



NORTHORPE LANE,
MIRFIELD

FLOOD RISK ASSESSMENT

NOVEMBER 2021

NORTHTHORPE LANE, MIRFIELD

FLOOD RISK ASSESSMENT

Newett Homes

REV B: 21111/01

Project No: 20983

Date: November 2021

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Q U A L I T Y M A N A G E M E N T

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P R O D U C T I O N T E A M

AMA

Director

Andrew Moseley

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APPENDICES

Appendix A PROPOSED SITE LAYOUT

1 INTRODUCTION

1.1 INTRODUCTION

1.1.1 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 Newett Homes in respect of a planning application for the proposed residential development at Northorpe Lane.

Site Name	Land off 28 Northorpe Lane
Location	Northorpe Lane, Mirfield, Kirklees, WF14 0QN
NGR (approx.)	421465, 421064
Application Site Area (ha)	1.3 ha
Development Type	Residential
NPPF Vulnerability	Low
EA Flood Zone	Flood Zone 1
EA Office	Yorkshire
Local Planning Authority	Kirklees Council

Table 1.1 - Site Summary

1.2 SOURCES OF DATA

1.2.1 The report is based on the following information:

- i. Proposed Site Layout (Appendix A);
- ii. Environment Agency information; and
- iii. Kirklees Council Strategic Flood Risk Assessment.

1.3 EXISTING SITE

1.3.1 The site in question is located in the town of Mirfield, approximately 1.75km from the town centre. The site is approximately 1.3ha in size and is bounded by dense rural housing to the south and greenfield agricultural and farm land to the north.

1.3.2 There is only one small water course in the immediate surrounding area of the site. The canker Dyke runs to the north of the site west to east. Apart from this, it can be seen no other water sources can be found anywhere close that could cause a threat to site.



Figure 1.1 - Site Location

1.4 PROPOSED DEVELOPMENT

- 1.4.1 The proposed development is set to consist of the development of the existing greenfield land in to a residential estate consisting of 43 properties.

1.5 FLOOD RISK PLANNING POLICY

National Planning Policy Framework

- 1.5.1 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.
- 1.5.2 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.
- 1.5.3 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.
- 1.5.4 This Flood Risk Assessment is written in accordance with the NPPF and the Planning Practice Guidance.

Flood Zones

- 1.5.5 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**.

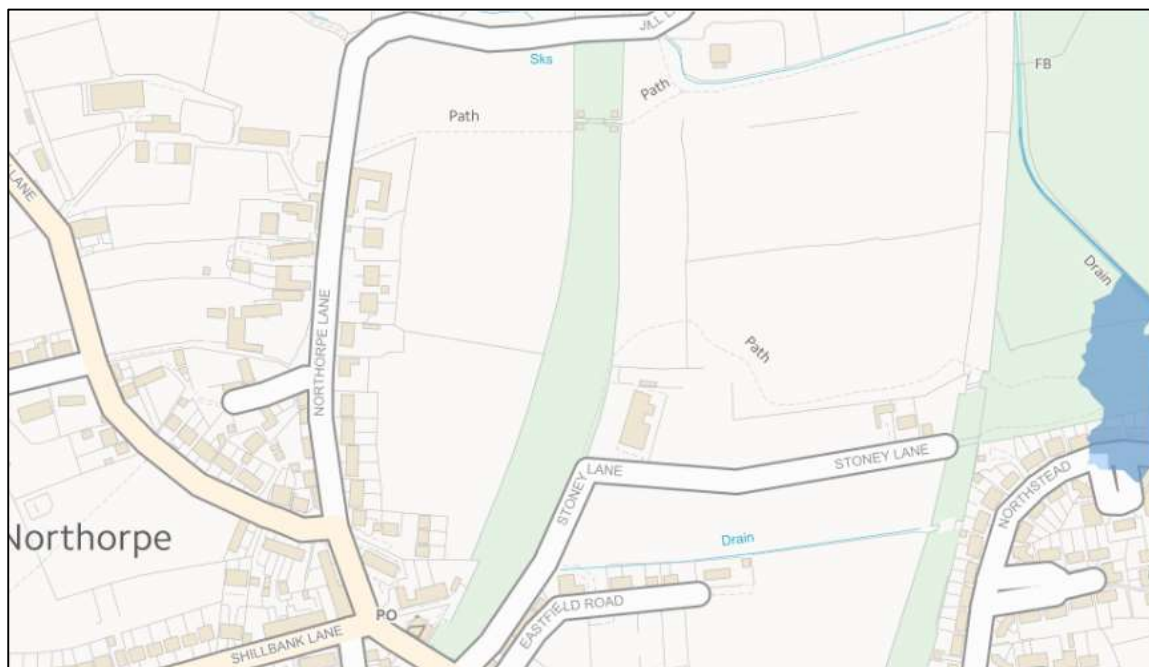


Figure 1.2 - Environment Agency Flood Zone Mapping

- 1.5.6 The site is shown to be located fully within Flood Zone 1 (Low Probability) therefore the site is considered to be low risk of flooding. Flood Zone 1 is defined as land assessed as having less than a 0.1% annual probability of flooding from fluvial and tidal sources.
- 1.5.7 Table 2 of the Planning Practice Guidance classifies land use. Under these classifications the proposed residential development is considered to be 'More Vulnerable' to the potential impacts of flooding.
- 1.5.8 Table 3 of the Planning Practice Guidance identifies that any development is considered appropriate within Flood Zone 1.

Flood Risk Vulnerability Classification	Essential Infrastructure	Water Compatible	Highly Vulnerable	More Vulnerable
Flood Zone 1	✓	✓	✓	✓
Flood Zone 2	✓	✓	Exception test required	✓
Flood Zone 3a	Exception test required	✓	x	Exception test required
Flood Zone 3b	Exception test required	✓	x	x

Table 1.1 - Planning Practice Guidance

1.6 OTHER RELEVANT POLICY AND GUIDANCE

Strategic Flood Risk Assessment

- 1.6.1 The Kirklees 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.
- 1.6.2 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 POTENTIAL SOURCES OF FLOOD RISK

2.1 POTENTIAL SOURCES OF FLOOD RISK

2.1.1 **Table 2.1** 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		The site is located in flood zone 1.
Tidal				X	There are no tidal influences effecting the site.
Canals				X	None present.
Groundwater			X		According to the KC Level 1 SFRA, the site is situated in an area which is susceptible to groundwater emergence by a factor of less than 25% which is the second lowest risk rating. Given the impermeable nature of the proposed site's hardstanding areas subsequent to development, potential elevation of groundwater or groundwater emergence is reduced.
Reservoirs and waterbodies				X	The site is shown to fall outside of the catchment for reservoir and waterbodies flooding.
Sewers			X		According to the landowner there has been no history of sewer flooding. Furthermore, according to the KC Level 1 SFRA the site is situated in an area with little to no history of sewer flooding.
Pluvial runoff		X			The site has a surface water flood risk of between very low to high with the only affected area being along the eastern perimeter of the site.
Effect of Development on Wider Catchment		X			The impermeable area of the site is being altered.

Table 2.1 - Pre-Mitigation Sources of Flood Risk

2.2 FLUVIAL FLOOD RISK

- 2.2.1 As previously mentioned, the site is shown to be within Flood Zone 1 and therefore poses a low risk to the proposed development.
- 2.2.2 The risk of flooding posed to the proposed development is low. This is because there is only a small number of watercourses near the site that can pose a threat. However, the closest watercourse is 155m away from the site and is at a lower level.
- 2.2.3 Mitigation measures to address the residual risk posed by the watercourses surrounding the site are discussed within **Section 3.0** of this report.

2.3 GROUNDWATER FLOOD RISK

- 2.3.1 Ground conditions at the site consist of slowly permeable seasonally wet acid loamy and clayey soils, therefore the propensity for ground water emergence at the site is considered to be low.
- 2.3.2 During long periods of heavy rainfall, the water table within an area can rise above the natural ground level, resulting in groundwater flooding. The site is located above a principal bedrock aquifer. This signifies permeable layers which would allow infiltration of water up through the soil.
- 2.3.3 According to the KC Level 1 SFRA groundwater susceptibility map as shown in **Appendix B**, the site is situated in an area which is susceptible to groundwater emergence by a factor of less than 25% which is the second lowest risk rating.
- 2.3.4 However, given the impermeable nature of the proposed site's hardstanding areas subsequent to development, potential elevation of groundwater or groundwater emergence within the superficial geology causing flooding within the site post-development will be largely eliminated.
- 2.3.5 Site specific investigations should be able to prove the presence of ground water and propose remedial mitigation where required. Flood risk to the proposed development due to groundwater emergence is therefore considered to be low.
- 2.3.6 Flood risk to the proposed development due to groundwater emergence is considered to be low provided that all reasonable and practicable mitigation measures for any subsurface construction associated with the development are adhered to.

2.4 FLOOD RISK FROM RESERVOIRS & LARGE WATERBODIES

- 2.4.1 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

2.4.2 Mapping demonstrates the site and possible access routes are far removed from the flood extent associated with flooding from large reservoirs. A review of Ordnance Survey mapping shows that no areas or reservoir flooding encroach the site.

2.4.3 As such, there is considered to be no risk from reservoir flooding.

2.5 FLOOD RISK FROM SEWERS

2.5.1 The site currently consists of Greenfield land and is not identified as having any drainage infrastructure within its boundary. Furthermore, the client has provided information stating that there has been no past history of sewer flooding on the site. The KC Level 1 SFRA also indicates that the site is situated in an area with little to no history of sewer flooding. The site is therefore considered to have very low potential risk of flooding from sewer flooding.

2.6 PLUVIAL FLOOD RISK

2.6.1 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 2.2**.

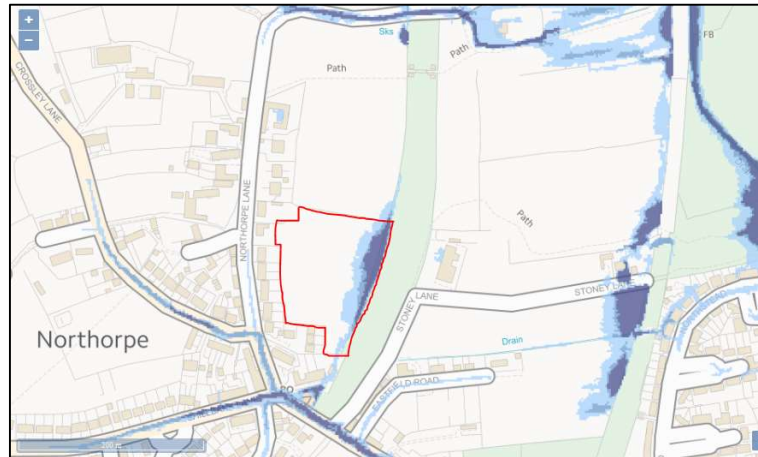


Figure 2.2 - Risk of Flooding from Surface Water Mapping

- 2.6.2 The EA Long Term Flood Risk Map (Figure 2.2) shows the majority of the site is located in an area at very low risk of surface water flooding, with the remainder being located in an area at low to high risk of surface water flooding.
- 2.6.3 The area at low risk of pluvial flooding is situated towards the eastern boundary of the site as shown in Figure 2.2. Low risk means that each year this area has a chance of flooding of between 0.1% and 1%. This area of low-risk surface water flooding could experience flood depths of over 0.9m with flow velocities of more than 0.25m/s.
- 2.6.4 Similarly, the area at medium risk of pluvial flooding is also situated along the eastern perimeter of the site. Medium risk means that each year this area has a chance of flooding of between 1% and 3.3%. This area of medium risk of pluvial flooding can expect flood depths of between 0.3m and greater than 0.9m with flow velocities of more than 0.25m/s.
- 2.6.5 Finally, the area at high risk of surface water flooding is found towards the northeast of the site. High risk means that each year this area has a chance of flooding of greater than 3.3%. This area at high risk can expect surface water flood depths of between 0.3m and 0.9m with flow velocities of less than 0.25m/s with some areas having flows of more than 0.25m/s.
- 2.6.6 For each of the 3 risks the flow direction of the surface water flooding is directed away from the site and will therefore reduce the risk of pluvial flooding on the site.
- 2.6.7 As the proposed development of the site may potentially reduce the overall site permeability and potentially increase surface water runoff rates and volumes, the surface water discharge controls must ensure that any proposal for drainage, or discharge, does not adversely impact upon downstream drainage infrastructure or offsite receptors.
- 2.6.8 The site is therefore considered to have very low potential risk of flooding from pluvial sources

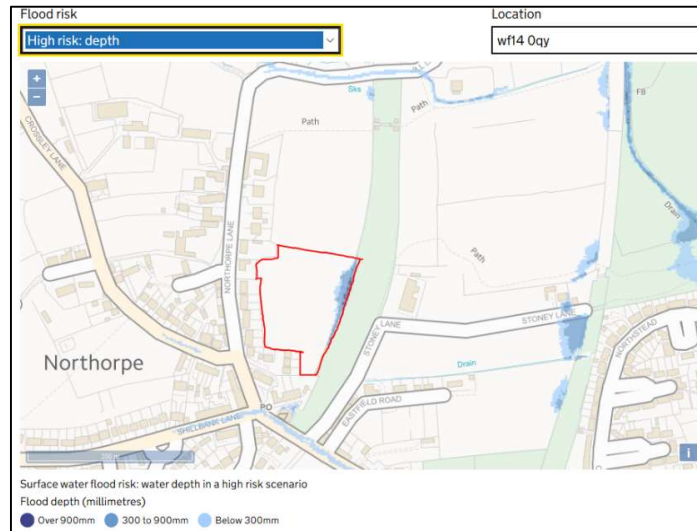


Figure 2.3 – High Risk Flooding on Site

2.7 EFFECT OF DEVELOPMENT ON WIDER CATCHMENT

Development Drainage

- 2.7.1 The current site is considered to be greenfield. The amount of impermeable area will be altered. Therefore, the existing drainage systems will not be suitable to discharge the surface water from the site alongside the additional run off from the proposed development. A sufficient Drainage strategy will be therefore provided by AMA.

3 FLOOD RISK MITIGATION

3.1 FLOOD RISK MITIGATION

- 3.1.1 **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.

3.2 SITE ARRANGEMENTS

Sequential Arrangement

- 3.2.1 The Flood Zone mapping shows the site to be located within flood zone 1.

Finished Levels

- 3.2.2 Given the site's location within Flood Zone 1, there are no specific requirements for finished floor levels with regard to flood risk. The existing ground level of the building is suitable and will remain.

4 CONCLUSIONS AND RECOMMENDATIONS

4.1 CONCLUSIONS AND RECOMMENDATIONS

4.1.1 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 Newett Homes.

4.1.2 This report demonstrates that the proposed development is not at significant flood risk, and simple mitigation measures have been recommended to address any residual risks that may remain. The identified risks and mitigation measures are summarised within **Table 4.1**.

Flood Source	Proposed Mitigation Measure
Fluvial	Site is shown to be in Flood Zone 1.
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

4.1.3 In compliance with the requirements of National Planning Policy Framework, and subject to the mitigation measures proposed, the development could proceed without being subject to significant flood risk. 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.

APPENDIX A - PROPOSED
SITE LAYOUT



Legend

-  1800mm timber gate
-  Bin storage area
-  Garden shed to provide secure, lockable cycle storage provided to plots without garage
-  Pre-cast concrete paving
-  Grass to front gardens and open space
-  Existing trees retained

- Notes**
- All unhatched roads, private drives and driveways in tarmac
 - Car parking provided at a minimum of 2 spaces per 2 and 3 bed dwelling and 3 spaces per 4 bed dwelling
 - For landscape details please see Landscape Plan prepared by landscape architect

Accommodation Schedule						
House Type			Area (sq.m)	NDSS requirement (sq.m)	Quantity	Total Areas (sq.m)
ELM	Elm	2 bed terraced	70.4	2B3P = 70	4	281.6
BUC	Buckthorn	2 bed bungalow	61.5	2B3P = 61	2	123.0
BLA	Blackthorn	3 bed detached	90.4	3B4P = 90	3	271.2
ASP	Aspen	3 bed semi detached/terraced 2.5 st	94.0	3B4P = 90	13	1,222.0
GUE	Guelder	4 bed detached	109.4	4B6P = 106	1	109.4
BEE ALT	Beeches Alt	3 bed semi detached int. garage split level	110.4	3B4P = 90	8	883.2
MUL	Mulberry	4 bed detached integral garage	115.8	4B7P = 115	1	115.8
HAZ+	Hazel +	4 bed detached integral garage 2.5 st	125.4	4B8P = 124	1	125.4
WIL	Willow	4 bed detached	128.6	4B8P = 124	1	128.6
BIR	Birch	4 bed detached integral garage	131.7	4B8P = 124	4	526.8
SES	Sesille	3 bed detached integral garage split level	132.9	3B6P = 108	4	531.6
CED	Cedar	4 bed detached integral garage	142.9	4B8P = 124	1	142.9
TOTAL OVERALL					43	4,461.5 sq.m
Total Site Area			13,678 sq.m			

K	08.12.21	Detail added	CR
J	01.12.21	Plots 5-21 amended	CR
H	04.11.21	Plots 32-43 amended	CR
G	03.11.21	SL03 house type introduced	CR
F	01.11.21	Split level house type introduced, general amends	CR
E	07.10.21	House type to Plots 1 & 2 revised, Plot 30 updated to accommodate tracking, Accommodation Schedule Updated & CBPP added for plots 39 - 42.	AH CR
D	30.09.21	Layout revised	AH CR
C	28.05.21	Garden shed to replace cycle storage box	CR
B	24.05.21	Cycle storage shown, FFLs added, schedule updated	CR
A	04.05.21	Layby shown	CR
Rev	Date	Description	Drawn Checked

Project **Northorpe Lane, Mirfield**

Drawing **Proposed Site Layout**

Client **Newett Homes**

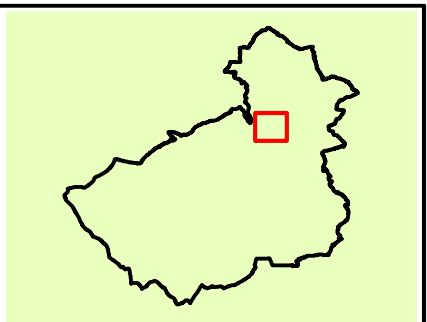
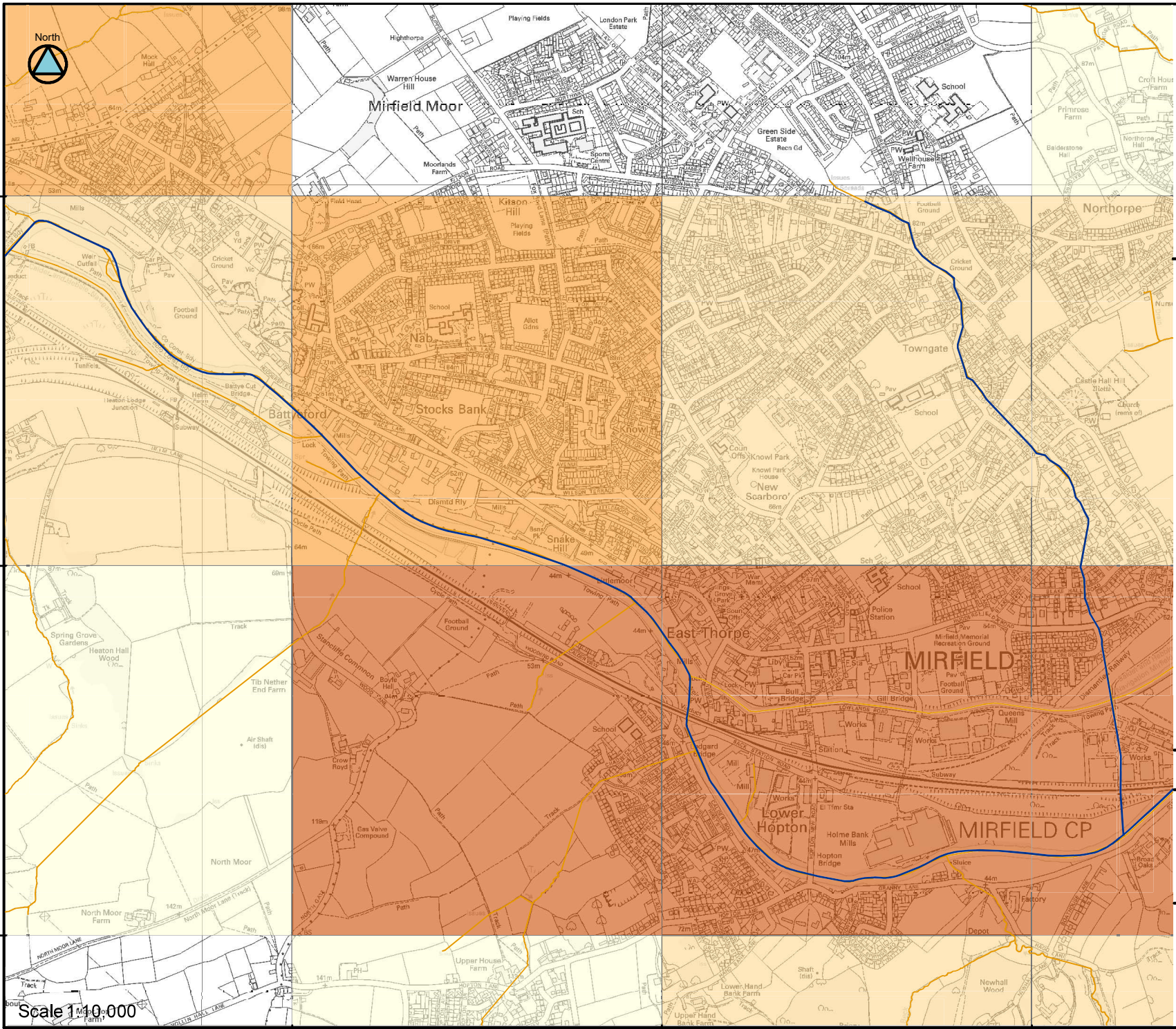
BM Suitability Description: **SUITABLE FOR INFORMATION** BM Suitability Code: **S2**

Status: **Planning** 2 Riverside Way 320 City Road
 Whitehall Waterfront Angel
 Date: **17.03.21** **LEEDS** **LONDON**
 Drawn: **CR** L51 4EH EC1V 2NZ
 Checked: **GE** 1 0113 819 8041 t 0203 883 8602
 Scale (A2): **1:500** w.edwardwardarchitecture.co.uk
 e.info@edwardwardarchitecture.co.uk

Project: **0899 - EA - A - P002 - K** Designer: Diptone Drawing No: Rev

edward architecture

A P P E N D I X B -
G R O U N D W A T E R
S U S C E P T A B I L I T Y M A P



LEGEND

- Choose Option Areas Susceptible to Ground water Flooding
- Council boundary
- Main River
- Detailed River Network
- Areas Susceptible to Ground Water Flooding Risk of Groundwater Emergence**
- $\geq 75\%$
- $\geq 50\% < 75\%$
- $\geq 25\% < 50\%$
- $< 25\%$

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STRATEGIC FLOOD RISK ASSESSMENT
 For
KIRKLEES COUNCIL
 MAP_W

421000

420000

419000

419000

420000

421000

Scale 1:40,000



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