	62.23	60.29	0.00	60.95	0.00	61.68	0.00	62.32	0.01	62.23	0.01
	IRWE03_4254u		59.55	60.13	60.82	61.46	61.36	59.56	0.00	60.13	0.00	60.82	0.00	61.47	0.01	61.36	0.01

Hydraulic Model Results - East Lancashire Paper Mill, Radcliffe

1D FMP Model Results - Maximum Water Levels (mAOD)

Normal Flow Condition Simulations

Date: 05-04-2021
Model Type: FMP-TUFLOW
FMP Build: 4.3
TUFLOW Build: 2018-03-AA

Normal Flow Condition Simulations - NFC

Model Ref	Event	DTM
Q20 EXG	5% AEP (1 in 20)	Existing Site Layout (EXG)
Q100 EXG	1% AEP (1 in 100)	
Q100CC1 EXG	1% AEP + 35% Climate Change (CC1)	
Q100CC2 EXG	1% AEP + 70% Climate Change (CC2)	
Q1000 EXG	0.1% AEP (1 in 1000)	

Normal Flow Condition Simulations - NFC

Model Ref	Event	DTM
Q20 DEV	5% AEP (1 in 20)	Proposed Development Layout (DEV)
Q100 DEV	1% AEP (1 in 100)	
Q100CC1 DEV	1% AEP + 35% Climate Change (CC1)	
Q100CC2 DEV	1% AEP + 70% Climate Change (CC2)	
Q1000 DEV	0.1% AEP (1 in 1000)	

Notes:

1D/2D model build 021
EXG = Existing site layout
DEV = Proposed site layout
Nodes adjacent to site are highlighted in yellow

	Node Label	Notable Features	NORMAL FLOW CONDITIONS (NFC) - EXG SCENARIO					NORMAL FLOW CONDITIONS (NFC) - DEV SCENARIO									
			Q20	Q100	Q100CC1	Q100CC2	Q1000	Q20		Q100		Q100CC1		Q100CC2		Q1000	
			Q20-EXG-NFC (5% AEP) (mAOD)	Q100-EXG-NFC (1% AEP) (mAOD)	Q100CC1-EXG-NFC (1% AEP + 35% CC) (mAOD)	Q100CC2-EXG-NFC (1% AEP +70% CC) (mAOD)	Q1000-EXG-NFC (0.1% AEP) (mAOD)	Q20-DEV-NFC (5% AEP) (mAOD)	WL Diff (DEV vs EXG)	Q100-DEV-NFC (1% AEP) (mAOD)	WL Diff (DEV vs EXG)	Q100CC1-DEV-NFC (1% AEP +35% CC) (mAOD)	WL Diff (DEV vs EXG)	Q100CC2-DEV-NFC (1% AEP +70% CC) (mAOD)	WL Diff (DEV vs EXG)	Q1000-DEV-NFC (0.1% AEP) (mAOD)	WL Diff (DEV vs EXG)
Hutchinson's Gok	RIDS_1P25342		59.55	60.13	60.82	61.46	61.36	59.56	0.00	60.13	0.00	60.82	0.00	61.47	0.01	61.36	0.01
	RIDS_1P25334		59.53	60.08	60.72	61.28	61.21	59.53	0.00	60.08	0.00	60.72	0.00	61.28	0.00	61.22	0.01
	RIDS_BR4234u		59.55	60.13	60.82	61.46	61.36	59.56	0.00	60.13	0.00	60.82	0.00	61.47	0.01	61.36	0.01
	RIDS_BR4234d		59.53	60.08	60.72	61.28	61.21	59.53	0.00	60.08	0.00	60.72	0.00	61.28	0.00	61.22	0.01
	RIVER03_03734		59.53	60.08	60.72	61.28	61.21	59.53	0.00	60.08	0.00	60.72	0.00	61.28	0.00	61.22	0.01
	RIVER03_0737		59.00	59.47	60.09	60.70	60.63	59.00	0.00	59.47	0.00	60.08	0.00	60.71	0.01	60.63	0.01
	RIVER03_0735		59.03	59.51	60.15	60.79	60.71	59.03	0.00	59.51	0.00	60.15	0.00	60.79	0.01	60.71	0.01
	HUT035_1897		70.60	70.72	70.76	70.91	70.84	70.18	-0.47	70.18	-0.55	70.16	-0.58	70.20	-0.72	70.20	-0.74
	HUT035_1849		70.58	70.65	70.69	70.83	70.86	70.15	-0.43	70.15	-0.50	70.16	-0.53	70.17	-0.65	70.18	-0.68
	HUT035_1809		70.54	70.60	70.63	70.76	70.80	70.14	-0.40	70.14	-0.46	70.14	-0.49	70.16	-0.61	70.16	-0.63
	HUT035_1768		70.51	70.57	70.60	70.73	70.76	70.13	-0.38	70.13	-0.44	70.13	-0.47	70.15	-0.59	70.15	-0.61
	HUT033_1737		70.49	70.55	70.57	70.71	70.74	70.12	-0.36	70.12	-0.42	70.12	-0.45	70.14	-0.57	70.15	-0.59
	HUT033_1696		70.46	70.52	70.54	70.68	70.71	70.11	-0.35	70.11	-0.41	70.12	-0.43	70.13	-0.55	70.14	-0.57
	HUT033_1589		70.45	70.50	70.53	70.67	70.70	70.11	-0.34	70.11	-0.40	70.11	-0.42	70.13	-0.54	70.13	-0.57
	HUT033_1533		70.44	70.49	70.52	70.66	70.69	70.10	-0.34	70.10	-0.39	70.11	-0.42	70.12	-0.54	70.13	-0.56
	HUT033_1484		70.43	70.48	70.51	70.65	70.68	70.10	-0.33	70.10	-0.38	70.10	-0.41	70.12	-0.53	70.12	-0.56
	HUT033_1435		70.39	70.44	70.47	70.60	70.63	70.09	-0.30	70.09	-0.35	70.10	-0.37	70.11	-0.49	70.12	-0.52
	HUT033_1402		70.37	70.42	70.45	70.59	70.62	70.05	-0.31	70.06	-0.37	70.06	-0.39	70.07	-0.52	70.08	-0.54
	HUT033_1289		70.07	70.17	70.21	70.40	70.44	69.70	-0.37	69.71	-0.47	69.71	-0.50	69.72	-0.68	69.73	-0.71
	HUT033_1227		70.02	70.11	70.14	70.33	70.36	69.67	-0.35	69.67	-0.44	69.67	-0.47	69.69	-0.64	69.69	-0.67
	HUT035_0765		69.94	70.02	70.05	70.21	70.23	69.63	-0.31	69.63	-0.39	69.63	-0.42	69.64	-0.56	69.64	-0.59
	HUT033_0689		69.87	69.94	69.96	70.10	70.12	69.58	-0.29	69.58	-0.36	69.58	-0.39	69.59	-0.51	69.59	-0.53
	HUT033_0743		69.70	69.74	69.76	69.92	69.93	69.46	-0.23	69.46	-0.28	69.46	-0.29	69.47	-0.35	69.47	-0.35
	HUT035_0647		69.59	69.64	69.65	69.88	69.68	69.40	-0.20	69.40	-0.24	69.40	-0.25	69.40	-0.28	69.40	-0.28
	HUT035_0566		69.46	69.52	69.54	69.39	69.59	69.09	-0.37	69.09	-0.43	69.09	-0.44	69.10	-0.48	69.10	-0.49
	HUT035_0566d		69.46	69.52	69.54	69.39	69.59	69.09	-0.37	69.09	-0.43	69.09	-0.44	69.10	-0.48	69.10	-0.49
	HUT035_0566u		69.46	69.52	69.54	69.39	69.59	69.09	-0.37	69.09	-0.43	69.09	-0.44	69.10	-0.48	69.10	-0.49
	HUT033_0544u		69.44	69.49	69.51	69.55	69.56	69.01	-0.43	69.01	-0.49	69.01	-0.50	69.01	-0.54	69.01	-0.55
	HUT033_0543d		69.25	69.28	69.29	69.31	69.32	68.76	-0.49	68.76	-0.52	68.76	-0.53	68.77	-0.54	68.77	-0.55
	HUT033_0543u		69.25	69.28	69.29	69.31	69.32	68.76	-0.49	68.76	-0.52	68.76	-0.53	68.77	-0.54	68.77	-0.55
	HUT035_0542F		69.18	69.21	69.22	69.24	69.24	68.76	-0.43	68.76	-0.45	68.76	-0.46	68.76	-0.48	68.76	-0.48
	HUT035_U02SF	A6053/Road Culvert	-	-	-	-	-	68.65	-	68.65	-	68.65	-	68.65	-	68.65	-
	Dummy2		-	-	-	-	-	68.65	-	68.65	-	68.65	-	68.65	-	68.65	-
	HUT035_0542E		69.25	69.28	69.29	69.31	69.32	68.76	-0.49	68.76	-0.52	68.76	-0.53	68.77	-0.54	68.77	-0.55
	HUT035_0542B		69.18	69.21	69.22	69.24	69.24	68.76	-0.42	68.76	-0.45	68.76	-0.46	68.76	-0.48	68.76	-0.48
	HUT035_U02SE		-	-	-	-	-	68.65	-	68.65	-	68.65	-	68.65	-	68.65	-
	Dummy1		-	-	-	-	-	68.65	-	68.65	-	68.65	-	68.65	-	68.65	-
	HUT035_0542E		69.15	69.18	69.18	69.20	69.20	-	-	-	-	-	-	-	-	-	-
	HUT035_0542Bj		69.15	69.18	69.18	69.20	69.20	-	-	-	-	-	-	-	-	-	-
	HUT035_0542E		69.15	69.18	69.18	69.20	69.20	-	-	-	-	-	-	-	-	-	-
	HUT033_0543D		69.05	69.07	69.08	69.09	69.09	-	-	-	-	-	-	-	-	-	-
	HUT033_0543F		69.01	69.02	69.04	69.05	69.05	-	-	-	-	-	-	-	-	-	-
	HUT033_0505b		68.83	68.88	68.92	68.97	68.97	-	-	-	-	-	-	-	-	-	-
	HUT035_0505u	Cricket Ground Culvert	62.54	63.48	64.71	65.91	65.74	-	-	-	-	-	-	-	-	-	-
	HUT035_0505		68.83	68.96	68.99	69.02	69.01	-	-	-	-	-	-	-	-	-	-
	HUT033_0505		62.35	63.33	64.59	65.82	65.65	-	-	-	-	-	-	-	-	-	-
	HUT033_0505		62.35	63.33	64.59	65.82	65.65	-	-	-	-	-	-	-	-	-	-
River Roch	ROCH03_0779		65.50	66.22	67.11	67.83	67.69	65.50	0.00	66.21	0.00	67.11	0.00	67.83	0.01	67.70	0.01
	ROCH03_0743		65.43	66.13	67.00	67.80	67.59	65.43	0.00	66.13	0.00	67.00	0.00	67.81	0.01	67.60	0.01
	ROCH03_0740		65.39	66.10	66.97	67.78	67.57	65.39	0.00	66.09	0.00	66.97	0.00	67.79	0.01	67.58	0.01
	ROCH03_0738		65.38	66.09	66.96	67.73	67.54	65.38	0.00	66.09	0.00	66.96	0.00	67.74	0.01	67.55	0.01
	ROCH03_0708		65.40	66.12	67.04	67.85	67.63	65.40	0.00	66.12	0.00	67.03	0.00	67.86	0.01	67.64	0.01
	ROCH03_0688u		65.39	66.11	67.03	67.90	67.66	65.39	0.00	66.10	0.00	67.02	-0.01	67.91	0.01	67.67	0.01
	ROCH_0685Wd		65.39	66.11	67.03	67.90	67.66	65.39	0.00	66.10	0.00	67.02	-0.01	67.91	0.01	67.67	0.01
	ROCH_0685Wd		65.09	65.81	66.75	67.47	67.45	65.09	0.00	65.81	0.00	66.74	-0.01	67.48	0.01	67.46	0.01
	ROCH_0685Wu		65.39	66.11	67.03	67.90	67.66	65.39	0.00	66.10	0.00	67.02	-0.01	67.91	0.01	67.67	0.01
	ROCH03_0685d		65.09	65.81	66.75	67.47	67.45	65.09	0.00	65.81	0.00	66.74	-0.01	67.48	0.01	67.46	0.01
	ROCH03_0685u		65.09	65.81	66.75	67.47	67.45	65.09	0.00	65.81	0.00	66.74	-0.01	67.48	0.01	67.46	0.01
	ROCH03_0667		65.04	65.77	66.71	67.60	67.40	65.04	0.00	65.76	0.00	66.70	0.00	67.61	0.01	67.41	0.01
	RIVER_BR0667		65.04	65.77	66.71	67.60	67.40	65.04	0.00	65.76	0.00	66.70	0.00	67.61	0.01	67.41	0.01
	RIVER_BR0632	Blackford Old Bridge	64.88	65.59	66.50	67.38	67.22	64.88	0.00	65.59	0.00	66.49	-0.01	67.39	0.01	67.23	0.01
	RIVER_0632u		65.04	65.77	66.71	67.60	67.40	65.04	0.00	65.76	0.00	66.70	0.00	67.61	0.01	67.41	0.01
	RIVER_0631U		64.88	65.59	66.50	67.38	67.22	64.88	0.00	65.59	0.00	66.49	-0.01	67.39	0.01	67.23	0.01
	ROCH03_0602		64.88	65.59	66.50	67.38	67.22	64.88	0.00	65.59	0.00	66.49	-0.01	67.39	0.01	67.23	0.01
	ROCH03_0526		64.87	65.62	66.55	67.45	67.27	64.87	0.00	65.61	0.00	66.54	-0.01	67.46	0.01	67.28	0.01
	ROCH03_0500		64.70	65.52	66.49	67.40	67.23	64.70	0.00	65.52	0.00	66.48	-0.01	67.41	0.01	67.24	0.01
	ROCH03_0388		64.77	65.54	66.52	67.44	67.26	64.76	0.00	65.54	0.00	66.52	-0.01	67.45	0.01	67.27	0.01
	ROCH03_0360		64.63	65.36	66.28	67.16	67.04	64.63	0.00	65.36	-0.01	66.27	-0.01	67.17	0.01	67.05	0.01
	ROCH03_0325		64.68	65.43	66.37	67.27	67.13	64.68	0.00	65.43	-0.01	66.36	-0.01	67.28	0.01	67.14	0.01
	ROCH03_0242		64.58	65.31	66.22	67.11	67.00	64.58	0.00	65.31	-0.01	66.22	-0.01	67.12	0.01	67.01	0.01
	ROCH03_0134		64.61	65.35	66.28	67.18	67.06	64.60	0.00	65.34	0.00	66.27	-0.01	67.19	0.01	67.07	0.01
	ROCH03_0075		64.59	65.34	66.27	67.17	67.05	64.59	0.00	65.33	0.00	66.26	-0.01	67.18	0.01	67.06	0.01
	ROCH03_0065		64.54	65.28	66.23	67.15	67.03	64.53	0.00	65.27	0.00	66.22	-0.01	67.16	0.01	67.04	0.01

Hydraulic Model Results - East Lancashire Paper Mill, Radcliffe

1D FMP Model Results - Maximum Water Levels (mAOD)

Sensitivity Test and Blockage Simulations

Date: 05-04-2021
Model Type: FMP-TUFLOW
FMP Build: 4.3
TUFLOW Build: 2018-03-AA

Sensitivity Tests

Model Ref	Details	Event	DTM
Q100CC1 ST1	+20% Manning's n	Q100CC1	EXG
Q100CC1 ST2	-20% Manning's n		
Q100CC1 ST3	+200mm of Stage values in downstream boundary HQ curve		
Q100CC1 ST4	-200mm of Stage values in downstream boundary HQ curve		

Blockage Scenarios - EXG

Model Ref	Details	Event
Q100CC1 EXG BL1-80	80% Blockage of A6053 Road Culvert	Q100CC1

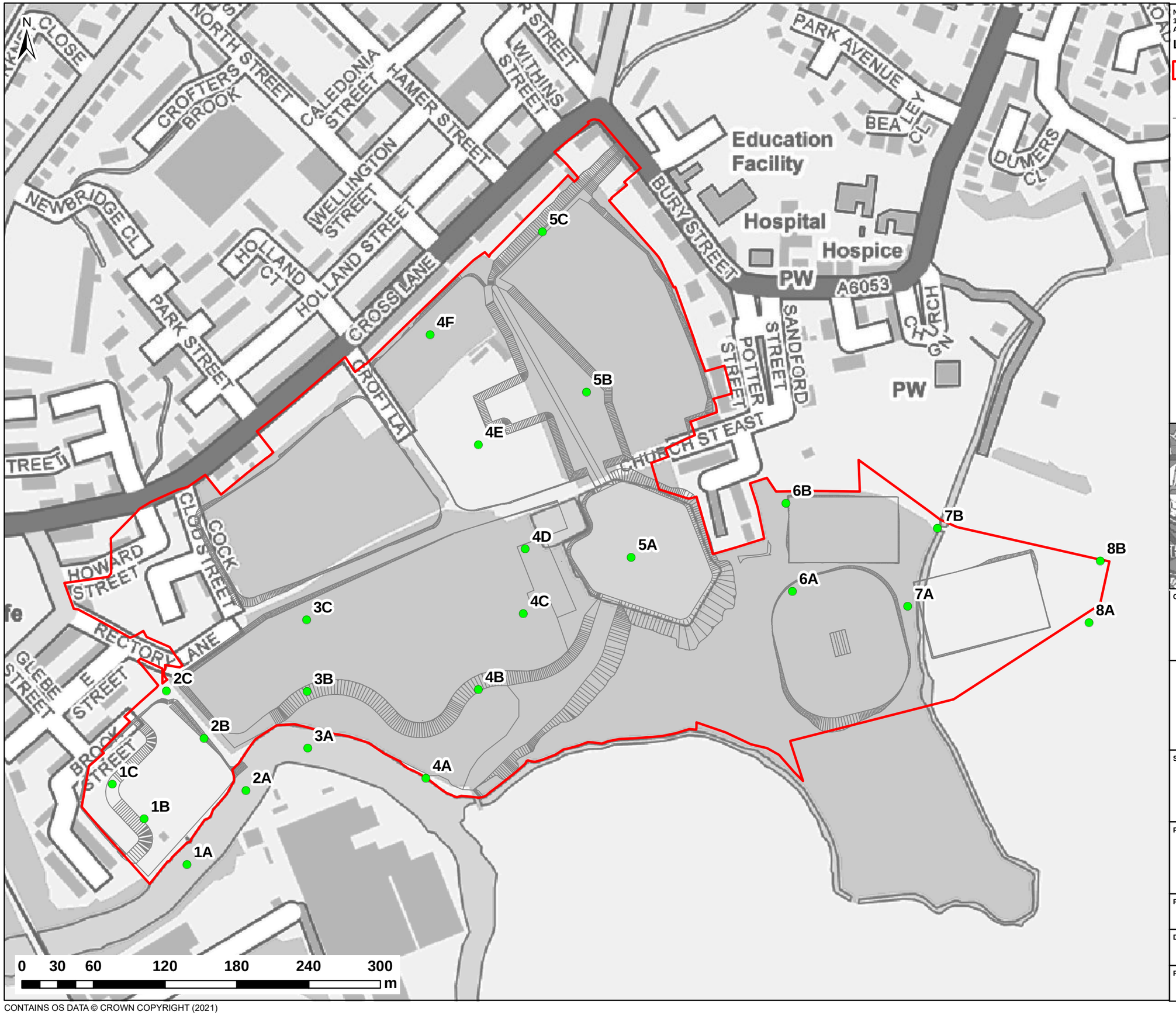
Blockage Scenarios - DEV

Model Ref	Details	Event
Q100CC1 DEV BL1-80	80% Blockage of A6053 Road Culvert	Q100CC1

Notes:
1D/2D model build 021
EXG = Existing site layout
DEV = Proposed site layout
ST = Sensitivity tests
BL = Blockage scenario
Nodes adjacent to site are highlighted in yellow

River	Node Label	Notable Features	NFC	SENSITIVITY TESTS: ST1		ST2		ST3		ST4		NFC-EXG	BLOCKAGE SCENARIO - EXG: BL1-80		NFC-DEV	BLOCKAGE SCENARIO - DEV: BL1-80		
			Q100CC1-EXG-NFC (1% AEP+ 35%CC) (mAOD)	Q100CC1-EXG-ST1 (1% AEP + 35% CC) (mAOD)	WL Diff vs NFC	Q100CC1-EXG-ST2 (1% AEP + 35% CC) (mAOD)	WL Diff vs NFC	Q100CC1-EXG-ST3 (1% AEP + 35% CC) (mAOD)	WL Diff vs NFC	Q100CC1-EXG-ST4 (1% AEP + 35% CC) (mAOD)	WL Diff vs NFC	Q100CC1-EXG-NFC (1% AEP+ 35%CC) (mAOD)	Q100CC1-EXG-BL1-80 (1% AEP + 35% CC) (mAOD)	WL Diff vs NFC	Q100CC1-DEV-NFC (1% AEP+ 35%CC) (mAOD)	Q100CC1-DEV-BL1-80 (1% AEP + 35% CC) (mAOD)	WL Diff vs EXG NFC	WL Diff vs DEV NFC
River Irwell	IRWE05_1363		76.41	76.59	0.18	76.40	-0.01	76.41	0.00	76.41	0.00	76.41	76.41	0.00	76.41	76.41	0.00	0.00
	IRWE05_1298		76.28	76.53	0.25	76.25	-0.03	76.28	0.00	76.28	0.00	76.28	76.28	0.00	76.28	76.28	0.00	0.00
	IRWE05_1209u		76.26	76.42	0.16	76.21	-0.05	76.26	0.00	76.26	0.00	76.26	76.26	0.00	76.26	76.26	0.00	0.00
	IRWE05_1209d		76.00	76.20	0.20	75.94	-0.06	76.00	0.00	76.00	0.00	76.00	76.00	0.00	76.00	76.00	0.00	0.00
	IRWE05_1091		75.60	75.80	0.20	75.57	-0.03	75.60	0.00	75.60	0.00	75.60	75.60	0.00	75.60	75.60	0.00	0.00
	IRWE05_1007		75.75	75.92	0.17	75.73	-0.03	75.75	0.00	75.75	0.00	75.75	75.75	0.00	75.75	75.75	0.00	0.00
	IR05_SP1007u		75.75	75.92	0.17	75.73	-0.03	75.75	0.00	75.75	0.00	75.75	75.75	0.00	75.75	75.75	0.00	0.00
	IR05_SP1000d		75.66	75.85	0.19	75.63	-0.03	75.66	0.00	75.66	0.00	75.66	75.66	0.00	75.66	75.66	0.00	0.00
	IRWE05_1007u		75.75	75.92	0.17	75.73	-0.03	75.75	0.00	75.75	0.00	75.75	75.75	0.00	75.75	75.75	0.00	0.00
	IRWE05_1000d		75.66	75.85	0.19	75.63	-0.03	75.66	0.00	75.66	0.00	75.66	75.66	0.00	75.66	75.66	0.00	0.00
	IRWE05_1000		75.66	75.85	0.19	75.63	-0.03	75.66	0.00	75.66	0.00	75.66	75.66	0.00	75.66	75.66	0.00	0.00
	IRWE05_0950		75.56	75.76	0.20	75.53	-0.03	75.56	0.00	75.56	0.00	75.56	75.56	0.00	75.56	75.56	0.00	0.00
	IRWE05_0882		75.35	75.57	0.22	75.33	-0.02	75.35	0.00	75.35	0.00	75.35	75.35	0.00	75.35	75.35	0.00	0.00
	IRWE05_0854		75.18	75.42	0.24	75.18	0.00	75.18	0.00	75.18	0.00	75.18	75.18	0.00	75.18	75.18	0.00	0.00
	IRWE05_0823		75.03	75.28	0.24	75.05	0.01	75.03	0.00	75.03	0.00	75.03	75.03	0.00	75.03	75.03	0.00	0.00
	IRWE05_0764		74.71	74.99	0.28	74.77	0.06	74.71	0.00	74.71	0.00	74.71	74.71	0.00	74.71	74.71	0.00	0.00
	IRWE05_0688		74.66	74.91	0.25	74.71	0.05	74.66	0.00	74.66	0.00	74.66	74.66	0.00	74.66	74.66	0.00	0.00
	IRWE05_0610		74.60	74.76	0.16	74.65	0.05	74.60	0.00	74.60	0.00	74.60	74.60	0.00	74.60	74.60	0.00	0.00
	IRWE05_0457		73.81	74.11	0.30	73.95	0.14	73.81	0.00	73.81	0.00	73.81	73.81	0.00	73.81	73.81	0.00	0.00
	IRWE05_0384		73.86	74.14	0.28	74.27	0.41	73.86	0.00	73.86	0.00	73.86	73.86	0.00	73.86	73.86	0.00	0.00
	IRWE05_0275		73.80	74.07	0.27	74.10	0.30	73.80	0.00	73.80	0.00	73.80	73.80	0.00	73.80	73.80	0.00	0.00
	IRWE05_0243		73.88	74.15	0.27	74.05	0.17	73.88	0.00	73.88	0.00	73.88	73.88	0.00	73.88	73.88	0.00	0.00
	IRWE05_0085		73.31	73.50	0.19	73.41	0.11	73.31	0.00	73.31	0.00	73.31	73.31	0.00	73.31	73.31	0.00	0.00
	IRWE05_0064i		72.76	72.95	0.19	72.81	0.06	72.76	0.00	72.76	0.00	72.76	72.76	0.00	72.76	72.76	0.00	0.00
	IRWE05_0043i		72.77	73.02	0.25	72.81	0.04	72.77	0.00	72.77	0.00	72.77	72.77	0.00	72.77	72.77	0.00	0.00
	IRWE05_0021i		72.84	73.04	0.21	72.85	0.02	72.84	0.00	72.84	0.00	72.84	72.84	0.00	72.84	72.84	0.00	0.00
	IRWE05_0000u		72.87	73.04	0.17	72.89	0.02	72.87	0.00	72.87	0.00	72.87	72.87	0.00	72.87	72.87	0.00	0.00
	IR05_BR0000u	Warth Railway Viaduct	72.87	73.04	0.17	72.89	0.02	72.87	0.00	72.87	0.00	72.87	72.87	0.00	72.87	72.87	0.00	0.00
	IR04_BR5013d		72.58	72.68	0.10	72.57	-0.01	72.58	0.00	72.58	0.00	72.58	72.58	0.00	72.58	72.58	0.00	0.00
	RB_Arch_u		72.87	73.04	0.17	72.89	0.02	72.87	0.00	72.87	0.00	72.87	72.87	0.00	72.87	72.87	0.00	0.00
	RB_Arch_d		72.34	72.50	0.16	72.31	-0.03	72.34	0.00	72.34	0.00	72.34	72.34	0.00	72.34	72.34	0.00	0.00
	IRWE04_5013d		72.58	72.68	0.10	72.57	-0.01	72.58	0.00	72.58	0.00	72.58	72.58	0.00	72.58	72.58	0.00	0.00
	IRWE04_4998		72.88	72.86	-0.01	72.96	0.08	72.88	0.00	72.88	0.00	72.88	72.88	0.00	72.88	72.88	0.00	0.00
	IR04_SP4998L		72.88	72.86	-0.01	72.96	0.08	72.88	0.00	72.88	0.00	72.88	72.88	0.00	72.88	72.88	0.00	0.00
	IR04_SP4996L		72.46	72.56	0.10	72.44	-0.02	72.46	0.00	72.46	0.00	72.46	72.46	0.00	72.46	72.46	0.00	0.00
	IRWE04_4998u		72.88	72.86	-0.01	72.96	0.08	72.88	0.00	72.88	0.00	72.88	72.88	0.00	72.88	72.88	0.00	0.00
	IRWE04_4996d		72.46	72.56	0.10	72.44	-0.02	72.46	0.00	72.46	0.00	72.46	72.46	0.00	72.46	72.46	0.00	0.00
	IR04_SP4998R		72.88	72.86	-0.01	72.96	0.08	72.88	0.00	72.88	0.00	72.88	72.88	0.00	72.88	72.88	0.00	0.00
	IR04_SP4996R		72.46	72.56	0.10	72.44	-0.02	72.46	0.00	72.46	0.00	72.46	72.46	0.00	72.46	72.46	0.00	0.00
	IRWE04_4996		72.46	72.56	0.10	72.44	-0.02	72.46	0.00	72.46	0.00	72.46	72.46	0.00	72.46	72.46	0.00	0.00
	IRWE04_4969u		72.55	72.62	0.08	72.55	0.00	72.55	0.00	72.55	0.00	72.55	72.55	0.00	72.55	72.55	0.00	0.00
	IRWE04_4957d		72.35	72.45	0.10	72.33	-0.01	72.35	0.00	72.35	0.00	72.35	72.35	0.00	72.35	72.35	0.00	0.00
	IRWE04_4919		72.28	72.36	0.07	72.27	-0.01	72.28	0.00	72.28	0.00	72.28	72.28	0.00	72.28	72.28	0.00	0.00
	IRWE04_4874		72.20	72.25	0.05	72.20	0.00	72.20	0.00	72.20	0.00	72.20	72.20	0.00	72.20	72.20	0.00	0.00
	IRWE04_4808		71.93	71.93	0.00	71.94	0.00	71.93	0.00	71.93	0.00	71.93	71.93	0.00	71.93	71.93	0.00	0.00
	IRWE04_4781		72.02	71.97	-0.05	72.03	0.01	72.02	0.00	72.02	0.00	72.02	72.02	0.00	72.02	72.02	0.00	0.00
	IRWE04_4781u		72.02	71.97	-0.05	72.03	0.01	72.02	0.00	72.02	0.00	72.02	72.02	0.00	72.02	72.02	0.00	0.00
	IRWE04_4781d		70.79	70.98	0.19	70.80	0.01	70.79	0.00	70.79	0.00	70.79	70.79	0.00	70.80	70.80	0.01	0.00
	IR04_SP4781R		72.02	71.97	-0.05	72.03	0.01	72.02	0.00	72.02	0.00	72.02	72.02	0.00	72.02	72.02	0.00	0.00
	IR04_SP4784R		70.79	70.98	0.19	70.80	0.01	70.79	0.00	70.79	0.00	70.79	70.79	0.00	70.80	70.80	0.01	0.00
	IRWE04_4767		70.79	70.98	0.19	70.80	0.01	70.79	0.00	70.79	0.00	70.79	70.79	0.00	70.80	70.80	0.01	0.00
	IRWE04_4748		70.68	70.88	0.20	70.69	0.01	70.68	0.00	70.68	0.00	70.68	70.68	0.00	70.69	70.69	0.01	0.00
	IRWE04_4725u		70.64	70.85	0.21	70.65	0.01	70.64	0.00	70.64	0.00	70.64	70.64	0.00	70.65	70.65	0.01	0.00
	IRWE04_4725d		70.54	70.77	0.23	70.55	0.00	70.54	0.00	70.54	0.00	70.54	70.54	0.00	70.56	70.56	0.01	0.00
	IRWE04_4710u		70.52	70.75	0.23	70.52	0.00	70.52	0.00	70.52	0.00	70.52	70.52	0.00	70.53	70.53	0.01	0.00
	IR04_BR4710u	Warth Bridge	70.52	70.75	0.23	70.52	0.00	70.52	0.00	70.52	0.00	70.52	70.52	0.00	70.53	70.53	0.01	0.00
	IR04_BR4690d		70.10	70.31	0.21	70.09	-0.01	70.10	0.00	70.10	0.00	70.10	70.10	0.00	70.11	70.11	0.01	0.00
	IRWE04_4690d		70.10	70.31	0.21	70.09	-0.01	70.10	0.00	70.10	0.00	70.10	70.10	0.00	70.11	70.11	0.01	0.00
	IRWE04_4614		69.77	69.99	0.22	69.75	-0.02	69.77	0.00	69.77	0.00	69.77	69.77	0.00	69.78	69.78	0.00	0.00
	IRWE04_4546		69.60	69.82	0.21	69.57	-0.04	69.60	0.00	69.60	0.00	69.60	69.60	0.00	69.61	69.61	0.00	0.00
	IRWE04_4469		69.52	69.75	0.23	69.47	-0.05	69.52	0.00	69.52	0.00	69.52	69.52	0.00	69.52	69.52	0.00	0.00
	IRWE04_4360		69.61	69.78	0.16	69.57	-0.04	69.61	0.00	69.61	0.00	69.61	69.61	0.00	69.62	69.62	0.01	0.00
	IRWE04_4322		69.55	69.72	0.17	69.50	-0.04	69.55	0.00	69.55	0.00	69.55	69.55	0.00	69.55	69.55	0.00	0.00
	IRWE04_4303		69.53	69.70	0.16	69.49	-0.04	69.53	0.00	69.53	0.00	69.53	69.53	0.00	69.54	69.54	0.00	0.00
	IRWE04_4261i		69.51	69.66	0.15	69.48	-0.03	69.51	0.00	69.51	0.00	69.51	69.51	0.00	69.52	69.52	0.00	0.00
	IRWE04_4219		69.46	69.60	0.14	69.43	-0.03	69.46	0.00	69.46	0.00	69.46	69.46	0.00	69.46	69.46	0.00	0.00
	IRWE04_4182i		69.42	69.56	0.14	69.39	-0.02	69.42	0.00	69.42	0.00	69.42	69.42	0.00	69.42	69.42	0.00	0.00
	IRWE04_4145		69.38	69.51	0.14	69.35	-0.02	69.38	0.00	69.38	0.00	69.38	69.38	0.00	69.38	69.38	0.01	0.00
	IRWE04_4099i		69.24	69.38	0.14	69.22	-0.03	69.24	0.00	69.24	0.00	69.24	69.24	0.00	69.25	69.25	0.00	0.00
	IRWE04_4054		69.17	69.33	0.16	69.14	-0.03	69.17	0.00	69.17	0.00	69.17	69.17	0.00	69.17	69.17	0.00	0.00
	IRWE04_4011		69.14	69.30	0.17	69.10	-0.03	69.14	0.00	69.14	0.00	69.14	69.14	0.00	69.14	69.14	0.00	0.00
	IRWE04_3946i		69.05	69.21	0.17	69.02	-0.03	69.05	0.00	69.05	0.00	69.05	69.05	0.00	69.05	69.05	0.00	0.00
	IRWE04_3882		68.94	69.11	0.17	68.91	-0.03	68.94	0.00	68.94	0.00	68.94	68.94	0.00	68.95	68.95	0.00	0.00
	IRWE04_3833i		68.81	68.99	0.18	68.77	-0.04	68.81	0.00	68.81	0.00	68.81	68.81	0.00	68.81	68.81	0.00	0.00
	IRWE04_3784		68.56	68.77	0.21	68.53	-0.03	68.57	0.00	68.56	0.00	68.56	68.57	0.00	68.57	68.57	0.00	0.00
	IRWE04_3760i		68.53	68.72	0.19	68.50	-0.03	68.53	0.00	68.53	0.00	68.53	68.53	0.00	68.54	68.54	0.00	0.00
	IRWE04_3736		68.52	68.71	0.19	68.48	-0.03	68.52	0.00	68.52	0.00	68.52	68.52	0.00	68.52	68.52	0.00	0.00
	IRWE04_3713		68.54	68.70	0.16	68.50	-0.04	68.54	0.00	68.54	0.00	68.54	68.54	0.00	68.54	68.54	0.00	0.00
	IRWE04_3695		68.54	68.73	0.18	68.49	-0.06	68.54	0.00	68.54	0.00	68.54	68.54	0.00	68.55	68.55	0.00	0.00
	IRWE04_3679		68.44	68.65	0.21	68.39	-0.05	68.44	0.00	68.44	0.00	68.44	68.44	0.00	68.44	68.44	0.00	0.00
	IRWE04_3616u		68.67	68.77	0.10	68.63	-0.04	68.67	0.00	68.67	0.00	68.67	68.67	0.00	68.67	68.67	0.00	0.00
	IR04_SP3616u		68.67	68.77	0.10	68.63	-0.04	68.67	0.00	68.67	0.00	68.67	68.67	0.00	68.67	68.67	0.00	0.00
	IR04_SP3601d	Hardy's Gate Bridge	68.12	68.30	0.18	68.08	-0.03	68.12	0.00	68.12	0.00	68.12	68.12	0.00	68.12	68.12	0.00	0.00
	IR04_BR3616u		68.67	68.77	0.10	68.63	-0.04	68.67	0.00	68.67	0.00	68.67	68.67	0.00	68.67	68.67	0.00	0.00
	IR04_BR3601d		68.12	68.30	0.18	68.08	-0.03	68.12	0.00	68.12	0.00	68.12	68.12	0.00	68.12	68.12	0.00	0.00
	IRWE04_3601d		68.12	68.30	0.18	68.08	-0.03	68.12	0.00	68.12	0.00	68.12	68.12	0.00	68.12	68.12	0.00	0.00
	IRWE04_3592		67.98	68.19	0.21	67.94	-0.04	67.98	0.00	67.98	0.00	67.98	67.98	0.00	67.98	67.98	0.00	0.00
	IRWE04_3581		67.91	68.13	0.22	67.87	-0.04	67.91	0.00	67.91	0.00	67.91	67.91	0.00	67.91	67.91	0.00	0.00
	IR04_L3574u		67.91	68.13	0.22	67.87	-0.04	67.91	0.00	67.91	0.00	67.91	67.91	0.00	67.91	67.91	0.00	0.00
	IR04_L3567d		67.73	68.00	0.27	67.69	-0.04	67.73	0.00	67.73	0.00	67.73	67.73	0.00	67.73	67.73	0.00	0.00
	IRWE04_3574u		67.91	68.13	0.22	67.87	-0.04	67.91	0.00	67.91	0.00	67.91	67.91	0.00	67.91	67.91	0.00	0.00
	IRWE04_3567d		67.73	68.00	0.27	67.69	-0.04	67.73	0.00	67.73	0.00	67.73	67.73	0.00	67.73	67.73	0.00	0.00
	IR04_R3574u		67.91	68.13	0.22	67.87	-0.04	67.91	0.00	67.91	0.00	67.91	67.91	0.00	67.91	67.91	0.00	0.00
	IR04_R3567d		67.73	68.00	0.27	67.69	-0.04	67.73	0.00	67.73	0.00	67.73	67.73	0.00	67.73	67.73	0.00	0.00
	IRWE04_3567		67.73	68.00	0.27	67.69	-0.04	67.73	0.00	67.73	0.00	67.73	67.73	0.00	67.73	67.73	0.00	0.00
	IRWE04_3512		67.75	67.98	0.23	67.71	-0.04	67.75	0.00	67.75	0.00	67.75	67.75	0.00	67.75	67.75	0.00	0.00
	IRWE04_3438		67.72	67.94	0.22	67.68	-0.04	67.72	0.00	67.72	0.00	67.72	67.72	0.00	67.72	67.72	0.00	0.00
	IRWE04_3376		67.62	67.85	0.23	67.57	-0.04	67.62	0.00	67.62	0.00	67.62	67.62	0.00	67.62	67.62	0.00	0.00
	IRWE04_3295		67.54	67.77	0.23	67.50	-0.05	67.54	0.00	67.54	0.00	67.54	67.54	0.00	67.55	67.55	0.00	0.00
	IRWE04_3204		67.45	67.68	0.23	67.40	-0.05	67.45	0.00	67.45	0.00	67.45	67.45	0.00	67.45	67.45	0.00	0.00
	IRWE04_3079		67.36	67.57	0.22	67.30	-0.05	67.36	0.00	67.36	0.00	67.36	67.36	0.00	67.36	67.36	0.00	0.00
	IRWE04_3023		67.28	67.51	0.23	67.22	-0.06	67.28	0.00	67.28	0.00	67.28	67.28	0.00	67.28	67.28	0.00	0.00
	IRWE04_2854		67.26	67.49	0.23	67.20	-0.06	67.26	0.00	67.26	0.00	67.26	67.26	0.00	67.26	67.26	0.00	0.00
	IRWE04_2777i		67.20	67.46	0.26	67.13	-0.07	67.20	0.00	67.20	0.00	67.20	67.20	0.00	67.20	67.20	0.00	0.00
	IRWE04_2688u		67.27	67.49	0.22	67.23	-0.04	67.27	0.00	67.27	0.00	67.27	67.27	0.00	67.27	67.27	0.00	0.00
	IRWE04_2688d		67.23	67.47	0.24	67.19	-0.04	67.23	0.00	67.23	0.00	67.23	67.23	0.00	67.23	67.23	0.00	0.00
	IRWE04_2570u		67.20	67.44	0.25	67.16	-0.03	67.20	0.00	67.20	0.00	67.20	67.20	0.00	67.20	67.20	0.00	0.00
	IR04_2570u		67.20	67.44	0.25	67.16	-0.03	67.20	0.00	67.20	0.00	67.20	67.20	0.00	67.20	67.20	0.00	0.00
	IR04_2570d		67.14	67.42	0.28	67.11	-0.03	67.14	0.00	67.14	0.00	67.14	67.14	0.00	67.14	67.14	0.00	0.00
	IR04_Sp2570u		67.20	67.44	0.25	67.16	-0.03	67.20	0.00	67.20	0.00	67.20	67.20	0.00	67.20	67.20	0.00	0.00
	IR04_Sp2570d		67.14	67.42	0.28	67.11	-0.03	67.14	0.00	67.14	0.00	67.14	67.14	0.00	67.14	67.14	0.00	0.00
	IRWE04_2570d		67.14	67.42	0.28	67.11	-0.03	67.14	0.00	67.14	0.00	67.14	67.14	0.00	67.14	67.14	0.00	0.00
	IRWE04_2510u		67.09	67.38	0.30	67.06	-0.03	67.09	0.00	67.09	0.00	67.09	67.09	0.00	67.09	67.09	0.00	0.00
	IR04_2510u		67.09	67.38	0.30	67.06	-0.03	67.09	0.00	67.09	0.00	67.09	67.09	0.00	67.09	67.09	0.00	0.00
	IR04_2510d		66.97	67.29	0.32	66.96	-0.01	66.97	0.00	66.97	0.00	66.97	66.97	0.00	66.97	66.97	0.00	0.00
	IR04_Sp2510u		67.09	67.38	0.30	67.06	-0.03	67.09	0.00	67.09	0.00	67.09	67.09	0.00	67.09	67.09	0.00	0.00
	IR04_Sp2510d		66.97	67.29	0.32	66.96	-0.01	66.97	0.00	66.97	0.00	66.97	66.97	0.00	66.97	66.97	0.00	0.00
	IRWE04_2510d		66.97	67.29	0.32	66.96	-0.01	66.97	0.00	66.97	0.00	66.97	66.97	0.00	66.97	66.97	0.00	0.00
	IRWE04_2449		66.74	67.14	0.41	66.73	-0.01	66.74	0.00	66.73	0.00	66.74	66.74	0.00	66.73	66.73	0.00	0.00
	IRWE04_2320		66.61	67.02	0.41	66.59	-0.02	66.61	0.00	66.61	0.00	66.61	66.61	0.00	66.61	66.61	0.00	0.00
	IRWE04_2276		66.55	66.99	0.44	66.55	0.00	66.55	0.00	66.55	0.00	66.55	66.55	0.00	66.55	66.55	0.00	0.00
	IRWE04_2192u		66.38	66.84	0.45	66.38	0.00	66.39	0.00	66.38	0.00	66.38	66.39	0.00	66.38	66.38	0.00	0.00
	IRWE04_2053		66.38	66.83	0.45	66.37	0.00	66.38	0.00	66.37	0.00	66.38	66.38	0.00	66.37	66.37	-0.01	0.00
	IRWE04_1974		66.38	66.83	0.45	66.38	0.00	66.38	0.00	66.38	0.00	66.38	66.39	0.00	66.38	66.38	0.00	0.00
	IRWE04_1871		66.25	66.74	0.49	66.26	0.02	66.25	0.00	66.24	0.00	66.25	66.25	0.00	66.24	66.24	-0.01	0.00
	IRWE04_1792u		66.23	66.72	0.49	66.25	0.02	66.24	0.00	66.23	0.00	66.23	66.24	0.00	66.22	66.22	-0.01	0.00
	IRWE04_1698u		66.23	66.71	0.48	66.25	0.02	66.23	0.00	66.23	0.00	66.23	66.23	0.00	66.22	66.22	-0.01	0.00
	IRWE04_1698d		66.23	66.71	0.48	66.25	0.02	66.23	0.00	66.23	0.00	66.23	66.23	0.00	66.22	66.22	-0.01	0.00
	IRWE04_1629		66.21	66.70	0.48	66.24	0.03	66.22	0.00	66.21	0.00	66.21	66.22	0.00	66.21	66.21	-0.01	0.00
	IRWE04_1457		66.23	66.70	0.47	66.25	0.02	66.23	0.00	66.22	0.00	66.23	66.23	0.00	66.22	66.22	-0.01	0.00
	IRWE04_1382		66.20	66.66	0.46	66.22	0.02	66.21	0.00	66.20	0.00	66.20	66.21	0.00	66.20	66.20	-0.01	0.00
	IRWE04_1334i		66.19	66.65	0.46	66.21	0.02	66.20	0.00	66.19	0.00	66.19	66.19	0.00	66.18	66.18	-0.01	0.00
	IRWE04_1256i		66.16	66.61	0.45	66.18	0.02	66.16	0.00	66.15	0.00	66.16	66.16	0.00	66.15	66.15	-0.01	0.00
	IRWE04_1155u		65.97	66.43	0.47	65.98	0.02	65.97	0.00	65.96	0.00	65.97	65.97	0.00	65.96	65.96	-0.01	0.00
	IRWE04_1120i		65.90	66.37	0.47	65.92	0.02	65.91	0.01	65.90	0.00	65.90	65.91	0.00	65.89	65.89	-0.01	0.00
	IRWE04_1061i		65.84	66.30	0.47	65.85	0.01	65.84	0.01	65.83	0.00	65.84	65.84	0.00	65.83	65.83	-0.01	0.00
	IRWE04_1003i		65.77	66.24	0.47	65.79	0.01	65.78	0.01	65.77	0.00	65.77	65.78	0.00	65.76	65.76	-0.01	0.00
	IRWE04_0926		65.70	66.17	0.47	65.72	0.01	65.71	0.01	65.70	0.00	65.70	65.71	0.00	65.69	65.69	-0.01	0.00
	IRWE04_0746		65.45	65.91	0.46	65.46	0.01	65.45	0.01	65.44	-0.01	65.45	65.45	0.00	65.43	65.43	-0.02	0.00
	IRWE04_0559		65.27	65.71	0.44	65.28	0.01	65.28	0.01	65.26	-0.01	65.27	65.27	0.00	65.25	65.25	-0.02	0.00
	IRWE04_0486		65.13	65.57	0.44	65.14	0.01	65.14	0.01	65.12	-0.01	65.13	65.13	0.00	65.11	65.11	-0.02	0.00
	IRWE04_0436		65.20	65.61	0.41	65.21	0.01	65.21	0.01	65.19	-0.01	65.20	65.20	0.00	65.18	65.18	-0.02	0.00
	IRWE04_0432		65.04	65.49	0.44	65.06	0.01	65.05	0.01	65.04	-0.01	65.04	65.05	0.00	65.02	65.02	-0.02	0.00
	IRWE04_0361i		64.98	65.43	0.45	64.99	0.02	64.99	0.01	64.97	-0.01	64.98	64.98	0.00	64.95	64.95	-0.03	0.00
	IRWE04_0312		64.82	65.29	0.47	64.84	0.03	64.83	0.01	64.81	-0.01	64.82	64.82	0.00	64.79	64.79	-0.03	0.00
	IRWE04_0232		64.73	65.20	0.47	64.77	0.03	64.75	0.01	64.72	-0.01	64.73	64.74	0.00	64.69	64.69	-0.04	0.00
	IRWE04_0146		64.63	65.13	0.50	64.67	0.04	64.64	0.02	64.61	-0.01	64.63	64.63	0.00	64.66	64.66	0.03	0.00
	IRWE04_0100i		64.60	65.09	0.49	64.64	0.04	64.61	0.02	64.59	-0.01	64.60	64.60	0.00	64.64	64.64	0.04	0.00
	IRWE04_0050i		64.58	65.07	0.49	64.63	0.04	64.60	0.01	64.57	-0.01	64.58	64.59	0.00	64.60	64.60	0.01	0.00
	IRWE04_0000u		64.59	65.07	0.48	64.63	0.04	64.60	0.02	64.57	-0.01	64.59	64.59	0.00	64.59	64.59	0.01	0.00
	IRWE03_6041d		64.59	65.07	0.48	64.63	0.04	64.60	0.02	64.57	-0.01	64.59	64.59	0.00	64.59	64.59	0.01	0.00
	IRWE03_5905i		64.40	64.88	0.49	64.43	0.03	64.41	0.02	64.38	-0.01	64.40	64.40	0.00	64.41	64.41	0.01	0.00
	IRWE03_5797		64.28	64.75	0.46	64.31	0.03	64.30	0.02	64.27	-0.01	64.28	64.29	0.00	64.28	64.28	0.00	0.00
	IR03_BR5797		64.28	64.75	0.46	64.31	0.03	64.30	0.02	64.27	-0.01	64.28	64.29	0.00	64.28	64.28	0.00	0.00
	IR03_BR5787		64.15	64.65	0.51	64.18	0.03	64.17	0.02	64.13	-0.02	64.15	64.15	0.00	64.14	64.14	0.00	0.00
	IRWE03_5787		64.15	64.65	0.51	64.18	0.03	64.17	0.02	64.13	-0.02	64.15	64.15	0.00	64.14	64.14	0.00	0.00
	IRWE03_5646		63.98	64.47	0.49	64.01	0.03	64.00	0.02	63.97	-0.02	63.98	63.98	0.00	63.98	63.98	0.00	0.00
	IRWE03_5529		63.79	64.28	0.49	63.82	0.03	63.82	0.02	63.77	-0.02	63.79	63.79	0.00	63.79	63.79	0.00	0.00
	IRWE03_5399u		63.56	64.04	0.48	63.59	0.03	63.59	0.03	63.54	-0.02	63.56	63.56	0.00	63.56	63.56	0.00	0.00
	IR03_SP5399u		63.56	64.04	0.48	63.59	0.03	63.59	0.03	63.54	-0.02	63.56	63.56	0.00	63.56	63.56	0.00	0.00
	IR03_SP5393d		62.57	63.04	0.47	62.58	0.02	62.59	0.02	62.55	-0.02	62.57	62.57	0.00	62.56	62.56	0.00	0.00
	IR03_BR5399u		63.56	64.04	0.48	63.59	0.03	63.59	0.03	63.54	-0.02	63.56	63.56	0.00	63.56	63.56	0.00	0.00
	IR03_BR5393d		62.57	63.04	0.47	62.58	0.02	62.59	0.02	62.55	-0.02	62.57	62.57	0.00	62.56	62.56	0.00	0.00
	IRWE03_5393d		62.57	63.04	0.47	62.58	0.02	62.59	0.02	62.55	-0.02	62.57	62.57	0.00	62.56	62.56	0.00	0.00
	IRWE03_5337i		62.57	63.00	0.43	62.59	0.02	62.59	0.02	62.55	-0.02	62.57	62.57	0.00	62.57	62.57	0.00	0.00
	IRWE03_5281u		62.54	62.95	0.41	62.56	0.02	62.57	0.03	62.52	-0.02	62.54	62.54	0.00	62.54	62.54	0.00	0.00
	IRWE03_5281d		62.31	62.76	0.46	62.32	0.02	62.33	0.03	62.28	-0.02	62.31	62.31	0.00	62.30	62.30	0.00	0.00
	IRWE03_5244u		62.24	62.69	0.45	62.26	0.02	62.27	0.03	62.22	-0.02	62.24	62.25	0.00	62.24	62.24	0.00	0.00
	IR03_SP5244u		62.24	62.69	0.45	62.26	0.02	62.27	0.03	62.22	-0.02	62.24	62.25	0.00	62.24	62.24	0.00	0.00
	IR03_SP5227d		62.23	62.66	0.42	62.25	0.02	62.26	0.03	62.21	-0.02	62.23	62.23	0.00	62.23	62.23	0.00	0.00
	IR03_BR5244u		62.24	62.69	0.45	62.26	0.02	62.27	0.03	62.22	-0.02	62.24	62.25	0.00	62.24	62.24	0.00	0.00
	IR03_BR5227d		62.23	62.66	0.42	62.25	0.02	62.26	0.03	62.21	-0.02	62.23	62.23	0.00	62.23	62.23	0.00	0.00
	IRWE03_5227d		62.23	62.66	0.42	62.25	0.02	62.26	0.03	62.21	-0.02	62.23	62.23	0.00	62.23	62.23	0.00	0.00
	IRWE03_5195		61.82	62.32	0.50	61.83	0.02	61.86	0.04	61.78	-0.03	61.82	61.82	0.00	61.82	61.82	0.00	0.00
	IRWE03_5067u		61.47	61.90	0.44	61.48	0.01	61.52	0.05	61.42	-0.04	61.47	61.47	0.00	61.46	61.46	0.00	0.00
	IR03_SP5067u		61.47	61.90	0.44	61.48	0.01	61.52	0.05	61.42	-0.04	61.47	61.47	0.00	61.46	61.46	0.00	0.00
	IR03_SP5064d		61.47	61.90	0.44	61.48	0.01	61.52	0.05	61.42	-0.04	61.47	61.47	0.00	61.46	61.46	0.00	0.00
	IR03_BR5067u		61.47	61.90	0.44	61.48	0.01	61.52	0.05	61.42	-0.04	61.47	61.47	0.00	61.46	61.46	0.00	0.00
	IR03_BR5064d		61.47	61.90	0.44	61.48	0.01	61.52	0.05	61.42	-0.04	61.47	61.47	0.00	61.46	61.46	0.00	0.00
	IRWE03_5064d		61.47	61.90	0.44	61.48	0.01	61.52	0.05	61.42	-0.04	61.47	61.47	0.00	61.46	61.46	0.00	0.00
	IRWE03_4716u		61.71	62.08	0.37	61.72	0.02	61.76	0.05	61.67	-0.04	61.71	61.71	0.00	61.71	61.71	0.00	0.00
	IR03_BR4716u		61.71	62.08	0.37	61.72	0.02	61.76	0.05	61.67	-0.04	61.71	61.71	0.00	61.71	61.71	0.00	0.00
	IR03_BR4706d		61.68	62.06	0.38	61.70	0.02	61.73	0.05	61.64	-0.04	61.68	61.68	0.00	61.68	61.68	0.00	0.00
	IRWE03_4706d		61.68	62.06	0.38	61.70	0.02	61.73	0.05	61.64	-0.04	61.68	61.68	0.00	61.68	61.68	0.00	0.00
	IRWE03_4254u		60.82	61.09	0.28	60.83	0.02	60.93	0.11	60.71	-0.10	60.82	60.82	0.00	60.82	60.82	0.00	0.00
	IR03_SP4254d		60.82	61.09	0.28	60.83	0.02	60.93	0.11	60.71	-0.10	60.82	60.82	0.00	60.82	60.82	0.00	0.00
	IR03_SP4252d		60.72	61.00	0.28	60.73	0.01	60.83	0.11	60.62	-0.10	60.72	60.72	0.00	60.72	60.72	0.00	0.00
	IR03_BR4254u		60.82	61.09	0.28	60.83	0.02	60.93	0.11	60.71	-0.10	60.82	60.82	0.00	60.82	60.82	0.00	0.00
	IR03_BR4252d		60.72	61.00	0.28	60.73	0.01	60.83	0.11	60.62	-0.10	60.72	60.72	0.00	60.72	60.72	0.00	0.00
	IRWE03_4252d		60.72	61.00	0.28	60.73	0.01	60.83	0.11	60.62	-0.10	60.72	60.72	0.00	60.72	60.72	0.00	0.00
	IRWE03_3757		60.09	60.06	-0.02	60.10	0.02	60.29	0.20	59.88	-0.20	60.09	60.09	0.00	60.08	60.08	0.00	0.00
	IRWE03_3724		60.15	60.11	-0.04	60.16	0.01	60.35	0.20	59.95	-0.20	60.15	60.15	0.00	60.15	60.15	0.00	0.00
Hutchinson's Goit	HUTC01_1897		70.76	70.80	0.04	70.76	0.00	70.76	0.00	70.76	0.00	70.76	70.76	0.00	70.18	70.20	-0.56	0.02
	HUTC01_1849		70.69	70.73	0.04	70.68	0.00	70.69	0.00	70.69	0.00	70.69	70.69	0.00	70.16	70.18	-0.51	0.02
	HUTC01_1809		70.63	70.67	0.04	70.62	-0.01	70.63	0.00	70.63	0.00	70.63	70.63	0.00	70.14	70.16	-0.47	0.02
	HUTC01_1768i		70.60	70.64	0.04	70.59	-0.01	70.60	0.00	70.60	0.00	70.60	70.60	0.00	70.13	70.15	-0.45	0.02
	HUTC01_1727		70.57	70.61	0.04	70.57	-0.01	70.57	0.00	70.57	0.00	70.57	70.57	0.00	70.12	70.14	-0.43	0.02
	HUTC01_1656i		70.54	70.58	0.04	70.54	-0.01	70.54	0.00	70.54	0.00	70.54	70.55	0.00	70.12	70.14	-0.41	0.02
	HUTC01_1585i		70.53	70.57	0.04	70.53	-0.01	70.53	0.00	70.53	0.00	70.53	70.53	0.00	70.11	70.13	-0.40	0.02
	HUTC01_1513		70.52	70.56	0.04	70.52	0.00	70.52	0.00	70.52	0.00	70.52	70.52	0.00	70.11	70.13	-0.39	0.02
	HUTC01_1466i		70.51	70.55	0.04	70.51	0.00	70.51	0.00	70.51	0.00	70.51	70.51	0.00	70.10	70.12	-0.39	0.02
	HUTC01_1423		70.47	70.51	0.04	70.46	0.00	70.47	0.00	70.47	0.00	70.47	70.47	0.00	70.10	70.12	-0.35	0.02
	HUTC01_1413		70.45	70.49	0.04	70.44	0.00	70.45	0.00	70.45	0.00	70.45	70.45	0.00	70.06	70.08	-0.36	0.03
	HUTC01_1299		70.21	70.27	0.06	70.21	0.00	70.21	0.00	70.21	0.00	70.21	70.21	0.00	69.71	69.78	-0.43	0.07
	HUTC01_1227		70.14	70.20	0.06	70.14	0.00	70.14	0.00	70.14	0.00	70.14	70.15	0.00	69.67	69.75	-0.39	0.08
	HUTC01_1010		70.05	70.10	0.05	70.05	0.00	70.05	0.00	70.05	0.00	70.05	70.05	0.00	69.63	69.72	-0.33	0.09
	HUTC01_0889		69.96	70.01	0.05	69.96	0.00	69.96	0.00	69.96	0.00	69.96	69.97	0.00	69.58	69.69	-0.28	0.11
	HUTC01_0710		69.76	69.78	0.02	69.76	0.00	69.76	0.00	69.76	0.00	69.76	69.76	0.00	69.46	69.63	-0.13	0.17
	HUTC01_0627		69.65	69.65	0.00	69.64	-0.01	69.65	0.00	69.65	0.00	69.65	69.67	0.03	69.40	69.61	-0.04	0.21
	HUTC01_0584		69.54	69.57	0.03	69.47	-0.07	69.54	0.00	69.54	0.00	69.54	69.67	0.13	69.09	69.59	0.06	0.50
	HUTC_0584bl		69.54	69.57	0.03	69.47	-0.07	69.54	0.00	69.54	0.00	69.54	69.67	0.13	69.09	69.59	0.06	0.50
	HUTC01_0584c		69.54	69.57	0.03	69.47	-0.07	69.54	0.00	69.54	0.00	69.54	69.08	-0.45	69.09	69.07	-0.46	-0.02
	HUTC01_0584u		69.51	69.55	0.04	69.43	-0.07	69.51	0.00	69.51	0.00	69.51	69.02	-0.49	69.01	68.99	-0.52	-0.02
	HUTC01_0544d		69.29	69.31	0.02	69.27	-0.01	69.29	0.00	69.29	0.00	69.29	68.89	-0.39	68.76	68.76	-0.53	0.00
	HUTC01_0544e		69.29	69.31	0.02	69.27	-0.01	69.29	0.00	69.29	0.00	69.29	68.89	-0.39	68.76	68.76	-0.53	0.00
	HUTC01_0504f		69.22	69.22	0.01	69.23	0.01	69.22	0.00	69.22	0.00	69.22	68.85	-0.37	68.76	68.76	-0.46	0.00
	HUTC01_s504f	A6053 Road Culvert	-	-	-	-	-	-	-	-	-	-	-	-	68.65	68.65	-	0.00
	Dummy2		-	-	-	-	-	-	-	-	-	-	-	-	68.65	68.65	-	0.00
	HUTC01_0544j		69.29	69.31	0.02	69.27	-0.01	69.29	0.00	69.29	0.00	69.29	68.89	-0.39	68.76	68.76	-0.53	0.00
	HUTC01_0504k		69.22	69.22	0.00	69.23	0.01	69.22	0.00	69.22	0.00	69.22	68.85	-0.37	68.76	68.76	-0.46	0.00
	HUTC01_s504k		-	-	-	-	-	-	-	-	-	-	-	-	68.65	68.65	-	0.00
	Dummy1		-	-	-	-	-	-	-	-	-	-	-	-	68.65	68.65	-	0.00
	HUTC01_0504l		69.18	69.20	0.01	69.19	0.01	69.18	0.00	69.18	0.00	69.18	68.84	-0.35	-	-	-	-
	HUTC01_0504g		69.18	69.20	0.01	69.19	0.01	69.18	0.00	69.18	0.00	69.18	68.84	-0.35	-	-	-	-
	HUTC01_0504		69.18	69.20	0.01	69.19	0.01	69.18	0.00	69.18	0.00	69.18	68.84	-0.35	-	-	-	-
	HUTC01_0410		69.08	69.08	0.00	69.07	-0.01	69.08	0.00	69.08	0.00	69.08	68.70	-0.38	-	-	-	-
	HUTC01_0307		69.04	69.03	-0.01	69.02	-0.02	69.04	0.00	69.04	0.00	69.04	68.59	-0.44	-	-	-	-
	HUTC01_0305b		68.92	68.96	0.03	68.84	-0.08	68.92	0.00	68.92	0.00	68.92	68.17	-0.76	-	-	-	-
	HUTC01_0305c	Cricket Ground Culvert	64.71	65.15	0.44	64.81	0.10	64.72	0.01	64.70	-0.01	64.71	64.68	-0.03	-	-	-	-
	HUTC01_0305		68.99	69.00	0.01	68.94	-0.05	68.99	0.00	68.99	0.00	68.99	68.50	-0.49	-	-	-	-
	HUTC01_0005		64.59	65.07	0.48	64.63	0.04	64.60	0.02	64.58	-0.01	64.59	64.59	0.00	-	-	-	-
	HUTC01_0000		64.59	65.07	0.48	64.63	0.04	64.60	0.02	64.58	-0.01	64.59	64.59	0.00	-	-	-	-
River Roch	ROCH01_0779		67.11	67.47	0.36	67.12	0.00	67.11	0.00	67.11	0.00	67.11	67.11	0.00	67.11	67.11	0.00	0.00
	ROCH01_0763		67.00	67.38	0.38	67.01	0.00	67.01	0.00	67.00	0.00	67.00	67.01	0.00	67.00	67.00	0.00	0.00
	ROCH01_0750		66.97	67.36	0.39	66.98	0.01	66.97	0.00	66.97	0.00	66.97	66.98	0.00	66.97	66.97	0.00	0.00
	ROCH01_0728		66.96	67.34	0.38	66.96	0.00	66.96	0.00	66.96	0.00	66.96	66.96	0.00	66.96	66.96	0.00	0.00
	ROCH01_0706		67.04	67.40	0.37	67.04	0.01	67.04	0.00	67.03	0.00	67.04	67.04	0.00	67.03	67.03	0.00	0.00
	ROCH01_0689u		67.03	67.41	0.38	67.04	0.01	67.03	0.00	67.02	0.00	67.03	67.03	0.00	67.02	67.02	0.00	0.00
	ROCH_0689Wu		67.03	67.41	0.38	67.04	0.01	67.03	0.00	67.02	0.00	67.03	67.03	0.00	67.02	67.02	0.00	0.00
	ROCH_0689Wd		66.75	67.20	0.46	66.76	0.02	66.75	0.00	66.74	0.00	66.75	66.75	0.00	66.74	66.74	-0.01	0.00
	ROCH_0689Su		67.03	67.41	0.38	67.04	0.01	67.03	0.00	67.02	0.00	67.03	67.03	0.00	67.02	67.02	0.00	0.00
	ROCH_0689Sd		66.75	67.20	0.46	66.76	0.02	66.75	0.00	66.74	0.00	66.75	66.75	0.00	66.74	66.74	-0.01	0.00
	ROCH01_0689d		66.75	67.20	0.46	66.76	0.02	66.75	0.00	66.74	0.00	66.75	66.75	0.00	66.74	66.74	-0.01	0.00
	ROCH01_0607		66.71	67.15	0.45	66.72	0.01	66.71	0.00	66.70	0.00	66.71	66.71	0.00	66.70	66.70	0.00	0.00
	RR01_BR0607		66.71	67.15	0.45	66.72	0.01	66.71	0.00	66.70	0.00	66.71	66.71	0.00	66.70	66.70	0.00	0.00
	RR01_BR0602	Blackford Old Bridge	66.50	66.98	0.48	66.51	0.01	66.50	0.00	66.50	0.00	66.50	66.50	0.00	66.49	66.49	-0.01	0.00
	RR01_0607u		66.71	67.15	0.45	66.72	0.01	66.71	0.00	66.70	0.00	66.71	66.71	0.00	66.70	66.70	0.00	0.00
	RR01_0607d		66.50	66.98	0.48	66.51	0.01	66.50	0.00	66.50	0.00	66.50	66.50	0.00	66.49	66.49	-0.01	0.00
	ROCH01_0602		66.50	66.98	0.48	66.51	0.01	66.50	0.00	66.50	0.00	66.50	66.50	0.00	66.49	66.49	-0.01	0.00
	ROCH01_0529		66.55	67.02	0.47	66.56	0.01	66.55	0.00	66.55	0.00	66.55	66.55	0.00	66.54	66.54	-0.01	0.00
	ROCH01_0450		66.49	66.97	0.49	66.51	0.02	66.49	0.00	66.48	0.00	66.49	66.49	0.00	66.48	66.48	-0.01	0.00
	ROCH01_0388		66.52	67.00	0.48	66.54	0.02	66.52	0.00	66.52	0.00	66.52	66.53	0.00	66.52	66.52	-0.01	0.00
	ROCH01_0300		66.28	66.77	0.50	66.29	0.02	66.28	0.00	66.27	0.00	66.28	66.28	0.00	66.27	66.27	-0.01	0.00
	ROCH01_0225		66.37	66.83	0.47	66.38	0.02	66.37	0.00	66.36	0.00	66.37	66.37	0.00	66.36	66.36	-0.01	0.00
	ROCH01_0150		66.22	66.71	0.48	66.24	0.02	66.23	0.00	66.22	0.00	66.22	66.23	0.00	66.22	66.22	-0.01	0.00
	ROCH01_0116		66.28	66.75	0.47	66.30	0.02	66.29	0.00	66.28	0.00	66.28	66.29	0.00	66.27	66.27	-0.01	0.00
	ROCH01_0075		66.27	66.74	0.47	66.29	0.02	66.27	0.00	66.27	0.00	66.27	66.27	0.00	66.26	66.26	-0.01	0.00
	ROCH01_0000		66.23	66.71	0.48	66.25	0.02	66.23	0.00	66.23	0.00	66.23	66.23	0.00	66.22	66.22	-0.01	0.00

Appendix H Tabulated 2D Model Results Data

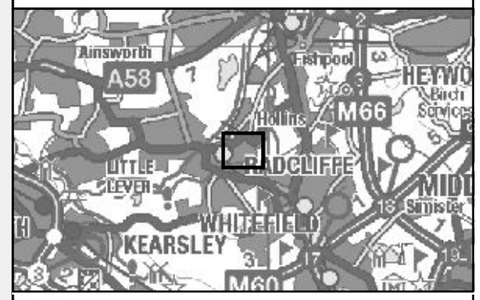


CONTAINS OS DATA © CROWN COPYRIGHT (2021)

NOTES:
1) ALL DIMENSIONS ARE IN METRES AND ALL LEVELS IN METRES ABOVE ORDNANCE DATUM UNLESS STATED OTHERWISE

LEGEND

- Site Boundary
- Data_Extraction_Points
- Proposed Development Layout



CLIENT:
TETRA TECH

waterco
www.waterco.co.uk

SCHEME:
EAST LANCASHIRE PAPER MILL

PLOT TITLE:
RESULTS NODE LOCATION PLAN

PLOT STATUS:	DATE:
FINAL	09-Apr-21

DRAWN:	CHECKED:	APPROVED:	PLOT SCALE @ A3:
VJ	SB	APR	1:3,000 (UNLESS STATED OTHERWISE)

PLOT NAME:	REV:
12168-Node_Plan	-

Hydraulic Model Results
2D TUFLOW Model Results - Maximum Water Levels (mAOD) and Depths (m)

PRIMARY SIMULATIONS & BLOCKAGES

Job Name: East Lancashire Paper Mill, Radcliffe
Job Number: 12168
Date: 05-04-2021
Model Type: FMP-TUFLOW
FMP Build: 4.3
TUFLOW Build: 2018-03-AA

Existing Site Layout Simulations:

Model Ref	Fluvial Event (AEP)	Development Scenario	Flow Condition
Q20-EXG-NFC	5%	Existing Site Layout (EXG)	Normal Flow Conditions (NFC)
Q100-EXG-NFC	1%		
Q100CC1-EXG-NFC	1% +35%CC		
Q100CC2-EXG-NFC	1% +70%CC		
Q1000-EXG-NFC	0.1%		

Development Site Layout Simulations:

Model Ref	Fluvial Event (AEP)	Development Scenario	Flow Condition
Q20-DEV-NFC	5%	Proposed Development Site Layout (DEV)	Normal Flow Conditions (NFC)
Q100-DEV-NFC	1%		
Q100CC1-DEV-NFC	1% +35%CC		
Q100CC2-DEV-NFC	1% +70%CC		
Q1000-DEV-NFC	0.1%		

Blockage Simulations:

Model Ref	Fluvial Event (AEP)	Development Scenario	Flow Condition
Q100CC1-EXG-BL1-80	1% +35%CC	Existing Site Layout (EXG)	80% Blockage of A6053 Road Culvert
Q100CC1-DEV-BL1-80		Proposed Site Layout (DEV)	

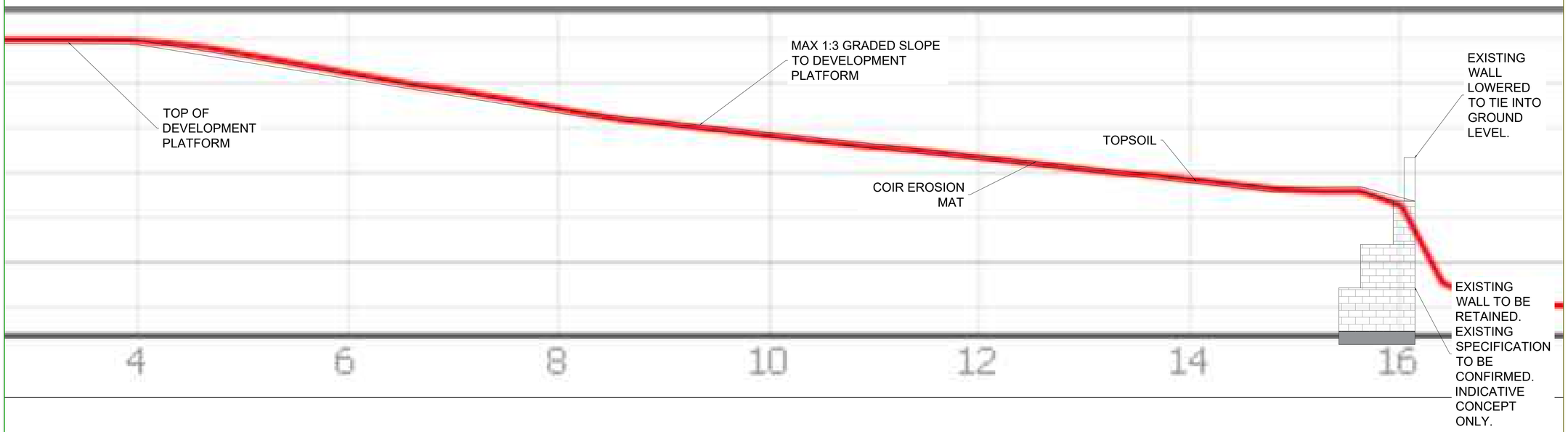
Notes:

Waterco model version 021

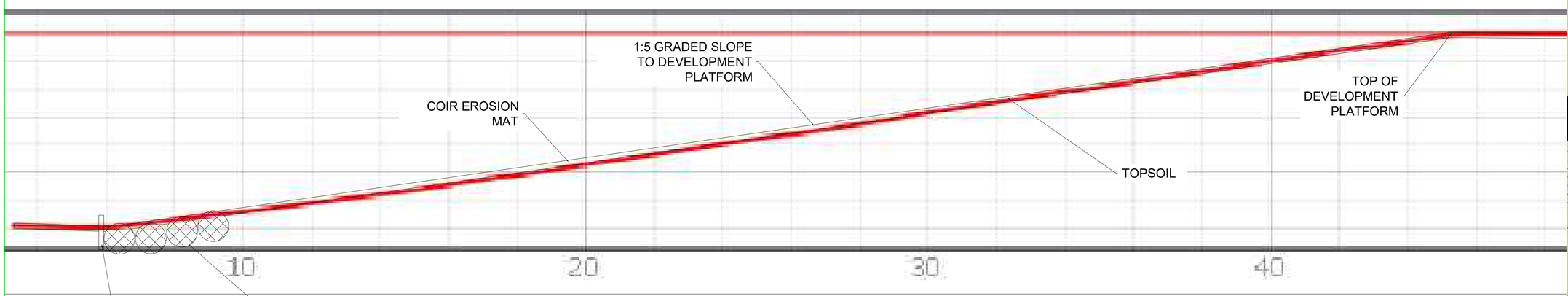
	EXISTING SITE LAYOUT										PROPOSED DEVELOPMENT SITE LAYOUT										Co-ordinates	
	Q20-EXG-NFC		Q100-EXG-NFC		Q100CC1-EXG-NFC		Q100CC2-EXG-NFC		Q1000-EXG-NFC		Q20-DEV-NFC		Q100-DEV-NFC		Q100CC1-DEV-NFC		Q100CC2-DEV-NFC		Q1000-DEV-NFC			
Node Reference	Max WL (mAOD)	Max Depth (m)	Max WL (mAOD)	Max Depth (m)	Max WL (mAOD)	Max Depth (m)	Max WL (mAOD)	Max Depth (m)	Max WL (mAOD)	Max Depth (m)	Max WL (mAOD)	Max Depth (m)	Max WL (mAOD)	Max Depth (m)	Max WL (mAOD)	Max Depth (m)	Max WL (mAOD)	Max Depth (m)	Max WL (mAOD)	Max Depth (m)	Eastings	Northings
1A	62.23	6.30	63.20	7.28	64.47	8.55	65.71	9.78	65.54	9.61	62.23	6.31	63.21	7.28	64.47	8.55	65.72	9.80	65.55	9.63	379058.32	407169.30
1B	62.27	0.19	63.25	1.16	64.53	2.45	65.79	3.70	65.62	3.53	62.29	0.89	63.29	1.89	64.56	3.16	65.81	4.41	65.64	4.24	379022.45	407207.55
1C	-	-	-	-	-	-	65.80	1.71	65.63	1.54	-	-	-	-	-	-	65.83	1.22	65.65	1.05	378995.81	407236.56
2A	62.34	5.20	63.31	6.18	64.58	7.44	65.81	8.67	65.64	8.50	62.34	5.21	63.32	6.19	64.58	7.45	65.82	8.69	65.65	8.52	379107.64	407231.02
2B	62.34	0.01	63.32	0.98	64.58	2.23	65.81	3.47	65.64	3.30	-	-	63.31	0.81	64.58	2.08	65.82	3.32	65.65	3.15	379072.56	407274.81
2C	-	-	-	-	64.58	1.00	65.81	2.23	65.65	2.06	-	-	-	-	64.58	1.00	65.82	2.24	65.65	2.07	379041.17	407314.37
3A	62.39	5.14	63.34	6.10	64.59	7.34	65.82	8.57	65.65	8.40	62.41	5.16	63.38	6.13	64.61	7.36	65.84	8.59	65.67	8.42	379159.43	407266.63
3B	-	-	-	-	64.59	0.49	65.82	1.72	65.66	1.55	-	-	-	-	64.64	0.05	65.85	1.15	65.68	0.98	379159.08	407314.11
3C	-	-	-	-	64.59	0.37	65.83	1.61	65.66	1.44	-	-	-	-	-	-	-	-	-	-	379158.37	407373.89
4A	62.52	2.00	63.44	2.92	64.66	4.14	65.84	5.33	65.68	5.17	62.56	2.04	63.47	2.95	64.67	4.15	65.87	5.35	65.70	5.18	379258.28	407241.66
4B	63.75	0.82	63.92	0.99	64.67	1.73	65.84	2.91	65.68	2.75	62.59	1.19	63.48	2.08	64.68	3.28	65.87	4.47	65.71	4.31	379302.20	407315.65
4C	-	-	-	-	64.67	0.10	65.84	1.28	65.68	1.12	-	-	-	-	-	-	-	-	-	-	379339.79	407379.35
4D	-	-	-	-	-	-	67.18	0.06	67.09	0.01	-	-	-	-	-	-	65.88	0.09	-	-	379341.47	407433.35
4E	67.57	0.04	67.58	0.05	67.59	0.05	67.59	0.06	67.59	0.06	-	-	-	-	-	-	-	-	-	-	379302.30	407520.59
4F	68.80	1.06	68.83	1.09	68.85	1.11	68.87	1.13	68.87	1.13	-	-	-	-	-	-	-	-	-	-	379261.81	407612.45
5A	66.13	1.61	66.49	1.97	66.56	2.04	67.22	2.70	67.12	2.60	65.55	2.30	65.55	2.30	65.55	2.30	65.87	2.62	65.71	2.46	379430.10	407426.23
5B	-	-	-	-	-	-	66.56	0.18	-	-	66.56	1.65	66.56	1.65	66.56	1.65	66.57	1.66	66.57	1.66	379392.71	407564.51
5C	69.08	0.67	69.10	0.69	69.11	0.70	69.13	0.71	69.13	0.71	66.83	0.28	66.84	0.28	66.84	0.28	66.84	0.29	66.84	0.29	379355.91	407698.63
6A	-	-	-	-	-	-	67.22	0.23	67.12	0.13	-	-	-	-	-	-	67.23	0.06	-	-	379564.81	407397.74
6B	-	-	-	-	-	-	67.22	0.61	67.12	0.51	-	-	-	-	-	-	67.23	0.62	67.13	0.52	379559.47	407471.33
7A	-	-	-	-	-	-	67.22	0.62	67.12	0.52	-	-	-	-	-	-	67.23	0.63	67.13	0.53	379661.55	407385.28
7B	-	-	65.55	0.64	66.38	1.46	67.22	2.30	67.12	2.21	-	-	65.55	0.64	66.37	1.46	67.23	2.31	67.13	2.22	379686.48	407450.56
8A	64.88	0.55	65.55	1.22	66.38	2.05	67.22	2.89	67.12	2.79	64.88	0.55	65.55	1.22	66.37	2.04	67.23	2.90	67.13	2.80	379822.58	407423.15
8B	-	-	-	-	-	-	67.22	0.17	67.12	0.08	-	-	-	-	-	-	67.23	0.18	67.13	0.09	379813.08	407371.52

	BLOCKAGE SCENARIO - EXG		BLOCKAGE SCENARIO - DEV		Co-ordinates	
	Q100CC1-EXG-BL1		Q100CC1-DEV-BL1			
Node Reference	Max WL (mAOD)	Max Depth (m)	Max WL (mAOD)	Max Depth (m)	Eastings	Northings
1A	64.47	8.55	64.47	8.55	379058.32	407169.30
1B	64.54	2.45	64.55	3.16	379022.45	407207.55
1C	-	-	-	-	378995.81	407236.56
2A	64.58	7.45	64.58	7.45	379107.64	407231.02
2B	64.58	2.23	64.59	2.08	379072.56	407274.81
2C	64.58	1.00	64.59	1.00	379041.17	407314.37
3A	64.59	7.34	64.61	7.37	379159.43	407266.63
3B	64.59	0.49	64.64	0.05	379159.08	407314.11
3C	64.59	0.37	-	-	379158.37	407373.89
4A	64.66	4.14	64.67	4.15	379258.28	407241.66
4B	64.67	1.73	64.68	3.28	379302.20	407315.65
4C	64.67	0.10	-	-	379339.79	407379.35
4D	-	-	-	-	379341.47	407433.35
4E	-	-	-	-	379302.30	407520.59
4F	-	-	-	-	379261.81	407612.45
5A	65.85	1.33	64.64	2.30	379430.10	407426.23
5B	-	-	66.40	1.65	379392.71	407564.51
5C	68.74	0.38	66.82	0.26	379355.91	407698.63
6A	-	-	-	-	379564.81	407397.74
6B	-	-	-	-	379559.47	407471.33
7A	-	-	-	-	379661.55	407385.28
7B	66.38	1.47	66.38	1.46	379686.48	407450.56
8A	66.38	2.05	66.38	2.04	379822.58	407423.15
8B	-	-	-	-	379813.08	407371.52

APPENDIX J – INDICATIVE CONCEPT SKETCHES



SECTION 1: RETAINED WALL WITH SOFT ENGINEERED REGRADED 1:3 EMBANKMENT



SECTION 2: SOFT ENGINEERED EMBANKMENT WITH 1:5 GRADING

NOTES

1. THIS DRAWING IS INDICATIVE AND CONCEPTUAL AND PROVIDED FOR ILLUSTRATIVE PURPOSES ONLY.
2. THE SPECIFICATION OF THE EXISTING WALL IS SUBJECT TO CONFIRMATION THROUGH INVESTIGATION.
3. INDICATIVE SOLUTION IS SUBJECT TO DETAILED DESIGN.
4. ADDITIONAL DETAIL TO BE PROVIDED AT SUBMISSION OF FLOOD RISK ACTIVITY PERMIT APPLICATION.

KEY

EXISTING WALL

COIR ROLL

FOR INFORMATION ONLY

Rev	Description	Date	Drn / Chk / App
P01	INDICATIVE CONCEPT	24/10/24	LS MB FH

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Client

MORRIS HOMES

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EAST LANCS PAPERMILL

Sheet Title

INDICATIVE CONCEPT SKETCH

TTE Project Number	Drawn By	Date	Checked By	Date	Approved By	Date	Scale @ A1	Suitability
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