



West House Farm
Henfield Road, Albourne, Hassocks, West
Sussex

**Flood Risk Assessment and Surface Water
Drainage Strategy**

For

Pyxis Land Limited

Document Control Sheet

West House Farm

Henfield Road, Albourne, Hassocks, West Sussex

Pyxis Land Limited

This document has been issued and amended as follows:

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Contents

1.0	Introduction	1
2.0	Site Description	2
3.0	Flood Risk Legislative and Policy Framework.....	5
4.0	Current Flood Risk	10
5.0	Future Flood Risk & Climate Change	15
6.0	Summary of Residual Flood Risk	17
7.0	Surface Water Drainage Strategy	18
8.0	Compliance with the National Standards for SuDS.....	23
9.0	Proposed Foul Water Drainage.....	25
10.0	Summary and Conclusion.....	26

Appendices

A	Site Location Plan
B	Proposed Site Plan
C	EA's Flood Map for Planning
D	EA's RoFSW Mapping
E	Topographical Survey
F	Southern Water Asset Records
G	Envirocheck FSR: Groundwater
H	Envirocheck FSR: Historic
I	Existing and Proposed Impermeable areas drawings
J	FEH QMED Calculation
K	Proposed Drainage Strategy Layout
L	Rainwater Harvesting Calculation

1.0 Introduction

- 1.1 This Flood Risk Assessment (FRA) and Drainage Strategy has been produced by Motion on behalf of their client, Pyxis Land Limited. It supports the planning application for the demolition of modern farm buildings, extension and conversion of the existing barn to a dwelling house, conversion of existing stable building to ancillary accommodation, construction of replacement stables, games room outbuilding, and a bike, bin and storage outbuilding for West House Farm, Henfield Road, Albourne, Hassocks, West Sussex. A site location plan and red line boundary of the proposed development can be seen in **Appendix A**.
- 1.2 The proposed development will provide a dwelling house, ancillary accommodation, stables, a games room, and a bike and bin storage outbuilding. The proposed development layout can be seen in **Appendix B**.
- 1.3 The 0.4590 hectares (ha) site is located within Flood Zone 1 according to the Environment Agency's (EA's) Flood Map for Planning (**Appendix C**) and is at Very Low Risk from surface water flooding.
- 1.4 With reference to the EA's risk of Flooding from Surface Water (RoFSW) map in **Appendix D**, most of the site is in the very low surface water flood risk category (areas less than the 1 in 1000-year return period). However, there is a small area along the entrance of the site which falls into the low, medium and high surface water risk category (areas between the 1 in 30- year return period and the 1 in 1000-year return period) which is where the ordinary watercourse flows below the existing access road to the site from Henfield Road.
- 1.5 A drainage strategy is required to demonstrate how the development will manage and discharge surface water generated in all rainfall events up to and including the 1 in 100-year + 45% storm.
- 1.6 Therefore, this FRA and drainage strategy has been produced to discuss the flood risks to the proposed development, from all sources. This FRA and drainage strategy will also define how the development will manage its surface water and foul sewage so that the development does not increase flood risk in the area or to neighbouring properties/land over the existing situation.
- 1.7 This FRA and drainage strategy follows the guidance set out in:
 - ▶ West Sussex LLFA Policy for the Management of Surface Water (November 2018)
 - ▶ National Planning Policy Framework (NPPF)
 - ▶ Planning Practice Guidance (PPG) to the National Planning Policy Framework
 - ▶ CIRIA SuDS Manual 2015 (C753)
 - ▶ Environment Agency Rainfall Runoff Management for Developments
 - ▶ The New National Standards for SuDS (July 2025)
- 1.8 This FRA and drainage strategy report pertains only to the drainage strategy for the development. It does not provide details of how the site will be drained during the construction phase. This report is also not a drainage verification report, which can only be produced post-construction.
- 1.9 Similarly, this report does not provide information on how the drainage infrastructure will be protected during the construction phase of the project. The provision of this information is the responsibility of the appointed contractor.

2.0 Site Description

Table 2.1 – Site Summary

Site Name	West House Farm
Location	Henfield Road, Albourne, Hassocks, West Sussex
Grid Reference	525744, 116882
Site Area	Red-line boundary: 4,590m ² (0.4590 ha) Developable area: 3,586m ² (0.3586 ha)
Development Type	A dwelling house, ancillary accommodation, stables, games room, and a bike and bin storage outbuilding
Flood Zone	Flood Zone 1
Surface Water Flood Risk	Very Low Risk
Local Water Authority	Southern Water
Local Planning Authority	Mid Sussex District Council (MSDC)
Lead Local Flood Authority	West Sussex County Council (WSCC)

Site Location and Description

- 2.1 The red-line boundary of the site measures 0.4590 ha, with the developable area being 0.3586 ha. The site is currently accessed from Henfield Road. The site location can be seen in the plan in **Appendix A**.
- 2.2 The site currently comprises a mix of modern farm buildings, a barn, and stables. A small cluster of trees are located to the southwestern corner of the site, while the northern and northeastern areas consist of greenfield land and an access path. To the south of the site is an existing ditch, and immediately northwest of the site lies West House Farm

Topography

- 2.3 With reference to the Topographical Survey of the site in **Appendix E**, the site levels range from around 30.97 metres Above Ordnance Datum (mAOD) in the southwest of the site, to around 26.2 mAOD to the northeast of the site. The overall site gradient is estimated to be around 1 in 21.

Geology

- 2.4 The British Geological Survey (BGS) online 1:50,000 GeoIndex¹ mapping does not record any superficial deposits on the site² and the underlying solid geology is Weald Clay Formation-Mudstone, which is Dark grey thinly-bedded mudstones and mudstones with subordinate siltstones, fine- to medium-grained sandstones, including calcareous sandstone, shelly limestones and clay ironstones³.

¹ https://mapapps2.bgs.ac.uk/geoindex/home.html?_ga=2.225054234.1281457246.1660057743-1245338023.1660057743

² https://mapapps2.bgs.ac.uk/geoindex/home.html?_ga=2.225054234.1281457246.1660057743-1245338023.1660057743

³ <https://webapps.bgs.ac.uk/lexicon/lexicon.cfm?pub=WC>

- 2.5 Defra's Magic Map application⁴ lists the soil as being 'Slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils'.
- 2.6 The nearest available BGS borehole record is from around 880m west of the site (TQ21NW8/B⁵). The borehole log shows Weald Clay to 18m. The layers were as follows:
- ▶ Mottled clay down to 12 feet (ft) 6 inches (in)
 - ▶ Black stone from 12 ft 6 in, down to 15 ft
 - ▶ Clay from 15 ft, down to 25 ft 6 in
 - ▶ Hard brown shale from 25 ft 6 in, down to 29 ft 6 in
 - ▶ Blue clay from 29 ft 6 in, down to 31 ft 3 in
 - ▶ Hard brown shale from 31 ft 3 in, down to 41 ft 6 in
 - ▶ Hard clay from 41 ft 6 in, down to 44 ft
 - ▶ Green shale from 44 ft, down to 56 ft 6 in
 - ▶ Clay from 56 ft 6 in, down to 59 ft 6 in

Hydrogeology

- 2.7 Groundwater Source Protection Zones (SPZ's) are defined around groundwater abstraction sources such as wells, boreholes and springs that are used for public drinking water supply.
- 2.8 SPZ's show the risk of contamination to groundwater from any activities that might cause pollution in the area. The closer the activity to the source of abstraction, the greater the risk. The maps show three main zones; inner – Zone 1; outer – Zone 2; and total catchment – Zone 3.
- 2.9 Defra's Magic Map was reviewed to see where the site is located in relation to the Groundwater SPZ's, and the site is not located in a SPZ.
- 2.10 Defra's Magic Map application lists the bedrock geology as 'unproductive' aquifer, and the Groundwater Vulnerability Map (England) classification is unproductive.

Infiltration Potential

- 2.11 The desk based geology information in the section above indicates that infiltration will not be feasible at the site due to the clay-based geology (Weald Clay Formation-Mudstone).
- 2.12 Therefore, infiltration cannot be considered a viable means of surface water discharge for the development.

Existing Drainage Regime

- 2.13 An asset location plan was obtained from Southern Water, and this can be seen in **Appendix F**. This shows that there are no public surface water or foul sewers within the site or in the immediate vicinity of the site boundary. The closest public foul sewer is located to the southeast of the site along the B2116 located next to Inholmes Farm with the manhole reference of 2801.

⁴ <https://magic.defra.gov.uk/MagicMap.html>

⁵ <https://api.bgs.ac.uk/sobi-scans/v1/borehole/scans/items/584196>

Hydrology

- 2.14 The EA Statutory Main River Map⁶ shows that the nearest Main River is approximately 1.3km west, southwest of the site.
- 2.15 An ordinary watercourse flowing north is located approximately 121 metres east of the site. The culverted watercourse passes beneath the site entrance and appears to originate from the area around Albourne Green.

⁶ <https://www.arcgis.com/apps/webappviewer/index.html?id=17cd53dfc524433980cc333726a56386>

3.0 Flood Risk Legislative and Policy Framework

- 3.1 LLFA's including WSCC have a responsibility under the FWMA to develop, maintain, apply and monitor the application of a strategy for local flood risk in their area. Local flood risk is defined as flood risk arising from local sources, such as surface water run-off, groundwater and ordinary watercourses (i.e. non main rivers). The EA plays a role in managing the watercourses designated as 'main rivers'.
- 3.2 West Sussex often delegates their LLFA responsibilities to Local Planning Authorities. It is often the case that MSDC consult on local flood risk and drainage matters, and this may be the case for the current application.

The National Planning Policy Framework

- 3.3 The NPPF sets out the Government's national policies on different aspects of land use planning in England in relation to flood risk. The Planning Practice Guidance (PPG) to the NPPF provides further information on the policies set out in the NPPF. It encourages development to take place in areas of lower flood risk wherever possible and stresses the importance of preventing increases in flood risk off-site to the wider catchment area. This includes ensuring that flood risk is considered at all stages of the planning process, avoiding inappropriate development in areas at risk of flooding and directing development away from those areas where risks are highest.
- 3.4 The process of directing development away from those areas where risks are highest is the Sequential Test. It covers all forms of flooding, and this is covered in Paragraphs 23 and 24 of the NPPF. Following the December 2024 update to the NPPF, Paragraph 175 was added that states that development can be appropriate on sites with flood risk *"in situations where a site-specific flood risk assessment demonstrates that no built development within the site boundary, including access or escape routes, land raising or other potentially vulnerable elements, would be located on an area that would not be at risk of flooding from any source, now and in the future"*. This essentially means that if a sequential approach is applied within the site boundary, and areas of flood risk now and in the future are avoided, that flood risk should not prevent the development coming forward and that the Sequential Test is not required.

The Environment Agency Flood Map for Planning

- 3.5 The updated Environment Agency's Flood Map for Planning was released on 25th March 2025. This updated and new National Flood Risk Assessment (NaFRA) uses both existing detailed local information and improved national data, includes the potential impact of climate change on flood risk, based on UK Climate Projections (UKCP18) and shows potential flood depths. This allows the Flood Map for Planning to provide much higher resolution maps that make it easier to see where there is risk
- 3.6 The New NaFRA Flood Map for Planning remains split into 'Flood Zones', which demarcate the extent of flooding from rivers or the sea for different return periods.
- 3.7 Table 3.1, on the next page, lists the flood zone categories and explains the flood risk probabilities they represent.

Table 3.1 – Flood Zone Categories

Flood Zone	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 tidal 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 tidal flooding. (Land shown in dark blue on the Flood Map)
Zone 3b The Functional Floodplain	This zone comprises land where water must flow or be stored in times of flood, which is typically the 1 in 30-year flood event or greater. Local planning authorities should identify in their SFRAs areas of functional floodplain and its boundaries accordingly, in agreement with the Environment Agency. (Not separately distinguished from Zone 3a on the Flood Map, but may be distinguished in Product 4 information, for example)

- 3.8 A site-specific FRA is required for proposals of 1ha or greater in Flood Zone 1, all proposals for development in Flood Zones 2 and 3, or in an area within Flood Zone 1 that has critical drainage problems (as notified to the local planning authority by the EA). There are areas of surface water flood risk on the boundaries of the site, thus flood risk from all sources will be reviewed for the completeness of the application.
- 3.9 An FRA should identify and assess the risks of all forms of flooding and demonstrate how these flood risks will be managed so that a development remains safe throughout its lifetime, taking climate change into account.
- 3.10 Within each Flood Zone, a key factor in determining planning applications for development is the flood risk vulnerability of a development. Table 2 of the PPG to the NPPF categorises different development types according to their vulnerability to flooding. These categories are:
- ▶ Essential infrastructure;
 - ▶ Highly vulnerable development;
 - ▶ More vulnerable development;
 - ▶ Less vulnerable development, and;
 - ▶ Water-compatible development.
- 3.11 Within the different Flood Zones each of the above development categories are considered appropriate or not permissible. The Technical Guidance to the NPPF lists these as:

Flood Zone 1:

- ▶ All the development categories listed above are appropriate.

Flood Zone 2:

- ▶ Water-compatible, less vulnerable development, more vulnerable development and essential infrastructure is appropriate in this zone.

Flood Zone 3a:

- ▶ Water-compatible and less vulnerable development is appropriate in this zone. Highly vulnerable development should not be permitted in this zone.

Flood Zone 3b:

- ▶ Only water-compatible development and essential infrastructure that must be there should be permitted in this zone.

3.12 The above information sets out the basis by which developments must be assessed in terms of flood risk.

3.13 The development will be reviewed against the Flood Zone in which it is located, and an assessment will be made of the appropriateness of the proposed development, as per the advice within the PPG to the NPPF, taking account of the proposed site layout for the development shown in **Appendix B**.

The New National Standards for SuDS

3.14 On 19 June 2025 the UK government published its new National Standards for Sustainable Drainage Systems (SuDS). The new standards are a minor evolution of industry standards and current best practice, many of which practitioners and design engineers had already been actively incorporating in recent years. Therefore, while the New National Standards do not fundamentally change current standards, they are a welcome step in clarifying points that had previously been uncertain and has enshrined them in a single piece of guidance.

3.15 The standards emphasise how sustainable drainage and flood risk should be considered in developments, and the importance of site appraisal and early, integrated design with the site's natural features and proposed infrastructure.

3.16 The New National Standards for SuDS outline that;

- ▶ SuDS are a mandatory for major developments and drainage strategies must conform with the new national criteria and LLFA guidance.
- ▶ There is a stronger emphasis on the 'four pillars' of SuDS. Drainage strategies must demonstrate benefits for water quantity and quality as well as amenity, and biodiversity. This pushes designers to incorporate more surface level SuDS and rely less on below-ground attenuation.
- ▶ There is more clarity on long-term adoption & maintenance of SuDS system and LPA's will expect clearer maintenance and management strategies for drainage systems and require stronger evidence of deliverability.

3.17 As stated before, this is a minor evolution of the current approach to drainage design, but there are subtle differences in the design factors, which could lead to an increase in size of attenuation features. In addition to the above overarching principles of the New National Standards for SuDS, there are seven core standards that are to be achieved in drainage design. These are:

Standard 1 – Runoff destinations (Drainage hierarchy)

3.18 Surface water runoff must be discharged following a strict five-tier sustainability hierarchy, prioritising solutions that keep water close to where it falls:

Priority 1: Collected for non-potable reuse (e.g. rainwater harvesting)

Priority 2: Infiltrated to ground

Priority 3: Discharged to an above-ground surface water body

Priority 4: Discharged to a surface water sewer or piped system

Priority 5: Discharged to a combined sewer

3.19 Use of lower-priority options must be robustly justified.

Standard 2 – Management of everyday rainfall (interception)

3.20 SuDS must manage frequent, small rainfall events at source, with the key points being:

- ▶ The first 5mm of rainfall should be intercepted within the development.
- ▶ Interception should prevent runoff for most rainfall events, across both summer and winter seasons.
- ▶ Interception can typically be delivered through features like green roofs, rain gardens, permeable paving, and bioretention.

Standard 3 – Management of extreme rainfall and flooding

3.21 SuDS must manage intense and extreme rainfall events to reduce flood risk:

- ▶ Control surface water runoff rates and volumes to greenfield runoff rates.
- ▶ Safely manage exceedance flows without negative impact on third party land.
- ▶ Ensure flooding (where unavoidable) is shallow, slow, and low-hazard.
- ▶ Prevent flooding of buildings and critical infrastructure.

Standard 4 – Water quality

3.22 SuDS must protect and improve water quality:

- ▶ Designs must be based on a site-specific water quality risk assessment.
- ▶ Drainage features should treat runoff according to the pollution risks of the proposed land use and this should be in accordance with Chapter 26 of the CIRIA SuDS Manual (C753).
- ▶ Multiple treatment stages are expected where risks are high (discharge to protected waters, for example)

Standard 5 – Amenity

3.23 SuDS must deliver positive placemaking outcomes, not just drainage quantity benefits:

- ▶ Contribute to attractive, usable, and safe spaces.
- ▶ Support recreation, wellbeing, and visual quality.
- ▶ Be integrated into landscaping and public realm design.

Standard 6 – Biodiversity

3.24 SuDS must enhance the natural environment:

- ▶ Deliver biodiversity benefits, aligned with Biodiversity Net Gain ambitions.
- ▶ Use vegetated, nature-based solutions wherever possible.
- ▶ Support habitats for plants, invertebrates, and wildlife.

Standard 7 – Design for construction, operation, maintenance, and structural integrity

3.25 SuDS must be designed for their whole lifecycle:

- ▶ They should be safe and effective to construct.
- ▶ They should include clear, deliverable maintenance and management plans.
- ▶ They must remain structurally sound over their design life.

- ▶ They should allow for decommissioning or adaptation (if required).

3.26 The specific points below should be borne in mind by designers and included in any drainage strategies:

- ▶ Standard 2 provides explicit guidance on the management of everyday rainfall. The first 5mm of rainfall (the 'first flush') must be managed by interception and should not leave the site. Instead, it should either be collected for reuse, infiltrated into the ground, or else captured, conveyed, and stored within SuDS features (but there are specific criteria that make this last point acceptable).
- ▶ The latest standards now formalise that the minimum permissible infiltration rate for discharging surface water via a 'System A' (Total Infiltration) solution. The minimum infiltration coefficient that can support an infiltration-based drainage solution is 1.0×10^{-6} m/sec. Additionally, the standards now add that the half drain in the 3.3% AEP event should be less than 24 hours.
- ▶ A 'relaxation factor' should instead be applied to the target greenfield runoff rates on brownfield site. It defines that the maximum relaxation factor for runoff rates should be no greater than five times the greenfield rates. This allows for easier implementation on heavily developed urban sites, especially where LLFA's previously demanded greenfield runoff rates.
- ▶ The New National Standards confirm a previous 'grey area' by stating that SuDS features should be included in the contributing catchment area. It also notes that there is no requirement to provide attenuation for external overland flows entering the site, but these flows should be considered for capacity of the pipe network.
- ▶ Standard 3 of the New National Standards for SuDS clarifies the expectations with regards to urban creep. It says "within developments an urban creep uplift factor shall be applied by adding a percentage increase *to the calculated area of the impermeable area within the property curtilages. This shall be 10% for all developments unless there are no external private permeable spaces, for example, flats and apartments, when it shall be 0%.*"

3.27 The proposed development at West House Farm acknowledges the requirements of the New National Standards for SuDS and will deliver them through the drainage strategy, where they are achievable alongside the competing technical and regulatory constraints.

4.0 Current Flood Risk

- 4.1 Flooding can arise from a variety or combination of sources. These may be natural or artificial and may be affected by climate change. These are discussed, below, in the following two sections and summarised in Table 6.1. The probability of any likely impacts is also assessed, where necessary.

Flooding from Rivers and the Sea

- 4.2 The 0.49 ha site is wholly located within Flood Zone 1 according to the EA's Flood Map for Planning (**Appendix C**). This means in any year the site has a less than 1 in 1,000-year (0.1%) chance of flooding from rivers or the sea.
- 4.3 There will be no increased risk of flooding from rivers or the sea on site post development, or as a result of climate change (this is discussed in Section 5, below).

Flood Risk and Appropriateness of the Proposed Development

- 4.4 According to the classifications in the NPPF the site is considered to be 'more vulnerable'.
- 4.5 Table 3 of the PPG to the NPPF (see below) states that 'more vulnerable' development is appropriate in Flood Zone 1, thus the proposed development is appropriate in this location. This is supported by the fact that the site is bordered on the northeast by a residential property.

Table 3 of the NPPF – Flood Risk Vulnerability and Flood Zone Compatibility

Flood Zones	Flood Risk Vulnerability Classification				
	Essential infrastructure	Highly vulnerable	More vulnerable	Less vulnerable	Water compatible
Zone 1	✓	✓	✓	✓	✓
Zone 2	✓	Exception Test required	✓	✓	✓
Zone 3a †	Exception Test required †	✗	Exception Test required	✓	✓
Zone 3b *	Exception Test required *	✗	✗	✗	✓*

Key:

✓ Development is appropriate

✗ Development should not be permitted.

Surface Water Flooding

- 4.6 Surface water, or pluvial flooding, results from rainfall-generated overland flow, where rainwater has not yet reached a watercourse or sewer and where the local drainage systems become overwhelmed. Pluvial flooding often occurs during short, very intense storms, but can also occur during longer periods of rainfall when the ground is already saturated, or where land has low permeability due to development.
- 4.7 In these conditions surface water can build up where the topography allows it to converge or pond. Where it gathers it will travel down prevailing gradients. Pluvial flooding then occurs at locations where

significant surface water flow paths converge, at localised low points and/or due to overland obstructions. In urban areas pluvial flooding often occurs where the built environment channels overland flow routes (down roads that are bounded by kerbs, for example) or where there are obstacles to the natural overland flow routes. Boundary walls and buildings are often the main causes and, hence, the likelihood of pluvial flooding to impact property and built-up areas.

- 4.8 Pluvial flooding is exacerbated in many cases by the mistreatment or failure of the below ground infrastructure (including partial or full blockages of gullies and/or within the combined sewers and the accumulation of fats, oils and greases within the sewer networks).
- 4.9 With reference to the EA's risk of Flooding from Surface Water (RoFSW) map in **Appendix D** most of the site is in the very low surface water flood risk category (areas less than the 1 in 1000-year return period). However, there is a small area along the entrance of the site which falls into the low, medium and high surface water risk category (areas between the 1 in 30- year return period and the 1 in 1000-year return period) which is where the ordinary watercourse is culverted below the existing site access road.
- 4.10 According to the RoFSW maps in **Appendix D**, all surface water flooding predicted on the site is expected to remain at depths of 600 mm or less, with the predominant flooding depth occurring at 300 mm or less.
- 4.11 As the above assessment of surface water flood risk has shown, occupants of the building would experience minimal flood depths and, should they require access/egress from the building, they would be subject to minimal flood hazard and it would be possible for all users to safely make their way to a muster point, including the elderly and the infirm. This is shown in the above discussion of Flood Hazard and is supported by the R&D Technical Report FD2320/TR2, which was a joint publication between Defra and the EA. It provides a framework and guidance for assessing and managing flood risk for new development and, more specifically, presents simple methods for assessing the conditions that constitute safe access and egress, which can be applied at the site-specific scale, i.e. as part of an FRA.
- 4.12 FD2320/TR2 considers a safe access or egress route to be one that is safe for use by occupiers without the intervention of the emergency services or others.
- 4.13 A dry route is safe for all, including people and vehicles. However, FD2320/TR2 states that "*if a dry route for people is not possible, a route for people where the flood hazard (in terms of depth and velocity of flooding) is low and should not cause a risk to people*" would constitute a safe access.
- 4.14 It is in this context that the access and egress to the West House Farm has been assessed and, as recommended by FD2320/TR2, the 'Intermediate Approach' to the assessment of Flood Hazard has been used, which is required where access and egress may not be dry.
- 4.15 The 'Intermediate Approach' to Flood Hazard is laid out within FD2321/TR1 'The Flood Risks to People Methodology' and discussed in the Supplementary Note to Operating Authorities. The method for calculating Flood Hazard is:

Flood Hazard

The Flood Hazard rating is calculated using the following equation:

$$HR = d \times (v + 0.5) + DF$$

Where,

HR = (flood) hazard rating;
d = depth of flooding (m);
v = velocity of floodwaters (m/sec); and
DF = debris factor calculated using Table A.1

Table A.1 Guidance on debris factors for different flood depths, velocities and dominant land uses

Depths	Pasture/Arable	Woodland	Urban
0 to 0.25 m	0	0	0
0.25 to 0.75 m	0	0.5	1
d>0.75 m and/or v>2	0.5	1	1

Ref: FD2321/TR1 Table 3.1

4.16 If this calculation is applied to the proposed site, the values for **d**, **v**, and **DF** are:

- ▶ **d** = 0.6 (max)
- ▶ **v** = Assumed at 1.0 m/s, although this is probably too high noting the shallow flood depths.
- ▶ **DF** = 0 (zero) as per Table A.1 for Pasture/Arable where flooding is than 0.25m to 0.75m deep.

4.17 Thus, the hazard calculation (HR) for the proposed site is:

$$HR = 0.6 \times (1.0 + 0.5) + 0$$

$$HR = 0.9$$

4.18 This HR value can be applied to Figure 4.1, which is the categorisation of Flood Hazard.

Figure 4.1- Categorisation of Flood Hazard

Flood Hazard Rating (HR)	Colour Code	Hazard to People Classification
Less than 0.75		Very low hazard - Caution
0.75 to 1.25		Danger for some – includes children, the elderly and the infirm
1.25 to 2.0		Danger for most – includes the general public
More than 2.0		Danger for all – includes the emergency services

4.19 Figure 4.1 confirms that an HR value of 0.9 represents a danger for some. However, this calculation is based on a water depth of 0.6 metres. When reviewing the RoFSW maps in the **Appendix D**, only a small area is shown to be affected by a depth of 0.6 metres, rather than an entire section of the road. In proportion to the overall surface water flooding of the area, this is not sufficient to block the road, as most of the flooding occurs at depths of 200–300 mm.

4.20 On the basis that the surface water flooding depth of 600mm is not proportionate, using a depth of 200 or 300mm would be deemed appropriate and indicates that the HR value would be classified as very low. As such, the flood hazard to the proposed site's access/egress route is very low and only caution needs to be expressed. This accords with FD2320/TR2 and the fact that "a route for people where the flood hazard (in terms of depth and velocity of flooding) is low and should not cause a risk to people" would constitute a safe access.

4.21 Additional precaution can be allowed for the 600 mm depth of flooding, as no flooding is shown at the location of the proposed house. The danger posed to the elderly, infirm, and children can be mitigated by ensuring that those at risk remain inside the property during a 600 mm flood event—which would be short-lived due to the limited extent of flooding or by relocating vulnerable individuals before the flooding occurs.

4.22 On the basis that the development will manage and discharge surface water generated in line with appropriate guidance, there will be no increased risk of surface water flooding on site post development.

4.23 Therefore, the site can be seen to be at low to medium risk of surface water flooding.

Groundwater Flooding

4.24 The risk of groundwater flooding is dependent on local geological and hydrogeological conditions at any given time. Groundwater levels rise during wet winter months and fall again in the summer when rainfall is low and extractions are higher. In very wet winters, rising groundwater levels can reactivate flow in ephemeral streams that only flow for part of the year or even lead to the flooding of normally dry land.

4.25 There are no flood risk maps for groundwater, as stated by the Environment Agency in their 2011 guidance note 'flooding from groundwater'. Mapping products currently available only show areas where

the geological and hydrological conditions may combine to cause groundwater flooding, but they should not be considered as groundwater flood risk maps. They only show susceptibility to groundwater flooding.

- 4.26 There are several mapping products that depict areas that may be susceptible to groundwater flooding, but they are not comparable in detail to the risk maps developed for fluvial, tidal and surface water, such as those used by practitioners and risk management authorities to support planning decisions. The mapping does not show the likelihood of groundwater flooding occurring and can only be considered as a hazard, but not a risk-based dataset.
- 4.27 As such, the mapping products can be viewed as indicative at best and should only be used as a prompt to review site-based information to determine whether groundwater is a risk factor that should be considered. Indeed, the Environment Agency state that:
- 4.28 "The susceptibility data should not be used on its own to make planning decisions at any scale and, in particular, should not be used to inform planning decisions at the site scale. The susceptibility data cannot be used on its own to indicate risk of groundwater flooding."
- 4.29 This FRA will review the groundwater flooding susceptibility mapping available, which has been supplied in the Envirocheck Landmark Flood Studies Report (FSR) and can be seen in **Appendix G**.

BGS Geological Indicators of Flooding

- 4.30 The BGS Geological Indicators of flooding map shows that the site is not in an area with indicators of groundwater flooding.

BGS Groundwater Flooding Susceptibility

- 4.31 The BGS Groundwater Flooding Susceptibility map shows that the site is not in an area where there is potential for groundwater flooding to occur.

Geosmart Information Groundwater Flood Map

- 4.32 The Geosmart Information Groundwater Flood Map places the site in an area of 'negligible' risk.

Groundwater Flood Risk Summary

- 4.33 The site is not in an area with any indicators of groundwater flooding and not in an area with potential for groundwater flooding to occur. Due to this and being in an area of 'negligible' risk, it can be seen that the development site is at very low groundwater flood risk.

Flooding from Infrastructure

- 4.34 Sewer flooding can occur when the capacity of the infrastructure is exceeded by excessive flows, or because of a reduction in capacity due to collapse, siltation, blockage, or if the downstream system becomes surcharged. This can lead to the sewers flooding onto the surrounding ground via manholes and gullies, which can generate overland flows.
- 4.35 Typically, sewer systems are constructed to accommodate rainstorms with a 30-year return period or less, depending on their age. Consequently, rainstorm events greater than 1 in 30-years would be expected to result in surcharging of some parts of the sewer system. In fact, due to most gullies being poorly maintained and often partially blocked with silt, leaves and other debris, their capacity is often estimated to be closer to the 1 in 10-year storm.
- 4.36 The 2009 Strategic Flood Risk Assessment (SFRA) for West Sussex County Council includes a map identifying areas more prone to flooding from sewers, with the site not affected.
- 4.37 Looking forward, the development's drainage must be designed in accordance with Sewers for Adoption, The Design and Construction Guidance (DCG), Building Regulations Approved Document Part H and BS EN 752. This will minimise the future risk of flooding due infrastructure failure.

- 4.38 Therefore, it is concluded that the proposed development site is at low risk of flooding from infrastructure failure.

Flooding from Artificial sources

- 4.39 The EA provides a map showing the maximum potential flood extent should all reservoirs with a capacity of greater than 25,000 cubic metres fail and release the water they hold.
- 4.40 The map shows that the site would not experience flooding in this scenario.
- 4.41 There are no other artificial sources of flooding (such as canals) in the vicinity of the site that could cause flooding.

Historic Flooding

- 4.42 The Envirocheck Landmark FSR includes a map showing recorded flood outlines, which can be seen in **Appendix H**.
- 4.43 This map shows that the site has no record of flooding in the past. Thus the Historic Flood Map supports this report's conclusion that the site is at low risk of flooding and that the proposed development is appropriate in this location.

5.0 Future Flood Risk & Climate Change

- 5.1 The NPPF and its supporting PPG sets out how flood risk should be considered over the lifetime of a development. This requires an increase in flood risk due to climate change to be taken into account. Both peak river flows and rainfall intensity should be assessed.

Peak River Flows

- 5.2 The EA's NaFRA2 Flood Map for Planning incorporates climate change allowances for the 2080s epoch (covering 2070–2125), which reflects the expected lifespan of a residential development.
- 5.3 With this allowance applied, the site remains at very low risk of fluvial flooding, as shown in Figure 5.1 below. As the site lies within Flood Zone 1, future fluvial flood risk does not require further assessment.

Figure 5.1 – Future fluvial flood risk (2070 to 2115)



Peak Rainfall Intensity and Climate Change

- 5.4 The proposed development site is within the Adur and Ouse Management Catchment⁷. The peak rainfall climate change allowances are as follows in Table 5.1, below:

Table 5.1 – Climate Change Predictions for Adur and Ouse Management Catchment

1 in 30-year Rainfall Event	Central Allowance	Upper End Allowance
2050's epoch	20%	35%
2070's epoch	20%	40%
1 in 100-year Rainfall Event	Central Allowance	Upper End Allowance
2050's epoch	20%	45%
2070's epoch	25%	45%

⁷ <https://environment.data.gov.uk/hydrology/climate-change-allowances/rainfall>

- 5.5 **Appendix D** has included the future surface water flood risk dataset with climate change allowances applied. This identifies that, while the overall extent at risk remains broadly similar with some individual risk bands increasing slightly, there is an increase in surface water to the north of the access road, as well as a small isolated area of risk where a proposed outbuilding is located to the west of the site.

6.0 Summary of Residual Flood Risk

- 6.1 Historic, current and future flood risk, from all sources, has been reviewed in the context of the proposed development at West House Farm. A summary of these flood risks is summarised in Table 6.1, below. The allocation of overall flood risk shows the residual flood risk once the site-specific conditions have been taken into account.

Table 6.1 - Summary of Flood Risk

Flood Source	Risk Level				Comment
	High	Medium	Low	Very Low	
Fluvial				X	The site is at very low risk of fluvial flooding
Tidal				X	The site is not at risk of tidal flooding
Groundwater				X	The site is in an area where susceptibility to groundwater is thought to be low
Surface Water		X	X		Most of the site is at Very Low risk of surface water flooding. Small amount of low, medium and high risk of surface water flooding along the watercourse.
Canals				X	There are no canals in the vicinity.
Reservoirs				X	There are no reservoirs in the vicinity.
Infrastructure Failure			X		The risk of infrastructure failure will be made negligible through drainage systems designed to accord with Building Regulations and adoptable standards.
Increase due to Climate Change			X		Climate change will only affect surface water flood risk, predominantly influencing the level of risk, with two small additional areas of extent identified to the north of the access road and to the west of the site.

7.0 Surface Water Drainage Strategy

Sustainable Drainage Overview

- 7.1 Current planning policy and EA guidance require developments to employ SuDS (Sustainable Drainage Systems) techniques wherever feasible.
- 7.2 The key benefits of SuDS are as follows:
- ▶ Improving water quality over a conventional piped system by removing pollutants from diffuse pollutant sources (e.g., roads);
 - ▶ Improving amenity through the provision of open green space;
 - ▶ Improving biodiversity through increased areas for wildlife habitat; and
 - ▶ Enabling a natural drainage regime that recharges groundwater (where possible).
- 7.3 SuDS provide a flexible approach to drainage, with a wide range of components from soakaways to large-scale basins or ponds. The individual techniques should be used where possible in a management train that mimics the natural pre-developed pattern of drainage.

Site Area

- 7.4 The site areas to undergo development are to be assessed as follows in Table 7.1:

Table 7.1 – Site Areas

Breakdown of Site Areas	Existing (ha)	Proposed (ha)	Difference (ha)
Buildings	0.0570	0.0521	- 0.0049
Hardstanding	0.0615	0.1496	+ 0.0881
Total	0.1185	0.2017	+ 0.0832

- 7.5 The difference in existing and proposed areas can be seen in **Appendix I**. The current access point to the proposed site will remain unchanged and has not been included within the site's designated developable areas.
- 7.6 The proposed hardstanding areas will use compacted shingle, which complements the rural landscape. Shingle is self-draining due to its natural voids and remains one of the most permeable ground surfacing materials as it is essentially coarse gravel. Therefore the proposed hardstanding is permeable and will drain at a greenfield rate and not be included within the calculations.
- 7.7 The roof areas of the buildings in the proposed development will decrease by 49m², resulting in a reduction of impermeable surfaces. This change represents an improvement over the existing impermeable areas. Additionally, the proposal includes implementing rainwater harvesting measures to further enhance drainage performance and meet current SuDS standards.

Greenfield Runoff Rate

- 7.8 The greenfield runoff rates have been calculated using the QMED value, which is the index flood in the Flood Estimation Handbook (FEH). QMED has been calculated for rural and urban values in MicroDrainage using the catchment descriptors methodology, which includes the following input variables:
- ▶ Site Location
 - ▶ SAAR – Standard Average Annual Rainfall 1961 – 1990 (mm)

- ▶ SPR Host - Standard percentage runoff derived from HOST soils data
- ▶ URBEXT - The extent of urban and suburban cover
- ▶ BFIHOST - Baseflow index derived from Hydrology of Soil Types (HOST) soils data
- ▶ FARL - Index of flood attenuation due to reservoirs and lakes

7.9 The QMED calculation sheet from MicroDrainage can be seen in **Appendix J**, and is expressed as a runoff rate per hectare. This is summarised in Table 7.2, below.

Table 7.2 - QMED Rural/Urban

QMED Rural (l/s)	QMED Urban (l/s)
12.7 l/s	13.0 l/s

- 7.10 The calculated QMED Rural value of 12.7 l/s is equivalent to a rate of 0.66 l/s over the 0.0521 ha impermeable area of the proposed buildings. This is not achievable as a discharge rate due to the very small-aperture flow controls that would be needed, which would be subject to an unsustainable blockage risk. No structures exist that can restrict flow to such fractions of a litre per second.
- 7.11 In line with this, it is proposed that a surface water discharge of 1.0 l/s will be used for this site.

Drainage Strategy Overview

- 7.12 As discussed in Sections 2 of this report, the desk-based geology information indicates that infiltration will not be feasible at the site due to the clay-based geology (Weald Clay). Therefore, infiltration cannot be considered a viable means of surface water discharge for the development.
- 7.13 The drainage strategy for the site has been developed on the premise that infiltration of surface water is not possible.
- 7.14 As stated above, the proposed hardstanding areas will use compacted shingle, which complements the rural landscape. Shingle is self-draining due to its natural voids and remains one of the most permeable ground surfacing materials as it is essentially coarse gravel.
- 7.15 The roof areas of the buildings in the proposed development will be reduced, resulting in a decrease in impermeable surfaces. Even though this change represents an improvement over the existing drainage rate, the development proposals include the incorporation of rainwater harvesting measures to further enhance drainage performance.
- 7.16 Therefore, the drainage strategy for the development will incorporate rainwater harvesting systems on all buildings, with excess water discharged to the adjacent drainage ditch at the QMED greenfield rate of 1.0 l/s.
- 7.17 The proposed site layout of the drainage strategy can be seen in **Appendix K** of this report.
- 7.18 This outlines the proposed drainage strategy for the development. The design criteria achieved by the proposed drainage strategy, and how it has been developed in accordance with the sequential check of the drainage hierarchy, is discussed below.

The Drainage Hierarchy

- 7.19 The NPPF states that opportunities to reduce overall flood risk should be sought and achieved through sustainable development and careful drainage design. This can be achieved through the layout and form of development, including green infrastructure and the appropriate application of sustainable drainage

systems (SuDS). SuDS are designed to control surface water runoff close to where it falls and mimic natural drainage as closely as possible. They provide opportunities to:

- ▶ Reduce the causes and impacts of flooding;
- ▶ Remove pollutants from urban run-off at source;
- ▶ Combine water management with green space with benefits for amenity, recreation and biodiversity.

- 7.20 To deliver SuDS benefits and ensure that a development reduces overall flood risk, there is an established hierarchy of surface water drainage methods that should be considered. The most preferable and sustainable are at the top and the least preferable and least sustainable at the bottom.
- 7.21 The drainage hierarchy is a sequential check that intends to ensure that all practical and reasonable measures are taken to manage surface water as high up the hierarchy (with '1' being the highest) as possible, and that the amount of surface water managed at the bottom of the hierarchy is minimised. The Planning Practice Guidance to the National Planning Policy Framework (NPPF) states that "*Generally, the aim should be to discharge surface run off as high up the following hierarchy of drainage options as reasonably practicable*".
- 7.22 The drainage hierarchy presented in the NPPF presents only four tiers of drainage options. This has been expanded on and adopted by others and now can be viewed as the following:
1. Store rainwater for later use
 2. Use infiltration techniques, such as porous surfaces in non-clay areas
 3. Attenuate rainwater in ponds or open water features for gradual release
 4. Attenuate rainwater by storing in tanks or sealed water features for gradual release
 5. Discharge rainwater direct to a watercourse
 6. Discharge rainwater to a surface water sewer/drain
 7. Discharge rainwater to the combined sewer
 8. Discharge rainwater to the foul sewer
- 7.23 The first two tiers of the drainage hierarchy ensure that surface water is retained within the site boundary and does not increase flood risk to others. This is always the most preferable method of surface water management.
- 7.24 The next six tiers of the hierarchy provide regional control, but with decreasing levels of pollution removal and reduced potential for amenity and habitat creation.
- 7.25 Within the lower six tiers of the drainage hierarchy, there must be some form of flow restriction, so that off-site surface water discharge resembles greenfield runoff rates, as much as is reasonably practicable. This requires on-site storage facilities, which may include ponds, swales, subsurface storage tanks and System C (non-infiltration) permeable pavements with flow control devices. Again, methods that provide the most potential for amenity and pollution removal should be favoured.
- 7.26 With regards to the proposed development and its drainage strategy, the tiers of the drainage hierarchy that have been achieved are summarised in Table 7.3, on the next page:

Table 7.3 - Compliance with the Drainage Hierarchy

Tier	Discharge Method	Used?	Notes
1	Store rainwater for later use	✓	Rainwater Harvesting has been proposed as part of the development.
2	Use infiltration techniques	✗	Infiltration is not viable at the site due to clay soils.
3	Attenuate rainwater in ponds or open water features	✗	SuDS basins and open features cannot be used as there is no space for a pond.
4	Attenuate rainwater by storing in tanks or sealed water features	✗	This tier of the drainage hierarchy will not be required.
5	Discharge rainwater direct to a watercourse	✓	The overflow from the attenuating rainwater harvesting tanks will outfall into the nearby drainage ditch.
6	Discharge rainwater to a surface water sewer/drain	✗	This tier of the drainage hierarchy will not be required.
7	Discharge rainwater to the combined sewer	✗	This tier of the drainage hierarchy will not be required.
8	Discharge rainwater to the foul sewer	✗	This tier of the drainage hierarchy will not be required.

Tier 1 – Store rainwater for later use

- 7.27 Water re-use systems can rarely manage 100% of the surface water discharged from a development. This requires the surface water yield from the building and hardstanding areas to balance perfectly with the demand from the proposed development; too much demand will result in a lack of water supply, whilst too little demand will cause the storage systems to become overwhelmed and could result in flooding when the next rainfall event happens. Consequently, even if there are opportunities and a need for rainwater recycling systems, further solutions for attenuating and discharging surface water will almost always be required.
- 7.28 There is likely to be a moderate rainwater yield from the roof areas of the development that could be used for domestic non-potable uses. Additionally, the proposed development includes landscaping that may benefit from having a supply of recycled rainwater for the watering of gardens, flowerbeds, etc.
- 7.29 The opportunity for water re-use and recycling on site has been explored, and therefore it is proposed that a rainwater harvesting tank is installed at the site. This will be installed to attenuate rainwater from the proposed roof areas, in order to achieve the requirements for intercepting surface water as set out in the New National Standards for SuDS. The water collected by the rainwater harvesting system will then be utilised for external uses, such as watering of gardens, washing of cars and drinking water for the horses.
- 7.30 The site has an estimated 5% annual rainwater yield of approximately 15,835 litres. Therefore, rainwater harvesting tanks will provide a total storage volume of around 16,000 litres for the development site, which equates to 16 m³ of storage as part of the proposed development. A table calculating the rainwater

yield for the overall development site and total rainwater harvesting tank storage volume is provided in **Appendix L**.

Tier 5 - Discharge rainwater direct to a watercourse

- 7.31 The drainage strategy will have an overflow outfall to the nearby drainage ditch, located along the southern edge of the site, at a rate of 1.0 l/s.

Surface Water Runoff Quality

- 7.32 The NPPF states that development should not have a detrimental impact on the environment, including the water environment. The technical guidance to the NPPF provides further advice on the benefits of ensuring runoff quality is to an appropriate standard.
- 7.33 The CIRIA SuDS Manual provides guidance on the treatment of surface water runoff. With regards to the proposed development, Table 4.3 of the CIRIA SuDS Manual rates the pollution hazard from roof water runoff as 'very low'. The only requirement for roof water runoff is the removal of gross solids and sediments.
- 7.34 The rainwater harvesting system enhances water quality by filtering out sediment, debris, and other pollutants through a combination of leaf guards, pre-tank filtration, and first-flush diversion, which prevent coarse solids and organic matter from entering the tank. Fine particles are further removed via sedimentation and flotation within the storage tank, ensuring that only cleaner, higher-quality water is supplied for reuse.

Management and Maintenance

- 7.35 A rainwater harvesting system requires a structured and ongoing management approach to ensure long-term performance, water quality, and system reliability. A formal maintenance plan should be in place for the lifetime of the development, outlining responsibilities, inspection frequencies, and the required competency of those undertaking maintenance. All activities must follow relevant health and safety legislation, including the CDM Regulations 2015, which require that maintenance tasks be carried out by a competent person with appropriate knowledge of the system. Regular monitoring is essential, as timely and adequate maintenance will prolong the lifespan of the system, whereas insufficient upkeep can significantly reduce efficiency and lead to operational issues.
- 7.36 Routine maintenance involves inspections and cleaning across all major components of the system, including roofs, gutters, filters, first-flush devices, pumps, overflows, and storage tanks. Gutters and downpipes should be inspected and cleared at least twice a year and after major storms, while filters and leaf guards require periodic cleaning in line with manufacturer guidance. Storage tanks must be checked to ensure inlets and outlets are sealed, that no debris is entering the system, and that overflow routes are functioning correctly. Sedimentation and floating debris should be removed at the recommended intervals, and pump systems should be maintained to guarantee reliable operation. Collectively, these tasks ensure the system continues to function efficiently, protect water quality, and provide a dependable non-potable water source over the long term.

8.0 Compliance with the National Standards for SuDS

- 8.1 The seven core standards for SuDS, as laid out in the National Standards for SuDS, were presented in Section 3 of this report.
- 8.2 This section will review how the drainage strategy has attained the seven core standards for SuDS, which is presented below.

Standard 1 – Runoff destinations (Drainage hierarchy)

- 8.3 With regards to the proposed development and its drainage strategy, the tiers of the drainage hierarchy that have been achieved are outlined in Table 8.1, below. These are the highest available tiers, as demonstrated by the discussion of the geoenvironmental characteristics and constraints discussed in Section 2 of this report.

Table 8.1 - Compliance with Standard 1 and the Drainage Hierarchy

Tier	Discharge Method	Used?	Notes
1	Collected for non-potable use	✓	Rainwater Harvesting has been proposed as part of the development.
2	Use infiltration techniques	✗	Infiltration is not viable on this site due to the geology of the site.
3	Discharged to an above ground surface water body	✓	The overflow from the attenuating rainwater harvesting tanks will outfall into the nearby drainage ditch.
4	Discharged to a surface water sewer, or another piped surface water drainage system	✗	This tier of the drainage hierarchy will not be required.
5	Discharged to a combined sewer	✗	This tier of the drainage hierarchy will not be required.

Standard 2 – Management of everyday rainfall (interception) - ✓

- 8.4 Rainwater harvesting will be installed on every roof throughout the site.
- 8.5 Therefore adequate interception, as required by Standard 2 of the National Standards for SuDS, has been provided.

Standard 3 – Management of extreme rainfall and flooding - ✓

- 8.6 Rainwater harvesting retains surface water for non-potable use, but they also release a proportion of surface water but at a restricted rate. Therefore, extreme rainfall will informally managed through betterment, attenuation and the slow release of surface water.

Standard 4 – Water quality- ✓

- 8.7 The rainwater harvesting system enhances water quality by filtering out sediment, debris, and other pollutants through a combination of leaf guards, pre-tank filtration, and first-flush diversion, which prevent coarse solids and organic matter from entering the tank. Fine particles are further removed via

sedimentation and flotation within the storage tank, ensuring that only cleaner, higher-quality water is supplied for reuse.

- 8.8 This source-control filtration improves runoff quality before it enters the wider drainage network, supporting compliance with Standard 4 – Water Quality of the National SuDS Standards and the CIRIA SuDS Manual.

Standard 5 – Amenity- ✓

- 8.9 The proposed development will use compacted shingle, which complements the rural landscape, for all hardstanding areas. This choice of material not only blends visually with the surrounding countryside, maintaining the site's natural character, but also supports sustainable drainage objectives. By selecting compacted shingle, the project aligns with SuDS principles, enhancing both aesthetic and functional aspects of the landscape, and providing a robust solution for everyday access and vehicular movement.

Standard 6 – Biodiversity - ✓

- 8.10 Rainwater harvesting supports biodiversity by reducing stormwater runoff, which in turn lowers erosion, sedimentation, and pollution in nearby watercourses, helping to protect sensitive aquatic habitats. It also promotes healthier vegetation by supplying naturally soft, chemical-free water that supports stronger plant growth and improves habitat quality for pollinators, birds, and other wildlife, while enhancing local ecological resilience.

Standard 7 – Design for construction, operation, maintenance, and structural integrity- ✓

- 8.11 By using surface-level SuDS in the drainage strategy, a system that is safe to construct and is sustainable to use and maintain, and safely integrates into the development, has been specified.
- 8.12 Routine maintenance for the rainwater harvesting system includes inspecting and cleaning key system components such as roofs, gutters, filters, first-flush devices, pumps, overflows, and storage tanks. Gutters and downpipes should be cleared at least twice a year and after major storms, while filters and leaf guards are cleaned periodically. Storage tanks must be checked for sealed inlets, outlets, debris, and proper overflow operation. Regular removal of sediment and maintenance of pumps ensure efficient system performance and reliable water quality over time.

9.0 Proposed Foul Water Drainage

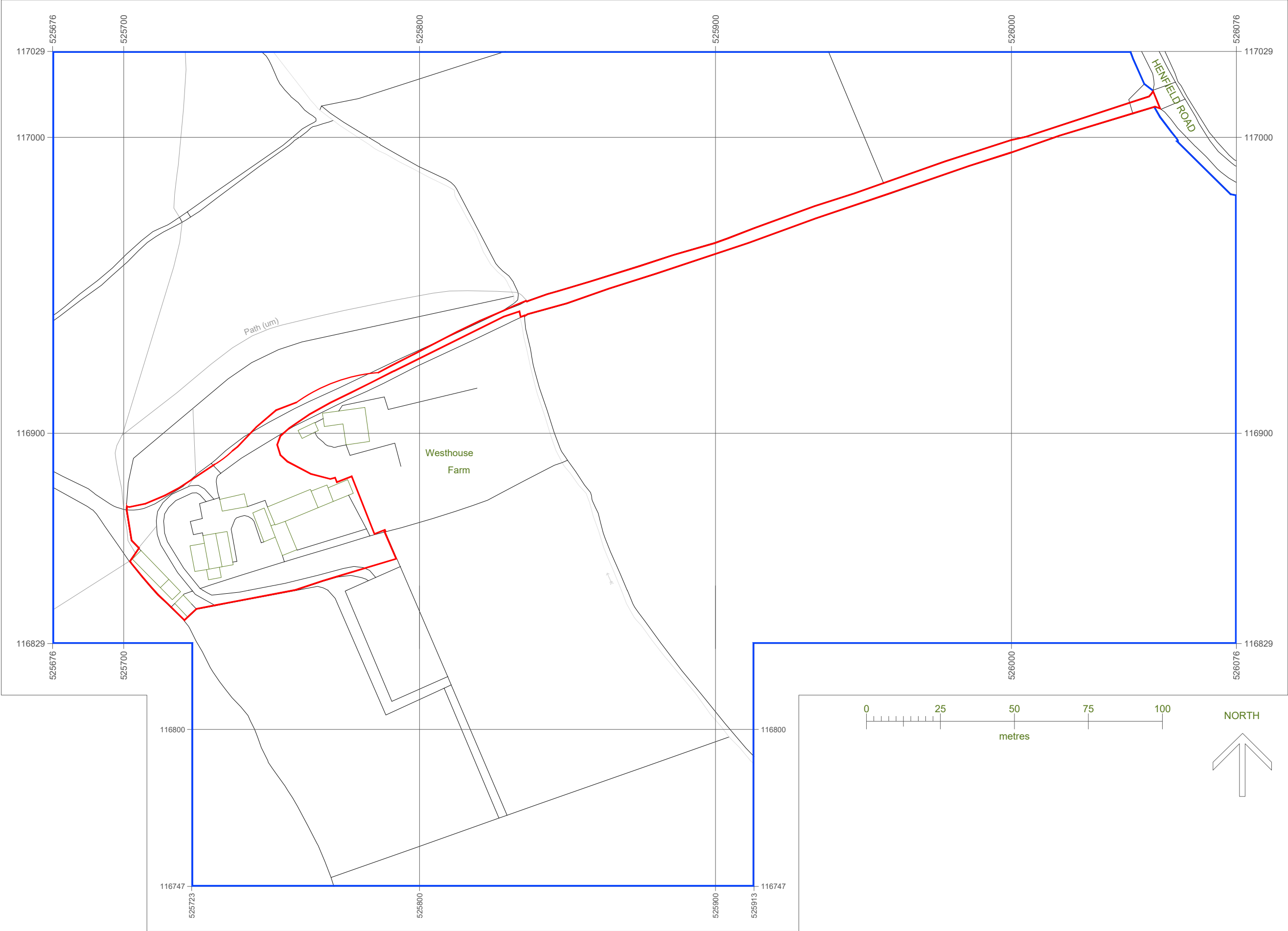
- 9.1 An asset location plan was obtained from Southern Water, and this can be seen in **Appendix F**. This shows that there are no public surface water or foul sewers within the site or in the immediate vicinity of the site boundary.
- 9.2 The proposed development will be served by a private on-site foul water drainage system, as connection to the public foul sewer network is not available or practicable at this location. Foul effluent generated by the development will be collected via a separate foul drainage system and conveyed to a package sewage treatment plant.
- 9.3 The sewage treatment plant will be sized in accordance with British Water – Flows and Loads and will comply with BS EN 12566 for small wastewater treatment systems. Treated effluent will either discharge to a drainage field via infiltration to ground or to a nearby watercourse. The final specification of the sewage treatment plant, discharge location, and method of discharge will be confirmed at the detailed design stage, with full details to be secured by planning condition.
- 9.4 The foul water drainage system will be designed and installed to comply with the Environment Agency's General Binding Rules for Small Sewage Discharges. If necessary, an application for an Environmental Permit will be submitted.
- 9.5 The sewage treatment plant and associated drainage infrastructure will be installed, operated and maintained in accordance with the manufacturer's recommendations. A long-term management and maintenance regime will be implemented for the lifetime of the development, with responsibility resting with the site owner or an appointed management company.
- 9.6 Overall, the proposed foul water drainage strategy is considered acceptable in principle, with the detailed design of the sewage treatment plant, discharge arrangements, and evidence of compliance with the Environment Agency's General Binding Rules to be secured through appropriately worded planning conditions

10.0 Summary and Conclusion

- 10.1 This FRA and Drainage Strategy has been produced by Motion on behalf of their client, Pyxis Land Limited. It supports the planning application at West House Farm, Henfield Road, Albourne, Hassocks, West Sussex.
- 10.2 The EA's Flood Map for Planning shows that the site is located within Flood Zone 1 (less than 1 in 1,000 annual probability of flooding from rivers or the sea).
- 10.3 West House Farm is predominantly at very low risk of surface water flooding, with only a minor area near the site entrance falling into higher risk categories. Flood depths are expected to remain shallow, and the calculated hazard level indicates minimal risk for occupants, including vulnerable individuals, with safe access and egress achievable. The site's flood risk will not increase post-development, provided surface water is managed in accordance with guidance. Therefore, the proposed development is considered appropriate, with overall surface water flood risk classified as low to medium.
- 10.4 The site is not in an area with any indicators of groundwater flooding and not in an area with potential for groundwater flooding to occur. Due to this and being in an area of 'negligible' risk, it can be seen that the development site is at very low groundwater flood risk.
- 10.5 The site is considered to be at very low risk of sewer flooding, is not at risk of reservoir flooding or any other artificial sources, and with no recorded history of past flooding.
- 10.6 As discussed in Section 2 of this report, the desk-based geology information indicates that infiltration will not be feasible at the site due to the clay-based geology (Weald Clay).
- 10.7 The proposed development will reduce the total roof area by 49m², decreasing impermeable surfaces and supporting improved site drainage. Therefore, the drainage strategy proposes that rainwater harvesting will be implemented across all buildings, with surplus water discharged to a nearby drainage ditch at a controlled rate of 1.0 l/s. The proposed development will feature compacted shingle hardstanding, which is highly permeable and will allow drainage at a greenfield rate, therefore not contributing to impermeable area calculations. The proposed surface water drainage strategy is also able to mitigate all pollution hazards created on site using SuDS features and no further pollution mitigation is needed.
- 10.8 The proposed development fully complies with all seven of the new national standards for SuDS, ensuring a robust and sustainable approach to surface water management across the site.
- 10.9 The development will be served by a private on-site foul water drainage system comprising a package sewage treatment plant. Treated effluent will discharge either to a drainage field or a nearby watercourse, with detailed design, compliance with the Environment Agency's General Binding Rules, and long-term maintenance arrangements to be secured by planning condition.
- 10.10 In conclusion, this drainage strategy has shown that the proposed development is at a very low residual risk of flooding, and this makes it appropriate in this location. Similarly, the drainage strategy has shown that the development can manage its surface water sustainably. Therefore, flood risk and surface water management should not form an impediment to the progress of this application.

Appendix A

Site Location Plan



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Location Plan

1:1250 | EXISTING

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Job No. 2412WE_R2

Drawn By MD

Checked By BK

Drawn On 24.11.2025

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Status Existing

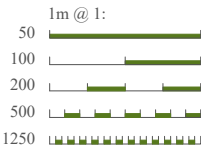
Drawing Location Plan

Submission Planning

Application Area: 4770 m²



Indicative: 0.0°



Appendix B

Proposed Site Plan



Proposed Ancillary
Refer to sheet 209

Proposed Bike &
Bin Store
Refer to sheet 210

Proposed Stables
Refer to sheet 210

Proposed Games Room
Refer to sheet 211

ASHP for Barn

Proposed Barn Conversion
Refer to sheet 203-208

Proposed Boundary

Site

1:500 PROPOSED

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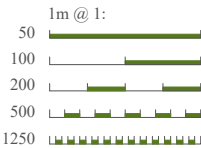
Status Proposed

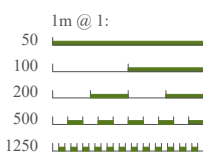
Drawing Site

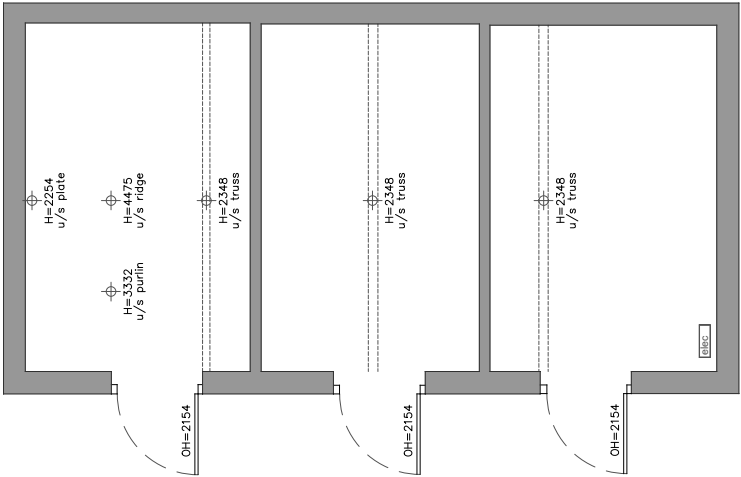
Submission **Planning**



Indicative: 0.0°

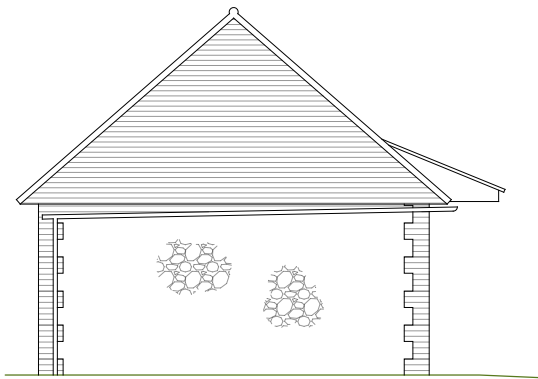






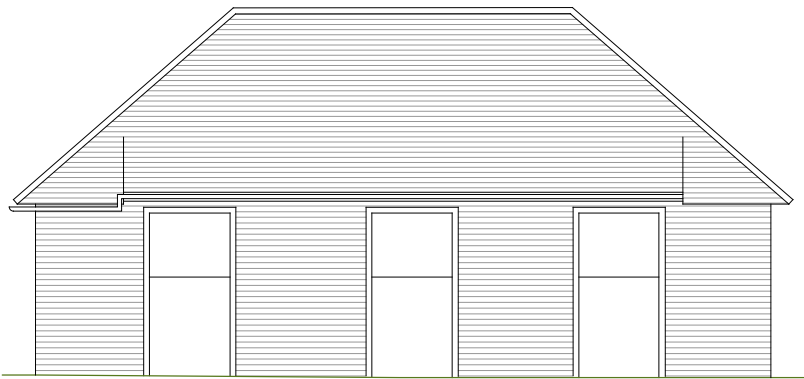
Ground Floor Plan

1:100 EXISTING



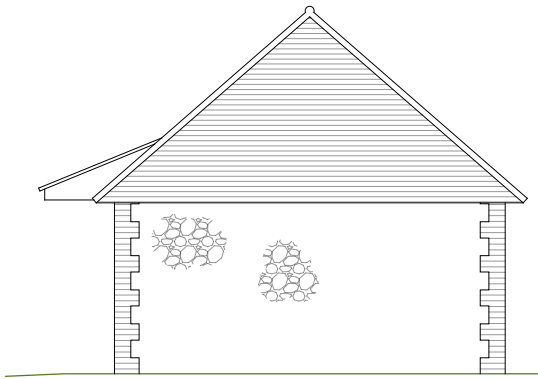
West

1:100 EXISTING



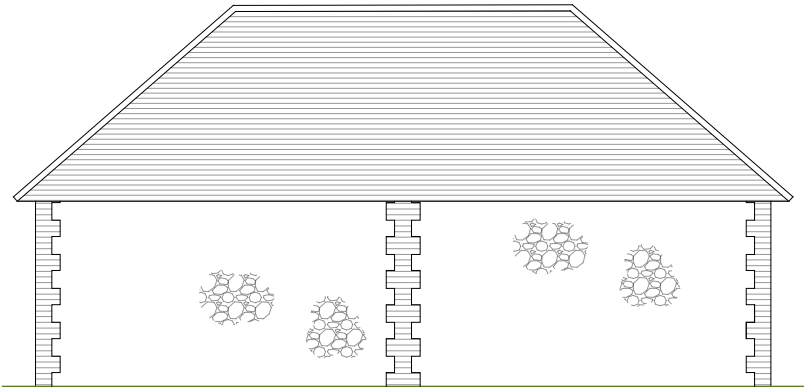
South

1:100 EXISTING



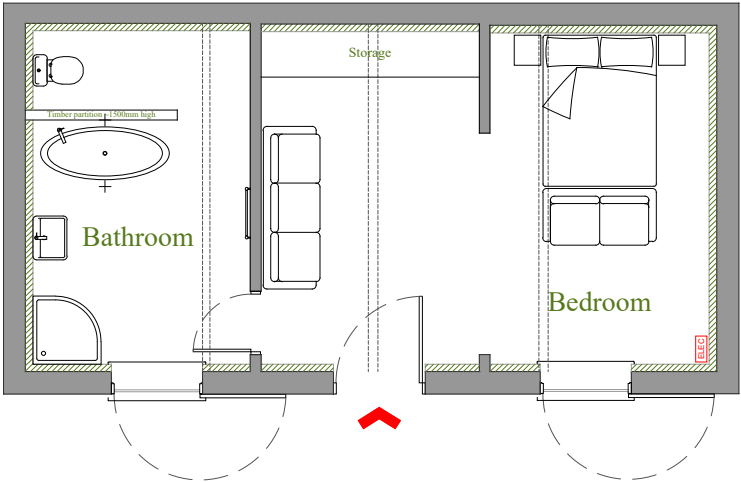
East

1:100 EXISTING



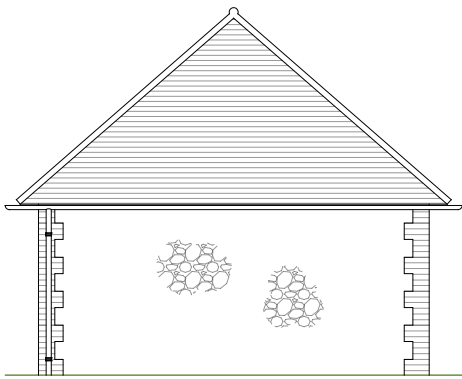
North

1:100 EXISTING



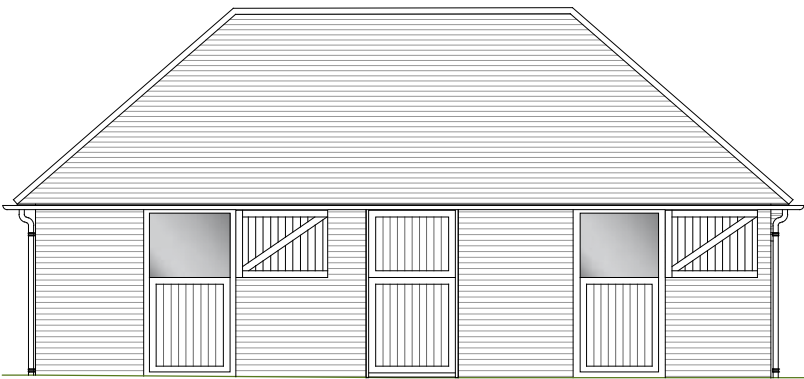
Ground Floor Plan

1:100 PROPOSED



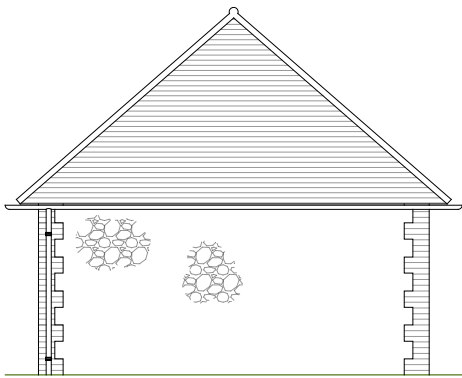
West

1:100 PROPOSED



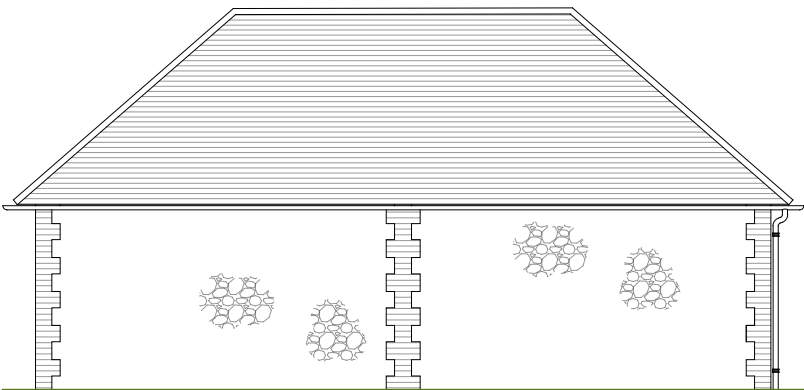
South

1:100 PROPOSED



East

1:100 PROPOSED



North

1:100 PROPOSED

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tel: 01243 201 102
email: enquiries@manorwood.co.uk
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Address

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Albourne, Hassocks, West
Sussex, BN6 9DE

Drawing No. 2412WE_209

Scale @ A3 1:100

Job No. 2412WE

Drawn By MD

Checked By BK

Drawn On 20.10.2025

Issued On 30.10.2025

Status Existing + Proposed

Drawing Office

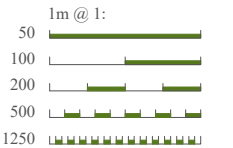
Submission Planning

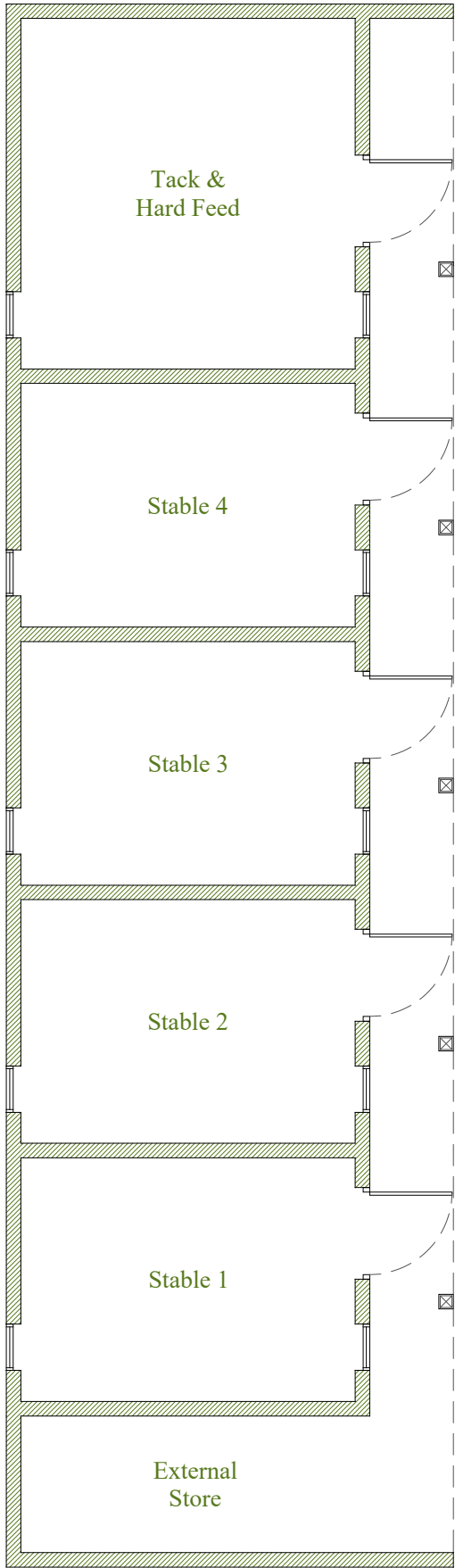
Revision 000

.

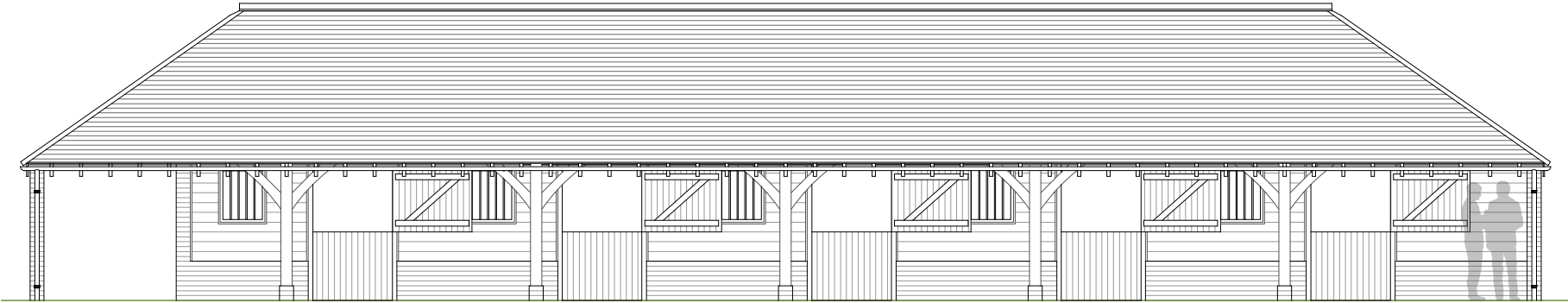


Indicative: 345.0°

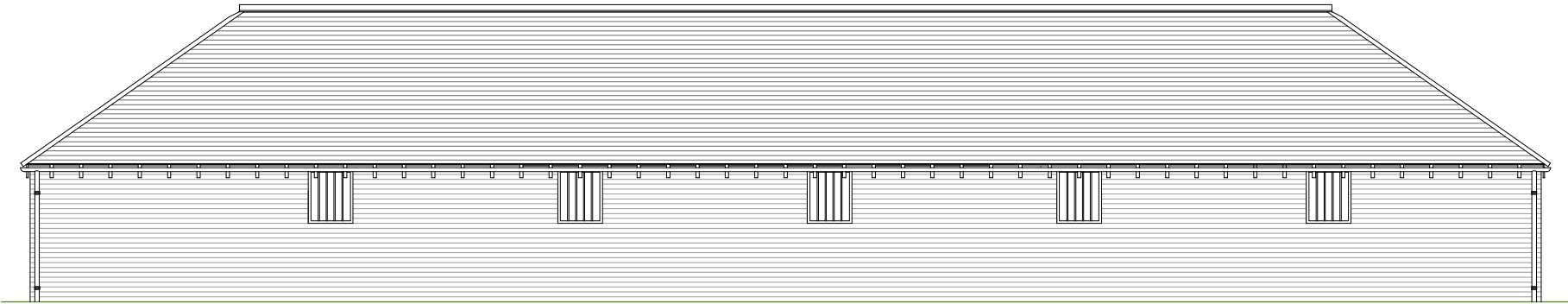




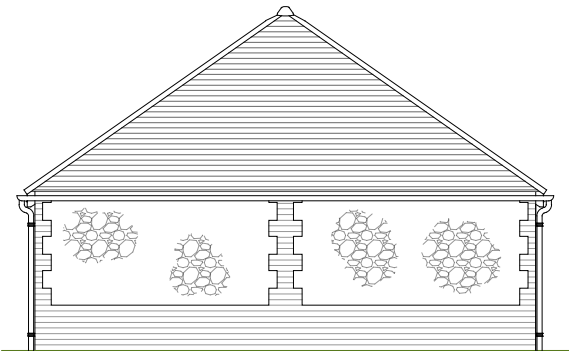
Ground Floor Plan
1:100 | PROPOSED



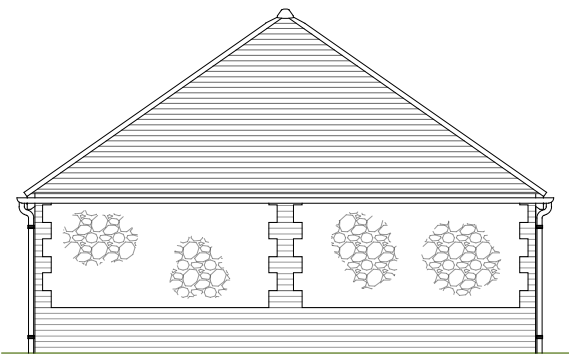
East
1:100 | PROPOSED



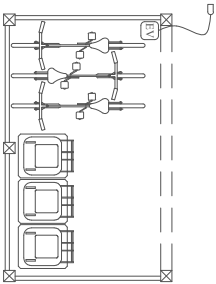
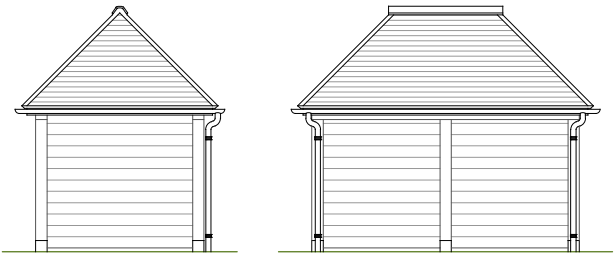
East
1:100 | PROPOSED



North
1:100 | PROPOSED



South
1:100 | PROPOSED



Bike & Bin Store
1:100 | PROPOSED

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Sussex, BN6 9DE

Drawing No. 2412WE_210

Scale @ A3 1:100

Job No. 2412WE

Drawn By MD

Checked By BK

Drawn On 20.10.2025

Issued On 30.10.2025

Status Proposed

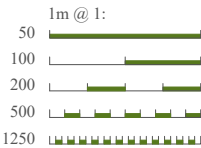
Drawing Stables + B&BS

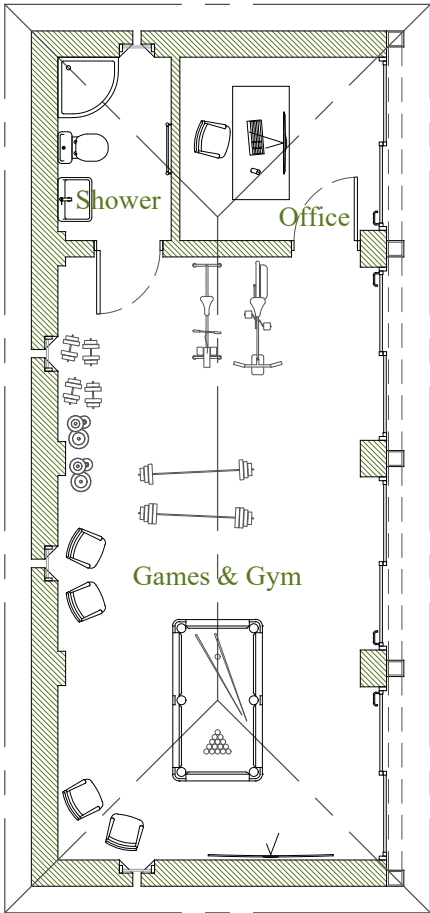
Submission Planning

Revision 000

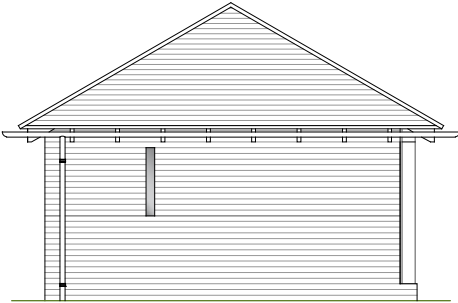


Indicative: 316.0°

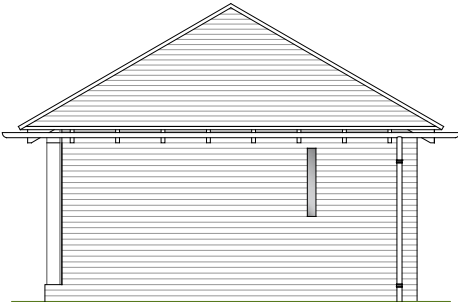




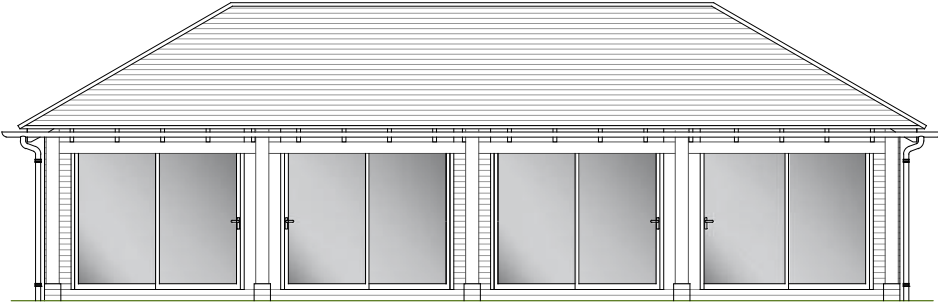
Ground Floor Plan
1:100 PROPOSED



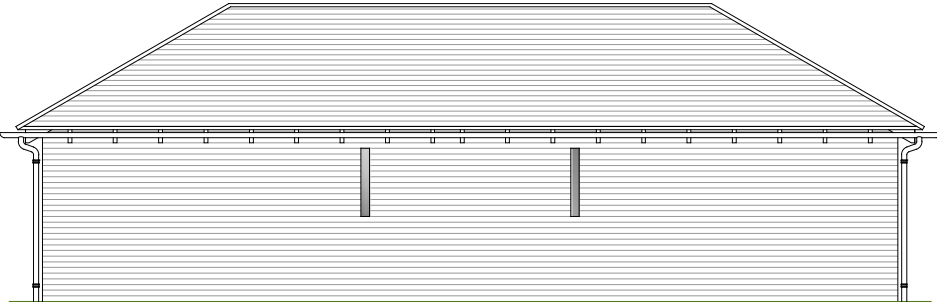
South
1:100 PROPOSED



North
1:100 PROPOSED



East
1:100 PROPOSED



West
1:100 PROPOSED

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Sussex, BN6 9DE

Drawing No. 2412WE_211

Scale @ A3 1:100

Job No. 2412WE

Drawn By MD

Checked By BK

Drawn On 20.10.2025

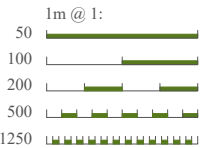
Issued On 30.10.2025

Status Proposed

Drawing Games & Carport

Submission Planning

Revision 001



Appendix C

EA's Flood Map for Planning

Flood map for planning

Your reference
Unspecified

Location (easting/northing)
525788/116860

Created
4 March 2026 16:09

Your selected location is in flood zone 1, an area with a low probability of flooding.

You will need to do a flood risk assessment if your site is **any of the following**:

- bigger than 1 hectare (ha)
- in an area with critical drainage problems as notified by the Environment Agency
- identified as being at increased flood risk in future by the local authority's strategic flood risk assessment
- at risk from other sources of flooding (such as surface water or reservoirs) and its development would increase the vulnerability of its use (such as constructing an office on an undeveloped site or converting a shop to a dwelling)

Notes

The flood map for planning shows river and sea flooding data only. It doesn't include other sources of flooding. It is for use in development planning and flood risk assessments.

This information relates to the selected location and is not specific to any property within it. The map is updated regularly and is correct at the time of printing.

Flood risk data is covered by the Open Government Licence which sets out the terms and conditions for using government data. <https://www.nationalarchives.gov.uk/doc/open-government-licence/version/3>

Use of the address and mapping data is subject to Ordnance Survey public viewing terms under Crown copyright and database rights 2026 AC0000807064. <https://flood-map-for-planning.service.gov.uk/os-terms>



Flood map for planning

Your reference

Unspecified

Location (easting/northing)

525788/116860

Scale

1:2,500

Created

4 Mar 2026 16:09

-  Selected area
-  Flood zone 3
-  Flood zone 2
-  Flood zone 1
-  Flood defence
-  Main river
-  Water storage area

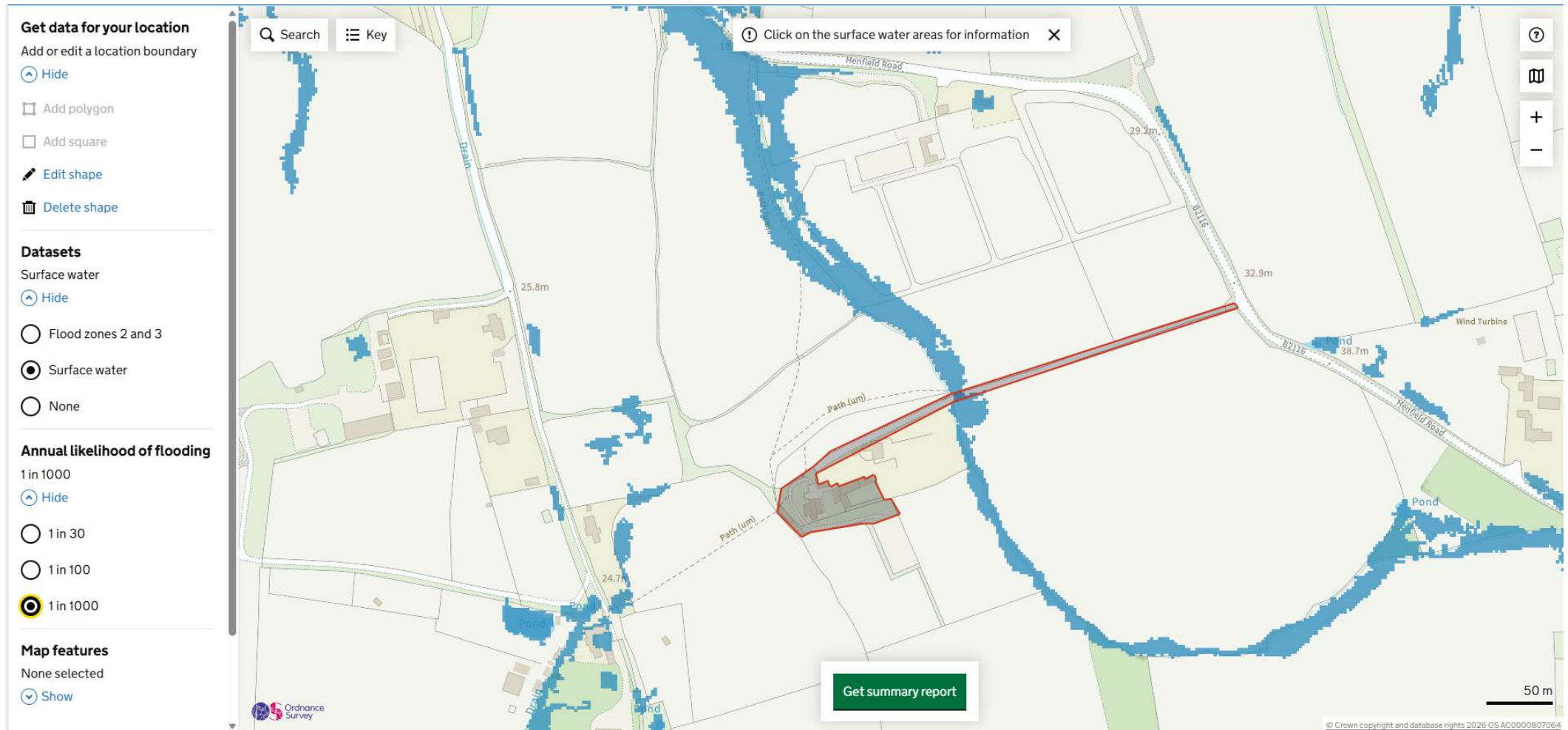


0 20 40 60m

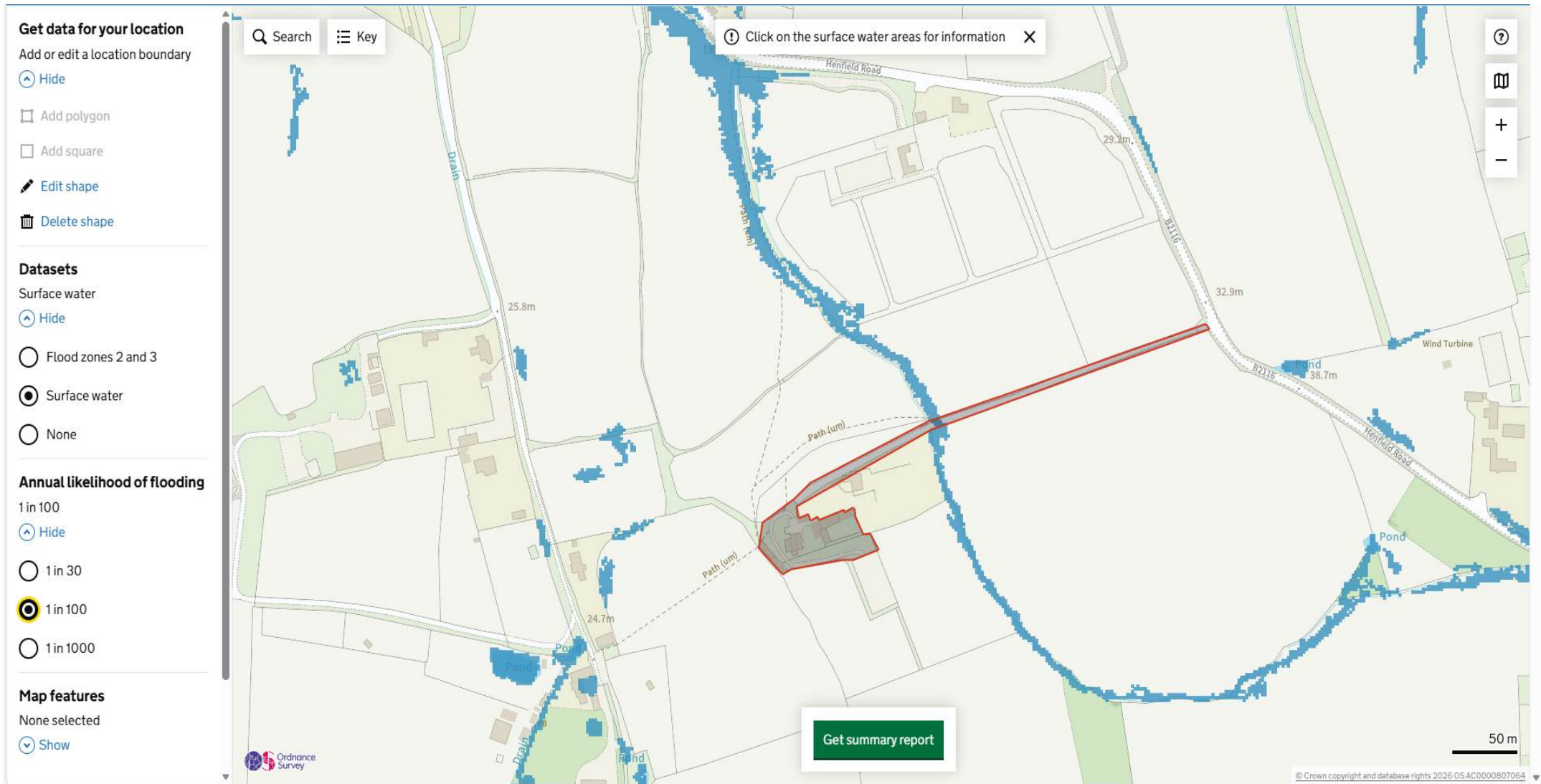
Appendix D

EA's RoFSW Mapping

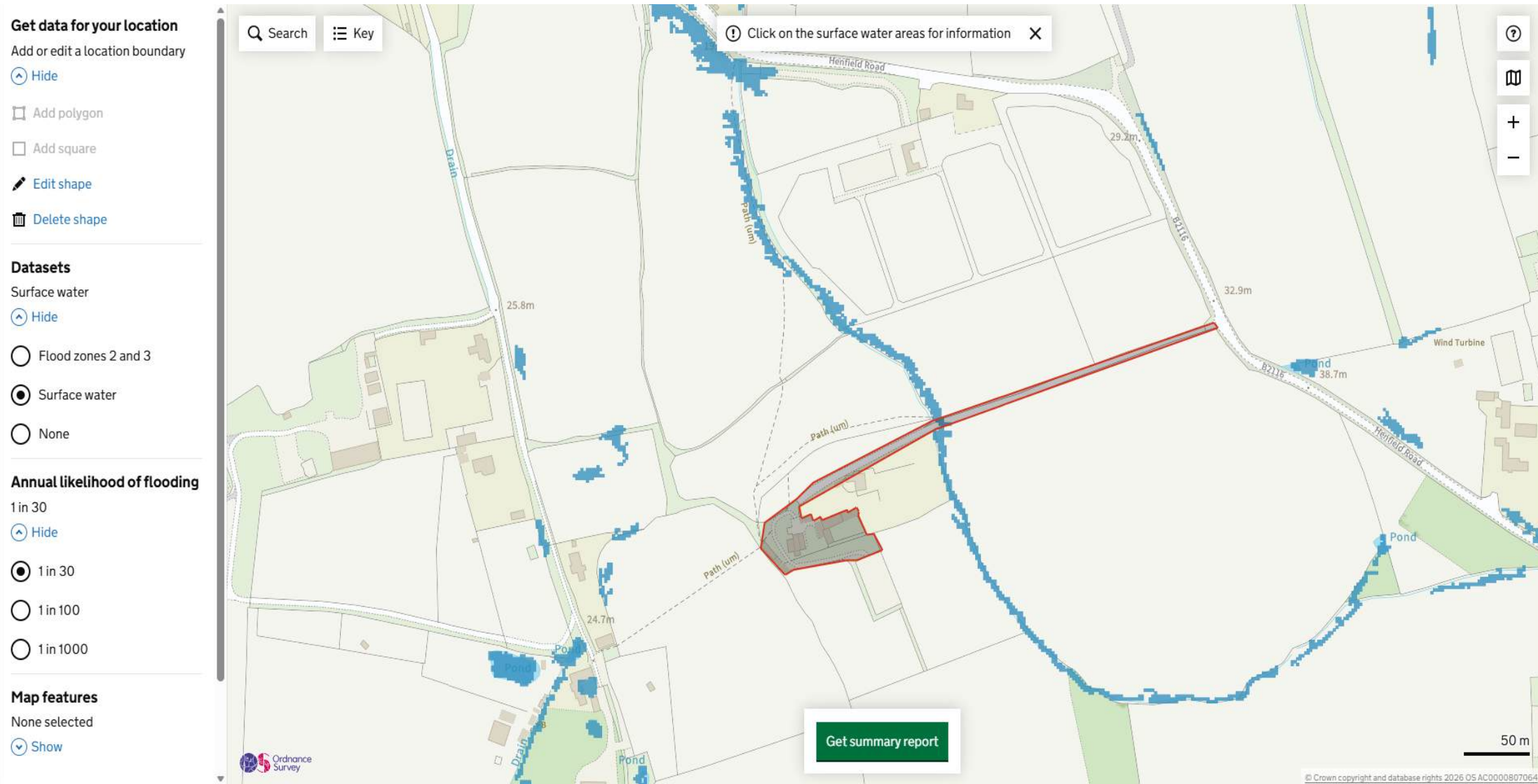
1 in 1000 Surface Water Flood Risk



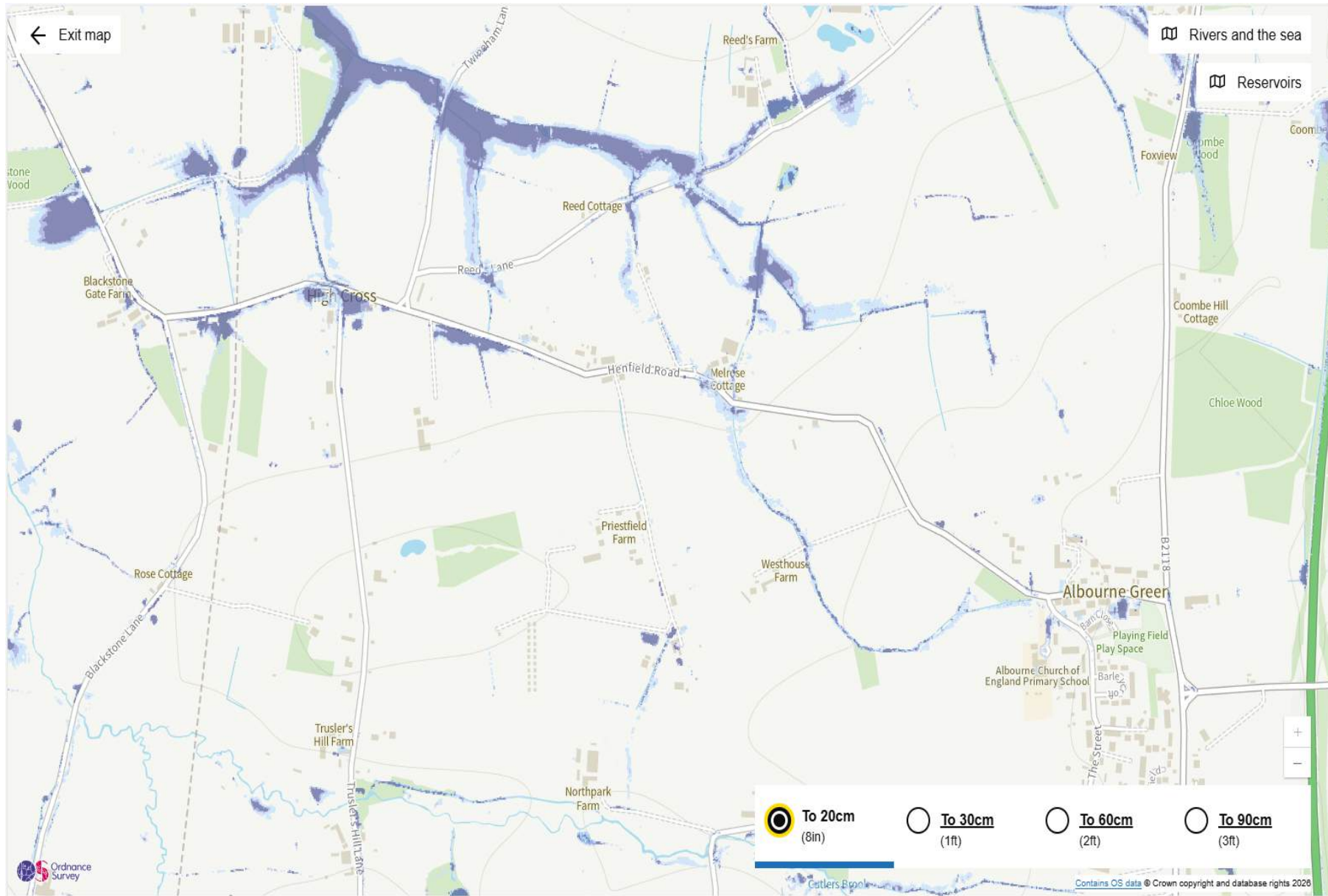
1 in 100 Surface Water Flood Risk



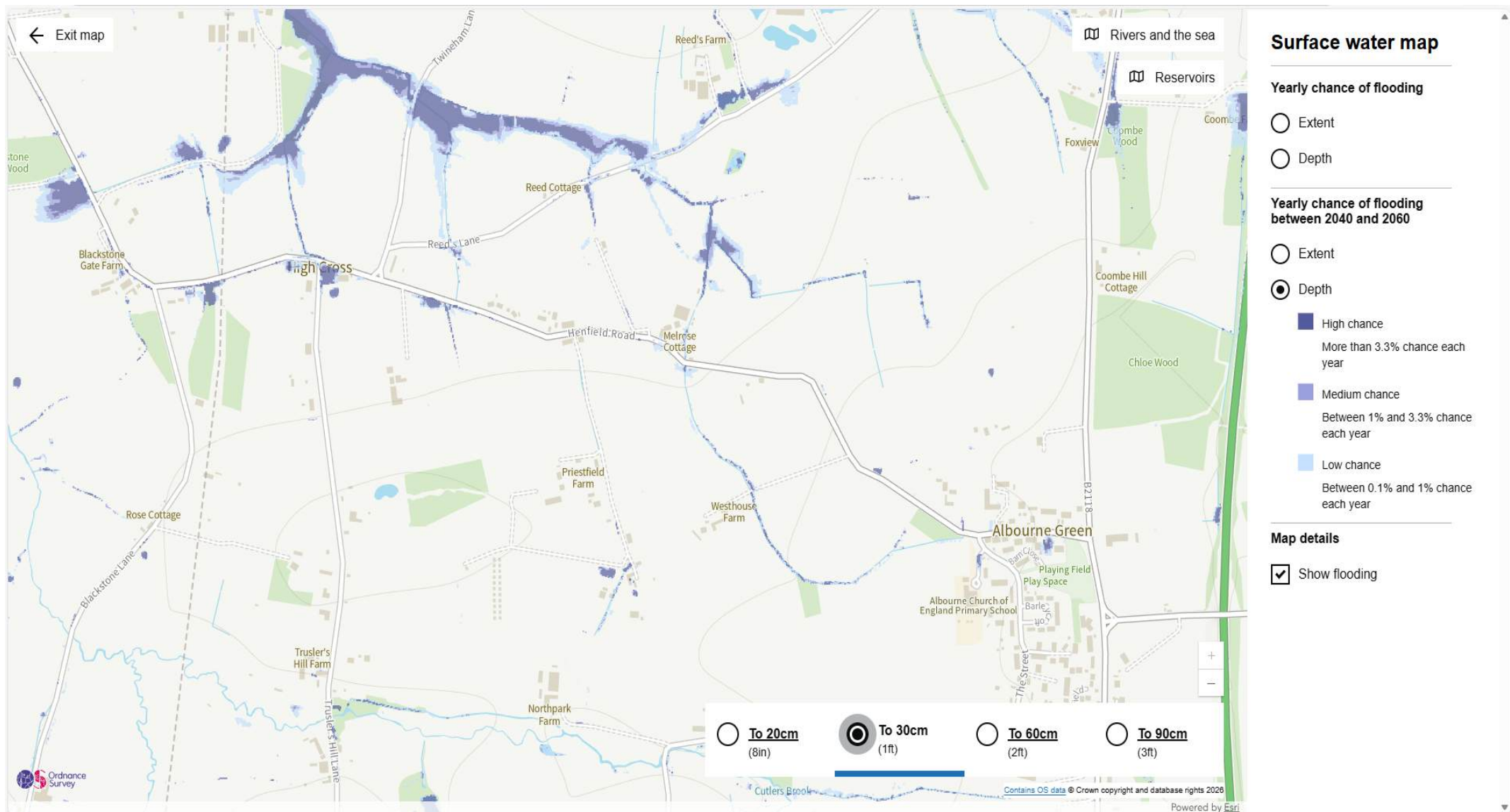
1 in 30 Surface Water Flood Risk



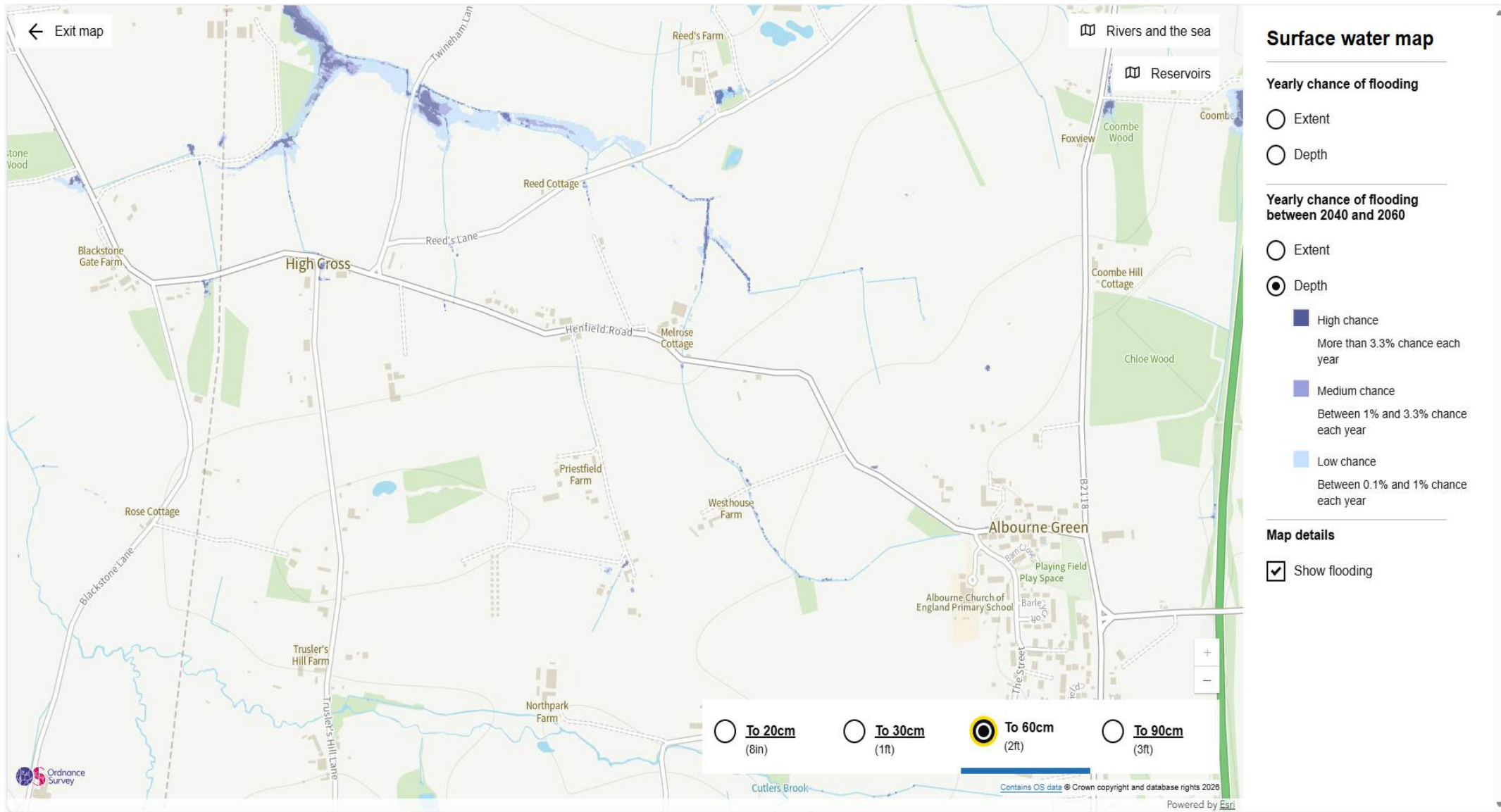
SW Flooding 20cm Depth



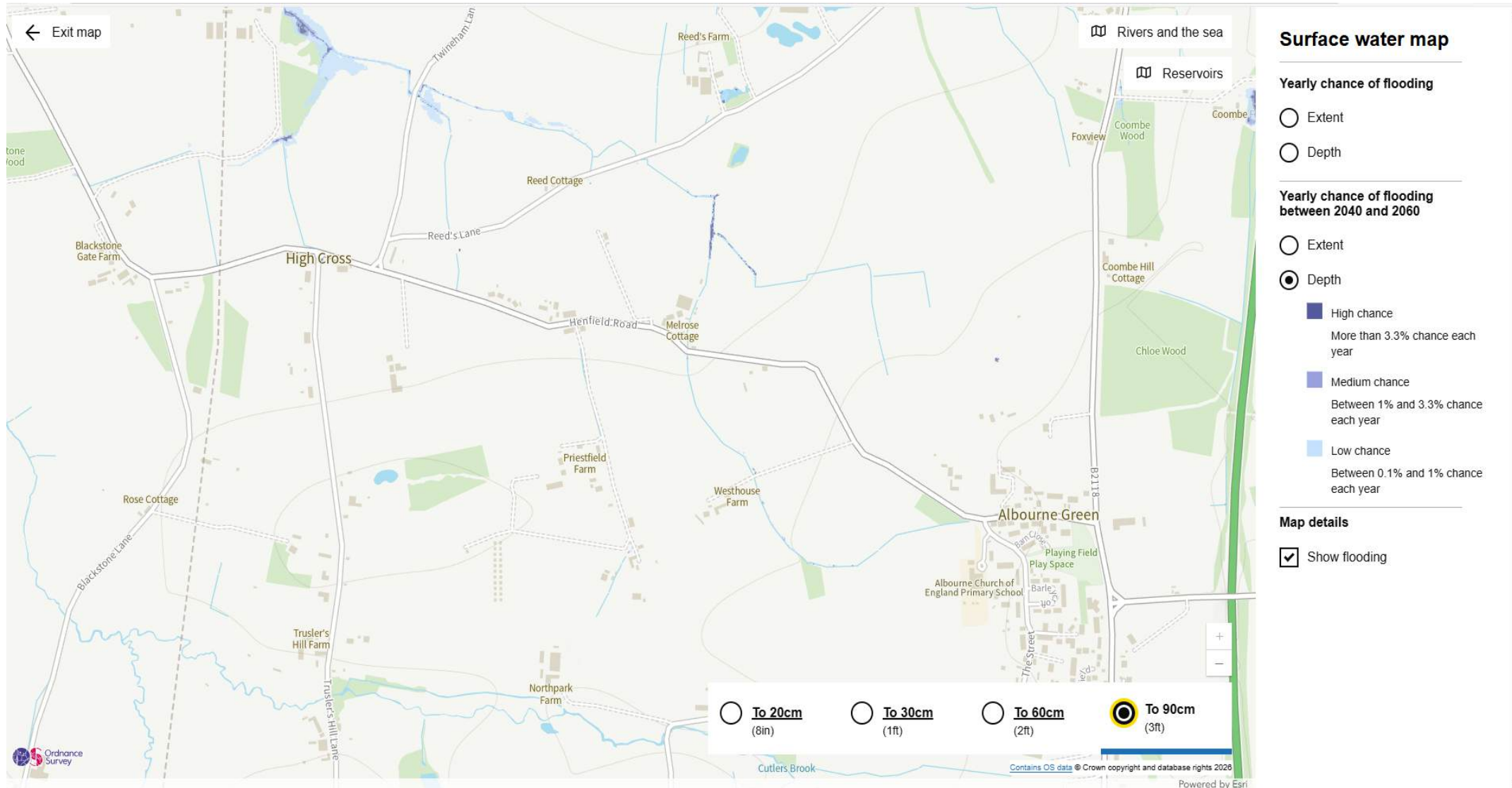
SW Flooding 30 cm Depth



SW Flooding 60cm Depth



SW Flooding 90cm Depth



Appendix E

Topographical Survey

NOTES
Survey accurate at time of site attendance. Do not scale from printed drawings except for planning purposes.

Grid is based on ordnance survey national grid fixed by GPS satellite active network.
Levels are related to the ordnance survey GPS active Network and transformed using the OSGM15 & OSTN15 model.

Drainage pipe sizes (where shown) have been gauged from the surface for safety reasons and should be regarded as approximate only.

Tree species (where shown) should be treated with caution and expert identification is advised.

Although this is a digital survey the accuracy and amount of detail shown is only commensurate with the graphical scale of mapping as specified. Care should be exercised when working to larger scales.

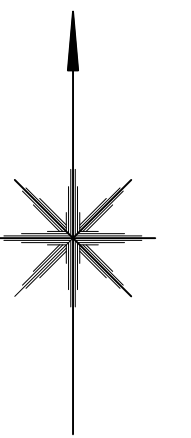
Visible features in the vicinity of the boundaries as shown above, may not represent the extent of legally conveyed ownership.

Whilst every effort has been made to achieve accuracy on this plan, CRUCIAL clearance dimensions, levels and invert levels should be checked prior to design and construction.

Areas of dense undergrowth cannot be surveyed in detail; these areas will be shown in outline only and marked as 'dense undergrowth' on the plan.

Kerb levels have been taken on the top of the channel.

0 2 4 6 8 10
SCALE 1:200



partial site plan 1:200

medlams
surveys limited

www.medlams-surveys.co.uk
info@medlams-surveys.co.uk
07717 205 388

project: Westhouse Farm, Sayers Common, BN6 9DE

client: Manorwood job ref: S3051

title: Topographic survey scale 1:50 & 1:100 @A1

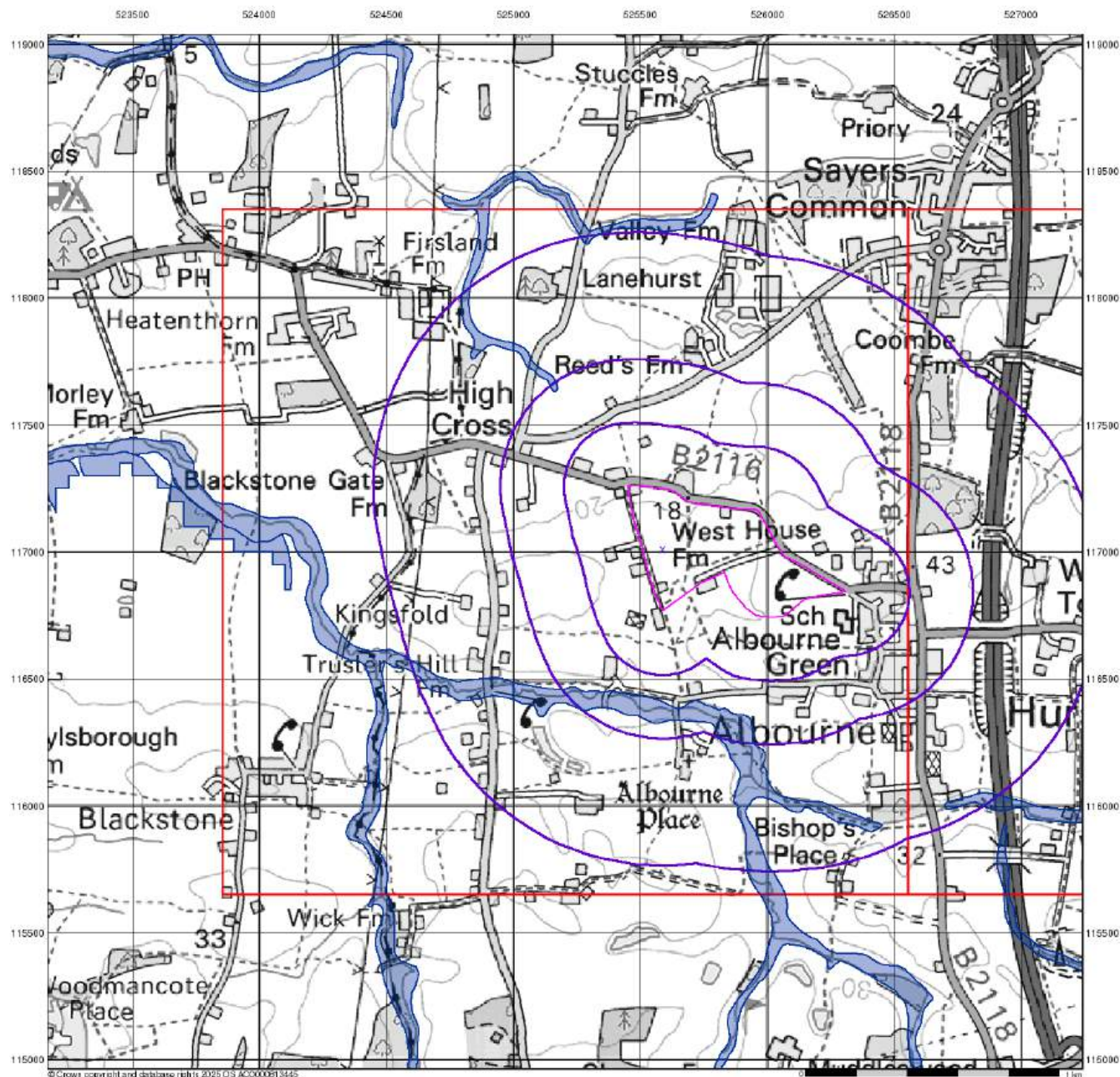
date February '25 dwg no: EX01 rev:

Appendix F

Southern Water Asset Records

Appendix G

Envirocheck FSR: Groundwater



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motion BGS Flood Data (1:50,000)

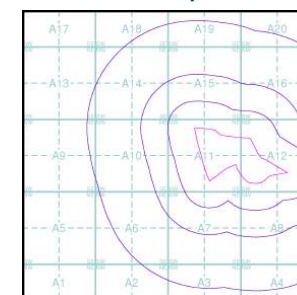
General

-  Specified Site
-  Specified Buffer(s)
-  Bearing Reference Point
-  Slice
-  Map ID

BGS Geological Indicators of Flooding

-  Coastal
-  Inland
-  Bodies of Water

BGS Flood Data Map - Slice A



Order Details

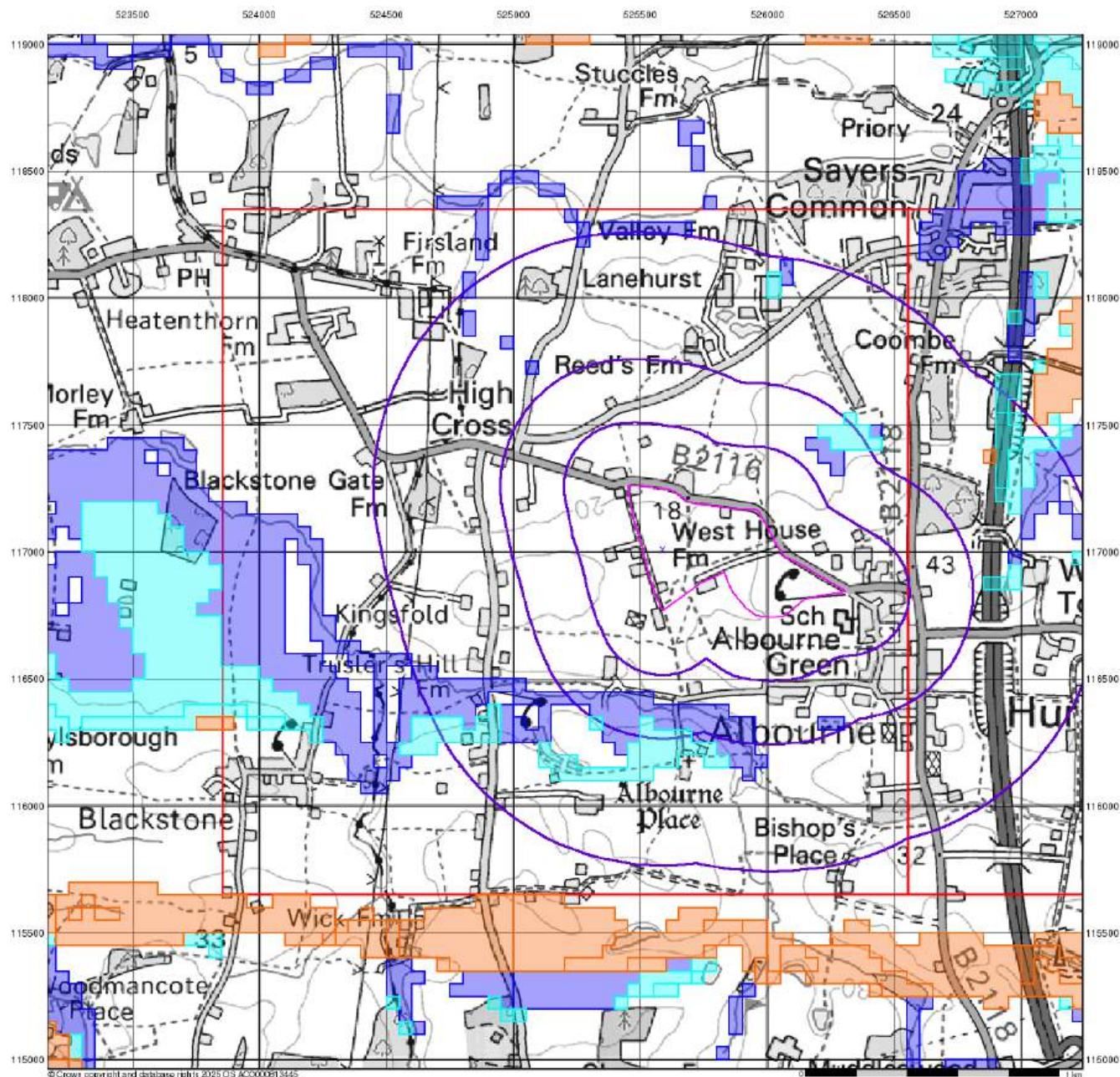
Order Number: 389812734 1 1
 Customer Ref: 1Pysay2509069
 National Grid Reference: 525580, 117010
 Slice: A
 Site Area (Ha): 22.96
 Search Buffer (m): 1000

Site Details

Amberley, Henfield Road, Albourne, HASSOCKS, BN6 9DS

Landmark
 INFORMATION GROUP

Tel: 0844 844 9952
 Fax: 0844 844 9951
 Web: www.envirocheck.co.uk



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motion BGS Flood Data (1:50,000)

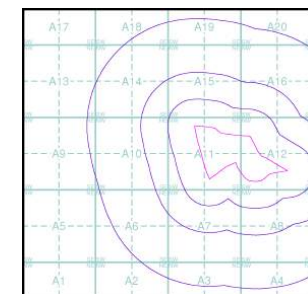
General

-  Specified Site
-  Specified Buffer(s)
-  Bearing Reference Point
-  Slice
-  Map ID

BGS Groundwater Flooding Susceptibility

-  Potential for Groundwater Flooding to Occur at Surface
-  Potential for Groundwater Flooding of Property Situated Below Ground Level
-  Limited Potential for Groundwater Flooding to Occur

BGS Flood Data Map - Slice A



Order Details

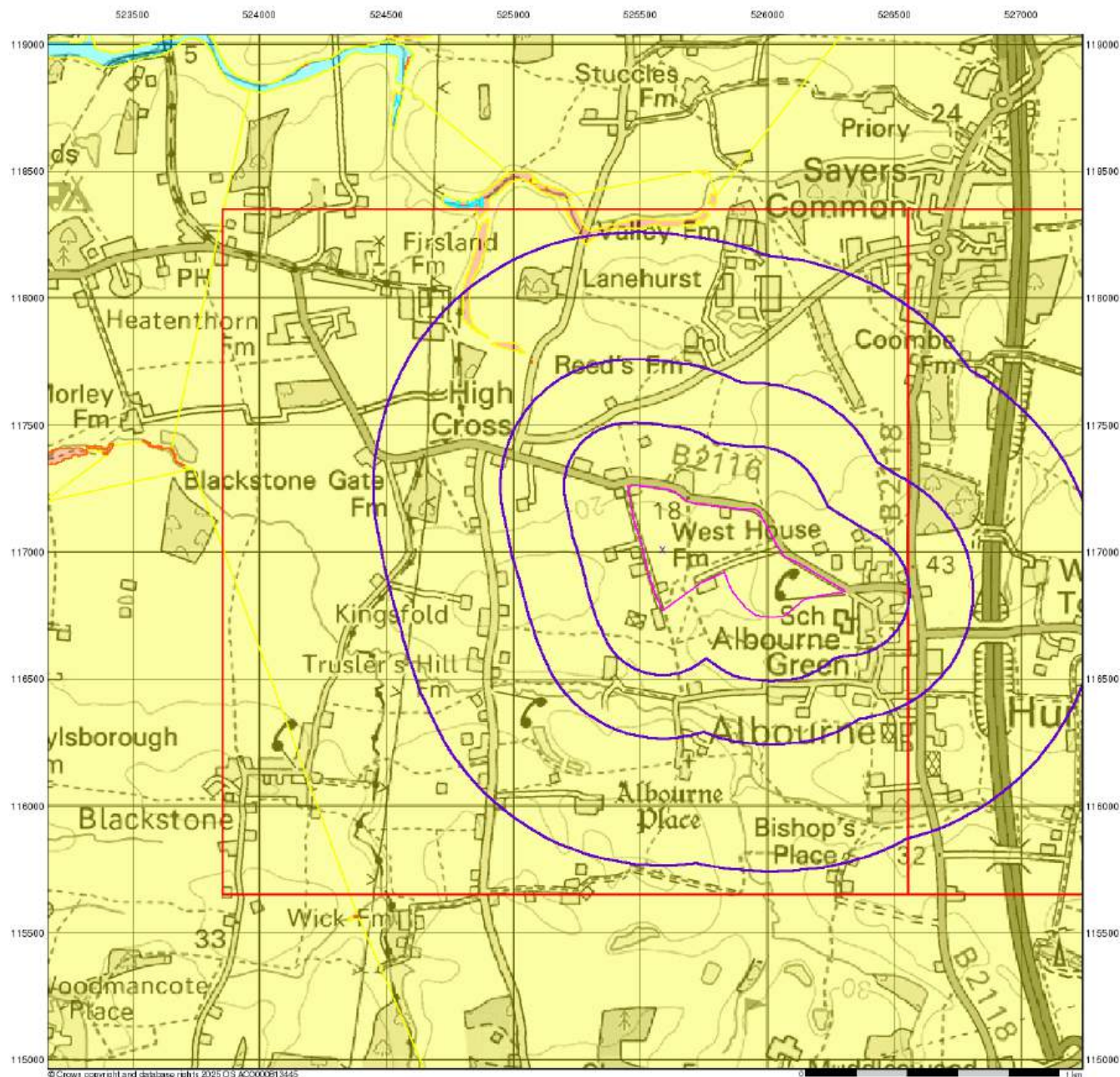
Order Number: 389812734 1 1
 Customer Ref: 1Pysay2509069
 National Grid Reference: 525580, 117010
 Slice: A
 Site Area (Ha): 22.96
 Search Buffer (m): 1000

Site Details

Amberley, Henfield Road, Albourne, HASSOCKS, BN6 9DS

Landmark
 INFORMATION GROUP

Tel: 0844 844 9952
 Fax: 0844 844 9951
 Web: www.envirocheck.co.uk



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GeoSmart Information Groundwater Flood Map (1:50,000)

General

Specified Site Specified Buffer(s) X Bearing Reference Point

Slice

GeoSmart Information Groundwater Flooding Risk

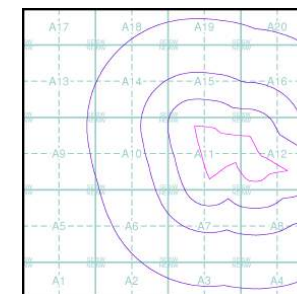
High Risk

Moderate Risk

Low Risk

Negligible Risk

GeoSmart Information Groundwater Flood Map - Slice A



Order Details

Order Number: 389812734 1_1
Customer Ref: 1Pysay2509069
National Grid Reference: 525580, 117010
Slice: A
Site Area (Ha): 22.96
Search Buffer (m): 1000

Site Details

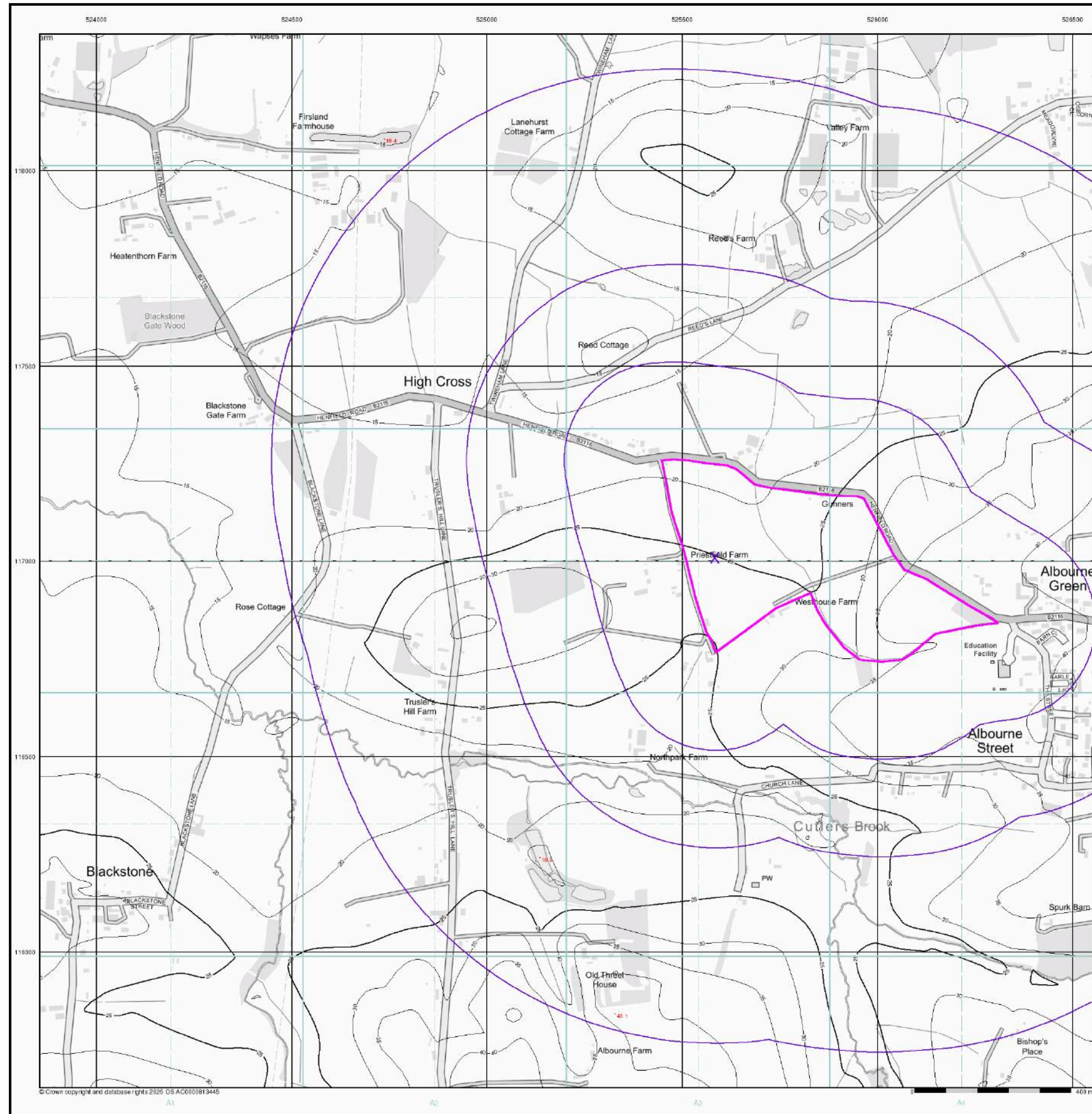
Amberley, Henfield Road, Albourne, HASSOCKS, BN6 9DS

Landmark
INFORMATION GROUP

Tel: 0844 844 9952
Fax: 0844 844 9951
Web: www.envirocheck.co.uk

Appendix H

Envirocheck FSR: Historic



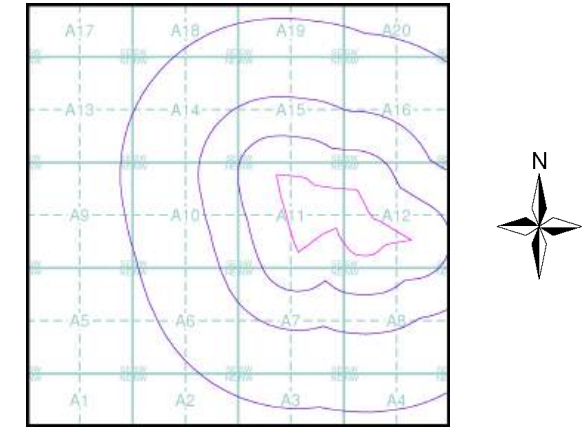
EA/NRW Historic Flood Map (1:10,000)

- General**
 - Specified Site
 - Specified Buffer(s)
 - Bearing Reference Point
 - Map ID
- Historic Flood Events Data**

Channel Capacity Exceeded (no raised defences)	Obstruction/Blockage - Culvert
Channel Capacity Exceeded /Surface Water	Obstruction/Blockage - Debris Screen
Groundwater/High Water Table	Operational Failure/ Breach of Defence
Local Drainage/Surface Water	Other
Mechanical Failure	Overtopping of Defences
Obstruction/Blockage - Bridge	Surface Water
Obstruction/Blockage - Channel	Unknown
Historical Flood Liabilities	
- Contours (height in metres)**

Standard Contour	105	MLW	Mean Low Water
Master Contour	100	MHW	Mean High Water
Spot Height	167.8		

EA/NRW Historic Flood Map - Slice A



Order Details

Order Number:	389812734_1_1
Customer Ref:	1Pysay2509069
National Grid Reference:	525580, 117010
Slice:	A
Site Area (Ha):	22.96
Search Buffer (m):	1000

Site Details

Amberley, Henfield Road, Albourne, HASSOCKS, BN6 9DS

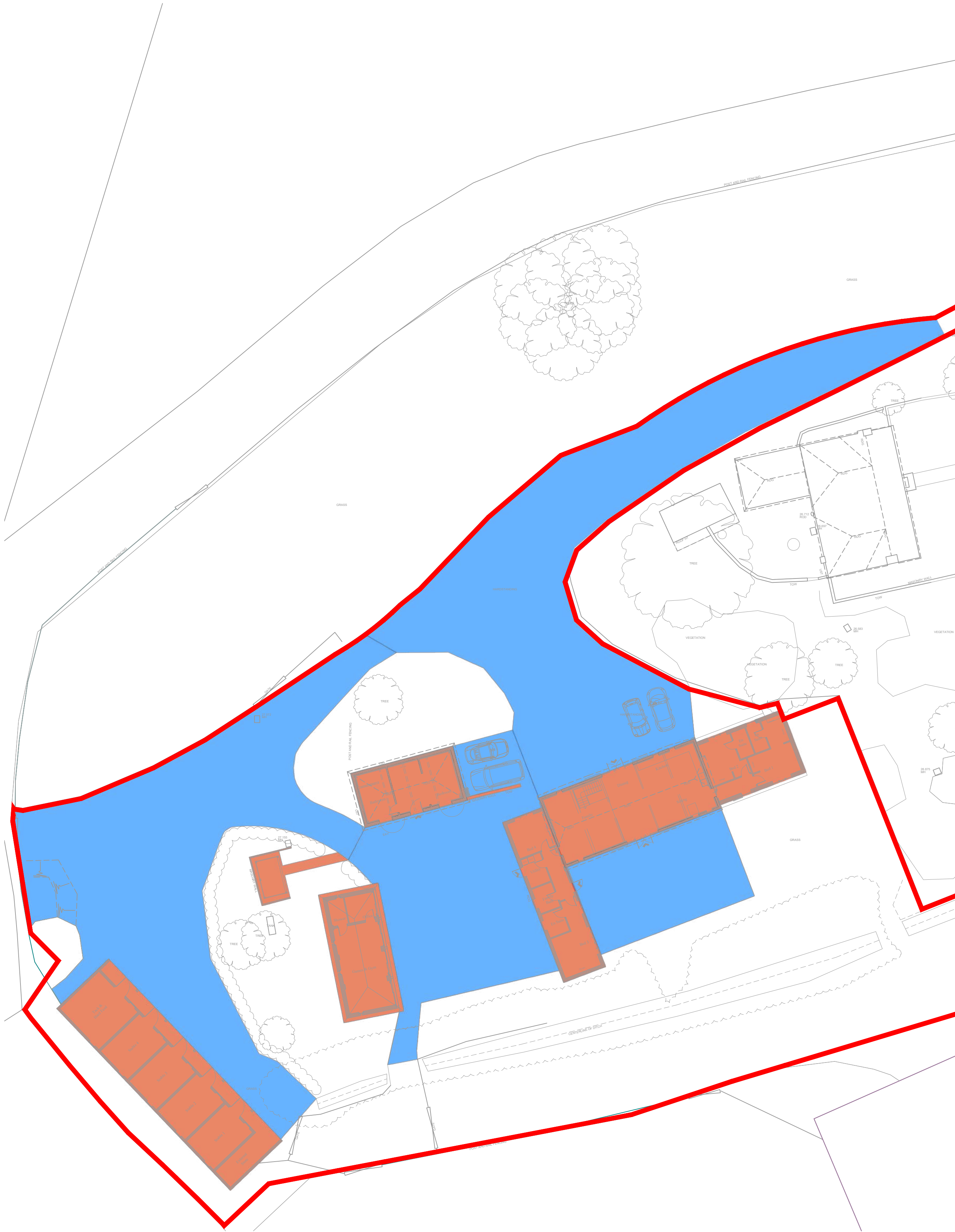
Appendix I

Existing and Proposed Impermeable areas drawings

Existing



Proposed



Notes

1. All levels and dimensions are to be checked on site before any work commences. All dimensions are in metres unless stated otherwise.
2. This drawing has been based upon survey information supplied by other companies and Motion cannot guarantee the accuracy of the data provided.
3. Any discrepancies should be reported to the architect and/or engineer immediately, so that clarification can be sought prior to the commencement of works.
4. This drawing should be read in conjunction with all other relevant architect and engineering details, drawings and specification.

Legend

- Site Boundary
- Building
- Hardstanding (Impermeable)
- Hardstanding (Permeable)

Site Areas

	Existing (sqm)	Proposed (sqm)	Difference (sqm)
Building	570m ²	521m ²	-49m ²
Hardstanding	615m ²	1,496m ²	881m ²
Total	1,185m ²	2,017m ²	832m ²

P01	First Issue	AM	LJ	JM	19/03/2026
Rev.	Description	Drm	Chk	App	Date

Drawing Status:

FOR PLANNING
NOT FOR CONSTRUCTION

motion

Guildford - Reading - London
www.motion.co.uk

Client:
Pyxis Land Limited

Project:
West House Farm, Henfield Road, Albourne

Title:
Permeable and Impermeable Areas

Scale: 1:250 (@ A1)

Drawing:
2509069-0900

Revision:
P01

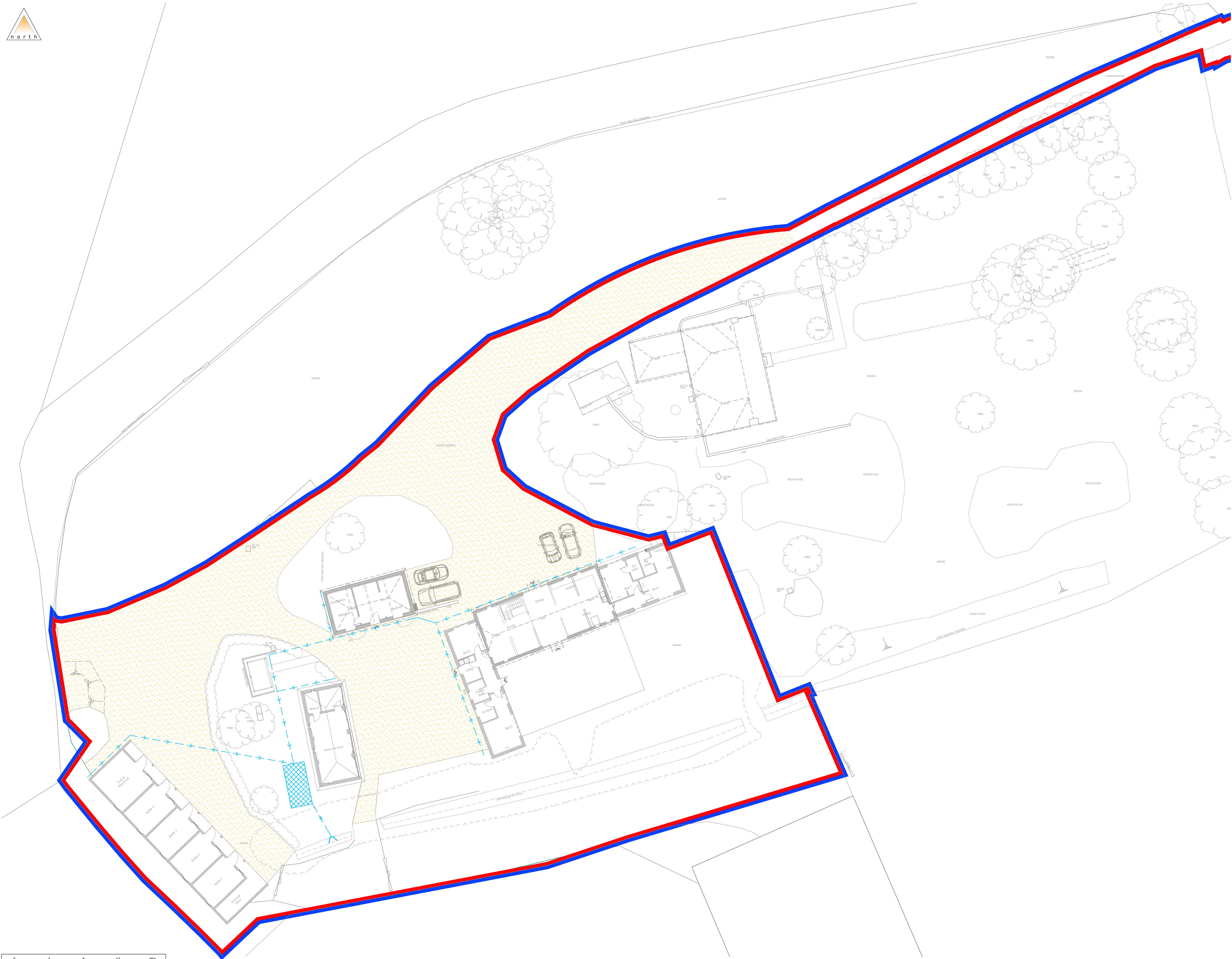
Appendix J

FEH QMED Calculation

Motion		Page 1																		
84 North Street																				
Guildford																				
Surrey GU1 4AU																				
Date 12/03/2026 11:38	Designed by commonuser																			
File	Checked by																			
Innovyze	Source Control 2020.1.3																			
<u>FEH Mean Annual Flood</u> Input <table><tr><td>QMED Method</td><td>2008</td><td>SAAR (mm)</td><td>828</td><td>BFIHOST</td><td>0.314</td></tr><tr><td>Site Location</td><td>GB 525400 117400 TQ 25400 17400</td><td>URBEXT (1990)</td><td>0.0228</td><td>FARL</td><td>1.000</td></tr><tr><td>Area (ha)</td><td></td><td>1.000</td><td>SPRHOST</td><td>45.200</td><td></td></tr></table> Results QMED Rural (l/s) 12.7 QMED Urban (l/s) 13.0			QMED Method	2008	SAAR (mm)	828	BFIHOST	0.314	Site Location	GB 525400 117400 TQ 25400 17400	URBEXT (1990)	0.0228	FARL	1.000	Area (ha)		1.000	SPRHOST	45.200	
QMED Method	2008	SAAR (mm)	828	BFIHOST	0.314															
Site Location	GB 525400 117400 TQ 25400 17400	URBEXT (1990)	0.0228	FARL	1.000															
Area (ha)		1.000	SPRHOST	45.200																
©1982-2020 Innovyze																				

Appendix K

Proposed Drainage Strategy Layout



- Notes**
1. All levels and dimensions are to be checked on site before any work commences. All dimensions are in metres unless stated otherwise.
 2. Any discrepancies shall be reported to the engineer immediately, so that clarification can be sought prior to the commencement of works.
 3. This drawing shall be read in conjunction with all other relevant engineering details, drawings and specification.
 4. The contractor is to keep a record of any variations made on site, including the relocation of sewers or drains, for their "as built" drawings to be prepared upon project completion.
 5. The exact location of all private rainwater pipes are to be confirmed with the architect details prior to works commencing.
 6. All works to the private drainage system to be in accordance with the Building Regulations Approved Document Part "H" 2015 edition.
 7. 350mm min cover to the pipe crown to be provided for private pipes laid in soft/paved areas. 900mm min cover to be provided for private pipes laid beneath roads/driveways unless not practicable. Where unachievable, shallow private drains may require protection using concrete surround or paving slabs bridging the trench, subject to the NHBC inspector's requirements.
 8. All pipes shall be laid soffit to soffit with outgoing pipes unless otherwise stated.
 9. Manholes situated within areas accessible to motor vehicles are to be fitted with suitable strength covers and frames. Please refer to the manhole schedule for guidance on this.
 10. Adjacent areas of hardstanding will comply with building regulations and divert water away from the proposed dwellings.
 11. The proposed dwellings will have FFL(s) a minimum of 150mm above adjacent external ground levels.
 12. The top surface of the pervious pavement should finish at least 150mm below any adjoining DPC level. Advice should always be sought from the manufacturer.

Legend

- Red Line Boundary
- Proposed Unmade Self-drain Gravel Driveway
- Proposed Rainwater Harvesting Tank
- Proposed Rainwater Supply
- Proposed Overflow Pipe
- Proposed Overflow Headwall

P01	First Issue	LJ	JM	JM	19/03/2026
Rev.	Description	Drm	Chk	App	Date

Drawing Status: **DRAFT**
NOT FOR CONSTRUCTION



Client: **Pyxis Land Limited**

Project: **West House Farm, Henfield Road, Albourne**

Title: **Surface Water Drainage Strategy**

Scale: 1:200 (@ A1)	Revision:
Drawing: 2509069-0501	P01

Appendix L

Rainwater Harvesting Calculation

Rainwater Harvesting System (BS EN 16941-1:2024 - Intermediate

AAR	858.7	Average Annual Rainfall
e	0.8	Yield Coefficient
h	0.9	Hydraulic Filter Efficiency

Unit	Roof Area	5% Annual Rainwater Yield (litres)	Tank Size (litres)
Dwelling	221.608	6,851	6,900
Games Room	67.636	2,091	2,100
Stables	153.465	4,744	4,800
Bike & Bin Storage	17.82	551	600
Ancillary	51.722	1,599	1,600
Totals	512.251	15,835	16,000