
Development at 86 Mexborough Road Bolton Upon Dearne

Flood Risk Assessment

Client:

Mr S. Kelly

86 Mexborough Road
Bolton Upon Dearne
Rotherham
S63 8NZ

Prepared by:

joc consultants ltd

Park Farm House
Leathley Lane
Leathley
Otley
LS21 2JU

REVISION HISTORY

Revision	Date	Details
00	31 st October 2019	First issue

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ABBREVIATIONS

AEP:	Annual exceedance probability
AOD:	Above Ordnance Datum
CCA:	Climate change allowance
FRA:	Flood risk assessment
LiDAR:	Light detection and ranging
LLFA:	Lead Local Flood Authority
MBC:	Metropolitan Borough Council
PPG:	Planning Practice Guidance
ReFH2:	ReFH2: Revitalised flood hydrology model, version 2
SFRA:	Strategic Flood Risk Assessment

1.0 INTRODUCTION

- 1.1. JOC Consultants Ltd is instructed by Shane Kelly (the Client), to prepare a flood risk assessment (FRA) for a proposed detached dwelling on land at 86 Mexbrough Road, Bolton Upon Dearne. The development is the subject of a planning application to City of Barnsley Metropolitan District Council.
- 1.2. References in this report to “the site” are references to the site to which the pre-planning discussions apply. Specific references to sources of information used in the report are shown in square brackets and are listed in section 11. Figures 1 and 2 are presented immediately following page 15 and the appendices follow thereafter.
- 1.3. This report is prepared specifically for the Client for the purpose of the aforementioned planning application and the report may not be used for any purpose other than for the purpose for which it was commissioned, and it may not be assigned to any third party without our written permission.
- 1.4. In the preparation of this FRA report, JOC Consultants Ltd has relied on published information and by information provided by the Client and accepts no liability for its accuracy or adequacy or for the consequences of any changes to or re-assessment of this data in the future.

2.0 OBJECTIVES

- 2.1. The objectives of this flood risk assessment are to:
 1. establish whether the proposed development is likely to be affected by current or future flooding from any source;
 2. establish whether the proposed development will increase flood risk elsewhere; and
 3. recommend, as appropriate, measures for managing flood risk.

3.0 PLANNING POLICY ON FLOOD RISK

3.1 National Policy

- 3.1.1. National Planning Policy in relation to flood risk is set out in the National Planning Policy Framework (NPPF) [1].

3.2 Local Policy

- 3.2.1. Proposed local policy on development and flood risk is set out in Core Policies CSP 3 and CSP 4 of the Barnsley MBC Core Strategy, adopted in September 2011. These policies deal with sustainable drainage and flood risk respectively.
- 3.2.2. The Level 1 Barnsley Strategic Flood Risk Assessment (SFRA) [2], published in September 2010 report provides evidence which supports local policy.

3.3 Planning Practice Guidance

- 3.3.1. In addition to national and local policy, the Planning Practice Guidance for Flood Risk and Coastal Change [3] provides advice to planning authorities to assist them when considering planning applications in areas at risk of flooding. The Environment Agency Standing Advice [4] also provides guidance to assist local planning authorities when considering planning applications in areas at risk of flooding.
- 3.3.2. This report has been prepared with reference to the Planning Practice Guidance and the Standing Advice.

4.0 LOCATION AND DESCRIPTION OF THE SITE

- 4.1. The site is situated to the north of the River Dearne within the existing rear garden of 86 Mexborough Road. The NGR coordinates at the approximate centre of the site are 445630E, 402140N.
- 4.2. In the absence of a topographical survey, the elevation of the site is estimated to be between 18.0m and 19.0m AOD.
- 4.3. The nearest watercourse is the River Dearne, which flows east, approximately 25m to the south of the site. This is designated as a “Main River” and is therefore under the control of the Environment Agency. There is also an un-named watercourse, approximately 8m to the south of the site, which flows into the River Dearne.
- 4.4. The underlying superficial geology is alluvium, comprising clay, silt sand and gravel. The underlying bedrock is the Pennine Middle Coal Measures comprising mudstone, Siltstone and Sandstone.

5.0 THE PROPOSED DEVELOPMENT

- 5.1. A detached dormer bungalow is proposed as shown on the site block plan and elevations drawing in Appendix A.
- 5.2. The development is classified as **More Vulnerable** in accordance with Table 2 of the Planning Practice Guidance, paragraph 066.

6.0 EXISTING FLOOD RISK

6.1 Assessment methodology

- 6.1.1. The development and proposed or recommended mitigation measures are assessed against the Design Flood, as defined in PPG paragraph 055 [3], taking into account existing flood defences.
- 6.1.2. Events which exceed the Design Flood and breach events are assessed as residual risks
- 6.1.3. Flood risk at the site has been assessed using data provided by the Environment Agency; the Barnsley SFRA; and the Long term Flood Risk information published by the Government.

6.2 History of Flooding

- 6.2.1. The Environment Agency Flood History Map shows the site to be in an area that was affected by the 2007 major flood event. Given its proximity to the River Dearne, it is highly likely that the site will have been flooded in other historical flood events.

6.3 Flood zones

- 6.3.1. The Flood Map for Planning shows the site to be partly in Flood Zones 2 and 3. The Barnsley Policies Map 59 confirms that the site is not in the Functional Floodplain, zone 3b.

6.4 Risk of fluvial flooding

- 6.4.1. The site is at a high risk of flooding from the River Dearne. Data from the River Don Flood Risk Management Study 2004, which includes the River Dearne, has been provided by the Environment Agency and is included in Appendix B. The nearest model node is DRN01 6197u. Modelled flood levels at this node are shown in Table 6.1 below.

Table 6.1: Modelled flow rates and flood levels at node DRN01 6197u		
Return period (years)	Flow rate m3/s	Flood level mAOD
25	47.23	17.60
50	50.99	17.67
75	58.09	17.77
100	68.73	17.95
150	84.11	18.31
200	93.15	18.55

6.4.2. If the estimated elevation of the site, between 18.0m and 19.0m AOD is correct, then the site is above the 1% AEP modelled flood level. In view of the uncertainty as to the actual elevation of the site, it is possible that part of the site it is at risk of flooding from a 1% AEP event. The data sheet in the River Don Flood Risk Management Study 2004 report for node DRN01 6197u shows the overtopping threshold of the left bank of the river to be approximately 17.95m AOD.

6.4.3. The SFRA Map D-3 indicates flood depths as follows:

- 1% AEP event: 0.5m to 1.0m;
- 0.1% AEP event: 1.0m to greater than 1.5m.

6.6 Surface water flood risk

6.5.1. The Updated Surface Water Flood Map shows the site to be at a high risk of surface water flooding, with depths indicated to be in the range 300mm to 900mm, (see Appendix C).

6.7 Risk of sewer flooding

6.6.1. We are not aware of any records of sewer flooding affecting the site and the annual probability of this type of flooding, should it occur, is likely to be less than 3.3%.

6.8 Risk of groundwater flooding

- 6.7.1. Groundwater flooding of land occurs when the water table rises above the ground surface or enters basements and is typically associated with permeable rock such as chalk. These conditions are not present at the site and no basements are proposed in the development.

6.9 Risk of flooding from reservoirs

- 6.8.1. The Environment Agency flood map for reservoirs shows the site to be at risk of flooding from the uncontrolled release of water from reservoirs, (see Appendix D). Reservoirs which impound more than 10,000 m³ of water above ground level are subject to regular statutory inspections by reservoir engineers. The likelihood of this type of flooding is very low.

7.0 EFFECTS OF CLIMATE CHANGE

7.1 Climate change allowances

- 7.1.1. The effects of climate change must be assessed over the lifetime of the development. The Planning Practice Guidance states at paragraph 026 that residential development should be considered for a minimum period of 100 years. For the purposes of this assessment, climate change effects are therefore considered up to the year 2119.
- 7.1.2. Current guidance on the application of climate change allowances was issued in February 2016 and updated on 15th February 2019 [5]. The guidance provides the anticipated changes to peak river flow and rainfall intensity for different scenarios of carbon dioxide emissions over future epochs up to 2115.

7.2 Peak river flow allowances

- 7.2.1. Climate change allowances are provided for each river basin district in England and as the site is situated within the Humber river basin district, the allowances applicable to the period 2070 to 2115 are shown in Table 7.1 below.

Table 7.1: Total percentage change in peak river flow in the period 2070 - 2115		
River Basin District	Allowance Category	Climate change effect
HUMBER	Upper end	50%
	Higher central	30%

- 7.2.2. A 30% increase in the flow rate at model node DRN01 6197u results in a flood level, estimated by interpolation of the data in Table 6.1, of approximately 18.45 AOD, as shown in Figure 2.

7.3 Peak rainfall intensity

- 7.2.3. The climate change guidance requires the Central and Upper End allowances to be used when assessing the effects of increases to peak rainfall intensity. The allowances apply across the whole of England and are shown in Table 7.2 for the period 2070 to 2115.

Table 7.2: Total percentage change in peak rainfall intensity in the period 2070 - 2115	
Allowance Category	Climate change effect
Upper end	40%
Central	20%

- 7.2.4. Estimates of peak rainfall rates and runoff have been prepared using the ReFH2 model and the results for return periods between 1 year (100% AEP) and 1000 years (0.1% AEP) are provided in Appendix E. The effects of the CCA allowances on the site in its existing condition are shown in Table 7.3 below.

Table 7.3: Effect of climate change on the 1% AEP rainfall event – existing condition		
	Peak runoff rate increase	Runoff volume increase
20% CCA	23.6%	24.1%
40% CCA	48.3%	49.3%

8.0 EFFECT OF THE DEVELOPMENT ON FLOOD RISK

8.1 Fluvial flood risk

- 8.1.1. The proposed development will result in some loss of floodplain storage, but the volume lost will be insignificant on the context of the wider flooded area. The development is therefore unlikely to result in a measurable increase in flood levels.

8.2 Surface water flood risk

- 8.2.1. For the purposes of this FRA it is estimated that the development will create an impervious area over approximately 50% of the site. The ReFH2 model results in Appendix E shows that this could increase the 1% AEP peak runoff rate runoff volume by approximately 360% and 246% respectively, assuming a CCA of 30%. These increases can be mitigated by the proposals for surface water management in section 9.2 below.

9.0 THE SEQUENTIAL TEST

- 9.1.1. As the development is in flood zones 2 and 3, the Sequential Test must be applied in accordance with the NPPF. The test has been applied to the Bolton Upon Dearne area.
- 9.1.2. A review of potential alternative sites in Flood Zone 1 has been carried out with reference to the Barnsley Strategic Housing and Employment Land Assessment (SHELAA), 2016 update, from which seven sites were identified, as shown in Table 9.1.

Table 9.1: SHELAA sites in Bolton Upon Dearne			
SHELAA reference	Location	Area (ha)	Flood zone
128	Land at School Street, Bolton Upon Dearne	0.50	1
168	Land south of Conniston Drive	4.6	1
181	Land east of Goldthorpe	77.8	1
260	Land south of Lowfield Road	3.1	1
809	Land north of Lowfield Road	3.6	1
882	Land south of Conniston Drive	0.8	1
886	Land south of Broadwater	14.3	1

- 9.1.3. It is evident from Table 9.1 that there are alternative sites in Flood Zone 1. The smallest of these however is 0.5 ha (5,000m²), which is approximately 14 times the size of the proposed development site. The sites are not, therefore suitable for the proposed development.
- 9.1.4. A check of available land on the market was made using the Rightmove database. This identified the following sites suitable for a single dwelling:

- Land at Lowfield Road, Bolton Upon Dearne: plot of land with planning permission for a 5 bedroom detached dwelling – flood zone 1.
- Land at Lowfield Road, Bolton Upon Dearne: 2 plots of land with planning permission for a 4 bedroom detached dwelling on each plot – flood zone 1.

9.1.5. It is evident from a search of available land on the market that there are alternative available sites in flood zone 1 that would be suitable for a single dwelling and, accordingly, the proposed development does not pass the Sequential Test.

10.0 FLOOD RISK MANAGEMENT

10.1 Fluvial flood risk

- 10.1.1. As the development is unable to pass the Sequential Test, the planning application is very likely to be refused. Should the development proceed however, it is recommended that, in view of potential flood depths at the site, the design of the dwelling should be altered to have all living accommodation at first floor level, with only garage and utility space at ground floor level. The ground floor should be constructed for flood resilience and the elevation of the first floor should not be less than 19.10m AOD. This will provide 650mm of freeboard above the 1% AEP flood level allowing for a 30% CCA.
- 10.1.2. It is also recommended that occupants of the development are encouraged to register with the free flood warning service provided by the Environment Agency so that vehicles and other items can be removed to higher ground in the event of an impending flood.
- 10.1.3. In the event of flooding from the River Dearne, access to the development may be restricted for a limited period but the upper ground floor will provide a safe place of refuge.

10.2 Surface water flood risk

10.2.1. The effect of the proposed development on surface water run-off volumes can be mitigated by the implementation of sustainable drainage principles. The Building Regulations require surface water to be discharged according to the following preference hierarchy:

1. to ground by infiltration;
2. to a watercourse;
3. to a sewer, if options (1) and (2) are not reasonably practicable.

- 10.2.2. Infiltration drainage is unlikely to be feasible owing to a potentially high water table and poor infiltration rates, based on the underlying geology. A surface water discharge to the River Dearne is therefore likely to be the preferred option.
- 10.2.3. Attenuation storage will be required and the form this will take will be a matter for the detailed design of the drainage system.
- 10.2.4. Should the development proceed, it is recommended that a detailed drainage design is prepared for the development in accordance with the technical standards for sustainable drainage [6] and the Building Regulations.

10.3 Residual risks

- 10.3.1. Residual risks are those which persist after any flood risk management measures designed to protect against the design flood event. These risks include:
- flood events that are greater than the design event; and
 - greater climate change effects than a 30% increase to fluvial flow rates.
- 10.3.2. The flood map for planning shows the flood zone 2 boundary, which represents the limit of the 0.1% AEP flood outline, to be approximately half way up Willow Lane where the ground level is estimated to be approximately 19.50m AOD. If the development is to proceed, it is recommended that a topographical survey of the site and Willow Lane is carried out in order to verify ground levels and re-assess this residual risk.
- 10.3.3. The 1% AEP with 50% CCA flood level is estimated to reach 18.80m AOD. This would reduce the freeboard to 0.3m, which would be acceptable.

11.0 CONCLUSIONS AND RECOMMENDATIONS

- 11.1.1. The development is classified as **More Vulnerable** and is in flood zones 2 and 3. It is at a high risk of fluvial and surface water flooding and available flood data indicate flood depths potentially in excess of 1.5m at the site.
- 11.1.2. Historical records show that the site was flooded in the major flood event of 2007.
- 11.1.3. There are available alternative sites in flood zone 1 in Bolton Upon Dearne that are suitable for a single detached dwelling. The proposed development is therefore unable to pass the Sequential Test as required by the National Planning Policy Framework.

- 11.1.4. The flood modelling data provided by the Environment Agency indicates a 1% AEP flood level at the site of 17.95m AOD. The effects of climate change over the lifetime of the development, is estimated to increase the flood level of this event in the range 18.45m to 18.80m AOD.
- 11.1.5. The risks of sewer flooding and groundwater flooding at the site are low. The site is however within an area at risk of flooding in the event of an uncontrolled release of water from reservoirs. The likelihood of such a release of water however is extremely low.
- 11.1.6. The proposed development is unlikely to result in any measurable increase in flood levels within the floodplain.
- 11.1.7. The development will increase surface water runoff rates and volume due to the creation of impermeable surfaces on the site. This can be mitigated by the implementation of sustainable drainage principles in the detailed design of the drainage system, in accordance with the recommendations in section 10.2 of this report.
- 11.1.8. The recommended minimum first floor level of 19.10m AOD will provide freeboard of 650mm above the 1% AEP flood level including a 30% CCA applied to the flow rate in the River Dearne. In the event of a 50% increase in the flow rate the freeboard would reduce to 300mm. In the extreme case of a 0.1% AEP flood, it is possible that the first floor could be flooded, but this should be reviewed following a topographical survey of the site and Willow Lane.
- 11.1.9. The development will not increase off-site flood risks provided the recommendations for surface water management are implemented.

12.0 REFERENCES

1. National Planning Policy Framework. Department for Communities and Local Government. February 2019.
2. Barnsley Level 1 SFRA, September 2010.
3. Planning Practice Guidance: Flood Risk and Coastal Change. Updated 15th April 2015. Department for Communities and Local Government.
4. Environment Agency Standing Advice to local planning authorities. April 2015.
5. Flood risk assessments: climate change allowances. Environment Agency, 19th February 2016, updated 3rd February 2017.
6. Sustainable Drainage Systems. Non-statutory technical standards for sustainable drainage systems. DEFRA March 2015.

Land at 86 Mexborough Road, Bolton Upn Dearne, S63 8LX

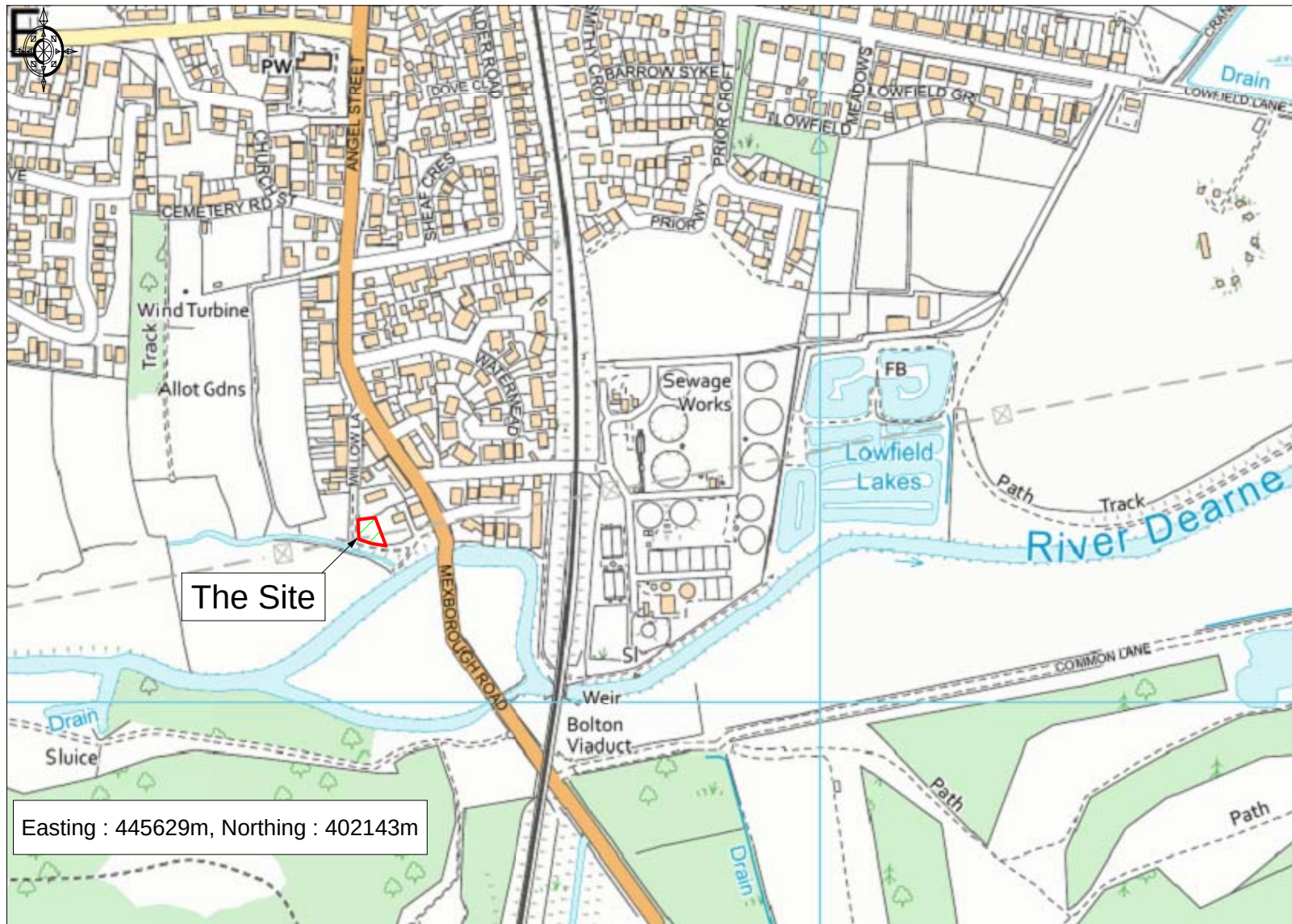
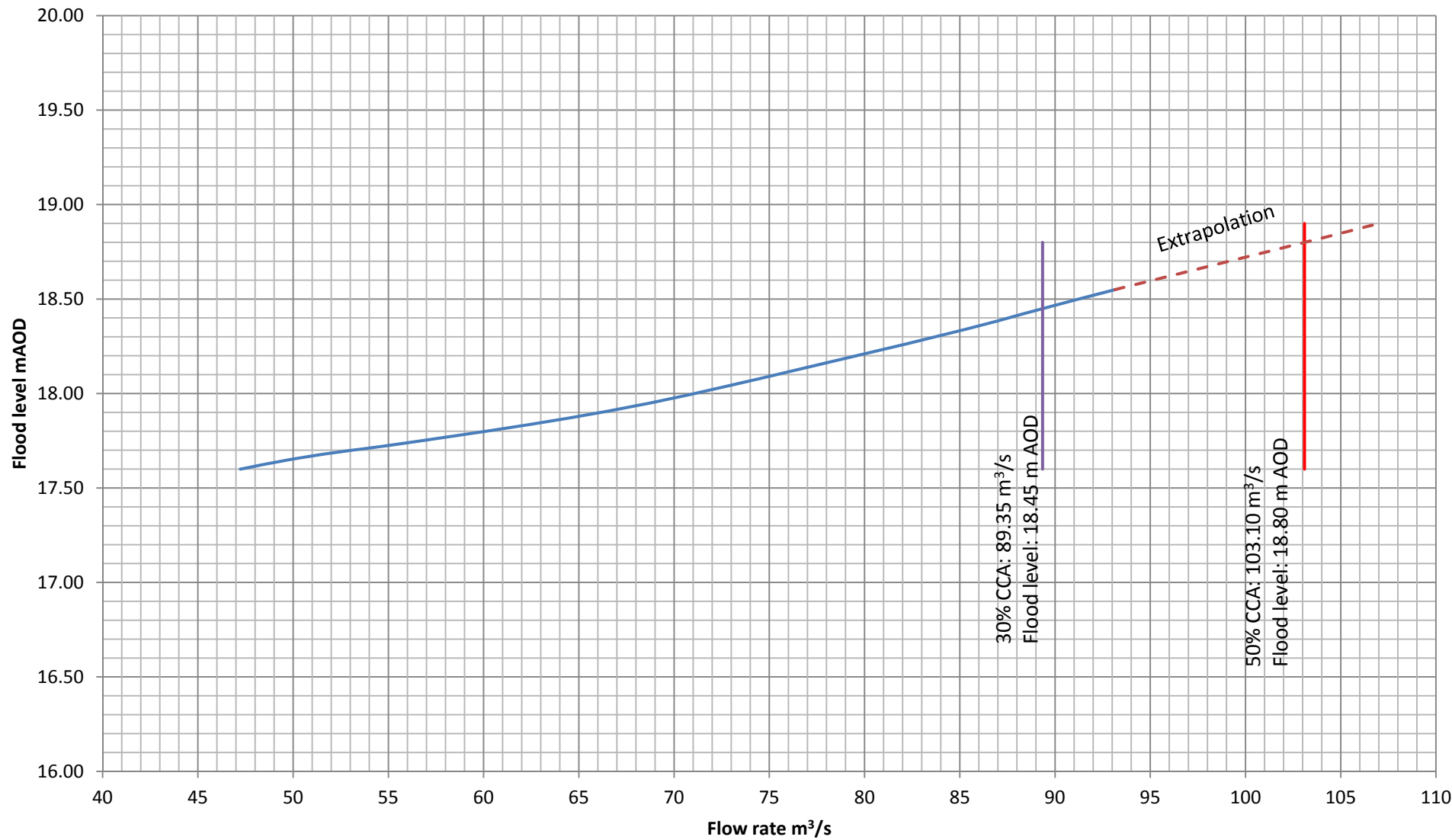


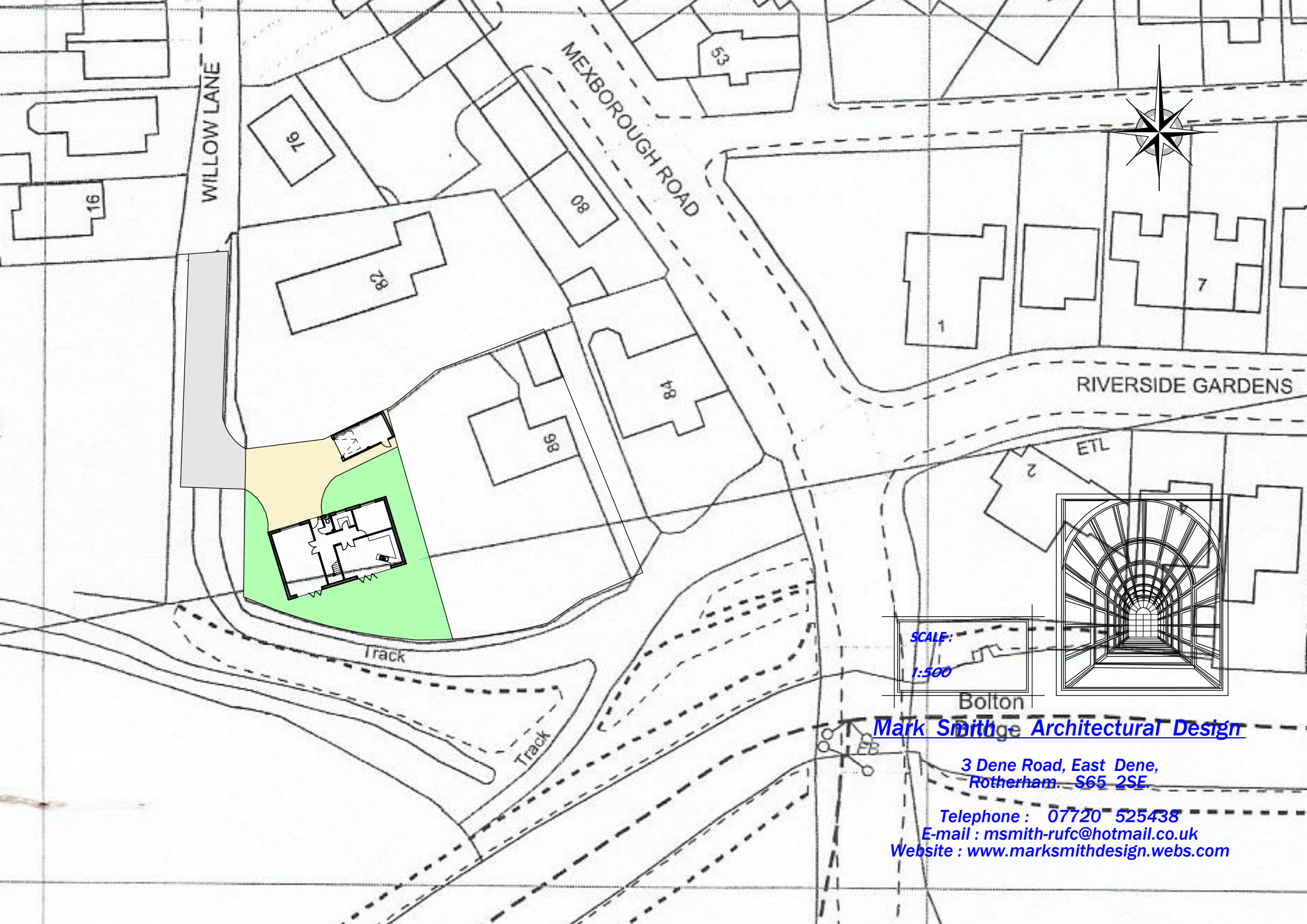
Figure 1: Location Plan

Figure 2: Stage-discharge relationship at model node DRN01 6197



APPENDIX A

Block plan and elevations drawings

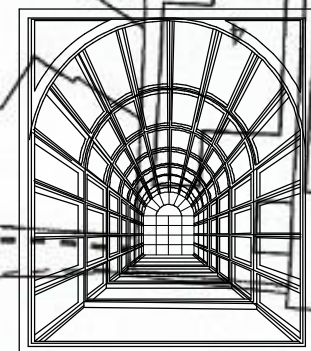


WILLOW LANE

MEXBOROUGH ROAD

RIVERSIDE GARDENS

SCALE:
1:500



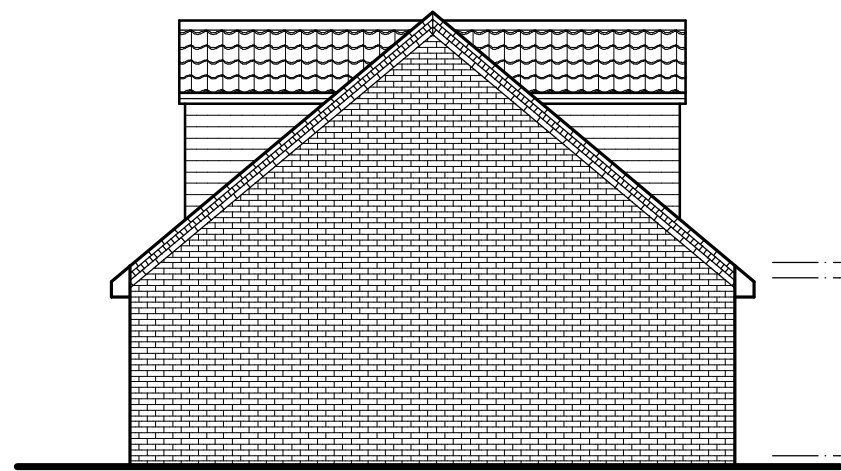
Mark Smith Architectural Design

3 Dene Road, East Dene,
Rotherham. S65 2SE.

Telephone : 07720 525438
E-mail : msmith-rufc@hotmail.co.uk
Website : www.marksmithdesign.webs.com



FRONT ELEVATION



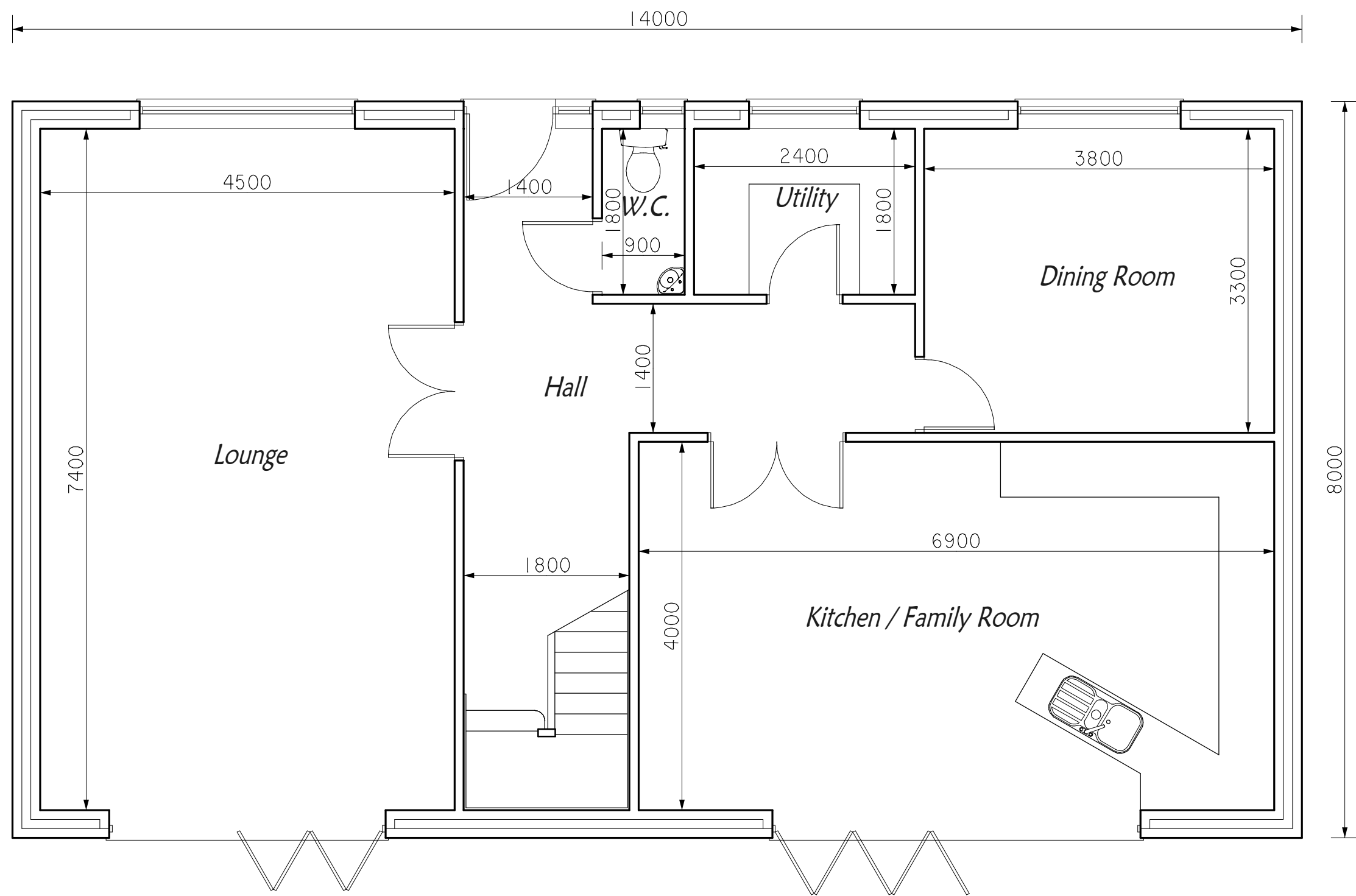
SIDE ELEVATION



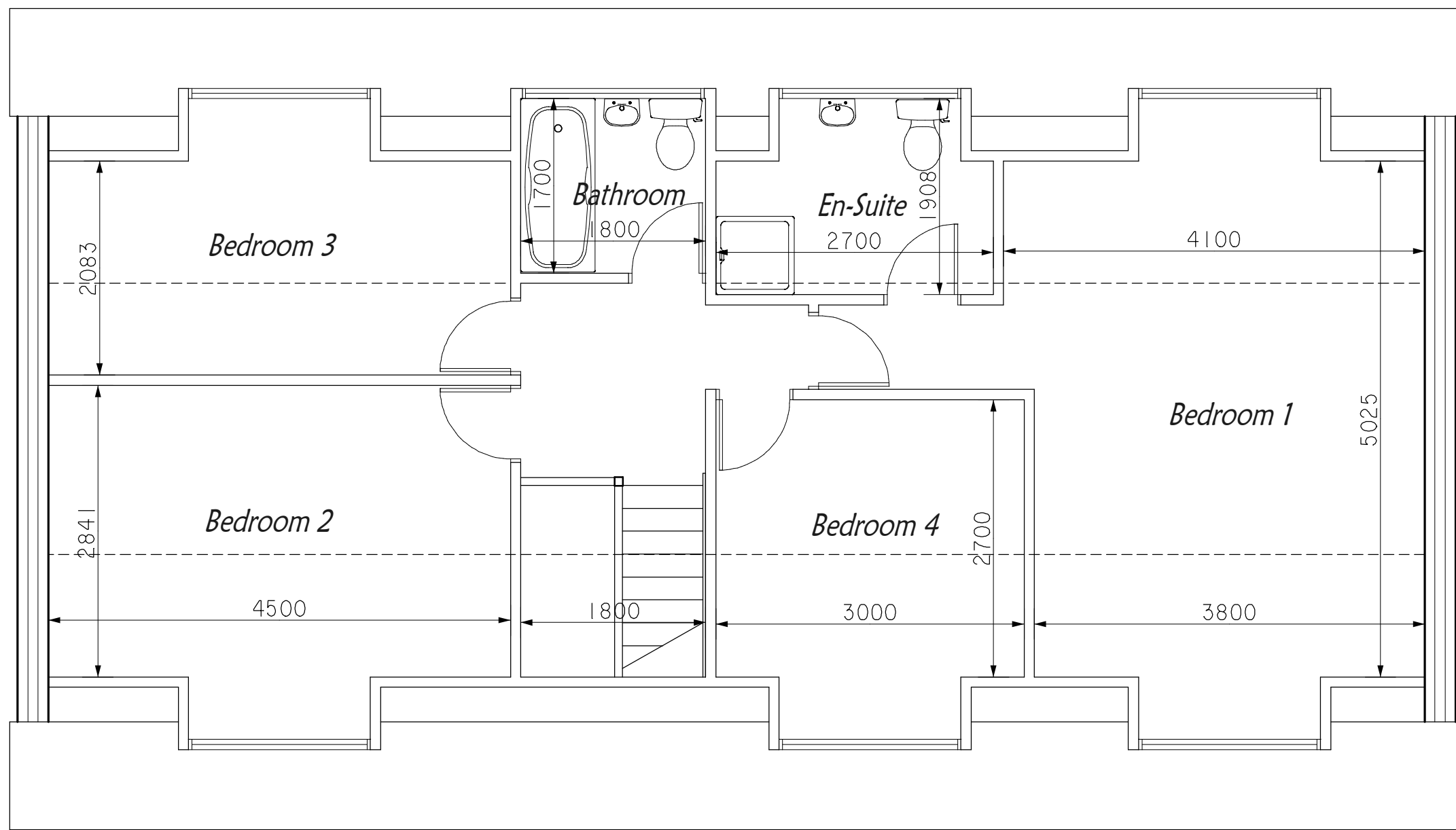
REAR ELEVATION

General notes

- 1 This drawing is copyright and is not to be copied or reproduced in any way without obtaining prior consent.
- 2 All dimensions and levels to be checked and verified on site.
Any discrepancies to be reported to this office before work commences.
- 3 Details of ground floor construction and foundations are indicative only and are subject to ground conditions and levels.
- 4 The project to which this drawing applies should, if applicable, be undertaken in full compliance with the C.D.M. Regulations (2007), and under the control of a client appointed C.D.M.Co-ordinator
- 5 Any work that is carried out adjacent to any existing 'Party Walls and Boundary Party Walls' the client is to ensure that the requirements of the Party Wall Act 1996 are strictly adhered to and all the legal requirements of that act are to be discharged prior to commencement of any work.
- 6 NOTE:
Any works that are subject to Building Regulation Approval must not be commenced prior to approval being granted.
Any works that are commenced prior to approval will be the sole responsibility of the applicant/contractor.



GROUND FLOOR LAYOUT



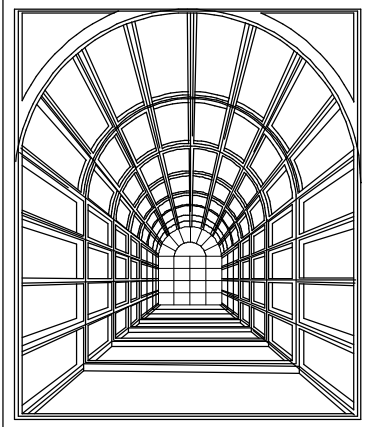
FIRST FLOOR LAYOUT

PROVISIONAL DRAWING

PROJECT: NEW DWELLING
ADDRESS: 86 MEXBOROUGH ROAD
BOLTON ON DEARNE
BARNLEY
CLIENT: MR S KELLY

DRAWING No :
MS/075/19
- 01

SCALE :
1:50 & 1:100



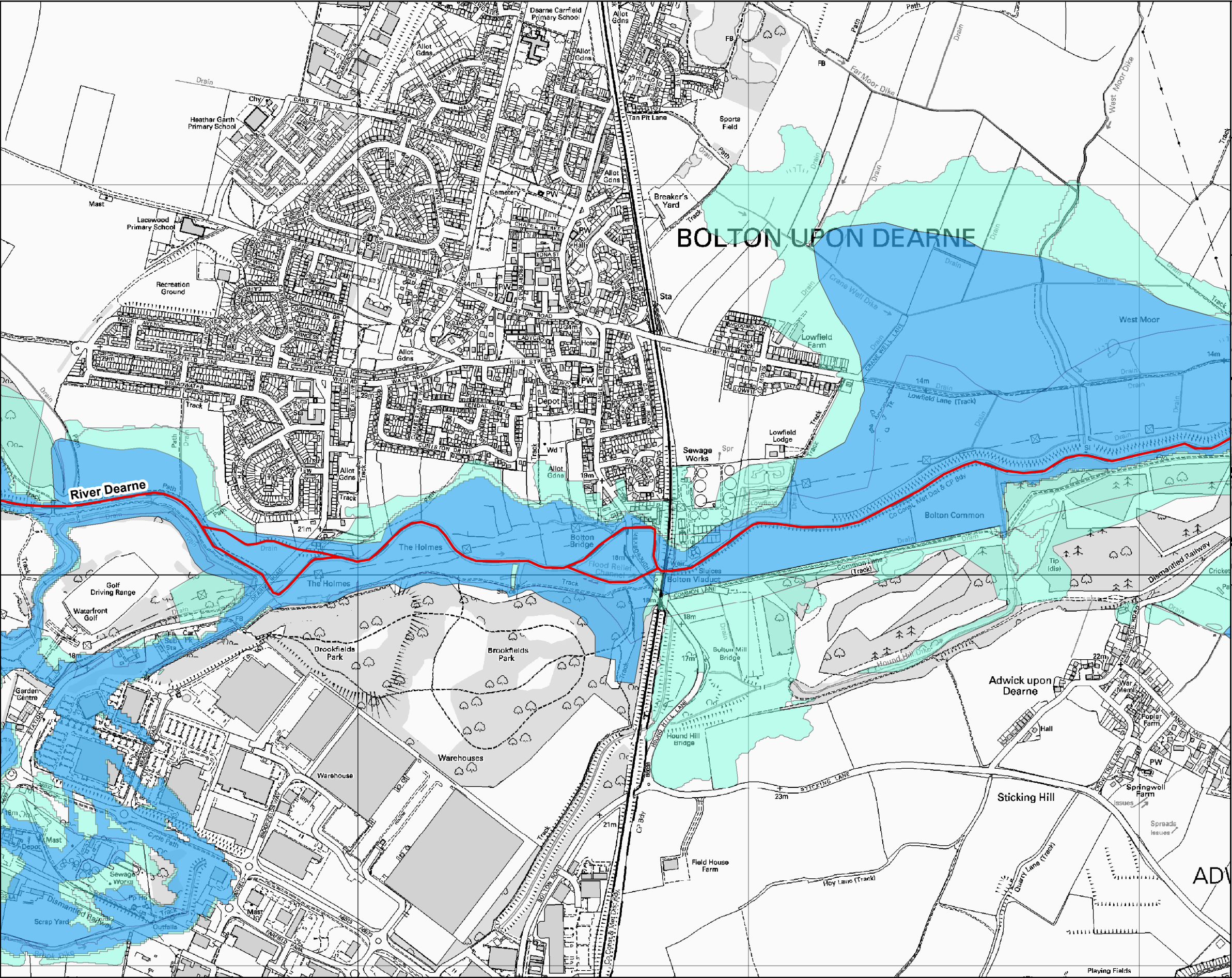
Mark Smith - Architectural Design
3 Dene Road, East Dene,
Rotherham. S65 2SE.

Telephone : 07720 525438
E-mail : msmith-rufc@hotmail.co.uk
Website : www.marksmithdesign.webs.com

APPENDIX B

Environment Agency Flood Data

RFI: 144281 Flood Map For Planning



www.environment-agency.gov.uk

Scale: 1:10,000

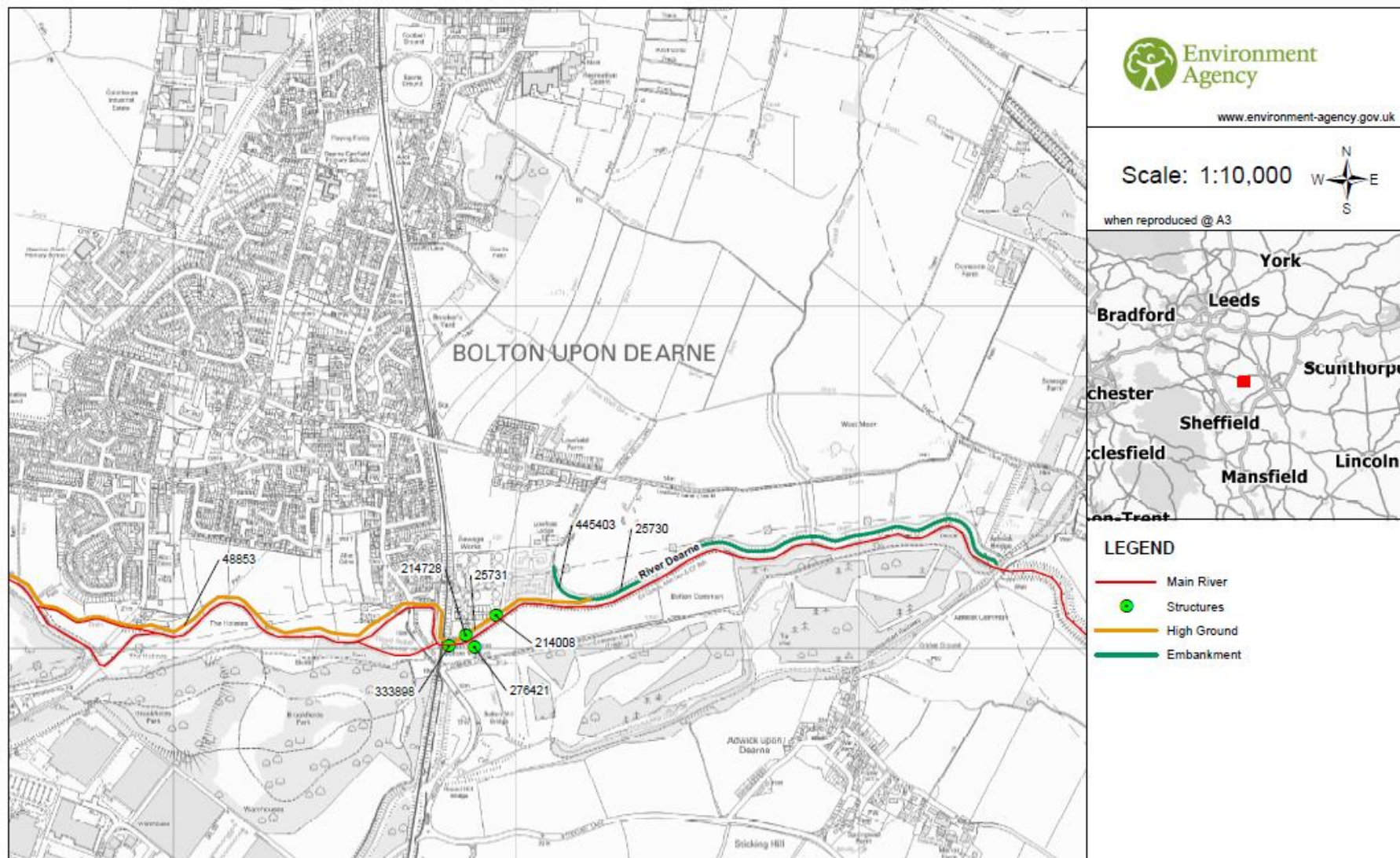
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LEGEND

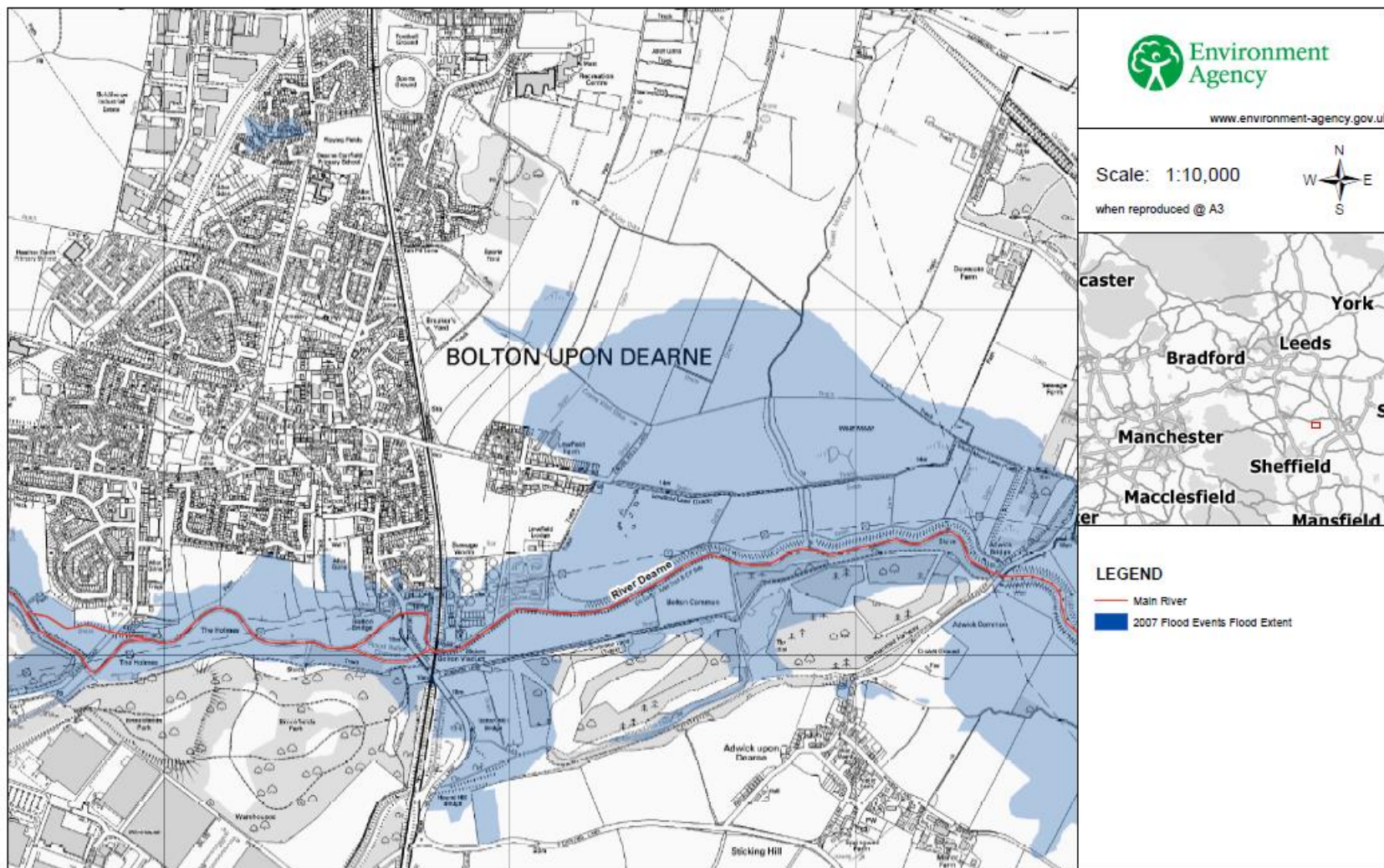
- Main River
- Areas Benefitting From Flood Defences
- Flood Zone 3 (FZ3)
- Flood Zone 2 (FZ2)

RFI/144281 Flood Defence Asset Location Map



ASSET_ID	DESCRIPTIO	ASSET_MAIN	AIMS_SUB_T	LENGTH	ACTUAL_DCL	ACTUAL_UCL	PROTECTION	TARGET_CON	OVERALL_CO	DESIGN_SOP
445403	Adwick Spillway	environment_agency	embankment	163.35			fluvial	3	3	
25730		environment_agency	embankment	1325.11	15.95	15.36	fluvial	2	3	50
48853		private	high_ground	1847.20			fluvial	3	2	30
25731		private	high_ground	450.42			fluvial	3	4	50

RFI/144281 Flood History Map



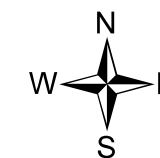
RFI: 144281 Modelled Flood Level Node Point Location Map



www.environment-agency.gov.uk

Scale: 1:5,000

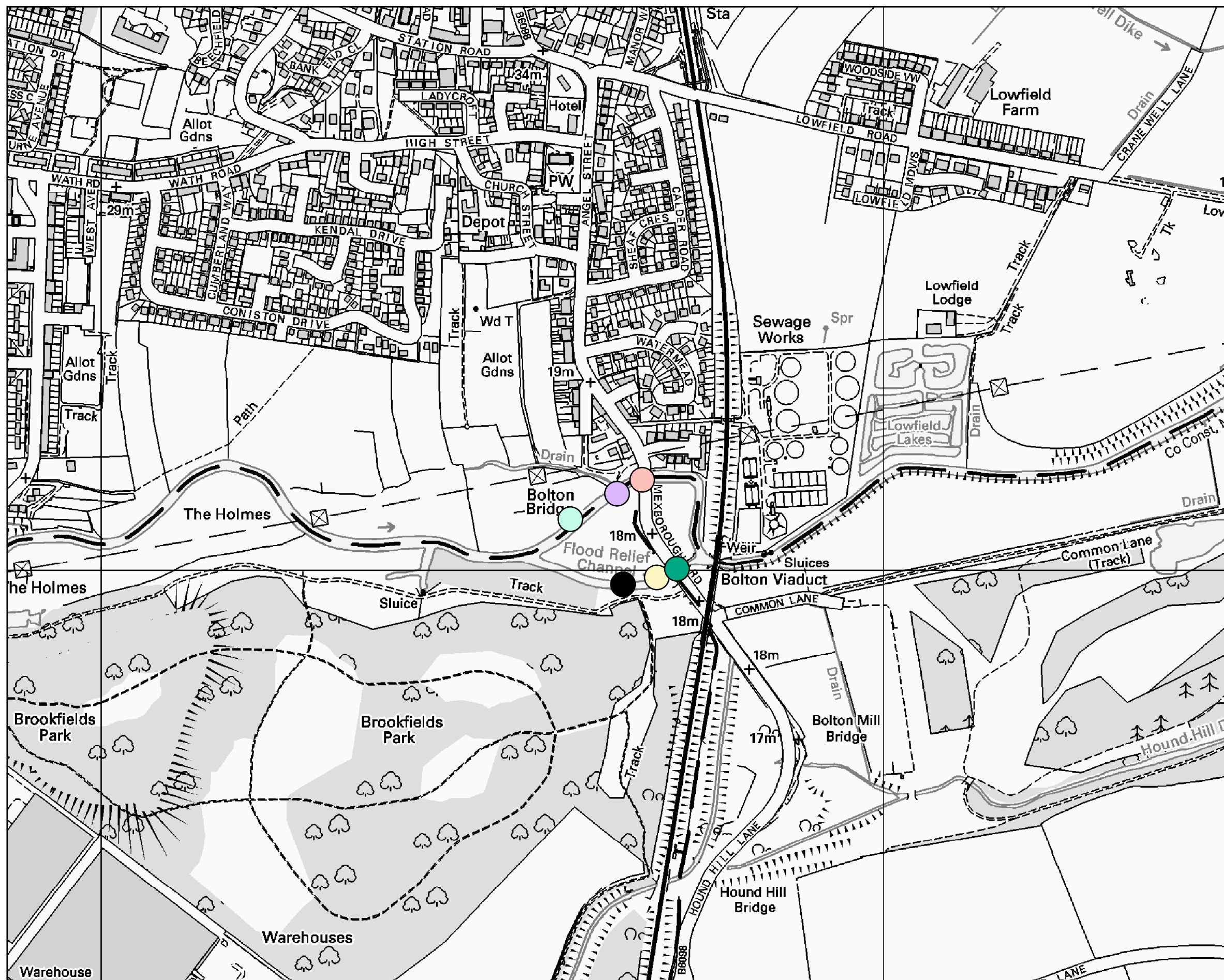
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LEGEND

NAME

- DRN01_6197SP
- DRN01_6197u
- DRN01_6301
- FLD1_47_SP
- FLD1_47d
- FLD1_47u



2004 River Don FRM Model Results - RFI/2019/144281 (Level - mAOD, Flow - m³/s)												
	Annual Exceedance Probability (AEP)											
	4% AEP (1 in 25)		2% AEP (1 in 50)		1.33% AEP (1 in 75)		1% AEP (1 in 100)		1.67% AEP (1 in 150)		0.5% AEP (1 in 200)	
Node Label	Flow	Stage	Flow	Stage	Flow	Stage	Flow	Stage	Flow	Stage	Flow	Stage
DRN01_6197u	47.23	17.60	50.99	17.67	58.09	17.77	68.73	17.95	84.11	18.31	93.15	18.55
DRN01_6197SP	6.73	17.60	12.01	17.67	25.27	17.77	51.73	17.95	74.54	18.31	85.61	18.55
DRN01_6301	47.33	17.69	51.19	17.75	58.85	17.85	68.75	18.01	84.15	18.35	93.19	18.58
FLD1_47_SP	0.00	17.46	0.03	17.50	4.55	17.65	17.74	17.84	41.65	18.20	56.86	18.45
FLD1_47d	23.87	17.37	27.91	17.49	29.19	17.63	34.35	17.79	50.23	18.16	64.45	18.42
FLD1_47u	23.87	17.46	27.91	17.50	29.19	17.65	34.35	17.84	50.23	18.20	64.45	18.45
#####	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
#####	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
#####	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
#####	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
#####	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
#####	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
#####	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
#####	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
#####	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
#####	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
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#####	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
#####	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
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#####	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
Column	2	2	3	3	4	4	5	5	6	6	7	7

Location Plan



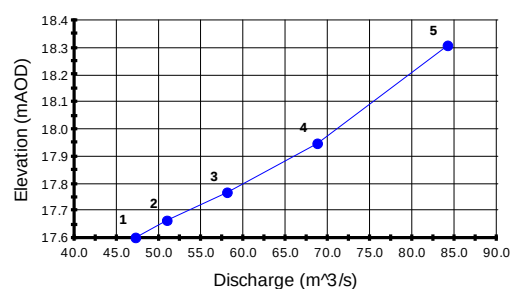
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Cross Section References

River: DRN
Reach: 01
Chainage: 6197U
Section Type: BRIDGE, SECTION, SPILL
OS NGR: SE 45690 02121
Survey Dwg Ref: N/A
Photograph Ref: DEAR_06197.JPG
Next
Section D/s: 6014U
Section U/s: 6301



Rating Curve



Number represents model profile number

Summary of Results

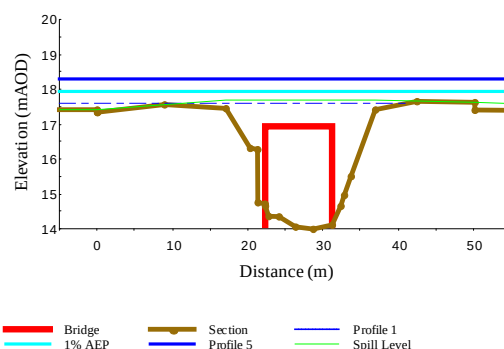
Profile No	AEP (%)	Flow (m³/s)	Water Level (mAOD)	Velocity (m/s)
1	4.00	47.2	17.604	0.91
2	2.00	51.0	17.667	0.91
3	1.33	58.1	17.770	0.91
4	1.00	68.7	17.949	0.91
5	0.67	84.1	18.307	0.92

Level of Left Bank 17.350 mAOD

Level of Right Bank 17.412 mAOD

AEP: Annual Exceedance Probability = 1/T, where T = Return Period (Years)

Cross Section Profile



DRN: 01: CROSS SECTION NUMBER 6197U

ASSET_ID	AIMS_SUB_T	DESCRIPTION	DESIGN_SOP	ASSET_MAIN	PROTECTION	TARGET_CON	OVERALL_CO
333898	weir			private	fluvial	9	2
214728	outfall			private	fluvial	9	3
276421	outfall			private	fluvial	9	3
214008	outfall			private	fluvial	9	2



Planning advice for developers – FAQs

INTRODUCTION

Local planning authorities (LPAs) across Yorkshire are required to consult us on [certain planning applications](#) which affect flood risk, groundwater, waste, or water quality.

If your development falls into one of these categories, we'll be invited to comment on your planning application. Your LPA, when considering your application, will take our comments into account.

We've produced this guidance to summarise the environmental issues we're responsible for. The guidance forms part of our free advice service; if you require site-specific or face-to-face advice, we'll need to recover our costs through our [charged advice service](#). Engaging with us early can help you identify the big issues, reduce the chances of subsequent delays and help you design a more sustainable and attractive development.

DEVELOPMENT AND FLOOD RISK

Is my development proposal at risk of flooding?

The [flood map for planning](#) shows where flooding from rivers and the sea may occur. Whilst this map isn't suitable for a detailed flood risk assessment, it'll show which [flood zone](#) your development is located within and therefore will indicate whether further assessment is needed. You should also refer to your LPA's [strategic flood risk assessment](#) which will provide additional local information on flood risk, including the location of functional floodplain and areas which are susceptible to other sources of flooding such as from surface water or reservoirs.

Will my application need to pass the sequential and exception tests?

Local planning authorities apply the [sequential test](#) to steer development towards areas at the lowest risk of flooding. If your proposal is located within flood zones 2 or 3, you should contact your LPA to discuss the sequential test **before** submitting your application. The LPA may require you to submit information with your application in support of the sequential test.

If the LPA confirm that the sequential test has ruled out steering the development to lower risk sites, the development may also need to pass the [exception test](#) by demonstrating that its sustainability benefits outweigh flood risk and that it can be made safe for its lifetime, through the production of a site-specific flood risk assessment. [Planning practice guidance](#) advises when an exception test will be required, which will depend on the [vulnerability of the development](#) and the flood zone it lies within.

Do I need to submit a flood risk assessment with my planning application?

You'll need to submit a flood risk assessment if your application lies within flood zones 2 or 3 or is over 1 hectare within flood zone 1. You'll also need to submit an assessment if your proposal could be affected by sources of flooding other than from rivers or the sea. For certain lower risk applications, we've provided '[flood risk standing advice](#)' which enables local planning authorities to assess flood risk assessments without the need to consult us.

What information should I include in my flood risk assessment?

We recommend that you refer to the checklist for a [site-specific flood risk assessment](#) for detailed advice on what to include in your flood risk assessment. Alongside referring to your LPA's strategic flood risk assessment, you should contact your LPA to find out whether there are any development guidelines which are specific to your locality.

Can I undertake my own flood risk assessment?

Your FRA must be appropriate to the scale, nature and location of the development whilst being credible and fit-for-purpose. Whilst it's possible to undertake your own assessment, most applicants employ suitably experienced professionals. We're not able to recommend specific consultants, but a simple web search should help you source a competent individual or company.

Do I need to consider how climate change will affect my proposal's flood risk?

Yes, you should demonstrate how flood risk will be managed now and over the development's lifetime, taking climate change into account. Please refer to the following [guidance](#) when undertaking your flood risk assessment. In some cases we'll hold the climate change flood data you need. In others you'll need to undertake your own analysis to understand the impacts.

Where can I get modelled or historic flood levels from?

Email our Customers and Engagement team (neyorkshire@environment-agency.gov.uk) to find out whether we have any modelled or historic flood levels available for your development site. A list of the packages of information we're able to provide can be found under the 'get information to complete an assessment' section of the [planning practice guidance](#). They'll aim to provide this information within 20 days. We no longer charge for providing this information.

The risk portrayed by your flood map doesn't seem to reflect the site's actual risk. How do I 'challenge' your flood map?

If you have evidence suggesting that our flood map is inaccurate, please contact our Customers and Engagement team (neyorkshire@environment-agency.gov.uk) who will provide you with any existing data we hold. To formally contest our flood zones, you'll need to submit supporting evidence, such as digital copies of a topographic survey or modelling for quality assurance purposes. Digital files of the proposed new flood zones in ArcMap or MapInfo format should also be supplied. Any new outline data you submit must conform to our flood zones policy, copies of which are available on request.

Whilst we'll usually be happy to review any topographical survey or model prior to the application being submitted, we would have to recover our costs for this work. In some cases where work to review and update our existing models is already underway, we may decline to consider a challenge.

As we have to be certain that the data which informs our flood map is fit-for-purpose, any revisions will need to meet stringent quality checks.

SURFACE WATER AND DRAINAGE

Who's responsible for managing surface water?

[Lead local flood authorities](#) are responsible for providing advice on the management of surface water resulting from new [major](#) development. [Internal drainage boards](#), where established, have permissive powers to manage water levels within their drainage districts, so also play a key role in managing surface water.

Will I need to provide surface water storage and limit the discharge rate?

You should contact your lead local flood authority to discuss surface water discharge rates and storage requirements. Typically, they'll ask that your development does not increase run-off and limits the discharge to the existing greenfield run-off rate (usually 1.4l/s/ha if not calculated).

Do I need to install sustainable drainage systems?

[Sustainable Drainage Systems \(SuDS\)](#) should always be carefully considered in discussion with your lead local flood authority. A SuDS scheme can reduce flood risk, improve water quality, create better habitats for wildlife, and produce pleasant, more amenable places for people.

Infiltration drainage must not, however, pose a risk to groundwater quality. All infiltration SuDS must:

- Meet the groundwater protection criteria set out on [GOV.UK](https://www.gov.uk)
- Not be constructed in ground affected by contamination

Who should I contact about connecting my development to the mains sewer?

Talk to your water company about connecting to their sewerage system. Here are some contact details for water companies operating in the Yorkshire Environment Agency area:

Yorkshire Water	planningconsultation@yorkshirewater.co.uk
Northumbrian Water	developmentenquiries@nwl.co.uk
Severn Trent Water	new.connections@severntrent.co.uk

My development is a long way from the mains sewer. Can I install a 'non-mains' drainage system, such as a package treatment plant?

New development should connect to the public mains sewer wherever possible. Individual treatment plants can deteriorate local water quality and are more challenging to monitor and regulate. If you can't connect to the mains sewer, your planning submission should outline how you will deal with foul drainage discharge. You should include evidence as to why it is not possible to connect to the mains system, including details of any prohibitive costs. Please

note that some 'non-mains' foul water drainage systems will require an environmental permit, irrespective of any planning approval.

OTHER ENVIRONMENTAL CONSIDERATIONS

What other environmental issues will you consider with my planning application?

Your planning application will need to demonstrate that any environmental risks can be managed, through design and construction, for the development's lifetime. Alongside flood risk, the key environmental risks we'll consider are:

- **[Land Contamination](#)**
We're mainly interested in those sites where there is a risk of pollution to controlled waters. You should investigate any contamination to see whether the environmental risk or cost of clean-up (remediation) would hinder your proposal. If contamination is known or suspected, a desktop study, investigation, remediation and other works may be required to enable safe development. Our [model procedures for the management of land contamination](#) provide further information.
- **[Pollution prevention](#)**
Your application should demonstrate how you'll minimise the risk of pollution from all aspects of your development, including construction and

operation phases. Groundwater can be vulnerable to pollution, as well as rivers and streams. Some areas (source protection zones and aquifers) are especially sensitive to pollutants as they typically supply public drinking water. To find out whether your development is located in an area sensitive to groundwater pollution, visit our interactive [maps](#). Advice on groundwater protection can be found on [GOV.UK](#)

- **Fisheries, biodiversity, geomorphology and protected species**

If your proposal is likely to affect the ecology of a main river, you'll need to carry out a risk assessment. This assessment should show that your development can proceed without demonstrable harm, and should propose mitigation, compensation or enhancements where required. A survey should be carried out if any protected species are thought to be nearby. If this survey confirms the presence of protected species or their habitat, measures should be taken to manage the development's risks. Natural England are the statutory consultee for other biodiversity-related matters. Further information on their remit can be found on [GOV.UK](#)

- **Water framework directive**

If your proposal affects ground or surface waterbodies, you'll need to consider the [Water Framework Directive](#) (WFD) and the actions set out in the [Humber River Basin Management Plan](#). You'll also need to submit a [WFD Assessment](#) demonstrating how the development will prevent deterioration and improve the waterbody's ecological status.

- **River buffer zone**

Your development should ensure that an 8m strip of land (planted with locally appropriate, native species) is left undisturbed next to the bank of any main river. This 'river corridor' will improve habitat connectivity and will ensure we're able to access the bank for any future flood defence construction and maintenance.

- **Culverting**

We're opposed to culverting. Culverts degrade watercourses' ecology and prevent the movement of wildlife and fish. As culverts can easily become blocked, they increase flood risk. They're also difficult to inspect and maintain. We may object to any planning applications involving culverting on a main river and may refuse to grant an environmental permit. Existing culverts should be removed and the river channel and bankside habitat reinstated to restore the ecological continuity of the river channel and its corridor.

Will I need any other Environment Agency permits for my development?

You might need an environmental permit if your development manages or produces waste or emissions that pollute the air, water or land or is work that affects a [main river](#) or a sea defence. The lead local flood authority is responsible for any consents relating to ordinary watercourses.

The [Environmental Permitting Regulations \(England and Wales\) 2015](#) cover water discharges, groundwater activities, flood risk activities, radioactive substances, waste, mining waste and installations. They also include provision for a number of directives including batteries. Further information, including contact details for further permitting related enquiries, can be found [here](#).

As planning and permitting decisions are often closely linked, we have issued detailed [guidance for developments requiring planning permission and environmental permits](#). This guidance explains how, when responding to planning consultations that require environmental permits, we will advise of three possible positions:

- No major permitting concerns
- More detailed consideration is required and parallel tracking is recommended
- Don't proceed – unlikely to grant a permit.

PRE-APPLICATION ADVICE

Can you provide site-specific advice, review a submission document, or attend a site meeting before I submit my planning application?

We encourage you to seek pre-application advice as it can help you solve key environmental issues early, reduce the chance of an objection and help you design a more sustainable development. If you'd like to take advantage of this service, please email our Sustainable Places team so that we can provide further details and estimated costs.

Please note that any pre-application guidance we provide doesn't represent our final view in relation to any future planning application. We recommend that you seek your own expert advice prior to submitting your application.

Who should I contact for further information?

Yorkshire planning enquiries: sp-yorkshire@environment-agency.gov.uk

General enquiries: 03708 506 506

Environment Agency, Lateral, 8 City Walk, Leeds LS11 9AT
<https://www.gov.uk/government/organisations/environment-agency>

APPENDIX C

Updated Surface Water Flood Map



Flood risk from rivers or the sea

- ☐ Extent of flooding
- ☐ Depth and flow estimates at monitoring stations



Flood risk from surface water

- ☐ Extent of flooding
- ☒ High risk: depth
- ☐ High risk: velocity
- ☐ Medium risk: depth
- ☐ Medium risk: velocity
- ☐ Low risk: depth
- ☐ Low risk: velocity



Flood risk from reservoirs

- ☐ Extent of flooding
- ☐ Flood depth
- ☐ Flood speed



APPENDIX D

Reservoirs Flood Map



Flood risk from rivers or the sea

- ☐ Extent of flooding
- ☐ Depth and flow estimates at monitoring stations



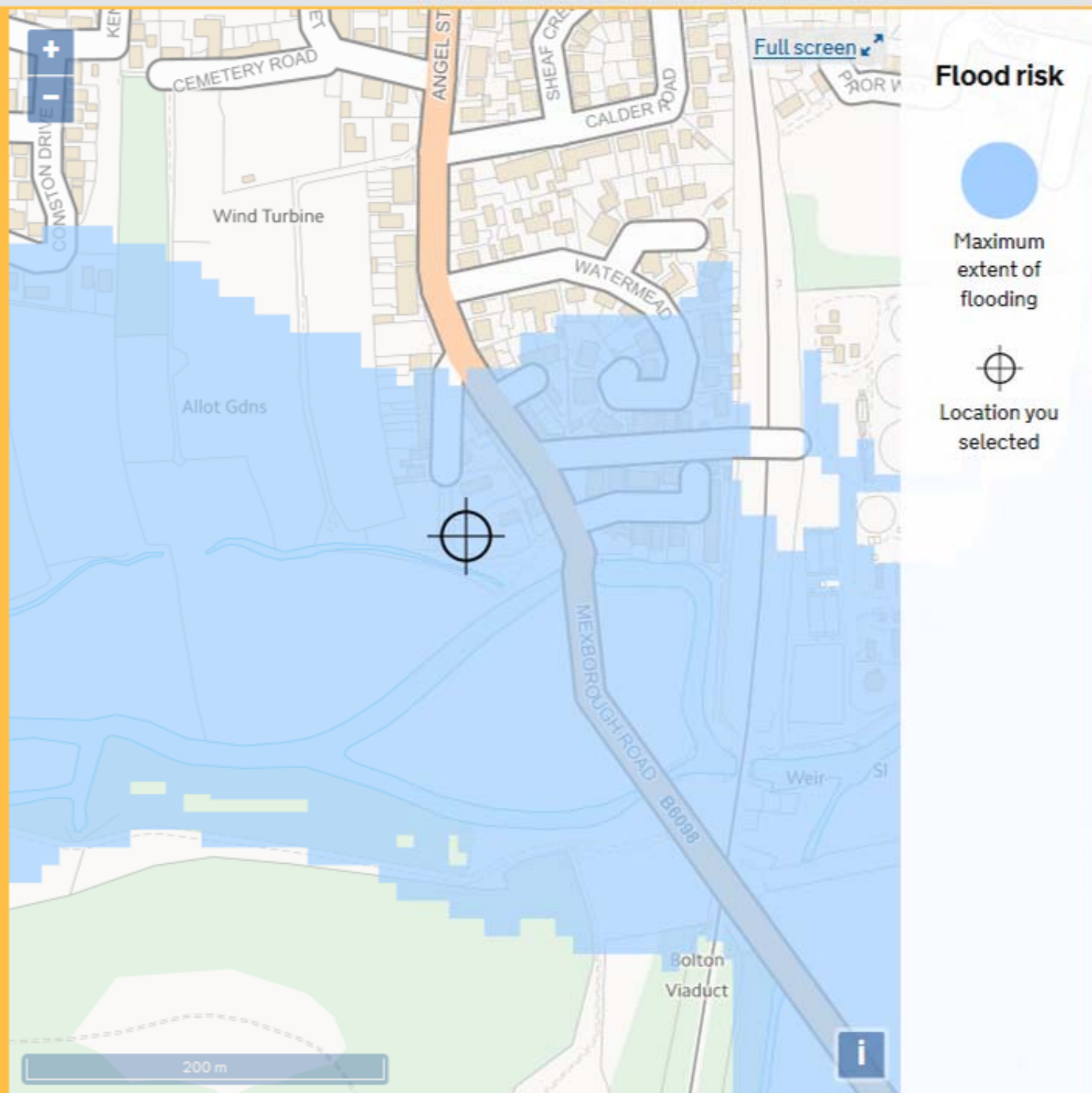
Flood risk from surface water

- ☐ Extent of flooding
- ☐ High risk: depth
- ☐ High risk: velocity
- ☐ Medium risk: depth
- ☐ Medium risk: velocity
- ☐ Low risk: depth
- ☐ Low risk: velocity



Flood risk from reservoirs

- ☒ Extent of flooding
- ☐ Flood depth
- ☐ Flood speed



APPENDIX E

ReFH 2 estimates of peak surface water runoff rates and volumes

19/026: 83 Mexbrough Road, Bolton Upn Dearne

REFH2 Estimates of surface water runoff rates and volumes

Return period (yrs)	Urbanised peak flow (l/s)	Urbanised direct runoff (m ³)	As-rural peak flow (l/s)	As-rural direct runnof (m ³)	
1	0.22	2.21	0.05	0.69	
2	0.25	2.53	0.06	0.80	
5	0.35	3.60	0.09	1.16	
10	0.43	4.42	0.11	1.45	
30	0.57	5.89	0.14	1.98	
50	0.64	6.72	0.16	2.29	
75	0.71	7.47	0.18	2.58	
100	0.77	8.07	0.20	2.82	
199	0.92	9.75	0.25	3.50	1% AEP with 20% CCA
200	0.93	9.76	0.25	3.50	
362	1.08	11.44	0.30	4.21	1% AEP with 40% CCA
1000	1.37	14.61	0.40	5.62	

Effect of CCA on 1% AEP event

	Peak flow rural increase	Runoff volume rural increase	Peak flow post development increase	Runoff volume post development increase
20% CCA increase	23.6%	24.1%	360.0%	246.1%
40% CCA increase	48.3%	49.3%	437.2%	306.0%

End of Report