



Enter a postcode or place name:

Other topics for this area...

Groundwater

Map legend

X: 343,136;Y: 387,668 at scale 1:75,000

[Other maps](#)[Data search](#)[Text only version](#)

☐ Groundwater source protection zones

☒ Groundwater source protection zones

☐ Inner zone (Zone 1)

☐ Inner zone - subsurface activity only (Zone 1c)

☐ Outer zone (Zone 2)

☐ Outer zone - subsurface activity only (Zone 2c)

☐ Total catchment (Zone 3)

☐ Total catchment - subsurface activity only (Zone 3c)

☐ Special interest (Zone 4)

☐ Aquifer Maps - Superficial Deposits Designation

☒ Aquifer Maps - Bedrock Designation

☐ Groundwater Vulnerability Zones

☐ Principal

☐ Secondary A

☐ Secondary B

☐ Secondary (undifferentiated)

☐ Unknown (lakes and landslip)

☐ Principal

☐ Secondary A

☐ Secondary B

☐ Secondary (undifferentiated)

☐ Major Aquifer High

☐ Major Aquifer Intermediate

☐ Major Aquifer Low

☐ Minor Aquifer High

☐ Minor Aquifer Intermediate

☐ Minor Aquifer Low



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More about Groundwater

Groundwater Source Protection Zones:

Groundwater provides a third of our drinking water. We ensure that your water is safe to drink defining Source Protection Zones. These zones help to monitor the risk of contamination from any activities that might cause pollution in the area.

The Source Protection Zones are not displayed at scales greater than 1:20,000 (Ordnance Survey 1:50,000 scale) as the data was only modelled to this level and is not accurate past this. They should not be compared against field boundaries.

[Understanding Groundwater Source Protection Zones maps](#)

British Geological Survey Aquifer Maps:

From 1st April 2010 new aquifer designations replace the old system of classifying aquifers as Major, Minor and Non-Aquifer. This new system is in line with our Groundwater Protection Policy (GP3) and the Water Framework Directive (WFD) and is based on British Geological Survey mapping.

The Aquifer Extents are not displayed at scales greater than 1:75,000 (Ordnance Survey 1:250,000 scale) as the data was only modelled to this level and is not accurate past this.

[Understanding Groundwater Source Protection Zones maps](#)

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Last updated: 14th August 2014



Enter a postcode or place name:

Other topics for this area...

Groundwater

Map legend

X: 343,173;Y: 387,742 at scale 1:75,000

[Other maps](#)[Data search](#)[Text only version](#)

<input type="checkbox"/>	Groundwater source protection zones
	Inner zone (Zone 1)
	Inner zone - subsurface activity only (Zone 1c)
	Outer zone (Zone 2)
	Outer zone - subsurface activity only (Zone 2c)
	Total catchment (Zone 3)
	Total catchment - subsurface activity only (Zone 3c)
	Special interest (Zone 4)
<input checked="" type="checkbox"/>	Aquifer Maps - Superficial Deposits Designation
	Principal
	Secondary A
	Secondary B
	Secondary (undifferentiated)
	Unknown (lakes and land slip)
<input type="checkbox"/>	Aquifer Maps - Bedrock Designation
	Principal
	Secondary A
	Secondary B
	Secondary (undifferentiated)
<input type="checkbox"/>	Groundwater Vulnerability Zones
	Major Aquifer High
	Major Aquifer Intermediate
	Major Aquifer Low
	Minor Aquifer High
	Minor Aquifer Intermediate
	Minor Aquifer Low



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More about Groundwater

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The Aquifer Extents are not displayed at scales greater than 1:75,000 (Ordnance Survey 1:250,000 scale) as the data was only modelled to this level and is not accurate past this.

[Understanding Groundwater Source Protection Zones maps](#)

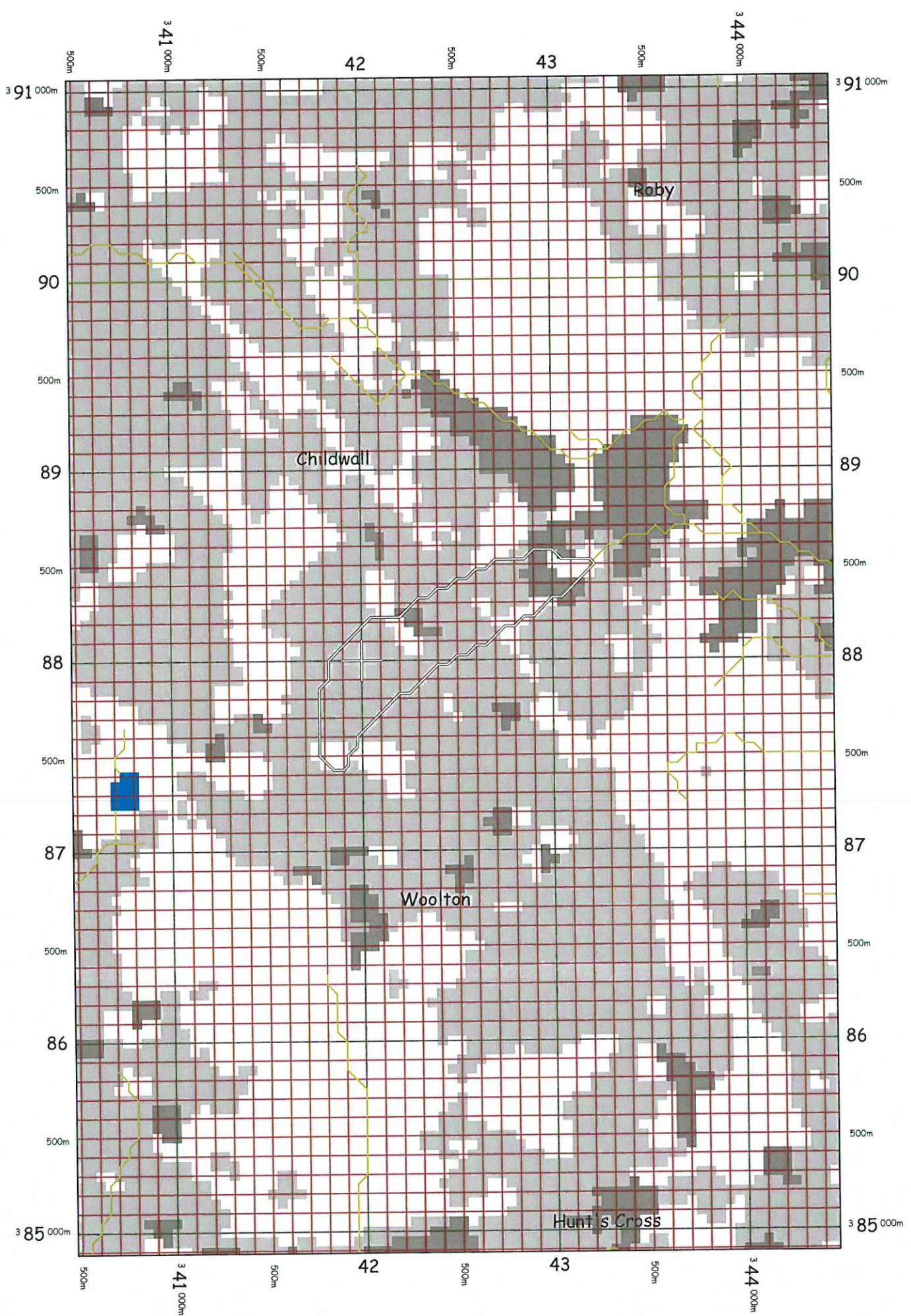
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Author: The Environment Agency | enquiries@environment-agency.gov.uk
 Last updated: 14th August 2014

APPENDIX E: FEH CATCHMENT DATA & DESCRIPTIONS

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VERSION	FEH CD-ROM	Version	3	exported at	14:25:51 GMT Thu 30-Oct-14
CATCHMENT	GB	343200 388500 SJ 43200 88500			
AREA		0.56			
ALTBAR		45			
ASPBAR		56			
ASPVAR		0.86			
BFIHOST		0.595			
DPLBAR		1.05			
DPSBAR		39			
FARL		1			
LDP		2.12			
PROPWET		0.37			
RMED-1H		11			
RMED-1D		30.8			
RMED-2D		41.4			
SAAR		845			
SAAR4170		860			
SPRHOST		24.81			
URBCONC1990		0.884			
URBEXT1990		0.4866			
URBLOC1990		0.943			
C		-0.02299			
D1		0.30851			
D2		0.32572			
D3		0.32741			
E		0.28799			
F		2.494			
C(1 km)		-0.023			
D1(1 km)		0.313			
D2(1 km)		0.316			
D3(1 km)		0.326			
E(1 km)		0.288			
F(1 km)		2.491			

DESIGN RAINFALL DEPTHS

Calculate : **Design rainfall** for

☒ catchment 343200 388500 [SJ 43200 88500]
☐ 1 km grid point 342000 388000 [SJ 42000 88000]
☐ Manually entered values ☐ for a point


Area : 0.5600 km²


C : -0.02299 D3 : 0.32741
 D1 : 0.30851 E : 0.28799
 D2 : 0.32572 F : 2.49400

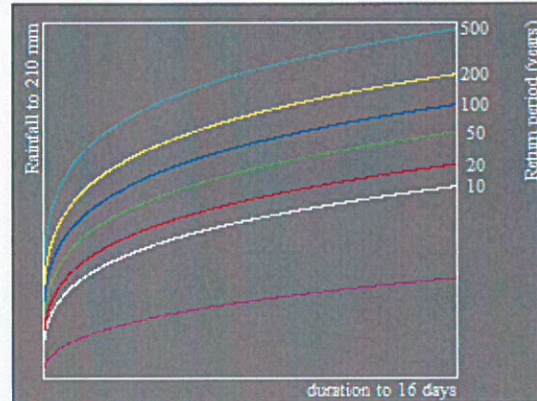
Duration : 6 Hours ☐ Fixed ☒ Sliding
 Return period : 1.0004 Years ☒ AM ☐ POT

Rainfall depth 12.4566 mm

Calculate... Export... Cancel

 An areal reduction factor of 0.983 has been applied to a point rainfall of 12.7 mm to yield a catchment design rainfall of 12.5 mm.





Calculate : **Design rainfall** for

☒ catchment 343200 388500 [SJ 43200 88500]
☐ 1 km grid point 342000 388000 [SJ 42000 88000]
☐ Manually entered values ☐ for a point


Area : 0.5600 km²


C : -0.02299 D3 : 0.32741
 D1 : 0.30851 E : 0.28799
 D2 : 0.32572 F : 2.49400

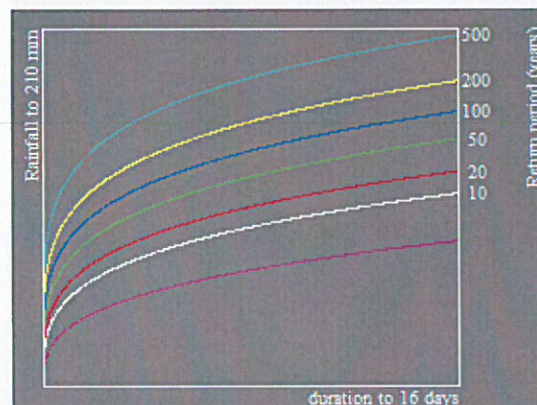
Duration : 6 Hours ☐ Fixed ☒ Sliding
 Return period : 2.0 Years ☒ AM ☐ POT

Rainfall depth 22.6561 mm

Calculate... Export... Cancel

 An areal reduction factor of 0.983 has been applied to a point rainfall of 23.0 mm to yield a catchment design rainfall of 22.7 mm.





Calculate : **Design rainfall** for

- ☒ catchment 343200 388500 [SJ 43200 88500]
☐ 1 km grid point 342000 388000 [SJ 42000 88000]
☐ Manually entered values ☐ for a point

Area : 0.5600 km²

C : -0.02299

D3 : 0.32741

D1 : 0.30851

E : 0.28799

D2 : 0.32572

F : 2.49400

Duration : 6

Hours

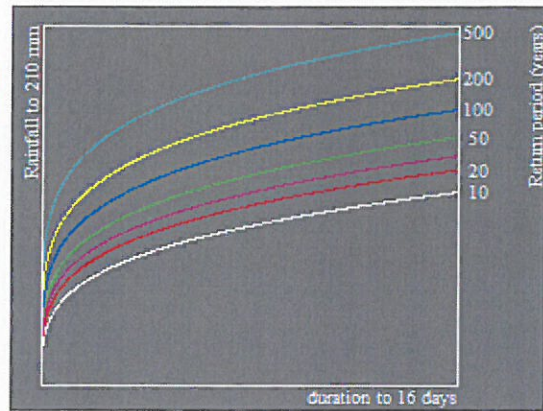
- ☐ Fixed
☒ Sliding

Return period : 30.0

Years

- ☒ AM
☐ POT

Rainfall depth 47.7132 mm



Calculate...

Export...

Cancel



An areal reduction factor of 0.983 has been applied to a point rainfall of 48.5 mm to yield a catchment design rainfall of 47.7 mm.



Calculate : **Design rainfall** for

- ☒ catchment 343200 388500 [SJ 43200 88500]
☐ 1 km grid point 342000 388000 [SJ 42000 88000]
☐ Manually entered values ☐ for a point

Area : 0.5600 km²

C : -0.02299

D3 : 0.32741

D1 : 0.30851

E : 0.28799

D2 : 0.32572

F : 2.49400

Duration : 6

Hours

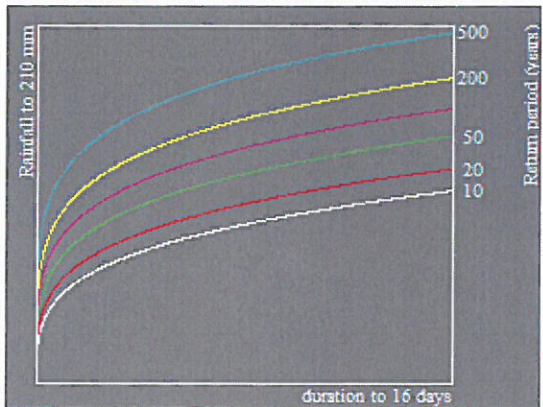
- ☐ Fixed
☒ Sliding

Return period : 100.0

Years

- ☒ AM
☐ POT

Rainfall depth 64.4106 mm



Calculate...

Export...

Cancel



An areal reduction factor of 0.983 has been applied to a point rainfall of 65.5 mm to yield a catchment design rainfall of 64.4 mm.



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APPENDIX F: NPPF EXTRACTS

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Table 1: Flood zones

(Note: These flood zones refer to the probability of river and sea flooding, ignoring the presence of defences)

Zone 1 - low probability

Definition

This zone comprises land assessed as having a less than 1 in 1,000 annual probability of river or sea flooding (<0.1%).

Appropriate uses

All uses of land are appropriate in this zone.

Flood risk assessment requirements

For development proposals on sites comprising one hectare or above the vulnerability to flooding from other sources as well as from river and sea flooding, and the potential to increase flood risk elsewhere through the addition of hard surfaces and the effect of the new development on surface water run-off, should be incorporated in a flood risk assessment. This need only be brief unless the factors above or other local considerations require particular attention.

Policy aims

In this zone, developers and local authorities should seek opportunities to reduce the overall level of flood risk in the area and beyond through the layout and form of the development, and the appropriate application of sustainable drainage systems².

Zone 2 - medium probability

Definition

This zone comprises land assessed as having between a 1 in 100 and 1 in 1,000 annual probability of river flooding (1% – 0.1%), or between a 1 in 200 and 1 in 1,000 annual probability of sea flooding (0.5% – 0.1%) in any year.

Appropriate uses

Essential infrastructure and the water-compatible, less vulnerable and more vulnerable uses, as set out in table 2, are appropriate in this zone. The highly vulnerable uses are *only* appropriate in this zone if the Exception Test is passed.

Flood risk assessment requirements

All development proposals in this zone should be accompanied by a flood risk assessment.

Policy aims

In this zone, developers and local authorities should seek opportunities to reduce the overall level of flood risk in the area through the layout and form of the development, and the appropriate application of sustainable drainage systems.

Zone 3a - high probability

Definition

This zone comprises land assessed as having a 1 in 100 or greater annual probability of river flooding (>1%), or a 1 in 200 or greater annual probability of flooding from the sea (>0.5%) in any year.

Appropriate uses

The water-compatible and less vulnerable uses of land (table 2) are appropriate in this zone. The highly vulnerable uses should not be permitted in this zone.

The more vulnerable uses and essential infrastructure should only be permitted in this zone if the Exception Test is passed. Essential infrastructure permitted in this zone should be designed and constructed to remain operational and safe for users in times of flood.

Flood risk assessment requirements

All development proposals in this zone should be accompanied by a flood risk assessment.

Policy aims

In this zone, developers and local authorities should seek opportunities to:

- reduce the overall level of flood risk in the area through the layout and form of the development and the appropriate application of sustainable drainage systems;

- relocate existing development to land in zones with a lower probability of flooding; and
- create space for flooding to occur by restoring functional floodplain and flood flow pathways and by identifying, allocating and safeguarding open space for flood storage.

Zone 3b - the functional floodplain

Definition

This zone comprises land where water *has* to flow or be stored in times of flood.

Local planning authorities should identify in their Strategic Flood Risk Assessments areas of functional floodplain and its boundaries accordingly, in agreement with the Environment Agency. The identification of functional floodplain should take account of local circumstances and not be defined solely on rigid probability parameters. But land which would flood with an annual probability of 1 in 20 (5%) or greater in any year, or is designed to flood in an extreme (0.1%) flood, should provide a starting point for consideration and discussions to identify the functional floodplain.

Appropriate uses

Only the water-compatible uses and the essential infrastructure listed in table 2 that has to be there should be permitted in this zone. It should be designed and constructed to:

- remain operational and safe for users in times of flood;
- result in no net loss of floodplain storage;
- not impede water flows; and
- not increase flood risk elsewhere.

Essential infrastructure in this zone should pass the Exception Test.

Flood risk assessment requirements

All development proposals in this zone should be accompanied by a flood risk assessment.

Policy aims

In this zone, developers and local authorities should seek opportunities to:

- reduce the overall level of flood risk in the area through the layout and form of the development and the appropriate application of sustainable drainage systems;
- relocate existing development to land with a lower probability of flooding.

Table 2: Flood risk vulnerability classification

<p>Essential infrastructure</p> <ul style="list-style-type: none"> • Essential transport infrastructure (including mass evacuation routes) which has to cross the area at risk. • Essential utility infrastructure which has to be located in a flood risk area for operational reasons, including electricity generating power stations and grid and primary substations; and water treatment works that need to remain operational in times of flood. • Wind turbines.
<p>Highly vulnerable</p> <ul style="list-style-type: none"> • Police stations, ambulance stations and fire stations and command centres and telecommunications installations required to be operational during flooding. • Emergency dispersal points. • Basement dwellings. • Caravans, mobile homes and park homes intended for permanent residential use³. • Installations requiring hazardous substances consent⁴. (Where there is a demonstrable need to locate such installations for bulk storage of materials with port or other similar facilities, or such installations with energy infrastructure or carbon capture and storage installations, that require coastal or water-side locations, or need to be located in other high flood risk areas, in these instances the facilities should be classified as "essential infrastructure")⁵.
<p>More vulnerable</p> <ul style="list-style-type: none"> • Hospitals. • Residential institutions such as residential care homes, children's homes, social services homes, prisons and hostels. • Buildings used for dwelling houses, student halls of residence, drinking establishments, nightclubs and hotels. • Non-residential uses for health services, nurseries and educational establishments. • Landfill and sites used for waste management facilities for hazardous waste⁶. • Sites used for holiday or short-let caravans and camping, <i>subject to a specific warning and evacuation plan</i>.⁷
<p>Less vulnerable</p> <ul style="list-style-type: none"> • Police, ambulance and fire stations which are <i>not</i> required to be operational during flooding. • Buildings used for shops, financial, professional and other services,
<p>restaurants and cafes, hot food takeaways, offices, general industry, storage and distribution, non-residential institutions not included in "more vulnerable", and assembly and leisure.</p> <ul style="list-style-type: none"> • Land and buildings used for agriculture and forestry. • Waste treatment (except landfill and hazardous waste facilities). • Minerals working and processing (except for sand and gravel working). • Water treatment works which do <i>not</i> need to remain operational during times of flood. • Sewage treatment works (if adequate measures to control pollution and manage sewage during flooding events are in place).
<p>Water-compatible development</p> <ul style="list-style-type: none"> • Flood control infrastructure. • Water transmission infrastructure and pumping stations. • Sewage transmission infrastructure and pumping stations. • Sand and gravel working. • Docks, marinas and wharves. • Navigation facilities. • Ministry of Defence defence installations. • Ship building, repairing and dismantling, dockside fish processing and refrigeration and compatible activities requiring a waterside location. • Water-based recreation (excluding sleeping accommodation). • Lifeguard and coastguard stations. • Amenity open space, nature conservation and biodiversity, outdoor sports and recreation and essential facilities such as changing rooms. • Essential ancillary sleeping or residential accommodation for staff required by uses in this category, <i>subject to a specific warning and evacuation plan</i>.

APPENDIX G: UU SEWER RECORDS & CORRESPONDENCE

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Chris Pickles

From: Chris Pickles
Sent: 30 October 2014 4:08 PM
To: 'WastewaterDeveloperServices@uuplc.co.uk'
Subject: Gateacre, Liverpool
Attachments: LOCATION PLAN.pdf

To whom it may concern,

Gateacre, Liverpool L25 4SA

Please could you confirm whether you have any information that you feel would be valuable to a Flood Risk Assessment for the above site (location plan attached), including details of historical flooding; this would be greatly appreciated.

Please do not hesitate to contact me on the details below to discuss further should you require additional information or clarification.

Kind regards
Chris

Christopher Pickles
Flood Risk & Engineering Technician

Betts Associates Ltd
Old Marsh Farm Barns, Welsh Road, Sealand, Flintshire, CH5 2LY
T - 01244 288178
F - 01244 288516
chris.pickles@betts-associates.co.uk
www.betts-associates.co.uk

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FLOOD RISK MANAGEMENT | STRUCTURAL SURVEYS | PARTY WALL DUTIES | ECOLOGY

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Chris Pickles

From: Wastewater Developer Services <WastewaterDeveloperServices@uuplc.co.uk>
Sent: 31 October 2014 8:31 AM
To: Chris Pickles
Subject: RE: Gateacre, Liverpool

Hi

I can confirm that there are no recorded historical sewer flooding issues within the vicinity of the proposed development site.

Please note that United Utilities Water plc (UW) can only record and check flooding events which are reported to us and we have to comply with our Regulators instructions on the qualification of flooding events to place on the 'at risk' register.

Also, this does not include any sewer flooding events caused by blockages or collapses which are the result of third party actions, natural events or other actions over which UW has no control and not a facet of sewer capacity.

Should you require any further information please do not hesitate to contact me.

Thanks sue

From: Chris Pickles [mailto:chris.pickles@betts-associates.co.uk]
Sent: 30 October 2014 16:08
To: Wastewater Developer Services
Subject: Gateacre, Liverpool

To whom it may concern,

Gateacre, Liverpool L25 4SA

Please could you confirm whether you have any information that you feel would be valuable to a Flood Risk Assessment for the above site (location plan attached), including details of historical flooding; this would be greatly appreciated.

Please do not hesitate to contact me on the details below to discuss further should you require additional information or clarification.

Kind regards
Chris

Christopher Pickles
Flood Risk & Engineering Technician

Betts Associates Ltd
Old Marsh Farm Barns, Welsh Road, Sealand, Flintshire, CH5 2LY
T - 01244 288178
F - 01244 288516
chris.pickles@betts-associates.co.uk
www.betts-associates.co.uk

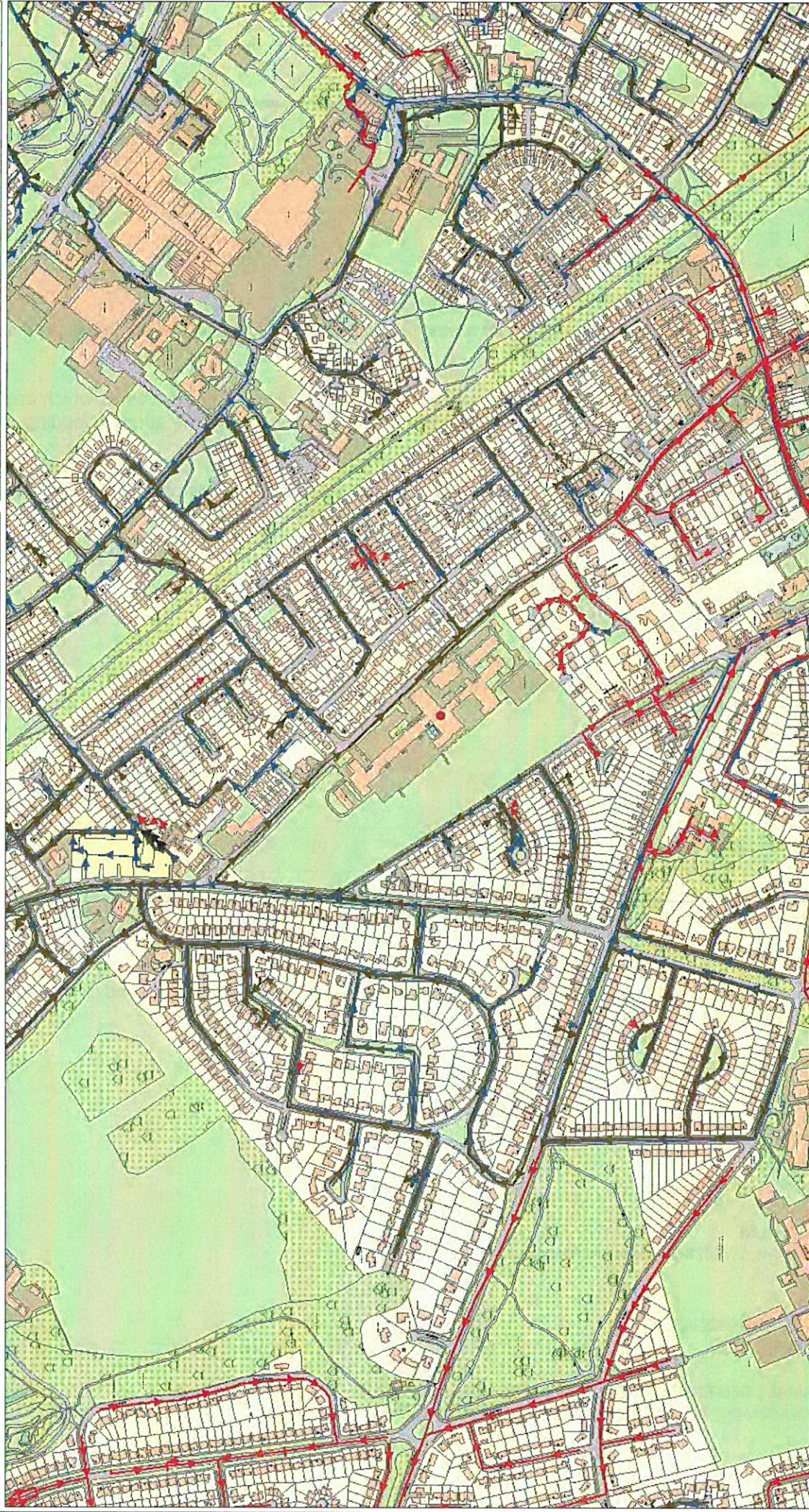
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FLOOD RISK MANAGEMENT | STRUCTURAL SURVEYS | PARTY WALL DUTIES | ECOLOGY

UU Maps for Safe Dig

Centre : X: 342226 Y: 388221

Date : 30/10/2014 09:14:41

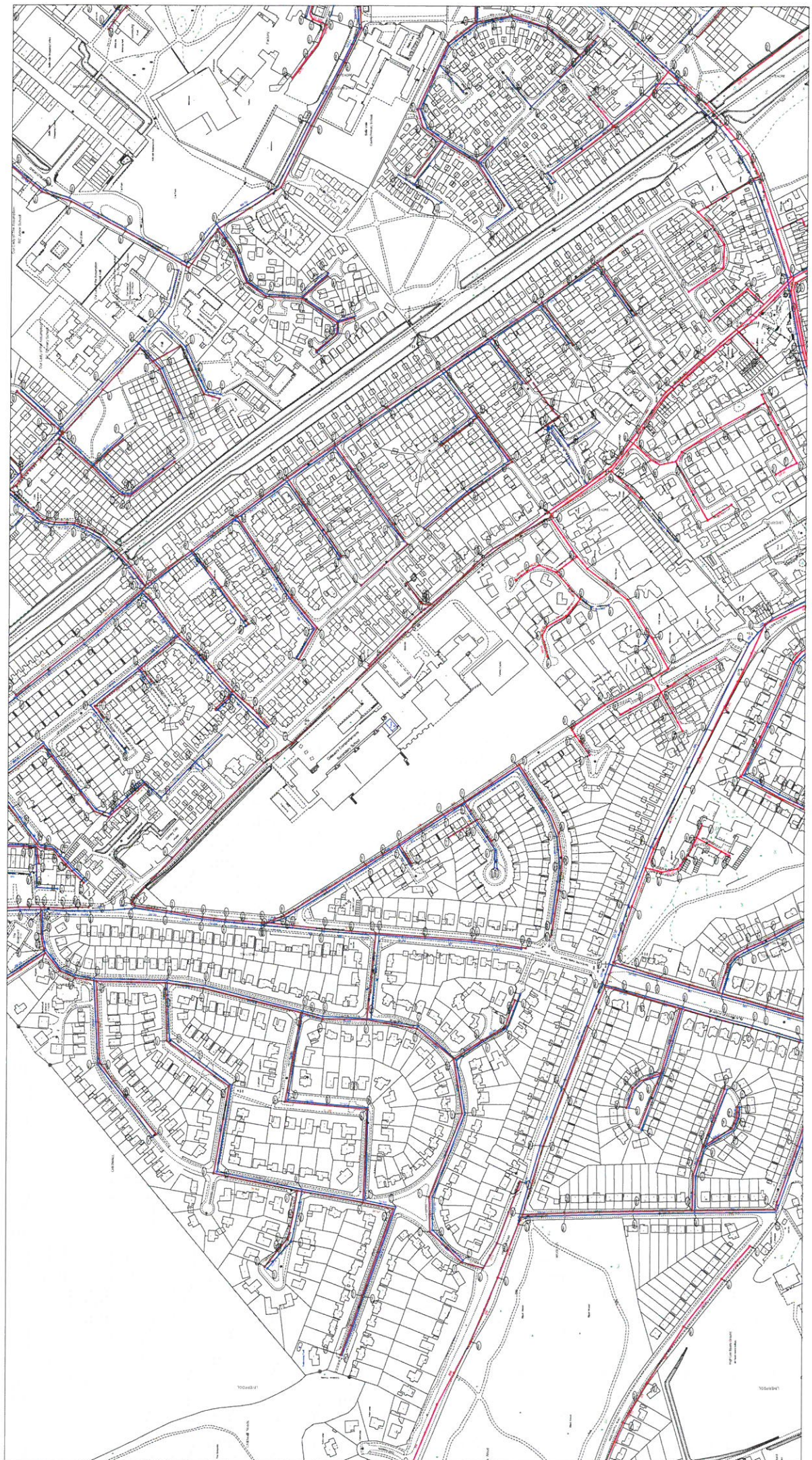
Scale Approx : 5000.0000000006



Extract from maps of United Utilities' Underground Assets

The position of the underground apparatus shown on this plan is approximate only and is given in accordance with the best information currently available. The actual positions may be different from those shown on the plan and private service pipes may be shown by a blue broken line. United Utilities Water will not accept liability for any damage caused by the actual position being different from those shown.

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APPENDIX H: LPA/LLFA CORRESPONDENCE

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Chris Pickles

From: Liverpool Direct <liverpool.direct@liverpool.gov.uk>
Sent: 30 October 2014 4:15 PM
To: Chris Pickles
Subject: RE: Web contact: Other

Thank you for your e-mail.

This e-mail confirms we have received your enquiry.

We will aim to respond to you within 24 hours, but please note that during busy periods it may take up to three working days to reply to you. In the mean time, you will be able to find the answers to lots of questions on our website: www.liverpool.gov.uk.

Please do not reply to this e-mail as it has been generated automatically.

Thank you

Liverpool Direct Limited


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APPENDIX I: SURFACE WATER RUN-OFF CALCULATIONS

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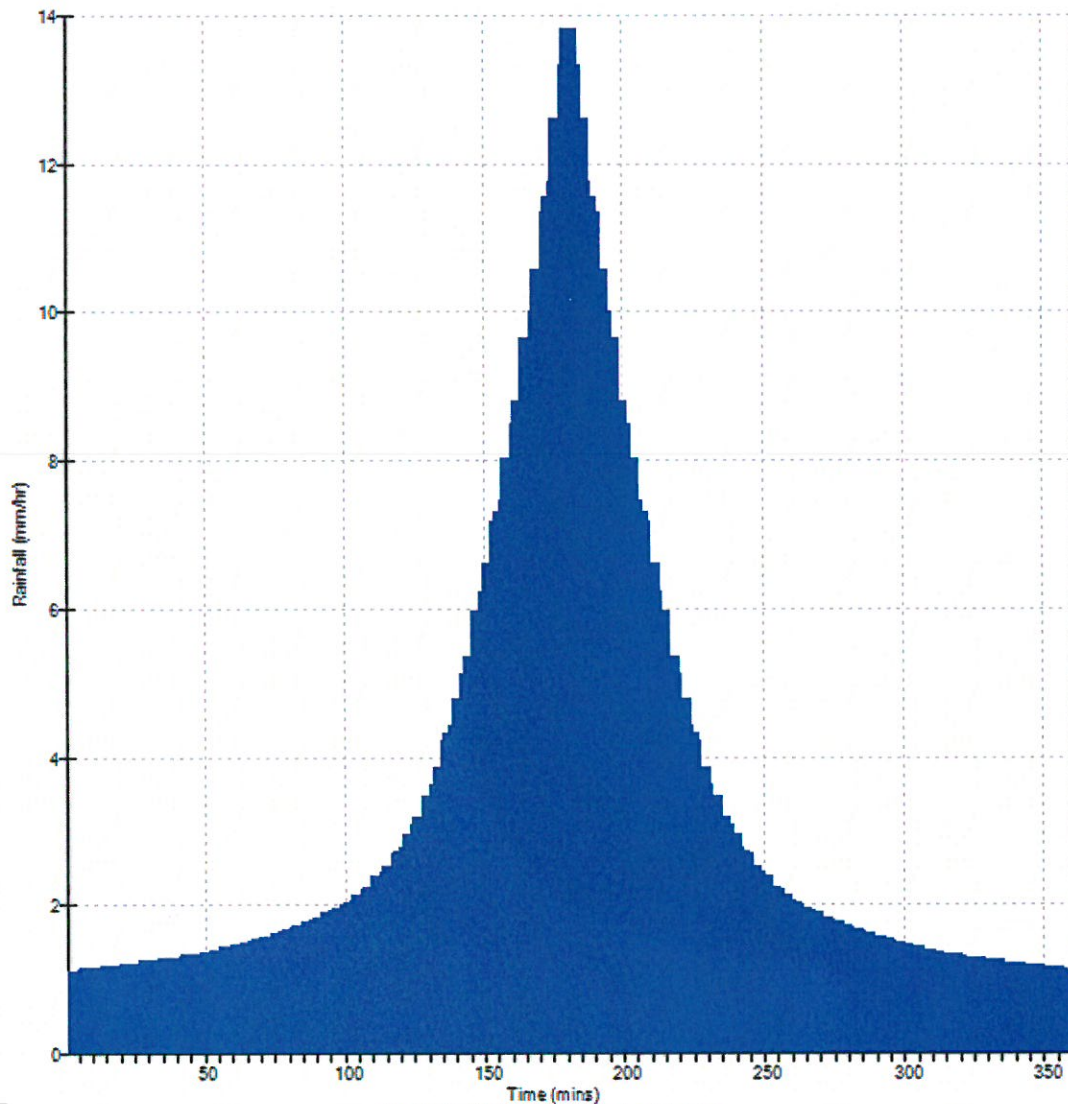
Betts Associates Ltd		Page 1
Old Marsh Farm Barns Welsh Road Sealand Flintshire CH5 2LY		
Date 30/10/2014 14:37	Designed by Chris.Pickles	
File	Checked by	
Micro Drainage		Network 2014.1

Rainfall profile

Storm duration (mins) 360

FEH Data

C(1km)	-0.023
D1(1km)	0.313
D2(1km)	0.316
D3(1km)	0.326
E(1km)	0.288
F(1km)	2.491
Peak Intensity (mm/hr)	13.820
Ave. Intensity (mm/hr)	3.526
Return Period (years)	1



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Old Marsh Farm Barns
Welsh Road
Sealand Flintshire CH5 2LY

Date 30/10/2014 14:37

Designed by Chris.Pickles

File

Checked by

Micro Drainage

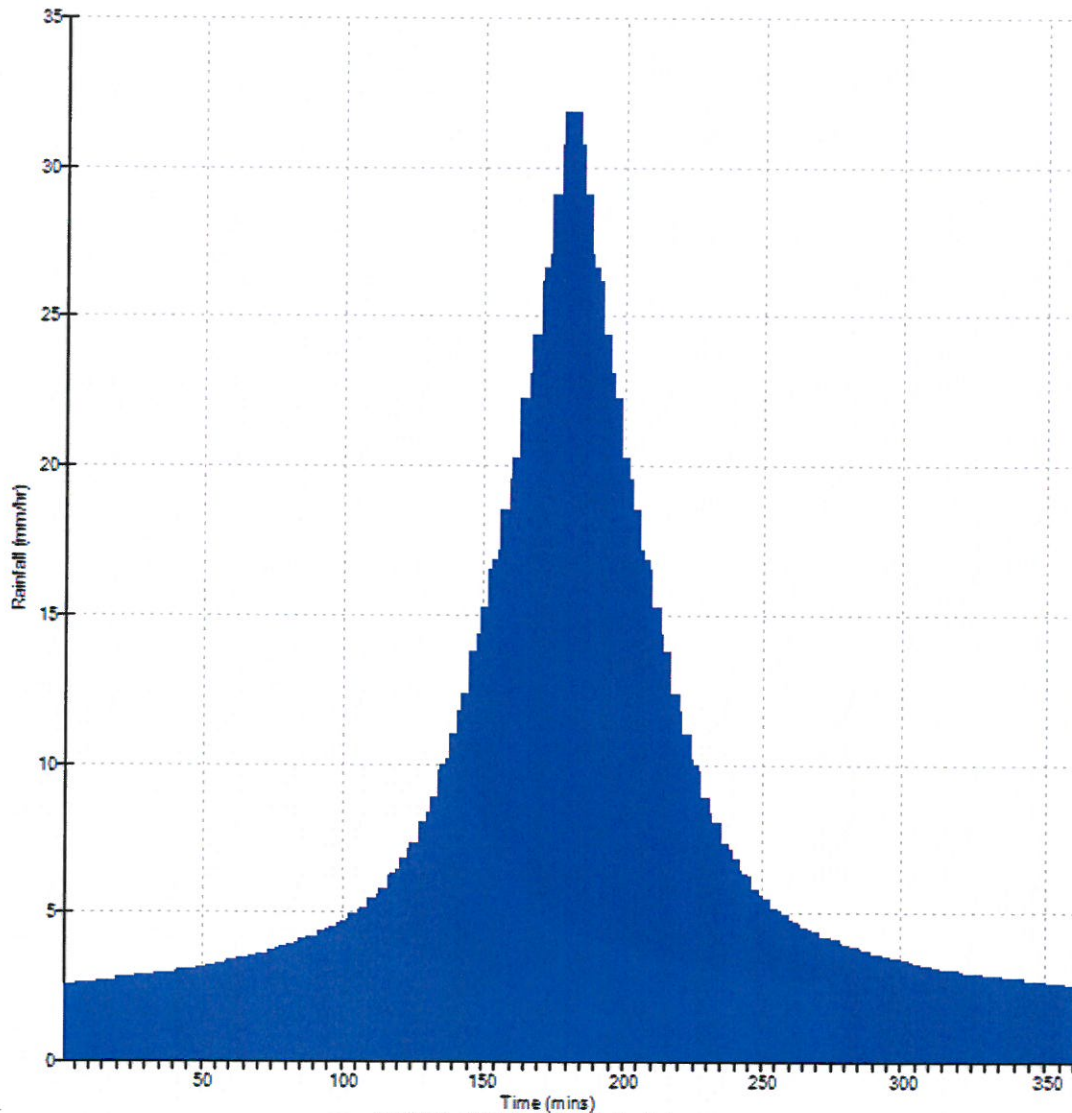
Network 2014.1


Rainfall profile

Storm duration (mins) 360

FEH Data

C (1km) -0.023
D1 (1km) 0.313
D2 (1km) 0.316
D3 (1km) 0.326
E (1km) 0.288
F (1km) 2.491
Peak Intensity (mm/hr) 31.860
Ave. Intensity (mm/hr) 8.128
Return Period (years) 30



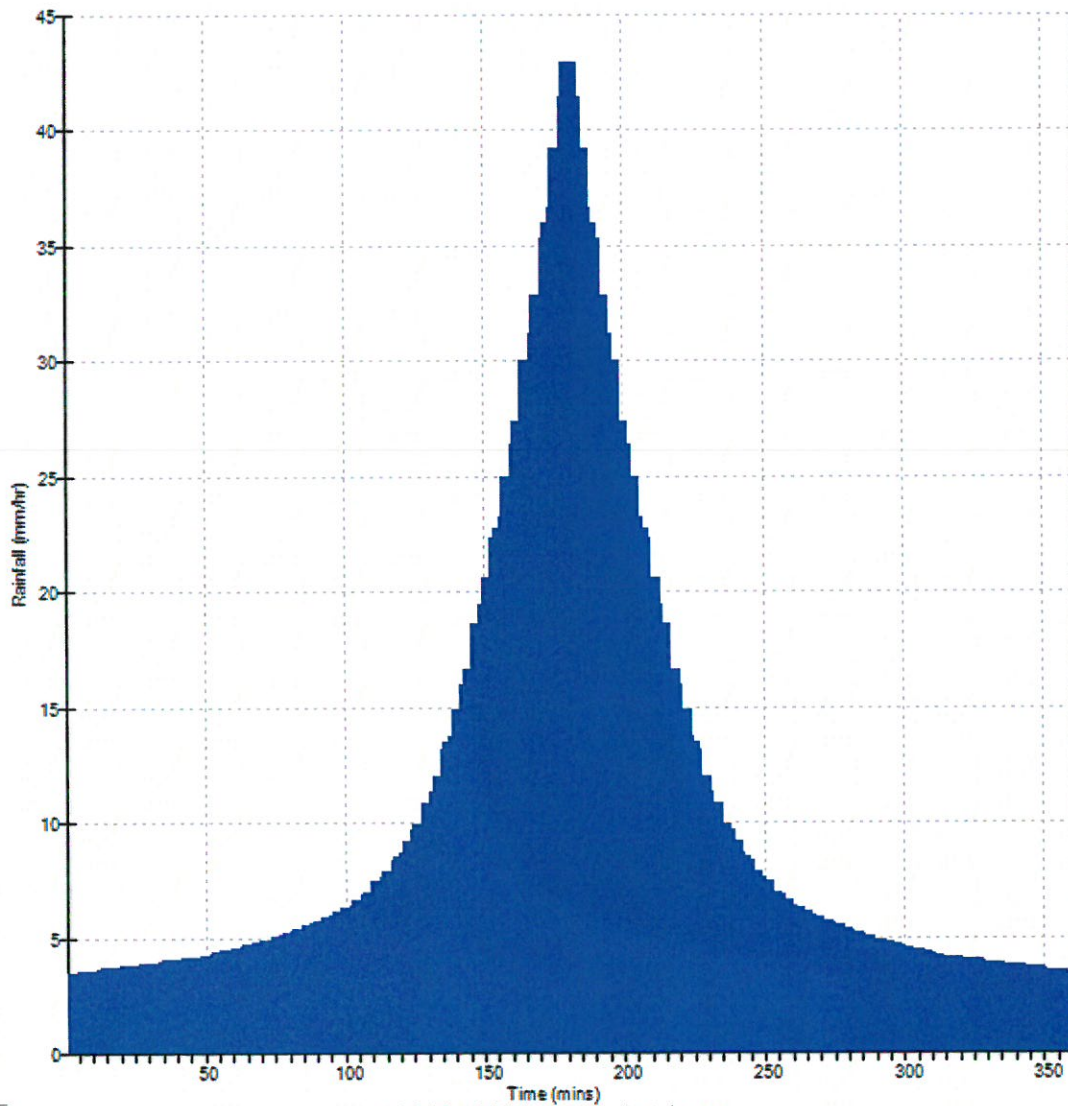
Betts Associates Ltd		Page 1
Old Marsh Farm Barns Welsh Road Sealand Flintshire CH5 2LY		
Date 30/10/2014 14:37	Designed by Chris.Pickles	
File	Checked by	
Micro Drainage		Network 2014.1

Rainfall profile


Storm duration (mins) 360

FEH Data

C(1km)	-0.023
D1(1km)	0.313
D2(1km)	0.316
D3(1km)	0.326
E(1km)	0.288
F(1km)	2.491
Peak Intensity (mm/hr)	43.010
Ave. Intensity (mm/hr)	10.972
Return Period (years)	100



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Betts Associates Ltd		Page 1
Old Marsh Farm Barns Welsh Road Sealand Flintshire CH5 2LY		
Date 30/10/2014 14:45 File	Designed by Chris.Pickles Checked by	

Micro Drainage Source Control 2014.1

ICP SUDS Mean Annual Flood

Input


Return Period (years)	1	Soil	0.450
Area (ha)	5.625	Urban	0.000
SAAR (mm)	802	Region Number	Region 10

Results 1/s

QBAR Rural 29.0
QBAR Urban 29.0

Q1 year 25.2

Q1 year 25.2
Q30 years 49.1
Q100 years 60.3

Betts Associates Ltd		Page 1
Old Marsh Farm Barns Welsh Road Sealand Flintshire CH5 2LY		
Date 30/10/2014 14:50	Designed by Chris.Pickles	
File	Checked by	
Micro Drainage		Source Control 2014.1
<u>Greenfield Runoff Volume</u>		
FEH Data		
Return Period (years)		1
Storm Duration (mins)		360
Site Location	GB 343200 388500 SJ 43200 88500	
C(1km)		-0.023
D1(1km)		0.313
D2(1km)		0.316
D3(1km)		0.326
E(1km)		0.288
F(1km)		2.491
Areal Reduction Factor		1.00
Area (ha)		5.625
SAAR (mm)		845
CWI		119.521
SPR Host		24.810
URBEXT (1990)		0.4866
Results		
Percentage Runoff (%)		37.37
Greenfield Runoff Volume (m³)		444.710
©1982-2014 XP Solutions		