NOVEMBER 20, 2025

PEVERIL HOMES

FLOOD RISK SSESSMENT AND SUSTAINABLE DRAINAGE STRATEGY

DRAYCOTT ROAD, BREASTON

25018-BMC-25-XX-RP-C-001

BM CIVIL ENGINEERING LTD

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1 INTRODUCTION

1.1 Terms of Reference

BM Civil Engineering Ltd (hereafter referred to as 'BMc') has been commissioned by Peveril Homes (the Client) to undertake a Flood Risk Assessment (FRA) for a proposed residential development on the land to the north of Draycott Road, Breaston (hereafter referred to as the 'site').

This report is prepared in support of an outline planning application, with all matters reserved (except for access). This report will review the sources of flood risk on site, their effect on the development, and will assess the site's suitability for the proposed development in line with the government guidance relating to development and flood risk. Additionally, the report will assess the site's existing drainage provision and provide a drainage strategy for the proposed development.

This FRA has been prepared in accordance with the Department for Communities and Local Government (DCLG) National Policy Guidance, and the publication of 'National Planning Policy Framework' published 12th December 2024.

This report has been produced on behalf of the clients, and no responsibility is accepted to any third party for all or any part. This report should not be relied upon or transferred to any other parties without the express written authorisation of BMc.

1.2 Legislation and Guidance

The Planning Practice Guidance was published on 6th March 2014 and contains guidance on Flood Risk and Coastal Change, updated 25th August 2022.

The National Planning Policy Framework (NPPF) document was published 12th December 2024.

The latest version of Planning Policy Statement (PPS) 25 was released on the 29th March 2010 and is now superseded by the NPPF.

NPPF can be downloaded free of charge from the internet at the following link:

- https://assets.publishing.service.gov.uk/media/67aafe8f3b41f783cca46251/NPPF_December_2024.pdf

Flood risk assessments: climate change allowances were published on 19th February 2016, updated 27th May 2022 and can be downloaded free of charge from the internet using the following link:

- https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances

1.3 Sources of Reference

i. Topographical Survey drawing ref. 4215, by Terra Measurement, dated 03/06/2025.
ii. Phase I Geo-environmental Assessment ref. E24151/1/0, by Elemental GI Ltd, dated October 2025.
iii. Environment Agency website accessed in November 2025.
iv. Environment Agency Surface Water Flood Risk Maps accessed in September 2025.
v. Environment Agency Climate Change Allowances website accessed in November 2025.
vi. Derbyshire County Council and Derby City Council Strategic Flood Risk Assessment Level 1 For Minerals and Waste, dated August 2012.
vii. Greater Nottingham Strategic Flood Risk Assessment ref. 60531541, by AECOM, dated September 2017.
viii. Hydraulic Modelling Study at Land off Gregory Avenue, Breaston ref. PSL-JBA-XX-XX-RP-HM-0001-S3-P02, by JBA Consulting, dated November 2025
ix. OS Explorer Series Mapping.
x. CIRIA C753 – The SuDS Manual.

2 BACKGROUND INFORMATION

2.1 Site Location, Description and Details

Figure 1: Draycott Road, Breaston – Site Location Plan

The site, as outlined above in Figure 1, has an overall area of approximately 3.6 hectares (ha) and is located north of Draycott Road, Breaston, DE72 3UT; centred at approximate OS grid reference 445341mE, 333557mN.

The site is bounded by existing residential development to the west south and southeast with open fields and agricultural land to the north and east. The Golden Stream, which is a designated main river, flows south towards the middle of the northern boundary and then proceeds to follow the northern and western boundaries of the site before crossing beneath Draycott Road.

The site is a mix of brownfield and greenfield land. Within the northern reaches of the site are a series of broken asphalt and concrete slabs, remnants of the old school buildings which previously occupied the site, whilst the southern reaches of the site comprise of open grassland.

A topographical survey of the site area has been undertaken and is included in Appendix A. The site is relatively flat and falls gently from north to south with a maximum elevation of circa 37.40m AOD towards the middle of the northern boundary and a minimum elevation of circa 35.00m AOD in the southwest corner of the site.

The concrete slabs of the old school buildings form a generally level plateau in the northwest corner of the site, however, several isolates low points are also noted in this area within the overgrown landscaped spaces between slabs. Towards the middle of the site, levels drop away from this plateaued area to meet the level of the open grassland to the south.

2.2 Main Drainage Catchment Context

The site is a mix of greenfield and brownfield land and has an overall area of circa 3.6 hectares (ha). Golden Stream, a designated main river, flows from the north to meet the middle of the northern site boundary. A secondary, un-named watercourse flows in an east-west direction along the rest of the northern boundary and connects into Golden Stream at this point. Golden Stream then proceeds to flow in a westerly direction before turning to the south to flow down the western boundary of the site. A brick culvert located just off the southwest corner of the site conveys the watercourse below Draycott Road to the south.

The Severn Trent Water sewer records are included in Appendix B for the surrounding area. The records indicate a network of 225mm diameter combined sewers to be present in the residential streets bordering the site, including Gregory Avenue to the west and Draycott Road to the south.

It is anticipated that the area of the site formerly occupied by the school drains to a positive piped network with a likely outfall into Golden Stream. The remaining areas of the site are believed to drain to Golden Stream via overland flow.

2.3 Approach to the Assessment

This assessment seeks to consider the risks of flooding both to the site and to the wider catchment area as a consequence of the proposed development. This also requires assessment of the site development constraints and opportunities offered by the existing infrastructure and natural environment in order to propose a strategy by which the site can be developed both economically and sustainably. This assessment draws on investigations regarding the local area.

2.4 Development Description

The site is proposed for residential development of circa 75 dwellings of mixed tenure and occupancy, with associated infrastructure and public open spaces and landscaping.

A copy of the proposed site layout is included in Appendix C for reference.

2.5 Flood Zone Classification and Policy Context

The NPPF follows a sequential, risk-based approach in determining the suitability of land for development with the intention of steering new development to areas of lowest risk. The sequential test should consider all potential sources of flooding, not only the fluvial and tidal flood risk indicated on the Flood Map for Planning.

The NPPF guidance specifies four categories of developments based on their perceived vulnerability to flood risk. Residential developments fall under the 'more vulnerable' category.

The NPPF guidance provides further guidance for producing Flood Risk Assessments based on the flood risk vulnerability in specific flood zones. Table 1 below summarises this compatibility assessment.

Table 1: Flood Risk Vulnerability and Flood Zone Compatibility (NPPF)

Flood Risk Vulnerability Classification		Essential Infrastructure	Water Compatible	Highly Vulnerable	More Vulnerable	Less Vulnerable
Flood Zone	Zone 1	✓	✓	✓	✓	✓
	Zone 2	✓	✓	Exception Test Required	✓	✓

	Zone 3a	Exception Test Required	✓	✗	Exception Test Required	✓
	Zone 3b Functional Floodplain	Exception Test Required	✓	✗	✗	✗

2.6 Climate Change

Climate Change will potentially increase both the frequency and intensity of localised storms, which could heighten localised drainage problems. In general, the impacts of climate change should be assessed over the lifetime of a proposed development and calculated in accordance with the National Planning Policy Framework (NPPF). The Technical Guidance to the NPPF previously recommended national precautionary sensitivity ranges for peak rainfall intensities and peak river flows for use in the assessment of the impacts of climate change on flooding. The previous national sensitivity allowances were updated on 19th February 2016 with new guidance from the Environment Agency. The new guidance replaced the former single national allowance with a range of allowances to assess fluvial flooding. The new allowances for use in flood risk assessment are varied based on individual river basin districts; and subsequently refined based on the vulnerability classification of the development; the flood zone classification; and the lifetime of the development.

The site is located within the Lower Trent and Erewash Management Catchment and is intended for residential end use which is classified as 'More Vulnerable' and has a potential lifetime in excess of 100 years.

In accordance with the NPPF and the peak river flow allowances for the catchment, the site should consider the central allowance for river flow when assessing the flood risk to the site which is 29% for the 2080's epoch.

In accordance with the NPPF and the peak rainfall allowances for the catchment, the drainage strategy for the site shall account for an upper end rainfall allowance of 35% in the 1 in 30 year AEP event and 40% in the 1 in 100 year AEP event.

3 FLOOD RISK ASSESSMENT

This study assesses the risk from different types of flooding to the development and the risk of flooding from the development, taking into consideration climate change, as well as how flood risks should be managed. The approach to assessing flood risk at the development site was informed by the requirements of NPPF.

3.1 Fluvial Flood Risk

The nearest watercourse to the site classified by the EA as designated main river is Golden Stream which is located immediately to the west of the site boundary which flows along the northern and western boundaries of the site. Golden Brook, another designated main river lies approximately 180m to the east of the site and flows in a north-south direction.

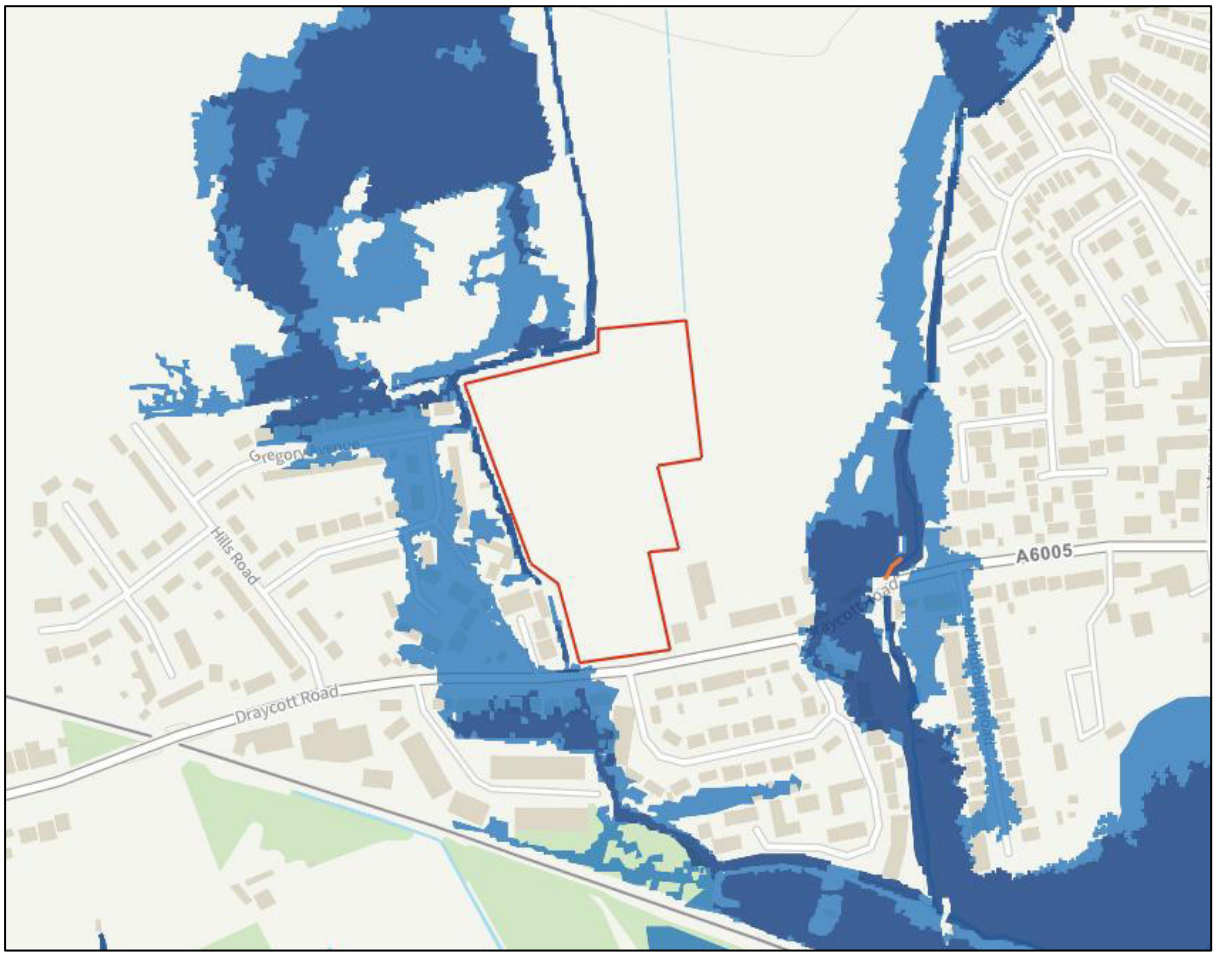

Figure 2: Environment Agency Flood Map for Planning Extract

As shown in Figure 2 that has been extracted from Environment Agency's Flood Map for Planning for the site, the application site is shown to be located entirely within Flood Zone 1, which has a less than a 1 in 1,000 (0.1%) annual probability of flooding occurring from fluvial sources.

The nearest flood zone 2/3 extents are located immediately adjacent to the northern and western boundaries and are associated with Golden Stream, with the flood extents shown to be contained within the banks of the watercourse.

Whilst the risk of fluvial flooding can be considered to be low, mitigation measures should be implemented in accordance with Section 4.2 of this report, given the proximity of the flood zone extents to the site boundary, to ensure that the proposed development remains safe for its lifetime.

3.2 Tidal Flood Risk

The site is not located in a zone of tidal influence and there is no risk of flooding from tidal sources.

3.3 Surface Water Flood Risk (Pluvial)

An extract of the EA's surface water flood mapping is shown in Figure 3 below. The majority of the site can be seen to be at very low risk of flooding from surface water (less than a 1 in 1,000 annual probability of flooding), however, the site is also impacted by areas of low, medium and high risk surface water flooding, particularly in the northeast of the site.

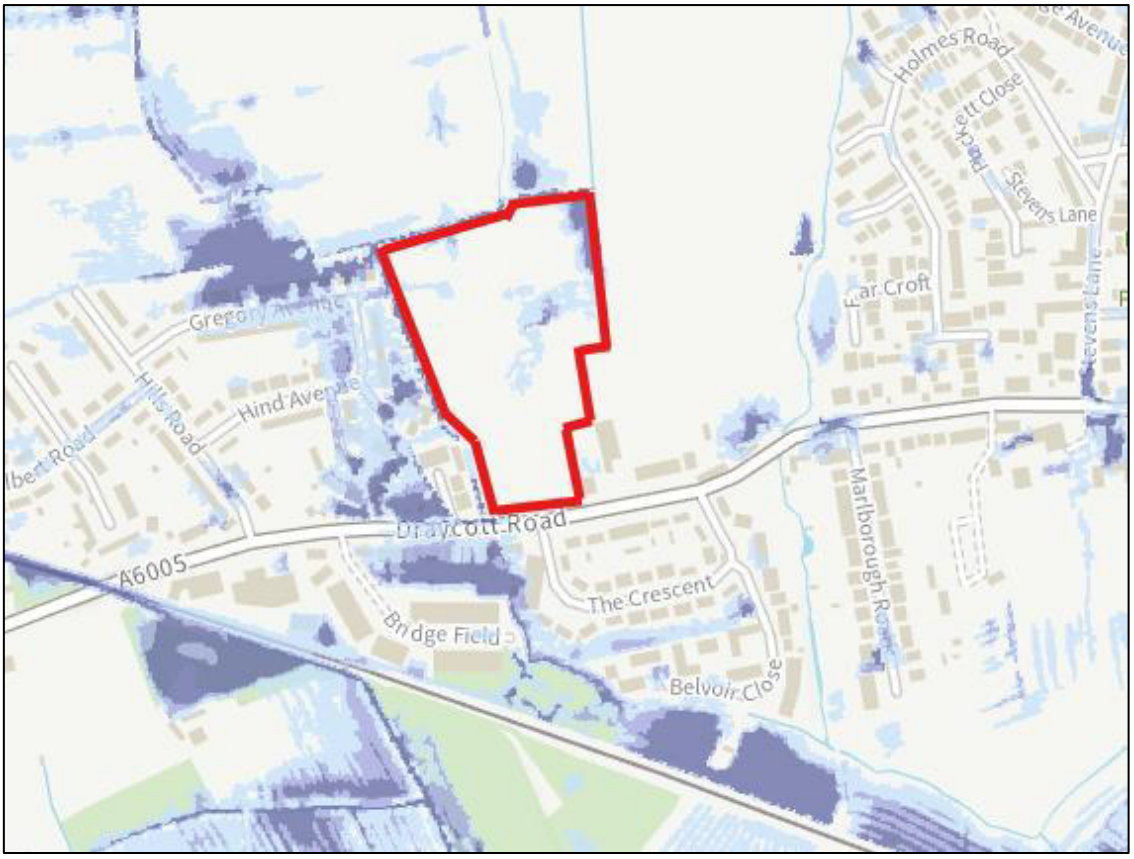

Figure 3: Extract from EA Flood Risk from Surface Water Map

A detailed hydraulic modelling study has been commissioned for the site to better understand the nature of the pluvial flood risk to the site. The study has been undertaken by JBA Consulting, the results of which are detailed in their report - *Hydraulic Modelling Study at Land off Gregory Avenue, Breaston ref. PSL-JBA-XX-XX-RP-HM-0001-S3-P02, dated November 2025* – which should be read in conjunction with this report.

Baseline flood modelling has been undertaken for the site and the surrounding catchment for the typical suite of return periods, incorporating appropriate allowances for climate change. The resulting flood extents impacting on the site are indicated in Figure 4 below.

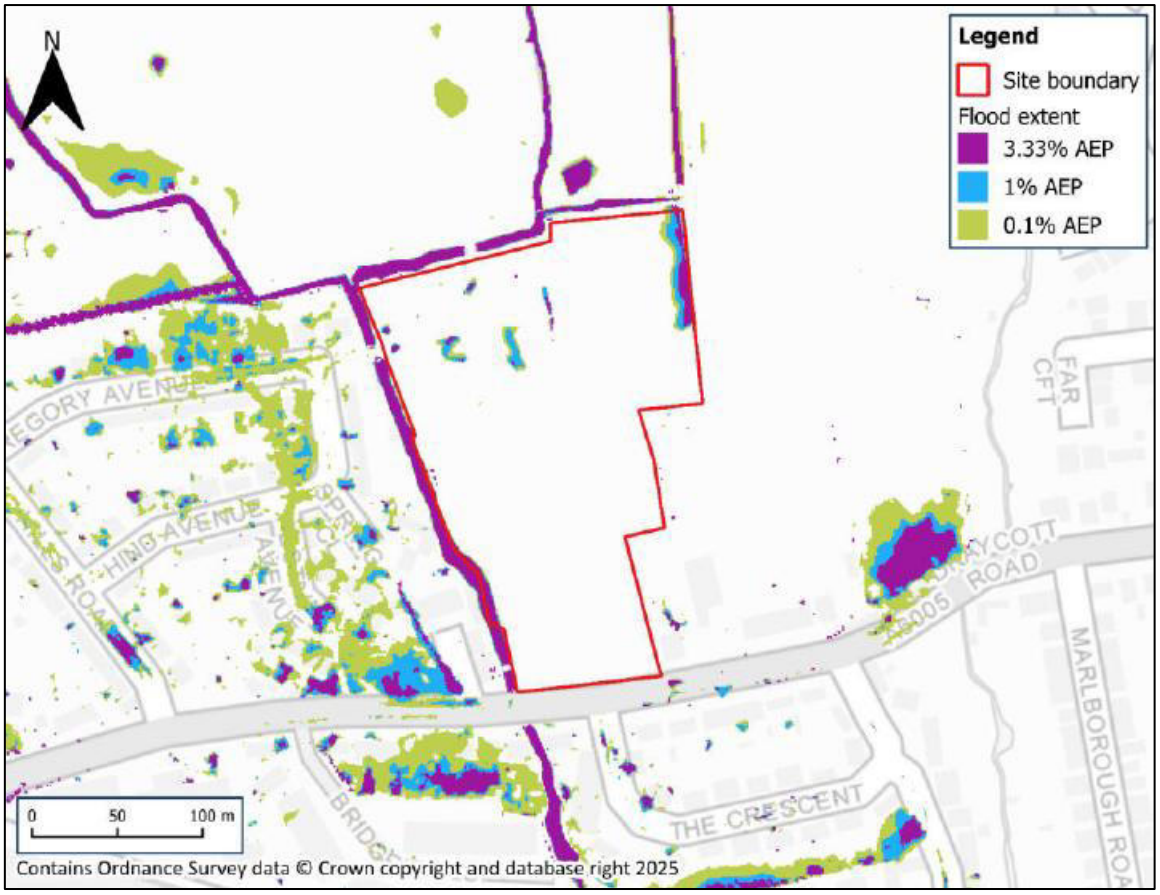

Figure 4: JBA Baseline Flood Extents

The results of the hydraulic modelling study show a significantly reduced impact on the site when compared to the EA flood mapping, particularly in the low risk (0.1% AEP) scenario. Several areas of medium to high risk remain within the site and, when compared with the site survey, can be seen to coincide with isolated low spots within the topography of the site. Additionally, it is noted within the JBA reporting that flood depths do not exceed 0.3m in any of these locations.

The risk to the proposed development from surface water is considered to be low, however, the mitigation measures should be implemented, as outlined in Section 4.1 to ensure that surface water risk does not present a constraint to development.

3.4 Groundwater Flood Risk

The Derbyshire County Council and Derby City Council Level 1 SFRA and the Greater Nottingham Level 1 SFRA documents have been reviewed and mapping provided within the respective documents shows the site to be located in an area with a greater than 75% susceptibility to groundwater flooding.

At the time of writing, intrusive ground investigations have yet to be undertaken at the site, however, the Phase 1 Site Investigation prepared by Elemental GI Ltd identifies the following points pertinent to groundwater flood risk:

- BGS mapping indicates the presence of drift deposits underlying the site, comprising both Alluvium (clay silt sand and gravel) and Allenton Terrace Deposits (sand and gravel).
- The underlying bedrock geology is recorded as Gunthorpe Member, Mudstone.
- The drift deposits, where present, are designated a Secondary A Aquifer, whilst the bedrock geology is designated a Secondary B Aquifer.
- The site is not located within a Source Protection Zone
- 2nr potable water abstractions are located within 2km of the site

Whilst the site is noted to be located within an area of susceptibility, it is considered that, through the implementation of the mitigation measures discussed in Section 4.3 of this report, the site can be developed in a manner to be considered at low risk of flooding from groundwater sources.

3.5 Flood Risk from Artificial Sources

Artificial flood sources include but are not limited to raised channels such as canals or storage features such as ponds and reservoirs.

The nearest reservoir to the site is the Church Wilne Reservoir located approximately 500m to the south of the site. The EA's reservoir flood mapping if extracted in Figure 5 below. It can be seen that the site is not impacted by flooding from reservoirs with the nearest flood extents being approximately 120m south of the site boundary.

There are no other known, artificial sources of flooding within the vicinity of the site and no historic flood incidents identified in the vicinity of the site within the Derbyshire County Council and Derby City Council Level 1 SFRA or the Greater Nottingham Level 1 SFRA documents

As discussed in Section 2.2 of this report, the nearest public sewerage infrastructure to the site is located in Gregory Avenue to the west of the site and Draycott Road to the south. It is considered that the site is not at risk of flooding from existing sewerage infrastructure with any exceedance conveyed by the existing road network.

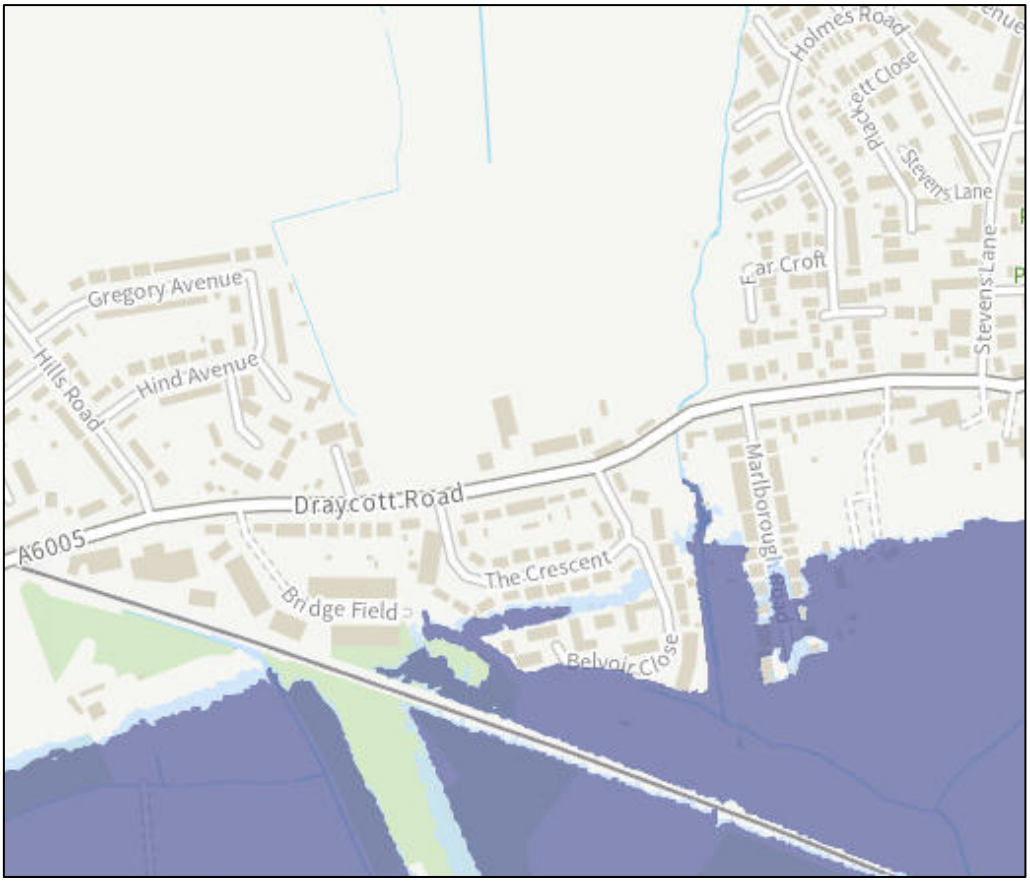

Figure 5: EA Reservoir Flood Mapping

4 FLOOD RISK MITIGATION MEASURES AND RESIDUAL RISK

The site is generally considered to be at low risk of flooding from all sources, and, subject to the implementation of the following mitigation measures, the residual risk is deemed to be very low.

4.1 Surface Water Considerations

An assessment of post development flood risk was undertaken by JBA Consulting in their aforementioned hydraulic modelling study for the site. The post development model assumes the raising of levels with the site boundary to form a development plateau and the removal of rainfall from the site area to simulate the implementation of a sustainable drainage strategy within the proposed development.

The results of the post development modelling are shown in Figure 6 below and demonstrate that the removal of existing topographical low points through the site levels design, and the implementation of a sustainable drainage strategy are sufficient to remove all surface water flood risk from the development.

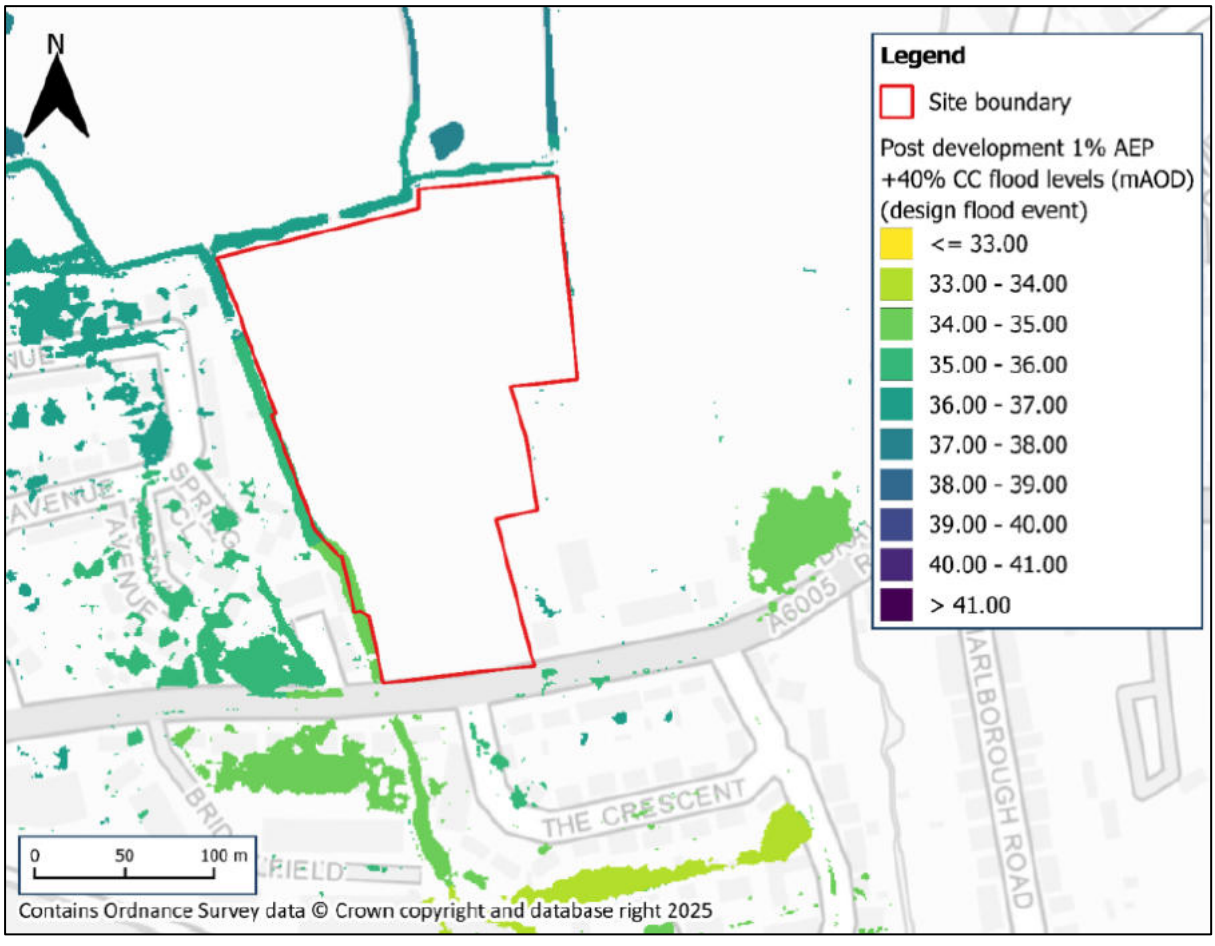

Figure 6: JBA Post Development Flood Levels

The sustainable drainage strategy should be implemented to deal with all surface water flows arising from the proposed development, taking account of all relevant national and local policies, including the use of appropriate climate change allowances to ensure that the proposed development is safe for its lifetime and will not increase flood risk elsewhere.

4.2 Fluvial Considerations

Given the proximity of fluvial features to the site boundary, the setting of finished floor levels should follow the Environment Agency standing advice to achieve a minimum freeboard of 300mm above the 1 in 100 AEP event flood level, including an appropriate allowance for climate change.

Fluvial flooding associated with the Golden Stream and the un-named watercourses bordering the site has been demonstrated to be contained within the banks of the respective watercourses and does not impact directly upon the site (refer to extracts of the detailed hydraulic modelling study provided in Figure 4 and Figure 6).

It is considered that finished floor levels should be set a minimum of 300mm above the adjacent top of bank level of the Golden Stream watercourse, to provide a robust mitigation against fluvial flooding.

4.3 Groundwater Considerations

Mitigation against potential localised groundwater emergence and exceedance flows shall be provided through the provision of adequate overland flow routing which shall be designed, so far as reasonably practical, to direct flows away from existing and proposed properties. Typically, finished floor levels should be set 150mm above the surrounding ground levels.

The results of intrusive site investigations should be reviewed in due course and consideration should be given to the raising of site levels, if required, should groundwater be found to be particularly shallow.

5 THE SEQUENTIAL AND EXCEPTION TESTS

The site has been found to lie within Flood Zone 1 and is not at risk from fluvial sources. Detailed hydraulic modelling has determined that the risk of flooding from surface water is minimal, restricted to isolated low points only which can be adequately managed through the redevelopment of the site. There are no other forms of flooding deemed to impact upon the site.

The sequential test is therefore deemed to have passed, and the exception test is not required.

6 SUSTAINABLE DRAINAGE STRATEGY

6.1 Pre-development Surface Water Runoff

The site is approximately 3.6ha in total area and consists of both brownfield and greenfield elements.

The areas of hardstanding have been measured from the topographical survey to at approximately 1.15ha. The runoff rate from the brownfield portion of the site can be calculated using the modified rational method as detailed below, using a conservative rainfall figure of 50mm. Given the age of the former school development, it is considered very unlikely that any flow restrictions will have been in place.

Q = 2.78 x area x rainfall intensity

Q = 2.78 x 1.15ha x 50mm

Q = 159.85 l/s

The remainder of the site area is considered to be greenfield and the annual average greenfield runoff rates shown in Table 2 below have been calculated using the HR Wallingford's Greenfield Runoff Estimation Toolkit using the IH124 Method. A copy of the calculations can be found in Appendix D.

Table 2: Greenfield Runoff Rates per Hectare.

Storm Event (year)	Q_{BAR}	Q_{1}	Q_{30}	Q_{100}
Discharge Rate (l/s/ha)	3.8	3.5	8.5	10.9

The greenfield site area of approximately 2.45 hectares. Based on Q_{BAR}, the runoff rate for the greenfield portion of the site is *9.31 l/s (2.45 ha x 3.8 l/s/ha).*

The overall discharge rate from the existing site is therefore calculated to be *169.16 l/s*.

6.2 Suitability of Discharge Methods

6.2.1 Discharge to the Ground

The Phase 1 desk study identifies the potential for the site to be underlain by sands and gravels of the Alluvium and Allenton Terrace deposits which are likely to have high infiltration potential.

Infiltration testing to BRE365, along with groundwater monitoring shall be undertaken as part of the Phase 2 intrusive site investigations to determine the feasibility of infiltration techniques. In the meantime, alternative methods shall be considered for the disposal of surface water from the site.

6.2.2 Discharge to a Surface Water Body

The site is bound by the Golden Stream Main River along its northern and western boundaries. In accordance with the suds hierarchy, these watercourses shall be utilised for the disposal of surface water from the site subject to the relevant approvals and consents being obtained from the Environment Agency.

6.3 Proposed Surface Water Drainage

It is understood that the runoff fate from brownfield developments in Derbyshire should be restricted, as close as reasonably practical, to the equivalent greenfield runoff rate for the site.

The Q_{BAR} greenfield runoff rate for the whole site area is calculated to be 13.7l/s (3.8l/s/ha x 3.6ha). Therefore, in accordance with national and local standards, it is proposed that discharge from the site shall be limited to 13.7l/s for all return periods up to and including the 1 in 100 AEP event including an allowance of 40% for climate change. This represents a betterment of 92% to the existing site runoff rate, thus contributing to an overall reduction to the flood risk setting of the surrounding area by significantly reducing runoff rates from the site, particularly in higher return periods.

The contributing impermeable area has been estimated from the proposed site layout at 1.577ha and a resulting storage volume 1,356m^3 is anticipated to be required to provide a 1 in 100 year standard of protection, including a 40% allowance for climate change. The preliminary storage calculations are within Appendix E; however, the final storage volumes shall be adjusted to suit the measured impermeable areas from the final layout, including an allowance for urban creep.

The site shall be drained by a positive piped network discharging to a storage structure positioned at the lowest part of the site in the south west corner. It is proposed that the storage shall be provided within an open attenuation pond feature to provide additional amenity and biodiversity benefits to the site.

Final discharge shall be to the Golden Stream, just upstream of its culvert crossing beneath Draycott Road. Flows shall be restricted by means of a vortex flow control device positioned at the outfall from the storage feature.

Overland flow routes will be carefully considered for blockage and exceedance events to ensure that surface water is conveyed away from both existing and proposed properties. Attenuation features are likely to be is proposed on the outer periphery of the site, close to the existing watercourses.

Once further intrusive ground investigations and testing have been completed, the inclusion of infiltration techniques, partial or full, shall be reviewed and incorporated into the strategy as appropriate.

A copy of the proposed drainage strategy drawing is included in Appendix F.

6.4 SuDS & SuDS Maintenance

SuDS shall be considered as part of the surface water drainage strategy. Typically, SuDS techniques are used to mimic the natural drainage of the land, infiltrating surface water into the ground or discharging it into a local watercourse. Where this occurs, it is important to ensure that the quality of water is as clean as possible to prevent the spread of any pollutants. This is also the case when discharging surface water to a surface water or combined sewer as is most cases these types of sewers discharge into watercourses.

Section 26 of The SuDS Manual – CIRIA C753 sets out pollution hazard risk levels for various land uses. Within this development the main sources of runoff are residential roof areas, residential driveways and low traffic residential access roads.

Residential roofs are classed as ‘very low’ pollution hazards. In these instances, the removal of gross solids and sediments only is generally sufficient. This will be achieved through the provision of trapped gully/channel outlets.

Residential driveways and access roads are classified as having a 'low' risk score. In this instance a 'Simple Index Approach' is required in accordance with Tables 26.2 and 26.3 of The SuDS Manual.

Table 26.2 sets out the pollution hazard indices for total suspended solids, metals and hydrocarbons based on different land use categories. Values of 0.5, 0.4 and 0.4 apply to this development respectively and can be viewed in Figure 5.

TABLE 26.2 Pollution hazard indices for different land use classifications

Land use	Pollution hazard level	Total suspended solids (TSS)	Metals	Hydro-carbons
Residential roofs	Very low	0.2	0.2	0.05
Other roofs (typically commercial/ industrial roofs)	Low	0.3	0.2 (up to 0.8 where there is potential for metals to leach from the roof)	0.05
Individual property driveways, residential car parks, low traffic roads (eg cul de sacs, homezones and general access roads) and non-residential car parking with infrequent change (eg schools, offices) ie < 300 traffic movements/day	Low	0.5	0.4	0.4
Commercial yard and delivery areas, non-residential car parking with frequent change (eg hospitals, retail), all roads except low traffic roads and trunk roads/motorways[1]	Medium	0.7	0.6	0.7
Sites with heavy pollution (eg haulage yards, lorry parks, highly frequented lorry approaches to industrial estates, waste sites), sites where chemicals and fuels (other than domestic fuel oil) are to be delivered, handled, stored, used or manufactured; industrial sites; trunk roads and motorways[1]	High	0.8[2]	0.8[2]	0.9[2]

Figure 7: Pollution Hazard Indices

The pollution hazard indices for the identified land use should be matched or exceeded by the mitigation indices of the selected SuDS components.

It is intended that runoff from all impermeable areas shall be intercepted and conveyed to a number of open storage features positioned around the site to suit the sub-catchments. At the time of writing, the final form of these features is yet to be decided but will either be detention basins or, ponds with a permanent water level.

Table 26.3 of the SuDS Manual set out the pollution mitigation indices for total suspended solids, metals and hydrocarbons based on different SuDS components and are replicated in Figure 6 below.

TABLE 26.3 Indicative SuDS mitigation indices for discharges to surface waters

	Mitigation indices[1]		
Type of SuDS component	**TSS**	**Metals**	**Hydrocarbons**
Filter strip	0.4	0.4	0.5
Filter drain	0.4[2]	0.4	0.4
Swale	0.5	0.6	0.6
Bioretention system	0.8	0.8	0.8
Permeable pavement	0.7	0.6	0.7
Detention basin	0.5	0.5	0.6
Pond[4]	0.7[3]	0.7	0.5
Wetland	0.8[3]	0.8	0.8
Proprietary treatment systems[5,6]	These must demonstrate that they can address each of the contaminant types to acceptable levels for frequent events up to approximately the 1 in 1 year return period event, for inflow concentrations relevant to the contributing drainage area.		

Figure 8: SuDS Mitigation indices

As can be seen, the mitigation indices for a pond exceed the hazard indices of the intended land use and as such, it is demonstrated that water quality can be sufficiently managed in accordance with the Simple Index Approach.

6.5 Amenity and Biodiversity

As well as water quantity and quality, SuDS can contribute to both biodiversity and amenity value within a development.

The use of open SuDS features as storage structures will contribute to amenity and biodiversity, integrating into the surrounding landscape to provide attractive open spaces with opportunities for planting of wildflower, shrub or marginal type species to create foraging and habitat for birdlife and invertebrates.

7 FOUL WATER DRAINAGE STRATEGY

7.1 Pre-development Foul Water Regime

It is anticipated that the brownfield portion of the site, previously occupied by the school, is connected to the combined sewer network located in Gregory Avenue, although the presence of existing connections is yet to be verified.

7.2 Proposed Developed Site Foul Water Strategy

It is proposed that foul flows from the site shall be discharged via gravity to the existing 225mm diameter combined sewer located in Draycott Road to the south of the site between the existing manholes referenced 3401 and 4401.

A Pre-Development Enquiry has been submitted to Severn Trent Water and their response, which is included in Appendix B, confirms that there is sufficient capacity for the proposed development and that a gravity connection to the sewer is acceptable subject to a formal S106 approval.

A copy of the proposed drainage strategy can be viewed in Appendix F.

8 MAINTENANCE REGIME

It is intended that the main piped sewerage network shall be offered to a sewerage undertaker for adoption and maintenance. The proposed SuDS features shall be offered to either a sewerage undertaker or appropriately qualified management company for adoption and maintenance. On plot drainage shall remain private with responsibility for maintenance conveyed to the relevant plot ownerships.

The drainage system should be generally maintained in accordance with the guidance outlined in this section.

8.1 Main Drainage System

Gutters, rainwater pipes, outlets, gullies, and drainage channels would be inspected and thoroughly cleaned once a year. All manholes would be inspected once a year and where necessary cleaned out at the same time. Any defects to the brickwork, benching cover or frame would be made good. Attention would be made to the Confined Spaces Regulations 1997 and the provisions contained therein for access to confined spaces. Details for entrance to manholes and separator tanks are contained in the above legislation.

8.2 Cleaning of the Drainage System

The following operations would be carried out during the periodic cleaning of the drainage system.

1. Covers of inspection chambers and manholes would be removed and the sides, benching and channels cleaned.
2. Intercepting traps, if fitted, would be plunged and flushed with clean water. Care would be taken to see that the stopper in the rodding eye is securely replaced.
3. Main and branch drains should be cleaned and afterwards would be flushed with clean water. Any obstructions found would be removed and not flushed into the system.
4. Periodically, accumulated deposits in gullies would be removed. The traps would then be plunged and thoroughly flushed out with clean water.

5. Covers of inspection chambers and gullies would be replaced, bedded unsuitable grease or other sealing material and/or bolted down as appropriate to the type. Missing bolts and broken items would be renewed.

8.3 Methods of Cleaning

The drainage system can be cleaned, as appropriate, using one or more of the following methods:

a. Rodding.

Appropriate cleaning tools and techniques should be chosen to avoid damage to the pipework to be cleaned. A set of rods with appropriate ends is basic useful equipment. It is important that correctly designed proprietary ends are used on the rods. Makeshift devices attached to the ends of rods should be avoided as they are not as effective as the correctly designed article and could become detached and create a blockage which would be difficult to remove. Furthermore, it is possible that such devices could cause damage to the pipeline. If the rods have brass ferrules, they should be checked to ensure that their fastenings are secure and that there are no protruding shoulders or fastenings as these can cause damage to drain lines, especially when entering through rodding eyes.

b. Jetting.

High pressure jetting techniques are suitable for use with all currently available pipe materials and should also be considered.

c. Hydraulic rams compressed air or other gases.

Equipment is available for use with all sizes of drain likely to be encountered in building drainage and is suitable for use with all currently available pipe materials. The principle of operation is that a shock wave is induced and is transmitted by water to the point of blockage, and the technique is effective where the pipe is surcharged or can be filled with water from the blockage to a point where the equipment can be used.

8.4 SuDS Components

8.4.1 Ponds – Maintenance should follow the general guidance set out within the CIRIA Guide C753 SUDS Manual Section 23.12 and table 23.1 (extract shown below).

TABLE 23.1 Operation and maintenance requirements for ponds and wetlands

Maintenance schedule	Required action	Typical frequency
Regular maintenance	Remove litter and debris	Monthly (or as required)
	Cut the grass – public areas	Monthly (during growing season)
	Cut the meadow grass	Half yearly (spring, before nesting season, and autumn)
	Inspect marginal and bankside vegetation and remove nuisance plants (for first 3 years)	Monthly (at start, then as required)
	Inspect inlets, outlets, banksides, structures, pipework etc for evidence of blockage and/or physical damage	Monthly
	Inspect water body for signs of poor water quality	Monthly (May – October)
	Inspect silt accumulation rates in any forebay and in main body of the pond and establish appropriate removal frequencies; undertake contamination testing once some build-up has occurred, to inform management and disposal options	Half yearly
	Check any mechanical devices eg penstocks	Half yearly
	Hand cut submerged and emergent aquatic plants (at minimum of 0.1 m above pond base; include max 25% of pond surface)	Annually
	Remove 25% of bank vegetation from water's edge to a minimum of 1 m above water level	Annually
	Tidy all dead growth (scrub clearance) before start of growing season (Note: tree maintenance is usually part of overall landscape management contract)	Annually
	Remove sediment from any forebay.	Every 1–5 years, or as required
	Remove sediment and planting from one quadrant of the main body of ponds without sediment forebays.	Every 5 years, or as required
Occasional maintenance	Remove sediment from the main body of big ponds when pool volume is reduced by 20%	With effective pre-treatment, this will only be required rarely, eg every 25–50 years
Remedial actions	Repair erosion or other damage	As required
	Replant, where necessary	As required
	Aerate pond when signs of eutrophication are detected	As required
	Realign rip-rap or repair other damage	As required
	Repair / rehabilitate inlets, outlets and overflows.	As required

Figure 9: Pond Maintenance Regime

9 CONCLUSIONS AND RECOMMENDATIONS

All means of flood risk at the site have been assessed and it has been demonstrated that the site is not at risk of flooding, nor would it pose a risk to adjacent land following development subject to the implementation of the mitigation measures outlined in Section 4 of this report and the sustainable drainage strategy outlined in Section .

We therefore conclude that the application site accords with local and national planning policy and that there are no reasons that the application should be refused on the ground of flood risk or drainage.

10 APPENDIX

Appendix A Topographical Survey

Station	Easting	Northing	Level
1	443501.871	333723.873	40.848
FS1	445595.678	333570.045	36.917
FS2	445595.271	333550.447	36.926
PC1	444236.832	334023.096	40.734
PC2	444343.185	334035.247	40.454
PC3	444241.872	333908.054	39.310
PC4	444252.708	333810.843	39.083
PC5	444270.999	333634.187	38.545
PC6	444269.540	333528.832	41.765
PC8	444260.631	333740.114	39.009
PC9	444418.625	334051.742	40.590
PC01	443439.132	333689.720	43.390
PC02	443501.868	333723.871	40.852
PC03	443574.488	333759.447	40.391
PC04	443646.488	333794.755	40.283
PC05	443715.000	333827.920	40.755
PC06	443793.671	333866.815	41.089
PC07	443850.436	333891.611	41.615
PC10	444543.309	334076.486	40.566
PC11	444649.729	334062.994	40.370
PC12	444756.002	334044.234	40.528
PC13	444841.633	334034.575	40.403
PC14	445015.498	334008.925	40.520
PC15	445115.168	334024.295	40.875
PC16	445192.792	334027.010	40.861
PC17	445289.545	334011.500	40.739
PC18	445328.421	333996.360	40.829
PC31	445414.956	333955.371	40.673
PC32	445521.779	333950.257	40.848
PC33	445615.608	333949.714	40.140
PC34	445717.354	333958.165	39.283
PC50	445307.001	333390.533	34.904
PC51	445350.107	333392.528	34.950
PC52	445413.685	333401.748	35.462
PC13A	444980.208	334008.608	40.477
PC13B	444924.983	334017.146	40.471
RT50	445304.572	333402.440	37.269
RT51	445418.745	333402.713	37.826
RT52	445433.540	333416.187	37.995
RT60	445526.627	333473.614	36.828
RT61	445619.225	333492.183	35.785
SC01	444651.011	334128.558	42.470
SC02	443501.872	333723.871	40.850
SC01A	443386.454	333714.520	42.412
SC02A	443510.644	333652.619	42.676

REV. NO.	DESCRIPTION TO REVISION	REV. BY	DATE
A	Additional Desription Added	JP	06.06.25
B	Additional Field Surveyed East Of Hopwell Rd	TW	01.07.2025
C			
D			

NOTES:

OS digital data has been shown for context only. In certain areas, the OS digital data has been linked/feathered to the accurate survey data to avoid ambiguity.
The OS digital data layers within this drawing have been renamed with the prefix TML_OSEDIT_.
If requested, the original unedited OS digital data can be issued separately.

TERRA MEASUREMENT
3D SURVEY AND MEASUREMENT SPECIALISTS

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CLIENT: PEVERIL HOMES

PROJECT: HOPWELL ROAD DRAYCOTT BREASTON DE72 3NX

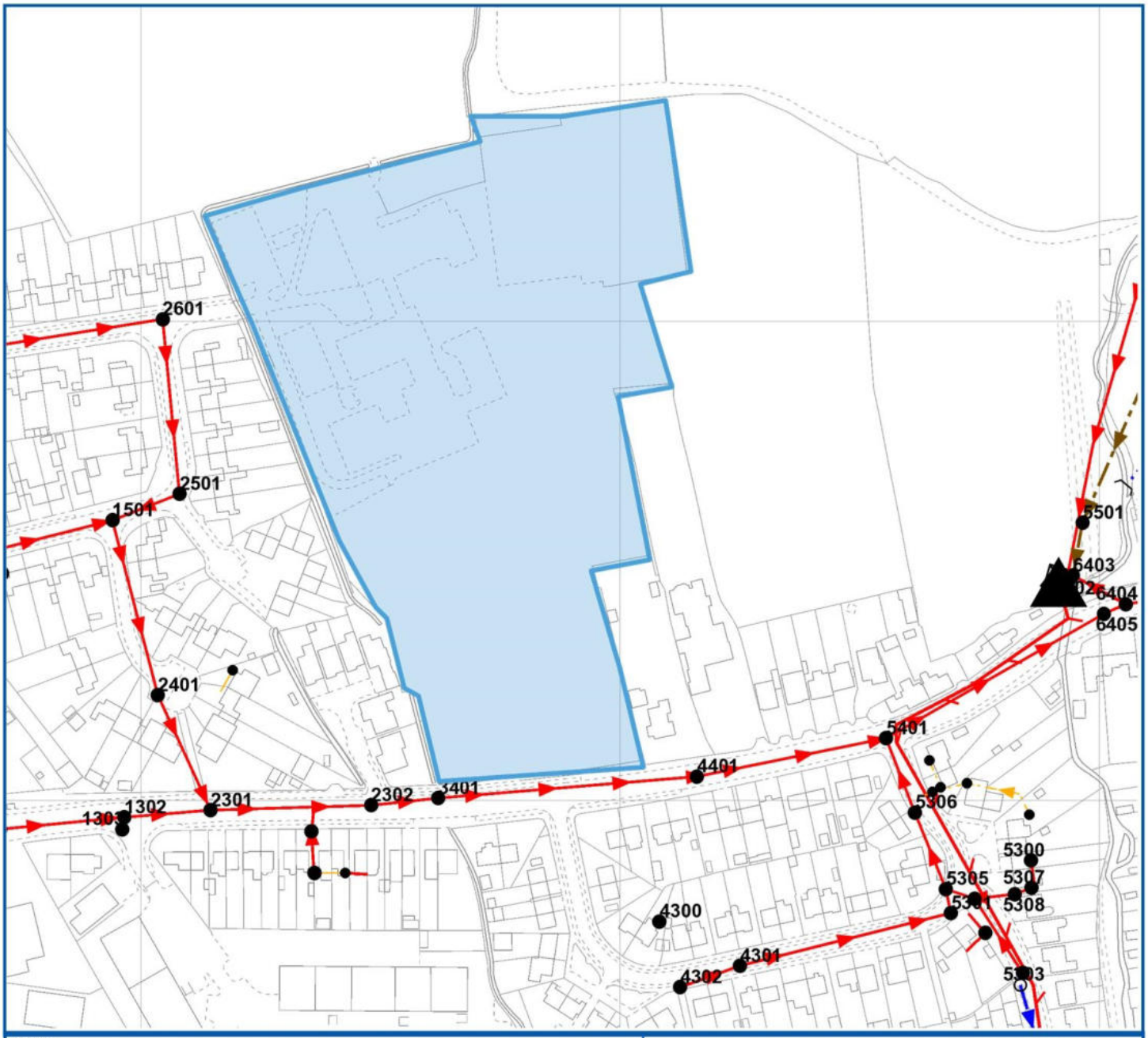
TITLE: TOPOGRAPHICAL SURVEY (Sheet 8 of 8)

DATE: 03/06/2025

GRID:	LEVEL:	DATA TYPE:	OTHER DATA AVAILABLE:
ORDNANCE SURVEY	ORDNANCE SURVEY	2D	3D ACAD - YES 3D GROUND MODEL - YES POINT CLOUD - NO SECTIONS - YES CUT & FILL ANALYSIS - YES

DRAWN BY:	SCALE @ AO:	PROJECT NO.:	DRAWING NAME:	REV.
KS	1:500	4125	4125 Hopwell Road_Breaston_Topographical Survey 2025	B

Appendix B Severn Trent Water Sewer Records and Responses



LEGEND

Operational Site

Waste Water Pump
- Transferred Asset
- S26
- S104
- S102
- Null Private
- Null
- None
- Highway Drain
- Adopted Sewer

Storage
- Disposal Site
- Off-Line Waste Water Storage
- On-Line Waste Water Storage
- Wet Well

Waste Water Process Structure
- Sewage Treatment Point
- Sewage Treatment Structure
- Sludge Treatment Point
- Sludge Treatment Structure

Manhole
- Foul Bifurcation Manhole
- Combined Bifurcation Manhole
- Surface Water Bifurcation Manhole
- Dual Manhole
- Foul Single Manhole
- Combined Single Manhole
- Surface Water Single Manhole
- Twin Manhole
- Foul Adopted Manhole
- Combined Adopted Manhole
- Surface Adopted Manhole
- Transfered Manhole
- Unsurveyed Manhole

Gravity Sewer Pipe
- Foul Gravity Sewer
- Combined Gravity Sewer
- Surface Water Gravity Sewer
- S104 Surface Water Gravity Sewer
- S104 Combined Gravity Sewer
- S104 Foul Gravity Sewer
- Private Surface Water Gravity Sewer
- Private Combined Gravity Sewer
- Private Foul Gravity Sewer
- Surface Water Unsurveyed Pipe
- Combined Unsurveyed Pipe
- Foul Unsurveyed Pipe
- Transfered Surface Water Sewer
- Transfered Combined Sewer
- Transfered Foul Sewer
- Disposal Pipe
- Overflow Pipe
- Culverted Water Course
- Waste Internal Site Pipe
- Sewer Service Connection
- Gravity Sewer Others

Pressure Sewer Pipe
- Surface Water Pressure Sewer
- Combined Pressure Sewer
- Foul Pressure Sewer
- S104 Surface Water Pressure Sewer
- S104 Combined Pressure Sewer
- S104 Foul Pressure Sewer
- Private Surface Water Pressure Sewe
- Private Combined Pressure Sewer
- Private Foul Pressure Sewer
- Surface Water Vacuum Sewer
- Foul Vacuum Sewer
- Combined Vacuum Sewer
- S104 Surface Water Vacuum Sewer
- S104 Combined Vacuum Sewer
- S104 Foul Vacuum Sewer
- Private Surface Water Vaccum Sewer
- Private Combined Vacuum Sewer
- Private Foul Vacuum Sewer
- Surface Water Siphon
- Combined Siphon
- Foul Siphon
- Private Surface Water Siphon
- Private Combined Siphon
- Private Foul Siphon
- S104 Surface Water Siphon
- S104 Combined Siphon
- S104 Foul Siphon
- Surface Water Unsurveyed Pipe
- Combined Unsurveyed Pipe
- Foul Unsurveyed Pipe
- Disposal Pipe

Service Pipe
- Surface Water Lateral Drain
- Combined Lateral Drain
- Foul Lateral Drain
- S104 Surface Water Lateral Drain
- S104 Combined Lateral Drain
- S104 Foul Lateral Drain
- Private Surface Water Lateral Drain
- Private Combined Lateral Drain
- Private Foul Lateral Drain
- Transfered Surface Water Lateral Dra
- Transfered Combined Lateral Drain
- Transfered Foul Lateral Drain

Pressure Sewer Annotation

Gravity Sewer Annotation

Service Sewer Annotation

Ancillary
- Balancing Lagoon
- Grease Trap
- Interceptor
- Screen

Chamber
- Flushing Chamber
- Scalaway
- Overflow

Fitting
- Blind Shaft
- Facility Connector
- Head Node
- Lamphole
- Sewerage Air Valve
- Sewerage Chemical Injection Point
- Sewerage Hatch Box
- Sewerage Pressure Washout
- Vent Column
- Waste Water Outfall

Control Valve
- Hydrobrake
- Penstock
- Sewerage Isolation Valve
- Sewerage Non Return Valve

Manhole Annotation

Print200mLine

Severn Trent Water Limited
Asset Data Management
PO Box 5344
Coventry
CV3 9FT
Telephone: 0345 601 6616

SEWER RECORD

O/S Map Scale: 1:2,500

This map is centred upon:

Date of Issue: 19-11-25

X: 445379.85 **Y:** 333518.25

Disclaimer Statement:

1 Do not scale off this Map.

2 This plan and any information supplied with it is furnished as a general guide, is only valid at the date of issue and no warranty as to its correctness is given or implied. In particular this plan and any information shown on it must not be relied upon in the event of any development or works (including but not limited to excavations) in the vicinity of SEVERN TRENT WATER assets or for the purposes of determining the suitability of a point of connection to the sewerage or distribution systems.

3 On 1 October 2011 most private sewers and private lateral drains in Severn Trent Water's sewerage area, which were connected to a public sewer as at 1 July 2011, Transferred to the ownership of Severn Trent Water and became public sewers and public lateral drains. A further transfer takes place on 1 October 2012. Private pumping stations, which form part of these sewers or lateral drains, will transfer to ownership of Severn Trent Water on or before 1 October 2016. Severn Trent Water does not possess complete records of these assets. These assets may not be displayed on the map.

5 Ordnance Survey licence number: **AC0000808122**

Sewer Node Sewer Pipe Data

Reference	Cover Level	Invert Level Upstream	Invert Level Downstream	Purpose	Material	Pipe Shape	Max Size	Min Size	Gradient	Year Laid
SK45331400	<UNK>	<UNK>	<UNK>	F	VC	U	100	<UNK>	<UNK>	31/12/1899 00:00:00
SK45335501	36.0499	32.98	31.219	F	VC	C	225	<UNK>	12.7	31/12/1899 00:00:00
SK45332401	35.243	33.567	33.449	C	VC	C	225	<UNK>	440	31/12/1899 00:00:00
SK45335306	34.9739	32.432	32.112	C	VC	C	225	<UNK>	103.88	31/12/1899 00:00:00
SK45336405	34.994	31.644	31.444	C	VC	C	<UNK>	<UNK>	49.25	31/12/1899 00:00:00
SK45334301	34.99	32.759	32.521	C	VC	C	225	<UNK>	377.96	31/12/1899 00:00:00
SK45334302	34.9059	33.056	32.759	C	VC	C	225	<UNK>	88.57	31/12/1899 00:00:00
SK45332302	34.824	33.079	32.905	C	VC	C	225	<UNK>	165.65	31/12/1899 00:00:00
SK45334201	<UNK>	<UNK>	<UNK>	S	<UNK>	<UNK>	<UNK>	<UNK>	0	31/12/1899 00:00:00
SK45334203	<UNK>	<UNK>	<UNK>	S	<UNK>	<UNK>	<UNK>	<UNK>	0	31/12/1899 00:00:00
SK45335308	1	<UNK>	<UNK>	C	VC	<UNK>	100	<UNK>	<UNK>	21/07/2023 00:00:00
SK45333401	34.81	32.905	32.631	C	VC	C	225	<UNK>	401.37	31/12/1899 00:00:00
SK45335202	34.422	33.052	32.888	S	VC	C	225	<UNK>	168.31	31/12/1899 00:00:00
SK45335302	34.3989	32.899	32.58	C	VC	C	150	<UNK>	115.28	31/12/1899 00:00:00
SK45331301	36.4319	34.375	33.834	C	VC	C	225	<UNK>	96.74	31/12/1899 00:00:00
SK45331303	35.1549	33.889	33.834	C	VC	C	225	<UNK>	85	31/12/1899 00:00:00
SK45335204	34.443	33.113	32.888	S	VC	C	225	<UNK>	147.13	31/12/1899 00:00:00
SK45335300	0.6	<UNK>	<UNK>	C	VC	<UNK>	100	<UNK>	<UNK>	21/07/2023 00:00:00
SK45332601	36.444	34.487	34.135	C	VC	C	225	<UNK>	209.51	31/12/1899 00:00:00
SK45332301	35.125	33.449	33.079	C	VC	C	225	<UNK>	181.16	31/12/1899 00:00:00
SK45335303	34.3769	33.497	33.335	S	VC	C	225	<UNK>	221.5	31/12/1899 00:00:00
SK45335304	34.56	32.58	32.448	C	VC	C	150	<UNK>	97.31	31/12/1899 00:00:00
SK45331302	35.33	33.834	33.449	C	VC	C	225	<UNK>	92.62	31/12/1899 00:00:00
SK45335205	34.4189	33.179	33.113	S	VC	C	225	<UNK>	171.43	31/12/1899 00:00:00
SK45335401	35.162	32.112	31.644	C	VC	C	<UNK>	<UNK>	223	31/12/1899 00:00:00
SK45336501	34.9799	33.74	33.01	F	VC	C	225	<UNK>	113.51	31/12/1899 00:00:00
SK45332501	35.9879	34.135	33.781	C	VC	C	225	<UNK>	85.94	31/12/1899 00:00:00
SK45335203	34.388	32.888	32.644	S	VC	C	225	<UNK>	64.67	31/12/1899 00:00:00
SK45331501	35.915	33.781	33.567	C	VC	C	225	<UNK>	359.19	31/12/1899 00:00:00
SK45336403	36.199	<UNK>	<UNK>	C	CO	C	300	<UNK>	<UNK>	31/12/1899 00:00:00
SK45336504	<UNK>	<UNK>	<UNK>	S	<UNK>	<UNK>	<UNK>	<UNK>	0	31/12/1899 00:00:00
SK45331502	36.477	34.929	34.487	C	VC	C	225	<UNK>	158.8	31/12/1899 00:00:00
SK45336404	34.914	31.444	31.219	C	VC	C	<UNK>	<UNK>	108.96	31/12/1899 00:00:00
SK45335307	0.8	<UNK>	<UNK>	C	VC	<UNK>	100	<UNK>	<UNK>	21/07/2023 00:00:00
SK45334202	<UNK>	<UNK>	<UNK>	S	<UNK>	<UNK>	<UNK>	<UNK>	0	31/12/1899 00:00:00
SK45335301	34.9109	32.521	32.448	C	VC	C	225	<UNK>	145.71	31/12/1899 00:00:00
SK45335201	34.4249	33.335	33.052	S	VC	C	225	<UNK>	107.14	31/12/1899 00:00:00
SK45334401	35.624	32.631	32.112	C	VC	C	225	<UNK>	155	31/12/1899 00:00:00
SK45335305	34.9179	32.448	32.432	C	VC	C	225	<UNK>	1727	31/12/1899 00:00:00
<UNK>	<UNK>	<UNK>	<UNK>	F	VC	<UNK>	<UNK>	<UNK>	<UNK>	14/07/2020 00:00:00
<UNK>	<UNK>	<UNK>	<UNK>	C	VC	<UNK>	<UNK>	<UNK>	<UNK>	23/10/2023 00:00:00

Sewer Node Sewer Pipe Data

Reference	Cover Level	Invert Level Upstream	Invert Level Downstream	Purpose	Material	Pipe Shape	Max Size	Min Size	Gradient	Year Laid
<UNK>	<UNK>	<UNK>	<UNK>	F	U	<UNK>	<UNK>	<UNK>	<UNK>	27/11/2019 00:00:00
<UNK>	<UNK>	<UNK>	<UNK>	C	VC	<UNK>	<UNK>	<UNK>	<UNK>	17/11/2019 00:00:00
<UNK>	<UNK>	<UNK>	<UNK>	F	VC	<UNK>	<UNK>	<UNK>	<UNK>	31/12/1899 00:00:00
<UNK>	<UNK>	<UNK>	<UNK>	F	U	<UNK>	<UNK>	<UNK>	<UNK>	27/11/2019 00:00:00
<UNK>	<UNK>	<UNK>	<UNK>	C	VC	<UNK>	<UNK>	<UNK>	<UNK>	06/03/2023 00:00:00

WONDERFUL ON TAP

SEVERN TRENT

Severn Trent Water Ltd
Leicester Water Centre
Gorse Hill
Anstey
Leicester
LE7 7GU
www.stwater.co.uk

We're here if you need us:
Vijay Tanna- 07855100647
Email:
network.solutions@severntrent.co.uk

Our ref: **1164669**

BM Civil Engineering Ltd
55,Priory Close
Breedon-On-Thehill
Derby
DE73 8LF

19th November 2025

F.A.O: Ben McManus

Dear Sir/Madam,

Proposed Development: (65x Dwellings and 10x Flats – 1.17 l/s)
Land to the North of Draycott Road, Breaston, Derby, DE72 3UT
XY:445372;333600

I refer to your 'Development Enquiry Request' in respect of the above named site. Please find enclosed the sewer records that are included in the fee together with the Supplementary Guidance Notes (SGN) which refer to surface water disposal from development sites.

Protective Strip

No public sewers within site boundary.

Due to a change in legislation on 1 October 2011 there may be former private sewers on the site which have transferred to the responsibility of Severn Trent Water Ltd, which are not shown on the statutory sewer records, but are located in your client's land. These sewers would require protective strips of 3 metres either side of the sewer's centreline that we will not allow to be built over. If such sewers are identified to be present on the site, please contact us for further guidance.

Please note: there is no guarantee that you will be able to build over or close to any Severn Trent sewers, and where a diversion is required there is no guarantee that you will be able to undertake those works on a self-lay basis. Every approach to build near to or divert our assets has to be assessed on its own merit and the decision of what is or isn't permissible is taken based on the risk to the asset and the wider catchment it serves. It is vital therefore that you contact us at the earliest opportunity to discuss the implications of our assets crossing your site. Failure to do so could significantly affect the costs and timescales of your project if it transpires diversionary works need to be carried out by Severn Trent.

Foul Water Drainage

The nearest 225mm combined sewer is located in the highway to the south on Draycott Road and nearest mh is SK4533**4401**. It is anticipated a development of such size would generate approximate gravity foul flows of 1.17l/s (2xdwf) which will have no adverse impact on the network. Therefore, a gravity connection to the public sewer (direct or indirect) is acceptable subject to a formal Section 106 sewer connection approval.

Surface Water Drainage

Under the terms of Section H of the Building Regulations 2000, the disposal of surface water by means of soakaways should be considered as the primary method. If these are found to be unsuitable, satisfactory evidence will need to be submitted. The evidence should be either percolation test results or by the submission of a statement from the SI consultant (extract or a supplementary letter).

Subject to above Severn Trent Water expects all surface water from the development to be drained in a sustainable way to the nearest watercourse or land drainage channel, subject to the developer discussing all aspects of the developments surface water drainage with the Local Lead Flood Authority (LLFA). Any discharge rate to a watercourse or drainage ditch will be determined by the LLFA / EA.

Please note we do not have any public Surface Water sewers located within close vicinity of the site hence you will need to explore the possibility of discharging the Sw into the nearby watercourse/ditch course- subject to agreement with the LLFA/EA.

Connections

For any new connections (including the re-use of existing connections) to the public sewerage system, the developer will need to submit a Section 106 application form. Our Developer Services department are responsible for handling all new connections enquiries and applications. To contact them for an application form and associated guidance notes please call 0800 7076600 or download from www.stwater.co.uk.

Please quote the above reference in any future correspondence (including e-mails) with STW Limited. Please note that Developer Enquiry responses are only valid for 6 months from the date of this letter.

Yours sincerely

Vijay Tanna
Network Solutions
Developer Services

Appendix C Proposed Development Layout

Planning Issue

Rev	Description	Date	Drn / Chk / App
P01	Planning Issue	17.11.2025	PC AC AC

Document Control

Issuing Office
Tetra Tech Leeds
3 Sovereign Square, Sovereign Street,
Leeds, United Kingdom, LS1 4ER
Tel: +44 (0)11 3278 7111
www.tetratecheurope.com

TETRA TECH

Client
Peveril Homes

Project Name
Breaston

Sheet Title
Illustrative Masterplan

TTE Project Number	Drawn By	Date	Checked By	Date	Approved By	Date	Scale @ A0	Suitability
784-B075234	PC	Nov '25	AC	Nov '25	AC	Nov '25	1:500	S0

Client Project Number	Originator	Volume/System	Level/Location	Type/Code	Role	Number	Revision
PRJ01	- TTE	- 00	- XX	- DR	- UD	- 60000	P01

TTE_MT_v1

Appendix D Greenfield Runoff Estimation

Greenfield runoff rate estimation tool

www.uksuds.com | Greenfield runoff rate estimation tool (https://www.uksuds.com/)

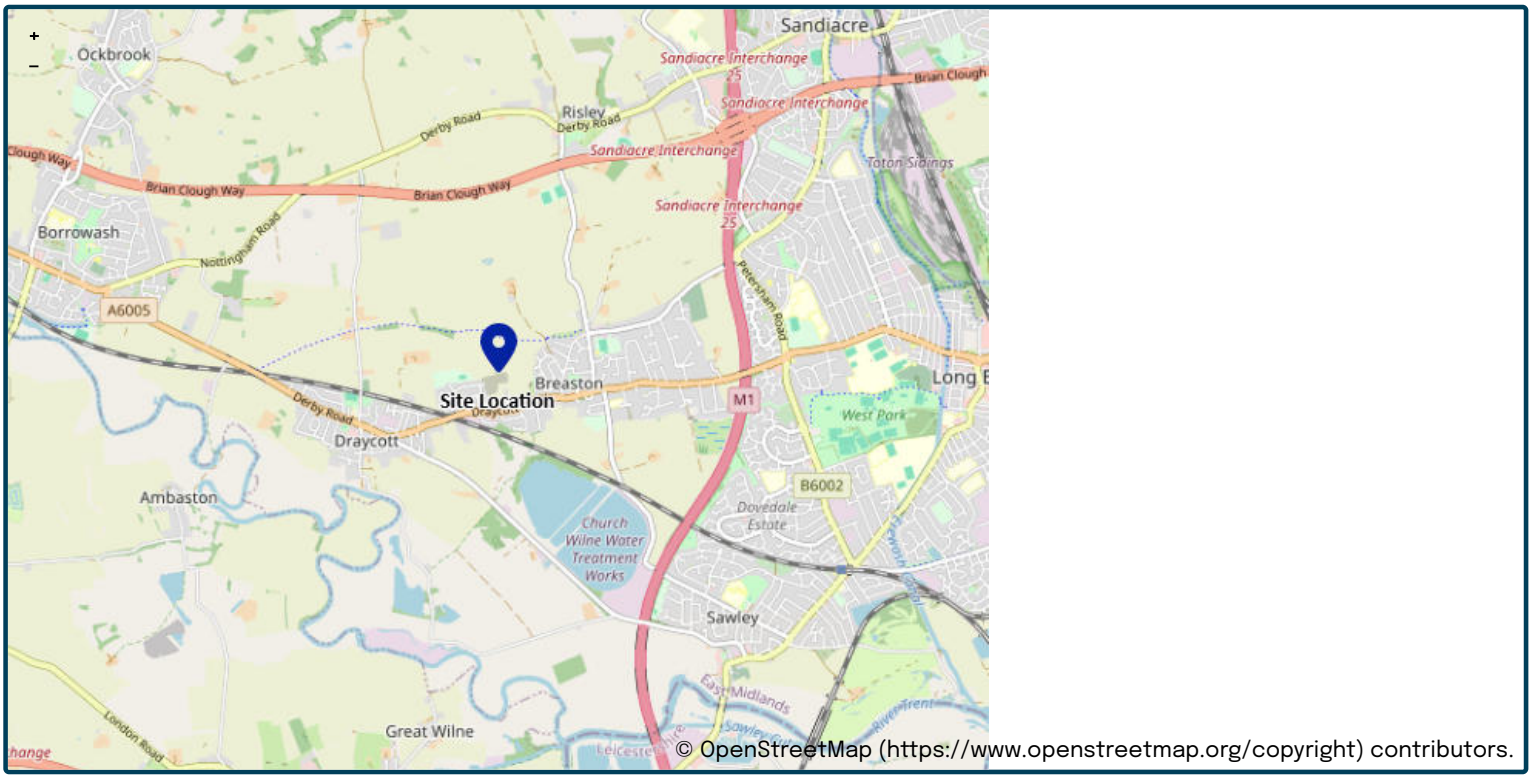
This is an estimation of the greenfield runoff rates that are used to meet normal best practice criteria in line with Environment Agency guidance “Rainfall runoff management for developments”, SC030219 (2013), the SuDS Manual C753 (CIRIA, 2015) and the non-statutory standards for SuDS (Defra, 2015). 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	19/11/2025
Calculated by	
Reference	
Model version	2.2.2

Location

Site name	Draycott Road
Site location	Breaston



Site easting (British National Grid)	445349
Site northing (British National Grid)	333530

Site details

Total site area (ha)	1 ha

Greenfield runoff

Method

Method	IH124

IH124

	My value		Map value
SAAR (mm)	628 mm		628
How should SPR be derived?	WRAP soil type		
WRAP soil type	4		4
SPR	0.47		
QBar (IH124) (l/s)	4.3 l/s		

Growth curve factors

	My value		Map value
Hydrological region	4		4
1 year growth factor	0.83		
2 year growth factor	0.89		
10 year growth factor	1.49		
30 year growth factor	2		
100 year growth factor	2.57		
200 year growth factor	3.04		

Results

Method	IH124
Flow rate 1 year (l/s)	3.5 l/s
Flow rate 2 year (l/s)	3.8 l/s
Flow rate 10 years (l/s)	6.3 l/s
Flow rate 30 years (l/s)	8.5 l/s
Flow rate 100 years (l/s)	10.9 l/s
Flow rate 200 years (l/s)	12.9 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

Appendix E Preliminary Storage Calculations

Design Settings

Rainfall Methodology	FEH-22	Minimum Velocity (m/s)	1.00
Return Period (years)	100	Connection Type	Level Soffits
Additional Flow (%)	40	Minimum Backdrop Height (m)	0.200
CV	0.750	Preferred Cover Depth (m)	1.200
Time of Entry (mins)	5.00	Include Intermediate Ground	✓
Maximum Time of Concentration (mins)	30.00	Enforce best practice design rules	x
Maximum Rainfall (mm/hr)	50.0		

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
Catchment 1	1.577	30.00	35.600	1500	445341.217	333423.740	1.500

Simulation Settings

Rainfall Methodology	FEH-22	Analysis Speed	Detailed	Starting Level (m)	
Rainfall Events	Singular	Skip Steady State	x	Check Discharge Rate(s)	x
Summer CV	1.000	Drain Down Time (mins)	1440	Check Discharge Volume	x
Winter CV	1.000	Additional Storage (m³/ha)	20.0		

Storm Durations

15	60	180	360	600	960	2160
30	120	240	480	720	1440	2880

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

Node Catchment 1 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	x	Sump Available	✓
Invert Level (m)	34.100	Product Number	CTL-SHE-0165-1370-1200-1370
Design Depth (m)	1.200	Min Outlet Diameter (m)	0.225
Design Flow (l/s)	13.7	Min Node Diameter (mm)	1500

Node Catchment 1 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	34.100
Side Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Time to half empty (mins)	896

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	1150.0	1150.0	1.200	1150.0	1294.3	1.201	0.0	1294.3

Results for 100 year +40% CC 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
480 minute winter	Catchment 1	480	35.256	1.156	142.1	1355.5620	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	Outflow (l/s)	Discharge Vol (m³)
480 minute winter	Catchment 1	Hydro-Brake®	13.6	1390.2

Appendix F Drainage Strategy Drawing

N

FFL's to plots adjacent to watercourse to be set a minimum of 0.3m above the adjacent top of bank level. Final FFL's subject to detailed design

FFL's to plots adjacent to watercourse to be set a minimum of 0.3m above the adjacent top of bank level. Final FFL's subject to detailed design

Min FFL 37.400
Min FFL 37.400
Min FFL 37.400
Min FFL 37.500
Min FFL 37.500
Min FFL 37.500
Min FFL 37.500
Min FFL 37.350
Min FFL 37.350
Min FFL 37.350
Min FFL 37.300
Min FFL 37.100
Min FFL 37.100
Min FFL 37.100
Min FFL 37.100
Min FFL 37.100
Min FFL 37.100
Min FFL 37.050
Min FFL 37.050
Min FFL 36.950

CL 37.25 IL 35.70
300Ø
CL 37.05 IL 35.15
375Ø
CL 37.00 IL 35.00
CL 37.00 IL 34.47
CL 37.10 IL 35.50
225Ø
375Ø
CL 37.10 IL 35.33
CL 37.10 IL 34.88
300Ø
CL 37.05 IL 35.55
CL 37.20 IL 35.77
225Ø
CL 37.10 IL 35.63
CL 35.30 IL 34.85
CL 37.00 IL 35.46
300Ø
CL 36.90 IL 35.34
375Ø
CL 36.85 IL 34.45
CL 36.85 IL 34.90
CL 36.75 IL 34.18
CL 36.75 IL 34.71
450Ø
525Ø
CL 36.50 IL 34.51
CL 36.50 IL 33.87
600Ø
CL 36.20 IL 34.34
CL 36.20 IL 33.52
600Ø
CL 35.90 IL 34.22
CL 35.90 IL 33.27
900Ø
CL 36.75 IL 33.19
CL 35.85 IL 34.17
CL 35.80 IL 34.10
800Ø
CL 35.80 IL 34.14
CL 36.75 IL 33.11
900Ø
225Ø
HW IL 34.10
CL 35.60 IL 32.88
CL 35.60 IL 34.45
HW IL 34.10
HW IL 33.90
225Ø @1:380
Outfall CL 35.30 IL 32.74
Ex 3401 CL 34.82 IL 32.91
Ex 4401 CL 35.65 IL 32.63
Draycott Road

SW DRAINAGE STRATEGY

Impermeable Area - 1.577ha
Discharge Rate - 13.7l/s
Storage Required ≈ 1,356m³

Attenuation Pond to provide storage volume:
Lowest bed level - 34.100
Min top of bank - 35.600
Top water level - 35.256 (100+40%, 480min winter storm)
Freeboard - 0.344m

Discharge restricted to 13.7l/s via vortex flow control device fitted to outfall manhole:
Design Flow - 13.7l/s
Design Head - 1.20m

Surface water outfall to Golden Stream Watercourse, positioned upstream of the Draycott Road Culvert. Invert level interpolated from channel sections survey. TBC via detailed topographic survey. Outfall subject to Environment Avency permissions and approvals.

Foul drainage to outfall to existing 225Ø STW combined sewer via a new manhole constructed between manholes ref. Ex 3401 and Ex 4401.

GENERAL NOTES

1. DO NOT SCALE.
2. This drawing is to be read in conjunction with all other relevant drawings and details.
3. Should there be any conflict between the details indicated on this drawing and those on other drawings the Engineer should be informed PRIOR to construction.
4. Until technical approval has been obtained from the relevant Authority, it should be understood that all drawings issued are Preliminary and NOT for construction. Should the Contractor commence site works prior to such approval being provided it is entirely at their own risk.
5. Sketch proposals are for illustrative purposes only and as such are subject to detailed site investigation including ground conditions, contaminants, drainage, design and planning / density negotiations.
6. All dimensions are in metres unless otherwise stated.
7. All foul drainage is to be 150Ø unless noted otherwise.
8. Finished floor levels, where indicated, are preliminary only and are subject to detailed design.
9. The BM Civil Engineering Ltd Designer's Risk Assessment(s) for this project must be reviewed PRIOR to the commencement of any works on site.

KEY:

- Development Boundary
- Proposed Section 104 Adoptable SW Sewer
- Proposed Section 104 Adoptable FW Sewer
- Existing Combined Water Sewer

PROPOSALS ARE SUBJECT TO DETAILED DESIGN, PLANNING AND LLFA APPROVAL

FFLs, WHERE SHOWN, ARE PRELIMINARY AND MAY BE SUBJECT TO DETAILED DESIGN CHANGES

THE INFORMATION ON THIS DRAWING IS FOR PLANNING PURPOSES ONLY AND MUST NOT BE READ AS A CONSTRUCTION ISSUE. IT INDICATES DESIGN INTENT ONLY AND IS SUBJECT TO DETAILED DESIGN. THIS DRAWING SHOULD BE READ IN CONJUNCTION WITH OTHER RELEVANT SPECIALIST DRAWINGS AND REPORTS.

Health and safety symbols refer to reference numbers indicated on Designers Risk Assessment number: 25018-BMC-25-XX-HS-C-0001

Health & Safety Information Key

- Used to provide design specific safety information that may not be obvious to a competent contractor but may be useful
- Used to restrict/prevent a possible action, e.g. stop construction traffic from entering an area
- Used to warn of significant design hazards, adding recommendations
- Used to encourage a positive action, e.g. use of robust protection for inspection chambers

Rev	Date	Amendments	By	Chk
P01	19.11.25	First Issue for Approval	CSM	BRM

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Client
PEVERIL HOMES

Project
DRAYCOTT ROAD
BREASTON

Drawing Title
DRAINAGE STRATEGY

Status
PRELIMINARY

Scale	Drawn	Checked	Date
1:500 @ A1	CSM	BRM	19.11.25

Drawing Number: 25018-BMC-25-XX-DR-C-2000
Revision: P01

Scale Bar
1:500 10 20 30