



TOPPING ENGINEERS

CONSULTING CIVIL &
STRUCTURAL ENGINEERS

FLOOD RISK ASSESSMENT

LOCATION:

**Hatfield Lane
Barnby Dun**

CLIENT: Titchmarsh & Bagley

DOCUMENT REF:
21784-FRA-001

REVISION/DATE:
Revision A

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Revision	Description	Date	Author	Checked
A	First Issue	Jan 2022	T Andrews	A Dyson

1.0 INTRODUCTION

This Flood Risk Assessment (FRA) is compliant with the requirements set out in the National Planning Policy Framework (NPPF) and the associated Planning Practice Guidance. The FRA has been produced on behalf of Titchmarsh & Bagley in respect of a planning application on Hatfield Lane.

Site Name	Hatfield Road
Location	Hatfield Lane, Barnby Dun, Doncaster DN3 1NF
NGR (approx.)	462401, 409172
Application Site Area (ha)	17.0 ha
Development Type	Residential
NPPF Vulnerability	More
EA Flood Zone	Flood Zone 3 & 1
EA Office	Yorkshire
Local Planning Authority	Doncaster Council

Table 1.1 - Site Summary

1.1 SOURCES OF DATA

The report is based on the following information:

- i. Environment Agency information
- ii. Topographical Survey (Appendix A) by Redbox Surveys
- iii. Yorkshire Water Sewer Records
- iv. Severn Trent Water Sewer Records
- v. Doncaster Council Strategic Flood Risk Assessment

1.2 EXISTING SITE

The site in question lies to the northeast of the city of Doncaster, approximately 8km away from the city centre. The development area is bounded to the south by Hatfield Lane and existing dwellings. Similarly, the western boundary leads onto an existing residential area. Contrastingly, the Northern and eastern regions of the site are bounded by existing farmland/agricultural land. At the most northern point of the site lies a small watercourse.

From Appendix A, it is clear that there is a large level change over the site. The lowest point of the site lies on the northern boundary, with an approximate level of 5.60 AOD. On the other hand, the highest point of the site lies on the southern boundary at Hatfield Lane, with an approximate level of 11.40 AOD.

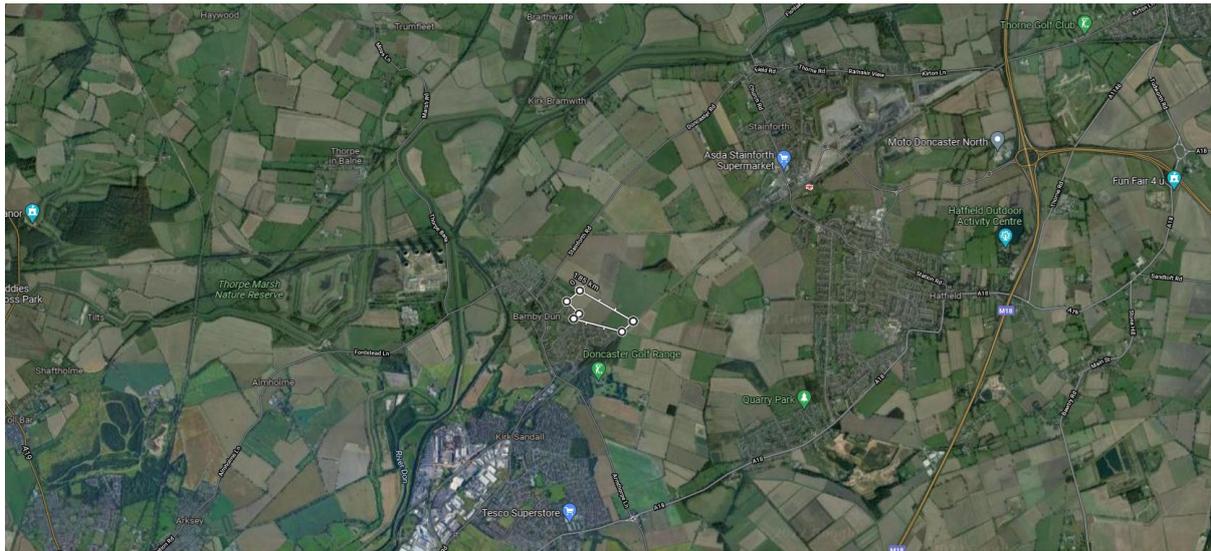


Figure 1.1 - Site Location

1.3 PROPOSED DEVELOPMENT

The proposed development is set to consist of a large residential scheme, along with associated highways and drainage infrastructure.

1.4 FLOOD RISK PLANNING POLICY

National Planning Policy Framework

The NPPF sets out the Government's national policies on different aspects of land use planning in England in relation to flood risk. Planning Practice Guidance is also available online.

The Planning Practice Guidance sets out the vulnerability to flooding of different land uses. It encourages development to be located in areas of lower flood risk where possible and stresses the importance of preventing increases in flood risk off site to the wider catchment area.

The Planning Practice Guidance also states that alternative sources of flooding, other than fluvial (river flooding), should also be considered when preparing a Flood Risk Assessment.

This Flood Risk Assessment is written in accordance with the NPPF and the Planning Practice Guidance.

As the development is a minor change of use it is therefore not subject to any sequential or exception testing.

Flood Zones

The Flood Zone Map for Planning has been prepared by the Environment Agency. This identifies areas potentially at risk of flooding from fluvial or tidal sources. An extract from the mapping is included as Figure 1.2.

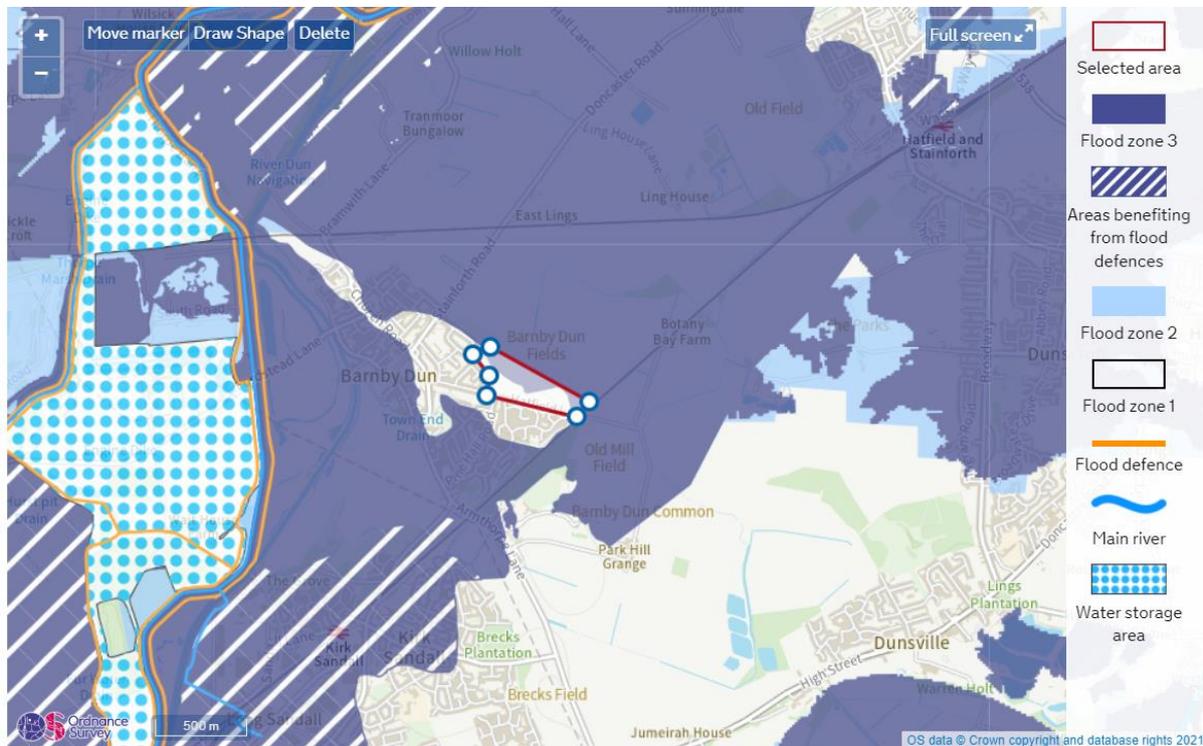


Figure 1.2 - Environment Agency Flood Zone Mapping

The site is shown to be located partially within Flood Zone 3 (High Probability) and partially within Flood Zone 1 (Low Probability) therefore the site is considered to be high risk of flooding. Flood Zone 3 is defined as land assessed as having an annual probability of flooding from fluvial and tidal sources greater than 1%. Flood Zone 1 is defined as land having an annual probability of flooding from fluvial and tidal sources of less than 1%.

Table 2 of the Planning Practice Guidance classifies land use. Under these classifications the proposed residential scheme is considered to be 'More Vulnerable' to the potential impacts of flooding.

Strategic Flood Risk Assessment

The Doncaster Council Flood Risk Assessment (SFRA) was prepared to review flood risks on a much wider scale to assess the potential for new development within the study area. The SFRA was used as an evidence base for Local Development Frameworks for each Local Planning Authority.

The SFRA therefore aims to bring together all available flood risk information for a variety of sources to provide a robust assessment. The SFRA therefore is useful for this site-specific FRA by highlighting available data and instances of known flooding in the area. Although written under the guidance of Planning Policy Statement 25, the SFRA is still considered to include relevant information.

2.0 POTENTIAL SOURCES OF FLOOD RISK

The table below identifies the potential sources of flood risk to the site, and the impacts which the development could have in the wider catchment prior to mitigation. These are discussed in greater detail in the forthcoming section. The mitigation measures proposed to address flood risk issues and ensure the development is appropriate for its location are discussed within Section 3.0.

Flood Source	Potential Risk				Description
	High	Medium	Low	None	
Fluvial			X		Any dwellings will be located in Flood Zone 1.
Tidal				X	Due to the location of the site, there are no potential impacts of tidal flooding.
Canals				X	None present.
Groundwater			X		Ground conditions are not conducive to fluctuating groundwater levels.
Reservoirs and waterbodies				X	The site is shown to fall outside of the catchment for reservoir and waterbodies flooding.
Sewers			X		It is assumed that the local drainage infrastructure is lower than the site in question.
Pluvial runoff			X		The site is shown to fall in the low-risk area of pluvial flooding.
Effect of Development on Wider Catchment			X		The impermeable area will be increased on site, but this will be catered for by a suitable drainage strategy

Table 2.1 - Pre-Mitigation Sources of Flood Risk

2.1 FLUVIAL FLOOD RISK

As previously mentioned, the site is shown to be within Flood Zone 3 and therefore poses a high risk to the proposed development. However, any proposed dwellings will be in Flood Zone 1, and therefore the risk of Fluvial Flooding is removed.

Level information and mitigation to be included in section 3.0 of this report.

2.2 GROUNDWATER FLOOD RISK

Subject to completion of site investigation to confirm we would assume that natural ground water level is located well below the site surface and the nature of the strata means it is unlikely that there will be perched water above this level.

We therefore do not consider there is a risk of groundwater flooding affecting the development subject to final confirmation upon completion of suitable site investigation.

2.3 FLOOD RISK FROM RESERVOIRS & LARGE WATERBODIES

Reservoir failure flood risk mapping has been prepared by the Environment Agency, this shows the largest area that might be flooded if a reservoir were to fail and release the water it holds. The map displays a worst-case scenario and is only intended as a guide. An extract from the mapping is included as **Figure 2.1**.

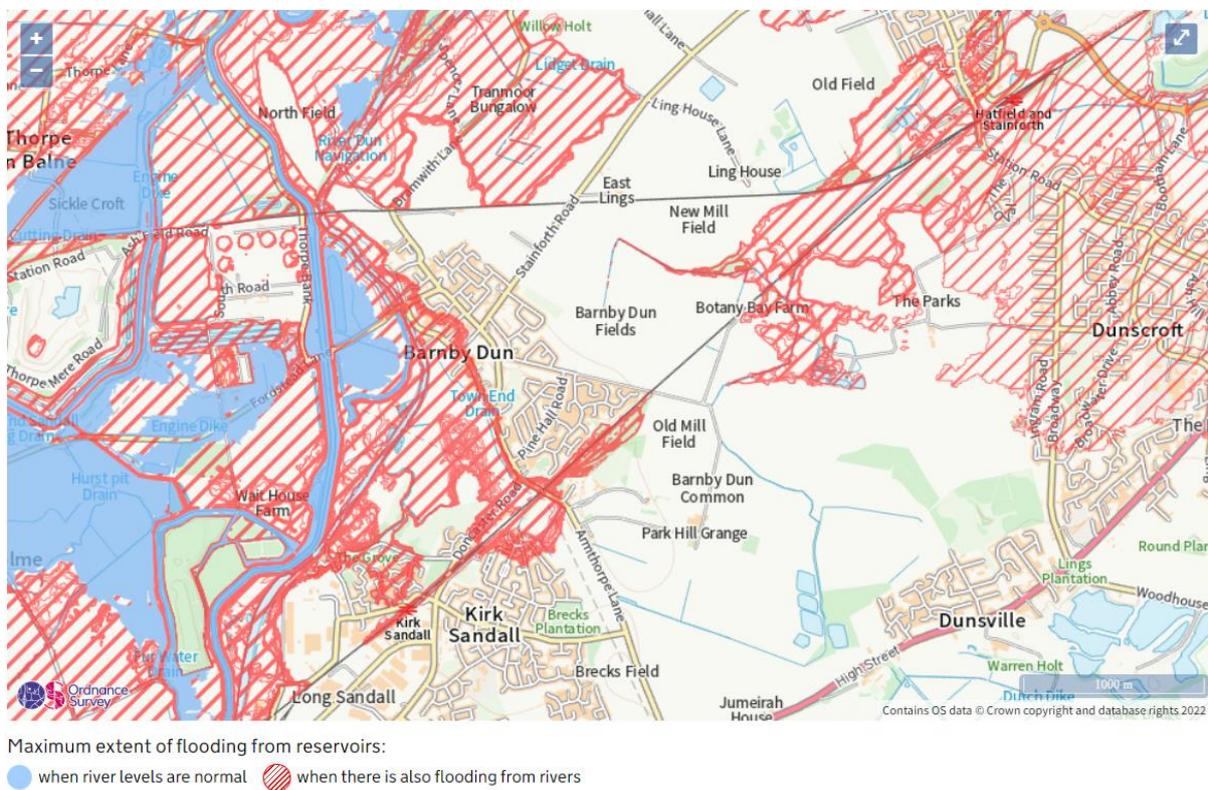


Figure 2.1 - Environment Agency Reservoir Failure Flood Risk Map

Mapping demonstrates the site and possible access routes are outside the proposed area of reservoir flooding.

As such, there is considered to be no risk of flooding from this source.

2.4 FLOOD RISK FROM SEWERS

The site in question is within an urban area. Therefore, it is likely that any existing sewers are at considerable depth.

As such, it is considered that there is no risk of flooding from sewers.

2.5 PLUVIAL FLOOD RISK

Risk of flooding from surface water mapping has been prepared by the Environment Agency, this shows the potential flooding which could occur when rainwater does not drain away through the normal drainage systems or soak into the ground but lies on or flows over the ground instead. An extract from the mapping is included as Figure 2.22

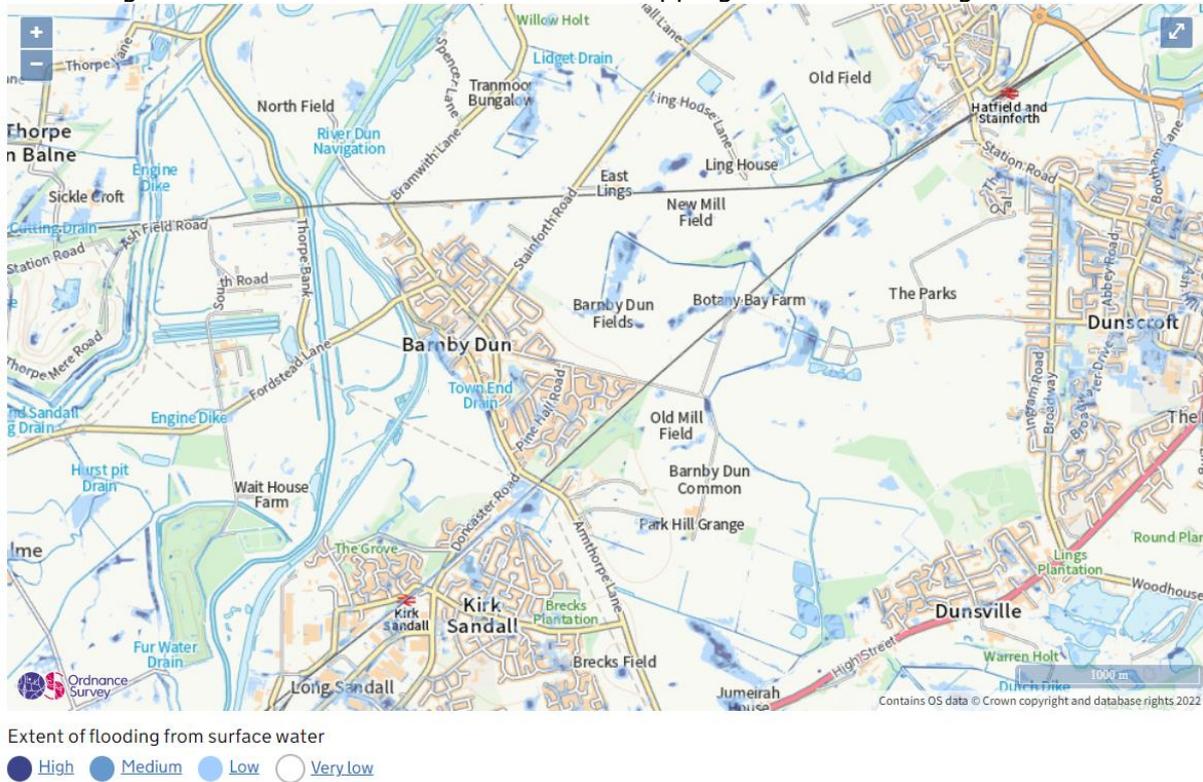


Figure 2.2 - Risk of Flooding from Surface Water Mapping

The mapping produced by the Environment Agency shows that the entire site is not at risk of pluvial flooding.

2.6 EFFECT OF DEVELOPMENT ON WIDER CATCHMENT

2.6.1 Development Drainage

The current site is considered to be greenfield. The amount of impermeable area will be altered and therefore a suitable drainage scheme will be required to prevent additional runoff.

3.0 FLOOD RISK MITIGATION

Section 2.0 has identified the sources of flooding which could potentially pose a risk to the site and the proposed development. This section of the FRA sets out the mitigation measures which are to be considered within the proposed development detail design to address and reduce the risk of flooding to within acceptable levels.

3.1 SITE ARRANGEMENTS

Sequential Arrangement

The Flood Zone mapping shows the site to be located within Flood Zone 1 & 3

Mitigation

In order to remove the risk of developing in Flood Zone 3, the environmental agency have provided their product 4 data. This information shows the flood levels for various flood events up to and including the 1in1000 year event. For the purposes of this development the 1in100 year storm plus climate change must be assessed. The information can be seen in appendix C. The nearest node to the site is DON01_3966d. This point has a 1in100 year + CC flood level of 8.575. Therefore, any dwelling should be placed above this level which would result in the unit being in Flood Zone 1.

The contour line of 8.575 has been added to Appendix A for reference.

4.0 CONCLUSIONS AND RECOMMENDATIONS

This Flood Risk Assessment (FRA) is compliant with the requirements set out in the National Planning Policy Framework (NPPF) and the associated Planning Practice Guidance. The FRA has been produced on behalf of Titchmarsh & Bagley.

This report demonstrates that the proposed development is a significant flood risk. Therefore, the proposed mitigation measures addressed in section 3.0 aim to remove the risk to the occupants of the building as best possible.

Flood Source	Proposed Mitigation Measure
Fluvial	Site is shown to be in Flood Zone 1 & 3.
Impact of the Development	Strategic surface water drainage strategy prepared for wider development will ensure a sustainable approach to surface water management.

Table 4.1 - Summary of Flood Risk Assessment

In compliance with the requirements of National Planning Policy Framework, and subject to the mitigation measures proposed, the development could proceed whilst being at risk of flooding as suitable mitigation has been provided. Moreover, the development will not increase flood risk to the wider catchment area as a result of suitable management of surface water runoff discharging from the site.

APPENDICES

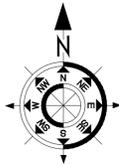


Appendix A – Topographical Survey

Appendix B – Layout

Appendix C - Environmental Agency Information

Appendix A
Topographical Survey

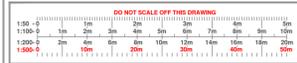


Topographical Survey Abbreviations			
AC	AIR CONDITIONING UNIT	LP	LAMP POST
B	BOLLARD	M/R	MARKER POST
BB	BELISHA BEACON	MH	MANHOLE
BD	BED LEVEL	CHC	OVERHEAD CABLE
BH	BORERHOLE (WITH No.)	PM	PARKING METER
BS	BUS STOP	P	POST
BT	BRITISH TELECOM COVER	RE	RODDING EYE
CAV	CABLE TELEVISION COVER	RS	ROAD SIGN
CC	CONTROL CABINET	R/WL	RETAINING WALL
CL	COVER LEVEL (MANHOLE)	SA	SOAK AWAY
COL	COLUMN	SCAM	SECURITY CAMERA
CP	CATCHPIPE	SG	STRIP GULLY
DP	RAIN WATER DOWN PIPE	SP	SIGN POST
EC	ELECTRIC CABLE	SV	STOP VALVE
EL	ELECTRIC COVER	TAP	WATER TAP
EP	ELECTRIC POLE	T/CB	TELEPHONE CALL BACK
ER	EARTH ROD	THL	THRESHOLD LEVEL
FFL	FINISHED FLOOR LEVEL	TL	TRAFFIC LIGHT
FH	FIRE HYDRANT	TOP	TOP OF FENCE LEVEL
FLT	FLOODLIGHT	TOW	TOP OF WALL LEVEL
G	GULLY	TP	TELEGRAPH POLE
GP	GATE POST	TST	TRIAL PIT (WITH No.)
GV	GAS VALVE	VP	VENT PIPE
IC	INSPECTION CHAMBER	WLV	WATER LEVEL
IL	INVERT LEVEL	WM	WATER METER
KO	KERB OUTLET	WO	WASH OUT
LB	LETTER BOX		

Floor Plan Abbreviations			
BH	BEAM HEIGHT	B	BUILDINGS
BL	BEAM LEVEL	OSB	OPEN SIDED BUILDINGS
CH	CEILING HEIGHT	T	TREE
CL	CEILING LEVEL		
CU	CONSUMER UNIT		
DH	DOOR HEIGHT		
FL	FLOOR LEVEL		
OH	OPENING HEIGHT		
OL	OPENING LEVEL		
ST	STOP TAP		
FL 50.21	FLOOR LEVEL		
BL 53.09	BEAM LEVEL		
CL 54.42	CEILING LEVEL		

Technical Notes:

- All survey levels and co-ordinates are related to OS Datum using the GPS Active Network. The Grid is orientated to Grid North with a Scale Factor of 1.00.
- All Boundaries surveyed are physical features. Please bear in mind that these may not represent the legally conveyed ownership.
- Trees are drawn to scale showing the average canopy spread and are approximate only. Where heights are shown they have been taken from ground level and are an estimate only.
- All underground features have been measured from the surface, therefore pipe sizes, depths etc are only an estimate or assumption. If dimensions are critical information must be checked and verified prior to work commencing.
- Whilst every effort has been made to locate all physical features during the survey no responsibility can be taken where features are obscured or hidden at the time of survey. This is especially important where high volumes of plant or vehicles are present on site.
- Off site features may have been measured remotely and as such may not be shown. The full detail of the feature due to limited access or obstructions with line of sight.
- All critical dimensions including levels should be checked prior to construction. Any errors or discrepancies should be reported immediately.
- All measurements have been taken from ground level only.
- Do not scale from this drawing.



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Client:
JVH Town Planning

Project:
Land off Hatfield Lane Barby Dun

Drawing Title:
Topographical Survey

No.	Description	Surveyed/Approved	Date
Surveyor:	Checked By:	Approved By:	Date of Survey:
LK/M	AJS	ART	06/02/19
Date of Issue:	12/02/19		
Drawing Status:	Scale:	Paper Size:	Sheet No.:
Finished	1:500	A0	1 of 1
Project No.:	Drawing No.:	Revision:	
RBS - 19/1429	RBS - 19/1429/001	-	



Topographical Survey Abbreviations

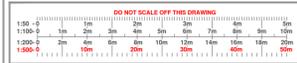
AC	AIR CONDITIONING UNIT	LP	LAMP POST
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FL	FLOOR LEVEL	OPEN SIDED BUILDINGS
OH	OPENING HEIGHT	OPEN SIDED BUILDINGS
OL	OPENING LEVEL	OPEN SIDED BUILDINGS
ST	STOP TAP	OPEN SIDED BUILDINGS
TL 50.21	FLOOR LEVEL	TREE (SPREAD TO SCALE)
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CL 54.42	CEILING LEVEL	

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Client: **JVH Town Planning**

Project: **Land off Hatfield Lane Barnby Dun**

Drawing Title: **Topographical Survey**

No.	Description	Surveyed/Approved	Date
Surveyor:	Checked By:	Approved By:	Date of Survey:
LKVM	AJS	ART	06/02/19
Date of Issue:	12/02/19		
Drawing Status:	Scale:	Paper Size:	Sheet No:
Finished	1:500	A0	1 of 2
Project No:	Drawing No:	Revision:	
RBS - 19/1429	RBS - 19/1429/001	-	

Appendix B
Proposed Site Layout

THIS DRAWING IS FOR THE PURPOSES OF ILLUSTRATIVE PLANNING ONLY AND SHOULD BE READ IN CONJUNCTION WITH ANY REPORTS AND DETAILS BY OTHER ASSOCIATE CONSULTANTS.

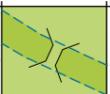
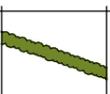
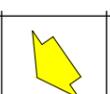
ORDNANCE SURVEY CROWN COPYRIGHT. ALL RIGHTS RESERVED. LICENCE NUMBER 100020449



0m 25m 50m 75m



Key

-  Existing Bridleway Made Up To Adoptable Standard Where Primary Access Required Elsewhere, Bridleway Status to Remain
-  Area of Development Limited to Land Above 8.575m AOD. Linear SuDS Infiltration Feature Formed Along Threshold with Wider Areas of Amenity Space Within FZ2.
-  Existing Hedges Where Retained. New Planting Along Bridleway to Establish Green Corridor
-  Single Storey Properties to be Located Where Adjacent to Existing Bungalows
-  Dwellings Oriented To Face Across Amenity Space and Open Views
-  Potential Location of Equipped Play Area
-  Potential Location of Foul Water Pump Station

JVH TOWN PLANNING CONSULTANTS LTD

Residential Development Proposal
on Land North of
Hatfield Lane, **BARNBY DUN**

CONCEPT

Appendix C
Environmental Agency Information

RFI/2018/111155 Flood Map for Planning centred on Hatfield Lane, Barnby Dun, DN3 1DD

Date Created: 10/01/19



www.environment-agency.gov.uk

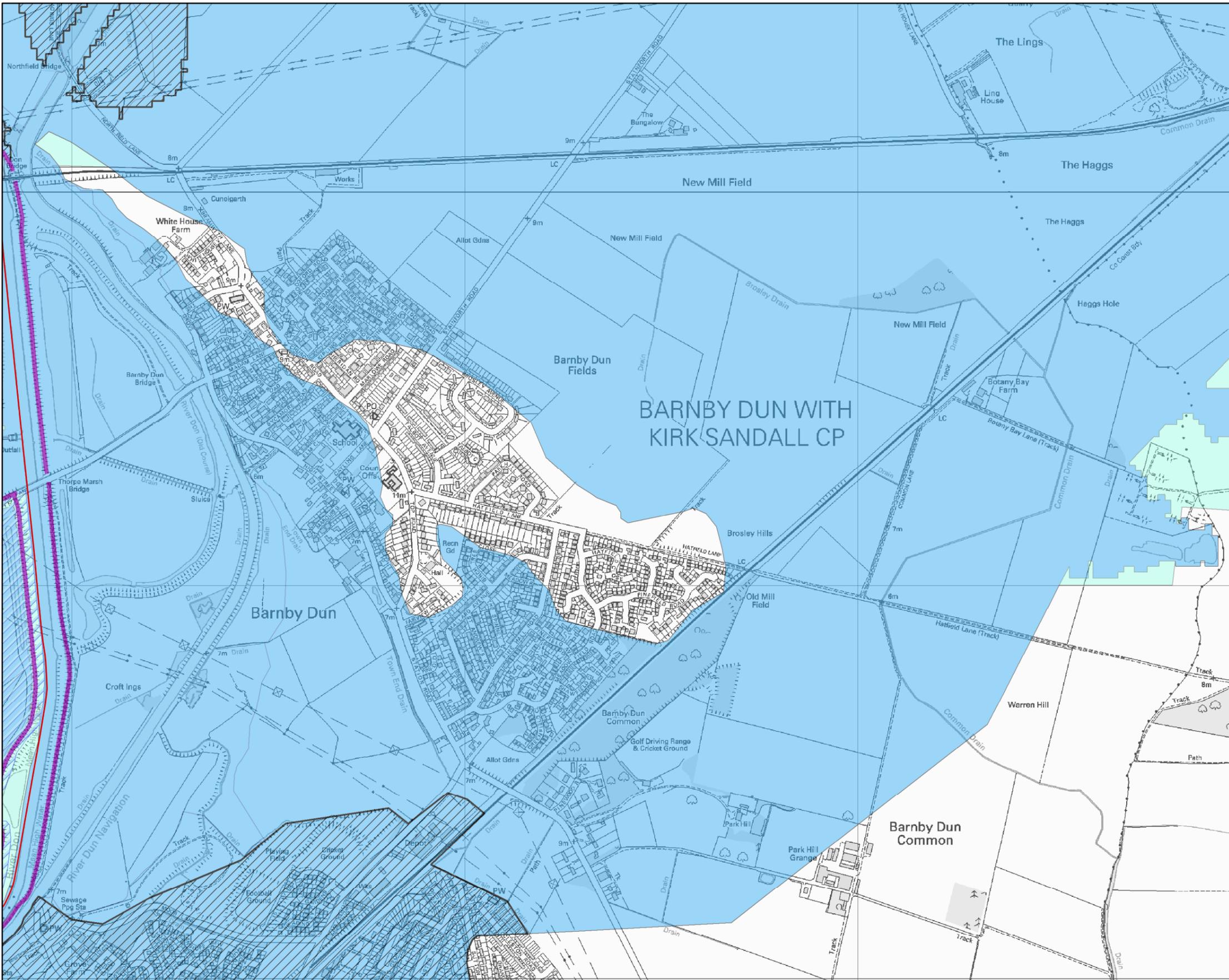
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LEGEND

- Main River
- Flood Map Flood Defences
- Areas Benefiting From Flood Defences
- Flood Storage Areas
- Flood Zone 3 (FZ3)
- Flood Zone 2 (FZ2)



RFI/2018/11155 Flood History Map centred on Hatfield Lane, Barnby Dun, DN3 1DD

Date Created: 10/01/19



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Scale: 1:10,000

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LEGEND

- Main River
- June 2007 Flood Level (m)
- June 2007 Surface Water Flooding Yorkshire
- June 2007 Flood Event (Ridings Area)
- 123 Autumn 2000
- 123 January 1982 - Lower Don Barnby Dun
- 123 March 1947
- 123 May 1932 Arksey

NAME

- June 2007 Surface Water Flooding Yorkshire
- June 2007 Flood Event (Ridings Area)
- 123 Autumn 2000
- 123 January 1982 - Lower Don Barnby Dun
- 123 March 1947
- 123 May 1932 Arksey



Channels (EA Maintained)

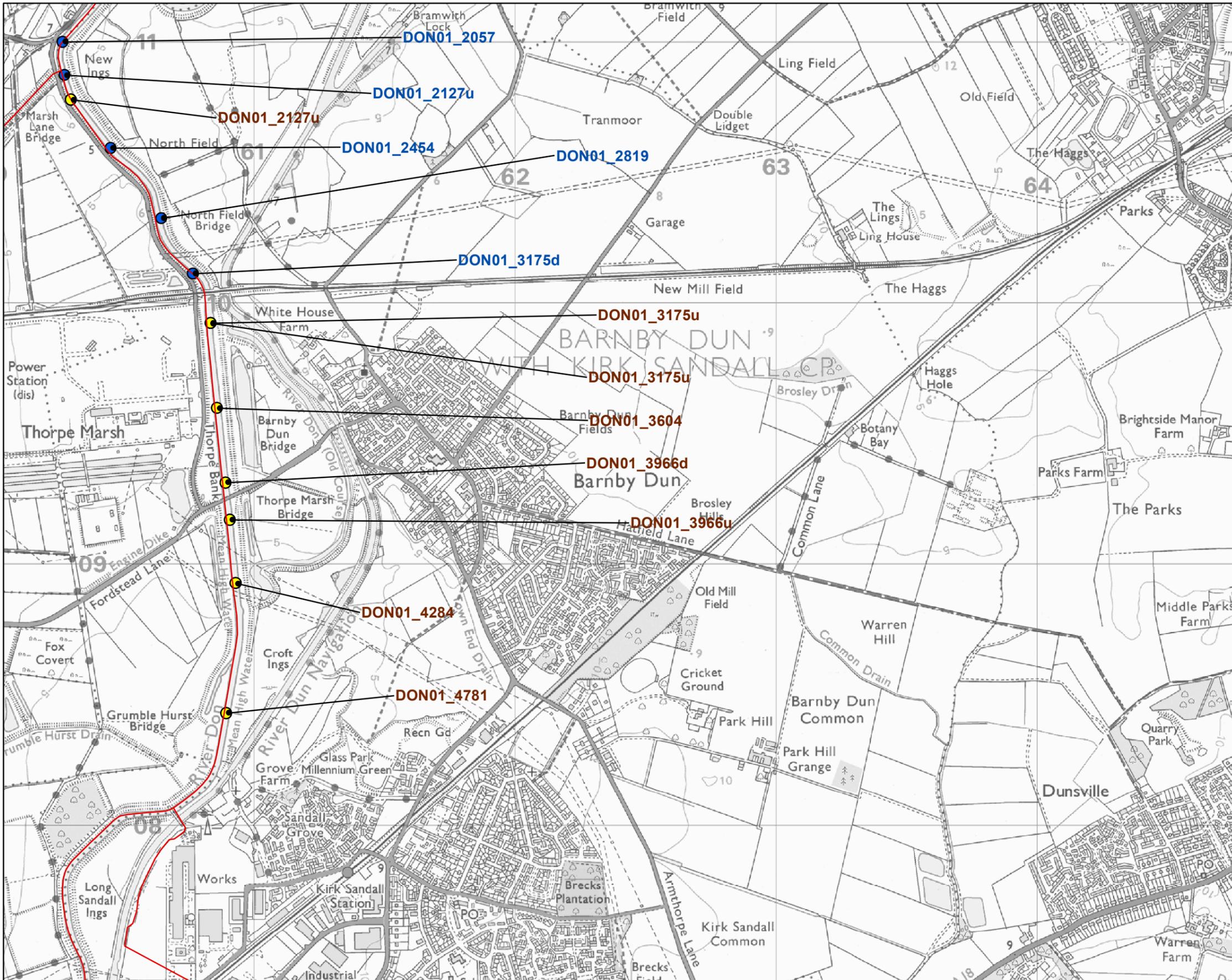
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503564		environment_agency	simple_culvert	42.39	<Null>	Doncaster District (B)	fluvial	3	3	
503991		environment_agency	simple_culvert	46.62	<Null>	Doncaster District (B)	fluvial	3	3	
158209		unknown	simple_culvert	25.37	Yorkshire	Doncaster Central	environment_agency	1		

Channels (3rd Party Maintained)

ASSET_ID	DESCRIPTION	ASSET_MAIN	AIMS_SUB_T	LENGTH	LAST INSPECTION	LOCAL AUTHORITY	PROTECTION	TARGET_CON	OVERALL_CO	DESIGN_SOP
158210		private	simple_culvert	315.66	<Null>	Doncaster District (B)	fluvial	3	1	100

RFI/2019/109673 Node Points Map, centred on Hatfield Lane, DN3 1NF

Date Created: 11/01/19



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- LEGEND**
-  Main River
 -  2016 Upper Humber Node Points
 -  2009 River Don Node Points

RFI/2018/111155 Node Point Map centred on Hatfield Lane, Barnby Dun, DN3 1DD

Date Created: 10/01/19



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Scale: 1:15,000

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LEGEND

- 2009 Lower Don Node Points
- 2016 Upper Humber Node Points
- Main River

