PROPOSED PARKING AND SPORTS PITCHES AT THE BADWELL ASH VILLAGE HALL, THE STREET, BADWELL ASH, SUFFOLK

FLOOD RISK ASSESSMENT

FEBRUARY 2024

REPORT REF: 3404/RE/02-24/01

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CONTRACT

Evans Rivers and Coastal Ltd has been commissioned by Badwell Ash Parish Council to carry out a flood risk assessment for a proposed parking area and sports pitches at the Badwell Ash Village Hall, The Street, Badwell Ash, Suffolk.

QUALITY ASSURANCE, ENVIRONMENT AND HEALTH AND SAFETY

Evans Rivers and Coastal Ltd operates a Quality Assurance, Environmental, and Health and Safety Policy.

This project comprises various stages including data collection; depth analysis; and reporting. Quality will be maintained throughout the project by producing specific methodologies for each work stage. Quality will also be maintained by providing specifications to third parties such as surveyors; initiating internal quality procedures including the validation of third party deliverables; creation of an audit trail to record any changes made; and document control using a database and correspondence log file system.

To adhere to the Environmental Policy, data will be obtained and issued in electronic format and alternatively by post. Paper use will also be minimised by communicating via email or telephone where possible. Documents and drawings will be transferred in electronic format where possible and all waste paper will be recycled. Meetings away from the office of Evans Rivers and Coastal Ltd will be minimised to prevent unnecessary travel, however for those meetings deemed essential, public transport will be used in preference to car journeys.

The project will follow the commitment and objectives outlined in the Health and Safety Policy operated by Evans Rivers and Coastal Ltd. All employees will be equipped with suitable personal protective equipment prior to any site visits and a risk assessment will be completed and checked before any site visit. Other factors which have been taken into consideration are the wider safety of the public whilst operating on site, and the importance of safety when working close to a water source and highway. Any designs resulting from this project and directly created by Evans Rivers and Coastal Ltd will also take into account safety measures within a "designers risk assessment".

Report carried out by:

Rupert Evans, BSc (Hons), MSc, CEnv, C.WEM, MCIWEM, PIEMA

DISCLAIMER

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1. INTRODUCTION

1.1 Project Scope

1.1.1 Evans Rivers and Coastal Ltd has been commissioned by Badwell Ash Parish Council to carry out a flood risk assessment for a proposed parking area and sports pitches at the Badwell Ash Village Hall, The Street, Badwell Ash, Suffolk.

1.1.2 It is understood that this Flood Risk Assessment will be submitted to the Planning Authority as part of a planning application. Specifically, this assessment intends to:

a) Review any literature and guidance specific to this area such as the SFRA;

b) Assess the risks to people and property and propose mitigation measures accordingly;

c) Review existing evacuation and warning procedures for the area;

d) Carry out an appraisal of flood risk from all sources as required by NPPF;

e) Report findings and recommendations.

1.1.3 This assessment is carried out in accordance with the requirements of the National Planning Policy Framework (NPPF) dated 2023. Other documents which have been consulted include:

- DEFRA/EA document entitled *Framework and guidance for assessing and managing flood risk for new development Phase 2 (FD2320/TR2)*, 2005;
- Communities and Local Government 2007. *Improving the Flood Performance of New Buildings*. HMSO.
- DEFRA/EA document entitled *The flood risks to people methodology (FD2321/TR1),* 2006;
- EA *Supplementary Note on Flood Hazard Ratings and Thresholds for Development Planning and Control Purpose*, 2008;
- National Planning Practice Guidance – Flood Risk and Coastal Change.
- UK Government's climate change allowances guidance.
- Suffolk Local Flood Risk Management Plan dated 2012.
- Suffolk County Council Preliminary Flood Risk Assessment dated 2011.
- Babergh and Mid Suffolk Level 1 Strategic Flood Risk Assessment (SFRA) dated 2020.

2. DATA COLLECTION

2.1 To assist with this report, the data collected included:

- Ordnance Survey 1:10,000 street view map obtained via Promap (Evans Rivers and Coastal Ltd OS licence number AC0000814628).
- British Geological Survey, *Online Geology of Britain Viewer*.
- British Geological Survey, *Groundwater flooding susceptibility map.*
- 1:625,000 *Hydrogeological Map of England and Wales*, published in 1977 by the Institute of Geological Sciences (now the British Geological Survey).
- Filtered LIDAR data at 1m resolution.

3. SITE CHARACTERISTICS

3.1 Existing Site Characteristics and Location

3.1.1 The site is located at the Badwell Ash Village Hall, The Street, Badwell Ash, Suffolk. The approximate Ordnance Survey (OS) grid reference for the site is 598958 269177 and the location of the site is shown on Figure 1.

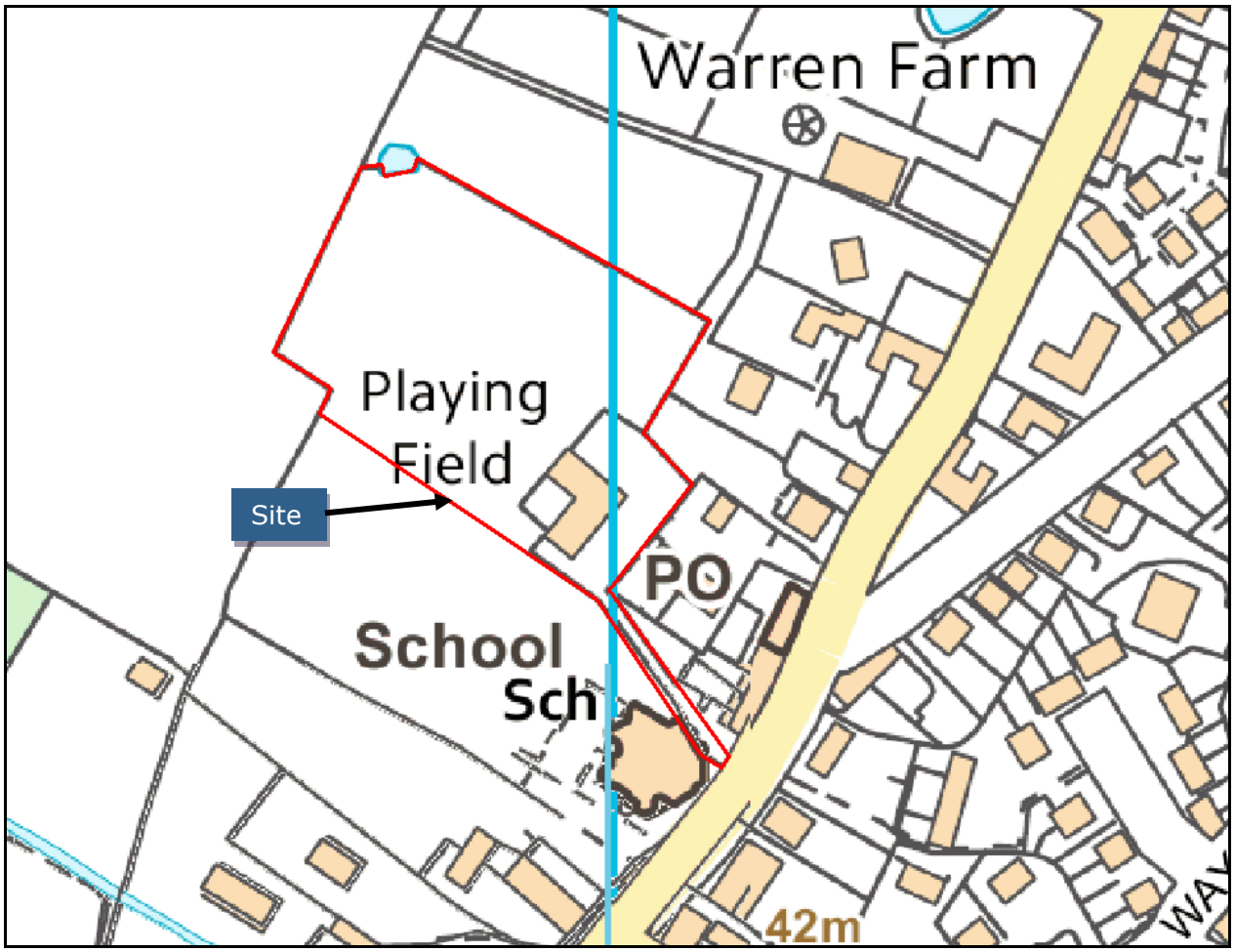

Figure 1: Site location plan (Source: Ordnance Survey)

3.1.2 The site comprises a village hall, parking area and open grassed field. The site is accessed via The Street to the south east of the site. A drainage ditch exists along the north western frontage of the site and Appendix F of the SFRA shows that an Ordinary Watercourse exists 152m north west of the site.

3.1.3 Filtered LIDAR data at 1m resolution has been obtained to determine and illustrate the topography of the site and surrounding area (Figure 2).

3.1.4 The survey data indicates that ground levels fall in a north westerly direction.

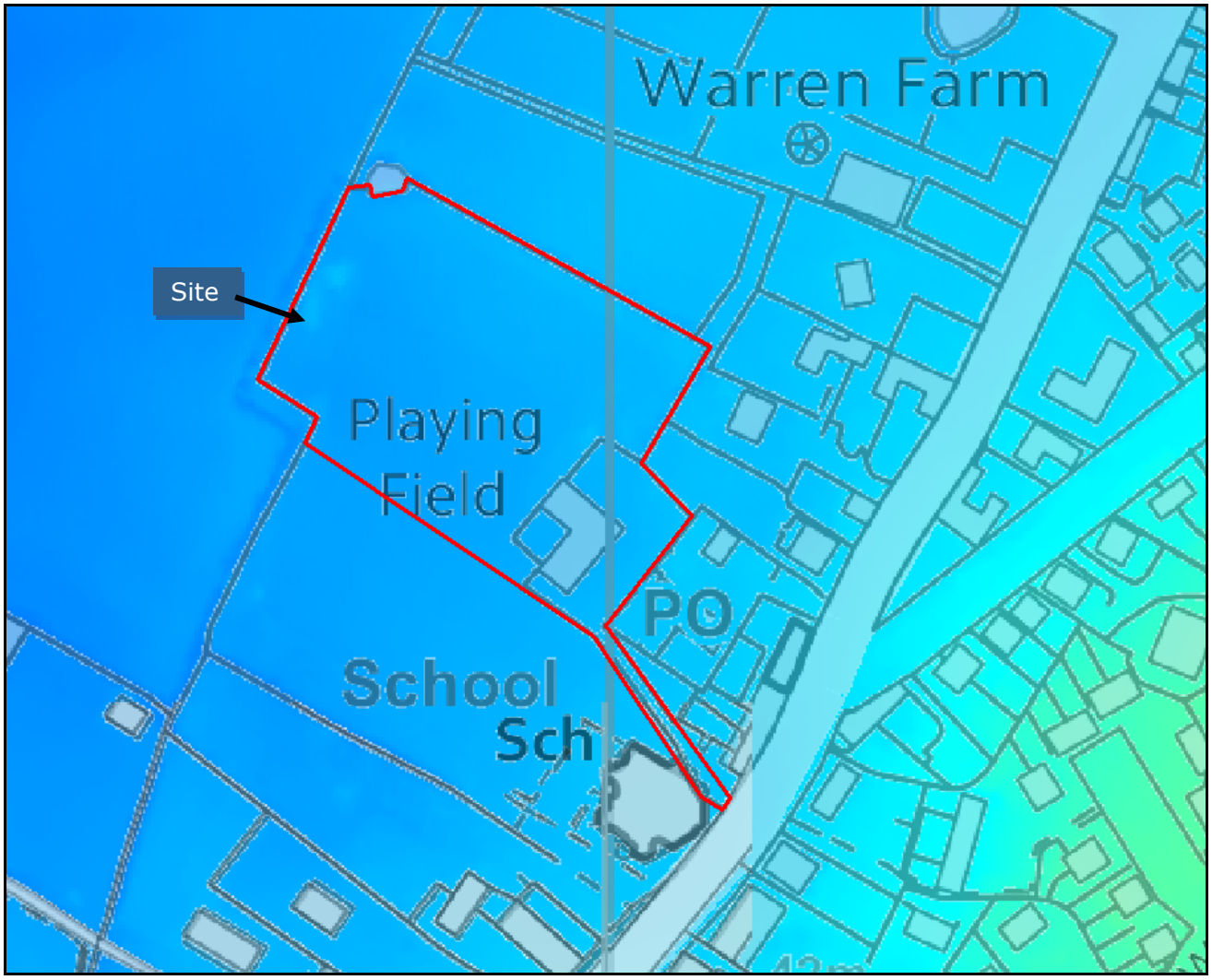

Figure 2: Filtered LIDAR survey data at 1m resolution where higher ground is denoted by red and orange colours and lower ground is denoted by blue colours

3.2 Site Proposals

3.2.1 It is the Client's intention to create a new parking area together with two sports pitches as shown on Drawing Number BAVH-PSP-001B. Part of the village hall will be used as a viewing area.

3.2.2 Annex 3 of the NPPF confirms that this proposal is classified as a 'less-vulnerable' use and 'water-compatible' use.

4. SOURCES OF FLOODING

4.1 Fluvial

4.1.1 The Environment Agency Flood Map (Figure 3) and Appendix B of the SFRA (Badwell Ash Ward Map) shows that the site is located within the NPPF Flood Zone 1, 'Low Probability' which comprises land as having less than a 1 in 1000 year annual probability of fluvial or tidal flooding (i.e. an event more severe than the extreme 1 in 1000 year event). NPPF states that all uses of land are appropriate in this zone.

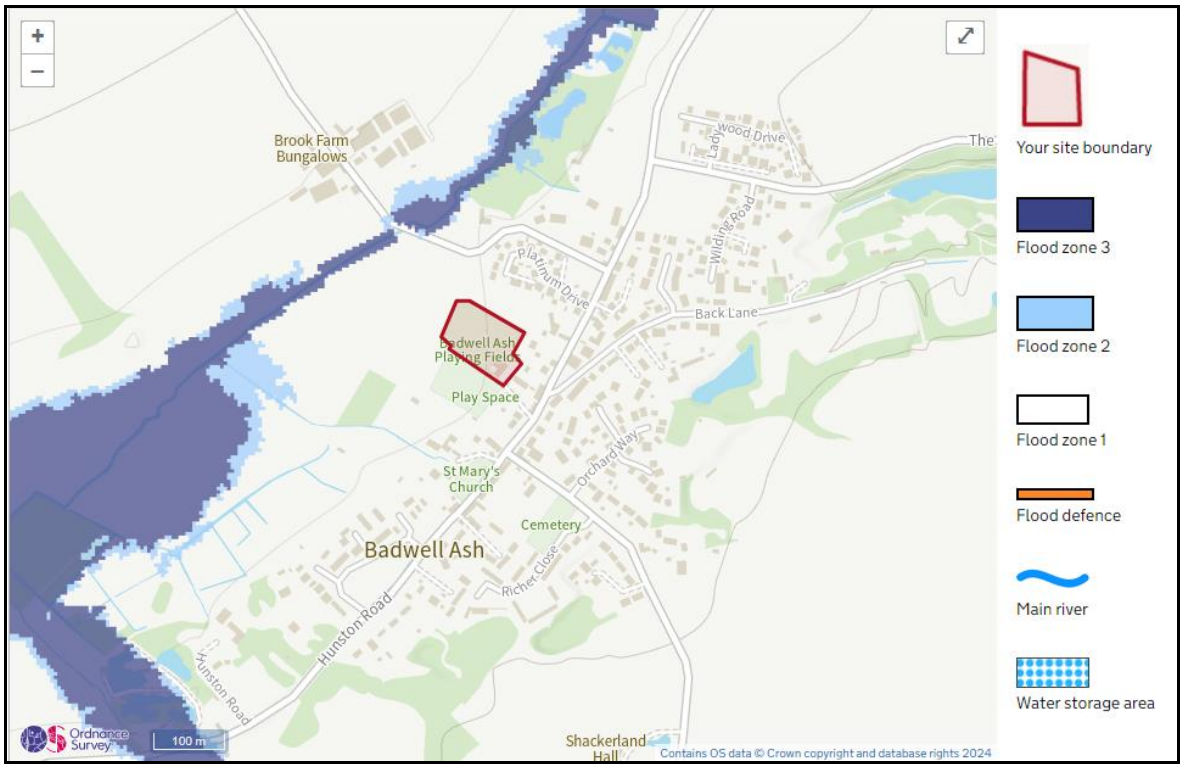

Figure 3: Environment Agency Flood Zone Map (Source: Environment Agency)

4.2 Groundwater Flooding

4.2.1 In order to assess the potential for groundwater flooding during higher return period rainfall events, the Jacobs/DEFRA report entitled *Strategy for Flood and Coastal Erosion Risk Management: Groundwater Flooding Scoping Study*, published in May 2004, was consulted, together with the guidance offered within the document entitled *Groundwater flooding records collation, monitoring and risk assessment (ref HA5)*, commissioned by DEFRA and carried out by Jacobs in 2006.

Soil and Geology at the Site

4.2.2 The British Geological Survey's *Online Geology of Britain Viewer* indicates that the soils beneath the site comprise sand and gravel deposits.

Groundwater Flooding Potential at the Site

4.2.3 There have been no recorded groundwater flood events across the area between 2000 and 2003, as indicated by the Jacobs study. Appendix G of the SFRA indicates that there is a risk of flooding to subsurface assets and the possibility of groundwater emergence locally.

4.2.4 However, the proposals involve open space car parking areas and 'water-compatible' sports pitches thus reducing the risk to acceptable levels

4.3 Surface Water Flooding and Sewer Flooding

4.3.1 Surface water and sewer flooding across urban areas is often a result of high intensity storm events which exceed the capacity of the sewers thus causing them to surcharge and flood. Poorly maintained sewer networks and blockages can also exacerbate the potential for sewer flooding. Surface water flooding can also occur as a result of overland flow across poorly drained rural areas.

4.3.2 Appendix E of the SFRA shows that there have been 3 recorded sewer flood incidents in this postcode area. Appendix D of the SFRA indicates that there have been no recorded flood incidents at the site and no flood incidents have been investigated at this location by Suffolk County Council.

4.3.3 The Environment Agency's Surface Water Flooding Map (Figure 4 and 5) together with Appendix A of the SFRA indicates that there is a very low to high surface water flood risk across the site (i.e. between a less than a 1 in 1000 year chance and events greater than 1 in 30 years).

4.3.4 Further more detailed data has been obtained via the Data.gov.uk site (https://environment.data.gov.uk/DefraDataDownload/?Mode=rofsw). The flood extent, depth and hazard GIS *shape file* was downloaded from Data.gov.uk (for tile TL_96).

4.3.5 It is generally accepted that the low risk flood event (i.e. between 1 in 1000 years and 1 in 100 years) on the Agency's map is used as a substitute for the climate change 1 in 100 year event to provide a worst-case scenario. There is no policy requirement to apply climate change onto the 1 in 1000 year event, as climate change is applied up to the 1 in 100 year event as confirmed at https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances#when-to-use-climate-change-allowance.

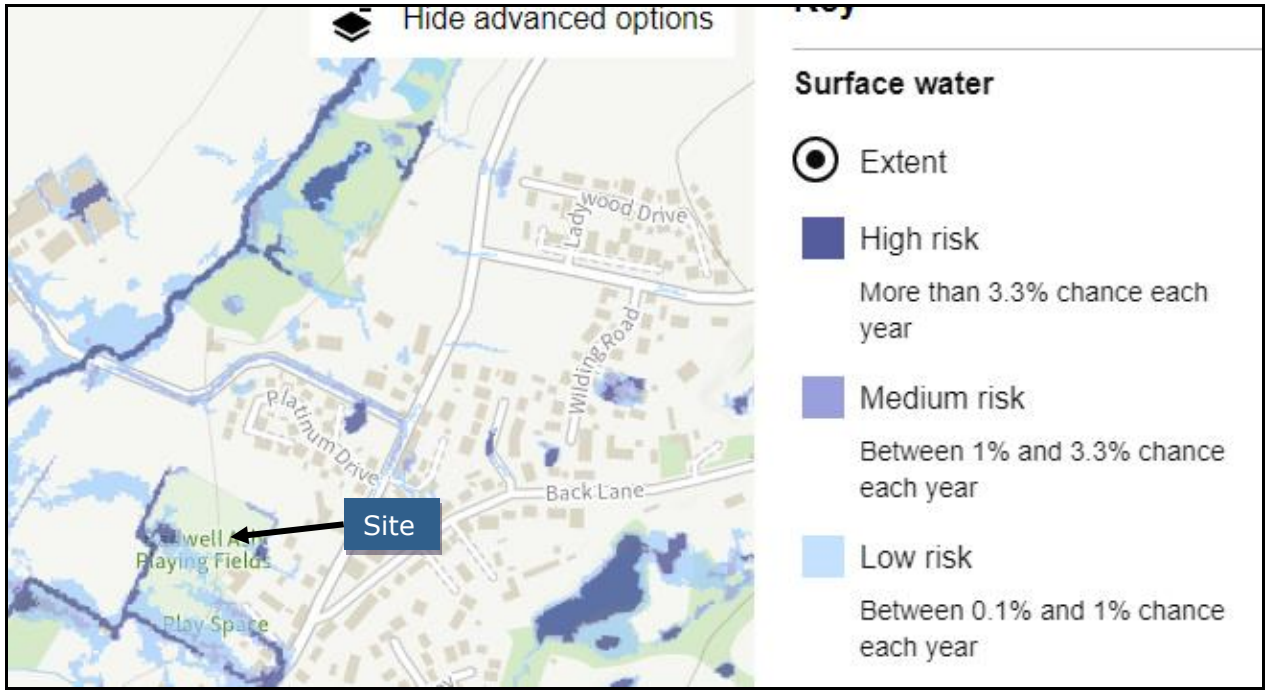

Figure 4: Environment Agency Surface Water Flooding Map (Source: Environment Agency, 2024)

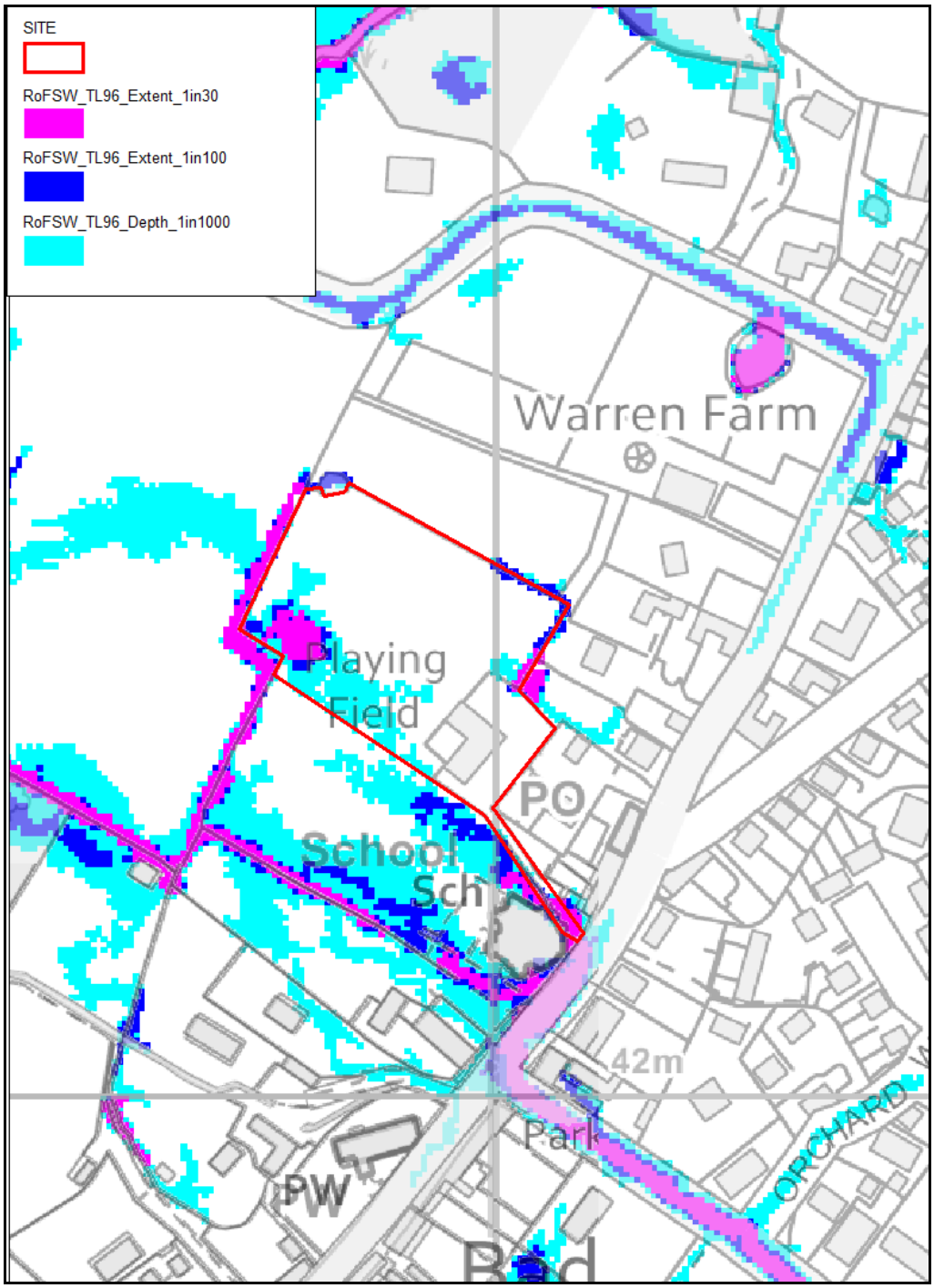

Figure 5: Environment Agency Surface Water Flooding Map (Source: Environment Agency, 2024)

4.3.6 Figure 6 shows that the area intended for the proposed sports pitches is partially across low to high risk areas and largely within very low risk areas. As these uses are 'water-compatible' it is considered that the risk to people and property is low.

4.3.7 The proposed parking area will largely be across very low risk areas, however, Figure 6 shows that there will be some small areas affected during low risk events. It is considered that vehicles can be moved out of the low flood risk area and the proposals will not include permanent or overnight parking.

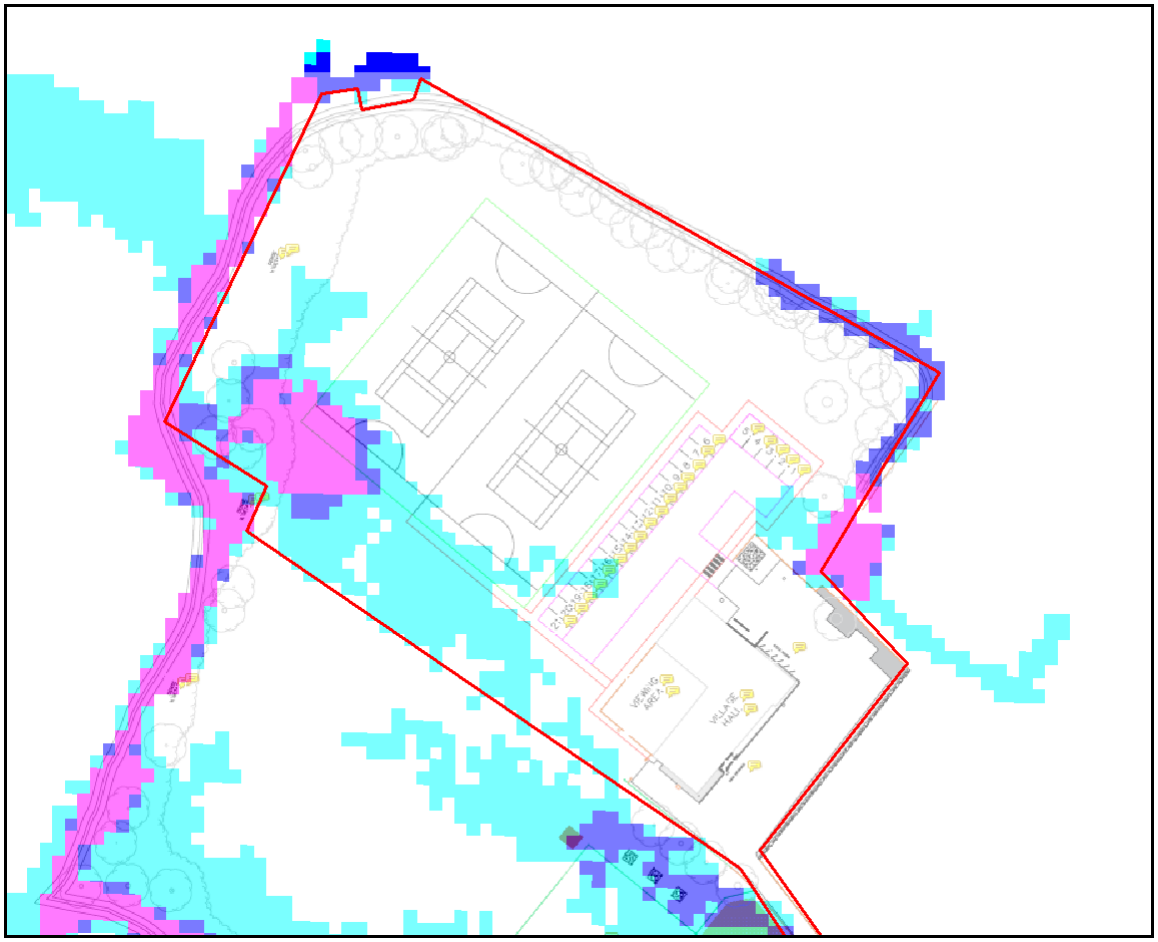

Figure 6: Surface water flood extents and proposed site layout (see key on Figure 5)

Reducing Vulnerability to the Hazard

4.3.8 Flood Warnings for surface water flooding do not currently exist, however, the site manager should sign up to the Met Office weather warning system https://www.metoffice.gov.uk/public/weather/warnings and ensure that they are aware of the flood risk so that people have the option to escape/evacuate and remove vehicles.

4.3.9 Signs and information plaques should be located regularly across the site to inform people of the flood risk. A member of staff should regularly review the flood warnings in place prior to opening the site. Furthermore, staff should not proceed with the site operations if it is considered that there is a flood risk. It is recommended that a *Business Flood Plan* is developed

Safe Access/Egress

4.3.10 The EA surface water flood map on Figure 5 and 6 shows that along The Street adjacent to the site entrance there is a low to high risk.

4.3.11 The flood hazard is calculated based on different combinations of floodwater depth and velocity, and subsequently by using the hazard equation as cited in the DEFRA/EA R&D Document *Framework and guidance for assessing and managing flood risk for new development Phase 2 (FD2320/TR2).* The numerical hazard rating extracted from the model is then categorised into four degrees of flood hazard (Table 1 overleaf) in accordance with Table 3.2 of *FD2321/TR1* and Table 4.2 of *FD2321/TR2.*

Table 1: Hazard to people categories (taken from Table 3.2 of *FD2321/TR1* and Table 4.2 of *FD2321/TR2)*

Hazard Rating	Degree of Flood Hazard	Description
< 0.75	Very low hazard	Caution "Flood zone with shallow flowing water or deep standing water"
0.75 – 1.25	Danger for Some	Dangerous for some (i.e. children) "Danger: Flood zone with deep or fast flowing water"
1.25 – 2.0	Danger for Most	Dangerous for most people (i.e. general public) "Danger: Flood zone with deep fast flowing water"
> 2.0	Danger for All	Dangerous for all "Extreme danger: flood zone with deep fast flowing water"

4.3.12 By reviewing the flood hazard GIS *shape file* downloaded from Data.gov.uk (https://environment.data.gov.uk/DefraDataDownload/?Mode=rofsw) the hazard to people accessing/leaving the site during low risk events would be *Dangerous for Most* for 29m, *Dangerous for Some* for 9m, then *Very low* thereafter (Figure 7).

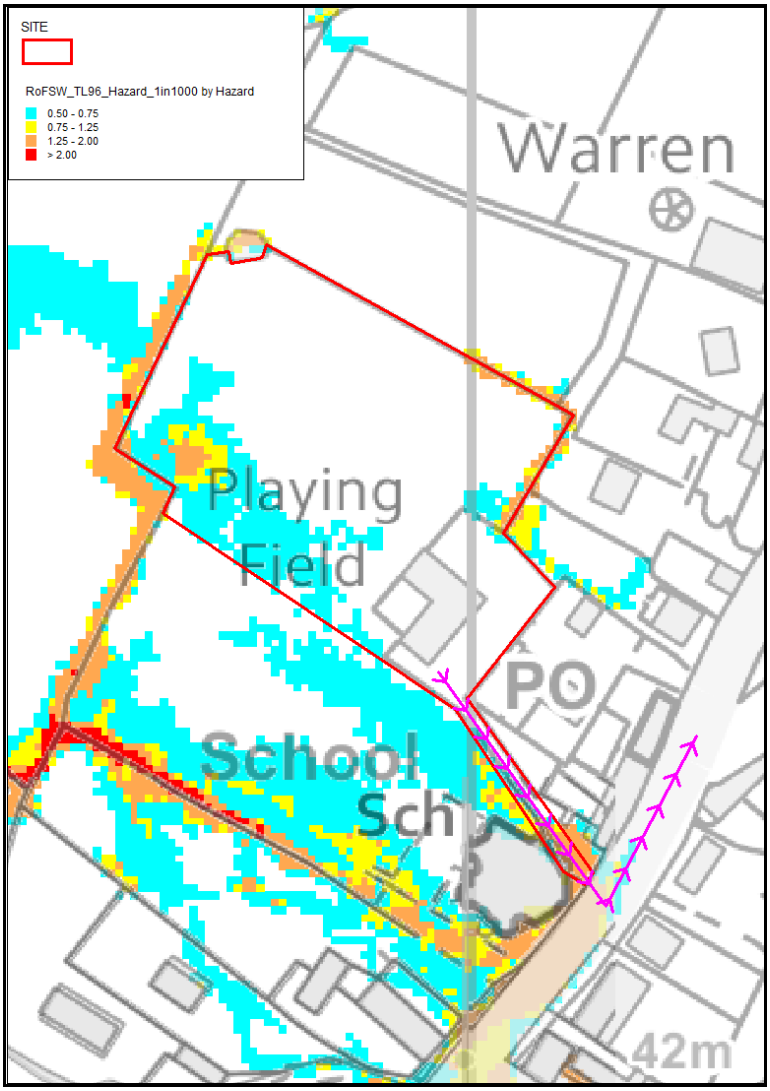

Figure 7: Evacuation route and flood hazard during low risk events (refer to Table 1 above for hazard classification)

4.4 Reservoirs, Canals And Other Artificial Sources

4.4.1 The failure of man-made infrastructure such as flood defences and other structures can result in unexpected flooding. Flooding from artificial sources such as reservoirs, canals and lakes can occur suddenly and without warning, leading to high depths and velocities of flood water which pose a safety risk to people and property.

4.4.2 The Environment Agency's "Risk of flooding from reservoirs" map suggests that the site is not at risk from reservoirs.

5. CONCLUSIONS

- The site comprises water-compatible and less-vulnerable uses.
- The site is located within the fluvial Flood Zone 1.
- There is a low groundwater flood risk and low risk from reservoirs.
- There is a very low to high surface water flood risk across the site. A more detailed analysis of the flood risk has been undertaken using the Data.gov.uk GIS data.
- It is generally accepted that the low risk flood event (i.e. between 1 in 1000 years and 1 in 100 years) on the Agency's map is used as a substitute for the climate change 1 in 100 year event to provide a worst-case scenario. There is no policy requirement to apply climate change onto the 1 in 1000 year event, as climate change is applied up to the 1 in 100 year event as confirmed at https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances#when-to-use-climate-change-allowance.
- The area intended for the proposed sports pitches is partially across low to high risk areas and largely within very low risk areas. As these uses are 'water-compatible' it is considered that the risk to people and property is low.
- The proposed parking area will largely be across very low risk areas, however, there will be some small areas affected during low risk events. It is considered that vehicles can be moved out of the low flood risk area and the proposals will not include permanent or overnight parking.
- A warning and evacuation plan has been set out in this assessment.

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DRAWINGS

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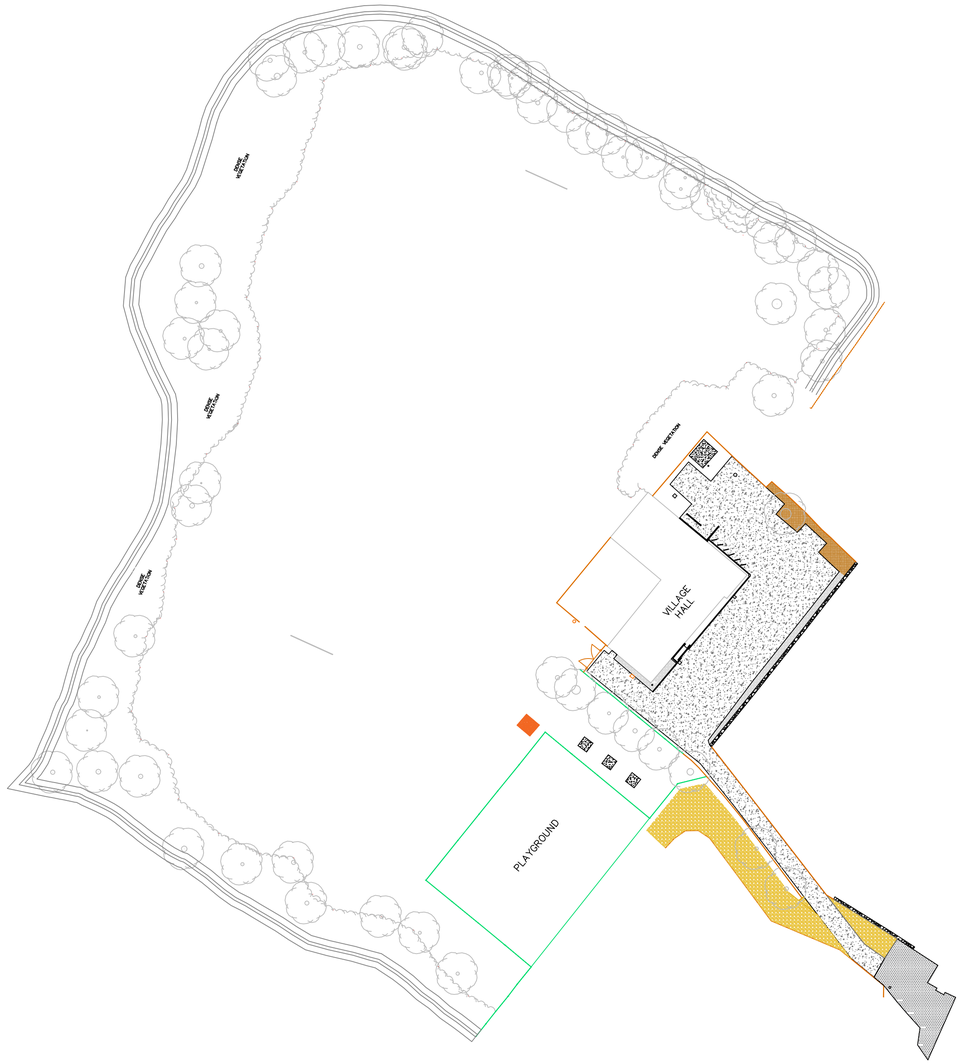
EXISTING BADWELL ASH VILLAGE HALL SITE PLAN



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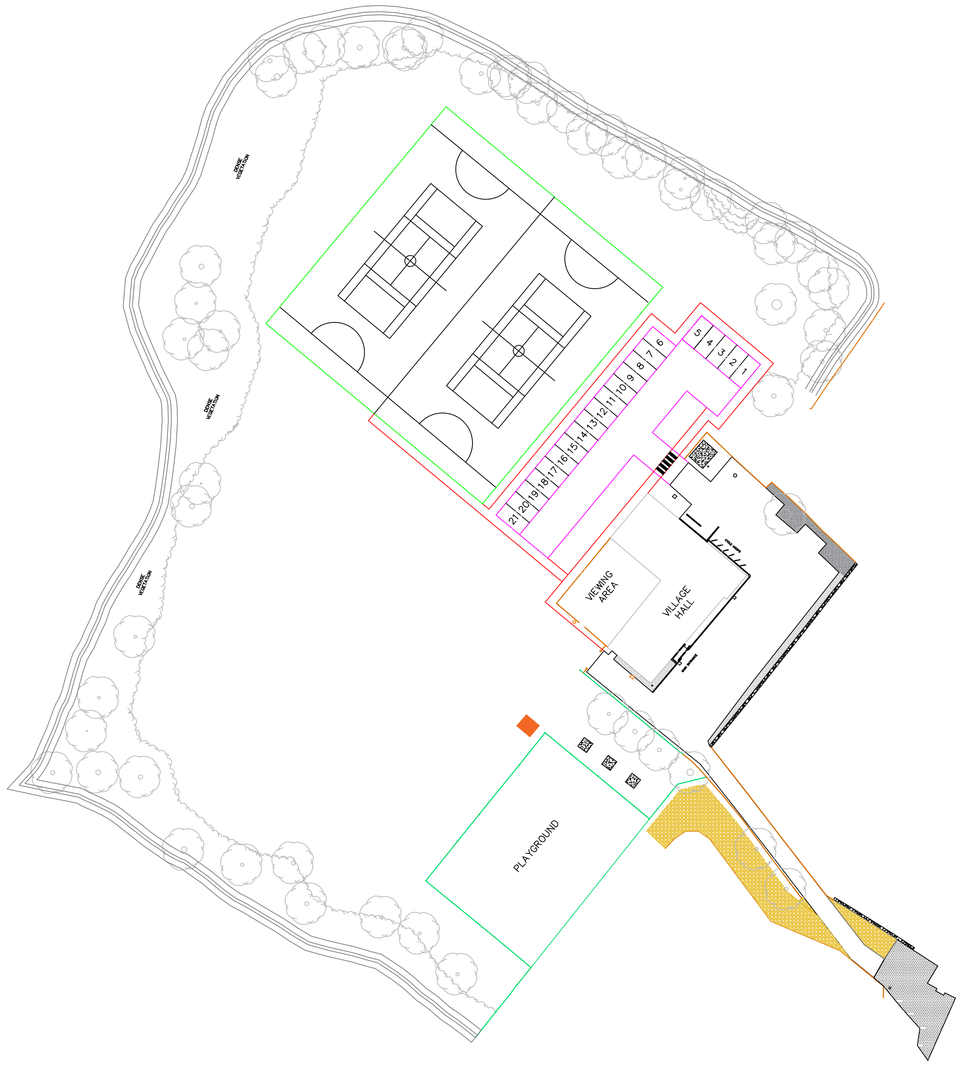
PROPOSED BADWELL ASH VILLAGE HALL SITE PLAN



Title

BADWELL ASH
VILLAGE HALL
PROPOSED SITE PLAN

Rev	Date	Description	By
B	18.01.24	Parking Spaces and Footpaths Updated	W.K
A	04.12.23	Parking Spaces and Sports Pitch Updated	W.K

Drawing No: BAVH – PSP – 001

Drawn: W.K

Checked:

Scale: 1:500 @ A1

Date: 04.09.2023

Rev: B

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