

EVIDENCE BASE: Surface Water Flooding

This document provides evidence in relation to Surface Water Flooding in East Horsley. This area of the Neighbourhood Plan draws upon the Guildford Surface Water Management Plan of October 2014, upon data provided by the Environment Agency, the NPPF Technical Guidance in relation to flooding and upon other local sources within East Horsley.

The following are provided in this document:

- a) Environment Agency, Flood Map for Planning: East Horsley
- b) Environment Agency, Flood Risk Map, area around East Horsley
- c) Horsley Streams & Ponds, a schematic layout
- d) Extract from Guildford Surface Water Management Plan, October 2014

a) Environment Agency, Flood Map for Planning

Environment Agency

Enter a postcode or place name: Other topics for this area...

Flood Map for Planning (Rivers and Sea)

X: 508,936; Y: 154,460 at scale 1:10,000 [Other maps](#) [Data search](#) [Text only version](#)

Map legend

Click on the map to see what Flood Zone (National Planning Policy Guidance definitions) the proposed development is in.

- Flood Map for Planning (Rivers and Sea)
- Flood Zone 3
- Flood Zone 2
- Flood defences (Not all may be shown?)
- Areas benefiting from flood defences (Not all may be shown?)
- Main River Line
- Main River Line
- Other national environmental organisations
- Natural Resources Wales Area of responsibility
- Scottish Environment Protection Agency Area of responsibility

Customer in Wales - From 1 April 2015 Natural Resources Wales (NRW) has taken over the responsibilities of the Environment Agency in Wales. © Environment Agency copyright and database rights 2015. © Ordnance Survey Crown copyright. All rights reserved. Environment Agency, 159820000. Contains Royal Mail data © Royal Mail copyright and database right 2015. This service is designed to inform members of the public, in line with our terms and conditions. For business or commercial use, please contact us.

More about flooding:

Understanding the Flood Map for Planning (Rivers and Sea)

A more detailed explanation to help you understand the flood map shown above.

Current flood warnings

We provide flood warnings online 24 hours a day. Find out the current flood warning status in your local area.

* **Legend information:** Flood defences and the areas benefiting from them are gradually being added through updates. Please contact your local environment agency office for further details.

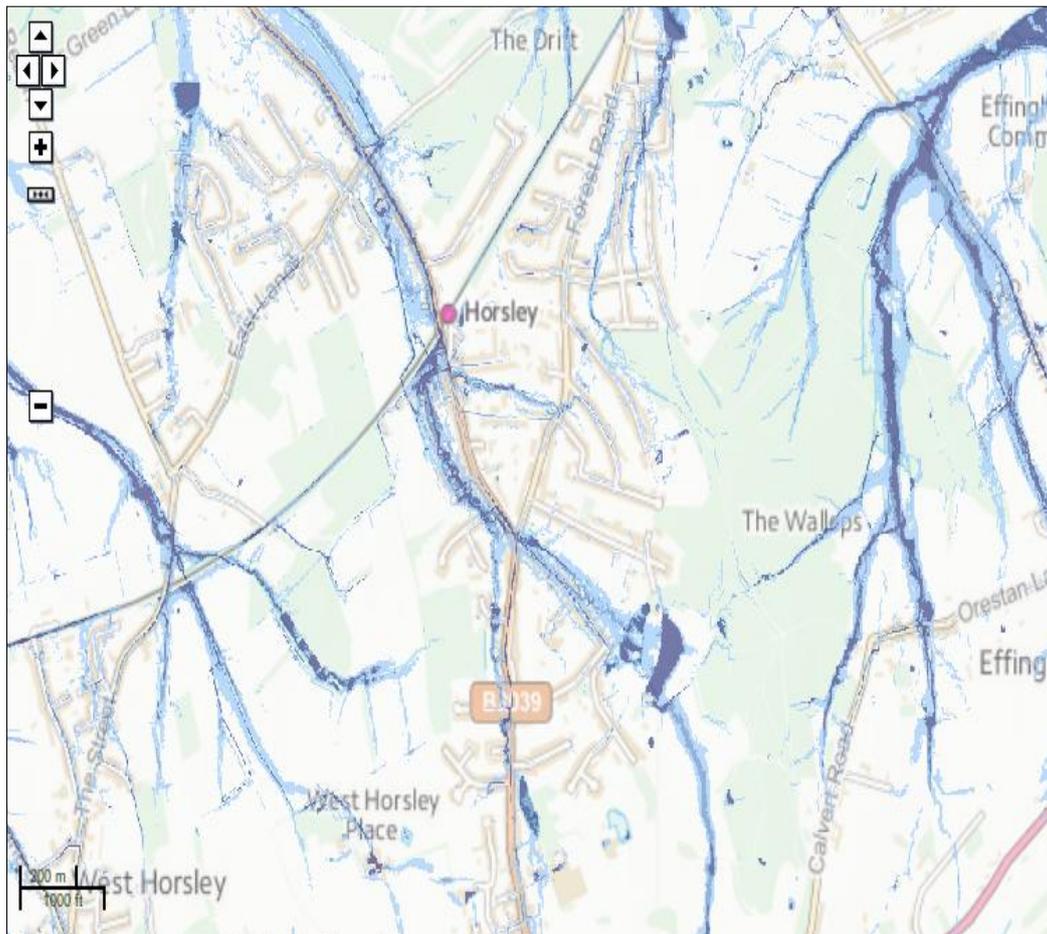
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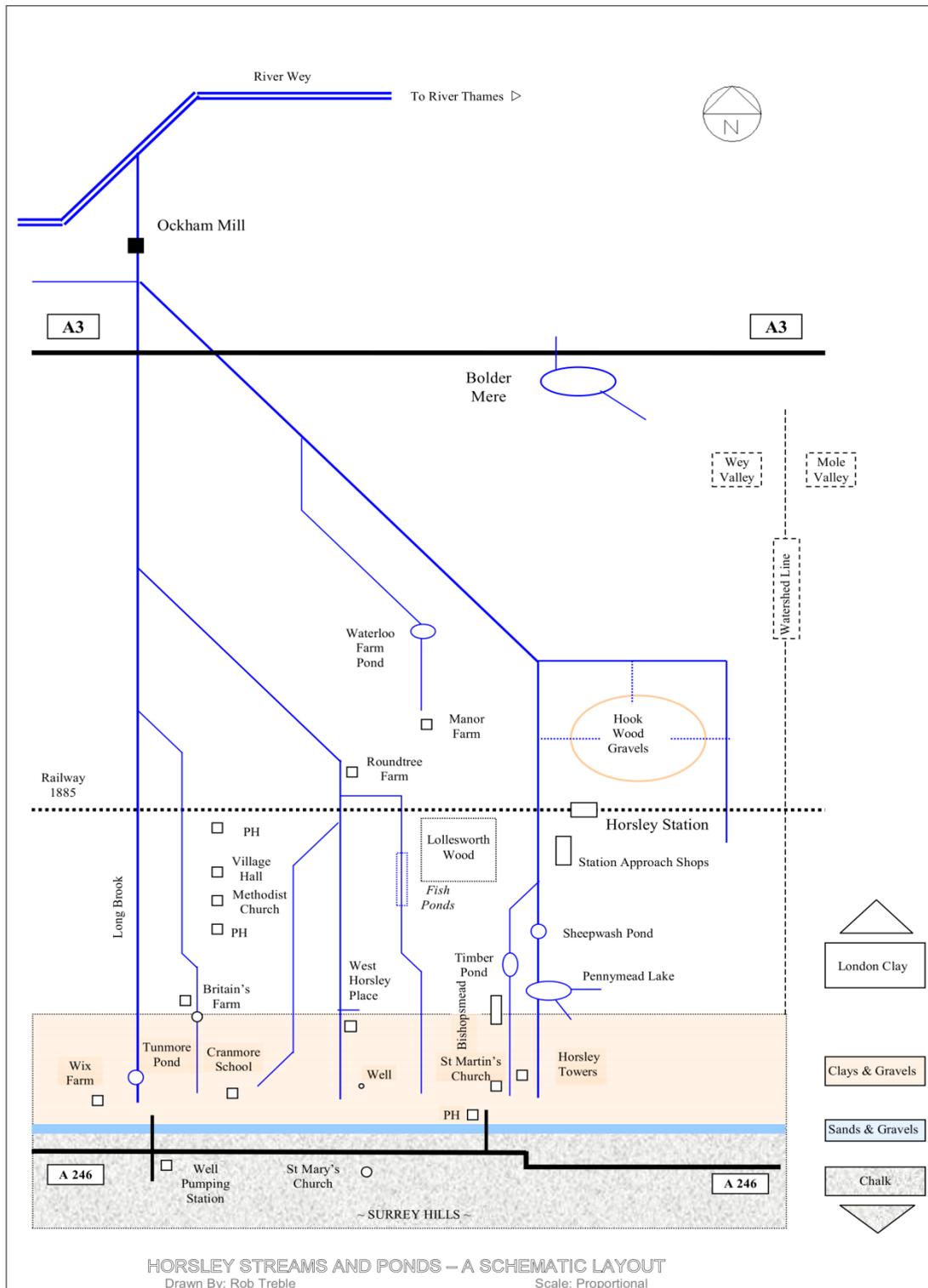
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b) Environment Agency, Flood Risk Map: Area around East Horsley



c) Horsley Streams & Ponds, a schematic layout

Prepared by Mr Robert Treble of HCPS.



d) Extract from Guildford Surface Water Management Plan, October 2014

The Horsleys

5.10.1 Summary of flood risk

There is an ordinary watercourse originating south of Lynx Hill road, which runs in a north-westerly direction through two large ponds (Pennymead Lake and Sheepwash Pond). Downstream of Sheepwash Pond the watercourse is a mixture of open and culverted sections, and as it emerges in the sports field to the south of the village hall the outlet is a 1500 mm circular culvert (near Old Rectory Lane). This watercourse runs parallel to the tennis courts in a northerly direction before passing through a dual culvert under the railway which has an unusual configuration. At the culvert inlet there is a drop into a 1500 mm culvert which flows north-westerly, and a 600 mm culvert which flows in a northerly direction (under Kingston Avenue near the village hall). The culverts near Old Rectory Lane (1500mm) and Kingston Avenue (1500mm + 600mm) have been assessed to confirm their capacity to accommodate predicted flows from the upstream catchment. Both culverts are predicted to have capacity to accommodate flows in excess of those due to a 1 in 75 year rainfall probability event.

However, surface water modelling predicts significant flood risk to properties on Kingston Avenue, Old Rectory Lane and Ockham Road South, probably due to overtopping of the watercourses in the area. It is unclear from anecdotal evidence gained from Guildford Borough Council's flood records or from the site visit whether the watercourses have a history of overtopping (either at open or culverted sections), or are indeed at risk of overtopping during a large rainfall event. In the absence of anecdotal evidence of flooding from the watercourse, it is not recommended that mitigation measures are taken forward, but further investigation is required.

There is a secondary watercourse which seems to flow through the back of no's 44-48 Kingston Avenue before flowing under the railway in a 450 mm culvert. The source of this watercourse is unknown. There is an additional flow pathway which is from a third watercourse running east to west past Maranello House. This watercourse was not traced during the site visit.

Anecdotal evidence from Guildford Borough Council and the site visit confirms flooding has been experienced on Kingston Avenue near no's 44-48. Evidence from the site visit indicated a lack of highway gullies at the low spot outside no. 46 Kingston Avenue. Furthermore, Surrey County Council confirmed a programme of jetting of highway gullies was undertaken three years ago to remove silt from the system.

The addition (or further jetting work) of highway gullies at the low spot of Kingston Avenue would help to alleviate this flooding, although there is uncertainty as to where the highway drainage connects to.

In addition to the flood risk noted above there is also historical evidence of flooding on East Lane and The Street in West Horsley, affecting the highway. Based on feedback from the public consultation on the SWMP the flooding is believed to be related to maintenance of the highway network in this location.

5.10.2 Appraisal of options

The primary location where both anecdotal and modelling evidence indicate flood risk is on Kingston Avenue. Site visits indicated the presence of blocked highway gullies and a lack of highway gullies in the low spot on Kingston Avenue. Therefore, it is recommended that enhanced highway maintenance is undertaken, and further investigation is undertaken to establish the scope for providing additional highway gullies to drain surface water away. It is estimated that up to 10 properties could be affected by flood risk on Kingston Avenue. Therefore, the improvements to highway drainage could offer an improved level of protection to 10 properties. The works are estimated to cost £10,000. It is also recommended that Surrey County Council investigate the condition and maintenance of the highway network on East Lane and The Street in West Horsley.

In addition, because of the scale of predicted flood risk in Horsley it is recommended that detailed investigation and integrated modelling is undertaken of the watercourse and drainage in the area. Initially, Guildford Borough Council officers should engage with local residents and the parish council to better understand historic flooding in this catchment due to overtopping of the watercourse. Subsequently, CCTV and detailed integrated hydraulic modelling should be undertaken to understand flood risk and potential mitigation measures. It is estimated that survey and detailed hydraulic modelling would cost in the order of £50,000-£75,000.

5.10.3 Funding strategy

It is recommended that highway drainage improvements on Kingston Avenue are funded and delivered by Surrey County Council as the highways authority. A CCTV survey of the watercourse to the rear of Kingston Avenue should be undertaken by Guildford Borough Council.

Further investigation and detailed hydraulic modelling of the watercourse through East Horsley is recommended. Initially, Guildford Borough Council should undertake engagement and consultation with local residents to better understand historic flooding in the catchment. Subsequently, it is recommended that an application for FDGiA funding is submitted to undertake detailed hydraulic modelling of the watercourse and drainage network in East Horsley to improve understanding of flood risk and potential mitigation measures. CCTV survey of the culverted watercourses may be required and should be funded by Guildford Borough Council.

5.10.4 Assumptions and uncertainties

□ Surface water mapping indicates significant flood risk to properties in East Horsley. There is limited anecdotal evidence of flooding, but due to the scale of currently modelled flood risk a catchment hydraulic modelling study is recommended to provide improved confidence in flood risk to properties and infrastructure in East Horsley

⊗ There are two existing ponds upstream of East Horsley which have not been assessed as part of the SWMP, but will need to be investigated as part of future catchment hydraulic modelling in the area.

The small watercourse and culvert under the railway to the rear of properties on Kingston Avenue has not been assessed during the SWMP. Therefore, there is uncertainty about the condition and capacity of the channel and culvert, which needs to be investigated further.

⊗ No mapped information on highway drainage data has been made available for the SWMP, so there is uncertainty about the location of highway drainage assets on Kingston Avenue.