

1 Priory Lane SG4 7HE

Reference: R0772 FRA-v1

Mar-25

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FLOOD RISK ASSESSMENT

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FLOOD RISK ASSESSMENT

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Report Limitations

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RIDA Reports makes no representation whatsoever concerning the legal significance of its findings or the legal matters referred to in the following report.

All Environment Agency mapping data used under special licence. Data is current as the data on the correspondence given by the Environment Agency and is subject to change.

The information presented and conclusions drawn are based on statistical data and are for guidance purposes only. The study provides no guarantee against flooding of the study site or elsewhere, nor of the absolute accuracy of water levels, flow rates and associated probabilities.

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Purpose of this report

- 1.1 RIDA Reports Ltd has been appointed to undertake a Level 3 – Detailed Study Flood Risk Assessment for a development located at SG4 7HE.

Objectives

- 1.2 The objectives of this FRA are to demonstrate the following:
- Whether the proposed development will likely be affected by current or future flooding.
 - Whether the proposed development will increase flood risk elsewhere.
 - Whether the flood risks associated with the proposed development can be satisfactorily managed.
 - Whether the measures proposed to deal with the flood risk are sustainable.

Documents Consulted

- 1.3 To achieve these objectives, the following documents have been consulted and referenced:

The National Planning Policy Framework (NPPF)
CIRIA C753 document The SuDS Manual, 2015
Local Flood Risk Management Strategy (LFRMS)
Level 1 Strategic Flood Risk Assessment (SFRA)
Aerial photographs and topographical survey of the site
British Geological Society Records
Local Council flood Maps
Environment Agency flood maps
The CIRIA publication 'C635 Designing for exceedance in urban drainage Good practice'



Development Site and Location

- 2.1 The site is located at Priory Lane, Little Wymondley. The nearest postcode is SG4 7HE. Refer to appendix A for site location plan.
- 2.2 The current use of the site is a commercial building. The current user vulnerability classification of the site is Less vulnerable . The site is located in the River Flood Zone 3. Refer to Appendix B for more details.

Development Proposals

- 2.3 The proposed development includes the construction of 3 new dwellings. Refer to Appendix B for the layout of the proposed development.
- 2.4 The vulnerability classification of the proposed development is More vulnerable with an estimated lifetime between 50 and 100 years.

Site Hydrology and Hydrogeology

- | | | |
|------------------------|-----|---|
| Hydrology | 2.5 | The Ash Brook is located approximately 14 m away from the development. |
| Aquifer | 2.6 | The development is located within a principal aquifer area. A principal aquifer consists of layers of rock or deposits that provide a high level of water storage. It may support water supply and/or river base flow on a strategic scale. It is likely that principal aquifers are aquifers previously designated as major. |
| Source Protection Zone | 2.7 | The site is not located within a Source Protection Zone. |
| Groundwater Levels | 2.8 | The ground water levels for this site are unknown. |

Site Geology

- | | | |
|----------------------|------|---|
| Bedrock | 2.9 | The British Geological Survey records of the site show that it is located within the Holywell Nodular Chalk Formation and New Pit Chalk Formation (Undifferentiated) - Chalk. |
| Superficial Deposits | 2.10 | The British Geological Survey records show that the superficial deposits are Head - Clay, Silt, Sand and Gravel; Glaciofluvial Deposits, Mid Pleistocene - Sand and Gravel. |



National Planning Policy Framework (NPPF)

- 3.1 The NPPF and its technical guidance is a set of planning policies with the key objective of contributing to sustainable development. As part of it, they ensure that flood risk and sustainability are considered during the planning process. This ensures that developments are not located in flood risk areas and directs developments to lower risk areas. The NPPF applies a sequential risk-based approach to determining land suitability for development in flood risk areas. The NPPF also encourages developers to seek opportunities to reduce the overall level of flood risk through the development layout and the application of Sustainable Drainage Systems (SuDS).

The Flood and Water Management Act (2010)

- 3.2 The Flood and Water Management Act aims to reduce the flood risk associated with extreme weather events. It provides robust flood risk management for people, homes and businesses and encourages using SuDS for developments. A robust SuDS strategy should consider the recommendations in this Flood Risk Assessment.

Strategic Flood Risk Assessment (SFRA)

- 3.3 Planning policy with regard to development and flood risk in the area is detailed in the Strategic Flood Risk Assessment Update (SFRA) which was published in 2016. The proposed development site is located within the administrative boundary of North Hertfordshire.
- 3.4 The SFRA commits to direct new development to locations at the lowest flood risk. The SFRA provides information on the levels and flood hazards that could result from flooding. The Environment Agency flood zone maps and the SFRA ignore the presence of existing flood defences when defining the potential extent of flooding.
- 3.5 This report follows the guidance given in the Strategic Flood Risk Assessment Update by evaluating the flood risk and providing relevant flood mitigation.



- 4.1 The NPPF guidance states that the sequential test "is designed to ensure that areas at little or no risk of flooding from any source are developed in preference to areas at higher risk. This means avoiding, so far as possible, development in current and future medium and high flood risk areas considering all sources of flooding including areas at risk of surface water flooding."

Applicability of the Sequential Test

- 4.2 The flood risks were determined by identifying all the sources of flooding and assessing their possible impact and likelihood to development. It is confirmed that the development is:

- In Flood Zone 3, based on the Planning Flood Risk Map
- In Flood Zone 1, based on the modelled flood levels. See Appendix D.
- At Low risk of surface flooding
- At very low risk of groundwater flooding
- Outside of a critical drainage area
- Outside of an area with sewer flooding

- 4.3 Due to the flood risk on the development, a sequential test is required. For this development, the sequential assessment was completed for the area within the red line of the planning application. The development has been located at the lowest flood risk. Regarding looking at other reasonably available sites, it is unlikely that other areas are available in lower flood risk probability as the development is small and can only be located within the proximity of the existing land use and land ownership. It is concluded that the current proposals pass the sequential test.

Exception Test

- 4.4 Fluvial flood risk was assessed using the Environment Agency Flood Zone Maps and the sequential risk-based approach recommended in the NPPF guidance. The exception test requirement considers the flood risk vulnerability of land uses about the flood zone categorisation. These parameters are assessed to determine whether the development requires an exception test or is inappropriate.

- Step 1** 4.5 The proposed development falls within The Environment Agency (EA) Flood Zone 3. The Flood Zone 3 is considered to have a high probability of flooding
- Flood Zone categorisation



with a 100 years or greater annual probability or >1%AEP.

Flood risk vulnerability	Step 2 4.6	Within Table 2 (Flood Risk Vulnerability Classification) of the NPPF Planning Practice Guide, the proposed development is classified as 'More vulnerable'.
Flood Zone incompatibility	Step 3 4.7	The Flood Risk vulnerability and Flood Zone incompatibility table of the NPPF Planning Practice Guide states that More vulnerable developments are required to pass the Exception Test in this area.

The Exception Test

4.8 The development requires passing the Exception Test. To pass the exception test, they should be demonstrated the following:

(a) the development would provide wider sustainability benefits to the community that outweigh the flood risk; and

(b) the development will be safe for its lifetime, taking account of the vulnerability of its users, without increasing flood risk elsewhere, and, where possible, will reduce flood risk overall.

Both elements of the exception test should be satisfied for development to be allocated or permitted.

4.9 The development reduces flood risk to the wider community through the provision of or financial contribution to flood risk management infrastructure. It also offers multifunctional Sustainable Drainage Systems that integrate with green infrastructure, significantly exceeding the National Planning Policy Framework policy requirements for Sustainable Drainage Systems.

4.10 The development reduces the flood risk overall and demonstrates that the measures go beyond just managing the flood risk resulting from the development. Reductions could be achieved, for example by:

- Incorporating green infrastructure within the layout and form of development to make additional space for the flow and storage of flood water;
- Providing Sustainable Drainage Systems that manage flood risk beyond the proposed site and above the usual standard, such as by removing surface water from existing combined sewers;
- Providing or making contributions to flood risk management infrastructure that will provide additional benefits to existing communities and/or safeguarding the land needed to deliver it.

4.11 The following sections of this flood risk assessment demonstrate that the



proposed development can be safely established with an adequate standard of flood protection, including allowance for climate change, and that proposed surface water management provisions may contribute to the reduction in flood risk elsewhere. On this basis, it is concluded that the proposed development passes the Exception Test.



- 5.1 The development has been assessed for the following potential flood risks, river and tidal flood risk, surface water flooding, flooding from groundwater, reservoir flood risk and drainage systems.

Flood Defence and Historic Flooding

- 5.2 The Environment Agency records show that the site does not benefit from flood defences. They also show that the area around the site has potentially been flooded in the past. This data does not indicate if a property has been flooded internally. See Appendix C for details.

Flooding from river and sea

- 5.3 The site is affected by River Flooding. The proposed development falls within The Environment Agency (EA) Flood Zone 3. The Flood Zone 3 is considered to have a high probability of flooding with a 100 years or greater annual probability or >1%AEP.
- 5.4 The climate change allowance has been taken from the EA peak river flow map. The vulnerability of the development, the design life of the building, and the flood zone classification were used to determine it. The climate change allowance for this site is 19%. The nearest climate change allowance of 19% provided by the EA was used as the most representative to complete this assessment.
- 5.5 The estimated flood levels have been modelled and are shown in table 1 below. Further details are provided in Appendix D.

Flood levels at Site

Return Period	Flood Level (m AOD)
1 in 20 (5%)	76.138
1 in 30 (3.3%)	76.148
1 in 100 (1%)	76.15
1 in 100 + 19%(CC)	76.152
1 in 1000 (0.1%)	76.241

- 5.6 The river flood risk level is 76.152m AOD. This level is 0.3 m lower than the average site level; however, the site is still impacted due to the 300mm



clearance between the design flood level and the FFL.

Surface water (overland flows) flood risk

5.7 The Environment Agency maps show that the flood risk from surface water is low. A residual risk of localised shallow ponding remains likely. The Environment Agency surface water flood risk maps are defined by applying a specific procedure based on digital terrain models and assumptions regarding infiltration and urban drainage losses. The surface water flood maps are determined by the Environment Agency as follows:

5.8 *"The nationally produced surface water flood mapping only indicates where surface water flooding could occur due to local rainfall. It does not fully represent flooding that occurs from:*

- Ordinary watercourses
- Drainage systems or public sewers caused by catchment-wide rainfall events
- Rivers
- Groundwater

Due to the modelling techniques, the mapping picks out depressions in the ground surface. It simulates some flow along natural drainage channels, rivers, low areas in floodplains, and flow paths between buildings. Although the maps appear to show flooding from ordinary watercourses, they should not be taken as definitive mapping of flood risk from these as the conveyance effect of ordinary watercourses or drainage channels is not explicitly modelled. Also, structures (such as bridges, culverts and weirs) and flood risk management infrastructure (such as defences) are not represented.

The nationally produced surface water flood mapping does not consider the effect of pumping stations in catchments with pumped drainage. No allowance is made for tide locking, high tidal or fluvial levels where sewers cannot discharge into rivers or the sea."

5.9 The strategic flood risk for North Hertfordshire confirms that the flood risk for the site is Low. The surface water flood data has not been produced to determine the flood levels at individual properties. This data does not contain the climate change allowances for depth levels. Therefore, the Design flood level given below is an assumption. The new development may have greater or lower surface water flood depths.

5.10 Based on the Environment Agency and the Strategic flood risk assessment's surface water mapping, together with the presence of surface water drainage systems at the site and surrounding area, it is concluded that the site is at Low risk of flooding from surface water sources. The depth of water is potentially below 300mm. For this assessment, a depth of water of 0.3m has been taken



as the most appropriate depth to the site; this depth has been derived from the rofsw_cc01 and includes the effects of climate change. The average ground level at the site where surface water is predicted to happen is 76.05m AOD. The surface water flood level on this site could be in the region of 76.35m AOD.

Flooding from drainage systems in adjacent areas

- 5.11 The council records have been reviewed. The flooding from drainage incidents maps were not found in the Strategic Flood Risk Assessment. Therefore, for the purpose of this report, it has been assumed that the risk of flooding from drainage systems is low.

Reservoirs Risks

- 5.12 The Reservoir Flood Map (RFM) produced by the Environment Agency does not show the risk to individual properties of dam breach flooding. The maps do not indicate or relate to any particular probability of dam breach flooding. The maps were prepared for emergency planning purposes. They can be used to help reservoir owners produce on-site plans, and the Local Resilience Forum produce off-site plans and to prioritise areas for evacuation/early warning in the event of a potential dam failure. The RFM shows that the development could be outside of the possible dam breach flooding path. See Appendix C.

Groundwater flood risk

- 5.13 The British Geological Survey's flood risk susceptibility maps show that the development has limited susceptibility to groundwater flooding. The risk of groundwater flood to the site is considered very low. Refer to appendix C for record drawings.

Critical Drainage Areas

- 5.14 The Strategic Flood Risk Assessment was reviewed as part of this assessment. However, it does not show the critical drainage areas within the council. For this report, it has been assumed that the site is outside of a notified critical drainage area.



6.1 The Flood hazard assessment has demonstrated that the site is:

- In Flood Zone 3, based on the Planning Flood Risk Map
- In Flood Zone 1, based on the modelled flood levels. See Appendix D.
- At Low risk of surface flooding
- At very low risk of groundwater flooding
- Outside of a critical drainage area
- Outside of an area with sewer flooding

6.2 Under the NPPF it is necessary to demonstrate that, for any new development on the site, it is possible to provide an adequate level of flood protection for personnel working or living at the development.

Design Flood Level

6.3 The design flood level is the maximum estimated water level during the design storm event including an allowance for climate change in line with current best practice and the national planning policy guidance.

6.4 The Design Flood Level for this development has been determined by evaluating the levels from the Fluvial/Sea, Surface Water and Groundwater flood levels.

6.5 For this site, the Design Flood Level is 76.35m AOD. This is the highest level and corresponds to the Surface Water Flood Level.

Flood Protection

6.6 The National Planning Guidance standing advice and Environment Agency recommends that where possible, flood avoidance is provided by establishing the development's finished floor level 600mm above (freeboard) the design flood level. However, this level can be reduced if there is a high level of certainty about the estimated flood level. For this site the estimated free board has been determined to be 0.3m above the Design Flood Level due to the quality of the flood risk information available and the type of risk. The finished floor should be 76.65m AOD. As the prevailing ground level where the existing building sits is 76.45 m AOD, achieving this level would involve a 200mm raise.

6.7 The recommended finished floor level can be achieved. Based on this, no flood protection or mitigation measures are deemed necessary.



- 6.18 The Strategic Flood Risk Assessment shows that the site is outside of an area of sewer flooding, therefore no mitigation on sewer flood is required.



7.1

The NPPF specifically stipulates that consideration should be given to potential off-site flood impacts of any proposed development. These off-site impacts are in relation to the following:

- Surface water management
- Flood flow conveyance, storage and climate change

Surface Water Management

7.2

The surface water run-off will be disposed of using SuDS techniques. The aim is to provide a sustainable design that accommodates the proposed attenuation volume and replicates the existing drainage regime using the SuDS hierarchy, as shown in the figure below.

7.3

The Landis Top Soil classification is slightly impeded drainage. The SuDS techniques highlighted in red below could be used on-site. This assessment is based on the LANDIS Top Soil infiltration, ground conditions and available potential discharge points.

The SuDS Hierarchy (Source:EA Thames region, SuDS a practical guide)

Most Sustainable	SUDS technique	Flood Reduction	Pollution Reduction	Landscape & Wildlife Benefit
↑	Living roofs	✓	✓	✓
	Basins and ponds	✓	✓	✓
	- Constructed wetlands			
	- Balancing ponds			
	- Detention basins			
	- Retention ponds			
	Filter strips and swales	✓	✓	✓
	Infiltration devices	✓	✓	✓
	- soakaways			
↓	- infiltration trenches and basins			
	Permeable surfaces and filter drains	✓	✓	
	- gravelled areas			
	- solid paving blocks			
Least Sustainable	- porous paviers			
	Tanked systems	✓		
	- over-sized pipes/tanks			
	- storms cells			

7.4

Subject to a drainage proposal in line with the NPPF, with no increase in the rate of surface water discharge from the site, compared to the site in its current configuration, the proposed development would have no adverse impact on surface water flood risk at the site or surrounding area. The SuDS should be designed at the detailed project stage.



Flood Flow conveyance and storage

- 7.5 Due to the size of the development and its location in the flood risk zone, flood compensation for this development is not required.



- 8.1 This flood risk assessment has identified the potential flooding mechanisms that could affect the site. As part of this, the following residual risks have been evaluated.

Public safety and Site Access

- 8.2 This assessment has demonstrated that the proposed development will have no adverse impact on flood risk in the area surrounding the site. Available evidence indicates that the development would not change surface water generation. Therefore, there is no basis to indicate that, with respect to flood risk, the proposed development would adversely impact public safety.
- 8.3 It will be necessary to ensure that all building users are fully informed of procedures to be implemented during the threat of imminent flooding.

Flood Warning and evacuation

- 8.4 The site is located within an area covered by the Environment Agency Flood Alert service. It is recommended that the users of the proposed development are registered with this service to receive early warning of imminent flooding.
- 8.5 The occupants of the site are encouraged to sign up for the alerts. An appropriate Flood Management and Evacuation Plan tailored to the use of the site should be in place before the site occupation. Table 4 below shows the actions that will be taken for each flood warning.
- 8.6 Action to be taken in the event of an Alarm being Raised or a Flood Warning Received:
- a. Raise the alarm and evacuate the site following the established Fire Drill procedures. The main assembly is as per the main house fire drill assembly point.
 - b. Contact Emergency Fire Services (999) if necessary and Environment Agency Floodline: (0845 988 1188) if the event is unexpected.
 - c. If safe to do so, locate and turn off critical services, e.g. water, gas & electricity.
 - d. Follow the routes below to evacuate the site altogether.



Actions that will be taken for each flood warning

Warning	Message	Timing	Action
 FLOOD ALERT	Flooding is possible. Be prepared.	2 hours to 2 days in advance of flooding.	- Be prepared for flooding. - Prepare a flood kit.
 FLOOD WARNING	Flooding is expected. Immediate action required.	Half an hour to 1 day in advance of flooding.	- Act now to protect your property. - Block doors with flood boards or sandbags and cover airbricks and other ventilation holes. - Move pets and valuables to a safe place. - Keep a flood kit ready. - Move any critical equipment and information to a safe location
 SEVERE FLOOD WARNING	Severe flooding. Danger to life.	When flooding poses a significant threat to life and different actions are required.	- Be ready should you need to evacuate from the property. - Co-operate with the emergency services and call 999 if you are in immediate danger.
Warning Removed	No further flooding is currently expected for your area.	Issued when a flood warning is no longer in force.	- Flood water may still be around and could be contaminated. - If you've been flooded, ring your buildings and contents insurance company as soon as possible.

Useful local phone numbers

Please write your local phone numbers in the space provided below. Make sure they are easy to find in the event of a flood.

	Local authority:
	Local police:
	Gas and electricity company:
	Insurance company and policy details:
	Doctor:
	Pharmacy:
	Electrician:
	Gas safe engineer:
	Plumber:
	Builder:



- 8.7 The proposed evacuation route below shows how the development could be evacuated before the 1 in 1000 or 0.1% annual probability of flooding extreme flood occurs. Safe egress is achievable by following Priory Lane south for 200m, until reaching the area which is shown to be beyond the extent of flooding. See figure below for details.

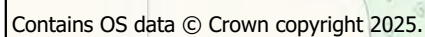
Evacuation Route



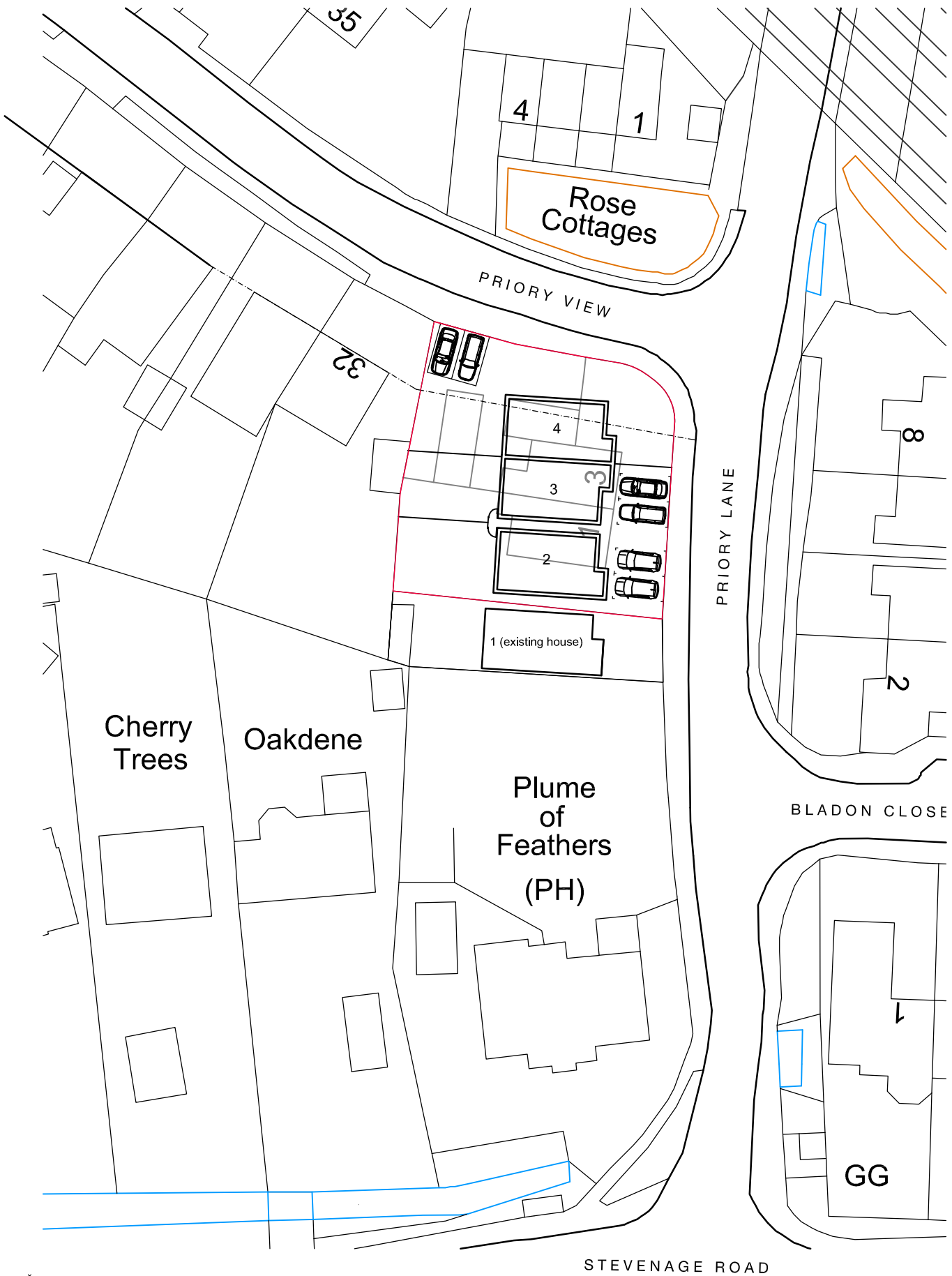
- 9.1 It is concluded that subject to the proposed mitigation measures, the site can be developed in accordance with the provisions of the NPPF and the requirements of the Environment Agency and the local planning authority.
- 9.2 This report demonstrates that the proposal will be safe, in terms of flood risk, for its design life and will not increase the flood risk elsewhere.
- 9.3 It is proposed that a formal Flood Warning and Emergency Response Plan is developed for the proposed development to communicate flood emergency response procedures to all the occupants of the site.



Appendix A



Appendix B



Scale 1:500 0 5 12.5 25 50m

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THIS DRAWING MUST BE READ TOGETHER WITH THE SPECIFICATION, BILL OF QUANTITIES AND RELATED DRAWINGS.



CLIENT:
**Mr. R. Carter
Walkern
Hertfordshire**

PROJECT:
New Housing

ISSUE STATUS:
Feasibility Study

TITLE:
Site / Block Plan

SCALE:
1:500@A4

PROJECT No:
2437

DATE:
Oct '2

DRAWN BY: CHECKED:
drw

DWG No:
P 001

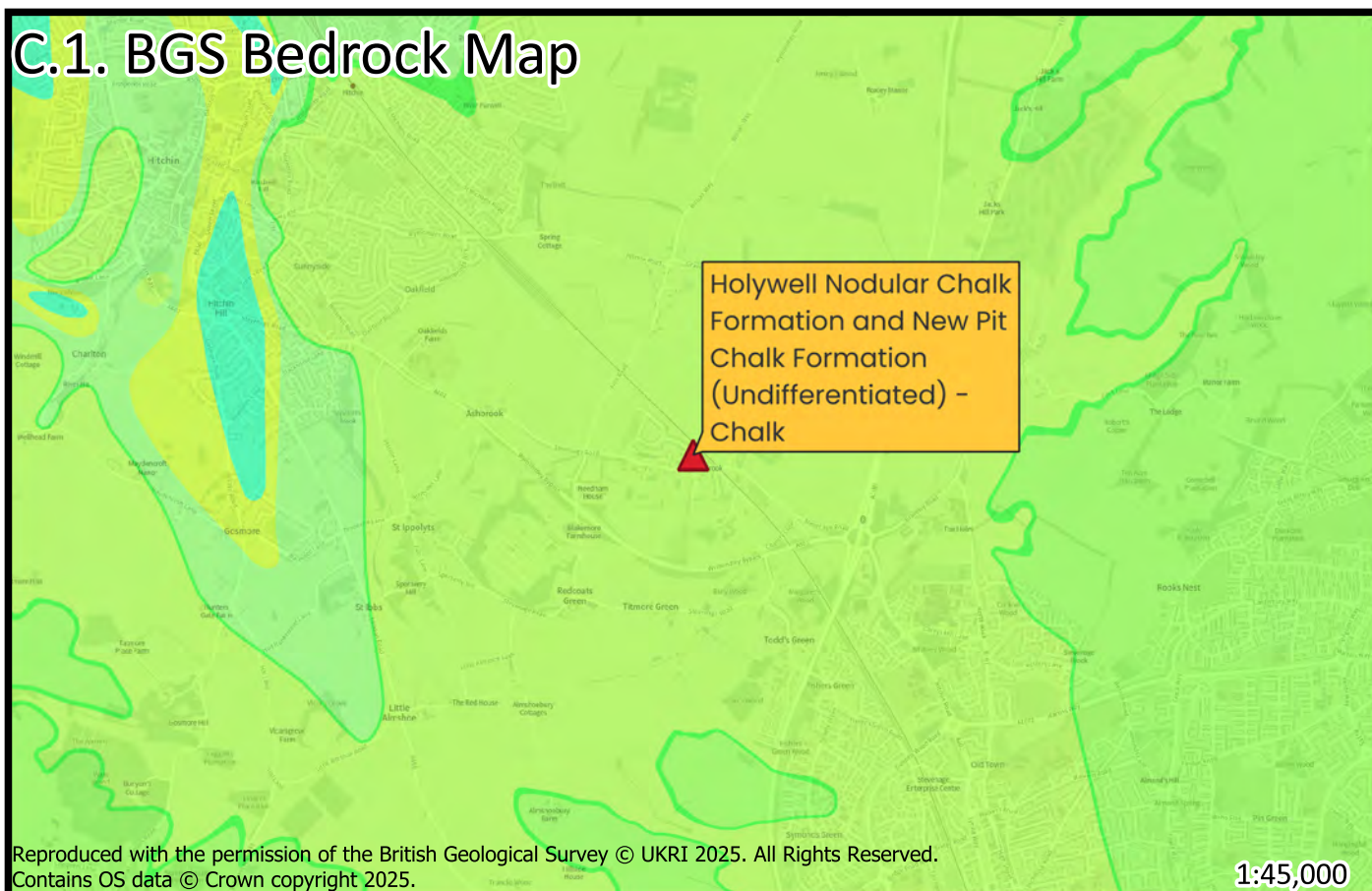
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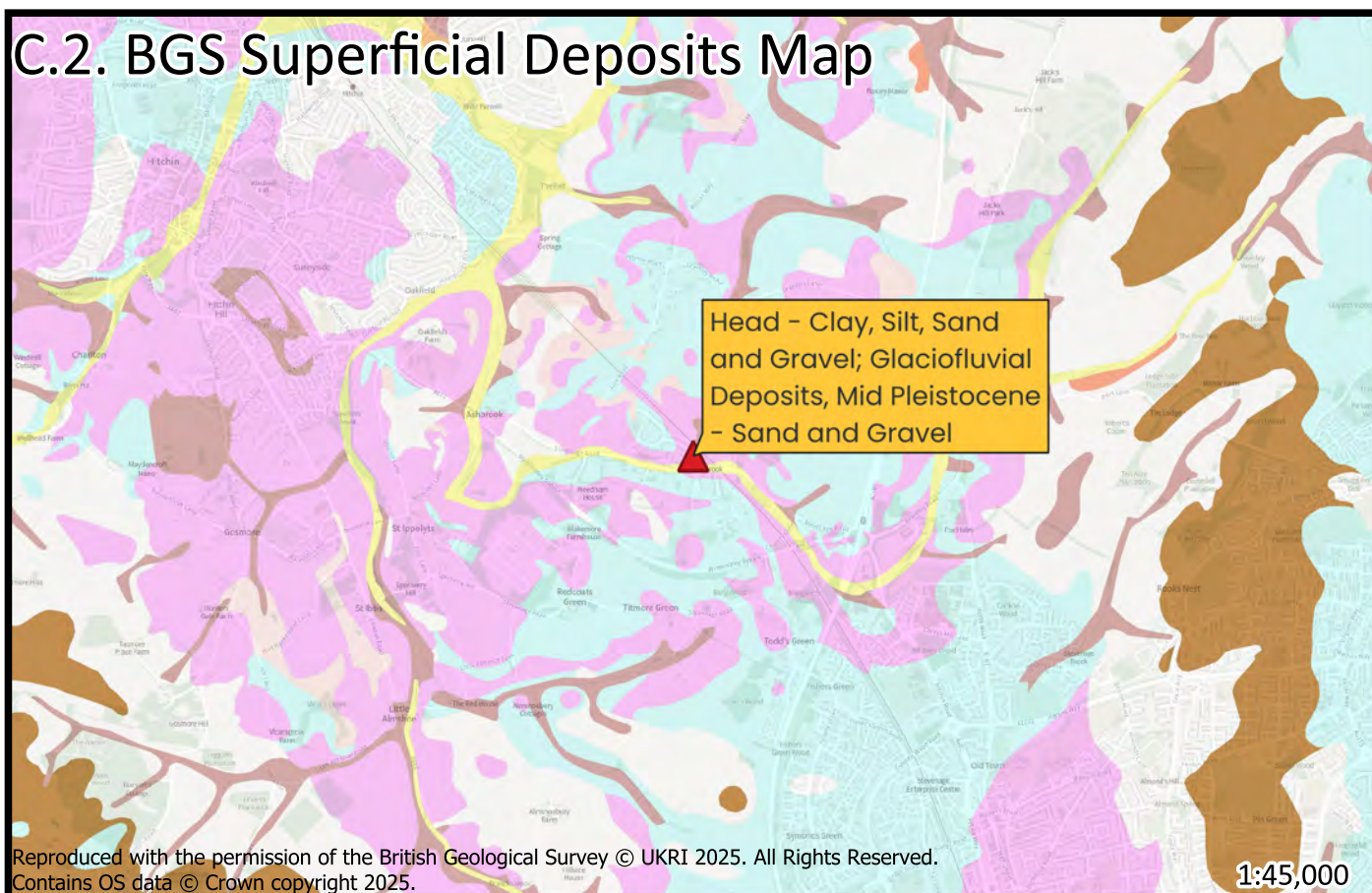
- 172a HIGH STREET - STEVENAGE -
- HERTFORDSHIRE - SG1 3LL -
- m: 07902 960 581 - t: 01438 234711 -
- e: drw@356architects.co.uk -

Appendix C

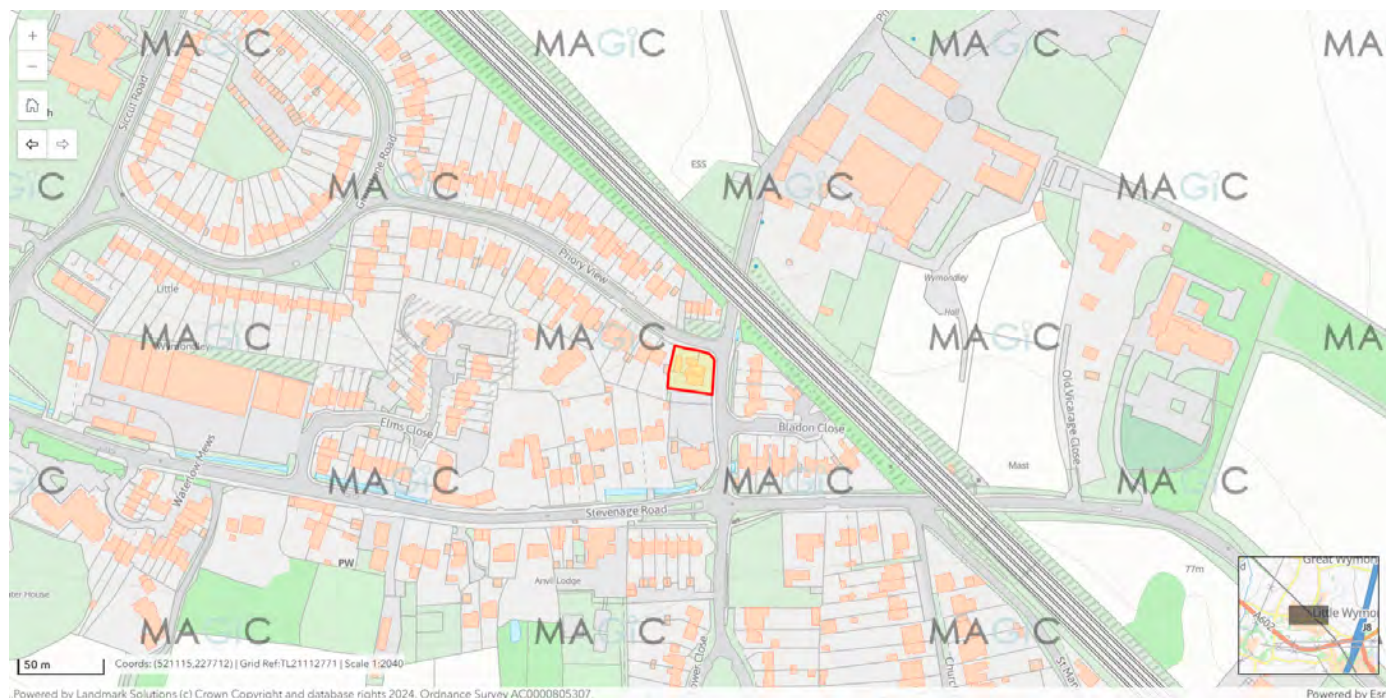
C.1. BGS Bedrock Map



C.2. BGS Superficial Deposits Map



C.3. Aquifer Designation Map (DEFRA MAGIC Tool)



Site Check Results

Site Check Report generated on Sat Mar 22 2025

The following features have been found in your search area:

You selected the location: Centroid Grid Ref: TL21502750

Aquifer Designation Map (Superficial Drift) (England)

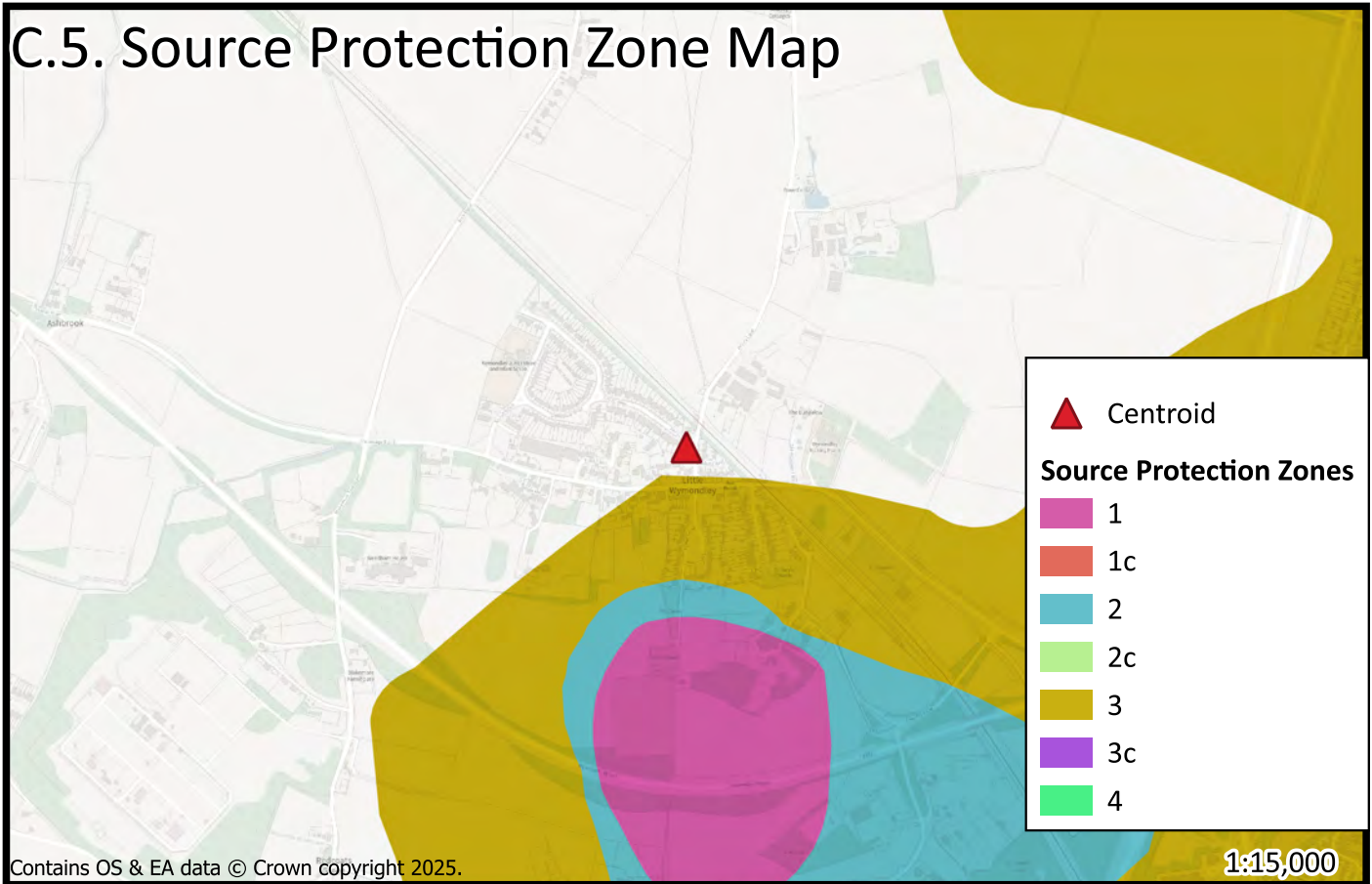
TYPOLOGY Secondary (undifferentiated)

TYPOLOGY Secondary A

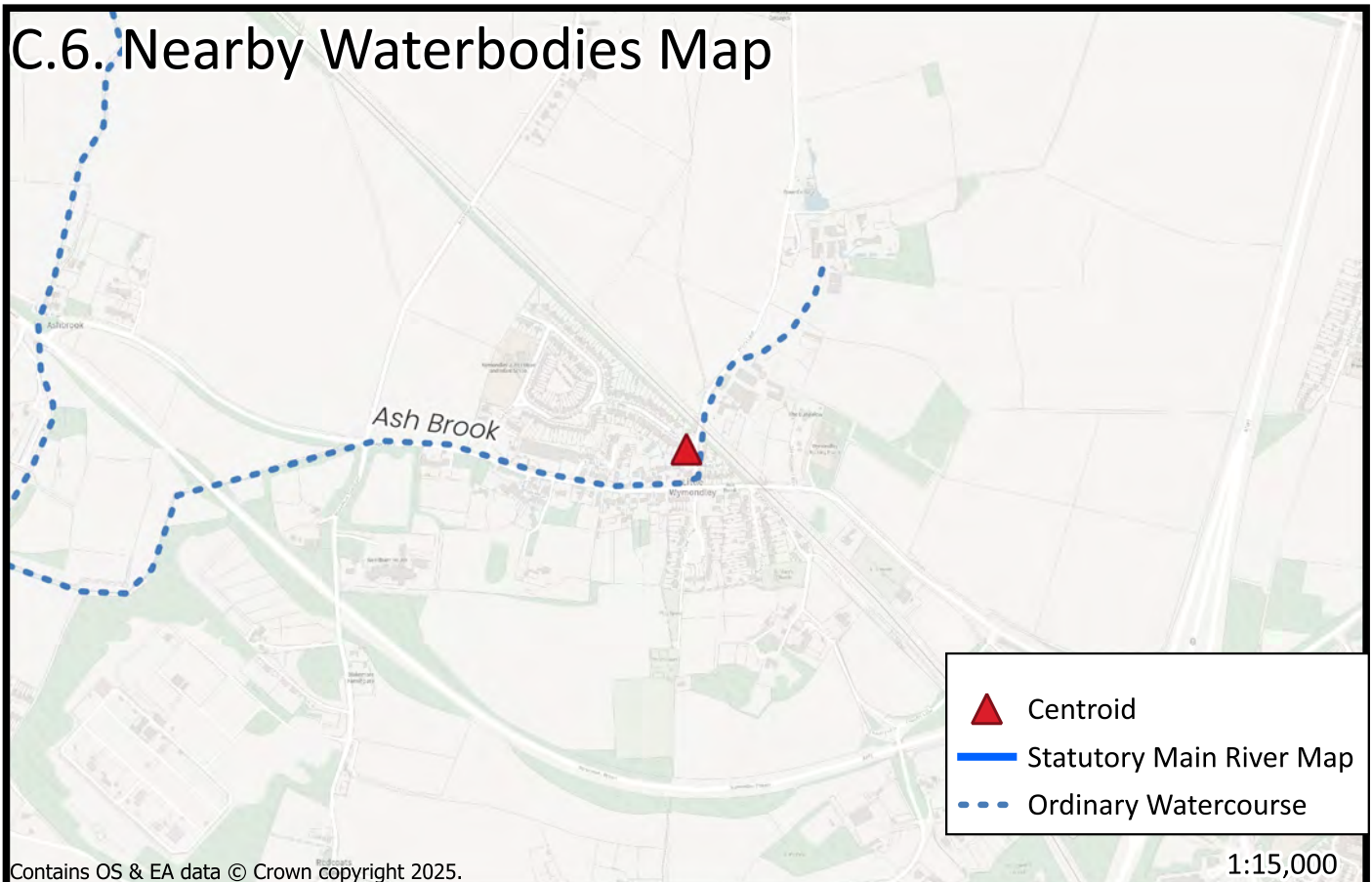
Aquifer Designation Map (Bedrock) (England)

TYPOLOGY Principal

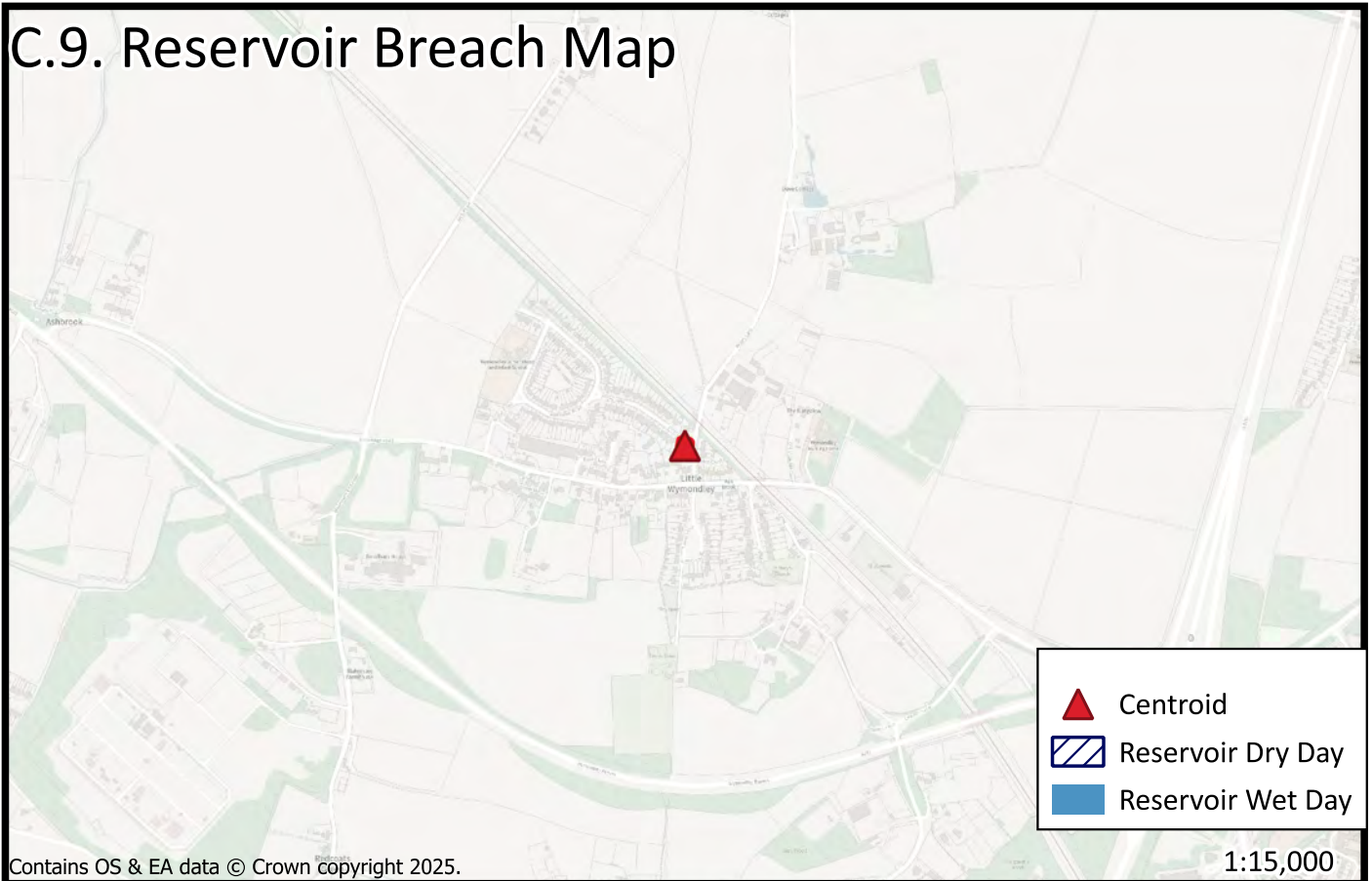
C.5. Source Protection Zone Map



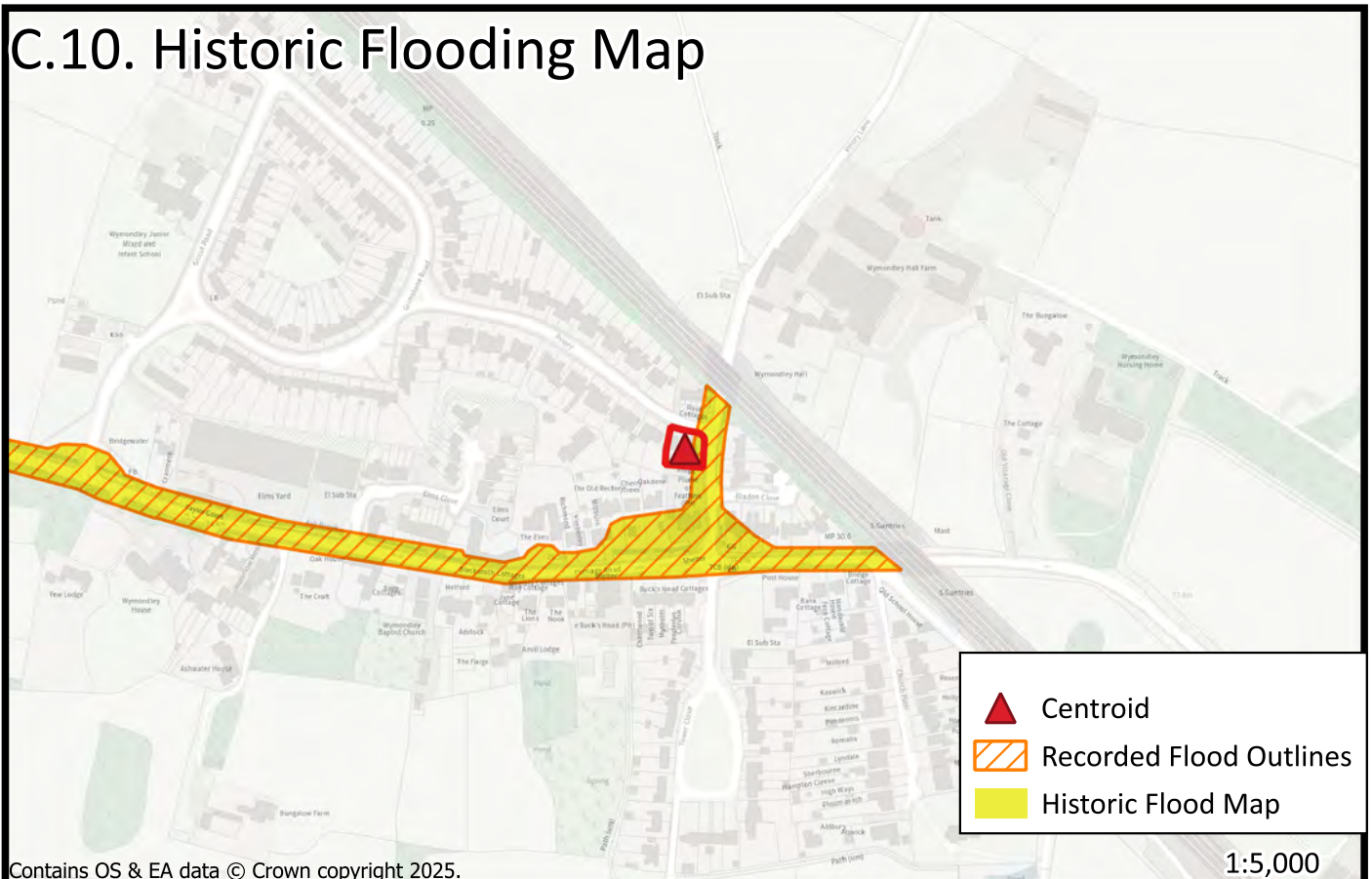
C.6. Nearby Waterbodies Map



C.9. Reservoir Breach Map



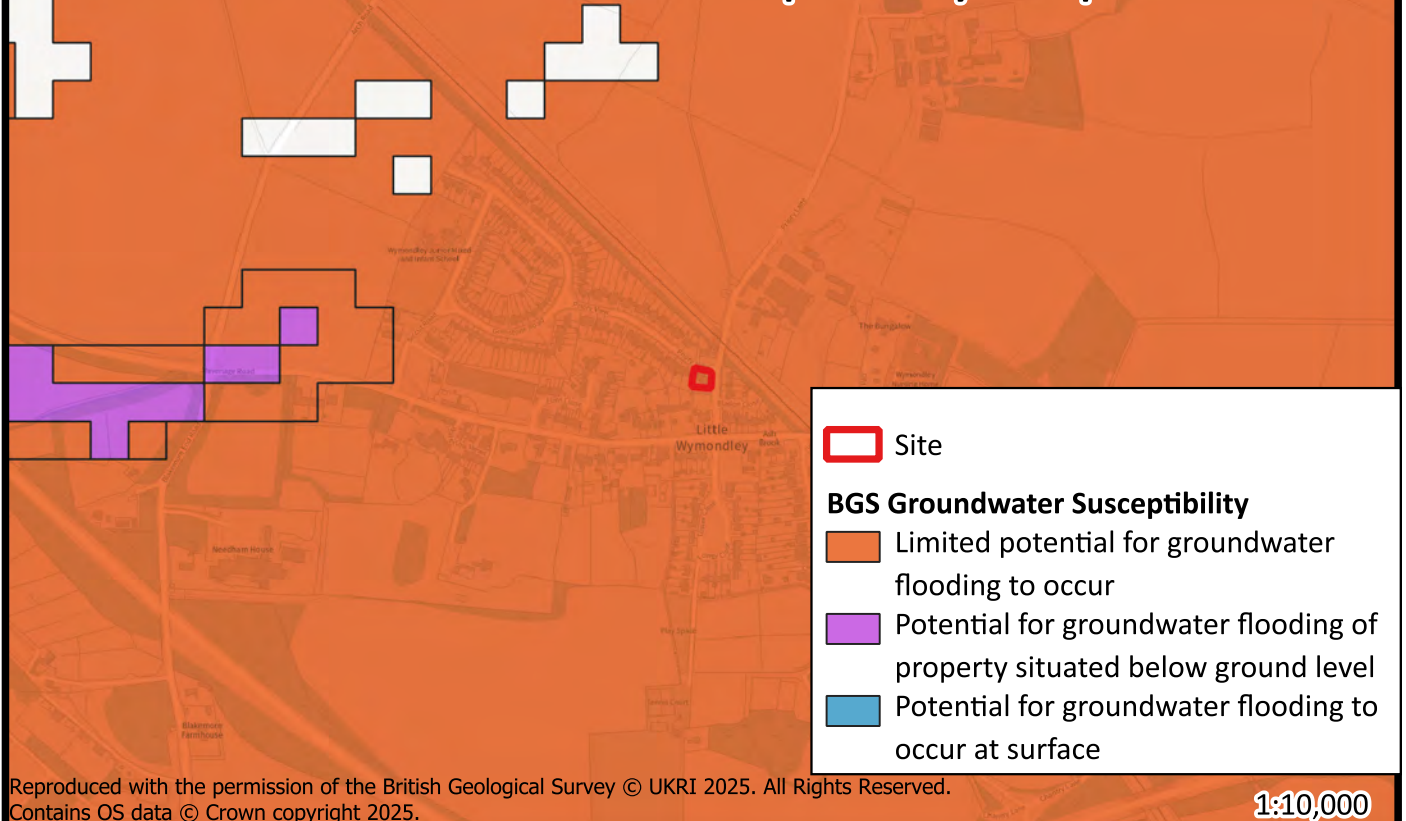
C.10. Historic Flooding Map



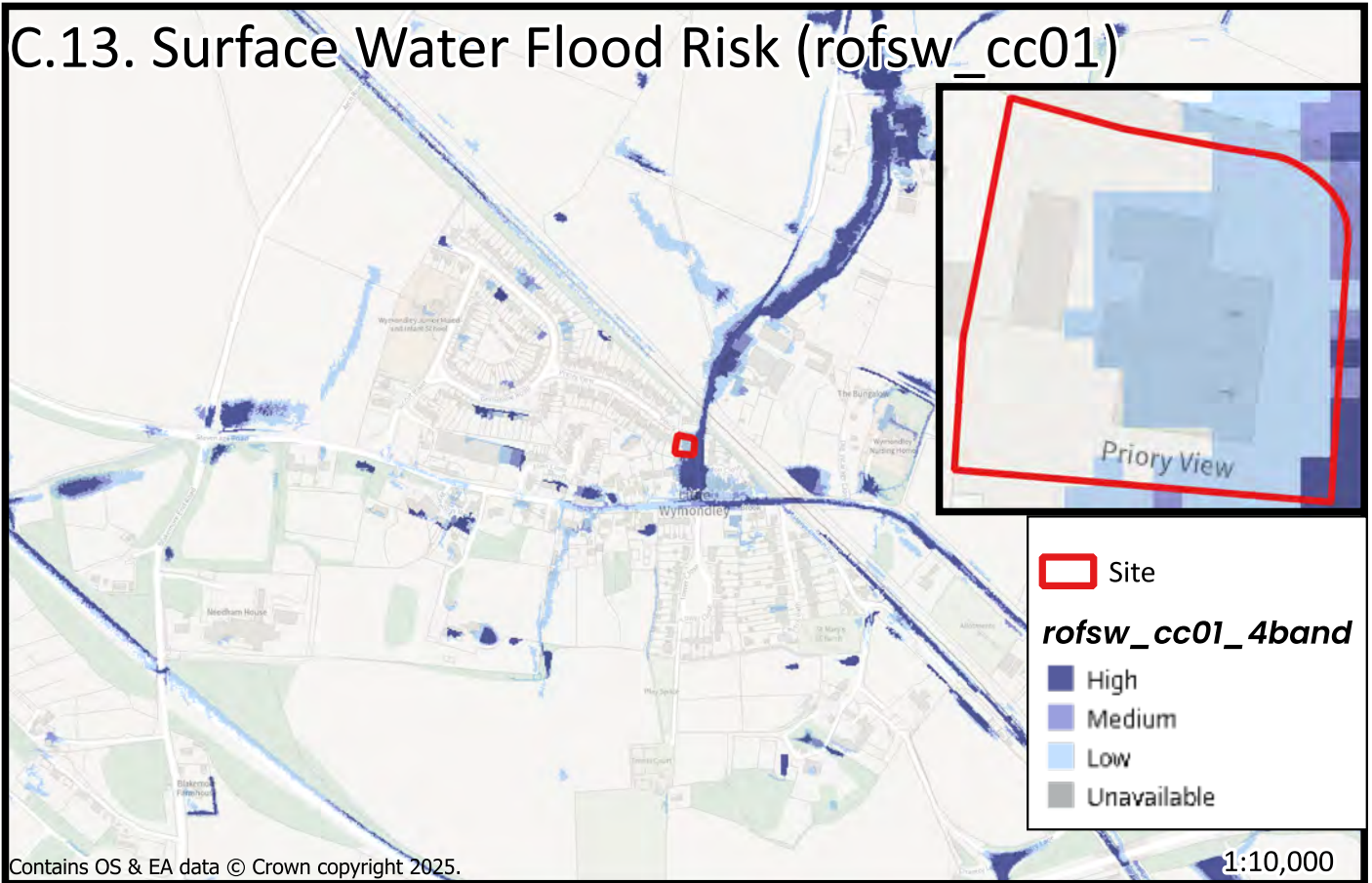
C.11. Flood Defences and Risk Reduction



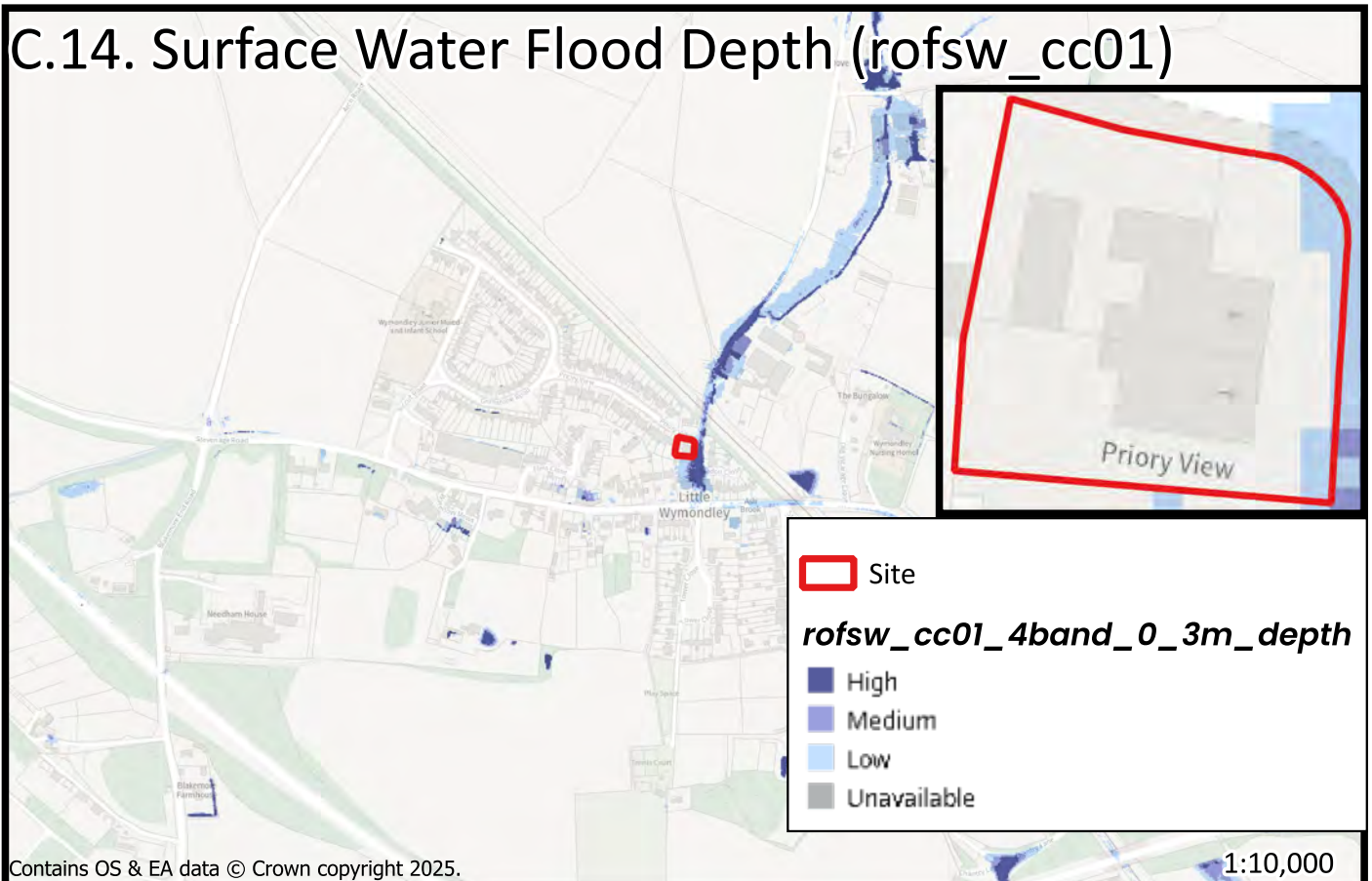
C.12. BGS Groundwater Susceptibility Map



C.13. Surface Water Flood Risk (rofsw_cc01)



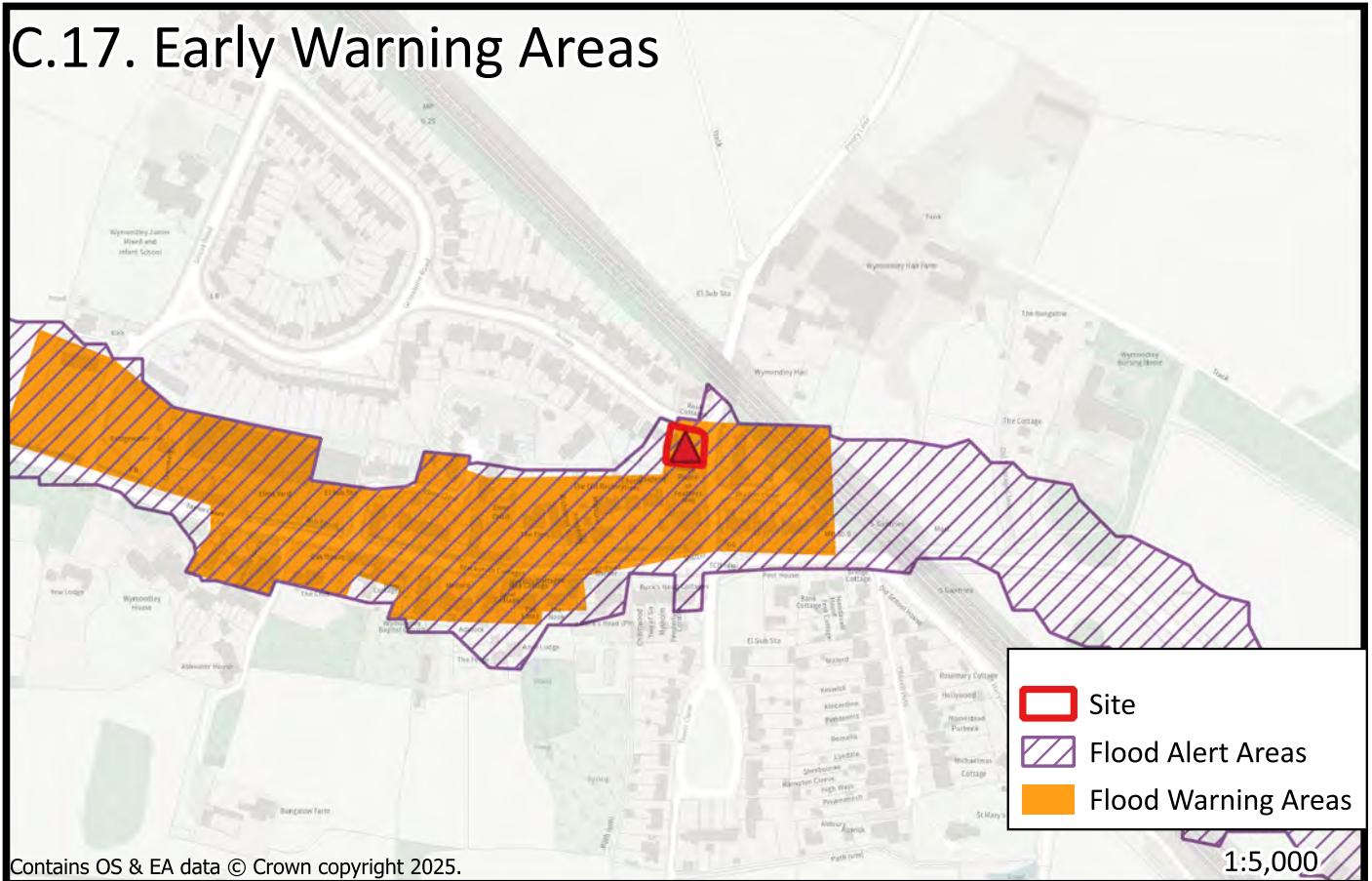
C.14. Surface Water Flood Depth (rofsw_cc01)



C.15. Rivers and Sea Flood Risk (rofrs_cc01)



C.17. Early Warning Areas



Soil Information

Soilscape 9:
Lime-rich loamy and clayey soils with impeded drainage

Texture:
Clayey, some loamy

Coverage:
England: 5.3%, Wales: 0.0%, England & Wales: 4.5%

Drainage:
Slightly impeded drainage

Fertility:
High

🥕🥕🥕🥕🥕

Flood map for planning

Your reference
R0772

Location (easting/northing)
521508/227506

Created
23 Mar 2025 0:44

Your selected location is in flood zone 3, an area with a high probability of flooding.

This means:

- you must complete a flood risk assessment for development in this area
- you should follow the Environment Agency's standing advice for carrying out a flood risk assessment (see www.gov.uk/guidance/flood-risk-assessment-standing-advice)

Notes

The flood map for planning shows river and sea flooding data only. It doesn't include other sources of flooding. It is for use in development planning and flood risk assessments.

This information relates to the selected location and is not specific to any property within it. The map is updated regularly and is correct at the time of printing.

Flood risk data is covered by the Open Government Licence which sets out the terms and conditions for using government data. <https://www.nationalarchives.gov.uk/doc/open-government-licence/version/3/>

Use of the address and mapping data is subject to Ordnance Survey public viewing terms under Crown copyright and database rights 2024 OS AC0000807064. <https://flood-map-for-planning.service.gov.uk/os-terms>

Flood map for planning

Your reference
R0772

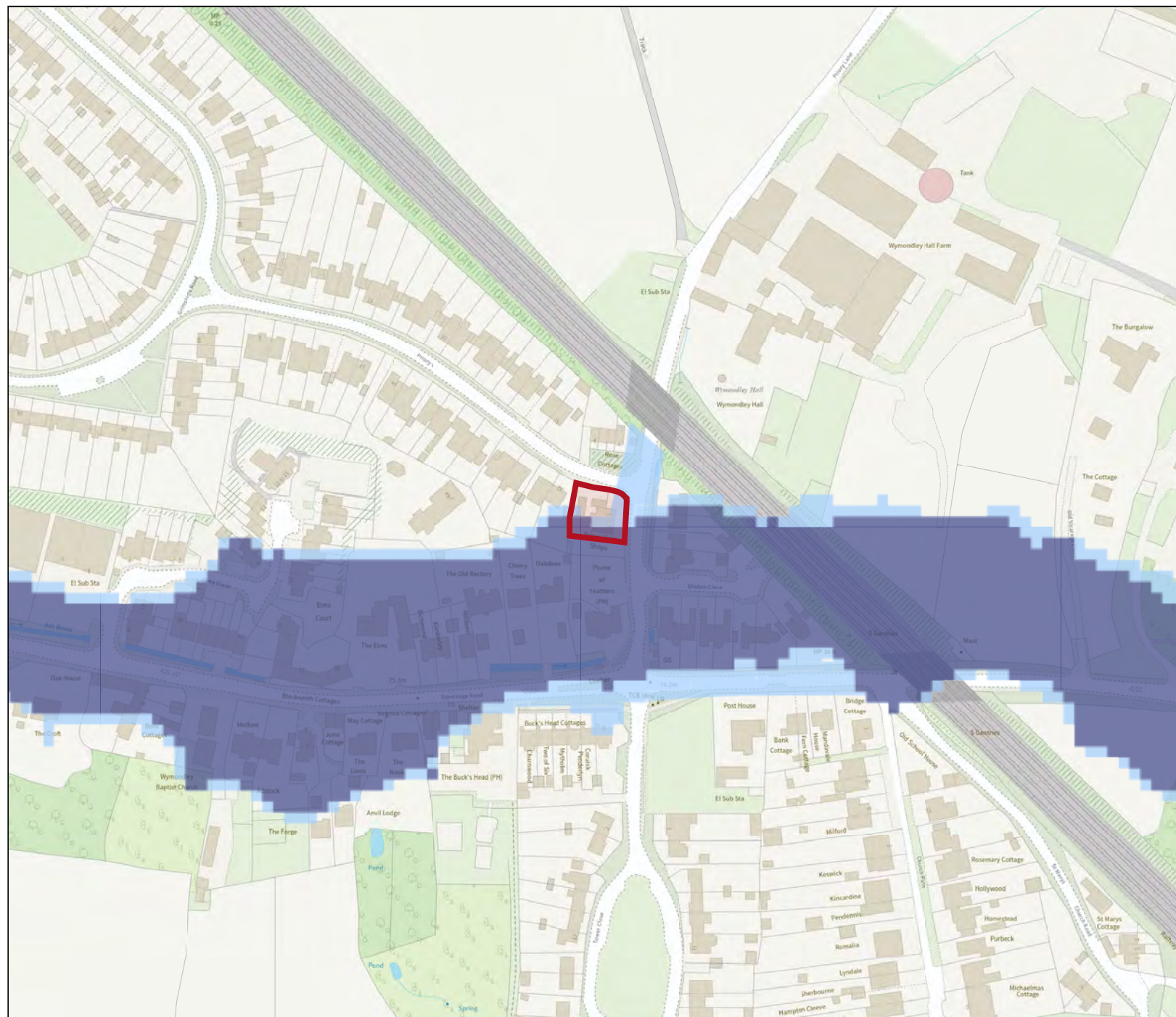
Location (easting/northing)
521508/227506

Scale
1:2500

Created
23 Mar 2025 0:44

-  Selected area
-  Flood zone 3
-  Flood zone 2
-  Flood zone 1
-  Flood defence
-  Main river
-  Water storage area

0 20 40 60m



Appendix D

River Modelling

1 Priory Lane, SG4 7HE

Reference: 0415

March 2025

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RIVER MODEL

Calculation of Flows

- 1.1 This study has considered the 1 in 20 year, 1 in 75 year, 1 in 100 year, 1 in 100 year + 19% allowance for climate change, 1 in 100 year + 30% allowance for climate change, 1 in 200 year, 1 in 1000 year, and 1 in 1000 year + 1.19% allowance for climate change flood flows for the roadside channel.
- 1.2 Using FEH Web Service, Catchment Descriptors were determined at a point near the project site. It has a drainage area of 12.22 km².
- 1.3 Each design rainfall was simulated in RefH2 with an Area reduction factor of 0.96 and Seasonal correction factor of 0.99. The summer storms were the ones that produce higher peak flows. A 19% and 30% increase from the 1 in 100 year event and a 19% increase from the 1 in 1000 year event were added in the simulation based on the climate change allowance.
- 1.4 The climate change allowances are as per the Guidance Flood risk assessments: climate change allowances last updated 27 May 2022.

Climate Change Allowances:

100+19% - Central-2080s

100+30% - Higher- 2080s

- 1.5 From the hydrological assessment, the design peak flows are as follows:

Table 1. Peak Flow Estimates for Priory Lane

Return Period (years)	Estimated Peak Flows, m ³ /s
1 in 20	2.44
1 in 30	2.68
1 in 75	3.44
1 in 100	3.78
1 in 100 + 19% CC	4.74
1 in 100 + 30% CC	5.34
1 in 200	4.96
1 in 1000	8.66
1 in 1000 + 19% CC	11.22



Upper and Bedford Ouse Management Catchment peak river flow allowances ⓧ

	Central	Higher	Upper
2020s	5%	10%	24%
2050s	4%	11%	30%
2080s	19%	30%	58%

This map contains information generated by [UK Centre for Ecology and Hydrology](#) using UK Climate projections.

Assessing Flood Extents and Depths

- 2.1 A two-dimensional hydraulic model of the watercourse was developed using HEC-RAS 6.6. The modelling process is described below.

Geometric Data

- 2.2 A 1-meter resolution LiDAR data was utilized as the base terrain of the project area. An on-site survey was also used to incorporate the existing hydraulic structures within the area to be analyzed.

An approximately 197,500 sqm area was set as the 2D flow area which was divided into 5m x 5m grid cells. Each cell has an assigned Manning's roughness of 0.06. An inflow and outflow boundary condition lines were placed at the most upstream and downstream parts of the 2D area, respectively.

- 2.3 Six culverts were modelled according to what was surveyed, taking into account their size, invert elevations, and material. As part of this modelling, it has been assumed that the culverts are unobstructed.

Flow Data

- 2.4 A flow hydrograph and normal depth were correspondingly set to the inflow and outflow boundary conditions. Flow hydrographs are based on the design peak flows while the normal depth is equivalent to the longitudinal slope of the channel, which is 0.0679.

Analysis

- 2.5 The model was simulated using unsteady flow analysis using diffusion wave equations. Computational interval is set at 2 seconds while output interval is 10 minutes. Simulation time is 48 hours.
- 2.6 Flood events were simulated for the 1 in 20 year, 1 in 30 year, 1 in 75 year, 1 in 100 year, 1 in 100 year with 19% climate change factor, 1 in 100 year with 30% climate change factor, 1 in 200 year, 1 in 1000 year, 1 in 1000 year with 19% climate change factor and 1 in 100 year with 19% climate change factor with blocked culvert. In total, there were 10 flood events simulated.
- 2.7 Two (2) manning's n values (0.05 and 0.07), in addition to the assumed 0.06 value, were used to investigate the impacts of the roughness of the water course to the water surface elevation.
- 2.8 A fully obstructed culvert (southeast) was also considered for the worst case scenario at 1 in 1000 + 19% CC year flood event.

Results

- 2.9 Modelling results show that the location of the development is safe from the flood inundation limits caused by the 1 in 20 year. However, the western portion of the site can be inundated by the 1 in 75 year through 1 in 1000 year events.
- 2.10 A 0.01 increase of manning's roughness ($n=0.07$) resulted an increase in water level by approximately 0.06m while a decrease of 0.01 roughness ($n=0.05$) resulted a decrease of water level by 0.06m. A small variance from the base roughness ($n=0.06$) does not lead to huge differences in water levels.
- 2.11 A fully obstructed culvert at the southeast at 1 in 100 + 19% CC year event shows an increase of 0.2m on the flood level in the project area. Since this is the worst-case scenario, it is recommended that further consultation with the Council is required in order to ascertain the likelihood that the culvert is fully blocked.



Figure 1 - Flood Inundation Map (1 in 20 year)

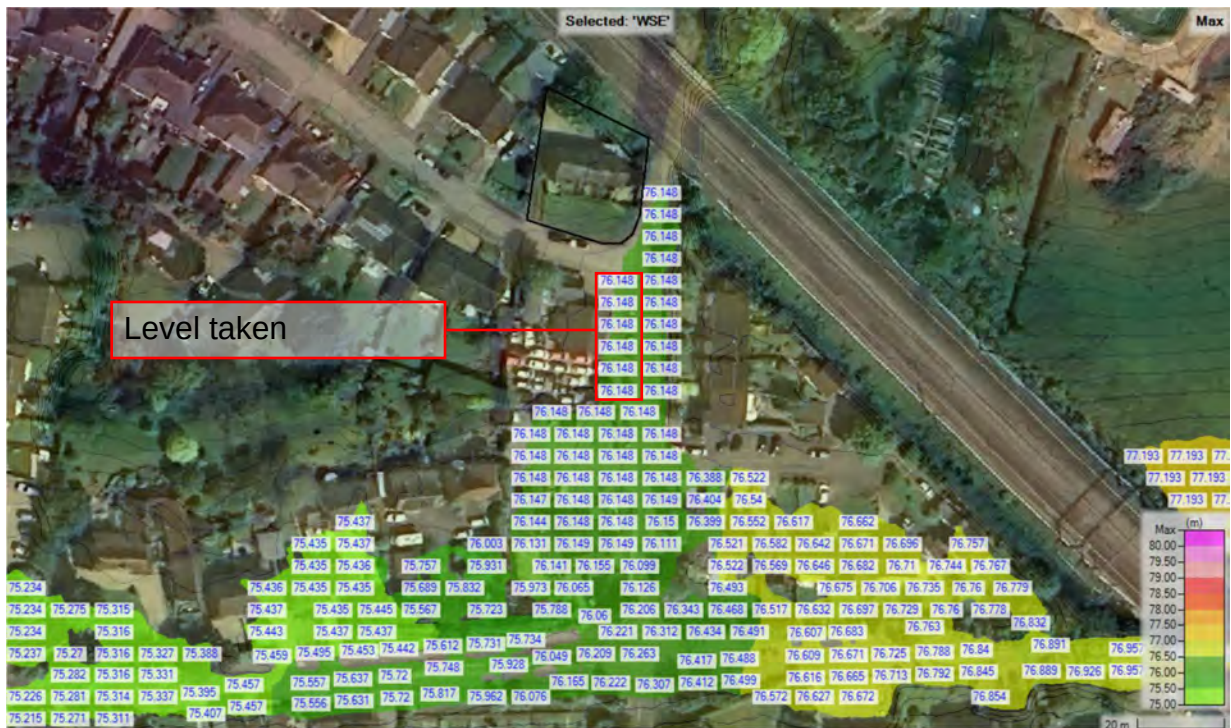


Figure 2 – Flood Inundation Map (1 in 30 year)



Figure 3 – Flood Inundation Map (1 in 75 year)

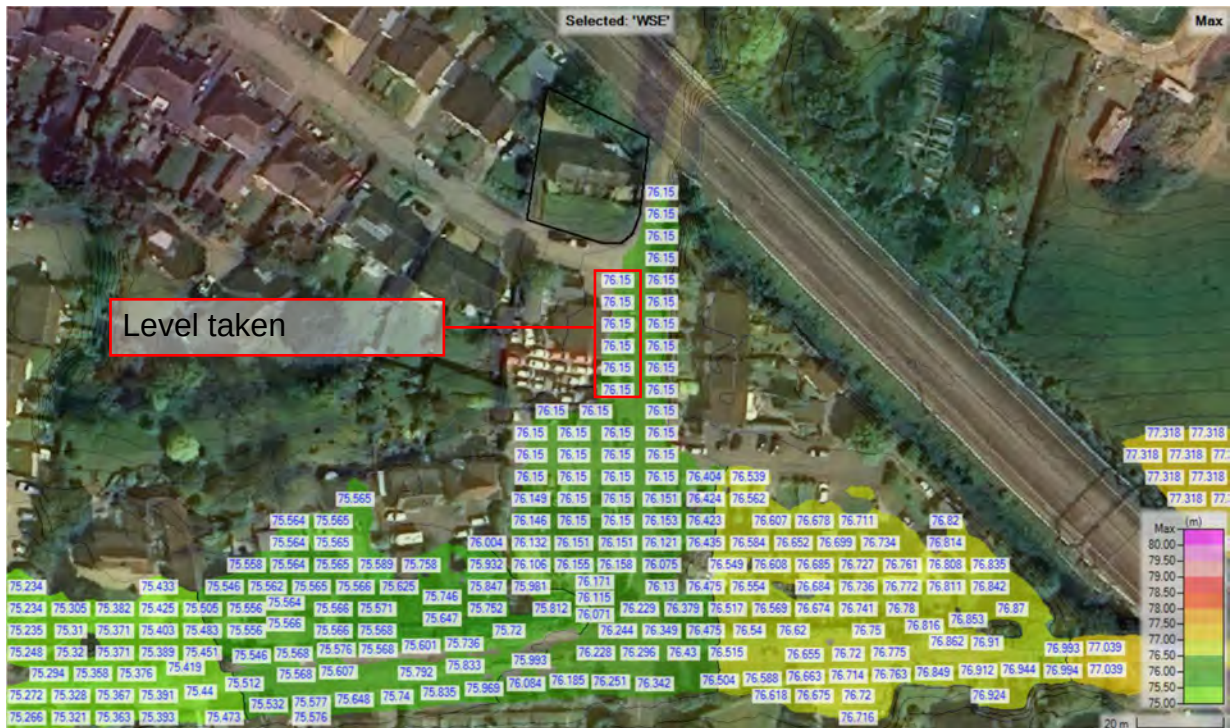


Figure 4 – Flood Inundation Map (1 in 100 year)



Figure 5 – Flood Inundation Map (1 in 100 year + 19% CC)



Figure 6 – Flood Inundation Map (1 in 100 year + 30% CC)



Figure 7 – Flood Inundation Map (1 in 200 year)



Figure 8 – Flood Inundation Map (1 in 1000 year)



Figure 9 – Flood Inundation Map (1 in 1000 year + 19% CC)

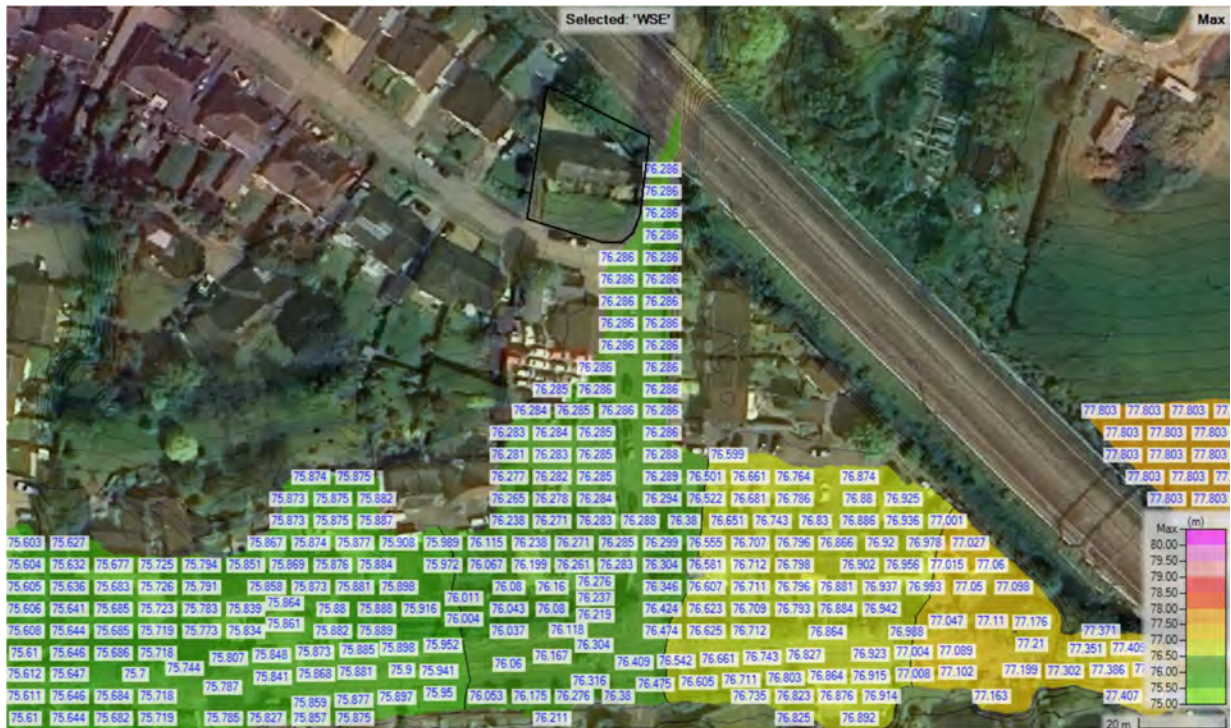


Figure 10 – Flood Inundation Map with the culvert completely blocked (1 in 100 year + 19% CC)

Appendix A

UK Design Flood Estimation

Generated on Friday, October 21, 2022 12:56:57 PM by DELL

Printed from the ReFH2 Flood Modelling software package, version 3.2.7650.24314

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

Site details

Checksum: EA5D-CC9A

Site name: Priory Lane

Easting: 521500

Northing: 227450

Country: England, Wales or Northern Ireland

Catchment Area (km²): 12.22

Using plot scale calculations: No

Model: 2.3

Site description: None

Model run: 20 year

Summary of results

Rainfall - FEH 2013 model (mm):	50.65	Total runoff (ML):	76.53
Total Rainfall (mm):	48.04	Total flow (ML):	212.31
Peak Rainfall (mm):	17.03	Peak flow (m ³ /s):	2.44

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 - FEH 2013 model)

Name	Value	User-defined?
Duration (hh:mm:ss)	09:00:00	No
Timestep (hh:mm:ss)	01:00:00	No
SCF (Seasonal correction factor)	0.99	No
ARF (Areal reduction factor)	0.96	No
Seasonality	Summer [Winter]	Yes

Loss model parameters

Name	Value	User-defined?
Cini (mm)	41.64	No
Cmax (mm)	719.89	No
Use alpha correction factor	No	No
Alpha correction factor	n/a	No

Routing model parameters

Name	Value	User-defined?
Tp (hr)	5.47	No
Up	0.65	No
Uk	0.8	No

Baseflow model parameters

Name	Value	User-defined?
BF0 (m ³ /s)	0.06	No
BL (hr)	58.63	No
BR	2.65	No

Urbanisation parameters

Name	Value	User-defined?
Urban area (km ²)	1.88	No
Urbext 2000	0.1	No
Impervious runoff factor	0.7	No
Imperviousness factor	0.4	No
Tp scaling factor	0.75	No
Depression storage depth (mm)	0.5	No
Exporting drained area (km ²)	0.00	Yes
Sewer capacity (m ³ /s)	0.00	Yes

Time series data

Time (hh:mm:ss)	Rain (mm)	Sewer Loss (mm)	Net Rain (mm)	Runoff (m³/s)	Baseflow (m³/s)	Total Flow (m³/s)
00:00:00	1.419	0.000	0.141	0.000	0.052	0.052
01:00:00	2.323	0.000	0.237	0.007	0.051	0.059
02:00:00	4.008	0.000	0.425	0.034	0.051	0.084
03:00:00	7.755	0.000	0.883	0.093	0.051	0.145
04:00:00	17.025	0.000	2.219	0.219	0.053	0.272
05:00:00	7.755	0.000	1.139	0.490	0.059	0.549
06:00:00	4.008	0.000	0.620	0.903	0.073	0.976
07:00:00	2.323	0.000	0.369	1.361	0.097	1.458
08:00:00	1.419	0.000	0.229	1.792	0.132	1.924
09:00:00	0.000	0.000	0.000	2.098	0.178	2.276
10:00:00	0.000	0.000	0.000	2.205	0.232	2.436
11:00:00	0.000	0.000	0.000	2.112	0.289	2.401
12:00:00	0.000	0.000	0.000	1.907	0.345	2.252
13:00:00	0.000	0.000	0.000	1.656	0.395	2.051
14:00:00	0.000	0.000	0.000	1.404	0.438	1.841
15:00:00	0.000	0.000	0.000	1.159	0.473	1.632
16:00:00	0.000	0.000	0.000	0.946	0.501	1.447
17:00:00	0.000	0.000	0.000	0.764	0.523	1.288
18:00:00	0.000	0.000	0.000	0.604	0.540	1.145
19:00:00	0.000	0.000	0.000	0.464	0.553	1.017
20:00:00	0.000	0.000	0.000	0.354	0.562	0.915
21:00:00	0.000	0.000	0.000	0.265	0.567	0.832
22:00:00	0.000	0.000	0.000	0.188	0.568	0.756
23:00:00	0.000	0.000	0.000	0.120	0.566	0.687
24:00:00	0.000	0.000	0.000	0.065	0.561	0.626
25:00:00	0.000	0.000	0.000	0.031	0.554	0.585
26:00:00	0.000	0.000	0.000	0.013	0.546	0.559
27:00:00	0.000	0.000	0.000	0.004	0.537	0.542
28:00:00	0.000	0.000	0.000	0.001	0.528	0.529
29:00:00	0.000	0.000	0.000	0.000	0.519	0.519
30:00:00	0.000	0.000	0.000	0.000	0.511	0.511
31:00:00	0.000	0.000	0.000	0.000	0.502	0.502
32:00:00	0.000	0.000	0.000	0.000	0.493	0.493
33:00:00	0.000	0.000	0.000	0.000	0.485	0.485
34:00:00	0.000	0.000	0.000	0.000	0.477	0.477

Time (hh:mm:ss)	Rain (mm)	Sewer Loss (mm)	Net Rain (mm)	Runoff (m ³ /s)	Baseflow (m ³ /s)	Total Flow (m ³ /s)
35:00:00	0.000	0.000	0.000	0.000	0.469	0.469
36:00:00	0.000	0.000	0.000	0.000	0.461	0.461
37:00:00	0.000	0.000	0.000	0.000	0.453	0.453
38:00:00	0.000	0.000	0.000	0.000	0.445	0.445
39:00:00	0.000	0.000	0.000	0.000	0.438	0.438
40:00:00	0.000	0.000	0.000	0.000	0.430	0.430
41:00:00	0.000	0.000	0.000	0.000	0.423	0.423
42:00:00	0.000	0.000	0.000	0.000	0.416	0.416
43:00:00	0.000	0.000	0.000	0.000	0.409	0.409
44:00:00	0.000	0.000	0.000	0.000	0.402	0.402
45:00:00	0.000	0.000	0.000	0.000	0.395	0.395
46:00:00	0.000	0.000	0.000	0.000	0.389	0.389
47:00:00	0.000	0.000	0.000	0.000	0.382	0.382
48:00:00	0.000	0.000	0.000	0.000	0.376	0.376
49:00:00	0.000	0.000	0.000	0.000	0.369	0.369
50:00:00	0.000	0.000	0.000	0.000	0.363	0.363
51:00:00	0.000	0.000	0.000	0.000	0.357	0.357
52:00:00	0.000	0.000	0.000	0.000	0.351	0.351
53:00:00	0.000	0.000	0.000	0.000	0.345	0.345
54:00:00	0.000	0.000	0.000	0.000	0.339	0.339
55:00:00	0.000	0.000	0.000	0.000	0.333	0.333
56:00:00	0.000	0.000	0.000	0.000	0.328	0.328
57:00:00	0.000	0.000	0.000	0.000	0.322	0.322
58:00:00	0.000	0.000	0.000	0.000	0.317	0.317
59:00:00	0.000	0.000	0.000	0.000	0.311	0.311
60:00:00	0.000	0.000	0.000	0.000	0.306	0.306
61:00:00	0.000	0.000	0.000	0.000	0.301	0.301
62:00:00	0.000	0.000	0.000	0.000	0.296	0.296
63:00:00	0.000	0.000	0.000	0.000	0.291	0.291
64:00:00	0.000	0.000	0.000	0.000	0.286	0.286
65:00:00	0.000	0.000	0.000	0.000	0.281	0.281
66:00:00	0.000	0.000	0.000	0.000	0.276	0.276
67:00:00	0.000	0.000	0.000	0.000	0.272	0.272
68:00:00	0.000	0.000	0.000	0.000	0.267	0.267
69:00:00	0.000	0.000	0.000	0.000	0.263	0.263
70:00:00	0.000	0.000	0.000	0.000	0.258	0.258

Time (hh:mm:ss)	Rain (mm)	Sewer Loss (mm)	Net Rain (mm)	Runoff (m ³ /s)	Baseflow (m ³ /s)	Total Flow (m ³ /s)
71:00:00	0.000	0.000	0.000	0.000	0.254	0.254
72:00:00	0.000	0.000	0.000	0.000	0.249	0.249
73:00:00	0.000	0.000	0.000	0.000	0.245	0.245
74:00:00	0.000	0.000	0.000	0.000	0.241	0.241
75:00:00	0.000	0.000	0.000	0.000	0.237	0.237
76:00:00	0.000	0.000	0.000	0.000	0.233	0.233
77:00:00	0.000	0.000	0.000	0.000	0.229	0.229
78:00:00	0.000	0.000	0.000	0.000	0.225	0.225
79:00:00	0.000	0.000	0.000	0.000	0.221	0.221
80:00:00	0.000	0.000	0.000	0.000	0.218	0.218
81:00:00	0.000	0.000	0.000	0.000	0.214	0.214
82:00:00	0.000	0.000	0.000	0.000	0.210	0.210
83:00:00	0.000	0.000	0.000	0.000	0.207	0.207
84:00:00	0.000	0.000	0.000	0.000	0.203	0.203
85:00:00	0.000	0.000	0.000	0.000	0.200	0.200
86:00:00	0.000	0.000	0.000	0.000	0.196	0.196
87:00:00	0.000	0.000	0.000	0.000	0.193	0.193
88:00:00	0.000	0.000	0.000	0.000	0.190	0.190
89:00:00	0.000	0.000	0.000	0.000	0.187	0.187
90:00:00	0.000	0.000	0.000	0.000	0.183	0.183
91:00:00	0.000	0.000	0.000	0.000	0.180	0.180
92:00:00	0.000	0.000	0.000	0.000	0.177	0.177
93:00:00	0.000	0.000	0.000	0.000	0.174	0.174
94:00:00	0.000	0.000	0.000	0.000	0.171	0.171
95:00:00	0.000	0.000	0.000	0.000	0.168	0.168
96:00:00	0.000	0.000	0.000	0.000	0.166	0.166
97:00:00	0.000	0.000	0.000	0.000	0.163	0.163
98:00:00	0.000	0.000	0.000	0.000	0.160	0.160
99:00:00	0.000	0.000	0.000	0.000	0.157	0.157
100:00:00	0.000	0.000	0.000	0.000	0.155	0.155
101:00:00	0.000	0.000	0.000	0.000	0.152	0.152
102:00:00	0.000	0.000	0.000	0.000	0.150	0.150
103:00:00	0.000	0.000	0.000	0.000	0.147	0.147
104:00:00	0.000	0.000	0.000	0.000	0.145	0.145
105:00:00	0.000	0.000	0.000	0.000	0.142	0.142
106:00:00	0.000	0.000	0.000	0.000	0.140	0.140

Time (hh:mm:ss)	Rain (mm)	Sewer Loss (mm)	Net Rain (mm)	Runoff (m ³ /s)	Baseflow (m ³ /s)	Total Flow (m ³ /s)
107:00:00	0.000	0.000	0.000	0.000	0.137	0.137
108:00:00	0.000	0.000	0.000	0.000	0.135	0.135
109:00:00	0.000	0.000	0.000	0.000	0.133	0.133
110:00:00	0.000	0.000	0.000	0.000	0.130	0.130
111:00:00	0.000	0.000	0.000	0.000	0.128	0.128
112:00:00	0.000	0.000	0.000	0.000	0.126	0.126
113:00:00	0.000	0.000	0.000	0.000	0.124	0.124
114:00:00	0.000	0.000	0.000	0.000	0.122	0.122
115:00:00	0.000	0.000	0.000	0.000	0.120	0.120
116:00:00	0.000	0.000	0.000	0.000	0.118	0.118
117:00:00	0.000	0.000	0.000	0.000	0.116	0.116
118:00:00	0.000	0.000	0.000	0.000	0.114	0.114
119:00:00	0.000	0.000	0.000	0.000	0.112	0.112
120:00:00	0.000	0.000	0.000	0.000	0.110	0.110
121:00:00	0.000	0.000	0.000	0.000	0.108	0.108
122:00:00	0.000	0.000	0.000	0.000	0.106	0.106
123:00:00	0.000	0.000	0.000	0.000	0.105	0.105
124:00:00	0.000	0.000	0.000	0.000	0.103	0.103
125:00:00	0.000	0.000	0.000	0.000	0.101	0.101
126:00:00	0.000	0.000	0.000	0.000	0.099	0.099
127:00:00	0.000	0.000	0.000	0.000	0.098	0.098
128:00:00	0.000	0.000	0.000	0.000	0.096	0.096
129:00:00	0.000	0.000	0.000	0.000	0.094	0.094
130:00:00	0.000	0.000	0.000	0.000	0.093	0.093
131:00:00	0.000	0.000	0.000	0.000	0.091	0.091
132:00:00	0.000	0.000	0.000	0.000	0.090	0.090
133:00:00	0.000	0.000	0.000	0.000	0.088	0.088
134:00:00	0.000	0.000	0.000	0.000	0.087	0.087
135:00:00	0.000	0.000	0.000	0.000	0.085	0.085
136:00:00	0.000	0.000	0.000	0.000	0.084	0.084
137:00:00	0.000	0.000	0.000	0.000	0.082	0.082
138:00:00	0.000	0.000	0.000	0.000	0.081	0.081
139:00:00	0.000	0.000	0.000	0.000	0.080	0.080
140:00:00	0.000	0.000	0.000	0.000	0.078	0.078
141:00:00	0.000	0.000	0.000	0.000	0.077	0.077
142:00:00	0.000	0.000	0.000	0.000	0.076	0.076

Time (hh:mm:ss)	Rain (mm)	Sewer Loss (mm)	Net Rain (mm)	Runoff (m ³ /s)	Baseflow (m ³ /s)	Total Flow (m ³ /s)
143:00:00	0.000	0.000	0.000	0.000	0.074	0.074
144:00:00	0.000	0.000	0.000	0.000	0.073	0.073
145:00:00	0.000	0.000	0.000	0.000	0.072	0.072
146:00:00	0.000	0.000	0.000	0.000	0.071	0.071
147:00:00	0.000	0.000	0.000	0.000	0.069	0.069
148:00:00	0.000	0.000	0.000	0.000	0.068	0.068
149:00:00	0.000	0.000	0.000	0.000	0.067	0.067
150:00:00	0.000	0.000	0.000	0.000	0.066	0.066
151:00:00	0.000	0.000	0.000	0.000	0.065	0.065
152:00:00	0.000	0.000	0.000	0.000	0.064	0.064
153:00:00	0.000	0.000	0.000	0.000	0.063	0.063
154:00:00	0.000	0.000	0.000	0.000	0.062	0.062
155:00:00	0.000	0.000	0.000	0.000	0.061	0.061
156:00:00	0.000	0.000	0.000	0.000	0.060	0.060
157:00:00	0.000	0.000	0.000	0.000	0.059	0.059
158:00:00	0.000	0.000	0.000	0.000	0.058	0.058
159:00:00	0.000	0.000	0.000	0.000	0.057	0.057
160:00:00	0.000	0.000	0.000	0.000	0.056	0.056
161:00:00	0.000	0.000	0.000	0.000	0.055	0.055
162:00:00	0.000	0.000	0.000	0.000	0.054	0.054
163:00:00	0.000	0.000	0.000	0.000	0.053	0.053

Appendix

Catchment descriptors

Name	Value	User-defined value used?
Area (km ²)	12.22	No
ALTBAR	118	No
ASPBAR	253	No
ASPVAR	0.25	No
BFIHOST	0.65	No
BFIHOST19	0.71	No
DPLBAR (km)	3.89	No
DPSBAR (mkm ⁻¹)	31.9	No
FARL	1	No
LDP	7.58	No
PROPWET (mm)	0.3	No
RMED1H	10.8	No
RMED1D	30.2	No
RMED2D	37.1	No
SAAR (mm)	618	No
SAAR4170 (mm)	644	No
SPRHOST	29.66	No
Urbext2000	0.1	No
Urbext1990	0.06	No
URBCONC	0.82	No
URBLOC	0.6	No
DDF parameter C	-0.03	No
DDF parameter D1	0.31	No
DDF parameter D2	0.31	No
DDF parameter D3	0.29	No
DDF parameter E	0.32	No
DDF parameter F	2.45	No
DDF parameter C (1km grid value)	-0.03	No
DDF parameter D1 (1km grid value)	0.32	No
DDF parameter D2 (1km grid value)	0.31	No
DDF parameter D3 (1km grid value)	0.29	No
DDF parameter E (1km grid value)	0.32	No
DDF parameter F (1km grid value)	2.43	No

UK Design Flood Estimation

Generated on Friday, October 21, 2022 12:59:36 PM by DELL

Printed from the ReFH2 Flood Modelling software package, version 3.2.7650.24314

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

Site details

Checksum: EA5D-CC9A

Site name: Priory Lane

Easting: 521500

Northing: 227450

Country: England, Wales or Northern Ireland

Catchment Area (km²): 12.22

Using plot scale calculations: No

Model: 2.3

Site description: None

Model run: 75 year

Summary of results

Rainfall - FEH 2013 model (mm):	66.82	Total runoff (ML):	108.87
Total Rainfall (mm):	63.37	Total flow (ML):	308.00
Peak Rainfall (mm):	22.46	Peak flow (m ³ /s):	3.44

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 - FEH 2013 model)

Name	Value	User-defined?
Duration (hh:mm:ss)	09:00:00	No
Timestep (hh:mm:ss)	01:00:00	No
SCF (Seasonal correction factor)	0.99	No
ARF (Areal reduction factor)	0.96	No
Seasonality	Summer [Winter]	Yes

Loss model parameters

Name	Value	User-defined?
Cini (mm)	41.64	No
Cmax (mm)	719.89	No
Use alpha correction factor	No	No
Alpha correction factor	n/a	No

Routing model parameters

Name	Value	User-defined?
Tp (hr)	5.47	No
Up	0.65	No
Uk	0.8	No

Baseflow model parameters

Name	Value	User-defined?
BF0 (m ³ /s)	0.06	No
BL (hr)	58.63	No
BR	2.65	No

Urbanisation parameters

Name	Value	User-defined?
Urban area (km ²)	1.88	No
Urbext 2000	0.1	No
Impervious runoff factor	0.7	No
Imperviousness factor	0.4	No
Tp scaling factor	0.75	No
Depression storage depth (mm)	0.5	No
Exporting drained area (km ²)	0.00	Yes
Sewer capacity (m ³ /s)	0.00	Yes

Time series data

Time (hh:mm:ss)	Rain (mm)	Sewer Loss (mm)	Net Rain (mm)	Runoff (m³/s)	Baseflow (m³/s)	Total Flow (m³/s)
00:00:00	1.872	0.000	0.186	0.000	0.052	0.052
01:00:00	3.065	0.000	0.316	0.009	0.051	0.061
02:00:00	5.288	0.000	0.574	0.045	0.051	0.095
03:00:00	10.231	0.000	1.216	0.124	0.052	0.176
04:00:00	22.461	0.000	3.157	0.293	0.055	0.348
05:00:00	10.231	0.000	1.660	0.665	0.064	0.729
06:00:00	5.288	0.000	0.913	1.240	0.084	1.324
07:00:00	3.065	0.000	0.546	1.884	0.118	2.002
08:00:00	1.872	0.000	0.340	2.498	0.169	2.667
09:00:00	0.000	0.000	0.000	2.946	0.236	3.182
10:00:00	0.000	0.000	0.000	3.121	0.315	3.436
11:00:00	0.000	0.000	0.000	3.009	0.401	3.409
12:00:00	0.000	0.000	0.000	2.729	0.483	3.212
13:00:00	0.000	0.000	0.000	2.380	0.558	2.938
14:00:00	0.000	0.000	0.000	2.022	0.622	2.644
15:00:00	0.000	0.000	0.000	1.673	0.675	2.348
16:00:00	0.000	0.000	0.000	1.368	0.717	2.086
17:00:00	0.000	0.000	0.000	1.110	0.751	1.860
18:00:00	0.000	0.000	0.000	0.882	0.777	1.659
19:00:00	0.000	0.000	0.000	0.683	0.796	1.479
20:00:00	0.000	0.000	0.000	0.524	0.810	1.334
21:00:00	0.000	0.000	0.000	0.395	0.818	1.213
22:00:00	0.000	0.000	0.000	0.282	0.820	1.102
23:00:00	0.000	0.000	0.000	0.182	0.818	1.000
24:00:00	0.000	0.000	0.000	0.099	0.811	0.910
25:00:00	0.000	0.000	0.000	0.048	0.801	0.849
26:00:00	0.000	0.000	0.000	0.021	0.789	0.810
27:00:00	0.000	0.000	0.000	0.007	0.777	0.784
28:00:00	0.000	0.000	0.000	0.001	0.764	0.765
29:00:00	0.000	0.000	0.000	0.000	0.751	0.751
30:00:00	0.000	0.000	0.000	0.000	0.738	0.738
31:00:00	0.000	0.000	0.000	0.000	0.726	0.726
32:00:00	0.000	0.000	0.000	0.000	0.713	0.713
33:00:00	0.000	0.000	0.000	0.000	0.701	0.701
34:00:00	0.000	0.000	0.000	0.000	0.690	0.690

Time (hh:mm:ss)	Rain (mm)	Sewer Loss (mm)	Net Rain (mm)	Runoff (m ³ /s)	Baseflow (m ³ /s)	Total Flow (m ³ /s)
35:00:00	0.000	0.000	0.000	0.000	0.678	0.678
36:00:00	0.000	0.000	0.000	0.000	0.666	0.666
37:00:00	0.000	0.000	0.000	0.000	0.655	0.655
38:00:00	0.000	0.000	0.000	0.000	0.644	0.644
39:00:00	0.000	0.000	0.000	0.000	0.633	0.633
40:00:00	0.000	0.000	0.000	0.000	0.622	0.622
41:00:00	0.000	0.000	0.000	0.000	0.612	0.612
42:00:00	0.000	0.000	0.000	0.000	0.602	0.602
43:00:00	0.000	0.000	0.000	0.000	0.591	0.591
44:00:00	0.000	0.000	0.000	0.000	0.581	0.581
45:00:00	0.000	0.000	0.000	0.000	0.572	0.572
46:00:00	0.000	0.000	0.000	0.000	0.562	0.562
47:00:00	0.000	0.000	0.000	0.000	0.552	0.552
48:00:00	0.000	0.000	0.000	0.000	0.543	0.543
49:00:00	0.000	0.000	0.000	0.000	0.534	0.534
50:00:00	0.000	0.000	0.000	0.000	0.525	0.525
51:00:00	0.000	0.000	0.000	0.000	0.516	0.516
52:00:00	0.000	0.000	0.000	0.000	0.507	0.507
53:00:00	0.000	0.000	0.000	0.000	0.499	0.499
54:00:00	0.000	0.000	0.000	0.000	0.490	0.490
55:00:00	0.000	0.000	0.000	0.000	0.482	0.482
56:00:00	0.000	0.000	0.000	0.000	0.474	0.474
57:00:00	0.000	0.000	0.000	0.000	0.466	0.466
58:00:00	0.000	0.000	0.000	0.000	0.458	0.458
59:00:00	0.000	0.000	0.000	0.000	0.450	0.450
60:00:00	0.000	0.000	0.000	0.000	0.443	0.443
61:00:00	0.000	0.000	0.000	0.000	0.435	0.435
62:00:00	0.000	0.000	0.000	0.000	0.428	0.428
63:00:00	0.000	0.000	0.000	0.000	0.420	0.420
64:00:00	0.000	0.000	0.000	0.000	0.413	0.413
65:00:00	0.000	0.000	0.000	0.000	0.406	0.406
66:00:00	0.000	0.000	0.000	0.000	0.399	0.399
67:00:00	0.000	0.000	0.000	0.000	0.393	0.393
68:00:00	0.000	0.000	0.000	0.000	0.386	0.386
69:00:00	0.000	0.000	0.000	0.000	0.380	0.380
70:00:00	0.000	0.000	0.000	0.000	0.373	0.373

Time (hh:mm:ss)	Rain (mm)	Sewer Loss (mm)	Net Rain (mm)	Runoff (m ³ /s)	Baseflow (m ³ /s)	Total Flow (m ³ /s)
71:00:00	0.000	0.000	0.000	0.000	0.367	0.367
72:00:00	0.000	0.000	0.000	0.000	0.361	0.361
73:00:00	0.000	0.000	0.000	0.000	0.355	0.355
74:00:00	0.000	0.000	0.000	0.000	0.349	0.349
75:00:00	0.000	0.000	0.000	0.000	0.343	0.343
76:00:00	0.000	0.000	0.000	0.000	0.337	0.337
77:00:00	0.000	0.000	0.000	0.000	0.331	0.331
78:00:00	0.000	0.000	0.000	0.000	0.326	0.326
79:00:00	0.000	0.000	0.000	0.000	0.320	0.320
80:00:00	0.000	0.000	0.000	0.000	0.315	0.315
81:00:00	0.000	0.000	0.000	0.000	0.309	0.309
82:00:00	0.000	0.000	0.000	0.000	0.304	0.304
83:00:00	0.000	0.000	0.000	0.000	0.299	0.299
84:00:00	0.000	0.000	0.000	0.000	0.294	0.294
85:00:00	0.000	0.000	0.000	0.000	0.289	0.289
86:00:00	0.000	0.000	0.000	0.000	0.284	0.284
87:00:00	0.000	0.000	0.000	0.000	0.279	0.279
88:00:00	0.000	0.000	0.000	0.000	0.275	0.275
89:00:00	0.000	0.000	0.000	0.000	0.270	0.270
90:00:00	0.000	0.000	0.000	0.000	0.265	0.265
91:00:00	0.000	0.000	0.000	0.000	0.261	0.261
92:00:00	0.000	0.000	0.000	0.000	0.256	0.256
93:00:00	0.000	0.000	0.000	0.000	0.252	0.252
94:00:00	0.000	0.000	0.000	0.000	0.248	0.248
95:00:00	0.000	0.000	0.000	0.000	0.244	0.244
96:00:00	0.000	0.000	0.000	0.000	0.240	0.240
97:00:00	0.000	0.000	0.000	0.000	0.235	0.235
98:00:00	0.000	0.000	0.000	0.000	0.231	0.231
99:00:00	0.000	0.000	0.000	0.000	0.228	0.228
100:00:00	0.000	0.000	0.000	0.000	0.224	0.224
101:00:00	0.000	0.000	0.000	0.000	0.220	0.220
102:00:00	0.000	0.000	0.000	0.000	0.216	0.216
103:00:00	0.000	0.000	0.000	0.000	0.213	0.213
104:00:00	0.000	0.000	0.000	0.000	0.209	0.209
105:00:00	0.000	0.000	0.000	0.000	0.205	0.205
106:00:00	0.000	0.000	0.000	0.000	0.202	0.202

Time (hh:mm:ss)	Rain (mm)	Sewer Loss (mm)	Net Rain (mm)	Runoff (m ³ /s)	Baseflow (m ³ /s)	Total Flow (m ³ /s)
107:00:00	0.000	0.000	0.000	0.000	0.199	0.199
108:00:00	0.000	0.000	0.000	0.000	0.195	0.195
109:00:00	0.000	0.000	0.000	0.000	0.192	0.192
110:00:00	0.000	0.000	0.000	0.000	0.189	0.189
111:00:00	0.000	0.000	0.000	0.000	0.185	0.185
112:00:00	0.000	0.000	0.000	0.000	0.182	0.182
113:00:00	0.000	0.000	0.000	0.000	0.179	0.179
114:00:00	0.000	0.000	0.000	0.000	0.176	0.176
115:00:00	0.000	0.000	0.000	0.000	0.173	0.173
116:00:00	0.000	0.000	0.000	0.000	0.170	0.170
117:00:00	0.000	0.000	0.000	0.000	0.167	0.167
118:00:00	0.000	0.000	0.000	0.000	0.165	0.165
119:00:00	0.000	0.000	0.000	0.000	0.162	0.162
120:00:00	0.000	0.000	0.000	0.000	0.159	0.159
121:00:00	0.000	0.000	0.000	0.000	0.156	0.156
122:00:00	0.000	0.000	0.000	0.000	0.154	0.154
123:00:00	0.000	0.000	0.000	0.000	0.151	0.151
124:00:00	0.000	0.000	0.000	0.000	0.149	0.149
125:00:00	0.000	0.000	0.000	0.000	0.146	0.146
126:00:00	0.000	0.000	0.000	0.000	0.144	0.144
127:00:00	0.000	0.000	0.000	0.000	0.141	0.141
128:00:00	0.000	0.000	0.000	0.000	0.139	0.139
129:00:00	0.000	0.000	0.000	0.000	0.136	0.136
130:00:00	0.000	0.000	0.000	0.000	0.134	0.134
131:00:00	0.000	0.000	0.000	0.000	0.132	0.132
132:00:00	0.000	0.000	0.000	0.000	0.130	0.130
133:00:00	0.000	0.000	0.000	0.000	0.127	0.127
134:00:00	0.000	0.000	0.000	0.000	0.125	0.125
135:00:00	0.000	0.000	0.000	0.000	0.123	0.123
136:00:00	0.000	0.000	0.000	0.000	0.121	0.121
137:00:00	0.000	0.000	0.000	0.000	0.119	0.119
138:00:00	0.000	0.000	0.000	0.000	0.117	0.117
139:00:00	0.000	0.000	0.000	0.000	0.115	0.115
140:00:00	0.000	0.000	0.000	0.000	0.113	0.113
141:00:00	0.000	0.000	0.000	0.000	0.111	0.111
142:00:00	0.000	0.000	0.000	0.000	0.109	0.109

Time (hh:mm:ss)	Rain (mm)	Sewer Loss (mm)	Net Rain (mm)	Runoff (m ³ /s)	Baseflow (m ³ /s)	Total Flow (m ³ /s)
143:00:00	0.000	0.000	0.000	0.000	0.107	0.107
144:00:00	0.000	0.000	0.000	0.000	0.106	0.106
145:00:00	0.000	0.000	0.000	0.000	0.104	0.104
146:00:00	0.000	0.000	0.000	0.000	0.102	0.102
147:00:00	0.000	0.000	0.000	0.000	0.100	0.100
148:00:00	0.000	0.000	0.000	0.000	0.099	0.099
149:00:00	0.000	0.000	0.000	0.000	0.097	0.097
150:00:00	0.000	0.000	0.000	0.000	0.095	0.095
151:00:00	0.000	0.000	0.000	0.000	0.094	0.094
152:00:00	0.000	0.000	0.000	0.000	0.092	0.092
153:00:00	0.000	0.000	0.000	0.000	0.091	0.091
154:00:00	0.000	0.000	0.000	0.000	0.089	0.089
155:00:00	0.000	0.000	0.000	0.000	0.088	0.088
156:00:00	0.000	0.000	0.000	0.000	0.086	0.086
157:00:00	0.000	0.000	0.000	0.000	0.085	0.085
158:00:00	0.000	0.000	0.000	0.000	0.083	0.083
159:00:00	0.000	0.000	0.000	0.000	0.082	0.082
160:00:00	0.000	0.000	0.000	0.000	0.080	0.080
161:00:00	0.000	0.000	0.000	0.000	0.079	0.079
162:00:00	0.000	0.000	0.000	0.000	0.078	0.078
163:00:00	0.000	0.000	0.000	0.000	0.076	0.076
164:00:00	0.000	0.000	0.000	0.000	0.075	0.075
165:00:00	0.000	0.000	0.000	0.000	0.074	0.074
166:00:00	0.000	0.000	0.000	0.000	0.073	0.073
167:00:00	0.000	0.000	0.000	0.000	0.071	0.071
168:00:00	0.000	0.000	0.000	0.000	0.070	0.070
169:00:00	0.000	0.000	0.000	0.000	0.069	0.069
170:00:00	0.000	0.000	0.000	0.000	0.068	0.068
171:00:00	0.000	0.000	0.000	0.000	0.067	0.067
172:00:00	0.000	0.000	0.000	0.000	0.066	0.066
173:00:00	0.000	0.000	0.000	0.000	0.064	0.064
174:00:00	0.000	0.000	0.000	0.000	0.063	0.063
175:00:00	0.000	0.000	0.000	0.000	0.062	0.062
176:00:00	0.000	0.000	0.000	0.000	0.061	0.061
177:00:00	0.000	0.000	0.000	0.000	0.060	0.060
178:00:00	0.000	0.000	0.000	0.000	0.059	0.059

Time (hh:mm:ss)	Rain (mm)	Sewer Loss (mm)	Net Rain (mm)	Runoff (m ³ /s)	Baseflow (m ³ /s)	Total Flow (m ³ /s)
179:00:00	0.000	0.000	0.000	0.000	0.058	0.058
180:00:00	0.000	0.000	0.000	0.000	0.057	0.057

Appendix

Catchment descriptors

Name	Value	User-defined value used?
Area (km ²)	12.22	No
ALTBAR	118	No
ASPBAR	253	No
ASPVAR	0.25	No
BFIHOST	0.65	No
BFIHOST19	0.71	No
DPLBAR (km)	3.89	No
DPSBAR (mkm ⁻¹)	31.9	No
FARL	1	No
LDP	7.58	No
PROPWET (mm)	0.3	No
RMED1H	10.8	No
RMED1D	30.2	No
RMED2D	37.1	No
SAAR (mm)	618	No
SAAR4170 (mm)	644	No
SPRHOST	29.66	No
Urbext2000	0.1	No
Urbext1990	0.06	No
URBCONC	0.82	No
URBLOC	0.6	No
DDF parameter C	-0.03	No
DDF parameter D1	0.31	No
DDF parameter D2	0.31	No
DDF parameter D3	0.29	No
DDF parameter E	0.32	No
DDF parameter F	2.45	No
DDF parameter C (1km grid value)	-0.03	No
DDF parameter D1 (1km grid value)	0.32	No
DDF parameter D2 (1km grid value)	0.31	No
DDF parameter D3 (1km grid value)	0.29	No
DDF parameter E (1km grid value)	0.32	No
DDF parameter F (1km grid value)	2.43	No

UK Design Flood Estimation

Generated on Friday, October 21, 2022 1:00:17 PM by DELL

Printed from the ReFH2 Flood Modelling software package, version 3.2.7650.24314

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

Site details

Checksum: EA5D-CC9A

Site name: Priory Lane

Easting: 521500

Northing: 227450

Country: England, Wales or Northern Ireland

Catchment Area (km²): 12.22

Using plot scale calculations: No

Model: 2.3

Site description: None

Model run: 100 year

Summary of results

Rainfall - FEH 2013 model (mm):	71.94	Total runoff (ML):	119.89
Total Rainfall (mm):	68.23	Total flow (ML):	340.17
Peak Rainfall (mm):	24.18	Peak flow (m ³ /s):	3.78

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 - FEH 2013 model)

Name	Value	User-defined?
Duration (hh:mm:ss)	09:00:00	No
Timestep (hh:mm:ss)	01:00:00	No
SCF (Seasonal correction factor)	0.99	No
ARF (Areal reduction factor)	0.96	No
Seasonality	Summer [Winter]	Yes

Loss model parameters

Name	Value	User-defined?
Cini (mm)	41.64	No
Cmax (mm)	719.89	No
Use alpha correction factor	No	No
Alpha correction factor	n/a	No

Routing model parameters

Name	Value	User-defined?
Tp (hr)	5.47	No
Up	0.65	No
Uk	0.8	No

Baseflow model parameters

Name	Value	User-defined?
BF0 (m ³ /s)	0.06	No
BL (hr)	58.63	No
BR	2.65	No

Urbanisation parameters

Name	Value	User-defined?
Urban area (km ²)	1.88	No
Urbext 2000	0.1	No
Impervious runoff factor	0.7	No
Imperviousness factor	0.4	No
Tp scaling factor	0.75	No
Depression storage depth (mm)	0.5	No
Exporting drained area (km ²)	0.00	Yes
Sewer capacity (m ³ /s)	0.00	Yes

Time series data

Time (hh:mm:ss)	Rain (mm)	Sewer Loss (mm)	Net Rain (mm)	Runoff (m³/s)	Baseflow (m³/s)	Total Flow (m³/s)
00:00:00	2.016	0.000	0.201	0.000	0.052	0.052
01:00:00	3.299	0.000	0.341	0.010	0.051	0.062
02:00:00	5.693	0.000	0.622	0.048	0.051	0.099
03:00:00	11.015	0.000	1.326	0.134	0.052	0.186
04:00:00	24.180	0.000	3.477	0.317	0.055	0.372
05:00:00	11.015	0.000	1.841	0.722	0.065	0.788
06:00:00	5.693	0.000	1.015	1.352	0.087	1.439
07:00:00	3.299	0.000	0.608	2.059	0.125	2.184
08:00:00	2.016	0.000	0.379	2.735	0.182	2.916
09:00:00	0.000	0.000	0.000	3.233	0.256	3.488
10:00:00	0.000	0.000	0.000	3.432	0.344	3.776
11:00:00	0.000	0.000	0.000	3.314	0.439	3.754
12:00:00	0.000	0.000	0.000	3.011	0.531	3.542
13:00:00	0.000	0.000	0.000	2.629	0.614	3.243
14:00:00	0.000	0.000	0.000	2.235	0.686	2.921
15:00:00	0.000	0.000	0.000	1.850	0.746	2.596
16:00:00	0.000	0.000	0.000	1.514	0.793	2.307
17:00:00	0.000	0.000	0.000	1.229	0.830	2.059
18:00:00	0.000	0.000	0.000	0.979	0.859	1.838
19:00:00	0.000	0.000	0.000	0.759	0.881	1.640
20:00:00	0.000	0.000	0.000	0.584	0.896	1.480
21:00:00	0.000	0.000	0.000	0.441	0.905	1.346
22:00:00	0.000	0.000	0.000	0.315	0.908	1.224
23:00:00	0.000	0.000	0.000	0.204	0.906	1.110
24:00:00	0.000	0.000	0.000	0.111	0.898	1.010
25:00:00	0.000	0.000	0.000	0.054	0.887	0.941
26:00:00	0.000	0.000	0.000	0.023	0.874	0.898
27:00:00	0.000	0.000	0.000	0.008	0.860	0.868
28:00:00	0.000	0.000	0.000	0.001	0.846	0.847
29:00:00	0.000	0.000	0.000	0.000	0.832	0.832
30:00:00	0.000	0.000	0.000	0.000	0.818	0.818
31:00:00	0.000	0.000	0.000	0.000	0.804	0.804
32:00:00	0.000	0.000	0.000	0.000	0.790	0.790
33:00:00	0.000	0.000	0.000	0.000	0.777	0.777
34:00:00	0.000	0.000	0.000	0.000	0.764	0.764

Time (hh:mm:ss)	Rain (mm)	Sewer Loss (mm)	Net Rain (mm)	Runoff (m ³ /s)	Baseflow (m ³ /s)	Total Flow (m ³ /s)
35:00:00	0.000	0.000	0.000	0.000	0.751	0.751
36:00:00	0.000	0.000	0.000	0.000	0.738	0.738
37:00:00	0.000	0.000	0.000	0.000	0.726	0.726
38:00:00	0.000	0.000	0.000	0.000	0.713	0.713
39:00:00	0.000	0.000	0.000	0.000	0.701	0.701
40:00:00	0.000	0.000	0.000	0.000	0.689	0.689
41:00:00	0.000	0.000	0.000	0.000	0.678	0.678
42:00:00	0.000	0.000	0.000	0.000	0.666	0.666
43:00:00	0.000	0.000	0.000	0.000	0.655	0.655
44:00:00	0.000	0.000	0.000	0.000	0.644	0.644
45:00:00	0.000	0.000	0.000	0.000	0.633	0.633
46:00:00	0.000	0.000	0.000	0.000	0.622	0.622
47:00:00	0.000	0.000	0.000	0.000	0.612	0.612
48:00:00	0.000	0.000	0.000	0.000	0.602	0.602
49:00:00	0.000	0.000	0.000	0.000	0.591	0.591
50:00:00	0.000	0.000	0.000	0.000	0.581	0.581
51:00:00	0.000	0.000	0.000	0.000	0.572	0.572
52:00:00	0.000	0.000	0.000	0.000	0.562	0.562
53:00:00	0.000	0.000	0.000	0.000	0.552	0.552
54:00:00	0.000	0.000	0.000	0.000	0.543	0.543
55:00:00	0.000	0.000	0.000	0.000	0.534	0.534
56:00:00	0.000	0.000	0.000	0.000	0.525	0.525
57:00:00	0.000	0.000	0.000	0.000	0.516	0.516
58:00:00	0.000	0.000	0.000	0.000	0.507	0.507
59:00:00	0.000	0.000	0.000	0.000	0.499	0.499
60:00:00	0.000	0.000	0.000	0.000	0.490	0.490
61:00:00	0.000	0.000	0.000	0.000	0.482	0.482
62:00:00	0.000	0.000	0.000	0.000	0.474	0.474
63:00:00	0.000	0.000	0.000	0.000	0.466	0.466
64:00:00	0.000	0.000	0.000	0.000	0.458	0.458
65:00:00	0.000	0.000	0.000	0.000	0.450	0.450
66:00:00	0.000	0.000	0.000	0.000	0.443	0.443
67:00:00	0.000	0.000	0.000	0.000	0.435	0.435
68:00:00	0.000	0.000	0.000	0.000	0.428	0.428
69:00:00	0.000	0.000	0.000	0.000	0.420	0.420
70:00:00	0.000	0.000	0.000	0.000	0.413	0.413

Time (hh:mm:ss)	Rain (mm)	Sewer Loss (mm)	Net Rain (mm)	Runoff (m ³ /s)	Baseflow (m ³ /s)	Total Flow (m ³ /s)
71:00:00	0.000	0.000	0.000	0.000	0.406	0.406
72:00:00	0.000	0.000	0.000	0.000	0.399	0.399
73:00:00	0.000	0.000	0.000	0.000	0.393	0.393
74:00:00	0.000	0.000	0.000	0.000	0.386	0.386
75:00:00	0.000	0.000	0.000	0.000	0.380	0.380
76:00:00	0.000	0.000	0.000	0.000	0.373	0.373
77:00:00	0.000	0.000	0.000	0.000	0.367	0.367
78:00:00	0.000	0.000	0.000	0.000	0.361	0.361
79:00:00	0.000	0.000	0.000	0.000	0.355	0.355
80:00:00	0.000	0.000	0.000	0.000	0.349	0.349
81:00:00	0.000	0.000	0.000	0.000	0.343	0.343
82:00:00	0.000	0.000	0.000	0.000	0.337	0.337
83:00:00	0.000	0.000	0.000	0.000	0.331	0.331
84:00:00	0.000	0.000	0.000	0.000	0.326	0.326
85:00:00	0.000	0.000	0.000	0.000	0.320	0.320
86:00:00	0.000	0.000	0.000	0.000	0.315	0.315
87:00:00	0.000	0.000	0.000	0.000	0.309	0.309
88:00:00	0.000	0.000	0.000	0.000	0.304	0.304
89:00:00	0.000	0.000	0.000	0.000	0.299	0.299
90:00:00	0.000	0.000	0.000	0.000	0.294	0.294
91:00:00	0.000	0.000	0.000	0.000	0.289	0.289
92:00:00	0.000	0.000	0.000	0.000	0.284	0.284
93:00:00	0.000	0.000	0.000	0.000	0.279	0.279
94:00:00	0.000	0.000	0.000	0.000	0.275	0.275
95:00:00	0.000	0.000	0.000	0.000	0.270	0.270
96:00:00	0.000	0.000	0.000	0.000	0.265	0.265
97:00:00	0.000	0.000	0.000	0.000	0.261	0.261
98:00:00	0.000	0.000	0.000	0.000	0.256	0.256
99:00:00	0.000	0.000	0.000	0.000	0.252	0.252
100:00:00	0.000	0.000	0.000	0.000	0.248	0.248
101:00:00	0.000	0.000	0.000	0.000	0.244	0.244
102:00:00	0.000	0.000	0.000	0.000	0.239	0.239
103:00:00	0.000	0.000	0.000	0.000	0.235	0.235
104:00:00	0.000	0.000	0.000	0.000	0.231	0.231
105:00:00	0.000	0.000	0.000	0.000	0.228	0.228
106:00:00	0.000	0.000	0.000	0.000	0.224	0.224

Time (hh:mm:ss)	Rain (mm)	Sewer Loss (mm)	Net Rain (mm)	Runoff (m ³ /s)	Baseflow (m ³ /s)	Total Flow (m ³ /s)
107:00:00	0.000	0.000	0.000	0.000	0.220	0.220
108:00:00	0.000	0.000	0.000	0.000	0.216	0.216
109:00:00	0.000	0.000	0.000	0.000	0.213	0.213
110:00:00	0.000	0.000	0.000	0.000	0.209	0.209
111:00:00	0.000	0.000	0.000	0.000	0.205	0.205
112:00:00	0.000	0.000	0.000	0.000	0.202	0.202
113:00:00	0.000	0.000	0.000	0.000	0.199	0.199
114:00:00	0.000	0.000	0.000	0.000	0.195	0.195
115:00:00	0.000	0.000	0.000	0.000	0.192	0.192
116:00:00	0.000	0.000	0.000	0.000	0.189	0.189
117:00:00	0.000	0.000	0.000	0.000	0.185	0.185
118:00:00	0.000	0.000	0.000	0.000	0.182	0.182
119:00:00	0.000	0.000	0.000	0.000	0.179	0.179
120:00:00	0.000	0.000	0.000	0.000	0.176	0.176
121:00:00	0.000	0.000	0.000	0.000	0.173	0.173
122:00:00	0.000	0.000	0.000	0.000	0.170	0.170
123:00:00	0.000	0.000	0.000	0.000	0.167	0.167
124:00:00	0.000	0.000	0.000	0.000	0.165	0.165
125:00:00	0.000	0.000	0.000	0.000	0.162	0.162
126:00:00	0.000	0.000	0.000	0.000	0.159	0.159
127:00:00	0.000	0.000	0.000	0.000	0.156	0.156
128:00:00	0.000	0.000	0.000	0.000	0.154	0.154
129:00:00	0.000	0.000	0.000	0.000	0.151	0.151
130:00:00	0.000	0.000	0.000	0.000	0.149	0.149
131:00:00	0.000	0.000	0.000	0.000	0.146	0.146
132:00:00	0.000	0.000	0.000	0.000	0.144	0.144
133:00:00	0.000	0.000	0.000	0.000	0.141	0.141
134:00:00	0.000	0.000	0.000	0.000	0.139	0.139
135:00:00	0.000	0.000	0.000	0.000	0.136	0.136
136:00:00	0.000	0.000	0.000	0.000	0.134	0.134
137:00:00	0.000	0.000	0.000	0.000	0.132	0.132
138:00:00	0.000	0.000	0.000	0.000	0.130	0.130
139:00:00	0.000	0.000	0.000	0.000	0.127	0.127
140:00:00	0.000	0.000	0.000	0.000	0.125	0.125
141:00:00	0.000	0.000	0.000	0.000	0.123	0.123
142:00:00	0.000	0.000	0.000	0.000	0.121	0.121

Time (hh:mm:ss)	Rain (mm)	Sewer Loss (mm)	Net Rain (mm)	Runoff (m ³ /s)	Baseflow (m ³ /s)	Total Flow (m ³ /s)
143:00:00	0.000	0.000	0.000	0.000	0.119	0.119
144:00:00	0.000	0.000	0.000	0.000	0.117	0.117
145:00:00	0.000	0.000	0.000	0.000	0.115	0.115
146:00:00	0.000	0.000	0.000	0.000	0.113	0.113
147:00:00	0.000	0.000	0.000	0.000	0.111	0.111
148:00:00	0.000	0.000	0.000	0.000	0.109	0.109
149:00:00	0.000	0.000	0.000	0.000	0.107	0.107
150:00:00	0.000	0.000	0.000	0.000	0.106	0.106
151:00:00	0.000	0.000	0.000	0.000	0.104	0.104
152:00:00	0.000	0.000	0.000	0.000	0.102	0.102
153:00:00	0.000	0.000	0.000	0.000	0.100	0.100
154:00:00	0.000	0.000	0.000	0.000	0.099	0.099
155:00:00	0.000	0.000	0.000	0.000	0.097	0.097
156:00:00	0.000	0.000	0.000	0.000	0.095	0.095
157:00:00	0.000	0.000	0.000	0.000	0.094	0.094
158:00:00	0.000	0.000	0.000	0.000	0.092	0.092
159:00:00	0.000	0.000	0.000	0.000	0.091	0.091
160:00:00	0.000	0.000	0.000	0.000	0.089	0.089
161:00:00	0.000	0.000	0.000	0.000	0.088	0.088
162:00:00	0.000	0.000	0.000	0.000	0.086	0.086
163:00:00	0.000	0.000	0.000	0.000	0.085	0.085
164:00:00	0.000	0.000	0.000	0.000	0.083	0.083
165:00:00	0.000	0.000	0.000	0.000	0.082	0.082
166:00:00	0.000	0.000	0.000	0.000	0.080	0.080
167:00:00	0.000	0.000	0.000	0.000	0.079	0.079
168:00:00	0.000	0.000	0.000	0.000	0.078	0.078
169:00:00	0.000	0.000	0.000	0.000	0.076	0.076
170:00:00	0.000	0.000	0.000	0.000	0.075	0.075
171:00:00	0.000	0.000	0.000	0.000	0.074	0.074
172:00:00	0.000	0.000	0.000	0.000	0.073	0.073
173:00:00	0.000	0.000	0.000	0.000	0.071	0.071
174:00:00	0.000	0.000	0.000	0.000	0.070	0.070
175:00:00	0.000	0.000	0.000	0.000	0.069	0.069
176:00:00	0.000	0.000	0.000	0.000	0.068	0.068
177:00:00	0.000	0.000	0.000	0.000	0.067	0.067
178:00:00	0.000	0.000	0.000	0.000	0.066	0.066

Time (hh:mm:ss)	Rain (mm)	Sewer Loss (mm)	Net Rain (mm)	Runoff (m ³ /s)	Baseflow (m ³ /s)	Total Flow (m ³ /s)
179:00:00	0.000	0.000	0.000	0.000	0.064	0.064
180:00:00	0.000	0.000	0.000	0.000	0.063	0.063

Appendix

Catchment descriptors

Name	Value	User-defined value used?
Area (km ²)	12.22	No
ALTBAR	118	No
ASPBAR	253	No
ASPVAR	0.25	No
BFIHOST	0.65	No
BFIHOST19	0.71	No
DPLBAR (km)	3.89	No
DPSBAR (mkm ⁻¹)	31.9	No
FARL	1	No
LDP	7.58	No
PROPWET (mm)	0.3	No
RMED1H	10.8	No
RMED1D	30.2	No
RMED2D	37.1	No
SAAR (mm)	618	No
SAAR4170 (mm)	644	No
SPRHOST	29.66	No
Urbext2000	0.1	No
Urbext1990	0.06	No
URBCONC	0.82	No
URBLOC	0.6	No
DDF parameter C	-0.03	No
DDF parameter D1	0.31	No
DDF parameter D2	0.31	No
DDF parameter D3	0.29	No
DDF parameter E	0.32	No
DDF parameter F	2.45	No
DDF parameter C (1km grid value)	-0.03	No
DDF parameter D1 (1km grid value)	0.32	No
DDF parameter D2 (1km grid value)	0.31	No
DDF parameter D3 (1km grid value)	0.29	No
DDF parameter E (1km grid value)	0.32	No
DDF parameter F (1km grid value)	2.43	No

UK Design Flood Estimation

Generated on Tuesday, November 22, 2022 4:57:49 PM by DELL
Printed from the ReFH2 Flood Modelling software package, version 3.2.7650.24314

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

Site details

Checksum: EFB3-DF0E

Site name: Priory Lane

Easting: 521500

Northing: 227450

Country: England, Wales or Northern Ireland

Catchment Area (km²): 12.22

Using plot scale calculations: No

Model: 2.3

Site description: None

Model run: 100 year 1.19 CC

Summary of results

Rainfall - FEH 2013 model (mm):	85.60	Total runoff (ML):	151.22
Total Rainfall (mm):	81.19	Total flow (ML):	432.68
Peak Rainfall (mm):	28.77	Peak flow (m ³ /s):	4.74

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 - FEH 2013 model)

Name	Value	User-defined?
Duration (hh:mm:ss)	09:00:00	No
Timestep (hh:mm:ss)	01:00:00	No
SCF (Seasonal correction factor)	0.99	No
ARF (Areal reduction factor)	0.96	No
Seasonality	Summer [Winter]	Yes
Climate change factor	1.19	Yes

Loss model parameters

Name	Value	User-defined?
Cini (mm)	41.64	No
Cmax (mm)	719.89	No
Use alpha correction factor	No	No
Alpha correction factor	n/a	No

Routing model parameters

Name	Value	User-defined?
Tp (hr)	5.47	No
Up	0.65	No
Uk	0.8	No

Baseflow model parameters

Name	Value	User-defined?
BF0 (m ³ /s)	0.06	No
BL (hr)	58.63	No
BR	2.65	No

Urbanisation parameters

Name	Value	User-defined?
Urban area (km ²)	1.88	No
Urbext 2000	0.1	No
Impervious runoff factor	0.7	No
Imperviousness factor	0.4	No
Tp scaling factor	0.75	No
Depression storage depth (mm)	0.5	No
Exporting drained area (km ²)	0.00	Yes
Sewer capacity (m ³ /s)	0.00	Yes

Time series data

Time (hh:mm:ss)	Rain (mm)	Sewer Loss (mm)	Net Rain (mm)	Runoff (m³/s)	Baseflow (m³/s)	Total Flow (m³/s)
00:00:00	2.399	0.000	0.239	0.000	0.052	0.052
01:00:00	3.926	0.000	0.409	0.012	0.051	0.064
02:00:00	6.775	0.000	0.754	0.057	0.051	0.109
03:00:00	13.107	0.000	1.633	0.161	0.052	0.213
04:00:00	28.775	0.000	4.385	0.382	0.057	0.439
05:00:00	13.107	0.000	2.362	0.880	0.069	0.949
06:00:00	6.775	0.000	1.311	1.662	0.097	1.759
07:00:00	3.926	0.000	0.787	2.546	0.146	2.692
08:00:00	2.399	0.000	0.491	3.399	0.218	3.617
09:00:00	0.000	0.000	0.000	4.040	0.313	4.353
10:00:00	0.000	0.000	0.000	4.313	0.427	4.740
11:00:00	0.000	0.000	0.000	4.184	0.550	4.734
12:00:00	0.000	0.000	0.000	3.815	0.669	4.484
13:00:00	0.000	0.000	0.000	3.339	0.778	4.117
14:00:00	0.000	0.000	0.000	2.844	0.872	3.716
15:00:00	0.000	0.000	0.000	2.358	0.949	3.307
16:00:00	0.000	0.000	0.000	1.932	1.011	2.943
17:00:00	0.000	0.000	0.000	1.572	1.059	2.632
18:00:00	0.000	0.000	0.000	1.257	1.097	2.354
19:00:00	0.000	0.000	0.000	0.979	1.126	2.105
20:00:00	0.000	0.000	0.000	0.757	1.146	1.903
21:00:00	0.000	0.000	0.000	0.574	1.158	1.732
22:00:00	0.000	0.000	0.000	0.412	1.163	1.575
23:00:00	0.000	0.000	0.000	0.268	1.160	1.428
24:00:00	0.000	0.000	0.000	0.147	1.151	1.298
25:00:00	0.000	0.000	0.000	0.071	1.137	1.209
26:00:00	0.000	0.000	0.000	0.031	1.120	1.151
27:00:00	0.000	0.000	0.000	0.010	1.103	1.113
28:00:00	0.000	0.000	0.000	0.002	1.084	1.086
29:00:00	0.000	0.000	0.000	0.000	1.066	1.066
30:00:00	0.000	0.000	0.000	0.000	1.048	1.048
31:00:00	0.000	0.000	0.000	0.000	1.030	1.030
32:00:00	0.000	0.000	0.000	0.000	1.013	1.013
33:00:00	0.000	0.000	0.000	0.000	0.996	0.996
34:00:00	0.000	0.000	0.000	0.000	0.979	0.979

Time (hh:mm:ss)	Rain (mm)	Sewer Loss (mm)	Net Rain (mm)	Runoff (m ³ /s)	Baseflow (m ³ /s)	Total Flow (m ³ /s)
35:00:00	0.000	0.000	0.000	0.000	0.962	0.962
36:00:00	0.000	0.000	0.000	0.000	0.946	0.946
37:00:00	0.000	0.000	0.000	0.000	0.930	0.930
38:00:00	0.000	0.000	0.000	0.000	0.914	0.914
39:00:00	0.000	0.000	0.000	0.000	0.899	0.899
40:00:00	0.000	0.000	0.000	0.000	0.884	0.884
41:00:00	0.000	0.000	0.000	0.000	0.869	0.869
42:00:00	0.000	0.000	0.000	0.000	0.854	0.854
43:00:00	0.000	0.000	0.000	0.000	0.840	0.840
44:00:00	0.000	0.000	0.000	0.000	0.825	0.825
45:00:00	0.000	0.000	0.000	0.000	0.811	0.811
46:00:00	0.000	0.000	0.000	0.000	0.798	0.798
47:00:00	0.000	0.000	0.000	0.000	0.784	0.784
48:00:00	0.000	0.000	0.000	0.000	0.771	0.771
49:00:00	0.000	0.000	0.000	0.000	0.758	0.758
50:00:00	0.000	0.000	0.000	0.000	0.745	0.745
51:00:00	0.000	0.000	0.000	0.000	0.732	0.732
52:00:00	0.000	0.000	0.000	0.000	0.720	0.720
53:00:00	0.000	0.000	0.000	0.000	0.708	0.708
54:00:00	0.000	0.000	0.000	0.000	0.696	0.696
55:00:00	0.000	0.000	0.000	0.000	0.684	0.684
56:00:00	0.000	0.000	0.000	0.000	0.673	0.673
57:00:00	0.000	0.000	0.000	0.000	0.661	0.661
58:00:00	0.000	0.000	0.000	0.000	0.650	0.650
59:00:00	0.000	0.000	0.000	0.000	0.639	0.639
60:00:00	0.000	0.000	0.000	0.000	0.628	0.628
61:00:00	0.000	0.000	0.000	0.000	0.618	0.618
62:00:00	0.000	0.000	0.000	0.000	0.607	0.607
63:00:00	0.000	0.000	0.000	0.000	0.597	0.597
64:00:00	0.000	0.000	0.000	0.000	0.587	0.587
65:00:00	0.000	0.000	0.000	0.000	0.577	0.577
66:00:00	0.000	0.000	0.000	0.000	0.567	0.567
67:00:00	0.000	0.000	0.000	0.000	0.558	0.558
68:00:00	0.000	0.000	0.000	0.000	0.548	0.548
69:00:00	0.000	0.000	0.000	0.000	0.539	0.539
70:00:00	0.000	0.000	0.000	0.000	0.530	0.530

Time (hh:mm:ss)	Rain (mm)	Sewer Loss (mm)	Net Rain (mm)	Runoff (m ³ /s)	Baseflow (m ³ /s)	Total Flow (m ³ /s)
71:00:00	0.000	0.000	0.000	0.000	0.521	0.521
72:00:00	0.000	0.000	0.000	0.000	0.512	0.512
73:00:00	0.000	0.000	0.000	0.000	0.503	0.503
74:00:00	0.000	0.000	0.000	0.000	0.495	0.495
75:00:00	0.000	0.000	0.000	0.000	0.486	0.486
76:00:00	0.000	0.000	0.000	0.000	0.478	0.478
77:00:00	0.000	0.000	0.000	0.000	0.470	0.470
78:00:00	0.000	0.000	0.000	0.000	0.462	0.462
79:00:00	0.000	0.000	0.000	0.000	0.454	0.454
80:00:00	0.000	0.000	0.000	0.000	0.447	0.447
81:00:00	0.000	0.000	0.000	0.000	0.439	0.439
82:00:00	0.000	0.000	0.000	0.000	0.432	0.432
83:00:00	0.000	0.000	0.000	0.000	0.424	0.424
84:00:00	0.000	0.000	0.000	0.000	0.417	0.417
85:00:00	0.000	0.000	0.000	0.000	0.410	0.410
86:00:00	0.000	0.000	0.000	0.000	0.403	0.403
87:00:00	0.000	0.000	0.000	0.000	0.396	0.396
88:00:00	0.000	0.000	0.000	0.000	0.390	0.390
89:00:00	0.000	0.000	0.000	0.000	0.383	0.383
90:00:00	0.000	0.000	0.000	0.000	0.377	0.377
91:00:00	0.000	0.000	0.000	0.000	0.370	0.370
92:00:00	0.000	0.000	0.000	0.000	0.364	0.364
93:00:00	0.000	0.000	0.000	0.000	0.358	0.358
94:00:00	0.000	0.000	0.000	0.000	0.352	0.352
95:00:00	0.000	0.000	0.000	0.000	0.346	0.346
96:00:00	0.000	0.000	0.000	0.000	0.340	0.340
97:00:00	0.000	0.000	0.000	0.000	0.334	0.334
98:00:00	0.000	0.000	0.000	0.000	0.329	0.329
99:00:00	0.000	0.000	0.000	0.000	0.323	0.323
100:00:00	0.000	0.000	0.000	0.000	0.318	0.318
101:00:00	0.000	0.000	0.000	0.000	0.312	0.312
102:00:00	0.000	0.000	0.000	0.000	0.307	0.307
103:00:00	0.000	0.000	0.000	0.000	0.302	0.302
104:00:00	0.000	0.000	0.000	0.000	0.297	0.297
105:00:00	0.000	0.000	0.000	0.000	0.292	0.292
106:00:00	0.000	0.000	0.000	0.000	0.287	0.287

Time (hh:mm:ss)	Rain (mm)	Sewer Loss (mm)	Net Rain (mm)	Runoff (m ³ /s)	Baseflow (m ³ /s)	Total Flow (m ³ /s)
107:00:00	0.000	0.000	0.000	0.000	0.282	0.282
108:00:00	0.000	0.000	0.000	0.000	0.277	0.277
109:00:00	0.000	0.000	0.000	0.000	0.272	0.272
110:00:00	0.000	0.000	0.000	0.000	0.268	0.268
111:00:00	0.000	0.000	0.000	0.000	0.263	0.263
112:00:00	0.000	0.000	0.000	0.000	0.259	0.259
113:00:00	0.000	0.000	0.000	0.000	0.254	0.254
114:00:00	0.000	0.000	0.000	0.000	0.250	0.250
115:00:00	0.000	0.000	0.000	0.000	0.246	0.246
116:00:00	0.000	0.000	0.000	0.000	0.242	0.242
117:00:00	0.000	0.000	0.000	0.000	0.238	0.238
118:00:00	0.000	0.000	0.000	0.000	0.234	0.234
119:00:00	0.000	0.000	0.000	0.000	0.230	0.230
120:00:00	0.000	0.000	0.000	0.000	0.226	0.226
121:00:00	0.000	0.000	0.000	0.000	0.222	0.222
122:00:00	0.000	0.000	0.000	0.000	0.218	0.218
123:00:00	0.000	0.000	0.000	0.000	0.215	0.215
124:00:00	0.000	0.000	0.000	0.000	0.211	0.211
125:00:00	0.000	0.000	0.000	0.000	0.207	0.207
126:00:00	0.000	0.000	0.000	0.000	0.204	0.204
127:00:00	0.000	0.000	0.000	0.000	0.200	0.200
128:00:00	0.000	0.000	0.000	0.000	0.197	0.197
129:00:00	0.000	0.000	0.000	0.000	0.194	0.194
130:00:00	0.000	0.000	0.000	0.000	0.190	0.190
131:00:00	0.000	0.000	0.000	0.000	0.187	0.187
132:00:00	0.000	0.000	0.000	0.000	0.184	0.184
133:00:00	0.000	0.000	0.000	0.000	0.181	0.181
134:00:00	0.000	0.000	0.000	0.000	0.178	0.178
135:00:00	0.000	0.000	0.000	0.000	0.175	0.175
136:00:00	0.000	0.000	0.000	0.000	0.172	0.172
137:00:00	0.000	0.000	0.000	0.000	0.169	0.169
138:00:00	0.000	0.000	0.000	0.000	0.166	0.166
139:00:00	0.000	0.000	0.000	0.000	0.163	0.163
140:00:00	0.000	0.000	0.000	0.000	0.161	0.161
141:00:00	0.000	0.000	0.000	0.000	0.158	0.158
142:00:00	0.000	0.000	0.000	0.000	0.155	0.155

Time (hh:mm:ss)	Rain (mm)	Sewer Loss (mm)	Net Rain (mm)	Runoff (m ³ /s)	Baseflow (m ³ /s)	Total Flow (m ³ /s)
143:00:00	0.000	0.000	0.000	0.000	0.153	0.153
144:00:00	0.000	0.000	0.000	0.000	0.150	0.150
145:00:00	0.000	0.000	0.000	0.000	0.147	0.147
146:00:00	0.000	0.000	0.000	0.000	0.145	0.145
147:00:00	0.000	0.000	0.000	0.000	0.142	0.142
148:00:00	0.000	0.000	0.000	0.000	0.140	0.140
149:00:00	0.000	0.000	0.000	0.000	0.138	0.138
150:00:00	0.000	0.000	0.000	0.000	0.135	0.135
151:00:00	0.000	0.000	0.000	0.000	0.133	0.133
152:00:00	0.000	0.000	0.000	0.000	0.131	0.131
153:00:00	0.000	0.000	0.000	0.000	0.129	0.129
154:00:00	0.000	0.000	0.000	0.000	0.126	0.126
155:00:00	0.000	0.000	0.000	0.000	0.124	0.124
156:00:00	0.000	0.000	0.000	0.000	0.122	0.122
157:00:00	0.000	0.000	0.000	0.000	0.120	0.120
158:00:00	0.000	0.000	0.000	0.000	0.118	0.118
159:00:00	0.000	0.000	0.000	0.000	0.116	0.116
160:00:00	0.000	0.000	0.000	0.000	0.114	0.114
161:00:00	0.000	0.000	0.000	0.000	0.112	0.112
162:00:00	0.000	0.000	0.000	0.000	0.110	0.110
163:00:00	0.000	0.000	0.000	0.000	0.108	0.108
164:00:00	0.000	0.000	0.000	0.000	0.107	0.107
165:00:00	0.000	0.000	0.000	0.000	0.105	0.105
166:00:00	0.000	0.000	0.000	0.000	0.103	0.103
167:00:00	0.000	0.000	0.000	0.000	0.101	0.101
168:00:00	0.000	0.000	0.000	0.000	0.100	0.100
169:00:00	0.000	0.000	0.000	0.000	0.098	0.098
170:00:00	0.000	0.000	0.000	0.000	0.096	0.096
171:00:00	0.000	0.000	0.000	0.000	0.095	0.095
172:00:00	0.000	0.000	0.000	0.000	0.093	0.093
173:00:00	0.000	0.000	0.000	0.000	0.091	0.091
174:00:00	0.000	0.000	0.000	0.000	0.090	0.090
175:00:00	0.000	0.000	0.000	0.000	0.088	0.088
176:00:00	0.000	0.000	0.000	0.000	0.087	0.087
177:00:00	0.000	0.000	0.000	0.000	0.085	0.085
178:00:00	0.000	0.000	0.000	0.000	0.084	0.084

Time (hh:mm:ss)	Rain (mm)	Sewer Loss (mm)	Net Rain (mm)	Runoff (m ³ /s)	Baseflow (m ³ /s)	Total Flow (m ³ /s)
179:00:00	0.000	0.000	0.000	0.000	0.083	0.083
180:00:00	0.000	0.000	0.000	0.000	0.081	0.081

Appendix

Catchment descriptors

Name	Value	User-defined value used?
Area (km ²)	12.22	No
ALTBAR	118	No
ASPBAR	253	No
ASPVAR	0.25	No
BFIHOST	0.65	No
BFIHOST19	0.71	No
DPLBAR (km)	3.89	No
DPSBAR (mkm ⁻¹)	31.9	No
FARL	1	No
LDP	7.58	No
PROPWET (mm)	0.3	No
RMED1H	10.8	No
RMED1D	30.2	No
RMED2D	37.1	No
SAAR (mm)	618	No
SAAR4170 (mm)	644	No
SPRHOST	29.66	No
Urbext2000	0.1	No
Urbext1990	0.06	No
URBCONC	0.82	No
URBLOC	0.6	No
DDF parameter C	-0.03	No
DDF parameter D1	0.31	No
DDF parameter D2	0.31	No
DDF parameter D3	0.29	No
DDF parameter E	0.32	No
DDF parameter F	2.45	No
DDF parameter C (1km grid value)	-0.03	No
DDF parameter D1 (1km grid value)	0.32	No
DDF parameter D2 (1km grid value)	0.31	No
DDF parameter D3 (1km grid value)	0.29	No
DDF parameter E (1km grid value)	0.32	No
DDF parameter F (1km grid value)	2.43	No

UK Design Flood Estimation

Generated on Tuesday, November 22, 2022 5:11:52 PM by DELL
Printed from the ReFH2 Flood Modelling software package, version 3.2.7650.24314

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

Site details

Checksum: EFB3-DF0E

Site name: Priory Lane

Easting: 521500

Northing: 227450

Country: England, Wales or Northern Ireland

Catchment Area (km²): 12.22

Using plot scale calculations: No

Model: 2.3

Site description: None

Model run: 100 year 1.3 CC

Summary of results

Rainfall - FEH 2013 model (mm):	93.52	Total runoff (ML):	170.61
Total Rainfall (mm):	88.69	Total flow (ML):	490.60
Peak Rainfall (mm):	31.43	Peak flow (m ³ /s):	5.34

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 - FEH 2013 model)

Name	Value	User-defined?
Duration (hh:mm:ss)	09:00:00	No
Timestep (hh:mm:ss)	01:00:00	No
SCF (Seasonal correction factor)	0.99	No
ARF (Areal reduction factor)	0.96	No
Seasonality	Summer [Winter]	Yes
Climate change factor	1.30	Yes

Loss model parameters

Name	Value	User-defined?
Cini (mm)	41.64	No
Cmax (mm)	719.89	No
Use alpha correction factor	No	No
Alpha correction factor	n/a	No

Routing model parameters

Name	Value	User-defined?
Tp (hr)	5.47	No
Up	0.65	No
Uk	0.8	No

Baseflow model parameters

Name	Value	User-defined?
BF0 (m ³ /s)	0.06	No
BL (hr)	58.63	No
BR	2.65	No

Urbanisation parameters

Name	Value	User-defined?
Urban area (km ²)	1.88	No
Urbext 2000	0.1	No
Impervious runoff factor	0.7	No
Imperviousness factor	0.4	No
Tp scaling factor	0.75	No
Depression storage depth (mm)	0.5	No
Exporting drained area (km ²)	0.00	Yes
Sewer capacity (m ³ /s)	0.00	Yes

Time series data

Time (hh:mm:ss)	Rain (mm)	Sewer Loss (mm)	Net Rain (mm)	Runoff (m³/s)	Baseflow (m³/s)	Total Flow (m³/s)
00:00:00	2.621	0.000	0.262	0.000	0.052	0.052
01:00:00	4.289	0.000	0.449	0.013	0.051	0.065
02:00:00	7.401	0.000	0.833	0.063	0.051	0.114
03:00:00	14.319	0.000	1.818	0.176	0.053	0.229
04:00:00	31.435	0.000	4.947	0.420	0.058	0.478
05:00:00	14.319	0.000	2.689	0.975	0.072	1.046
06:00:00	7.401	0.000	1.497	1.849	0.103	1.952
07:00:00	4.289	0.000	0.901	2.843	0.158	3.001
08:00:00	2.621	0.000	0.562	3.805	0.240	4.045
09:00:00	0.000	0.000	0.000	4.536	0.348	4.884
10:00:00	0.000	0.000	0.000	4.857	0.479	5.336
11:00:00	0.000	0.000	0.000	4.723	0.619	5.342
12:00:00	0.000	0.000	0.000	4.314	0.756	5.070
13:00:00	0.000	0.000	0.000	3.781	0.880	4.662
14:00:00	0.000	0.000	0.000	3.224	0.988	4.212
15:00:00	0.000	0.000	0.000	2.674	1.077	3.751
16:00:00	0.000	0.000	0.000	2.193	1.148	3.341
17:00:00	0.000	0.000	0.000	1.787	1.204	2.991
18:00:00	0.000	0.000	0.000	1.431	1.248	2.679
19:00:00	0.000	0.000	0.000	1.118	1.281	2.398
20:00:00	0.000	0.000	0.000	0.866	1.304	2.170
21:00:00	0.000	0.000	0.000	0.658	1.318	1.976
22:00:00	0.000	0.000	0.000	0.474	1.323	1.797
23:00:00	0.000	0.000	0.000	0.309	1.320	1.629
24:00:00	0.000	0.000	0.000	0.170	1.310	1.480
25:00:00	0.000	0.000	0.000	0.083	1.294	1.377
26:00:00	0.000	0.000	0.000	0.036	1.276	1.311
27:00:00	0.000	0.000	0.000	0.012	1.255	1.267
28:00:00	0.000	0.000	0.000	0.002	1.234	1.236
29:00:00	0.000	0.000	0.000	0.000	1.213	1.213
30:00:00	0.000	0.000	0.000	0.000	1.193	1.193
31:00:00	0.000	0.000	0.000	0.000	1.173	1.173
32:00:00	0.000	0.000	0.000	0.000	1.153	1.153
33:00:00	0.000	0.000	0.000	0.000	1.133	1.133
34:00:00	0.000	0.000	0.000	0.000	1.114	1.114

Time (hh:mm:ss)	Rain (mm)	Sewer Loss (mm)	Net Rain (mm)	Runoff (m ³ /s)	Baseflow (m ³ /s)	Total Flow (m ³ /s)
35:00:00	0.000	0.000	0.000	0.000	1.095	1.095
36:00:00	0.000	0.000	0.000	0.000	1.077	1.077
37:00:00	0.000	0.000	0.000	0.000	1.059	1.059
38:00:00	0.000	0.000	0.000	0.000	1.041	1.041
39:00:00	0.000	0.000	0.000	0.000	1.023	1.023
40:00:00	0.000	0.000	0.000	0.000	1.006	1.006
41:00:00	0.000	0.000	0.000	0.000	0.989	0.989
42:00:00	0.000	0.000	0.000	0.000	0.972	0.972
43:00:00	0.000	0.000	0.000	0.000	0.956	0.956
44:00:00	0.000	0.000	0.000	0.000	0.940	0.940
45:00:00	0.000	0.000	0.000	0.000	0.924	0.924
46:00:00	0.000	0.000	0.000	0.000	0.908	0.908
47:00:00	0.000	0.000	0.000	0.000	0.893	0.893
48:00:00	0.000	0.000	0.000	0.000	0.878	0.878
49:00:00	0.000	0.000	0.000	0.000	0.863	0.863
50:00:00	0.000	0.000	0.000	0.000	0.848	0.848
51:00:00	0.000	0.000	0.000	0.000	0.834	0.834
52:00:00	0.000	0.000	0.000	0.000	0.820	0.820
53:00:00	0.000	0.000	0.000	0.000	0.806	0.806
54:00:00	0.000	0.000	0.000	0.000	0.792	0.792
55:00:00	0.000	0.000	0.000	0.000	0.779	0.779
56:00:00	0.000	0.000	0.000	0.000	0.766	0.766
57:00:00	0.000	0.000	0.000	0.000	0.753	0.753
58:00:00	0.000	0.000	0.000	0.000	0.740	0.740
59:00:00	0.000	0.000	0.000	0.000	0.727	0.727
60:00:00	0.000	0.000	0.000	0.000	0.715	0.715
61:00:00	0.000	0.000	0.000	0.000	0.703	0.703
62:00:00	0.000	0.000	0.000	0.000	0.691	0.691
63:00:00	0.000	0.000	0.000	0.000	0.680	0.680
64:00:00	0.000	0.000	0.000	0.000	0.668	0.668
65:00:00	0.000	0.000	0.000	0.000	0.657	0.657
66:00:00	0.000	0.000	0.000	0.000	0.646	0.646
67:00:00	0.000	0.000	0.000	0.000	0.635	0.635
68:00:00	0.000	0.000	0.000	0.000	0.624	0.624
69:00:00	0.000	0.000	0.000	0.000	0.613	0.613
70:00:00	0.000	0.000	0.000	0.000	0.603	0.603

Time (hh:mm:ss)	Rain (mm)	Sewer Loss (mm)	Net Rain (mm)	Runoff (m ³ /s)	Baseflow (m ³ /s)	Total Flow (m ³ /s)
71:00:00	0.000	0.000	0.000	0.000	0.593	0.593
72:00:00	0.000	0.000	0.000	0.000	0.583	0.583
73:00:00	0.000	0.000	0.000	0.000	0.573	0.573
74:00:00	0.000	0.000	0.000	0.000	0.563	0.563
75:00:00	0.000	0.000	0.000	0.000	0.554	0.554
76:00:00	0.000	0.000	0.000	0.000	0.544	0.544
77:00:00	0.000	0.000	0.000	0.000	0.535	0.535
78:00:00	0.000	0.000	0.000	0.000	0.526	0.526
79:00:00	0.000	0.000	0.000	0.000	0.517	0.517
80:00:00	0.000	0.000	0.000	0.000	0.508	0.508
81:00:00	0.000	0.000	0.000	0.000	0.500	0.500
82:00:00	0.000	0.000	0.000	0.000	0.491	0.491
83:00:00	0.000	0.000	0.000	0.000	0.483	0.483
84:00:00	0.000	0.000	0.000	0.000	0.475	0.475
85:00:00	0.000	0.000	0.000	0.000	0.467	0.467
86:00:00	0.000	0.000	0.000	0.000	0.459	0.459
87:00:00	0.000	0.000	0.000	0.000	0.451	0.451
88:00:00	0.000	0.000	0.000	0.000	0.444	0.444
89:00:00	0.000	0.000	0.000	0.000	0.436	0.436
90:00:00	0.000	0.000	0.000	0.000	0.429	0.429
91:00:00	0.000	0.000	0.000	0.000	0.422	0.422
92:00:00	0.000	0.000	0.000	0.000	0.414	0.414
93:00:00	0.000	0.000	0.000	0.000	0.407	0.407
94:00:00	0.000	0.000	0.000	0.000	0.400	0.400
95:00:00	0.000	0.000	0.000	0.000	0.394	0.394
96:00:00	0.000	0.000	0.000	0.000	0.387	0.387
97:00:00	0.000	0.000	0.000	0.000	0.381	0.381
98:00:00	0.000	0.000	0.000	0.000	0.374	0.374
99:00:00	0.000	0.000	0.000	0.000	0.368	0.368
100:00:00	0.000	0.000	0.000	0.000	0.362	0.362
101:00:00	0.000	0.000	0.000	0.000	0.355	0.355
102:00:00	0.000	0.000	0.000	0.000	0.349	0.349
103:00:00	0.000	0.000	0.000	0.000	0.343	0.343
104:00:00	0.000	0.000	0.000	0.000	0.338	0.338
105:00:00	0.000	0.000	0.000	0.000	0.332	0.332
106:00:00	0.000	0.000	0.000	0.000	0.326	0.326

Time (hh:mm:ss)	Rain (mm)	Sewer Loss (mm)	Net Rain (mm)	Runoff (m ³ /s)	Baseflow (m ³ /s)	Total Flow (m ³ /s)
107:00:00	0.000	0.000	0.000	0.000	0.321	0.321
108:00:00	0.000	0.000	0.000	0.000	0.315	0.315
109:00:00	0.000	0.000	0.000	0.000	0.310	0.310
110:00:00	0.000	0.000	0.000	0.000	0.305	0.305
111:00:00	0.000	0.000	0.000	0.000	0.300	0.300
112:00:00	0.000	0.000	0.000	0.000	0.295	0.295
113:00:00	0.000	0.000	0.000	0.000	0.290	0.290
114:00:00	0.000	0.000	0.000	0.000	0.285	0.285
115:00:00	0.000	0.000	0.000	0.000	0.280	0.280
116:00:00	0.000	0.000	0.000	0.000	0.275	0.275
117:00:00	0.000	0.000	0.000	0.000	0.271	0.271
118:00:00	0.000	0.000	0.000	0.000	0.266	0.266
119:00:00	0.000	0.000	0.000	0.000	0.261	0.261
120:00:00	0.000	0.000	0.000	0.000	0.257	0.257
121:00:00	0.000	0.000	0.000	0.000	0.253	0.253
122:00:00	0.000	0.000	0.000	0.000	0.248	0.248
123:00:00	0.000	0.000	0.000	0.000	0.244	0.244
124:00:00	0.000	0.000	0.000	0.000	0.240	0.240
125:00:00	0.000	0.000	0.000	0.000	0.236	0.236
126:00:00	0.000	0.000	0.000	0.000	0.232	0.232
127:00:00	0.000	0.000	0.000	0.000	0.228	0.228
128:00:00	0.000	0.000	0.000	0.000	0.224	0.224
129:00:00	0.000	0.000	0.000	0.000	0.220	0.220
130:00:00	0.000	0.000	0.000	0.000	0.217	0.217
131:00:00	0.000	0.000	0.000	0.000	0.213	0.213
132:00:00	0.000	0.000	0.000	0.000	0.209	0.209
133:00:00	0.000	0.000	0.000	0.000	0.206	0.206
134:00:00	0.000	0.000	0.000	0.000	0.202	0.202
135:00:00	0.000	0.000	0.000	0.000	0.199	0.199
136:00:00	0.000	0.000	0.000	0.000	0.196	0.196
137:00:00	0.000	0.000	0.000	0.000	0.192	0.192
138:00:00	0.000	0.000	0.000	0.000	0.189	0.189
139:00:00	0.000	0.000	0.000	0.000	0.186	0.186
140:00:00	0.000	0.000	0.000	0.000	0.183	0.183
141:00:00	0.000	0.000	0.000	0.000	0.180	0.180
142:00:00	0.000	0.000	0.000	0.000	0.177	0.177

Time (hh:mm:ss)	Rain (mm)	Sewer Loss (mm)	Net Rain (mm)	Runoff (m ³ /s)	Baseflow (m ³ /s)	Total Flow (m ³ /s)
143:00:00	0.000	0.000	0.000	0.000	0.174	0.174
144:00:00	0.000	0.000	0.000	0.000	0.171	0.171
145:00:00	0.000	0.000	0.000	0.000	0.168	0.168
146:00:00	0.000	0.000	0.000	0.000	0.165	0.165
147:00:00	0.000	0.000	0.000	0.000	0.162	0.162
148:00:00	0.000	0.000	0.000	0.000	0.159	0.159
149:00:00	0.000	0.000	0.000	0.000	0.157	0.157
150:00:00	0.000	0.000	0.000	0.000	0.154	0.154
151:00:00	0.000	0.000	0.000	0.000	0.151	0.151
152:00:00	0.000	0.000	0.000	0.000	0.149	0.149
153:00:00	0.000	0.000	0.000	0.000	0.146	0.146
154:00:00	0.000	0.000	0.000	0.000	0.144	0.144
155:00:00	0.000	0.000	0.000	0.000	0.142	0.142
156:00:00	0.000	0.000	0.000	0.000	0.139	0.139
157:00:00	0.000	0.000	0.000	0.000	0.137	0.137
158:00:00	0.000	0.000	0.000	0.000	0.134	0.134
159:00:00	0.000	0.000	0.000	0.000	0.132	0.132
160:00:00	0.000	0.000	0.000	0.000	0.130	0.130
161:00:00	0.000	0.000	0.000	0.000	0.128	0.128
162:00:00	0.000	0.000	0.000	0.000	0.126	0.126
163:00:00	0.000	0.000	0.000	0.000	0.123	0.123
164:00:00	0.000	0.000	0.000	0.000	0.121	0.121
165:00:00	0.000	0.000	0.000	0.000	0.119	0.119
166:00:00	0.000	0.000	0.000	0.000	0.117	0.117
167:00:00	0.000	0.000	0.000	0.000	0.115	0.115
168:00:00	0.000	0.000	0.000	0.000	0.113	0.113
169:00:00	0.000	0.000	0.000	0.000	0.111	0.111
170:00:00	0.000	0.000	0.000	0.000	0.110	0.110
171:00:00	0.000	0.000	0.000	0.000	0.108	0.108
172:00:00	0.000	0.000	0.000	0.000	0.106	0.106
173:00:00	0.000	0.000	0.000	0.000	0.104	0.104
174:00:00	0.000	0.000	0.000	0.000	0.102	0.102
175:00:00	0.000	0.000	0.000	0.000	0.101	0.101
176:00:00	0.000	0.000	0.000	0.000	0.099	0.099
177:00:00	0.000	0.000	0.000	0.000	0.097	0.097
178:00:00	0.000	0.000	0.000	0.000	0.096	0.096

Time (hh:mm:ss)	Rain (mm)	Sewer Loss (mm)	Net Rain (mm)	Runoff (m ³ /s)	Baseflow (m ³ /s)	Total Flow (m ³ /s)
179:00:00	0.000	0.000	0.000	0.000	0.094	0.094
180:00:00	0.000	0.000	0.000	0.000	0.092	0.092

Appendix

Catchment descriptors

Name	Value	User-defined value used?
Area (km ²)	12.22	No
ALTBAR	118	No
ASPBAR	253	No
ASPVAR	0.25	No
BFIHOST	0.65	No
BFIHOST19	0.71	No
DPLBAR (km)	3.89	No
DPSBAR (mkm ⁻¹)	31.9	No
FARL	1	No
LDP	7.58	No
PROPWET (mm)	0.3	No
RMED1H	10.8	No
RMED1D	30.2	No
RMED2D	37.1	No
SAAR (mm)	618	No
SAAR4170 (mm)	644	No
SPRHOST	29.66	No
Urbext2000	0.1	No
Urbext1990	0.06	No
URBCONC	0.82	No
URBLOC	0.6	No
DDF parameter C	-0.03	No
DDF parameter D1	0.31	No
DDF parameter D2	0.31	No
DDF parameter D3	0.29	No
DDF parameter E	0.32	No
DDF parameter F	2.45	No
DDF parameter C (1km grid value)	-0.03	No
DDF parameter D1 (1km grid value)	0.32	No
DDF parameter D2 (1km grid value)	0.31	No
DDF parameter D3 (1km grid value)	0.29	No
DDF parameter E (1km grid value)	0.32	No
DDF parameter F (1km grid value)	2.43	No

UK Design Flood Estimation

Generated on Friday, October 21, 2022 1:02:08 PM by DELL

Printed from the ReFH2 Flood Modelling software package, version 3.2.7650.24314

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

Site details

Checksum: EA5D-CC9A

Site name: Priory Lane

Easting: 521500

Northing: 227450

Country: England, Wales or Northern Ireland

Catchment Area (km²): 12.22

Using plot scale calculations: No

Model: 2.3

Site description: None

Model run: 200 year

Summary of results

Rainfall - FEH 2013 model (mm):	88.51	Total runoff (ML):	158.24
Total Rainfall (mm):	83.95	Total flow (ML):	453.61
Peak Rainfall (mm):	29.75	Peak flow (m ³ /s):	4.96

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 - FEH 2013 model)

Name	Value	User-defined?
Duration (hh:mm:ss)	09:00:00	No
Timestep (hh:mm:ss)	01:00:00	No
SCF (Seasonal correction factor)	0.99	No
ARF (Areal reduction factor)	0.96	No
Seasonality	Summer [Winter]	Yes

Loss model parameters

Name	Value	User-defined?
Cini (mm)	41.64	No
Cmax (mm)	719.89	No
Use alpha correction factor	No	No
Alpha correction factor	n/a	No

Routing model parameters

Name	Value	User-defined?
Tp (hr)	5.47	No
Up	0.65	No
Uk	0.8	No

Baseflow model parameters

Name	Value	User-defined?
BF0 (m ³ /s)	0.06	No
BL (hr)	58.63	No
BR	2.65	No

Urbanisation parameters

Name	Value	User-defined?
Urban area (km ²)	1.88	No
Urbext 2000	0.1	No
Impervious runoff factor	0.7	No
Imperviousness factor	0.4	No
Tp scaling factor	0.75	No
Depression storage depth (mm)	0.5	No
Exporting drained area (km ²)	0.00	Yes
Sewer capacity (m ³ /s)	0.00	Yes

Time series data

Time (hh:mm:ss)	Rain (mm)	Sewer Loss (mm)	Net Rain (mm)	Runoff (m³/s)	Baseflow (m³/s)	Total Flow (m³/s)
00:00:00	2.480	0.000	0.248	0.000	0.052	0.052
01:00:00	4.060	0.000	0.424	0.013	0.051	0.064
02:00:00	7.005	0.000	0.783	0.059	0.051	0.111
03:00:00	13.553	0.000	1.700	0.167	0.052	0.219
04:00:00	29.753	0.000	4.589	0.396	0.057	0.453
05:00:00	13.553	0.000	2.480	0.915	0.070	0.985
06:00:00	7.005	0.000	1.378	1.730	0.099	1.829
07:00:00	4.060	0.000	0.828	2.654	0.150	2.804
08:00:00	2.480	0.000	0.517	3.547	0.226	3.773
09:00:00	0.000	0.000	0.000	4.220	0.326	4.546
10:00:00	0.000	0.000	0.000	4.511	0.446	4.956
11:00:00	0.000	0.000	0.000	4.380	0.575	4.955
12:00:00	0.000	0.000	0.000	3.995	0.700	4.696
13:00:00	0.000	0.000	0.000	3.499	0.815	4.314
14:00:00	0.000	0.000	0.000	2.981	0.914	3.895
15:00:00	0.000	0.000	0.000	2.472	0.995	3.467
16:00:00	0.000	0.000	0.000	2.026	1.060	3.086
17:00:00	0.000	0.000	0.000	1.650	1.112	2.761
18:00:00	0.000	0.000	0.000	1.320	1.152	2.471
19:00:00	0.000	0.000	0.000	1.029	1.182	2.211
20:00:00	0.000	0.000	0.000	0.796	1.203	1.999
21:00:00	0.000	0.000	0.000	0.604	1.216	1.820
22:00:00	0.000	0.000	0.000	0.435	1.221	1.655
23:00:00	0.000	0.000	0.000	0.283	1.218	1.501
24:00:00	0.000	0.000	0.000	0.155	1.208	1.364
25:00:00	0.000	0.000	0.000	0.075	1.194	1.269
26:00:00	0.000	0.000	0.000	0.033	1.176	1.209
27:00:00	0.000	0.000	0.000	0.011	1.158	1.168
28:00:00	0.000	0.000	0.000	0.002	1.138	1.140
29:00:00	0.000	0.000	0.000	0.000	1.119	1.119
30:00:00	0.000	0.000	0.000	0.000	1.100	1.100
31:00:00	0.000	0.000	0.000	0.000	1.082	1.082
32:00:00	0.000	0.000	0.000	0.000	1.063	1.063
33:00:00	0.000	0.000	0.000	0.000	1.045	1.045
34:00:00	0.000	0.000	0.000	0.000	1.028	1.028

Time (hh:mm:ss)	Rain (mm)	Sewer Loss (mm)	Net Rain (mm)	Runoff (m ³ /s)	Baseflow (m ³ /s)	Total Flow (m ³ /s)
35:00:00	0.000	0.000	0.000	0.000	1.010	1.010
36:00:00	0.000	0.000	0.000	0.000	0.993	0.993
37:00:00	0.000	0.000	0.000	0.000	0.976	0.976
38:00:00	0.000	0.000	0.000	0.000	0.960	0.960
39:00:00	0.000	0.000	0.000	0.000	0.944	0.944
40:00:00	0.000	0.000	0.000	0.000	0.928	0.928
41:00:00	0.000	0.000	0.000	0.000	0.912	0.912
42:00:00	0.000	0.000	0.000	0.000	0.897	0.897
43:00:00	0.000	0.000	0.000	0.000	0.881	0.881
44:00:00	0.000	0.000	0.000	0.000	0.867	0.867
45:00:00	0.000	0.000	0.000	0.000	0.852	0.852
46:00:00	0.000	0.000	0.000	0.000	0.837	0.837
47:00:00	0.000	0.000	0.000	0.000	0.823	0.823
48:00:00	0.000	0.000	0.000	0.000	0.809	0.809
49:00:00	0.000	0.000	0.000	0.000	0.796	0.796
50:00:00	0.000	0.000	0.000	0.000	0.782	0.782
51:00:00	0.000	0.000	0.000	0.000	0.769	0.769
52:00:00	0.000	0.000	0.000	0.000	0.756	0.756
53:00:00	0.000	0.000	0.000	0.000	0.743	0.743
54:00:00	0.000	0.000	0.000	0.000	0.731	0.731
55:00:00	0.000	0.000	0.000	0.000	0.718	0.718
56:00:00	0.000	0.000	0.000	0.000	0.706	0.706
57:00:00	0.000	0.000	0.000	0.000	0.694	0.694
58:00:00	0.000	0.000	0.000	0.000	0.682	0.682
59:00:00	0.000	0.000	0.000	0.000	0.671	0.671
60:00:00	0.000	0.000	0.000	0.000	0.660	0.660
61:00:00	0.000	0.000	0.000	0.000	0.648	0.648
62:00:00	0.000	0.000	0.000	0.000	0.637	0.637
63:00:00	0.000	0.000	0.000	0.000	0.627	0.627
64:00:00	0.000	0.000	0.000	0.000	0.616	0.616
65:00:00	0.000	0.000	0.000	0.000	0.606	0.606
66:00:00	0.000	0.000	0.000	0.000	0.595	0.595
67:00:00	0.000	0.000	0.000	0.000	0.585	0.585
68:00:00	0.000	0.000	0.000	0.000	0.575	0.575
69:00:00	0.000	0.000	0.000	0.000	0.566	0.566
70:00:00	0.000	0.000	0.000	0.000	0.556	0.556

Time (hh:mm:ss)	Rain (mm)	Sewer Loss (mm)	Net Rain (mm)	Runoff (m ³ /s)	Baseflow (m ³ /s)	Total Flow (m ³ /s)
71:00:00	0.000	0.000	0.000	0.000	0.547	0.547
72:00:00	0.000	0.000	0.000	0.000	0.538	0.538
73:00:00	0.000	0.000	0.000	0.000	0.528	0.528
74:00:00	0.000	0.000	0.000	0.000	0.519	0.519
75:00:00	0.000	0.000	0.000	0.000	0.511	0.511
76:00:00	0.000	0.000	0.000	0.000	0.502	0.502
77:00:00	0.000	0.000	0.000	0.000	0.494	0.494
78:00:00	0.000	0.000	0.000	0.000	0.485	0.485
79:00:00	0.000	0.000	0.000	0.000	0.477	0.477
80:00:00	0.000	0.000	0.000	0.000	0.469	0.469
81:00:00	0.000	0.000	0.000	0.000	0.461	0.461
82:00:00	0.000	0.000	0.000	0.000	0.453	0.453
83:00:00	0.000	0.000	0.000	0.000	0.446	0.446
84:00:00	0.000	0.000	0.000	0.000	0.438	0.438
85:00:00	0.000	0.000	0.000	0.000	0.431	0.431
86:00:00	0.000	0.000	0.000	0.000	0.423	0.423
87:00:00	0.000	0.000	0.000	0.000	0.416	0.416
88:00:00	0.000	0.000	0.000	0.000	0.409	0.409
89:00:00	0.000	0.000	0.000	0.000	0.402	0.402
90:00:00	0.000	0.000	0.000	0.000	0.395	0.395
91:00:00	0.000	0.000	0.000	0.000	0.389	0.389
92:00:00	0.000	0.000	0.000	0.000	0.382	0.382
93:00:00	0.000	0.000	0.000	0.000	0.376	0.376
94:00:00	0.000	0.000	0.000	0.000	0.369	0.369
95:00:00	0.000	0.000	0.000	0.000	0.363	0.363
96:00:00	0.000	0.000	0.000	0.000	0.357	0.357
97:00:00	0.000	0.000	0.000	0.000	0.351	0.351
98:00:00	0.000	0.000	0.000	0.000	0.345	0.345
99:00:00	0.000	0.000	0.000	0.000	0.339	0.339
100:00:00	0.000	0.000	0.000	0.000	0.333	0.333
101:00:00	0.000	0.000	0.000	0.000	0.328	0.328
102:00:00	0.000	0.000	0.000	0.000	0.322	0.322
103:00:00	0.000	0.000	0.000	0.000	0.317	0.317
104:00:00	0.000	0.000	0.000	0.000	0.311	0.311
105:00:00	0.000	0.000	0.000	0.000	0.306	0.306
106:00:00	0.000	0.000	0.000	0.000	0.301	0.301

Time (hh:mm:ss)	Rain (mm)	Sewer Loss (mm)	Net Rain (mm)	Runoff (m ³ /s)	Baseflow (m ³ /s)	Total Flow (m ³ /s)
107:00:00	0.000	0.000	0.000	0.000	0.296	0.296
108:00:00	0.000	0.000	0.000	0.000	0.291	0.291
109:00:00	0.000	0.000	0.000	0.000	0.286	0.286
110:00:00	0.000	0.000	0.000	0.000	0.281	0.281
111:00:00	0.000	0.000	0.000	0.000	0.276	0.276
112:00:00	0.000	0.000	0.000	0.000	0.272	0.272
113:00:00	0.000	0.000	0.000	0.000	0.267	0.267
114:00:00	0.000	0.000	0.000	0.000	0.263	0.263
115:00:00	0.000	0.000	0.000	0.000	0.258	0.258
116:00:00	0.000	0.000	0.000	0.000	0.254	0.254
117:00:00	0.000	0.000	0.000	0.000	0.250	0.250
118:00:00	0.000	0.000	0.000	0.000	0.245	0.245
119:00:00	0.000	0.000	0.000	0.000	0.241	0.241
120:00:00	0.000	0.000	0.000	0.000	0.237	0.237
121:00:00	0.000	0.000	0.000	0.000	0.233	0.233
122:00:00	0.000	0.000	0.000	0.000	0.229	0.229
123:00:00	0.000	0.000	0.000	0.000	0.225	0.225
124:00:00	0.000	0.000	0.000	0.000	0.221	0.221
125:00:00	0.000	0.000	0.000	0.000	0.218	0.218
126:00:00	0.000	0.000	0.000	0.000	0.214	0.214
127:00:00	0.000	0.000	0.000	0.000	0.210	0.210
128:00:00	0.000	0.000	0.000	0.000	0.207	0.207
129:00:00	0.000	0.000	0.000	0.000	0.203	0.203
130:00:00	0.000	0.000	0.000	0.000	0.200	0.200
131:00:00	0.000	0.000	0.000	0.000	0.197	0.197
132:00:00	0.000	0.000	0.000	0.000	0.193	0.193
133:00:00	0.000	0.000	0.000	0.000	0.190	0.190
134:00:00	0.000	0.000	0.000	0.000	0.187	0.187
135:00:00	0.000	0.000	0.000	0.000	0.184	0.184
136:00:00	0.000	0.000	0.000	0.000	0.180	0.180
137:00:00	0.000	0.000	0.000	0.000	0.177	0.177
138:00:00	0.000	0.000	0.000	0.000	0.174	0.174
139:00:00	0.000	0.000	0.000	0.000	0.171	0.171
140:00:00	0.000	0.000	0.000	0.000	0.169	0.169
141:00:00	0.000	0.000	0.000	0.000	0.166	0.166
142:00:00	0.000	0.000	0.000	0.000	0.163	0.163

Time (hh:mm:ss)	Rain (mm)	Sewer Loss (mm)	Net Rain (mm)	Runoff (m ³ /s)	Baseflow (m ³ /s)	Total Flow (m ³ /s)
143:00:00	0.000	0.000	0.000	0.000	0.160	0.160
144:00:00	0.000	0.000	0.000	0.000	0.157	0.157
145:00:00	0.000	0.000	0.000	0.000	0.155	0.155
146:00:00	0.000	0.000	0.000	0.000	0.152	0.152
147:00:00	0.000	0.000	0.000	0.000	0.150	0.150
148:00:00	0.000	0.000	0.000	0.000	0.147	0.147
149:00:00	0.000	0.000	0.000	0.000	0.145	0.145
150:00:00	0.000	0.000	0.000	0.000	0.142	0.142
151:00:00	0.000	0.000	0.000	0.000	0.140	0.140
152:00:00	0.000	0.000	0.000	0.000	0.137	0.137
153:00:00	0.000	0.000	0.000	0.000	0.135	0.135
154:00:00	0.000	0.000	0.000	0.000	0.133	0.133
155:00:00	0.000	0.000	0.000	0.000	0.131	0.131
156:00:00	0.000	0.000	0.000	0.000	0.128	0.128
157:00:00	0.000	0.000	0.000	0.000	0.126	0.126
158:00:00	0.000	0.000	0.000	0.000	0.124	0.124
159:00:00	0.000	0.000	0.000	0.000	0.122	0.122
160:00:00	0.000	0.000	0.000	0.000	0.120	0.120
161:00:00	0.000	0.000	0.000	0.000	0.118	0.118
162:00:00	0.000	0.000	0.000	0.000	0.116	0.116
163:00:00	0.000	0.000	0.000	0.000	0.114	0.114
164:00:00	0.000	0.000	0.000	0.000	0.112	0.112
165:00:00	0.000	0.000	0.000	0.000	0.110	0.110
166:00:00	0.000	0.000	0.000	0.000	0.108	0.108
167:00:00	0.000	0.000	0.000	0.000	0.106	0.106
168:00:00	0.000	0.000	0.000	0.000	0.105	0.105
169:00:00	0.000	0.000	0.000	0.000	0.103	0.103
170:00:00	0.000	0.000	0.000	0.000	0.101	0.101
171:00:00	0.000	0.000	0.000	0.000	0.099	0.099
172:00:00	0.000	0.000	0.000	0.000	0.098	0.098
173:00:00	0.000	0.000	0.000	0.000	0.096	0.096
174:00:00	0.000	0.000	0.000	0.000	0.094	0.094
175:00:00	0.000	0.000	0.000	0.000	0.093	0.093
176:00:00	0.000	0.000	0.000	0.000	0.091	0.091
177:00:00	0.000	0.000	0.000	0.000	0.090	0.090
178:00:00	0.000	0.000	0.000	0.000	0.088	0.088

Time (hh:mm:ss)	Rain (mm)	Sewer Loss (mm)	Net Rain (mm)	Runoff (m ³ /s)	Baseflow (m ³ /s)	Total Flow (m ³ /s)
179:00:00	0.000	0.000	0.000	0.000	0.087	0.087
180:00:00	0.000	0.000	0.000	0.000	0.085	0.085

Appendix

Catchment descriptors

Name	Value	User-defined value used?
Area (km ²)	12.22	No
ALTBAR	118	No
ASPBAR	253	No
ASPVAR	0.25	No
BFIHOST	0.65	No
BFIHOST19	0.71	No
DPLBAR (km)	3.89	No
DPSBAR (mkm ⁻¹)	31.9	No
FARL	1	No
LDP	7.58	No
PROPWET (mm)	0.3	No
RMED1H	10.8	No
RMED1D	30.2	No
RMED2D	37.1	No
SAAR (mm)	618	No
SAAR4170 (mm)	644	No
SPRHOST	29.66	No
Urbext2000	0.1	No
Urbext1990	0.06	No
URBCONC	0.82	No
URBLOC	0.6	No
DDF parameter C	-0.03	No
DDF parameter D1	0.31	No
DDF parameter D2	0.31	No
DDF parameter D3	0.29	No
DDF parameter E	0.32	No
DDF parameter F	2.45	No
DDF parameter C (1km grid value)	-0.03	No
DDF parameter D1 (1km grid value)	0.32	No
DDF parameter D2 (1km grid value)	0.31	No
DDF parameter D3 (1km grid value)	0.29	No
DDF parameter E (1km grid value)	0.32	No
DDF parameter F (1km grid value)	2.43	No

UK Design Flood Estimation

Generated on Friday, October 21, 2022 1:02:41 PM by DELL

Printed from the ReFH2 Flood Modelling software package, version 3.2.7650.24314

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

Site details

Checksum: EA5D-CC9A

Site name: Priory Lane

Easting: 521500

Northing: 227450

Country: England, Wales or Northern Ireland

Catchment Area (km²): 12.22

Using plot scale calculations: No

Model: 2.3

Site description: None

Model run: 1000 year

Summary of results

Rainfall - FEH 2013 model (mm):	131.39	Total runoff (ML):	276.07
Total Rainfall (mm):	124.62	Total flow (ML):	812.15
Peak Rainfall (mm):	44.17	Peak flow (m ³ /s):	8.66

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 - FEH 2013 model)

Name	Value	User-defined?
Duration (hh:mm:ss)	09:00:00	No
Timestep (hh:mm:ss)	01:00:00	No
SCF (Seasonal correction factor)	0.99	No
ARF (Areal reduction factor)	0.96	No
Seasonality	Summer [Winter]	Yes

Loss model parameters

Name	Value	User-defined?
Cini (mm)	41.64	No
Cmax (mm)	719.89	No
Use alpha correction factor	No	No
Alpha correction factor	n/a	No

Routing model parameters

Name	Value	User-defined?
Tp (hr)	5.47	No
Up	0.65	No
Uk	0.8	No

Baseflow model parameters

Name	Value	User-defined?
BF0 (m ³ /s)	0.06	No
BL (hr)	58.63	No
BR	2.65	No

Urbanisation parameters

Name	Value	User-defined?
Urban area (km ²)	1.88	No
Urbext 2000	0.1	No
Impervious runoff factor	0.7	No
Imperviousness factor	0.4	No
Tp scaling factor	0.75	No
Depression storage depth (mm)	0.5	No
Exporting drained area (km ²)	0.00	Yes
Sewer capacity (m ³ /s)	0.00	Yes

Time series data

Time (hh:mm:ss)	Rain (mm)	Sewer Loss (mm)	Net Rain (mm)	Runoff (m³/s)	Baseflow (m³/s)	Total Flow (m³/s)
00:00:00	3.682	0.000	0.371	0.000	0.052	0.052
01:00:00	6.026	0.000	0.647	0.019	0.051	0.070
02:00:00	10.399	0.000	1.230	0.089	0.052	0.141
03:00:00	20.118	0.000	2.787	0.253	0.054	0.307
04:00:00	44.166	0.000	8.006	0.611	0.062	0.673
05:00:00	20.118	0.000	4.506	1.457	0.084	1.541
06:00:00	10.399	0.000	2.540	2.825	0.135	2.959
07:00:00	6.026	0.000	1.538	4.404	0.226	4.630
08:00:00	3.682	0.000	0.963	5.964	0.362	6.326
09:00:00	0.000	0.000	0.000	7.194	0.544	7.738
10:00:00	0.000	0.000	0.000	7.800	0.764	8.565
11:00:00	0.000	0.000	0.000	7.658	1.004	8.662
12:00:00	0.000	0.000	0.000	7.045	1.238	8.283
13:00:00	0.000	0.000	0.000	6.210	1.452	7.662
14:00:00	0.000	0.000	0.000	5.315	1.638	6.952
15:00:00	0.000	0.000	0.000	4.420	1.791	6.211
16:00:00	0.000	0.000	0.000	3.636	1.914	5.550
17:00:00	0.000	0.000	0.000	2.977	2.012	4.989
18:00:00	0.000	0.000	0.000	2.402	2.088	4.489
19:00:00	0.000	0.000	0.000	1.894	2.146	4.040
20:00:00	0.000	0.000	0.000	1.481	2.187	3.667
21:00:00	0.000	0.000	0.000	1.134	2.212	3.347
22:00:00	0.000	0.000	0.000	0.823	2.223	3.046
23:00:00	0.000	0.000	0.000	0.541	2.219	2.761
24:00:00	0.000	0.000	0.000	0.301	2.203	2.504
25:00:00	0.000	0.000	0.000	0.147	2.177	2.324
26:00:00	0.000	0.000	0.000	0.064	2.146	2.210
27:00:00	0.000	0.000	0.000	0.021	2.112	2.133
28:00:00	0.000	0.000	0.000	0.003	2.077	2.080
29:00:00	0.000	0.000	0.000	0.000	2.041	2.041
30:00:00	0.000	0.000	0.000	0.000	2.007	2.007
31:00:00	0.000	0.000	0.000	0.000	1.973	1.973
32:00:00	0.000	0.000	0.000	0.000	1.940	1.940
33:00:00	0.000	0.000	0.000	0.000	1.907	1.907
34:00:00	0.000	0.000	0.000	0.000	1.875	1.875

Time (hh:mm:ss)	Rain (mm)	Sewer Loss (mm)	Net Rain (mm)	Runoff (m ³ /s)	Baseflow (m ³ /s)	Total Flow (m ³ /s)
35:00:00	0.000	0.000	0.000	0.000	1.843	1.843
36:00:00	0.000	0.000	0.000	0.000	1.812	1.812
37:00:00	0.000	0.000	0.000	0.000	1.781	1.781
38:00:00	0.000	0.000	0.000	0.000	1.751	1.751
39:00:00	0.000	0.000	0.000	0.000	1.721	1.721
40:00:00	0.000	0.000	0.000	0.000	1.692	1.692
41:00:00	0.000	0.000	0.000	0.000	1.664	1.664
42:00:00	0.000	0.000	0.000	0.000	1.636	1.636
43:00:00	0.000	0.000	0.000	0.000	1.608	1.608
44:00:00	0.000	0.000	0.000	0.000	1.581	1.581
45:00:00	0.000	0.000	0.000	0.000	1.554	1.554
46:00:00	0.000	0.000	0.000	0.000	1.528	1.528
47:00:00	0.000	0.000	0.000	0.000	1.502	1.502
48:00:00	0.000	0.000	0.000	0.000	1.476	1.476
49:00:00	0.000	0.000	0.000	0.000	1.451	1.451
50:00:00	0.000	0.000	0.000	0.000	1.427	1.427
51:00:00	0.000	0.000	0.000	0.000	1.403	1.403
52:00:00	0.000	0.000	0.000	0.000	1.379	1.379
53:00:00	0.000	0.000	0.000	0.000	1.356	1.356
54:00:00	0.000	0.000	0.000	0.000	1.333	1.333
55:00:00	0.000	0.000	0.000	0.000	1.310	1.310
56:00:00	0.000	0.000	0.000	0.000	1.288	1.288
57:00:00	0.000	0.000	0.000	0.000	1.266	1.266
58:00:00	0.000	0.000	0.000	0.000	1.245	1.245
59:00:00	0.000	0.000	0.000	0.000	1.224	1.224
60:00:00	0.000	0.000	0.000	0.000	1.203	1.203
61:00:00	0.000	0.000	0.000	0.000	1.183	1.183
62:00:00	0.000	0.000	0.000	0.000	1.163	1.163
63:00:00	0.000	0.000	0.000	0.000	1.143	1.143
64:00:00	0.000	0.000	0.000	0.000	1.124	1.124
65:00:00	0.000	0.000	0.000	0.000	1.105	1.105
66:00:00	0.000	0.000	0.000	0.000	1.086	1.086
67:00:00	0.000	0.000	0.000	0.000	1.068	1.068
68:00:00	0.000	0.000	0.000	0.000	1.050	1.050
69:00:00	0.000	0.000	0.000	0.000	1.032	1.032
70:00:00	0.000	0.000	0.000	0.000	1.015	1.015

Time (hh:mm:ss)	Rain (mm)	Sewer Loss (mm)	Net Rain (mm)	Runoff (m ³ /s)	Baseflow (m ³ /s)	Total Flow (m ³ /s)
71:00:00	0.000	0.000	0.000	0.000	0.997	0.997
72:00:00	0.000	0.000	0.000	0.000	0.981	0.981
73:00:00	0.000	0.000	0.000	0.000	0.964	0.964
74:00:00	0.000	0.000	0.000	0.000	0.948	0.948
75:00:00	0.000	0.000	0.000	0.000	0.932	0.932
76:00:00	0.000	0.000	0.000	0.000	0.916	0.916
77:00:00	0.000	0.000	0.000	0.000	0.900	0.900
78:00:00	0.000	0.000	0.000	0.000	0.885	0.885
79:00:00	0.000	0.000	0.000	0.000	0.870	0.870
80:00:00	0.000	0.000	0.000	0.000	0.855	0.855
81:00:00	0.000	0.000	0.000	0.000	0.841	0.841
82:00:00	0.000	0.000	0.000	0.000	0.827	0.827
83:00:00	0.000	0.000	0.000	0.000	0.813	0.813
84:00:00	0.000	0.000	0.000	0.000	0.799	0.799
85:00:00	0.000	0.000	0.000	0.000	0.786	0.786
86:00:00	0.000	0.000	0.000	0.000	0.772	0.772
87:00:00	0.000	0.000	0.000	0.000	0.759	0.759
88:00:00	0.000	0.000	0.000	0.000	0.746	0.746
89:00:00	0.000	0.000	0.000	0.000	0.734	0.734
90:00:00	0.000	0.000	0.000	0.000	0.721	0.721
91:00:00	0.000	0.000	0.000	0.000	0.709	0.709
92:00:00	0.000	0.000	0.000	0.000	0.697	0.697
93:00:00	0.000	0.000	0.000	0.000	0.685	0.685
94:00:00	0.000	0.000	0.000	0.000	0.674	0.674
95:00:00	0.000	0.000	0.000	0.000	0.662	0.662
96:00:00	0.000	0.000	0.000	0.000	0.651	0.651
97:00:00	0.000	0.000	0.000	0.000	0.640	0.640
98:00:00	0.000	0.000	0.000	0.000	0.629	0.629
99:00:00	0.000	0.000	0.000	0.000	0.619	0.619
100:00:00	0.000	0.000	0.000	0.000	0.608	0.608
101:00:00	0.000	0.000	0.000	0.000	0.598	0.598
102:00:00	0.000	0.000	0.000	0.000	0.588	0.588
103:00:00	0.000	0.000	0.000	0.000	0.578	0.578
104:00:00	0.000	0.000	0.000	0.000	0.568	0.568
105:00:00	0.000	0.000	0.000	0.000	0.558	0.558
106:00:00	0.000	0.000	0.000	0.000	0.549	0.549

Time (hh:mm:ss)	Rain (mm)	Sewer Loss (mm)	Net Rain (mm)	Runoff (m ³ /s)	Baseflow (m ³ /s)	Total Flow (m ³ /s)
107:00:00	0.000	0.000	0.000	0.000	0.540	0.540
108:00:00	0.000	0.000	0.000	0.000	0.531	0.531
109:00:00	0.000	0.000	0.000	0.000	0.522	0.522
110:00:00	0.000	0.000	0.000	0.000	0.513	0.513
111:00:00	0.000	0.000	0.000	0.000	0.504	0.504
112:00:00	0.000	0.000	0.000	0.000	0.496	0.496
113:00:00	0.000	0.000	0.000	0.000	0.487	0.487
114:00:00	0.000	0.000	0.000	0.000	0.479	0.479
115:00:00	0.000	0.000	0.000	0.000	0.471	0.471
116:00:00	0.000	0.000	0.000	0.000	0.463	0.463
117:00:00	0.000	0.000	0.000	0.000	0.455	0.455
118:00:00	0.000	0.000	0.000	0.000	0.447	0.447
119:00:00	0.000	0.000	0.000	0.000	0.440	0.440
120:00:00	0.000	0.000	0.000	0.000	0.432	0.432
121:00:00	0.000	0.000	0.000	0.000	0.425	0.425
122:00:00	0.000	0.000	0.000	0.000	0.418	0.418
123:00:00	0.000	0.000	0.000	0.000	0.411	0.411
124:00:00	0.000	0.000	0.000	0.000	0.404	0.404
125:00:00	0.000	0.000	0.000	0.000	0.397	0.397
126:00:00	0.000	0.000	0.000	0.000	0.390	0.390
127:00:00	0.000	0.000	0.000	0.000	0.384	0.384
128:00:00	0.000	0.000	0.000	0.000	0.377	0.377
129:00:00	0.000	0.000	0.000	0.000	0.371	0.371
130:00:00	0.000	0.000	0.000	0.000	0.365	0.365
131:00:00	0.000	0.000	0.000	0.000	0.358	0.358
132:00:00	0.000	0.000	0.000	0.000	0.352	0.352
133:00:00	0.000	0.000	0.000	0.000	0.346	0.346
134:00:00	0.000	0.000	0.000	0.000	0.341	0.341
135:00:00	0.000	0.000	0.000	0.000	0.335	0.335
136:00:00	0.000	0.000	0.000	0.000	0.329	0.329
137:00:00	0.000	0.000	0.000	0.000	0.324	0.324
138:00:00	0.000	0.000	0.000	0.000	0.318	0.318
139:00:00	0.000	0.000	0.000	0.000	0.313	0.313
140:00:00	0.000	0.000	0.000	0.000	0.307	0.307
141:00:00	0.000	0.000	0.000	0.000	0.302	0.302
142:00:00	0.000	0.000	0.000	0.000	0.297	0.297

Time (hh:mm:ss)	Rain (mm)	Sewer Loss (mm)	Net Rain (mm)	Runoff (m ³ /s)	Baseflow (m ³ /s)	Total Flow (m ³ /s)
143:00:00	0.000	0.000	0.000	0.000	0.292	0.292
144:00:00	0.000	0.000	0.000	0.000	0.287	0.287
145:00:00	0.000	0.000	0.000	0.000	0.282	0.282
146:00:00	0.000	0.000	0.000	0.000	0.278	0.278
147:00:00	0.000	0.000	0.000	0.000	0.273	0.273
148:00:00	0.000	0.000	0.000	0.000	0.268	0.268
149:00:00	0.000	0.000	0.000	0.000	0.264	0.264
150:00:00	0.000	0.000	0.000	0.000	0.259	0.259
151:00:00	0.000	0.000	0.000	0.000	0.255	0.255
152:00:00	0.000	0.000	0.000	0.000	0.251	0.251
153:00:00	0.000	0.000	0.000	0.000	0.246	0.246
154:00:00	0.000	0.000	0.000	0.000	0.242	0.242
155:00:00	0.000	0.000	0.000	0.000	0.238	0.238
156:00:00	0.000	0.000	0.000	0.000	0.234	0.234
157:00:00	0.000	0.000	0.000	0.000	0.230	0.230
158:00:00	0.000	0.000	0.000	0.000	0.226	0.226
159:00:00	0.000	0.000	0.000	0.000	0.222	0.222
160:00:00	0.000	0.000	0.000	0.000	0.219	0.219
161:00:00	0.000	0.000	0.000	0.000	0.215	0.215
162:00:00	0.000	0.000	0.000	0.000	0.211	0.211
163:00:00	0.000	0.000	0.000	0.000	0.208	0.208
164:00:00	0.000	0.000	0.000	0.000	0.204	0.204
165:00:00	0.000	0.000	0.000	0.000	0.201	0.201
166:00:00	0.000	0.000	0.000	0.000	0.197	0.197
167:00:00	0.000	0.000	0.000	0.000	0.194	0.194
168:00:00	0.000	0.000	0.000	0.000	0.191	0.191
169:00:00	0.000	0.000	0.000	0.000	0.187	0.187
170:00:00	0.000	0.000	0.000	0.000	0.184	0.184
171:00:00	0.000	0.000	0.000	0.000	0.181	0.181
172:00:00	0.000	0.000	0.000	0.000	0.178	0.178
173:00:00	0.000	0.000	0.000	0.000	0.175	0.175
174:00:00	0.000	0.000	0.000	0.000	0.172	0.172
175:00:00	0.000	0.000	0.000	0.000	0.169	0.169
176:00:00	0.000	0.000	0.000	0.000	0.166	0.166
177:00:00	0.000	0.000	0.000	0.000	0.164	0.164
178:00:00	0.000	0.000	0.000	0.000	0.161	0.161

Time (hh:mm:ss)	Rain (mm)	Sewer Loss (mm)	Net Rain (mm)	Runoff (m ³ /s)	Baseflow (m ³ /s)	Total Flow (m ³ /s)
179:00:00	0.000	0.000	0.000	0.000	0.158	0.158
180:00:00	0.000	0.000	0.000	0.000	0.155	0.155

Appendix

Catchment descriptors

Name	Value	User-defined value used?
Area (km ²)	12.22	No
ALTBAR	118	No
ASPBAR	253	No
ASPVAR	0.25	No
BFIHOST	0.65	No
BFIHOST19	0.71	No
DPLBAR (km)	3.89	No
DPSBAR (mkm ⁻¹)	31.9	No
FARL	1	No
LDP	7.58	No
PROPWET (mm)	0.3	No
RMED1H	10.8	No
RMED1D	30.2	No
RMED2D	37.1	No
SAAR (mm)	618	No
SAAR4170 (mm)	644	No
SPRHOST	29.66	No
Urbext2000	0.1	No
Urbext1990	0.06	No
URBCONC	0.82	No
URBLOC	0.6	No
DDF parameter C	-0.03	No
DDF parameter D1	0.31	No
DDF parameter D2	0.31	No
DDF parameter D3	0.29	No
DDF parameter E	0.32	No
DDF parameter F	2.45	No
DDF parameter C (1km grid value)	-0.03	No
DDF parameter D1 (1km grid value)	0.32	No
DDF parameter D2 (1km grid value)	0.31	No
DDF parameter D3 (1km grid value)	0.29	No
DDF parameter E (1km grid value)	0.32	No
DDF parameter F (1km grid value)	2.43	No

UK Design Flood Estimation

Generated on Tuesday, November 22, 2022 5:12:31 PM by DELL
Printed from the ReFH2 Flood Modelling software package, version 3.2.7650.24314

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

Site details

Checksum: EFB3-DF0E

Site name: Priory Lane

Easting: 521500

Northing: 227450

Country: England, Wales or Northern Ireland

Catchment Area (km²): 12.22

Using plot scale calculations: No

Model: 2.3

Site description: None

Model run: 1000 year 1.19 CC

Summary of results

Rainfall - FEH 2013 model (mm):	156.35	Total runoff (ML):	357.05
Total Rainfall (mm):	148.29	Total flow (ML):	1064.17
Peak Rainfall (mm):	52.56	Peak flow (m ³ /s):	11.22

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 - FEH 2013 model)

Name	Value	User-defined?
Duration (hh:mm:ss)	09:00:00	No
Timestep (hh:mm:ss)	01:00:00	No
SCF (Seasonal correction factor)	0.99	No
ARF (Areal reduction factor)	0.96	No
Seasonality	Summer [Winter]	Yes
Climate change factor	1.19	Yes

Loss model parameters

Name	Value	User-defined?
Cini (mm)	41.64	No
Cmax (mm)	719.89	No
Use alpha correction factor	No	No
Alpha correction factor	n/a	No

Routing model parameters

Name	Value	User-defined?
Tp (hr)	5.47	No
Up	0.65	No
Uk	0.8	No

Baseflow model parameters

Name	Value	User-defined?
BF0 (m ³ /s)	0.06	No
BL (hr)	58.63	No
BR	2.65	No

Urbanisation parameters

Name	Value	User-defined?
Urban area (km ²)	1.88	No
Urbext 2000	0.1	No
Impervious runoff factor	0.7	No
Imperviousness factor	0.4	No
Tp scaling factor	0.75	No
Depression storage depth (mm)	0.5	No
Exporting drained area (km ²)	0.00	Yes
Sewer capacity (m ³ /s)	0.00	Yes

Time series data

Time (hh:mm:ss)	Rain (mm)	Sewer Loss (mm)	Net Rain (mm)	Runoff (m³/s)	Baseflow (m³/s)	Total Flow (m³/s)
00:00:00	4.381	0.000	0.443	0.000	0.052	0.052
01:00:00	7.171	0.000	0.782	0.023	0.051	0.074
02:00:00	12.374	0.000	1.510	0.107	0.052	0.159
03:00:00	23.941	0.000	3.499	0.305	0.055	0.360
04:00:00	52.558	0.000	10.354	0.743	0.065	0.808
05:00:00	23.941	0.000	5.933	1.802	0.093	1.896
06:00:00	12.374	0.000	3.365	3.539	0.159	3.697
07:00:00	7.171	0.000	2.044	5.562	0.277	5.840
08:00:00	4.381	0.000	1.282	7.581	0.456	8.037
09:00:00	0.000	0.000	0.000	9.205	0.696	9.900
10:00:00	0.000	0.000	0.000	10.048	0.987	11.035
11:00:00	0.000	0.000	0.000	9.914	1.305	11.219
12:00:00	0.000	0.000	0.000	9.155	1.616	10.772
13:00:00	0.000	0.000	0.000	8.094	1.902	9.996
14:00:00	0.000	0.000	0.000	6.940	2.150	9.090
15:00:00	0.000	0.000	0.000	5.779	2.355	8.135
16:00:00	0.000	0.000	0.000	4.762	2.520	7.281
17:00:00	0.000	0.000	0.000	3.909	2.650	6.558
18:00:00	0.000	0.000	0.000	3.164	2.752	5.917
19:00:00	0.000	0.000	0.000	2.508	2.830	5.338
20:00:00	0.000	0.000	0.000	1.969	2.885	4.854
21:00:00	0.000	0.000	0.000	1.514	2.920	4.434
22:00:00	0.000	0.000	0.000	1.103	2.935	4.038
23:00:00	0.000	0.000	0.000	0.728	2.931	3.660
24:00:00	0.000	0.000	0.000	0.406	2.910	3.317
25:00:00	0.000	0.000	0.000	0.200	2.876	3.076
26:00:00	0.000	0.000	0.000	0.087	2.835	2.922
27:00:00	0.000	0.000	0.000	0.029	2.790	2.819
28:00:00	0.000	0.000	0.000	0.004	2.744	2.748
29:00:00	0.000	0.000	0.000	0.000	2.697	2.697
30:00:00	0.000	0.000	0.000	0.000	2.652	2.652
31:00:00	0.000	0.000	0.000	0.000	2.607	2.607
32:00:00	0.000	0.000	0.000	0.000	2.563	2.563
33:00:00	0.000	0.000	0.000	0.000	2.520	2.520
34:00:00	0.000	0.000	0.000	0.000	2.477	2.477

Time (hh:mm:ss)	Rain (mm)	Sewer Loss (mm)	Net Rain (mm)	Runoff (m ³ /s)	Baseflow (m ³ /s)	Total Flow (m ³ /s)
35:00:00	0.000	0.000	0.000	0.000	2.435	2.435
36:00:00	0.000	0.000	0.000	0.000	2.394	2.394
37:00:00	0.000	0.000	0.000	0.000	2.353	2.353
38:00:00	0.000	0.000	0.000	0.000	2.314	2.314
39:00:00	0.000	0.000	0.000	0.000	2.274	2.274
40:00:00	0.000	0.000	0.000	0.000	2.236	2.236
41:00:00	0.000	0.000	0.000	0.000	2.198	2.198
42:00:00	0.000	0.000	0.000	0.000	2.161	2.161
43:00:00	0.000	0.000	0.000	0.000	2.124	2.124
44:00:00	0.000	0.000	0.000	0.000	2.089	2.089
45:00:00	0.000	0.000	0.000	0.000	2.053	2.053
46:00:00	0.000	0.000	0.000	0.000	2.018	2.018
47:00:00	0.000	0.000	0.000	0.000	1.984	1.984
48:00:00	0.000	0.000	0.000	0.000	1.951	1.951
49:00:00	0.000	0.000	0.000	0.000	1.918	1.918
50:00:00	0.000	0.000	0.000	0.000	1.885	1.885
51:00:00	0.000	0.000	0.000	0.000	1.853	1.853
52:00:00	0.000	0.000	0.000	0.000	1.822	1.822
53:00:00	0.000	0.000	0.000	0.000	1.791	1.791
54:00:00	0.000	0.000	0.000	0.000	1.761	1.761
55:00:00	0.000	0.000	0.000	0.000	1.731	1.731
56:00:00	0.000	0.000	0.000	0.000	1.702	1.702
57:00:00	0.000	0.000	0.000	0.000	1.673	1.673
58:00:00	0.000	0.000	0.000	0.000	1.645	1.645
59:00:00	0.000	0.000	0.000	0.000	1.617	1.617
60:00:00	0.000	0.000	0.000	0.000	1.590	1.590
61:00:00	0.000	0.000	0.000	0.000	1.563	1.563
62:00:00	0.000	0.000	0.000	0.000	1.536	1.536
63:00:00	0.000	0.000	0.000	0.000	1.510	1.510
64:00:00	0.000	0.000	0.000	0.000	1.485	1.485
65:00:00	0.000	0.000	0.000	0.000	1.460	1.460
66:00:00	0.000	0.000	0.000	0.000	1.435	1.435
67:00:00	0.000	0.000	0.000	0.000	1.411	1.411
68:00:00	0.000	0.000	0.000	0.000	1.387	1.387
69:00:00	0.000	0.000	0.000	0.000	1.364	1.364
70:00:00	0.000	0.000	0.000	0.000	1.340	1.340

Time (hh:mm:ss)	Rain (mm)	Sewer Loss (mm)	Net Rain (mm)	Runoff (m ³ /s)	Baseflow (m ³ /s)	Total Flow (m ³ /s)
71:00:00	0.000	0.000	0.000	0.000	1.318	1.318
72:00:00	0.000	0.000	0.000	0.000	1.296	1.296
73:00:00	0.000	0.000	0.000	0.000	1.274	1.274
74:00:00	0.000	0.000	0.000	0.000	1.252	1.252
75:00:00	0.000	0.000	0.000	0.000	1.231	1.231
76:00:00	0.000	0.000	0.000	0.000	1.210	1.210
77:00:00	0.000	0.000	0.000	0.000	1.190	1.190
78:00:00	0.000	0.000	0.000	0.000	1.170	1.170
79:00:00	0.000	0.000	0.000	0.000	1.150	1.150
80:00:00	0.000	0.000	0.000	0.000	1.130	1.130
81:00:00	0.000	0.000	0.000	0.000	1.111	1.111
82:00:00	0.000	0.000	0.000	0.000	1.092	1.092
83:00:00	0.000	0.000	0.000	0.000	1.074	1.074
84:00:00	0.000	0.000	0.000	0.000	1.056	1.056
85:00:00	0.000	0.000	0.000	0.000	1.038	1.038
86:00:00	0.000	0.000	0.000	0.000	1.020	1.020
87:00:00	0.000	0.000	0.000	0.000	1.003	1.003
88:00:00	0.000	0.000	0.000	0.000	0.986	0.986
89:00:00	0.000	0.000	0.000	0.000	0.969	0.969
90:00:00	0.000	0.000	0.000	0.000	0.953	0.953
91:00:00	0.000	0.000	0.000	0.000	0.937	0.937
92:00:00	0.000	0.000	0.000	0.000	0.921	0.921
93:00:00	0.000	0.000	0.000	0.000	0.906	0.906
94:00:00	0.000	0.000	0.000	0.000	0.890	0.890
95:00:00	0.000	0.000	0.000	0.000	0.875	0.875
96:00:00	0.000	0.000	0.000	0.000	0.860	0.860
97:00:00	0.000	0.000	0.000	0.000	0.846	0.846
98:00:00	0.000	0.000	0.000	0.000	0.832	0.832
99:00:00	0.000	0.000	0.000	0.000	0.817	0.817
100:00:00	0.000	0.000	0.000	0.000	0.804	0.804
101:00:00	0.000	0.000	0.000	0.000	0.790	0.790
102:00:00	0.000	0.000	0.000	0.000	0.777	0.777
103:00:00	0.000	0.000	0.000	0.000	0.764	0.764
104:00:00	0.000	0.000	0.000	0.000	0.751	0.751
105:00:00	0.000	0.000	0.000	0.000	0.738	0.738
106:00:00	0.000	0.000	0.000	0.000	0.725	0.725

Time (hh:mm:ss)	Rain (mm)	Sewer Loss (mm)	Net Rain (mm)	Runoff (m ³ /s)	Baseflow (m ³ /s)	Total Flow (m ³ /s)
107:00:00	0.000	0.000	0.000	0.000	0.713	0.713
108:00:00	0.000	0.000	0.000	0.000	0.701	0.701
109:00:00	0.000	0.000	0.000	0.000	0.689	0.689
110:00:00	0.000	0.000	0.000	0.000	0.678	0.678
111:00:00	0.000	0.000	0.000	0.000	0.666	0.666
112:00:00	0.000	0.000	0.000	0.000	0.655	0.655
113:00:00	0.000	0.000	0.000	0.000	0.644	0.644
114:00:00	0.000	0.000	0.000	0.000	0.633	0.633
115:00:00	0.000	0.000	0.000	0.000	0.622	0.622
116:00:00	0.000	0.000	0.000	0.000	0.612	0.612
117:00:00	0.000	0.000	0.000	0.000	0.601	0.601
118:00:00	0.000	0.000	0.000	0.000	0.591	0.591
119:00:00	0.000	0.000	0.000	0.000	0.581	0.581
120:00:00	0.000	0.000	0.000	0.000	0.571	0.571
121:00:00	0.000	0.000	0.000	0.000	0.562	0.562
122:00:00	0.000	0.000	0.000	0.000	0.552	0.552
123:00:00	0.000	0.000	0.000	0.000	0.543	0.543
124:00:00	0.000	0.000	0.000	0.000	0.534	0.534
125:00:00	0.000	0.000	0.000	0.000	0.525	0.525
126:00:00	0.000	0.000	0.000	0.000	0.516	0.516
127:00:00	0.000	0.000	0.000	0.000	0.507	0.507
128:00:00	0.000	0.000	0.000	0.000	0.498	0.498
129:00:00	0.000	0.000	0.000	0.000	0.490	0.490
130:00:00	0.000	0.000	0.000	0.000	0.482	0.482
131:00:00	0.000	0.000	0.000	0.000	0.474	0.474
132:00:00	0.000	0.000	0.000	0.000	0.466	0.466
133:00:00	0.000	0.000	0.000	0.000	0.458	0.458
134:00:00	0.000	0.000	0.000	0.000	0.450	0.450
135:00:00	0.000	0.000	0.000	0.000	0.442	0.442
136:00:00	0.000	0.000	0.000	0.000	0.435	0.435
137:00:00	0.000	0.000	0.000	0.000	0.428	0.428
138:00:00	0.000	0.000	0.000	0.000	0.420	0.420
139:00:00	0.000	0.000	0.000	0.000	0.413	0.413
140:00:00	0.000	0.000	0.000	0.000	0.406	0.406
141:00:00	0.000	0.000	0.000	0.000	0.399	0.399
142:00:00	0.000	0.000	0.000	0.000	0.393	0.393

Time (hh:mm:ss)	Rain (mm)	Sewer Loss (mm)	Net Rain (mm)	Runoff (m ³ /s)	Baseflow (m ³ /s)	Total Flow (m ³ /s)
143:00:00	0.000	0.000	0.000	0.000	0.386	0.386
144:00:00	0.000	0.000	0.000	0.000	0.379	0.379
145:00:00	0.000	0.000	0.000	0.000	0.373	0.373
146:00:00	0.000	0.000	0.000	0.000	0.367	0.367
147:00:00	0.000	0.000	0.000	0.000	0.361	0.361
148:00:00	0.000	0.000	0.000	0.000	0.354	0.354
149:00:00	0.000	0.000	0.000	0.000	0.348	0.348
150:00:00	0.000	0.000	0.000	0.000	0.343	0.343
151:00:00	0.000	0.000	0.000	0.000	0.337	0.337
152:00:00	0.000	0.000	0.000	0.000	0.331	0.331
153:00:00	0.000	0.000	0.000	0.000	0.325	0.325
154:00:00	0.000	0.000	0.000	0.000	0.320	0.320
155:00:00	0.000	0.000	0.000	0.000	0.315	0.315
156:00:00	0.000	0.000	0.000	0.000	0.309	0.309
157:00:00	0.000	0.000	0.000	0.000	0.304	0.304
158:00:00	0.000	0.000	0.000	0.000	0.299	0.299
159:00:00	0.000	0.000	0.000	0.000	0.294	0.294
160:00:00	0.000	0.000	0.000	0.000	0.289	0.289
161:00:00	0.000	0.000	0.000	0.000	0.284	0.284
162:00:00	0.000	0.000	0.000	0.000	0.279	0.279
163:00:00	0.000	0.000	0.000	0.000	0.274	0.274
164:00:00	0.000	0.000	0.000	0.000	0.270	0.270
165:00:00	0.000	0.000	0.000	0.000	0.265	0.265
166:00:00	0.000	0.000	0.000	0.000	0.261	0.261
167:00:00	0.000	0.000	0.000	0.000	0.256	0.256
168:00:00	0.000	0.000	0.000	0.000	0.252	0.252
169:00:00	0.000	0.000	0.000	0.000	0.248	0.248
170:00:00	0.000	0.000	0.000	0.000	0.244	0.244
171:00:00	0.000	0.000	0.000	0.000	0.239	0.239
172:00:00	0.000	0.000	0.000	0.000	0.235	0.235
173:00:00	0.000	0.000	0.000	0.000	0.231	0.231
174:00:00	0.000	0.000	0.000	0.000	0.227	0.227
175:00:00	0.000	0.000	0.000	0.000	0.224	0.224
176:00:00	0.000	0.000	0.000	0.000	0.220	0.220
177:00:00	0.000	0.000	0.000	0.000	0.216	0.216
178:00:00	0.000	0.000	0.000	0.000	0.212	0.212

Time (hh:mm:ss)	Rain (mm)	Sewer Loss (mm)	Net Rain (mm)	Runoff (m ³ /s)	Baseflow (m ³ /s)	Total Flow (m ³ /s)
179:00:00	0.000	0.000	0.000	0.000	0.209	0.209
180:00:00	0.000	0.000	0.000	0.000	0.205	0.205

Appendix

Catchment descriptors

Name	Value	User-defined value used?
Area (km ²)	12.22	No
ALTBAR	118	No
ASPBAR	253	No
ASPVAR	0.25	No
BFIHOST	0.65	No
BFIHOST19	0.71	No
DPLBAR (km)	3.89	No
DPSBAR (mkm ⁻¹)	31.9	No
FARL	1	No
LDP	7.58	No
PROPWET (mm)	0.3	No
RMED1H	10.8	No
RMED1D	30.2	No
RMED2D	37.1	No
SAAR (mm)	618	No
SAAR4170 (mm)	644	No
SPRHOST	29.66	No
Urbext2000	0.1	No
Urbext1990	0.06	No
URBCONC	0.82	No
URBLOC	0.6	No
DDF parameter C	-0.03	No
DDF parameter D1	0.31	No
DDF parameter D2	0.31	No
DDF parameter D3	0.29	No
DDF parameter E	0.32	No
DDF parameter F	2.45	No
DDF parameter C (1km grid value)	-0.03	No
DDF parameter D1 (1km grid value)	0.32	No
DDF parameter D2 (1km grid value)	0.31	No
DDF parameter D3 (1km grid value)	0.29	No
DDF parameter E (1km grid value)	0.32	No
DDF parameter F (1km grid value)	2.43	No