

FLOOD RISK ASSESSMENT & DRAINAGE STRATEGY

Proposed Residential Development, Uplands, West Ashton Road, Trowbridge, BA14 6DW, on Behalf of Hills Homes Developments Limited.

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1.0 INTRODUCTION

- 1.1 This *Flood Risk Assessment & Drainage Strategy* has been prepared by Cole Easdon Consultants Limited (CE) on behalf of Hills Homes Development Limited in respect of a proposed residential development at Uplands, West Ashton Road, Trowbridge, BA14 6DW. Refer to CE Figure 9740/500 Figure 1 [*Site Location Plan*] in Appendix 1.

Development Proposals

- 1.2 The development proposals comprise the demolition of the existing property (Uplands) and the construction of 40 residential dwellings, with site access, parking and landscaping.
- 1.3 This study is based on Drawing No. 3164/150 Rev F [*PROPOSED SITE PLAN*] (by Ian Sullivan Architecture Ltd). Refer to Appendix 2.

Need for Study

- 1.4 The purpose of this assessment is to demonstrate that the development proposal outlined above can be satisfactorily accommodated without worsening flood risk for the area and without placing the development itself at risk of flooding, as per National guidance provided within the *National Planning Policy Framework* document (NPPF).
- 1.5 Accordingly, this study has been prepared to:
- assess flood risk to the development from fluvial sources;
 - assess flood risk to the development from other potential sources, including ditches, sewers, groundwater and overland flows;
 - ensure that the proposed development will fully comply with the requirements of the Environment Agency's (EA's) policy on the safeguarding of floodplains.
 - provide surface and foul water drainage strategies for the proposed development.

Local Policy

- 1.6 This assessment demonstrates that the proposals meet the requirements set out by the *Wiltshire Core Strategy (Adopted January 2015)*, namely *Core Policy 67: Flood Risk* which states that housing development is favoured in areas of Flood Zone 1 over areas of higher risk. The Core Strategy also '*...supports a sustainable approach to surface water drainage, and development will be expected to incorporate Sustainable Drainage Systems (SuDS)...*'.
- 1.7 This assessment also demonstrates that the proposals meet the requirements of the *Wiltshire Council Drainage and Betterment Strategy (June 2024)*, *Wiltshire Council Groundwater*

Management Strategy (GWMS) (2016) and Wiltshire Council Strategic Flood Risk Assessment (SFRA, November 2024).

- 1.8 The development proposals must also adhere to guidance set out within the *National Policy Framework (NPPF)* and *National Standards for Sustainable Drainage Systems (July 2025)*.

Scope of Study

- 1.9 In Section 2.0, we describe the characteristics of the proposed development site and surrounding area. In Section 3.0, we assess flood risk issues. Foul & surface water drainage strategies are outlined in Sections 4.0 and 5.0, respectively. Conclusions are presented in Section 6.0.

- 1.10 The following resources have been used for this study:

- Defra's Multi-Agency Geographic Information for the Countryside (MAGIC) Map (accessed April 2026);
- Flood Map for Planning – Fluvial and Pluvial Mapping - Environment Agency (EA, accessed July 2026);
- Geological Map – British Geological Survey (BGS, accessed April 2026);
- Wessex Water Public Sewer Records (accessed October 2025);
- Revised Climate Change Allowances (EA, May 2022);

- 1.11 The following publicly available documents have also been reviewed as part of this assessment:

- Building Regulations 2015 – Approved Document H (Drainage and Waste Disposal);
- CIRIA C753 The SuDS Manual (November 2015);
- National Planning Policy Framework (February 2025);
- National Standards for Sustainable Drainage Systems (DEFRA, July 2025)
- Wiltshire Council Core Strategy (January 2015);
- Wiltshire Council Drainage and Betterment Strategy (Wiltshire Council, June 2024);
- Wiltshire Council – Drainage Policy - Discharge Rates for Greenfield and Brownfield Sites
- Wiltshire Council Groundwater Management Strategy 2016 (Wiltshire Council, 2016);
- Wiltshire Council – Drainage Policy - Safe Management of Overland Exceedance Flows;
- Wiltshire Council Strategic Flood Risk Assessment Level 1 (JBA Consulting, November 2024); and,
- Wiltshire Council Sustainable Drainage Systems (SuDS) Adoption (Wiltshire Council 2025).

- 1.12 The following abbreviations are used in this Report:

- AOD – Above Ordnance Datum;

-
- BGS – British Geological Survey;
 - EA – Environment Agency;
 - FEH – Flood Estimation Handbook;
 - FMP – Flood Map for Planning;
 - ha – Hectares;
 - L/S – Litres per Second;
 - NPPF – National Planning Policy Framework;
 - QBAR - Annual flood flow (return period of approximately 1:2.3 years);
 - SFRA – Strategic Flood Risk Assessment;
 - SuDS – Sustainable Urban Drainage Systems; and,
 - WW – Wessex Water.

2.0 THE EXISTING SITE

- 2.1 The development site is located some 1.25km southeast of Trowbridge town centre to the east of West Ashton Road, Trowbridge BA14 6DW. Refer to CE Figure 9470/500 Figure 1 [*Site Location Plan*] in Appendix 1.
- 2.2 The site comprises a parcel of undeveloped greenfield land covering approximately 5.74 hectares (ha).
- 2.3 The site is bounded to the north by existing residential dwellings, to the east by an attenuation pond associated with residential development to the northeast with the Leap Gate highway beyond. The site is bounded to the south by Blackball Brook with greenfield land beyond. To the west the site is bounded by West Ashton Road.
- 2.4 Land use in the immediate vicinity of the site is primarily residential.

Existing Topography

- 2.5 The site topographical survey indicates that existing ground levels vary from approximately 37.1m AOD to 42.2m AOD, with levels falling from north to south towards Blackball Brook. Refer to Drawing No. APLS-0609-001 [*Topographic Survey*] (by AP Land Surveys) in Appendix 2.

Nearby Watercourses/Drainage Features

- 2.6 Blackball Brook bounds the site to the site, flowing in the westerly direction beneath West Ashton Road at Blackball Bridge. The Brook discharges into the River Biss some 320m to the west of the site. The River Biss is designated as Main River by the Environment Agency.
- 2.7 An attenuation pond is located to the east of the site which drains existing residential development in the vicinity of Soprano Way to the north-east. The pond discharges surface water runoff, presumably via a flow control device, to Blackball Brook upstream of the site.

Existing Public Sewers

- 2.8 Wessex Water (WW) records indicate a public foul water sewer associated with the existing Uplands property. This sewer flows offsite in a westerly direction towards the Woodlands Edge Pumping Station located beyond the site boundary. There is no other public sewerage infrastructure within the site boundary. Refer to Appendix 3.

Existing Drainage

- 2.9 With the exception of the single dwelling (to be demolished) the site is greenfield with no formal drainage regime. Runoff generated within the greenfield areas of the site will naturally percolate into the soil or flow as overland flow in a southerly direction towards Blackball Brook. Refer to existing catchment plan on CE Plan 9740/501(A) [*Proposed Drainage Strategy*] in Appendix 1.
- 2.10 The site has been split into two drainage catchments. In accordance with the National SuDS Standards (DEFRA, July 2025) equivalent greenfield runoff rates for the proposed impermeable areas and bed area of proposed basins have been calculated using both the HR Wallingford Greenfield Calculator and on the basis of 3l/s/ha. HR Wallingford gives a QBAR rate of 0.7l/s compared to a rate of 0.73l/s when using 3l/s/ha for catchment 1 (0.243ha). HR Wallingford gives a QBAR rate of 2.1l/s compared to a rate of 2.3l/s when using 3l/s/ha for catchment 2 (0.762ha). Refer to Appendix 5.

Existing Ground Conditions

- 2.11 British Geological Survey (BGS) mapping indicates that site is underlain by Oxford Clay Formation-Mudstone. In proximity to Blackball Brook this is overlain by superficial geology of Alluvium-Clay, silt, sand and gravel. Refer to Figure 2.1 below.

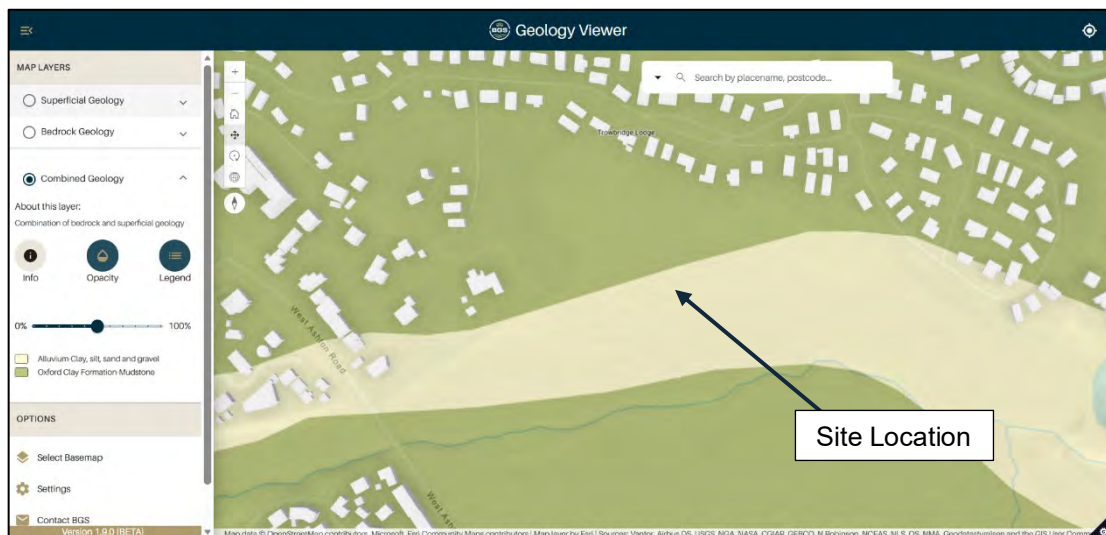


Figure 2.1: BGS Geology Map
Source: <https://geologyviewer.bgs.ac.uk>

- 2.12 Defra's Multi-Agency Geographic Information for the Countryside (MAGIC) map indicates that the superficial deposits underlying the site are classified as a "Secondary A" aquifer. The underlying bedrock strata is classified as an Unproductive strata. The site is not located within a Groundwater Source Protection Zone.

Intrusive Investigation

- 2.13 An intrusive investigation has been undertaken in November 2024 by Paddock Geo Engineering. Refer to Appendix 4. Investigation comprised 9 No. percussion liner sampler boreholes (WS01 – WS09) and 15 no. trial pits, of which 4 no. for observation (TP01 – TP04), 6 no. for CBR testing (TP05 – TP10) and 5 no. (SA01 – SA05) for infiltration testing in accordance with BRE365. Refer to Figure 2.2 below.

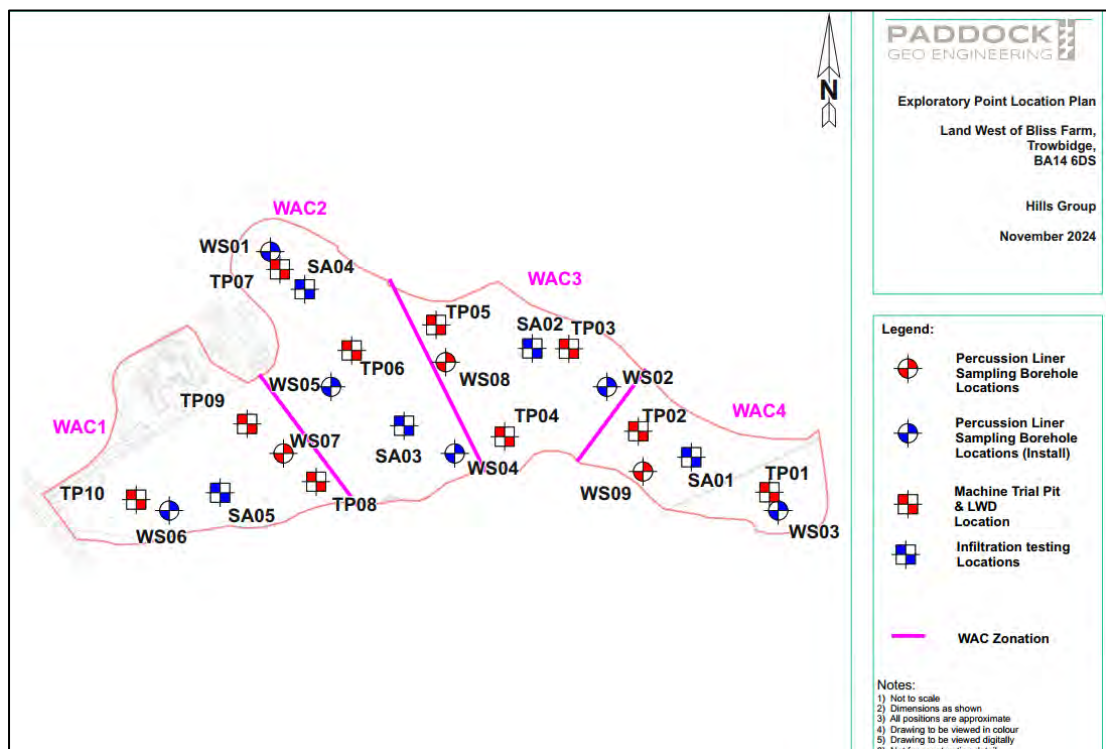


Figure 2.2: Exploratory Point Location Plan (Extract from SI Report)

- 2.14 Investigation achieved target depths of 5m bgl. The investigation encountered topsoil like made ground and made ground between 0.20 – 0.60m bgl. Underlying the topsoil like made ground was fine-grained alluvium in the southern part of the site varying in thickness between 0.3m – 3.90m. Beneath the alluvium, where present, was weathered oxford clay formation. In numerous locations the Oxford Clay formation bedrock was encountered, the full thickness of which was not proven. Refer to SI report in Appendix 5.
- 2.15 Infiltration testing was undertaken in SA01 to SA05. Testing was deemed to have failed within all 5 trial pits after the first test cycle and thus further testing (test cycles 2 and 3 in accordance with BRE 365) was not undertaken.

- 2.16 Groundwater was encountered in a number of the locations across the site. Refer to SI extract in Figure 2.3 below.

Exploratory Location (Depth)	Water Strike Detail
WS01(5.00m)	No groundwater encountered during drilling.
WS02(5.00m)	Groundwater strike at 3.42mbgl standing at 3.42mbgl over 20 minutes.
WS03(5.00m)	Groundwater strike at 3.1mbgl rising to 2.50mbgl over 20 minutes.
WS04(5.00m)	No groundwater encountered during drilling.
WS05(5.00m)	No groundwater encountered during drilling.
WS06(5.00m)	Groundwater strike at 1.90mbgl rising to 1.10mbgl over 20 minutes.
WS07(5.00m)	No groundwater encountered during drilling.
WS08(5.00m)	No groundwater encountered during drilling.
WS09(4.00m)	Seepage at 1.30m.
SA01(2.15m)	Groundwater strike at 2.00mbgl rising to 2.00mbgl over 20 minutes.
SA02(1.00m)	No groundwater encountered during excavation.
SA03(1.45m)	
SA04(1.20m)	
SA05(1.10m)	
TP01(0.80m)	
TP02(2.10m)	
TP03(0.90m)	
TP04(1.80m)	
TP05(0.60m)	
TP06(1.90m)	
TP07(0.80m)	

Figure 2.3: Water Strike Details Table (Extract from SI Report)

- 2.17 Groundwater monitoring was undertaken during October and November 2024 in WS01 – WS06 following the site investigation. Groundwater levels were encountered between 0.17m – 1.37m. The SI concluded that the groundwater encountered is considered to be associated with the underlying Secondary Aquifer situated within the Alluvium. Refer to Appendix 5.

3.0 FLOOD RISK ISSUES

- 3.1 This Section presents an assessment of flood risk to the development and includes recommended flood risk mitigation measures appropriate to the level of perceived risk. Flood risk issues and proposed mitigation measures are summarised in Table 3.1 below.

Historic Flooding

- 3.2 EA Product 4 Flood Data was obtained in November 2024. Refer to Appendix 6. The Product 4 letter outlines that the EA's historic records indicate fluvial flooding in the vicinity of the site in 1925, 1932 and 1960.

Assessment of Flood Risk from Fluvial Sources

- 3.3 The Flood Map for Planning (FMP) for the locality as produced by the EA is shown in Figure 3.1. According to the FMP it can be seen that majority of the site is located within Flood Zone 1 (Low Risk). Areas alongside Blackball Brook, including the existing access, are located in fluvial Flood Zone 2 and 3.



Figure 3.1: EA Flood Map for Planning
Source : <https://flood-map-for-planning.service.gov.uk/>

Modelled Flood Data

- 3.4 EA Product 4 Data obtained in November 2024 advised that the FMP at that time was based upon JFLOW data. JFLOW was subsequently superseded by work undertaken by the EA on the NaFRA2 released at the start of 2025. The EA have been contacted for a copy of the revised data and a response is awaited. At the time of writing flood level data is generally not available for the site in respect of NaFRA2 data release.

- 3.5 Accordingly, a fluvial hydraulic flood model has been developed by CE for the Blackball Brook using 1D-2D Flood Modeller software. The 1D modelled extent covers a watercourse length of 1166m, originating some 423m to the east of the site and terminating some 130m to the east of the confluence with the River Biss. The model utilises flows generated using Statistical method as input. The model was run for different return period events and with appropriate climate change allowances in line with the EA's updated guidance on climate change. The modelling study is detailed in the hydraulic modelling report included in Appendix 8 of this Report.
- 3.6 In accordance with the *Revised EA Climate Change Allowances (2022)*, it is required to assess the site using the Central Climate Change allowance. For the Avon Bristol and North Somerset Streams Management Catchment, the 2080 Central Climate Change allowance is 26%. The modelled 100yr flood levels along the Blackball Brook vary from 38.477mAOD within the eastern extent (BLACK0567) to 37.190m AOD within the western extent by the West Ashton Road culvert (BLACK0977). The 100yr+26%CC flood levels vary between 38.584m and 37.267m across the same nodes. The maximum 2D modelled flood level is 37.980m (at Node 8) for the 100yr+26% CC event. Refer to modelled flood data on CEC Plan 9740/511(A) [*Existing 100 year +26% Climate Change Flood Extent*] in Appendix 1.
- 3.7 Modelled results indicated that the low-lying southern parts of the site are within the 1:100yr and 1:1000yr floodplains of the Blackball Brook. There is no out of bank flooding during the 1:30 year event (FZ3b).
- 3.8 The modelled floodplain extents confirm that no part of the proposed residential development is located within the modelled floodplain. The proposed access is outside of the modelled 1:100 year flood extent (Flood Zone 3). During the 100yr+26%CC event, the proposed access is shown to lie within the modelled floodplain. Modelled flood depths are between 0.04m to 0.35m. Refer to CEC Plan 9740/511(A) [*Existing 100 year +26% Climate Change Flood Extent*] in Appendix 1.
- 3.9 *NPPF Annex 3: Flood Risk Vulnerability Classification* classifies the proposed site usage 'Buildings used for dwelling' as 'More Vulnerable' development. In accordance with the *NPPF Practice Guidance Table 2 (Flood Risk Vulnerability and Flood Zone 'incompatibility')*, More Vulnerable Development is appropriate within Flood Zone 1.
- 3.10 Any works affecting the brook, such as construction of an outfall, will require a prior agreement with Wiltshire Council. Note that there are no new footbridges proposed across the Brook.

- 3.11 Flood risk from this source is therefore considered to be low.

Fluvial Flood Risk Mitigation Measures

- 3.12 Proposed residential dwellings are all located within FZ1. All finished floor levels will be set 150mm above surrounding finished ground levels or 150mm above the modelled 1:100 year + climate change flood level, whichever is higher, in accordance with Wiltshire Council requirements.
- 3.13 The proposed access is located outside of the 1:100 year modelled floodplain (FZ3) but partially within the modelled 1:100 year + 26% climate change flood zone. The access road will therefore be raised above the 1:100 year + 26% climate change flood level. Compensatory storage will be provided as part of detailed design to mitigate the loss of floodplain storage.

Maintenance of the watercourse corridor

- 3.14 The development can provide a minimum 8-metre-wide undeveloped buffer strip alongside the watercourse with no built structures (buildings, walls). Under development proposals there are significant open/green areas maintained within the southern region alongside the watercourse for the benefit of wildlife/ecology.
- 3.15 The watercourse is under the riparian ownership of the applicant. The watercourse channel and structures within the site's ownership will be regularly inspected and general maintenance (such as debris/silt/overgrowth removal) carried out by a private management company. This will also enable serious issues (culvert blockages, bank failure) to be reported to the LLFA to enable timely remedial action.

Incorporation of SuDS

- 3.16 The development will include adequate drainage/SuDS measure to ensure flows entering the adjoining watercourse are reduced compared to the existing situation, ensuring no increase in flood risk in the locality. This is further discussed in Section 4.0.

Assessment of Flood Risk from Overland Flow (Pluvial)

- 3.17 The EA Map 'Risk of Flooding from Surface Water' includes pluvial flood mapping for the present day and 2061-2125 epochs. Mapping indicates that during the climate change scenario (2061-2125) there are discrete areas of the site at risk of surface water flooding. Refer to Figure 3.2. The majority of the flooding is anticipated to be less than 150mm in depth, with a low-lying area to the south of the existing access predicted to experience surface water flood depths between 150-300mm. The existing access is not at risk of pluvial flooding. All proposed

development is located outside areas of mapped pluvial flood risk. The risk of surface water flooding is therefore considered to be low.

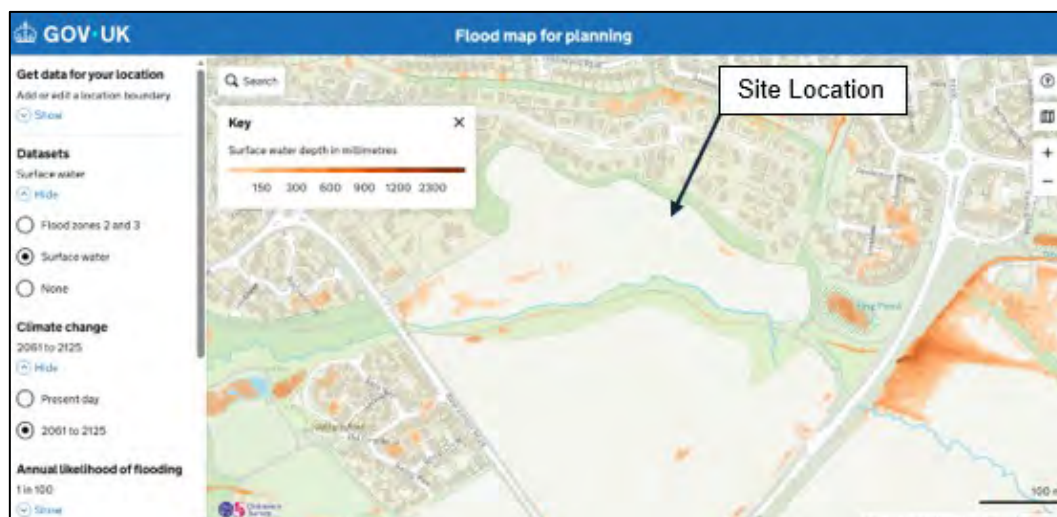


Figure 3.2: EA Yearly chance of surface water flooding between 2040 and 2060 map – Extent
Source: <https://flood-map-for-planning.service.gov.uk/>

Overland Flow Flood Risk Mitigation Measures

- 3.18 No mitigation required, however the introduction of a SuDS scheme for the development will ensure that post development runoff is managed positively without any increase in surface water flood risk. Refer to Section 4 of this Report.

Assessment of Flood Risk from Existing Sewers/Drains

- 3.19 There is an existing 100mm diameter public foul water sewer associated with the existing dwelling to be demolished, which flows offsite to a public foul water pumping station. This sewer only serves the existing dwelling and will be disconnected on demolition of the dwelling.
- 3.20 There is an existing balancing pond to the east of the site. It is assumed that local topography in this area is similar to the site, falling in an southerly direction. Therefore, in the event of flooding from the balancing pond water would flow in a southerly direction towards Blackball Brook. In addition, proposed development will be located at a higher level, some distance from the existing balancing pond and therefore, flood risk is considered to be low.

Sewer/Drain Flood Risk Mitigation Measures

- 3.21 No mitigation is required.

Assessment of Flood Risk from Groundwater

- 3.22 SFRA mapping indicates the site is located within an area that is not susceptible to groundwater flooding.
- 3.23 An intrusive investigation has been undertaken by Paddock Geo Engineering. Groundwater monitoring was undertaken during October/November 2024 in WS01 – WS06 following the site investigation. Groundwater levels were encountered between 0.17m – 1.37m bgl. Site investigation reporting concluded that the groundwater encountered is considered to be associated with the underlying Secondary Aquifer situated within the Alluvium.
- 3.24 Where proposed development is located in areas where alluvium is present there may be an increased risk of elevated groundwater. In the event of groundwater flooding, floodwater would flow in a southerly direction towards Blackball Brook. The risk of flooding from this source is considered to be low - moderate.

Groundwater Flood Risk Mitigation Measures

- 3.25 As a precautionary measure, finished floor levels should be set 150mm above finished ground levels.

Assessment of Flood Risk from Reservoirs

- 3.26 The EA Risk of Flooding from Reservoirs map shows the site is not at risk of flooding from this source. Refer to Figure 3.3 below. Therefore, flood risk from this source is considered to be low.

Artificial Sources Flood Risk Mitigation Measures

- 3.27 No mitigation is required.



Figure 3.3: EA Risk of Flooding from Reservoirs Map
Source : <https://check-long-term-flood-risk.service.gov.uk/map>

Table 3.1: Assessment of Flood Risk to the Development Site Arising from External Sources

Source of Potential Flooding to the Development Site	Flood Risk	Mitigation/Comments
Fluvial/Tidal	Low	- The Flood Map for Planning shows that the majority of the site is located within Flood Zone 1 (Low Risk). - Modelling work confirms the proposed development will be located in Flood Zone 1 (Low risk). - Localised land raising required to mitigate for the 1:100yrCC fluvial flood event at the proposed access. Compensatory storage to be provided as part of detailed design. - Finished floor levels to be raised 150mm above modelled flood level
Overland Flow (Pluvial)	Low	- According to the Surface Water Flood Map southern parts of the site are at low-medium risk of surface water flooding, associated with the existing topography. - Proposed development is located outside of areas of pluvial flood risk. - No mitigation required.
Groundwater	Low - Moderate	- Groundwater levels were encountered between 0.17m – 1.37m associated within the underlying Secondary Aquifer situated within the Alluvium. - Elevated risk of groundwater emergence where alluvium is present. - Finished floor levels should be raised 150mm above existing ground levels
Public Sewer	Low	- A 100mm diameter public foul sewer located within site boundary. Negligible risk of flooding. - An existing balancing pond is located to the east. In the event of flooding, floodwaters would flow towards Blackball Brook and not impact the proposed development. - No mitigation required
Reservoirs	Low	- EA mapping confirms that the site is not at risk of flooding. - No mitigation required.

4.0 SURFACE WATER DRAINAGE STRATEGY

Refer to CE Plan 9740/501(A) [*Proposed Drainage Strategy*] in Appendix 1 and Wiltshire Council SuDS Checklist in Appendix 7.

- 4.1 In order to mitigate flood risk posed by post development surface water runoff, adequate control measures, including Sustainable Drainage Systems (SuDS) will be provided within the site. This will ensure that flood risk is not increased elsewhere as a result of the development.

Drainage Hierarchy

- 4.2 The proposed drainage strategy for the site has been prepared according to the surface water drainage hierarchy set out in *National Standards for Sustainable Drainage Systems (DEFRA, June 2025)*, as follows. Also, refer to Table 4.1 below.

1. Collected for non-potable uses;
2. Infiltration to ground;
3. Discharged to an above ground surface water body;
4. Discharged to a surface water sewer, or another piped surface water drainage system;
5. Discharged to a combined sewer.

Non-potable Uses

- 4.3 Water butts will be proposed for individual properties for irrigation purposes.

Infiltration Potential

- 4.4 Intrusive investigation indicated infiltration potential does not exist across the site as infiltration tests failed.

Proposed Discharge Location

- 4.5 In accordance with the Drainage Hierarchy, surface water will be drained to proposed attenuation basins and discharged into Blackball Brook to the south of the site.

Proposed Discharge Rate

- 4.6 Greenfield runoff rates have been calculated for the site using 3 l/s per ha in accordance with National Standards. The equivalent QBAR runoff rates for proposed impermeable area (1ha) is 3.0l/s. Post development discharge will be restricted to this rate for all storms up to and including the 1 in 100 year + 45% climate change event. Post development flows will be restricted using HydroBrake flow controls,

Urban Creep Allowance

- 4.7 An urban creep allowance of 10% has been applied to the proposed roof areas to allow for future extensions/modifications.

Table 4.1: Review of SuDS Components in accordance with the Drainage Hierarchy

SuDS Technique	Proposed	Not proposed	Reason
Store rainwater for later use	X		Water butts to be utilised
Use infiltration techniques		X	Infiltration SuDS not feasible
Discharge to an above ground surface water body	X		Discharge to Blackball Brook proposed
Discharge to a surface water sewer, or another piped surface water drainage system		X	Connection not sought. Discharge to Blackball Brook proposed.
Discharge to a combined sewer		X	Connection not sought.

Proposed Sustainable Drainage Systems

- 4.8 Runoff from roof and road areas has been split into two catchments and will be discharged into two attenuation basins located on the southern side of the development in Flood Zone 1. Runoff will then be discharged from the basins to the Blackball Brook via flow controls.

Catchment 1

- 4.9 Catchment 1 comprises a catchment area totalling 0.243ha and drains to Basin 1. Basin 1 receives runoff directly from roofs, parking areas and roads. Non-adoptable roadways and parking bays will be surfaced in permeable paving for water quality, interception and conveyance purposes. Basin 1 has been designed with a bed area of 510m², some 1m deep and 1 in 3 side slopes. The basin has also been designed to have a minimum of 0.3m freeboard within the basin. Calculations indicate that basin 1 will provide 262m³ of storage prior to discharge to the watercourse at the proposed rate of 0.7l/s.

Catchment 2

- 4.10 Catchment 2 comprises a catchment area totalling 0.762ha and drains to Basin 2. Basin 2 receives runoff directly from roofs, parking areas and roads. Non-adoptable roadways and parking bays will be surfaced in permeable paving for water quality, interception and conveyance purposes. Basin 2 has been designed with a bed area of 1482m², some 1m deep and 1 in 3 side slopes. The basin has also been designed to have a minimum of 0.3m freeboard within the basin. Calculations indicate that basin 2 will provide 827m³ of storage prior to discharge to the watercourse at the proposed rate of 2.3l/s.

- 4.11 The proposed SuDS have been designed to accommodate and dispose of runoff from all storms up to and including the 1:100-year storm with a 45% allowance for future climate change, in accordance with the latest EA guidance for the Avon Bristol and North Somerset Streams Management Catchment. All preliminary surface water drainage calculations have been undertaken using InfoDrainage software and FEH rainfall data. Calculations have also been provided for the 30 year event, however, InfoDrainage software was unable to provide a half-drain time for these features. Refer to calculations within Appendix 5.

Interception, Biodiversity and Amenity Requirements

- 4.12 As per the National Standards for SuDS the site is required to comply with Standard 2 (Interception), Standard 5 (Amenity) and Standard 6 (Biodiversity).
- 4.13 Catchment 1 comprises a catchment area of 2106m² excluding the bed area of the basin (319m²) but including 510m² of unlined permeable paving. Therefore, the proposed SuDS features provide sufficient interception for 2113m² of catchment (i.e.: (319x5) +510)). This is greater than the proposed hard catchment area (2,106m²). The proposed basin will also provide additional Biodiversity and Amenity benefits through sufficient planting within and around the basin.
- 4.14 Catchment 2 comprises a catchment area of 6141m² excluding the bed area of the basin (1482m²) but including 1618m² of unlined permeable paving in driveways and private roads. Therefore, the proposed SuDS features provide sufficient interception for 9028m² of catchment area (i.e.: (1482x5) +1618). This is greater than the proposed hard catchment (6,141m²). The proposed basin will also provide additional Biodiversity and Amenity benefits through sufficient planting within and around the basin.

Design Exceedance

- 4.15 If design exceedance was to occur, flows would follow the existing site topography and flow in a southerly direction towards the watercourse, without impacting proposed dwellings.
- 4.16 In accordance with Wiltshire Council requirements a sensitivity analysis has been undertaken on the drainage calculations to model the impact of a surcharged outfall to watercourse. The surcharged calculation assumes that the water level within the watercourse is at the modelled 100yr + 26% CC flood level. Calculations indicate that during the 1:100 year + 45% rainfall event with surcharging, Basin 1 floods by 58m³, Basin 2 does not flood. In the event of flooding from Basin 1, all floodwaters would flow southwards towards the watercourse across existing floodplain without impacting the proposed development.

Water Quality

4.17 Water quality has been assessed in line with the Simple Index approach from Chapter 26 of CIRIA C753 *The SuDS Manual*:

1. Step 1 – Allocate suitable pollution hazard indices for the proposed land use.
2. Step 2 – Select SuDS with a total pollution mitigation index that equals or exceeds the pollution hazard index.

4.18 The highest pollution hazard level for the proposed land use is Low (residential car parks and low traffic roads). The pollution hazard indices for the proposed land uses are shown in Table 4.2 below.

**Table 4.2: Pollution Hazard Indices for the Proposed Site
(from Table 26.2 of CIRIA C753 The SuDS Manual)**

Land use	Pollution hazard level	Total suspended solids (TSS)	Metals	Hydrocarbons
Residential car parks & low traffic roads	Low	0.5	0.4	0.4

4.19 The individual Pollution Mitigation Indices for permeable subbase storage and attenuation basins individually are greater than the Pollution Hazard Indices for residential car parks and low traffic roads. Refer to Table 4.3 below. Therefore, the proposed drainage strategy will provide sufficient water quality treatment to runoff. Where SuDS features are used in sequence a factor of 0.5 should be applied to the secondary component.

Table 4.3: Pollution Mitigation Indices for Discharge to Surface Water from the Proposed Site (from Table 26.3 of CIRIA C753 The SuDS Manual)

SuDS Feature	Total suspended solids (TSS)	Metals	Hydrocarbons
Subbase Storage	0.7	0.6	0.7
Attenuation Basin	0.5	0.5	0.6

Adoption and Maintenance

4.20 Proposed permeable paving in communal areas, and attenuation basins will be maintained by a management company acting on the owners' behalf. Permeable pavement in private drives will be maintained by the individual property owners. Where feasible, proposed surface water pipework will be offered for adoption by Wessex Water. A draft Maintenance Schedule is outlined below and summarised in Table 4.4.

Attenuation Basin

4.21 It is anticipated that the attenuation basin will be dry except during rainfall events, and will be grassed, and used as part of the landscaping and amenity area on site when dry. It is not

anticipated that the attenuation basin will require a rigorous maintenance regime as long as silt is removed from the basin on a regular basis. Notwithstanding this, a suitable maintenance regime for the infiltration basin would be as follows:

1. Monthly – removal of litter, mowing grass and check inlet pipe for blockages.
2. Annually – sediment removal and tidy dead plant growth.
3. As required – repair inlets and outlets and reinstate design levels.

Permeable Paving

4.22 Surfaces should be regularly cleaned of silt and other sediments to preserve their infiltration capability. The cleaning regime should be as follows:

- End of winter (April) – to collect winter debris;
- Mid-summer (July/August) – to collect dust, flower and grass-type deposits; and
- After autumn leaf fall (November).

4.23 If reconstruction is necessary, the following procedure should be followed:

1. Lift surface layer;
2. Remove any geotextile filter layer;
3. Inspect sub-base and remove, wash and replace if required;
4. Renew any geotextile layer; and
5. Renew surfacing if required.

4.24 Materials removed from the voids or the layers below the surface may contain hazardous substances such as heavy metals and hydrocarbons which may need to be disposed of as controlled waste.

Pipework and catchpits

4.25 It is not envisaged that silt build up within the pipework systems will require a rigorous maintenance regime so long as silt is removed from upstream catch pits on a regular basis. Notwithstanding this, a suitable maintenance regime for the systems will comprise of routine inspection (every six months) and silt removal (as necessary).

Flow Control

4.26 The flow control should be inspected regularly for blockages and silt/debris removed, as necessary.

Table 4.4: Draft Maintenance Schedule for Proposed Drainage Infrastructure

Drainage Element	Schedule	Maintenance Requirement	Frequency
Permeable Paving	Regular	Cleaning surface	Once a year, after autumn leaf fall
	Occasional	Removal of weeds	As required
	Remedial	Remedial work to any depressions or damage considered a hazard to end users or detrimental to performance	As required
		Rehabilitation of surface, upper sub-structure, and filter membrane by replacement	Every 10 – 15 years, or as required
Attenuation Basin	Monitoring	- Inspect for evidence of weed growth or poor operation. - Inspect silt accumulation rates. - Monitor inspection chambers	- Initial inspection after construction - Monthly for 3 months after installation - Three monthly, 48 hours after large storms in first six months - Annually
	Regular	- Remove litter and debris. - Mow grass - Manage other vegetation and manage nuisance plants	- Monthly - Monthly, or as required. - Monthly at start, then as required
	Occasional	- Reseed areas of poor vegetation growth - Prune and trim trees. - Remove sediment from pre-treatment system when 50% full	As required
	Remedial	- Repair erosion or other damage by reseeded. - Realign riprap. - Repair or rehabilitate inlets, outlets and overflows. - Reinstate uneven surface and design levels	As required
Pipework, Flow control & Catchpits	Monitoring	- Inspect inlets, outlets, and overflows for blockages. - Inspect banksides, structures, pipework etc. for evidence of damage. - Inspect inlets and pre-treatment systems for silt accumulation.	- Monthly - Monthly - Half yearly
	Regular	- Inspect for accumulation of silt. - Inspect inlets, outlets and overflows for blockages. - Inspect for debris and litter	Every six months
	Occasional	Remove silt, debris and litter	As required

Note: In addition to the above maintenance requirements, it is recommended that all drainage elements are inspected:

- Following the first storm event
- Monthly for the first 3 months following commissioning.

Proposed Construction Phase Surface Water Drainage

- 4.27 During construction, contaminated water can arise from a number of sources, as listed below. Efforts will be placed on minimising the risk of receiving waters becoming polluted in the first instance. There is a risk of construction runoff and sediment entering the watercourse in the absence of appropriate pollution preventive measures during the construction phase.
- runoff from exposed ground and material stockpiles;
 - plant washings;
 - fuel and chemical storage/refuelling area;
 - dewatering of excavations, etc.
- 4.28 Areas of exposed earth will be kept to a minimum to reduce the risk of silt mobilisation. Stripped topsoil will be stored in a designated area and covered and/or protected by a cut off drain to prevent suspended solids leaving the area.
- 4.29 Any runoff from the work area will be collected and passed through a temporary sediment pond or settling tank (e.g. Siltbuster) and discharged into the watercourse only once sediment has settled. It may be possible to use elements of the permanent surface water management system (attenuation basin, flow control) for this purpose. If used for this purpose, these elements will need to be cleaned of sediment prior to commissioning.
- 4.30 Outfall into the watercourse will be monitored regularly during construction and works halted if pollution is observed.
- 4.31 Construction runoff will be prevented from directly entering the watercourse via the use of appropriate bund, cut-off trenches and silt fence measures. The amount of exposed earth will be kept to minimum to reduce the amount of silt transportation. Stripped soil will be stored in a designated area, away from any water bodies, and protected by a silt fence or straw bales to prevent clean water entering the area and dirty water leaving from the area. All open or exposed ground and stockpiles will be enclosed with silt fences/geofabrics.

Dewatering Excavations

- 4.32 If pumping is required for the dewatering of excavations, all pumped water will pass through a sediment removal tank or settling pond to remove sediment before it is discharged to watercourse. Small excavations will be covered overnight to prevent rainwater collecting in them.

Wheel Washing

- 4.33 Construction vehicle wheels will be cleaned before leaving the site.

Fuel & Chemical Storage

- 4.34 Construction materials will be stored on an impermeable or lined surface. Materials must be located where there isn't a risk of them being washed into waterways or drains. Fuels and chemicals to be stored securely in accordance with current guidance. Mobile plant will be refuelled either off site or within a designated area on hardstanding.
- 4.35 Provision will also be made to have an oil spill kit on site in the unlikely event of an oil or fuel spillage. The risk of oil spillage will be mitigated by:
- i) Using only modern well-maintained plant that is inspected and serviced by the dealers on a regular basis;
 - ii) Daily pre-use inspection;
 - iii) Using machines with a monitored loader pump with auto stop to prevent overfill of fuels;
 - iv) Using bunded fuel storage/transport containers.

5.0 FOUL WATER DRAINAGE STRATEGY

Refer to CE Plan 9740/501(A) [*Proposed Drainage Strategy*] in Appendix 1.

- 5.1 Wessex Water (WW) records indicate a public foul water sewer associated with the existing property. This sewer flows offsite in a westerly direction towards the Woodlands Edge Pumping Station located beyond the site boundary. There is no other public sewerage infrastructure within the site boundary. Refer to Appendix 2.
- 5.2 It is proposed to connect to the existing public foul water sewer at the western boundary of the site. A pre-development enquiry has been submitted to Wessex Water to confirm the most suitable point of connection and whether there is adequate capacity to accommodate the development proposals. Wessex Water advise that the minimum diameter receiving sewer must be 150mm in diameter.
- 5.3 Wessex Water advise that capacity in the local network is limited. Therefore, a full capacity appraisal will be required to identify, what, if any reinforcement will be required to accommodate the proposed foul flows from the development. In addition, a more detailed appraisal of the Woodlands Edge SPS will be required as part of the assessment. Refer to pre-development enquiry response in Appendix 2.
- 5.4 The proposed foul water network will be offered for adoption by Wessex Water.

6.0 DISCUSSION AND CONCLUSIONS

- 6.1 Flood risk to the proposed development from various sources, such as fluvial, sewers, groundwater, reservoirs and overland flow has been considered in this study. Flood risk from groundwater is considered to be low-moderate. Flood risk from all other sources is considered low. All finished floor levels will be set 150mm above surrounding finished ground levels or 150mm above the modelled 1:100 year + climate change flood level, whichever is higher. The introduction of a SuDS scheme for the development will ensure that post development runoff is managed positively without any increase in surface water flood risk.
- 6.2 The proposed dwellings are wholly in Flood Zone 1. The proposed access is located outside of the 1:100 year modelled floodplain (FZ3) but partially within the modelled 1:100 year + 26% climate change flood zone. The access road will therefore be raised above the 1:100 year + 26% climate change flood level and compensatory storage is to be provided as part of detailed design to mitigate the loss of floodplain storage.
- 6.3 Infiltration-based SuDS are not feasible at the site. In accordance with the Drainage Hierarchy, post development surface water runoff will be discharged to Blackball Brook located to the south of the site at a rate equivalent to 3ls/ha in accordance with the National SuDS standards.
- 6.4 Attenuation-based SuDS comprise two attenuation basins. Permeable paving is proposed in carparking areas for water quality, conveyance and interception purposes. The proposed SuDS provide adequate interception to runoff in accordance with National Standards. All SuDS have been sized to accommodate runoff from the 1 in 100 year + 45% storm event, without flooding.
- 6.5 Water quality has been assessed in line with the Simple Index approach from Chapter 26 of CIRIA C753 The SuDS Manual. The proposed SuDS will provide adequate treatment for post development runoff.
- 6.6 If design exceedance was to occur, flows would follow the existing site topography and flow in southerly direction and flow into Blackball Brook without impacting proposed dwellings.
- 6.7 Proposed permeable paving in communal areas, and attenuation basins will be maintained by a management company acting on the owners' behalf. Permeable pavement in private drives will be maintained by the individual property owners. Where feasible, proposed surface water pipework will be offered for adoption by Wessex Water.

-
- 6.8 Wessex Water have confirmed that a capacity assessment is required to confirm the to identify, what, if any reinforcement will be required to accommodate the proposed foul flows from the development.
- 6.9 This study has been undertaken in accordance with the principles set out in *NPPF*. We can conclude that providing the development adheres to the conditions advised in this Report, the said development proposals can be accommodated without increasing flood risk within the locality in accordance with objectives set by Central Government and the EA.

Cole Easdon Consultants Limited
July 2026

Appendix 1



No.	By	Date	Revision Details
A	JP	30.06.26	Update layout

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Client

Hills Homes Developments Limited

Job Title

Uplands
West Ashton Road
Trowbridge
BA14 6DW

Drawing Title

Proposed Drainage Strategy

Drawing Status

FOR COMMENT	FOR PLANNING	FOR TENDER	FOR APPROVAL	FOR CONSTRUCTION	AS BUILT

"CONSTRUCTION AT CLIENT / CONTRACTOR RISK"

Designed by

AW

Drawn by

AW

Checked by

JP

Date

April 2026

Scale

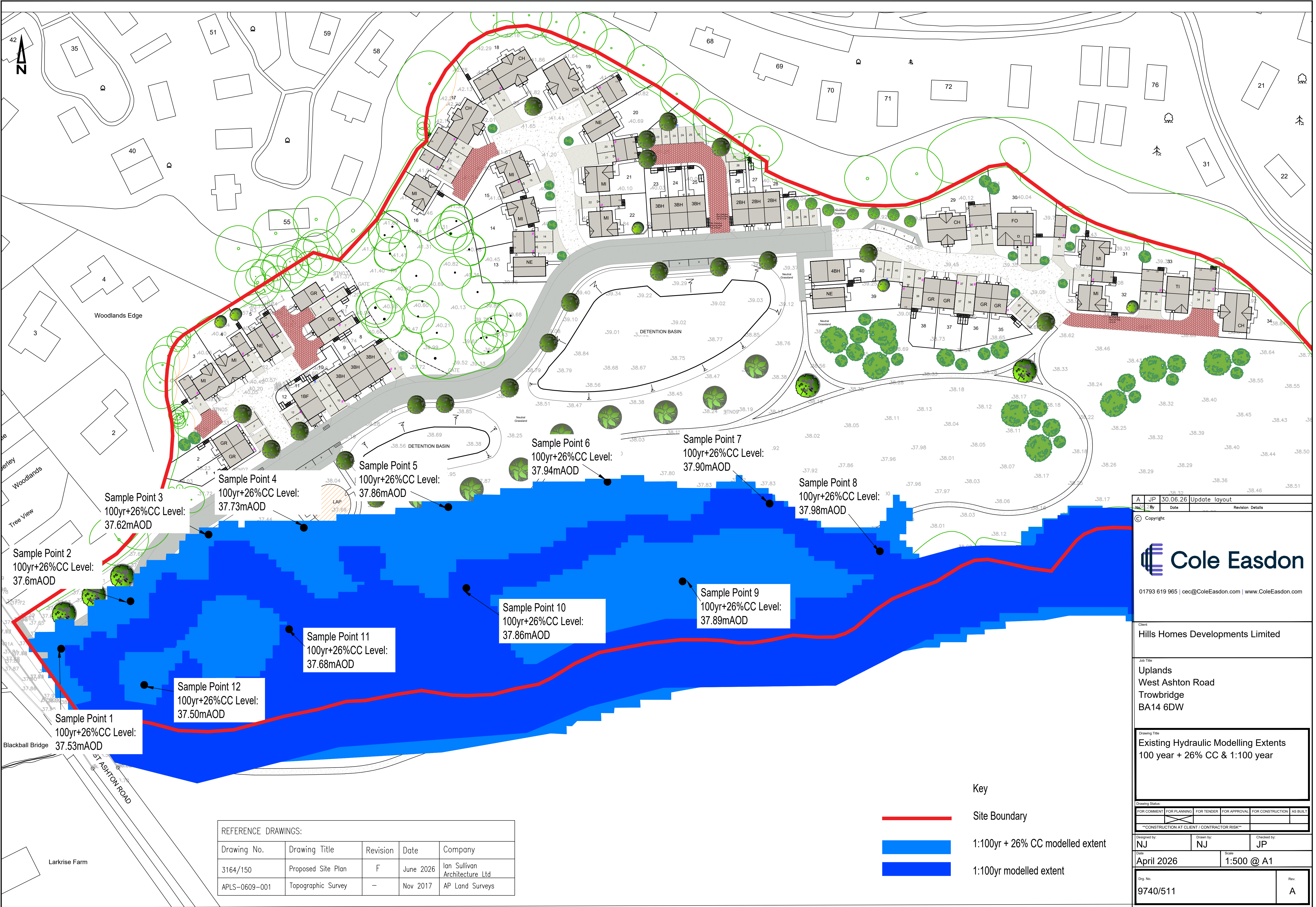
1:500 @ A1

Dwg No.

9740/501

Rev.

A



A		JP	30.06.26	Update layout
No.	7	By	Date	Revision Details
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Cole Easdon				
01793 619 965 cec@ColeEasdon.com www.ColeEasdon.com				
Client Hills Homes Developments Limited				
Job Title Uplands West Ashton Road Trowbridge BA14 6DW				
Drawing Title Existing Hydraulic Modelling Extents 100 year + 26% CC & 1:100 year				
Drawing Status: FOR COMMENT FOR PLANNING FOR TENDER FOR APPROVAL FOR CONSTRUCTION AS BUILT				
CONSTRUCTION AT CLIENT / CONTRACTOR RISK				
Designed by: NJ	Drawn by: NJ	Checked by: JP		
Date: April 2026	Scale: 1:500 @ A1			
Orig. No. 9740/511			Rev. A	

Appendix 2

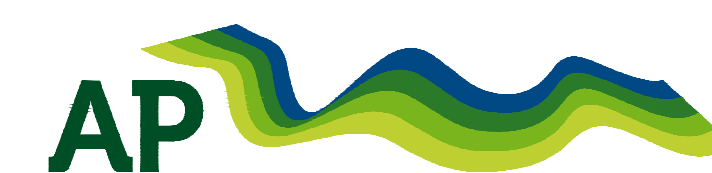


NOTES

[illegible]

REV.	AMENDMENT	DRN	CHKD	DATE

CONTROL USED:		STATIONS ESTABLISHED:	
TYPE	DESCRIPTION	LEVEL	NAME
			CO-ORDINATES



21 Grandisson Drive, Ottery St Mary, Devon, EX11 1JG

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PROJECT/WATERCOURSE
West Ashton Road – Trowbridge

SITE/LIMITS	Topographic Survey
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SURVEYED BY: AP Land Surveys Ref: APLS-0609

SURVEY DATE: NOV 2017

SCALE: 1:1000

DATUM: ODN

DATUM: UDN
CRID: NATION

GRID:	NATION:
GAD FILENAME:	ADIC:

CAD FILENAME: APLS-0609.dwg

	DA
	DRAWING NO.

DRAWING NO.
API 9

APLS-0609-00

REV	17
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REV.
—

ECOLOGY



Denotes Wall Mounted Electric Vehicle Charging Station



Denotes Bollard Electric Vehicle Charging Station

Housetype Schedule: (NDSS COMPLIANT)
Private Housing

GR	2 Bed House	8 no
MI	3 Bed House	9 no
NE	3 Bed House	4 no
FO	4 Bed House	1 no
TI	4 Bed House	1 no
CH	4 Bed House	5 no

Total 28 no

Affordable Housing

1BF	1 Bed Flats	2 no
2BH	2 Bed House	3 no
3BH	3 Bed House	6 no
4BH	4 Bed House	1 no

Total 12 no

Total 40 no units

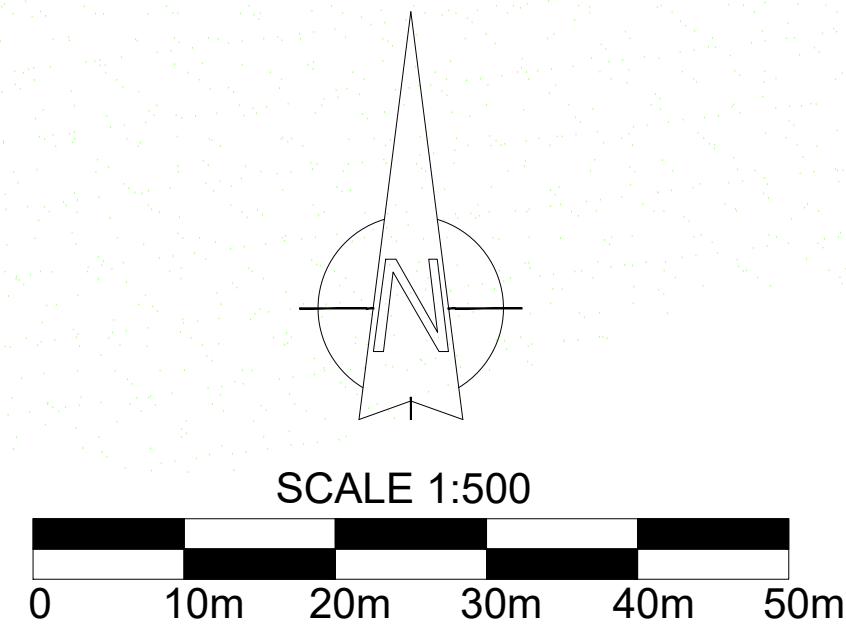
Site Area - 57,413m²

LEGEND

- Site Boundary
- Existing Indicative Tree Planting
- Existing Indicative Hedge / Shrub Planting
- Area to be Tarmac
- Area to be Shared Surface
- Area to be Permeable Block Paving
- Area to be Grass
- Area to be Neutral Grassland
- Area to be Modified Grassland
- Area to be Permeable Block Paving (Driveways Only)
- Denotes Paving Slabs
- Denotes LAP
- Denotes Hoggin Footpath
- Things to be removed
- Proposed Indicative Tree Planting (refer to Landscaping Plan)
- Proposed Indicative Hedge / Shrub Planting (refer to Landscaping Plan)
- 1.8m Screen Wall
- 1.8m Close Boarded Fence
- 600mm Knee Rail Fence
- Primary Access Door
- Secondary Access Door
- Access Gate
- Visitor Parking
- 1m Wide Block Setts
- Denotes Bin Storage
- Denotes Collection Point
- Denotes Cycle Storage
- Denotes Feature Window added to Housetypes



F	30.04.2026	Updated in accordance with latest Reckless Orchard soft landscaping design.
E	21.04.2026	Pedestrian crossover repositioned.
D	20.04.2026	Existing trees & hedges updated to match latest GE survey. Plots 13, 18 & 34 handed. Feature windows updated to match latest Housetypes. Plot 5 garage repositioned. Hoggin footpath added. Landscaping updated to match Reckless Orchard design. Housetype substitution for Plots 6, 7 & 16.
C	18.03.2026	Plots 11-12, 17, 18, 19, 29, 30 & 40 handed. Canopies updated to match latest Housetypes.
B	10.03.2026	Updated in accordance with latest clients comments.
A	05.03.2026	Updated in accordance with latest clients comments.
Rev	Date	Description



All drawings are copyright
Report all discrepancies to project administrator
Do not scale drawing for construction purposes
All dimensions to be checked on site

Project Title
**Uplands,
West Ashton Road,
Trowbridge,
BA14 6DW**

Client
Hills Homes Ltd

Ian Sullivan Architecture Ltd

101 Victoria Road, Swindon, Wiltshire SN1 3BD
Tel/Fax: 01793 612663 - E-mail: ian.sullivan@btconnect.com

Drawing Title
PROPOSED SITE PLAN

Job No	Drawing No	Rev
3164	150	F
Scale	Drawn	Client
1 : 500 @ A0	CE	ISA
Date	Feb' 2026	