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Oaklands Road  
Haywards Heath  
West Sussex  
RH16 1SS

Wednesday 25<sup>th</sup> June 2025  
Our Ref: D2348  
Planning Reference: DM/24/2981

Dear Joanne,

**RE: PALMERS AUTOCENTRE TYRES (STETON WORKS), TURNERS HILL ROAD, CRAWLEY DOWN**

Further to our recent telephone conversation, I am pleased to enclose an updated drainage strategy following further investigation on and off site. Additionally, this cover letter serves to provide responses to the points raised in the Flood Risk and Drainage Team's consultation comments (**Appendix A**) in respect of the application to discharge Condition 6.

The previously submitted drainage strategy sought to discharge surface water to Southern Water's public foul water sewer network, albeit with significant betterment proposed when compared with the existing arrangement. It has been proven on site and demonstrated that, as existing, the site currently drains surface water to Southern Water's public foul water sewer network without any attenuation or restriction of flows. Additionally, given the existing soakaways on site were identified as having piped connectivity to the on-site drainage system which discharges to Southern Water's public foul water sewer network, and the presence of groundwater at shallow depths, it is also evident the existing system has enabled groundwater to drain to Southern Water's public foul water sewer network.

It was proposed that foul and surface water flows on site would be separated up until the final manhole on site, before combining to discharge to the public foul water sewer network. It was proposed that surface water flows were to be restricted to a rate of 1.00 l/s, with significant attenuation and run-off treatment provided by the permeable paving. Additionally, the proposed drainage system would have also removed the ability for groundwater to drain to Southern Water's public foul water sewer.

Despite the undeniable betterment that the proposed scheme presented, following attempts to demonstrate the benefits of these improvements to Southern Water, unfortunately, they have refused to accept this proposal. As a result, an alternative strategy has been prepared which is considered more sustainable, and in accordance with the drainage hierarchy, in light of new information.

The enclosed revised surface water drainage strategy has been developed following the identification of an ordinary watercourse located on the southern side of Turners Hill Road, which falls in a westerly direction. This was not previously identified following a site visit undertaken earlier in the year. West Sussex County Council highway boundary records (**Appendix B**) indicate that this falls within the public highway, whilst photographic evidence of the watercourse is provided in Figure 1.

As infiltration is not viable, as proven by on site investigation, the second highest ranking opportunity for surface water drainage in view of the drainage hierarchy is to drain run-off to a watercourse. This, therefore, now represents the highest available means of disposing of surface water.



**Figure 1. Photograph confirming the presence of the ordinary watercourse, to the south of Turners Hill Road (facing west)**

The enclosed revised surface water drainage strategy again proposes to provide permeable paving across the site as a means of providing attenuation, but also promoting water quality. Run-off collected from the roof area of the 5 No. proposed dwellings will discharge to the permeable paving, which will then discharge to a new piped system on site. Flows discharging off site to the ordinary watercourse will be restricted to 1.00 l/s.

This revised strategy will ensure that existing surface water flows, and groundwater, will no longer discharge to Southern Water's public foul water sewer network, providing significant betterment compared with the existing site use and associated drainage methods.

The Flood Risk and Drainage Team's consultation response in respect of the original drainage strategy, raised comments in view of the earlier design. Responses to these points are provided, below.

In view of the revised surface water drainage strategy, revised calculations have been prepared and are contained within **Appendix H** of the enclosed drainage strategy report. Cover and invert levels are exported directly from Site3D (modelling software), regardless, these figures have been cross-referenced and checked between the calculations and the drainage plan (**drawing PL001 Rev. P1**). This drawing has also been updated to reflect the extents of the different 'blocks' of permeable paving (e.g. Permeable Paving 1, 2 and 3).

S8 and S45 are 'dummy' nodes within the calculations, required in order to load the permeable paving catchments into the hydraulic model. Where run-off from the roof areas of the 5 No. dwellings drain to the permeable paving, this is demonstrated in the calculations under the 'Catchment Area (ha)' heading for Manhole S44.

The access road has a longitudinal gradient which does not exceed 1:49, with flatter sections of 1:63 and 1:122. The hydraulic calculations consider the gradient of the access road in respect of the permeable paving construction and associated storage, which demonstrates that all simulated storm, up to and including the 1 in 100-year plus climate change event, are attenuated on site with no flooding. Additional features, such as baffles, are not necessary.

It is no longer proposed that surface water will discharge to Southern Water's public foul water sewer network. The new surface water drainage strategy instead proposes to discharge run-off to the ordinary watercourse, south of Turners Hill Road. As such, approval from Southern Water is not required. The proposed works to the ordinary watercourse will be subject to an OWC application and approval from Mid Sussex County Council/West Sussex County Council. This is a separate process to that of planning, and will be dealt with accordingly at the appropriate time.

In order to connect the 5 No. new dwellings to Southern Water's public foul water sewer to provide a method of foul drainage, a S106 application must be submitted to Southern Water. Associated fees and payment in relation to this process enables the client/developer to connect to Southern Water's network, with Southern Water responsible for ensuring that capacity exists within their network. This application will be submitted at the appropriate time, once planning matters have been resolved and works can commence on site.

We trust that the revised surface water drainage strategy will be acceptable given the significant betterment this provides compared with both the existing arrangement as well as the original proposal, whilst this now also adheres with the drainage hierarchy by providing a method of surface water drainage which ranks highest in view of site constraints and opportunities.

Should you have any further questions or queries at all, please do not hesitate to contact me directly in order to address any potential concerns at the earliest opportunity.

Yours sincerely,

A handwritten signature in black ink, appearing to read 'Stuart Burnett'.

Stuart Burnett  
BP Civils

## APPENDIX A – FLOOD RISK AND DRAINAGE TEAM CONSULTATION COMMENTS

**From:** drainage <drainage@midsussex.gov.uk>  
**Sent:** 10 June 2025 16:36:55 UTC+01:00  
**To:** "Joanne Fisher" <Joanne.Fisher@midsussex.gov.uk>  
**Cc:** "drainage" <drainage@midsussex.gov.uk>  
**Subject:** DM/25/1060 - Palmers Autocentre Tyres Palmers Autocentre Tyres Turners Hill Road Crawley Down Crawley West Sussex RH10 4HQ

Dear Joanne,

Please find below our comments for DM/25/1060:

The Flood Risk and Drainage team have reviewed the submitted information and have the following comments regarding condition 6:

Surface Water

It is proposed for permeable paving to be utilised to discharge surface water from the site at an attenuated rate. This is acceptable in principle.

Details within the supplied calculations and layout should be made consistent. This includes but is not restricted to the details related to the Permeable Paving areas 2 and 3.

Due to the slope across the site, details should be provided to demonstrate how the capacity within the gravel sub-base will be maintained.

Foul Water

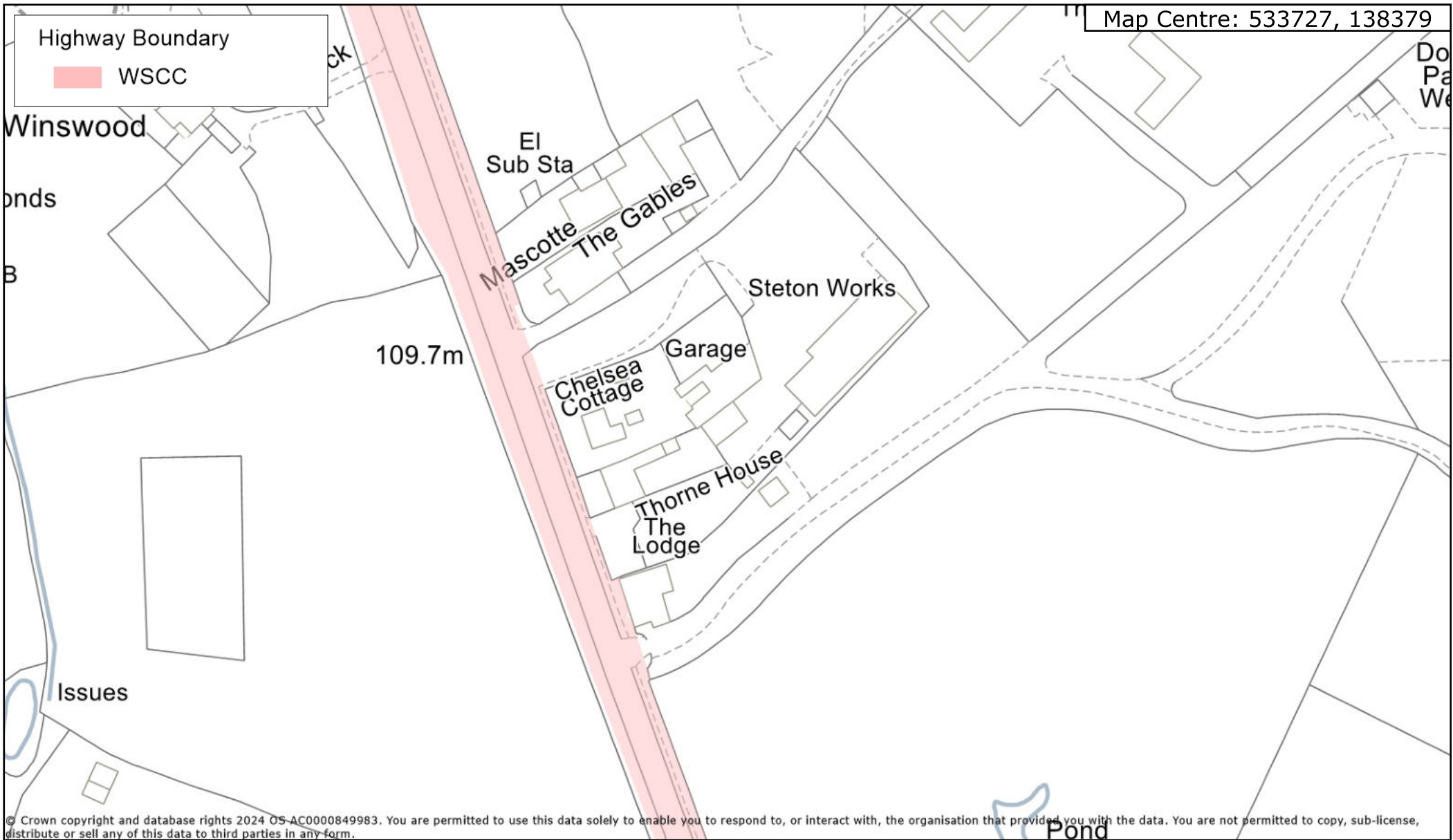
It is proposed for foul water to discharge into a public sewer. Although this is considered acceptable in principle, evidence of communication with Southern Water should be provided. This communication should include details relating to the proposed discharge of surface water into the foul sewer.

Upon receipt of this additional information, we will be able to comment further. Receipt of the requested additional information does not mean further information will not be requested.

Best Wishes

**Flood Risk and Drainage Team**  
**Estate Services and Building Control**  
**Mid Sussex District Council**  
[drainage@midsussex.gov.uk](mailto:drainage@midsussex.gov.uk)

## APPENDIX B – WEST SUSSEX COUNTY COUNCIL HIGHWAY BOUNDARY RECORDS



02 April 2024  
Carol Rigler

## Planning Services

Information about the status of a highway, and in some circumstances the extent of the highway, may be taken from a number of sources held by the County Council. Unless taken from a legal agreement the information should be regarded as guidance only.



1:1250

## REVISED DRAINAGE STRATEGY



**STETON WORKS, TURNERS HILL ROAD,  
CRAWLEY DOWN, WEST SUSSEX RH10  
4HQ**

## **PROPOSED RESIDENTIAL DEVELOPMENT**

Drainage Strategy

Prepared on Behalf of

JW Stratton Limited

D2348/DS1.2

March 2025

## DOCUMENT CONTROL

Project: Steton Works, Turners Hill Road, Crawley Down, West Sussex RH10 4HQ  
Proposed Residential Development

Document: Drainage Strategy

Client: JW Stratton Limited

Reference: D2348/DS1.2

### Document Checking:

**Author:** S Burnett **Date:** 19/03/2025

**Checked by:** M Akmenkalns **Date:** 27/03/2025

**Approved by:** M Akmenkalns **Date:** 27/03/2025

### Status:

| Issue | Date       | Status      | Issued by |
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## DRAWINGS

- SK001** Existing Drainage
- PL100** Site Location Plan
- PL200** Topographic Survey & Contours
- PL300** Impermeable Areas Comparison
- PL001** Proposed Drainage
- PL002** Proposed Levels

## APPENDICES

- Appendix A** ECE Architectural Development Proposals
- Appendix B** Engineering Land & Building Surveys Topographic Survey
- Appendix C** Albury S.I. Ltd Site Investigation
- Appendix D** Southern Water Public Sewer Records
- Appendix E** Flood Maps for Planning Extracts
- Appendix F** Wallingford Greenfield Run-off Calculations
- Appendix G** Causeway Flow Existing Surface Water Drainage Calculations
- Appendix H** Site 3D Proposed Surface Water Drainage Calculations

## 1 INTRODUCTION

### 1.1 Background

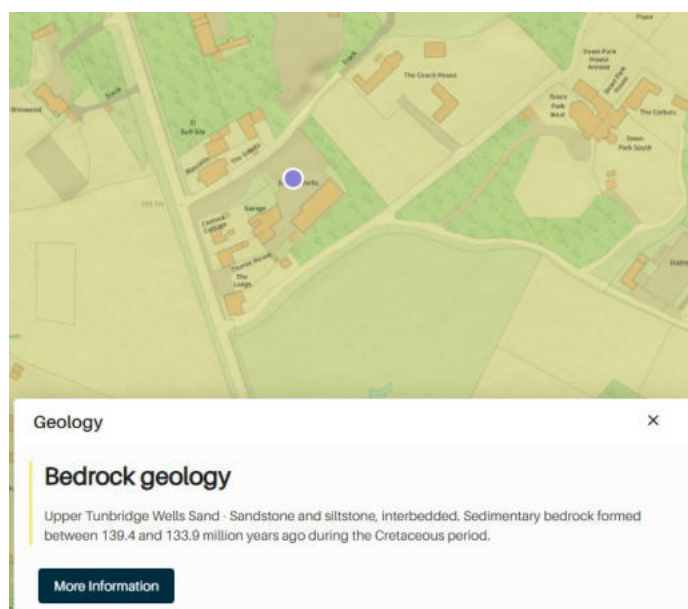
- 1.1.1 BP Civils is instructed by JW Stratton Limited ('the client') to prepare a drainage strategy to accompany a discharge of condition application in relation to the proposed residential development at Steton Works, Turners Hill Road, Crawley Down.
- 1.1.2 The site was granted outline planning approval (DM/22/0867) further to appeal (APP/D3830/W/22/3303070).
- 1.1.3 This drainage strategy has been prepared to assist in discharging Condition 6 of the appeal decision notice.
- 1.1.4 Condition 6 states:
- 'No development shall take place until foul and surface water drainage works have been provided on the site to serve the development hereby permitted, in accordance with details that have first been submitted to and approved in writing by the local planning authority. The details shall include a timetable for its implementation and a management and maintenance plan for the lifetime of the development which shall include arrangements for adoption by any public authority or statutory undertaker and any other arrangements to secure the operation of the scheme throughout its lifetime. Maintenance and management during the lifetime of the development should be in accordance with the approved details.'*
- 1.1.5 The proposed development concerns the demolition of all existing buildings on site and construction of 5 No. dwellings and associated parking.
- 1.1.6 The architectural development proposals are contained within **Appendix A**.
- 1.1.7 This report has been undertaken in accordance with National Planning Policy Framework (NPPF) and The Planning Practice Guidance on the use of SuDS for achieving sustainable development.
- 1.1.8 In preparing this report, BP Civils has referred to the following documents and information:
- Albury S.I. Ltd Site Investigation
  - British Geological Survey (BGS) Information and Records
  - Environment Agency 'Flood Maps for Planning'
  - Long-Term Flood Risk Maps (Gov.uk)
  - Mid Sussex District Council Strategic Flood Risk Assessment
  - Southern Water Public Sewer Records
- 1.1.9 This drainage strategy report has been prepared to assess site constraints and opportunities and propose a drainage strategy that is appropriate for the design life of the development, without causing off site impacts from run-off in a design event.
- 1.1.10 This report has been prepared for the benefit of the named client only.

## 2 SITE LOCATION AND DESCRIPTION

- 2.1.1 The National Grid Reference for the site is TQ 33745 38412.
- 2.1.2 A site location plan is included within this report (drawing **PL100 'Site Location Plan'**).
- 2.1.3 The site measures 2,780m<sup>2</sup> (0.28Ha) and is located on the eastern side of Turners Hill Road at the former Palmers Autocentre Tyres site.
- 2.1.4 The site is currently occupied by 4 No. existing buildings with an existing impermeable area totalling 1,459m<sup>2</sup>.
- 2.1.5 A topographic survey has been undertaken at the site by Engineering Land & Building Surveys, dated November 2021. The survey is contained within **Appendix B**.
- 2.1.6 The topographic survey identifies levels in the range of 109.80m AOD and 112.100m AOD.
- 2.1.7 Drawing **PL200 'Site Topographic Survey & Contours'** demonstrates the trends in topography at the site.

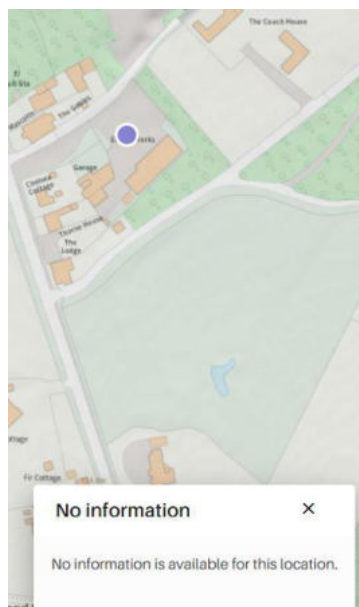
### 3 GROUND CONDITIONS

- 3.1.1 Albury S.I. Ltd has undertaken intrusive investigation at the site. Site works were undertaken on 2<sup>nd</sup> April 2024.
- 3.1.2 7 No. boreholes were excavated on site to depths in the range of 1.60m to 3.10m below ground level.
- 3.1.3 Albury S.I. Ltd's reporting is contained within **Appendix C**.
- 3.1.4 Made Ground was encountered at all 7 No. borehole locations at depths of up to 0.80m below ground level. The Made Ground was underlain by varying geology, as recorded by the borehole logs contained within **Appendix C**.
- 3.1.5 In addition to Albury S.I. Ltd's report, reference has also been made to the BGS Geology of Britain Viewer.
- 3.1.6 The BGS Geology of Britain Viewer indicates an 'Upper Tunbridge Wells Sand – Sandstone and siltstone, interbedded' bedrock geology.



**Figure 1. BGS Geology of Britain Viewer – Bedrock Geology**

- 3.1.7 No superficial deposits are recorded at the site.



**Figure 2. BGS Geology of Britain Viewer – Superficial Deposits**

## 3.2 Groundwater

- 3.2.1 Albury S.I. Ltd has confirmed that groundwater was struck at depths of 1.55m, 2.70m and 1.55m below ground level at borehole locations 3, 6 and 7. Standing water levels were also observed at these depths upon completion of the boreholes. The remaining borehole locations remained dry during excavation and upon completion.
- 3.2.2 2 No. visits were conducted by Albury S.I. Ltd to collect groundwater readings. These readings were collected on 16<sup>th</sup> April 2024 and 3<sup>rd</sup> May 2024. The results are confirmed below:

| Date       | Borehole Location | Water Level (m bgl) |
|------------|-------------------|---------------------|
| 16/04/2024 | 3                 | 0.56                |
|            | 5                 | 1.14                |
|            | 6                 | 0.71                |
| 03/05/2024 | 3                 | 0.49                |
|            | 5                 | 0.64                |
|            | 6                 | 0.56                |

- 3.2.3 Mapping managed by MAGIC ([magic.defra.gov.uk](http://magic.defra.gov.uk)) provides geographic information concerning the

natural environment from across government. This mapping tool has been referred to in order to confirm aquifer designations, as well as whether the site is located within any groundwater source protection zones, groundwater vulnerability zones, drinking water protected areas or drinking water safeguard zones.

3.2.4 The site falls within a 'Secondary A' bedrock aquifer and an 'Unproductive' superficial drift aquifer.

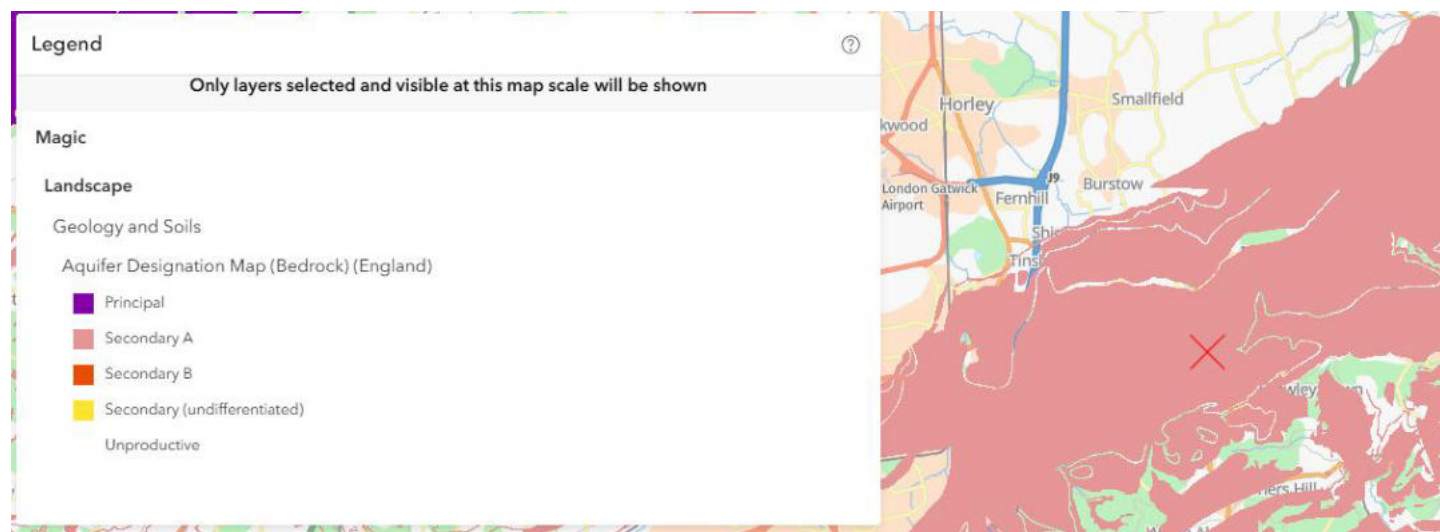


Figure 3. Bedrock Aquifer Designation Map (DEFRA)

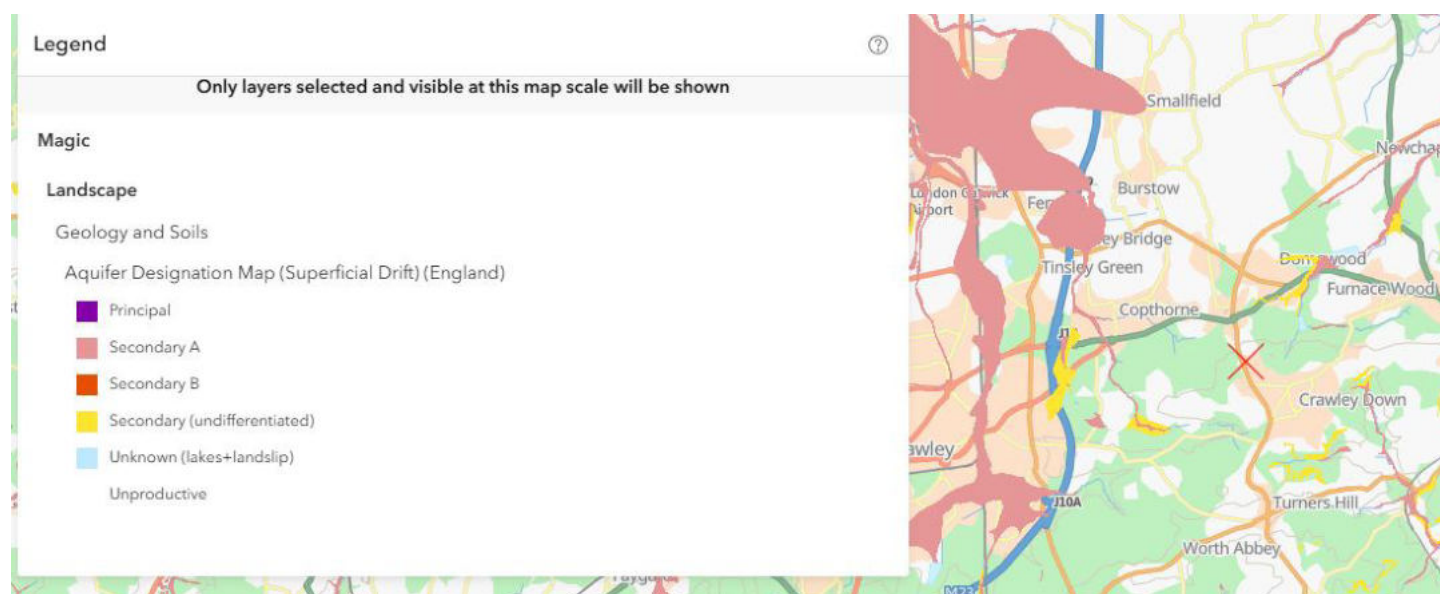


Figure 4. Superficial Drift Designation Map (DEFRA)

3.2.5 The Groundwater Vulnerability Map confirms that the site falls within a 'High' groundwater vulnerability zone.

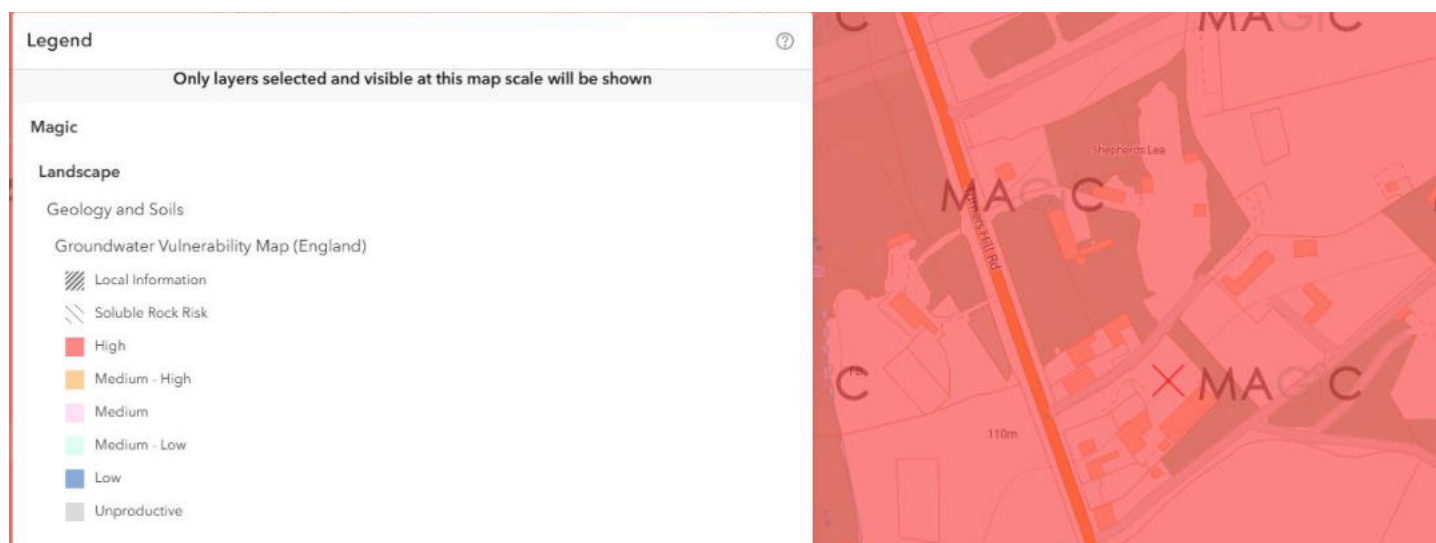


Figure 5. Groundwater Vulnerability Map (DEFRA)

3.2.6 The site falls outside of any Drinking Water Protected Areas for Surface Water, Drinking Water Safeguard Zones for Groundwater as well as all Groundwater Source Protection Zones, but is located within a Drinking Water Safeguard Zone for Surface Water.

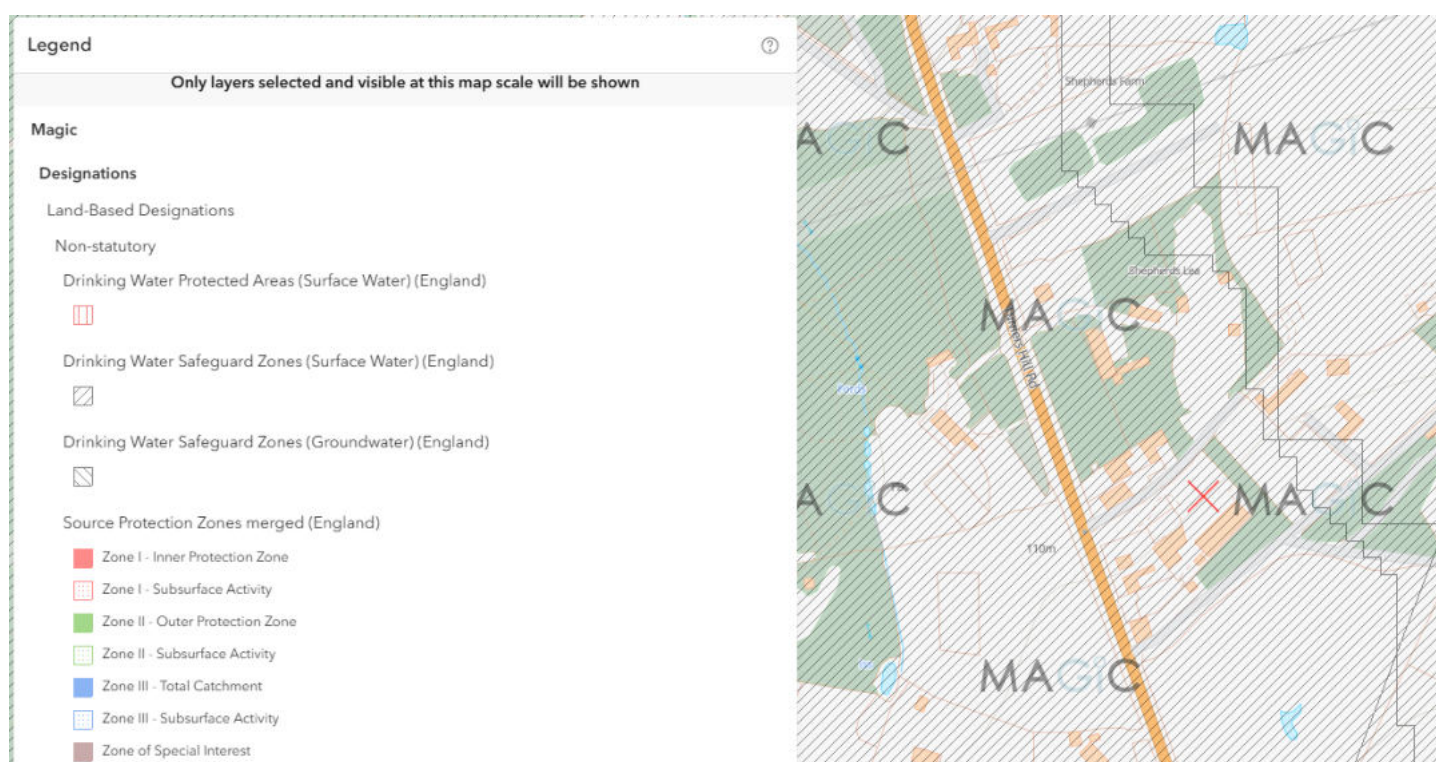


Figure 6. Drinking Water Protected Areas (Surface Water), Drinking Water Safeguard Zones (Surface Water and Groundwater) and Source Protection Zones Map (DEFRA)

## 4 EXISTING DRAINAGE

### 4.1 Surface Water

- 4.1.1 A CCTV survey has been undertaken at the site by Happy Drains. The survey works were undertaken on 20<sup>th</sup> February 2025 with additional survey works undertaken on 18<sup>th</sup> March 2025.
- 4.1.2 Drawing **SK001 'Existing Drainage'** has been prepared to demonstrate the findings of the survey works undertaken.
- 4.1.3 The existing buildings on site currently drain to a below ground surface water drainage system which discharges to soakaways on site.
- 4.1.4 Run-off from the areas of impermeable block paving is collected by 2 No. channel drains, discharging to the below ground surface water drainage system as referenced in 4.1.3.
- 4.1.5 It has been confirmed that the soakaways on-site have piped connectivity to Southern Water's public foul water sewer located beneath Turners Hill Road. It is assumed that this piped connectivity provides a high-level overflow to the public foul water sewer when the soakaways are inundated and unable to operate, impacted by high (shallow) groundwater levels. It is likely that groundwater is also being conveyed to the public foul water sewer as a result of this connectivity.
- 4.1.6 The areas of 'rough asphalt' identified on the topographic survey (scalpings, or similar) are understood to drain naturally where possible, with any exceedance following the topography of the site.
- 4.1.7 The existing asphalt access drive is not served by formal drainage infrastructure on-site. A slot drain is located at the site entrance (at the back edge of footway) although this ineffective owing to evident silt accumulation. Run-off therefore falls to Turners Hill Road, draining to the public highway drainage system.
- 4.1.8 Greenfield run-off rates have been calculated based on the site area of 2,780m<sup>2</sup> (0.28Ha) as follows:
- QBAR: 1.6 l/s
  - 1 in 1-Year: 1.4 l/s
  - 1 in 10-Year: 2.6 l/s
  - 1 in 30-Year: 3.7 l/s
  - 1 in 100-Year: 5.1 l/s
  - 1 in 200-Year: 6 l/s
- 4.1.9 A 1D hydraulic model has been prepared to calculate existing rates of run-off generated by the site.
- 4.1.10 Brownfield run-off rates have been calculated based on the existing catchment (c. 1,022m<sup>2</sup>) draining to the public foul water sewer beneath Turners Hill Road as follows:
- 1 in 2-Year: 7.5 l/s
  - 1 in 10-Year: 8.3 l/s
  - 1 in 30-Year: 8.3 l/s

- 1 in 100-Year: 8.4 l/s

- 4.1.11 An ordinary watercourse has been identified on the southern side of Turners Hill Road, opposite the site. This is identified as falling in a westerly direction.
- 4.1.12 An additional watercourse has been identified beyond the northern boundary, falling to the north, where it is culverted under and existing access, before diverting to the west.
- 4.1.13 The local sewerage authority is Southern Water. Public sewer records have been obtained from Southern Water (**Appendix D**), which confirm that there are no public surface water sewers within the immediate vicinity of the site.
- 4.1.14 Southern Water has been unable to confirm the location of the nearest public surface water sewer.

## **4.2 Foul Water**

- 4.2.1 Southern Water's public sewer records identify a 225mm dia. public foul water sewer beneath Turners Hill Road. This is identified as flowing in a south-easterly direction.
- 4.2.2 The site benefits from an existing connection to the public foul water sewer beneath Turners Hill Road.

## **4.3 Highway Drainage**

- 4.3.1 Turners Hill Road is served by traditional road gullies, which discharge to a highway drainage system located beneath the footway on the eastern side of the road.
- 4.3.2 It is not known where the highway drainage system discharges to.

## 5 FLOOD RISK

### 5.1 Flood Maps and Modelling

5.1.1 Flood Maps for Planning identifies the site falling fully within Flood Zone 1.

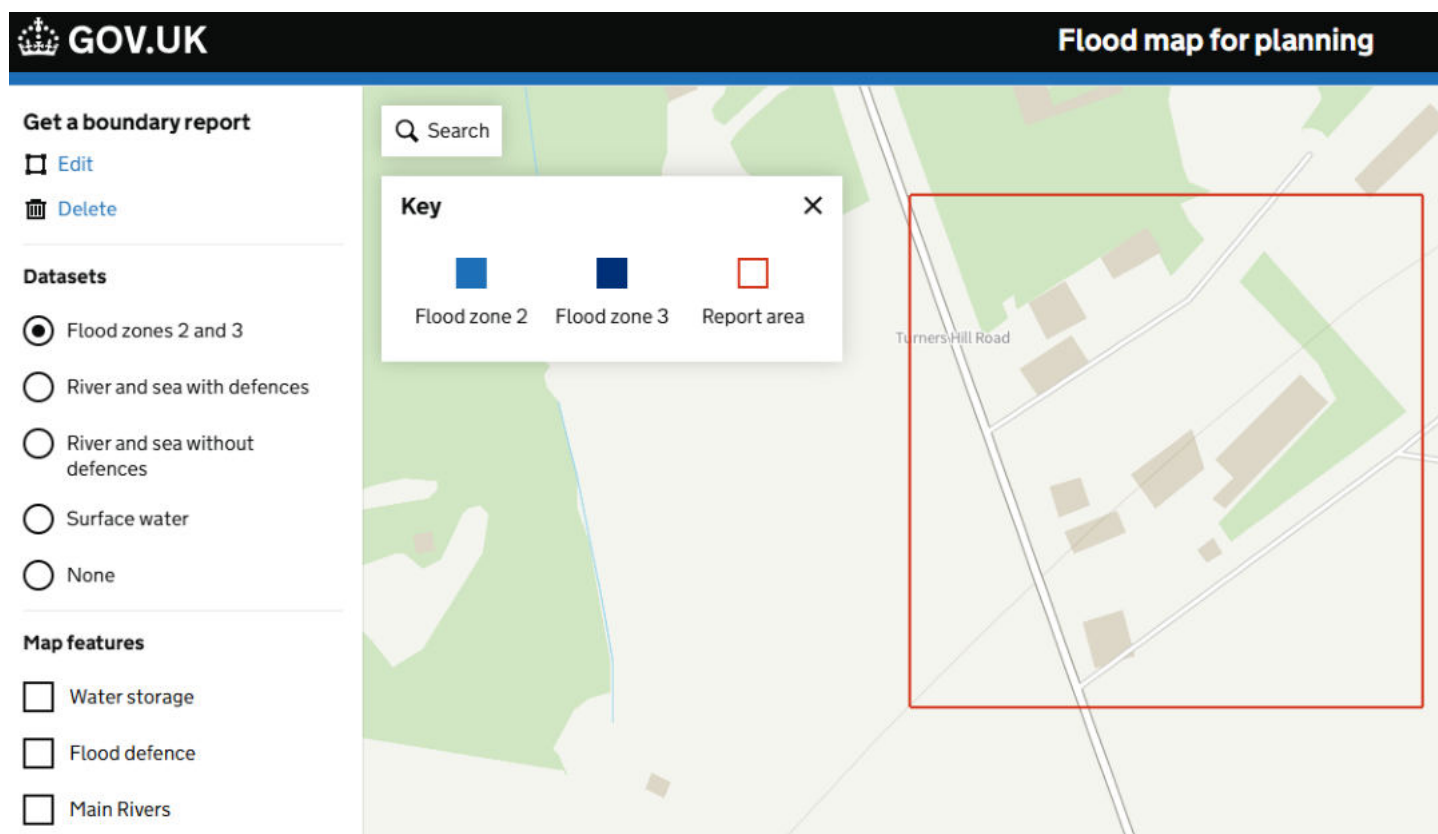


Figure 7. Flood Maps for Planning (Gov.uk)

| Flood Zone                               | Definition                                                                                                                                                                                                                                                                                              |
|------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Zone 1 Low Probability</b>            | Land having a less than 0.1% annual probability of river or sea flooding. (Shown as 'clear' on the Flood Map for Planning – all land outside Zones 2, 3a and 3b).                                                                                                                                       |
| <b>Zone 2 Medium Probability</b>         | Land having between a 1% and 0.1% annual probability of river flooding; or land having between a 0.5% and 0.1% annual probability of sea flooding. (Land shown in light blue on the Flood Map).                                                                                                         |
| <b>Zone 3a High Probability</b>          | Land having a 1% or greater annual probability of river flooding; or land having a 0.5% or greater annual probability of sea. (Land shown in dark blue on the Flood Map).                                                                                                                               |
| <b>Zone 3b The Functional Floodplain</b> | This zone comprises land where water from rivers or the sea has to flow or be stored in times of flood. The identification of functional floodplain should take account of local circumstances and not be defined solely on rigid probability parameters. Functional floodplain will normally comprise: |

|  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|--|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <ul style="list-style-type: none"> <li>Land having a 3.3% or greater annual probability of flooding, with any existing flood management infrastructure operating effectively; or</li> <li>Land that is designed to flood (such as a flood attenuation scheme), even if it would only flood in more extreme events (such as 0.1% annual probability flooding).</li> </ul> <p>Local planning authorities should identify in their Strategic Flood Risk Assessments areas of functional floodplain and its boundaries accordingly, in agreement with the Environment Agency. (Not separately distinguished from Zone 3a on the Flood Map).</p> |
|--|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

- 5.1.2 Flood Maps for Planning, Rivers and the Sea, do not identify the site as being at risk of flooding from such sources in either the present day, or in view of climate change (with and/or without defences).
- 5.1.3 Flood Maps for Planning, Surface Water, largely do not identify the site as being at risk of surface water flooding. Minimal extents beyond the north-eastern boundary are identified as being at risk (1 in 30 and 1 in 100), with areas at or near the site entrance identified as being at risk (1 in 1000).
- 5.1.4 Flood Maps for Planning extracts are contained within **Appendix E**.
- 5.1.5 The Long-Term Flood Risk Service indicates that groundwater and/or reservoir flooding is 'unlikely' at the site.

Other flood risks

[More about groundwater and reservoirs](#)

Groundwater

Flooding from groundwater is unlikely in this area.

Reservoirs

Flooding from reservoirs is unlikely in this area.

Figure 8. Long-Term Flood Risk Service – Groundwater and Reservoirs (Gov.uk)

## 5.2 Summary of Flood Risk

### 5.2.1 The potential sources of flooding are:

| Source of Flooding        | Level of Risk                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|---------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Rivers and Coastal</b> | <b>Very Low</b><br>The site is not identified as being at risk of flooding from such sources.                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Surface Water</b>      | <b>Very Low to Low</b><br>Flood Maps for Planning, Surface Water, identify the site, largely, as not being at risk of surface water flooding.<br>Extents beyond the north-eastern boundary of the site are identified as being at risk (1 in 30 and 1 in 100) as well as at or near the site entrance (1 in 1000).                                                                                                                                            |
| <b>Groundwater</b>        | <b>Low to Medium</b><br>Groundwater has been encountered at shallow depths on site in relation to investigation undertaken by Albury S.I. Ltd.<br>The Long-term Flood Risk Service (Gov.uk) indicates that groundwater flooding is 'unlikely' at the site.<br>No historic instances of groundwater flooding have been identified at the site.                                                                                                                 |
| <b>Sewers</b>             | <b>Very Low</b><br>There are no public surface water sewers within the vicinity of the site, whilst the nearest public foul water sewer is located beneath Turners Hill Road.<br>The site is served by an existing connection to the public foul water sewer.<br>Given the location of the known sewer and the local topography, sewer flooding is not anticipated.<br>No information has been identified which suggests historic sewer flooding at the site. |
| <b>Artificial Sources</b> | <b>None</b><br>The site is not identified as being at risk of flooding from artificial sources.                                                                                                                                                                                                                                                                                                                                                               |

## 6 PROPOSED DEVELOPMENT

### 6.1 Description of Development

- 6.1.1 The proposed development will the demolition of the existing buildings on site and the construction of 5 No. dwellings. The architectural development proposals are contained within **Appendix A**.
- 6.1.2 The type of development proposed falls within the "More Vulnerable" flood risk vulnerability classification (Annex 3: Flood risk vulnerability classification, NPPF) and is appropriate in Flood Zone 1 (Flood Risk and Coastal Change Table 2).

| Flood Zones                                                               | Flood Risk Vulnerability Classification |                         |                         |                 |                  |
|---------------------------------------------------------------------------|-----------------------------------------|-------------------------|-------------------------|-----------------|------------------|
|                                                                           | Essential Infrastructure                | Highly Vulnerable       | More Vulnerable         | Less Vulnerable | Water Compatible |
| Flood Zone 1                                                              | ✓                                       | ✓                       | ✓                       | ✓               | ✓                |
| Flood Zone 2                                                              | ✓                                       | Exception Test Required | ✓                       | ✓               | ✓                |
| Flood Zone 3a†                                                            | Exception Test Required †               | ✗                       | Exception Test Required | ✓               | ✓                |
| Flood Zone 3b*                                                            | Exceptions Test Required *              | ✗                       | ✗                       | ✗               | ✓*               |
| ✓ = Development is appropriate<br>✗ = Development should not be permitted |                                         |                         |                         |                 |                  |

- 6.1.3 The pre-development impermeable area totals 1,459m<sup>2</sup> (0.15Ha).
- 6.1.4 The post-development impermeable area totals 1,313m<sup>2</sup> (0.13Ha).
- 6.1.5 The reduction in impermeable area, post development, amounts to 146m<sup>2</sup> (10%).
- 6.1.6 The use of SuDS methods and techniques, where site conditions and constraints allow, will be utilised to assist in the management of surface water run-off generated by the proposed development, whilst adhering to the SuDS hierarchy as stated within Building Regulations (Part H) and The SuDS Manual (C753).
- 6.1.7 The specific drainage proposal is detailed in **Section 7** of this report.

## 7 PROPOSED DRAINAGE STRATEGY

### 7.1 Surface Water

7.1.1 The SUDS Manual and Building Regulations, Approved Document H, set out a hierarchy of drainage methods to ensure that developments maximise the use of sustainable drainage techniques. The hierarchy favours infiltration methods of disposal over other methods such as watercourse and sewers, as detailed below;

- i. Utilise infiltration techniques
- ii. Attenuate rainwater in ponds or open water features for gradual release
- iii. Attenuate rainwater by storing in tanks or sealed water features for gradual release
- iv. Discharge rainwater direct to a watercourse
- v. Discharge rainwater to a surface water sewer/drain
- vi. Discharge rainwater to a combined sewer

| SUDS Technique                                                                          | Suitable | Comments                                                                                                                                                          |
|-----------------------------------------------------------------------------------------|----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Living Roof                                                                             | No       | Not suitable in view of architectural proposals.                                                                                                                  |
| Basins and Ponds (such as Wetlands, Balancing Ponds, Detention Basins, Retention Ponds) | No       | Not viable in view of spatial constraints at the site and the proposed site layout.                                                                               |
| Filter strips and swales                                                                | No       | Not viable in view of spatial constraints at the site.                                                                                                            |
| Infiltration Devices<br>- Soakaways<br>- Infiltration trenches and basins               | No       | Groundwater has been encountered at shallow depths (as shallow as 0.49m below ground level), therefore infiltration methods and techniques cannot be implemented. |
| Permeable surfaces and filter drains (such as gravelled areas and porous block paving)  | Yes      | Features such as permeable paving will need to be tanked to avoid groundwater ingress.                                                                            |
| Tanked systems (such as oversized pipes or cellular tanks)                              | Yes      | Groundwater to be considered in terms of flotation.                                                                                                               |

7.1.2 Site investigation undertaken by Albury S.I. Ltd in April and May 2024 has identified groundwater at shallow depths at the site.

- 7.1.3 West Sussex County Council policies require 1m+ freeboard in relation to peak groundwater levels and the base of infiltration features. In view of the depths at which groundwater has been encountered on site, it is not possible to utilise infiltration and accommodate soakaways on site to serve the proposed development. The presence of made-ground is also restrictive in relation to such features.
- 7.1.4 The site currently drains surface water to Southern Water's public foul water sewer, beneath Turners Hill Road. As existing, the site drains freely, without attenuation, to the public foul water sewer. Even with betterment proposed, Southern Water will not accept post-development surface water run-off within their public foul water sewer network, owing to recent policy changes.
- 7.1.5 Southern Water's public sewer records do not identify any public surface water sewers within the vicinity of the site. Southern Water has confirmed in correspondence that *'it appears there is no surface water sewer in the area.'*
- 7.1.6 West Sussex County Council will not permit private surface water flows to discharge to public highway drainage systems. As such, it is not possible to discharge surface water to the highway drain serving Turners Hill Road.
- 7.1.7 It is proposed that run-off, post-development, will drain to the ordinary watercourse located on the southern-side of Turners Hill Road, opposite the site entrance. This watercourse flows in a westerly direction along Turners Hill Road.
- 7.1.8 It is proposed that the majority of the access drive and all private driveways will be of a permeable construction. This will be tanked.
- 7.1.9 The initial stretch of the access drive will be of an impermeable construction, draining via road gullies to a new surface water sewer constructed on site.
- 7.1.10 Flows discharging off-site to the ordinary watercourse will be restricted to 1.00 l/s.
- 7.1.11 The surface water drainage calculations have considered a 1-in-100-year storm event, inclusive of an allowance of 40% for the potential impact(s) of climate change.

## 7.2 Treatment

- 7.2.1 In accordance with the CIRIA SuDS Manual C753 regarding methods for managing pollution risks, the risk posed by surface water run-off to the receiving environment depends on the pollution hazard at the site (the source), SuDS treatment techniques (the pathway), and the sensitivity of the environment (the receptor).
- 7.2.2 The simple index approach considers whether SuDS techniques are appropriate for the site. The states that for SuDS components to deliver adequate treatment, the total pollution mitigation index for each contaminant type should equal or exceed the pollution hazard index.
- 7.2.3 The SuDS Manual outlines three categories of pollution hazard identification, which vary depending on proposed land use, which are as follows:
- Total Suspended Solids (TSS).
  - Metals (M).
  - Hydrocarbons (H).

- 7.2.4 In accordance with C753 Table 26.2, the proposed land uses at the site are categorised as follows:
- Residential Roofs– Very low/TSS=0.2/M=0.2/H=0.05
  - Individual property driveways, residential car parks, low traffic roads – Low/TSS=0.5/M=0.4/H=0.4
- 7.2.5 In accordance with C753 Table 26.3, the values of SuDS Mitigation indices are provided for permeable paving:
- Permeable Pavement – TSS=0.7/M=0.6/H=0.7
- 7.2.6 The use of permeable paving will ensure that run-off from the site receives a level of treatment required by the SuDS Manual, with hydrocarbons being filtered by the aggregate and geotextile layers.
- 7.2.7 As the pollution hazard index does not exceed any pollution mitigation index for any contaminant type, the proposed SuDS methods will provide sufficient treatment for the proposed development.
- 7.3 Climate Change**
- 7.3.1 Gov.uk provides guidance for local planning authorities preparing strategic flood risk assessments and developers and their agents preparing flood risk assessments for planning applications, and development consent orders for nationally significant infrastructure projects.
- 7.3.2 Climate change allowances are predictions of anticipated change for peak river flow, peak rainfall intensity, sea level rise and offshore wind speed and extreme wave height.
- 7.3.3 Allowance for climate change shall be provided in the undertaking of site-specific flood risk assessments where new development is proposed to minimise vulnerability and provide resilience to flooding and coastal change.
- 7.3.4 The 'Peak Rainfall Allowances Map' shows anticipated changes in peak rainfall intensity.
- 7.3.5 Based on the latest allowances, for the 3.3% annual exceedance rainfall event, an increase of 35% should be applied to peak rainfall in relation to the proposed development.
- 7.3.6 For the 1% annual exceedance rainfall event, an increase of 40% should be applied to peak rainfall in relation to the proposed development.

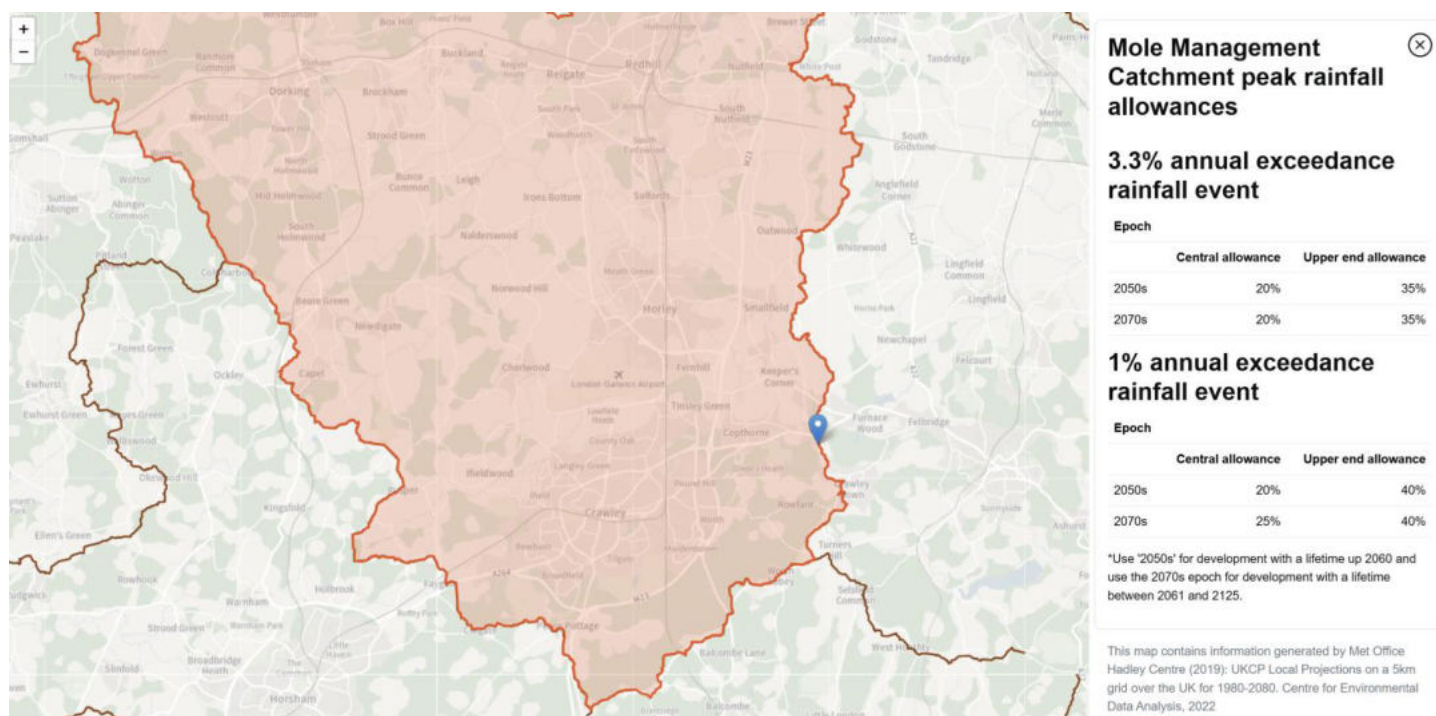


Figure 9. Climate Change Allowances – Peak Rainfall Allowances (Gov.uk)

## 7.4 Urban Creep

- 7.4.1 An allowance of 10% has been made within the surface water drainage calculations prepared for the potential impacts of urban creep. This has been attributed to the proposed roof areas of the 5 No. plots.

## 7.5 Foul Water Drainage

- 7.5.1 It is proposed that the 5 No. dwellings will drain to Southern Water's public foul water sewer. A new connection is to be established.
- 7.5.2 Post development, peak foul water flows are estimated to amount to 0.23 l/s (based on Sewer Sector Guidance, Appendix C, Design and Construction Guidance).
- 7.5.3 Connection to the public foul water sewer will be subject to a S106 application, and approval from Southern Water.
- 7.5.4 Recent changes to infrastructure and connection charges (OFWAT Charging Rules) place the onus on the sewerage undertaker to reinforce their network should there no longer be sufficient capacity to serve the new development. Funding for this is provided by revised charging arrangements for infrastructure and connection charges for each dwelling constructed comprising a Network Reinforcement Charge and Site-Specific Charges. The revised charging arrangement (funded by the developer) covers alterations to the Existing Sewer Network and the sewerage undertaker remains responsible for the cost of reinforcing their Strategic Assets. The developer is responsible for connecting the development to the public sewer network.

## 8 MAINTENANCE

### 8.1 Proposed Maintenance Regime

8.1.1 Maintenance is required to ensure the long-term operational performance of the proposed surface water drainage system.

8.1.2 The drainage system has been designed to minimise maintenance requirements; however a number of key tasks will need to be undertaken so that the system remains in optimal condition. These operations are summarised in the table below, along with the required frequency of works.

| Drainage System feature                                        | Proposed maintenance / remedial works                                  | Required frequency of works        |
|----------------------------------------------------------------|------------------------------------------------------------------------|------------------------------------|
| <b>Permeable Paving</b>                                        | Surface raking/sweeping to reduce/remove silt and debris accumulation. | Every 8 to 12 weeks                |
|                                                                | Removal / management of weed growth                                    | At least once a year               |
| <b>Diffuser units &amp; catch pits, gully sumps and drains</b> | Inspection and additional cleansing as required.                       | Annual                             |
|                                                                | Desilting                                                              | Year 1, Year 3, then every 5 years |
| <b>Pipework</b>                                                | Jetting to clear blockages                                             | As required                        |

8.1.3 Infrastructure which is 'shared' (i.e. serving more than a single plot and/or falling outside of any individual plot's curtilage) will be the responsibility of an appointed Management Company.

8.1.4 The responsibility of any drainage infrastructure supporting a single dwelling will be the sole responsibility of the owner/occupier of the associated dwelling.

### Accidental Spillages

8.1.5 It is not envisaged that any materials are to be stored onsite once the development has been completed, which could cause major spills and potential pollution issues within the drainage system. If this situation alters in the future consultation with a specialist will be required in order to confirm if any upgrades to the existing system are necessary.

8.1.6 Minor spillages of fuels and oils will be dealt with by the permeable paving and deep trapped gullies, by bio-degrading and collecting the hydrocarbons respectively.

### Future Alterations to the Development

8.1.7 Any future alterations at the site which may impact upon the proposed drainage systems should be assessed and confirmed by a specialist.

8.1.8 Where possible any future services are to avoid being located through areas of permeable paving.

8.1.9 If new services are required to run through areas of permeable paving, services should be installed below the depth of permeable paving with the permeable system reinstalled above.

## 9 OFFSITE IMPACTS

- 9.1.1 The proposed surface water drainage system will improve the off-site situation by removing existing surface water flows from the site, and groundwater ingress, from Southern Water's public foul water sewer network, and discharging run-off instead to the ordinary watercourse on the southern side of Turners Hill Road at a restricted rate of 1.00 l/s.
- 9.1.2 Foul water from the proposed development will drain to Southern Water's public foul water sewer, via a new connection to be established on Turners Hill Road.

## 10 SUMMARY

- 10.1.1 The proposed development concerns the demolition of all existing buildings on site and construction of 5 No. dwellings and associated parking.
- 10.1.2 The site measures 2,780m<sup>2</sup> (0.28Ha) and is currently occupied by 4 No. existing buildings with an existing impermeable area totalling 1,459m<sup>2</sup>.
- 10.1.3 The site topographic survey identifies levels in the range of 109.80m AOD and 112.100m AOD.
- 10.1.4 Groundwater has been identified on site at depths as shallow as 0.49m below ground level.
- 10.1.5 The site currently drains to soakaways with a high-level overflow to Southern Water's public foul water sewer beneath Turners Hill Road.
- 10.1.6 The site is located in Flood Zone 1 and has been assessed as being at 'Very Low' or 'Low' risk of flooding from all of the potential sources of flood risk considered, with the exception of groundwater ('Low' to 'Medium').
- 10.1.7 Post development, the site will drain to the ordinary watercourse on the southern side of Turners Hill Road, opposite the site entrance.
- 10.1.8 Surface water flows discharging off-site will be restricted to 1.00 l/s with attenuation provided within the proposed permeable paving.
- 10.1.9 Post development, peak foul water flows are estimated to be to 0.23 l/s (based on Sewer Sector Guidance, Appendix C, Design and Construction Guidance).
- 10.1.10 Foul water will drain to the public foul water sewer beneath Turners Hill Road. A new connection will be established.
- 10.1.11 There will be no negative impacts off-site as a result of the re-development of the site, with betterment provided in respect of surface water drainage.