

# Flood Risk Assessment

To accompany a planning application for  
development on land at

16 Ings Road, Wombwell, Barnsley,  
S73 0BP

Prepared by

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# 1 Executive Summary

- A The proposal is for new dwellings and this is non-major development;
- B The proposed dwellings lie wholly within Flood Zone 1;
- C There is no documented evidence of flood risk from any other sources;
- D The site is therefore in the most sequentially preferable area;
- E The site lies in proximity to Flood Zones 3 and 2;
- F Floor levels will provide more than the required minimum of 300mm free-board;
- G Flood resilience and mitigation methods are not required;
- H The proposal intends to manage all surface water on site in line with the drainage hierarchy and hence will not impact on flood risk elsewhere;
- I Existing access/egress routes away from site are unaffected;
- J The owners of the dwellings will be advised to sign up to flood warning schemes;
- K Assuming the recommended advance flood warning alerts and the access/egress routes can be maintained over the lifetime of the development, the proposal to create two new dwellings wholly within Flood Zone 1 and at no risk from other sources of flooding is considered acceptable.

## Designer actions required

- 1 Confirm that FFL will be set no lower than 26.08mAOD and show this datum on the plans.
- 2 Confirm the design intention to manage surface water at source in line with current best practice and the drainage hierarchy.

## 2 Introduction

### 2.1 Site location

The project is at 16 Ings Road, Wombwell, Barnsley, S73 0BP (see Figure 1).



Figure 1: Site location plan, as indicated with North topmost.

### 2.2 Development description

The proposal is for two dwellings.

The site is an existing developed site and the proposed work is classed as “non-major” in respect to flood risk.

All proposal plans are to be submitted under separate cover.

### 2.3 Site geology

Geological mapping data from within the vicinity indicate Alluvium - Clay, silt, sand and gravel however this would require confirmation on site. If available on site, the superficial deposits may offer poor to medium permeability. Infiltration SuDS therefore may be viable (subject to site testing).

## 3 Policies

In preparation for this Flood Risk Assessment (FRA), National Planning Policy Framework<sup>[3]</sup> and British Standards on Assessing and Managing Flood Risk<sup>[1]</sup> were reviewed, and their related policies are, where applicable, referred to in this report.

The Environment Agency has been consulted in order to establish the flood zone of the proposed site.

In addition,

- Planning policies from the Local Authority were also reviewed including its Strategic Flood Risk Assessment.
- The latest Planning Policy Guidance (PPG) was reviewed in respect to flood risk.

### 3.1 Sequential test

“The Sequential Test ensures that a sequential, risk-based approach is followed to steer new development to areas with the lowest risk of flooding, taking all sources of flood risk and climate change into account” (PPG).

The LPA are now responsible for the application of the Sequential test as steered by the PPG<sup>1</sup>.

“Can development be allocated in areas of low flood risk both now and in the future? (Level 1 Strategic Flood Risk Assessment). If Yes: Sequential test passed.” (PPG flow chart for LPA).

To assist the LPA, the findings within the following Sections of this report will demonstrate that the site is at very low risk both now and in the future.

This report therefore suggests that the test is Passed.

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<sup>1</sup>Guidance provided to the LPA from the EA can be viewed here <https://www.youtube.com/watch?v=xgbEGrsM-t4> (in particular at 13:48)

### 3.2 Vulnerability class

Flood risk vulnerability classification (see table 2)		Essential infrastructure	Water compatible	Highly vulnerable	More vulnerable	Less vulnerable
Flood zone (see table 1)	Zone 1	✓	✓	✓	✓	✓
	Zone 2	✓	✓	Exception Test required	✓	✓
	Zone 3a	Exception Test required	✓	✗	Exception Test required	✓
	Zone 3b functional floodplain	Exception Test required	✓	✗	✗	✗

**Key:** ✓ Development is appropriate.  
 ✗ Development should not be permitted.

Figure 2: Flood risk vulnerability and flood zone compatibility<sup>[2]</sup>

With reference to Figure 2, the proposed development is classified as “More Vulnerable”. The site is located in Flood Zone 1.

### 3.3 Exception Test

Does not apply

## 4 Flood risk analysis

### 4.1 Sources of potential flooding

Flood risk from various sources at the site is analysed in this section.

#### 4.1.1 Flood risk from sea and rivers

Flooding can occur from the sea due to a particularly high tide or surge, or combination of both.

The site is not at risk from tidal flooding.

Flooding can also take place from flows that are not contained within a river channel due to high levels of rainfall in the catchment.

With reference to the Environment Agency flood map, Figure 3, the site lies within Flood Zone 1. This means that the site has a Very Low probability of fluvial flooding (the actual risk to the site is less than a 1 in 1000yr annual probability of fluvial flooding).

EA classification: "Very Low Risk".

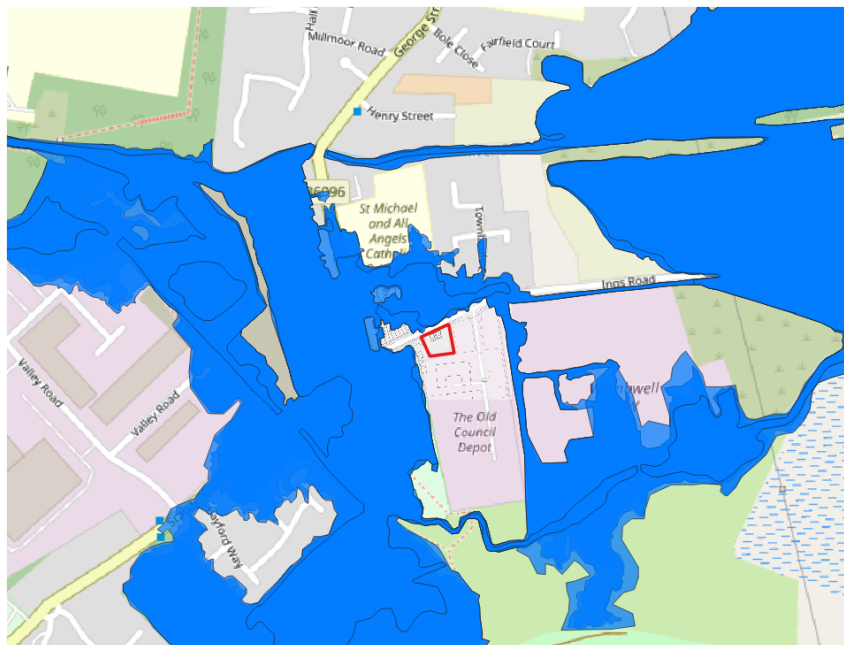


Figure 3: Flood zone mapping from the EA data. The site itself is in Flood Zone 1 although is adjacent to Flood Zones 2 & 3.

## Historic flooding

With reference to the EA historic flood mapping as extract at Figure 4, the site is adjacent to, but not shown to lie in an area of historic flooding.



Figure 4: Historic flood mapping from the EA online data. The site falls outside an area of historic flooding

### 4.1.2 Flood risk from groundwater

Groundwater flooding occurs when water levels in the ground rise above surface levels. It is most common in low-lying areas underlain by permeable rock (aquifers), usually due to extended periods of wet weather.

The site's geology is classified as having a very Low susceptibility to groundwater flooding.

The EA state: "Flooding from groundwater is unlikely in this area".

Hence, the risk of groundwater flooding on the proposed site can be considered to be Negligible.

### 4.1.3 Flood risk from sewer and highway drains

Flooding occurs when combined, foul or surface water sewers and highway drains are temporarily over-loaded due to excessive rainfall or due to blockage.

There are no indicators to Sewer flooding at the site.

Hence, the risk of sewer and highway flooding to the proposed site can be considered to be Low.

#### 4.1.4 Flooding risk from surface water

Flooding occurs when rainfall fall on a surface (on or off the site) which acts as run-off which has not infiltrated into the ground or entered into a drainage system.

With reference to the E.A online mapping, Figure 5, the site is not at risk from surface water flooding.

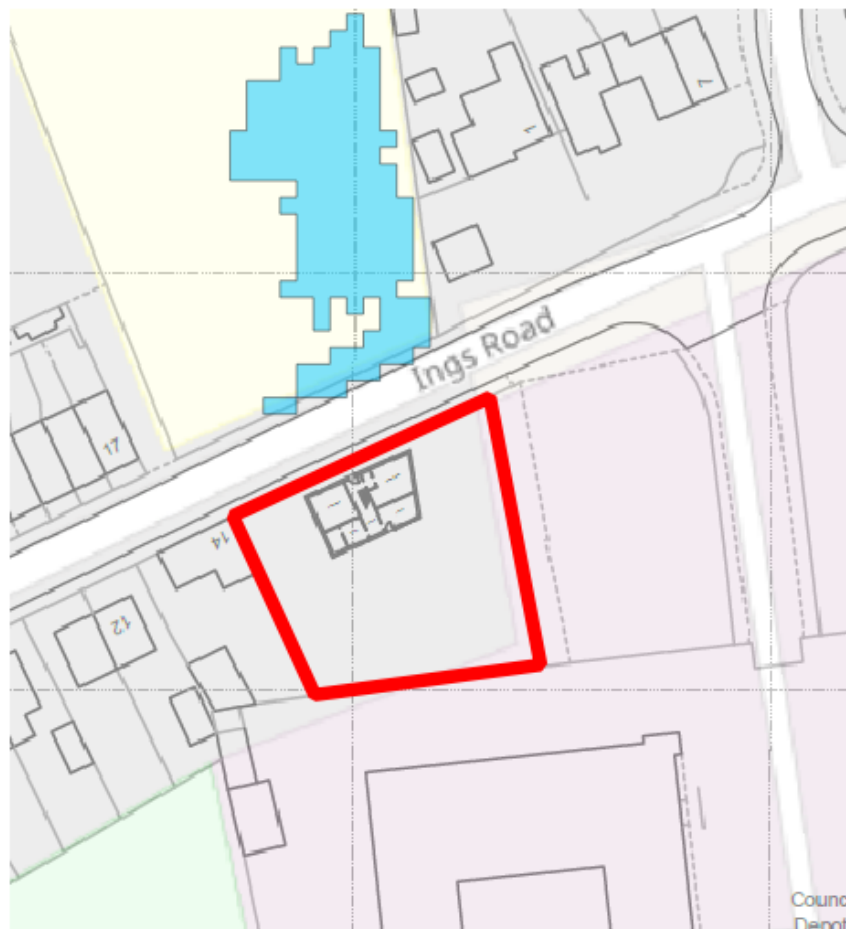


Figure 5: 1 in 1000yr SW flood extent mapping. The site is not shown to be at risk from SW flooding.

EA classification: “Very low risk of (surface water) flooding”

#### 4.1.5 Flood risk from infrastructure failure

Flooding occurs because of canals, reservoirs, industrial processes, burst water mains or failed pumping stations.

The site is not at flood risk due to reservoir failure as shown in Figure 6. The area surrounding the site is only at risk if a reservoir failure coincides with a fluvial flood event. The combined probability of this occurring is extremely Low.

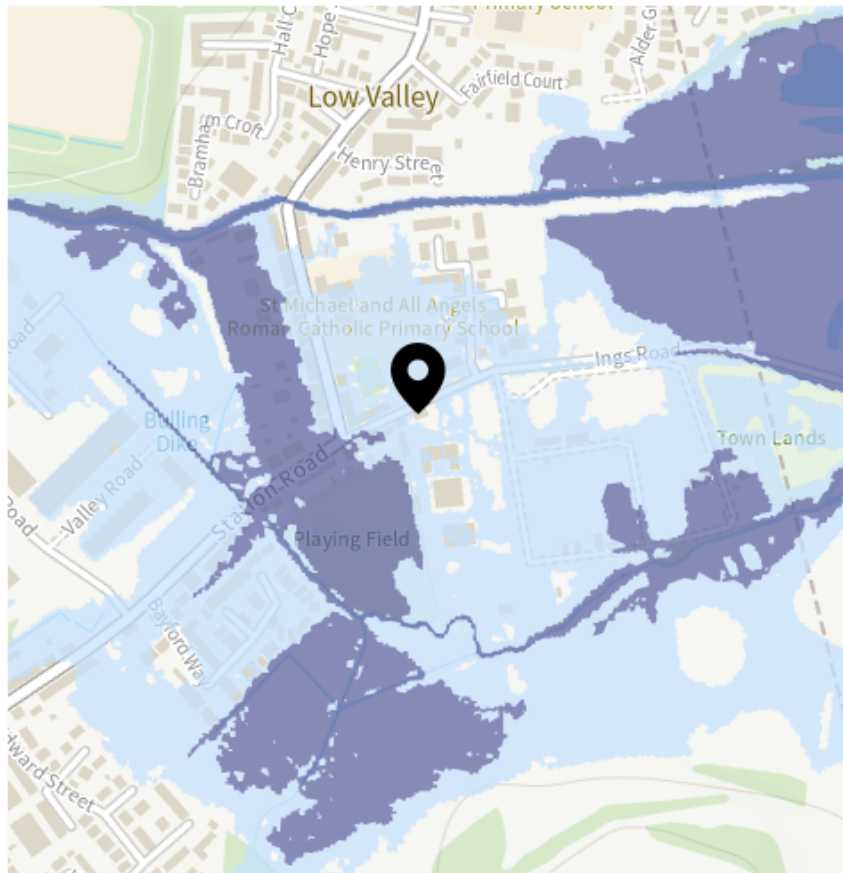


Figure 6: Flood risk from reservoir flooding. The site itself is not at risk. (Source: EA flood mapping)

Hence the flood risk to the site from reservoir failure is considered to be Negligible.

#### 4.1.6 Urban flash flooding

With reference to the UFF dataset there are no referenced flash flood incidents at this location.

## 4.2 On-site surface water analysis and management

### 4.2.1 Generation of Run-off

The post-development surface water run-off volume will increase when compared to the pre-development level because there is an overall reduction in impermeable areas. Hence all additional surface water arising will be managed on site in line with current best practice.

### **4.3 SuDS Statement**

Surface water will be managed in full alignment with the SuDS hierarchy as required under provisions made under the Town and Country Planning Act 1990.

While not required for Planning permission consent it can be confirmed that all SW on site will be also be designed, installed and tested in full accordance with Part H of the Building Regulations 2010 (as amended 2013), Requirement H3, as made under the Building Act 1984.

It is likely that soakaways will be viable given the expected ground conditions associated with the local geology hence the recommendation of this report would be to adopt the use of raised rain-garden planters, soakaways and water butts as a viable and proportionate SuDS 'provision on site.

### **4.4 Impact on flood risk elsewhere**

#### **4.4.1 SW arising**

Since the proposal is intending to manage all surface water arising at source the impact on flood risk elsewhere is Low.

## 5 Levels

### 5.1 Climate change allowances

The revised climate change allowance for the site is +28% as shown in Figure 7.

The EA do not provide data for a 28% uplift hence the value for +28% is arrived at using the EA data (as provided under a Product 6 request) to construct stage discharge charts for the appropriate in-channel nodes.

For this site Node Dove01\_1450 and Node BUL01\_2404 are used which represent the upstream and downstream nodes of the flood flow route past the site as shown in Figure 8.

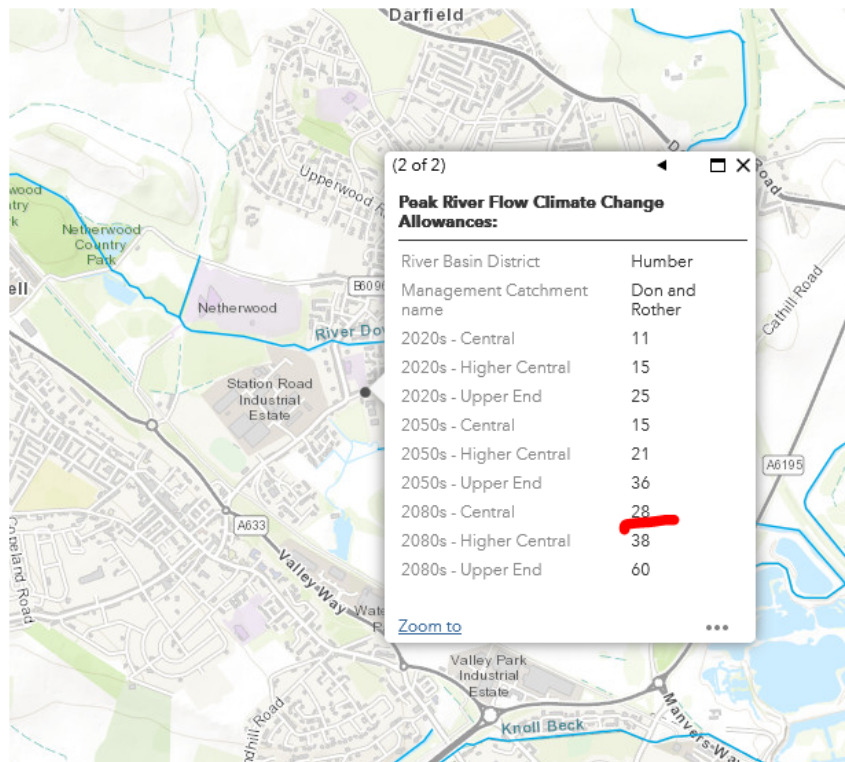


Figure 7: Revised climate change allowances

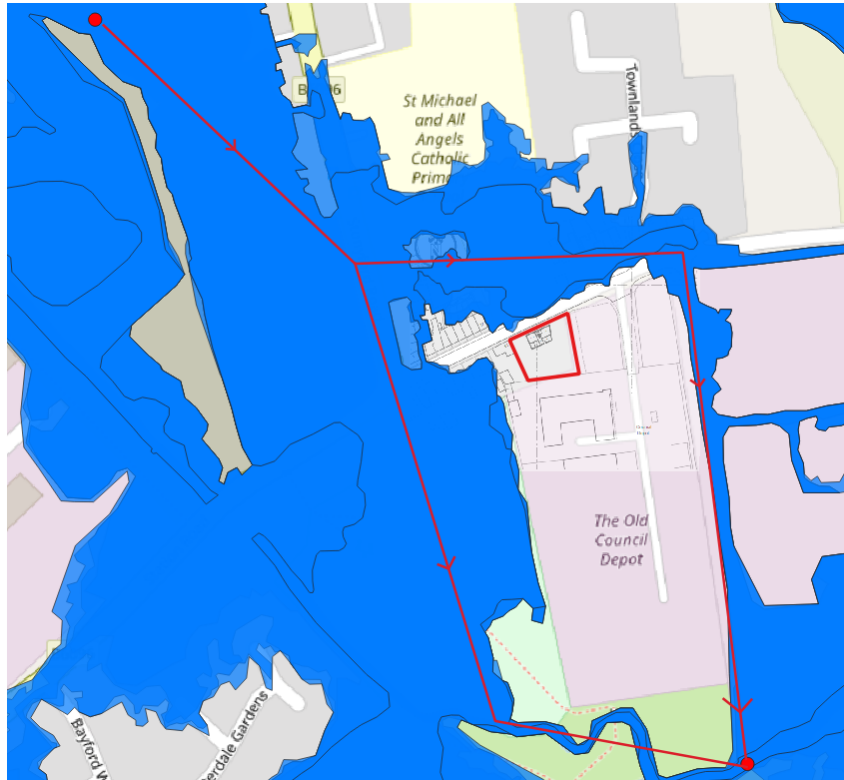


Figure 8: EA data nodes used based on flood flow route

## 5.2 Flood level data

The Stage Discharge relationships are provided at Appendix A.

The upstream 1 in 100yr +28% CC flood level is 27.03m AOD and similarly found to be 24.19m AOD downstream.

These values are interpolated to give an estimated flood level at the site (which is circa midway between the two points at a 280m downstream distance from the upstream node out of the 635m total distance between the two nodes).

$$27.03 - (27.03 - 24.19) \times 280 / 635 = 25.777$$

Design period 1 in 100yr + 28%CC flood level is **25.78m AOD**

## 5.3 Freeboard

Generally, the required minimum freeboard over 1 in 100yr +25% CC flood levels is 300mm.

## 5.4 Floor level data

FFL should therefore be set no lower than **26.08m AOD**

## 5.5 Ground levels

Generally ground levels are found to be no lower than 25.97m AOD (lowest point identified) hence the minimum FFL can be readily achieved following standard methods of construction where FFL is set 150mm higher than ground level.

## 6 Management of flood risk

### 6.1 Flood risk resilience measures

No specific measures required for dwellings in Flood Zone 1.

### 6.2 Management of residual risk

#### 6.2.1 Safe access and egress routes

The NPPF stipulates that, where required, safe access and escape routes should be available to/from new developments in flood risk areas. Access routes should be such that occupants can safely access and exit the building in design flood conditions.

Due to the location of the site relative to the flood zones, safe access and egress has to be considered.

The access egress routes are existing routes currently serving other dwellings and these are not affected by the proposal (ref Figure 9).

While the site itself is not at risk, early warning of flood events is to be considered.

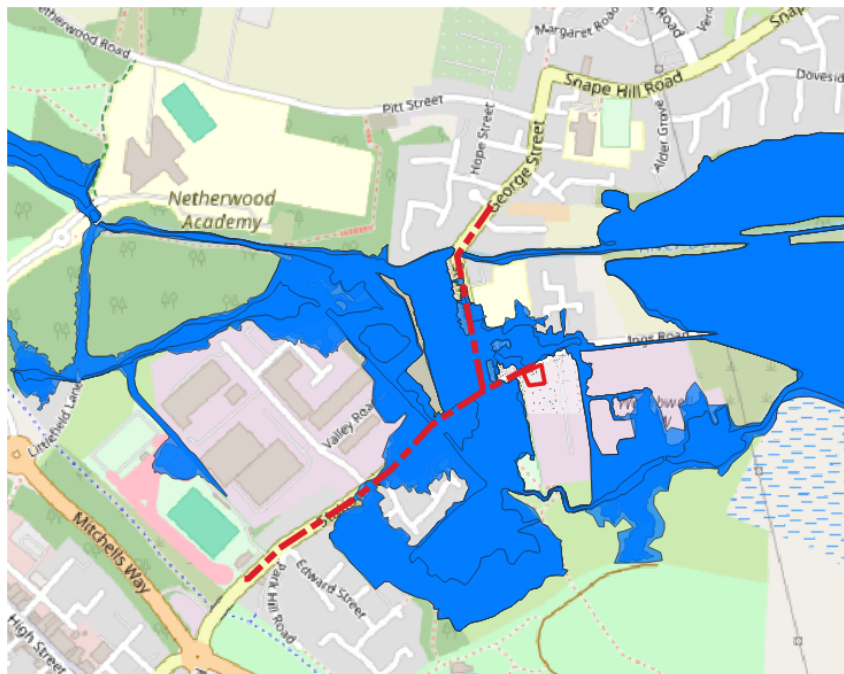


Figure 9: Access and egress routes relative to site

### **6.3 Flood warning schemes**

Since it has been established that the site is sited in an area with a possibility of flooding the owners of the dwellings should be advised to sign up to the E.A. "Flood Warnings Direct" which is a free service providing flood warnings by phone, text or email. See <https://www.fws.environment-agency.gov.uk/app/olr/register>, or call the E.A. on 0345 988 1188 for full information.

### **6.4 Flood Plan**

Not required in Flood Zone 1.

## 7 Conclusions

Given that:

- The proposal is for new dwellings and this is non-major development;
- The proposed dwellings lie wholly within Flood Zone 1;
- There is no documented evidence of flood risk from any other sources;
- The site is therefore in the most sequentially preferable area;
- The site lies in proximity to Flood Zones 3 and 2;
- Floor levels will provide more than the required minimum of 300mm freeboard;
- Flood resilience and mitigation methods are not required;
- The proposal intends to manage all surface water on site in line with the drainage hierarchy and hence will not impact on flood risk elsewhere;
- Existing access/egress routes away from site are unaffected;
- The owners of the dwellings will be advised to sign up to flood warning schemes;

and assuming the recommended advance flood warning alerts and the access/egress routes can be maintained over the lifetime of the development, the proposal to create two new dwellings wholly within Flood Zone 1 and at no risk from other sources of flooding is considered acceptable.

Signed:



Dr Robin Saunders CEng, C. Build E, MCABE, BEng(Hons), PhD

Date: 8<sup>th</sup> April, 2024

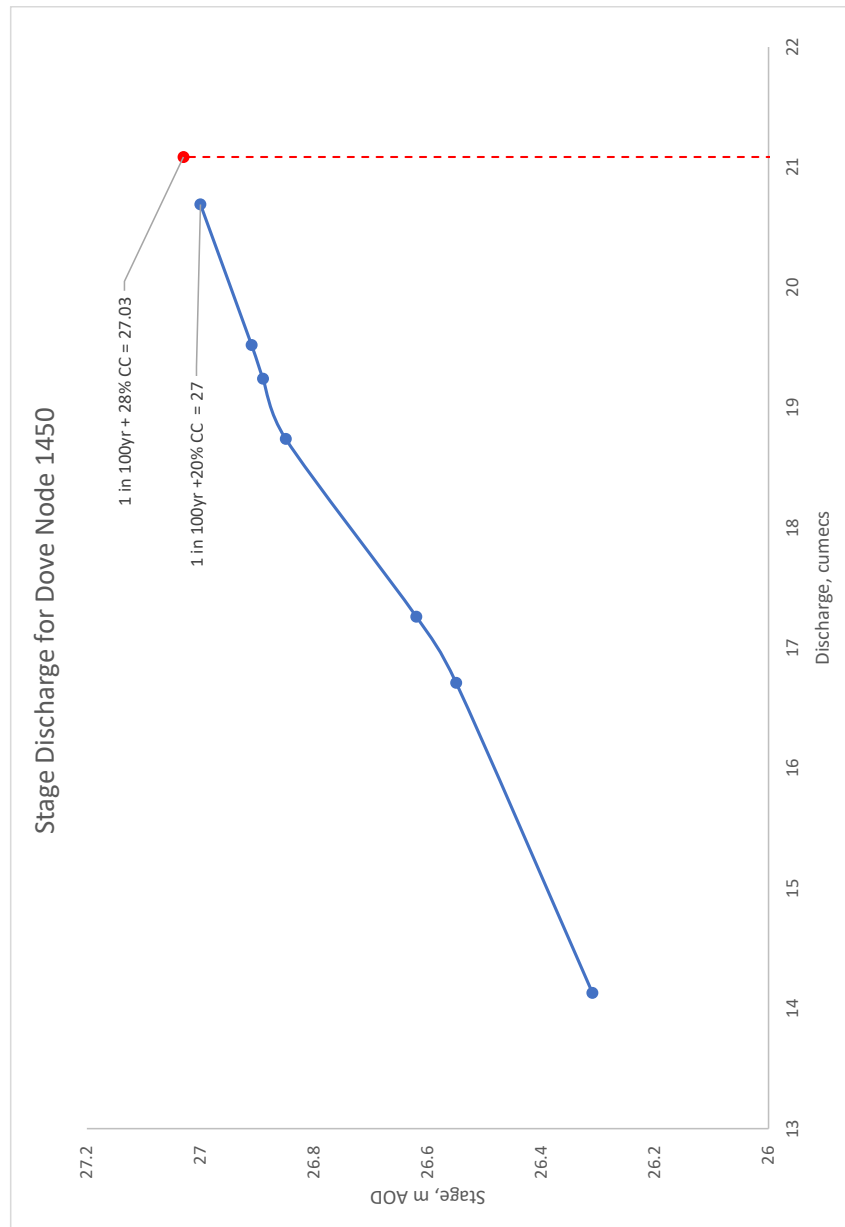
## References

[1] BSI. BS 8533:2011. Technical report, 2011.

- [2] Department for Communities and Local Government. Technical guidance to the national planning policy framework. 2018.
- [3] Ministry of Housing, Communities and Local Government. National planning policy framework. 2021.

# A EA data

## A.1 Upstream node DOVE01\_1450



## A.2 Downstream node BUL01\_2402

