RIDGE

# FLOOD RISK SCOPING NOTE

**ECOTRICITY**
September 2020

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## ECOTRICITY

September 2020

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RIDGE

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## Appendices

# 1. INTRODUCTION

## 1.1. Appointment and Brief

1.1.1. This Flood Risk scoping note has been prepared on behalf of Ecotricity for the proposed Eco-Park at Land at M5 Junction 13, Stroud (hereby referred to as the 'Site'). The site is proposed to be allocated for mixed use development as part of the Local Plan Review (site PS20).

1.1.2. The site primarily falls in Flood Zone 1 with a small percentage of the site in the south falling within Flood Zone 2/3.

1.1.3. This note will look to review the flood risk in relation to the proposed football pitches which have been identified to fall within Flood Zone 3.

1.1.4. The purpose of this document is to outline the how the football pitches respond to the Flood Zone area in the south of the site.

1.1.5. It aims to review the flood risk, as follows:

- Provide an analysis of the proposed development in terms of the risks of flooding from:
  - Surface Water;
  - Rivers;
  - Sea;
  - Reservoirs; and
  - Other sources

1.1.6. The note herein is subject to further detailed analysis undertaken as for a Flood Risk Analysis.

## 1.2. Limitations

The purpose of this report as outlined in Section 1, together with those related matters specifically referred to therein and it is not intended to be used for any other purposes. The report is for the sole benefit and may only be relied upon by the addressee, to whom we will owe a duty of care. The report and any part of it is confidential to the addressee and should not be disclosed to any third party for any purpose, without the prior written consent of Ridge and Partners LLP as to the form and context of such disclosure. The granting of such consent shall not entitle the third party to place reliance on the report, nor shall it confer any third-party rights pursuant to the Contracts (Rights of Third Parties) Act. The report may not be assigned to any third party.

## 1.3. Reference Information

1.3.1. The following information has been obtained and interrogated as part of this study:

- Environment Agency (2020) Long Term online flooding maps;
- Gloucester County Council (2011) Preliminary Flood Risk Assessment;
- Halcrow (2012) Level 2 Strategic Flood Risk Assessment for Stroud District Council;
- JBA Consulting (2019) Level 2 Strategic Flood Risk Assessment for Stroud District Council;
- Environment Agency (2009) Summary report for Catchment Flood Management Plan;
- RSK (2017) Flood Risk Assessment: Eco Park Stroud;
- RSK (2015) Preliminary Risk Assessment: Land at M5 Junction 13 West of Stonehouse; and
- Severn Trent Asset Records (2020).
- Highways England (May 2020) South West Region Drainage Team standard comments for planning consultations

1.3.2. In addition, the following documents have been consulted:

- Stroud District Council (2015) Stroud District Local Plan;
- Stroud District Council (2019) Stroud District Local Plan Review Draft Plan for Consultation;
- Communities and Local Government Document. (2012). The National Planning Policy Framework;
- PWA Planning (2017) Environmental Statement: Eco Park Stroud;
- Environment Agency. (2016). Flood Risk Assessments: Climate Change Allowances;
- Environment Agency. (2013). Rainfall Runoff Management for Developments; and
- CIRIA. (2015). C753 – The SuDS Manual.

# 2. QUANTIFYING FLOOD RISK

Detailed flood data was requested from the Environment Agency, and the following review is a combination of the data supplied and of the maps available on the gov.uk[1] site.

## 2.1. Flood Zone

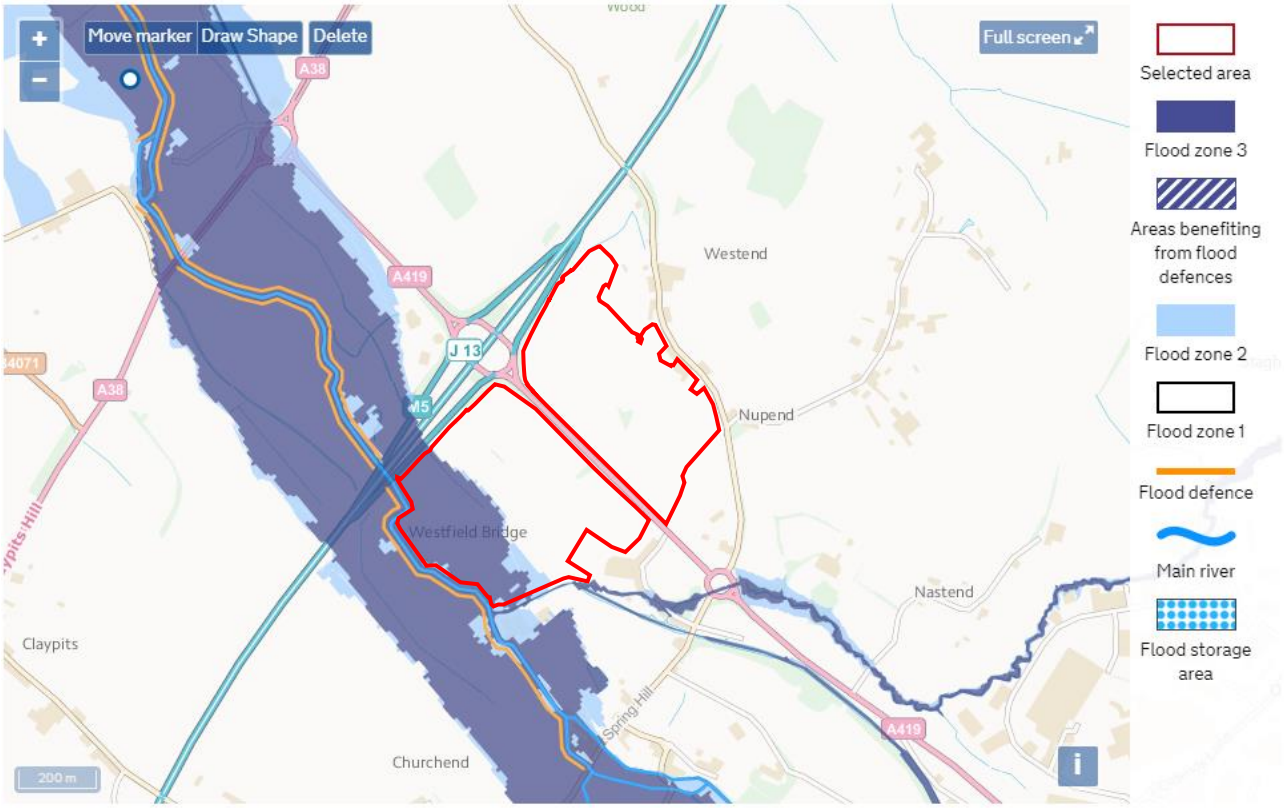



*Figure 1 - Flood map for Planning - Accessed 23/09/2020 https://flood-map-for-planning.service.gov.uk/*

2.1.1. Figure 1 above confirms that the majority of the site, denoted by the red line boundary, sits in a Flood Zone 1 area and does not currently benefit from flood defences. There is 8.9 Ha of Flood Zone 2 and Flood Zone 3 which equates to only 21% of the total site area (Circa 41Ha).

2.1.2. It can be seen from the below site plan, Figure 2, the small portion of the Flood Zone 2 and 3 will be utilised for Sports Pitches only.


*Figure 2 - Site Plan with Flood Zone highlighted*

2.1.3. In line with Table 2: Flood Risk Vulnerability Classification from the gov.uk flood risk and coastal change guidance, playing fields fall within 'Outdoor sports and recreation' which are classed as water compatible. It can therefore be seen using the table below that the Sports Field are appropriate uses within the Flood Zone 2 and 3 areas.

*Table 1 Flood Risk Vulnerability Classification*

| FLOOD ZONE | ESSENTIAL INFRASTRUCTURE | HIGHLY VULNERABLE | MORE VULNERABLE | LESS VULNERABLE | WATER COMPATIMBLE |
|---|---|---|---|---|---|
| Zone 1 | ✓ | ✓ | ✓ | ✓ | ✓ |
| Zone 2 | ✓ | Exception Test Required | ✓ | ✓ | ✓ |
| Zone 3a | Exception Test Required | ✘ | Exception Test Required | ✓ | ✓ |
| Zone 3b | Exception Test Required | ✘ | ✘ | ✘ | ✓ |

Key:
✓ Development Appropriate
✘ Development should not be permitted

## 2.2. Review of Flood Risk Assessment for Missing Mile Canal

2.2.1. As part of the planning application (S.19/0291/FUL) for the proposed Missing Mile section of the Stroudwater Navigation canal, the Environmental Statement included a detailed flood risk assessment and associated modelling was undertaken. This was accessed on the Stroud District Council planning database.

2.2.2. The Environmental Statement is a relevant document to be considered as it reviewed a 500m wide buffer around the proposal which covers the application site.

*"Section 6.83 - The whole of the Phase 1B study reach was included in the hydraulic model and assessed as part of the Flood Risk Assessment due to the position of the Missing Mile in the right bank floodplain of the River Frome and the proposed post-development hydraulic connectivity during flooding between the River Frome and Stroudwater Navigation as it extends from Westfield Lock, Eastington, to Gloucester and Sharpness Canal, at Saul Junction."*

*"Section 6.87 - The M5 embankment is shown to dissect the floodplain, with a flow route through the River Frome bridge. Both the 1 in 100 year and 1 in 1000-year flood extents are such that it suggests that both the left bank pedestrian access culvert and the right bank pedestrian cattle creep will also likely act as flood flow routes as well as two Armco tube crossings nearby."*

2.2.3. The Flood Risk Assessment (FRA) carried out by Katherine Colby Hydrologists undertook a modelling exercise that created a new baseline model for the area. The modelling was carried out in consultation with the Environment Agency who ultimately agreed with the modelling. The review was carried out by the Modelling & Forecasting team at the Environment Agency.

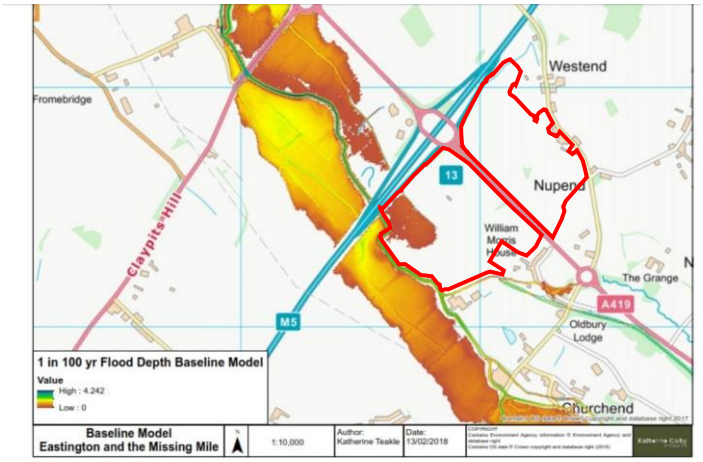



Figure 14: Baseline model 1 in 100 year flood depths through Eastington and the Missing Mile

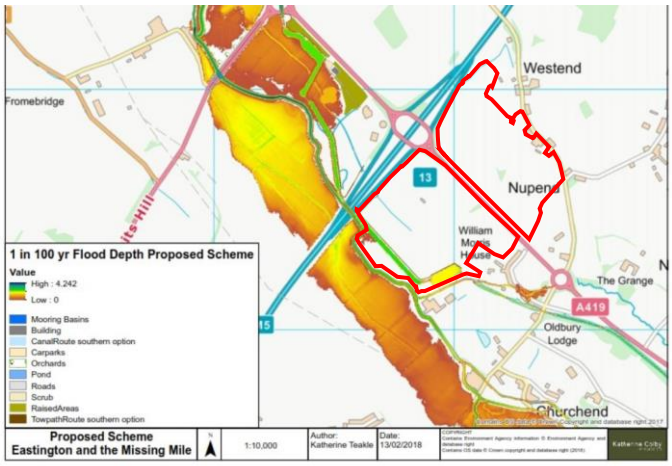



Figure 15: Proposed model 1 in 100 year flood depths through Eastington and the Missing Mile

*Figure 3 - Extract of Figure 14 & 15 from the Missing Mile FRA showing predicted 1 in 100 year flood depth before and after the implementation of the proposed canal route*

2.2.4. Figure 3 demonstrates that the flood plain area for the 1 in 100-year event will be removed from the application site, shown by the red boundary line, should the Missing Mile canal section be built in the proposed location.

2.2.5. Section 3.1.37 of the FRA states that the Baseline model illustrates that flooding would occur on the right bank floodplain of the River Frome, on the upstream side of the M5 embankment; this flood extent is not replicated in the Proposed Scheme flood extent. This is due to the proposed M5 crossing lateral weir structure that diverts flood water from the River Frome into the Stroudwater Canal. The connection between the River and the Canal in this location removes the flooding onto the River Frome right bank floodplain upstream of the M5 that is illustrated in the Baseline model flood extent.

2.2.6. It can be concluded from the "missing mile" FRA undertaken that the proposed development of the Canal would have significant benefit in reducing the area at risk of flooding in the area surrounding the site, however, it is not required to protect the site from flooding due to the proposed land uses being water camptible .

# 3. CONCLUSION

## 3.1. Assessment on EA long term flood risk data

Based on the current EA data, the allocated site is at low risk of flooding from Surface water, River and Sea sources and at low risk of flooding from reservoirs. The majority of the site currently sits within Flood Zone 1. However, there is a small proportion (21%) of the site which is designated as Flood Zone 2/3 but will only have the sports pitches on which are water compatible development and therefore the overall site is at a low risk of flooding from surface water and river flooding.

## 3.2. Assessment of FRA completed for Missing Mile Canal project

Modelling carried out as part of the FRA for application reference S.19/0291/FUL for the reinstatement of the 'Missing Mile' section of the Stroudwater Navigation canal shows that the area of the application site to the North East of the canal will become protected and the risk of flooding will reduce in the area surrounding the site. However, it should be noted that the canal does not need to be put in place to act as a flood defence as the proposed development use with the flood zones are playing fields which are water compatible.

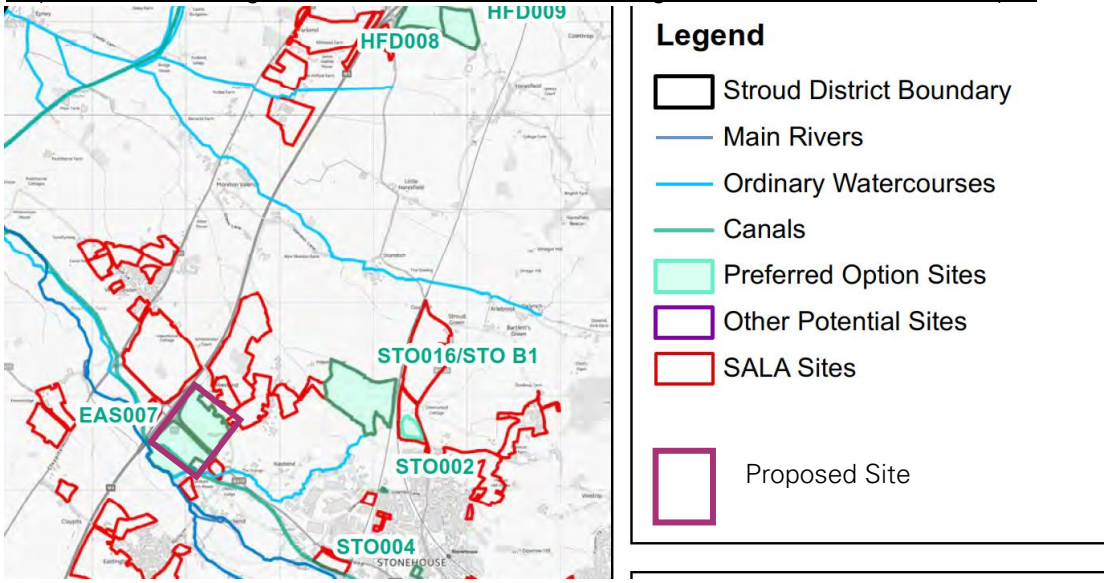
## 3.3. Summary

It can be concluded that the site is overall at a low risk of flooding and that by following best practice for Surface Water design there will not be an increased risk of flooding to the surrounding area or within the site.

# APPENDIX A – EXTRACT FROM STROUD LEVEL 2 STRATEGIC FLOOD RISK ASSESSMENT

**Draft Report – November 2019 – JBA Consulting**

https://www.stroud.gov.uk/info/Stroud_Level_2_Strategic_Flood_Risk_Assessment.pdf




| | | | Proportion of site shown to be at risk (%) | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Flood Zones | | | | | | Updated Flood Map for Surface Water | | | | | ASTGWF | | | | |
| **Site code Area (ha)** | Site Name | Area (ha) | FZ 3b only | FZ 3a only | Total % within FZ3 | % in FZ2 | % in FZ1 | Total % within FZ 3a + 70% CC | Total % at surface water risk up to 30-yr | Total % at surface water risk up to 100-yr | Total % at surface water risk up to 1000 yrs | % within Historic Flood Map | % within Risk of Flooding from Reservoirs | ASTGWF - Category 1 <25% | ASTGWF - Category 2 >=25% <50% | ASTGWF - Category 3 >=50% <75% | ASTGWF - Category 4 >=75% | Presence of Watercourse (Detailed River Network) |
| **EAS007** | Land at Junction 13 of M5 | 42.09 | 11.9 % | 6.8 % | 18.7 % | 21.4 % | 78.6 % | 0.0% | 7.2% | 12.5% | 42.3% | 19.3% | 7.1% | 55.0% | 0.0% | 0.0% | 45.0% | Yes |

| **Site code Area (ha)** | Site Name | Flood Risk Vulnerability (as in Para 66, Table 2 of NPPF PPF) | Is the site in FZ1 and at low risk from other sources? (see Read me tab for criteria) | Presence of a canal? | Presence of an embankment? (within 50m |
|---|---|---|---|---|---|
| **EAS007** | Land at Junction 13 of M5 | Less Vulnerable | No | No | No |

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