ANDREW MOSELEY ASSOCIATES
TRANSPORT AND DEVELOPMENT PLANNING CONSULTANTS

STBALES, BARNSLEY ROAD, DARTON

FLOOD RISK ASSESMENT

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STBALES, BARNSLEY ROAD, DARTON

FLOOD RISK ASSESMENT

Flatman Planning

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Andrew Moseley Associates

51A St Paul's Street

Leeds, LS1 2TE

www.amatp.co.uk

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PRODUCTION TEAM

Associate	Gavin Shepherd
Graduate	Aaron Yesudian

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1 INTRODUCTION

1.1.1 This Flood Risk Assessment (FRA) has been provided at the request of Flatman Planning, hereafter referred to as "the client", to assess the flood risks associated with the proposed development of Stables, Barnsley Road, Darton, hereafter referred to as "the site".

1.1.2 The purpose of this FRA is to:

- Identify the possible hazards posed from all major sources of flooding (fluvial, surface water, groundwater, infrastructural and coastal sources);
- Provide a qualitative assessment of the probability of each potential flood hazard representing a constraint on the proposed development, based on the proposed land use type for the development and likelihood of flood occurrence;
- Conceptually determine and define necessary surface water management controls to ensure no exacerbation of flood risk on the site or to external receptors due to any increase in surface water runoff; and
- Recommend appropriate and necessary mitigation measures and additional assessments that may be required to progress the sustainable development of the site.

1.1.3 The FRA comprises the following:

- A desktop review of publicly available information, including information from the Environment Agency (EA) and Barnsley Metropolitan Borough Council (BMBC) who are the Lead Local Flood Authority (LLFA) for the proposed development area; and
- An assessment and outline design of hydraulic controls and drainage requirements and drainage elements required to support the development of the site.

1.1.4 This report further details the methodologies employed within this study and provides recommendations as to any further work or investigations required to support the development of the Site through the planning application process.

1.2 REGULATORY POLICY AND LEGISLATION

1.2.1 This assessment has been carried out in line with the current Government legislation, the National Planning Policy Framework (NPPF) 2021.

1.2.2 It has been assessed with reference to the following documents and legislative guidelines:

- CIRIA 753 The SUDS Manual V6 (2016);
- DEFRA "Flood Risk Assessment Guidance for New Developments" (2006);
- DEFRA "Surface Water Management Plan Technical Guidance" (2010);
- BS 8533 2011 Assessing & Managing Flood Risk in Development Code of Practice (2011);
- BS 8582:2013 Code of practice for surface water management for development Sites (2013);
- National Planning Practice Guidance (2012 – updated 2016);
- C624 Development and Flood Risk – Guidance for the Construction Industry' (2004);
- Design and Construction Guidance for Sewage Sector (DCGSS) (2020);
- Planning Policy Guidance – Flood Risk and Climate Change (2014 and as amended).

1.2.3 In addition to the above, this report has also been informed by the following documents:

- BMBC Level 1 SFRA – 2010
- BMBC Level 2 SFRA – 2010

2 METHODOLOGY

2.1 INTRODUCTION

2.1.1 This report aims to demonstrate that the proposed development is sustainable and will not be impacted by or exacerbate flood risk elsewhere through the development of the site. This assessment will account for the effects of climate change, as well as identifying further opportunities to reduce the probability and consequences of flooding within the site locality.

2.1.2 This report aims to identify constraints and opportunities for the site based on the development proposals provided by the client (**Appendix A**) and provide recommendations for the sustainable provision of drainage and mitigation of any potential flood risk for the site.

2.1.3 The assessment methodology is as follows:

- Desktop review of the geology, hydrology and other pertinent environmental characteristics of the Site, and how these affect flood risk of the proposed development and site drainage.
- Obtain and review existing baseline flood risk and drainage guidance information from relevant environmental authorities (EA, LLFA, etc.) as to site specific flood risk from all applicable sources
- Review the findings from the above and advise on the suitability of developing the site for the proposed development in consideration of the applicable flood risk and drainage and comment on limitations and opportunities for the site, with recommendations of further mitigation where applicable and appropriate.

3 PROJECT BACKGROUND

3.1 DEVELOPMENT DESCRIPTION AND LOCATION

3.1.1 Andrew Moseley Associates (AMA) was appointed by Flatman Planning to provide a Flood Risk Assessment in support of the construction and development of two dwellings situated on land off Barnsley Road, Darton, Barnsley, S75 5NT, NGR: SE 31271 09383.

3.1.2 The proposed development is located in the area of Darton which is approximately 2.5 miles northwest of Barnsley. Proposals for the site are for residential use, consisting of the construction and development of two detached dwellings with associated hardstanding and landscaped areas. A site layout plan in provided in **Appendix A**

3.1.3 The Local Planning Authority for this development is Barnsley Metropolitan Borough Council who are also the Lead Local Flood Authority for the area.

3.1.4 This report has been prepared in accordance with the National Planning Policy Framework (NPPF) and the accompanying technical guidance to assess all forms of flooding including the management of surface water on-site.

3.1.5 The Site is referenced in Table 2-1 and Figure 1 below.

Table 3-1. Site context

Site Name	Stables, Land off Barnsley Road
Location	Barnsley
NGR (approx.)	SE 31271 09383
Application Site Area (ha)	0.26
General Locality	The site is located on both undeveloped greenfield land as well as previously developed brownfield land. The site borders a paddock to the south, greenfield land to the north and east with Barnsley Road running along the western perimeter of the site. Pedestrian and vehicular access to the site is provided via Barnsley Road which is located along the western boundary of the site.
Development Type	Residential
NPPF Vulnerability	Low
EA Flood Zone	Flood Zone 1, 2 and 3
EA Office	Yorkshire
Local Planning Authority	BMBC

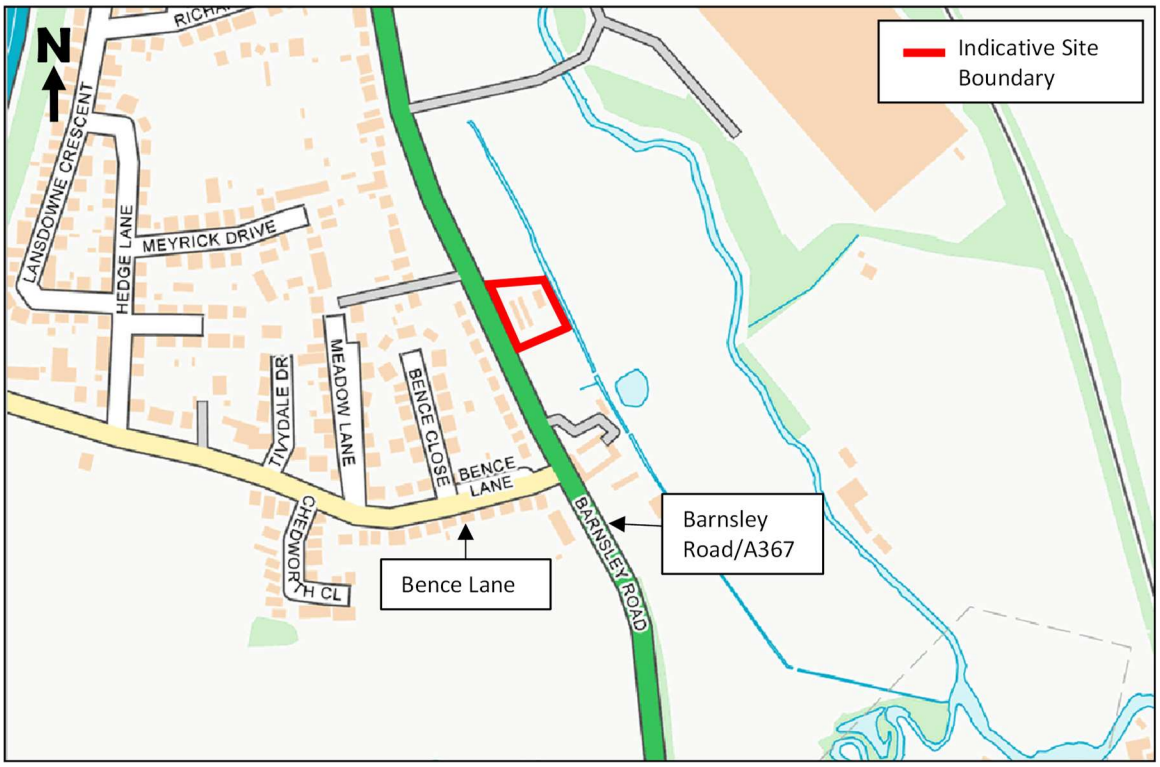


Figure 1. Site location

3.2 CURRENT SITE CONDITIONS

Ground cover and topography

3.2.1 In the absence of a topographic survey, LiDAR data has been used to develop a digital elevation model of the site (Figure 2). The 1m DTM (2020) shows ground levels at the site to be in the region of 55.6 to 60.2 m Above Ordnance Survey (m AOD).

3.2.2 Further review of topographical data shows site levels to be lowest towards the eastern perimeter of the site running in parallel to the drain, while greatest levels are located along the western perimeter bordering Barnsley Road. A general fall in gradient from west to east is observed across the site.

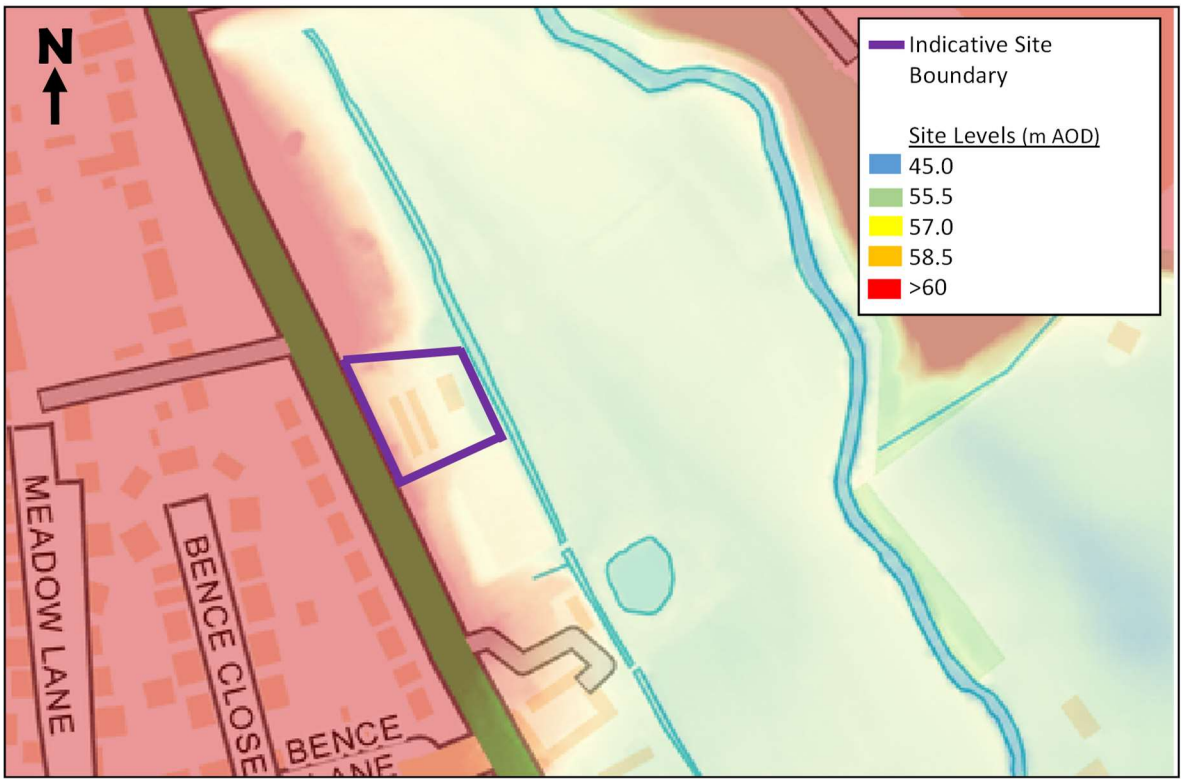


Figure 2. Site Digital Elevation Model

3.3 GEOLOGY

3.3.1 British Geological Survey (BGS) Open Geoscience website[1] indicates that the entire site is underlain by Pennine Middle Coal Measures Formation - Mudstone, Siltstone and Sandstone with no overlying superficial deposits.

3.3.2 The BGS website information indicates that there is one borehole in close proximity to the site (Ref: SE30NW94) which can be found in **Appendix B**. The borehole is situated 20m to the northwest of the site and shows that ground conditions consist of clay, coal and mudstone. There was no water intrusion or rest water level indicated.

3.4 HYDROGEOLOGY

3.4.1 According to the Department for Environment, Food and Rural Affairs (DEFRA) MAGIC map[2], the site is indicated as not being located in a Groundwater Source Protection Zone (SPZ), as defined by the Environment Agency (EA) for the protection of a potable groundwater supply.

3.4.2 The site is located as being in an area of high ground water vulnerability and located above a Secondary A bedrock aquifer as well as a secondary A superficial drift aquifer.

[1] Available at: http://mapapps.bgs.ac.uk/geologyofbritain/home.html accessed on 14/12/2021
[2] Available at: https://magic.defra.gov.uk/MagicMap.aspx?startTopic, accessed on 14/12/2021

3.4.3 Information obtained from the Cranfield University's Soilscape website[3] indicates that the site is located in an area classified as being Soilscape 6, which is defined as having Freely draining slightly acid loamy soils

3.5 HYDROLOGY

3.5.1 The River Dearne is located approximately 700 m to the east of the site at its closest point. The Don is classified as a main river and flows in a northerly direction away from the site. The river Dearne is classified as a main river by the EA and therefore falls under their jurisdiction.

3.5.2 Boarding the eastern permitter of the site is an unnamed drain as shown in Figure 3. This drain runs along the whole eastern border and joins the River Dearne at a point to the south of the site. The drain is situated in the Danvm Drainage Commissioners internal drainage board and therefore falls under their jurisdiction

3.5.3 The EA's Catchment Data Explorer website[4] indicates that the site resides within the Dearne Operational Catchment operational catchment.

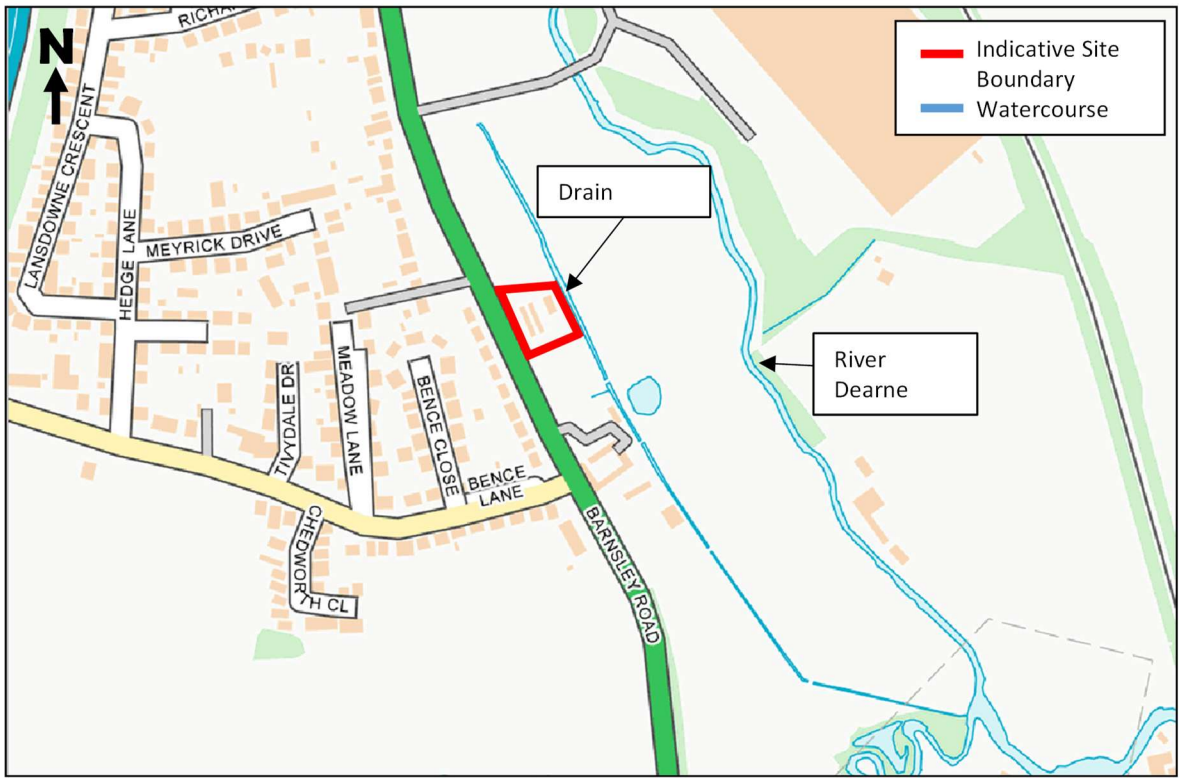


Figure 3. Watercourse location

[3] Available at: http://www.landis.org.uk/soilscapes/, accessed on 14/12/2021
[4] Available at: https://environment.data.gov.uk/catchment-planning/ , accessed on 14/12/2021

4 POTENTIAL FLOOD RISK

4.1 SOURCES OF FLOODING

4.1.1 This report is to consider flood risk from all potential sources. Section 5 then discusses in further detail the probability of flooding, any potential impacts and necessary mitigation, where required.

4.1.2 The NPPF (2021) also requires site developers to consider the impact of additional runoff generated by the proposed development on the receiving downstream catchment, and to assess the risk of runoff from the surrounding. This will require a full and comprehensive drainage assessment.

4.2 ENVIRONMENT AGENCY FLOOD ZONES

4.2.1 The EA Flood Map for Planning shows the majority of the site is located in Flood Zone 1, i.e. . land assessed as having less than 1 in 1,000 annual probability (<0.1%) of river or sea flooding in any one year, with the remainder being located in Flood Zone 2 and 3, i.e. Flood Zone 2, land assessed as having between a 1 in 100 and 1 in 1,000 annual probability (1% - 0.1%) of river flooding, or between a 1 in 200 and 1 in 1,000 annual probability (0.5% - 0.1%) of sea flooding in any one year. And Flood Zone 3, i.e. land assessed as having a 1 in 100 greater annual probability (>1%) of river flooding, or a 1 in 200 or greater annual probability (>0.5%) of sea flooding in any one year. This potential fluvial / coastal flood risk to the Site has been illustrated in Figure 4.

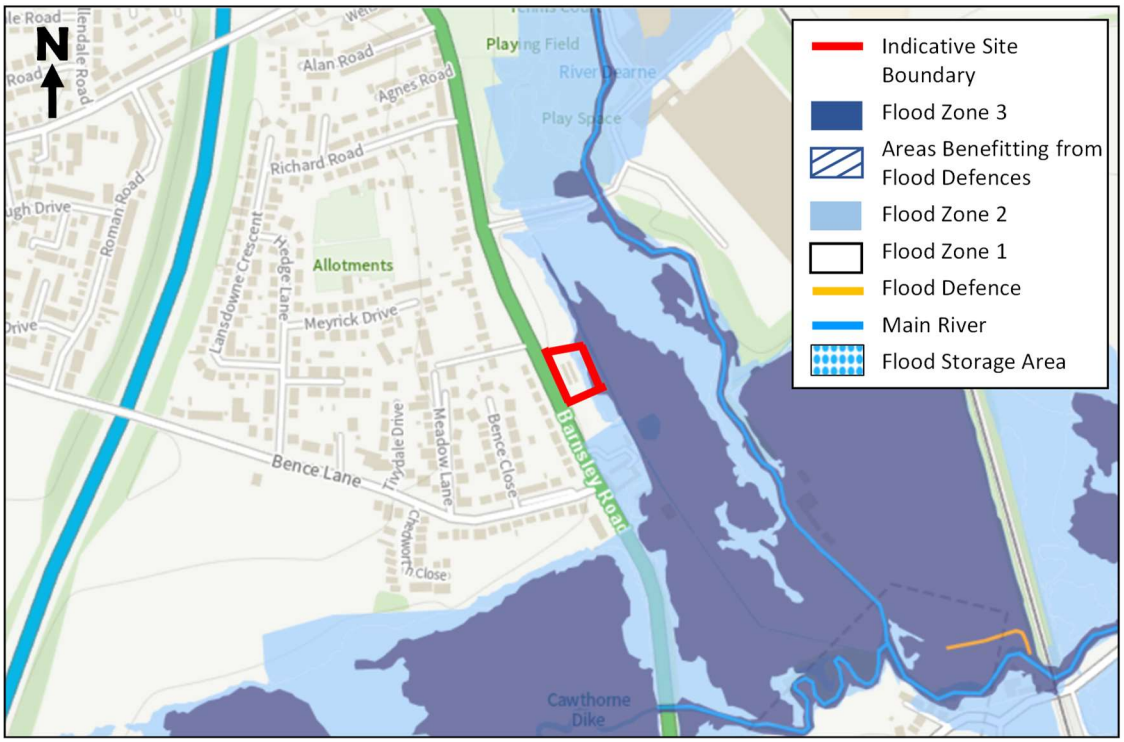


Figure 4. Environment Agency long term flood map for planning - rivers and sea

4.3 FLUVIAL AND COASTAL FLOODING

4.3.1 The EA Long Term Flood Risk Map for fluvial and coastal flooding shown in **Figure 5** indicates that the site is at medium to high risk of fluvial flooding as it is situated in flood zone 2 and 3. As the site is situated a few meters from a drain which is connected to the River Dearne.

4.3.2 The site is 45 miles from the nearest coastline, therefor the site is considered to not be at risk from coastal flooding.

4.3.3 As shown in **Figure 5** the majority of the site is situated in an area classified as very low risk of fluvial flooding. The east of the site is the only area which is found in flood zone 2 (medium risk). Medium risk means that each year this area has a chance of flooding of between 1% and 3.3%. Therefore, there is still a large proportion of the site which can be developed without the need for major flood mitigation measures.

4.3.4 The risk of flooding posed to the proposed development is classed as low. This is because there will be no dwellings and infrastructure built within either flood zone 2 or 3. This is further discussed in section 6.3 of this report.

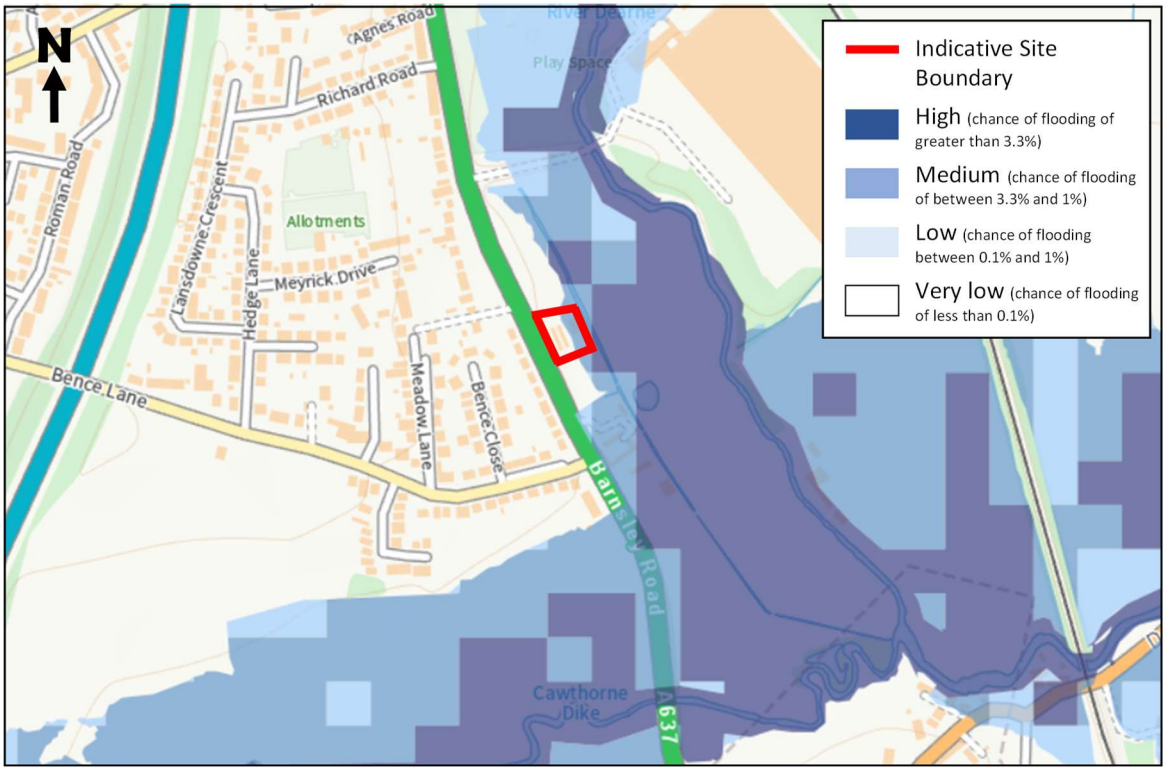


Figure 5. Environment Agency long term flood map – rivers and sea

4.4 PLUVIAL (SURFACE WATER) FLOODING

4.4.1 The EA Long Term Flood Risk Map (**Figure 6**) 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 of low medium and high risk of surface water flooding.

4.4.2 The areas at low risk are situated mainly towards the centre and west of the site. Low risk means that each year this area has a chance of flooding of between 0.1% and 1%. Flooding from surface water is difficult to predict as rainfall location and volume are difficult to forecast. In addition, local features can greatly affect the chance and severity of flooding.

4.4.3 The areas at low risk can expect pluvial flood depths of less than 0.3m and velocities greater than 0.25m/s. the direction of flow follows the topography of the site with surface water flowing east towards the drain.

4.4.4 The medium risk areas of the site can be found towards the north of the site. Medium risk means that each year this area has a chance of flooding of between 1% and 3.3%. this area towards the north can expect flood depths of less than 0.3m and velocities of greater than 0.25m/s. The flows are directed towards the drain in the east.

4.4.5 The areas which are at high risk are found towards the east of the site near the drain. High risk means that each year this area has a chance of flooding of greater than 3.3%. This area at high risk of pluvial flooding can expect flood depths of between 0.3m and 0.9m and surface water flows of less than 0.25m/s. Once again surface water flowing away from the site towards the drain in the east.

4.4.6 As the site is shown to have a varied risk of surface water flooding it must be noted that the areas at most risk are situated away from the proposed dwellings for the site. In addition, all surface water flows show to be flowing away from the site and in the direction of the drain which is situated outside the site boundary. The site is therefore considered to have low potential risk of flooding from pluvial sources.

4.4.7 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.

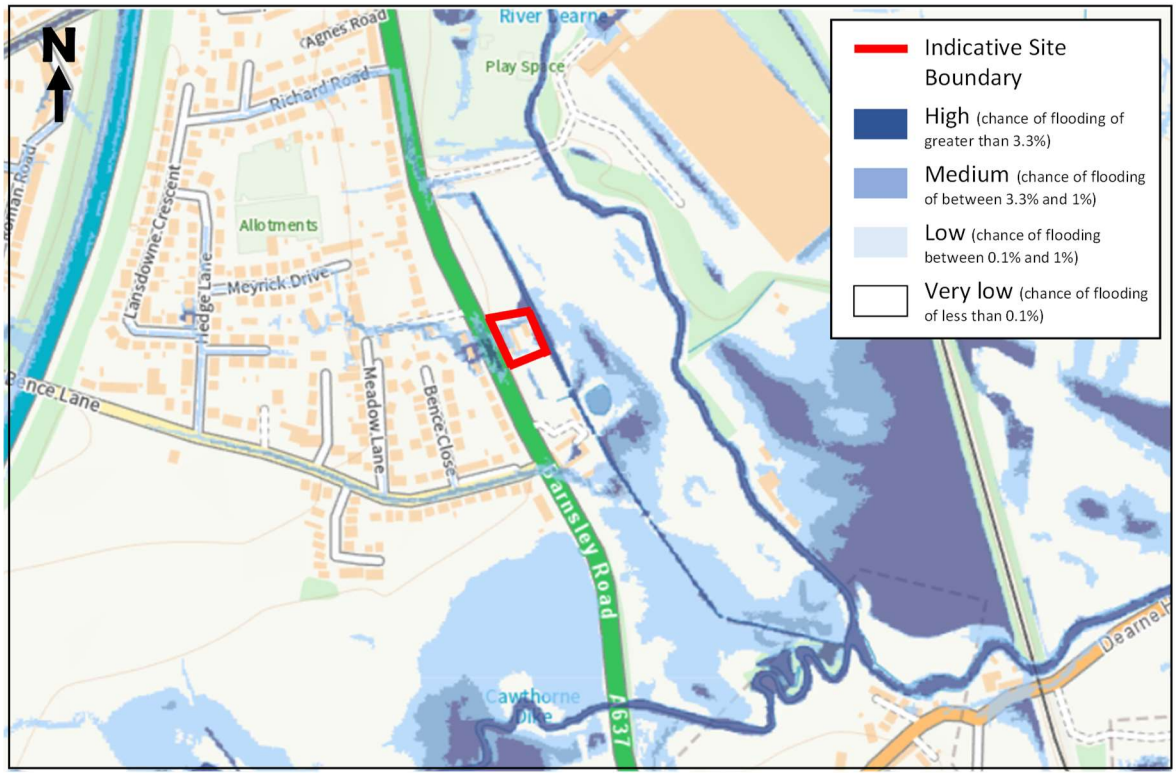


Figure 6. Environment Agency long term flood risk map – pluvial (surface water) flooding

4.5 GROUNDWATER FLOODING

4.5.1 Ground conditions at the site consist of freely draining slightly acid loamy soils, therefore the propensity for ground water emergence at the site is considered to be medium.

4.5.2 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.

4.5.3 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. Likewise, noting the fall in gradient from west to east, any emerging ground water would be directed away from the proposed development area and discharge into the Drain bordering the site.

4.5.4 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.

4.5.5 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.

4.6 FLOODING FROM ARTIFICIAL SOURCES

4.6.1 The EA Long Term Flood Risk Map of flood risk from reservoir and canal failure (Figure 7) indicates that the site and its surroundings, are not affected by potential flood waters from artificial sources such as dam or canal failure. The figures provided within the EA mapping principally indicate the worst-case flooding extents. Therefore, the potential risk of flooding from reservoir and/or canal failure is considered to be negligible.

4.6.2 In addition to the above reservoirs and canals are regularly maintained by relevant local authorities and failure is extremely unlikely. The site is therefore considered to have very low potential risk of flooding from artificial sources.

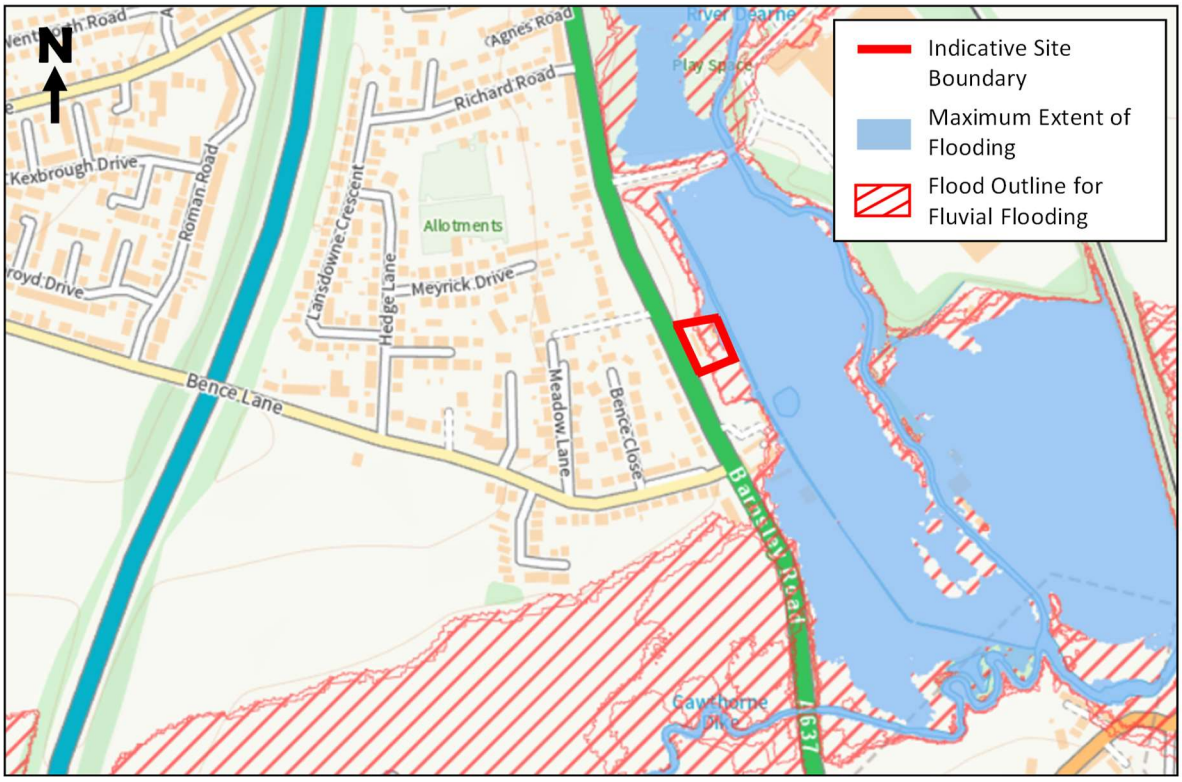


Figure 7. Environment Agency long term flood risk map – artificial sources

4.7 FLOODING FROM SEWERS

4.7.1 The site currently consists of Greenfield land and is not identified as having any drainage infrastructure within is boundary. According the BMBC Level 1 SFRA it indicates that the area of Darton to be more prone to external sewer flooding. However, there is little information to suggest

the site is at any greater flood risk. Furthermore, the topography of the site means that any flooding from sewers would run across the site and drain directly into the drain to the east of the site. The site is therefore considered to have very low potential risk of flooding from sewer flooding.

4.8 HISTORIC FLOODING

4.8.1 The EA historic flood map shows the site to have experienced historic flooding. A review of the BMBC Level 1 SFRA indicates the same historic flood outline as the EA. However, there is little information on the types of historic flooding which has occurred at the site. The EA historic flood outline can be seen in Figure 8.

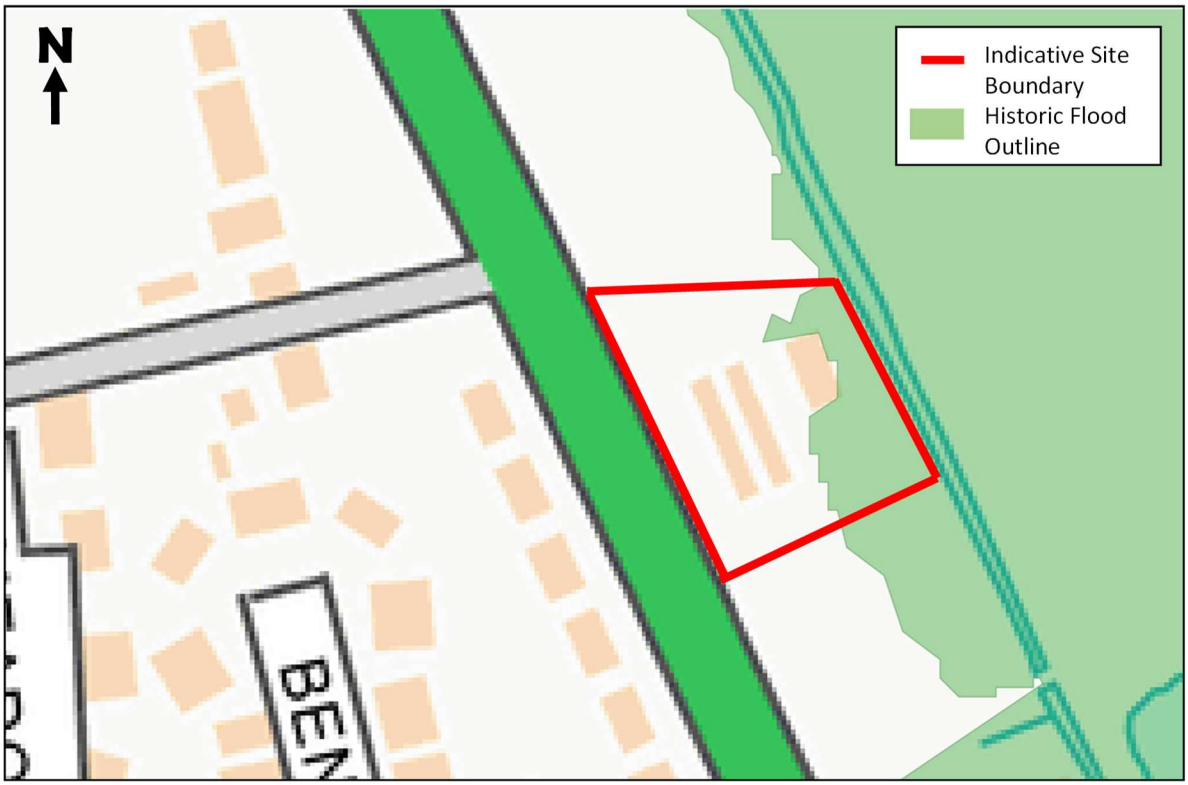


Figure 8. Environment Agency historic flood map outline

4.9 FLOOD WARNING AND ALERT AREAS

4.9.1 The site is located in an EA Flood Warning and Flood Alert area (Figure 9). Flood warning areas are defined as areas where flooding can be expected to occur from rivers or the sea and in some areas or from groundwater during a predicted scenario. Flood Alert areas are defined as areas where it is possible for flooding to occur from rivers, sea, and in some location's groundwater during a predicted scenario.

4.9.2 Properties and businesses within this area can sign up to receive free flood alerts via email and text to inform them upon the risk of flooding prior to flood events (Available: https://www.gov.uk/sign-up-for-flood-warnings). It is recommended that Client does so as part of the future site flood risk management for this area

4.9.3 In the scenario where a Flood Warning or Flood Alert is issued, the closest accessible land not located within a Flood Warning and Flood Alert area is approximately 10m off the Site. Emergency access and egress can be provided to this point via the main site gate onto Barnsley Road. Furthermore, an island of dry land to be located in the north of the site where temporary safe refuge could be sought.

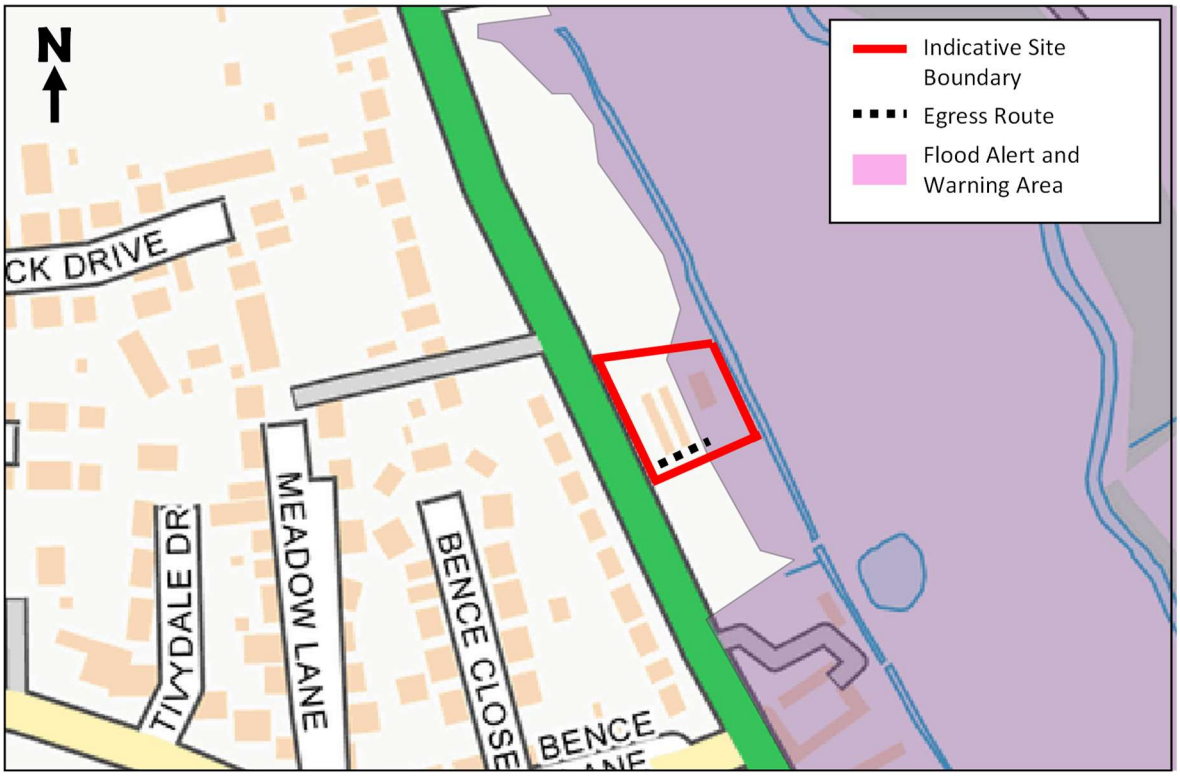


Figure 9. Environment Agency flood warning and alert areas

5 FLOOD RISK ASSESMENT

5.1 FLOOD RISK PLANNING POLICY

National planning policy framework

5.1.1 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.

5.1.2 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.

5.1.3 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.

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

5.1.5 The EA Flood Map for Planning shows the majority of the site is located in Flood Zone 1, i.e. . land assessed as having less than 1 in 1,000 annual probability (<0.1%) of river or sea flooding in any one year, with the remainder being located in Flood Zone 2 and 3, i.e. Flood Zone 2, land assessed as having between a 1 in 100 and 1 in 1,000 annual probability (1% - 0.1%) of river flooding, or between a 1 in 200 and 1 in 1,000 annual probability (0.5% - 0.1%) of sea flooding in any one year. And Flood Zone 3, i.e. land assessed as having a 1 in 100 greater annual probability (>1%) of river flooding, or a 1 in 200 or greater annual probability (>0.5%) of sea flooding in any one year.

5.1.6 The flood map extents indicated on this map show the potential for flooding from fluvial and coastal sources, and although they are indicative, they are a key tool in defining the appropriateness of a development type or the requirement for further assessment.

5.1.7 The EA flood extent maps have been used to design the site layout for new proposed development. Therefore, all buildings and infrastructure which is critical to the safety of the residents has been placed outside of flood zone 2 and into flood zone 1. This design method has been shown in section 6.3 of this report.

5.1.8 Under the NPPF (2021), Flood Zone 1 is defined as having a low probability flood risk. The proposed development includes the construction and development of 4 dwellings and associated infrastructure, which are defined within Table 2 of the NPPF technical guidance as being 'More Vulnerable'. Therefore, according to the criteria in Table 3 of the NPPF Technical Guidance (Flood Risk Vulnerability and Flood Zone 'Compatibility'), the proposed development may be deemed as 'Appropriate'.

5.2 SEQUENTIAL AND EXCEPTION TEST

5.2.1 Both the NPPG and the SFRA require the 'sequential test' to be applied to ensure that proposed developments are carried out in area that are at the least risk of flooding, before considering development in areas that are at risk of flooding. The proposed site falls within flood zone 1 and is considered to come under the 'more vulnerable' category as a residential development.

5.2.2 Based on Table 3 in the National Planning Practice Guidance for Flood Risk and Coastal Change, the proposed use of the site is acceptable due to it being located in Flood zone 1 and an exception test is not required.

Table 5-1. Development appropriateness based on vulnerability and flood zone

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

5.3 POTENTIAL SOURCES OF FLOOD RISK

5.3.1 Table 3 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 6.

Table 5-2 Pre-mitigation flood risk summary

Flood Source	Potential Risk			Description
	High	Medium	Low	
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	The hardstanding nature of the site will ensure ground water emergence will be low.
Reservoirs and waterbodies			X	The site is shown to fall outside of the catchment for reservoir and waterbodies flooding.
Sewers			X	There is no evidence to support that the site is at risk of sewer flooding.

Flood Source	Potential Risk			Description
	High	Medium	Low	
Pluvial runoff		X		The site has varied risk of pluvial flooding throughout the site, however due to the nature of the surface water flows and an appropriate drainage strategy the risk of surface water flooding post development will be low.
Effect of Development on Wider Catchment		X		The impermeable area of the site is being altered.

6 FLOOD RISK MITIGATION

6.1 FLOOD RISK MITIGATION

6.1.1 Section 4 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.

6.2 EFFECT OF DEVELOPMENT ON WIDER CATCHMENT

Development drainage

6.2.1 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.

6.3 SITE ARRANGEMENTS

Sequential arrangement

6.3.1 The Flood Zone mapping shows the site to be located within Flood Zone 1.

Finished levels

6.3.2 Given the site's location within Flood Zone 1, there are no specific requirements for finished floor levels with regard to flood risk. However a minimum of 150mm above existing ground level is recommended.

Site layout

6.3.3 As discussed in section 5.1.7 of this report as the site is situated within all 3 flood zones, this has meant that the site development plan has been informed by this information to ensure that all essential buildings and infrastructure is situated in flood zone 1.

6.3.4 The distance from the road to the edge of flood zone 2 is shown to be 31.2m and the distance from the edge of the road to the eastern edge of the dwellings is 30.1m indicating that there is approximately 1.1m gap between the edge of the properties and the start of flood zone 2.

6.3.5 As shown in **Appendix A** the edge of flood zone 2 is situated outside the dwellings leaving only the gardens of the dwellings in the flood zone. There is also no infrastructure being built within flood zone 3.

7 SUMMARY & CONCLUSION

7.1.1 The EA Long Term Flood Risk Map for fluvial and coastal flooding indicates that the site is at medium to high risk of fluvial flooding as it is situated in flood zone 2 and 3. However the risk of flooding posed to the proposed development is classed as low. This is because there will be no dwellings and infrastructure built within either flood zone 2 or 3.

7.1.2 The EA Long Term Flood Risk Map for surface water flooding 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 of low medium and high risk of surface water flooding.

7.1.3 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. This should be investigated through a drainage strategy.

7.1.4 Ground conditions at the site consist of freely draining slightly acid loamy soils, therefore the propensity for ground water emergence at the site is considered to be medium. 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.

7.1.5 The EA Long Term Flood Risk Map of flood risk from reservoir and canal failure (Figure 7) indicates that the site and its surroundings, are not affected by potential flood waters from artificial sources such as dam or canal failure

7.1.6 The site is located in an EA Flood Warning and Flood Alert area therefore the client should sign up to receive free flood alerts via email and text to inform them upon the risk of flooding prior to flood events (Available: https://www.gov.uk/sign-up-for-flood-warnings). It is recommended that Client does so as part of the future site flood risk management for this area.

8 LIMITATIONS

8.1 LIMITATIONS

8.1.1 This report has been prepared for exclusive use by Flatman Planning for the purpose of assisting them in evaluating the potential constraints imposed by flood risk and drainage in making a Planning Application.

8.1.2 AMA accepts no liability for any use of this document other than by its client and only for the purposes, stated in the document, for which it was prepared and provided. No person other than the client may copy (in whole or in part) use or rely on the contents of this document, without the prior written permission of AMA. Any advice, opinions or recommendations within this document should be read and relied upon only in the context of the document as a whole.

8.1.3 AMA has endeavoured to assess all information provided to them during this appraisal. The report summarises from several external sources and cannot offer any guarantees or warranties for the completeness or accuracy of information relied upon.

8.1.4 This report has been undertaken with the assumption that the site will be developed in accordance with the above proposals without significant change. The conclusions resulting from this study are not necessarily indicative of future conditions or operating practices at or adjacent to the site.

8.1.5 A topographic survey has been completed for the site and was supplied to AMA by the client. AMA accepts no liability for the accuracy of this survey, and it is recommended that it is verified on-site prior to the commencement of any construction work.

8.1.6 Existing drainage information is based on third party survey data and record information which is considered to be incomplete. It is therefore recommended that a FULL drainage investigation survey is commissioned to establish the precise alignment, level, and condition of ALL existing drainage within the development site to inform the masterplan and future detailed design proposals.

APPENDICES

APPENDIX A – PROPOSED SITE LAYOUT

APPENDIX B – BGS BOREHOLE RECORDS

Appendix A

PROPOSED SITE LAYOUT



NOTES

P1	Preliminary - Initial Issue	-	-

ANDREW MOSELEY ASSOCIATES
TRANSPORT AND DEVELOPMENT PLANNING CONSULTANTS

Project:
Stables, Barnsley Road, Darton

Client:
Flatman Planning

Drawing:
Site Layout and Flood Zone 2 Boundary

Drawn By:	Date:	
AY	21/12/2020	
Checked: GS	Scale: 1:500	A3
Drawing No. AMA/21348/D/001		Rev. 1

Appendix B

BGS BOREHOLE RECORDS

British Geological Survey

Version 2.0.6.4

BGS ID: 83960 : BGS Reference: SE30NW94
British National Grid (27700) : 431070,409480

Report an issue with this borehole

SE30NW 94 ~~331 095~~

Michael D. Joyce Associates Consulting Geotechnical Engineers	RECORD OF DRILLING Date 13th December 1989	Borehole Number 4

Client North Homes 3107 0948

Site Meyrick Drive/Barnsley Road

Location Darton

Type of Drill Rotary Percussive **Size** 75mm

From	To	Description	Thickness	Remarks
m	m		m	
0.0	0.4	Topsoil	0.4	
0.4	0.7	Clay	0.3	
0.7	10.5	Sandstone, brown	9.8	
10.5	11.2	COAL	0.7	
11.2	11.7	Grey mudstone	0.5	
11.7	12.1	COAL	0.4	
12.1	19.0	Grey mudstone	6.9	
19.0	19.5	COAL	0.5	
19.5	20.0	Mudstone	0.5	
				Dry and solid

Signed Ewan Halliday Date 5 Jan 1990

British Geological Survey

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Andrew Moseley Associates, 51A St Paul's Street, Leeds, LS1 2TE

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