

ONE
HORTON
HEATH



Upper Acre

Flood Risk and Drainage Strategy

December 2025



**ARCH
ASSOCIATES**

DRAINAGE AND FLOOD RISK TECHNICAL NOTE



UPPER ACRE,
ONE HORTON HEATH

DRAINAGE AND FLOOD RISK TECHNICAL NOTE

for

UPPER ACRE
ONE HORTON HEATH

Client:

Eastleigh Borough Council (One Horton Heath Team)
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1.0 Executive Summary

Arch Associates Limited has been appointed by Eastleigh Borough Council (One Horton Heath Team) to prepare a Technical Note to discharge the relevant drainage conditions from the Outline Planning Permission (OPP) and to demonstrate alignment with the drainage principles established in the OPP for the Upper Acre parcel within the wider One Horton Heath development. The surface water drainage system will utilise SuDS treatment trains to manage water quality and quantity as detailed in Section 2.4, which includes using Prevention Measures and Source Control Techniques. The RMA SuDS drainage design has been prepared in accordance with the strategy developed for the OPP, the National Planning Policy Framework (NPPF), Planning Practice Guidance (PPG) and the and the LLFA requirements. The relevant conditions to discharge are listed below:

Condition 58 Flood Risk

Condition 59 Foul Drainage

Condition 61 SUDS

2.0 Introduction

The Upper Acre parcel forms a significant phase within the wider One Horton Heath development, a major mixed-use scheme proposed to the west of Burnetts Lane, Eastleigh. Refer to Figure 1 for proposed scheme location. The overall project, led by Eastleigh Borough Council's One Horton Heath Team, was granted outline planning permission in October 2025 for up to 2,500 homes, a local centre, a primary school, and commercial floorspace (LPA Ref: O/20/89498). The Reserved Matters Application (RMA) for Upper Acre, covering approximately 10.34 hectares, is now being submitted in accordance with the outline consent and associated conditions.



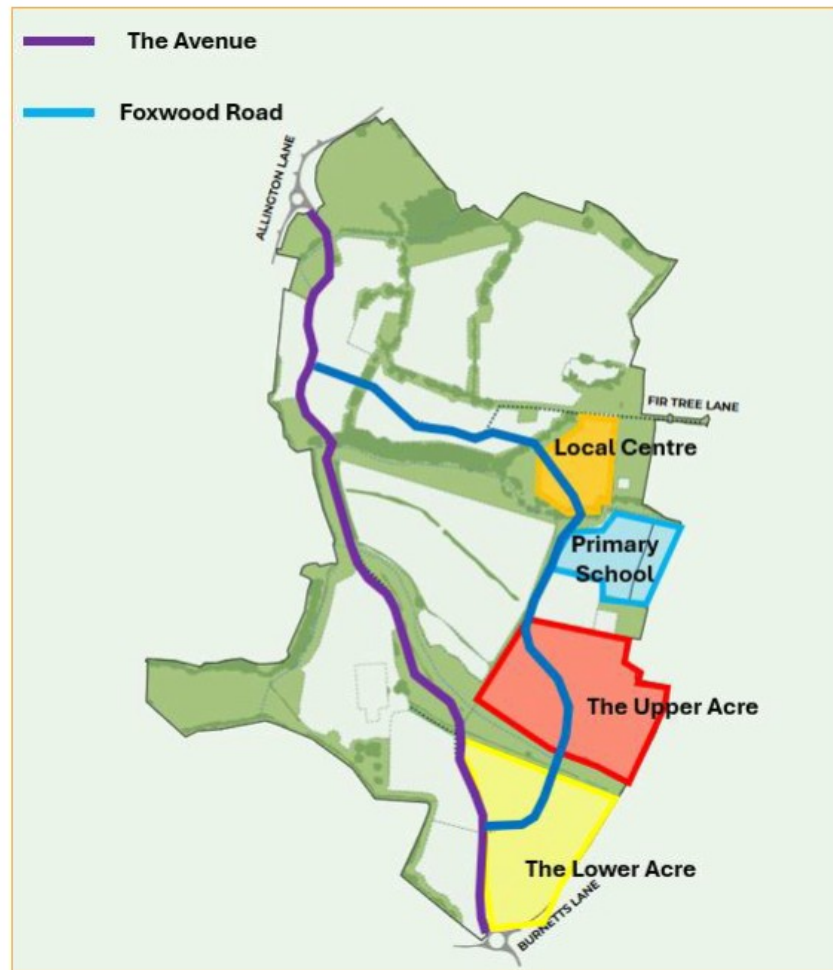


Figure 1 Location of Upper Acre within wider development

Upper Acre is strategically positioned at the eastern boundary of the outline planning site, acting as a transition between the proposed Local Centre and the southern residential neighbourhoods at Lower Acre, which are currently under construction. The site itself is predominantly open agricultural land, bounded by established hedgerows, with existing residential properties and Burnetts Lane to the east, and the ongoing Lower Acre construction to the south. To the west lies an existing solar farm.

The proposed development at Upper Acre comprises 424 dwellings, including a mix of houses and apartments, with a range of one to five-bedroom homes. The scheme is designed to provide accessible homes, with at least 80% of dwellings meeting M4(2) standards for access, parking, and internal arrangements. Car parking provision includes

635 spaces for residents and 127 for visitors, while cycle storage is integrated for all homes, either within garden stores, garages, or dedicated cycle stores for apartments.

3.0 Technical Submission

3.1 Condition 58 – Flood Risk

Condition 58 of LPA Ref: O/20/89498, regarding flood risk, states the following:

Each reserved matters application shall include details of a scheme to address the flood risk issues raised below and no development shall commence until such time as this scheme has been submitted to, and approved in writing by, the local planning authority.

- *Ensure the development is flood resilient by ensuring all finished floor levels are built 600mm above the 1 in 100yr design flood level with the latest climate change allowances.*
- *Ensure no development is built within flood zones 2 and 3*
- *Ensure development is directed away from any watercourse*
- *Ensure any watercourse crossings are detailed and do not increase the risk of flooding either on or off-site. The scheme shall be fully implemented and subsequently maintained, in accordance with the scheme's timing/phasing arrangements, or within any other period as may subsequently be agreed, in writing, by the local planning authority.*

Reason: *To reduce the risk of flooding to the proposed development and its future users and for compliance with Policy DM5 of the Eastleigh Borough Local Plan.*

RESPONSE:

Environment Agency (EA) Flood Map for Planning

Upper Acre lies wholly within EA Flood Zone 1, as can be seen in the Figures 2 and 3 below, which include both the present day flood maps and the 2070 to 2125 future range.



Figure 2 Overlay of present day flood map for planning and site location plan
([Map – Flood map for planning – GOV.UK](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/614442/Map_-_Flood_map_for_planning_-_GOV.UK))

Figure 3 Overlay of 2070 to 2125 flood map for planning and site location plan

([Map – Flood map for planning – GOV.UK](#))

Flooding from Rivers and Streams (Fluvial)

The risk of fluvial flooding in this case is considered to be low given the extent of the modelled flood zones from the EA and local Strategic Flood Risk Assessment (SFRA) information, specifically Flood Zones Sheet 2 of 5, Figure 1B prepared for Eastleigh Borough Council (BC). The SRFA was commissioned on behalf of 10 planning authorities in South Hampshire (the 'Partnership for South Hampshire (PfSH)) to prepare a flood risk assessment. Part 8 of the SRFA provides recommendations to Eastleigh BC to consider when developing policies and establishing requirements for development management.

Flooding from Land (Pluvial)

The EA maps indicate little to no surface water flood risk across the site, and waters are limited to the existing ordinary watercourse. Refer to Figures 4 and 5.



Figure 4 Overlay of EA Surface water flood mapping and site location plan
([Map – Flood map for planning – GOV.UK](#))

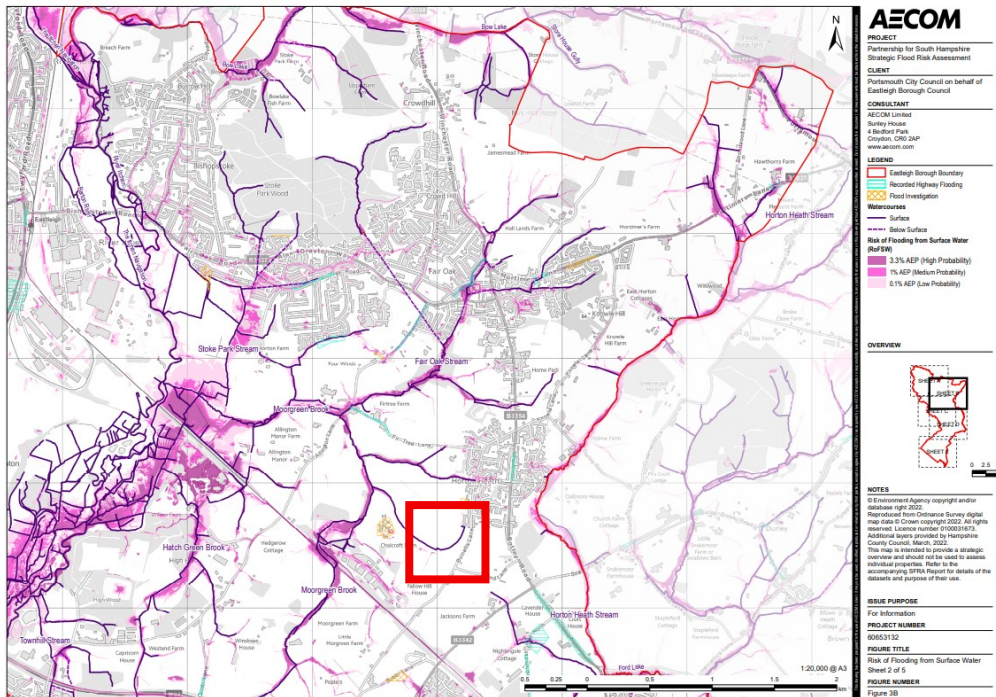


Figure 5 Extract from Eastleigh BC SFRA Surface Water Flood Risk Maps, Sheet 2

([pfsh_eastleigh_figure3_riskoffloodingfromsurfacewater.pdf](#))

Groundwater Flood Risk

According to the SFRA, the site lies within an area of low groundwater flood risk (<25% probability). Refer to Figure 6.

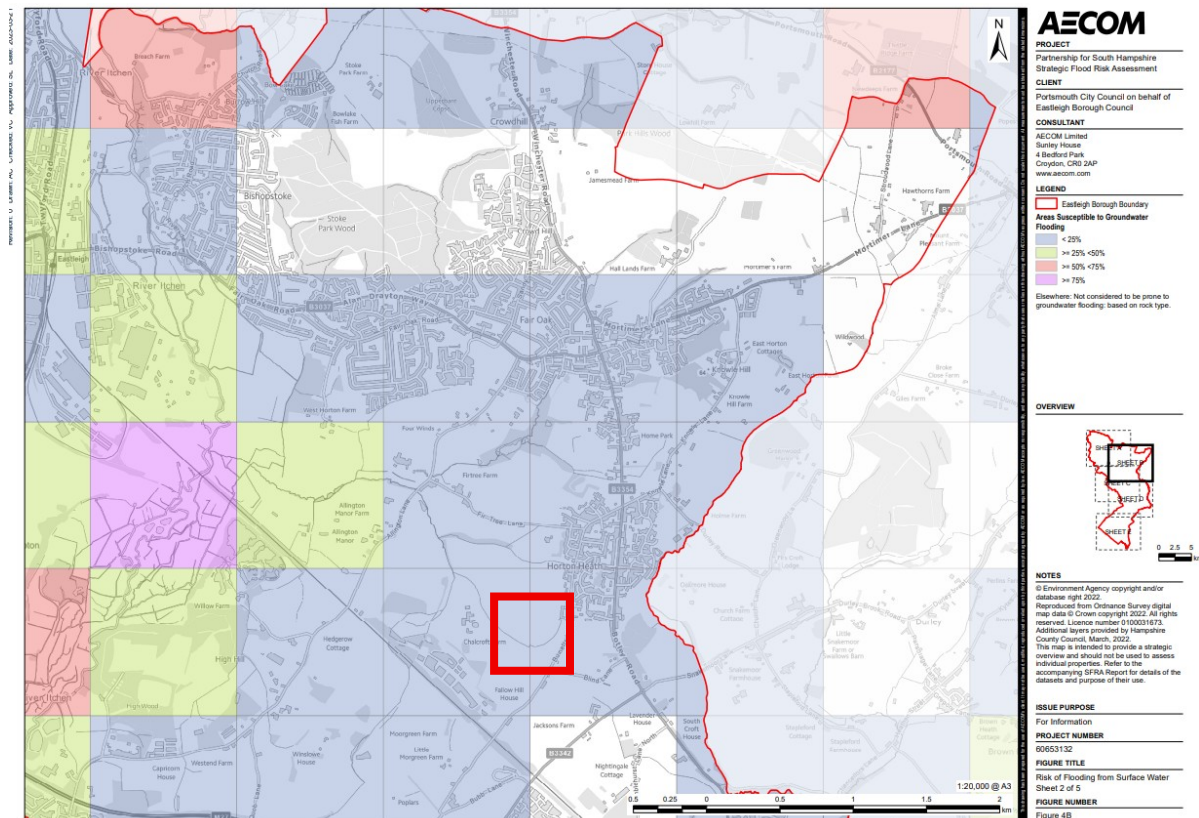


Figure 6 Extract from Eastleigh BC SFRA Groundwater Flood Risk Maps, Sheet 2
[\(pfs_h_eastleigh_figure4_areasusceptibleto groundwaterflooding.pdf\)](#)

The majority of the site is at low risk of groundwater flooding based on available information. The only exceptions are the areas along the natural watercourses in the south and south-eastern parts of the site. Here, groundwater will naturally be shallower, especially near the watercourses, increasing the risk of localised groundwater flooding. However, development has been kept away from the watercourses leaving a reasonable buffer. In addition, the watercourses can convey any potential groundwater surge away from the development. No borehole information is available within the vicinity of the site through British Geological Survey (BGS) mapping to provide additional clarity on the groundwater conditions. A preliminary site investigation carried out by Stantec (ref. STA-10-XX-RP-G-0002) states initial groundwater findings consistent with the above, which

implies that drainage via infiltration is not suitable, though continuous groundwater monitoring remains in effect.

Historic Flooding

According to the SFRA, there have been no reported flood incidents within the development boundary. Refer to Figure 7. A Southern Water reported incident is noted within the existing housing development to the northeast of the site, however the topography local to this incident is such that exceedance flow paths are toward Burnetts Lane, which has been accounted for within the hydraulic calculations. Refer to Appendix 4 – Surface Water Drainage Calculations.

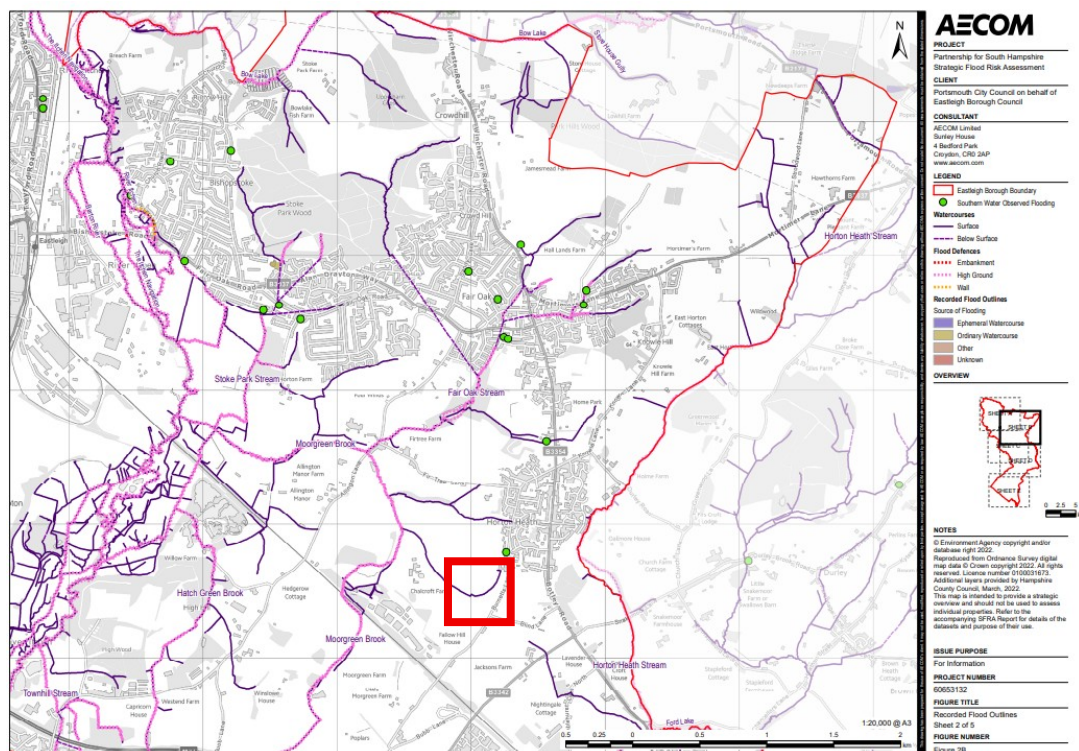


Figure 7 Extract from Eastleigh BC SFRA Report Flood Incidents Map, Sheet 2

([pfsh_eastleigh_figure2_recordedfloodoutlines.pdf](#))

Risk of Flooding from Reservoirs

According to the SFRA, there is a very low risk of flooding from reservoirs. Refer to Figure 8.

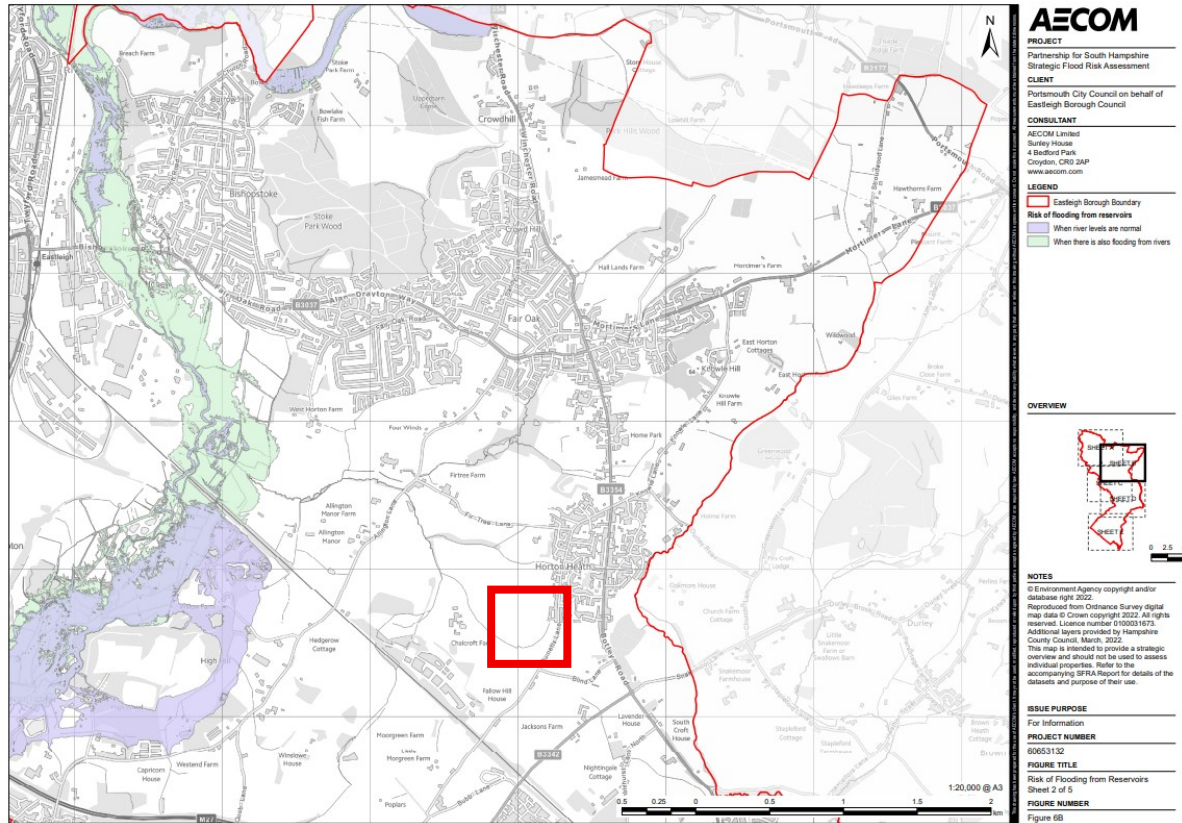


Figure 8 Extract from Eastleigh BC SFRA Report Risk of Reservoir Flooding Map, Sheet 2 ([pfsH_eastleigh_figure6_riskoffloodingfromreservoirs.pdf](#))

The proposed development will be safe from surface water flooding and the development will not increase flood risk elsewhere.

The proposed levels and drainage strategy are such that the development is at a low risk of flooding from the various sources identified above. FFLs across the site are set above flood levels, and the EA and SRFA mapping confirm that the development resides largely within Flood Zone 1 in accordance with Policy 5 of the Eastleigh Borough Local Plan.

Continuous groundwater monitoring remains in effect, however early indications by Stantec imply that drainage via infiltration is not suitable.

3.2 Condition 59 – Foul Drainage

Condition 59 of LPA Ref: O/20/89498, regarding foul drainage, states the following:

Construction of the development of each reserved matters phase (excluding site clearance) shall not commence until full details of any proposed means of foul sewerage have been submitted to, and approved in writing by, the Local Planning Authority in consultation with Southern Water. These shall be in accordance with the submitted Utilities and Foul Water Statement 26114-RP-IE-002 Issue 02, May 2022. The approved details shall be fully implemented prior to the first occupation of development within each reserved matters phase.

Reason: *to provide satisfactory foul drainage and to prevent flooding.*

RESPONSE:

The proposed foul drainage for Upper Acre has been largely set out in the previous submitted applications ((LPA Ref: O/20/89498) and is essentially drained via gravity to a manhole at the southern boundary between Upper and Lower Acre.

The spine road information submitted by Ridge & Partners for the SID spine road includes the proposed foul main run down into Lower Acre. In addition, the construction drawings for Lower Acre, also by Ridge, show the northernmost foul spur into Upper Acre onto which the foul drainage in to connect.

The drawings contained in Appendix 3 – Technical Drawing Pack demonstrate the foul network arrangement.



3.3 Condition 61 – SuDS

Condition 61 of LPA Ref: O/20/89498, regarding SuDS, states the following:

No development of each reserved matters phase shall begin until a detailed final surface water drainage scheme, based on the submitted PFA Flood Risk Assessment G277-FN14-FRA Addendum dated June 22 & submitted 13 Sept 2022 has been submitted and approved in writing by the Local Planning Authority. The submitted details shall include:

- a) at least three forms of naturalised filtration (as proposed) and supported by hydrological studies to demonstrate that the drainage system will not adversely affect the integrity of the River Itchen Special Area of Conservation (SAC) and will contribute towards achieving the conservation objectives of the SAC by improving water quality and reducing fine particle sediment inputs;*
- b) details of how the scheme will contribute to reductions in nitrogen and phosphorous in receiving waters including the River Itchen SAC;*
- c) A technical summary highlighting any changes to the design from that within the approved Flood Risk Assessment and addendums.*
- d) Updated drainage plans and calculations as appropriate to include type, layout and dimensions of drainage features including references to link to the drainage calculations. Cross and long sections of proposed basins to include exceedance flow paths in the event of flow control blockage between basins I & J.*
- f) Details of protection measures to minimise blockage risk to flow control devices.*
- g) Evidence that urban creep has been included within the calculations.*
- h) Updated exceedance plans demonstrating the extent of flooding expected at the 1:100 + climate change event. These must also detail how flows are likely to behave at the apparent low spots where no onward flow path is identified.*
- i) Details of land drainage provision to allow suitable drainage of green areas where overland flow routes are disrupted as a result of the development.*

-
- j) *Confirmation that the SuDS infrastructure is in place or will be in place prior to the development of the related plot.*
 - k) *Confirmation that sufficient water quality measures have been included to satisfy the methodology in the Ciria SuDS Manual C753.*
 - l) *Sustainable drainage elements with attenuation, storage and treatment capacities incorporated as set out in the CRIA SuDS Manual C697 CIRIA SuDS Manual C753, or equivalent and updated local or national design guidance where available. If SuDS are proposed as part of the open space provision on a site, gradients should generally not exceed 1:4;*
 - m) *Details for the long term maintenance, management, adoption and monitoring arrangements for the surface water drainage system. The submitted details shall include:*
 - i) *Maintenance schedules for each drainage feature type*
 - ii) *A plan detailing ownership of each drainage feature*

Confirmation that adoption of features is accepted by Southern Water /Highways Authority/other public body

- iv) *Details of protection measures*
- v) *Specify the responsibilities of each party for the implementation of the SuDS scheme.*
- vi) *Specify a timetable for implementation.*

The sustainable drainage system shall be implemented and thereafter managed and maintained in accordance with the approved details.

Reason: *to prevent risk of flooding and ensure satisfactory drainage for the development in accordance with Policies DM3, DM5, DM6 and DM11 of the Local Plan.*

RESPONSE:

The basis of the surface water strategy that was put forward by PFA at planning stage (Appendix 1 – PFA Outline Planning Flood Risk Assessment and Drainage Strategy) has been carried through into our detailed design. The site development area in this reserved matters planning application considers the parcels either side of the SID spine road for the Upper Acre, which has its own SuDS Strategy and FRA (Appendix 2 – Ridge & Partners Spine Road SuDS Strategy). As such, Basin H as it is generally referred to, which is the basin to the west of the site into which most of the Upper Acre drains, has been designed and detailed by Ridge and Partners. In addition, the basins to the south of the development site, i.e. in the north of Lower Acre and referred to generally as Basins I, J, and K, are already constructed. The portion of the Upper Acre to the east of the watercourse ditch drains entirely to Basin J as allowed for in its original design and the in the PFA master drainage strategy. Consequently, we have ensured within our modelling that the capacities of these basins, considering the contribution of Lower Acre when considering Basin J, have not been exceeded.

The existing drainage strategy for Upper Acre comprises the existing watercourse only, which flows south and then to the west along the boundary between Upper Acre and Lower Acre. The topography of the site directs runoff toward the existing watercourse, which ultimately discharges into the River Itchen.

The proposed surface water strategy consists of a gravity sewer system, a SuDS management train in the forms of permeable paving, flow control units, downstream defenders and attenuation basins. The surface water run-off from the development will be attenuated via cellular attenuation crate systems before discharging into either Basins H or Basin J. The proposed discharge rate for Basin H and Basin J are 70.8l/s and 29.6l/s respectively, which has been established by PFA based on greenfield runoff rates



(Appendix 1 – PFA Outline Planning Flood Risk Assessment and Drainage Strategy) and contributing catchment areas.

Treatment Train/Water Quality

The SuDS treatment train generally includes a combination of permeable paving, specialist treatment manholes and attenuation basins. Water quality can therefore be assessed using the CIRIA SuDS Manual simple index approach as defined in Table 1.

Element	Pollution Hazard Indices			
	Pollution Hazard Level	Total Suspended Solids	Metals	Hydrocarbons
Roads (excluding low traffic roads, etc.)	Medium	0.7	0.6	0.7
	Pollution Mitigation Indices			
Downstream Defender (Advanced)		0.5	0.4	0.5
Detention Basin		0.7	0.7	0.5
Total		0.85	0.75	0.75
Sufficiency		Sufficient	Sufficient	Sufficient

Table 1 CIRIA Suds Simple Index Approach

*Given the varied land use across the runoff area, the land use type with the highest pollution index is selected for the assessment. Permeable paving has been excluded

from the above assessment as the spine road discharges into the treatment manhole before out-falling to the basin, therefore no permeable paving is present in this worst case condition.

Nitrate and Phosphorous Removal

Retention Ponds

- Retention ponds provide both flood attenuation and water quality treatment, as well as biodiversity and amenity benefits.

Phosphorous Removal Mechanisms

- Sediment Forebay:
An upstream device captures coarse sediments and gross pollutants before water enters the main pond, preventing silt build-up and protecting water quality.
- Fine Sediment Deposition:
The pond is designed so that fine sediments settle at the bottom and are not disturbed or washed out during high flows.
- Biological Uptake:
Aquatic plants and flora within the pond absorb phosphorous, reducing its concentration in the water.

Nitrate Removal Mechanisms

- Sediment Forebay:
Removes coarse sediments, which often bind with nutrients.
- Permanent Pool:
Allows further settlement of fine sediments and removal of nutrients through physical and biological processes.
- Nitrogen-Reducing Vegetation:
Marginal and aquatic species (including evergreens) are selected for their ability to uptake and reduce nitrogen compounds.
- Multi-Zone Basin Design:

The pond is divided into distinct cells/zones, increasing water residence time and pollutant removal pathways. This enhances nutrient removal, simplifies maintenance, and supports varied ecology.

- **Micro Pools and Aquatic Benches:**

Micro pools and surrounding wetland planting act as biological filters, further removing nutrients and providing habitat and safety benefits.

- **Marshy Grassland Areas:**

Shallow, wet grassland around the micro pools provides additional filtration.

Refer to Appendix 2 – Ridge & Partners Spine Road SuDS Strategy for details for both Basin H and Basin J, which incorporate the various features mentioned above.

SuDS Maintenance

The maintenance regime of the surface water drainage system and its components is outlined within the accompanying Arch Associates Limited SuDS Maintenance Manual (ref. AAL390 DRAINAGE MAINTENANCE MANUAL – A). Maintenance of the adopted portions of drainage will be the responsibility of the adopting authority. Maintenance of all remaining private drainage will be the responsibility of the management company.

Protection of the watercourse during construction

The site phasing plan will ultimately be provided by the contractor. As the site topography naturally falls towards the watercourse in the south, surface water run-off during construction will naturally be allowed to flow overland before entering the watercourse.

Prior to construction, a specialist silt fence should be installed along any boundary between development and a watercourse. This is to be in the form of a Terrastop Premium solution by Hy-Tex, or similar approved, and installed in accordance with the



manufacturer's recommendations. Refer to Figure 9 for specialist silt fence in practice. The protection measures are to be inspected daily by the site management and any defects repaired immediately.



Figure 9 Example of Terrastop Premium on a working site

The drawings contained in Appendix 3 – Technical Drawing Pack demonstrate the surface water network arrangement.

The proposed surface water drainage strategy remains in accordance with the PFA strategy and principles outlined at OPP. The technical drawing pack and surface water hydraulic calculations within Appendices 3 (Technical Drawing Pack) and 4 (Surface Water Drainage Calculations) respectively demonstrate the alignment with the aforementioned documents/principles. The Maintenance Manual (ref. AAL390 DRAINAGE MAINTENANCE MANUAL – A) details the maintenance of each drainage asset, inclusive of responsible parties and frequency of maintenance activities.