



WILT18 STOCKHAM MARSH, WILTSHIRE

FLOOD RISK SCOPING REPORT

MAY 2025

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Prepared by:		Checked by:	Approved by:
Jane Moon MSc, CSci, MCIWEM, FGS		Claire Wasiak MEng, CEng, CWEM, MCIWEM	H Tracey
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Jane Moon MSc, CSci, MCIWEM, FGS		Claire Wasiak MEng, CEng, CWEM, MCIWEM	H Tracey
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Jane Moon MSc, CSci, MCIWEM, FGS		Claire Wasiak MEng, CEng, CWEM, MCIWEM	A Green
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Jane Moon MSc, CSci, MCIWEM, FGS		Claire Wasiak MEng, CEng, CWEM, MCIWEM	A Green

Hydro-Morph has followed accepted procedure in providing the services, but given the residual risk associated with any prediction and the variability which can be experienced in flood conditions, we take no liability for and give no warranty against actual flooding of any property (client's or third party) or the consequences of flooding in relation to the performance of the services.

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1. Introduction

Hydro-Morph Ltd has been commissioned by The Environment Bank to provide a Flood Risk Assessment (FRA), in accordance with the requirements of the National Planning Policy Framework (NPPF), to support a planning application for proposed earthworks associated with reprofiling of land at Stockham Marsh Farm in Wiltshire.

This FRA has been prepared based on the guidelines within the National Planning Policy Framework (NPPF) and associated guidance documents. It seeks to identify the flood risks for the site, the potential impact of the proposed development and outline our approach to mitigating those risks, considering the key constraints of the site.

This report is to be read in conjunction with all associated documents and drawings submitted as part of this application.

2. Approach

The FRA will identify the existing flood risk to the site based upon readily available information. This will include the following:

- Review of all relevant planning documentation and historical information on the site;
- Review of any ground conditions and any Site Investigation information where available;
- Review of Environment Agency (EA) Flood Map and Surface Water Flood Map;
- Review of Environment Agency Groundwater Monitoring Stations where available near the site;
- Assessment of Existing Flow Pathways, water sources and any existing infrastructure relating to surface water management of the site;
- Review of Strategic Flood Risk Assessment Reports and Lead Local Flood Authority Requirements for Surface Water Management;
- Review of other local site specific FRAs where appropriate.

The study will aim to provide a qualitative appraisal of the flood risk posed to the site and the potential impacts on flood risk elsewhere. It will identify the key risks to the site from a flood risk perspective and indicate possible measures to reduce flood risk – including the proposed approach to the management of surface water flow pathways where they may be influenced by any relandscaping proposals (as defined within the planning application). This will also provide some guidance to the Design Team on the emerging flood risk and support the masterplan development process.

3. Site Location

The WILT 18 Stockham Marsh site is located to the east of the village of Foxham near Chippenham at Stockham Marsh Farm as referenced in Table 1 and shown in the Site Location Plan in Figure 1.

The site is currently a greenfield site comprising 67.8 Hectares of agricultural land and predominantly comprises arable cropland and temporary grass ley, in rotation, bordered by hedgerows. The site is bounded by the Cade Burns watercourse to the north and the Foxham to Charlcott minor B road to the east. The remainder of the site is bordered by existing hedgerows and ditches to the south and west.

The Cade Burns is classified as a 'Main River' within the site, which is a headwater tributary of the River Avon which it joins to the north-east of Chippenham, see Figure 1.

Table 1: Site Referencing Information

Site Address	Bremhill, Foxham, Wiltshire, SN15 4NL
Site Grid Refs	ST 99751 76815

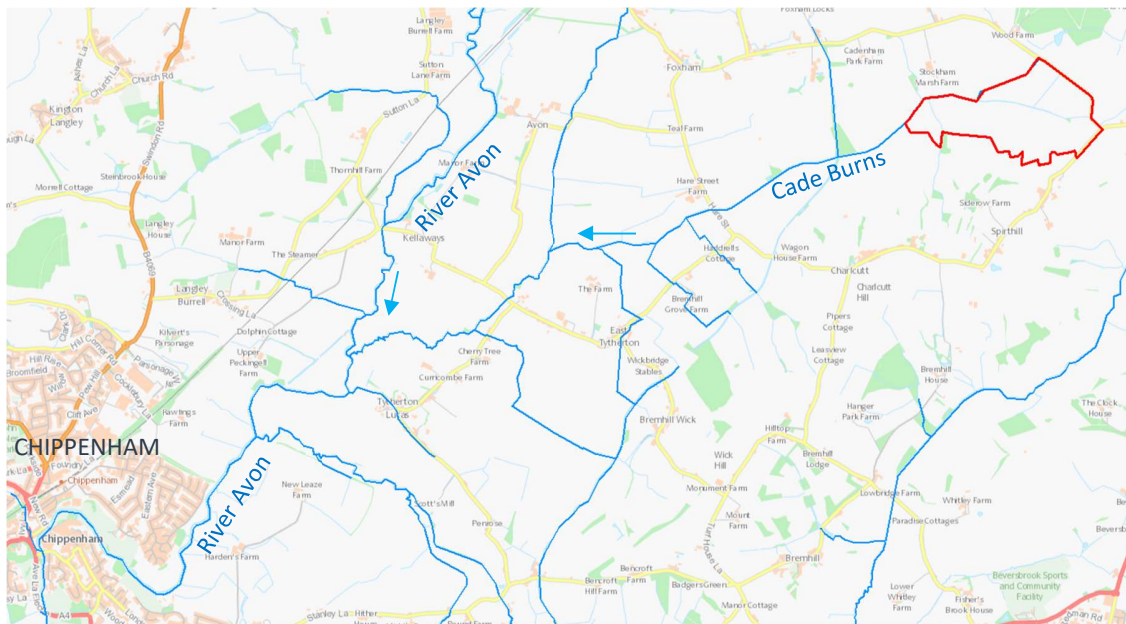


Figure 1: Location Plan

The site is in the headwaters of the Cade Burns, which is fed by springs that drain from the surrounding hills. The site slopes from east to west varying in level from 80m AOD to 61m AOD as shown in Figure 2.

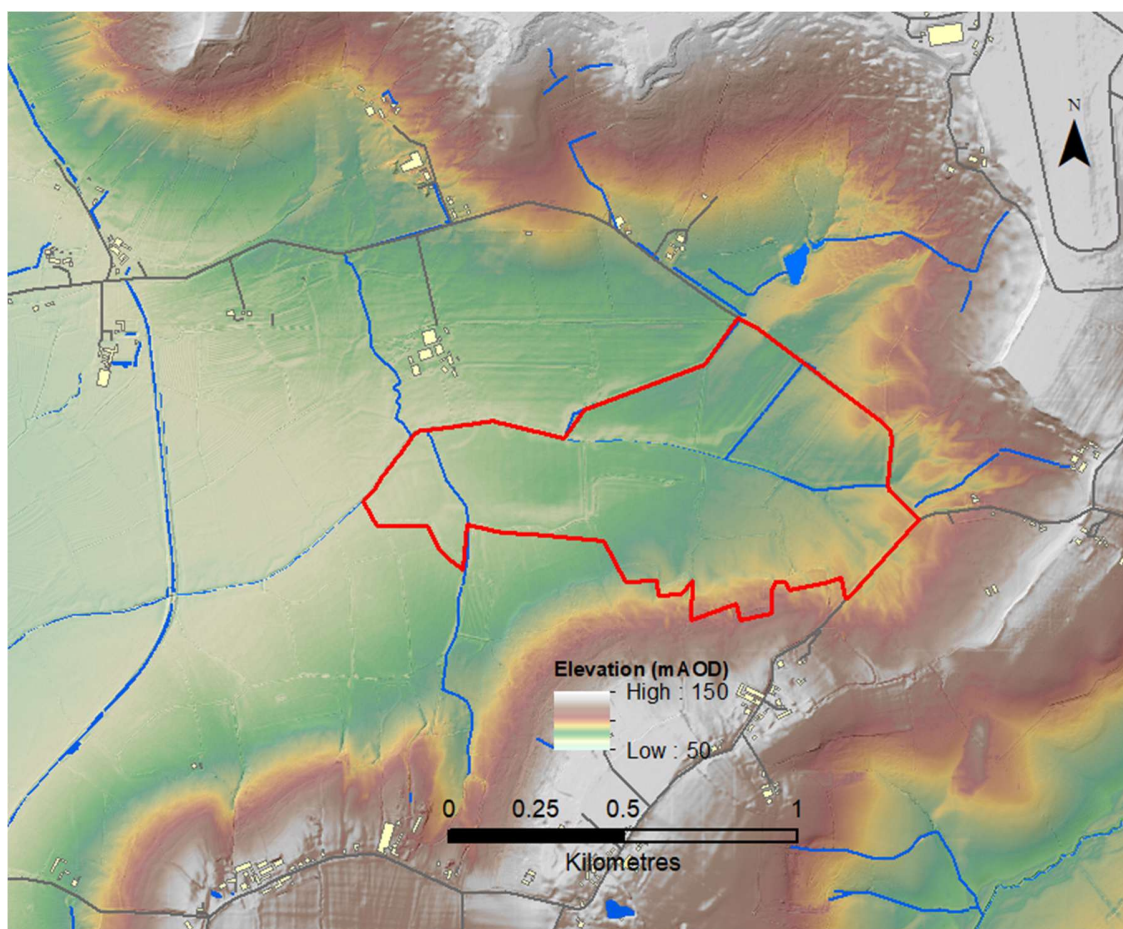


Figure 2: Ground Elevation Data

4. Proposed works

The Environment Bank are working with a local landowner farming cluster to create a fully secured and funded, advanced off-site habitat creation and enhancement project at WILT18 Stockham Marsh, in support of delivering biodiversity net gain.

Habitat Banks are established in advance, delivering a significant uplift in biodiversity value that is translated, through the use of the Biodiversity Metric, into Biodiversity Units (BNG Units) that can be sold to developers to meet their BNG obligations. Environment Bank Habitat Banks are delivered at scale in order to meet the Lawtonian principles of “bigger, better and more joined up” (Lawton, 2010), delivering the very best outcomes for nature, benefitting from economies of scale in regard to management and monitoring activities, and contributing to the local nature recovery networks by adding strategic ecological value.

The Habitat Bank at Stockham Marsh (WILT18 Site) aims to take existing arable fields and isolated woodland and transform them into a more diverse mosaic of wildflower grassland, native mixed scrub, woodland, pond and wetland habitats. These habitats will provide a myriad of opportunities for increasing abundance and expanding populations of local species.

The habitats will be managed in an environmentally sensitive manner, initially with input of locally sourced green hay and seeds, followed by a low intensity grazing. The use of cattle grazing and mechanical cutting will create structure within the newly created wildflower grassland and scrub, mimicking the natural systems of the past.

Existing buried drainage pipes running across the site are to be broken up during the first phase of works proposed for the summer 2025. The second phase (also to be undertaken in 2025) will involve minor earthworks to create offline ponds and wetland habitats along existing surface water flow pathways, see Figure 3 below. No works are proposed to the Cade Burns, and land levels adjacent to the river or in the wider floodplain will not be raised as part of these works. Site-won material will be used where possible to do so but without impacting on existing levels within the floodplain.

The proposed works are indicated in Figure 3.

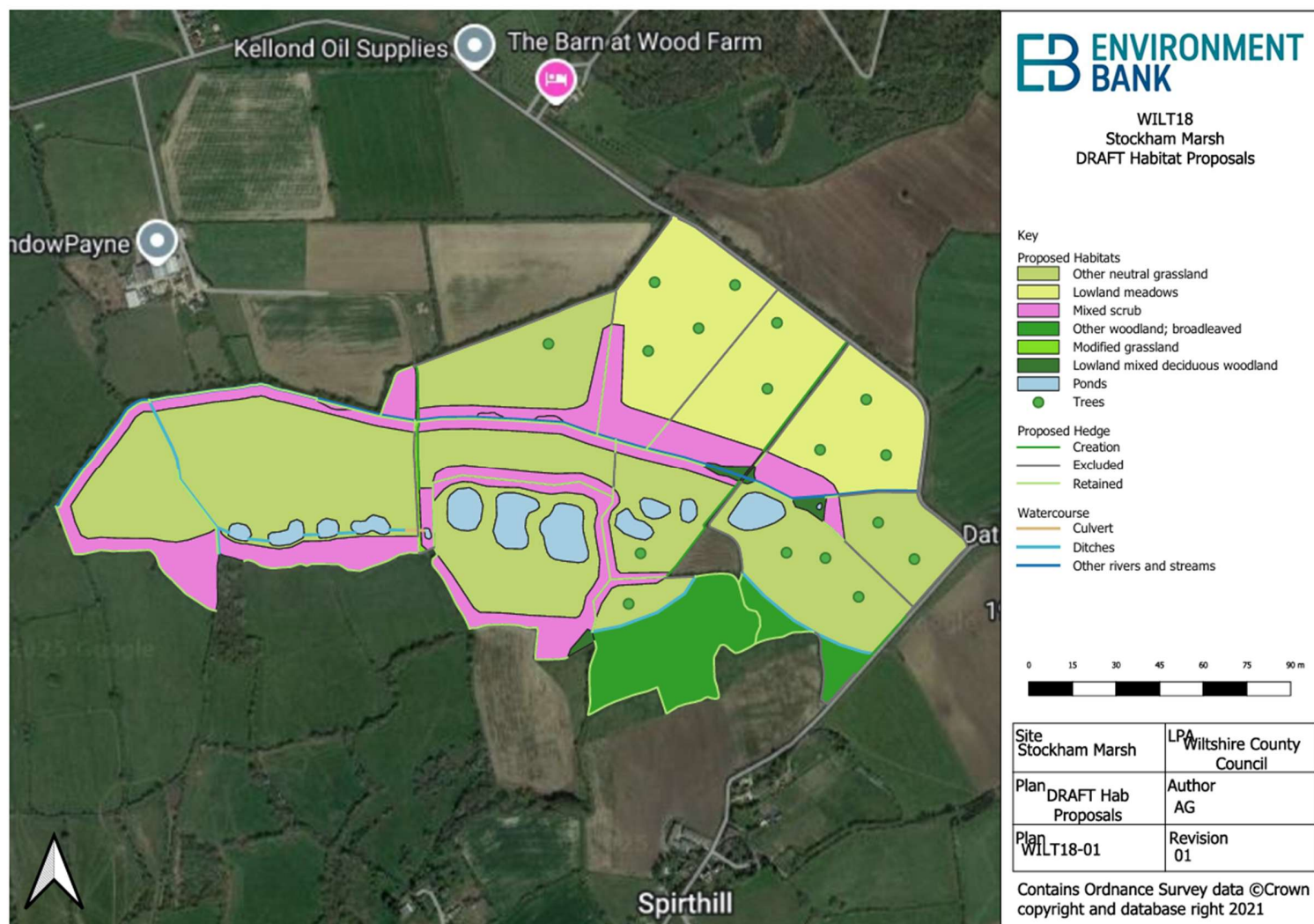


Figure 3: Proposed habitats

5. Flood Risk Assessment Process

5.1 OVERVIEW

The NPPF sets out Government policy on development and flood risk. It aims to ensure that flood risk is taken into account at all stages of the planning process, to avoid inappropriate development in areas at risk of flooding, and to direct development away from areas of highest risk. Where new development is considered necessary in areas of flood risk, NPPF aims to make it safe, without increasing flood risk elsewhere, and, where possible, reduce flood risk overall.

Local Planning Authorities have the overall responsibility for ensuring that development proposals are informed by an appropriate flood risk assessment and that development is appropriately flood resistant and resilient.

As detailed in Paragraph 20 of the supporting guidance to the NPPF, an FRA will be required to identify the risk of flooding to the development and to others from all sources of flooding and demonstrate how flood risk will be managed now and over the development's lifetime, taking climate change into account, and with regard to the vulnerability of its user.

CIRIA publication C624 Development of Flood Risk – Guidance for the Construction Industry defines three levels for an FRA:

- a) **Screening Study (Level 1)** – to identify whether there are any flooding or surface water management issues related to a development site that may warrant further consideration;
- b) **Scoping Study (Level 2)** – to be undertaken if the Level 1 FRA indicates that the site may lie within an area that is at risk of flooding or that the site may increase flood risk due to increased run-off and;
- c) **Detailed Study (Level 3)** – to be undertaken if the Level 2 FRA concludes that further quantitative analysis is required to assess flood risk issues related to the development of the site.

Each of these levels should be explored concurrently until flood risk to the proposed development has been mitigated. This report constitutes a **Level 2 FRA - Scoping Study**.

5.2 PLANNING POLICY

5.2.1 SEQUENTIAL TESTING

NPPF promotes a sequential risk-based approach to determine the suitability of land for development in flood risk areas. The sequential risk-based approach aims to steer new developments to areas at the lowest risk of flooding from all sources, and to avoid inappropriate development in areas at risk of flooding. In this case the site is within Flood Zone 1 and so Flood Risk Sequential Test Evidence (FRSTE) will not be required.

5.2.2 FLOOD RISK CLASSIFICATION

The Flood Zones are defined within the Flood Risk and Coastal Change guidance that supports the NPPF. This table is repeated below in Table 2. The majority of the site is within Flood Zone 1 though it also includes areas of Flood Zone 3a.

Table 2: NPPF Flood Zones

Subject	Definition
Zone 1 Low Probability	Land having a less than 1 in 1,000 annual probability of river or sea flooding. (Shown as 'clear' on the Flood Map – all land outside Zones 2 and 3)
Zone 2 Medium Probability	Land having between a 1 in 100 and 1 in 1,000 annual probability of river flooding; or Land having between a 1 in 200 and 1 in 1,000 annual probability of sea flooding. (Land shown in light blue on the Flood Map)
Zone 3a High Probability	Land having a 1 in 100 or greater annual probability of river flooding; or Land having a 1 in 200 or greater annual probability of sea flooding. (Land shown in dark blue on the Flood Map)
Zone 3b The Functional Floodplain	This zone comprises land where water has to flow or be stored in times of flood. Local planning authorities should identify in their Strategic Flood Risk Assessments areas of functional floodplain and its boundaries accordingly, in agreement with the Environment Agency. (Not separately distinguished from Zone 3a on the Flood Map)

5.2.3 VULNERABILITY CLASSIFICATION

NPPF defines the different vulnerability classifications within Annex 3. The Flood Risk and Coastal Change guidance to the NPPF compares the Flood Zoning and Vulnerability to consider whether the proposed development can be considered 'compatible' with its level of risk. These details are repeated below in Table 3.

Table 3: Flood risk vulnerability and flood zone 'incompatibility'

Flood Zones	Essential infrastructure	Highly vulnerable	More vulnerable	Less vulnerable	Water compatible
Zone 1	✓	✓	✓	✓	✓
Zone 2	✓	Exception Test required	✓	✓	✓
Zone 3a	Exception Test required	X	Exception Test required	✓	✓
Zone 3b	Exception Test required	X	X	X	✓

The proposals comprise works to restore wetland habitat (ponds and marshland) and are therefore considered to be **water compatible development** which is appropriate in all Flood Zones.

In this Flood Zone local authorities would seek opportunities to reduce the overall level of risk in the area through the layout and form of the development and the appropriate application of sustainable drainage systems. In this case, the development is relandscaping of ground and planting so no impermeable areas are proposed. However, the relandscaping of ground may give rise to changes in surface water flow pathway routes and these will be assessed as part of this report.

The proposed landscaping and planting across the site will significantly improve the condition of the underlying soils, reduce surface erosion and reduce the rapidity of surface water runoff even with the profile of the ground changing.

5.2.4 FLOOD RISK MANAGEMENT AUTHORITIES / STAKEHOLDERS

The Environment Agency (EA) used to have primary statutory responsibility for flood management and defence in England. They have now delegated some of these powers to Lead Local Flood Authorities (usually at County Council Level). The EA will be consulted by Local Planning Authorities (LPAs) on all applications for development in flood risk areas in Flood Zone 3 and those in areas with critical drainage problems. The LLFA's are consulted on all other applications over 1ha in Flood Zones 1 and 2. The final decision to grant consent lies with the LPA, however these statutory bodies are consulted during the review process.

The following Flood Risk Management Authorities are considered integral to flood risk management in this area and will usually be consulted as part of any planning application.

- Wiltshire County Council as the Local Planning Authority and Lead Local Flood Authority
- Town and Parish Council
- Environment Agency – Wessex Area
- Water Authorities – Wessex Water
- Highway Authorities – Wiltshire County Council, Highways England

5.2.5 LOCAL PLANNING POLICIES AND GUIDANCE

The NPPF states that local planning authorities should adopt strategies to mitigate and adapt to climate change taking full account of flood risk. Local plans should be supported by a strategic flood risk assessment and develop policies to manage flood risk from all sources.

There are several policy documents that have been put together under this framework for the area of Wiltshire:

- Preliminary Flood Risk Assessment
- Strategic Flood Risk Assessment
- Surface Water Management Plan
- Local Flood Risk Management Strategy

- Wiltshire Core Strategy

These documents have been reviewed as part of this assessment and incorporated within this report where appropriate. The original reports are available online through the Wiltshire County Council Website. The key outputs relating to surface water management from some of these documents are summarised in Table 4.

Table 4: Local Planning Policies and Guidance

Document	Details
Preliminary Flood Risk Assessment	A Preliminary Flood Risk Assessment (PFRA) is a high-level screening exercise to identify areas of significant flood risk, required under the EU Floods Directive. Undertaking a PFRA requires the assessment of past floods, assessment of future floods and identification of flood risk areas which are all captured in a preliminary assessment report. The PFRA was produced in 2011 by Wiltshire Council as the Lead Local Flood Authority (LLFA) and was later reviewed in 2017. The PFRA (and later review) conclude that using the EA criteria, there are no 'Nationally Significant Flood Risk Areas' identified in Wiltshire for the purposes of the Flood Risk Regulations.
Strategic Flood Risk Assessment	Level 1 Strategic Flood Risk Assessments (SFRA) were undertaken by each of the individual District Councils prior to the commencement of Wiltshire Council. The West Wiltshire SFRA prepared in May 2019 provides an overview of flood risk from all sources within the West Wiltshire DC administrative area. The mapping within this document indicates that the site is located within a sub-catchment considered to be at HIGH cumulative flood risk. Site-specific FRAs therefore need to consider the potential cumulative effects of any proposed development within this catchment.
Surface Water Management Plan	A Phase 1 and 2 Surface Water Management Plan (SWMP) covering Chippenham, Trowbridge and Salisbury was prepared for Wiltshire Council in November 2011. Mapping accompanying the SWMP indicates a low expected permeability at the site and a less than 25% susceptibility to groundwater flooding. Surface water mapping has been superseded by the surface water mapping developed as part of the 2019 SFRA. Subject to site specific investigations, this would suggest that the site may be suitable for use of infiltration techniques.
Wiltshire Local Flood Risk Management Strategy	Wiltshire Council is the Lead Local Flood Authority for this area and in October 2015 prepared a Local Flood Risk Management Strategy. This summarises the flood risk, the approach to managing flood risk and how it will work with other organisations to deliver the strategy.
Wiltshire Core Strategy	The Wiltshire Core Strategy Development Plan Document was formally adopted on 20 January 2015. The plan provides a positive and flexible overarching planning policy framework for Wiltshire for the period up to 2026. The Core Strategy policies relevant to flood and water management: Core Policy 67 (Flood Risk) – 'Development proposed in Flood Zones 2 and 3 as identified within the SFRA will need to refer to the Strategic Housing Land Availability Assessment when providing evidence to the local planning authority in order to apply the Sequential Test in line with the requirements of national policy and established best practice.

	All new development will include measures to reduce the rate of rainwater run-off and improve rainwater infiltration to soil and ground (sustainable urban drainage) unless site or environmental conditions make these measures unsuitable’. Core Policy 68 (Water Resources) – ‘Development must not prejudice the delivery of the actions and targets of the relevant River Basin or Catchment Management Plan and should contribute towards their delivery where possible. Non-residential development will be required to incorporate water efficiency measures. Developers will be expected to submit details of how water efficiency has been taken into account during the design of proposals’. Development proposals within a Source Protection Zone, Safeguard Zone or Water Protection Zone must assess any risk to groundwater resources and demonstrate that these would be protected throughout the construction and operational phases of development’.
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6. Defining Flood Risk

6.1 HISTORIC FLOOD EVENTS

The EA’s historic flood map and recorded flood outlines have been reviewed, and no specific flood records for the site have been identified. Wiltshire Councils Level 1 Strategic Flood Risk Assessment has been reviewed to establish any records of flooding at or in close proximity to the application site, none were identified.

There is evidence, however, that flooding occurred locally both within the village of Foxham and at Stockham Marsh Farm in October 2023 (personal communication). It is understood that the source of water was from surface water runoff following a period of sustained heavy rainfall.

6.2 FLOOD RISK MECHANISMS

In accordance with the NPPF and the NPPF technical guidance, all forms of flooding including fluvial, tidal, groundwater, surface water and flooding from artificial sources have been addressed below.

6.2.1 FLUVIAL FLOOD RISK

Figure 4 shows the Fluvial Flood Risk Map. Flood Zone 1 (low risk) is identified on the map by no shading whilst Flood Zone 2 (medium risk) is identified by light blue shading and Flood Zone 3 (high risk) by dark blue shading. The flood map is derived by assuming no formal protection from flood defences, the standard EA procedure for defining flood zones. This indicates the site (shown by the red shaded area) is largely within Flood Zone 1 (low risk) but land adjacent to the Cade Burns is within Flood Zone 3 (high risk).

This area has been identified within Wiltshire Councils Level 1 SFRA as having a high cumulative impact score due to impacts any changes could have on downstream flood risk (Figure 5).

The only earthworks proposed within the area shown as Flood Zone 3 are four ponds (Figure 6). Existing ground will be lowered between 0.5-1m to create the ponds which will help to create additional floodplain storage during times of flood. Land levels adjacent to the river or in the wider floodplain will not be raised as part of these works and site-won material will be spread outside of the floodplain so as not to impact on

existing levels within the floodplain. The works will therefore not negatively impact on downstream flood risk and may have a beneficial impact due to greater flood storage across the site.

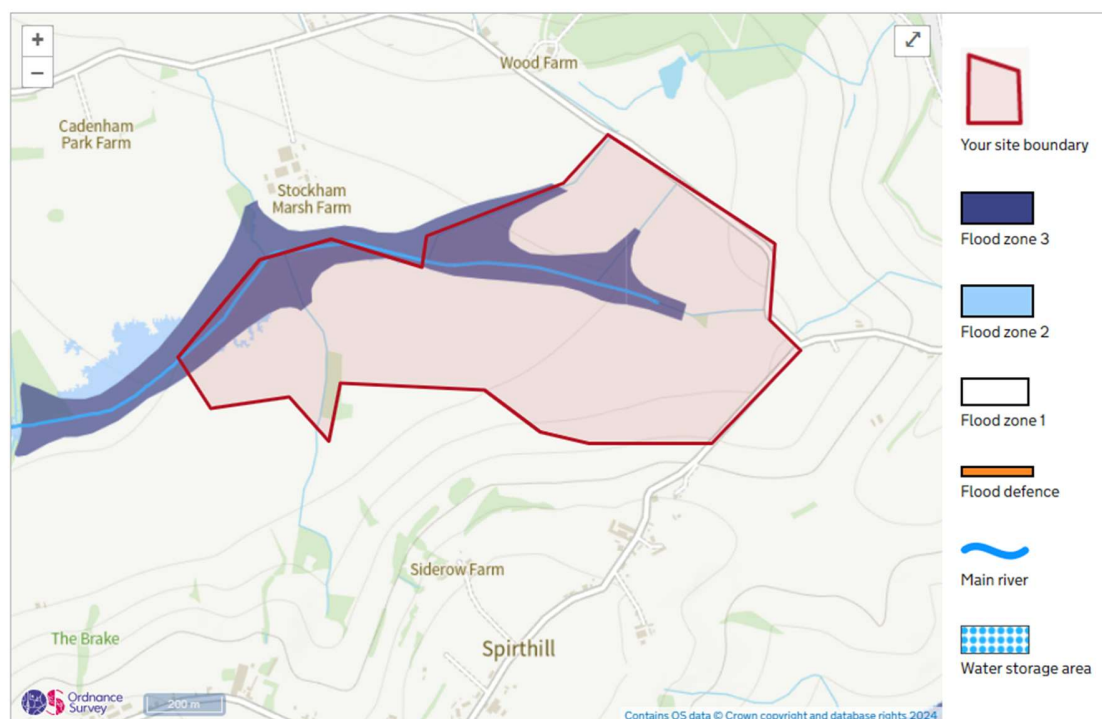


Figure 4: Extract from Flood Map for Planning (January 2024)

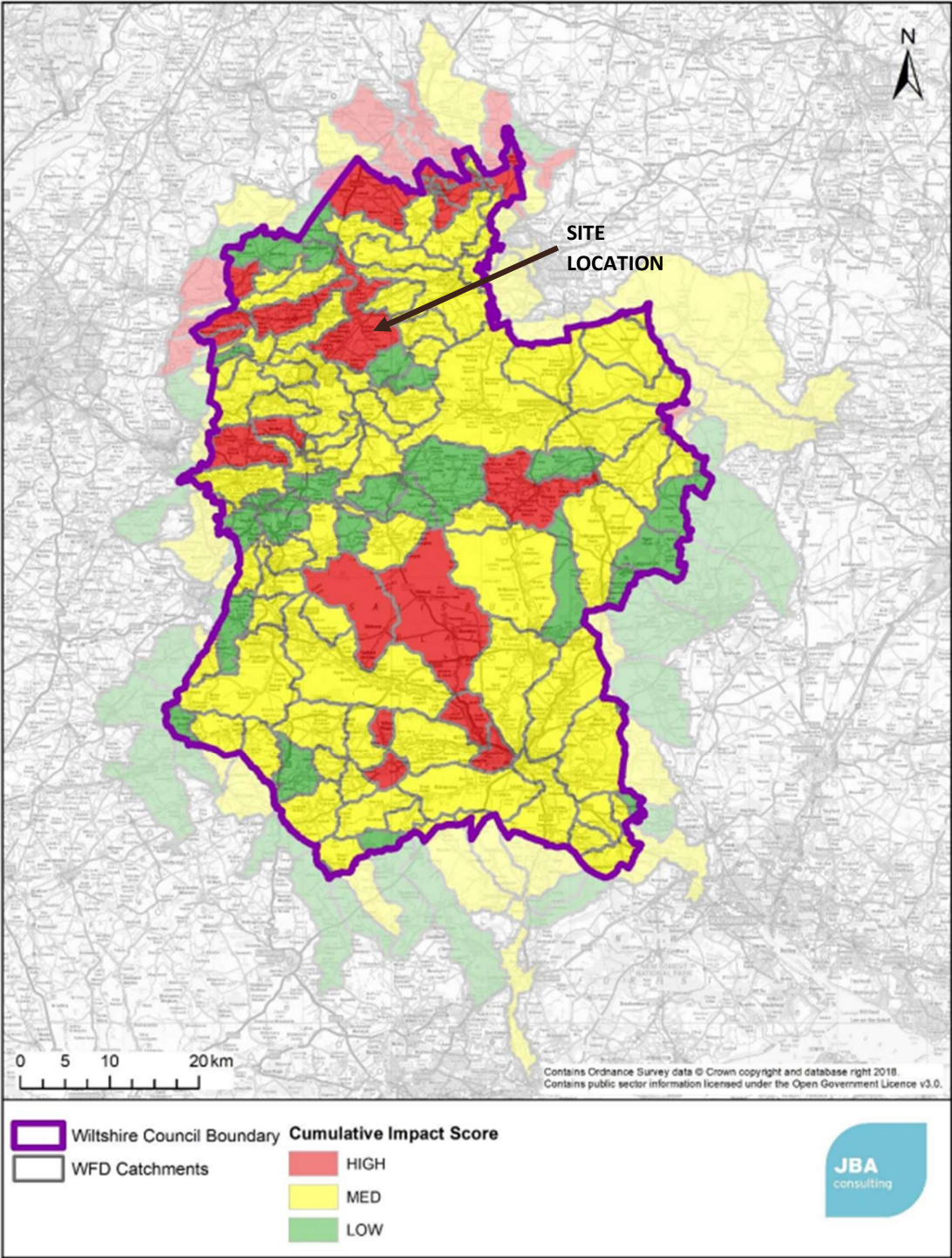


Figure 5: Flood Risk Cumulative Impact Score by WFD Catchment

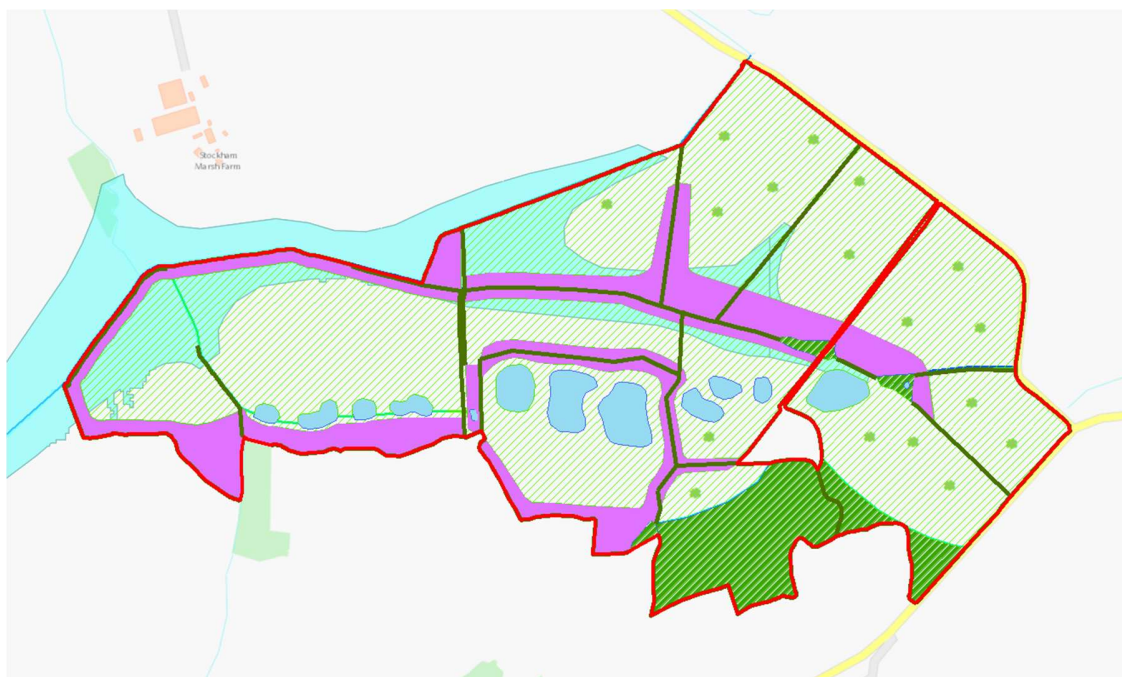


Figure 6: Fluvial flood outline overlaid on the proposed works.

6.2.2 TIDAL FLOOD RISK

Given the location, site elevation, and distance from the coastline this site is not considered to be at risk from tidal sources of flooding.

6.2.3 GROUNDWATER FLOOD RISK

Groundwater flooding occurs due to water rising up from the underlying aquifer or from water flowing from springs. This tends to occur after long periods of sustained high rainfall, and the areas at most risk are often low-lying where the water table is more likely to be at shallow depth. Groundwater flooding usually occurs in areas underlain by major aquifers but can be associated with more localised floodplain sands and gravels.

A review of data shows that there are no groundwater aquifers underlying the site. As shown in Figure 7 the site is largely underlain by Head (Clay, Silt, Sand and gravel) and Alluvium (clay and silt) superficial deposits overlying bedrock associated with the Oxford Clay formation (mudstone) which is impermeable. However, the hills to the south and east that drain into the site are underlain by sandstone associated with the Hazelbury Bryan Formation and limestone associated with the Stanford Formation, which are permeable. The site therefore lies at the boundary between permeable and impermeable bedrock strata.

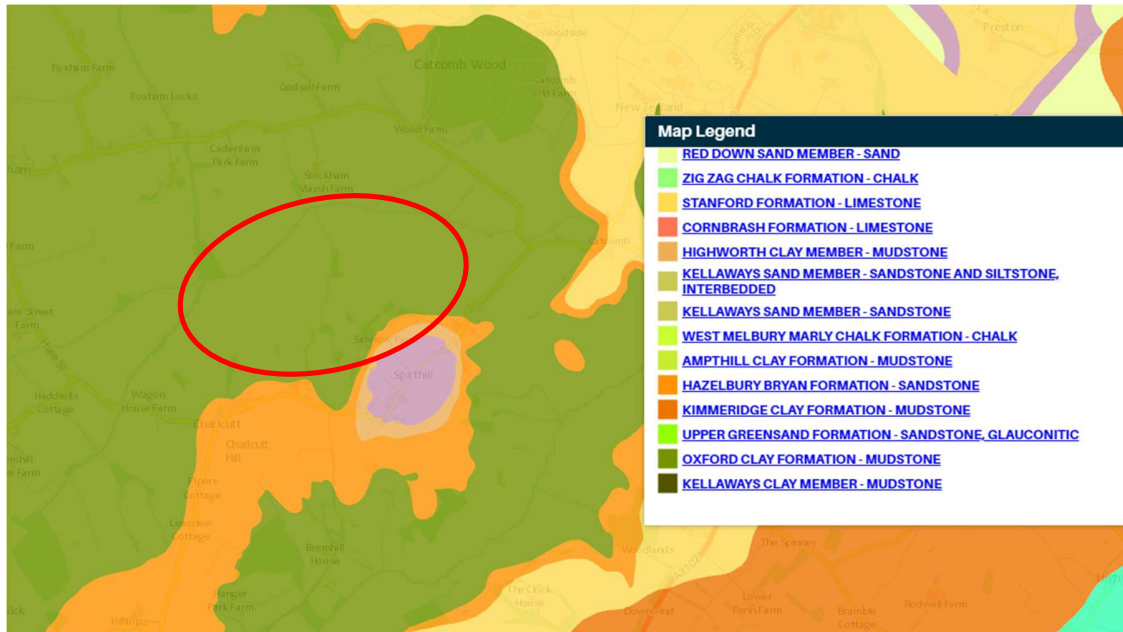


Figure 7: BGS Bedrock Geology (Downloaded January 2024), site indicated by the red boundary.

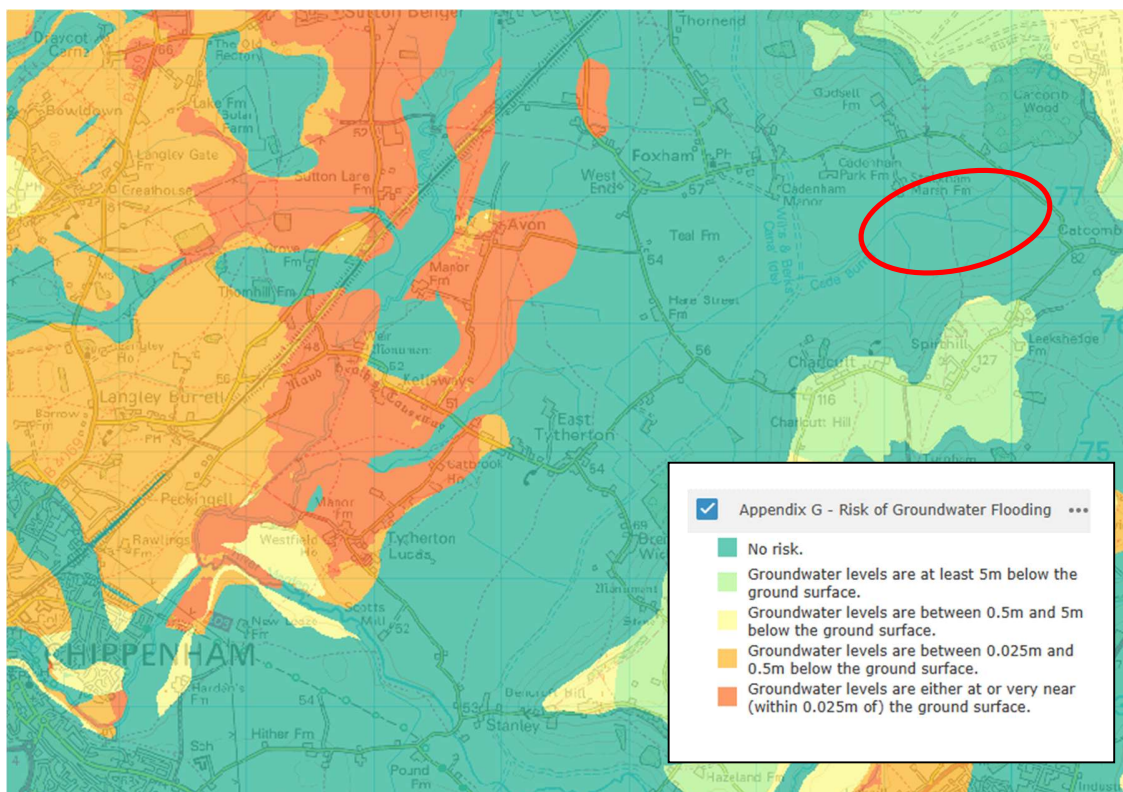


Figure 8: SFRA Susceptibility to Groundwater Flooding, site indicated by the red boundary.

The SFRA identifies that the site is at no risk of groundwater flooding, see Figure 8. The site is indicated by the red circle. The mapping within the SFRA is based on the British Geological Survey national dataset on

the susceptibility of groundwater flooding. The dataset is based on geological and hydrogeological information and can be used to identify areas where geological conditions could enable groundwater flooding to occur and where groundwater may come close to the surface. It is important to note that it is a susceptibility and does not indicate hazard or risk.

This correlates with the geology mapping which indicates a boundary line between differing strata opening routes for water to flow through. This correlates with onsite observations of the emerging springs surrounding the site.

6.2.4 SURFACE WATER FLOOD RISK

Surface water flooding occurs when soils are saturated so their natural capacity to absorb rainfall is prevented leading to overland flow, or when rain falls upon paved surfaces with low absorption causing water to run-off. During periods of intense rainfall this inevitably overwhelms drainage systems.

Unlike flooding from rivers, surface water flooding can happen many miles from a river, often in places that people wouldn't expect because it's a long way from a river or stream – it happens simply because there is nowhere else for the rainwater to go.

In 2013 a national map showing the risk of flooding from surface water was published online. The risk of flooding from surface water map has been produced by the Environment Agency on behalf of the government, using information and input from Lead Local Flood Authorities (Figure 9).

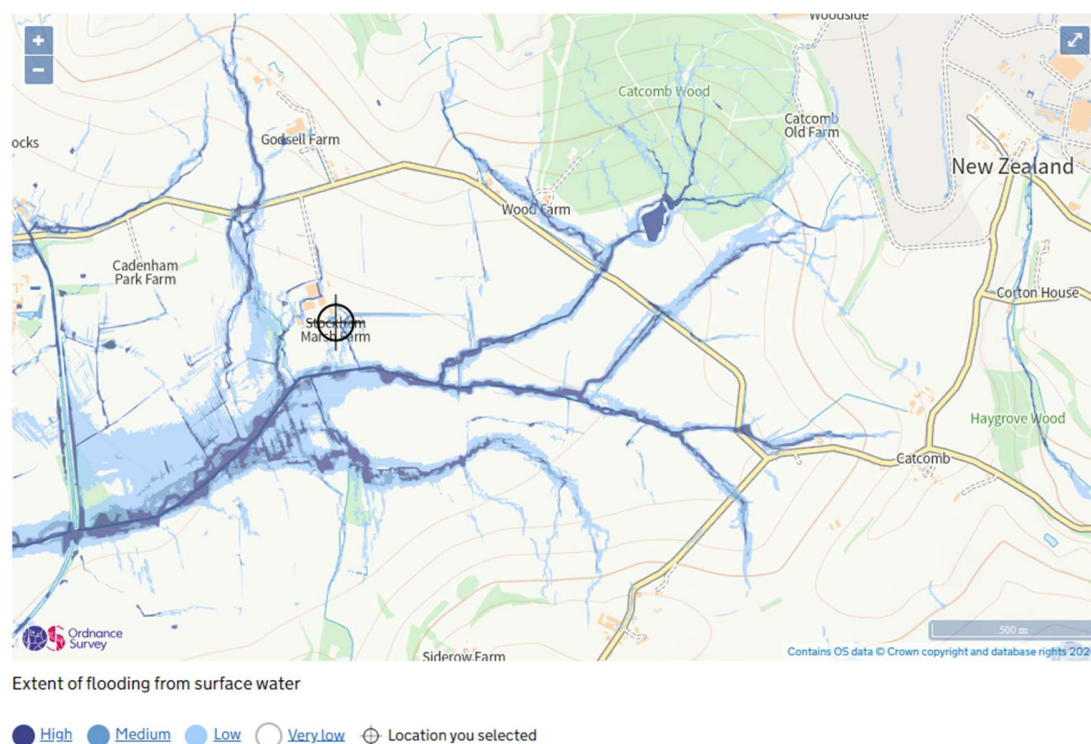


Figure 9: Environment Agency Surface Water Flood Map (January 2024)

This identifies several high-risk surface water flow routes that flow through the site originating from the adjacent hills to the north, east and south of the site. The flow routes eventually flow into the Cade Burns.

An assessment of the existing surface water flow paths has been undertaken to ensure that the earthworks proposed for the construction of the ponds does not impact on adjacent or downstream areas. As the risk to downstream areas is high, it is important that we assess the impact of any change to the topography these flow pathways to ensure that there is no material change to the direction of flow or increase in surface water flood risk as a result.

Figure 10 indicates where the surface water flows currently exist across the site and how the proposed changes in landscaping and habitat will qualitatively affect these flows.

Where earthworks are proposed to form ponds, the works are being deliberately sited along existing surface water flowpaths to help capture surface water runoff and store it, to help to slow the rate of runoff entering the downstream Cade Burns. The proposed works should therefore have a positive impact on reducing any cumulative impact on flood risk downstream.

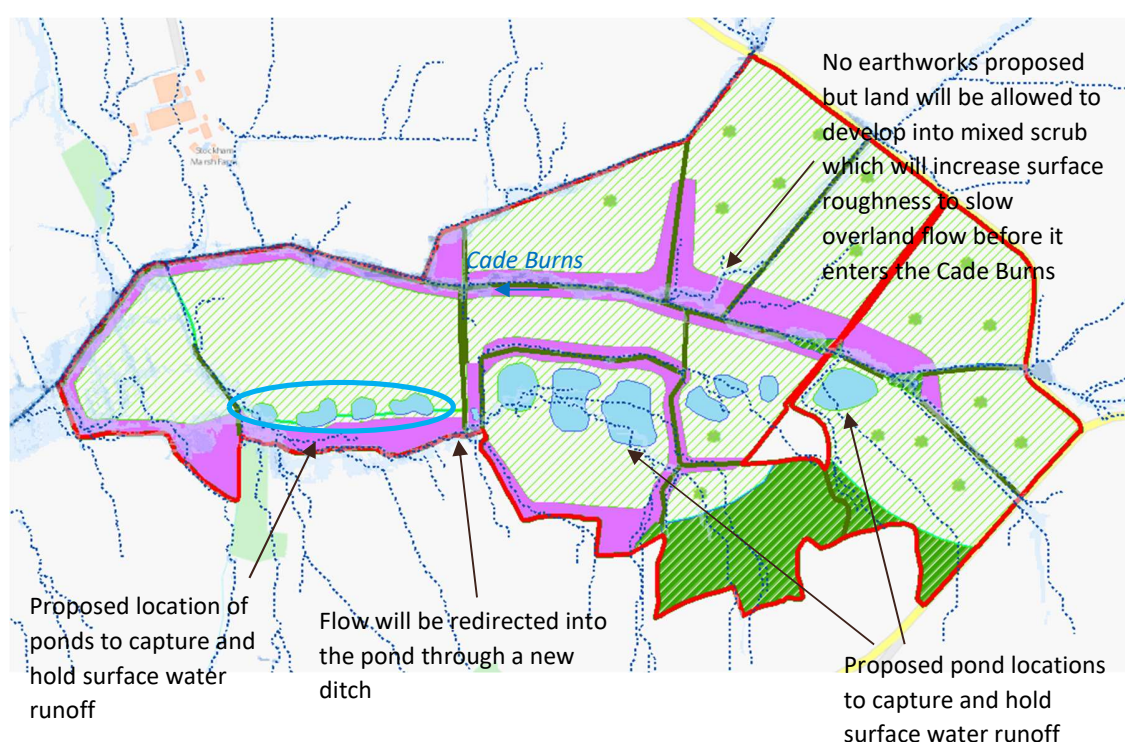


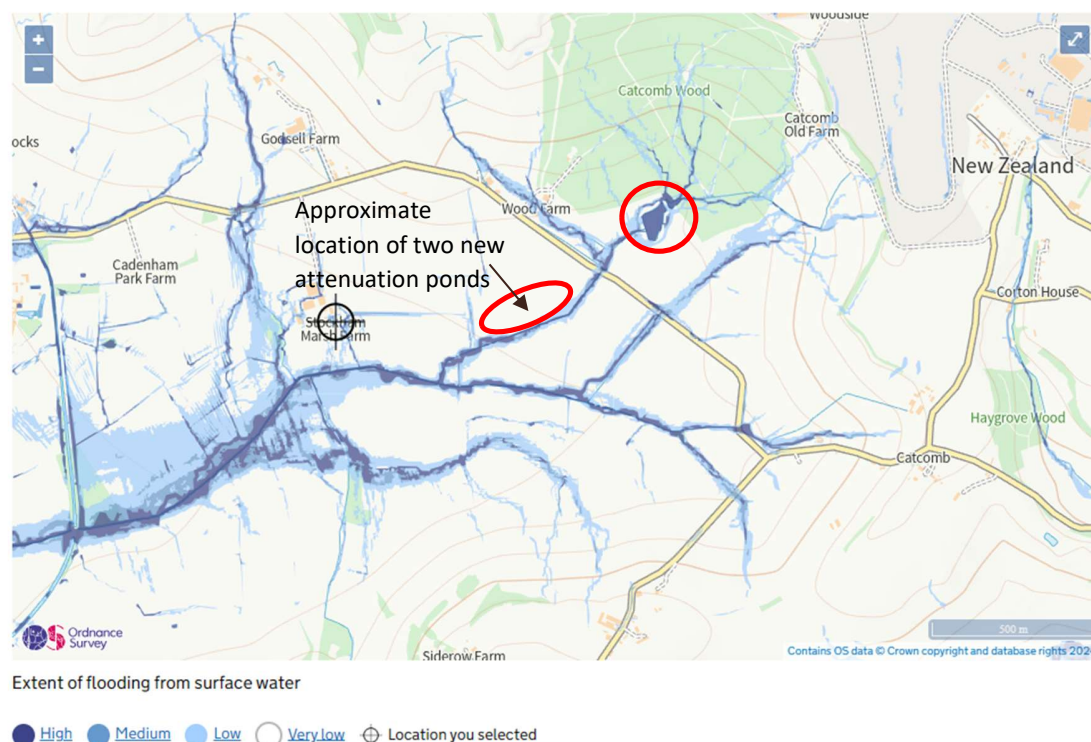
Figure 10: Surface water flow pathways overlaid by the location of the proposed works.

6.2.5 OTHER SOURCES OF FLOOD RISK

The potential risk from flooding from the foul sewer system in this area is considered low. There are no recorded incidents of flooding near this site.

There are four attenuation ponds located upstream of the site along one of the surface water flow pathways, these are shown in Figure 6. The upstream ponds appear to have been constructed sometime in the late 1990s and were extended over subsequent years with the addition of another pond upstream around 2005, both ponds are retained by a slightly elevated bund (approx. 3m in height based on a review of LiDAR). The ponds further downstream were more recently constructed in 2023 and comprise of two separate connected ponds surrounded by a shallow bund which has been planted with trees. Flow is redirected into the ponds from the adjacent ditch and is temporarily stored within the pond likely providing some

attenuation effect on downstream flood risk. Given the shallow height of the bunds surrounding the ponds and vegetation cover, the risk of a flooding to the site from a breach of these artificial features is considered to be low.



**Figure 6: Location of attenuation ponds further along a surface water pathway upstream of the site.
(Environment Agency Surface Water Flood Map, January 2024)**

6.3 CONCLUSION

The site is at the top of the catchment and therefore has a lot of potential for having a significant positive impact on the downstream catchment. Utilising various natural flood management techniques within the site to hold water in the landscape during peak rainfall events will provide improvements to biodiversity, enable existing habitats to expand and flourish and provide some downstream benefits to flood risk.

The fluvial flood risk to the site is considered high where the site runs up against the Cade Burns, however there are no proposed changes to the site that will impact on floodplain connectivity along the Burn. Proposed ponds will create additional storage within the floodplain and changes in land-use alongside the watercourse will increase roughness and scrub habitat which will also help to reduce surface runoff entering from adjacent fields.

Surface water flood risk is assessed as high within the area of the site covered by this FRA. Where earthworks are proposed to form ponds, the works are being deliberately cited along existing surface water flowpaths to help capture surface water runoff and store it, to help to slow the rate of runoff entering the downstream Cade Burns. The proposed works should therefore have a positive impact on reducing any cumulative impact on flood risk downstream.

It is considered that with these measures; it can be demonstrated that the proposed development of this site represents no tangible increase in surface water runoff rates and that the above provides sufficient comfort that there will be no increase in flood risk downstream as a result of these proposed works.