



Land East of Henfield Road, Cowfold

Flood Risk Assessment

May 2026



Flood Risk Assessment

Land East of Henfield Road (A281), Cowfold

Client

Landacre Developments Ltd

Ref: 14136

Date: May 2026

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Issue	Issue date	Compiled	Checked
First Draft Issue	15/05/2026	DT	FVV
First Issue	18/05/2026	DT	FVV

Executive Summary

- The outline planning application is submitted on behalf of Landacre Developments Ltd to Horsham District Council for the construction of approximately 40 residential dwellings on Land East of Henfield Road (A281), Cowfold. This FRA has been prepared in accordance with the NPPF (2025) and the Planning Practice Guidance: Flood risk and coastal change (PPG ID7, updated September 2025).
- The majority of the site lies within Flood Zone 1 – Low Probability, remote from any significant fluvial flood risk. An area of Flood Zones 2 and 3 exists along the southern boundary associated with the Cowfold Stream but is contained within the ditch corridor and does not constrain the proposed development footprint. All proposed dwellings, accesses and SuDS features are located within Flood Zone 1.
- A localised surface water flow route crosses the site from north to south with a Very Low hazard rating (no higher than 0.75). This will be managed through a minor earth bund along the central open space to route flows safely towards the Cowfold Stream.
- Ground conditions are impermeable (Weald Clay Formation). BGS borehole data confirms clay to at least 39.5m depth with no groundwater encountered. The site is in a Negligible – Class 4 groundwater flood risk zone and is not within a Source Protection Zone. Infiltration SuDS are not feasible; runoff will be discharged to the existing ditch watercourse at the south of the site.
- Surface water runoff will be restricted to the 1 in 2 AEP greenfield rate of 4.9 l/s/ha across two drainage catchments (West: 2.4 l/s; East: 1.8 l/s). Attenuation is provided by two open basins sized to accommodate the 1 in 100-year plus 45% climate change rainfall event.
- The proposed SuDS strategy forms a multi-stage treatment train demonstrated to sufficiently protect the receiving water environment from TSS, metals and hydrocarbons using the Simple Index Approach (CIRIA C753). The basins also provide amenity and biodiversity benefits.
- All foul water flows will be pumped via an adoptable on-site pumping station to connect to the existing Southern Water sewer network upstream of the Treatment Works, under a S106 connection application. A foul capacity assessment will be undertaken at the next stage.
- The development complies with the NPPF (2024), Planning Practice Guidance, Horsham District Local Plan Policies 37 and 38, the Flood and Water Management Act 2010, and the Defra National Standards for Sustainable Drainage Systems (June 2025), and Policy 1 of the Cowfold Neighbourhood Plan.

1 Introduction

- 1.1 The outline planning application is submitted on behalf of Landacre Developments Ltd to Horsham District Council for the development of Land East of Henfield Road (A281), Cowfold.
- 1.2 The proposed development comprises the construction of approximately 40 residential dwellings, with vehicular access, car parking, landscaping, open space and other associated works and infrastructure. The site is currently greenfield land and is proposed to be redeveloped for residential use.
- 1.3 GTA Civils & Transport Ltd was appointed by Landacre Developments Ltd to provide an FRA to support the planning application to Horsham District Council as described above. No responsibility is accepted to any third party for all or part of this study in connection with this or any other development.
- 1.4 This FRA has been prepared in accordance with the National Planning Policy Framework (NPPF) (2024) and relevant planning practice guidance, in particular "Flood risk and coastal change" (PPG ID7, updated September 2025).

2 Policy Context

Local Plan

- 2.1 The Horsham District Planning Framework (HDPF) was adopted in 2015 setting out the policies to guide future development to 2031.
- 2.2 The HDPF sets out policies relevant to this FRA as follows:

Policy 37: Sustainable Construction

Proposals must seek to improve the sustainability of development. To deliver sustainable design, development should incorporate the following measures where appropriate according to the development and location:

[...]

3. *Use design measures to minimise vulnerability to flooding and heatwave events;*

[...]

Policy 38: Flooding

1. *Development proposals will follow a sequential approach to flood risk management [...]*
2. *Comply with the tests and recommendations set out in Horsham Strategic Flood Risk Assessment (SFRA).*
3. *Where there is the potential to increase flood risk, proposals must incorporate the use of sustainable drainage systems (SuDS) where technically feasible, or incorporate water management measures which reduce the risk of flooding and ensure flood risk is not increased elsewhere.*
4. *Consider the vulnerability and importance of local ecological resources such as water quality and biodiversity when determining the suitability of SuDS. New development should undertake more detailed assessments to consider the most appropriate SuDS methods for each site. Consideration should also be given to amenity value and green infrastructure.*
5. *Utilise drainage techniques that mimic natural drainage patterns and manage surface water as close to its source as possible will be required where technically feasible.*
6. *Be in accordance with the objective of the Water Framework Directive, and accord with the findings of the Gatwick Sub Region Water Cycle Study in order to maintain water quality and water availability in rivers and wetlands and wastewater treatment requirements.*

Evidence Base

- 2.3 The Horsham District Council published its Level 1 SFRA in September 2024 and Level 2 SFRA in January 2020.
- 2.4 The Level 1 SFRA sets out an overview of flood risk from various sources within the borough to inform land use planning. The findings relevant to this site are summarised later on in this report.

Legislative Context

- 2.5 The Flood and Water Management Act 2010 (FWMA) updated legislation to ensure better protection from flooding, manage water more sustainably, improve public services and secure water resources during periods of drought. The FWMA helps reduce flood risk by:
- clarifying who is responsible for managing all sources of flood risk;
 - encouraging more sustainable forms of drainage in new developments; and
 - making it easier to resolve misconnections to sewers.
- 2.6 The FWMA established the creation of the Lead Local Flood Authority (LLFA) at county or unitary level to manage local flood risk. Each LLFA is required to prepare a Local Flood Risk Management Strategy which considers all sources of flood risk and identifies objectives to manage local flood risk to local communities.
- 2.7 The LLFA relevant to the Development is West Sussex County Council.
- 2.8 The FWMA also laid the groundwork for national Sustainable Drainage Systems (SuDS) standards to be created. Defra published the "National standards for sustainable drainage systems (SuDS)" on 19 June 2025 which provide the technical guidance that developers are expected to follow and which LLFAs will use to assess submissions.
- 2.9 The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017 tie the UK into the EU Water Framework Directive (WFD) which sets environmental objectives for water bodies. The Regulations set out how the Environment Agency (EA) monitors the ecological and chemical status of surface water bodies and the chemical and quantitative status of groundwater.
- 2.10 The Water Industry Act 1991 establishes the duties of sewerage undertakers to provide, maintain, and operate an effective sewerage system, including ensuring that public sewers and treatment works are capable of handling current and future demands. The Act places a general duty on undertakers to assess and plan investment to ensure sufficient capacity in sewers and treatment works to accommodate growth while upholding environmental and operational standards.

3 Existing Site & Current Flood Risk

Site Location

- 3.1 The site comprises 2.6ha of agricultural land. It is bounded to the west by residential land, to the south by existing watercourse parallel to the site boundary, to the east by a Southern Water sewage treatment works and woodland, and to the north by residential development and a parcel of vegetated land.
- 3.2 A location plan is in Appendix A.

Topography

- 3.3 The site falls from northwest to southeast (at a gradient of approximately 1:60) with levels ranging from between approximately 16.00m Above Ordnance Datum at the site access, to 11.50m AOD in the southeast corner at the existing watercourse. The levels then continue falling to the east.
- 3.4 Survey data is included in Appendix B.

Hydrology

- 3.5 The site is bounded by two existing ditches, along its southern and eastern boundaries. These are Ordinary Watercourses. Based on the topographical survey, the ditches are up to 1.5m deep.
- 3.6 The ditch along the southern boundary of the site is also known as the Cowfold Stream. This continues flowing south towards the River Adur, approximately 2.7km away from the site.

Geology

- 3.7 The published bedrock geology for the site comprises Weald Clay Formation - Mudstone. There are no superficial deposits in the majority of the site. Some superficial deposits of Alluvium clay, silt, sand and gravel are present immediately to the south following the alignment of the existing ditch.
- 3.8 The soilscape for the site is "slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils". These are noted to have impeded drainage, with natural drainage to the local stream network.

- 3.9 The site is located within an unproductive zone according to the EA Groundwater Vulnerability Map, which reflects the generally impermeable ground. It is not located within a Source Protection Zone (SPZ).
- 3.10 Some initial exploratory boreholes have been carried out at the site, between 2.5m and 3.5m below ground level. This confirmed the presence of Weald Clay, beneath a thin layer (200mm) of topsoil. Some sandstone was found at depth in one of the boreholes. Winter groundwater monitoring is ongoing at the site, the results of which will be used to inform the detailed SuDS design at the next stage.
- 3.11 SI data is included in Appendix C.

Flood Zone

- 3.12 The EA's Flood Map for Planning shows the majority of the site lies within Zone 1 – Low Probability, having less than a 1 in 1,000 (0.1%) annual exceedance probability (AEP) of river flooding.
- 3.13 An area of Flood Zones 2 and 3 exists along the southern boundary of the site, associated with the Cowfold Stream. The floodplain mostly extends over the southern bank of the ditch, in the woodland. It is contained by the rapidly raising grounds within the site boundary itself.
- 3.14 The EA's "Flood Map for Planning" is in Appendix D.

Surface Water Flood Risk

- 3.15 Surface water flooding occurs when excess rainwater does not infiltrate into the ground, or is not intercepted by urban drainage systems, and instead flows across the surface.
- 3.16 The EA's Risk of Flooding from Surface Water (RoFSW) map extracts are included in Appendix D. These show areas of risk for the 1 in 30, 1 in 100, and 1 in 1000 AEP events (High, Medium, and Low Risk respectively).
- 3.17 The EA mapping indicates the presence of a flow route crossing the site from north to south. This originates from the residential area directly south of the site and expected flood depths are less than 200mm throughout. It follows a natural depression in the ground, discharging into the Cowfold Stream.
- 3.18 The EA dataset includes a map of the likely hazard associated with the surface water flooding. This shows the likelihood of flood occurring with a given flood hazard rating. A hazard rating of 0.75 or lower is considered Very Low ("Caution"); and is based on the

expected maximum depths and velocities. Figure 3-1 below illustrates that the hazard rating at the site is no higher than 0.75.

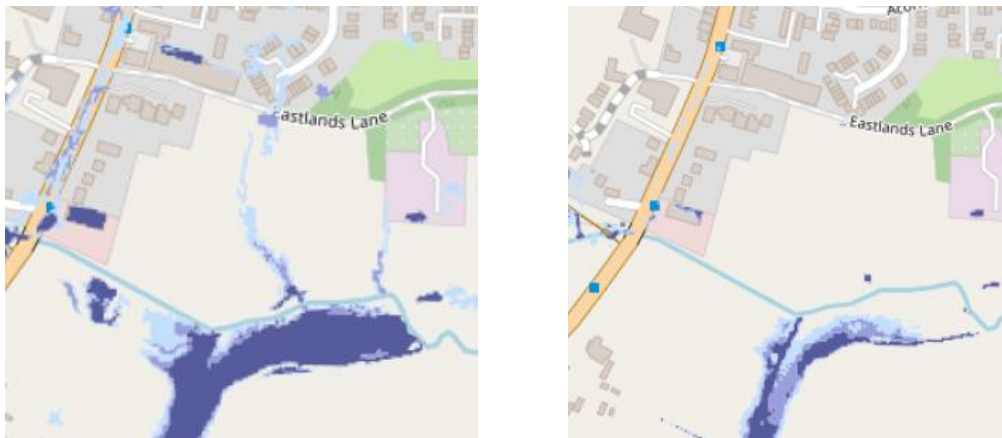


Figure 3-1: RoFSW Hazard - EA April 2026. Left map shows likelihood of a flood occurring with a hazard rating of 0.5 or higher; right shows likelihood of a flood occurring with a hazard rating of 0.75 or higher.

Reservoir Flood Risk

3.19 There are no impounded water features in the vicinity of the site. The EA's mapping indicates that the lower lying land on the south of the site would be affected by reservoir flooding in a "wet day" scenario (when combined with a storm event). This does not impact the site itself.

3.20 The EA's "Flood Risk Map from Reservoirs" is in Appendix D.

Groundwater Flood Risk

3.21 Groundwater Flooding can occur when groundwater rises up from the underlying aquifer to flood subsurface infrastructure or to emerge at the ground surface.

3.22 The geology of the site has been shown to be impervious, with impeded subsurface drainage. Additionally, the SFRA mapping shows that the site is located in an area at "negligible – Class 4" risk of groundwater flooding. Based on these findings it is believed that the site is not at risk of groundwater flooding.

Climate Change

3.23 The site lies within the Adur and Ouse Management Catchment. The relevant peak river flow allowance for new developments is the Central Allowance, which is 37% in this catchment (2080s).

3.24 A Climate Change (2070 to 2125) layer was added to the Flood Map for Planning by the EA. This dataset is intended to show how the combined extent of Flood Zones 2 and 3

could increase with climate change over the next century, ignoring benefits of any existing flood defences and assuming no changes to the flood defences or land-use during that time. The future Flood Zone extent matches the current Flood Zone 2 extent.

- 3.25 The relevant peak rainfall allowance for the site, which will be used to inform the drainage design calculations, is 30% for the 1 in 30-year storm event, and 45% for the 1 in 100-year storm event. This corresponds to the upper end allowance, 2070s epoch.

Historical Flooding

- 3.26 A review of the available data and documents has not identified any records of flooding incidents at or close to the site.

Existing Sewers

- 3.27 The Southern Water records are included in Appendix E. This indicates the presence of a 300mm diameter sewer within Eastland Lane, to the north of the site. This flows to the existing Sewage Works located adjacent to the side.
- 3.28 There is also a surface water sewer (525mm diameter) located just east of the site boundary, flowing from north to south and discharging to the Cowfold Stream immediately downstream of the site.

Existing Drainage Characteristics

- 3.29 The current site is 100% greenfield. The existing topography, geology, and hydrology described above indicates that, in its current condition, the existing greenfield runoff from the site likely quickly saturate the ground and then flow towards the existing ditch network.
- 3.30 Greenfield runoff rates per hectare have been calculated using the HR Wallingford method. The results are shown below and calculations included in Appendix G.

1 in 1 AEP	4.7 litres per second per hectare (l/s/ha)
1 in 2 AEP	4.9 l/s/ha
1 in 30 AEP	12.8 l/s/ha
1 in 100 AEP	17.7 l/s/ha

4 Proposed Flood Risk Mitigation

- 4.1 The proposed Drainage Strategy plan is included in Appendix F. The Strategy plan includes the flood extents to allow comparison with the proposed development layout.

Fluvial

- 4.2 All proposed dwellings, associated accesses, and SuDS features are located within Flood Zone 1. All types of development are appropriate within this Zone in terms of flood risk according to the NPPF and planning practice guidance.
- 4.3 The area of Flood Zone 2 and 3 within the site boundary to the south is retained within the ditch corridor.

Surface Water

- 4.4 The existing overland flow pathway crossing the site from the north is to be routed through the central open space. This will be achieved by including a minor earth bund (maximum height of 500mm) along the edge of the green space, to protect the proposed dwellings and route the flow towards the Cowfold Stream.
- 4.5 Any access road crossing that corridor shall be designed with dropped kerb and a north to south crossfall, to avoid creating an obstacle to the flows. This will be detailed as part of the fixed layout at the Reserved Matter stage. Flow depths and velocities are expected to remain low (as per the existing scenario), with Very Low hazard rating.
- 4.6 Figure 4-1 below indicates the expected overland flow route through the site once the development is implemented (in blue), compared to the existing overland flow route (in purple). This high-level assessment is based on the illustrative site layout and shall be reviewed against the final layout at Reserved Matter stage.

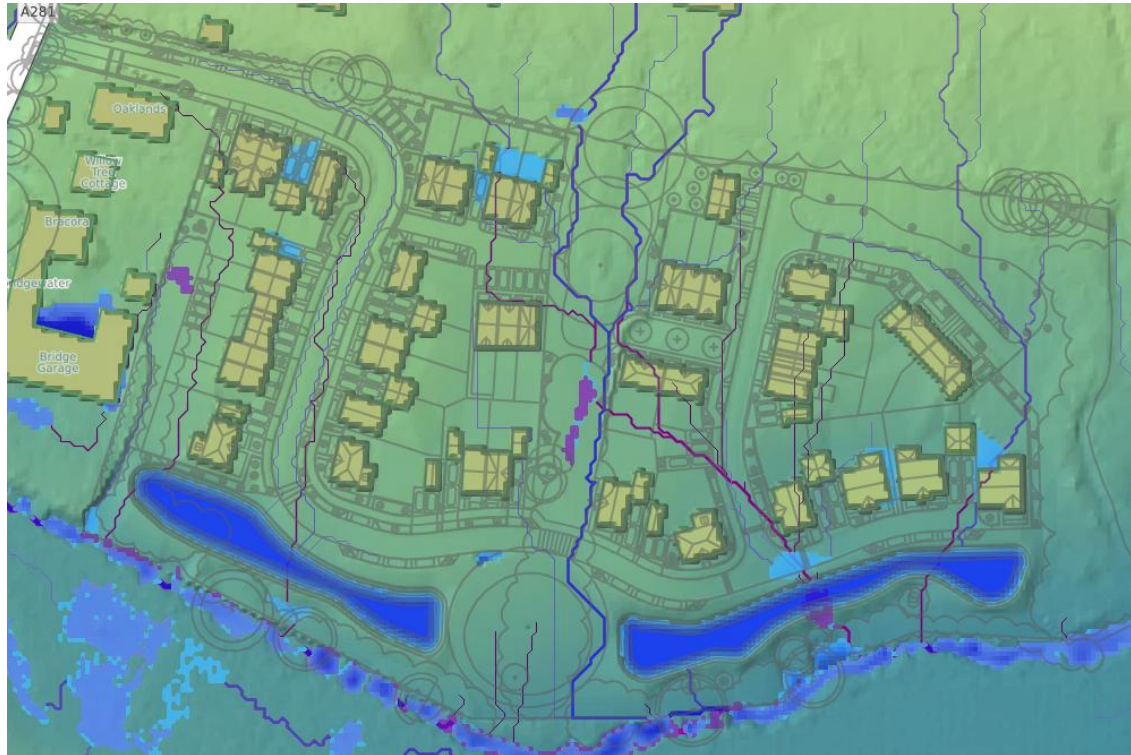


Figure 4-1: Assessment of Overland Flow based on the illustrative masterplan using SCALGO live (static modelling)

4.7 All other sources of flood risks have been assessed as Low Risks. No further mitigations are therefore required beyond the implementation of the surface water drainage strategy, which is further outlined in the following section.

5 Proposed Surface Water Strategy

- 5.1 Defra published the National standards for SuDS ("NSS") on 19 June 2025. The key principles underpinning the NSS include a natural approach to managing water and an early and integrated design. The proposed SuDS strategy is illustrated in Appendix F and has been prepared in accordance with these key principles. There are 7 core standards set out in the NSS and these are discussed in turn as follows:

Standard 1: runoff destinations.

- 5.2 The NSS hierarchy sets the priority as collecting runoff for non-potable use. Rainwater harvesting (RwH) solutions need to be considered with the architectural and building services design and hence will be considered at detailed stage. Water butts will be provided at a minimum for each dwelling. Unless supersized storage tanks are provided in excess of the demand sizing, it must be assumed that any RwH systems are full and quickly overflowing at the time of an extreme storm event. Onward discharge must therefore be considered.
- 5.3 The 2nd priority is to infiltrate runoff to ground. The published ground conditions indicate that the use of infiltration SuDS at the site is unlikely to be effective due to the impermeable soils. In situ ground investigations will be carried out at the next stage including soakaway testing and groundwater monitoring.
- 5.4 The 3rd priority is to discharge runoff to an above ground surface water body. The strategy for the development is therefore to discharge runoff to the existing ditch watercourse at the south side of the site boundary. The outfall locations are illustrated on the Strategy plan in Appendix F.

Standard 2: management of everyday rainfall (interception)

- 5.5 An integrated SuDS approach will be taken within the built development parcels. The on-plot and source control SuDS measures will be defined at the detailed design stage. As these are the measures that principally address the management of everyday rainfall, it is appropriate to consider the interception and area volume calculations required by Standard 2 at detailed stage.
- 5.6 The drainage strategy included in Appendix F indicates potential areas suitable for the use of permeable paving, based on the illustrative masterplan. The combination of those features and the attenuation basins will provide interception benefits. This can then be supplemented with additional bioretention areas (raingardens) or swales if required.

Standard 3: management of extreme rainfall and flooding

- 5.7 The NSS guidance sets out that the peak allowable discharge rate from the development to the watercourses should be limited to the 1 in 2 (50%) AEP greenfield runoff rate, or 3 l/s/ha, whichever is the greater. As shown in Section 3 above, the 1 in 2 AEP greenfield runoff rate for the site is 4.9 l/s/ha (see Appendix G). The peak allowable discharge rate for the development is therefore set to **4.9 l/s/ha**.
- 5.8 The site is divided into 2 distinct catchments with separate outfall to the existing ditch. A catchment plan is included in Appendix F. The catchment total area and corresponding flow rates are summarised in Table 5-1 below. These are based on the illustrative masterplan and shall be reviewed at Reserved Matter stage.

Table 5-1: Catchment areas and corresponding greenfield rates

	Catchment 1 – West Basin	Catchment 2 – East Basin
Impermeable Catchment Area (total in hectare)	0.507	0.386
Corresponding peak allowable discharge rate	2.4 l/s	1.8 l/s

- 5.9 Attenuation is provided through two strategic basins, located in the lowest parts of the site. These have been designed to cater for the 1 in 100-year plus 45% climate change event.
- 5.10 Hydraulic Calculations are included in Appendix G based on FEH22 rainfall data and using a CV of 1. An urban creep factor of 10% has been applied to all roof areas in accordance with the latest guidance.
- 5.11 Exceedance: overland flow in the event of extreme storm events or failure of the drainage system will flow towards the existing watercourse. This is illustrated on the strategy layout in Appendix F.

Standard 4: water quality

- 5.12 The proposed SuDS strategy includes a multi-stage treatment train to protect the water quality in the receiving water environment.
- 5.13 Based on the Simple Index Approach described in CIRIA C753 (The SuDS Manual) the development's pollution hazard indices are outlined in Table 5-2 below along with the relevant SuDS mitigation indices for the proposed SuDS components.

Pollutant type	TSS	Metals	Hydrocarbons
Pollution hazard indices			
Residential roofs – Very low	0.2	0.2	0.05
Vehicular areas – Low	0.5	0.4	0.4
SuDS mitigation indices			
Permeable pavement	0.7	0.6	0.7
Attenuation Basin	0.5	0.5	0.6

Table 5-2: Runoff Treatment - Simple Index Approach

- 5.14 Table 5-2 demonstrates that the proposed SuDS treatment train will sufficiently protect the water environment.

Standard 5: amenity

- 5.15 The basins will represent positive destinations for recreation as part of the green infrastructure. Softened embankment slopes are proposed, with a maximum gradient of 1 in 3 where needed. For more information, refer to the architect's documents. Further details will be provided at the next stage.

Standard 6: biodiversity

- 5.16 The proposed SuDS strategy offers potential for biodiversity gains via new habitat creations in the proposed attenuation basins. For more information, refer to the ecology consultant's documents.

Standard 7: design of drainage for construction, operation, maintenance, decommissioning and structural integrity

- 5.17 Construction and Phasing: Limited information is available at this stage regarding the proposed phasing of the development. These topics are typically addressed by condition with Phasing Plans and Construction Environmental Management Plans (CEMP). Construction of the surface water drainage scheme will be carried out in line with best practice methods and controls.
- 5.18 Ownership and maintenance: A draft Drainage Maintenance Plan (DMP) outlining ownership and maintenance responsibilities is included in Appendix H. This is a draft version based on the information currently available at this stage; the DMP will be updated as the design of each phase is developed and will remain a live document over the duration of the project.

6 Foul Drainage Strategy

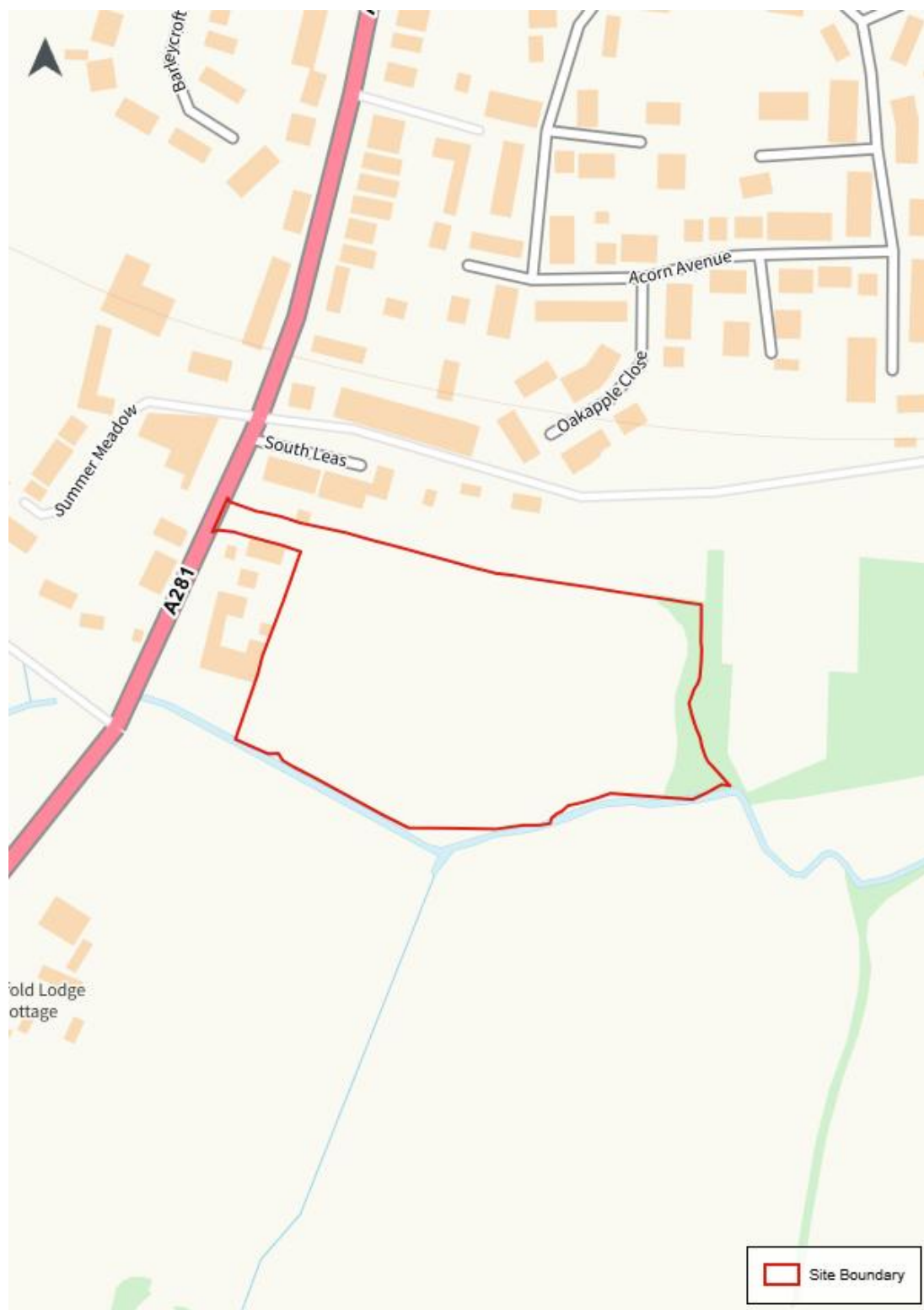
- 6.1 Due to the site levels, all proposed foul water flows from the development will need to be pumped to connect to the existing Southern Water network upstream of the existing Treatment Works.
- 6.2 An adoptable on-site pumping station has been shown on the drainage strategy in Appendix F. This will need to be fully integrated within the layout as the design develops at Reserved Matter stage. The new connection to Southern Water network will be constructed under a S106 connection application, to be applied for in due course.
- 6.3 A foul capacity assessment shall be prepared at the next stage to assess whether any emergency storage may be required on site, to alleviate any risks of combined sewer overflows at the existing treatment plant.

7 Conclusions

- 7.1 The majority of the site lies within Flood Zone 1 – Low Probability, remote from any significant fluvial flood risk. An area of Flood Zones 2 and 3 exists along the southern site boundary associated with the Cowfold Stream, but this is contained within the ditch corridor and does not constrain the proposed development footprint. All proposed dwellings, accesses and SuDS features are located within Flood Zone 1.
- 7.2 A localised surface water flow route crosses the site from north to south, with hazard ratings no higher than 0.75 (Very Low – “Caution”). This will be managed through the inclusion of a minor earth bund or similar along the edge of the central open space to route flows safely towards the Cowfold Stream.
- 7.3 The proposed surface water drainage strategy discharges to the existing ditch watercourse along the southern site boundary. Runoff will be restricted to the 1 in 2 AEP greenfield rate of 4.9 l/s/ha. Attenuation is provided through two open basins located in the lowest parts of the site, sized to accommodate the 1 in 100-year plus 45% climate change rainfall event.
- 7.4 The proposed drainage strategy will provide suitable treatment to protect the water quality of the downstream environment, as well as amenity and biodiversity benefits in line with the recommendations of the National Standards for SuDS.
- 7.5 All proposed foul water flows from the development will be pumped via an adoptable on-site pumping station and connected to the existing Southern Water sewer network upstream of the existing Treatment Works, via a S106 connection application. A foul capacity assessment will be undertaken at the next stage to assess the need for any emergency storage.
- 7.6 The development complies with the NPPF (2025), the relevant Planning Practice Guidance, Horsham District Local Plan Policies 37 and 38, the Flood and Water Management Act 2010, and the Defra National Standards for Sustainable Drainage Systems (June 2025), and Policy 1 of the Cowfold Neighbourhood Plan.

Appendix A

Location Plan



Aerial Photo



Appendix B

Site Survey



Appendix C

SI Data

Henfield Road, Cowfold RH13 8DT (For ID only)



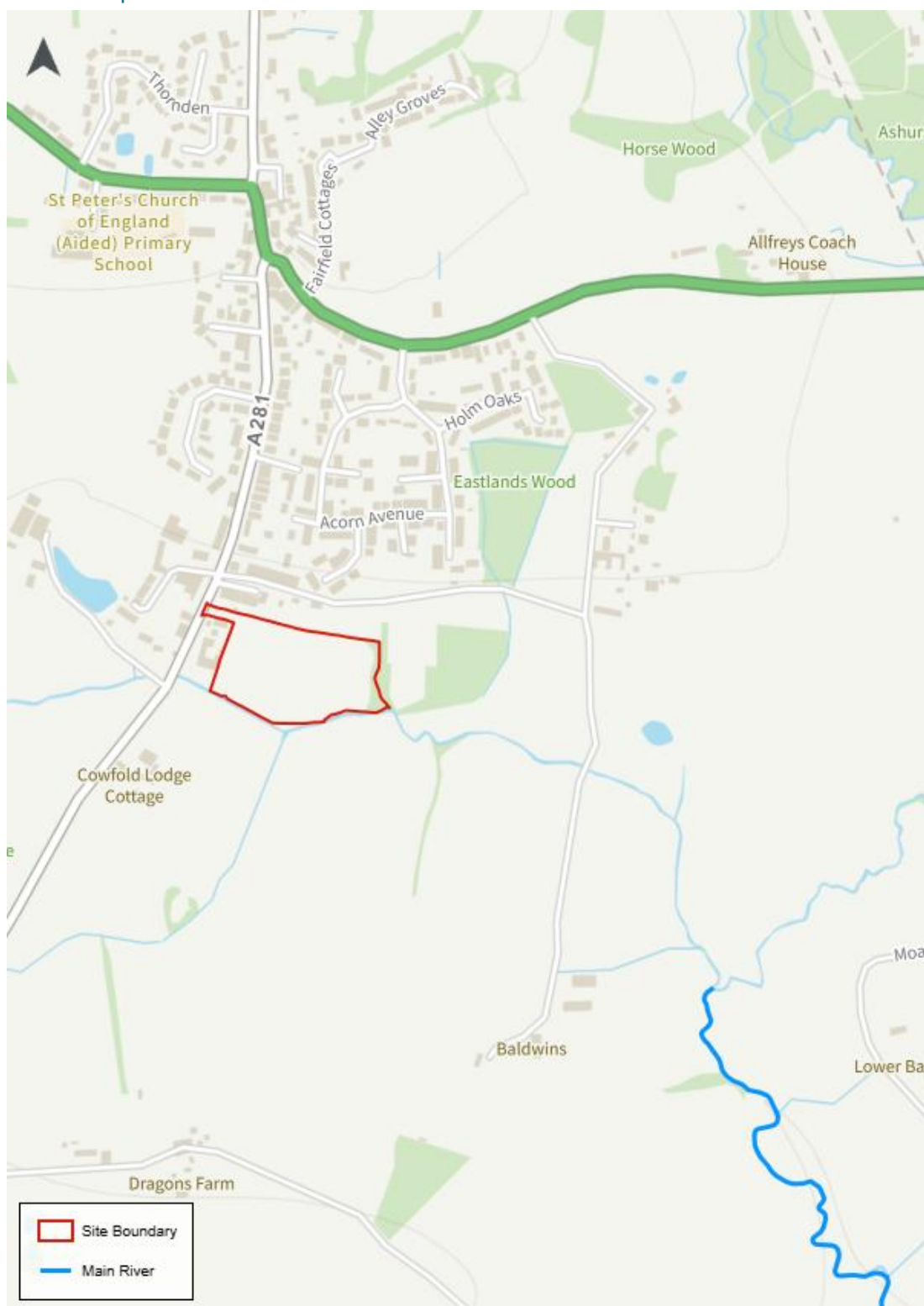
		Windowless Sample Log										Location No			
												WS1			
Project:		Henfield Road, Cowfold										Date			
Project No:												16.10.2025			
Location:												Logged By			
Client:		Landacre Developments Ltd										LP			
In Situ Testing										Hand Pen		Depth (m)	Stratum Description		
Depth (m)	Type	Seating		Main Drive				"N"	Depth (m)	(kg/cm2)					
		1	2	1	2	3	4								
1.0	SPT	1	4	6	11	15	19	51			0	Grass over brown silty CLAY with roots and rootlets.			
2.0	SPT	9	12	16	17	18	20	71			0.20	TOPSOIL			
2.5	SPT	15	21	32	46			78+			0.20				
											2.50	Very stiff / hard light orange brown patched pale grey, very silty CLAY with thin bands of weak mudstone.			
Sampling													CLAY		
Depth (m)		Type		Soil Type											
Notes															
Install at 2.5m Hole DRY															

		Windowless Sample Log										Location No WS2	
Project:		Henfield Road, Cowfold										Date	
Project No:												16.10.2025	
Location:												Logged By	
Client:		Landacre Developments Ltd										LP	
In Situ Testing										Hand Pen		Depth (m)	Stratum Description
Depth (m)	Type	Seating		Main Drive				"N"	Depth (m)	(kg/cm2)			
		1	2	1	2	3	4						
1.0	SPT	3	5	6	8	12	14	40			0	Grass over brown silty CLAY with rootlets. TOPSOIL Very stiff / hard orange brown and grey silty CLAY, becoming shaley with thin bands of mudstone. CLAY Interbedded bands reddish brown mudstone and very stiff grey clay. CLAY Very stiff / hard dark grey CLAY with some ironstaining. CLAY	
2.0	SPT	4	6	10	18	17	15	60					
3.0	SPT	3	5	7	6	13	15	41					
3.5	SPT	50+						50+					
Sampling												3.00	
Depth (m)	Type	Soil Type										3.00	
												3.50	
Notes													
Install at 3.5m Hole DRY													

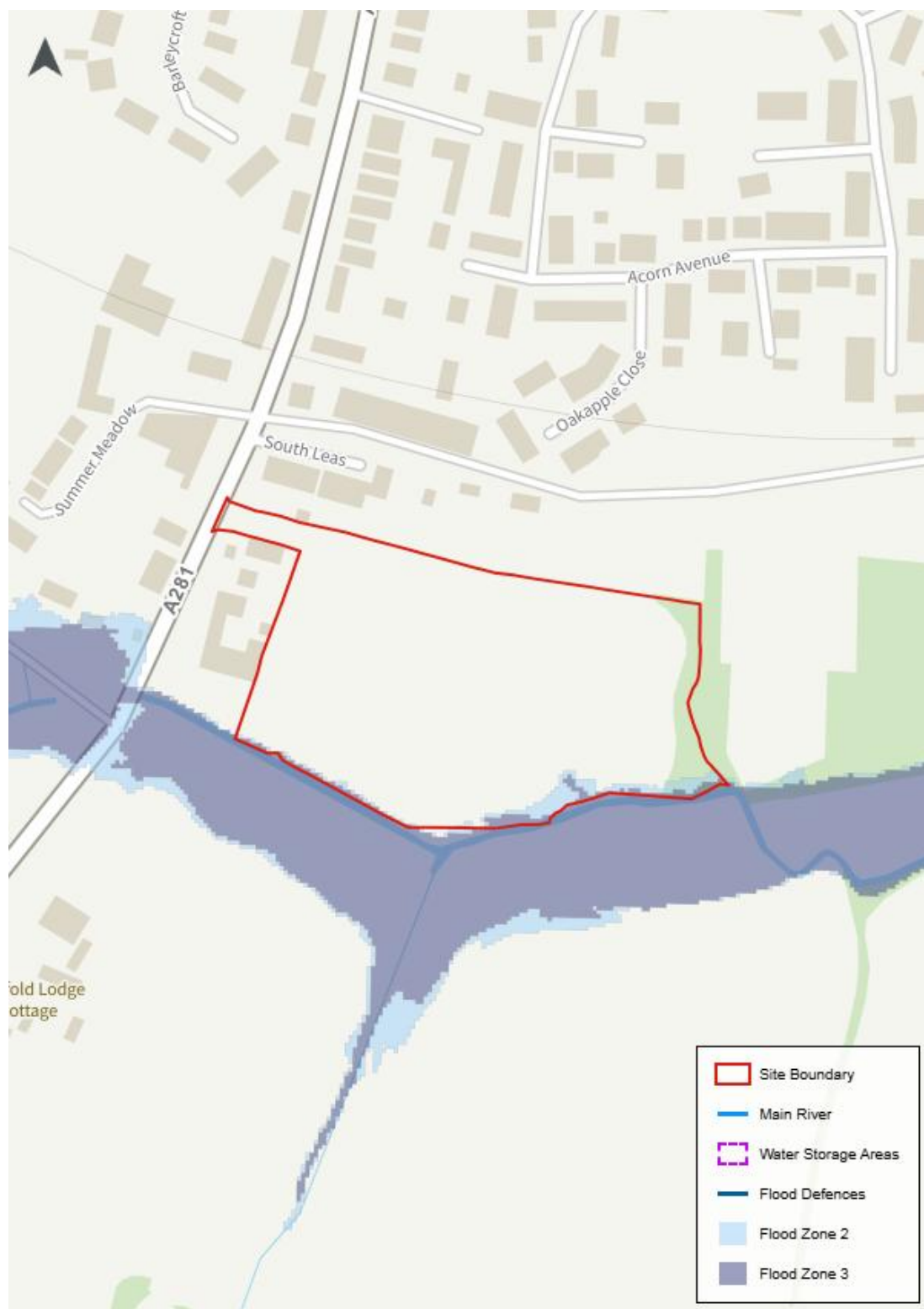
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												WS3				
Project:		Henfield Road, Cowfold										Date				
Project No:												16.10.2025				
Location:												Logged By				
Client:		Landacre Developments Ltd										LP				
In Situ Testing									Hand Pen		Depth (m)	Stratum Description				
Depth (m)	Type	Seating		Main Drive				"N"	Depth (m)	(kg/cm2)						
		1	2	1	2	3	4									
1.0	SPT	3	5	6	10	9	9	34			0	Grass over brown silty CLAY with rootlets.				
2.0	SPT	50+						50+			0.20	TOPSOIL				
											0.20	Very stiff light brown mottled grey silty CLAY, becoming harder and more silty with ironstaining.				
											1.90		CLAY			
											1.90	Orange and grey SANDSTONE				
											2.00	SANDSTONE				
Sampling																
Depth (m)		Type		Soil Type												
Notes																
Install at 2m Hole DRY																

Appendix D

Flood Maps



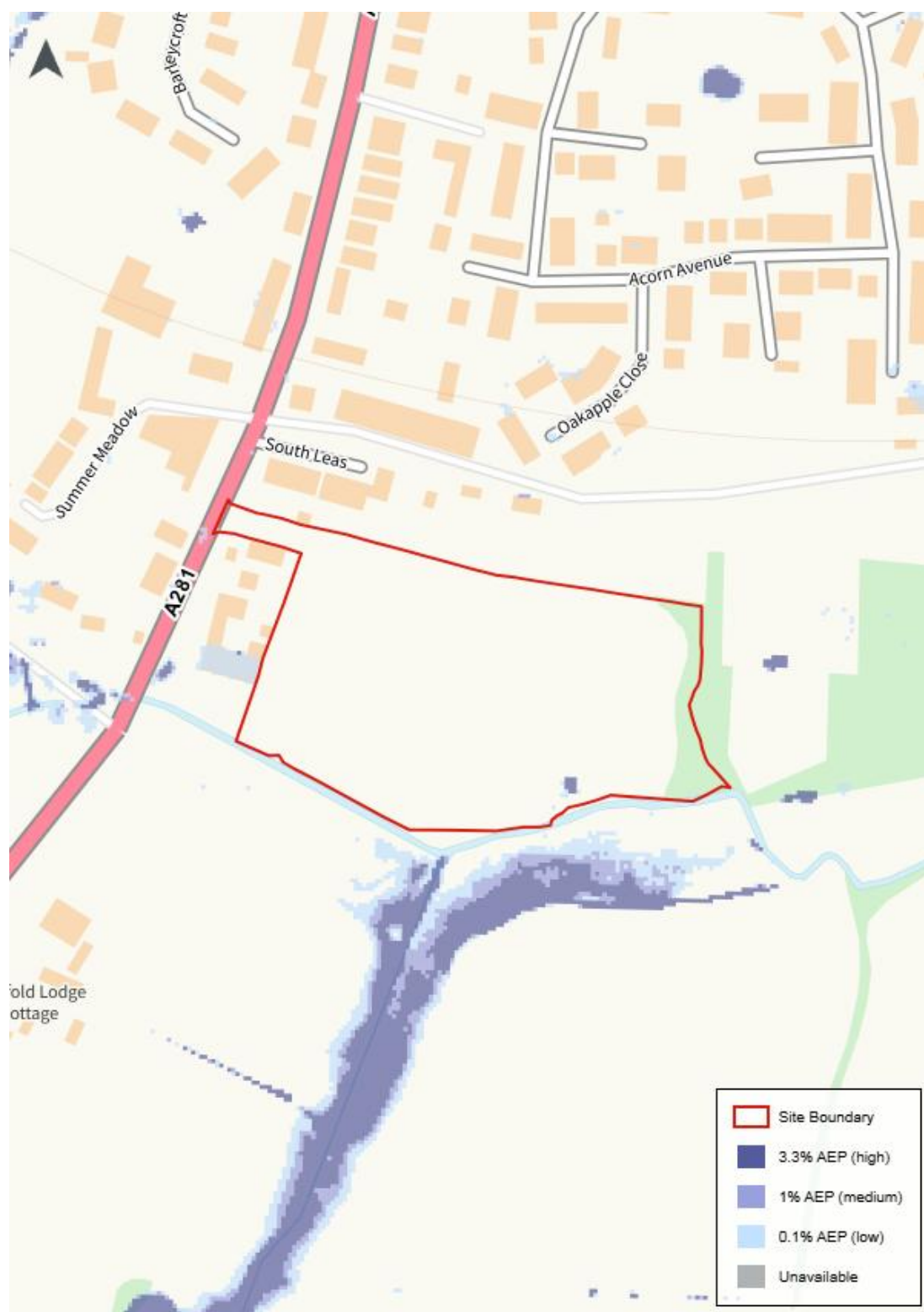
Environment Agency Main Rivers Map



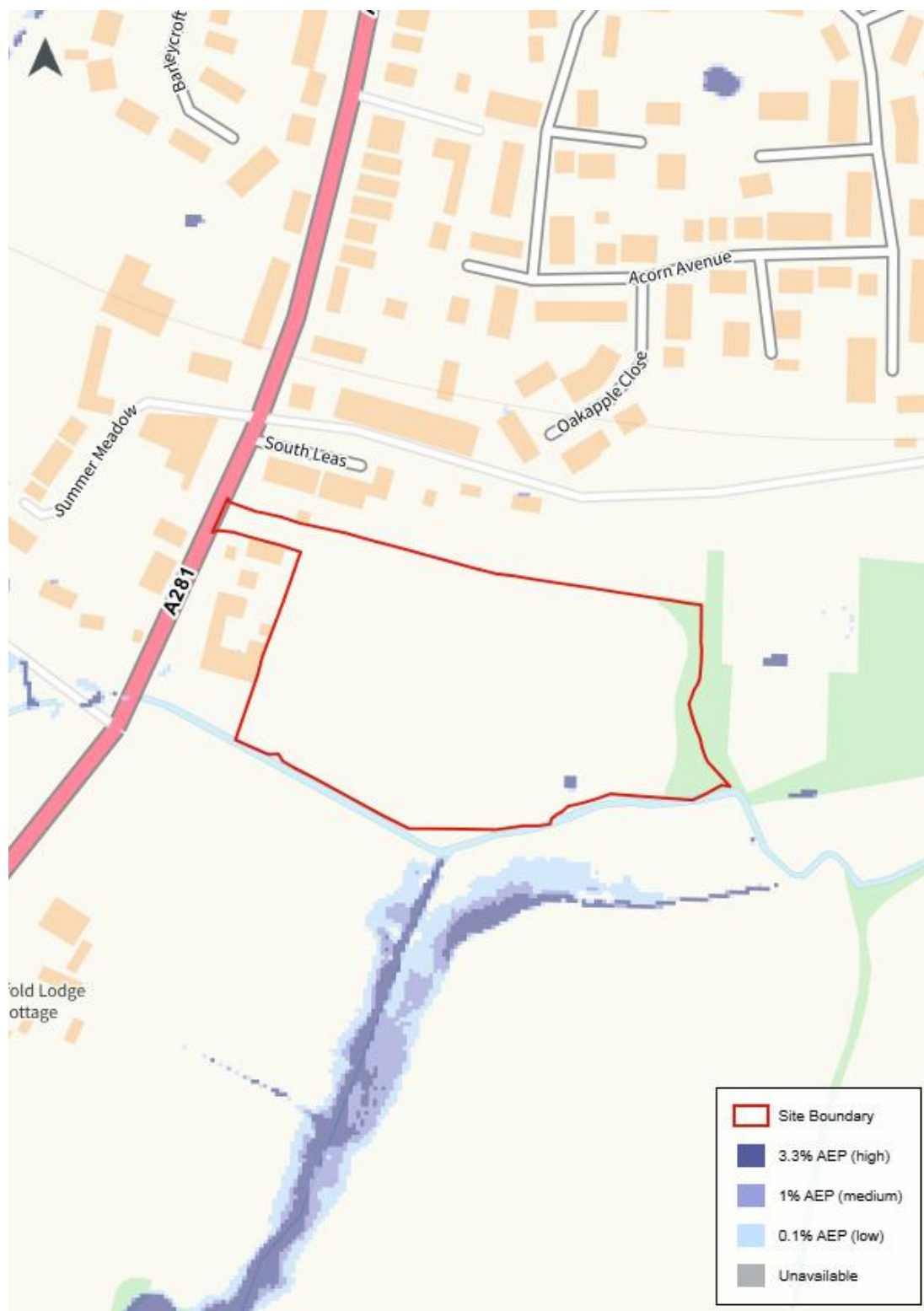
Environment Agency Flood Map for Planning



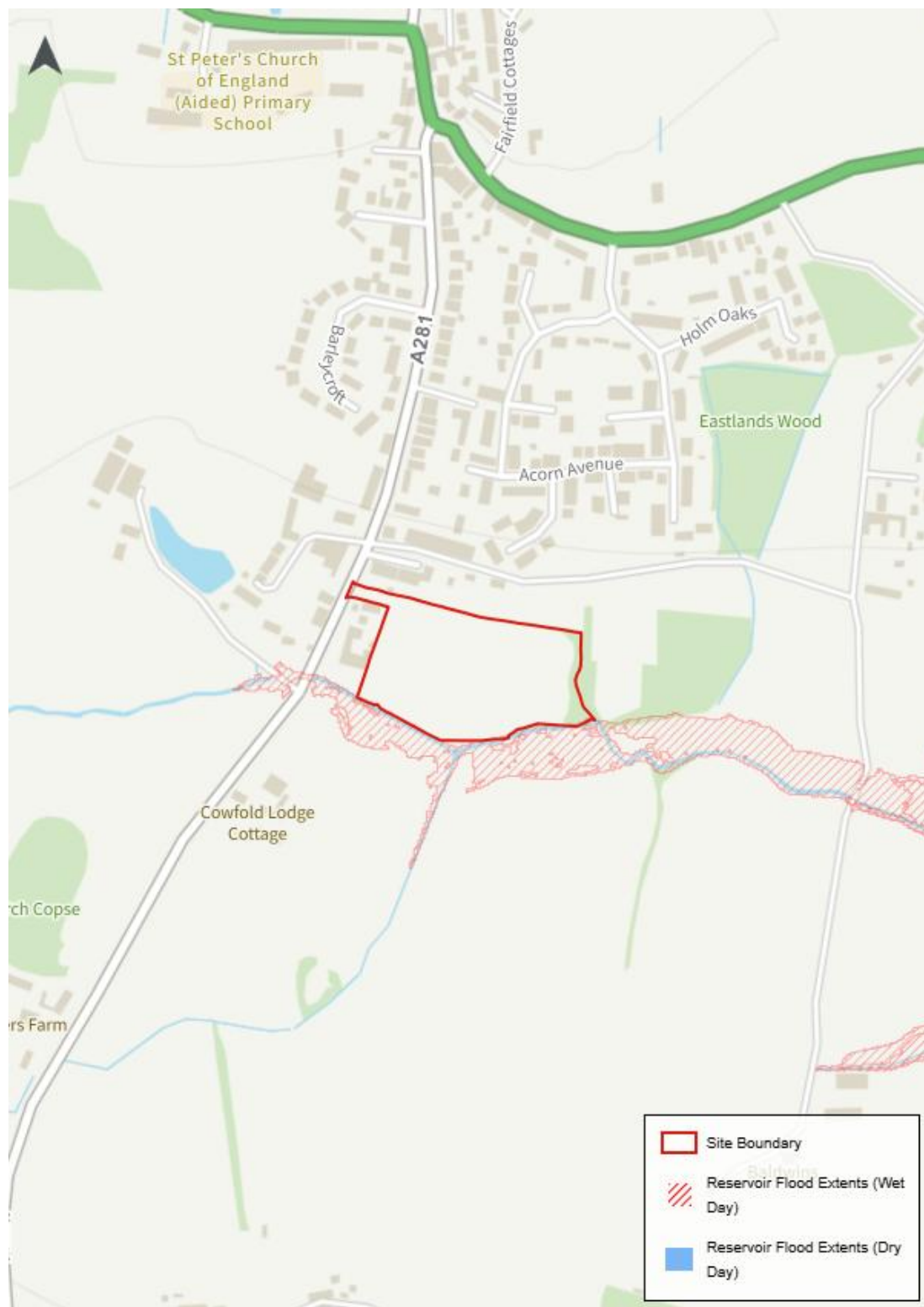
Environment Agency Surface Water Flood Extents Map



Environment Agency Risk of Surface Water Flooding (0.2m) Map

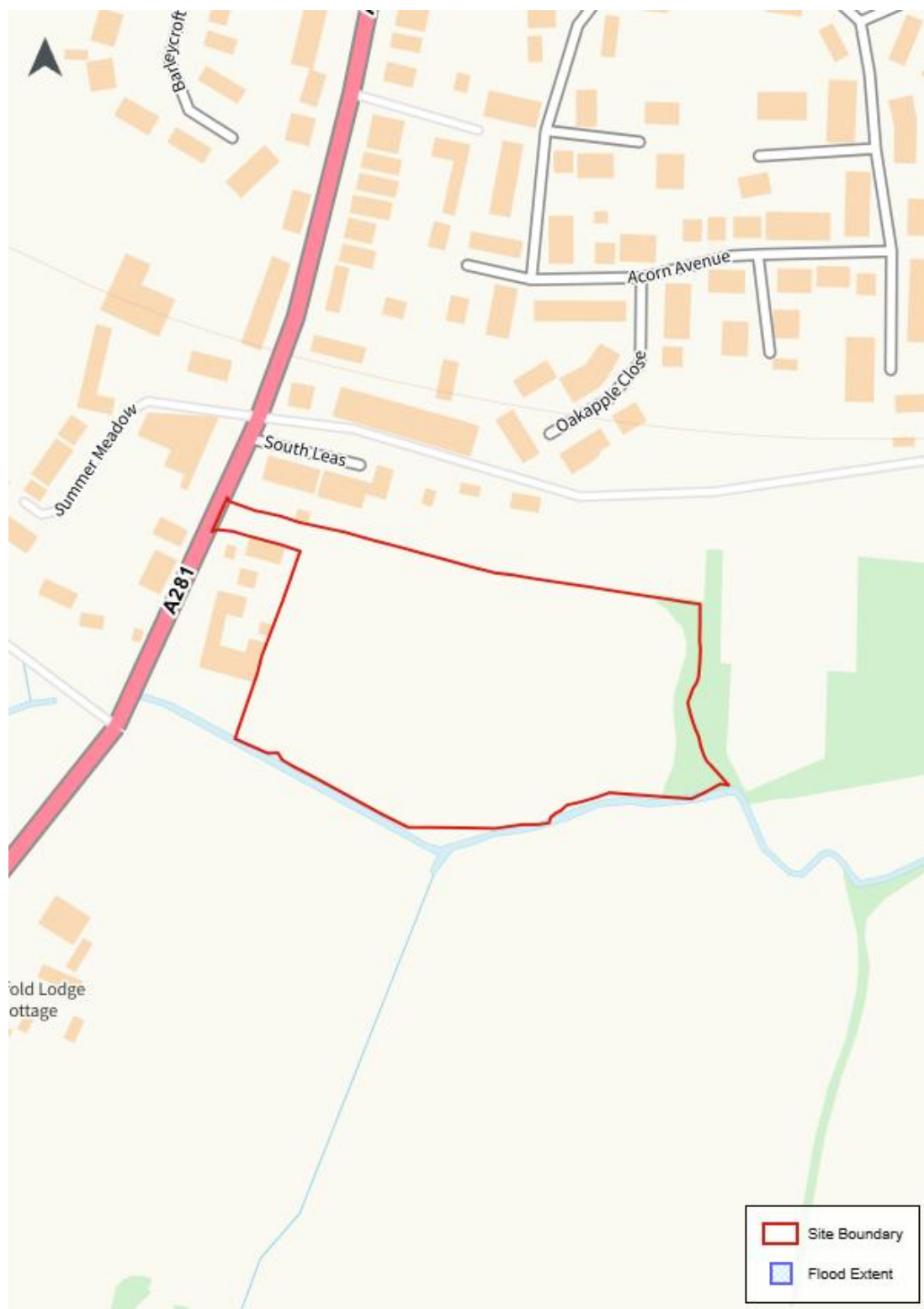


Environment Agency Risk of Surface Water Flooding (0.3m) Map



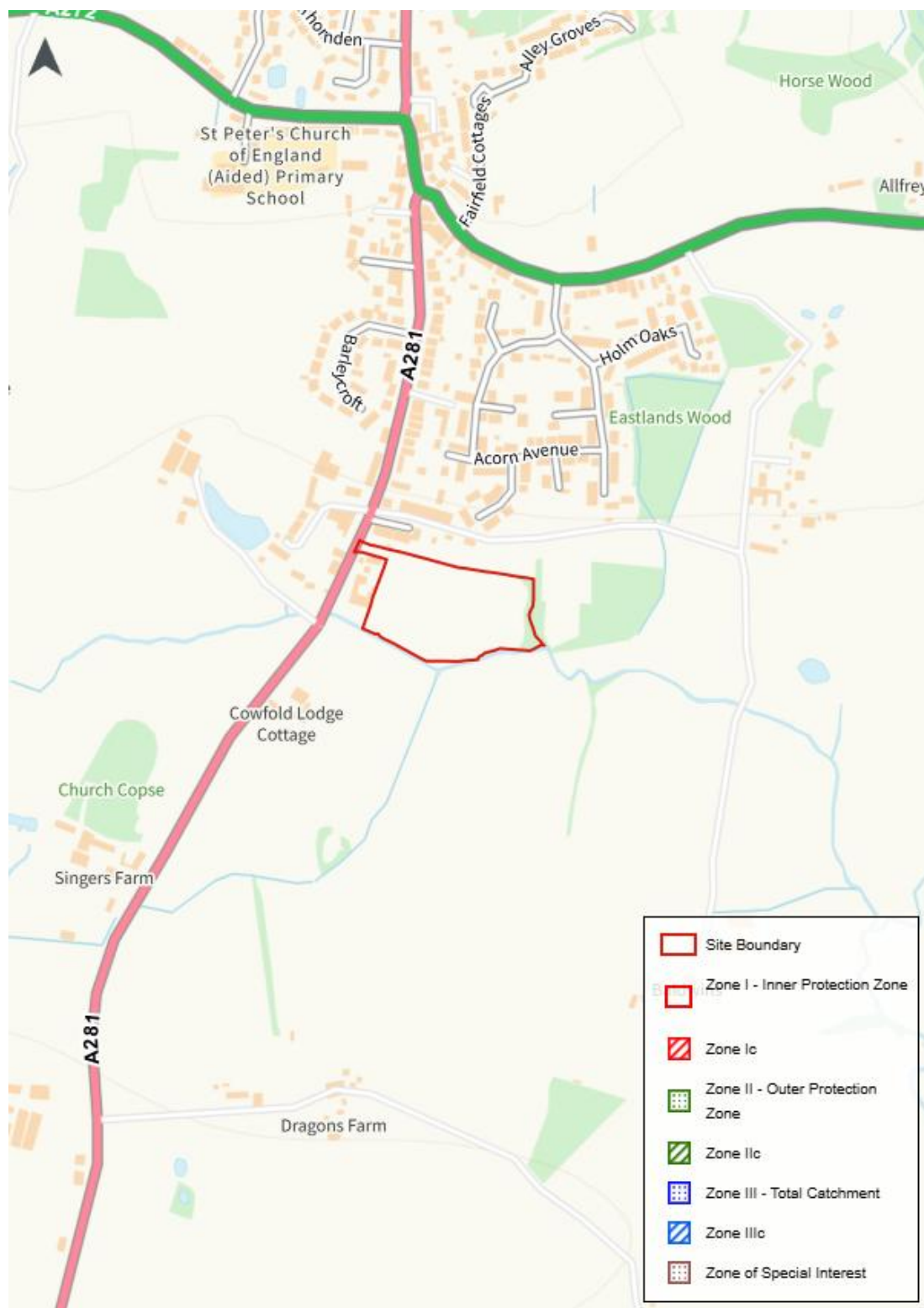
Environment Agency Flood Risk from Reservoirs

The site is clear from the risk of flooding from this source.



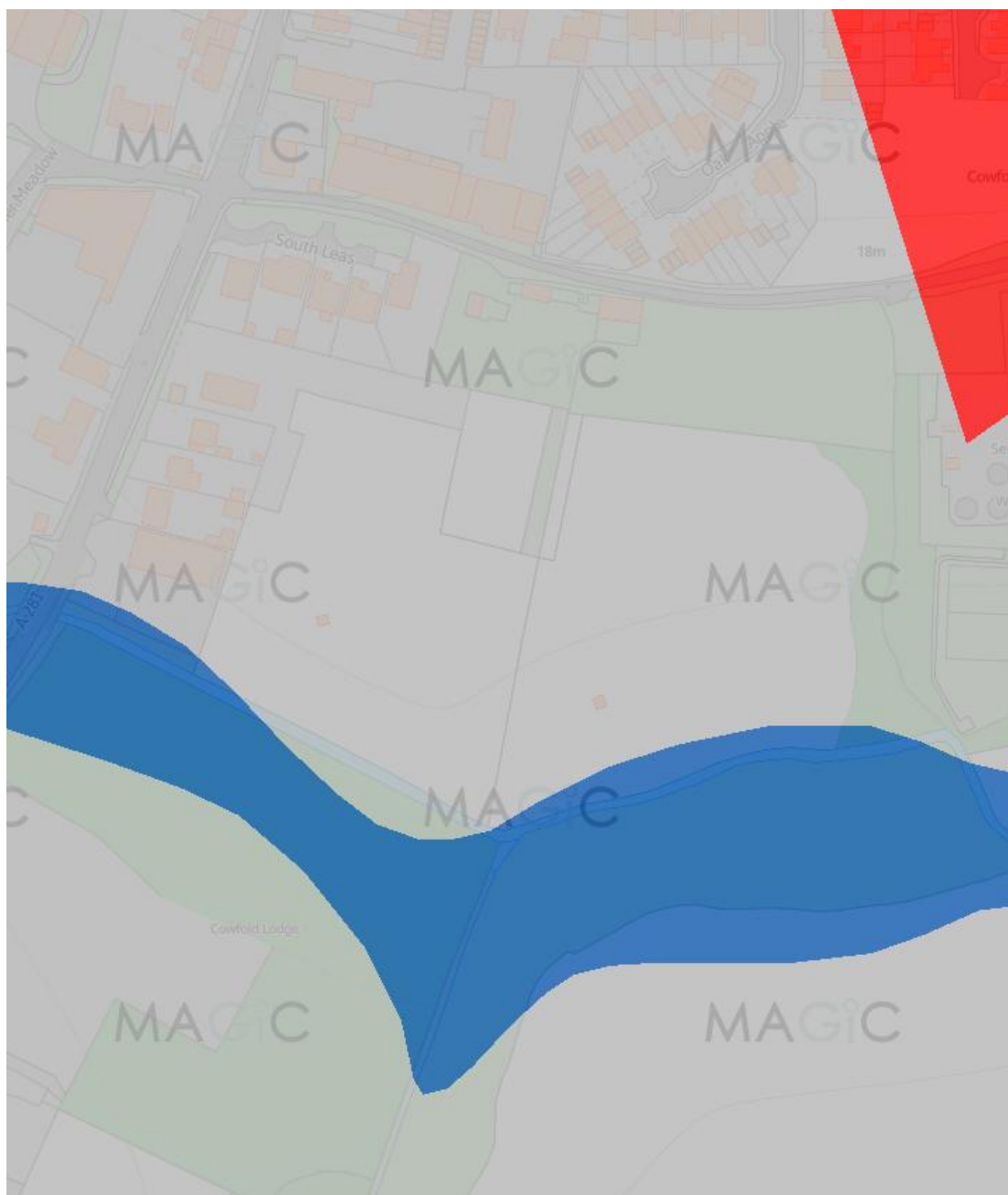
DEFRA Historical Flooding Map

Neither this site nor anywhere in the vicinity has been affected by flooding in the past.



Environment Agency Groundwater Source Protection Zones Map

The site is not within a Source Protection Zone.



Groundwater Vulnerability Map (England)

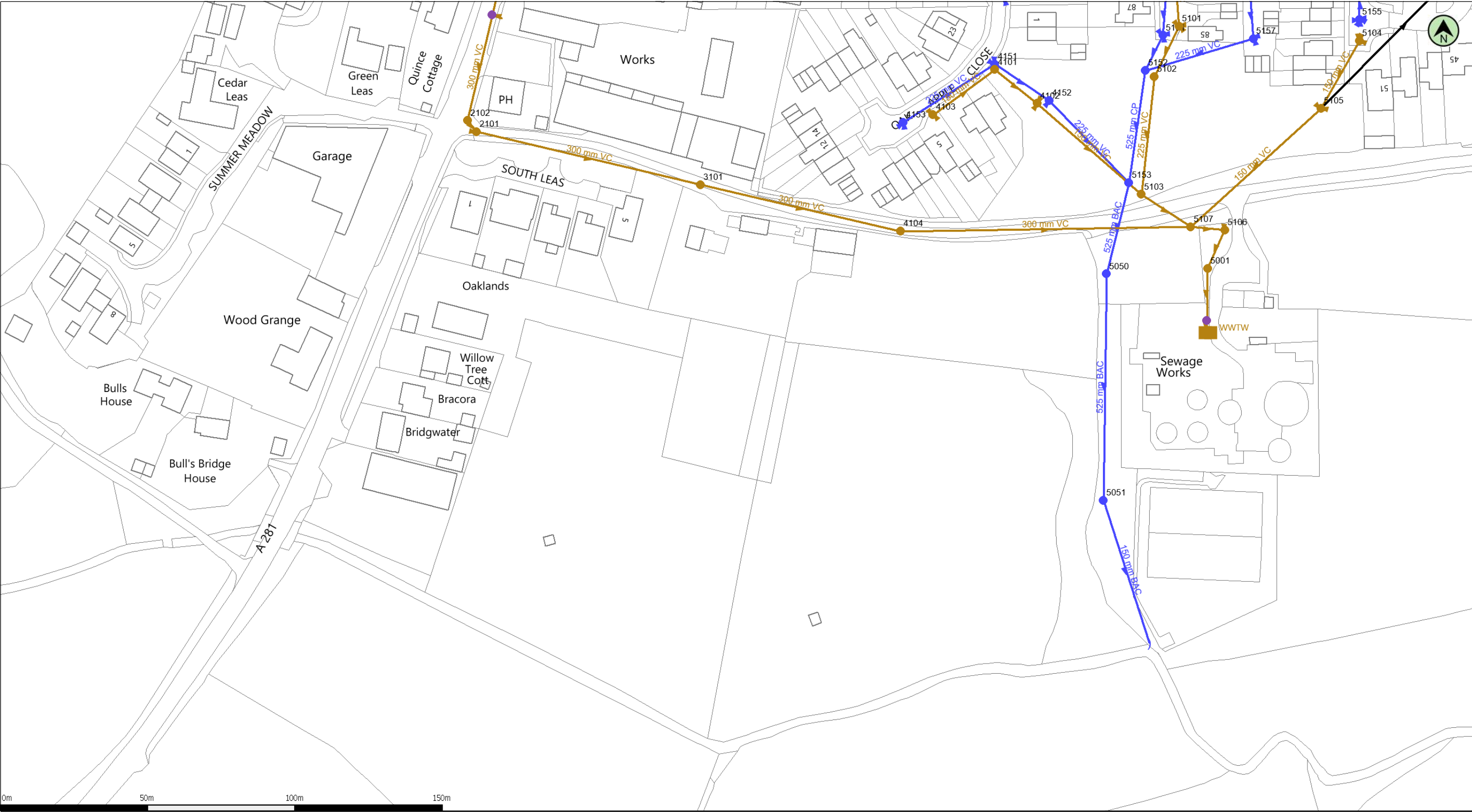
-  Local Information
-  Soluble Rock Risk
-  High
-  Medium - High
-  Medium
-  Medium - Low
-  Low
-  Unproductive

Environment Agency Online Groundwater Vulnerability Zones Map

The site lies in an unproductive area.

Appendix E

Sewer Records



(c) Crown copyright and database rights 2026 Ordnance Survey AC0000808122 Date: 12/03/26 Scale: 1:1250 Map Centre: 521383,122051 Data updated: 22/02/26 Our Ref: 2057472 - 1 Wastewater Plan A3
Powered by digdat

The positions of pipes shown on this plan are believed to be correct, but Southern Water Services Ltd accept no responsibility in the event of inaccuracy. The actual positions should be determined on site. This plan is produced by Southern Water Services Ltd (c) Crown copyright and database rights 2026 Ordnance Survey AC0000808122. This map is to be used for the purposes of viewing the location of Southern Water plant only. Any other uses of the map data or further copies is not permitted.

WARNING: BAC pipes are constructed of Bonded Asbestos Cement.

WARNING: Unknown (UNK) materials may include Bonded Asbestos Cement.

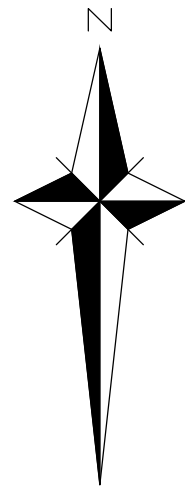
 Foul Gravity Sewer	 Combined Gravity Sewer	 Culverted Water Course or Treated Effluent	 Surface Water Gravity Sewer
 Rising Main, Vacuum or Syphon	 Combined Outfall	 Surface Water Outfall	 Surface Water Inlet
 Combined Pumping Station	 Surface Water Pumping Station	 Foul Manhole	 Combined Manhole
 Foul Pumping Station	 Surface Water Manhole	 Side Entry Manhole, Demarcation Chamber, Dummy Manhole or Surface Water Soakaway	 Water Treatment Works
 Section 104 Area	 Building Over Agreement Area		

cfagan@gtacivils.co.uk
14136 Henfield Rd



Appendix F

Scheme Drawings



DESIGN NOTES

1. STORAGE DESIGN BASED ON 1 IN 100 YR STORM + 45% CC.
2. DRAIN POINTS AND LOCATIONS TO BE CONFIRMED BY ARCHITECT.
3. CONTRACTOR TO ESTABLISH LOCATIONS OF ALL EXISTING SERVICES PRIOR TO COMMENCING.
4. EXISTING TREES TO BE PROTECTED WHERE EXCAVATIONS RUN CLOSE. ANY DRAIN ROUTE THROUGH ROOT PROTECTION AREAS TO BE INSTALLED IN ACCORDANCE WITH ARBORICULTURAL SPECIALIST REQUIREMENTS.
5. APPROVAL TO BE GAINED FROM LLFA/IDB FOR WATER DISCHARGE INTO DITCH AND DISCHARGE RATES.
6. CONTRACTOR TO ALLOW FOR NEW FOUL CONNECTION TO SEWER AND SURFACE WATER DISCHARGE INTO EXISTING DITCH.

GENERAL NOTES:

1. All dimensions to be checked on site. All details and dimensions relating to sub-contractors or suppliers work must be checked and agreed between the sub-contractor or supplier and the main contractor.
2. This drawing is to be read in conjunction with all relevant architects, services and engineers drawings and specifications.
3. The location, size, depth and identification of existing services that may be shown or referred to on this drawing have been assessed from non intrusive observations, record drawings or the live. The contractor shall safely carry out intrusive investigations, trial holes or soundings prior to commencing work to satisfy himself that it is safe to proceed and that the assessments are accurate. Any discrepancies shall be notified to gta prior to works commencing.
4. Tender or billing drawings shall not be used for construction or the ordering of materials.
5. Do not scale. All dimensions and levels to be site confirmed.
6. Copyright : This drawing must not be copied, amended nor reproduced without the prior written agreement of gta.

KEY

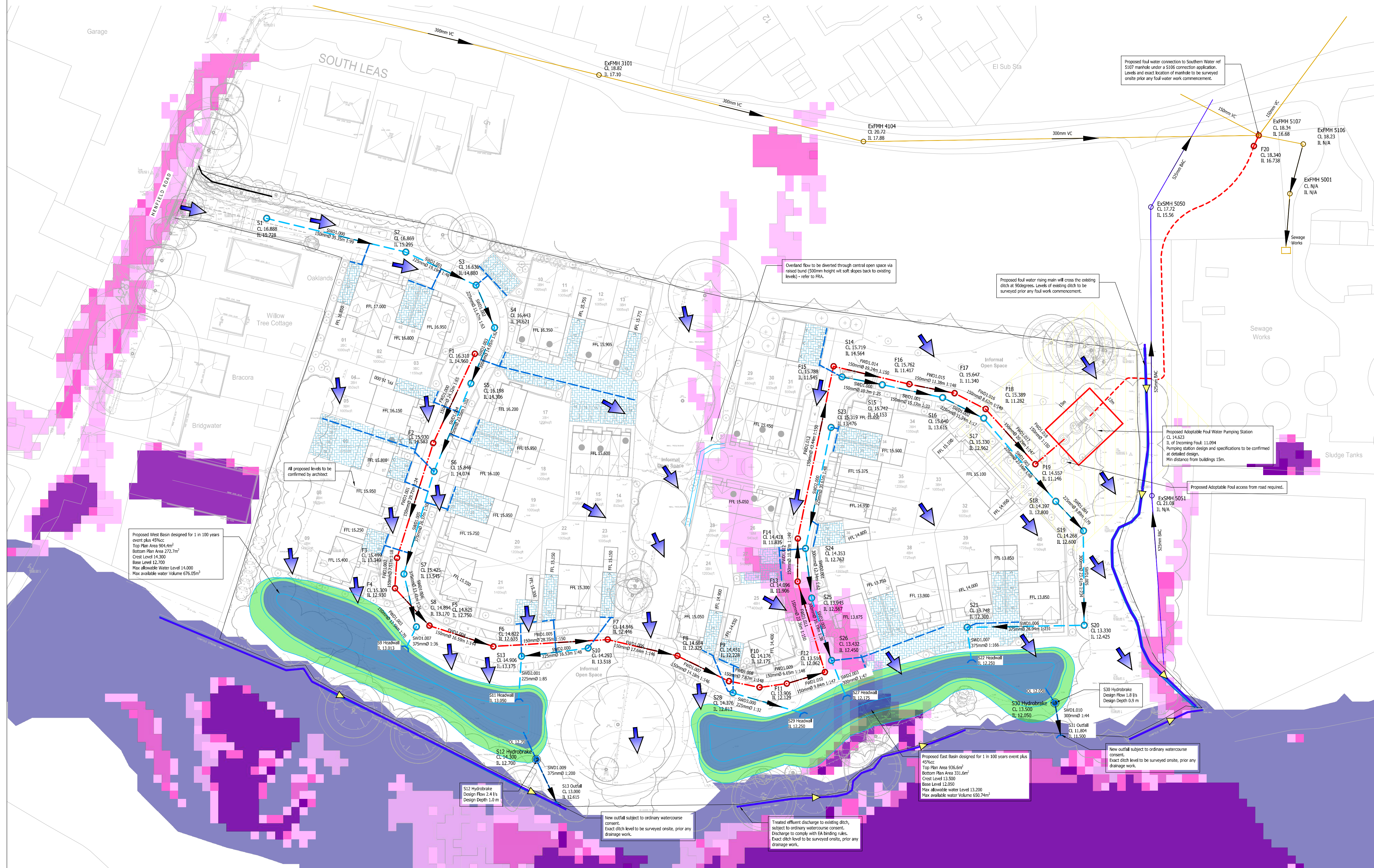
- Site Boundary
- Existing Surface water ditch
- Existing Southern Water Foul Water Sewer
- Existing Southern Water Surface Water Sewer
- Private Surface water drain
- Adoptable Foul Drainage
- Adoptable Surface Water Drainage
- Filter Drainage channel
- Adoptable Foul Rising Main
- Proposed unlined permeable paving area for treatment/interception. No attenuation storage allowed for.
- Flood Flow exceedance route

SURFACE WATER FLOOD RISK

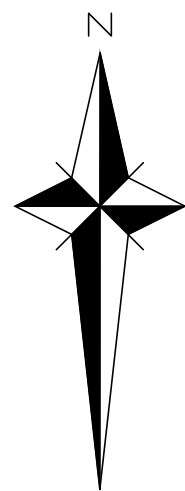
- Surface Water Flood Risk - 1 in 30yr
- Surface Water Flood Risk - 1 in 100yr
- Surface Water Flood Risk - 1 in 1000yr

FLOOD ZONES

- Flood Zone 3



P01	Initial Issue	14.05.2026	DT	FW
Rev	Amendments	Date	Dsn	Chk
Status				
PRELIMINARY				
Client				
LANDACRE				
Architect				
ECE ARCHITECTURE				
Project				
LAND OFF HENFIELD ROAD COWFOLD				
Title				
PROPOSED DRAINAGE STRATEGY PLAN				
Date		Scale @ A1	1:500	
APRIL 2026		Project Ref.	14136	
Clients Ref.				
 Civils & Transport Maple House, 192-198 London Road, Burgess Hill, West Sussex, RH15 9RD Tel:01444 871444 Web: www.gtacivils.co.uk				
Drawing Number			Rev.	
14136/1100			P01	



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5. APPROVAL TO BE GAINED FROM LLFA/IDB FOR WATER DISCHARGE INTO DITCH AND DISCHARGE RATES.
6. CONTRACTOR TO ALLOW FOR NEW FOUL CONNECTION TO SEWER AND SURFACE WATER DISCHARGE INTO EXISTING DITCH.

GENERAL NOTES:

1. All dimensions to be checked on site. All details and dimensions relating to sub-contractors or suppliers work must be checked and agreed between the sub-contractor or supplier and the main contractor.
2. This drawing is to be read in conjunction with all relevant architects, services and engineers drawings and specifications.
3. The location, size, depth and identification of existing services that may be shown or referred to on this drawing have been assessed from non intrusive observations, record drawings or the like. The contractor shall safely carry out intrusive investigations, trial holes or soundings prior to commencing work to satisfy himself that it is safe to proceed and that the assessments are accurate. Any discrepancies shall be notified to gta prior to works commencing.
4. Tender or billing drawings shall not be used for construction or the ordering of materials.
5. Do not scale. All dimensions and levels to be site confirmed.
6. Copyright : This drawing must not be copied, amended nor reproduced without the prior written agreement of gta.

EAST BASIN

Manhole No.	Pipe No.	Private IMP	Private UC	Total IMP + UC
S12	1.009	0.000	0.000	0.000
S14	1.000	239.888	0.000	239.888
S15	1.001	277.819	7.762	285.582
S16	1.002	241.150	12.130	253.280
S17	1.003	92.050	0.000	92.050
S18	1.004	0.000	0.000	0.000
S19	1.005	110.742	11.074	121.816
S20	1.006	332.703	10.552	343.255
S21	1.007	333.850	10.552	344.402
S23	2.000	976.853	42.113	1018.966
S24	2.001	330.982	8.913	339.895
S25	2.002	0.000	0.000	0.000
S26	2.003	281.926	7.787	289.713
S28	3.000	526.976	7.545	534.520
S30	1.009	0.000	0.000	0.000
S31	1.010	0.000	0.000	0.000
Totals:		3744.938	118.429	3863.367

WEST BASIN

Manhole No.	Pipe No.	Private IMP	Private UC	Total IMP + UC
S1	1.000	78.291	0.000	78.291
S2	1.001	688.373	16.394	704.766
S3	1.002	194.739	0.000	194.739
S4	1.003	503.016	22.175	525.191
S5	1.004	968.986	16.413	985.398
S6	1.005	1077.288	25.360	1102.648
S7	1.006	687.034	14.330	701.364
S8	1.007	0.000	0.000	0.000
S10	2.000	588.333	9.304	597.637
S13	2.001	179.304	0.000	179.304
Totals:		4965.364	103.975	5069.338

P01	Initial Issue		14.05.2026	DT	FW
Rev	Amendments		Date	Dsn	Chk
Status					
PRELIMINARY					
Client					
LANDACRE					
Architect					
ECE ARCHITECTURE					
Project					
LAND OFF HENFIELD ROAD COWFOLD					
Title					
PROPOSED IMPERMEABLE AREAS PLAN					
Date		Scale @ A1			
APRIL 2026		AS SHOWN			
Clients Ref.		Project Ref.		14136	
 Civils & Transport Maple House, 192-198 London Road, Burgess Hill, West Sussex, RH15 9RD Tel:01444 871444 Web: www.gtacivils.co.uk					
Drawing Number				Rev.	
14136/1101				P01	

Appendix G

Calculations

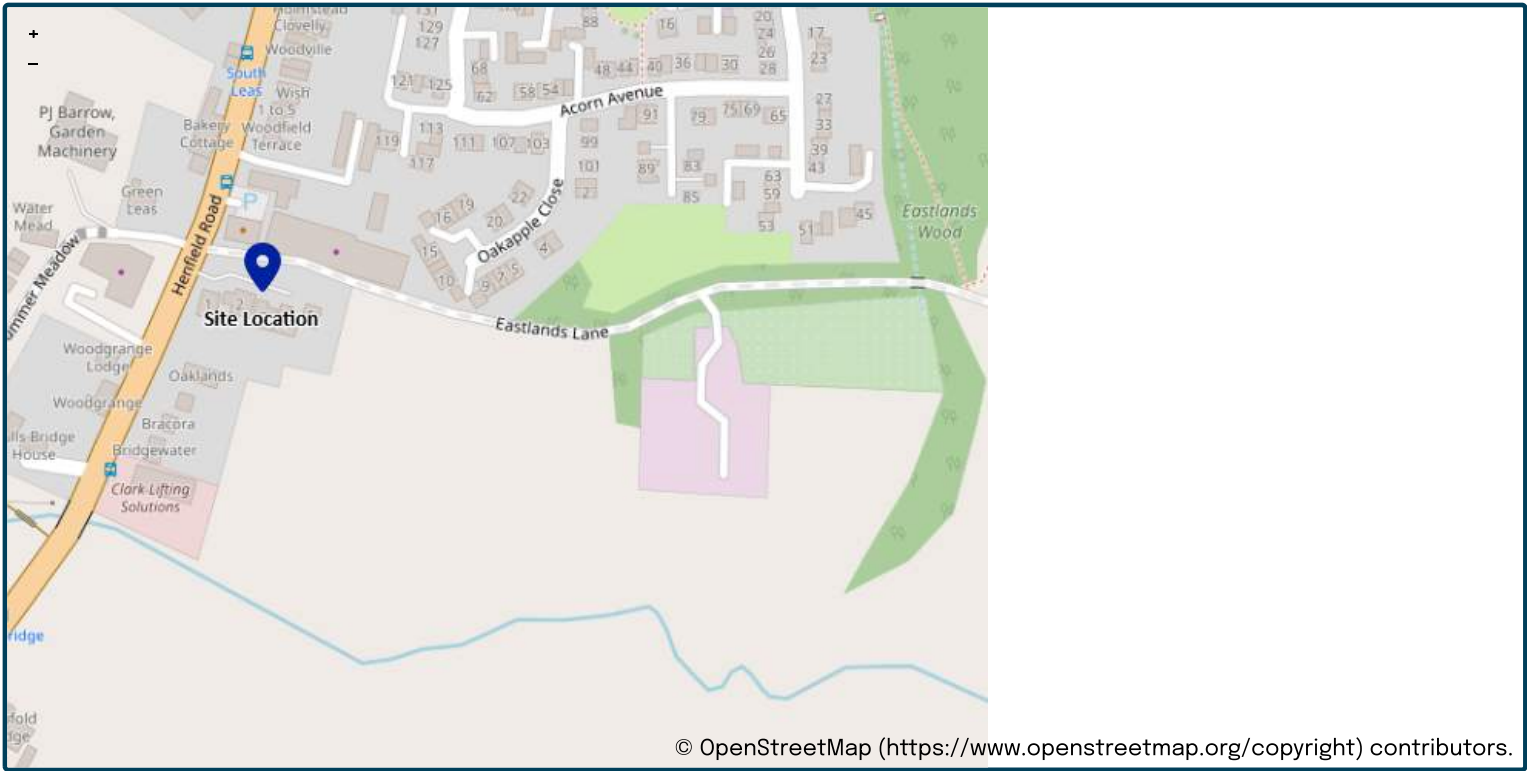
This is an estimation of the greenfield runoff rates that are used to meet normal best practice criteria in line with Environment Agency guidance “Rainfall runoff management for developments”, SC030219 (2013), the SuDS Manual C753 (CIRIA, 2015) and the non-statutory standards for SuDS (Defra, 2015). This information on greenfield runoff rates may be the basis for setting consents for the drainage of surface water runoff from sites.

Project details

Date	04/12/2025
Calculated by	
Reference	
Model version	2.2.2

Location

Site name	Land off Henfield Road
Site location	Cowfold



Site easting (British National Grid)	521321
Site northing (British National Grid)	122113

Site details

Total site area (ha)	1	ha
----------------------	--------------------------------	----

Greenfield runoff

Method

Method	IH124
--------	-------

IH124

	<u>My value</u>		<u>Map value</u>
SAAR (mm)	790 mm	☐	790
How should SPR be derived?	WRAP soil type		
WRAP soil type	4	☐	4
SPR	0.47		
QBar (IH124) (l/s)	5.6 l/s		

Growth curve factors

	<u>My value</u>		<u>Map value</u>
Hydrological region	7	☐	7
1 year growth factor	0.85		
2 year growth factor	0.88		
10 year growth factor	1.62		
30 year growth factor	2.3		
100 year growth factor	3.19		
200 year growth factor	3.74		

Results

Method	IH124
Flow rate 1 year (l/s)	4.7 l/s
Flow rate 2 year (l/s)	4.9 l/s
Flow rate 10 years (l/s)	9.0 l/s
Flow rate 30 years (l/s)	12.8 l/s
Flow rate 100 years (l/s)	17.7 l/s
Flow rate 200 years (l/s)	20.8 l/s

Please note runoff estimation is subject to significant uncertainty. Results are therefore normally reported to only 1 decimal place. Where 2 decimal places are provided, this does not indicate accuracy to this level, it has been adopted to prevent 'zero' figures from being reported. Outputs less than 0.01 l/s are reported as 0.01 l/s.

Disclaimer

This report was produced using the Greenfield runoff rate estimation tool (2.2.2) developed by HR Wallingford and available at [uksuds.com](https://www.uksuds.com) (<https://www.uksuds.com/>). The use of this tool is subject to the UK SuDS terms and conditions and licence agreement, which can both be found at [uksuds.com/terms-conditions](https://www.uksuds.com/terms-conditions) (<https://www.uksuds.com/terms-conditions>). The outputs from this tool have been used to estimate Greenfield runoff rates. The use of these results is the responsibility of the users of this tool. No liability will be accepted by HR Wallingford, the Environment Agency, Centre for Ecology and Hydrology, Wallingford Hydrosolutions or any other organisation for the use of these data in the design or operational characteristics of any drainage scheme.

Design Settings

Rainfall Methodology	FEH-22	Maximum Time of Concentration (mins)	30.00	Preferred Cover Depth (m)	1.200
Return Period (years)	100	Maximum Rainfall (mm/hr)	50.0	Include Intermediate Ground	✓
Additional Flow (%)	45	Minimum Velocity (m/s)	1.00	Enforce best practice design rules	x
CV	1.000	Connection Type	Level Soffits		
Time of Entry (mins)	5.00	Minimum Backdrop Height (m)	1.000		

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)	Invert Level (m)
S14	0.024	5.00	15.735	1350	521431.985	122052.193	1.171	14.564
S15	0.029	5.00	15.648	1350	521442.010	122050.309	1.494	14.154
S16	0.025	5.00	15.523	1200	521456.867	122047.105	1.908	13.615
S17	0.009	5.00	15.287	1350	521466.994	122041.997	2.325	12.962
S18			14.397	1350	521484.799	122021.489	1.597	12.800
S19	0.012	5.00	14.268	1350	521491.604	122014.310	1.668	12.600
S20	0.034	5.00	13.330	1350	521491.809	121990.903	0.905	12.425
S21	0.034	5.00	13.802	1350	521462.920	121990.365	1.502	12.300
S22			13.500		521463.985	121982.155	1.250	12.250
S23	0.102	5.00	15.354	1350	521429.321	122039.786	1.878	13.476
S24	0.034	5.00	14.432	1350	521422.986	122009.843	1.665	12.767
S25			14.043	1350	521424.515	121997.602	1.476	12.567
S26	0.029	5.00	13.556	1350	521429.423	121982.176	1.106	12.450
S27			13.500		521432.775	121973.369	1.325	12.175
S28	0.053	5.00	14.591	1350	521405.071	121974.192	1.778	12.813
S29			13.500		521422.486	121969.141	1.250	12.250
S30			13.500		521467.953	121979.737	1.450	12.050
S31 OUTFALL			11.804		521486.252	121963.801	0.304	11.500

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
1.000	S14	S15	10.200	0.600	14.564	14.154	0.410	24.9	150	5.08	50.0
1.001	S15	S16	15.199	0.600	14.154	13.690	0.464	32.8	150	5.23	50.0
1.002	S16	S17	11.343	0.600	13.615	12.962	0.653	17.4	225	5.29	50.0
1.003	S17	S18	27.159	0.600	12.962	12.800	0.162	167.6	225	5.74	50.0
1.004	S18	S19	9.892	0.600	12.800	12.675	0.125	79.1	225	5.85	50.0
1.005	S19	S20	23.408	0.600	12.600	12.500	0.100	234.1	300	6.23	50.0
1.006	S20	S21	28.894	0.600	12.425	12.300	0.125	231.2	375	6.64	50.0
1.007	S21	S22	8.279	0.600	12.300	12.250	0.050	165.6	375	6.73	50.0
1.008	S22	S30	4.646	0.600	12.250	12.050	0.200	23.2	300	6.76	50.0
2.000	S23	S24	30.606	0.600	13.476	12.842	0.634	48.3	225	5.27	50.0
2.001	S24	S25	12.336	0.600	12.767	12.567	0.200	61.7	300	5.37	50.0
2.002	S25	S26	16.188	0.600	12.567	12.450	0.117	138.4	300	5.58	50.0
2.003	S26	S27	9.424	0.600	12.450	12.175	0.275	34.3	300	5.63	50.0
2.004	S27	S30	35.750	0.600	12.175	12.050	0.125	286.0	300	6.28	50.0

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
1.000	2.027	35.8	6.3	1.021	1.344	0.024	0.0	42	1.531
1.001	1.765	31.2	13.8	1.344	1.683	0.053	0.0	70	1.714
1.002	3.154	125.4	20.4	1.683	2.100	0.078	0.0	61	2.338
1.003	1.007	40.0	22.8	2.100	1.372	0.087	0.0	122	1.039
1.004	1.471	58.5	22.8	1.372	1.368	0.087	0.0	97	1.380
1.005	1.023	72.3	26.0	1.368	0.530	0.099	0.0	124	0.941
1.006	1.187	131.1	35.0	0.530	1.127	0.134	0.0	131	1.009
1.007	1.405	155.2	44.0	1.127	0.875	0.168	0.0	136	1.214
1.008	3.275	231.5	44.0	0.950	1.150	0.168	0.0	88	2.541
2.000	1.887	75.0	26.7	1.653	1.365	0.102	0.0	93	1.733
2.001	2.005	141.7	35.6	1.365	1.176	0.136	0.0	102	1.679
2.002	1.335	94.3	35.6	1.176	0.806	0.136	0.0	127	1.243
2.003	2.694	190.5	43.2	0.806	1.025	0.165	0.0	97	2.197
2.004	0.924	65.3	43.2	1.025	1.150	0.165	0.0	178	0.986

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
3.000	S28	S29	18.133	0.600	12.813	12.250	0.563	32.2	225	5.13	50.0
3.001	S29	S30	46.686	0.600	12.250	12.050	0.200	233.4	225	6.04	50.0
1.009	S30	S31 OUTFALL	24.265	0.600	12.050	11.500	0.550	44.1	300	6.93	50.0

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
3.000	2.313	92.0	14.0	1.553	1.025	0.053	0.0	59	1.686
3.001	0.851	33.8	14.0	1.025	1.225	0.053	0.0	101	0.811
1.009	2.373	167.7	101.2	1.150	0.004	0.386	0.0	168	2.480

Simulation Settings

Rainfall Methodology	FEH-22	Winter CV	1.000	Drain Down Time (mins)	1440	Check Discharge Rate(s)	x
Rainfall Events	Singular	Analysis Speed	Normal	Additional Storage (m³/ha)	0.0	Check Discharge Volume	x
Summer CV	1.000	Skip Steady State	x	Starting Level (m)			

Storm Durations

15 | 30 | 60 | 120 | 180 | 240 | 360 | 480 | 600 | 720 | 960 | 1440

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)	Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
2	0	0	0	100	45	0	0
30	40	0	0				

Node S30 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	x	Sump Available	✓
Invert Level (m)	12.050	Product Number	CTL-SHE-0065-1800-0900-1800
Design Depth (m)	0.900	Min Outlet Diameter (m)	0.100
Design Flow (l/s)	1.8	Min Node Diameter (mm)	1200

Node S30 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	12.050
Side Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Time to half empty (mins)	660

Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)
0.000	331.4	0.0	0.300	451.3	0.0	0.600	574.5	0.0	0.900	700.1	0.0	1.200	828.2	0.0	1.450	936.7	0.0
0.100	370.6	0.0	0.400	492.1	0.0	0.700	616.1	0.0	1.000	742.6	0.0	1.300	871.4	0.0			
0.200	410.8	0.0	0.500	533.2	0.0	0.800	658.0	0.0	1.100	785.2	0.0	1.400	914.9	0.0			

Results for 2 year Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	S14	10	14.599	0.035	4.3	0.0501	0.0000	OK
15 minute summer	S15	10	14.212	0.058	9.4	0.0836	0.0000	OK
15 minute summer	S16	10	13.665	0.050	13.8	0.0566	0.0000	OK
15 minute summer	S17	11	13.061	0.099	15.3	0.1423	0.0000	OK
15 minute summer	S18	11	12.885	0.085	15.3	0.1210	0.0000	OK
15 minute summer	S19	11	12.703	0.103	17.4	0.1480	0.0000	OK
15 minute summer	S20	11	12.535	0.110	23.2	0.1569	0.0000	OK
15 minute summer	S21	11	12.408	0.108	29.0	0.1540	0.0000	OK
15 minute summer	S22	11	12.325	0.075	28.7	0.0000	0.0000	OK
15 minute summer	S23	10	13.553	0.077	18.3	0.1103	0.0000	OK
15 minute summer	S24	10	12.855	0.088	24.1	0.1260	0.0000	OK
15 minute summer	S25	10	12.676	0.109	24.0	0.1554	0.0000	OK
15 minute summer	S26	11	12.530	0.080	28.9	0.1139	0.0000	OK
15 minute summer	S27	11	12.315	0.140	29.1	0.0000	0.0000	OK
15 minute summer	S28	10	12.862	0.049	9.6	0.0697	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	S14	1.000	S15	4.3	0.913	0.119	0.0483	
15 minute summer	S15	1.001	S16	9.3	1.501	0.297	0.0937	
15 minute summer	S16	1.002	S17	13.7	1.191	0.109	0.1331	
15 minute summer	S17	1.003	S18	15.3	1.002	0.381	0.4147	
15 minute summer	S18	1.004	S19	15.3	1.185	0.262	0.1278	
15 minute summer	S19	1.005	S20	17.3	0.830	0.239	0.4875	
15 minute summer	S20	1.006	S21	23.1	0.872	0.176	0.7638	
15 minute summer	S21	1.007	S22	28.7	1.389	0.185	0.1731	
15 minute summer	S22	1.008	S30	28.7	3.346	0.124	0.0484	
15 minute summer	S23	2.000	S24	18.0	1.532	0.240	0.3597	
15 minute summer	S24	2.001	S25	24.0	1.195	0.169	0.2480	
15 minute summer	S25	2.002	S26	23.9	1.267	0.253	0.3067	
15 minute summer	S26	2.003	S27	29.1	1.248	0.153	0.2218	
15 minute summer	S27	2.004	S30	29.4	1.786	0.450	0.6689	
15 minute summer	S28	3.000	S29	9.5	0.939	0.104	0.1870	

Results for 2 year Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	S29	10	12.338	0.088	9.5	0.0000	0.0000	OK
720 minute summer	S30	525	12.274	0.224	11.0	84.2660	0.0000	OK
720 minute summer	S31 OUTFALL	525	11.522	0.022	1.8	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	S29	3.001	S30	9.6	1.208	0.283	0.4409	
720 minute summer	S30	1.009	S31 OUTFALL	1.8	0.782	0.011	0.0550	120.7

Results for 30 year +40% CC Critical Storm Duration. Lowest mass balance: 99.66%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	S14	11	14.633	0.069	15.4	0.0994	0.0000	OK
15 minute summer	S15	11	14.431	0.277	33.6	0.3960	0.0000	SURCHARGED
15 minute summer	S16	11	13.716	0.101	47.4	0.1141	0.0000	OK
15 minute summer	S17	11	13.298	0.336	53.0	0.4815	0.0000	SURCHARGED
15 minute summer	S18	11	12.993	0.193	52.5	0.2757	0.0000	OK
15 minute summer	S19	11	12.819	0.219	59.5	0.3127	0.0000	OK
960 minute winter	S20	945	12.664	0.239	5.5	0.3415	0.0000	OK
960 minute winter	S21	945	12.662	0.362	11.8	0.5186	0.0000	OK
960 minute summer	S22	975	12.662	0.412	44.5	0.0000	0.0000	SURCHARGED
15 minute summer	S23	10	13.649	0.173	65.3	0.2474	0.0000	OK
15 minute summer	S24	10	12.972	0.205	86.2	0.2938	0.0000	OK
15 minute summer	S25	11	12.811	0.244	85.7	0.3488	0.0000	OK
960 minute winter	S26	930	12.661	0.211	6.8	0.3016	0.0000	OK
960 minute winter	S27	930	12.661	0.486	6.8	0.0000	0.0000	SURCHARGED
15 minute summer	S28	10	12.907	0.094	34.2	0.1349	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	S14	1.000	S15	15.3	1.156	0.428	0.1304	
15 minute summer	S15	1.001	S16	31.9	1.876	1.023	0.2676	
15 minute summer	S16	1.002	S17	47.4	1.517	0.378	0.3232	
15 minute summer	S17	1.003	S18	52.5	1.328	1.312	1.0318	
15 minute summer	S18	1.004	S19	52.1	1.549	0.890	0.3319	
15 minute summer	S19	1.005	S20	59.0	1.162	0.815	1.1902	
960 minute winter	S20	1.006	S21	5.5	0.551	0.042	2.6456	
960 minute winter	S21	1.007	S22	18.0	0.864	0.116	0.9083	
960 minute summer	S22	1.008	S30	26.3	1.319	0.113	0.3272	
15 minute summer	S23	2.000	S24	64.4	2.056	0.858	0.9599	
15 minute summer	S24	2.001	S25	85.7	1.529	0.605	0.6911	
15 minute summer	S25	2.002	S26	85.1	1.565	0.902	0.9235	
960 minute winter	S26	2.003	S27	6.8	0.722	0.036	0.5811	
960 minute winter	S27	2.004	S30	6.7	0.561	0.102	2.5175	
15 minute summer	S28	3.000	S29	34.1	1.372	0.370	0.4438	

Results for 30 year +40% CC Critical Storm Duration. Lowest mass balance: 99.66%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
960 minute winter	S29	945	12.662	0.412	2.2	0.0000	0.0000	SURCHARGED
960 minute winter	S30	945	12.662	0.612	34.8	277.8320	0.0000	SURCHARGED
30 minute summer	S31 OUTFALL	199	11.522	0.022	1.8	0.0000	0.0000	OK
Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
960 minute winter	S29	3.001	S30	2.1	0.444	0.061	1.8568	
960 minute winter	S30	1.009	S31 OUTFALL	1.8	0.787	0.011	0.0557	217.2

Results for 100 year +45% CC Critical Storm Duration. Lowest mass balance: 99.62%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	S14	11	14.858	0.294	20.0	0.4213	0.0000	SURCHARGED
15 minute summer	S15	11	14.723	0.569	40.4	0.8140	0.0000	SURCHARGED
15 minute summer	S16	11	13.786	0.171	59.5	0.1932	0.0000	OK
15 minute summer	S17	12	13.601	0.639	66.0	0.9144	0.0000	SURCHARGED
15 minute summer	S18	12	13.104	0.304	64.2	0.4344	0.0000	SURCHARGED
15 minute summer	S19	12	12.861	0.261	73.1	0.3731	0.0000	OK
1440 minute winter	S20	1410	12.842	0.417	5.2	0.5964	0.0000	SURCHARGED
1440 minute winter	S21	1290	12.843	0.543	6.4	0.7766	0.0000	SURCHARGED
1440 minute winter	S22	1440	12.846	0.596	51.9	0.0000	0.0000	SURCHARGED
15 minute summer	S23	11	14.148	0.672	85.1	0.9609	0.0000	SURCHARGED
15 minute summer	S24	11	13.290	0.523	106.9	0.7483	0.0000	SURCHARGED
15 minute summer	S25	11	13.117	0.550	105.3	0.7872	0.0000	SURCHARGED
15 minute summer	S26	11	12.914	0.464	126.8	0.6633	0.0000	SURCHARGED
1440 minute winter	S27	1410	12.837	0.662	6.5	0.0000	0.0000	SURCHARGED
15 minute summer	S28	10	12.923	0.110	44.6	0.1568	0.0000	OK
Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	S14	1.000	S15	18.0	1.178	0.503	0.1796	
15 minute summer	S15	1.001	S16	39.3	2.232	1.260	0.2657	
15 minute summer	S16	1.002	S17	58.7	1.562	0.468	0.4090	
15 minute summer	S17	1.003	S18	64.2	1.614	1.603	1.0801	
15 minute summer	S18	1.004	S19	64.5	1.623	1.103	0.3843	
15 minute summer	S19	1.005	S20	73.2	1.232	1.012	1.3815	
1440 minute winter	S20	1.006	S21	5.1	0.498	0.039	3.1869	
1440 minute winter	S21	1.007	S22	18.1	0.784	0.117	0.9131	
1440 minute winter	S22	1.008	S30	-33.8	1.045	-0.146	0.3272	
15 minute summer	S23	2.000	S24	79.8	2.006	1.063	1.2172	
15 minute summer	S24	2.001	S25	105.3	1.557	0.743	0.8687	
15 minute summer	S25	2.002	S26	103.7	1.513	1.099	1.1399	
15 minute summer	S26	2.003	S27	125.5	1.782	0.659	0.6636	
1440 minute winter	S27	2.004	S30	6.7	0.540	0.103	2.5175	
15 minute summer	S28	3.000	S29	44.4	1.444	0.483	0.5345	

Results for 100 year +45% CC Critical Storm Duration. Lowest mass balance: 99.62%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
1440 minute winter	S29	1410	12.836	0.586	2.1	0.0000	0.0000	SURCHARGED
1440 minute winter	S30	1410	12.836	0.786	15.6	385.1613	0.0000	SURCHARGED
15 minute summer	S31 OUTFALL	158	11.522	0.022	1.8	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
1440 minute winter	S29	3.001	S30	2.1	0.402	0.061	1.8568	
1440 minute winter	S30	1.009	S31 OUTFALL	1.8	0.786	0.011	0.0556	254.4

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Depth (m)	Invert Level (m)
S1	0.008	5.00	17.305	1.577	15.728
S2	0.070	5.00	16.887	1.592	15.295
S3	0.019	5.00	16.657	1.777	14.880
S4	0.053	5.00	16.436	1.815	14.621
S5	0.099	5.00	16.176	1.870	14.306
S6	0.110	5.00	15.826	1.752	14.074
S7	0.070	5.00	15.396	1.851	13.545
S8			14.846	1.676	13.170
S9			14.300	1.287	13.013
S10	0.060	5.00	14.857	1.339	13.518
S13	0.018	5.00	14.920	1.745	13.175
S11			14.300	1.250	13.050
S12			14.300	1.600	12.700
S13 OUTFALL			13.000	0.385	12.615

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)
1.000	S1	S2	35.354	0.600	15.728	15.370	0.358	98.8	150	Circular	5.58
1.001	S2	S3	19.189	0.600	15.295	14.880	0.415	46.2	225	Circular	5.75
1.002	S3	S4	11.469	0.600	14.880	14.696	0.184	62.3	225	Circular	5.86
1.003	S4	S5	14.953	0.600	14.621	14.381	0.240	62.3	300	Circular	5.99

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Pro Depth (mm)	Pro Velocity (m/s)
1.000	1.011	17.9	1.5	1.427	1.367	0.008	30	0.617
1.001	1.928	76.7	15.4	1.367	1.552	0.078	68	1.515
1.002	1.659	66.0	19.2	1.552	1.515	0.098	83	1.444
1.003	1.995	141.0	29.5	1.515	1.495	0.150	93	1.590

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)
1.004	S5	S6	23.560	0.600	14.306	14.074	0.232	101.6	375	Circular	6.21
1.005	S6	S7	26.368	0.600	14.074	13.545	0.529	49.8	375	Circular	6.38
1.006	S7	S8	13.407	0.600	13.545	13.170	0.375	35.8	375	Circular	6.45
1.007	S8	S9	5.608	0.600	13.170	13.013	0.157	35.7	375	Circular	6.48
1.008	S9	S12	37.824	0.600	13.013	12.700	0.313	120.8	375	Circular	6.87
2.000	S10	S13	16.527	0.600	13.518	13.175	0.343	48.2	225	Circular	5.15
2.001	S13	S11	10.687	0.600	13.175	13.050	0.125	85.5	225	Circular	5.27
2.002	S11	S12	10.668	0.600	13.050	12.850	0.200	53.3	225	Circular	5.37
1.009	S12	S13 OUTFALL	16.969	0.600	12.700	12.615	0.085	199.6	375	Circular	7.09

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Pro Depth (mm)	Pro Velocity (m/s)
1.004	1.798	198.5	48.9	1.495	1.377	0.249	126	1.498
1.005	2.571	284.0	70.6	1.377	1.476	0.359	127	2.150
1.006	3.038	335.6	84.4	1.476	1.301	0.429	128	2.548
1.007	3.040	335.7	84.4	1.301	0.912	0.429	128	2.550
1.008	1.647	181.9	84.4	0.912	1.225	0.429	179	1.616
2.000	1.889	75.1	11.7	1.114	1.520	0.060	60	1.388
2.001	1.415	56.3	15.3	1.520	1.025	0.078	80	1.205
2.002	1.794	71.3	15.3	1.025	1.225	0.078	71	1.439
1.009	1.278	141.2	99.6	1.225	0.010	0.507	233	1.382

Simulation Settings

Rainfall Methodology	FEH-22	Winter CV	1.000	Drain Down Time (mins)	1440	Check Discharge Rate(s)	x
Rainfall Events	Singular	Analysis Speed	Normal	Additional Storage (m³/ha)	0.0	Check Discharge Volume	x
Summer CV	1.000	Skip Steady State	x	Starting Level (m)			

Storm Durations

15	30	60	120	180	240	360	480	600	720	960	1440
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Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)	Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
2	0	0	0	100	45	0	0
30	40	0	0				

Node S12 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Downstream Link	1.009	Sump Available	✓
Replaces Downstream Link	x	Product Number	CTL-SHE-0074-2400-1000-2400
Invert Level (m)	12.700	Min Outlet Diameter (m)	0.100
Design Depth (m)	1.000	Min Node Diameter (mm)	1200
Design Flow (l/s)	2.4		

Node S12 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	12.700
Side Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Time to half empty (mins)	

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	272.6	0.0	0.300	383.1	0.0	0.600	497.7	0.0	0.900	615.8	0.0	1.200	737.3	0.0	1.500	862.1	0.0
0.100	308.5	0.0	0.400	420.9	0.0	0.700	536.7	0.0	1.000	655.9	0.0	1.300	778.5	0.0	1.600	904.5	0.0
0.200	345.6	0.0	0.500	459.2	0.0	0.800	576.1	0.0	1.100	696.4	0.0	1.400	820.1	0.0			

Results for 2 year Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	S1	11	15.756	0.028	1.4	0.0396	0.0000	OK
15 minute summer	S2	10	15.359	0.064	13.8	0.0917	0.0000	OK
15 minute summer	S3	10	14.963	0.083	17.2	0.1192	0.0000	OK
15 minute summer	S4	10	14.714	0.093	26.3	0.1330	0.0000	OK
15 minute summer	S5	10	14.431	0.125	43.7	0.1790	0.0000	OK
15 minute summer	S6	10	14.198	0.124	63.1	0.1775	0.0000	OK
15 minute summer	S7	11	13.676	0.131	75.0	0.1869	0.0000	OK
15 minute summer	S8	11	13.311	0.141	75.0	0.2014	0.0000	OK
15 minute summer	S9	10	13.190	0.177	75.3	0.0000	0.0000	OK
15 minute summer	S10	10	13.575	0.057	10.7	0.0815	0.0000	OK
15 minute summer	S13	10	13.253	0.078	13.8	0.0884	0.0000	OK
15 minute summer	S11	10	13.116	0.066	13.7	0.0000	0.0000	OK
720 minute summer	S12	525	13.022	0.322	14.5	106.8379	0.0000	OK
720 minute summer	S13 OUTFALL	525	12.649	0.034	2.4	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	S1	1.000	S2	1.3	0.591	0.073	0.0783	
15 minute summer	S2	1.001	S3	13.7	1.213	0.179	0.2174	
15 minute summer	S3	1.002	S4	16.9	1.336	0.256	0.1456	
15 minute summer	S4	1.003	S5	26.1	1.479	0.185	0.2644	
15 minute summer	S5	1.004	S6	43.4	1.365	0.218	0.7529	
15 minute summer	S6	1.005	S7	62.6	1.906	0.220	0.8683	
15 minute summer	S7	1.006	S8	75.0	2.088	0.224	0.4817	
15 minute summer	S8	1.007	S9	75.3	1.703	0.224	0.2486	
15 minute summer	S9	1.008	S12	76.2	2.648	0.419	1.2244	
15 minute summer	S10	2.000	S13	10.6	1.062	0.141	0.1662	
15 minute summer	S13	2.001	S11	13.7	1.247	0.243	0.1176	
15 minute summer	S11	2.002	S12	13.6	1.399	0.191	0.1041	
720 minute summer	S12	1.009	S13 OUTFALL	2.4	0.494	0.017	0.0826	162.0

Results for 30 year +40% CC Critical Storm Duration. Lowest mass balance: 99.21%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	S1	10	15.782	0.054	5.0	0.0767	0.0000	OK
15 minute summer	S2	10	15.435	0.140	50.0	0.1997	0.0000	OK
15 minute summer	S3	10	15.083	0.203	62.0	0.2911	0.0000	OK
15 minute summer	S4	11	14.835	0.214	94.6	0.3060	0.0000	OK
15 minute summer	S5	11	14.686	0.380	157.1	0.5436	0.0000	SURCHARGED
15 minute summer	S6	11	14.507	0.433	225.5	0.6202	0.0000	SURCHARGED
15 minute summer	S7	11	14.115	0.570	257.7	0.8157	0.0000	SURCHARGED
15 minute summer	S8	11	13.766	0.596	251.9	0.8523	0.0000	SURCHARGED
15 minute summer	S9	11	13.608	0.595	252.1	0.0000	0.0000	SURCHARGED
15 minute summer	S10	10	13.637	0.119	38.2	0.1709	0.0000	OK
960 minute winter	S13	930	13.549	0.374	3.2	0.4232	0.0000	SURCHARGED
960 minute winter	S11	930	13.549	0.499	5.4	0.0000	0.0000	SURCHARGED
960 minute winter	S12	930	13.549	0.849	23.5	366.4402	0.0000	SURCHARGED
30 minute winter	S13 OUTFALL	501	12.649	0.034	2.4	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	S1	1.000	S2	4.9	0.832	0.274	0.2278	
15 minute summer	S2	1.001	S3	49.5	1.543	0.646	0.6106	
15 minute summer	S3	1.002	S4	61.3	1.745	0.929	0.4001	
15 minute summer	S4	1.003	S5	94.4	1.841	0.669	0.9281	
15 minute summer	S5	1.004	S6	155.0	1.704	0.781	2.5979	
15 minute summer	S6	1.005	S7	212.8	2.268	0.749	2.9083	
15 minute summer	S7	1.006	S8	251.9	2.377	0.751	1.4788	
15 minute summer	S8	1.007	S9	252.1	2.286	0.751	0.6185	
15 minute summer	S9	1.008	S12	252.9	3.010	1.391	3.9445	
15 minute summer	S10	2.000	S13	38.0	1.421	0.506	0.4395	
960 minute winter	S13	2.001	S11	3.2	0.780	0.057	0.4250	
960 minute winter	S11	2.002	S12	4.2	0.679	0.059	0.4243	
960 minute winter	S12	1.009	S13 OUTFALL	2.4	0.494	0.017	0.0826	286.3

Results for 100 year +45% CC Critical Storm Duration. Lowest mass balance: 99.39%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	S1	12	16.221	0.493	13.2	0.7054	0.0000	SURCHARGED
15 minute summer	S2	12	16.176	0.881	65.1	1.2607	0.0000	SURCHARGED
15 minute summer	S3	12	15.920	1.040	73.2	1.4885	0.0000	SURCHARGED
15 minute summer	S4	11	15.652	1.031	107.8	1.4759	0.0000	SURCHARGED
15 minute summer	S5	11	15.493	1.187	182.9	1.6983	0.0000	SURCHARGED
15 minute summer	S6	11	15.257	1.183	257.9	1.6922	0.0000	SURCHARGED
15 minute summer	S7	11	14.679	1.134	311.1	1.6230	0.0000	SURCHARGED
15 minute summer	S8	11	14.151	0.981	308.8	1.4041	0.0000	SURCHARGED
15 minute summer	S9	11	13.917	0.904	307.0	0.0000	0.0000	SURCHARGED
960 minute winter	S10	945	13.764	0.246	3.2	0.3520	0.0000	SURCHARGED
960 minute winter	S13	945	13.764	0.589	4.2	0.6662	0.0000	SURCHARGED
960 minute winter	S11	945	13.764	0.714	4.1	0.0000	0.0000	SURCHARGED
960 minute winter	S12	945	13.764	1.064	36.0	503.6190	0.0000	SURCHARGED
960 minute winter	S13 OUTFALL	945	12.649	0.034	2.4	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	S1	1.000	S2	11.7	1.026	0.653	0.6224	
15 minute summer	S2	1.001	S3	57.8	1.563	0.753	0.7632	
15 minute summer	S3	1.002	S4	76.5	1.925	1.160	0.4561	
15 minute summer	S4	1.003	S5	113.3	1.957	0.804	1.0530	
15 minute summer	S5	1.004	S6	174.5	1.651	0.879	2.5986	
15 minute summer	S6	1.005	S7	255.1	2.313	0.898	2.9083	
15 minute summer	S7	1.006	S8	308.8	2.800	0.920	1.4788	
15 minute summer	S8	1.007	S9	307.0	2.784	0.914	0.6185	
15 minute summer	S9	1.008	S12	307.6	3.000	1.691	4.1719	
960 minute winter	S10	2.000	S13	3.2	0.747	0.043	0.6573	
960 minute winter	S13	2.001	S11	4.1	0.780	0.072	0.4250	
960 minute winter	S11	2.002	S12	8.9	0.679	0.124	0.4243	
960 minute winter	S12	1.009	S13 OUTFALL	2.4	0.495	0.017	0.0833	308.8

Appendix H

Draft Drainage Maintenance Plan

Land East of Henfield Road (A281),
Cowfold
Drainage Maintenance Plan

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Issue	Issue date	Compiled	Checked
First Draft Issue	18.05.26	DT	FVV

1 Introduction

- 1.1 This report has been prepared by GTA Civils & Transport Ltd for Landacre Developments Ltd in relation to the proposed development at Land East of Henfield Road (A281), Cowfold. No responsibility is accepted to any third party for all or part of this study in connection with this or any other development.
- 1.2 This Drainage Maintenance Plan (DMP) has been prepared for inclusion as an Appendix to the Flood Risk Assessment (FRA) submitted to Horsham District Council in order to support the planning application.
- 1.3 The DMP sets out the framework for the management of the proposed sustainable drainage systems (SuDS) within the development. The DMP remains a draft version during the design stage; it will be updated with final construction information prior to Handover and will remain a live document over the duration of the project. At this stage, what is set out herein is intended to be sufficient to demonstrate the viability of the proposed SuDS maintenance regime for planning purposes.

2 Ownership & Maintenance Responsibilities

- 2.1 A summary of the ownership and maintenance responsibilities for the development is as follows:
- Individual property drainage will be cared for by the property owner.
 - Adopted sewers and qualifying SuDS components will be the responsibility of Southern Water or will be vested in a sewerage company under a NAV agreement. The final arrangements will be confirmed at the next stage
 - The remaining drainage features along with the site-wide infrastructure will be cared for the Estate Management Company set up by the developer.
 - The developer will be responsible for maintaining completed SuDS components in advance of transfer to / adoption by the relevant party.
- 2.2 The DMP is intended to comprise a useful handbook for the Management Company to assist with arranging regular and appropriate maintenance activities for the assets under its control. Hence, the DMP only includes the maintenance activities for which the Management Company will be responsible.
- 2.3 The following sections set out schedules detailing the maintenance requirements for each of the main drainage items used within the scheme. The Management Company will undertake the inspections and maintenance activities in accordance with these schedules. Public bodies will maintain adopted features in line with their established procedures.
- 2.4 The Management Company will seek financial contributions (in the form of service charges), at regular intervals, from the leaseholders/owners of the development to include for the regular costs of the maintenance of the site drainage.
- 2.5 Additional reference should be made to currently established best practice and guidance documents such as The SuDS Manual (CIRIA C753, 2015) and other resources available at the susdrain website (www.susdrain.org).
- 2.6 This DMP should be considered a live document. The frequency of maintenance intervals may need to be increased or decreased based on the observed performance

of the drainage systems over time. Changes should be agreed with the drainage authority and recorded and dated in the DMP.

2.7 Important safety information is set out in the next section.

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3 Health and Safety

3.1 All those responsible for and involved in the maintenance of the site drainage systems should be safety-conscious and comply with the relevant health and safety legislation. This includes:

- The Health and Safety at Work etc Act 1974
- The Management of Health and Safety at Work Regulations 1999
- The Workplace (Health, Safety and Welfare) Regulations 1992

3.2 The Building Management Company is responsible for suitable risk assessment and management to ensure safe working conditions and practices. Measures to protect potential visitors also need to be considered.

3.3 Specialist contractors used should work to industry guidelines and be able to demonstrate safe working practices.

3.4 Employers have a duty to employees to inform them about the risks of their work environment and to decrease the risk as far as reasonably practicable. Appropriate personal protective equipment (PPE) should be provided and policies implemented based on risk assessment.

3.5 Operatives should be trained for working near water. Risks of contaminated water should be considered. Checking for open cuts and using nitrile gloves, waterproof plasters etc is advised.

3.6 Entry of pipes, chambers, tanks and culverts should be avoided. Work should be carried out from the surface using appropriate equipment. In the event that entry cannot be avoided to perform a critical task, the required safety training, protection measures and precautions must be implemented prior to entry. Lone working should never be attempted.

3.7 For further information refer to Section 36 of The SuDS Manual (CIRIA C753).

4 Schedule A – Sewers, Manholes & Gullies

- 4.1 Regular inspection and maintenance is required to ensure the effective long-term operation of private drains, manholes, gullies & channel drains.
- 4.2 Prior to construction: a CCTV survey to be carried out on all receiving existing public sewer systems prior to connection with adopted sewers.
- 4.3 Post Completion: a CCTV survey to be carried out on all new and retained existing drainage systems and any downstream receiving systems, prior to connection with adopted sewers.
- 4.4 The report will be used to prove the integrity of the as-built drainage system prior to issue of practical completion certificate and will be handed over to the Client & Management Company for future reference.
- 4.5 Operation and maintenance requirements for all sewers, manholes and gullies are described in the following table:

Schedule	Action	Frequency
Regular Maintenance	Inspect and identify any areas that are not operating correctly. If required, take remedial action.	6 Monthly intervals.
	Common yard & car park & other hard standing areas to be swept clear of debris, to prevent possibility of blockages to the receiving drainage systems.	Monthly.
	Debris removal from gullies (where may cause risks to performance).	6 Monthly intervals, after autumn leaf fall, or as required based on specific observations.
	Lift and inspect receiving manholes to check for any blockages.	Monthly.
Remedial Actions	Repair any damaged gully gratings.	As required.
Monitoring	Carry out full CCTV survey to confirm ongoing integrity of all drains. Inspect all gullies and silt pits during the survey.	10-yearly intervals.

- 4.6 Where appropriate refer also to specialist drainage manufacturer's information and maintenance requirements.
- 4.7 In all instances, inspection and cleaning should be carried out only by a specialist contractor and in accordance with the guidelines given in 'Safe Working in Sewers and

at Sewage Works' published by National Joint Health and Safety Committee for the Water Services.

4.8 Further information on safety is set out in Section 3.

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5 Schedule B – Permeable Pavement

5.7 Inspection Frequency and Maintenance Requirements: as per table below.

Schedule	Action	Frequency
Regular Maintenance	Machine sweeper (push- or scarab-type).	Annually after autumn leaf fall
Occasional Maintenance	Weed removal	Annually
Remedial Actions	Remediate adjacent landscaping to original levels	As required
	Paving repairs including replenishment of lost jointing material	As required
	Rehabilitation of surface and upper substructure by remedial sweeping	Every 10 to 15 years or as required if infiltration is reduced by clogging
Monitoring	Initial inspection	Monthly for first three months
	Inspection for evidence of poor operation and/or weed growth	Quarterly, 48 hrs after large storms in first six months
	Inspection for silt accumulation to establish sweeping frequencies	Annually
	Monitor inspection chambers	Annually

5.8 Further information on safety is set out in Section 3.

6 Schedule C – Detention Basins and Control Chambers

6.1 Inspection Frequency and Maintenance Requirements: as per table below.

Schedule	Action	Frequency
Regular Maintenance	Remove litter and debris Cut grass. Manage other vegetation and remove nuisance plants. Inspect basin bed for silt accumulation. Inspect vegetation coverage	Monthly, or as required Monthly (during growing season), Monthly at start, then as required. Monthly for 6 months, quarterly for 2 years, then half yearly Monthly for 6 months, quarterly for 2 years, then half yearly
Occasional Maintenance	Reseed areas of poor vegetation growth, alter plant types to better suit conditions, if required.	As required or if bare soil is exposed over 10% or more of the treatment area
Remedial Actions	Repair erosion or other damage by re-turfing or reseedling. Relevel uneven surfaces and reinstate design levels. Remove silt accumulation. Silt removal is only to be carried out after consultation with Environmental Officers. Remove and dispose of oils or petrol residues using safe standard practices.	As required. As required. Monthly for 6 months, quarterly for 2 years, then half yearly As required.

Control Chambers and Hydrobrakes	Check hydrobrake orifices are clear and retention tank door is closed. Check function of retention tank door and oil if necessary. Similarly, check outfalls and inlets of attenuation ponds to ensure pipes are clear and free-flowing.	First 2 years of occupation – Monthly Then annually
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6.2 Safety information is set out in Section 3.

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7 Contamination or Dilution of Spillage

- 7.1 In the event of a spillage it is the responsibility of the landowner to clear up any spillage before it enters the drainage system. The primary method of dealing with any spillage of hydrocarbons should be using sand to soak up the leak and prevent any hydrocarbons entering the drainage system. Once sand has been contaminated it should not be washed into the drainage system but disposed of by a Licensed Contractor.

7.2 Environment Agency – Emergency Contact Number

In the event of a spillage the Environment Agency should be contacted to notify the event and seek advice. The Environment Agency Incident Hotline is **0800 80 70 60** (Freephone 24hrs).



Civil Engineering - Transport Planning - Flood Risk

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