



# Meridian Solar Farm

EN010169

Volume 6

Environmental Statement

6.3 ES Appendix 11-4:  
Outline Drainage Strategy  
- Annex E

APFP Regulation 5(2)(a)

Infrastructure Planning (Applications:  
Prescribed Forms and Procedure)  
Regulations 2009

March 2026

# Annex E - Grid Connection Route Outline Drainage Strategy

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# 1. Executive Summary

## 1.1. Overview

- 1.1.1. Meridian Solar Farm Ltd (hereafter referred to as ‘the Applicant’) is seeking a Development Consent Order (DCO) for the construction, operation and decommissioning of the Meridian Solar Farm (hereafter referred to as the ‘Scheme’). The Scheme comprises the Solar Development Area, Inter-Array Connections and the Grid Connection Route.
- 1.1.2. This Grid Connection Route Outline Drainage Strategy forms Annex E of the **ES Appendix 11-4: Outline Drainage Strategy** (Doc Ref. 6.3) and provides the operational drainage strategy for the Grid Connection Route only. No drainage design is proposed for the Inter-Array Connections. The drainage strategy for the Solar Development Area is provided within **ES Appendix 11-4: Outline Drainage Strategy** (Doc Ref. 6.3).
- 1.1.3. The design life of the Scheme will be 40 years, and decommissioning is expected to commence thereafter. Upon decommissioning, the above-ground physical infrastructure will be dismantled and removed. In addition, concrete foundations to these elements would be removed to a depth agreed with the relevant landowner from the area within the Order Limits and recycled or disposed of in accordance with good practice and market conditions at that time. The mode of any underground cable decommissioning will be dependent upon Government policy, best practice and landowner agreement at that time.
- 1.1.4. The National Planning Practice Guidance<sup>1</sup>, paragraph 006, suggests that for non-residential development, an assessment period of 75 years can be used to form a starting point for assessment. However, as the operational design life is stated as 40 years, it is considered appropriate to assess the design life for 40 years.
- 1.1.5. The Site is located to the south of Spalding and north-east of Crowland within flat, open countryside. The main land use across the Site is agricultural. The landscape features within the vicinity consist of steep man-made agricultural drainage ditches typically bordering arable field boundaries.
- 1.1.6. The Grid Connection Route will consist of:
- 400kV Overhead Line (OHL);
  - Steel lattice Pylons;
  - Underground Transmission Electrical Cables;

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<sup>1</sup> Department of Communities and Local Government (2014, updated September 2025) National Planning Practice Guidance: Flood Risk and Coastal Change. <https://www.gov.uk/guidance/flood-risk-and-coastal-change> [Accessed 04/02/2026]

- Cable Sealing End Compounds, associated equipment and access roads.

1.1.7. This Outline Drainage Strategy has been prepared in accordance with best practice methods, with drainage features designed in conformance with the requirements of relevant regulatory authorities, key guidance and legislation.

1.1.8. This Outline Drainage Strategy details the proposed approach to surface water drainage for the permanent features of the Grid Connection Corridor during the operational phase of the Scheme. Surface water runoff during the construction and decommissioning of the Scheme is to be managed by the contractor, as set out within the **Outline Construction Environmental Management Plan (OCEMP)** (Doc Ref. 7.10) and the **Outline Decommissioning Environmental Management Plan (ODEMP)** (Doc Ref. 7.12).

## 2. Introduction

### 2.1. Overview

2.1.1. This document outlines the principles, requirements and overall strategy for the drainage of surface water runoff from the proposed permanent features within the Grid Connection Route during the operational phase of the development. Surface water drainage for Solar Development Area has been addressed separately within **ES Appendix 11-4: Outline Drainage Strategy** (Doc Ref. 6.3). Surface water runoff during the construction and decommissioning of the Scheme is to be managed by the contractor, as set out within the **Outline Construction Environmental Management Plan (OCEMP)** (Doc Ref. 7.10) and the **Outline Decommissioning Environmental Management Plan (ODEMP)** (Doc Ref. 7.12).

2.1.2.

2.1.3. The Grid Connection Route would be up to 13km in length and would connect the Solar Development Area of the Scheme to the National Grid Weston Marsh B Substation. Of importance to this Drainage Strategy, the Grid Connection Route would comprise permanent features including Cable Sealing End Compounds (CSEC), Overhead Line (OHL) pylons and permanent access roads.

2.1.4. A full description of the Scheme is included in **ES Chapter 2: The Scheme** (Doc Ref. 6.1). An overview of the Scheme and its environmental impacts is provided in the **ES Non-Technical Summary** (Doc Ref. 6.1).

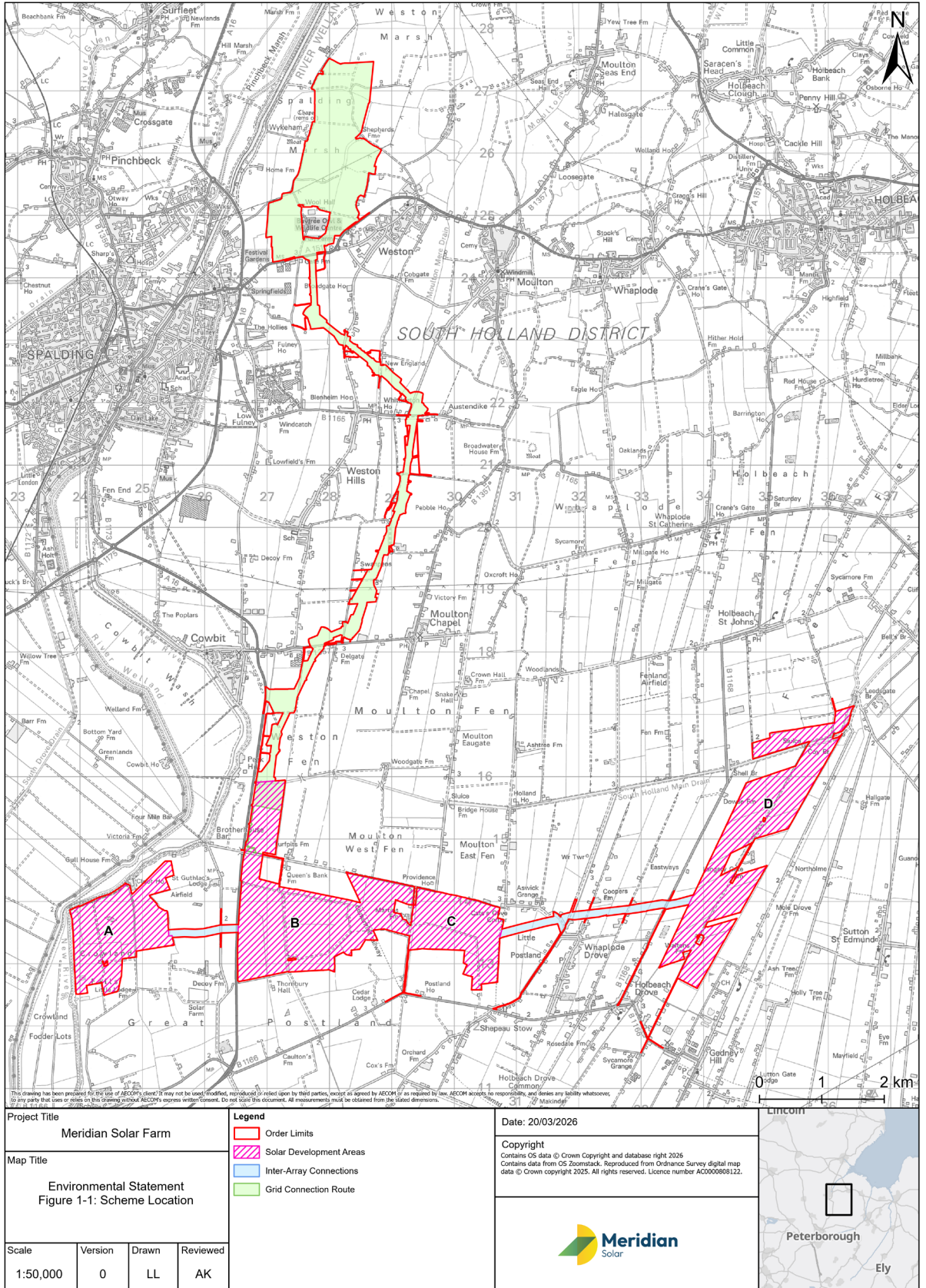
### 2.2. Legislation & Guidance

2.2.1. Drainage for the consented development would be constructed following best practice and designed in conformance with the requirements of relevant regulatory authorities, key guidance and legislation. Please refer to **ES Appendix 11-1: Hydrology and Flood Risk Legislation, Policy and Guidance** (Doc Ref. 6.3).

### 2.3. Site Location

2.3.1. The Grid Connection Route is located to the east of Spalding, Lincolnshire and commences to the northwest of the village of Moulton at an approximate Ordnance Survey grid reference of TF 28015 25679, running in a general southerly direction before terminating immediately south of the South Holland Main Drain and immediate east of the River Welland at an approximate grid reference of TF 26800 14790. The location of the Site and the proposed Grid Connection Route Order Limits are shown in Figure 1-1.

Figure 1-1: Site Location



## 2.4. Topography

2.4.1. The topography along the full Grid Connection Route and wider region is flat and level, with only minor localised depressions. Ground levels generally range between 1m above Ordnance Datum (m AOD) and 3m AOD. Due to how flat and level the wider region is, the land historically comprises a large network of ditches and open drains to facilitate crop irrigation and drainage of the surrounding land. The full Grid Connection Route falls within an area managed by South Holland Internal Drainage Board (IDB), who are responsible for managing and maintaining formal drains within their area. These ditches and open drains generally convey flows in the direction of the River Welland, an Environment Agency (EA) Main River which runs in a general south to northeast direction before discharging to The Wash and the North Sea, or to the South Holland Main Drain to the south, which runs in an easterly direction before discharging to the River Nene near the village of Sutton Bridge.

## 2.5. Geology

- 2.5.1. British Geological Survey (BGS) GeoIndex Onshore mapping<sup>2</sup> indicates the middle section of the Grid Connection Route, centred around Austendike Road (B1165), together with the very south end of the site, are situated upon bedrock geology comprising West Walton Formation (mudstone and siltstone). The remainder of the cable route (west of Weston village and east of Cowbit village) is indicated to be situated upon bedrock geology comprising Oxford Clay Formation (mudstone).
- 2.5.2. The BGS records also indicate that the bedrock geology is overlain by superficial deposits comprising Tidal Flat Deposits (clay and silt) throughout the entirety of the Grid Connection Route.
- 2.5.3. The Cranfield University LandIS Soilsclapes mapping<sup>3</sup> indicates that the entirety of the Grid Connection Route is situated on soils defined as “*loamy and clayey soils of coastal flats with naturally high groundwater.*”
- 2.5.4. Based upon the above, drainage via formal infiltration measures is highly unlikely to be feasible. However, limited amounts of infiltration/percolation to the topsoil layers may be feasible, particularly during drier periods where rainfall is less frequent, and should be encouraged through the use of SuDS drainage techniques.

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<sup>2</sup> British Geological Survey GeoIndex Onshore mapping, available at: <https://mapapps2.bgs.ac.uk/geoindex/home.html>, last accessed July 2025

<sup>3</sup> Cranfield University, LandIS Soilsclapes mapping, available at: <https://www.landis.org.uk/soilsclapes/>, last accessed July 2025

## 2.6. Summary of Flood Risk

- 2.6.1. A detailed Flood Risk Assessment, which assesses the risk of flooding from all sources to the Grid Connection Route is provided in **ES Appendix 11-3: Flood Risk Assessment** (Doc Ref. 6.3).
- 2.6.2. The EA's Flood Map for Planning indicates the majority of the Grid Connection Route is situated within Flood Zone 3, having a 1 in 100 or greater annual probability of flooding from rivers or the sea. Small portions of the Grid Connection Route, particularly around the central and southern sections, are indicated to be situated in either Flood Zone 2 only, with between a 1 in 100 and 1 in 1,000 annual probability of flooding, or Flood Zone 1 only, with a less than 1 in 1,000 annual probability of flooding. The EA's River and Sea with Defences dataset takes into account flood defences and indicates a low residual risk of flooding to the Order Limits from these sources.
- 2.6.3. The River Welland is tidally influenced from The Wash up to the confluence of the Coronation Channel and the River Welland. However, upon review of the EA's Risk of Flooding from Rivers and Sea dataset, flooding is shown to originate from the river itself and particularly from the upstream extents. Additionally, there is widespread tidal flooding from The Wash and the tidal River Nene within this dataset, with notable separation between the tidal flood extents and of those indicated at the Grid Connection Route. As such, the risk of flooding to the Grid Connection Route is determined to be primarily fluvial in nature.
- 2.6.4. The EA's Risk of Flooding from Surface Water dataset indicates areas of surface water flood risk ranging from high (greater than 1 in 30 annual chance) to low (between 1 in 100 and 1 in 1,000 annual chance) throughout, with the majority of the Grid Connection Route indicated to be at very low (less than 1 in 1,000 annual chance). There are no indicated surface water flow paths indicated within the Order Limits boundary for the Grid Connection Route, or within the immediate vicinity.

## 2.7. Climate Change

- 2.7.1. In February 2016, the EA issued updated guidance on the impacts of climate change on flood risk in the UK to support National Planning Policy Framework (NPPF)<sup>4</sup>. This advice, which was most recently updated in May 2022, sets out that peak rainfall intensity, sea level, peak river flow; offshore wind speed and extreme wave heights are all expected to increase in the future as a result of climate change. Consideration of the changes to these parameters should use the allowances outlined below based on the anticipated lifetime of the development.

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4 Environment Agency, Flood Risk Assessments: Climate change allowances. February 2016, Updated May 2022

2.7.2. In relation to surface water management and drainage, only the effects of climate change upon peak rainfall intensities have been considered below.

### Peak Rainfall Intensity

2.7.3. For peak rainfall intensity, the Planning Practice Guidance<sup>5</sup> (PPG) states that, for developments with a lifetime between 2061 and 2100 the Central allowance of the 2070s epoch should be assessed for both the 3.3% and 1% AEP events. However, given the scale of the Scheme, a conservative approach where the Upper End allowance has been adopted. As the Grid Connection Route spans two different management catchments, Table 1-1 below details the allowances for both catchments, though in this instance the allowances are the same in both instances.

Table 2-1: Peak Rainfall Climate Change Allowances

Management Catchment	Allowance Category	AEP (%)	Total Potential Change Anticipated for 2050s	Total Potential Change Anticipated for 2070s
Welland	Upper End	3.3	35%	35%
	Central		20%	20%
	Upper End	1	40%	40%
	Central		20%	25%
Nene	Upper End	3.3	35%	35%
	Central		20%	20%
	Upper End	1	40%	40%
	Central		20%	25%

2.7.4. For drainage components serving the permanent features of the development (i.e. the CSEC compounds permanent access roads), a development lifetime of up to 2100 has been assumed. Therefore, an allowance for climate change has been applied using the 2070s epoch. As such, the Upper End allowance of 40% has been applied to the 1% AEP event for the purpose of drainage design.

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5 NPPF Planning Practice Guidance, Flood Risk and Coastal Change, Ministry of Housing, Communities and Local Government. March 2014, Updated September 2025

## 3. Drainage Principles

### 3.1. Sustainable Drainage Systems (SuDS)

3.1.1. The drainage strategy for the Grid Connection Route would ensure minimal impact on the existing flow regime, water quality, and runoff quantity. The nature of the ground conditions dictates the drainage methodology that can be employed, though infiltration should be promoted where feasible.

3.1.2. Drainage serving the Grid Connection Route would include elements of SuDS design. SuDS are a sustainable method of managing the quantity and quality of runoff into local watercourses, water features and connecting drainage network systems. SuDS aim to replicate natural drainage regimes and have a number of benefits including:

- Attenuation of runoff, reducing peak flow and can alleviate flooding issues that might arise downstream;
- Provision of a level of treatment for runoff that can reduce sediment and pollutants in runoff prior to release to the water environment; and
- Provision of benefits to biodiversity and amenity, even where this is not the primary aim.

## 4. Site Specific Surface Water Drainage

### 4.1. Overview

- 4.1.1. This section details how surface water runoff would be managed from the positively drained features within the Grid Connection Route of the Scheme, to ensure that there is no risk to downstream flood risk and no risk of pollution of watercourses by sediment or other contaminants.
- 4.1.2. Due to the indicated geology at the site location comprising mudstone, siltstone and clay, in line with national and local guidance, and in line with best practice, all features of the development are to drain at restricted rates to the nearest open watercourse following suitable attenuation and treatment for water quality. Limited infiltration may be possible and should be promoted where feasible, though formal infiltration features would not be proposed.
- 4.1.3. Flow control devices, such as HydroBrakes, orifice plates or weirs would be used to restrict rates to greenfield rates where feasible. These flow restriction devices should be inspected at regular intervals throughout the construction phase in order to identify any possible operational issues.

### 4.2. Greenfield Runoff Estimation

- 4.2.1. Greenfield runoff rates for the site have been estimated through application of the Revitalised Flood Hydrograph Model (ReFH2<sup>6</sup>). ReFH2 is recommended by the EA as the methodology for estimating flood peaks and hydrographs for small catchments<sup>7</sup>. The ReFH2 method is applied using “*The Revitalised Flood Hydrograph*” modelling tool.
- 4.2.2. The latest FEH22 rainfall data and hydrological descriptors from the Flood Estimation Handbook (FEH) Web Service<sup>8</sup> were applied to the analysis. The FEH parameters have been reviewed with understanding of the local geological context and are considered to be appropriate.
- 4.2.3. Climate change uplifts have been applied to the estimation of greenfield runoff rates for the 3.3% and 1% AEP events based on EA guidance<sup>9</sup>. The climate change uplifts have been applied to peak rainfall intensities based on the 2070s Upper End allowance for developments with a lifetime between 2061 and 2100 as a

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6 Wallingford Hydro Solutions (2023), ReFH 2, available at: <https://www.hydrosolutions.co.uk/software/refh-2/>, last accessed July 2025

7 Environment Agency, Estimating flood peaks and hydrographs for small catchments: Phase 1, Project: SC090031, May 2012

8 UK Centre for Ecology and Hydrology, Flood Estimation Handbook Web Service, available online at <https://fehweb.ceh.ac.uk/>, last accessed July 2025

9 Environment Agency, Flood Risk Assessments: Climate change allowances. February 2016, Updated July 2021

conservative approach. As such, an uplift of 35% has been applied to the 3.3% AEP event and an uplift of 40% has been applied to the 1% AEP event.

- 4.2.4. Greenfield runoff rates have been calculated in litres per second per hectare. The greenfield runoff results are summarised in Table 4-1, with full results included as Annex A.

**Table 4-1: Greenfield Runoff Rates (1ha)**

Annual Exceedance Probability	Runoff Rate (l/s)
100%	0.79
50%	0.94
3.3%	2.5
3.3% + 35% CC	3.59
1%	3.41
1% + 40% CC	5.24

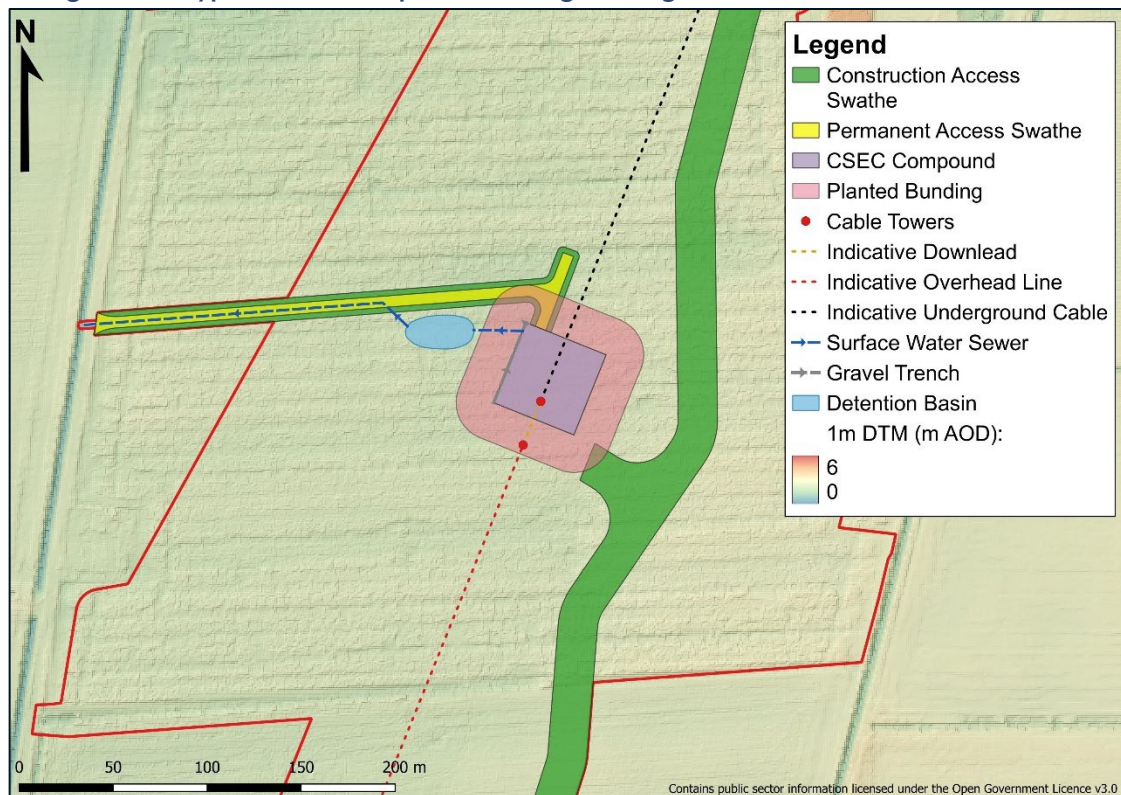
- 4.2.5. In order to determine the flow restriction for individually drained components of the Scheme, the 1 in 2-year (50% AEP) rate (approximately QMED) has been scaled to the total positively drained area of each component.

### 4.3. CSEC Compounds

- 4.3.1. The CSEC compounds both comprise a surface water of 0.21ha which is to be positively drained. Based upon an area of 0.21ha, the calculated flow restricted would be 0.2l/s. Given that this would result in a very small flow restriction orifice that would increase the risk of blockage, a minimum rate of 0.7l/s has been applied. This rate represents the lowest feasible rate for a flow restriction while maintaining a minimum 75mm orifice, ensuring that a self-cleansing velocity can be maintained and the risk of blockage in the system is minimised.
- 4.3.2. Surface water runoff from the CSEC compounds is proposed to drain as overland flow towards a shallow gravel filled trench/swale which will run adjacent to the downgradient compound boundary. Runoff will be intercepted by the gravel trench, filtering down and into a perforated pipe in a French drain arrangement. Runoff would subsequently drain via a pipe to an appropriately sized detention basin with a restricted discharge to Delgate Drain.
- 4.3.3. The detention basins for the CSEC compounds have been sized to accommodate the 1 in 100-year (1% AEP) rainfall event with a 40% allowance for climate change, while maintaining a peak restricted discharge rate of 0.7l/s. In order to maintain this discharge rate for all events up to and including the 1 in 100- year (1% AEP) rainfall event with an allowance for climate change, the basins will need to accommodate 209m<sup>3</sup> surface water storage.

- 4.3.4. In accordance with the relevant guidance and best practice measures, the basins have been designed to comprise 1 in 3 side slopes and a minimum freeboard level of 300mm. Both basins have been designed with an overall depth of 800mm, resulting in a peak water depth of 500mm during the 1 in 100-year (1% AEP) rainfall event with an allowance for climate change.
- 4.3.5. A typical arrangement for the drainage of the CSEC compounds is shown in Figure 4-1 below.

Figure 4-1: Typical CSEC Compound Drainage Arrangement



- 4.3.6. Surface water attenuation calculations for the proposed CSEC compounds are included in Annex B.

#### 4.4. OHL Pylon Footings

- 4.4.1. The OHL pylons will comprise a stone working area around the base during construction, with concrete footings which will result in a comparatively small amount of surface water runoff. The stone working area will be more than sufficient intercepting the minimal surface water runoff generated by the footings. Any surface water runoff from the stone working area would also be expected to be minimal and would be intercepted by the surrounding grass/vegetation. Following construction, the stone working area is to be removed with the existing surface reinstated, with the vegetation acting to intercept low order surface water runoff from the footings for the lifetime of the pylons. As such, no formal outfall to a watercourse will be required.

## 4.5. Permanent Access Roads

4.5.1. The permanent access roads serving the CSEC compounds are to comprise an adjacent swale which will run the length of the road. Surface water runoff from the road surface will drain directly to the swale either by profiling the surface of the road to fall towards the swale or through the use of drains which will intercept surface water runoff and drain it directly to the swale. The swales would be unlined and will comprise planted vegetation in order to facilitate limited percolation to the ground in addition to evapotranspiration. It would be expected that much of the surface water runoff would dissipate naturally. However, a secondary outfall would be provided to Delgate Drain, with a flow restriction comprising a 75mm orifice diameter to ensure the lowest rate feasible, which would ensure the risk of spill is reduced.

## 4.6. Water Quality – Pollution Hazard Potential

4.6.1. The Simple Index Method, as outlined within the SuDS Manual, provides a way of quantifying the benefit to water quality of the SuDS Management Train. The pollution hazard from the land use and the mitigation from the SuDS component are each assigned an index. The total mitigation index must be greater than the pollution hazard index for adequate treatment to be delivered:

$$\text{Total SuDS mitigation index} \geq \text{pollution hazard index}$$

*(for each contaminant type) (for each containment type)*

4.6.2. The total SuDS mitigation is the summation of the first components mitigation index plus half the mitigation index of any subsequent components.

4.6.3. With reference to The SuDS Manual, surface water runoff generated from the Scheme varies depending on the type of component. Each component, together with the pollution index this component is expected to generate, are presented in Table 4-2 below. Table 4-2 also includes the total SuDS mitigation index for all SuDS components within the treatment train for each specific development component, which comprises a gravel trench and subsequent detention basin for the CSEC and construction compounds, a gravel trench/depression for the pylon footings and swales running adjacent to the permanent access roads.

Table 4-2: SuDS Performance: Water Quality Indices

Land Use	Pollution Hazard Level	Pollution Hazard and SuDS Mitigation Indices Comparison					
		Total Suspended Solids (TSS)		Metals		Hydro-Carbons	
		Pollution Index	SuDS Mitigation Index	Pollution Index	SuDS Mitigation Index	Pollution Index	SuDS Mitigation Index
Pylons	Very Low	0.2	0.4	0.2	0.4	0.05	0.4

Land Use	Pollution Hazard Level	Pollution Hazard and SuDS Mitigation Indices Comparison					
		Total Suspended Solids (TSS)		Metals		Hydro-Carbons	
		Pollution Index	SuDS Mitigation Index	Pollution Index	SuDS Mitigation Index	Pollution Index	SuDS Mitigation Index
Cable Sealing End Compounds	Low-Medium	0.6	0.65	0.5	0.65	0.55	0.7
Permanent Access Roads	Low	0.5	0.5	0.4	0.6	0.4	0.6

4.6.4. As the SuDS Mitigation Index provided by the proposed SuDS measures are greater than or equal to the Pollution Hazard Index, the water quality assessment criteria are deemed to be satisfied for the proposed development.

#### 4.7. Inspection and Maintenance

4.7.1. The proposed surface water drainage system will require regular inspection and maintenance throughout the operational phase of the Scheme. It is recommended that inspection and maintenance be carried out in accordance with a maintenance plan, detailing the specific procedures and requirements at set intervals for each component of the system. A maintenance plan should be completed as part of the detailed drainage design for the Scheme in accordance with the relevant guidance and manufacturer specifications of specific components.

4.7.2. The anticipated inspection and maintenance requirements for surface-level SuDS components are outlined in Table 4-3.

**Table 4-3: Surface-Level SuDS Component Inspection and Maintenance Requirements**

Maintenance Schedule	Required Action	Minimum Frequency
Regular Maintenance	Remove litter and debris	Monthly, or as required
	Cut grass - to retain grass height within specified design range	Monthly (during growing season), or as required
	Manage other vegetation and remove nuisance plants	Monthly (at start), then as required
	Inspect inlets, outlets, overflows, banksides, structures, pipework etc. for evidence of damage and/or blockages, and clear if required	Monthly
	Inspect water body for signs of poor water quality (e.g. eutrophication)	Monthly (May – October)
	Inspect structure forebay and main body for silt accumulation and observe accumulation rates; undertake contamination testing once build-up has occurred	Biannual
	Inspect mechanical devices, e.g. flow restrictions, penstocks etc.	Biannual

Maintenance Schedule	Required Action	Minimum Frequency
	Hand cut submerged and emergent aquatic vegetation (at minimum of 0.1m and include a maximum 25% of structure surface)	Annually
	Remove 25% of bank vegetation from edge of water (to a minimum of 1m above water level)	Annually
	Remove all dead vegetation prior to growing season	Annually
	Remove sediment from forebay	Every 1-5 years, or as required
	Remove sediment and vegetation from one quadrant of the main body of the structure without a forebay	Every 5 years, or as required
Occasional Maintenance	Remove silt accumulation from the main body of the structure when volume is reduced by 20%	As required
Remedial Actions	Repair erosion or other damage	As required
	Replant lost vegetation, including reurfing bare soil	As required
	Aerate structure where signs of eutrophication are observed	As required
	Repair structural damage, including realigning rip-rap, rehabilitating inlets, outlets and overflows etc.	As required
	Scarify and spike topsoil layer to improve infiltration performance, break up silt deposits and prevent compaction of the soil surface	As required
	Remove build-up of sediment on upstream gravel trench, flow spreader or at top of filter strip	As required
	Remove and dispose of oils or petrol residues using safe standard practices.	As required

## 5. Conclusions

- 5.1.1. The Applicant is seeking a Development Consent Order (DCO) for the construction, operation and decommissioning of the Meridian Solar Project. The Scheme comprises the construction, operation and decommissioning of a solar PV electricity generating station with associated infrastructure, including a Battery Energy Storage System (BESS), Inter-Array Connections and a Grid Connection Route.
- 5.1.2. This document outlines the principles, requirements and overall strategy for the drainage of surface water runoff from the proposed permanent features within the Grid Connection Route.
- 5.1.3. Surface water runoff from the CSEC compounds is proposed to drain as overland flow towards a shallow gravel filled trench/swale which will run adjacent to the downgradient compound boundary. Runoff will be intercepted by the gravel trench, filtering down and into a perforated pipe in a French drain arrangement. Runoff would subsequently drain via a pipe to an appropriately sized detention basin with a restricted discharge of 0.7l/s to Delgate Drain.
- 5.1.4. The OHL pylons would comprise concrete footings and are proposed to drain to a shallow gravel filled depression or a shallow gravel trench/swale around the perimeter of the whole pylon, encouraging percolation to ground. Despite indicated ground conditions, given the small footprint of the concrete footings and the low order amount of rainfall runoff these would general, this method for drainage is deemed appropriate.
- 5.1.5. The permanent access roads serving the CSEC compounds are to comprise an adjacent swale which will run the length of the road. Surface water runoff from the road surface will drain directly to the swale which would be unlined and will comprise planted vegetation. A secondary outfall would be provided to Delgate Drain, with a flow restriction comprising a 75mm orifice diameter to ensure the lowest rate feasible.
- 5.1.6. An assessment of water quality has been undertaken in order to demonstrate that the proposed drainage features would be sufficient for the treatment of surface water runoff from the CSEC compounds, OHL footings and permanent access roads.
- 5.1.7. The proposed surface water drainage system will require regular inspection and maintenance throughout the operational phase of the Scheme. It is recommended that inspection and maintenance be carried out in accordance with a maintenance plan, detailing the specific procedures and requirements at set intervals for each component of the system.

# ANNEXES

## Annex A – Greenfield Runoff Calculations

# UK Design Flood Estimation

Generated on 27 November 2025 09:36:11 by [REDACTED]  
Printed from the ReFH2 Flood Modelling software package, version 4.1.8879.22466

## Summary of estimate using the Flood Estimation Handbook revitalised flood hydrograph method (ReFH2)

### Site details

Checksum: 95C9-FCE8

Site name: FEH\_Point\_Descriptors\_528180\_325733\_v5\_0\_1

Easting: 528180

Northing: 325733

Country: England, Wales or Northern Ireland

Catchment Area (km<sup>2</sup>): 0.01 [0.5]\*

Using plot scale calculations: Yes

Model: 2.3

Site description: None

## Model run: 1 year

### Summary of results

Rainfall - FEH22 (mm):	20.86	Total runoff (ML):	0.02
Total Rainfall (mm):	13.39	Total flow (ML):	0.05
Peak Rainfall (mm):	3.04	Peak flow (m <sup>3</sup> /s):	0.00

### Parameters

*Where the user has overridden a system-generated value, this original value is shown in square brackets after the value used.*

*\* Indicates that the user locked the duration/timestep*

#### Rainfall parameters (Rainfall - FEH22)

Name	Value	User-defined?
Duration (hh:mm:ss)	05:30:00	No
Timestep (hh:mm:ss)	00:30:00	No
SCF (Seasonal correction factor)	0.64	No
ARF (Areal reduction factor)	1 [1]	Yes
Seasonality	Winter	No

#### Loss model parameters

Name	Value	User-defined?
Cini (mm)	79.07	No
Cmax (mm)	718.34	No
Use alpha correction factor	No	No
Alpha correction factor	n/a	No

#### Routing model parameters

Name	Value	User-defined?
Tp (hr)	3.43 [1.14]	Yes
Up	0.65	No
Uk	0.8	No

#### Baseflow model parameters

Name	Value	User-defined?
BF0 (m <sup>3</sup> /s)	0	No
BL (hr)	57.22 [42.52]	Yes
BR	2.25	No

#### Urbanisation parameters

Name	Value	User-defined?
Sewer capacity (m <sup>3</sup> /s)	0	No
Exporting drained area (km <sup>2</sup> )	0	No
Urban area (km <sup>2</sup> )	0	No
Effective URBEXT2000	0	n/a
Impervious runoff factor	0.7	No
Imperviousness factor	0.4	No
Tp scaling factor	0.75	No
Depression storage depth (mm)	0.5	No

Time series data

Time (hh:mm:ss)	Rain (mm)	Sewer Loss (m <sup>3</sup> /s)	Net Rain (mm)	Runoff (m <sup>3</sup> /s)	Baseflow (m <sup>3</sup> /s)	Total Flow (m <sup>3</sup> /s)
00:00:00	0.2941	0.0000	0.0324	0.0000	4.63E-05	4.63E-05
00:30:00	0.4926	0.0000	0.0546	0.0000	4.59E-05	4.72E-05
01:00:00	0.8211	0.0000	0.0917	0.0000	4.56E-05	5.14E-05
01:30:00	1.3576	0.0000	0.1538	0.0000	4.54E-05	6.14E-05
02:00:00	2.2094	0.0000	0.2557	0.0000	4.55E-05	8.12E-05
02:30:00	3.0435	0.0000	0.3634	0.0001	4.62E-05	0.000117
03:00:00	2.2094	0.0000	0.2719	0.0001	4.77E-05	0.000178
03:30:00	1.3576	0.0000	0.1704	0.0002	5.07E-05	0.000264
04:00:00	0.8211	0.0000	0.1043	0.0003	5.54E-05	0.000367
04:30:00	0.4926	0.0000	0.0630	0.0004	6.2E-05	0.000476
05:00:00	0.2941	0.0000	0.0378	0.0005	7.05E-05	0.000584
05:30:00	0.0000	0.0000	0.0000	0.0006	8.08E-05	0.000682
06:00:00	0.0000	0.0000	0.0000	0.0007	9.25E-05	0.000756
06:30:00	0.0000	0.0000	0.0000	0.0007	0.000105	0.000791
07:00:00	0.0000	0.0000	0.0000	0.0007	0.000117	0.000789
07:30:00	0.0000	0.0000	0.0000	0.0006	0.000129	0.000763
08:00:00	0.0000	0.0000	0.0000	0.0006	0.00014	0.00072
08:30:00	0.0000	0.0000	0.0000	0.0005	0.000149	0.000669
09:00:00	0.0000	0.0000	0.0000	0.0005	0.000158	0.000615
09:30:00	0.0000	0.0000	0.0000	0.0004	0.000165	0.000564
10:00:00	0.0000	0.0000	0.0000	0.0003	0.00017	0.000519
10:30:00	0.0000	0.0000	0.0000	0.0003	0.000175	0.000482
11:00:00	0.0000	0.0000	0.0000	0.0003	0.000179	0.000448
11:30:00	0.0000	0.0000	0.0000	0.0002	0.000183	0.000416
12:00:00	0.0000	0.0000	0.0000	0.0002	0.000185	0.000385
12:30:00	0.0000	0.0000	0.0000	0.0002	0.000187	0.000355
13:00:00	0.0000	0.0000	0.0000	0.0001	0.000189	0.000325
13:30:00	0.0000	0.0000	0.0000	0.0001	0.00019	0.000296
14:00:00	0.0000	0.0000	0.0000	0.0001	0.00019	0.000267
14:30:00	0.0000	0.0000	0.0000	0.0001	0.000189	0.000241
15:00:00	0.0000	0.0000	0.0000	0.0000	0.000188	0.00022
15:30:00	0.0000	0.0000	0.0000	0.0000	0.000187	0.000204
16:00:00	0.0000	0.0000	0.0000	0.0000	0.000186	0.000194
16:30:00	0.0000	0.0000	0.0000	0.0000	0.000184	0.000188

Time (hh:mm:ss)	Rain (mm)	Sewer Loss (m <sup>3</sup> /s)	Net Rain (mm)	Runoff (m <sup>3</sup> /s)	Baseflow (m <sup>3</sup> /s)	Total Flow (m <sup>3</sup> /s)
17:00:00	0.0000	0.0000	0.0000	0.0000	0.000183	0.000184
17:30:00	0.0000	0.0000	0.0000	0.0000	0.000181	0.000181
18:00:00	0.0000	0.0000	0.0000	0.0000	0.00018	0.00018
18:30:00	0.0000	0.0000	0.0000	0.0000	0.000178	0.000178
19:00:00	0.0000	0.0000	0.0000	0.0000	0.000177	0.000177
19:30:00	0.0000	0.0000	0.0000	0.0000	0.000175	0.000175
20:00:00	0.0000	0.0000	0.0000	0.0000	0.000174	0.000174
20:30:00	0.0000	0.0000	0.0000	0.0000	0.000172	0.000172
21:00:00	0.0000	0.0000	0.0000	0.0000	0.000171	0.000171
21:30:00	0.0000	0.0000	0.0000	0.0000	0.000169	0.000169
22:00:00	0.0000	0.0000	0.0000	0.0000	0.000168	0.000168
22:30:00	0.0000	0.0000	0.0000	0.0000	0.000166	0.000166
23:00:00	0.0000	0.0000	0.0000	0.0000	0.000165	0.000165
23:30:00	0.0000	0.0000	0.0000	0.0000	0.000163	0.000163
24:00:00	0.0000	0.0000	0.0000	0.0000	0.000162	0.000162
24:30:00	0.0000	0.0000	0.0000	0.0000	0.00016	0.00016
25:00:00	0.0000	0.0000	0.0000	0.0000	0.000159	0.000159
25:30:00	0.0000	0.0000	0.0000	0.0000	0.000158	0.000158
26:00:00	0.0000	0.0000	0.0000	0.0000	0.000156	0.000156
26:30:00	0.0000	0.0000	0.0000	0.0000	0.000155	0.000155
27:00:00	0.0000	0.0000	0.0000	0.0000	0.000154	0.000154
27:30:00	0.0000	0.0000	0.0000	0.0000	0.000152	0.000152
28:00:00	0.0000	0.0000	0.0000	0.0000	0.000151	0.000151
28:30:00	0.0000	0.0000	0.0000	0.0000	0.00015	0.00015
29:00:00	0.0000	0.0000	0.0000	0.0000	0.000148	0.000148
29:30:00	0.0000	0.0000	0.0000	0.0000	0.000147	0.000147
30:00:00	0.0000	0.0000	0.0000	0.0000	0.000146	0.000146
30:30:00	0.0000	0.0000	0.0000	0.0000	0.000144	0.000144
31:00:00	0.0000	0.0000	0.0000	0.0000	0.000143	0.000143
31:30:00	0.0000	0.0000	0.0000	0.0000	0.000142	0.000142
32:00:00	0.0000	0.0000	0.0000	0.0000	0.000141	0.000141
32:30:00	0.0000	0.0000	0.0000	0.0000	0.000139	0.000139
33:00:00	0.0000	0.0000	0.0000	0.0000	0.000138	0.000138
33:30:00	0.0000	0.0000	0.0000	0.0000	0.000137	0.000137
34:00:00	0.0000	0.0000	0.0000	0.0000	0.000136	0.000136

Time (hh:mm:ss)	Rain (mm)	Sewer Loss (m <sup>3</sup> /s)	Net Rain (mm)	Runoff (m <sup>3</sup> /s)	Baseflow (m <sup>3</sup> /s)	Total Flow (m <sup>3</sup> /s)
34:30:00	0.0000	0.0000	0.0000	0.0000	0.000135	0.000135
35:00:00	0.0000	0.0000	0.0000	0.0000	0.000134	0.000134
35:30:00	0.0000	0.0000	0.0000	0.0000	0.000132	0.000132
36:00:00	0.0000	0.0000	0.0000	0.0000	0.000131	0.000131
36:30:00	0.0000	0.0000	0.0000	0.0000	0.00013	0.00013
37:00:00	0.0000	0.0000	0.0000	0.0000	0.000129	0.000129
37:30:00	0.0000	0.0000	0.0000	0.0000	0.000128	0.000128
38:00:00	0.0000	0.0000	0.0000	0.0000	0.000127	0.000127
38:30:00	0.0000	0.0000	0.0000	0.0000	0.000126	0.000126
39:00:00	0.0000	0.0000	0.0000	0.0000	0.000124	0.000124
39:30:00	0.0000	0.0000	0.0000	0.0000	0.000123	0.000123
40:00:00	0.0000	0.0000	0.0000	0.0000	0.000122	0.000122
40:30:00	0.0000	0.0000	0.0000	0.0000	0.000121	0.000121
41:00:00	0.0000	0.0000	0.0000	0.0000	0.00012	0.00012
41:30:00	0.0000	0.0000	0.0000	0.0000	0.000119	0.000119
42:00:00	0.0000	0.0000	0.0000	0.0000	0.000118	0.000118
42:30:00	0.0000	0.0000	0.0000	0.0000	0.000117	0.000117
43:00:00	0.0000	0.0000	0.0000	0.0000	0.000116	0.000116
43:30:00	0.0000	0.0000	0.0000	0.0000	0.000115	0.000115
44:00:00	0.0000	0.0000	0.0000	0.0000	0.000114	0.000114
44:30:00	0.0000	0.0000	0.0000	0.0000	0.000113	0.000113
45:00:00	0.0000	0.0000	0.0000	0.0000	0.000112	0.000112
45:30:00	0.0000	0.0000	0.0000	0.0000	0.000111	0.000111
46:00:00	0.0000	0.0000	0.0000	0.0000	0.00011	0.00011
46:30:00	0.0000	0.0000	0.0000	0.0000	0.000109	0.000109
47:00:00	0.0000	0.0000	0.0000	0.0000	0.000108	0.000108
47:30:00	0.0000	0.0000	0.0000	0.0000	0.000107	0.000107
48:00:00	0.0000	0.0000	0.0000	0.0000	0.000106	0.000106
48:30:00	0.0000	0.0000	0.0000	0.0000	0.000105	0.000105
49:00:00	0.0000	0.0000	0.0000	0.0000	0.000105	0.000105
49:30:00	0.0000	0.0000	0.0000	0.0000	0.000104	0.000104
50:00:00	0.0000	0.0000	0.0000	0.0000	0.000103	0.000103
50:30:00	0.0000	0.0000	0.0000	0.0000	0.000102	0.000102
51:00:00	0.0000	0.0000	0.0000	0.0000	0.000101	0.000101
51:30:00	0.0000	0.0000	0.0000	0.0000	0.0001	0.0001

Time (hh:mm:ss)	Rain (mm)	Sewer Loss (m <sup>3</sup> /s)	Net Rain (mm)	Runoff (m <sup>3</sup> /s)	Baseflow (m <sup>3</sup> /s)	Total Flow (m <sup>3</sup> /s)
52:00:00	0.0000	0.0000	0.0000	0.0000	9.92E-05	9.92E-05
52:30:00	0.0000	0.0000	0.0000	0.0000	9.83E-05	9.83E-05
53:00:00	0.0000	0.0000	0.0000	0.0000	9.75E-05	9.75E-05
53:30:00	0.0000	0.0000	0.0000	0.0000	9.66E-05	9.66E-05
54:00:00	0.0000	0.0000	0.0000	0.0000	9.58E-05	9.58E-05
54:30:00	0.0000	0.0000	0.0000	0.0000	9.5E-05	9.5E-05
55:00:00	0.0000	0.0000	0.0000	0.0000	9.41E-05	9.41E-05
55:30:00	0.0000	0.0000	0.0000	0.0000	9.33E-05	9.33E-05
56:00:00	0.0000	0.0000	0.0000	0.0000	9.25E-05	9.25E-05
56:30:00	0.0000	0.0000	0.0000	0.0000	9.17E-05	9.17E-05
57:00:00	0.0000	0.0000	0.0000	0.0000	9.09E-05	9.09E-05
57:30:00	0.0000	0.0000	0.0000	0.0000	9.01E-05	9.01E-05
58:00:00	0.0000	0.0000	0.0000	0.0000	8.93E-05	8.93E-05
58:30:00	0.0000	0.0000	0.0000	0.0000	8.85E-05	8.85E-05
59:00:00	0.0000	0.0000	0.0000	0.0000	8.78E-05	8.78E-05
59:30:00	0.0000	0.0000	0.0000	0.0000	8.7E-05	8.7E-05
60:00:00	0.0000	0.0000	0.0000	0.0000	8.62E-05	8.62E-05
60:30:00	0.0000	0.0000	0.0000	0.0000	8.55E-05	8.55E-05
61:00:00	0.0000	0.0000	0.0000	0.0000	8.48E-05	8.48E-05
61:30:00	0.0000	0.0000	0.0000	0.0000	8.4E-05	8.4E-05
62:00:00	0.0000	0.0000	0.0000	0.0000	8.33E-05	8.33E-05
62:30:00	0.0000	0.0000	0.0000	0.0000	8.26E-05	8.26E-05
63:00:00	0.0000	0.0000	0.0000	0.0000	8.18E-05	8.18E-05
63:30:00	0.0000	0.0000	0.0000	0.0000	8.11E-05	8.11E-05
64:00:00	0.0000	0.0000	0.0000	0.0000	8.04E-05	8.04E-05
64:30:00	0.0000	0.0000	0.0000	0.0000	7.97E-05	7.97E-05
65:00:00	0.0000	0.0000	0.0000	0.0000	7.9E-05	7.9E-05
65:30:00	0.0000	0.0000	0.0000	0.0000	7.83E-05	7.83E-05
66:00:00	0.0000	0.0000	0.0000	0.0000	7.77E-05	7.77E-05
66:30:00	0.0000	0.0000	0.0000	0.0000	7.7E-05	7.7E-05
67:00:00	0.0000	0.0000	0.0000	0.0000	7.63E-05	7.63E-05
67:30:00	0.0000	0.0000	0.0000	0.0000	7.57E-05	7.57E-05
68:00:00	0.0000	0.0000	0.0000	0.0000	7.5E-05	7.5E-05
68:30:00	0.0000	0.0000	0.0000	0.0000	7.43E-05	7.43E-05
69:00:00	0.0000	0.0000	0.0000	0.0000	7.37E-05	7.37E-05

Time (hh:mm:ss)	Rain (mm)	Sewer Loss (m <sup>3</sup> /s)	Net Rain (mm)	Runoff (m <sup>3</sup> /s)	Baseflow (m <sup>3</sup> /s)	Total Flow (m <sup>3</sup> /s)
69:30:00	0.0000	0.0000	0.0000	0.0000	7.31E-05	7.31E-05
70:00:00	0.0000	0.0000	0.0000	0.0000	7.24E-05	7.24E-05
70:30:00	0.0000	0.0000	0.0000	0.0000	7.18E-05	7.18E-05
71:00:00	0.0000	0.0000	0.0000	0.0000	7.12E-05	7.12E-05
71:30:00	0.0000	0.0000	0.0000	0.0000	7.05E-05	7.05E-05
72:00:00	0.0000	0.0000	0.0000	0.0000	6.99E-05	6.99E-05
72:30:00	0.0000	0.0000	0.0000	0.0000	6.93E-05	6.93E-05
73:00:00	0.0000	0.0000	0.0000	0.0000	6.87E-05	6.87E-05
73:30:00	0.0000	0.0000	0.0000	0.0000	6.81E-05	6.81E-05
74:00:00	0.0000	0.0000	0.0000	0.0000	6.75E-05	6.75E-05
74:30:00	0.0000	0.0000	0.0000	0.0000	6.69E-05	6.69E-05
75:00:00	0.0000	0.0000	0.0000	0.0000	6.64E-05	6.64E-05
75:30:00	0.0000	0.0000	0.0000	0.0000	6.58E-05	6.58E-05
76:00:00	0.0000	0.0000	0.0000	0.0000	6.52E-05	6.52E-05
76:30:00	0.0000	0.0000	0.0000	0.0000	6.46E-05	6.46E-05
77:00:00	0.0000	0.0000	0.0000	0.0000	6.41E-05	6.41E-05
77:30:00	0.0000	0.0000	0.0000	0.0000	6.35E-05	6.35E-05
78:00:00	0.0000	0.0000	0.0000	0.0000	6.3E-05	6.3E-05
78:30:00	0.0000	0.0000	0.0000	0.0000	6.24E-05	6.24E-05
79:00:00	0.0000	0.0000	0.0000	0.0000	6.19E-05	6.19E-05
79:30:00	0.0000	0.0000	0.0000	0.0000	6.13E-05	6.13E-05
80:00:00	0.0000	0.0000	0.0000	0.0000	6.08E-05	6.08E-05
80:30:00	0.0000	0.0000	0.0000	0.0000	6.03E-05	6.03E-05
81:00:00	0.0000	0.0000	0.0000	0.0000	5.98E-05	5.98E-05
81:30:00	0.0000	0.0000	0.0000	0.0000	5.92E-05	5.92E-05
82:00:00	0.0000	0.0000	0.0000	0.0000	5.87E-05	5.87E-05
82:30:00	0.0000	0.0000	0.0000	0.0000	5.82E-05	5.82E-05
83:00:00	0.0000	0.0000	0.0000	0.0000	5.77E-05	5.77E-05
83:30:00	0.0000	0.0000	0.0000	0.0000	5.72E-05	5.72E-05
84:00:00	0.0000	0.0000	0.0000	0.0000	5.67E-05	5.67E-05
84:30:00	0.0000	0.0000	0.0000	0.0000	5.62E-05	5.62E-05
85:00:00	0.0000	0.0000	0.0000	0.0000	5.57E-05	5.57E-05
85:30:00	0.0000	0.0000	0.0000	0.0000	5.52E-05	5.52E-05
86:00:00	0.0000	0.0000	0.0000	0.0000	5.48E-05	5.48E-05
86:30:00	0.0000	0.0000	0.0000	0.0000	5.43E-05	5.43E-05

Time (hh:mm:ss)	Rain (mm)	Sewer Loss (m <sup>3</sup> /s)	Net Rain (mm)	Runoff (m <sup>3</sup> /s)	Baseflow (m <sup>3</sup> /s)	Total Flow (m <sup>3</sup> /s)
87:00:00	0.0000	0.0000	0.0000	0.0000	5.38E-05	5.38E-05
87:30:00	0.0000	0.0000	0.0000	0.0000	5.33E-05	5.33E-05
88:00:00	0.0000	0.0000	0.0000	0.0000	5.29E-05	5.29E-05
88:30:00	0.0000	0.0000	0.0000	0.0000	5.24E-05	5.24E-05
89:00:00	0.0000	0.0000	0.0000	0.0000	5.2E-05	5.2E-05
89:30:00	0.0000	0.0000	0.0000	0.0000	5.15E-05	5.15E-05
90:00:00	0.0000	0.0000	0.0000	0.0000	5.11E-05	5.11E-05
90:30:00	0.0000	0.0000	0.0000	0.0000	5.06E-05	5.06E-05
91:00:00	0.0000	0.0000	0.0000	0.0000	5.02E-05	5.02E-05
91:30:00	0.0000	0.0000	0.0000	0.0000	4.97E-05	4.97E-05
92:00:00	0.0000	0.0000	0.0000	0.0000	4.93E-05	4.93E-05
92:30:00	0.0000	0.0000	0.0000	0.0000	4.89E-05	4.89E-05
93:00:00	0.0000	0.0000	0.0000	0.0000	4.85E-05	4.85E-05
93:30:00	0.0000	0.0000	0.0000	0.0000	4.8E-05	4.8E-05
94:00:00	0.0000	0.0000	0.0000	0.0000	4.76E-05	4.76E-05
94:30:00	0.0000	0.0000	0.0000	0.0000	4.72E-05	4.72E-05
95:00:00	0.0000	0.0000	0.0000	0.0000	4.68E-05	4.68E-05

## Appendix

### Catchment descriptors \*

Name	Value	User-defined value used?
BFIHOST	0.71	No
BFIHOST19	0.68	No
PROPWET	0.22	No
SAAR (mm)	564	No

*Values in square brackets are the original values loaded from the FEH Web Service or FEH CD-ROM*

# UK Design Flood Estimation

Generated on 27 November 2025 09:37:25 by [REDACTED]  
Printed from the ReFH2 Flood Modelling software package, version 4.1.8879.22466

## Summary of estimate using the Flood Estimation Handbook revitalised flood hydrograph method (ReFH2)

### Site details

Checksum: 95C9-FCE8

Site name: FEH\_Point\_Descriptors\_528180\_325733\_v5\_0\_1

Easting: 528180

Northing: 325733

Country: England, Wales or Northern Ireland

Catchment Area (km<sup>2</sup>): 0.01 [0.5]\*

Using plot scale calculations: Yes

Model: 2.3

Site description: None

## Model run: 2 year

### Summary of results

Rainfall - FEH22 (mm):	24.58	Total runoff (ML):	0.02
Total Rainfall (mm):	15.78	Total flow (ML):	0.06
Peak Rainfall (mm):	3.59	Peak flow (m <sup>3</sup> /s):	0.00

### Parameters

*Where the user has overridden a system-generated value, this original value is shown in square brackets after the value used.*

*\* Indicates that the user locked the duration/timestep*

#### Rainfall parameters (Rainfall - FEH22)

Name	Value	User-defined?
Duration (hh:mm:ss)	05:30:00	No
Timestep (hh:mm:ss)	00:30:00	No
SCF (Seasonal correction factor)	0.64	No
ARF (Areal reduction factor)	1 [1]	Yes
Seasonality	Winter	No

#### Loss model parameters

Name	Value	User-defined?
Cini (mm)	79.07	No
Cmax (mm)	718.34	No
Use alpha correction factor	No	No
Alpha correction factor	n/a	No

#### Routing model parameters

Name	Value	User-defined?
Tp (hr)	3.43 [1.14]	Yes
Up	0.65	No
Uk	0.8	No

#### Baseflow model parameters

Name	Value	User-defined?
BF0 (m <sup>3</sup> /s)	0	No
BL (hr)	57.22 [42.52]	Yes
BR	2.25	No

#### Urbanisation parameters

Name	Value	User-defined?
Sewer capacity (m <sup>3</sup> /s)	0	No
Exporting drained area (km <sup>2</sup> )	0	No
Urban area (km <sup>2</sup> )	0	No
Effective URBEXT2000	0	n/a
Impervious runoff factor	0.7	No
Imperviousness factor	0.4	No
Tp scaling factor	0.75	No
Depression storage depth (mm)	0.5	No

Time series data

Time (hh:mm:ss)	Rain (mm)	Sewer Loss (m <sup>3</sup> /s)	Net Rain (mm)	Runoff (m <sup>3</sup> /s)	Baseflow (m <sup>3</sup> /s)	Total Flow (m <sup>3</sup> /s)
00:00:00	0.3465	0.0000	0.0382	0.0000	4.63E-05	4.63E-05
00:30:00	0.5805	0.0000	0.0644	0.0000	4.59E-05	4.74E-05
01:00:00	0.9676	0.0000	0.1084	0.0000	4.56E-05	5.25E-05
01:30:00	1.5999	0.0000	0.1821	0.0000	4.55E-05	6.44E-05
02:00:00	2.6036	0.0000	0.3040	0.0000	4.57E-05	8.77E-05
02:30:00	3.5866	0.0000	0.4342	0.0001	4.65E-05	0.00013
03:00:00	2.6036	0.0000	0.3264	0.0002	4.84E-05	0.000202
03:30:00	1.5999	0.0000	0.2052	0.0003	5.2E-05	0.000305
04:00:00	0.9676	0.0000	0.1259	0.0004	5.76E-05	0.000428
04:30:00	0.5805	0.0000	0.0761	0.0005	6.56E-05	0.000558
05:00:00	0.3465	0.0000	0.0457	0.0006	7.58E-05	0.000688
05:30:00	0.0000	0.0000	0.0000	0.0007	8.81E-05	0.000805
06:00:00	0.0000	0.0000	0.0000	0.0008	0.000102	0.000894
06:30:00	0.0000	0.0000	0.0000	0.0008	0.000117	0.000937
07:00:00	0.0000	0.0000	0.0000	0.0008	0.000132	0.000936
07:30:00	0.0000	0.0000	0.0000	0.0008	0.000146	0.000904
08:00:00	0.0000	0.0000	0.0000	0.0007	0.000159	0.000854
08:30:00	0.0000	0.0000	0.0000	0.0006	0.00017	0.000793
09:00:00	0.0000	0.0000	0.0000	0.0005	0.00018	0.000728
09:30:00	0.0000	0.0000	0.0000	0.0005	0.000189	0.000667
10:00:00	0.0000	0.0000	0.0000	0.0004	0.000196	0.000614
10:30:00	0.0000	0.0000	0.0000	0.0004	0.000202	0.000568
11:00:00	0.0000	0.0000	0.0000	0.0003	0.000207	0.000528
11:30:00	0.0000	0.0000	0.0000	0.0003	0.000211	0.00049
12:00:00	0.0000	0.0000	0.0000	0.0002	0.000214	0.000454
12:30:00	0.0000	0.0000	0.0000	0.0002	0.000217	0.000418
13:00:00	0.0000	0.0000	0.0000	0.0002	0.000218	0.000382
13:30:00	0.0000	0.0000	0.0000	0.0001	0.000219	0.000347
14:00:00	0.0000	0.0000	0.0000	0.0001	0.00022	0.000313
14:30:00	0.0000	0.0000	0.0000	0.0001	0.000219	0.000282
15:00:00	0.0000	0.0000	0.0000	0.0000	0.000218	0.000256
15:30:00	0.0000	0.0000	0.0000	0.0000	0.000217	0.000237
16:00:00	0.0000	0.0000	0.0000	0.0000	0.000215	0.000225
16:30:00	0.0000	0.0000	0.0000	0.0000	0.000214	0.000218

Time (hh:mm:ss)	Rain (mm)	Sewer Loss (m <sup>3</sup> /s)	Net Rain (mm)	Runoff (m <sup>3</sup> /s)	Baseflow (m <sup>3</sup> /s)	Total Flow (m <sup>3</sup> /s)
17:00:00	0.0000	0.0000	0.0000	0.0000	0.000212	0.000213
17:30:00	0.0000	0.0000	0.0000	0.0000	0.00021	0.00021
18:00:00	0.0000	0.0000	0.0000	0.0000	0.000208	0.000208
18:30:00	0.0000	0.0000	0.0000	0.0000	0.000206	0.000206
19:00:00	0.0000	0.0000	0.0000	0.0000	0.000205	0.000205
19:30:00	0.0000	0.0000	0.0000	0.0000	0.000203	0.000203
20:00:00	0.0000	0.0000	0.0000	0.0000	0.000201	0.000201
20:30:00	0.0000	0.0000	0.0000	0.0000	0.000199	0.000199
21:00:00	0.0000	0.0000	0.0000	0.0000	0.000198	0.000198
21:30:00	0.0000	0.0000	0.0000	0.0000	0.000196	0.000196
22:00:00	0.0000	0.0000	0.0000	0.0000	0.000194	0.000194
22:30:00	0.0000	0.0000	0.0000	0.0000	0.000192	0.000192
23:00:00	0.0000	0.0000	0.0000	0.0000	0.000191	0.000191
23:30:00	0.0000	0.0000	0.0000	0.0000	0.000189	0.000189
24:00:00	0.0000	0.0000	0.0000	0.0000	0.000187	0.000187
24:30:00	0.0000	0.0000	0.0000	0.0000	0.000186	0.000186
25:00:00	0.0000	0.0000	0.0000	0.0000	0.000184	0.000184
25:30:00	0.0000	0.0000	0.0000	0.0000	0.000183	0.000183
26:00:00	0.0000	0.0000	0.0000	0.0000	0.000181	0.000181
26:30:00	0.0000	0.0000	0.0000	0.0000	0.000179	0.000179
27:00:00	0.0000	0.0000	0.0000	0.0000	0.000178	0.000178
27:30:00	0.0000	0.0000	0.0000	0.0000	0.000176	0.000176
28:00:00	0.0000	0.0000	0.0000	0.0000	0.000175	0.000175
28:30:00	0.0000	0.0000	0.0000	0.0000	0.000173	0.000173
29:00:00	0.0000	0.0000	0.0000	0.0000	0.000172	0.000172
29:30:00	0.0000	0.0000	0.0000	0.0000	0.00017	0.00017
30:00:00	0.0000	0.0000	0.0000	0.0000	0.000169	0.000169
30:30:00	0.0000	0.0000	0.0000	0.0000	0.000167	0.000167
31:00:00	0.0000	0.0000	0.0000	0.0000	0.000166	0.000166
31:30:00	0.0000	0.0000	0.0000	0.0000	0.000164	0.000164
32:00:00	0.0000	0.0000	0.0000	0.0000	0.000163	0.000163
32:30:00	0.0000	0.0000	0.0000	0.0000	0.000162	0.000162
33:00:00	0.0000	0.0000	0.0000	0.0000	0.00016	0.00016
33:30:00	0.0000	0.0000	0.0000	0.0000	0.000159	0.000159
34:00:00	0.0000	0.0000	0.0000	0.0000	0.000157	0.000157

Time (hh:mm:ss)	Rain (mm)	Sewer Loss (m <sup>3</sup> /s)	Net Rain (mm)	Runoff (m <sup>3</sup> /s)	Baseflow (m <sup>3</sup> /s)	Total Flow (m <sup>3</sup> /s)
34:30:00	0.0000	0.0000	0.0000	0.0000	0.000156	0.000156
35:00:00	0.0000	0.0000	0.0000	0.0000	0.000155	0.000155
35:30:00	0.0000	0.0000	0.0000	0.0000	0.000153	0.000153
36:00:00	0.0000	0.0000	0.0000	0.0000	0.000152	0.000152
36:30:00	0.0000	0.0000	0.0000	0.0000	0.000151	0.000151
37:00:00	0.0000	0.0000	0.0000	0.0000	0.000149	0.000149
37:30:00	0.0000	0.0000	0.0000	0.0000	0.000148	0.000148
38:00:00	0.0000	0.0000	0.0000	0.0000	0.000147	0.000147
38:30:00	0.0000	0.0000	0.0000	0.0000	0.000145	0.000145
39:00:00	0.0000	0.0000	0.0000	0.0000	0.000144	0.000144
39:30:00	0.0000	0.0000	0.0000	0.0000	0.000143	0.000143
40:00:00	0.0000	0.0000	0.0000	0.0000	0.000142	0.000142
40:30:00	0.0000	0.0000	0.0000	0.0000	0.00014	0.00014
41:00:00	0.0000	0.0000	0.0000	0.0000	0.000139	0.000139
41:30:00	0.0000	0.0000	0.0000	0.0000	0.000138	0.000138
42:00:00	0.0000	0.0000	0.0000	0.0000	0.000137	0.000137
42:30:00	0.0000	0.0000	0.0000	0.0000	0.000136	0.000136
43:00:00	0.0000	0.0000	0.0000	0.0000	0.000134	0.000134
43:30:00	0.0000	0.0000	0.0000	0.0000	0.000133	0.000133
44:00:00	0.0000	0.0000	0.0000	0.0000	0.000132	0.000132
44:30:00	0.0000	0.0000	0.0000	0.0000	0.000131	0.000131
45:00:00	0.0000	0.0000	0.0000	0.0000	0.00013	0.00013
45:30:00	0.0000	0.0000	0.0000	0.0000	0.000129	0.000129
46:00:00	0.0000	0.0000	0.0000	0.0000	0.000128	0.000128
46:30:00	0.0000	0.0000	0.0000	0.0000	0.000126	0.000126
47:00:00	0.0000	0.0000	0.0000	0.0000	0.000125	0.000125
47:30:00	0.0000	0.0000	0.0000	0.0000	0.000124	0.000124
48:00:00	0.0000	0.0000	0.0000	0.0000	0.000123	0.000123
48:30:00	0.0000	0.0000	0.0000	0.0000	0.000122	0.000122
49:00:00	0.0000	0.0000	0.0000	0.0000	0.000121	0.000121
49:30:00	0.0000	0.0000	0.0000	0.0000	0.00012	0.00012
50:00:00	0.0000	0.0000	0.0000	0.0000	0.000119	0.000119
50:30:00	0.0000	0.0000	0.0000	0.0000	0.000118	0.000118
51:00:00	0.0000	0.0000	0.0000	0.0000	0.000117	0.000117
51:30:00	0.0000	0.0000	0.0000	0.0000	0.000116	0.000116

Time (hh:mm:ss)	Rain (mm)	Sewer Loss (m <sup>3</sup> /s)	Net Rain (mm)	Runoff (m <sup>3</sup> /s)	Baseflow (m <sup>3</sup> /s)	Total Flow (m <sup>3</sup> /s)
52:00:00	0.0000	0.0000	0.0000	0.0000	0.000115	0.000115
52:30:00	0.0000	0.0000	0.0000	0.0000	0.000114	0.000114
53:00:00	0.0000	0.0000	0.0000	0.0000	0.000113	0.000113
53:30:00	0.0000	0.0000	0.0000	0.0000	0.000112	0.000112
54:00:00	0.0000	0.0000	0.0000	0.0000	0.000111	0.000111
54:30:00	0.0000	0.0000	0.0000	0.0000	0.00011	0.00011
55:00:00	0.0000	0.0000	0.0000	0.0000	0.000109	0.000109
55:30:00	0.0000	0.0000	0.0000	0.0000	0.000108	0.000108
56:00:00	0.0000	0.0000	0.0000	0.0000	0.000107	0.000107
56:30:00	0.0000	0.0000	0.0000	0.0000	0.000106	0.000106
57:00:00	0.0000	0.0000	0.0000	0.0000	0.000105	0.000105
57:30:00	0.0000	0.0000	0.0000	0.0000	0.000104	0.000104
58:00:00	0.0000	0.0000	0.0000	0.0000	0.000103	0.000103
58:30:00	0.0000	0.0000	0.0000	0.0000	0.000103	0.000103
59:00:00	0.0000	0.0000	0.0000	0.0000	0.000102	0.000102
59:30:00	0.0000	0.0000	0.0000	0.0000	0.000101	0.000101
60:00:00	0.0000	0.0000	0.0000	0.0000	9.99E-05	9.99E-05
60:30:00	0.0000	0.0000	0.0000	0.0000	9.9E-05	9.9E-05
61:00:00	0.0000	0.0000	0.0000	0.0000	9.82E-05	9.82E-05
61:30:00	0.0000	0.0000	0.0000	0.0000	9.73E-05	9.73E-05
62:00:00	0.0000	0.0000	0.0000	0.0000	9.65E-05	9.65E-05
62:30:00	0.0000	0.0000	0.0000	0.0000	9.56E-05	9.56E-05
63:00:00	0.0000	0.0000	0.0000	0.0000	9.48E-05	9.48E-05
63:30:00	0.0000	0.0000	0.0000	0.0000	9.4E-05	9.4E-05
64:00:00	0.0000	0.0000	0.0000	0.0000	9.32E-05	9.32E-05
64:30:00	0.0000	0.0000	0.0000	0.0000	9.23E-05	9.23E-05
65:00:00	0.0000	0.0000	0.0000	0.0000	9.15E-05	9.15E-05
65:30:00	0.0000	0.0000	0.0000	0.0000	9.07E-05	9.07E-05
66:00:00	0.0000	0.0000	0.0000	0.0000	9E-05	9E-05
66:30:00	0.0000	0.0000	0.0000	0.0000	8.92E-05	8.92E-05
67:00:00	0.0000	0.0000	0.0000	0.0000	8.84E-05	8.84E-05
67:30:00	0.0000	0.0000	0.0000	0.0000	8.76E-05	8.76E-05
68:00:00	0.0000	0.0000	0.0000	0.0000	8.69E-05	8.69E-05
68:30:00	0.0000	0.0000	0.0000	0.0000	8.61E-05	8.61E-05
69:00:00	0.0000	0.0000	0.0000	0.0000	8.54E-05	8.54E-05

Time (hh:mm:ss)	Rain (mm)	Sewer Loss (m <sup>3</sup> /s)	Net Rain (mm)	Runoff (m <sup>3</sup> /s)	Baseflow (m <sup>3</sup> /s)	Total Flow (m <sup>3</sup> /s)
69:30:00	0.0000	0.0000	0.0000	0.0000	8.46E-05	8.46E-05
70:00:00	0.0000	0.0000	0.0000	0.0000	8.39E-05	8.39E-05
70:30:00	0.0000	0.0000	0.0000	0.0000	8.32E-05	8.32E-05
71:00:00	0.0000	0.0000	0.0000	0.0000	8.24E-05	8.24E-05
71:30:00	0.0000	0.0000	0.0000	0.0000	8.17E-05	8.17E-05
72:00:00	0.0000	0.0000	0.0000	0.0000	8.1E-05	8.1E-05
72:30:00	0.0000	0.0000	0.0000	0.0000	8.03E-05	8.03E-05
73:00:00	0.0000	0.0000	0.0000	0.0000	7.96E-05	7.96E-05
73:30:00	0.0000	0.0000	0.0000	0.0000	7.89E-05	7.89E-05
74:00:00	0.0000	0.0000	0.0000	0.0000	7.82E-05	7.82E-05
74:30:00	0.0000	0.0000	0.0000	0.0000	7.75E-05	7.75E-05
75:00:00	0.0000	0.0000	0.0000	0.0000	7.69E-05	7.69E-05
75:30:00	0.0000	0.0000	0.0000	0.0000	7.62E-05	7.62E-05
76:00:00	0.0000	0.0000	0.0000	0.0000	7.55E-05	7.55E-05
76:30:00	0.0000	0.0000	0.0000	0.0000	7.49E-05	7.49E-05
77:00:00	0.0000	0.0000	0.0000	0.0000	7.42E-05	7.42E-05
77:30:00	0.0000	0.0000	0.0000	0.0000	7.36E-05	7.36E-05
78:00:00	0.0000	0.0000	0.0000	0.0000	7.29E-05	7.29E-05
78:30:00	0.0000	0.0000	0.0000	0.0000	7.23E-05	7.23E-05
79:00:00	0.0000	0.0000	0.0000	0.0000	7.17E-05	7.17E-05
79:30:00	0.0000	0.0000	0.0000	0.0000	7.11E-05	7.11E-05
80:00:00	0.0000	0.0000	0.0000	0.0000	7.04E-05	7.04E-05
80:30:00	0.0000	0.0000	0.0000	0.0000	6.98E-05	6.98E-05
81:00:00	0.0000	0.0000	0.0000	0.0000	6.92E-05	6.92E-05
81:30:00	0.0000	0.0000	0.0000	0.0000	6.86E-05	6.86E-05
82:00:00	0.0000	0.0000	0.0000	0.0000	6.8E-05	6.8E-05
82:30:00	0.0000	0.0000	0.0000	0.0000	6.74E-05	6.74E-05
83:00:00	0.0000	0.0000	0.0000	0.0000	6.68E-05	6.68E-05
83:30:00	0.0000	0.0000	0.0000	0.0000	6.63E-05	6.63E-05
84:00:00	0.0000	0.0000	0.0000	0.0000	6.57E-05	6.57E-05
84:30:00	0.0000	0.0000	0.0000	0.0000	6.51E-05	6.51E-05
85:00:00	0.0000	0.0000	0.0000	0.0000	6.45E-05	6.45E-05
85:30:00	0.0000	0.0000	0.0000	0.0000	6.4E-05	6.4E-05
86:00:00	0.0000	0.0000	0.0000	0.0000	6.34E-05	6.34E-05
86:30:00	0.0000	0.0000	0.0000	0.0000	6.29E-05	6.29E-05

Time (hh:mm:ss)	Rain (mm)	Sewer Loss (m <sup>3</sup> /s)	Net Rain (mm)	Runoff (m <sup>3</sup> /s)	Baseflow (m <sup>3</sup> /s)	Total Flow (m <sup>3</sup> /s)
87:00:00	0.0000	0.0000	0.0000	0.0000	6.23E-05	6.23E-05
87:30:00	0.0000	0.0000	0.0000	0.0000	6.18E-05	6.18E-05
88:00:00	0.0000	0.0000	0.0000	0.0000	6.12E-05	6.12E-05
88:30:00	0.0000	0.0000	0.0000	0.0000	6.07E-05	6.07E-05
89:00:00	0.0000	0.0000	0.0000	0.0000	6.02E-05	6.02E-05
89:30:00	0.0000	0.0000	0.0000	0.0000	5.97E-05	5.97E-05
90:00:00	0.0000	0.0000	0.0000	0.0000	5.91E-05	5.91E-05
90:30:00	0.0000	0.0000	0.0000	0.0000	5.86E-05	5.86E-05
91:00:00	0.0000	0.0000	0.0000	0.0000	5.81E-05	5.81E-05
91:30:00	0.0000	0.0000	0.0000	0.0000	5.76E-05	5.76E-05
92:00:00	0.0000	0.0000	0.0000	0.0000	5.71E-05	5.71E-05
92:30:00	0.0000	0.0000	0.0000	0.0000	5.66E-05	5.66E-05
93:00:00	0.0000	0.0000	0.0000	0.0000	5.61E-05	5.61E-05
93:30:00	0.0000	0.0000	0.0000	0.0000	5.56E-05	5.56E-05
94:00:00	0.0000	0.0000	0.0000	0.0000	5.51E-05	5.51E-05
94:30:00	0.0000	0.0000	0.0000	0.0000	5.47E-05	5.47E-05
95:00:00	0.0000	0.0000	0.0000	0.0000	5.42E-05	5.42E-05
95:30:00	0.0000	0.0000	0.0000	0.0000	5.37E-05	5.37E-05
96:00:00	0.0000	0.0000	0.0000	0.0000	5.33E-05	5.33E-05
96:30:00	0.0000	0.0000	0.0000	0.0000	5.28E-05	5.28E-05
97:00:00	0.0000	0.0000	0.0000	0.0000	5.23E-05	5.23E-05
97:30:00	0.0000	0.0000	0.0000	0.0000	5.19E-05	5.19E-05
98:00:00	0.0000	0.0000	0.0000	0.0000	5.14E-05	5.14E-05
98:30:00	0.0000	0.0000	0.0000	0.0000	5.1E-05	5.1E-05
99:00:00	0.0000	0.0000	0.0000	0.0000	5.05E-05	5.05E-05
99:30:00	0.0000	0.0000	0.0000	0.0000	5.01E-05	5.01E-05
100:00:00	0.0000	0.0000	0.0000	0.0000	4.97E-05	4.97E-05
100:30:00	0.0000	0.0000	0.0000	0.0000	4.92E-05	4.92E-05
101:00:00	0.0000	0.0000	0.0000	0.0000	4.88E-05	4.88E-05
101:30:00	0.0000	0.0000	0.0000	0.0000	4.84E-05	4.84E-05
102:00:00	0.0000	0.0000	0.0000	0.0000	4.8E-05	4.8E-05
102:30:00	0.0000	0.0000	0.0000	0.0000	4.75E-05	4.75E-05
103:00:00	0.0000	0.0000	0.0000	0.0000	4.71E-05	4.71E-05
103:30:00	0.0000	0.0000	0.0000	0.0000	4.67E-05	4.67E-05

## Appendix

### Catchment descriptors \*

Name	Value	User-defined value used?
BFIHOST	0.71	No
BFIHOST19	0.68	No
PROPWET	0.22	No
SAAR (mm)	564	No

*Values in square brackets are the original values loaded from the FEH Web Service or FEH CD-ROM*

# UK Design Flood Estimation

Generated on 27 November 2025 09:37:57 by [REDACTED]  
Printed from the ReFH2 Flood Modelling software package, version 4.1.8879.22466

## Summary of estimate using the Flood Estimation Handbook revitalised flood hydrograph method (ReFH2)

### Site details

Checksum: 95C9-FCE8

Site name: FEH\_Point\_Descriptors\_528180\_325733\_v5\_0\_1

Easting: 528180

Northing: 325733

Country: England, Wales or Northern Ireland

Catchment Area (km<sup>2</sup>): 0.01 [0.5]\*

Using plot scale calculations: Yes

Model: 2.3

Site description: None

## Model run: 30 year

### Summary of results

Rainfall - FEH22 (mm):	59.57	Total runoff (ML):	0.05
Total Rainfall (mm):	38.25	Total flow (ML):	0.17
Peak Rainfall (mm):	8.69	Peak flow (m <sup>3</sup> /s):	0.00

### Parameters

*Where the user has overridden a system-generated value, this original value is shown in square brackets after the value used.*

*\* Indicates that the user locked the duration/timestep*

#### Rainfall parameters (Rainfall - FEH22)

Name	Value	User-defined?
Duration (hh:mm:ss)	05:30:00	No
Timestep (hh:mm:ss)	00:30:00	No
SCF (Seasonal correction factor)	0.64	No
ARF (Areal reduction factor)	1 [1]	Yes
Seasonality	Winter	No

#### Loss model parameters

Name	Value	User-defined?
Cini (mm)	79.07	No
Cmax (mm)	718.34	No
Use alpha correction factor	No	No
Alpha correction factor	n/a	No

#### Routing model parameters

Name	Value	User-defined?
Tp (hr)	3.43 [1.14]	Yes
Up	0.65	No
Uk	0.8	No

#### Baseflow model parameters

Name	Value	User-defined?
BF0 (m <sup>3</sup> /s)	0	No
BL (hr)	57.22 [42.52]	Yes
BR	2.25	No

#### Urbanisation parameters

Name	Value	User-defined?
Sewer capacity (m <sup>3</sup> /s)	0	No
Exporting drained area (km <sup>2</sup> )	0	No
Urban area (km <sup>2</sup> )	0	No
Effective URBEXT2000	0	n/a
Impervious runoff factor	0.7	No
Imperviousness factor	0.4	No
Tp scaling factor	0.75	No
Depression storage depth (mm)	0.5	No

Time series data

Time (hh:mm:ss)	Rain (mm)	Sewer Loss (m <sup>3</sup> /s)	Net Rain (mm)	Runoff (m <sup>3</sup> /s)	Baseflow (m <sup>3</sup> /s)	Total Flow (m <sup>3</sup> /s)
00:00:00	0.8397	0.0000	0.0929	0.0000	4.63E-05	4.63E-05
00:30:00	1.4068	0.0000	0.1579	0.0000	4.59E-05	4.95E-05
01:00:00	2.3446	0.0000	0.2692	0.0000	4.57E-05	6.25E-05
01:30:00	3.8768	0.0000	0.4620	0.0000	4.6E-05	9.23E-05
02:00:00	6.3091	0.0000	0.7965	0.0001	4.7E-05	0.000151
02:30:00	8.6911	0.0000	1.1880	0.0002	4.97E-05	0.00026
03:00:00	6.3091	0.0000	0.9283	0.0004	5.51E-05	0.000447
03:30:00	3.8768	0.0000	0.5979	0.0007	6.49E-05	0.00072
04:00:00	2.3446	0.0000	0.3717	0.0010	8.02E-05	0.00105
04:30:00	1.4068	0.0000	0.2267	0.0013	0.000102	0.00141
05:00:00	0.8397	0.0000	0.1366	0.0016	0.00013	0.00176
05:30:00	0.0000	0.0000	0.0000	0.0019	0.000163	0.00209
06:00:00	0.0000	0.0000	0.0000	0.0022	0.000202	0.00235
06:30:00	0.0000	0.0000	0.0000	0.0022	0.000243	0.00249
07:00:00	0.0000	0.0000	0.0000	0.0022	0.000285	0.0025
07:30:00	0.0000	0.0000	0.0000	0.0021	0.000324	0.00242
08:00:00	0.0000	0.0000	0.0000	0.0019	0.000361	0.00229
08:30:00	0.0000	0.0000	0.0000	0.0017	0.000393	0.00212
09:00:00	0.0000	0.0000	0.0000	0.0015	0.000422	0.00195
09:30:00	0.0000	0.0000	0.0000	0.0013	0.000446	0.00178
10:00:00	0.0000	0.0000	0.0000	0.0012	0.000467	0.00163
10:30:00	0.0000	0.0000	0.0000	0.0010	0.000484	0.0015
11:00:00	0.0000	0.0000	0.0000	0.0009	0.000498	0.00139
11:30:00	0.0000	0.0000	0.0000	0.0008	0.00051	0.00129
12:00:00	0.0000	0.0000	0.0000	0.0007	0.00052	0.00119
12:30:00	0.0000	0.0000	0.0000	0.0006	0.000527	0.00109
13:00:00	0.0000	0.0000	0.0000	0.0005	0.000533	0.000993
13:30:00	0.0000	0.0000	0.0000	0.0004	0.000536	0.000897
14:00:00	0.0000	0.0000	0.0000	0.0003	0.000538	0.000804
14:30:00	0.0000	0.0000	0.0000	0.0002	0.000537	0.000718
15:00:00	0.0000	0.0000	0.0000	0.0001	0.000536	0.000645
15:30:00	0.0000	0.0000	0.0000	0.0001	0.000533	0.000592
16:00:00	0.0000	0.0000	0.0000	0.0000	0.000529	0.000559
16:30:00	0.0000	0.0000	0.0000	0.0000	0.000525	0.000538

Time (hh:mm:ss)	Rain (mm)	Sewer Loss (m <sup>3</sup> /s)	Net Rain (mm)	Runoff (m <sup>3</sup> /s)	Baseflow (m <sup>3</sup> /s)	Total Flow (m <sup>3</sup> /s)
17:00:00	0.0000	0.0000	0.0000	0.0000	0.00052	0.000524
17:30:00	0.0000	0.0000	0.0000	0.0000	0.000516	0.000516
18:00:00	0.0000	0.0000	0.0000	0.0000	0.000511	0.000511
18:30:00	0.0000	0.0000	0.0000	0.0000	0.000507	0.000507
19:00:00	0.0000	0.0000	0.0000	0.0000	0.000502	0.000502
19:30:00	0.0000	0.0000	0.0000	0.0000	0.000498	0.000498
20:00:00	0.0000	0.0000	0.0000	0.0000	0.000494	0.000494
20:30:00	0.0000	0.0000	0.0000	0.0000	0.000489	0.000489
21:00:00	0.0000	0.0000	0.0000	0.0000	0.000485	0.000485
21:30:00	0.0000	0.0000	0.0000	0.0000	0.000481	0.000481
22:00:00	0.0000	0.0000	0.0000	0.0000	0.000477	0.000477
22:30:00	0.0000	0.0000	0.0000	0.0000	0.000473	0.000473
23:00:00	0.0000	0.0000	0.0000	0.0000	0.000469	0.000469
23:30:00	0.0000	0.0000	0.0000	0.0000	0.000464	0.000464
24:00:00	0.0000	0.0000	0.0000	0.0000	0.00046	0.00046
24:30:00	0.0000	0.0000	0.0000	0.0000	0.000456	0.000456
25:00:00	0.0000	0.0000	0.0000	0.0000	0.000452	0.000452
25:30:00	0.0000	0.0000	0.0000	0.0000	0.000448	0.000448
26:00:00	0.0000	0.0000	0.0000	0.0000	0.000445	0.000445
26:30:00	0.0000	0.0000	0.0000	0.0000	0.000441	0.000441
27:00:00	0.0000	0.0000	0.0000	0.0000	0.000437	0.000437
27:30:00	0.0000	0.0000	0.0000	0.0000	0.000433	0.000433
28:00:00	0.0000	0.0000	0.0000	0.0000	0.000429	0.000429
28:30:00	0.0000	0.0000	0.0000	0.0000	0.000426	0.000426
29:00:00	0.0000	0.0000	0.0000	0.0000	0.000422	0.000422
29:30:00	0.0000	0.0000	0.0000	0.0000	0.000418	0.000418
30:00:00	0.0000	0.0000	0.0000	0.0000	0.000415	0.000415
30:30:00	0.0000	0.0000	0.0000	0.0000	0.000411	0.000411
31:00:00	0.0000	0.0000	0.0000	0.0000	0.000407	0.000407
31:30:00	0.0000	0.0000	0.0000	0.0000	0.000404	0.000404
32:00:00	0.0000	0.0000	0.0000	0.0000	0.0004	0.0004
32:30:00	0.0000	0.0000	0.0000	0.0000	0.000397	0.000397
33:00:00	0.0000	0.0000	0.0000	0.0000	0.000393	0.000393
33:30:00	0.0000	0.0000	0.0000	0.0000	0.00039	0.00039
34:00:00	0.0000	0.0000	0.0000	0.0000	0.000387	0.000387

Time (hh:mm:ss)	Rain (mm)	Sewer Loss (m <sup>3</sup> /s)	Net Rain (mm)	Runoff (m <sup>3</sup> /s)	Baseflow (m <sup>3</sup> /s)	Total Flow (m <sup>3</sup> /s)
34:30:00	0.0000	0.0000	0.0000	0.0000	0.000383	0.000383
35:00:00	0.0000	0.0000	0.0000	0.0000	0.00038	0.00038
35:30:00	0.0000	0.0000	0.0000	0.0000	0.000377	0.000377
36:00:00	0.0000	0.0000	0.0000	0.0000	0.000373	0.000373
36:30:00	0.0000	0.0000	0.0000	0.0000	0.00037	0.00037
37:00:00	0.0000	0.0000	0.0000	0.0000	0.000367	0.000367
37:30:00	0.0000	0.0000	0.0000	0.0000	0.000364	0.000364
38:00:00	0.0000	0.0000	0.0000	0.0000	0.00036	0.00036
38:30:00	0.0000	0.0000	0.0000	0.0000	0.000357	0.000357
39:00:00	0.0000	0.0000	0.0000	0.0000	0.000354	0.000354
39:30:00	0.0000	0.0000	0.0000	0.0000	0.000351	0.000351
40:00:00	0.0000	0.0000	0.0000	0.0000	0.000348	0.000348
40:30:00	0.0000	0.0000	0.0000	0.0000	0.000345	0.000345
41:00:00	0.0000	0.0000	0.0000	0.0000	0.000342	0.000342
41:30:00	0.0000	0.0000	0.0000	0.0000	0.000339	0.000339
42:00:00	0.0000	0.0000	0.0000	0.0000	0.000336	0.000336
42:30:00	0.0000	0.0000	0.0000	0.0000	0.000333	0.000333
43:00:00	0.0000	0.0000	0.0000	0.0000	0.00033	0.00033
43:30:00	0.0000	0.0000	0.0000	0.0000	0.000327	0.000327
44:00:00	0.0000	0.0000	0.0000	0.0000	0.000325	0.000325
44:30:00	0.0000	0.0000	0.0000	0.0000	0.000322	0.000322
45:00:00	0.0000	0.0000	0.0000	0.0000	0.000319	0.000319
45:30:00	0.0000	0.0000	0.0000	0.0000	0.000316	0.000316
46:00:00	0.0000	0.0000	0.0000	0.0000	0.000313	0.000313
46:30:00	0.0000	0.0000	0.0000	0.0000	0.000311	0.000311
47:00:00	0.0000	0.0000	0.0000	0.0000	0.000308	0.000308
47:30:00	0.0000	0.0000	0.0000	0.0000	0.000305	0.000305
48:00:00	0.0000	0.0000	0.0000	0.0000	0.000303	0.000303
48:30:00	0.0000	0.0000	0.0000	0.0000	0.0003	0.0003
49:00:00	0.0000	0.0000	0.0000	0.0000	0.000297	0.000297
49:30:00	0.0000	0.0000	0.0000	0.0000	0.000295	0.000295
50:00:00	0.0000	0.0000	0.0000	0.0000	0.000292	0.000292
50:30:00	0.0000	0.0000	0.0000	0.0000	0.00029	0.00029
51:00:00	0.0000	0.0000	0.0000	0.0000	0.000287	0.000287
51:30:00	0.0000	0.0000	0.0000	0.0000	0.000285	0.000285

Time (hh:mm:ss)	Rain (mm)	Sewer Loss (m <sup>3</sup> /s)	Net Rain (mm)	Runoff (m <sup>3</sup> /s)	Baseflow (m <sup>3</sup> /s)	Total Flow (m <sup>3</sup> /s)
52:00:00	0.0000	0.0000	0.0000	0.0000	0.000282	0.000282
52:30:00	0.0000	0.0000	0.0000	0.0000	0.00028	0.00028
53:00:00	0.0000	0.0000	0.0000	0.0000	0.000277	0.000277
53:30:00	0.0000	0.0000	0.0000	0.0000	0.000275	0.000275
54:00:00	0.0000	0.0000	0.0000	0.0000	0.000273	0.000273
54:30:00	0.0000	0.0000	0.0000	0.0000	0.00027	0.00027
55:00:00	0.0000	0.0000	0.0000	0.0000	0.000268	0.000268
55:30:00	0.0000	0.0000	0.0000	0.0000	0.000266	0.000266
56:00:00	0.0000	0.0000	0.0000	0.0000	0.000263	0.000263
56:30:00	0.0000	0.0000	0.0000	0.0000	0.000261	0.000261
57:00:00	0.0000	0.0000	0.0000	0.0000	0.000259	0.000259
57:30:00	0.0000	0.0000	0.0000	0.0000	0.000256	0.000256
58:00:00	0.0000	0.0000	0.0000	0.0000	0.000254	0.000254
58:30:00	0.0000	0.0000	0.0000	0.0000	0.000252	0.000252
59:00:00	0.0000	0.0000	0.0000	0.0000	0.00025	0.00025
59:30:00	0.0000	0.0000	0.0000	0.0000	0.000248	0.000248
60:00:00	0.0000	0.0000	0.0000	0.0000	0.000245	0.000245
60:30:00	0.0000	0.0000	0.0000	0.0000	0.000243	0.000243
61:00:00	0.0000	0.0000	0.0000	0.0000	0.000241	0.000241
61:30:00	0.0000	0.0000	0.0000	0.0000	0.000239	0.000239
62:00:00	0.0000	0.0000	0.0000	0.0000	0.000237	0.000237
62:30:00	0.0000	0.0000	0.0000	0.0000	0.000235	0.000235
63:00:00	0.0000	0.0000	0.0000	0.0000	0.000233	0.000233
63:30:00	0.0000	0.0000	0.0000	0.0000	0.000231	0.000231
64:00:00	0.0000	0.0000	0.0000	0.0000	0.000229	0.000229
64:30:00	0.0000	0.0000	0.0000	0.0000	0.000227	0.000227
65:00:00	0.0000	0.0000	0.0000	0.0000	0.000225	0.000225
65:30:00	0.0000	0.0000	0.0000	0.0000	0.000223	0.000223
66:00:00	0.0000	0.0000	0.0000	0.0000	0.000221	0.000221
66:30:00	0.0000	0.0000	0.0000	0.0000	0.000219	0.000219
67:00:00	0.0000	0.0000	0.0000	0.0000	0.000217	0.000217
67:30:00	0.0000	0.0000	0.0000	0.0000	0.000215	0.000215
68:00:00	0.0000	0.0000	0.0000	0.0000	0.000213	0.000213
68:30:00	0.0000	0.0000	0.0000	0.0000	0.000212	0.000212
69:00:00	0.0000	0.0000	0.0000	0.0000	0.00021	0.00021

Time (hh:mm:ss)	Rain (mm)	Sewer Loss (m <sup>3</sup> /s)	Net Rain (mm)	Runoff (m <sup>3</sup> /s)	Baseflow (m <sup>3</sup> /s)	Total Flow (m <sup>3</sup> /s)
69:30:00	0.0000	0.0000	0.0000	0.0000	0.000208	0.000208
70:00:00	0.0000	0.0000	0.0000	0.0000	0.000206	0.000206
70:30:00	0.0000	0.0000	0.0000	0.0000	0.000204	0.000204
71:00:00	0.0000	0.0000	0.0000	0.0000	0.000203	0.000203
71:30:00	0.0000	0.0000	0.0000	0.0000	0.000201	0.000201
72:00:00	0.0000	0.0000	0.0000	0.0000	0.000199	0.000199
72:30:00	0.0000	0.0000	0.0000	0.0000	0.000197	0.000197
73:00:00	0.0000	0.0000	0.0000	0.0000	0.000196	0.000196
73:30:00	0.0000	0.0000	0.0000	0.0000	0.000194	0.000194
74:00:00	0.0000	0.0000	0.0000	0.0000	0.000192	0.000192
74:30:00	0.0000	0.0000	0.0000	0.0000	0.00019	0.00019
75:00:00	0.0000	0.0000	0.0000	0.0000	0.000189	0.000189
75:30:00	0.0000	0.0000	0.0000	0.0000	0.000187	0.000187
76:00:00	0.0000	0.0000	0.0000	0.0000	0.000186	0.000186
76:30:00	0.0000	0.0000	0.0000	0.0000	0.000184	0.000184
77:00:00	0.0000	0.0000	0.0000	0.0000	0.000182	0.000182
77:30:00	0.0000	0.0000	0.0000	0.0000	0.000181	0.000181
78:00:00	0.0000	0.0000	0.0000	0.0000	0.000179	0.000179
78:30:00	0.0000	0.0000	0.0000	0.0000	0.000178	0.000178
79:00:00	0.0000	0.0000	0.0000	0.0000	0.000176	0.000176
79:30:00	0.0000	0.0000	0.0000	0.0000	0.000175	0.000175
80:00:00	0.0000	0.0000	0.0000	0.0000	0.000173	0.000173
80:30:00	0.0000	0.0000	0.0000	0.0000	0.000172	0.000172
81:00:00	0.0000	0.0000	0.0000	0.0000	0.00017	0.00017
81:30:00	0.0000	0.0000	0.0000	0.0000	0.000169	0.000169
82:00:00	0.0000	0.0000	0.0000	0.0000	0.000167	0.000167
82:30:00	0.0000	0.0000	0.0000	0.0000	0.000166	0.000166
83:00:00	0.0000	0.0000	0.0000	0.0000	0.000164	0.000164
83:30:00	0.0000	0.0000	0.0000	0.0000	0.000163	0.000163
84:00:00	0.0000	0.0000	0.0000	0.0000	0.000161	0.000161
84:30:00	0.0000	0.0000	0.0000	0.0000	0.00016	0.00016
85:00:00	0.0000	0.0000	0.0000	0.0000	0.000159	0.000159
85:30:00	0.0000	0.0000	0.0000	0.0000	0.000157	0.000157
86:00:00	0.0000	0.0000	0.0000	0.0000	0.000156	0.000156
86:30:00	0.0000	0.0000	0.0000	0.0000	0.000154	0.000154

Time (hh:mm:ss)	Rain (mm)	Sewer Loss (m <sup>3</sup> /s)	Net Rain (mm)	Runoff (m <sup>3</sup> /s)	Baseflow (m <sup>3</sup> /s)	Total Flow (m <sup>3</sup> /s)
87:00:00	0.0000	0.0000	0.0000	0.0000	0.000153	0.000153
87:30:00	0.0000	0.0000	0.0000	0.0000	0.000152	0.000152
88:00:00	0.0000	0.0000	0.0000	0.0000	0.00015	0.00015
88:30:00	0.0000	0.0000	0.0000	0.0000	0.000149	0.000149
89:00:00	0.0000	0.0000	0.0000	0.0000	0.000148	0.000148
89:30:00	0.0000	0.0000	0.0000	0.0000	0.000147	0.000147
90:00:00	0.0000	0.0000	0.0000	0.0000	0.000145	0.000145
90:30:00	0.0000	0.0000	0.0000	0.0000	0.000144	0.000144
91:00:00	0.0000	0.0000	0.0000	0.0000	0.000143	0.000143
91:30:00	0.0000	0.0000	0.0000	0.0000	0.000142	0.000142
92:00:00	0.0000	0.0000	0.0000	0.0000	0.00014	0.00014
92:30:00	0.0000	0.0000	0.0000	0.0000	0.000139	0.000139
93:00:00	0.0000	0.0000	0.0000	0.0000	0.000138	0.000138
93:30:00	0.0000	0.0000	0.0000	0.0000	0.000137	0.000137
94:00:00	0.0000	0.0000	0.0000	0.0000	0.000135	0.000135
94:30:00	0.0000	0.0000	0.0000	0.0000	0.000134	0.000134
95:00:00	0.0000	0.0000	0.0000	0.0000	0.000133	0.000133
95:30:00	0.0000	0.0000	0.0000	0.0000	0.000132	0.000132
96:00:00	0.0000	0.0000	0.0000	0.0000	0.000131	0.000131
96:30:00	0.0000	0.0000	0.0000	0.0000	0.00013	0.00013
97:00:00	0.0000	0.0000	0.0000	0.0000	0.000129	0.000129
97:30:00	0.0000	0.0000	0.0000	0.0000	0.000127	0.000127
98:00:00	0.0000	0.0000	0.0000	0.0000	0.000126	0.000126
98:30:00	0.0000	0.0000	0.0000	0.0000	0.000125	0.000125
99:00:00	0.0000	0.0000	0.0000	0.0000	0.000124	0.000124
99:30:00	0.0000	0.0000	0.0000	0.0000	0.000123	0.000123
100:00:00	0.0000	0.0000	0.0000	0.0000	0.000122	0.000122
100:30:00	0.0000	0.0000	0.0000	0.0000	0.000121	0.000121
101:00:00	0.0000	0.0000	0.0000	0.0000	0.00012	0.00012
101:30:00	0.0000	0.0000	0.0000	0.0000	0.000119	0.000119
102:00:00	0.0000	0.0000	0.0000	0.0000	0.000118	0.000118
102:30:00	0.0000	0.0000	0.0000	0.0000	0.000117	0.000117
103:00:00	0.0000	0.0000	0.0000	0.0000	0.000116	0.000116
103:30:00	0.0000	0.0000	0.0000	0.0000	0.000115	0.000115
104:00:00	0.0000	0.0000	0.0000	0.0000	0.000114	0.000114

Time (hh:mm:ss)	Rain (mm)	Sewer Loss (m <sup>3</sup> /s)	Net Rain (mm)	Runoff (m <sup>3</sup> /s)	Baseflow (m <sup>3</sup> /s)	Total Flow (m <sup>3</sup> /s)
104:30:00	0.0000	0.0000	0.0000	0.0000	0.000113	0.000113
105:00:00	0.0000	0.0000	0.0000	0.0000	0.000112	0.000112
105:30:00	0.0000	0.0000	0.0000	0.0000	0.000111	0.000111
106:00:00	0.0000	0.0000	0.0000	0.0000	0.00011	0.00011
106:30:00	0.0000	0.0000	0.0000	0.0000	0.000109	0.000109
107:00:00	0.0000	0.0000	0.0000	0.0000	0.000108	0.000108
107:30:00	0.0000	0.0000	0.0000	0.0000	0.000107	0.000107
108:00:00	0.0000	0.0000	0.0000	0.0000	0.000106	0.000106
108:30:00	0.0000	0.0000	0.0000	0.0000	0.000105	0.000105
109:00:00	0.0000	0.0000	0.0000	0.0000	0.000104	0.000104
109:30:00	0.0000	0.0000	0.0000	0.0000	0.000103	0.000103
110:00:00	0.0000	0.0000	0.0000	0.0000	0.000102	0.000102
110:30:00	0.0000	0.0000	0.0000	0.0000	0.000102	0.000102
111:00:00	0.0000	0.0000	0.0000	0.0000	0.000101	0.000101
111:30:00	0.0000	0.0000	0.0000	0.0000	9.98E-05	9.98E-05
112:00:00	0.0000	0.0000	0.0000	0.0000	9.89E-05	9.89E-05
112:30:00	0.0000	0.0000	0.0000	0.0000	9.81E-05	9.81E-05
113:00:00	0.0000	0.0000	0.0000	0.0000	9.72E-05	9.72E-05
113:30:00	0.0000	0.0000	0.0000	0.0000	9.64E-05	9.64E-05
114:00:00	0.0000	0.0000	0.0000	0.0000	9.55E-05	9.55E-05
114:30:00	0.0000	0.0000	0.0000	0.0000	9.47E-05	9.47E-05
115:00:00	0.0000	0.0000	0.0000	0.0000	9.39E-05	9.39E-05
115:30:00	0.0000	0.0000	0.0000	0.0000	9.3E-05	9.3E-05
116:00:00	0.0000	0.0000	0.0000	0.0000	9.22E-05	9.22E-05
116:30:00	0.0000	0.0000	0.0000	0.0000	9.14E-05	9.14E-05
117:00:00	0.0000	0.0000	0.0000	0.0000	9.06E-05	9.06E-05
117:30:00	0.0000	0.0000	0.0000	0.0000	8.99E-05	8.99E-05
118:00:00	0.0000	0.0000	0.0000	0.0000	8.91E-05	8.91E-05
118:30:00	0.0000	0.0000	0.0000	0.0000	8.83E-05	8.83E-05
119:00:00	0.0000	0.0000	0.0000	0.0000	8.75E-05	8.75E-05
119:30:00	0.0000	0.0000	0.0000	0.0000	8.68E-05	8.68E-05
120:00:00	0.0000	0.0000	0.0000	0.0000	8.6E-05	8.6E-05
120:30:00	0.0000	0.0000	0.0000	0.0000	8.53E-05	8.53E-05
121:00:00	0.0000	0.0000	0.0000	0.0000	8.45E-05	8.45E-05
121:30:00	0.0000	0.0000	0.0000	0.0000	8.38E-05	8.38E-05

Time (hh:mm:ss)	Rain (mm)	Sewer Loss (m <sup>3</sup> /s)	Net Rain (mm)	Runoff (m <sup>3</sup> /s)	Baseflow (m <sup>3</sup> /s)	Total Flow (m <sup>3</sup> /s)
122:00:00	0.0000	0.0000	0.0000	0.0000	8.31E-05	8.31E-05
122:30:00	0.0000	0.0000	0.0000	0.0000	8.23E-05	8.23E-05
123:00:00	0.0000	0.0000	0.0000	0.0000	8.16E-05	8.16E-05
123:30:00	0.0000	0.0000	0.0000	0.0000	8.09E-05	8.09E-05
124:00:00	0.0000	0.0000	0.0000	0.0000	8.02E-05	8.02E-05
124:30:00	0.0000	0.0000	0.0000	0.0000	7.95E-05	7.95E-05
125:00:00	0.0000	0.0000	0.0000	0.0000	7.88E-05	7.88E-05
125:30:00	0.0000	0.0000	0.0000	0.0000	7.81E-05	7.81E-05
126:00:00	0.0000	0.0000	0.0000	0.0000	7.74E-05	7.74E-05
126:30:00	0.0000	0.0000	0.0000	0.0000	7.68E-05	7.68E-05
127:00:00	0.0000	0.0000	0.0000	0.0000	7.61E-05	7.61E-05
127:30:00	0.0000	0.0000	0.0000	0.0000	7.54E-05	7.54E-05
128:00:00	0.0000	0.0000	0.0000	0.0000	7.48E-05	7.48E-05
128:30:00	0.0000	0.0000	0.0000	0.0000	7.41E-05	7.41E-05
129:00:00	0.0000	0.0000	0.0000	0.0000	7.35E-05	7.35E-05
129:30:00	0.0000	0.0000	0.0000	0.0000	7.29E-05	7.29E-05
130:00:00	0.0000	0.0000	0.0000	0.0000	7.22E-05	7.22E-05
130:30:00	0.0000	0.0000	0.0000	0.0000	7.16E-05	7.16E-05
131:00:00	0.0000	0.0000	0.0000	0.0000	7.1E-05	7.1E-05
131:30:00	0.0000	0.0000	0.0000	0.0000	7.04E-05	7.04E-05
132:00:00	0.0000	0.0000	0.0000	0.0000	6.97E-05	6.97E-05
132:30:00	0.0000	0.0000	0.0000	0.0000	6.91E-05	6.91E-05
133:00:00	0.0000	0.0000	0.0000	0.0000	6.85E-05	6.85E-05
133:30:00	0.0000	0.0000	0.0000	0.0000	6.79E-05	6.79E-05
134:00:00	0.0000	0.0000	0.0000	0.0000	6.73E-05	6.73E-05
134:30:00	0.0000	0.0000	0.0000	0.0000	6.68E-05	6.68E-05
135:00:00	0.0000	0.0000	0.0000	0.0000	6.62E-05	6.62E-05
135:30:00	0.0000	0.0000	0.0000	0.0000	6.56E-05	6.56E-05
136:00:00	0.0000	0.0000	0.0000	0.0000	6.5E-05	6.5E-05
136:30:00	0.0000	0.0000	0.0000	0.0000	6.45E-05	6.45E-05
137:00:00	0.0000	0.0000	0.0000	0.0000	6.39E-05	6.39E-05
137:30:00	0.0000	0.0000	0.0000	0.0000	6.33E-05	6.33E-05

## Appendix

### Catchment descriptors \*

Name	Value	User-defined value used?
BFIHOST	0.71	No
BFIHOST19	0.68	No
PROPWET	0.22	No
SAAR (mm)	564	No

*Values in square brackets are the original values loaded from the FEH Web Service or FEH CD-ROM*

# UK Design Flood Estimation

Generated on 27 November 2025 09:41:21 by [REDACTED]  
Printed from the ReFH2 Flood Modelling software package, version 4.1.8879.22466

## Summary of estimate using the Flood Estimation Handbook revitalised flood hydrograph method (ReFH2)

### Site details

Checksum: 95C9-FCE8

Site name: FEH\_Point\_Descriptors\_528180\_325733\_v5\_0\_1

Easting: 528180

Northing: 325733

Country: England, Wales or Northern Ireland

Catchment Area (km<sup>2</sup>): 0.01 [0.5]\*

Using plot scale calculations: Yes

Model: 2.3

Site description: None

## Model run: 30 year 1.35 CC

### Summary of results

Rainfall - FEH22 (mm):	80.42	Total runoff (ML):	0.08
Total Rainfall (mm):	51.63	Total flow (ML):	0.24
Peak Rainfall (mm):	11.73	Peak flow (m <sup>3</sup> /s):	0.00

### Parameters

*Where the user has overridden a system-generated value, this original value is shown in square brackets after the value used.*

*\* Indicates that the user locked the duration/timestep*

#### Rainfall parameters (Rainfall - FEH22)

Name	Value	User-defined?
Duration (hh:mm:ss)	05:30:00	No
Timestep (hh:mm:ss)	00:30:00	No
SCF (Seasonal correction factor)	0.64	No
ARF (Areal reduction factor)	1 [1]	Yes
Seasonality	Winter	No
Climate change factor	1.35	Yes

#### Loss model parameters

Name	Value	User-defined?
Cini (mm)	79.07	No
Cmax (mm)	718.34	No
Use alpha correction factor	No	No
Alpha correction factor	n/a	No

#### Routing model parameters

Name	Value	User-defined?
Tp (hr)	3.43 [1.14]	Yes
Up	0.65	No
Uk	0.8	No

#### Baseflow model parameters

Name	Value	User-defined?
BF0 (m <sup>3</sup> /s)	0	No
BL (hr)	57.22 [42.52]	Yes
BR	2.25	No

#### Urbanisation parameters

Name	Value	User-defined?
Sewer capacity (m <sup>3</sup> /s)	0	No
Exporting drained area (km <sup>2</sup> )	0	No
Urban area (km <sup>2</sup> )	0	No
Effective URBEXT2000	0	n/a
Impervious runoff factor	0.7	No
Imperviousness factor	0.4	No
Tp scaling factor	0.75	No
Depression storage depth (mm)	0.5	No

Time series data

Time (hh:mm:ss)	Rain (mm)	Sewer Loss (m <sup>3</sup> /s)	Net Rain (mm)	Runoff (m <sup>3</sup> /s)	Baseflow (m <sup>3</sup> /s)	Total Flow (m <sup>3</sup> /s)
00:00:00	1.1336	0.0000	0.1257	0.0000	4.63E-05	4.63E-05
00:30:00	1.8992	0.0000	0.2145	0.0000	4.6E-05	5.08E-05
01:00:00	3.1652	0.0000	0.3687	0.0000	4.58E-05	6.85E-05
01:30:00	5.2337	0.0000	0.6403	0.0001	4.63E-05	0.000109
02:00:00	8.5173	0.0000	1.1235	0.0001	4.79E-05	0.00019
02:30:00	11.7330	0.0000	1.7131	0.0003	5.17E-05	0.00034
03:00:00	8.5173	0.0000	1.3636	0.0005	5.94E-05	0.000603
03:30:00	5.2337	0.0000	0.8880	0.0009	7.31E-05	0.000991
04:00:00	3.1652	0.0000	0.5556	0.0014	9.49E-05	0.00146
04:30:00	1.8992	0.0000	0.3400	0.0019	0.000126	0.00198
05:00:00	1.1336	0.0000	0.2054	0.0023	0.000165	0.0025
05:30:00	0.0000	0.0000	0.0000	0.0028	0.000214	0.00298
06:00:00	0.0000	0.0000	0.0000	0.0031	0.000269	0.00336
06:30:00	0.0000	0.0000	0.0000	0.0032	0.000329	0.00356
07:00:00	0.0000	0.0000	0.0000	0.0032	0.000389	0.00359
07:30:00	0.0000	0.0000	0.0000	0.0030	0.000446	0.00348
08:00:00	0.0000	0.0000	0.0000	0.0028	0.000499	0.0033
08:30:00	0.0000	0.0000	0.0000	0.0025	0.000547	0.00306
09:00:00	0.0000	0.0000	0.0000	0.0022	0.000589	0.0028
09:30:00	0.0000	0.0000	0.0000	0.0019	0.000624	0.00256
10:00:00	0.0000	0.0000	0.0000	0.0017	0.000654	0.00234
10:30:00	0.0000	0.0000	0.0000	0.0015	0.000679	0.00216
11:00:00	0.0000	0.0000	0.0000	0.0013	0.0007	0.002
11:30:00	0.0000	0.0000	0.0000	0.0011	0.000718	0.00185
12:00:00	0.0000	0.0000	0.0000	0.0010	0.000732	0.00171
12:30:00	0.0000	0.0000	0.0000	0.0008	0.000744	0.00156
13:00:00	0.0000	0.0000	0.0000	0.0007	0.000752	0.00142
13:30:00	0.0000	0.0000	0.0000	0.0005	0.000757	0.00129
14:00:00	0.0000	0.0000	0.0000	0.0004	0.000759	0.00115
14:30:00	0.0000	0.0000	0.0000	0.0003	0.000759	0.00103
15:00:00	0.0000	0.0000	0.0000	0.0002	0.000757	0.000919
15:30:00	0.0000	0.0000	0.0000	0.0001	0.000753	0.000842
16:00:00	0.0000	0.0000	0.0000	0.0000	0.000747	0.000792
16:30:00	0.0000	0.0000	0.0000	0.0000	0.000742	0.000761

Time (hh:mm:ss)	Rain (mm)	Sewer Loss (m <sup>3</sup> /s)	Net Rain (mm)	Runoff (m <sup>3</sup> /s)	Baseflow (m <sup>3</sup> /s)	Total Flow (m <sup>3</sup> /s)
17:00:00	0.0000	0.0000	0.0000	0.0000	0.000735	0.000742
17:30:00	0.0000	0.0000	0.0000	0.0000	0.000729	0.00073
18:00:00	0.0000	0.0000	0.0000	0.0000	0.000723	0.000723
18:30:00	0.0000	0.0000	0.0000	0.0000	0.000716	0.000716
19:00:00	0.0000	0.0000	0.0000	0.0000	0.00071	0.00071
19:30:00	0.0000	0.0000	0.0000	0.0000	0.000704	0.000704
20:00:00	0.0000	0.0000	0.0000	0.0000	0.000698	0.000698
20:30:00	0.0000	0.0000	0.0000	0.0000	0.000692	0.000692
21:00:00	0.0000	0.0000	0.0000	0.0000	0.000686	0.000686
21:30:00	0.0000	0.0000	0.0000	0.0000	0.00068	0.00068
22:00:00	0.0000	0.0000	0.0000	0.0000	0.000674	0.000674
22:30:00	0.0000	0.0000	0.0000	0.0000	0.000668	0.000668
23:00:00	0.0000	0.0000	0.0000	0.0000	0.000662	0.000662
23:30:00	0.0000	0.0000	0.0000	0.0000	0.000657	0.000657
24:00:00	0.0000	0.0000	0.0000	0.0000	0.000651	0.000651
24:30:00	0.0000	0.0000	0.0000	0.0000	0.000645	0.000645
25:00:00	0.0000	0.0000	0.0000	0.0000	0.00064	0.00064
25:30:00	0.0000	0.0000	0.0000	0.0000	0.000634	0.000634
26:00:00	0.0000	0.0000	0.0000	0.0000	0.000628	0.000628
26:30:00	0.0000	0.0000	0.0000	0.0000	0.000623	0.000623
27:00:00	0.0000	0.0000	0.0000	0.0000	0.000618	0.000618
27:30:00	0.0000	0.0000	0.0000	0.0000	0.000612	0.000612
28:00:00	0.0000	0.0000	0.0000	0.0000	0.000607	0.000607
28:30:00	0.0000	0.0000	0.0000	0.0000	0.000602	0.000602
29:00:00	0.0000	0.0000	0.0000	0.0000	0.000596	0.000596
29:30:00	0.0000	0.0000	0.0000	0.0000	0.000591	0.000591
30:00:00	0.0000	0.0000	0.0000	0.0000	0.000586	0.000586
30:30:00	0.0000	0.0000	0.0000	0.0000	0.000581	0.000581
31:00:00	0.0000	0.0000	0.0000	0.0000	0.000576	0.000576
31:30:00	0.0000	0.0000	0.0000	0.0000	0.000571	0.000571
32:00:00	0.0000	0.0000	0.0000	0.0000	0.000566	0.000566
32:30:00	0.0000	0.0000	0.0000	0.0000	0.000561	0.000561
33:00:00	0.0000	0.0000	0.0000	0.0000	0.000556	0.000556
33:30:00	0.0000	0.0000	0.0000	0.0000	0.000551	0.000551
34:00:00	0.0000	0.0000	0.0000	0.0000	0.000546	0.000546

Time (hh:mm:ss)	Rain (mm)	Sewer Loss (m <sup>3</sup> /s)	Net Rain (mm)	Runoff (m <sup>3</sup> /s)	Baseflow (m <sup>3</sup> /s)	Total Flow (m <sup>3</sup> /s)
34:30:00	0.0000	0.0000	0.0000	0.0000	0.000542	0.000542
35:00:00	0.0000	0.0000	0.0000	0.0000	0.000537	0.000537
35:30:00	0.0000	0.0000	0.0000	0.0000	0.000532	0.000532
36:00:00	0.0000	0.0000	0.0000	0.0000	0.000528	0.000528
36:30:00	0.0000	0.0000	0.0000	0.0000	0.000523	0.000523
37:00:00	0.0000	0.0000	0.0000	0.0000	0.000519	0.000519
37:30:00	0.0000	0.0000	0.0000	0.0000	0.000514	0.000514
38:00:00	0.0000	0.0000	0.0000	0.0000	0.00051	0.00051
38:30:00	0.0000	0.0000	0.0000	0.0000	0.000505	0.000505
39:00:00	0.0000	0.0000	0.0000	0.0000	0.000501	0.000501
39:30:00	0.0000	0.0000	0.0000	0.0000	0.000496	0.000496
40:00:00	0.0000	0.0000	0.0000	0.0000	0.000492	0.000492
40:30:00	0.0000	0.0000	0.0000	0.0000	0.000488	0.000488
41:00:00	0.0000	0.0000	0.0000	0.0000	0.000484	0.000484
41:30:00	0.0000	0.0000	0.0000	0.0000	0.000479	0.000479
42:00:00	0.0000	0.0000	0.0000	0.0000	0.000475	0.000475
42:30:00	0.0000	0.0000	0.0000	0.0000	0.000471	0.000471
43:00:00	0.0000	0.0000	0.0000	0.0000	0.000467	0.000467
43:30:00	0.0000	0.0000	0.0000	0.0000	0.000463	0.000463
44:00:00	0.0000	0.0000	0.0000	0.0000	0.000459	0.000459
44:30:00	0.0000	0.0000	0.0000	0.0000	0.000455	0.000455
45:00:00	0.0000	0.0000	0.0000	0.0000	0.000451	0.000451
45:30:00	0.0000	0.0000	0.0000	0.0000	0.000447	0.000447
46:00:00	0.0000	0.0000	0.0000	0.0000	0.000443	0.000443
46:30:00	0.0000	0.0000	0.0000	0.0000	0.000439	0.000439
47:00:00	0.0000	0.0000	0.0000	0.0000	0.000435	0.000435
47:30:00	0.0000	0.0000	0.0000	0.0000	0.000432	0.000432
48:00:00	0.0000	0.0000	0.0000	0.0000	0.000428	0.000428
48:30:00	0.0000	0.0000	0.0000	0.0000	0.000424	0.000424
49:00:00	0.0000	0.0000	0.0000	0.0000	0.00042	0.00042
49:30:00	0.0000	0.0000	0.0000	0.0000	0.000417	0.000417
50:00:00	0.0000	0.0000	0.0000	0.0000	0.000413	0.000413
50:30:00	0.0000	0.0000	0.0000	0.0000	0.00041	0.00041
51:00:00	0.0000	0.0000	0.0000	0.0000	0.000406	0.000406
51:30:00	0.0000	0.0000	0.0000	0.0000	0.000402	0.000402

Time (hh:mm:ss)	Rain (mm)	Sewer Loss (m <sup>3</sup> /s)	Net Rain (mm)	Runoff (m <sup>3</sup> /s)	Baseflow (m <sup>3</sup> /s)	Total Flow (m <sup>3</sup> /s)
52:00:00	0.0000	0.0000	0.0000	0.0000	0.000399	0.000399
52:30:00	0.0000	0.0000	0.0000	0.0000	0.000395	0.000395
53:00:00	0.0000	0.0000	0.0000	0.0000	0.000392	0.000392
53:30:00	0.0000	0.0000	0.0000	0.0000	0.000389	0.000389
54:00:00	0.0000	0.0000	0.0000	0.0000	0.000385	0.000385
54:30:00	0.0000	0.0000	0.0000	0.0000	0.000382	0.000382
55:00:00	0.0000	0.0000	0.0000	0.0000	0.000379	0.000379
55:30:00	0.0000	0.0000	0.0000	0.0000	0.000375	0.000375
56:00:00	0.0000	0.0000	0.0000	0.0000	0.000372	0.000372
56:30:00	0.0000	0.0000	0.0000	0.0000	0.000369	0.000369
57:00:00	0.0000	0.0000	0.0000	0.0000	0.000366	0.000366
57:30:00	0.0000	0.0000	0.0000	0.0000	0.000362	0.000362
58:00:00	0.0000	0.0000	0.0000	0.0000	0.000359	0.000359
58:30:00	0.0000	0.0000	0.0000	0.0000	0.000356	0.000356
59:00:00	0.0000	0.0000	0.0000	0.0000	0.000353	0.000353
59:30:00	0.0000	0.0000	0.0000	0.0000	0.00035	0.00035
60:00:00	0.0000	0.0000	0.0000	0.0000	0.000347	0.000347
60:30:00	0.0000	0.0000	0.0000	0.0000	0.000344	0.000344
61:00:00	0.0000	0.0000	0.0000	0.0000	0.000341	0.000341
61:30:00	0.0000	0.0000	0.0000	0.0000	0.000338	0.000338
62:00:00	0.0000	0.0000	0.0000	0.0000	0.000335	0.000335
62:30:00	0.0000	0.0000	0.0000	0.0000	0.000332	0.000332
63:00:00	0.0000	0.0000	0.0000	0.0000	0.000329	0.000329
63:30:00	0.0000	0.0000	0.0000	0.0000	0.000326	0.000326
64:00:00	0.0000	0.0000	0.0000	0.0000	0.000323	0.000323
64:30:00	0.0000	0.0000	0.0000	0.0000	0.000321	0.000321
65:00:00	0.0000	0.0000	0.0000	0.0000	0.000318	0.000318
65:30:00	0.0000	0.0000	0.0000	0.0000	0.000315	0.000315
66:00:00	0.0000	0.0000	0.0000	0.0000	0.000312	0.000312
66:30:00	0.0000	0.0000	0.0000	0.0000	0.00031	0.00031
67:00:00	0.0000	0.0000	0.0000	0.0000	0.000307	0.000307
67:30:00	0.0000	0.0000	0.0000	0.0000	0.000304	0.000304
68:00:00	0.0000	0.0000	0.0000	0.0000	0.000302	0.000302
68:30:00	0.0000	0.0000	0.0000	0.0000	0.000299	0.000299
69:00:00	0.0000	0.0000	0.0000	0.0000	0.000296	0.000296

Time (hh:mm:ss)	Rain (mm)	Sewer Loss (m <sup>3</sup> /s)	Net Rain (mm)	Runoff (m <sup>3</sup> /s)	Baseflow (m <sup>3</sup> /s)	Total Flow (m <sup>3</sup> /s)
69:30:00	0.0000	0.0000	0.0000	0.0000	0.000294	0.000294
70:00:00	0.0000	0.0000	0.0000	0.0000	0.000291	0.000291
70:30:00	0.0000	0.0000	0.0000	0.0000	0.000289	0.000289
71:00:00	0.0000	0.0000	0.0000	0.0000	0.000286	0.000286
71:30:00	0.0000	0.0000	0.0000	0.0000	0.000284	0.000284
72:00:00	0.0000	0.0000	0.0000	0.0000	0.000281	0.000281
72:30:00	0.0000	0.0000	0.0000	0.0000	0.000279	0.000279
73:00:00	0.0000	0.0000	0.0000	0.0000	0.000276	0.000276
73:30:00	0.0000	0.0000	0.0000	0.0000	0.000274	0.000274
74:00:00	0.0000	0.0000	0.0000	0.0000	0.000272	0.000272
74:30:00	0.0000	0.0000	0.0000	0.0000	0.000269	0.000269
75:00:00	0.0000	0.0000	0.0000	0.0000	0.000267	0.000267
75:30:00	0.0000	0.0000	0.0000	0.0000	0.000265	0.000265
76:00:00	0.0000	0.0000	0.0000	0.0000	0.000262	0.000262
76:30:00	0.0000	0.0000	0.0000	0.0000	0.00026	0.00026
77:00:00	0.0000	0.0000	0.0000	0.0000	0.000258	0.000258
77:30:00	0.0000	0.0000	0.0000	0.0000	0.000256	0.000256
78:00:00	0.0000	0.0000	0.0000	0.0000	0.000253	0.000253
78:30:00	0.0000	0.0000	0.0000	0.0000	0.000251	0.000251
79:00:00	0.0000	0.0000	0.0000	0.0000	0.000249	0.000249
79:30:00	0.0000	0.0000	0.0000	0.0000	0.000247	0.000247
80:00:00	0.0000	0.0000	0.0000	0.0000	0.000245	0.000245
80:30:00	0.0000	0.0000	0.0000	0.0000	0.000242	0.000242
81:00:00	0.0000	0.0000	0.0000	0.0000	0.00024	0.00024
81:30:00	0.0000	0.0000	0.0000	0.0000	0.000238	0.000238
82:00:00	0.0000	0.0000	0.0000	0.0000	0.000236	0.000236
82:30:00	0.0000	0.0000	0.0000	0.0000	0.000234	0.000234
83:00:00	0.0000	0.0000	0.0000	0.0000	0.000232	0.000232
83:30:00	0.0000	0.0000	0.0000	0.0000	0.00023	0.00023
84:00:00	0.0000	0.0000	0.0000	0.0000	0.000228	0.000228
84:30:00	0.0000	0.0000	0.0000	0.0000	0.000226	0.000226
85:00:00	0.0000	0.0000	0.0000	0.0000	0.000224	0.000224
85:30:00	0.0000	0.0000	0.0000	0.0000	0.000222	0.000222
86:00:00	0.0000	0.0000	0.0000	0.0000	0.00022	0.00022
86:30:00	0.0000	0.0000	0.0000	0.0000	0.000218	0.000218

Time (hh:mm:ss)	Rain (mm)	Sewer Loss (m <sup>3</sup> /s)	Net Rain (mm)	Runoff (m <sup>3</sup> /s)	Baseflow (m <sup>3</sup> /s)	Total Flow (m <sup>3</sup> /s)
87:00:00	0.0000	0.0000	0.0000	0.0000	0.000216	0.000216
87:30:00	0.0000	0.0000	0.0000	0.0000	0.000215	0.000215
88:00:00	0.0000	0.0000	0.0000	0.0000	0.000213	0.000213
88:30:00	0.0000	0.0000	0.0000	0.0000	0.000211	0.000211
89:00:00	0.0000	0.0000	0.0000	0.0000	0.000209	0.000209
89:30:00	0.0000	0.0000	0.0000	0.0000	0.000207	0.000207
90:00:00	0.0000	0.0000	0.0000	0.0000	0.000205	0.000205
90:30:00	0.0000	0.0000	0.0000	0.0000	0.000204	0.000204
91:00:00	0.0000	0.0000	0.0000	0.0000	0.000202	0.000202
91:30:00	0.0000	0.0000	0.0000	0.0000	0.0002	0.0002
92:00:00	0.0000	0.0000	0.0000	0.0000	0.000198	0.000198
92:30:00	0.0000	0.0000	0.0000	0.0000	0.000197	0.000197
93:00:00	0.0000	0.0000	0.0000	0.0000	0.000195	0.000195
93:30:00	0.0000	0.0000	0.0000	0.0000	0.000193	0.000193
94:00:00	0.0000	0.0000	0.0000	0.0000	0.000192	0.000192
94:30:00	0.0000	0.0000	0.0000	0.0000	0.00019	0.00019
95:00:00	0.0000	0.0000	0.0000	0.0000	0.000188	0.000188
95:30:00	0.0000	0.0000	0.0000	0.0000	0.000187	0.000187
96:00:00	0.0000	0.0000	0.0000	0.0000	0.000185	0.000185
96:30:00	0.0000	0.0000	0.0000	0.0000	0.000183	0.000183
97:00:00	0.0000	0.0000	0.0000	0.0000	0.000182	0.000182
97:30:00	0.0000	0.0000	0.0000	0.0000	0.00018	0.00018
98:00:00	0.0000	0.0000	0.0000	0.0000	0.000179	0.000179
98:30:00	0.0000	0.0000	0.0000	0.0000	0.000177	0.000177
99:00:00	0.0000	0.0000	0.0000	0.0000	0.000175	0.000175
99:30:00	0.0000	0.0000	0.0000	0.0000	0.000174	0.000174
100:00:00	0.0000	0.0000	0.0000	0.0000	0.000172	0.000172
100:30:00	0.0000	0.0000	0.0000	0.0000	0.000171	0.000171
101:00:00	0.0000	0.0000	0.0000	0.0000	0.000169	0.000169
101:30:00	0.0000	0.0000	0.0000	0.0000	0.000168	0.000168
102:00:00	0.0000	0.0000	0.0000	0.0000	0.000167	0.000167
102:30:00	0.0000	0.0000	0.0000	0.0000	0.000165	0.000165
103:00:00	0.0000	0.0000	0.0000	0.0000	0.000164	0.000164
103:30:00	0.0000	0.0000	0.0000	0.0000	0.000162	0.000162
104:00:00	0.0000	0.0000	0.0000	0.0000	0.000161	0.000161

Time (hh:mm:ss)	Rain (mm)	Sewer Loss (m <sup>3</sup> /s)	Net Rain (mm)	Runoff (m <sup>3</sup> /s)	Baseflow (m <sup>3</sup> /s)	Total Flow (m <sup>3</sup> /s)
104:30:00	0.0000	0.0000	0.0000	0.0000	0.000159	0.000159
105:00:00	0.0000	0.0000	0.0000	0.0000	0.000158	0.000158
105:30:00	0.0000	0.0000	0.0000	0.0000	0.000157	0.000157
106:00:00	0.0000	0.0000	0.0000	0.0000	0.000155	0.000155
106:30:00	0.0000	0.0000	0.0000	0.0000	0.000154	0.000154
107:00:00	0.0000	0.0000	0.0000	0.0000	0.000153	0.000153
107:30:00	0.0000	0.0000	0.0000	0.0000	0.000151	0.000151
108:00:00	0.0000	0.0000	0.0000	0.0000	0.00015	0.00015
108:30:00	0.0000	0.0000	0.0000	0.0000	0.000149	0.000149
109:00:00	0.0000	0.0000	0.0000	0.0000	0.000147	0.000147
109:30:00	0.0000	0.0000	0.0000	0.0000	0.000146	0.000146
110:00:00	0.0000	0.0000	0.0000	0.0000	0.000145	0.000145
110:30:00	0.0000	0.0000	0.0000	0.0000	0.000144	0.000144
111:00:00	0.0000	0.0000	0.0000	0.0000	0.000142	0.000142
111:30:00	0.0000	0.0000	0.0000	0.0000	0.000141	0.000141
112:00:00	0.0000	0.0000	0.0000	0.0000	0.00014	0.00014
112:30:00	0.0000	0.0000	0.0000	0.0000	0.000139	0.000139
113:00:00	0.0000	0.0000	0.0000	0.0000	0.000137	0.000137
113:30:00	0.0000	0.0000	0.0000	0.0000	0.000136	0.000136
114:00:00	0.0000	0.0000	0.0000	0.0000	0.000135	0.000135
114:30:00	0.0000	0.0000	0.0000	0.0000	0.000134	0.000134
115:00:00	0.0000	0.0000	0.0000	0.0000	0.000133	0.000133
115:30:00	0.0000	0.0000	0.0000	0.0000	0.000132	0.000132
116:00:00	0.0000	0.0000	0.0000	0.0000	0.00013	0.00013
116:30:00	0.0000	0.0000	0.0000	0.0000	0.000129	0.000129
117:00:00	0.0000	0.0000	0.0000	0.0000	0.000128	0.000128
117:30:00	0.0000	0.0000	0.0000	0.0000	0.000127	0.000127
118:00:00	0.0000	0.0000	0.0000	0.0000	0.000126	0.000126
118:30:00	0.0000	0.0000	0.0000	0.0000	0.000125	0.000125
119:00:00	0.0000	0.0000	0.0000	0.0000	0.000124	0.000124
119:30:00	0.0000	0.0000	0.0000	0.0000	0.000123	0.000123
120:00:00	0.0000	0.0000	0.0000	0.0000	0.000122	0.000122
120:30:00	0.0000	0.0000	0.0000	0.0000	0.000121	0.000121
121:00:00	0.0000	0.0000	0.0000	0.0000	0.000119	0.000119
121:30:00	0.0000	0.0000	0.0000	0.0000	0.000118	0.000118

Time (hh:mm:ss)	Rain (mm)	Sewer Loss (m <sup>3</sup> /s)	Net Rain (mm)	Runoff (m <sup>3</sup> /s)	Baseflow (m <sup>3</sup> /s)	Total Flow (m <sup>3</sup> /s)
122:00:00	0.0000	0.0000	0.0000	0.0000	0.000117	0.000117
122:30:00	0.0000	0.0000	0.0000	0.0000	0.000116	0.000116
123:00:00	0.0000	0.0000	0.0000	0.0000	0.000115	0.000115
123:30:00	0.0000	0.0000	0.0000	0.0000	0.000114	0.000114
124:00:00	0.0000	0.0000	0.0000	0.0000	0.000113	0.000113
124:30:00	0.0000	0.0000	0.0000	0.0000	0.000112	0.000112
125:00:00	0.0000	0.0000	0.0000	0.0000	0.000111	0.000111
125:30:00	0.0000	0.0000	0.0000	0.0000	0.00011	0.00011
126:00:00	0.0000	0.0000	0.0000	0.0000	0.000109	0.000109
126:30:00	0.0000	0.0000	0.0000	0.0000	0.000109	0.000109
127:00:00	0.0000	0.0000	0.0000	0.0000	0.000108	0.000108
127:30:00	0.0000	0.0000	0.0000	0.0000	0.000107	0.000107
128:00:00	0.0000	0.0000	0.0000	0.0000	0.000106	0.000106
128:30:00	0.0000	0.0000	0.0000	0.0000	0.000105	0.000105
129:00:00	0.0000	0.0000	0.0000	0.0000	0.000104	0.000104
129:30:00	0.0000	0.0000	0.0000	0.0000	0.000103	0.000103
130:00:00	0.0000	0.0000	0.0000	0.0000	0.000102	0.000102
130:30:00	0.0000	0.0000	0.0000	0.0000	0.000101	0.000101
131:00:00	0.0000	0.0000	0.0000	0.0000	0.0001	0.0001
131:30:00	0.0000	0.0000	0.0000	0.0000	9.94E-05	9.94E-05
132:00:00	0.0000	0.0000	0.0000	0.0000	9.86E-05	9.86E-05
132:30:00	0.0000	0.0000	0.0000	0.0000	9.77E-05	9.77E-05
133:00:00	0.0000	0.0000	0.0000	0.0000	9.69E-05	9.69E-05
133:30:00	0.0000	0.0000	0.0000	0.0000	9.6E-05	9.6E-05
134:00:00	0.0000	0.0000	0.0000	0.0000	9.52E-05	9.52E-05
134:30:00	0.0000	0.0000	0.0000	0.0000	9.44E-05	9.44E-05
135:00:00	0.0000	0.0000	0.0000	0.0000	9.35E-05	9.35E-05
135:30:00	0.0000	0.0000	0.0000	0.0000	9.27E-05	9.27E-05
136:00:00	0.0000	0.0000	0.0000	0.0000	9.19E-05	9.19E-05
136:30:00	0.0000	0.0000	0.0000	0.0000	9.11E-05	9.11E-05
137:00:00	0.0000	0.0000	0.0000	0.0000	9.03E-05	9.03E-05
137:30:00	0.0000	0.0000	0.0000	0.0000	8.95E-05	8.95E-05

## Appendix

### Catchment descriptors \*

Name	Value	User-defined value used?
BFIHOST	0.71	No
BFIHOST19	0.68	No
PROPWET	0.22	No
SAAR (mm)	564	No

*Values in square brackets are the original values loaded from the FEH Web Service or FEH CD-ROM*

# UK Design Flood Estimation

Generated on 27 November 2025 09:42:13 by [REDACTED]  
Printed from the ReFH2 Flood Modelling software package, version 4.1.8879.22466

## Summary of estimate using the Flood Estimation Handbook revitalised flood hydrograph method (ReFH2)

### Site details

Checksum: 95C9-FCE8

Site name: FEH\_Point\_Descriptors\_528180\_325733\_v5\_0\_1

Easting: 528180

Northing: 325733

Country: England, Wales or Northern Ireland

Catchment Area (km<sup>2</sup>): 0.01 [0.5]\*

Using plot scale calculations: Yes

Model: 2.3

Site description: None

## Model run: 100 year

### Summary of results

Rainfall - FEH22 (mm):	77.48	Total runoff (ML):	0.07
Total Rainfall (mm):	49.75	Total flow (ML):	0.23
Peak Rainfall (mm):	11.30	Peak flow (m <sup>3</sup> /s):	0.00

### Parameters

*Where the user has overridden a system-generated value, this original value is shown in square brackets after the value used.*

*\* Indicates that the user locked the duration/timestep*

#### Rainfall parameters (Rainfall - FEH22)

Name	Value	User-defined?
Duration (hh:mm:ss)	05:30:00	No
Timestep (hh:mm:ss)	00:30:00	No
SCF (Seasonal correction factor)	0.64	No
ARF (Areal reduction factor)	1 [1]	Yes
Seasonality	Winter	No

#### Loss model parameters

Name	Value	User-defined?
Cini (mm)	79.07	No
Cmax (mm)	718.34	No
Use alpha correction factor	No	No
Alpha correction factor	n/a	No

#### Routing model parameters

Name	Value	User-defined?
Tp (hr)	3.43 [1.14]	Yes
Up	0.65	No
Uk	0.8	No

#### Baseflow model parameters

Name	Value	User-defined?
BF0 (m <sup>3</sup> /s)	0	No
BL (hr)	57.22 [42.52]	Yes
BR	2.25	No

#### Urbanisation parameters

Name	Value	User-defined?
Sewer capacity (m <sup>3</sup> /s)	0	No
Exporting drained area (km <sup>2</sup> )	0	No
Urban area (km <sup>2</sup> )	0	No
Effective URBEXT2000	0	n/a
Impervious runoff factor	0.7	No
Imperviousness factor	0.4	No
Tp scaling factor	0.75	No
Depression storage depth (mm)	0.5	No

Time series data

Time (hh:mm:ss)	Rain (mm)	Sewer Loss (m <sup>3</sup> /s)	Net Rain (mm)	Runoff (m <sup>3</sup> /s)	Baseflow (m <sup>3</sup> /s)	Total Flow (m <sup>3</sup> /s)
00:00:00	1.0922	0.0000	0.1211	0.0000	4.63E-05	4.63E-05
00:30:00	1.8299	0.0000	0.2065	0.0000	4.6E-05	5.06E-05
01:00:00	3.0497	0.0000	0.3546	0.0000	4.58E-05	6.77E-05
01:30:00	5.0427	0.0000	0.6147	0.0001	4.62E-05	0.000107
02:00:00	8.2065	0.0000	1.0760	0.0001	4.77E-05	0.000184
02:30:00	11.3049	0.0000	1.6358	0.0003	5.14E-05	0.000329
03:00:00	8.2065	0.0000	1.2989	0.0005	5.88E-05	0.000581
03:30:00	5.0427	0.0000	0.8447	0.0009	7.2E-05	0.000951
04:00:00	3.0497	0.0000	0.5280	0.0013	9.28E-05	0.0014
04:30:00	1.8299	0.0000	0.3230	0.0018	0.000122	0.00189
05:00:00	1.0922	0.0000	0.1950	0.0022	0.00016	0.00239
05:30:00	0.0000	0.0000	0.0000	0.0026	0.000206	0.00285
06:00:00	0.0000	0.0000	0.0000	0.0030	0.000259	0.00321
06:30:00	0.0000	0.0000	0.0000	0.0031	0.000316	0.0034
07:00:00	0.0000	0.0000	0.0000	0.0031	0.000373	0.00343
07:30:00	0.0000	0.0000	0.0000	0.0029	0.000428	0.00333
08:00:00	0.0000	0.0000	0.0000	0.0027	0.000479	0.00315
08:30:00	0.0000	0.0000	0.0000	0.0024	0.000524	0.00292
09:00:00	0.0000	0.0000	0.0000	0.0021	0.000564	0.00268
09:30:00	0.0000	0.0000	0.0000	0.0018	0.000598	0.00244
10:00:00	0.0000	0.0000	0.0000	0.0016	0.000626	0.00224
10:30:00	0.0000	0.0000	0.0000	0.0014	0.00065	0.00206
11:00:00	0.0000	0.0000	0.0000	0.0012	0.000671	0.00191
11:30:00	0.0000	0.0000	0.0000	0.0011	0.000688	0.00177
12:00:00	0.0000	0.0000	0.0000	0.0009	0.000701	0.00163
12:30:00	0.0000	0.0000	0.0000	0.0008	0.000712	0.00149
13:00:00	0.0000	0.0000	0.0000	0.0006	0.00072	0.00136
13:30:00	0.0000	0.0000	0.0000	0.0005	0.000724	0.00123
14:00:00	0.0000	0.0000	0.0000	0.0004	0.000727	0.0011
14:30:00	0.0000	0.0000	0.0000	0.0003	0.000727	0.00098
15:00:00	0.0000	0.0000	0.0000	0.0002	0.000724	0.000879
15:30:00	0.0000	0.0000	0.0000	0.0001	0.00072	0.000805
16:00:00	0.0000	0.0000	0.0000	0.0000	0.000715	0.000758
16:30:00	0.0000	0.0000	0.0000	0.0000	0.00071	0.000728

Time (hh:mm:ss)	Rain (mm)	Sewer Loss (m <sup>3</sup> /s)	Net Rain (mm)	Runoff (m <sup>3</sup> /s)	Baseflow (m <sup>3</sup> /s)	Total Flow (m <sup>3</sup> /s)
17:00:00	0.0000	0.0000	0.0000	0.0000	0.000704	0.00071
17:30:00	0.0000	0.0000	0.0000	0.0000	0.000698	0.000699
18:00:00	0.0000	0.0000	0.0000	0.0000	0.000692	0.000692
18:30:00	0.0000	0.0000	0.0000	0.0000	0.000686	0.000686
19:00:00	0.0000	0.0000	0.0000	0.0000	0.00068	0.00068
19:30:00	0.0000	0.0000	0.0000	0.0000	0.000674	0.000674
20:00:00	0.0000	0.0000	0.0000	0.0000	0.000668	0.000668
20:30:00	0.0000	0.0000	0.0000	0.0000	0.000662	0.000662
21:00:00	0.0000	0.0000	0.0000	0.0000	0.000656	0.000656
21:30:00	0.0000	0.0000	0.0000	0.0000	0.000651	0.000651
22:00:00	0.0000	0.0000	0.0000	0.0000	0.000645	0.000645
22:30:00	0.0000	0.0000	0.0000	0.0000	0.000639	0.000639
23:00:00	0.0000	0.0000	0.0000	0.0000	0.000634	0.000634
23:30:00	0.0000	0.0000	0.0000	0.0000	0.000628	0.000628
24:00:00	0.0000	0.0000	0.0000	0.0000	0.000623	0.000623
24:30:00	0.0000	0.0000	0.0000	0.0000	0.000617	0.000617
25:00:00	0.0000	0.0000	0.0000	0.0000	0.000612	0.000612
25:30:00	0.0000	0.0000	0.0000	0.0000	0.000607	0.000607
26:00:00	0.0000	0.0000	0.0000	0.0000	0.000601	0.000601
26:30:00	0.0000	0.0000	0.0000	0.0000	0.000596	0.000596
27:00:00	0.0000	0.0000	0.0000	0.0000	0.000591	0.000591
27:30:00	0.0000	0.0000	0.0000	0.0000	0.000586	0.000586
28:00:00	0.0000	0.0000	0.0000	0.0000	0.000581	0.000581
28:30:00	0.0000	0.0000	0.0000	0.0000	0.000576	0.000576
29:00:00	0.0000	0.0000	0.0000	0.0000	0.000571	0.000571
29:30:00	0.0000	0.0000	0.0000	0.0000	0.000566	0.000566
30:00:00	0.0000	0.0000	0.0000	0.0000	0.000561	0.000561
30:30:00	0.0000	0.0000	0.0000	0.0000	0.000556	0.000556
31:00:00	0.0000	0.0000	0.0000	0.0000	0.000551	0.000551
31:30:00	0.0000	0.0000	0.0000	0.0000	0.000546	0.000546
32:00:00	0.0000	0.0000	0.0000	0.0000	0.000541	0.000541
32:30:00	0.0000	0.0000	0.0000	0.0000	0.000537	0.000537
33:00:00	0.0000	0.0000	0.0000	0.0000	0.000532	0.000532
33:30:00	0.0000	0.0000	0.0000	0.0000	0.000527	0.000527
34:00:00	0.0000	0.0000	0.0000	0.0000	0.000523	0.000523

Time (hh:mm:ss)	Rain (mm)	Sewer Loss (m <sup>3</sup> /s)	Net Rain (mm)	Runoff (m <sup>3</sup> /s)	Baseflow (m <sup>3</sup> /s)	Total Flow (m <sup>3</sup> /s)
34:30:00	0.0000	0.0000	0.0000	0.0000	0.000518	0.000518
35:00:00	0.0000	0.0000	0.0000	0.0000	0.000514	0.000514
35:30:00	0.0000	0.0000	0.0000	0.0000	0.000509	0.000509
36:00:00	0.0000	0.0000	0.0000	0.0000	0.000505	0.000505
36:30:00	0.0000	0.0000	0.0000	0.0000	0.000501	0.000501
37:00:00	0.0000	0.0000	0.0000	0.0000	0.000496	0.000496
37:30:00	0.0000	0.0000	0.0000	0.0000	0.000492	0.000492
38:00:00	0.0000	0.0000	0.0000	0.0000	0.000488	0.000488
38:30:00	0.0000	0.0000	0.0000	0.0000	0.000483	0.000483
39:00:00	0.0000	0.0000	0.0000	0.0000	0.000479	0.000479
39:30:00	0.0000	0.0000	0.0000	0.0000	0.000475	0.000475
40:00:00	0.0000	0.0000	0.0000	0.0000	0.000471	0.000471
40:30:00	0.0000	0.0000	0.0000	0.0000	0.000467	0.000467
41:00:00	0.0000	0.0000	0.0000	0.0000	0.000463	0.000463
41:30:00	0.0000	0.0000	0.0000	0.0000	0.000459	0.000459
42:00:00	0.0000	0.0000	0.0000	0.0000	0.000455	0.000455
42:30:00	0.0000	0.0000	0.0000	0.0000	0.000451	0.000451
43:00:00	0.0000	0.0000	0.0000	0.0000	0.000447	0.000447
43:30:00	0.0000	0.0000	0.0000	0.0000	0.000443	0.000443
44:00:00	0.0000	0.0000	0.0000	0.0000	0.000439	0.000439
44:30:00	0.0000	0.0000	0.0000	0.0000	0.000435	0.000435
45:00:00	0.0000	0.0000	0.0000	0.0000	0.000431	0.000431
45:30:00	0.0000	0.0000	0.0000	0.0000	0.000428	0.000428
46:00:00	0.0000	0.0000	0.0000	0.0000	0.000424	0.000424
46:30:00	0.0000	0.0000	0.0000	0.0000	0.00042	0.00042
47:00:00	0.0000	0.0000	0.0000	0.0000	0.000417	0.000417
47:30:00	0.0000	0.0000	0.0000	0.0000	0.000413	0.000413
48:00:00	0.0000	0.0000	0.0000	0.0000	0.000409	0.000409
48:30:00	0.0000	0.0000	0.0000	0.0000	0.000406	0.000406
49:00:00	0.0000	0.0000	0.0000	0.0000	0.000402	0.000402
49:30:00	0.0000	0.0000	0.0000	0.0000	0.000399	0.000399
50:00:00	0.0000	0.0000	0.0000	0.0000	0.000395	0.000395
50:30:00	0.0000	0.0000	0.0000	0.0000	0.000392	0.000392
51:00:00	0.0000	0.0000	0.0000	0.0000	0.000389	0.000389
51:30:00	0.0000	0.0000	0.0000	0.0000	0.000385	0.000385

Time (hh:mm:ss)	Rain (mm)	Sewer Loss (m <sup>3</sup> /s)	Net Rain (mm)	Runoff (m <sup>3</sup> /s)	Baseflow (m <sup>3</sup> /s)	Total Flow (m <sup>3</sup> /s)
52:00:00	0.0000	0.0000	0.0000	0.0000	0.000382	0.000382
52:30:00	0.0000	0.0000	0.0000	0.0000	0.000378	0.000378
53:00:00	0.0000	0.0000	0.0000	0.0000	0.000375	0.000375
53:30:00	0.0000	0.0000	0.0000	0.0000	0.000372	0.000372
54:00:00	0.0000	0.0000	0.0000	0.0000	0.000369	0.000369
54:30:00	0.0000	0.0000	0.0000	0.0000	0.000365	0.000365
55:00:00	0.0000	0.0000	0.0000	0.0000	0.000362	0.000362
55:30:00	0.0000	0.0000	0.0000	0.0000	0.000359	0.000359
56:00:00	0.0000	0.0000	0.0000	0.0000	0.000356	0.000356
56:30:00	0.0000	0.0000	0.0000	0.0000	0.000353	0.000353
57:00:00	0.0000	0.0000	0.0000	0.0000	0.00035	0.00035
57:30:00	0.0000	0.0000	0.0000	0.0000	0.000347	0.000347
58:00:00	0.0000	0.0000	0.0000	0.0000	0.000344	0.000344
58:30:00	0.0000	0.0000	0.0000	0.0000	0.000341	0.000341
59:00:00	0.0000	0.0000	0.0000	0.0000	0.000338	0.000338
59:30:00	0.0000	0.0000	0.0000	0.0000	0.000335	0.000335
60:00:00	0.0000	0.0000	0.0000	0.0000	0.000332	0.000332
60:30:00	0.0000	0.0000	0.0000	0.0000	0.000329	0.000329
61:00:00	0.0000	0.0000	0.0000	0.0000	0.000326	0.000326
61:30:00	0.0000	0.0000	0.0000	0.0000	0.000323	0.000323
62:00:00	0.0000	0.0000	0.0000	0.0000	0.000321	0.000321
62:30:00	0.0000	0.0000	0.0000	0.0000	0.000318	0.000318
63:00:00	0.0000	0.0000	0.0000	0.0000	0.000315	0.000315
63:30:00	0.0000	0.0000	0.0000	0.0000	0.000312	0.000312
64:00:00	0.0000	0.0000	0.0000	0.0000	0.00031	0.00031
64:30:00	0.0000	0.0000	0.0000	0.0000	0.000307	0.000307
65:00:00	0.0000	0.0000	0.0000	0.0000	0.000304	0.000304
65:30:00	0.0000	0.0000	0.0000	0.0000	0.000302	0.000302
66:00:00	0.0000	0.0000	0.0000	0.0000	0.000299	0.000299
66:30:00	0.0000	0.0000	0.0000	0.0000	0.000296	0.000296
67:00:00	0.0000	0.0000	0.0000	0.0000	0.000294	0.000294
67:30:00	0.0000	0.0000	0.0000	0.0000	0.000291	0.000291
68:00:00	0.0000	0.0000	0.0000	0.0000	0.000289	0.000289
68:30:00	0.0000	0.0000	0.0000	0.0000	0.000286	0.000286
69:00:00	0.0000	0.0000	0.0000	0.0000	0.000284	0.000284

Time (hh:mm:ss)	Rain (mm)	Sewer Loss (m <sup>3</sup> /s)	Net Rain (mm)	Runoff (m <sup>3</sup> /s)	Baseflow (m <sup>3</sup> /s)	Total Flow (m <sup>3</sup> /s)
69:30:00	0.0000	0.0000	0.0000	0.0000	0.000281	0.000281
70:00:00	0.0000	0.0000	0.0000	0.0000	0.000279	0.000279
70:30:00	0.0000	0.0000	0.0000	0.0000	0.000276	0.000276
71:00:00	0.0000	0.0000	0.0000	0.0000	0.000274	0.000274
71:30:00	0.0000	0.0000	0.0000	0.0000	0.000272	0.000272
72:00:00	0.0000	0.0000	0.0000	0.0000	0.000269	0.000269
72:30:00	0.0000	0.0000	0.0000	0.0000	0.000267	0.000267
73:00:00	0.0000	0.0000	0.0000	0.0000	0.000264	0.000264
73:30:00	0.0000	0.0000	0.0000	0.0000	0.000262	0.000262
74:00:00	0.0000	0.0000	0.0000	0.0000	0.00026	0.00026
74:30:00	0.0000	0.0000	0.0000	0.0000	0.000258	0.000258
75:00:00	0.0000	0.0000	0.0000	0.0000	0.000255	0.000255
75:30:00	0.0000	0.0000	0.0000	0.0000	0.000253	0.000253
76:00:00	0.0000	0.0000	0.0000	0.0000	0.000251	0.000251
76:30:00	0.0000	0.0000	0.0000	0.0000	0.000249	0.000249
77:00:00	0.0000	0.0000	0.0000	0.0000	0.000247	0.000247
77:30:00	0.0000	0.0000	0.0000	0.0000	0.000244	0.000244
78:00:00	0.0000	0.0000	0.0000	0.0000	0.000242	0.000242
78:30:00	0.0000	0.0000	0.0000	0.0000	0.00024	0.00024
79:00:00	0.0000	0.0000	0.0000	0.0000	0.000238	0.000238
79:30:00	0.0000	0.0000	0.0000	0.0000	0.000236	0.000236
80:00:00	0.0000	0.0000	0.0000	0.0000	0.000234	0.000234
80:30:00	0.0000	0.0000	0.0000	0.0000	0.000232	0.000232
81:00:00	0.0000	0.0000	0.0000	0.0000	0.00023	0.00023
81:30:00	0.0000	0.0000	0.0000	0.0000	0.000228	0.000228
82:00:00	0.0000	0.0000	0.0000	0.0000	0.000226	0.000226
82:30:00	0.0000	0.0000	0.0000	0.0000	0.000224	0.000224
83:00:00	0.0000	0.0000	0.0000	0.0000	0.000222	0.000222
83:30:00	0.0000	0.0000	0.0000	0.0000	0.00022	0.00022
84:00:00	0.0000	0.0000	0.0000	0.0000	0.000218	0.000218
84:30:00	0.0000	0.0000	0.0000	0.0000	0.000216	0.000216
85:00:00	0.0000	0.0000	0.0000	0.0000	0.000214	0.000214
85:30:00	0.0000	0.0000	0.0000	0.0000	0.000213	0.000213
86:00:00	0.0000	0.0000	0.0000	0.0000	0.000211	0.000211
86:30:00	0.0000	0.0000	0.0000	0.0000	0.000209	0.000209

Time (hh:mm:ss)	Rain (mm)	Sewer Loss (m <sup>3</sup> /s)	Net Rain (mm)	Runoff (m <sup>3</sup> /s)	Baseflow (m <sup>3</sup> /s)	Total Flow (m <sup>3</sup> /s)
87:00:00	0.0000	0.0000	0.0000	0.0000	0.000207	0.000207
87:30:00	0.0000	0.0000	0.0000	0.0000	0.000205	0.000205
88:00:00	0.0000	0.0000	0.0000	0.0000	0.000204	0.000204
88:30:00	0.0000	0.0000	0.0000	0.0000	0.000202	0.000202
89:00:00	0.0000	0.0000	0.0000	0.0000	0.0002	0.0002
89:30:00	0.0000	0.0000	0.0000	0.0000	0.000198	0.000198
90:00:00	0.0000	0.0000	0.0000	0.0000	0.000197	0.000197
90:30:00	0.0000	0.0000	0.0000	0.0000	0.000195	0.000195
91:00:00	0.0000	0.0000	0.0000	0.0000	0.000193	0.000193
91:30:00	0.0000	0.0000	0.0000	0.0000	0.000191	0.000191
92:00:00	0.0000	0.0000	0.0000	0.0000	0.00019	0.00019
92:30:00	0.0000	0.0000	0.0000	0.0000	0.000188	0.000188
93:00:00	0.0000	0.0000	0.0000	0.0000	0.000186	0.000186
93:30:00	0.0000	0.0000	0.0000	0.0000	0.000185	0.000185
94:00:00	0.0000	0.0000	0.0000	0.0000	0.000183	0.000183
94:30:00	0.0000	0.0000	0.0000	0.0000	0.000182	0.000182
95:00:00	0.0000	0.0000	0.0000	0.0000	0.00018	0.00018
95:30:00	0.0000	0.0000	0.0000	0.0000	0.000179	0.000179
96:00:00	0.0000	0.0000	0.0000	0.0000	0.000177	0.000177
96:30:00	0.0000	0.0000	0.0000	0.0000	0.000175	0.000175
97:00:00	0.0000	0.0000	0.0000	0.0000	0.000174	0.000174
97:30:00	0.0000	0.0000	0.0000	0.0000	0.000172	0.000172
98:00:00	0.0000	0.0000	0.0000	0.0000	0.000171	0.000171
98:30:00	0.0000	0.0000	0.0000	0.0000	0.000169	0.000169
99:00:00	0.0000	0.0000	0.0000	0.0000	0.000168	0.000168
99:30:00	0.0000	0.0000	0.0000	0.0000	0.000166	0.000166
100:00:00	0.0000	0.0000	0.0000	0.0000	0.000165	0.000165
100:30:00	0.0000	0.0000	0.0000	0.0000	0.000164	0.000164
101:00:00	0.0000	0.0000	0.0000	0.0000	0.000162	0.000162
101:30:00	0.0000	0.0000	0.0000	0.0000	0.000161	0.000161
102:00:00	0.0000	0.0000	0.0000	0.0000	0.000159	0.000159
102:30:00	0.0000	0.0000	0.0000	0.0000	0.000158	0.000158
103:00:00	0.0000	0.0000	0.0000	0.0000	0.000157	0.000157
103:30:00	0.0000	0.0000	0.0000	0.0000	0.000155	0.000155
104:00:00	0.0000	0.0000	0.0000	0.0000	0.000154	0.000154

Time (hh:mm:ss)	Rain (mm)	Sewer Loss (m <sup>3</sup> /s)	Net Rain (mm)	Runoff (m <sup>3</sup> /s)	Baseflow (m <sup>3</sup> /s)	Total Flow (m <sup>3</sup> /s)
104:30:00	0.0000	0.0000	0.0000	0.0000	0.000153	0.000153
105:00:00	0.0000	0.0000	0.0000	0.0000	0.000151	0.000151
105:30:00	0.0000	0.0000	0.0000	0.0000	0.00015	0.00015
106:00:00	0.0000	0.0000	0.0000	0.0000	0.000149	0.000149
106:30:00	0.0000	0.0000	0.0000	0.0000	0.000147	0.000147
107:00:00	0.0000	0.0000	0.0000	0.0000	0.000146	0.000146
107:30:00	0.0000	0.0000	0.0000	0.0000	0.000145	0.000145
108:00:00	0.0000	0.0000	0.0000	0.0000	0.000143	0.000143
108:30:00	0.0000	0.0000	0.0000	0.0000	0.000142	0.000142
109:00:00	0.0000	0.0000	0.0000	0.0000	0.000141	0.000141
109:30:00	0.0000	0.0000	0.0000	0.0000	0.00014	0.00014
110:00:00	0.0000	0.0000	0.0000	0.0000	0.000139	0.000139
110:30:00	0.0000	0.0000	0.0000	0.0000	0.000137	0.000137
111:00:00	0.0000	0.0000	0.0000	0.0000	0.000136	0.000136
111:30:00	0.0000	0.0000	0.0000	0.0000	0.000135	0.000135
112:00:00	0.0000	0.0000	0.0000	0.0000	0.000134	0.000134
112:30:00	0.0000	0.0000	0.0000	0.0000	0.000133	0.000133
113:00:00	0.0000	0.0000	0.0000	0.0000	0.000131	0.000131
113:30:00	0.0000	0.0000	0.0000	0.0000	0.00013	0.00013
114:00:00	0.0000	0.0000	0.0000	0.0000	0.000129	0.000129
114:30:00	0.0000	0.0000	0.0000	0.0000	0.000128	0.000128
115:00:00	0.0000	0.0000	0.0000	0.0000	0.000127	0.000127
115:30:00	0.0000	0.0000	0.0000	0.0000	0.000126	0.000126
116:00:00	0.0000	0.0000	0.0000	0.0000	0.000125	0.000125
116:30:00	0.0000	0.0000	0.0000	0.0000	0.000124	0.000124
117:00:00	0.0000	0.0000	0.0000	0.0000	0.000123	0.000123
117:30:00	0.0000	0.0000	0.0000	0.0000	0.000122	0.000122
118:00:00	0.0000	0.0000	0.0000	0.0000	0.00012	0.00012
118:30:00	0.0000	0.0000	0.0000	0.0000	0.000119	0.000119
119:00:00	0.0000	0.0000	0.0000	0.0000	0.000118	0.000118
119:30:00	0.0000	0.0000	0.0000	0.0000	0.000117	0.000117
120:00:00	0.0000	0.0000	0.0000	0.0000	0.000116	0.000116
120:30:00	0.0000	0.0000	0.0000	0.0000	0.000115	0.000115
121:00:00	0.0000	0.0000	0.0000	0.0000	0.000114	0.000114
121:30:00	0.0000	0.0000	0.0000	0.0000	0.000113	0.000113

Time (hh:mm:ss)	Rain (mm)	Sewer Loss (m <sup>3</sup> /s)	Net Rain (mm)	Runoff (m <sup>3</sup> /s)	Baseflow (m <sup>3</sup> /s)	Total Flow (m <sup>3</sup> /s)
122:00:00	0.0000	0.0000	0.0000	0.0000	0.000112	0.000112
122:30:00	0.0000	0.0000	0.0000	0.0000	0.000111	0.000111
123:00:00	0.0000	0.0000	0.0000	0.0000	0.00011	0.00011
123:30:00	0.0000	0.0000	0.0000	0.0000	0.000109	0.000109
124:00:00	0.0000	0.0000	0.0000	0.0000	0.000108	0.000108
124:30:00	0.0000	0.0000	0.0000	0.0000	0.000108	0.000108
125:00:00	0.0000	0.0000	0.0000	0.0000	0.000107	0.000107
125:30:00	0.0000	0.0000	0.0000	0.0000	0.000106	0.000106
126:00:00	0.0000	0.0000	0.0000	0.0000	0.000105	0.000105
126:30:00	0.0000	0.0000	0.0000	0.0000	0.000104	0.000104
127:00:00	0.0000	0.0000	0.0000	0.0000	0.000103	0.000103
127:30:00	0.0000	0.0000	0.0000	0.0000	0.000102	0.000102
128:00:00	0.0000	0.0000	0.0000	0.0000	0.000101	0.000101
128:30:00	0.0000	0.0000	0.0000	0.0000	0.0001	0.0001
129:00:00	0.0000	0.0000	0.0000	0.0000	9.94E-05	9.94E-05
129:30:00	0.0000	0.0000	0.0000	0.0000	9.85E-05	9.85E-05
130:00:00	0.0000	0.0000	0.0000	0.0000	9.77E-05	9.77E-05
130:30:00	0.0000	0.0000	0.0000	0.0000	9.68E-05	9.68E-05
131:00:00	0.0000	0.0000	0.0000	0.0000	9.6E-05	9.6E-05
131:30:00	0.0000	0.0000	0.0000	0.0000	9.52E-05	9.52E-05
132:00:00	0.0000	0.0000	0.0000	0.0000	9.43E-05	9.43E-05
132:30:00	0.0000	0.0000	0.0000	0.0000	9.35E-05	9.35E-05
133:00:00	0.0000	0.0000	0.0000	0.0000	9.27E-05	9.27E-05
133:30:00	0.0000	0.0000	0.0000	0.0000	9.19E-05	9.19E-05
134:00:00	0.0000	0.0000	0.0000	0.0000	9.11E-05	9.11E-05
134:30:00	0.0000	0.0000	0.0000	0.0000	9.03E-05	9.03E-05
135:00:00	0.0000	0.0000	0.0000	0.0000	8.95E-05	8.95E-05
135:30:00	0.0000	0.0000	0.0000	0.0000	8.87E-05	8.87E-05
136:00:00	0.0000	0.0000	0.0000	0.0000	8.8E-05	8.8E-05
136:30:00	0.0000	0.0000	0.0000	0.0000	8.72E-05	8.72E-05
137:00:00	0.0000	0.0000	0.0000	0.0000	8.64E-05	8.64E-05
137:30:00	0.0000	0.0000	0.0000	0.0000	8.57E-05	8.57E-05

## Appendix

### Catchment descriptors \*

Name	Value	User-defined value used?
BFIHOST	0.71	No
BFIHOST19	0.68	No
PROPWET	0.22	No
SAAR (mm)	564	No

*Values in square brackets are the original values loaded from the FEH Web Service or FEH CD-ROM*

# UK Design Flood Estimation

Generated on 27 November 2025 09:43:18 by [REDACTED]  
Printed from the ReFH2 Flood Modelling software package, version 4.1.8879.22466

## Summary of estimate using the Flood Estimation Handbook revitalised flood hydrograph method (ReFH2)

### Site details

Checksum: 95C9-FCE8

Site name: FEH\_Point\_Descriptors\_528180\_325733\_v5\_0\_1

Easting: 528180

Northing: 325733

Country: England, Wales or Northern Ireland

Catchment Area (km<sup>2</sup>): 0.01 [0.5]\*

Using plot scale calculations: Yes

Model: 2.3

Site description: None

## Model run: 100 year 1.4 CC

### Summary of results

Rainfall - FEH22 (mm):	108.48	Total runoff (ML):	0.11
Total Rainfall (mm):	69.65	Total flow (ML):	0.34
Peak Rainfall (mm):	15.83	Peak flow (m <sup>3</sup> /s):	0.01

### Parameters

*Where the user has overridden a system-generated value, this original value is shown in square brackets after the value used.*

*\* Indicates that the user locked the duration/timestep*

#### Rainfall parameters (Rainfall - FEH22)

Name	Value	User-defined?
Duration (hh:mm:ss)	05:30:00	No
Timestep (hh:mm:ss)	00:30:00	No
SCF (Seasonal correction factor)	0.64	No
ARF (Areal reduction factor)	1 [1]	Yes
Seasonality	Winter	No
Climate change factor	1.40	Yes

#### Loss model parameters

Name	Value	User-defined?
Cini (mm)	79.07	No
Cmax (mm)	718.34	No
Use alpha correction factor	No	No
Alpha correction factor	n/a	No

#### Routing model parameters

Name	Value	User-defined?
Tp (hr)	3.43 [1.14]	Yes
Up	0.65	No
Uk	0.8	No

#### Baseflow model parameters

Name	Value	User-defined?
BF0 (m <sup>3</sup> /s)	0	No
BL (hr)	57.22 [42.52]	Yes
BR	2.25	No

#### Urbanisation parameters

Name	Value	User-defined?
Sewer capacity (m <sup>3</sup> /s)	0	No
Exporting drained area (km <sup>2</sup> )	0	No
Urban area (km <sup>2</sup> )	0	No
Effective URBEXT2000	0	n/a
Impervious runoff factor	0.7	No
Imperviousness factor	0.4	No
Tp scaling factor	0.75	No
Depression storage depth (mm)	0.5	No

Time series data

Time (hh:mm:ss)	Rain (mm)	Sewer Loss (m <sup>3</sup> /s)	Net Rain (mm)	Runoff (m <sup>3</sup> /s)	Baseflow (m <sup>3</sup> /s)	Total Flow (m <sup>3</sup> /s)
00:00:00	1.5291	0.0000	0.1699	0.0000	4.63E-05	4.63E-05
00:30:00	2.5618	0.0000	0.2920	0.0000	4.6E-05	5.25E-05
01:00:00	4.2696	0.0000	0.5070	0.0000	4.59E-05	7.67E-05
01:30:00	7.0598	0.0000	0.8939	0.0001	4.67E-05	0.000132
02:00:00	11.4891	0.0000	1.6031	0.0002	4.9E-05	0.000243
02:30:00	15.8268	0.0000	2.5093	0.0004	5.44E-05	0.000453
03:00:00	11.4891	0.0000	2.0400	0.0008	6.53E-05	0.000826
03:30:00	7.0598	0.0000	1.3447	0.0013	8.48E-05	0.00138
04:00:00	4.2696	0.0000	0.8469	0.0020	0.000116	0.00207
04:30:00	2.5618	0.0000	0.5203	0.0027	0.00016	0.00282
05:00:00	1.5291	0.0000	0.3149	0.0034	0.000217	0.00358
05:30:00	0.0000	0.0000	0.0000	0.0040	0.000288	0.0043
06:00:00	0.0000	0.0000	0.0000	0.0045	0.000369	0.00488
06:30:00	0.0000	0.0000	0.0000	0.0047	0.000456	0.00519
07:00:00	0.0000	0.0000	0.0000	0.0047	0.000544	0.00524
07:30:00	0.0000	0.0000	0.0000	0.0045	0.000629	0.0051
08:00:00	0.0000	0.0000	0.0000	0.0041	0.000708	0.00483
08:30:00	0.0000	0.0000	0.0000	0.0037	0.000778	0.00449
09:00:00	0.0000	0.0000	0.0000	0.0033	0.00084	0.00411
09:30:00	0.0000	0.0000	0.0000	0.0029	0.000892	0.00375
10:00:00	0.0000	0.0000	0.0000	0.0025	0.000937	0.00343
10:30:00	0.0000	0.0000	0.0000	0.0022	0.000975	0.00316
11:00:00	0.0000	0.0000	0.0000	0.0019	0.00101	0.00292
11:30:00	0.0000	0.0000	0.0000	0.0017	0.00103	0.0027
12:00:00	0.0000	0.0000	0.0000	0.0014	0.00105	0.00249
12:30:00	0.0000	0.0000	0.0000	0.0012	0.00107	0.00229
13:00:00	0.0000	0.0000	0.0000	0.0010	0.00108	0.00208
13:30:00	0.0000	0.0000	0.0000	0.0008	0.00109	0.00188
14:00:00	0.0000	0.0000	0.0000	0.0006	0.0011	0.00168
14:30:00	0.0000	0.0000	0.0000	0.0004	0.0011	0.0015
15:00:00	0.0000	0.0000	0.0000	0.0002	0.00109	0.00134
15:30:00	0.0000	0.0000	0.0000	0.0001	0.00109	0.00122
16:00:00	0.0000	0.0000	0.0000	0.0001	0.00108	0.00115
16:30:00	0.0000	0.0000	0.0000	0.0000	0.00107	0.0011

Time (hh:mm:ss)	Rain (mm)	Sewer Loss (m <sup>3</sup> /s)	Net Rain (mm)	Runoff (m <sup>3</sup> /s)	Baseflow (m <sup>3</sup> /s)	Total Flow (m <sup>3</sup> /s)
17:00:00	0.0000	0.0000	0.0000	0.0000	0.00106	0.00107
17:30:00	0.0000	0.0000	0.0000	0.0000	0.00105	0.00105
18:00:00	0.0000	0.0000	0.0000	0.0000	0.00104	0.00104
18:30:00	0.0000	0.0000	0.0000	0.0000	0.00103	0.00103
19:00:00	0.0000	0.0000	0.0000	0.0000	0.00103	0.00103
19:30:00	0.0000	0.0000	0.0000	0.0000	0.00102	0.00102
20:00:00	0.0000	0.0000	0.0000	0.0000	0.00101	0.00101
20:30:00	0.0000	0.0000	0.0000	0.0000	0.000999	0.000999
21:00:00	0.0000	0.0000	0.0000	0.0000	0.00099	0.00099
21:30:00	0.0000	0.0000	0.0000	0.0000	0.000982	0.000982
22:00:00	0.0000	0.0000	0.0000	0.0000	0.000973	0.000973
22:30:00	0.0000	0.0000	0.0000	0.0000	0.000965	0.000965
23:00:00	0.0000	0.0000	0.0000	0.0000	0.000956	0.000956
23:30:00	0.0000	0.0000	0.0000	0.0000	0.000948	0.000948
24:00:00	0.0000	0.0000	0.0000	0.0000	0.00094	0.00094
24:30:00	0.0000	0.0000	0.0000	0.0000	0.000931	0.000931
25:00:00	0.0000	0.0000	0.0000	0.0000	0.000923	0.000923
25:30:00	0.0000	0.0000	0.0000	0.0000	0.000915	0.000915
26:00:00	0.0000	0.0000	0.0000	0.0000	0.000907	0.000907
26:30:00	0.0000	0.0000	0.0000	0.0000	0.000899	0.000899
27:00:00	0.0000	0.0000	0.0000	0.0000	0.000892	0.000892
27:30:00	0.0000	0.0000	0.0000	0.0000	0.000884	0.000884
28:00:00	0.0000	0.0000	0.0000	0.0000	0.000876	0.000876
28:30:00	0.0000	0.0000	0.0000	0.0000	0.000869	0.000869
29:00:00	0.0000	0.0000	0.0000	0.0000	0.000861	0.000861
29:30:00	0.0000	0.0000	0.0000	0.0000	0.000854	0.000854
30:00:00	0.0000	0.0000	0.0000	0.0000	0.000846	0.000846
30:30:00	0.0000	0.0000	0.0000	0.0000	0.000839	0.000839
31:00:00	0.0000	0.0000	0.0000	0.0000	0.000831	0.000831
31:30:00	0.0000	0.0000	0.0000	0.0000	0.000824	0.000824
32:00:00	0.0000	0.0000	0.0000	0.0000	0.000817	0.000817
32:30:00	0.0000	0.0000	0.0000	0.0000	0.00081	0.00081
33:00:00	0.0000	0.0000	0.0000	0.0000	0.000803	0.000803
33:30:00	0.0000	0.0000	0.0000	0.0000	0.000796	0.000796
34:00:00	0.0000	0.0000	0.0000	0.0000	0.000789	0.000789

Time (hh:mm:ss)	Rain (mm)	Sewer Loss (m <sup>3</sup> /s)	Net Rain (mm)	Runoff (m <sup>3</sup> /s)	Baseflow (m <sup>3</sup> /s)	Total Flow (m <sup>3</sup> /s)
34:30:00	0.0000	0.0000	0.0000	0.0000	0.000782	0.000782
35:00:00	0.0000	0.0000	0.0000	0.0000	0.000775	0.000775
35:30:00	0.0000	0.0000	0.0000	0.0000	0.000769	0.000769
36:00:00	0.0000	0.0000	0.0000	0.0000	0.000762	0.000762
36:30:00	0.0000	0.0000	0.0000	0.0000	0.000755	0.000755
37:00:00	0.0000	0.0000	0.0000	0.0000	0.000749	0.000749
37:30:00	0.0000	0.0000	0.0000	0.0000	0.000742	0.000742
38:00:00	0.0000	0.0000	0.0000	0.0000	0.000736	0.000736
38:30:00	0.0000	0.0000	0.0000	0.0000	0.000729	0.000729
39:00:00	0.0000	0.0000	0.0000	0.0000	0.000723	0.000723
39:30:00	0.0000	0.0000	0.0000	0.0000	0.000717	0.000717
40:00:00	0.0000	0.0000	0.0000	0.0000	0.00071	0.00071
40:30:00	0.0000	0.0000	0.0000	0.0000	0.000704	0.000704
41:00:00	0.0000	0.0000	0.0000	0.0000	0.000698	0.000698
41:30:00	0.0000	0.0000	0.0000	0.0000	0.000692	0.000692
42:00:00	0.0000	0.0000	0.0000	0.0000	0.000686	0.000686
42:30:00	0.0000	0.0000	0.0000	0.0000	0.00068	0.00068
43:00:00	0.0000	0.0000	0.0000	0.0000	0.000674	0.000674
43:30:00	0.0000	0.0000	0.0000	0.0000	0.000668	0.000668
44:00:00	0.0000	0.0000	0.0000	0.0000	0.000662	0.000662
44:30:00	0.0000	0.0000	0.0000	0.0000	0.000657	0.000657
45:00:00	0.0000	0.0000	0.0000	0.0000	0.000651	0.000651
45:30:00	0.0000	0.0000	0.0000	0.0000	0.000645	0.000645
46:00:00	0.0000	0.0000	0.0000	0.0000	0.00064	0.00064
46:30:00	0.0000	0.0000	0.0000	0.0000	0.000634	0.000634
47:00:00	0.0000	0.0000	0.0000	0.0000	0.000629	0.000629
47:30:00	0.0000	0.0000	0.0000	0.0000	0.000623	0.000623
48:00:00	0.0000	0.0000	0.0000	0.0000	0.000618	0.000618
48:30:00	0.0000	0.0000	0.0000	0.0000	0.000612	0.000612
49:00:00	0.0000	0.0000	0.0000	0.0000	0.000607	0.000607
49:30:00	0.0000	0.0000	0.0000	0.0000	0.000602	0.000602
50:00:00	0.0000	0.0000	0.0000	0.0000	0.000597	0.000597
50:30:00	0.0000	0.0000	0.0000	0.0000	0.000591	0.000591
51:00:00	0.0000	0.0000	0.0000	0.0000	0.000586	0.000586
51:30:00	0.0000	0.0000	0.0000	0.0000	0.000581	0.000581

Time (hh:mm:ss)	Rain (mm)	Sewer Loss (m <sup>3</sup> /s)	Net Rain (mm)	Runoff (m <sup>3</sup> /s)	Baseflow (m <sup>3</sup> /s)	Total Flow (m <sup>3</sup> /s)
52:00:00	0.0000	0.0000	0.0000	0.0000	0.000576	0.000576
52:30:00	0.0000	0.0000	0.0000	0.0000	0.000571	0.000571
53:00:00	0.0000	0.0000	0.0000	0.0000	0.000566	0.000566
53:30:00	0.0000	0.0000	0.0000	0.0000	0.000561	0.000561
54:00:00	0.0000	0.0000	0.0000	0.0000	0.000556	0.000556
54:30:00	0.0000	0.0000	0.0000	0.0000	0.000551	0.000551
55:00:00	0.0000	0.0000	0.0000	0.0000	0.000547	0.000547
55:30:00	0.0000	0.0000	0.0000	0.0000	0.000542	0.000542
56:00:00	0.0000	0.0000	0.0000	0.0000	0.000537	0.000537
56:30:00	0.0000	0.0000	0.0000	0.0000	0.000532	0.000532
57:00:00	0.0000	0.0000	0.0000	0.0000	0.000528	0.000528
57:30:00	0.0000	0.0000	0.0000	0.0000	0.000523	0.000523
58:00:00	0.0000	0.0000	0.0000	0.0000	0.000519	0.000519
58:30:00	0.0000	0.0000	0.0000	0.0000	0.000514	0.000514
59:00:00	0.0000	0.0000	0.0000	0.0000	0.00051	0.00051
59:30:00	0.0000	0.0000	0.0000	0.0000	0.000505	0.000505
60:00:00	0.0000	0.0000	0.0000	0.0000	0.000501	0.000501
60:30:00	0.0000	0.0000	0.0000	0.0000	0.000497	0.000497
61:00:00	0.0000	0.0000	0.0000	0.0000	0.000492	0.000492
61:30:00	0.0000	0.0000	0.0000	0.0000	0.000488	0.000488
62:00:00	0.0000	0.0000	0.0000	0.0000	0.000484	0.000484
62:30:00	0.0000	0.0000	0.0000	0.0000	0.000479	0.000479
63:00:00	0.0000	0.0000	0.0000	0.0000	0.000475	0.000475
63:30:00	0.0000	0.0000	0.0000	0.0000	0.000471	0.000471
64:00:00	0.0000	0.0000	0.0000	0.0000	0.000467	0.000467
64:30:00	0.0000	0.0000	0.0000	0.0000	0.000463	0.000463
65:00:00	0.0000	0.0000	0.0000	0.0000	0.000459	0.000459
65:30:00	0.0000	0.0000	0.0000	0.0000	0.000455	0.000455
66:00:00	0.0000	0.0000	0.0000	0.0000	0.000451	0.000451
66:30:00	0.0000	0.0000	0.0000	0.0000	0.000447	0.000447
67:00:00	0.0000	0.0000	0.0000	0.0000	0.000443	0.000443
67:30:00	0.0000	0.0000	0.0000	0.0000	0.000439	0.000439
68:00:00	0.0000	0.0000	0.0000	0.0000	0.000436	0.000436
68:30:00	0.0000	0.0000	0.0000	0.0000	0.000432	0.000432
69:00:00	0.0000	0.0000	0.0000	0.0000	0.000428	0.000428

Time (hh:mm:ss)	Rain (mm)	Sewer Loss (m <sup>3</sup> /s)	Net Rain (mm)	Runoff (m <sup>3</sup> /s)	Baseflow (m <sup>3</sup> /s)	Total Flow (m <sup>3</sup> /s)
69:30:00	0.0000	0.0000	0.0000	0.0000	0.000424	0.000424
70:00:00	0.0000	0.0000	0.0000	0.0000	0.000421	0.000421
70:30:00	0.0000	0.0000	0.0000	0.0000	0.000417	0.000417
71:00:00	0.0000	0.0000	0.0000	0.0000	0.000413	0.000413
71:30:00	0.0000	0.0000	0.0000	0.0000	0.00041	0.00041
72:00:00	0.0000	0.0000	0.0000	0.0000	0.000406	0.000406
72:30:00	0.0000	0.0000	0.0000	0.0000	0.000403	0.000403
73:00:00	0.0000	0.0000	0.0000	0.0000	0.000399	0.000399
73:30:00	0.0000	0.0000	0.0000	0.0000	0.000396	0.000396
74:00:00	0.0000	0.0000	0.0000	0.0000	0.000392	0.000392
74:30:00	0.0000	0.0000	0.0000	0.0000	0.000389	0.000389
75:00:00	0.0000	0.0000	0.0000	0.0000	0.000385	0.000385
75:30:00	0.0000	0.0000	0.0000	0.0000	0.000382	0.000382
76:00:00	0.0000	0.0000	0.0000	0.0000	0.000379	0.000379
76:30:00	0.0000	0.0000	0.0000	0.0000	0.000375	0.000375
77:00:00	0.0000	0.0000	0.0000	0.0000	0.000372	0.000372
77:30:00	0.0000	0.0000	0.0000	0.0000	0.000369	0.000369
78:00:00	0.0000	0.0000	0.0000	0.0000	0.000366	0.000366
78:30:00	0.0000	0.0000	0.0000	0.0000	0.000363	0.000363
79:00:00	0.0000	0.0000	0.0000	0.0000	0.000359	0.000359
79:30:00	0.0000	0.0000	0.0000	0.0000	0.000356	0.000356
80:00:00	0.0000	0.0000	0.0000	0.0000	0.000353	0.000353
80:30:00	0.0000	0.0000	0.0000	0.0000	0.00035	0.00035
81:00:00	0.0000	0.0000	0.0000	0.0000	0.000347	0.000347
81:30:00	0.0000	0.0000	0.0000	0.0000	0.000344	0.000344
82:00:00	0.0000	0.0000	0.0000	0.0000	0.000341	0.000341
82:30:00	0.0000	0.0000	0.0000	0.0000	0.000338	0.000338
83:00:00	0.0000	0.0000	0.0000	0.0000	0.000335	0.000335
83:30:00	0.0000	0.0000	0.0000	0.0000	0.000332	0.000332
84:00:00	0.0000	0.0000	0.0000	0.0000	0.000329	0.000329
84:30:00	0.0000	0.0000	0.0000	0.0000	0.000326	0.000326
85:00:00	0.0000	0.0000	0.0000	0.0000	0.000324	0.000324
85:30:00	0.0000	0.0000	0.0000	0.0000	0.000321	0.000321
86:00:00	0.0000	0.0000	0.0000	0.0000	0.000318	0.000318
86:30:00	0.0000	0.0000	0.0000	0.0000	0.000315	0.000315

Time (hh:mm:ss)	Rain (mm)	Sewer Loss (m <sup>3</sup> /s)	Net Rain (mm)	Runoff (m <sup>3</sup> /s)	Baseflow (m <sup>3</sup> /s)	Total Flow (m <sup>3</sup> /s)
87:00:00	0.0000	0.0000	0.0000	0.0000	0.000312	0.000312
87:30:00	0.0000	0.0000	0.0000	0.0000	0.00031	0.00031
88:00:00	0.0000	0.0000	0.0000	0.0000	0.000307	0.000307
88:30:00	0.0000	0.0000	0.0000	0.0000	0.000304	0.000304
89:00:00	0.0000	0.0000	0.0000	0.0000	0.000302	0.000302
89:30:00	0.0000	0.0000	0.0000	0.0000	0.000299	0.000299
90:00:00	0.0000	0.0000	0.0000	0.0000	0.000297	0.000297
90:30:00	0.0000	0.0000	0.0000	0.0000	0.000294	0.000294
91:00:00	0.0000	0.0000	0.0000	0.0000	0.000291	0.000291
91:30:00	0.0000	0.0000	0.0000	0.0000	0.000289	0.000289
92:00:00	0.0000	0.0000	0.0000	0.0000	0.000286	0.000286
92:30:00	0.0000	0.0000	0.0000	0.0000	0.000284	0.000284
93:00:00	0.0000	0.0000	0.0000	0.0000	0.000281	0.000281
93:30:00	0.0000	0.0000	0.0000	0.0000	0.000279	0.000279
94:00:00	0.0000	0.0000	0.0000	0.0000	0.000277	0.000277
94:30:00	0.0000	0.0000	0.0000	0.0000	0.000274	0.000274
95:00:00	0.0000	0.0000	0.0000	0.0000	0.000272	0.000272
95:30:00	0.0000	0.0000	0.0000	0.0000	0.000269	0.000269
96:00:00	0.0000	0.0000	0.0000	0.0000	0.000267	0.000267
96:30:00	0.0000	0.0000	0.0000	0.0000	0.000265	0.000265
97:00:00	0.0000	0.0000	0.0000	0.0000	0.000262	0.000262
97:30:00	0.0000	0.0000	0.0000	0.0000	0.00026	0.00026
98:00:00	0.0000	0.0000	0.0000	0.0000	0.000258	0.000258
98:30:00	0.0000	0.0000	0.0000	0.0000	0.000256	0.000256
99:00:00	0.0000	0.0000	0.0000	0.0000	0.000253	0.000253
99:30:00	0.0000	0.0000	0.0000	0.0000	0.000251	0.000251
100:00:00	0.0000	0.0000	0.0000	0.0000	0.000249	0.000249
100:30:00	0.0000	0.0000	0.0000	0.0000	0.000247	0.000247
101:00:00	0.0000	0.0000	0.0000	0.0000	0.000245	0.000245
101:30:00	0.0000	0.0000	0.0000	0.0000	0.000243	0.000243
102:00:00	0.0000	0.0000	0.0000	0.0000	0.00024	0.00024
102:30:00	0.0000	0.0000	0.0000	0.0000	0.000238	0.000238
103:00:00	0.0000	0.0000	0.0000	0.0000	0.000236	0.000236
103:30:00	0.0000	0.0000	0.0000	0.0000	0.000234	0.000234
104:00:00	0.0000	0.0000	0.0000	0.0000	0.000232	0.000232

Time (hh:mm:ss)	Rain (mm)	Sewer Loss (m <sup>3</sup> /s)	Net Rain (mm)	Runoff (m <sup>3</sup> /s)	Baseflow (m <sup>3</sup> /s)	Total Flow (m <sup>3</sup> /s)
104:30:00	0.0000	0.0000	0.0000	0.0000	0.00023	0.00023
105:00:00	0.0000	0.0000	0.0000	0.0000	0.000228	0.000228
105:30:00	0.0000	0.0000	0.0000	0.0000	0.000226	0.000226
106:00:00	0.0000	0.0000	0.0000	0.0000	0.000224	0.000224
106:30:00	0.0000	0.0000	0.0000	0.0000	0.000222	0.000222
107:00:00	0.0000	0.0000	0.0000	0.0000	0.00022	0.00022
107:30:00	0.0000	0.0000	0.0000	0.0000	0.000218	0.000218
108:00:00	0.0000	0.0000	0.0000	0.0000	0.000216	0.000216
108:30:00	0.0000	0.0000	0.0000	0.0000	0.000215	0.000215
109:00:00	0.0000	0.0000	0.0000	0.0000	0.000213	0.000213
109:30:00	0.0000	0.0000	0.0000	0.0000	0.000211	0.000211
110:00:00	0.0000	0.0000	0.0000	0.0000	0.000209	0.000209
110:30:00	0.0000	0.0000	0.0000	0.0000	0.000207	0.000207
111:00:00	0.0000	0.0000	0.0000	0.0000	0.000205	0.000205
111:30:00	0.0000	0.0000	0.0000	0.0000	0.000204	0.000204
112:00:00	0.0000	0.0000	0.0000	0.0000	0.000202	0.000202
112:30:00	0.0000	0.0000	0.0000	0.0000	0.0002	0.0002
113:00:00	0.0000	0.0000	0.0000	0.0000	0.000198	0.000198
113:30:00	0.0000	0.0000	0.0000	0.0000	0.000197	0.000197
114:00:00	0.0000	0.0000	0.0000	0.0000	0.000195	0.000195
114:30:00	0.0000	0.0000	0.0000	0.0000	0.000193	0.000193
115:00:00	0.0000	0.0000	0.0000	0.0000	0.000192	0.000192
115:30:00	0.0000	0.0000	0.0000	0.0000	0.00019	0.00019
116:00:00	0.0000	0.0000	0.0000	0.0000	0.000188	0.000188
116:30:00	0.0000	0.0000	0.0000	0.0000	0.000187	0.000187
117:00:00	0.0000	0.0000	0.0000	0.0000	0.000185	0.000185
117:30:00	0.0000	0.0000	0.0000	0.0000	0.000183	0.000183
118:00:00	0.0000	0.0000	0.0000	0.0000	0.000182	0.000182
118:30:00	0.0000	0.0000	0.0000	0.0000	0.00018	0.00018
119:00:00	0.0000	0.0000	0.0000	0.0000	0.000179	0.000179
119:30:00	0.0000	0.0000	0.0000	0.0000	0.000177	0.000177
120:00:00	0.0000	0.0000	0.0000	0.0000	0.000176	0.000176
120:30:00	0.0000	0.0000	0.0000	0.0000	0.000174	0.000174
121:00:00	0.0000	0.0000	0.0000	0.0000	0.000172	0.000172
121:30:00	0.0000	0.0000	0.0000	0.0000	0.000171	0.000171

Time (hh:mm:ss)	Rain (mm)	Sewer Loss (m <sup>3</sup> /s)	Net Rain (mm)	Runoff (m <sup>3</sup> /s)	Baseflow (m <sup>3</sup> /s)	Total Flow (m <sup>3</sup> /s)
122:00:00	0.0000	0.0000	0.0000	0.0000	0.00017	0.00017
122:30:00	0.0000	0.0000	0.0000	0.0000	0.000168	0.000168
123:00:00	0.0000	0.0000	0.0000	0.0000	0.000167	0.000167
123:30:00	0.0000	0.0000	0.0000	0.0000	0.000165	0.000165
124:00:00	0.0000	0.0000	0.0000	0.0000	0.000164	0.000164
124:30:00	0.0000	0.0000	0.0000	0.0000	0.000162	0.000162
125:00:00	0.0000	0.0000	0.0000	0.0000	0.000161	0.000161
125:30:00	0.0000	0.0000	0.0000	0.0000	0.000159	0.000159
126:00:00	0.0000	0.0000	0.0000	0.0000	0.000158	0.000158
126:30:00	0.0000	0.0000	0.0000	0.0000	0.000157	0.000157
127:00:00	0.0000	0.0000	0.0000	0.0000	0.000155	0.000155
127:30:00	0.0000	0.0000	0.0000	0.0000	0.000154	0.000154
128:00:00	0.0000	0.0000	0.0000	0.0000	0.000153	0.000153
128:30:00	0.0000	0.0000	0.0000	0.0000	0.000151	0.000151
129:00:00	0.0000	0.0000	0.0000	0.0000	0.00015	0.00015
129:30:00	0.0000	0.0000	0.0000	0.0000	0.000149	0.000149
130:00:00	0.0000	0.0000	0.0000	0.0000	0.000147	0.000147
130:30:00	0.0000	0.0000	0.0000	0.0000	0.000146	0.000146
131:00:00	0.0000	0.0000	0.0000	0.0000	0.000145	0.000145
131:30:00	0.0000	0.0000	0.0000	0.0000	0.000144	0.000144
132:00:00	0.0000	0.0000	0.0000	0.0000	0.000142	0.000142
132:30:00	0.0000	0.0000	0.0000	0.0000	0.000141	0.000141
133:00:00	0.0000	0.0000	0.0000	0.0000	0.00014	0.00014
133:30:00	0.0000	0.0000	0.0000	0.0000	0.000139	0.000139
134:00:00	0.0000	0.0000	0.0000	0.0000	0.000137	0.000137
134:30:00	0.0000	0.0000	0.0000	0.0000	0.000136	0.000136
135:00:00	0.0000	0.0000	0.0000	0.0000	0.000135	0.000135
135:30:00	0.0000	0.0000	0.0000	0.0000	0.000134	0.000134
136:00:00	0.0000	0.0000	0.0000	0.0000	0.000133	0.000133
136:30:00	0.0000	0.0000	0.0000	0.0000	0.000132	0.000132
137:00:00	0.0000	0.0000	0.0000	0.0000	0.00013	0.00013
137:30:00	0.0000	0.0000	0.0000	0.0000	0.000129	0.000129

## Appendix

### Catchment descriptors \*

Name	Value	User-defined value used?
BFIHOST	0.71	No
BFIHOST19	0.68	No
PROPWET	0.22	No
SAAR (mm)	564	No

*Values in square brackets are the original values loaded from the FEH Web Service or FEH CD-ROM*

## Annex B – Surface Water Drainage 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)	2.00	Include Intermediate Ground	✓
Maximum Time of Concentration (mins)	30.00	Enforce best practice design rules	✓
Maximum Rainfall (mm/hr)	50.0		

**Nodes**

Name	Area (ha)	Cover Level (m)	Easting (m)	Northing (m)	Depth (m)
Moulton Chapel - North	0.210	2.350	528180.107	325733.138	0.800
Moulton Chapel - South	0.210	2.300	528180.086	325731.830	0.800

**Simulation Settings**

Rainfall Methodology	FEH-22	Analysis Speed	Normal	Starting Level (m)	
Rainfall Events	Singular	Skip Steady State	x	Check Discharge Rate(s)	x
Summer CV	0.750	Drain Down Time (mins)	240	Check Discharge Volume	x
Winter CV	0.840	Additional Storage (m <sup>3</sup> /ha)	20.0		

**Storm Durations**

15	30	60	120	180	240	360	480	600	720	960	1440
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Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
1	0	0	0
2	0	0	0
30	0	0	0
30	35	0	0
100	0	0	0
100	40	0	0

**Node Moulton Chapel - North Offline Hydro-Brake® Control**

Flap Valve	x	Objective	(HE) Minimise upstream storage
Loop to Node		Sump Available	✓
Invert Level (m)	1.550	Product Number	CTL-SHE-0045-7000-0500-7000
Design Depth (m)	0.500	Min Outlet Diameter (m)	0.075
Design Flow (l/s)	0.7	Min Node Diameter (mm)	1200

**Node Moulton Chapel - South Offline Hydro-Brake® Control**

Flap Valve	x	Objective	(HE) Minimise upstream storage
Loop to Node		Sump Available	✓
Invert Level (m)	1.500	Product Number	CTL-SHE-0045-7000-0500-7000
Design Depth (m)	0.500	Min Outlet Diameter (m)	0.075
Design Flow (l/s)	0.7	Min Node Diameter (mm)	1200

**Node Moulton Chapel - North Depth/Area Storage Structure**

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	1.550
Side Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Time to half empty (mins)	

Depth (m)	Area (m <sup>2</sup> )	Inf Area (m <sup>2</sup> )	Depth (m)	Area (m <sup>2</sup> )	Inf Area (m <sup>2</sup> )
0.000	357.0	0.0	0.800	535.8	0.0

**Node Moulton Chapel - South Depth/Area Storage Structure**

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	1.500
Side Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Time to half empty (mins)	

Depth (m)	Area (m <sup>2</sup> )	Inf Area (m <sup>2</sup> )	Depth (m)	Area (m <sup>2</sup> )	Inf Area (m <sup>2</sup> )
0.000	357.0	0.0	0.800	535.8	0.0

**Results for 1 year Critical Storm Duration. Lowest mass balance: 100.00%**

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m <sup>3</sup> )	Flood (m <sup>3</sup> )	Status
720 minute winter	Moulton Chapel - North	540	1.619	0.069	2.2	25.4039	0.0000	OK
720 minute winter	Moulton Chapel - South	540	1.569	0.069	2.2	25.4039	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	Outflow (l/s)	Discharge Vol (m <sup>3</sup> )
720 minute winter	Moulton Chapel - North	Hydro-Brake®	0.6	22.0
720 minute winter	Moulton Chapel - South	Hydro-Brake®	0.6	22.0

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

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m <sup>3</sup> )	Flood (m <sup>3</sup> )	Status
600 minute winter	Moulton Chapel - North	480	1.648	0.098	3.5	36.4003	0.0000	OK
600 minute winter	Moulton Chapel - South	480	1.598	0.098	3.5	36.4003	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	Outflow (l/s)	Discharge Vol (m <sup>3</sup> )
600 minute winter	Moulton Chapel - North	Hydro-Brake®	0.7	23.8
600 minute winter	Moulton Chapel - South	Hydro-Brake®	0.7	23.8

**Results for 30 year Critical Storm Duration. Lowest mass balance: 100.00%**

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m <sup>3</sup> )	Flood (m <sup>3</sup> )	Status
600 minute winter	Moulton Chapel - North	585	1.806	0.256	8.2	100.2480	0.0000	OK
600 minute winter	Moulton Chapel - South	585	1.756	0.256	8.2	100.2480	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	Outflow (l/s)	Discharge Vol (m <sup>3</sup> )
600 minute winter	Moulton Chapel - North	Hydro-Brake®	0.7	27.6
600 minute winter	Moulton Chapel - South	Hydro-Brake®	0.7	27.6

**Results for 30 year +35% CC Critical Storm Duration. Lowest mass balance: 99.99%**

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m <sup>3</sup> )	Flood (m <sup>3</sup> )	Status
960 minute winter	Moulton Chapel - North	945	1.905	0.355	7.5	142.5951	0.0000	OK
960 minute winter	Moulton Chapel - South	945	1.855	0.355	7.5	142.5951	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	Outflow (l/s)	Discharge Vol (m <sup>3</sup> )
960 minute winter	Moulton Chapel - North	Hydro-Brake®	0.7	37.4
960 minute winter	Moulton Chapel - South	Hydro-Brake®	0.7	37.4

**Results for 100 year Critical Storm Duration. Lowest mass balance: 99.99%**

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m <sup>3</sup> )	Flood (m <sup>3</sup> )	Status
960 minute winter	Moulton Chapel - North	945	1.905	0.355	7.5	142.5951	0.0000	OK
960 minute winter	Moulton Chapel - South	945	1.855	0.355	7.5	142.5951	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	Outflow (l/s)	Discharge Vol (m <sup>3</sup> )
960 minute winter	Moulton Chapel - North	Hydro-Brake®	0.7	37.4
960 minute winter	Moulton Chapel - South	Hydro-Brake®	0.7	37.4

**Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 99.99%**

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m <sup>3</sup> )	Flood (m <sup>3</sup> )	Status
1440 minute winter	Moulton Chapel - North	1410	2.050	0.500	7.5	209.0477	0.0000	OK
1440 minute winter	Moulton Chapel - South	1410	2.000	0.500	7.5	209.0477	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	Outflow (l/s)	Discharge Vol (m <sup>3</sup> )
1440 minute winter	Moulton Chapel - North	Hydro-Brake®	0.7	57.9
1440 minute winter	Moulton Chapel - South	Hydro-Brake®	0.7	57.9

