APPENDIX C: PROPOSED PLANNING LAYOUT

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All levels and dimensions must be checked on site by the contractor prior to commencement of works. Any variations must be immediately reported to GreenSkyArchitecture.

1:100 10m
1:50 5m

Notes
-

- SITE BOUNDARY
- MILTON AVENUE DEVELOPMENT
- EXISTING PUBLIC FOOTPATH
- PUBLIC FOOTPATH
- EXISTING TREES
- RETAINED HEDGEROW
- PUBLIC OPEN SPACE
- HOUSING BLOCKS
- ROADS
- BUS ACCESS
- ROAD - SHARED SURFACE

Revision	Date	Note
-	-	-

GREENSKY ARCHITECTURE
Architecture / Interior Design / Planning / Code for Sustainable Homes / BREEAM / Sustainability / Energy Assessors
T: +44(0)7815 606738 W: greenskyarchitecture.com E: mark@greenskyarchitecture.com
Green Sky Architecture is a trading name of Green Sky Consult Ltd. Company Registered in Cardif No 7350336

Client

Project Title
WADDOW VIEW, CLITHEROE

Drawing Title
ILLUSTRATIVE MASTER PLAN

Drawn	Checked	Date
MS		11.06.2014

Drawing Number	Scale	Revision
1110.1	1:1250 @ A1	

Drawing Status
Information ☐ Draft ☐ Approval ■ Tender ☐ Construction ☐ As Built ☐

APPENDIX D: EA INFORMATION & CORRESPONDENCE

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C1/SEA/14/CW/RN/RN/08/L01

18th January 2012

Mr C. Worswick
Environment Agency
Sent via e-mail [colin.worswick@environment-agency.gov.uk]

Dear Colin,

WADDOW VIEW, CLITHEROE
RIVER MODELLING METHODOLOGY

I am writing to propose a methodology for the modelling of an unnamed ordinary watercourse running through our clients proposed development.

Development Proposals
The preliminary development proposals are attached and are residential in nature. The river modelling exercise is proposed to determine accurately the floodplain extents and in turn the allowable development extents and/or the flood risk mitigation deemed necessary. The river modelling will be the principle component of the future FRA.

Watercourse Data & Investigation
The EA have advised that they do not have modelling data for this brook and I would be pleased if you could confirm that this is still the case. The reason the modelling is proposed is due to the fact that the possible flood plain extent from the unnamed watercourse is not currently known.

We will have the brook surveyed in detail (including cross sections at 10m intervals) and a standard site-wide topographic survey undertaken to allow the river model to be constructed.

Watercourse Modelling Proposals
We use HEC-RAS in conjunction with the FEH catchment data to model the watercourse. The analysis will look at a variety of standard elements including climate change sensitivity. The resultant output from this model will inform the next stage of the proposal.

I would be pleased if you could confirm that you find the proposals outlined acceptable in principle.

I trust you will find the above of assistance, however, if you have any queries or require further information please do not hesitate to contact me.

Yours sincerely,

Richard Nicholas
Associate
BETTS ASSOCIATES

Enc.

Cc. Jane Dickman (Dickman Associates)

Old Marsh Farm Barns
Welsh Road, Sealand
Flintshire CH5 2LY
Telephone: 01244 288 178
Fax: 01244 288 516

www.betts-associates.co.uk

Ribble Valley Borough Council
Development Control
Council Offices Church Walk
Clitheroe
Lancashire
BB7 2RA

Our ref: NO/2012/104462/01-L01
Your ref: 3/2012/0913

Date: 07 November 2012

Dear Sir/Madam

OUTLINE DEVELOPMENT - RESIDENTIAL DEVELOPMENT AND A CRECHE LAND OFF WADDINGTON ROAD, CLITHEROE, LANCASHIRE, BB7 2DE.

Thank you for consulting us on this application. We have no objection to the proposal in principle, but have some concerns about the potential impacts of the development in relation to flood risks for the site and impact on the watercourses.

Environment Agency position (flooding)

The proposed development will only meet the requirements of the National Planning Policy Framework if the measures detailed in the Flood Risk Assessment "FRA" given reference no. SEA14_FRA, Revision 2.0 dated October 2012 submitted with this application is implemented and secured by way of a planning condition on any planning permission:-

Conditions

1. Prior to occupation of the development hereby approved, the mitigation measures detailed within the Flood Risk Assessment (FRA) SEA14_FRA, Revision 2.0, dated October 2012 Final with the FRA shall be carried out. The mitigation measures shall be carried out in full accordance with the approved FRA subject to any reasonable modifications required in writing by the Local Planning Authority.

2. No development shall take place until a surface water drainage scheme for the site, based on sustainable drainage principles and an assessment of the hydrological and hydrogeological context of the development, has been submitted to and approved in writing by the Local Planning Authority. The surface water drainage scheme shall demonstrate the surface water run-off generated up to and including the 1 in 100 year critical storm will not exceed the run-off from the undeveloped site following the corresponding rainfall event. The scheme shall subsequently be implemented in accordance with the approved details before the development is taken into use.

Cont/d..

Reason

Environment Agency
Lutra House Walton Summit, Bamber Bridge, Preston, PR5 8BX.
Customer services line: 03708 506 506
www.environment-agency.gov.uk

To prevent flooding by ensuring the satisfactory storage of/disposal of surface water from the site in order to prevent and mitigate the risks of flooding on and off site.

Advice to applicant

Erection of flow control structures or any culverting of an ordinary watercourse requires consent from the Lead Local Flood Authority which in this instance is Lancashire County Council. It is best to discuss proposals for any works with them at an early stage.

Environment Agency position (water quality, wildlife and biodiversity)

In order to prevent negative impacts on water quality, biodiversity and wildlife of the area, the Agency suggests that the following condition is added to any approval:-

Condition

An 8 metre vegetated buffer zone shall be retained next to the watercourses; the buffer zone shall be measured from the top of the bank of the watercourse. No development, including the erection of any structures, buildings, fences, walls or other means of enclosure or formation of hardstandings shall be carried out within this area. No planting shall take place in this area without the prior written approval of the Local Planning Authority.

Reason

To protect the watercourse and wildlife using the river corridor.

The reason a dedicated buffer zone is required is to:-

(i) allow the watercourse to undergo natural processes of erosion and deposition, and associated changes in alignment and bank profile, without the need for artificial bank protection works and the associated destruction of natural bank habitat;

(ii) to provide for the terrestrial life stages of aquatic insects, for nesting of water-related bird species, and for bank dwelling small mammals; (iii) to provide a "wildlife corridor" bringing more general benefits by linking a number of habitats and affording species a wider and therefore more robust and sustainable range of linked habitats;

(iii) to allow for the maintenance of a zone of natural character with vegetation that gives rise to a range of conditions of light and shade in the watercourse itself. This mix of conditions encourages proliferation of a wide range of aquatic species, including fish;

(iv) to allow, where appropriate, for the regrading of banks to a lower and safer profile, in areas where there is public access;

(v) to prevent overshadowing of watercourses by buildings; and (vii) to reduce the risk of accidental pollution from run-off.

Cont/d..

If you have any queries about our letter, please contact me using the details below.

Yours faithfully

Environment Agency

Enter a postcode or place name: **Other topics for this area...**

Go | Risk of Flooding from Rivers and Sea | View other Interactive Maps

Risk of Flooding from Rivers and Sea

River flooding happens when a river cannot cope with the amount of water draining into it from the surrounding land. Sea flooding happens when there are high tides and stormy conditions.

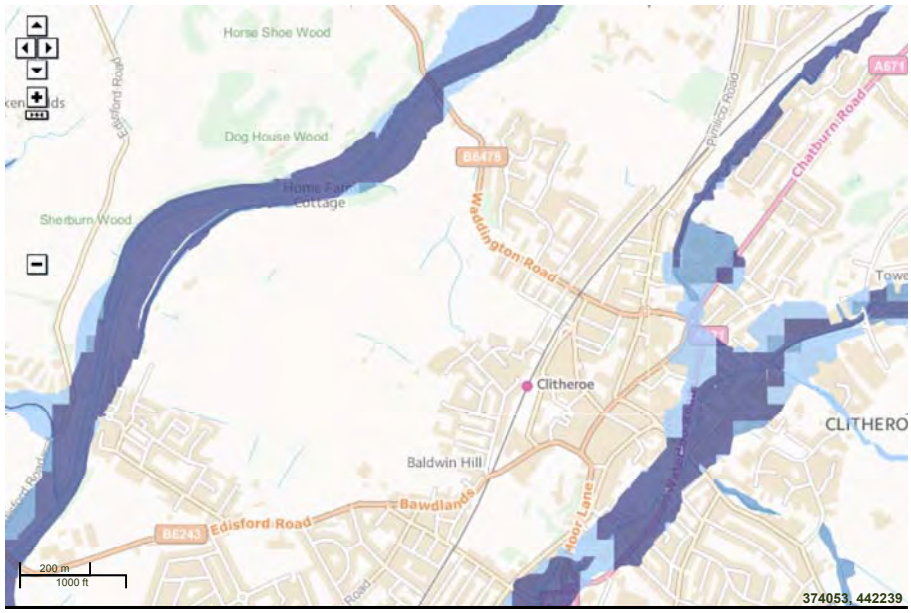
The shading on the map shows the risk of flooding from rivers and the sea in this particular area.

Click on the map for a more detailed explanation.

Map legend

- Risk of Flooding from Rivers and Sea
  - High
  - Medium
  - Low
  - Very Low

Map of BB7 2HX at scale 1:10,000 **Data search**



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Author: The Environment Agency | enquiries@environment-agency.gov.uk
Last updated: 27 June 2014

Environment Agency

Interactive Maps

Risk of Flooding from Rivers and Sea for X:373909, Y:442241

The location you have selected is in an area that has a very low chance of flooding from rivers or the sea.

What does 'very low' mean?

Very low means that each year, this area has a chance of flooding of less than 1 in 1000 (0.1%).

This takes into account the effect of any flood defences that may be in this area. Flood defences reduce, but do not completely stop the chance of flooding as they can be overtopped or fail.

Floods Destroy. Be prepared

It is important to remember that while the risk is low, we can never eliminate all flooding. Surrounding roads and services may still be affected and could impact you.

- Check if you can receive free flood warnings
- Complete a flood plan
- Find out how to prepare your property for flooding

Planning a development

This information is not suitable for use in land-use planning. If you are planning a development, you need to use the Risk of Flooding for Land-Use Planning (Rivers and Sea) for England or Development Advisory Map for Wales. This is because for planning purposes you need to use information based on flooding without defences.

Further information

You can also check the level and flow estimates for rivers and sea, and the latest river and sea levels.

If you have questions about how the map was produced, please call Floodline on 0845 988 1188.

This area may be at risk from other types of flooding.

- Check your risk of flooding from surface water.
- Check your risk of flooding from reservoirs.

For the purposes of the Flood Risk Regulations 2009 and the EU Directive 2007/60/EC on the assessment and management of flood risks, this is a Flood Hazard Map

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Environment Agency

Enter a postcode or place name: Go

Other topics for this area... Flood Map for Planning (Rivers and Sea)

Flood Map for Planning (Rivers and Sea)

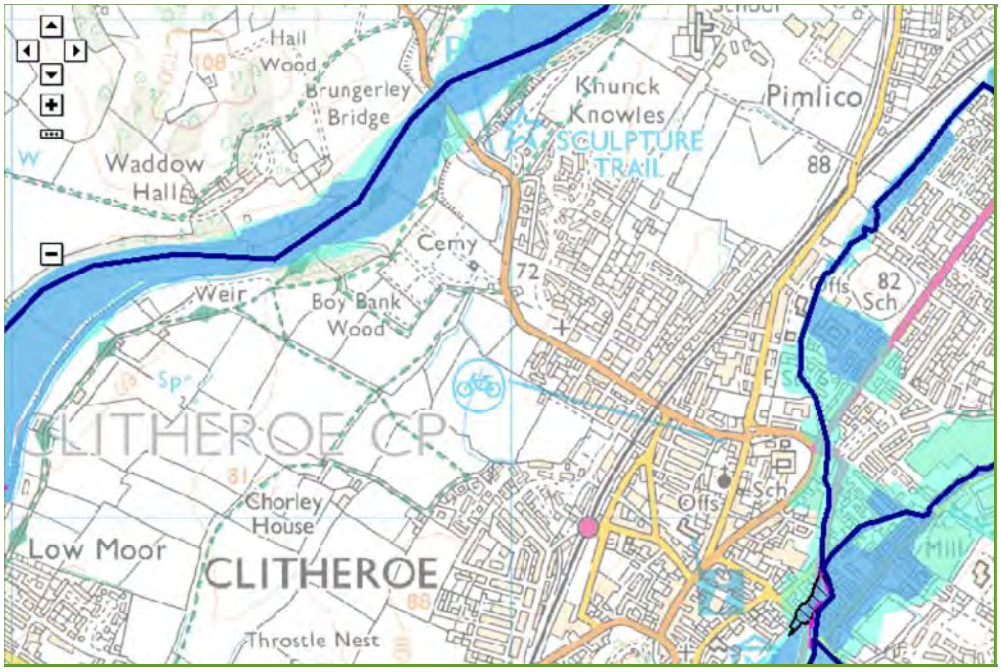
Map legend

Click on the map to see what Flood Zone (National Planning Policy Guidance definitions) the proposed development is in.

- Flood Map for Planning (Rivers and Sea)
- Flood Zone 3
- Flood Zone 2
- Flood defences (Not all may be shown*)
- Areas benefiting from flood defences (Not all may be shown*)
- Main rivers

X: 373,981;Y: 442,364 at scale 1:10,000

Other maps | Data search | Text only version



More about flooding:

Understanding the Flood Map for Planning (Rivers and Sea)

A more detailed explanation to help you understand the flood map shown above.

Current flood warnings

We provide flood warnings online 24 hours a day. Find out the current flood warning status in your local area.

*** Legend Information:** Flood defences and the areas benefiting from them are gradually being added through updates. Please contact your local environment agency office for further details.

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Author: The Environment Agency | enquiries@environment-agency.gov.uk
Last updated: 29th May 2014

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Enter a postcode or place name: 012FWFL9A Go

Other topics for this area... Flood Warning Areas

Flood Warning

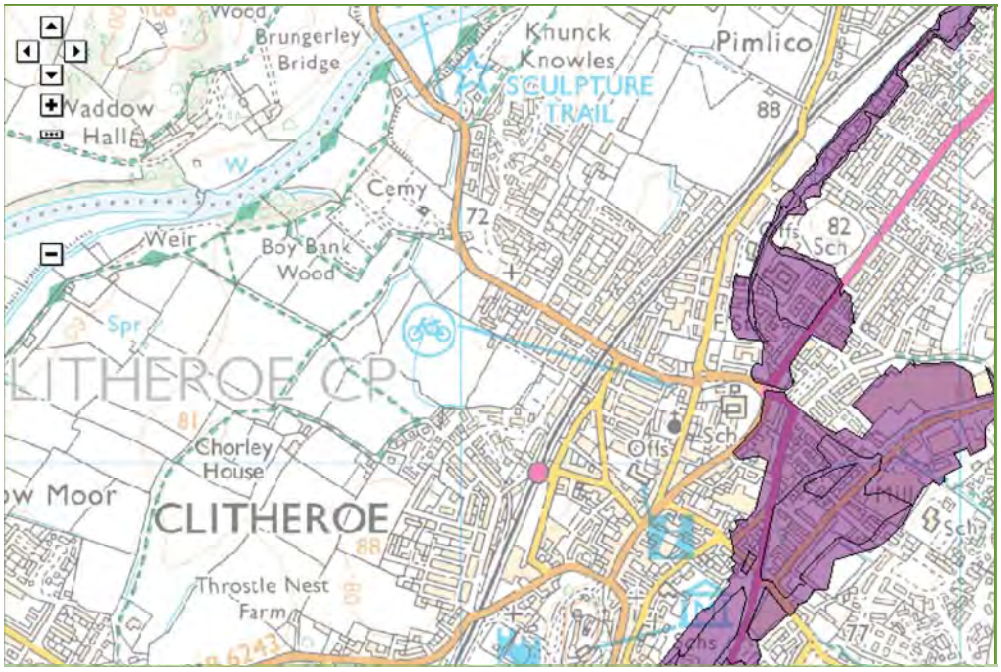
Map legend

Click on an area for details.

- Flood Warning Areas
  - Areas where we issue flood warnings
- Flood Alert Areas
  - Areas where we issue flood alerts
- River level monitoring (hi-flows)
  - River level monitoring (hi-flows)
- River and Sea levels
  - River and Sea levels

X: 374,080;Y: 442,255 at scale 1:10,000

Other maps Data search Text only version



More about Flood Warnings:

Flood Warning Areas

If your home or business is within a purple shaded area on the map then you can receive free flood warnings. We issue flood warnings to specific areas when flooding is expected. **If you receive a flood warning you should take immediate action**.

For further information visit our Flood warning pages.

Flood Alert Areas

If your home or business is within a pink shaded area on the map then you can receive free flood alerts. We issue flood alerts when flooding is possible. In many areas we issue flood alerts for flooding from rivers, the sea and groundwater. **If you receive a flood alert you should be prepared for flooding and to take action**.

It is very difficult to predict the exact location of flooding from groundwater as it is often related to local geology. We can't say for definite which properties are at risk from groundwater flooding. To help people we provide flood alerts for large areas that could be affected if groundwater levels were high.

For further information visit our Flood warning pages.

River Levels

River level monitoring sensors are placed in the waters at key points and measure changes in water level. This data is recorded at 15 minute intervals; it's then sent back to our offices to be published online at least once a day. The information may be updated more frequently to meet operational needs, for example when water levels are high. This is the most up to date information available about river and sea levels.

For further information visit our River and Sea Levels pages.

HiFlows

HiFlows-UK provides data on the flood peaks at around 1000 river flow gauging stations in the UK, for use in the flood estimation methods.

For further information visit our HiFlows-UK pages.

Environment Agency

Enter a postcode or place name: Other topics for this area...

Go | Risk of Flooding from Reservoirs | View other Interactive Maps

Risk of Flooding from Reservoirs

Reservoir flooding is extremely unlikely to happen.

The shading on the map shows the area that could be flooded if a large reservoir were to fail and release the water it holds. A large reservoir is one that holds over 25,000 cubic metres of water, equivalent to approximately 10 Olympic sized swimming pools. Since this is a worst case scenario, it's unlikely that any actual flood would be this large.

Click on the shading to see details of reservoirs that could cause flooding in this area.

Map legend

- Risk of Flooding from Reservoirs
- Maximum extent of flooding

Map of X: 373,936; Y: 442,187 at scale 1:10,000 **Data search**

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Last updated: 27 June 2014

Environment Agency

Enter a postcode or place name: **Other topics for this area...**

Go | Risk of Flooding from Surface Water | View other Interactive Maps

Risk of Flooding from Surface Water

Surface water flooding happens when rainwater does not drain away through the normal drainage systems or soak into the ground, but lies on or flows over the ground instead.

The shading on the map shows the risk of flooding from surface water in this particular area.

Click on the map for a more detailed explanation.

Map of X: 373,936; Y: 442,187 at scale 1:10,000 **Data search**

Map legend

- Risk of Flooding from Surface Water
  - High
  - Medium
  - Low
  - Very Low

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Author: The Environment Agency | enquiries@environment-agency.gov.uk
Last updated: 27 June 2014

Environment Agency

Interactive Maps

Risk of Flooding from Surface Water for X:373964, Y:442235

The location you have selected is in an area that has a very low chance of flooding from surface water.

What does 'very low' mean?

Very low means that each year, this area has a chance of flooding of less than 1 in 1000 (0.1%).

This type of flooding can be difficult to predict, much more so than river or sea flooding as it is hard to forecast exactly where or how much rain will fall in any storm.

This is based on the best information we have available, such as ground levels and drainage.

Floods Destroy. Be prepared

Don't wait until it's too late. Prepare for flooding by taking some simple steps to reduce the impact on your home or business.

- Complete a flood plan
- Find out how to prepare your property for flooding
- Check the three-day flood risk forecast

Further Information

The map has been produced by the Environment Agency, using information from Lead Local Flood Authorities where it is available. Lead Local Flood Authorities are responsible for managing the risk from surface water flooding.

If you have questions about how the map was produced, please call Floodline on 0845 988 1188.

If you would like more information on how surface water is being managed in this area, you can speak to Lancashire County Council.

You can use the information in this area to see the approximate areas that would flood, and which parts would be shallower or deeper.

The potential impact of surface water flooding can vary according to the depth of the water, and its velocity (speed and direction that it is flowing in).

This area may be at risk from other types of flooding.

- Check your risk of flooding from rivers and sea.
- Check your risk of flooding from reservoirs.

For the purposes of the Flood Risk Regulations 2009 and the EU Directive 2007/60/EC on the assessment and management of flood risks, this is a Flood Hazard Map.

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Environment Agency

Interactive Maps

Risk of Flooding from Surface Water for X:373925, Y:442309

The location you have selected is in an area that has a low chance of flooding from surface water.

What does 'low' mean?

Low means that each year, this area has a chance of flooding of between 1 in 1000 (0.1%) and 1 in 100 (1%).

This type of flooding can be difficult to predict, much more so than river or sea flooding as it is hard to forecast exactly where or how much rain will fall in any storm.

This is based on the best information we have available, such as ground levels and drainage.

Floods Destroy. Be prepared

Don't wait until it's too late. Prepare for flooding by taking some simple steps to reduce the impact on your home or business.

- Complete a flood plan
- Find out how to prepare your property for flooding
- Check the three-day flood risk forecast

Further Information

The map has been produced by the Environment Agency, using information from Lead Local Flood Authorities where it is available. Lead Local Flood Authorities are responsible for managing the risk from surface water flooding.

If you have questions about how the map was produced, please call Floodline on 0845 988 1188.

If you would like more information on how surface water is being managed in this area, you can speak to Lancashire County Council.

You can use the information in this area to see the approximate areas that would flood, and which parts would be shallower or deeper.

The potential impact of surface water flooding can vary according to the depth of the water, and its velocity (speed and direction that it is flowing in).

- View surface water depth estimates for this area.
- View surface water velocity estimates for this area.

This area may be at risk from other types of flooding.

- Check your risk of flooding from rivers and sea.
- Check your risk of flooding from reservoirs.

For the purposes of the Flood Risk Regulations 2009 and the EU Directive 2007/60/EC on the assessment and management of flood risks, this is a Flood Hazard Map.

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Interactive Maps

Risk of Flooding from Surface Water for X:373869, Y:442395

The location you have selected is in an area that has a medium chance of flooding from surface water.

What does 'medium' mean?

Medium means that each year, this area has a chance of flooding of between 1 in 100 (1%) and 1 in 30 (3.3%).

This type of flooding can be difficult to predict, much more so than river or sea flooding as it is hard to forecast exactly where or how much rain will fall in any storm.

This is based on the best information we have available, such as ground levels and drainage.

Floods Destroy. Be prepared

Don't wait until it's too late. Prepare for flooding by taking some simple steps to reduce the impact on your home or business.

- Complete a flood plan
- Find out how to prepare your property for flooding
- Check the three-day flood risk forecast

Further Information

The map has been produced by the Environment Agency, using information from Lead Local Flood Authorities where it is available. Lead Local Flood Authorities are responsible for managing the risk from surface water flooding.

If you have questions about how the map was produced, please call Floodline on 0845 988 1188.

If you would like more information on how surface water is being managed in this area, you can speak to Lancashire County Council.

You can use the information in this area to see the approximate areas that would flood, and which parts would be shallower or deeper.

The potential impact of surface water flooding can vary according to the depth of the water, and its velocity (speed and direction that it is flowing in).

- View surface water depth estimates for this area.
- View surface water velocity estimates for this area.

This area may be at risk from other types of flooding.

- Check your risk of flooding from rivers and sea.
- Check your risk of flooding from reservoirs.

For the purposes of the Flood Risk Regulations 2009 and the EU Directive 2007/60/EC on the assessment and management of flood risks, this is a Flood Hazard Map.

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Interactive Maps

Risk of Flooding from Surface Water for X:373940, Y:442474

The location you have selected is in an area that has a high chance of flooding from surface water.

What does 'high' mean?

High means that each year, this area has a chance of flooding of greater than 1 in 30 (3.3%).

This type of flooding can be difficult to predict, much more so than river or sea flooding as it is hard to forecast exactly where or how much rain will fall in any storm.

This is based on the best information we have available, such as ground levels and drainage.

Floods Destroy. Be prepared

Don't wait until it's too late. Prepare for flooding by taking some simple steps to reduce the impact on your home or business.

- Complete a flood plan
- Find out how to prepare your property for flooding
- Check the three-day flood risk forecast

Further Information

The map has been produced by the Environment Agency, using information from Lead Local Flood Authorities where it is available. Lead Local Flood Authorities are responsible for managing the risk from surface water flooding.

If you have questions about how the map was produced, please call Floodline on 0845 988 1188.

If you would like more information on how surface water is being managed in this area, you can speak to Lancashire County Council.

You can use the information in this area to see the approximate areas that would flood, and which parts would be shallower or deeper.

The potential impact of surface water flooding can vary according to the depth of the water, and its velocity (speed and direction that it is flowing in).

- View surface water depth estimates for this area.
- View surface water velocity estimates for this area.

This area may be at risk from other types of flooding.

- Check your risk of flooding from rivers and sea.
- Check your risk of flooding from reservoirs.

For the purposes of the Flood Risk Regulations 2009 and the EU Directive 2007/60/EC on the assessment and management of flood risks, this is a Flood Hazard Map.

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Enter a postcode or place name: Go

Other topics for this area... Risk of Flooding from Surface Water View other Interactive Maps

Surface Water Depth - Low Chance of Occurring

Surface water flooding happens when rainwater does not drain away through the normal drainage systems or soak into the ground, but lies on or flows over the ground instead.

The shading on the map shows the estimated water depth when there is a low chance of flooding.

Click in the legend to see estimated water depths for high and medium chances of flooding, and for estimated velocity (speed and direction of the water).

Map legend

- [x] Surface Water Depth - Low Chance of Occurring
  - Over 900mm
  - 300-900mm
  - Below 300mm

Chance of occurring

- (•) Low
- ( ) Medium
- ( ) High

Other layers

Switch to layer:
- Surface water extent
- Surface water velocity

Map of X: 374,008; Y: 442,202 at scale 1:10,000 Data search

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Author: The Environment Agency | enquiries@environment-agency.gov.uk
Last updated: 27 June 2014

Environment Agency

Enter a postcode or place name: Other topics for this area...

Go | Risk of Flooding from Surface Water | View other Interactive Maps

Surface Water Velocity - Low Chance of Occurring

Surface water flooding happens when rainwater does not drain away through the normal drainage systems or soak into the ground, but lies on or flows over the ground instead.

The shading on the map shows the estimated water speed when there is a low chance of flooding. The estimated direction of the water is shown when you zoom in.

Click in the legend to see estimated water velocities for high and medium chances of flooding, and for estimated water depth.

Map legend

- Surface Water Velocity - Low Chance of Occurring
  - Over 0.25 m/s
  - Less than 0.25 m/s
  - Direction of water

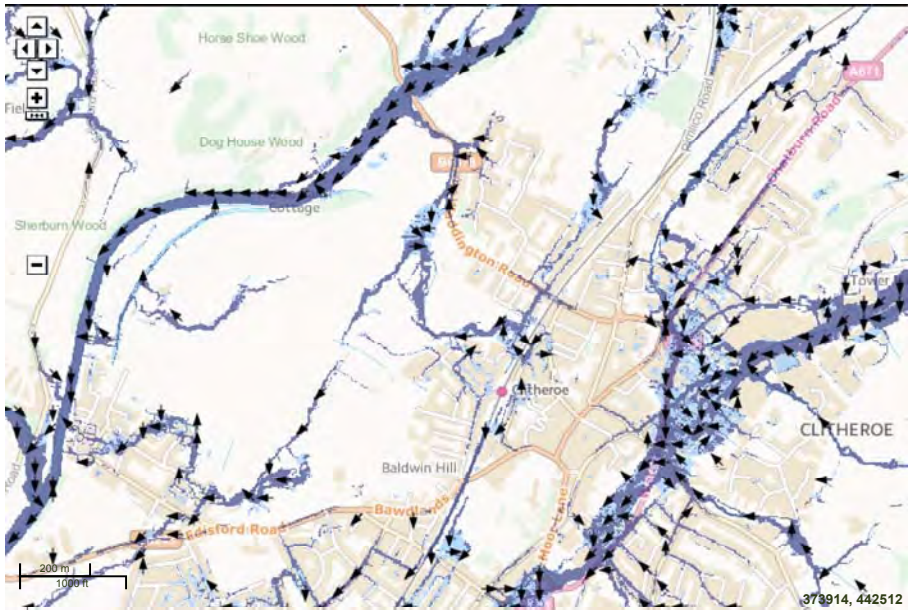
Chance of occurring

- Low
- Medium
- High

Other layers

Switch to layer:
- Surface water extent
- Surface water depth

Map of X: 374,008; Y: 442,202 at scale 1:10,000 **Data search**



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Author: The Environment Agency | enquiries@environment-agency.gov.uk
Last updated: 27 June 2014

Environment Agency

Enter a postcode or place name: Go

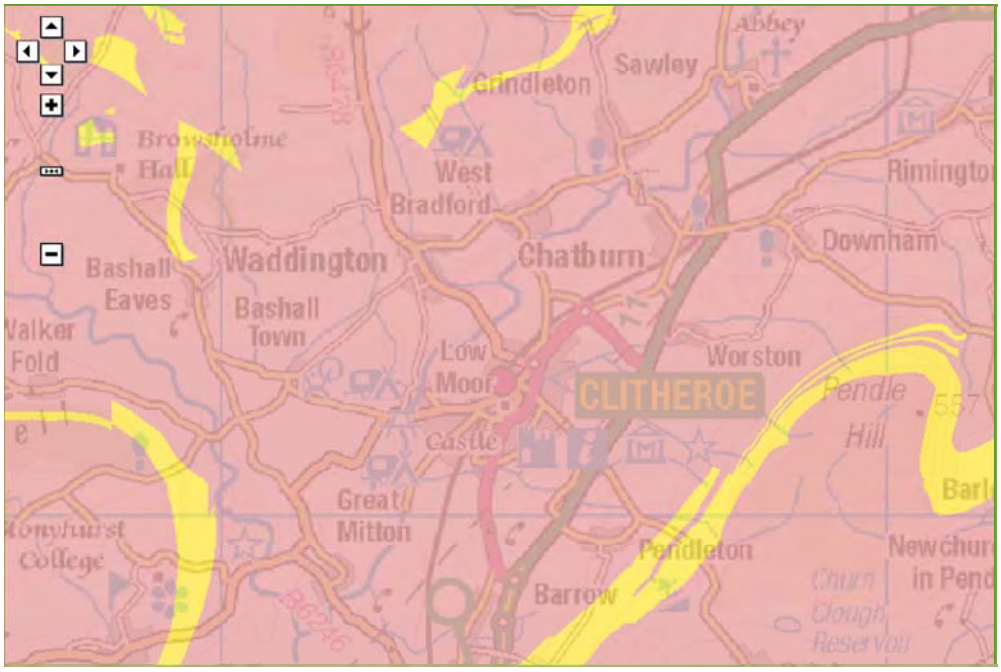
Other topics for this area... Groundwater

Groundwater

Map legend

- Groundwater source protection zones
  - Inner zone (Zone 1)
  - Outer zone (Zone 2)
  - Total catchment (Zone 3)
  - Special interest (Zone 4)
- Aquifer Maps - Superficial Deposits Designation
  - Principal
  - Secondary A
  - Secondary B
  - Secondary (undifferentiated)
  - Unknown (lakes and landslip)
- Aquifer Maps - Bedrock Designation
  - Principal
  - Secondary A
  - Secondary B
  - Secondary (undifferentiated)
- Groundwater Vulnerability Zones
  - Major Aquifer High
  - Major Aquifer Intermediate
  - Major Aquifer Low
  - Minor Aquifer High
  - Minor Aquifer Intermediate
  - Minor Aquifer Low

X: 374,200;Y: 442,689 at scale 1:75,000 Other maps Data search Text only version



More about Groundwater

British Geological Survey Aquifer data:

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 pass this.

New BGS Aquifer Designation 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.

Groundwater Source Protection Zones data:

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 pass this. They should not be compared against field boundaries.

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.

Facts and figures of our groundwater resources

Find out more about groundwater and groundwater levels.

Environment Agency

Enter a postcode or place name: Go

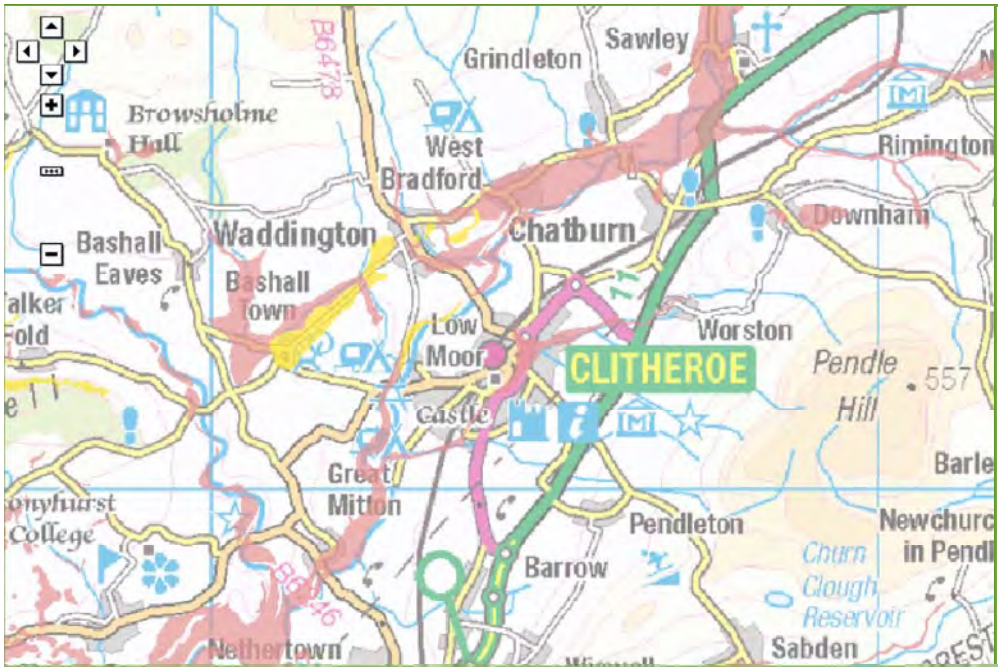
Other topics for this area... Groundwater

Groundwater

Map legend

- Groundwater source protection zones
  - Inner zone (Zone 1)
  - Outer zone (Zone 2)
  - Total catchment (Zone 3)
  - Special interest (Zone 4)
- Aquifer Maps - Superficial Deposits Designation
  - Principal
  - Secondary A
  - Secondary B
  - Secondary (undifferentiated)
  - Unknown (lakes and landslip)
- Aquifer Maps - Bedrock Designation
  - Principal
  - Secondary A
  - Secondary B
  - Secondary (undifferentiated)
- Groundwater Vulnerability Zones
  - Major Aquifer High
  - Major Aquifer Intermediate
  - Major Aquifer Low
  - Minor Aquifer High
  - Minor Aquifer Intermediate
  - Minor Aquifer Low

X: 374,345;Y: 442,303 at scale 1:75,000 Other maps Data search Text only version



More about Groundwater

British Geological Survey Aquifer data:

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New BGS Aquifer Designation Maps

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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 pass this. They should not be compared against field boundaries.

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.

Facts and figures of our groundwater resources

Find out more about groundwater and groundwater levels.

APPENDIX E: FEH CATCHMENT DATA & DESCRIPTIONS

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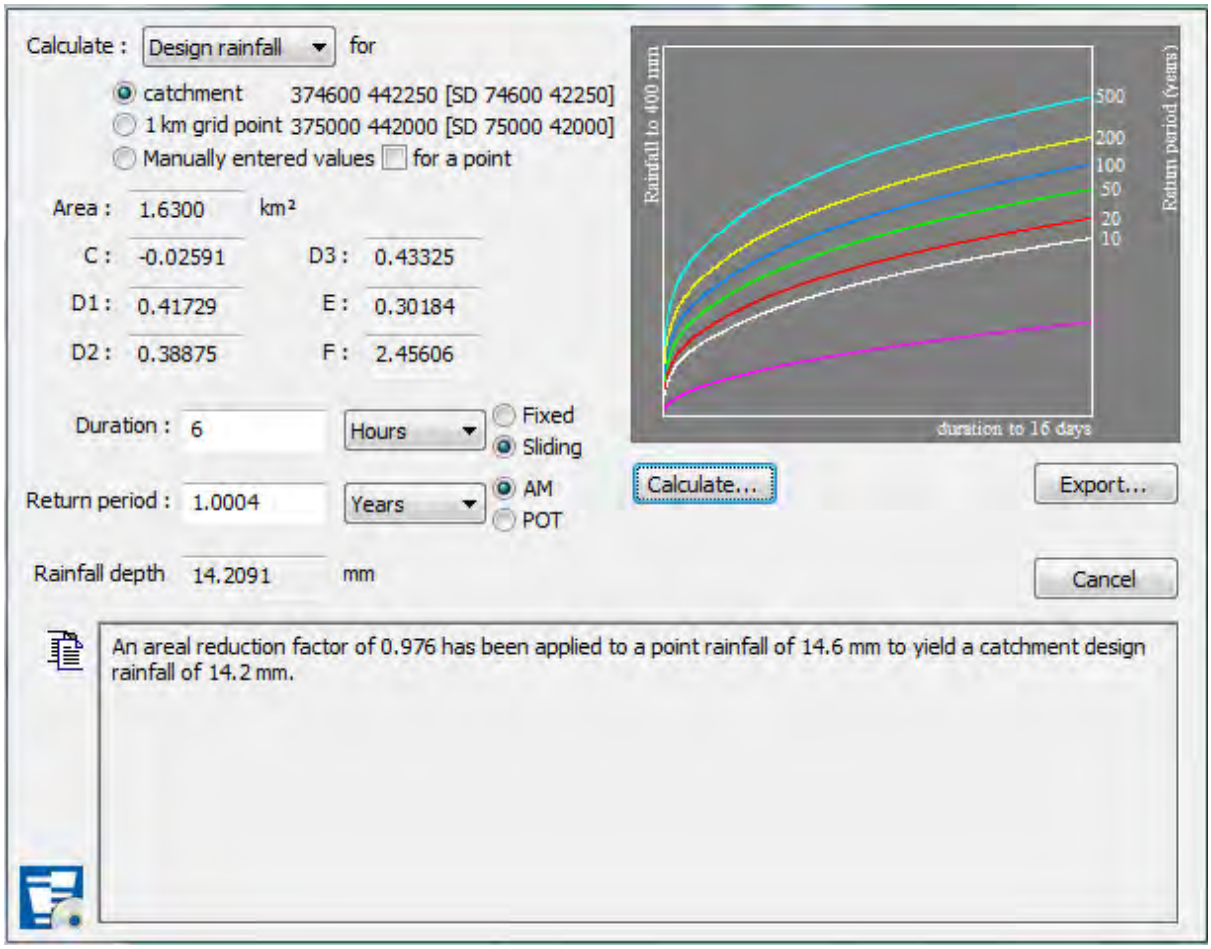
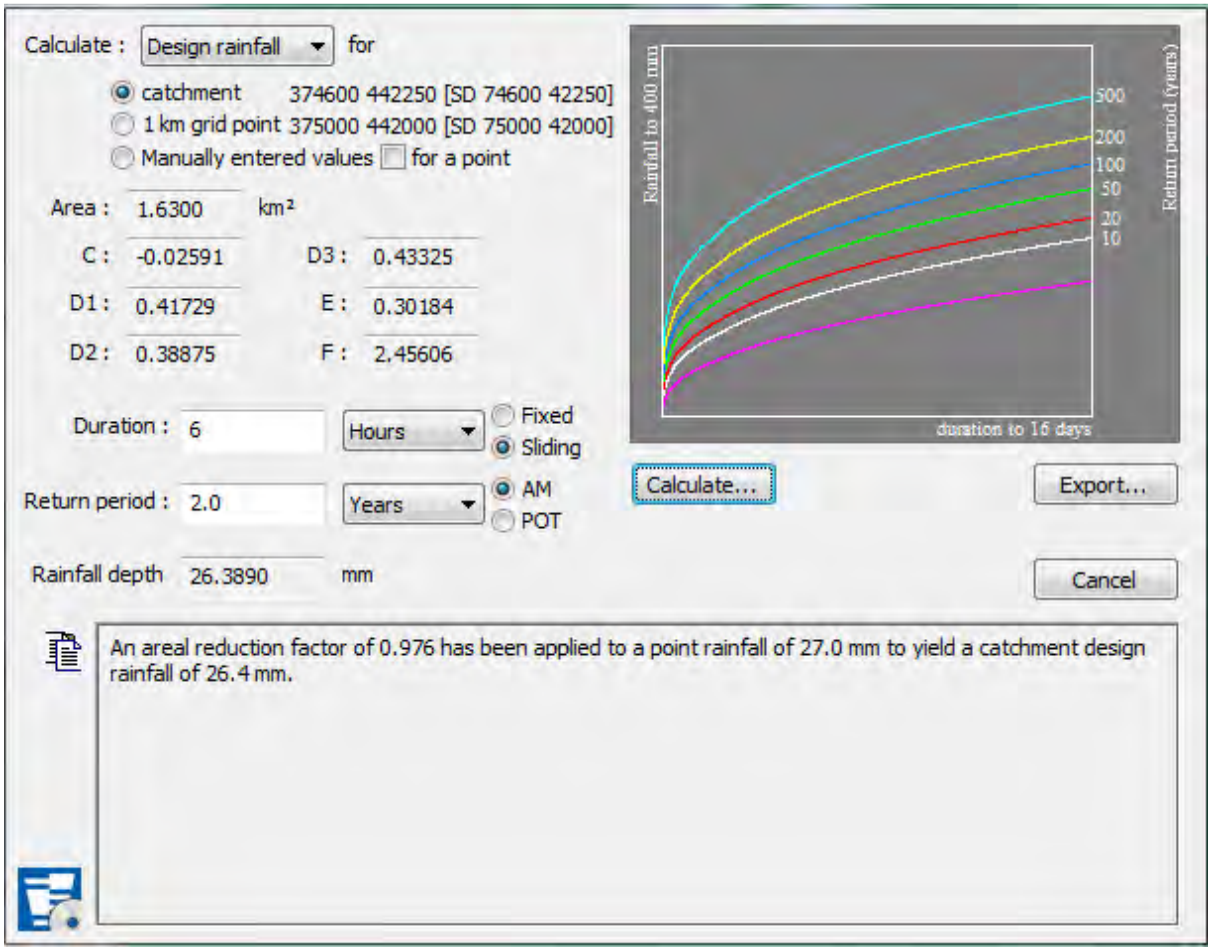
VERSION	FEH CD-ROM	Version	3	exported at	14:59:28	GMT	Fri	30-Mar-12	
CATCHMENT	GB	374600	442250	SD 74600 42250					
AREA	1.63								
ALTBAR	98								
ASPBAR	283								
ASPVAR	0.36								
BFIHOST	0.434								
DPLBAR	1.83								
DPSBAR	39.9								
FARL	0.995								
LDP	3.33								
PROPWET	0.6								
RMED-1H	10.4								
RMED-1D	42.4								
RMED-2D	58.8								
SAAR	1222								
SAAR4170	1158								
SPRHOST	30.35								
URBCONC1990	0.449								
URBEXT1990	0.0429								
URBLOC1990	0.395								
C	-0.02591								
D1	0.41729								
D2	0.38875								
D3	0.43325								
E	0.30184								
F	2.45606								
C(1 km)	-0.025								
D1(1 km)	0.406								
D2(1 km)	0.39								
D3(1 km)	0.43								
E(1 km)	0.3								
F(1 km)	2.46								

DESIGN RAINFALL DEPTHS





Calculate : Design rainfall for

catchment 374600 442250 [SD 74600 42250]
1 km grid point 375000 442000 [SD 75000 42000]
Manually entered values for a point

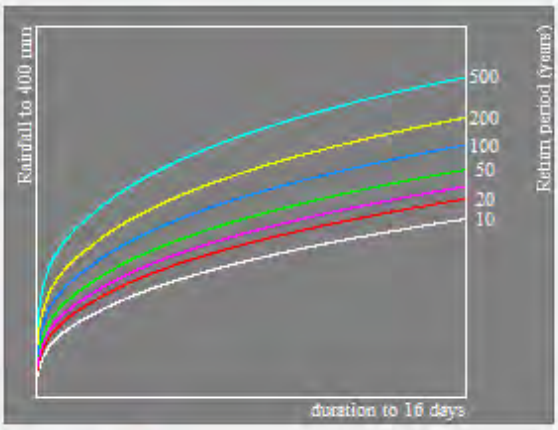
Area : 1.6300 km²

C : -0.02591 D3 : 0.43325
D1 : 0.41729 E : 0.30184
D2 : 0.38875 F : 2.45606

Duration : 6 Hours Fixed Sliding

Return period : 30.0 Years AM POT

Rainfall depth 57.0391 mm



Calculate... Export... Cancel

An areal reduction factor of 0.976 has been applied to a point rainfall of 58.4 mm to yield a catchment design rainfall of 57.0 mm.

Calculate : Design rainfall for

catchment 374600 442250 [SD 74600 42250]
1 km grid point 375000 442000 [SD 75000 42000]
Manually entered values for a point

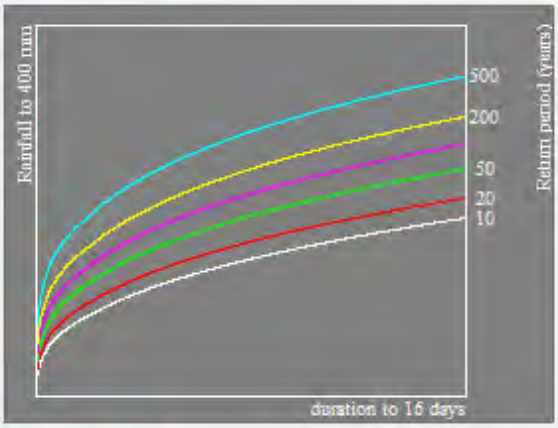
Area : 1.6300 km²

C : -0.02591 D3 : 0.43325
D1 : 0.41729 E : 0.30184
D2 : 0.38875 F : 2.45606

Duration : 6 Hours Fixed Sliding

Return period : 100.0 Years AM POT

Rainfall depth 77.8112 mm



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An areal reduction factor of 0.976 has been applied to a point rainfall of 79.7 mm to yield a catchment design rainfall of 77.8 mm.

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 systems[2].

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

Essential infrastructure • 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.
Highly vulnerable • 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 use[3]. • Installations requiring hazardous substances consent[4]. (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].
More vulnerable • 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 waste[6]. • Sites used for holiday or short-let caravans and camping, *subject to a specific warning and evacuation plan.*[7]
Less vulnerable • Police, ambulance and fire stations which are *not* required to be operational during flooding. • Buildings used for shops, financial, professional and other services, restaurants and cafes, hot food takeaways, offices, general industry, storage and distribution, non–residential institutions not included in "more vulnerable", and assembly and leisure. • 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 *not* 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).
Water-compatible development • 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, *subject to a specific warning and evacuation plan.*

APPENDIX G:UU SEWER RECORDS & CORRESPONDENCE

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CS

United Utilities Water PLC
Developer Services & Planning
Thirlmere House
Lingley Mere Business Park
Lingley Green Avenue
Great Sankey
Warrington WA5 3LP

Telephone 01925 678307
Planning.liaison@uuplc.co.uk

Ribble Valley Borough Council
Council Officers, Church Walk
Clitheroe
BB7 2RA

Your ref: 3/2012/0913
Our ref: DC/12/4348
Date: 29-NOV-12

Dear Sir/Madam

Location: Land Waddington Road, Clitheroe
Proposal: Outline Application for a residential development and a creche

With reference to the above planning application,

A significant public sewer crosses this site and we will not permit building over it. We will require an access strip width of 10 metres, 5 metres either side of the centre line of the sewer which is in accordance with the minimum distances specified in the current issue of "Sewers for Adoption", for maintenance or replacement.

United Utilities have sufficient spare capacity to accommodate the site at this time but we would seek to review our position if any applications are approved in advance of this scheme.

With my comments in mind, I will have no objection to the proposal provided that the following conditions are attached to any approval

This site must be drained on a separate system, with only foul drainage connected into the foul sewer. Surface water should discharge to the soakaway/SUDS or directly to watercourse which may require the consent of the Local Authority. Surface water should not be allowed to drain to the public sewer because alternatives are available

- Prior to the commencement of development, a strategy outlining the general system of drainage for foul and surface water flows arising from the entire site shall be submitted to the local planning authority and approved in writing. This strategy shall include details of any necessary infrastructure. Thereafter the detailed schemes for foul and surface water drainage for any phase of the development shall be submitted for approval in accordance with the strategy for the entire site approved under this condition.

  Reason: To secure proper drainage and to reduce the risk of flooding & pollution.

- Prior to the commencement of any phase of the development, details for surface water drainage and means of disposal for that phase, based on sustainable drainage principles and evidence of an assessment of site conditions (inclusive of how the

scheme shall be maintained and managed after completion and any necessary infrastructure) shall be submitted to and approved in writing by the local planning authority. For the avoidance of doubt, no surface water shall discharge into the public foul combined or surface water sewerage system, directly or indirectly, in accordance with the submitted application & FRA. The development shall be completed, maintained and managed in accordance with the approved details.

Reason: To secure proper drainage and to reduce the risk of flooding.

- Prior to the commencement of any phase of development, details of the foul drainage scheme for that phase including any necessary infrastructure shall be submitted to and approved in writing by the local planning authority. No housing shall be occupied for that phase until the approved foul drainage scheme for that phase has been completed in accordance with the approved details. Unless otherwise agreed in writing, the approved foul drainage scheme shall only connect to the foul sewer network between manhole reference 8001 on the existing 675mm combined sewer & manhole reference 9002 on the existing 675mm combined sewer, both are which located at grid reference 373861, 442060.

  Reason: To secure proper drainage and to reduce the risk of flooding & pollution

- Notwithstanding any indication on the approved plans, no development approved by this permission shall be commenced until a scheme for the provision and implementation of a surface water regulation system, restricting surface water discharge to 33 l/s has been approved by the Local Planning Authority. The development shall be completed, maintained and managed in accordance with the approved details.

  Reason: To secure proper drainage and to reduce the risk of flooding.

- For the avoidance of doubt, surface water must drain separate from the foul and no surface water will be permitted to discharge directly or indirectly into existing foul, combined or surface water sewerage systems.

  Reason: To secure proper drainage and to reduce the risk of flooding.

A separate metered supply to each unit will be required at the applicant's expense and all internal pipework must comply with current water supply (water fittings) regulations 1999.

Should this planning application be approved, the applicant should contact our Service Enquiries on 0845 7462200 regarding connection to the water mains/public sewers.
Our water mains will need extending to serve any development on this site. The applicant, who may be required to pay a capital contribution, will need to sign an Agreement under Sections 41, 42 & 43 of the Water Industry Act 1991.

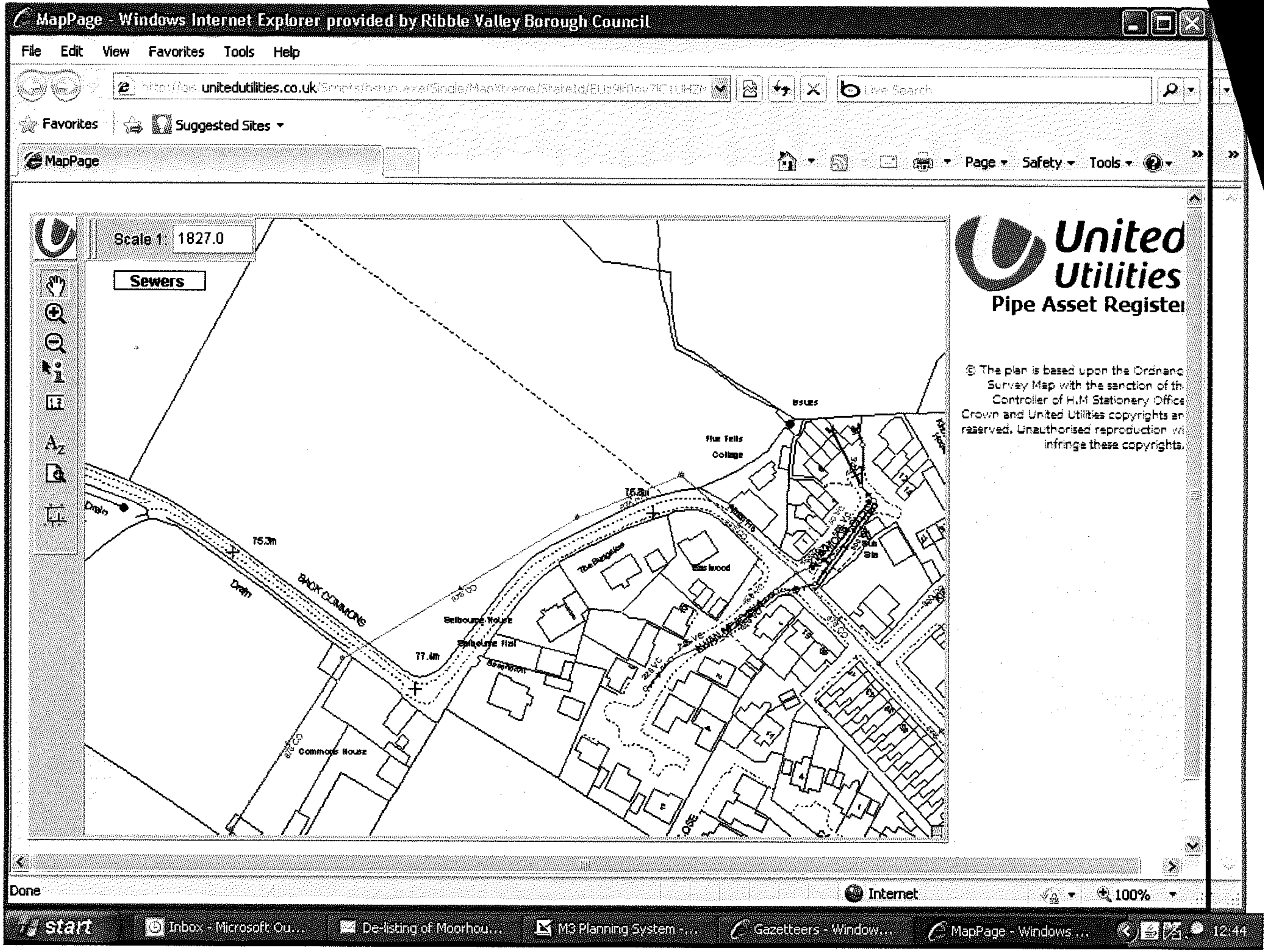
United Utilities offer a fully supported mapping service at a modest cost for our water mains and sewerage assets. This is a service, which is constantly updated by our Property Searches Team (Tel No: 0870 7510101). It is the applicant's responsibility to demonstrate

the exact relationship between any assets that may cross the site and any proposed development

Please note, due to the public sewer transfer, not all sewers are currently shown on the statutory sewer records, if a sewer is discovered during construction, please contact a Building Control Body to discuss the matter further.

Yours Faithfully,

Daniel McDermott
Developer Services & Asset Protection
United Utilities


MapPage - Windows Internet Explorer provided by Ribble Valley Borough Council
File Edit View Favorites Tools Help
unitedutilities.co.uk
Favorites
Suggested Sites
MapPage
Page Safety Tools
Scale 1: 1827.0
Sewers
United Utilities
Pipe Asset Register
© The plan is based upon the Ordnance Survey Map with the sanction of the Controller of H.M Stationery Office Crown and United Utilities copyrights are reserved. Unauthorised reproduction will infringe these copyrights.
Drain
75.3m
BACK COMMONS
Selbourne House
Selbourne Flat
77.4m
Commons House
75.8m
Flue Fells
Cottage
Issues
Done
Internet
100%
start
Inbox - Microsoft Ou...
De-listing of Moorhou...
M3 Planning System -...
Gazetteers - Window...
MapPage - Windows ...
12:44

United Utilites Water PLC
Property Searches
Stephen's Way
Goose Green
Wigan
WN3 6PJ

DX 719690 Wigan 8

Telephone 0870 751 0101

Fax Number 0870 7510102

Property.searches@uuplc.co.uk

Your Ref:
Our Ref: 08/ 821325
Date: 22/08/2011

BETTS ASSOCIATES LTD
OLD MARSH FARM BARNS
WELSH ROAD

SEALAND
CH5 2LY

FAO: R NICHOLAS

Dear Sirs

Location: CHEWS FARM CLITHEROE

I acknowledge with thanks your request dated 22/08/11 for information on the location of our services.

Please find enclosed plans showing the approximate position of our apparatus known to be in the vicinity of this site.
I attach General Condition Information sheets, which details contact numbers for additional services (i.e. new supplies, connections, diversions) which we are unable to deal with at this office. In addition you should ensure they are made available to anyone carrying out any works which may affect our apparatus.

I trust the above meets with you requirements and look forward to hearing from you should you need anything further.

Please note from Friday 30th September 2011 we will no longer be providing a mapping service for any Electricity Assets. This service will be through ENW Ltd, 304 Bridgewater Place, Birchwood Park, Warrington, WA3 6XG Tel: 0800 048 1820 (Option 4) or E Mail: http://www.enwl.co.uk.

If you have any queries regarding this matter please telephone us on 0870 7510101.

Yours Faithfully,

S McManus

Sue McManus
Operations Manager
Property Searches

From 1st October 2011 ownership of private sewers and lateral drains will change in accordance with The Water Industry (Schemes for Adoption of Private Sewers) Regulations 2011.
The results of this request do not reflect these changes.
For further information please visit; http://www.unitedutilities.com/privatesewers.aspx

United Utilities Water PLC
Registered in England & Wales No. 2366678
Registered Office: Haweswater House,
Lingley Mere Business Park, Lingley Green Avenue,
Great Sankey, Warrington, WA5 3LP

TERMS AND CONDITIONS - WASTERWATER & WATER DISTRIBUTION PLANS

These provisions apply to the public sewerage, water distribution and telemetry systems (including sewers which are the subject of an agreement under Section 104 of the Water Industry Act 1991 and mains installed in accordance with the agreement for the self construction of water mains) (UUW apparatus) of United Utilities Water PLC ("UUW").

TERMS AND CONDITIONS:

1. This Map and any information supplied with it is issued subject to the provisions contained below, to the exclusion of all others and no party relies upon any representation, warranty, collateral contract or other assurance of any person (whether party to this agreement or not) that is not set out in this agreement or the documents referred to in it.

2. This Map and any information supplied with it is provided for general guidance only and no representation, undertaking or warranty as to its accuracy, completeness or being up to date is given or implied.

3. In particular, the position and depth of any UUW apparatus shown on the Map are approximate only. UUW strongly recommends that a comprehensive survey is undertaken in addition to reviewing this Map to determine and ensure the precise location of any UUW apparatus. The exact location, positions and depths should be obtained by excavation trial holes.

4. The location and position of private drains, private sewers and service pipes to properties are not normally shown on this Map but their presence must be anticipated and accounted for and you are strongly advised to carry out your own further enquiries and investigations in order to locate the same.

5. The position and depth of UUW apparatus is subject to change and therefore this Map is issued subject to any removal or change in location of the same. The onus is entirely upon you to confirm whether any changes to the Map have been ade subsequent to issue and prior to any works being carried out.

6. This Map and any information shown on it or provided with it must not be relied upon in the event of any development, construction or other works (including but not limited to any excavations) in the vicinity of UUW apparatus or for the purpose of determining the suitability of a point of connection to the sewerage or other distribution systems.

7. No person or legal entity, including any company shall be relieved from any liability howsoever and whensoever arising for any damage caused to UUW apparatus by reason of the actual position and/or depths of UUW apparatus being different from those shown on the Map and any information supplied with it.

8. If any provision contained herein is or becomes legally invalid or unenforceable, it will be taken to be severed from the remaining provisions which shall be unaffected and continue in full force and affect.

9. This agreement shall be governed by English law and all parties submit to the exclusive jurisdiction of the English courts, save that nothing will prevent UUW from bringing proceedings in any other competent jurisdiction, whether concurrently or otherwise.

Conditions and information regarding wastewater network

These general conditions and precautions apply to the wastewater network of United Utilities.

Please ensure that a copy of these conditions is passed to your representative and contractor on site.

1. United Utilities provides the approximate locations of its sewers according to its records. These records are not necessarily accurate or complete nor do they normally show the positions of every sewer culvert or drain, private connections from properties to the public sewers or the particulars of any private system. No person or company shall be relieved from liability for any damage caused by reason of the actual positions and/or depths being different from those indicated. The records do indicate the position of the nearest known public sewer from which the likely length of private connections can be estimated together with the need for any off site drainage rights or easements.

2. Special requirements relative to our sewers may be indicated. United Utilities employees or its contractors will visit any site at reasonable notice to assist in the location of its underground sewers and advise any precautions that may be required to obviate any damage. To arrange a visit or for further information regarding new supplies, connections, diversions, costing, or any notification required under these General Conditions, please call us on **0845 746 2200**.

3. Where public sewers are within a site which is to be developed and do not take any drainage from outside the area, they are from an operational viewpoint redundant. The developer must identify all redundant sewers affected by the development and apply to United Utilities in writing for these sewers to be formally closed. The developer shall bear all related costs of the physical abandonment work.

4. Public sewers within the site that are still live outside the area, will be subject to a “Restricted Building zone”. This would normally be a surface area equivalent to the depth of the sewer measured from the centre line of the sewer on either side. No construction will be permitted within that zone. The developer should also note that deep and wide rooted trees must not be planted in close proximity to live sewers. Access to public sewers must be maintained at all times and no interference to manholes will be permitted during construction work.

5. Where there is a public sewer along the line of a proposed development/building, arrangements shall be made by the developer at his cost to divert the sewer around the development. Where this is not possible and as a last resort, a “Building Over Agreement” will need to be completed under section 18 of the Building Act 1984. The developer shall design building foundations to ensure that no additional loading is transferred to the sewer and submit such details both to the Local Authority’s Building Control Officer and to United Utilities for approval/acceptance. United Utilities on a rechargeable basis would normally undertake all aspects of design work associated with the diversion of any part of the operational wastewater network.

6. Where there is a non-main river watercourse/culvert passing through the site, the landowner has the responsibility of a riparian owner for the watercourse/culvert and is responsible for the maintenance of the fabric of the culvert and for all works involved in maintaining the unrestricted flow through it. Building over the watercourse/culvert is not recommended. The developer must contact the local authority before any works are carried out on the watercourse/culvert. Where it is necessary to discharge surface water from the site into the watercourse/culvert the developer shall make an assessment of the available capacity of the watercourse/culvert (based on a 1 in 50 year event) and ensure that the additional flow to be discharged into the watercourse/culvert will not cause any flooding. In appropriate cases, flooding may be prevented by on-site storage. The developer shall submit the relevant details required to substantiate his development proposals. Details of any outfall proposed shall also be submitted to the Environment Agency, PO Box 12, Richard Fairclough House, Knutsford Road, Warrington, Cheshire, WA4 1HT for their approval.

7. Where there is a main river watercourse/culvert passing through the site, the developer shall submit all proposals affecting the river to the Environment Agency at the address stated in paragraph 6 for approval/acceptance.

8. Your attention is drawn also to the following:

- **Private drains or sewers which may be within the site.** United Utilities has no duty to keep records of private drains and sewers, and there are no comprehensive records kept elsewhere. Local Authority Building Control Officers may have records of recent developments and they or the developer may be able to provide information in this respect.

- **Applications to make connections to the public sewer.** The developer must write to United Utilities requesting an application form that must be duly completed and returned. No works on the public sewer shall be carried out until a letter of consent is received from United Utilities.

- **Sewers for adoption.** If an agreement for the adoption of sewers under Section 104 of the Water Industry Act 1991 is being contemplated, a submission in accordance with "Sewers for Adoption", Fifth Edition, published by the Water Research Centre (2001) Plc, Henley Road, Medmenham, PO Box 16, Marlow, Buckinghamshire, SL7 2HD will be required, taking into consideration any departures from the general guide stipulated by United Utilities.

- **Further consultation with United Utilities.** Developers wishing to seek advice or clarification regarding sewer record information provided should contact United Utilities to arrange an appointment. A consultation fee may be charged, details of which will be made available at the time of making an appointment.

9. Combined sewers, foul sewers, surface water sewers, and pumped mains. These are shown separately in a range of colours or markings to distinguish them on our drawings, which are extracts from the statutory regional sewer map. A legend and key is provided on each extract for general use, although not all types of sewer will be shown on every extract.

   Combined sewers shown coloured red carry both surface water and foul sewage, especially in areas where there is no separate surface water sewerage system.

   Foul sewers coloured brown may also carry surface water and there may be no separate surface water system indicated in the immediate area. Both combined and foul sewers carry wastewater to our treatment works before it can safely be returned to the environment.

   Surface water sewers coloured blue on our drawings are intended only to carry uncontaminated surface water (e.g. rainfall from roofs, etc) and they usually discharge into local watercourses. It is important for the protection of the environment and water quality that only uncontaminated surface water is connected to the surface water sewers. Improper connections to surface water sewers from sink wastes, washing machines and other domestic use of water can cause significant pollution of watercourses.

   Pumped mains, rising mains and sludge mains will all be subject to pumping pressures and are neither suitable nor available for making new connections.

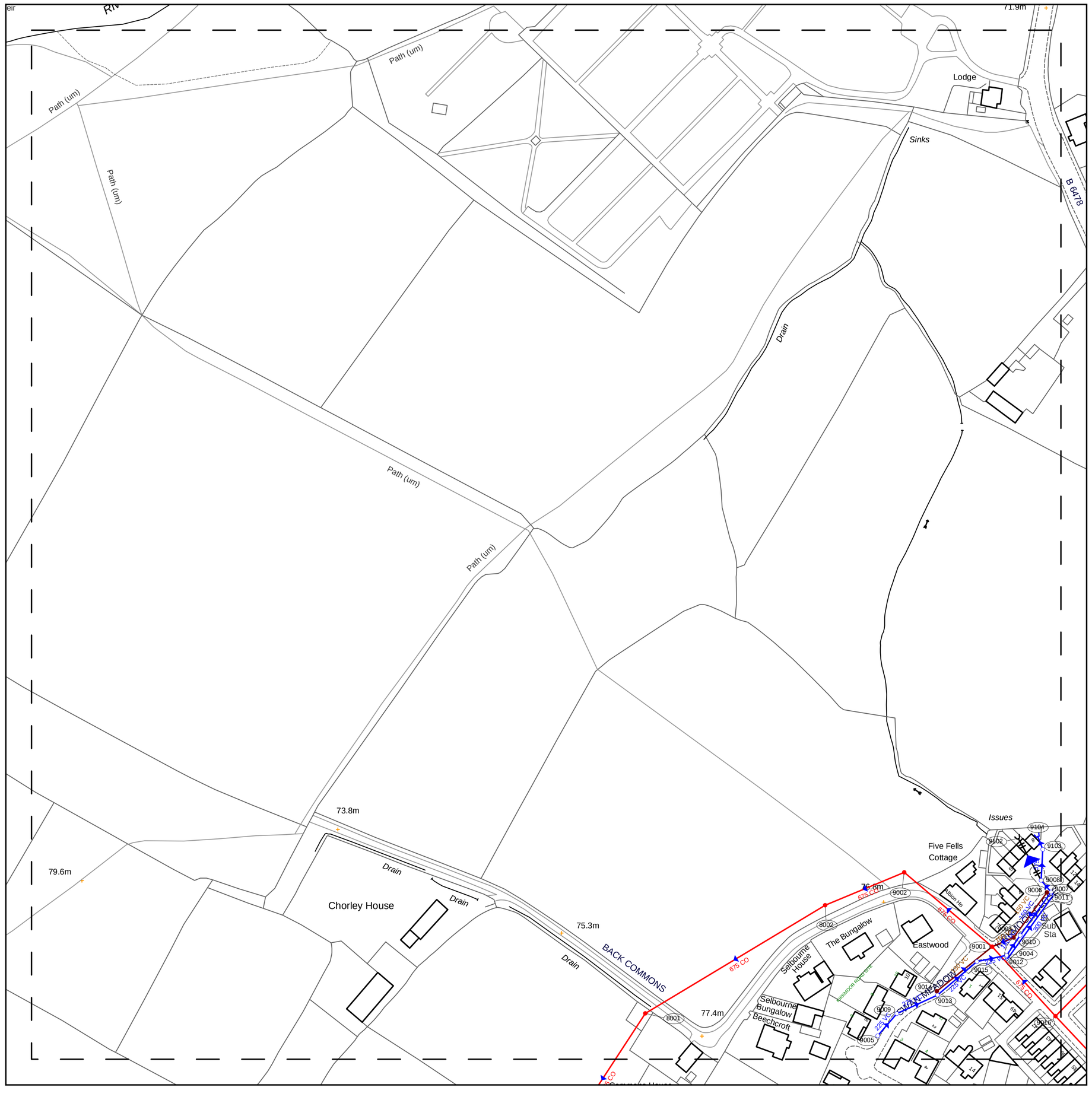
   Highway drains, when included, show as blue and black dashed lines. Highway drains are not assets belonging to United Utilities and are the responsibility of local authorities.

10. For information regarding future proposals for construction of company apparatus please write to United Utilities, PO Box 453, Warrington, WA5 3QN.

11. For information regarding easements, deeds, grants or wayleaves please write to United Utilities Property Solutions, Coniston Buildings, Lingley Mere Business Park, Lingley Green Avenue, Great Sankey, Warrington WA5 3UU (**Tel: 01925 463 654**).

United Utilities Water PLC
Haweswater House, Lingley Mere Business Park,
Lingley Green Avenue, Great Sankey, Warrington WA5 3LP
www.unitedutilities.com

Registered in England and Wales Registered Number 2366678



OS Sheet No: SD7342SE

Scale 1:1250 Date: 22-Aug-2011

Printed by: Rob Payne

Refno	Cover	Func	Type	Invert	Size.x	Size.y	Shape	Matl	Grad	Length
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8002		C	M		675		C	CO		101.89
9001	77.19	C	M	73.39	675		C	CO		55.91
9002		C	M		675		C	CO		41.61
9003		F	M		150		C	VC		11.29
9004		S	M		150		C	VC		11.74
9005		S	M		225		C	VC		14.19
9006		F	M		150		C	VC		27.26
9007		S	M		375		C			7.46
9008		S	M		375		C			15.05
9009		S	M		225		C	VC		21.75
9010		S	M		150		C	VC		25.83
9011		S	G		300		C	VC		1.89
9012		S	G		300		C	VC		38.45
9013		S	M		225		C	VC		25.09
9014		F	M		150		C	VC		34.51
9015		S	M		225		C	VC		14.78
9016	77.65	C	M		675		C	CO		45.64
9102		S	F							
9103		S	M		375		C			6.78
9104		S	F							

WASTE WATER SYMBOLOGY

FOUL SURFACE COMBINED DUAL MANHOLE

FOUL SURFACE COMBINED DUAL SIDE ENTRY MANHOLE

PRIVATE SEWER

ABANDONED SEWER

SITE TERMINATION

T-JUNCTION (SADDLE)

AIRVALVE

LAMP HOLE

CASCADE

OIL INTERCEPTOR

CONTROL KIOSK

PENSTOCK

CONTROL VALVE

RODDING EYE

GULLEY

SOAKAWAY

HATCHBOX

TUMBLING BAY

HEADWALL

UNSPECIFIED

HYDROBRAKE

VALVE

INLET

WASHOUT

GHOST NODE (inc. GN - Rising Main & GN - Dual Function)

EXPEDIENCY NODE (CHANGE OF CHARACTERISTIC)

CATCHPIT

SIDE ENTRY CATCHPIT

CHAMBER

SIDE ENTRY CHAMBER

DROPSHAFT

SIDE ENTRY DROPSHAFT

SHEET EDGE

VENT COLUMN

SEWER OVERFLOW

DISCHARGE POINT (OUTFALL)

TANK

WASTE WATER TREATMENT WORKS

PUMPING STATION

EJECTOR STATION

SLUDGE PUMPING STATION

Note - ALL flow direction arrows are BLUE - colour not significant

NODE TABLE ABBREVIATIONS

MANHOLE FUNCTION

- F Foul
- S Surface
- C Combined
- T Transition
- O Overflow
- U Unspecified

MANHOLE / NODE TYPE

- M Manhole
- J Junction
- L Lamphole
- H Hatchbox
- R Rodding Eye
- F Outfall
- V Combined Sewer Overflow
- P Pumping Station
- S Soakaway
- D Dual Function Manhole
- W Treatment Works
- Z Ghost in Rising Main
- C Cascade
- Y Gulley
- E Ejector
- O Oil Injector
- I Inlet
- B Hydrobrake
- T Vent Column
- X Valve
- U Unspecified
- Q Expediency Node
- G Ghost (to allow pipe bends)

SEWER SHAPE

- C Circular
- E Egg
- O Oval
- F Flat Top
- R Rectangular
- S Square
- T Trapezoidal
- A Arch
- B Barrel
- H Horseshoe
- U Unspecified

SEWER MATERIAL

- AC Asbestos Cement
- BR Brick
- CI Cast Iron
- SI Spun (Grey) Iron
- CO Concrete
- CS Concrete Segments (Bolted)
- CS Concrete Segments (Unbolted)
- CC Concrete Box Culvert
- DI Ductile Iron
- GR Glass Reinforced Concrete
- GR Glass Reinforced Plastic
- PS Plastic / Steel Composite
- PV Polyvinyl Chloride
- PE Polythene
- RP Reinforced Plastic Matrix
- ST Steel
- VC Vitrified Clay (All Clayware)
- PP Polypropylene
- PF Pitch Fibre
- MA Masonry - In Regular Courses
- MA Masonry - Randomly Coursed
- U Unspecified

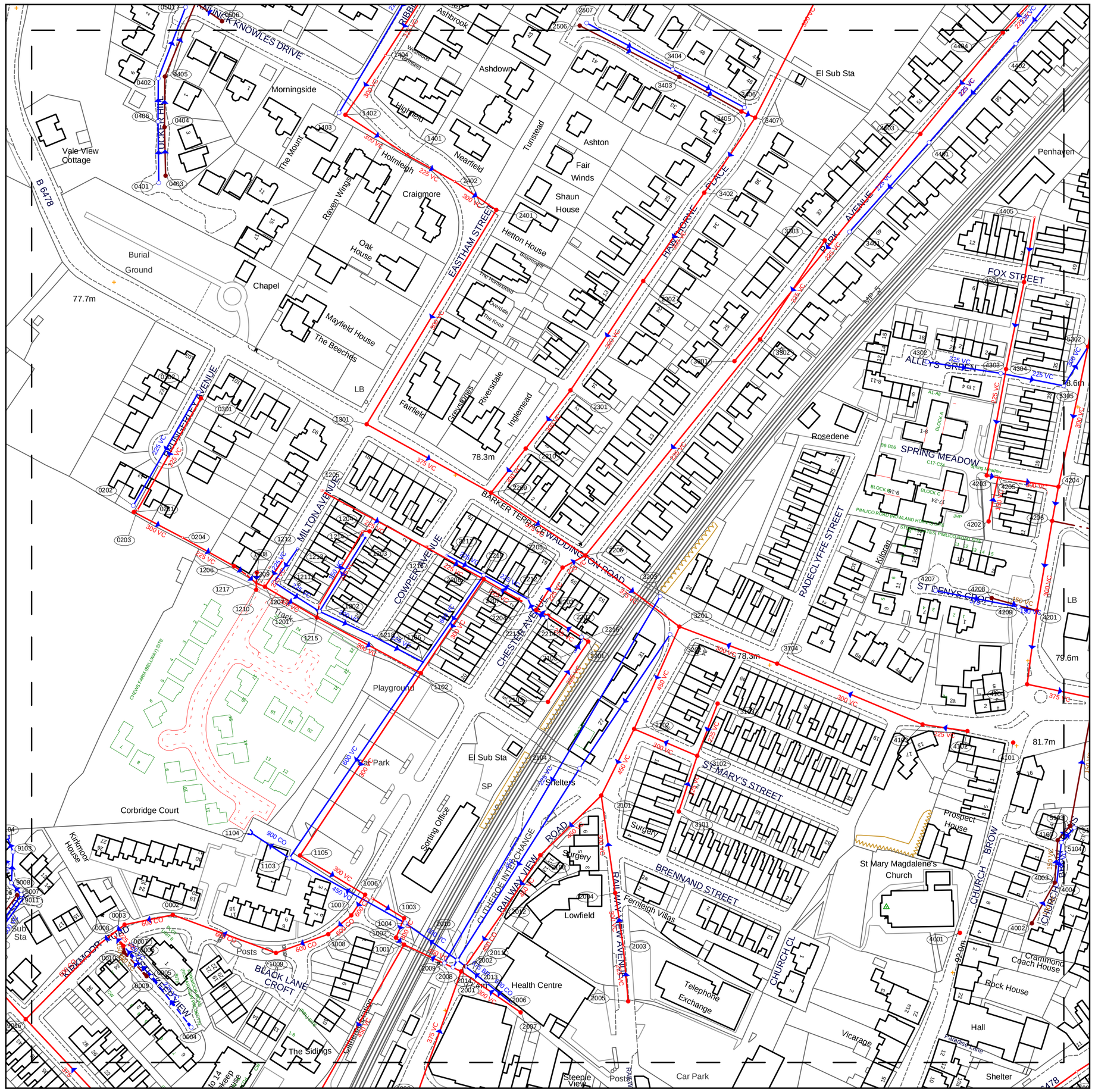
OS Sheet No: SD7342SE
Scale 1:1250 Date: 22-Aug-2011

21 Nodes

Sheet 1 of 1

United Utilities

SEWER RECORDS



OS Sheet No: SD7442SW

Scale 1:1250 Date: 22-Aug-2011

Printed by: Rob Payne

Refno	Cover	Func	Type	Invert	Size.x	Size.y	Shape	Matl	Grad	Length
0002		C	M		600		C	CO		23.82
0003		C	M		600		C	CO		7.39
0004		S	M		225		C	VC		31.08
0005		S	M		225		C	VC		12.1
0006		S	M		225		C	VC		8.15
0007		C	M		225		C	VC		7.86
0008		F	J		600		C	CO		58.96
0009		F	M		150		C	VC		15.98
0010		F	M		150		C	VC		3.13
0201	81.07	C	M	77.77	300		C	VC	58	26.61
0202	81.05	S	M							
0203		C	G		225		C	VC		2.11
0204		C	Q	77.31	225		C	VC	62	28.57
0301	81.38	C	M	78.77	225		C	VC		62.08
0302	81.39	S	M	79.73	225		C	VC	66	63.32
0401		S	M							29.65
0402		S	M							37.01
0403		F	M							23.49
0404		F	M							24.51
0405		F	M							38.78
0406		S	M							20.9
1001	75.89	C	M	74.69	450		C	VC		89.41
1002	76.18	C	M	74.92	300		C	VC	86	5.15
1003	76.54	C	M	75.07	300		C	VC	79	10.26
1004	76.54	S	M	74.89	450		C	VC	494	64.26
1005		F	Q	75.39	300		C	VC	60	18.01
1006		C	M		600		C	CO		12
1007		C	M		600		C	CO		14.43
1008		C	M		600		C	CO		26.88
1009		C	M		600		C	CO		53.27
1102	77.13	C	M	75.82	300		C	VC	265	105.92
1103	76.95	S	M	74.73	900		C	CO		21.88
1104		S	F							
1105	77.11	C	M	75.39	300		C	VC	123	36.8
1106		S	J		600		C	VC		114.9
1201	78.23	C	M		300		C	VC		57.11
1202	78.19	S	M	77.07	300		C	VC		27.75
1203		S	L	77.73	150		C	VC	67	42.03
1204	78.69	C	M	76.99	225		C	VC		3.37
1205		C	L	78.58	225		C	VC		57.22
1206	79.19	C	M	76.8	225		C	VC		7.28
1207	78.82	C	M	76.57	300		C	VC		29.25
1208		C	M		300			VC		5.24
1209		C	Q		300		C	VC		6.32
1210		C	M		300			VC		3.1
1211	78.81	S	M	77.29	225		C	VC	131	26.19
1212		C	G		225		C	VC		15.5
1213		S	G		225		C	VC		19.93
1214		C	G		225		C	VC		41.46
1215		C	G		225		C	VC		6.19
1216		C	L		225		C	VC		30.05
1217		C	J		300		C	VC		4.5
1218		S	Q		225		C	VC		28.14
1301	79.91	C	M	77.06	375		C	VC	65	68.76
1401		C	L	80.21	225		C	VC	92	24.71
1402	83.46	C	M	80.62	300		C	VC	91	37.17
1403		S	M							
1404		C	Q	80.77	300		C	VC	267	34.71
2001	76.89	C	M	74.81	450		C	VC	277	30.5
2002	76.9	S	D	75.14	610		C	BR		4.84
2003		C	Q	76.15	300		C	VC	66	26.43
2004	77.32	C	M	75.73	300		C	VC	74	47.65
2005	78.23	C	M	76.55	225		C	VC	66	26.43
2006		S	G		600		C	CO		14.46
2007	77.06	C	M	75.38	300		C	VC	67	35
2008		S	M							
2009		S	M							
2010	76.69	S	M		450		C			4.06
2010	76.69	S	M		600		C	VC		31.05
2011	76.9	F	D	74.81	450		C	CO	-127	1.27
2012		C	Q	74.9	450		C	CO	456	31.91
2013		S	Q		675		C	BR		13.57
2014		F	Q	74.82	450		C	VC	-196	1.96

Refno	Cover	Func	Type	Invert	Size.x	Size.y	Shape	Matl	Grad	Length
2101	77.65	C	M	75.07	450		C	VC	517	41.33
2102	77.94	C	M	75.21	450		C	VC	300	35.96
2103	77.25	C	M	76.39	225		C	VC	73	35.14
2104	77.22	S	M		450		C			110.1
2105		S	G		150			VC		6.15
2106	77.34	C	M	74.97	450		C	VC	471	32.98
2201	77.31	C	M	76.15	225		C	VC	51	23.08
2202	77.3	S	M							
2203	77.02	C	M	75.68	225		C	VC	-5	6.45
2204	77.96	C	M	76.97	225		C	VC	23	24.15
2205	77.03	C	M	75.88	225		C	VC	78	12.52
2206	76.94	C	M	75.69	375		C	VC	168	57.12
2207		C	L	76.29	225		C	VC	302	21.13
2208	77.45	C	M	76.2	300		C	VC	152	54.75
2209	77.78	C	M	75.98	375		C	VC	196	54.85
2210	78.09	C	M	76.34	300		C	VC	80	27.15
2211		S	G		225		C	VC		20.34
2212		S	G		225		C	VC		24.38
2213		S	G		225		C	VC		6.95
2214		S	M		225		C	VC		6.68
2215	77.43	S	M	75.28	600		C	VC		51.37
2216		S	G		150		C	VC		1.86
2301	78.42	C	M	76.8	300		C	VC	81	35.6
2302	79.05	C	M	77.09	300		C	VC	235	63.58
2401	82.07	C	M	79.66	300		C	VC	47	121.28
2402		C	Q	79.94	300		C	VC	94	24.52
3101	78.36	C	M	76.93	225		C	VC	105	28.39
3102	78.5	C	M	76.64	300		C	VC	29	33.19
3103	78.31	C	M	76.96	225		C	VC	91	27.2
3104	78.69	C	M	76.9	300		C	VC	32	50.6
3201	77.03	C	M	75.32	450		C	VC	602	54.18
3202		S	M							78.23
3203		S	M		225		C	VC		205.99
3301	78.88	C	M							
3302	79.08	C	M	77.44	225		C	VC	78	134.55
3303	80.17	C	M		225		C	VC		57.26
3401	80.26	S	M							
3402	79.98	C	M	77.28	300		C	VC	306	51.98
3403		F	M		300			VC		34.4
3404		S	M		300			VC		39.33
3405		C	M		300			VC		7.28
3406		S	M		300			VC		2.44
3407		C	M		300		C	VC		43.93
4001		C	M							
4002		F	M		150		C	VC		22.59
4003		F	M		150		C	VC		20.56
4004	83.99	S	M	82.16	150		C	VC	159	20.65
4101		C	M							
4102	81.98	C	M	79.83	225		C	VC	18	21.93
4103	81.15	C	M	78.56	300		C	VC	47	76.33
4104	80.32	C	M	76.32	375		C	VC	91	32.9
4105		F	M		150		C	VC		9.34
4201	79.49	C	M	76.4	300		C	VC	719	35.94
4202	79.51	C	M	78.04	150		C	VC		21.72
4203	79.25	C	M	77.07	300		C	VC		5.49
4204	79.02	C	M	76.53	300		C	VC		16.82
4205		C	J		300		C	VC		29.63
4206		C	M		300		C	VC		44.08
4207	80.12	S	M	78.24	375		C		111	40.99
4208	79.92	F	M	77.91	150		C	VC		22.68
4209	79.74	S	M	77.87	150		C	VC		9.01
4301	79.62	C	M		225		C	VC		42.99
4302		S	M		225		C	VC		36.02
4303		S	M		225		C	VC		31.1
4304		C	M		225		C	VC		52.35
4401	80.54	S	M	79.19	225		C	VC	121	57.91
4402	81.08	S	M	79.8	225		C	VC	108	63.73
4403	80.6	C	M	78.8	225		C	VC	134	142.17
4404	81.15	C	M	79.58	225		C	VC	83	63.29
4405		C	G		225			VC		31.79
5104	84.27	S	M	81.97	225		C	VC	72	9.42
5305		S	M		300		C	VC		22.38

WASTE WATER SYMBOLOGY

- MANHOLE
- FOUL
- SURFACE
- COMBINED
- DUAL
- SIDE ENTRY MANHOLE
- PRIVATE SEWER
- ABANDONED SEWER
- SITE TERMINATION
- T-JUNCTION (SADDLE)
- AIRVALVE
- LAMP HOLE
- CASCADE
- OIL INTERCEPTOR
- CONTROL KIOSK
- PENSTOCK
- CONTROL VALVE
- RODDING EYE
- GULLEY
- SOAKAWAY
- HATCHBOX
- TUMBLING BAY
- HEADWALL
- UNSPECIFIED
- HYDROBRAKE
- VALVE
- INLET
- WASHOUT
- GHOST NODE (inc. GN - Rising Main & GN - Dual Function)
- EXPEDIENCY NODE (CHANGE OF CHARACTERISTIC)
- CATCHPIT
- SIDE ENTRY CATCHPIT
- CHAMBER
- SIDE ENTRY CHAMBER
- DROPSHAFT
- SIDE ENTRY DROPSHAFT
- SHEET EDGE
- VENT COLUMN
- SEWER OVERFLOW
- DISCHARGE POINT (OUTFALL)
- TANK
- WASTE WATER TREATMENT WORKS
- PUMPING STATION
- EJECTOR STATION
- SLUDGE PUMPING STATION

Note - ALL flow direction arrows are BLUE - colour not significant

NODE TABLE ABBREVIATIONS

MANHOLE FUNCTION

F Foul	T Transition
S Surface	O Overflow
C Combined	U Unspecified

MANHOLE / NODE TYPE

M Manhole	Z Ghost in Rising Main
J Junction	C Cascade
L Lamphole	Y Gulley
H Hatchbox	E Ejector
R Rodding Eye	O Oil Injector
F Outfall	I Inlet
V Combined Sewer Overflow	B Hydrobrake
	T Vent Column
P Pumping Station	X Valve
S Soakaway	U Unspecified
D Dual Function Manhole	Q Expediency Node
	G Ghost (to allow pipe bends)
W Treatment Works	

SEWER SHAPE

C Circular	T Trapezoidal
E Egg	A Arch
O Oval	B Barrel
F Flat Top	H Horseshoe
R Rectangular	U Unspecified
S Square	

SEWER MATERIAL

AC	Asbestos Cement
BR	Brick
CI	Cast Iron
SI	Spun (Grey) Iron
CO	Concrete
CS	Concrete Segments (Bolted)
CS	Concrete Segments (Unbolted)
CC	Concrete Box Culvert
DI	Ductile Iron
GR	Glass Reinforced Concrete
GR	Glass Reinforced Plastic
PS	Plastic / Steel Composite
PV	Polyvinyl Chloride
PE	Polythene
RP	Reinforced Plastic Matrix
ST	Steel
VC	Vitrified Clay (All Clayware)
PP	Polypropylene
PF	Pitch Fibre
MA	Masonry - In Regular Courses
MA	Masonry - Randomly Coursed
U	Unspecified

OS Sheet No: SD7442SW
Scale 1:1250 Date: 22-Aug-2011
145 Nodes
Sheet 1 of 1

United Utilities
SEWER RECORDS

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APPENDIX H:SURFACE WATER RUN-OFF CALCULATIONS

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ICP SUDS Mean Annual Flood

Input

Return Period (years)	1	Soil	0.304
Area (ha)	9.200	Urban	0.000
SAAR (mm)	1222	Region Number	Region 10

Results l/s

QBAR Rural	33.1
QBAR Urban	33.1
Q1 year	28.8
Q1 year	28.8
Q30 years	56.1
Q100 years	68.9

BETTS ASSOCIATES
CIVIL AND STRUCTURAL ENGINEERS

JOB NO: SEA/14 MADE BY: RSN
DATE: 02/05/2012 CHECKED BY:
SHEET NO: 1 REV: A

JOB TITLE: MADDOW VIEW, CLITHEROE

TOTAL DEVELOPMENT AREA = 8.328 ha (T)
EXISTING GREENFIELD AREA = 8.328 ha (G)
PROPOSED IMPERMEABLE AREA = 2.498 ha (P)

HYDROLOGICAL DATA.
SAAR = 1222mm SPR = 30.35% (0.3035=C)
D_{100} = 77.8mm $D_{100+30\%CC}$ = 101.1mm
i_1 = 10.2mm/hr i_{100} = 33.0mm/hr $i_{100\,CC}$ = 42.9mm/hr

EXISTING (PRE-DEVELOPMENT) RUN-OFF RATES

$Q_{G1} = A_G \times i_1 \times C / 0.36 = (8.328 \times 10.2 \times 0.3035)/0.36 =$ 71.61 l/s

$Q_{G100} = A_G \times i_{100} \times C / 0.36 = (8.328 \times 10.2 \times 0.3035)/0.36 =$ 231.7 l/s

PROPOSED (POST-DEVELOPMENT) RUN-OFF RATES (UNRESTRICTED)

$Q_{P1} = A_P \times i_1 / 0.36 = (2.498 \times 10.2)/0.36 =$ 70.8 l/s

$Q_{P100} = A_P \times i_{100+CC} / 0.36 = (2.498 \times 42.9)/0.36 =$ 297.7 l/s

EXISTING (PRE-DEVELOPMENT) RUN-OFF VOLUMES.

$V_{G100} = A_G \times D_{100} \times C = 8.328 \times 77.8 \times 0.3035 =$ 196.6 m³

PROPOSED (POST-DEVELOPMENT) RUN-OFF VOLUMES (UNRESTRICTED).

$V_{P100} = A_P \times D_{100+CC} = 2.498 \times 101.1 =$ 252.5m³

TEL: FAX:
EMAIL: enquiries@betts-associates.co.uk

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APPENDIX I: STORMWATER STORAGE ESTIMATES

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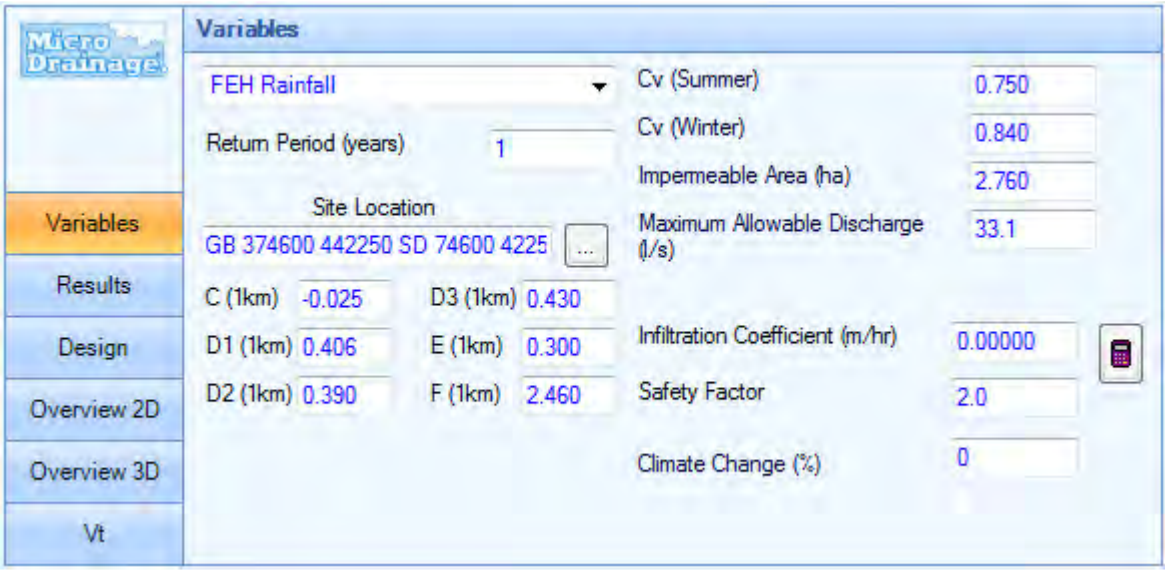
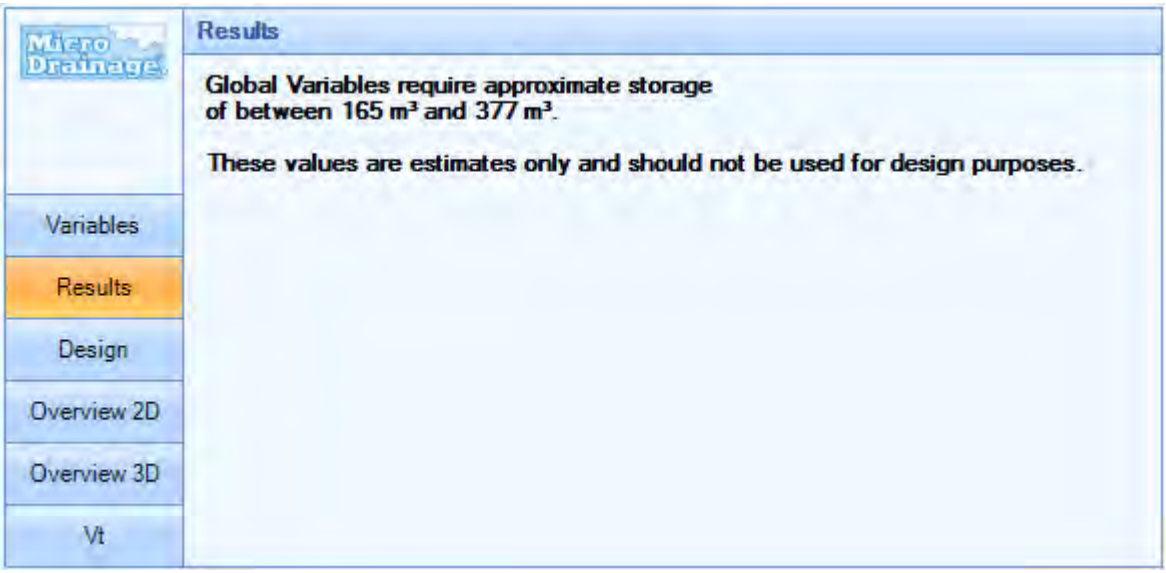
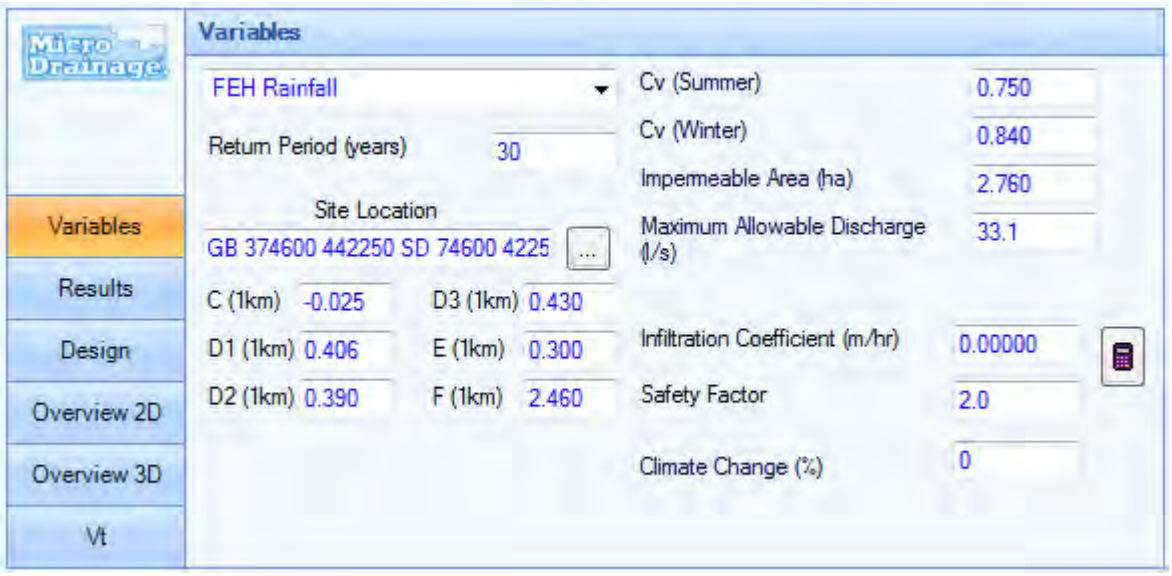
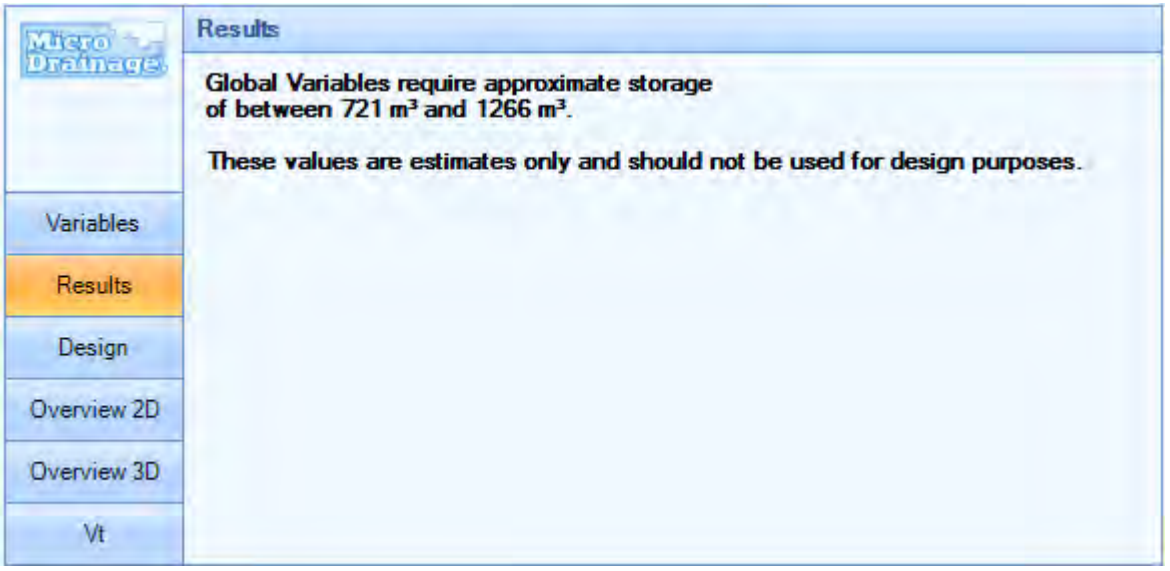
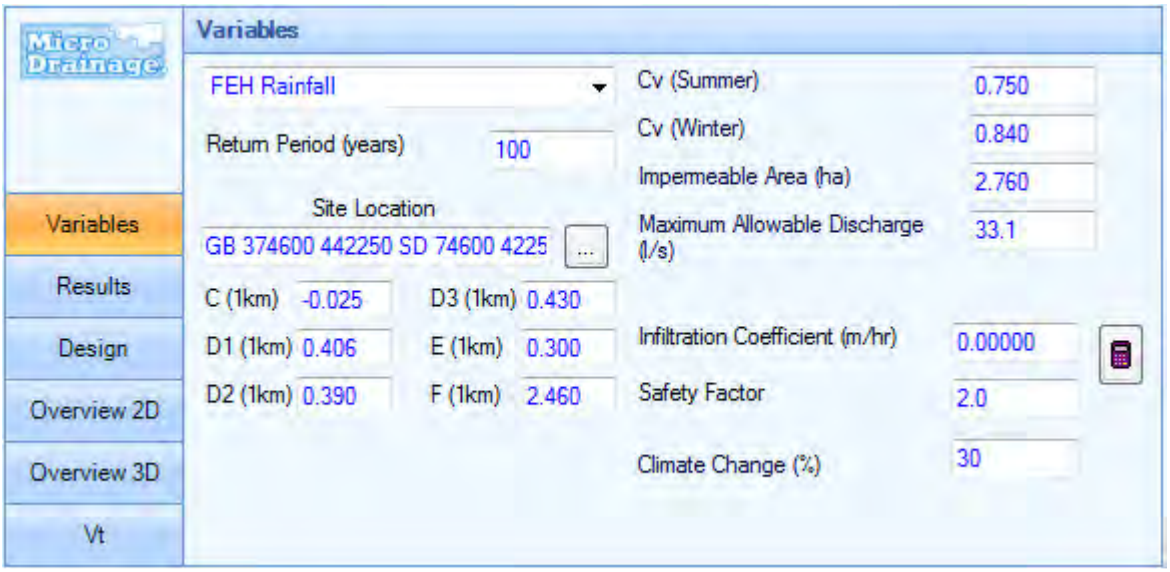
STORMWATER STORAGE ESTIMATES

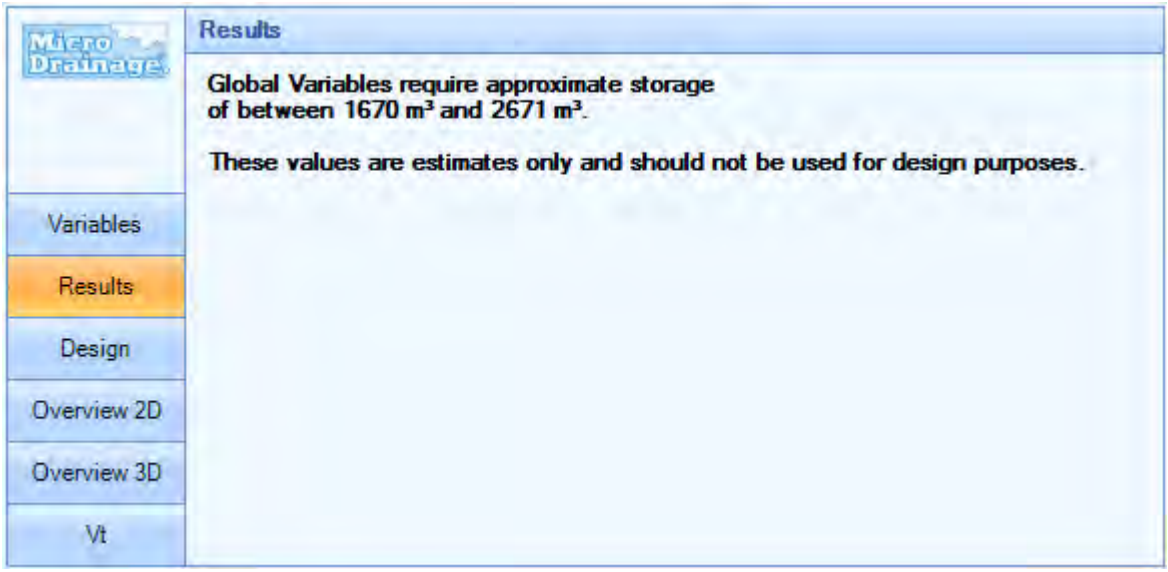





Micro Drainage
Variables
Results
Design
Overview 2D
Overview 3D
Vt
Variables
FEH Rainfall
Return Period (years) 30
Site Location
GB 374600 442250 SD 74600 4225
...
C (1km) -0.025
D1 (1km) 0.406
D2 (1km) 0.390
D3 (1km) 0.430
E (1km) 0.300
F (1km) 2.460
Cv (Summer) 0.750
Cv (Winter) 0.840
Impermeable Area (ha) 2.760
Maximum Allowable Discharge (l/s) 33.1
Infiltration Coefficient (m/hr) 0.00000
Safety Factor 2.0
Climate Change (%) 0


Micro Drainage
Variables
Results
Design
Overview 2D
Overview 3D
Vt
Results
Global Variables require approximate storage
of between 721 m³ and 1266 m³.
These values are estimates only and should not be used for design purposes.


Micro Drainage
Variables
Variables
Results
Design
Overview 2D
Overview 3D
Vt
FEH Rainfall
Return Period (years) 100
Site Location
GB 374600 442250 SD 74600 4225
...
C (1km) -0.025
D3 (1km) 0.430
D1 (1km) 0.406
E (1km) 0.300
D2 (1km) 0.390
F (1km) 2.460
Cv (Summer) 0.750
Cv (Winter) 0.840
Impermeable Area (ha) 2.760
Maximum Allowable Discharge (l/s) 33.1
Infiltration Coefficient (m/hr) 0.00000
Safety Factor 2.0
Climate Change (%) 30


Micro Drainage
Results
Variables
Results
Design
Overview 2D
Overview 3D
Vt
Global Variables require approximate storage of between 1670 m³ and 2671 m³.
These values are estimates only and should not be used for design purposes.

APPENDIX J: PFRA/SFRA INFORMATION

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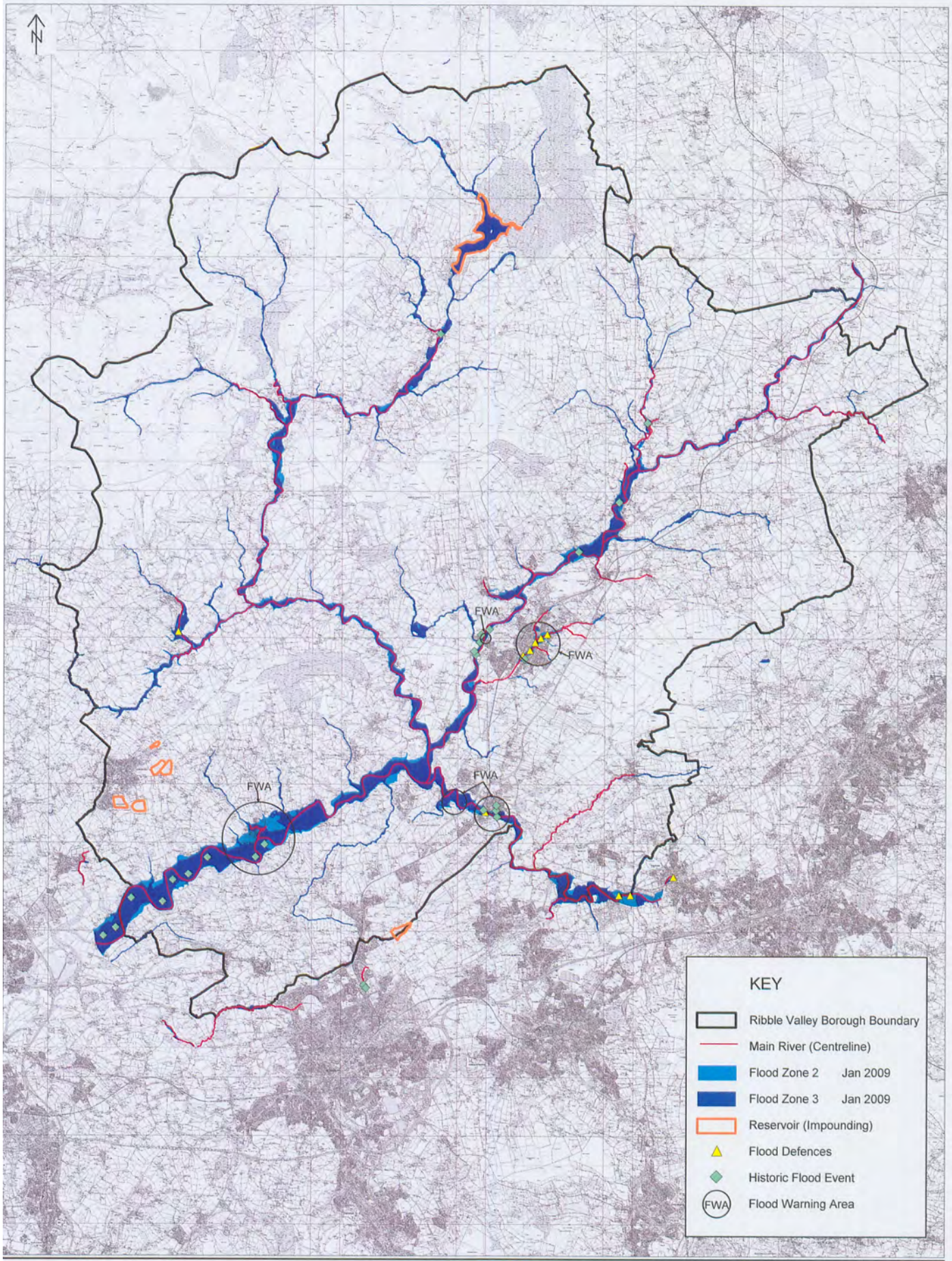


MAP 1 RIBBLE VALLEY STRATEGIC FLOOD RISK ASSESSMENT

Scale: 1:115000

Future direction for flood risk management

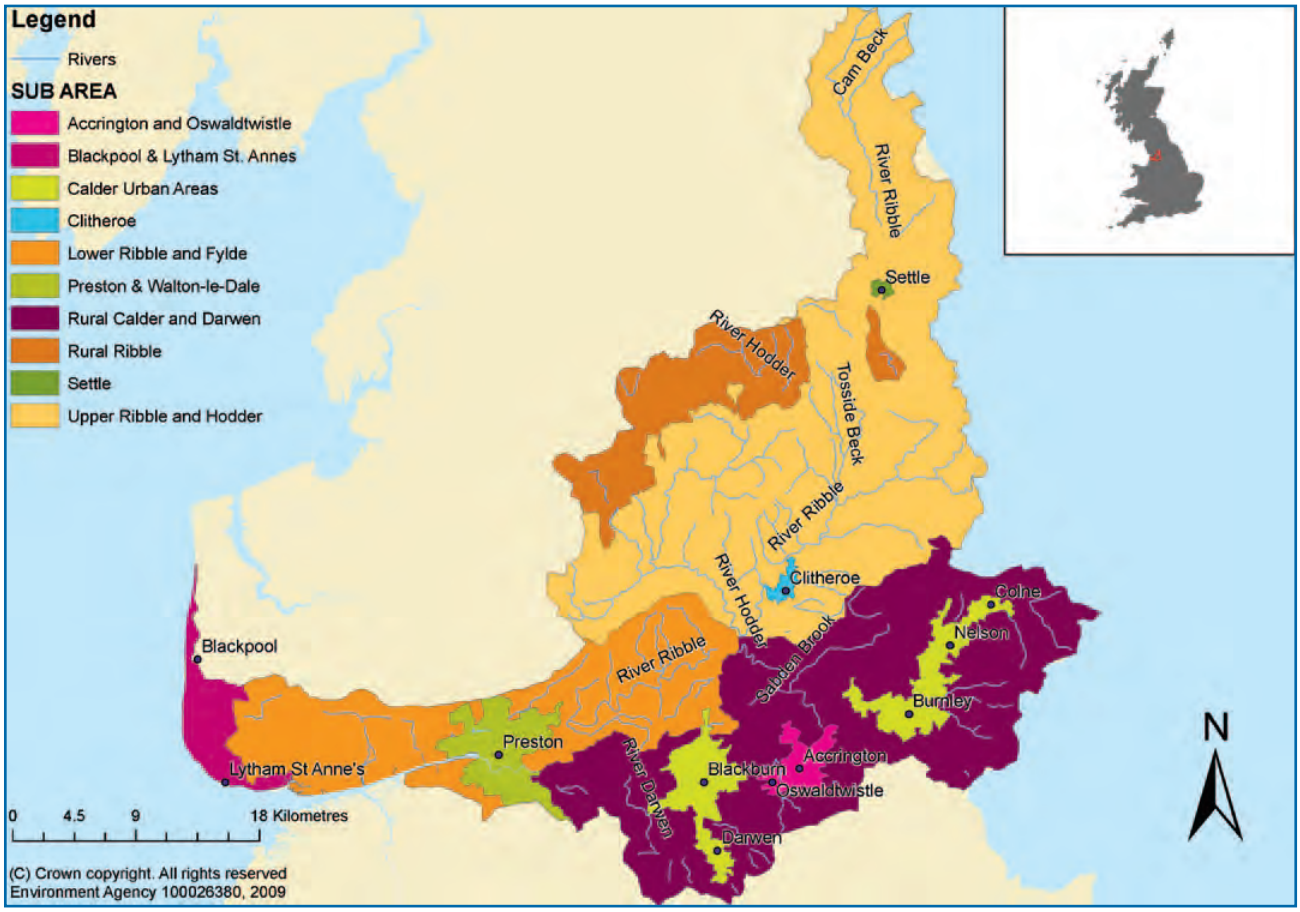
Approaches in each sub-area

We have divided the Ribble CFMP area into ten distinct sub-areas that have similar physical characteristics, sources of flooding, and levels of risk. These sub areas will allow us and key stakeholders to promote flood risk management approaches, policies and actions that are most appropriate in that area to deliver the various Government and regional strategies, in particular "Making Space for Water". In the face of increasing risk, it often is not sustainable to keep building and raising defences. This is why we have to look catchment-wide at how we direct effort and resources to ensure sustainable solutions. We have assessed what will be the most sustainable approach to managing flood risk in each sub area. This is presented in the following sections and they outline:

- The key issues in that area.
- The vision and preferred policy.
- The proposed actions to implement the policy.

This document does set out our policies for managing flood risk, recognising the constraints that do exist. Our future direction for managing flood risk is expressed by applying one of our six standard policy options to that sub area. To select the most appropriate policy, the plan has considered how social, economic and environmental objectives are affected by flood risk management activities under each policy option. The six policy options are explained on page 11.

Map 3 Sub-areas



Clitheroe

Our key partners are:

Ribble Valley Borough Council

United Utilities

Lancashire County Council

The issues in this sub-area

The town of Clitheroe is at risk of flooding from Mearley Brook, stretches of which are culverted (ie, built over to form an underground river) through the town. The under-capacity or blockage of these culverted stretches present the most significant flood risk to the town. In addition, the Low Moor area is at risk of flooding from the River Ribble. There are 260 properties in Clitheroe at risk of flooding in a 1% flood event as well as three schools and one health care facility, due to climate change it is expected to rise to 490 by the year 2100. There are some problems related to sewer and surface water flooding although this is not as severe as in other parts of the catchment. Within Clitheroe, there are 37 properties at risk of flooding in a higher frequency 10% flood event, which requires more urgent action. Residents in Clitheroe and Low Moor are eligible to receive a flood warning service due to the high flood risk.

The vision and preferred policy

Policy option 5: Areas of moderate to high flood risk where we can generally take further action to reduce flood risk.

Flood risk within Clitheroe is high and will rise significantly in the future if action is not taken. The culverted stretches of Mearley Brook need to be addressed to ensure that they are of a sufficient capacity, and the flood risk associated with the open stretches of Mearley Brook and the River Ribble requires further investigation. In addition, aspects such as sewer flooding and highways drainage flooding need to be considered, and we need to work with our partners to more fully understand and manage these aspects.

The key messages

- Flood risk is high and is forecast to increase in the future due to the effects of climate change.
- Clitheroe is at risk of flooding from culverted and open watercourses in the town.
- We need to work with our partners to investigate all sources of flood risk within Clitheroe, and use the planning system to discourage floodplain development.

Proposed actions to implement the preferred policy

The essential actions to achieve our policy aim are listed below:

- Investigate flood risk within Clitheroe, identifying those areas at most risk and propose measures that are economically and environmentally viable.
- Promote the application of rigorous planning control for any new development in and around Clitheroe using the principles in PPS25 and encourage the implementation of SUDS.
- Produce a Strategic Flood Risk Assessment (SFRA) for Clitheroe to help minimise flood risk to future development in the town from all sources of flooding.
- Investigate the causes of surface and sewer flooding in Clitheroe and carry out remedial actions with our partners.

↑ Mearley Brook at Clitheroe

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