



Proposed Industrial Units – Ashbourne Lane, Chapel- en-le-Frith

Flood Risk Assessment & Drainage Statement

For Wainwrights

Date 22 March 2024

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1. Introduction

This report has been prepared by Hydrock Consultants Limited (Hydrock) on behalf of our client Wainwrights to support the submission of a Full planning application for proposed new industrial units at Ashbourne Lane, Chapel-en-le-Frith.

This report will outline the existing site, its constraints and the proposed development in terms of flood risk and drainage related matters.

2. Site Information

2.1 Site Location & Current Use

The site is located within Chapel-en-le-Frith, High Peak. It is a parcel of land bordered by Ashbourne Lane to the south west, residential properties served by Netherfield Road and Buxton Road to the east and north respectively and a private car park to the west.

The land comprises an approximately 0.32-hectare brownfield site that was a former council depot/joinery.

Access to the site is via an existing vehicular access onto Ashbourne Lane on the south west boundary.

The approximate site address and Ordnance Survey Grid Reference is in Table 1,

Table 1: Site Referencing Information

Site Referencing Information	
Site Address	Land off Ashbourne Lane Chapel-en-le-Frith SK23 OPA
Grid Reference	SK 065807 406559E 380783N

2.2 Topography

The site generally falls from the south east to the north west with levels ranging between 226.5m AOD down to approximately 225m AOD. A ramp is located on the central eastern site boundary falling from south east to north west with levels from approximately 225.2m AOD at the top of the ramp to 221.3m AOD at the bottom.

There are numerous retaining walls present at the site boundaries, retaining the site, and also within the site retaining the existing ramp.

A topographical survey (**Appendix A**) has been undertaken and used to inform this flood risk assessment and drainage strategy.

2.3 Geology

A review of the British Geological Survey (BGS) mapping shows the site to be predominantly underlain with superficial deposits of Devensian Till. The geological mapping indicates the solid geology beneath the entire site to be Shale Grit-Sandstone.

A Phase 1 Desk Top Study has been carried out by Arc Environmental (Report 23-873 P1 DTS, dated October 2023). Made ground is anticipated to be present associated with the construction of the

existing on-site buildings. The Devensian Till deposits are anticipated to relate to slightly sandy slightly gravelly clay of a firm to stiff consistency. The Shale Grit comprising of alternating sandstones and mudstones.

Intrusive site investigations are due to be completed in April 2024 with this report being updated to suit its findings.

2.4 Proposed Development

The proposed development involves the demolition of existing buildings and reconfiguring the site layout to construct three new industrial units with associated new site access works and car parking. Access to the site will be taken from Ashbourne Lane, north west of the existing access to be removed.

The proposed site plan is shown in Figure 1, below.

Figure 1 Proposed Site Plan



3. Sources of Flood Risk

3.1 Fluvial and Tidal Flooding

The site has been assessed for risk based on the EA Flood Maps and supplementary flood data received as part of a request for detailed flood model information. All sources of flooding have been considered including fluvial, pluvial, tidal, artificial sources and groundwater.

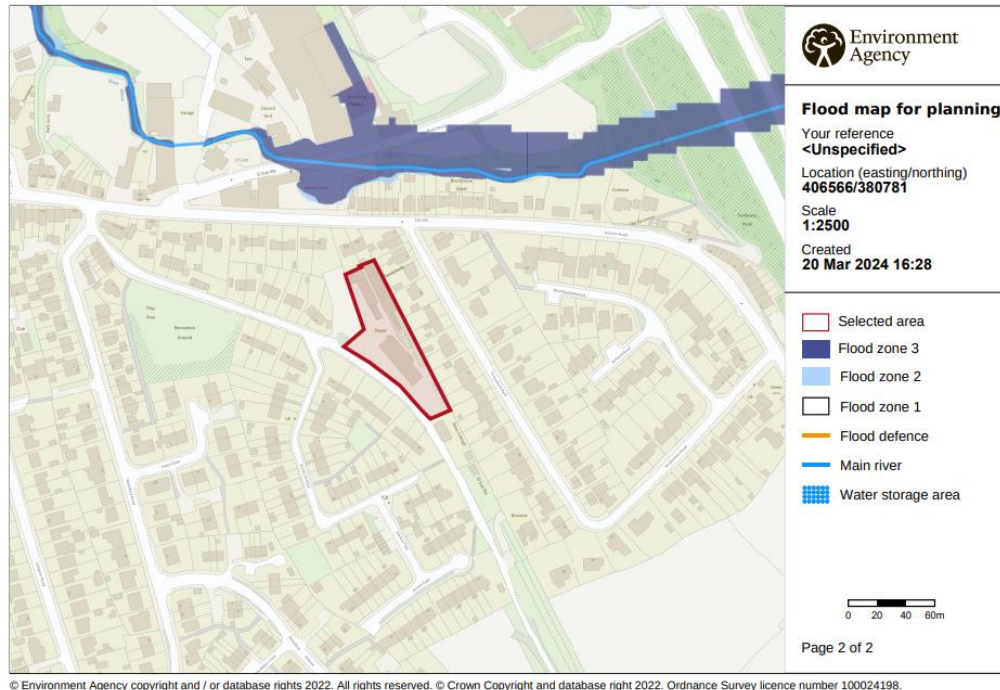
The nearest watercourse to the site is Black Brook, a 'Main River' that is located to the north and east of the site. It is approximately 60m from the site boundary at its closest point to the north and 200m from the site boundary to the east.

Warm Brook is also located to the west of the site. At its closest point, this 'Main River' is approximately 460m from the site boundary.

No other watercourses are evident within or immediately adjacent to the site.

The Environment Agency Flood Map for Planning shows the site to be entirely within Flood Zone 1 'Low Probability'. This is shown in Figure 2, below.

Figure 2 Environment Agency Flood Map for Planning



Based on the above information, the site is considered to have less than a 1 in 1,000 annual probability of river flooding within any one year.

3.2 Surface Water Flooding

Surface water flooding occurs as the result of an inability of intense rainfall to infiltrate the ground. This often happens when the maximum soil infiltration rate or storage capacity is reached. Flows generated by such events either enter existing land drainage features or follow the general topography which can concentrate flows and lead to localised ponding/flooding.

The EA Flood Map for Surface Water (Figure 3, below) shows that there are areas of the site at low to high risk of surface water flooding with the rest of the site at very low risk of surface water flooding.

The surface water flood risk appears to originate from a surface water flood route coming from the south east of the site. Overland flood flows are shown to be conveyed from agricultural land, spilling onto Netherfield Road in a north westerly direction before migrating beyond the residential properties towards the site. These flows enter the site and pool in lower lying parts of the site.

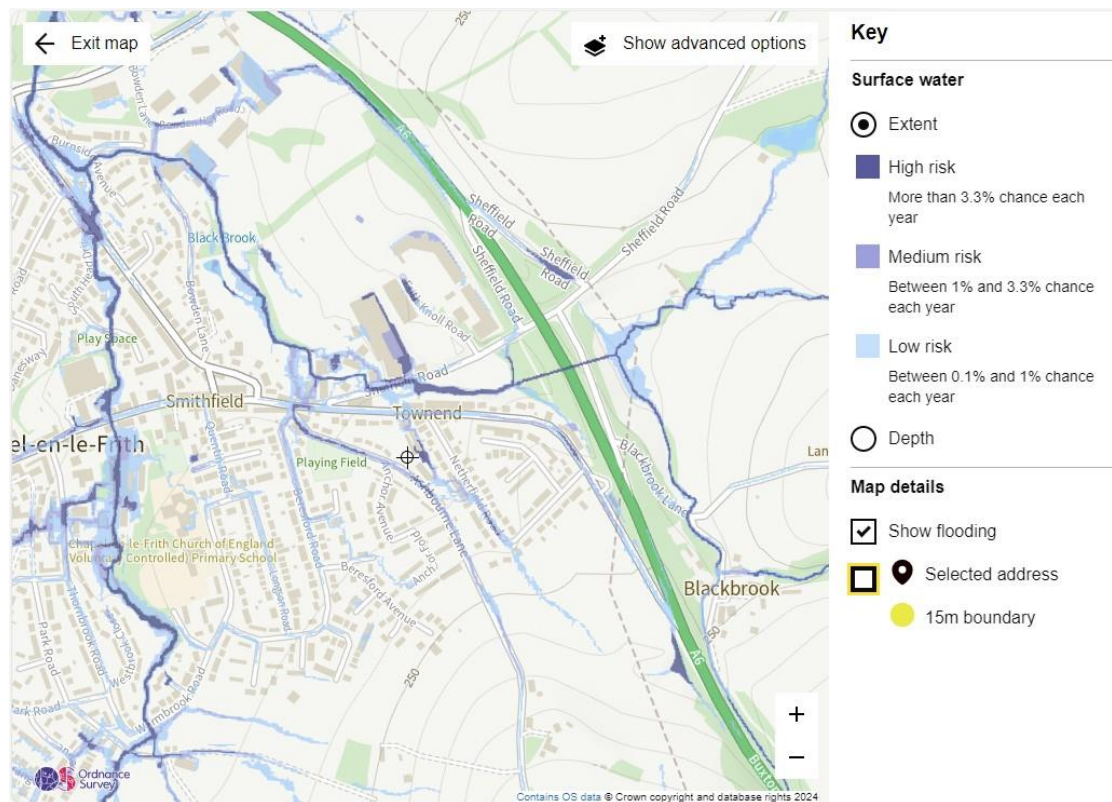
There is a surface water flood route adjacent to the site in Ashbourne Lane however this is contained within the highway extents and does not appear to enter the site boundary.

To mitigate the risks, it is proposed that the units are elevated above the existing ground levels at the lower lying parts of the site, preventing any surface water flows from entering the building footprint. The site levels are to be shaped to ensure flows are conveyed away from any existing or proposed buildings.

The design of the proposed external levels will ensure this existing flood risk is not amplified or intensified and only the existing flood flow routes are maintained.

As such, the residual risk of surface water flooding is considered to be low.

Figure 3: Flood Map for Surface Water



3.3 Groundwater Flooding

A potential risk of flooding is considered to be from rising groundwater within the underlying strata. Beneath the anticipate made ground the site is underlain by Till deposits over sandstone and mudstone bedrock.

Given the topography of the site, the nature of the proposed development and the nature of the underlying strata, we do not consider groundwater flooding to be a significant risk, although this will be reviewed following further site investigations.

3.4 Infrastructure Failure Flooding

The site is not shown to be at risk of flooding from reservoirs.

A further possible source of flooding is from public sewers. The United Utilities (UU) statutory sewer map, included in **Appendix B**, shows that there are no UU assets within the site boundary.

Any flooding associated with the existing sewer assets in Ashbourne Lane will remain within the public highway and will be prevented from entering the site by the raised access ramps.

3.5 Sequential & Exception Test

Given that the site is situated in Flood Zone 1 as detailed in Section 3.1, a Sequential or Exception Test is not required.

4. Surface & Foul Water Drainage

4.1 Surface Water Drainage

In line with the NPPF, the aim should be to discharge surface water run-off from the site in line with the order of priority detailed within the surface water drainage hierarchy.

1. Into the ground (infiltration)
2. To a surface water body or watercourse
3. To a surface water sewer, highway drain or another drainage system
4. To a combined water sewer

An intrusive site investigation has not yet been undertaken. However, it is understood that ground conditions are unlikely to be suitable for surface water disposal via infiltration/soakaway action due to the low permeability of the underlying geology and the presence of made ground. Infiltration methods are, therefore, not considered suitable at this location but will be reviewed following site investigations.

There are no suitable watercourses within or immediately adjacent to the site into which surface water could be discharged. The nearest watercourse to the site is Black Brock which is located away from the site to the north and is not feasible to discharge into due to third part land.

As such, and based on the above Drainage Hierarchy, surface water flows from the proposed development should be directed to the nearest public surface water sewer. The UU statutory sewer map (**Appendix B**) shows there are no public surface water sewers within the vicinity of the site. A pre-application enquiry was requested from United Utilities, the response to this enquiry was received in March 2024 and is included within **Appendix C**. UU have advised to investigate the possibility of draining surface water to the highway drain before permission would be granted to discharge into a combined sewer.

An enquiry has been made to Derbyshire County Council to obtain highway drainage asset plans, a response has yet to have been received at the time of this report.

There is an existing private surface water network within the site boundary, associated with the previous use of the site. This is evident on the topographical survey of the site (**Appendix A**). It is understood that the private surface water network discharges to a highway drain within Ashbourne Lane, although this is to be proven following further CCTV survey.

The topographical survey also shows a 300mm diameter drain to the west of the site. This is understood to be the highway drainage system.

It is proposed to construct a new surface water connection onto this highway sewer to avoid both the existing and proposed retaining walls. It is assumed that a gravity connection will be feasible but this should be confirmed following detailed drainage design. This will be subject to approval from the Highways Authority.

As the site is brownfield, it is proposed to reduce the existing surface water flows by 50% to provide a betterment to existing peak flow rates from the site. The peak flow from the existing impermeable area of the site, approximately 2005m² (0.2ha), has been calculated using the Modified Rational Method. The calculation is provided below:

$$Q=CiA$$

$$Q=2.78 \times 50 \times 0.2$$

$$Q=27.8 \text{ l/s}$$

With a 50% betterment applied: 13.9 l/s

All proposed surface water systems should be designed to accommodate the worst case 1 in 30-year storm event without flooding. Furthermore, the worst case 1 in 100 year plus 30% climate change storm event should also be retained on-site in an area that will not cause flooding to any existing or proposed buildings.

To accommodate the 1 in 100 year plus 30% climate change storm event, attenuation and a flow control shall be provided within the proposed car park at the centre of the site. This will require approximately 58 cubic metres of attenuation within the site boundary at a restricted discharge rate of 13.9L/s.

Sustainable Urban Drainage Systems (SUDS) should also be used wherever possible to mimic as far as practicable the natural run off regime, improve water quality, reduce run-off volume and attenuate peak flows. These should be designed in accordance with the current guidance, CIRIA C753 'The SuDs Manual'.

4.2 Foul Water Drainage

There are no United Utilities public sewer assets within the site boundary, however, given the previous use of the site there is an existing private foul network within the site boundary. This is evident on the topographical survey of the site (**Appendix A**).

UU have advised in their pre-development enquiry response (**Appendix B**) that foul water flows should discharge into the 150mm diameter public foul sewer within Netherfield Road located to the east of the site.

However, the UU statutory sewer map (**Appendix B**) shows there is also a 150mm diameter public foul sewer within Ashbourne Lane, adjacent to the site. It is proposed to utilise the existing foul connection to this public sewer that is located within the site boundary, subject to CCTV drainage condition survey. It is assumed that a gravity connection will be feasible but this should be confirmed following detailed drainage design.

The proposed foul water connection to the public sewer will be subject to United Utilities approval.

It is understood that both the surface and foul water drainage systems will be maintained by a private maintenance/management company. However, all drainage systems will be designed and constructed to meet or exceed the 'Design & Construction Guidance' requirements.

Appendix A

- *Topographical Survey*

Appendix B

- *United Utilities Sewer Asset Map*

Appendix C

- *United Utilities Pre-development response*

Appendix D

- *Proposed Drainage Strategy Layout*