



# Flood Risk Assessment and Drainage Strategy In support of Agricultural Development at

Danefold Farm  
Littleworth Lane  
Partridge Green  
West Sussex  
RH18 8NA

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May 2025  
Revision [0]  
Job No: 6126





# Flood Risk Assessment & Drainage Strategy At Danefold Farm, Littleworth Lane West Sussex, RH13 8NA

## Contents

|                                            |    |
|--------------------------------------------|----|
| Amendments.....                            | 2  |
| References .....                           | 2  |
| Introduction .....                         | 3  |
| Development Description and Location ..... | 3  |
| Development Classification .....           | 3  |
| Sequential Test.....                       | 4  |
| Definition of the Flood Hazard .....       | 5  |
| Probability .....                          | 6  |
| Climate Change .....                       | 7  |
| Development Proposals .....                | 7  |
| Flood Risk Management Measures .....       | 7  |
| Off Site Impacts .....                     | 8  |
| Residual Risks .....                       | 8  |
| Drainage Strategy .....                    | 8  |
| Development Description and Location ..... | 8  |
| Existing Drainage .....                    | 9  |
| Site Geology .....                         | 9  |
| Ground Water .....                         | 9  |
| Topography .....                           | 9  |
| Design Objective.....                      | 10 |
| Development Drainage Proposals .....       | 10 |
| Surface Water Drainage .....               | 10 |
| Foul Water Drainage .....                  | 11 |
| Residual Flood Risk .....                  | 11 |
| Conclusion .....                           | 12 |
| Appendices.....                            | 14 |



Flood Risk Assessment & Drainage Strategy  
At Danefold Farm, Littleworth Lane  
West Sussex, RH13 8NA

## Amendments

| Revision | Date                      | Description    |
|----------|---------------------------|----------------|
| 0        | 28 <sup>th</sup> May 2025 | Planning Issue |

## References

| Reference | Title                                                                                          |
|-----------|------------------------------------------------------------------------------------------------|
| A         | CIRIA Publication 753 – The SUDS Manual (2015)                                                 |
| B         | Sewers for Adoption 7 <sup>th</sup> Edition (Wrc 2012)                                         |
| C         | Part H of the Building Regulations (2015)                                                      |
| D         | The Soakaway Design Guide (KCC 2000)                                                           |
| E         | Water. People. Places. A guide for master planning sustainable drainage in developments (2013) |
| F         | Planning Practice Guidance (2016)                                                              |



## Flood Risk Assessment & Drainage Strategy At Danefold Farm, Littleworth Lane West Sussex, RH13 8NA

### Introduction

This Flood Risk Assessment and Drainage Strategy has been prepared in support of a planning application for the relocation of an existing farmyard manure store, the construction of one new silage clamp, and the development of a new slurry lagoon.

This document aims to identify any areas at risk of flooding and provide appropriate mitigation measures where necessary. It also outlines the proposed surface water drainage methods. A Location Plan and the layout of the proposed scheme are included in the appendices.

Due to the area of development being over 1 Hectare, the site is subject to a formal Flood Risk Assessment (FRA), which is to be submitted and approved by the Local Planning Authority in consultation with the Statutory Consultees.

### Development Description and Location

The development proposal is for the relocation of an existing farmyard manure store, along with the construction of one new silage clamp and a new slurry lagoon.

The development works are situated on Danefold Farm, Littleworth Lane, which is located within the planning district of Horsham.

The location of the proposed site is at grid reference 518830, 122093 as shown in the location plans in the appendices.

### Development Classification

The flood risk vulnerability classification for this type of development in this location is considered as Less Vulnerable which is defined in Table 2 of the Technical Guidance to the National Planning Policy Framework.

Less Vulnerable - *Land and buildings used for agriculture and forestry.*

## Sequential Test

As set out in the National Planning Policy Framework, the aim of the Sequential Test is to direct new development to areas with the lowest probability of flooding. The starting point to the Sequential Test is the Flood Zones, which can be seen in the appendices. The map key clearly shows Zones 2 and 3, whereas Zone 1 is the remainder of the land not hatched.

These flood zones refer to the probability of river and coastal flooding, ignoring the presence of any existing flood defences.

The Strategic Flood Risk Assessments and Surface Water Management Plans for Horsham District Council, refines the information on the probability of flooding and also takes into account other sources of flooding which have been assessed in more detail further into this flood risk assessment.

The proposed development is situated within Zone 1 and is classified as Less Vulnerable in accordance with Table 2 of the Technical Guidance to the National Planning Policy Framework.

Following an assessment of Table 3 of the Technical Guidance to the National Planning Policy Framework, it states that development in this situation, it is Appropriate Development, as seen in the table below:

**Table 3: Flood risk vulnerability and flood zone 'compatibility'**

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

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



## Flood Risk Assessment & Drainage Strategy At Danefold Farm, Littleworth Lane West Sussex, RH13 8NA

If the application of the Sequential Test is not possible to comply with, a site-specific flood risk assessment must demonstrate that the development will be safe for its lifetime taking account of the vulnerability of its users, without increasing flood risk elsewhere, and, where possible, will reduce flood risk overall.

Given that the proposed development site is located entirely within Flood Zone 1, which is classified as having the lowest probability of flooding, the application automatically satisfies the Sequential Test.

### Definition of the Flood Hazard

For the preparation of this Flood Risk Assessment it is necessary to consider all of the potential sources of flooding and how this may affect the site. A checklist has been provided below to help identify these areas which can be discussed in greater detail in this section.

| Possible Source of Flooding                                 | Applicable to this Site?            |
|-------------------------------------------------------------|-------------------------------------|
| Fluvial Flooding from nearby rivers or streams              | <input checked="" type="checkbox"/> |
| Coastal Flooding                                            | <input checked="" type="checkbox"/> |
| Surface Water Runoff from the Site, Adjacent or Nearby Land | <input checked="" type="checkbox"/> |
| Flooding from Surface Water Sewers                          | <input checked="" type="checkbox"/> |
| Flooding from Foul Water Sewers                             | <input checked="" type="checkbox"/> |
| Flooding from Reservoirs                                    | <input checked="" type="checkbox"/> |
| Flooding from Groundwater                                   | <input checked="" type="checkbox"/> |
| Flooding from other Sources                                 | <input checked="" type="checkbox"/> |

Flood maps for planning have been checked which show the development site to be in Flood Zone 1. There is therefore a very low probability of flooding from nearby rivers or the sea, less than 0.1% (1 in 1000 year) annually.



## Flood Risk Assessment & Drainage Strategy At Danefold Farm, Littleworth Lane West Sussex, RH13 8NA

Surface water flooding maps have been checked (also contained in the appendices) which shows a low chance of Surface water flooding, which travels overland from the fields/woodlands to the West. The new proposals improve Surface Water management of the slurry pit and silage clamp.

When checking the flood maps for planning in relation to reservoir flooding, there are no risks to this proposed development.

Local geotechnical mapping has confirmed that the site is underlain by the Weald Clay Formation. Borehole records indicate that groundwater was encountered at a depth of approximately 35 metres below ground level. Based on this information, groundwater flooding is not considered to pose a risk to the development site.

There are no other sources on or off site that are thought to be a flood risk at this site.

### Probability

The proposed development is situated within Zone 1 which can be seen in the Flood Map for Planning, contained in the appendices.

The District Council for the area have prepared a Strategic Flood Risk Assessment which refines the information provided by the Environment Agency and gives an overview of the flood risk in the district.

Based on the Information provided in both the Flood Maps for Planning and the Strategic Flood Risk Assessment, the probability of a flood event may be taken as Zone 1 – Low Probability, as it has less than a 1 in 1000 annual probability or greater of river flooding, ignoring the presence of existing flood defences.



## Flood Risk Assessment & Drainage Strategy At Danefold Farm, Littleworth Lane West Sussex, RH13 8NA

### Climate Change

More recent guidelines have been published by the Environment Agency for new flood risk assessments, which suggests regional climate changes and appropriate freeboard levels for new residential dwellings. This is for an agricultural application, so climate change allowances has only been applied to rainfall calculations in this instance.

### Development Proposals

The rainfall on the impermeable areas of the silage clamp and manure storage will be collected via heavy duty linear drains and will direct the water through a series of catchpits before discharging to the slurry lagoon. The slurry lagoon will also act as an impermeable area, thus generating it's own surface water accumulation. This will be an enclosed system and not connected to any on or off-site discharge points. The dirty water will periodically be drained from the underground wastewater storage tank and used for spreading over the fields, in line with DEFRA Guidance. Water levels in the slurry lagoon will be able to drain to the dirty water overflow tank where it will be collected. This will need regular monitoring to ensure storm capacity is not being compromised, therefore, a high-level alarm is proposed for the underground storage tank, to alert the farm management team that the tank needs to be emptied ready for the next storm. In any case, the tank should have a regularly scheduled check and also checked after any significant rainfall event.

### Flood Risk Management Measures

In order to effectively manage any site-specific flood risk, it may be necessary to introduce mitigation measures to help eliminate or reduce the impact of potential flooding. There are various methods and systems available to protect any new buildings from flooding. However, as this development is for agricultural development and consists of one new silage clamp and slurry lagoon, specific flood risk management measures are not required, other than following the WSCC guidance for surface water management.



## Flood Risk Assessment & Drainage Strategy At Danefold Farm, Littleworth Lane West Sussex, RH13 8NA

### Off Site Impacts

There are no foreseen adverse residual impacts to neighbouring properties or the surrounding area in relation to flood risk as a result of the proposed development scheme.

### Residual Risks

There are no additional residual flood risks to the property following the implementation of the new scheme.

### Drainage Strategy

This Drainage Strategy has been developed in support of a planning application for the relocation of an existing farmyard manure store, the construction of a new silage clamp, and the construction of a new slurry lagoon.

The aim of the Drainage Strategy is to incorporate and adopt Best Management Practices (BMP's) for Sustainable Urban Drainage Systems (SUD's) (where appropriate) in accordance with Site Specific Technical Reports and Published Documents referenced in Page (ii). This document also aims to identify the methods of drainage available for the Surface Water Drainage.

A layout of the proposed scheme can be found in the appendices of this document.

### Development Description and Location

The development proposals are for the relocation of an existing farmyard manure store, the construction of one new silage clamp, and a new slurry lagoon.

The development works are situated on Danefold Farm, Littleworth Lane, which is located within the planning district of Horsham.

The location of the proposed site is at grid reference 518830, 122093 as shown in the location plans in the appendices.



## Flood Risk Assessment & Drainage Strategy At Danefold Farm, Littleworth Lane West Sussex, RH13 8NA

### Existing Drainage

The site is currently undeveloped farmland and is therefore assumed to have no existing drainage infrastructure. This will need to be confirmed on-site prior to construction.

### Site Geology

The site is underlain by the Weald Clay Formation which is typically described by the British Geological Survey as Dark grey thinly-bedded mudstones (shales) and mudstones with subordinate siltstones, fine- to medium-grained sandstones, including calcareous sandstone, shelly limestones and clay ironstones.

Typically, Weald Clay is deemed as unsuitable for infiltration, therefore, no soakage testing has been undertaken at this site for the benefit of clean roof water. Any “dirty water” associated with the proposals, being the runoff from the silage clamp and manure storage must be stored and disposed of in line with DEFRA Farming guidance publications.

### Ground Water

Local geotechnical mapping has been checked, which confirms the site is underlain by Weald Clay. The nearby surrounding borehole records have been checked, which do not indicate that the groundwater is close to the surface, therefore, the site is unlikely be affected by groundwater emergence.

### Topography

The land at the application site slopes down from the Southeast to Northwest. Levels on the Southeastern boundary are around 37.500mAOD, with levels on the Northwest boundary around 29.500mAOD.



## Flood Risk Assessment & Drainage Strategy At Danefold Farm, Littleworth Lane West Sussex, RH13 8NA

### Design Objective

The objective of the design will be to;

- a) Retain the quantity of surface water runoff leaving the impermeable areas for all storms, up to and including the 1 in 100 year return period + 45% climate change until it can be disposed of in line with DEFRA guidance.

### Development Drainage Proposals

#### Surface Water Drainage

The rainfall on the impermeable areas of the silage clamp and manure storage will be collected via heavy duty linear drains and will direct the water through a series of catchpits before discharging to the slurry lagoon. The slurry lagoon will also act as an impermeable area, thus generating its own surface water accumulation. This will be an enclosed system and not connected to any on or off-site discharge points. The dirty water will periodically be drained from the underground wastewater storage tank and used for spreading over the fields, in line with DEFRA Guidance. Water levels in the slurry lagoon will be able to drain to the dirty water overflow tank where it will be collected. This will need regular monitoring to ensure storm capacity is not being compromised, therefore, a high-level alarm is proposed for the underground storage tank, to alert the farm management team that the tank needs to be emptied ready for the next storm. In any case, the tank should have a regularly scheduled check and also checked after any significant rainfall event.

It is not intended that the proposed development drainage will be offered for adoption to any of the statutory authorities, however, the surface water calculations for the proposed development will be in accordance with the requirements set out in the Water, People, Places – A guide for master planning sustainable drainage into developments.

There is no infiltration proposed for this development as the water associated with the proposals must be stored and disposed of in line with DEFRA Farming guidance publications, therefore, no soakage testing has been undertaken at this site.



## Flood Risk Assessment & Drainage Strategy At Danefold Farm, Littleworth Lane West Sussex, RH13 8NA

All surface water accumulation generated by the new proposals are directed down to the slurry lagoon and the simulated storm is entirely contained within the lagoon and will be allowed to be drained down in accordance with the farm management schedules and DEFRA guidance.

This design strategy caters for up to and including the 1 in 100 year return period + 45% climate change, whilst assessing the effects of a 1 in 2 year, 1 in 30 year, 1 in 100 year and with the uplift of 45% increase of the same return period in accordance with WSCC guidance.

All calculations have been undertaken with Causeway Flow Software using FEH Point Data integrated into the drainage model. These calculations and sections are contained within the appendices.

### Foul Water Drainage

There are no specific domestic wastewater facilities associated with this application, therefore foul water drainage design does not need to be included in this document.

### Residual Flood Risk

This development has been formally assessed against flood risk earlier in this report. This Drainage strategy takes the principles identified within the FRA, to incorporate them within the detailed design, focusing on reduction and mitigation of flood risk for both on and off site.

Surface Water Drainage systems have been designed to cater for and up to the 1 in 100-year return period, plus 45% climate change, retaining the surface water on site in accordance with LLFA requirements and Industry Guidance.



## Flood Risk Assessment & Drainage Strategy At Danefold Farm, Littleworth Lane West Sussex, RH13 8NA

### Conclusion

Roads & Sewers for Planning & Design Ltd (RSPD) have been requested to provide a Flood Risk Assessment and Drainage Strategy in support of a planning application for the relocation of an existing farmyard manure store, the construction of one new silage clamp, and a new slurry lagoon, located at Danefold Farm, Littleworth Lane, Partridge Green, West Sussex, RH13 8NA.

This document aims to identify any flood risk areas, offering suggested mitigation where appropriate and also outline the methods of drainage available for the Surface Water Drainage. A Location Plan and layout of the proposed scheme can be found in the appendices of this document.

Due to the area of development being over 1 Hectare, the site is subject to a formal Flood Risk Assessment (FRA), which is to be submitted and approved by the Local Planning Authority in consultation with the Statutory Consultees.

The flood risk vulnerability classification for this type of development in this location is considered as Less Vulnerable which is defined in Table 2 of the Technical Guidance to the National Planning Policy Framework.

Based on the Information provided in both the Flood Maps for Planning and the Strategic Flood Risk Assessment, the probability of a flood event may be taken as Zone 1 – Low Probability, as it has less than a 1 in 1000 annual probability or greater of river flooding, ignoring the presence of existing flood defences.

In order to effectively manage any site-specific flood risk, it may be necessary to introduce mitigation measures to help eliminate or reduce the impact of potential flooding. However, as this development is for agricultural development and consists of a new silage clamps and slurry lagoon, where there are no foreseen flood risks, specific flood risk management measures are not required, other than following the guidance for surface water management in the design process.

There are no foreseen adverse residual impacts to neighbouring properties or the surrounding area in relation to flood risk as a result of the proposed development scheme.



Flood Risk Assessment & Drainage Strategy  
At Danefold Farm, Littleworth Lane  
West Sussex, RH13 8NA

On the basis of the findings of this report, it is recommended that no objections should be raised to the development proposals on the grounds of flood risk.



## Flood Risk Assessment & Drainage Strategy At Danefold Farm, Littleworth Lane West Sussex, RH13 8NA

### Appendices

- Site Location Plan
- Flood Maps for Planning
- Fluvial Flood Maps
- Surface Water Flood Maps
- Reservoir Flood Maps
- Geoindex Map
- SPZ Plan
- Groundwater Zones
- Sewer Asset Plan
- Danefold Farm Site Plan
- Danefold Farm Topographical Survey
- RSPD 6126-01 Drainage Design
- RSPD 6126 FLOW Calculations

## Danefold Farm



Produced on Land App, May 19, 2025.  
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## Location Plan

100 m  
Scale 1:3250 (at A4)



# Flood map for planning

Your reference  
**Unspecified**

Location (easting/northing)  
**518806/122113**

Created  
**19 May 2025 09:36**

**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 2025 AC0000807064. <https://flood-map-for-planning.service.gov.uk/os-terms>



## Flood map for planning

Your reference

**Unspecified**

Location (easting/northing)

**518806/122113**

Scale

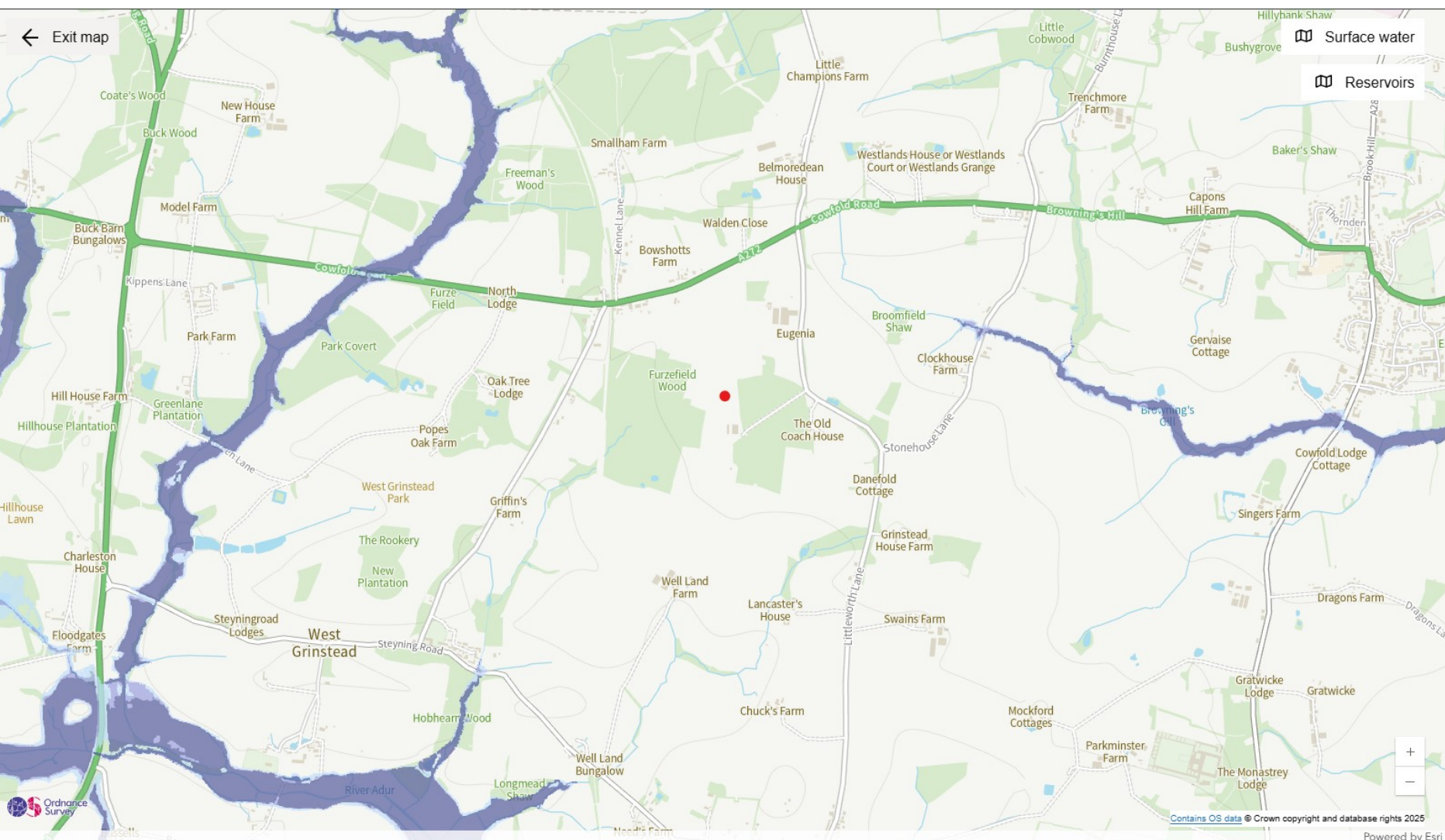
**1:2,500**

Created

**19 May 2025 09:36**

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

  
0 20 40 60m



## Rivers and sea map

### Yearly chance of flooding

#### ☒ Extent

- ☒ High chance  
More than 3.3% chance each year
- ☐ Medium chance  
Between 1% and 3.3% chance each year
- ☐ Low chance  
Between 0.1% and 1% chance each year
- ☐ Very low chance  
Less than 0.1% chance each year

#### ☐ Depth

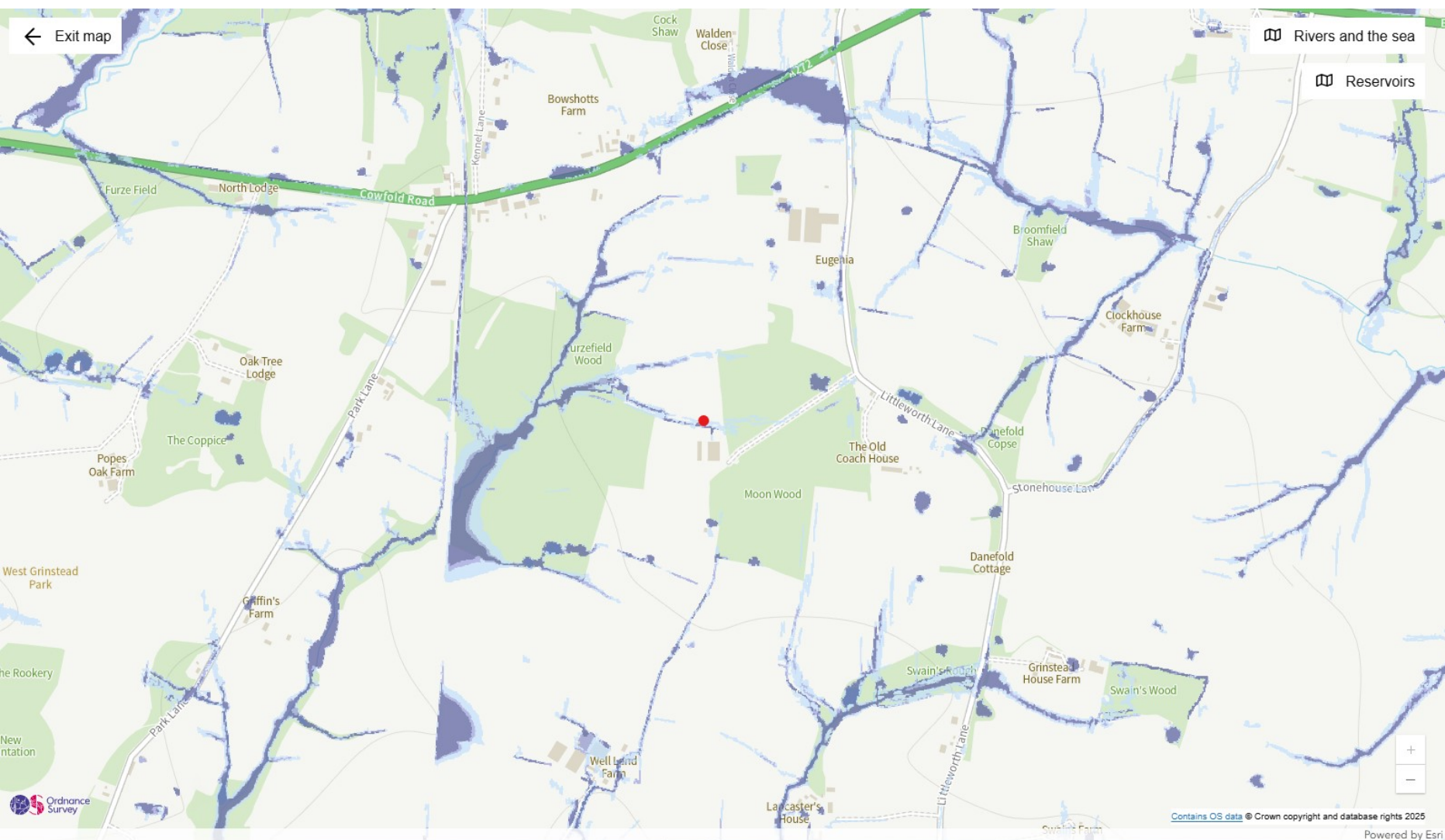
### Yearly chance of flooding between 2036 and 2069

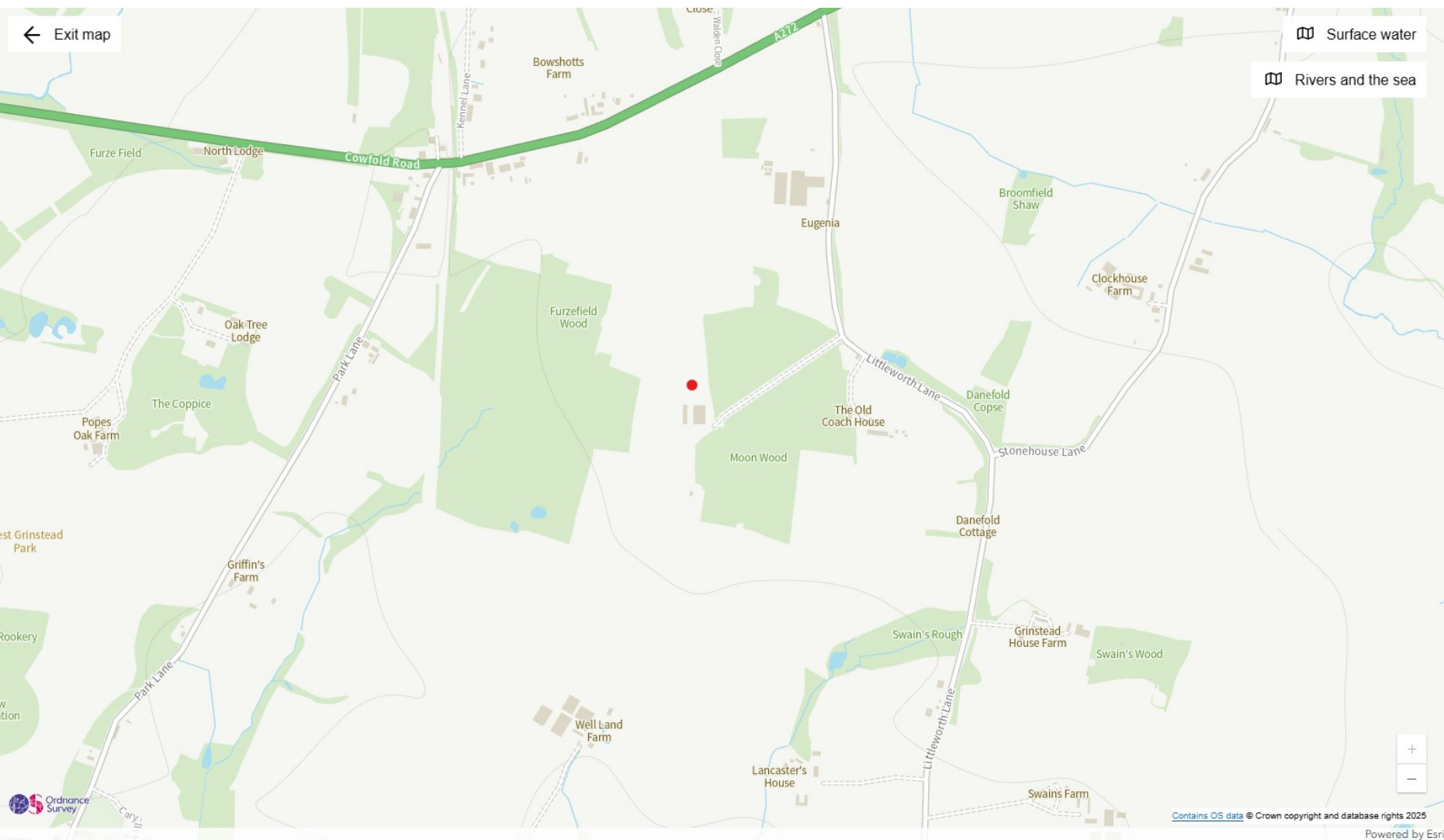
#### ☐ Extent

#### ☐ Depth

### Map details

- ☒ Show flooding

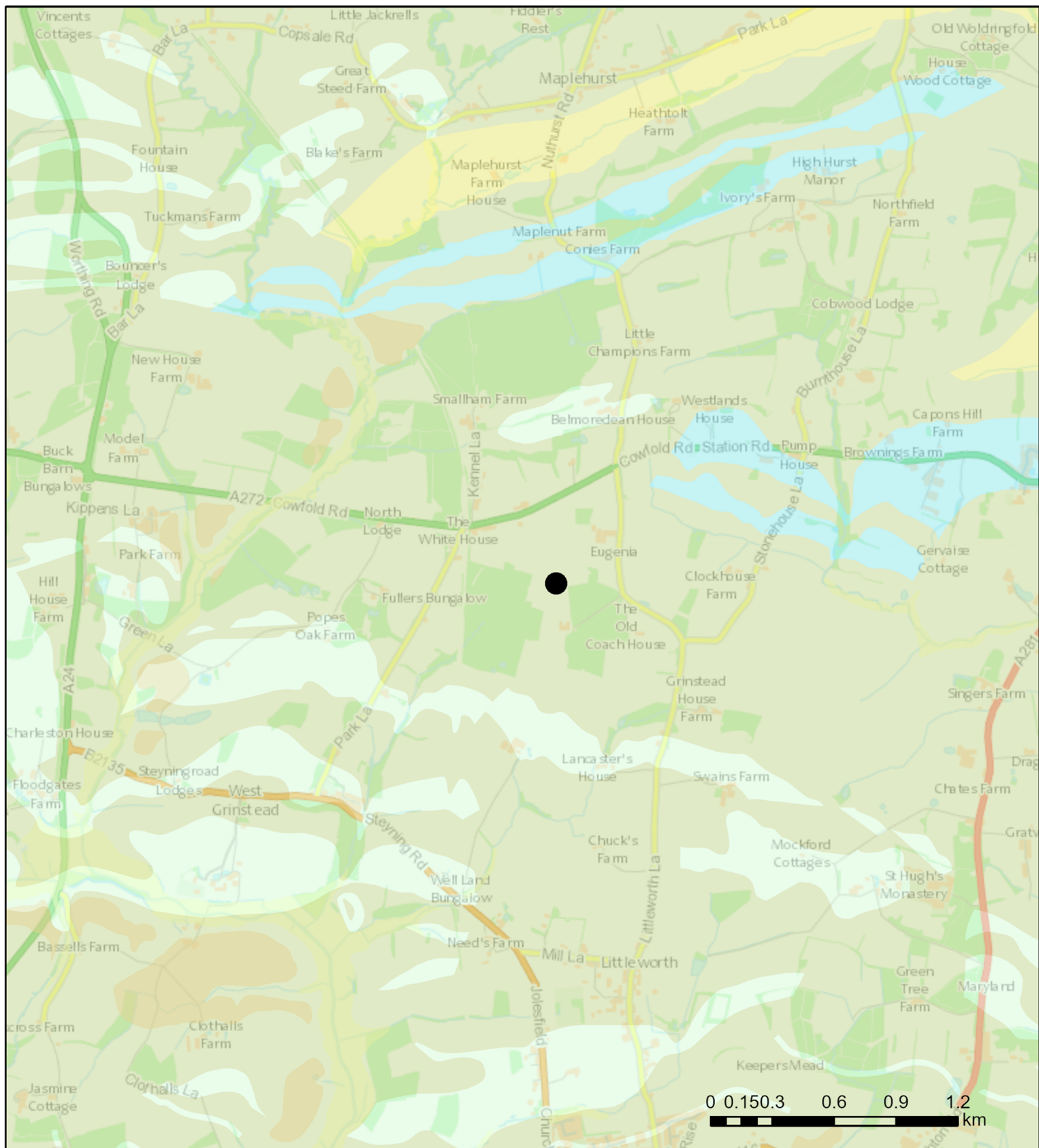




# GeoIndex Report



British  
Geological  
Survey



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GeoIndex Onshore Data Sources: NERC, Natural England, English Heritage and Ordnance Survey

# Map Key

## Superficial deposits 1:50,000 scale

-  [ALLUVIUM - CLAY, SILT, SAND AND GRAVEL](#)
-  [HEAD - CLAY, SILT, SAND AND GRAVEL](#)
-  [RIVER TERRACE DEPOSITS, 1 \(ADUR\) - SAND AND GRAVEL](#)
-  [RIVER TERRACE DEPOSITS, 2 \(ADUR\) - SAND AND GRAVEL](#)
-  [RIVER TERRACE DEPOSITS, 3 \(ADUR\) - SAND AND GRAVEL](#)

## Bedrock geology 1:50,000 scale

-  [HORSHAM STONE MEMBER - SANDSTONE](#)
-  [WEALD CLAY FORMATION - SANDSTONE](#)
-  [WEALD CLAY FORMATION - MUDSTONE](#)
-  [UPPER TUNBRIDGE WELLS SAND - SANDSTONE AND SILTSTONE, INTERBEDDED](#)
-  [UPPER TUNBRIDGE WELLS SAND - SANDSTONE AND MUDSTONE](#)
-  [LOWER TUNBRIDGE WELLS SAND - SANDSTONE, SILTSTONE AND MUDSTONE](#)
-  [CUCKFIELD STONE BED - SANDSTONE, CALCAREOUS](#)
-  [WEALD CLAY FORMATION - CLAY-IRONSTONE](#)
-  [WADHURST CLAY FORMATION - MUDSTONE](#)
-  [LOWER GRINSTEAD CLAY - MUDSTONE](#)
-  [UPPER GRINSTEAD CLAY - MUDSTONE](#)
-  [UPPER TUNBRIDGE WELLS SAND - MUDSTONE](#)
-  [ARDINGLY SANDSTONE MEMBER - SANDSTONE](#)
-  [WEALD CLAY FORMATION - LIMESTONE](#)

**Selection Results**

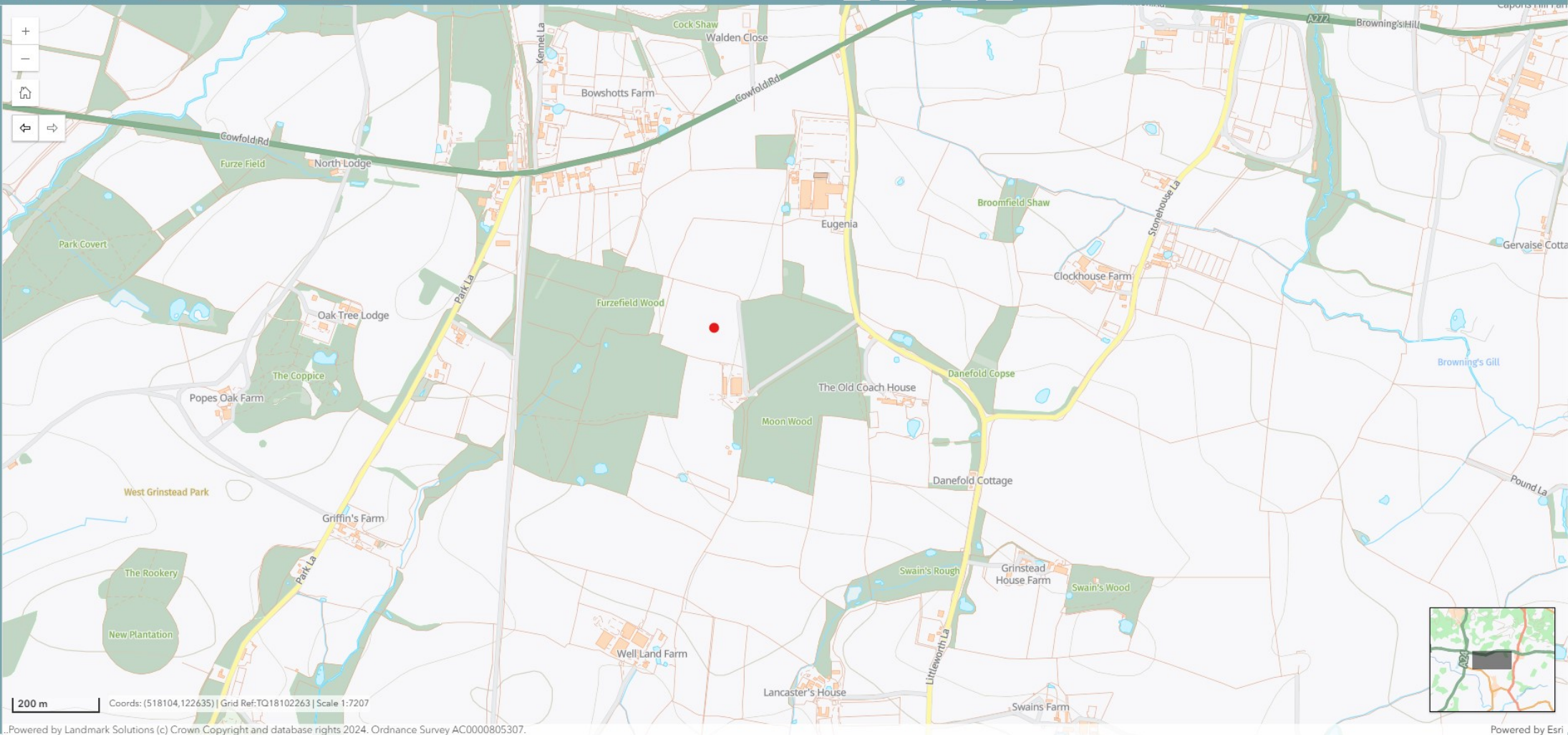
MAGiC

359625,269691 / SO59...



OSGB36

1:7,207



200 m Coords: (518104,122635) | Grid Ref: TQ18102263 | Scale 1:7207



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# Groundwater Zones



British  
Geological  
Survey



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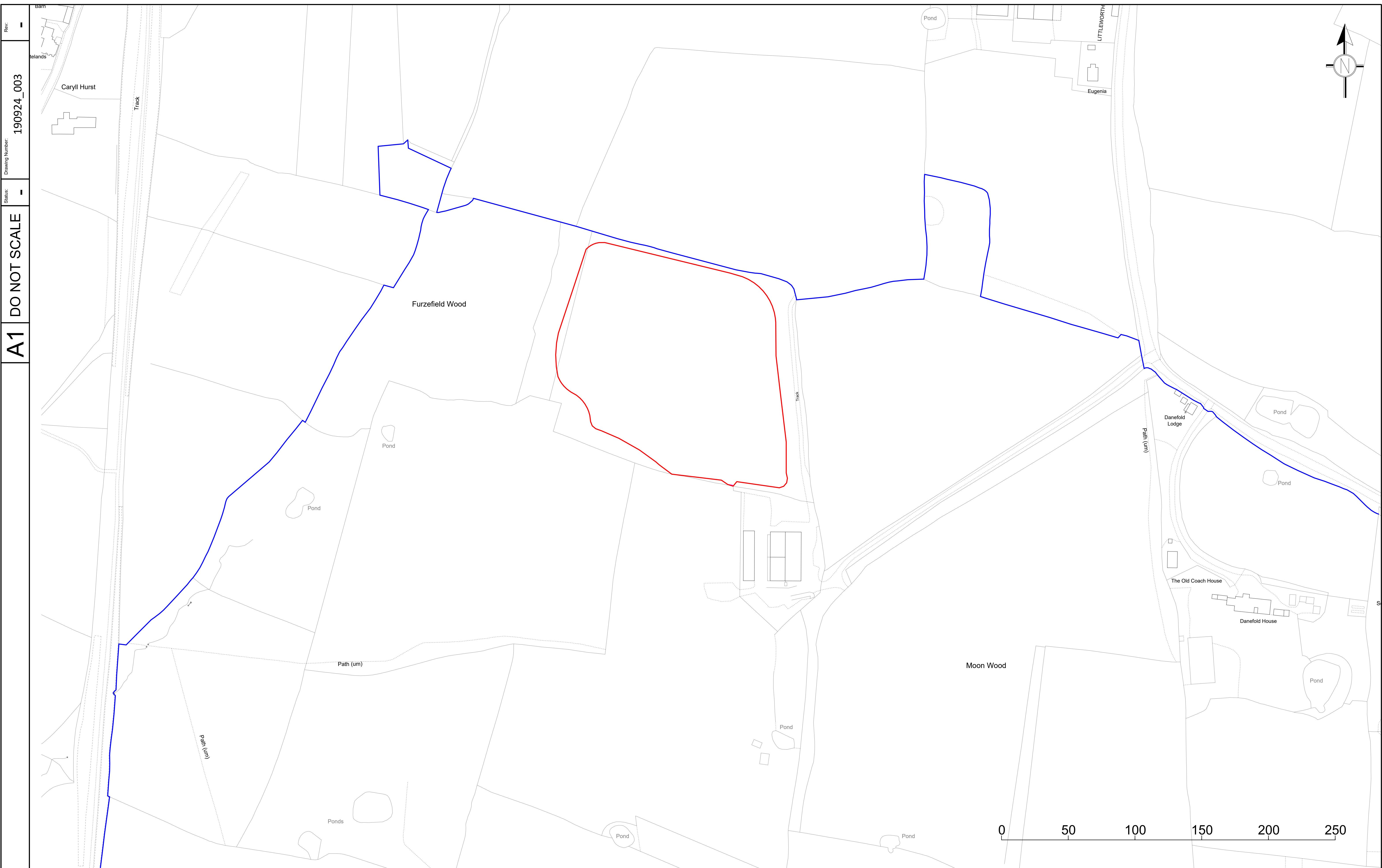
GeoIndex Onshore Data Sources: NERC, Natural England, English Heritage and Ordnance Survey

# Map Key

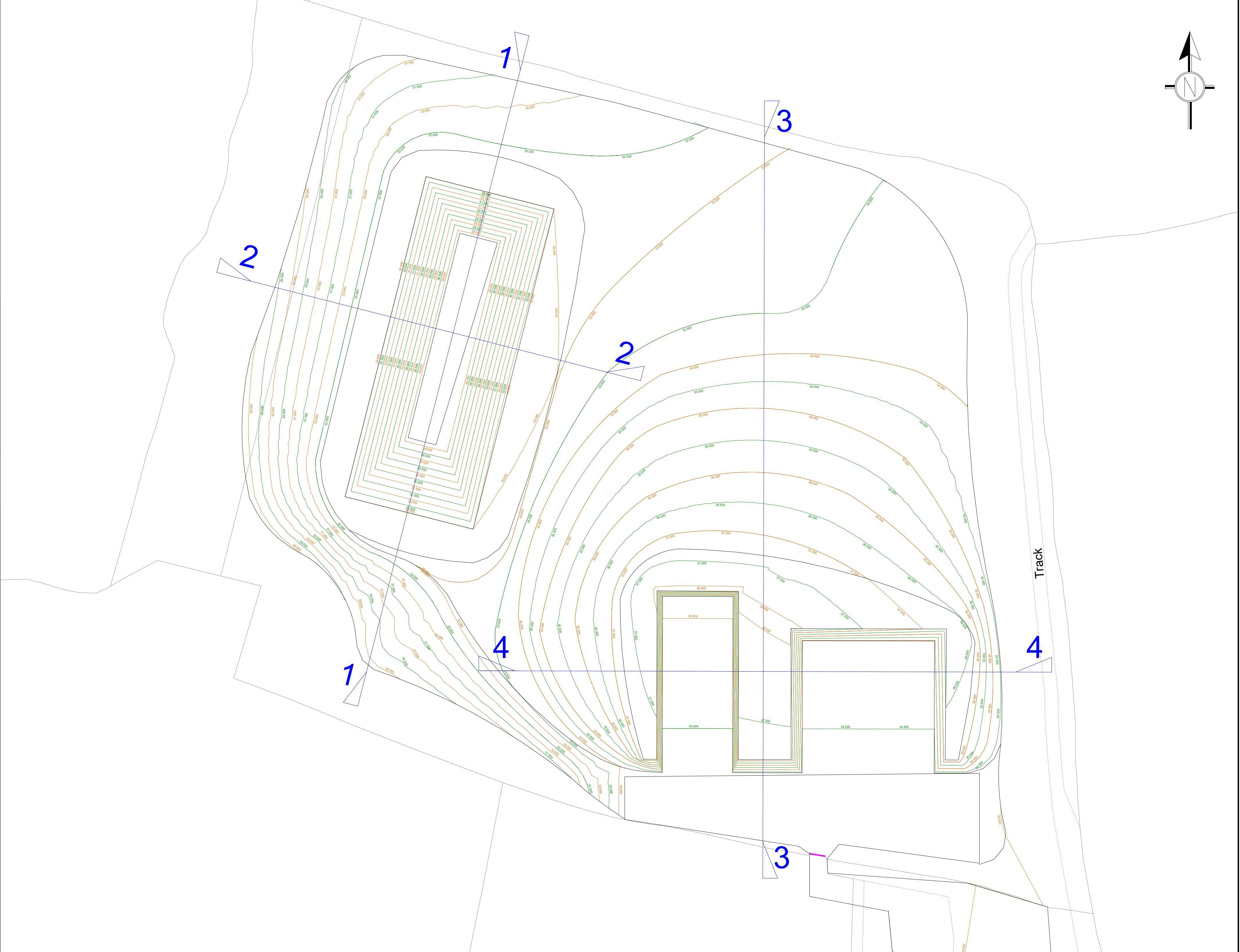
Hydrogeology 1:625,000 scale

- Aquifers with significant intergranular flow
-  Highly productive aquifer
  -  Moderately productive aquifer
  -  Low productivity aquifer
- Aquifers in which flow is virtually all through fractures and other discontinuities
-  Highly productive aquifer
  -  Moderately productive aquifer
  -  Low productivity aquifer
  -  Rocks with essentially no groundwater

**Selection Results**



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| SECTION 1 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| PROPOSED  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| SURVEY    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| CHAINAGE  | 2.800<br>5.000<br>7.500<br>14.000<br>12.500<br>15.000<br>17.000<br>20.000<br>22.500<br>25.000<br>27.500<br>30.000<br>32.500<br>35.000<br>37.500<br>40.000<br>42.500<br>45.000<br>47.500<br>50.000<br>52.500<br>55.000<br>57.500<br>60.000<br>62.500<br>65.000<br>67.500<br>70.000<br>72.500<br>75.000<br>77.500<br>80.000<br>82.500<br>85.000<br>87.500<br>90.000<br>92.500<br>95.000<br>97.500<br>100.000<br>102.500<br>105.000<br>107.500<br>110.000<br>112.500<br>115.000<br>117.500<br>120.000<br>122.500<br>125.000<br>127.500<br>130.000<br>132.500<br>135.000<br>137.500<br>140.000<br>142.500<br>145.000 |

| SECTION 2 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| PROPOSED  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| SURVEY    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| CHAINAGE  | 2.800<br>5.000<br>10.000<br>12.500<br>15.000<br>17.500<br>20.000<br>22.500<br>25.000<br>27.500<br>30.000<br>32.500<br>35.000<br>37.500<br>40.000<br>42.500<br>45.000<br>47.500<br>50.000<br>52.500<br>55.000<br>57.500<br>60.000<br>62.500<br>65.000<br>67.500<br>70.000<br>72.500<br>75.000<br>77.500<br>80.000<br>82.500<br>85.000<br>87.500<br>90.000<br>92.500<br>95.000<br>97.500<br>100.000<br>102.500<br>105.000<br>107.500<br>110.000<br>112.500<br>115.000<br>117.500<br>120.000<br>122.500<br>125.000<br>127.500<br>130.000<br>132.500<br>135.000<br>137.500<br>140.000<br>142.500<br>145.000 |

| SECTION 3 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| PROPOSED  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| SURVEY    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| CHAINAGE  | 2.800<br>5.000<br>7.500<br>10.000<br>12.500<br>15.000<br>17.500<br>20.000<br>22.500<br>25.000<br>27.500<br>30.000<br>32.500<br>35.000<br>37.500<br>40.000<br>42.500<br>45.000<br>47.500<br>50.000<br>52.500<br>55.000<br>57.500<br>60.000<br>62.500<br>65.000<br>67.500<br>70.000<br>72.500<br>75.000<br>77.500<br>80.000<br>82.500<br>85.000<br>87.500<br>90.000<br>92.500<br>95.000<br>97.500<br>100.000<br>102.500<br>105.000<br>107.500<br>110.000<br>112.500<br>115.000<br>117.500<br>120.000<br>122.500<br>125.000<br>127.500<br>130.000<br>132.500<br>135.000<br>137.500<br>140.000<br>142.500<br>145.000 |

| SECTION 4 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| PROPOSED  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| SURVEY    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| CHAINAGE  | 2.800<br>5.000<br>7.500<br>10.000<br>12.500<br>15.000<br>17.500<br>20.000<br>22.500<br>25.000<br>27.500<br>30.000<br>32.500<br>35.000<br>37.500<br>40.000<br>42.500<br>45.000<br>47.500<br>50.000<br>52.500<br>55.000<br>57.500<br>60.000<br>62.500<br>65.000<br>67.500<br>70.000<br>72.500<br>75.000<br>77.500<br>80.000<br>82.500<br>85.000<br>87.500<br>90.000<br>92.500<br>95.000<br>97.500<br>100.000<br>102.500<br>105.000<br>107.500<br>110.000<br>112.500<br>115.000<br>117.500<br>120.000<br>122.500<br>125.000<br>127.500<br>130.000<br>132.500<br>135.000<br>137.500<br>140.000<br>142.500<br>145.000 |



- FOR  
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|                     |                 |
|---------------------|-----------------|
| Project<br>6126     | Sheet<br><br>01 |
| Date<br>20/05/2025  |                 |
| Scale<br>1:500 @ A1 |                 |

**Design Settings**

|                       |        |                                      |               |                                    |       |
|-----------------------|--------|--------------------------------------|---------------|------------------------------------|-------|
| Rainfall Methodology  | FEH-22 | Maximum Time of Concentration (mins) | 30.00         | Preferred Cover Depth (m)          | 0.350 |
| Return Period (years) | 2      | Maximum Rainfall (mm/hr)             | 50.0          | Include Intermediate Ground        | ✓     |
| Additional Flow (%)   | 0      | Minimum Velocity (m/s)               | 0.75          | Enforce best practice design rules | ✓     |
| CV                    | 0.750  | Connection Type                      | Level Soffits |                                    |       |
| Time of Entry (mins)  | 5.00   | Minimum Backdrop Height (m)          | 0.200         |                                    |       |

**Adoptable Manhole Type**

| Max Width (mm) | Diameter (mm) | Max Width (mm) | Diameter (mm) | Max Width (mm) | Diameter (mm) | Max Width (mm) | Diameter (mm) |
|----------------|---------------|----------------|---------------|----------------|---------------|----------------|---------------|
| 374            | 1200          | 499            | 1350          | 749            | 1500          | 900            | 1800          |

&gt;900 Link+900 mm

| Max Depth (m) | Diameter (mm) | Max Depth (m) | Diameter (mm) |
|---------------|---------------|---------------|---------------|
| 1.500         | 1050          | 99.999        | 1200          |

**Circular Link Type**

|       |          |         |   |                     |    |               |   |
|-------|----------|---------|---|---------------------|----|---------------|---|
| Shape | Circular | Barrels | 1 | Auto Increment (mm) | 75 | Follow Ground | x |
|-------|----------|---------|---|---------------------|----|---------------|---|

**Available Diameters (mm)**

100 | 150

**Nodes**

|   | Name       | Area<br>(ha) | T of E<br>(mins) | Cover<br>Level<br>(m) | Node<br>Type | Manhole<br>Type | Diameter<br>(mm) | Easting<br>(m) | Northing<br>(m) | Depth<br>(m) |
|---|------------|--------------|------------------|-----------------------|--------------|-----------------|------------------|----------------|-----------------|--------------|
| ✓ | S1         | 0.154        | 5.00             | 34.000                | Manhole      | Adoptable       | 600              | 518800.840     | 122042.780      | 0.775        |
| ✓ | S2         |              |                  | 34.250                | Manhole      | Adoptable       | 600              | 518780.000     | 122062.870      | 1.250        |
| ✓ | S3         |              |                  | 33.000                | Manhole      | Adoptable       | 600              | 518765.750     | 122099.220      | 0.850        |
| ? | SLURRY PIT | 0.225        |                  | 33.000                | Manhole      | Adoptable       | 1200             | 518758.910     | 122142.540      | 1.000        |
| ✓ | INLET      |              |                  | 33.000                | Manhole      | Adoptable       | 1200             | 518763.940     | 122103.890      | 0.925        |

Links

|   | Name  | US Node | DS Node    | Length (m) | ks (mm) / n | US IL (m) | DS IL (m) | Fall (m) | Slope (1:X) | Dia (mm) | Link Type | T of C (mins) | Rain (mm/hr) |
|---|-------|---------|------------|------------|-------------|-----------|-----------|----------|-------------|----------|-----------|---------------|--------------|
| ? | 1.000 | S1      | S2         | 28.947     | 0.600       | 33.225    | 33.000    | 0.225    | 128.7       | 225      | Circular  | 5.42          | 50.0         |
| ? | 1.001 | S2      | S3         | 39.043     | 0.600       | 33.000    | 32.150    | 0.850    | 45.9        | 225      | Circular  | 5.76          | 50.0         |
| ✓ | 1.002 | S3      | INLET      | 5.008      | 0.600       | 32.150    | 32.075    | 0.075    | 66.8        | 225      | Circular  | 5.81          | 50.0         |
| ? | 1.003 | INLET   | SLURRY PIT | 38.976     | 0.600       | 32.075    | 32.000    | 0.075    | 519.7       | 225      | Circular  | 6.95          | 48.0         |

|   | Name  | US Node | DS Node    | Vel (m/s) | Cap (l/s) | Flow (l/s) | US Depth (m) | DS Depth (m) | Minimum Depth (m) | Maximum Depth (m) | Σ Area (ha) | Σ Add Inflow (l/s) | Pro Depth (mm) | Pro Velocity (m/s) |
|---|-------|---------|------------|-----------|-----------|------------|--------------|--------------|-------------------|-------------------|-------------|--------------------|----------------|--------------------|
| ? | 1.000 | S1      | S2         | 1.151     | 45.8      | 20.9       | 0.550        | 1.025        | 0.550             | 1.025             | 0.154       | 0.0                | 107            | 1.126              |
| ? | 1.001 | S2      | S3         | 1.935     | 76.9      | 20.9       | 1.025        | 0.625        | 0.625             | 1.025             | 0.154       | 0.0                | 80             | 1.648              |
| ✓ | 1.002 | S3      | INLET      | 1.602     | 63.7      | 20.9       | 0.625        | 0.700        | 0.625             | 0.700             | 0.154       | 0.0                | 88             | 1.437              |
| ? | 1.003 | INLET   | SLURRY PIT | 0.567     | 22.5      | 20.0       | 0.700        | 0.775        | 0.700             | 0.775             | 0.154       | 0.0                | 166            | 0.638              |

Pipeline Schedule

| Link  | Length (m) | Slope (1:X) | Dia (mm) | Link Type | US CL (m) | US IL (m) | US Depth (m) | DS CL (m) | DS IL (m) | DS Depth (m) |
|-------|------------|-------------|----------|-----------|-----------|-----------|--------------|-----------|-----------|--------------|
| 1.000 | 28.947     | 128.7       | 225      | Circular  | 34.000    | 33.225    | 0.550        | 34.250    | 33.000    | 1.025        |
| 1.001 | 39.043     | 45.9        | 225      | Circular  | 34.250    | 33.000    | 1.025        | 33.000    | 32.150    | 0.625        |
| 1.002 | 5.008      | 66.8        | 225      | Circular  | 33.000    | 32.150    | 0.625        | 33.000    | 32.075    | 0.700        |
| 1.003 | 38.976     | 519.7       | 225      | Circular  | 33.000    | 32.075    | 0.700        | 33.000    | 32.000    | 0.775        |

| Link  | US Node | Dia (mm) | Node Type | MH Type   | DS Node    | Dia (mm) | Node Type | MH Type   |
|-------|---------|----------|-----------|-----------|------------|----------|-----------|-----------|
| 1.000 | S1      | 600      | Manhole   | Adoptable | S2         | 600      | Manhole   | Adoptable |
| 1.001 | S2      | 600      | Manhole   | Adoptable | S3         | 600      | Manhole   | Adoptable |
| 1.002 | S3      | 600      | Manhole   | Adoptable | INLET      | 1200     | Manhole   | Adoptable |
| 1.003 | INLET   | 1200     | Manhole   | Adoptable | SLURRY PIT | 1200     | Manhole   | Adoptable |

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| Return Period<br>(years) | Climate Change<br>(CC %) | Additional Area<br>(A %) | Additional Flow<br>(Q %) | Return Period<br>(years) | Climate Change<br>(CC %) | Additional Area<br>(A %) | Additional Flow<br>(Q %) |
|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| 2                        | 0                        | 0                        | 0                        | 100                      | 35                       | 0                        | 0                        |
| 30                       | 0                        | 0                        | 0                        | 100                      | 45                       | 0                        | 0                        |

## Node SLURRY PIT Depth/Area Storage Structure

|                             |         |               |      |                           |        |
|-----------------------------|---------|---------------|------|---------------------------|--------|
| Base Inf Coefficient (m/hr) | 0.00000 | Safety Factor | 2.0  | Invert Level (m)          | 32.000 |
| Side Inf Coefficient (m/hr) | 0.00000 | Porosity      | 1.00 | Time to half empty (mins) |        |

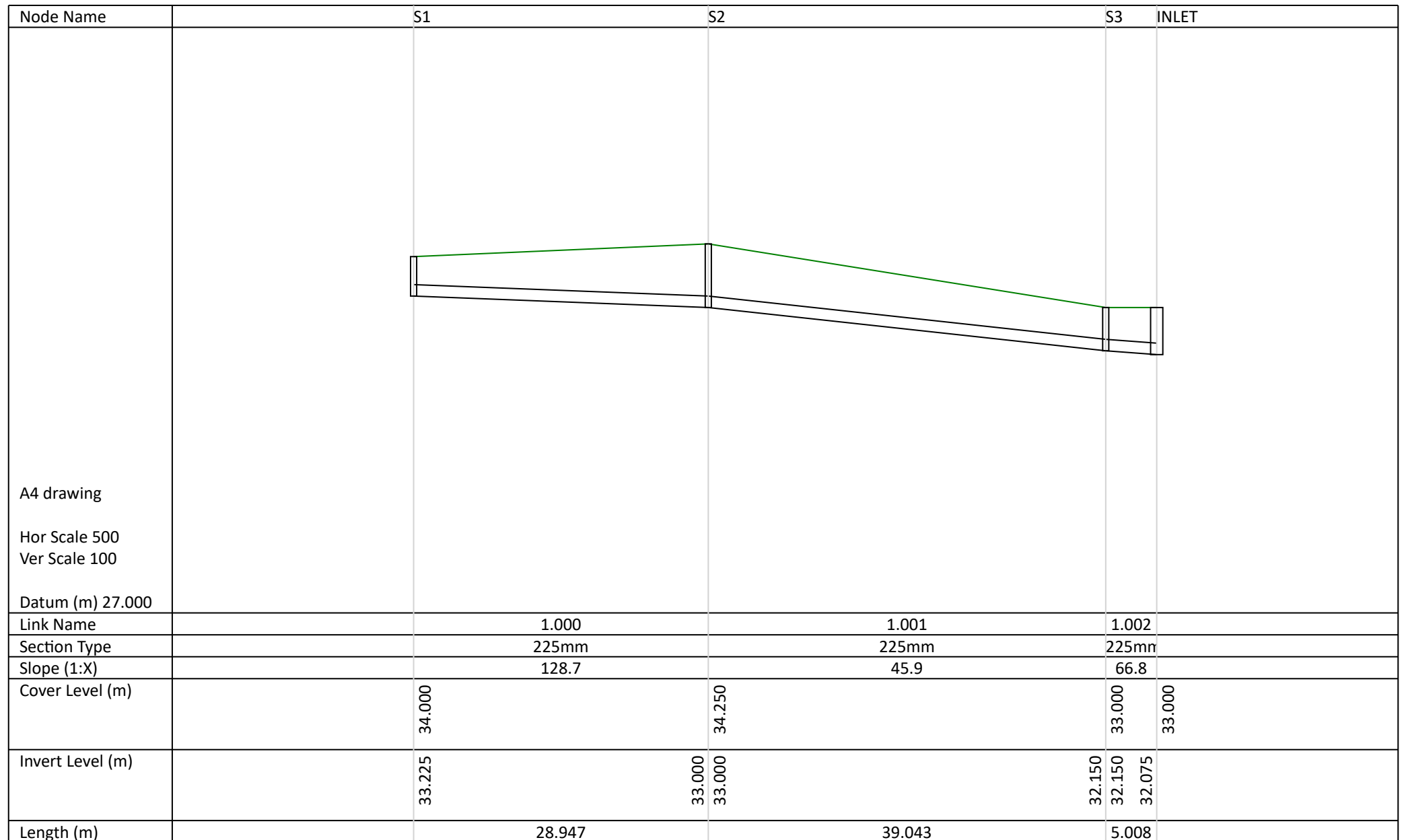
| Depth<br>(m) | Area<br>(m <sup>2</sup> ) | Inf Area<br>(m <sup>2</sup> ) | Depth<br>(m) | Area<br>(m <sup>2</sup> ) | Inf Area<br>(m <sup>2</sup> ) |
|--------------|---------------------------|-------------------------------|--------------|---------------------------|-------------------------------|
| 0.000        | 1846.0                    | 0.0                           | 1.000        | 2250.0                    | 0.0                           |

## Other (defaults)

|                      |       |                       |       |                          |       |
|----------------------|-------|-----------------------|-------|--------------------------|-------|
| Entry Loss (manhole) | 0.250 | Entry Loss (junction) | 0.000 | Apply Recommended Losses | x     |
| Exit Loss (manhole)  | 0.250 | Exit Loss (junction)  | 0.000 | Flood Risk (m)           | 0.300 |

## Approval Settings

|                         |         |                                     |       |                                       |       |
|-------------------------|---------|-------------------------------------|-------|---------------------------------------|-------|
| Node Size               | ✓       | Maximum Cover Depth (m)             | 3.000 | Surcharged Depth                      | ✓     |
| Node Losses             | ✓       | Backdrops                           | ✓     | Return Period (years)                 |       |
| Link Size               | ✓       | Minimum Backdrop Height (m)         |       | Maximum Surcharged Depth (m)          | 0.100 |
| Minimum Diameter (mm)   | 150     | Maximum Backdrop Height (m)         | 1.500 | Flooding                              | ✓     |
| Link Length             | ✓       | Full Bore Velocity                  | ✓     | Return Period (years)                 | 30    |
| Maximum Length (m)      | 100.000 | Minimum Full Bore Velocity (m/s)    |       | Time to Half Empty                    | x     |
| Coordinates             | ✓       | Maximum Full Bore Velocity (m/s)    | 3.000 | Discharge Rates                       | ✓     |
| Accuracy (m)            | 1.000   | Proportional Velocity               | ✓     | Discharge Volume                      | ✓     |
| Crossings               | ✓       | Return Period (years)               |       | 100 year 360 minute (m <sup>3</sup> ) |       |
| Cover Depth             | ✓       | Minimum Proportional Velocity (m/s) | 0.750 |                                       |       |
| Minimum Cover Depth (m) |         | Maximum Proportional Velocity (m/s) | 3.000 |                                       |       |





| Node Name                                                                                           | INLET           | SLURRY PIT |        |
|-----------------------------------------------------------------------------------------------------|-----------------|------------|--------|
| <div>A4 drawing</div> <div>Hor Scale 500</div> <div>Ver Scale 100</div> <div>Datum (m) 27.000</div> |                 |            |        |
|                                                                                                     | Link Name       | 1.003      |        |
|                                                                                                     | Section Type    | 225mm      |        |
|                                                                                                     | Slope (1:X)     | 519.7      |        |
|                                                                                                     | Cover Level (m) | 33.000     | 33.000 |
| Invert Level (m)                                                                                    | 32.075          | 32.000     |        |
| Length (m)                                                                                          | 38.976          |            |        |