RoC CONSULTING

Masterplan Drainage Strategy

Walshaw Garden Neighbourhood, Bury

for

HIMOR, Redrow Homes and
VHW Land Partnership (Walshaw) Limited

20/10/2020

COMPLEX CHALLENGES ...
MADE SIMPLE

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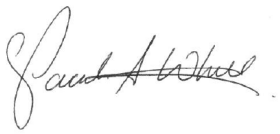
Operations Director	PAUL WHITE		**17/01/20**
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COMPLEX CHALLENGES ...
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1.0 Introduction

1.1 Purpose of This Report

This masterplan drainage strategy report has been developed to support the allocation of the site through the GMSF associated with application for the development of a circa 64-hectare comprising mainly greenfield site referred to as the Walshaw Garden Neighbourhood for the provision of up to 1,250 residential dwellings and a one form entry primary school development; associated landscaping, roads and related works on land northwest of Bury town centre, east of Walshaw.

Specifically, this drainage strategy report relates to the outline masterplan drainage strategy associated with the proposed residential developments and single form entry school to be brought forward independently by the separate four landownerships comprising HIMOR, Redrow Homes, VHW Land Partnership (Walshaw) Limited and Bury Council.

It presents the methodology and calculations associated with the latest current outline masterplan drainage proposals with potential future constraints identified during the development of the drainage strategy.

1.2 Proposed Development

The current proposals for the Walshaw Garden Neighbourhood Development Framework November 2019 prepared by Barton Wilmore for the development of the site includes for up to 1,250 homes; a one form entry primary school (use class D1), associated landscaping, roads and related works.

A Site Location and Land Ownership Plan is contained within Appendix A and the current Concept Masterplan developed by Barton Wilmore is contained in Appendix B.

1.3 RoC Flood Risk Assessments

RoC Consulting (RoC) have developed the current Flood Risk Assessments for the three sites under the ownership HIMOR, Redrow Homes and VHW Land Partnership (Walshaw) Limited, which incorporates the Bury Council site:

- 4072 / HIMOR FRA
- 4072 / Redrow Homes FRA
- 4072 / VHW & BC FRA

2.0 Policy & Guidance

2.1 Bury Unitary Development Plan

The Bury Unitary Development Plan (UDP) is a guide for the future development or protection of land in the Borough and the policies and proposals currently form the basis of the Council's decision on planning applications.

The current Bury UDP was adopted by the Council on the 29th August 1997. The Council is now working to replace the adopted UDP with a new document called the Bury Local Plan. Until the new Local Plan is produced the UDP will continue to be used to make planning decisions.

In relation to drainage and flood risk, the following policies are relevant from the UDP Part 2 – Chapter 6: Environment and are consistent with the current National Planning Policy Framework and Guidelines (NPPF & NPPG).

EN5 - FLOOD PROTECTION AND DEFENCE
The Council will seek to control development in a manner consistent with flood protection and the maintenance of flood defence systems.

EN5/1 - NEW DEVELOPMENT AND FLOOD RISK
The Council will not permit new development, including the raising of land and the intensification of development, where such development would be at risk from flooding, would be likely to increase the risk of flooding elsewhere, or would adversely affect river flood defences. When assessing proposals against this policy, the following criteria will apply:

- the impact on the floodplain
- the increase in surface water run-off as a result of the proposal
- the impact on fluvial flood defences
- the incorporation of mitigating works

EN5	FLOOD PROTECTION AND DEFENCE	✓	7, 17 (Bullet 6), 100	Policy EN5 seeks to guide development away from areas that may be at risk from flooding and to restrict development that would itself increase the risk of flooding. This is in conformity with the NPPF which states that inappropriate development in areas at risk of flooding should be avoided by directing development away from areas at highest risk.
	EN5/1 – New Development and Flood Risk	✓	7, 17 (Bullet 6), 100	Policy EN5/1 seeks to ensure that new development or the intensification of existing development is not at risk from flooding and does not increase the risk of flooding elsewhere. This is in conformity with the NPPF which states that inappropriate development in areas at risk of flooding should be avoided by directing development away from areas at highest risk.

EN7 - POLLUTION CONTROL
The Council will seek to control environmental nuisance and minimise pollution levels associated with development by limiting the environmental impact of pollution, wherever possible, in conformity with current legislation and prescribed standards.

EN7	POLLUTION CONTROL		7, 17, 109, 110, 120, 121, 122, 124	Policy EN7 states that the Council will seek to control environmental nuisance and minimise pollution levels associated with development by limiting the environmental impact of pollution. This is considered to be consistent with the NPPF in that pollution control is one of the integral aspects of securing sustainable development and is one of the core planning principles. It is also consistent with the approach to controlling pollution as set out in section 11 of the NPPF.

EN7/3 - WATER POLLUTION
The Council will not permit development which would have an unacceptable adverse effect in terms of pollution upon the water quality of the Borough's water courses and other water features.

EN7/4 - GROUNDWATER PROTECTION
The Council will not permit development proposals which would have an unacceptable adverse effect on groundwater resources, particularly in terms of their quality and/or supply.

	EN7/3 – Water Pollution	✓	7, 17, 109, 110, 120, 121, 122, 124	Policy EN7/3 states that the Council will not permit development which would have an unacceptable adverse effect in terms of pollution upon the water quality of the Borough's water courses and other water features. This is considered to be consistent with the NPPF in that pollution control is one of the integral aspects of securing sustainable development and is one of the core planning principles. It is also consistent with the approach to controlling pollution as set out in section 11 of the NPPF.
	EN7/4 – Groundwater Protection	✓	7, 17, 109, 110, 120, 121, 122, 124	Policy EN7/4 states that the Council will not permit development proposals which would have an unacceptable adverse effect on groundwater resources, particularly in terms of their quality and/or supply. This is considered to be consistent with the NPPF in that pollution control is one of the integral aspects of securing sustainable development and is one of the core planning principles. It is also consistent with the approach to controlling pollution as set out in section 11 of the NPPF.

2.2 C753 SUDS Manual

This document provides best practice guidance on the planning, design, construction, operation and maintenance of sustainable drainage systems (SUDS). This document provides detail on all the typical sustainable drainage systems and details on how they can be interconnected to not only provide the required drainage performance but also act as pollution control whilst enhancing the site wide masterplan proposals.

SUDS should not be thought of as an individual component, but as an interconnected system designed to manage, treat and make best use of surface water, from where it falls as rain to the point at which it is discharged into the receiving environment beyond the boundaries of the site.

A central design concept for SUDS is the SUDS Management Train. This describes the use of a sequence of components that collectively provides the necessary processes to control the frequency of run-off, the flow rates and the volumes of run-off, and to reduce concentrations of contaminants to acceptable levels. There are six specific functions provided by SUDS components. They are not independent, and one component may provide two or more functions.

2.3 Non-Statutory Technical Standards for SUDS

This document sets out the non-statutory technical standards for sustainable drainage systems. They should be used in conjunction with the National Planning Policy Framework and Planning Practice Guidance.

The technical standards prescribe requirements for both Peak Flow and Volume Control with an emphasis on ensuring that these do not exceed the pre-development case and, where practicable, should not exceed greenfield rates and volumes for the 1 in 1 year and 1 in 100 year rainfall events.

Previous undeveloped site peak flow rates and run-off volumes must never exceed existing greenfield figures.

A practice guidance document was produced by the LASOO advisory group in support of the Non-Statutory technical standards. In August 2019, LASOO was replaced by the Association of SUDS Authorities (ASA), the ‘standards’ currently remain.

3.0 Site Context

The development site is located to the north and south of Walshaw Road in the Walshaw area of Bury, approximately 2.5km to the northwest of the town centre.

The masterplan development site is centred around NGR: SD 78058 11680 with an approximate nearest postcode of BL8 3AE. The total masterplan red line site application boundary is 64 hectares including 2.90 hectares within the site red line application boundary for the Bury Council land. The site is roughly split as Residential and School for 37.5 hectares with 26.5 hectares for green infrastructure.

A Barton Willmore Site Location and Land Ownership Plan is contained within Appendix A.

As noted above, the masterplan development site is split between four landownerships and three independent Flood Risk Assessments have been produced for each part of the site for each landowner, based on the Barton Willmore Concept Masterplan contained within Appendix B.

The proposed development comprises the construction of circa 1,250 residential units spread across an approximate total development area with an assumed density of approximately 34.6 dwellings per hectare (dph).

For the purposes of this strategy and based upon the areas provided by Barton Willmore, it has been assumed that 60% of the net development area will be impermeable (roof, paved areas, roads and footpaths etc) including a 10% allowance for urban creep providing the positively drained area. The proposed use of SUDS techniques is to be further developed at detailed design stage and to meet any reserved planning matters that will allow for flexibility in the percentage.

For a detailed description of each part of the site refer to the individual Flood Risk Assessments.

In general terms, the site is bounded to the north by Scobell Street. Bisected west east by Walshaw Road roughly through the centre of the site. Dow Lane and greenfield to the south. Mainly residential with Church Street, High Street and Lowercroft Road to the west.

The majority of the site is currently undeveloped greenfield land in the form of fields separated by hedgerows. The only areas of hard standing are relatively small (possibly temporary overspill car parking) associated with the Stables Country Club.

A review of the existing site levels indicates that for the northern development site area from Scobell Street to the north; to a high point adjacent to Christ Church, Walshaw; falls south and north respectively towards Walshaw Brook. The southern development area from the high point at Christ Church, Walshaw; falls south easterly towards Elton Brook. Refer to RoC drawings

4072/SK104, 105 and 106 located in Appendix C for plans indicating existing site contours and overland flow routes.

There are three notable watercourses either within or in close proximity to the site:-

1. To the north of Scobell Street, in close proximity to the northern boundary of the site an unnamed watercourse is present which flows through the existing residential area from west to east before becoming culverted approximately 50m to the west of Camberley Close. United Utilities records identify the culvert turning and flowing in a north easterly direction. There is no evidence to suggest that it enters the proposed development site.

2. Walshaw Brook is an ordinary watercourse which runs through the northern part of the site to the southern boundaries of the HIMOR, Redrow Homes land and the northern boundary of the VHW Land Partnership (Walshaw) Limited land, flowing in a south easterly direction. There are numerous tributaries that drain at various locations along its length. Also, there are ponds/lakes to the north of the Brook and to the south of the Redrow Homes site which have connectivity.

3. Elton Brook is also an ordinary watercourse present just outside the VHW Land Partnership (Walshaw) Limited's southern development site boundary. This generally flows in an easterly direction with a number of tributaries present within the site connecting at various points. One of the main tributaries commences within the site and crosses a number of the development parcels. Outside the south east boundary, north of Elton Vale sports Club, are three large water features which are referred to as Elton the Brook Reservoirs.

United Utilities are the local water company, and their sewer record maps show that the highways surrounding the development site are well served by an existing network of sewers. A combined public sewer doglegs across the VHW Land Partnership (Walshaw) Limited from Sudren Street in a south easterly direction, to the east of Dow Lane. These are located in Appendix D

There are no records of private sewers within the development site boundary.

For details on the masterplan development sites geology, hydrogeology, ground water protection zones, historical flood records, flood mapping etc refer to the RoC site specific Flood Risk Assessments.

4.0 Foul Water Drainage

4.1 Foul Water Drainage Strategy

The general principle of the foul drainage strategy is to provide new separate foul drainage systems with connections to the exiting public sewer network surrounding the site at points to suit the individual development site proposals.

Given the varying level of the development site and requirement for three ownership sites to be independently drained, it is envisaged that one or more pumping stations may be required which would be offered to United Utilities for adoption.

Preliminary calculations have been undertaken based on the Sewers for Adoption allowance of 4,000 litres per dwelling per day and based on the current predicted level of development proposed of 1,250 properties. The estimated design flow for the masterplan development site would be in the order of 61.6 l/s, including an allowance of 3.7l/s for the one form entry primary school. However, this will be subject to review as the scheme is developed and therefore the proposed foul water system strategy has been developed with some flexibility to allow for the phased nature of the scheme and the potential for the masterplan to evolve over time.

The table below summarises the split of the properties based on the masterplan development site net developable area of 36.12ha, based on 34.6 dwellings/ha and the estimated total design foul flow rate.

Land Parcel	Area (ha)	Property No.	Flow Rate (l/s)
Masterplan Development Site	36.12	1250	61.6

4.1.1 HIMOR

The masterplan foul water drainage strategy drawing 4072/SK111 can be located in Appendix I, highlighting the indicative location of the gravity foul water drainage, a pumping station and pumping main are based on the current Barton Willmore Concept Masterplan (Refer to Appendix B), together with outfall points to the United Utilities combined sewerage network.

Preliminary calculations have been undertaken based on the Sewers for Adoption allowance of 4,000 litres per dwelling per day and based on the current predicted level of development proposed of 261 properties. The estimated design flow for the HIMOR development site would be in the order of 12.1 l/s. However, this will be subject to review as the scheme is developed and therefore

the proposed foul water system strategy has been developed with some flexibility to allow for the phased nature of the scheme and the potential for the masterplan to evolve over time.

The table below summarises the split of the properties based on the individual development site areas based on 34.6 dwellings/ha, and the estimated design foul flow rates.

Land Parcel	Area (ha)	Property No.	Flow Rate (l/s)
HIMOR	7.54	261	12.1

Based on the existing concept masterplan layout, development plot catchment plan (Refer to appendix E), existing site contour levels (Refer to Appendix C), the location and levels of the combined public sewerage network from the sewer record maps (Refer to Appendix D), it is currently assumed that an adoptable pumping station and pumping main together with associated land for access and compound will be required to serve HIMOR parcels Hi-C and Hi-D.

4.1.2 Redrow Homes

The masterplan foul water drainage strategy drawing 4072/SK110 can be located in Appendix I, highlighting the indicative location of the gravity foul water drainage, two possible pumping stations and pumping mains are based on the current Barton Willmore Concept Masterplan (Refer to Appendix B), together with outfall points to the United Utilities combined sewerage network.

Preliminary calculations have been undertaken based on the Sewers for Adoption allowance of 4,000 litres per dwelling per day and based on the current predicted level of development proposed of 332 properties. The estimated design flow for the Redrow Homes development site would be in the order of 15.4 l/s. However, this will be subject to review as the scheme is developed and therefore the proposed foul water system strategy has been developed with some flexibility to allow for the phased nature of the scheme and the potential for the masterplan to evolve over time.

The table below summarises the split of the properties based on the individual development site areas based on 34.6 dwellings/ha, and the estimated design foul flow rates.

Land Parcel	Area (ha)	Property No.	Flow Rate (l/s)
Redrow Homes	9.6	332	15.4

Based on the existing concept masterplan layout, development plot catchment plan (Refer to appendix E), existing site contour levels (Refer to Appendix C), the location and levels of the combined public sewerage network from the sewer record maps (Refer to Appendix D), it is currently assumed that two adoptable pumping stations and pumping mains together with

associated land for access and compound will be required to serve Redrow Homes parcels Red-A and Red-B.

4.1.3 VHW Land Partnership (Walshaw) Limited

The masterplan foul water drainage strategy drawing 4072/SK112 can be located in Appendix I, highlighting the indicative location of the gravity foul water drainage, a foul water pumping station and pumping main, together with sewer diversion works based on the current Barton Willmore Concept Masterplan (Refer to Appendix B), together with outfall points to the United Utilities combined sewerage network.

Preliminary calculations have been undertaken based on the Sewers for Adoption allowance of 4,000 litres per dwelling per day and based on the current predicted level of development proposed of 657 properties. The estimated design flow for the VHW Land Partnership (Walshaw) Limited development site would be in the order of 34.1 l/s, including and allowance of 3.7l/s for the one form entry primary school. However, this will be subject to review as the scheme is developed and therefore the proposed foul water system strategy has been developed with some flexibility to allow for the phased nature of the scheme and the potential for the masterplan to evolve over time.

The table below summarises the split of the properties based on the individual development site areas based on 34.6 dwellings/ha, and the estimated design foul flow rates.

Land Parcel	Area (ha)	Property No.	Flow Rate (l/s)
VHW-A	18.98	657	30.4
BC-SFES	-	-	3.7

Based on the existing concept masterplan layout, development plot catchment plan (Refer to appendix E), existing site contour levels (Refer to Appendix C), the location and levels of the combined public sewerage network from the sewer record maps (Refer to Appendix D), it is currently assumed that an adoptable pumping station and pumping main together with associated land for access and compound will be required to serve VHW Land Partnership (Walshaw) Limited land parcel VHW-I.

4.1.4 General Comments

Pre-development enquiries have been made for each site to United Utilities, and their responses which are valid for 12 months, can be located in Appendix D. United Utilities have confirmed that foul water from the sites are allowed to discharge unrestricted to the surrounding sewerage network and that connection points would be agreed at detailed application stage.

Notwithstanding the above, the foul water drainage strategy for the masterplan development site will be reviewed in more detail as part of the site wide engineering assessment. As such, during the development of the land parcels, alternative points of discharge to the public sewerage network at alternative locations may be required to suit the development proposals.

Given the phased approach of the development it will be necessary to agree the maintenance of the drainage system in the interim with Bury Council as United Utilities would only adopt sections of the drainage once it is receiving more than 50% development foul flows.

The above will be discussed and agreed as part of the S104 process with Bury Council and United Utilities respectively.

5.0 Surface Water Drainage

5.1 Introduction

The National Planning Policy Framework (NPPF) and accompanying Technical Guidance indicate that surface water run-off should be controlled as near to its source as possible through a sustainable drainage approach to surface water management.

Sustainable drainage (SUDS) techniques including soakaways, infiltration trenches, permeable pavements, grassed swales, ponds and wetlands should be employed wherever possible to help reduce flood risk by attenuating the rate and quantity of surface water run-off from a site. This approach can also offer other benefits in terms of promoting groundwater recharge, water quality improvement and amenity enhancements. Approved document Part H of the Building Regulations (2015) sets out a hierarchy for the disposal of surface water which encourages a SUDS approach.

CIRIA gives guidance and weighting to the various SUDS options that can be utilised within the further development of a masterplan at detailed design stage and to meet any possible planning requirements. Table 1.7 for the CIRIA document C697 ‘The SUDS Manual’ is provided on the opposite page:

SUDS Technique	Description	Water quantity	Water quality	Environmental benefits	Total Score
		General Score	General Score	General Score	
Wetlands	As ponds, but the runoff flows slowly but continuously through aquatic vegetation that attenuates and filters the flow. Shallower than ponds.	75	100	100	**92**
Ponds	Depressions used for storing and treating water. They have a permanent pool and bankside emergent and aquatic vegetation.	63	100	100	**88**
Bioretention areas	Vegetated areas for collecting and treating water before discharge downstream, or to the ground via infiltration.	50	100	100	**83**
Green roofs	Vegetated roofs that reduce runoff volume and rate.	25	88	83	**65**
Pervious pavements	Allow inflow of rainwater into underlying construction/soil.	63	63	50	**58**
Swales Shallow	Vegetated channels that conduct and/or retain water (and can permit infiltration when un-lined). The vegetation filters particulates.	63	56	50	**56**
Infiltration basins	Depressions that store and dispose of water via infiltration.	50	50	50	**50**
Filter strips	Vegetated strips of gently sloping ground designed to drain water evenly from impermeable areas and filter out silt and other particulates.	38	50	50	**46**
Detention basin	Dry depressions designed to store water for a specified retention time.	25	44	50	**40**
Infiltration trenches	As filter drains, but allowing infiltration through trench base and sides.	63	50	0	**38**
Filter drain	Linear drains/trenches filled with a permeable material, often with a perforated pipe in the base of the trench.	50	50	0	**33**
Sand filters	Treatment devices using sand beds as filter media.	38	63	0	**33**
Soakaways	Sub-surface structures that store and dispose of water via infiltration.	25	38	0	**21**
Pipes, subsurface storage	Conduits and their accessories as conveyance measures and/or storage. Water quality can be targeted using sedimentation and filter media.	50	13	0	**21**
Silt removal devices	Manhole and/or proprietary devices to remove silt.	0	13	0	**4**
	Technique unsuitable for High Density Urban Environments				

Based on Table 1.7 of CIRIA C697 'The SUDS Manual'

5.2 Pre-Development & Restricted Surface Water Run-Off

For the purposes of determining the existing rate of surface water run-off, the site is considered to be Greenfield.

The run-off rates from the permeable (greenfield) areas of the site have been calculated using MicroDrainage ICP SUDS which is based on the modified IOH124 using FSR Rainfall and adjusted for sites less than 50ha in accordance with the recommendations of the DEFRA R&D Technical Report SC030219 'Rainfall run-off management for development' (2013).

To determine more accurately the parameters for the SAAR (Statistical Average Annual Rainfall mm) and the Soil Type (SPR) across the masterplan development site, values from the UK SUDS Website www.ukSUDS.com were obtained from interrogating the maps available and taking the average reading for each landownership.

The UK SUDS greenfield run-off tool uses a digitised version of the Winter Rainfall Acceptance Potential (WRAP) map from the Wallingford Procedure which can be considered to provide more accurate SOIL and SPR values.

Individual parcel areas have been measured from the Barton Willmore Concept Masterplan (refer to Appendix B). Individual catchments as supplied by Barton Willmore are indicative only and will be subject to change as specific land parcels and development phasing are defined and further developed.

The total restricted discharge rate calculated within the three reports for the whole development site for the 30 year event is 367.6l/s and for the 100 year plus climate change (40%) event is 446.4l/s using the ICP SUDS method in Microdrainage (Innovyze).

5.2.1 HIMOR

For the current HIMOR catchment area, refer to the RoC Catchment Area drawing 4072/SK105 located in Appendix E.

The RoC Catchment Area drawing 4072/SK105 located in Appendix E relates solely to the masterplan drainage strategy for the current Barton Willmore Concept Masterplan and identifies the greenfield run-off for the proposed parcels and main proposed Link Road. Refer to Appendix F for the MicroDrainage Source Control Surface Water Greenfield Run-off Calculations.

The table below summarises the greenfield run-off rates generated by each proposed land parcel for a range of storm return periods and defines the limiting discharge flow rate requirements for the development for the 30year event and 100year plus 40% allowance for climate change. As a consequence, where flow rates are less than 5.0 l/s (i.e. 1.9*) then this has been taken as a minimum allowable discharge to mitigate against blockage from vegetation and other material.

The table below defines the proposed restricted discharge rates for the development parcels based on a 60% development area including an allowance of 10% for future development. Link Roads have been taken at 100%. The proposed use of SUDS will enable any variations within this strategy to be accommodated. These are subject to agreement with the LLFA.

Land Parcel	Gross Area (ha)	Net Area (ha)	Existing/Proposed Greenfield Runoff (l/s)				Maximum Discharge (L/S) $Q_{100+40\%}$
			Q_1	Q_{bar}	Q_{30}	Q_{100}	
Hi-A	3.65	2.19	16.2	18.7	31.6	38.8	38.8
Hi-B	2.95	1.77	13.2	15.1	25.6	31.4	31.4
Hi-C	0.62	0.38	2.8	3.2	5.4	6.6	6.6
Hi-D	0.32	0.20	1.5	1.6	2.8*	3.4*	5.0
Hi-R	0.44	0.44	3.3	3.7	6.4	7.8	7.8

The total restricted discharge from the masterplan development site area is based on the above and would be 74.0l/s for the 30-year event and 89.6l/s for the 100 year plus climate change (40%) event.

Notwithstanding the above, further engineering assessment is required to agree the drainage strategy for the development parcels in conjunction with the proposed site levels. There may be a requirement for specific land parcels to discharge directly into one of the local water features or into the Link Road drainage network to mitigate against pumping of surface water. Should this occur then the discharge rate identified above would be amended accordingly.

5.2.2 Redrow Homes

For the current Redrow Homes catchment area, refer to the RoC Catchment Area drawing 4072/SK104 located in Appendix E.

The RoC Catchment Area drawing 4072/SK104 located in Appendix E relates solely to the masterplan drainage strategy for the current Barton Willmore Concept Masterplan and identifies the greenfield run-off for the proposed parcels and main proposed Link Road. Refer to Appendix F for the MicroDrainage Source Control Surface Water Greenfield Run-off Calculations.

The table below summarises the greenfield run-off rates generated by each proposed land parcel for a range of storm return periods and defines the limiting discharge flow rate requirements for the development for the 30year event and 100year plus 40% allowance for climate change. As a consequence, where flow rates are less than 5.0 l/s (i.e. 1.9*) then this has been taken as a minimum allowable discharge to mitigate against blockage from vegetation and other material.

The table below defines the proposed restricted discharge rates for the development parcels based on a 60% development area including an allowance of 10% for future development. Link Roads have been taken at 100%. The proposed use of SUDS will enable any variations within this strategy to be accommodated. These are subject to agreement with the LLFA.

Land Parcel	Gross Area (ha)	Net Area (ha)	Existing/Proposed Greenfield Runoff (l/s)				Maximum Discharge (L/S) $Q_{100+40\%}$
			Q_1	Q_{bar}	Q_{30}	Q_{100}	
Red-A	7.48	4.49	32.3	37.1	63.0	77.2	77.2
Red-B	2.00	1.20	8.6	9.9	16.8	21.8	21.8
Red-C	0.12	0.08	0.5	0.6	1.0*	1.3*	5.0
Red-R	0.11	0.11	0.8	0.9	1.5*	1.9*	5.0

The total restricted discharge from the masterplan development site area is based on the above and would be 89.8/s for the 30-year event and 109.0/s for the 100 year plus climate change (40%) event.

Notwithstanding the above, further engineering assessment is required to agree the drainage strategy for the development parcels in conjunction with the proposed site levels. There may be a requirement for specific land parcels to discharge directly into one of the local water features or into the Link Road drainage network to mitigate against pumping of surface water. Should this occur then the discharge rate identified above would be amended accordingly.

5.2.3 VHW Land Partnership (Walshaw) Limited

For the current VHW Land Partnership (Walshaw) Ltd catchment area, refer to the RoC Catchment Area drawing 4072/SK106 located in Appendix E.

The RoC Catchment Area drawing 4072/SK106 located in Appendix E relates solely to the masterplan drainage strategy for the current Barton Willmore Concept Masterplan and identifies

the greenfield run-off for the proposed parcels and main proposed Link Road. Refer to Appendix F for the MicroDrainage Source Control Surface Water Greenfield Run-off Calculations.

The table below summarises the greenfield run-off rates generated by each proposed land parcel for a range of storm return periods and defines the limiting discharge flow rate requirements for the development for the 30year event and 100year plus 40% allowance for climate change. As a consequence, where flow rates are less than 5.0 l/s (i.e. 1.9*) then this has been taken as a minimum allowable discharge to mitigate against blockage from vegetation and other material.

The table below defines the proposed restricted discharge rates for the development parcels based on a 60% development area including an allowance of 10% for future development. Link Roads have been taken at 100%. The proposed use of SUDS will enable any variations within this strategy to be accommodated. These are subject to agreement with the LLFA.

Land Parcel	Gross Area (ha)	Net Area (ha)	Existing/Proposed Greenfield Runoff (l/s)				Maximum Discharge (L/S) $Q_{100+40\%}$
			Q_1	Q_{bar}	Q_{30}	Q_{100}	
VHW-A	1.12	0.67	4.9	5.6	9.5	11.8	11.8
VHW-B	3.96	2.38	17.3	19.9	33.8	41.5	41.5
VHW-C	2.20	1.32	9.66	11.1	18.8	23.0	23.0
VHW-D	0.72	0.43	3.2	3.6	6.1	7.6	7.6
VHW-E	1.80	1.08	7.9	9.1	15.4	18.8	18.8
VHW-F	0.24	0.15	1.1	1.2	2.1*	2.5*	5.0
VHW-G	3.62	2.17	15.8	18.2	30.9	37.9	37.9
VHW-H	2.39	1.62	11.8	13.6	23.0	28.2	28.2
VHW-I	2.63	1.58	11.5	13.3	22.4	27.5	27.5
VHW-R1	0.47	0.47	3.4	3.9	6.7	8.2	8.2
VHW-R2	0.26	0.26	1.9	2.2	3.7*	4.5*	5

VHW-R3	0.63	0.63	4.6	5.3	9.0	11.0	11.0
BC-SFES	2.13	1.28	9.4	10.8	18.2	22.3	22.3

The total restricted discharge from the masterplan development site area is based on the above and would be 203.8l/s for the 30-year event and 247.8/s for the 100 year plus climate change (40%) event.

Notwithstanding the above, further engineering assessment is required to agree the drainage strategy for the development parcels in conjunction with the proposed site levels. There may be a requirement for specific land parcels to discharge directly into one of the local water features or into the Link Road drainage network to mitigate against pumping of surface water. Should this occur then the discharge rate identified above would be amended accordingly.

5.3 Methods of Surface Water Management

The site is currently undeveloped greenfield land and can be considered 100% permeable however, this will change post development through the introduction of proposed buildings, access roads and area of hardstanding.

There are three methods that have been reviewed for the management and discharge of surface water which are detailed below; these may be applied individually or collectively to form a complete strategy. They should be applied in the order of priority as listed.

- Discharge via infiltration
- Discharge to watercourse
- Discharge to public sewerage system

Discharge via Infiltration
Any impermeable areas that can drain to a soakaway or an alternative method of infiltration would significantly improve the sustainability of any surface water systems.

It is understood that to date, no soakaway testing has been carried out on the masterplan development site.

Reference to the online British Geological Survey (BGS) map for the site indicates the following ground model:

Bedrock Geology: Pennine Lower Coal Measures – Mudstone, Siltstone, and Sandstone. Interbedded with Cannel Rock (South Lancashire) – Sandstone. Sedimentary bedrock formed approximately 319 million years ago in the Carboniferous Period

Superficial Deposits: Predominantly Devensian – Diamicton Till, with a small area of Glaciofluvial Deposits, Devensian – Sand and Gravel in the Western area of the site that encompasses the Eastern most pond / lake. Superficial Deposits formed up to 2 million years ago in the Quaternary Period

The Bury Local Flood Risk Management Strategy (2018) suggests that the geology 'consisting predominately of sand and gravels which have high permeability. However, there are areas of clay which have low permeability'.

Soilscape England describes the soils as 'slowly permeable, seasonally wet acid loamy and clayey with impeded drainage.'

Based on the underlying geology it is considered that infiltration could potentially be a suitable method of surface water disposal. Subject to intrusive ground investigation confirming the underlying geology is suitable in principle, soakaway testing should be carried out in accordance with BRE365 to determine whether any infiltration solution can potentially be applied as a feasible method of surface water management.

If favourable infiltration rates are returned from the site investigation, surface water arising from the proposed development will be discharged via one or more infiltration solutions such as soakaways or permeable pavements, the design standard will be no surface flooding for storm events up to and including the 30 year return period in accordance with the SUDS Manual (2015).

The resultant storage volume depends on the infiltration rate and contributing impermeable area for each soakaway/area of permeable paving; this will be determined at detailed design stage when the proposed masterplan has been developed further.

However, it should be noted from the Bury Local Flood Risk Management Strategy referenced to in the Flood Risk Assessments, identify that the land in general is shown to be at varying risk from >=25%<50% and >75% risk of groundwater flooding. As such, it may not be practical to consider infiltration as a practical solution as this could increase the risk of ground waterflooding across the site.

In addition, the groundwater level is unknown and the requirement for soakaways, infiltration structures are to be set at least 1m above the highest recorded winter water level, together with the unknown infiltration rate and risk of groundwater flooding, which makes it highly unlikely that it will be practical to rely on infiltration as a suitable means of surface water control from development run-off.

5.3.1 HIMOR

Discharge to Watercourse
As indicated earlier in this report, there are three ordinary watercourse features in close proximity to the site. These are an un-named watercourse to the north of Scobell Street outside the

masterplan boundary, Walshaw Brook within the northern area of the masterplan site, i.e. to the northern boundary of VHW Land Partnership (Walshaw) Limited and southern boundaries for the HIMOR and Redrow Homes sites and Elton Brook just outside the masterplan southern boundary i.e. south of Walshaw Lane.

Based on the topography of the site and subject to confirmation of proposed site levels, it is anticipated that the west and central parts of the HIMOR site, land Parcels Hi-B, Hi-C and Hi-R will drain to Walshaw Brook, with the topography generally falling south-east from 133m to 123m AOD and south-west 126m to 121m AOD respectively.

All surface water discharge to ordinary watercourses and/or tributaries will need to be restricted to greenfield run-off rates, subject to agreement with the Lead Local flood Authority.

Discharge to Public Sewer
If it is ultimately determined that discharge via infiltration or to either of the ordinary watercourses or tributaries is not feasible, then it will be necessary to look at discharging those parts of the sites into the public surface water sewer network.

Any discharge to a public sewer system would be subject to confirmation of invert levels, capacity and condition. United Utilities and the LLFA would need to be consulted at the appropriate time to discuss and agree discharge rates and suitable points of connection to the system.

The east part of the HIMOR site, Parcel Hi-A, following the current natural levels generally falls in a south east direction from 121m to 118m AOD. However, it may be difficult to obtain a gravity connection to the south and therefore an alternative connection to the existing culverted watercourse on the northern side of Scobell Street could be considered as an alternative. This measures 1.5m diameter and flows in a westerly direction along the frontage of the existing residential properties. From review of the sewer records a connection could be made downstream of MH 2104 which has an invert level of 114.92m AOD.

Discharge to the United Utilities sewerage network would be restricted to greenfield run-off rates or less, depending on the available capacity and may only be agreed once all other options for disposal have been exhausted. Appropriate evidence would need to be provided to demonstrate that infiltration and a connection to any local watercourse are not feasible methods of disposal.

5.3.2 Redrow Homes

Discharge to Watercourse
As indicated earlier in this report, there are three ordinary watercourse features in close proximity to the site. These are an un-named watercourse to the north of Scobell Street outside the masterplan boundary, Walshaw Brook within the northern area of the masterplan site, i.e. to the northern boundary of VHW Land Partnership (Walshaw) Limited and southern boundaries for the HIMOR and Redrow Homes sites and Elton Brook just outside the masterplan southern boundary i.e. south of Walshaw Lane.

Based on the topography of the site and subject to confirmation of proposed site levels it is anticipated that the Redrow Homes site will drain by gravity to Walshaw Brook. The topography of the site generally slopes in a southern direction, with levels ranging from circa 120m AOD in the north to circa 115m AOD in the south, with land parcels Red-A and Red-C draining southwards and parcel Red-B draining south westerly.

All surface water discharge to ordinary watercourses and/or tributaries will need to be restricted to greenfield run-off rates, subject to agreement with the Lead Local flood Authority.

Discharge to Public Sewer
If it is ultimately determined that discharge via infiltration or to either of the ordinary watercourses or tributaries is not feasible, then it will be necessary to look at discharging those parts of the sites into the public surface water sewer network.

The nearest available surface water asset is the culverted watercourse to the north of Scobell Street. Based on the topography of the site it is anticipated that a pumped connection would be required.

Any discharge to a public sewer system would be subject to confirmation of invert levels, capacity and condition. United Utilities and the LLFA would need to be consulted at the appropriate time to discuss and agree discharge rates and suitable points of connection to the system.

Discharge to the United Utilities sewerage network would be restricted to greenfield run-off rates or less, depending on the available capacity and may only be agreed once all other options for disposal have been exhausted. Appropriate evidence would need to be provided to demonstrate that infiltration and a connection to any local watercourse are not feasible methods of disposal.

5.3.3 VHW Land Partnership (Walshaw) Limited

Discharge to Watercourse
As indicated earlier in this report, there are three ordinary watercourse features in close proximity to the site. These are an un-named watercourse to the north of Scobell Street outside the masterplan boundary, Walshaw Brook within the northern area of the masterplan site, i.e. to the northern boundary of VHW Land Partnership (Walshaw) Limited and southern boundaries for the HIMOR and Redrow Homes sites and Elton Brook just outside the masterplan southern boundary i.e. south of Walshaw Lane.

Based on the topography of the site and subject to confirmation of proposed site levels it is anticipated that the northern part of the VHW Land Partnership (Walshaw Limited) site from Parcels VHW-A to VHW-E and VHW-R1 & R2 will drain to Walshaw Brook, with the topography generally falling north-east from 140m to 117m AOD. The southern section of the site from Parcels VHW-F to VHW-I and VHW-R3, including Bury Council Parcel BC-A will drain to Elton Brook via the onsite tributaries, with the topography generally falling north-east from 140m to 110m AOD.

All surface water discharge to ordinary watercourses and/or tributaries will need to be restricted to greenfield run-off rates, subject to agreement with the Lead Local flood Authority.

Discharge to Public Sewer
If it is expected that a connection to the existing watercourse network will be feasible and therefore this method of disposal has not been considered further.

5.4 Surface Water Drainage Strategy

As described above, if discharge via infiltration is not feasible then it will be necessary to restrict discharge from the development parcels and Link Road sections to the corresponding greenfield run-off rate.

Therefore, the method for surface water disposal for the proposed masterplan development sites, is where practical to discharge directly to watercourse in accordance with the hierarchy for surface water disposal as set out in Part H of the Building Regulations and in accordance with the NPPF. Based on the Barton Willmore Concept Masterplan, the development site has been sub-divided into land parcels and Link Road sections, following the requirement for each landownership to be brought forward independently with the drainage run-off calculated on a parcel by parcel basis.

The outline surface water drainage strategy is based on the assumption that each development parcel of land or Link Road section will be restricted to the equivalent greenfield run-off, with attenuation provided to protect the development sites from flooding for up to the critical 100 year event including 40% for climate change, in accordance with the requirements of the' Non-Statutory Sustainable Technical Standards' for peak flow control ensuring that the overall proposed development would not exceed the existing scenario and a betterment would be provided for larger return periods.

As this is an outline drainage strategy no allowance has been made for attenuation within the land parcel drainage systems or the betterment provided by the implementation of SUDS systems.

As such the attenuation volumes that have been calculated for the development land parcels have been based on the restricted greenfield run-off rates and assumed impermeable areas utilising high level quick storage estimate with the upper limits specified. This approach will give a conservative approach.

The general principle of the surface water drainage strategy is to provide new drainage systems serving the proposed impermeable development areas with discharge to the various existing ordinary watercourse features within the development boundary wherever practically possible, or alternatively to off-site surface water sewers or, combined public sewer as a last option. Given the varying level nature of the development site and independent sites, subject to topographical surveys, surveys of the existing watercourses and ditches and the setting of external levels at

detail design stage, one or more pumping stations may be required, these could be offered to United Utilities or the LLFA for adoption.

The development site has been split up along the lines of landownership to allow for independent development, with each landownership area being sub-divided into several notional catchments to suit the Barton Wilmore Concept Masterplan and existing drainage features. The discharge rate from each of these catchments have been restricted to the equivalent 30year and 100year greenfield run-off rates, or a minimum of 5l/s as a practical rate for small catchments. Attenuation volumes were estimated using the Microdrainage Quick Storage Estimate (QSE) tool with a combination of detention basins, swales, geo-cellular tanks and/or oversized pipework suggested to meet these requirements.

It is assumed that as each phased parcel of land is brought forward for development on site, SUDS will be considered and incorporated if practical, such as rain gardens, water butts, permeable paving for drives etc prior to connecting into the overall infrastructure.

For the proposed new Link Roads, it has been suggested where practical and subject to the agreement of the adopting authority(s) that they could be drained by parallel swales, or with Rain Gardens/Bio-remediation where tree-lined, or oversized pipework laid beneath the highway which again would discharge if practical to one of the existing watercourses within the site or alternatively to off-site surface water sewers or, combined public sewer as a last option.

The total restricted discharge rate calculated within the three reports for the whole development site for the 30 year event is 367.6l/s and for the 100 year plus climate change (40%) event is 446.4l/s using the ICP SUDS method in Microdrainage (Innovyze).

The total attenuation volume calculated within the three reports for the 30 year was 9,146m³ and for the 100 year plus climate change (40%) event was 19,063m^3 using the upper limit of the quick Storage Estimate from Source Control in Microdrainage (Innovyze). The upper limit was used to make allowance for the 100year 6Hr volume long term storage volume to be calculated and confirmed at detail design stage.

An existing ordinary watercourse defined as Walshaw Brook is present within the development boundary generally flowing in a southeast direction, including a number of reservoirs/ponds and open and culverted tributaries. Elton Brook also an existing ordinary watercourse which generally flows in an easterly direction with a downstream series of reservoirs and is located outside the site development boundary to the south of Walshaw Lane. However, there is a main open and culverted tributary of Elton Brook within the development site which crosses a number of the development parcels. As a result of the development proposals a number of these are affected and would need to be either culverted, diverted or abandoned.

Existing watercourse and ditches receive development run-off from outside the site development boundary and ultimately need to be maintained. It is proposed that these are further investigated, surveyed and hydraulically modelled to inform their current operational capacity and condition.

Where necessary these will need to be cleaned out and regraded to ensure that base flows and current biodiversity are maintained.

The outline total attenuation volume required for the Masterplan Development Site Area based on the summation of the tables below would be 9,665m³ for the 30 year event and 19,063m³ for the 100 year plus climate change (40%) event, based on the proposed restricted greenfield run-off rates mentioned in Section 5.2.

5.4.1 HIMOR

The masterplan surface water drainage strategy drawing 4072/SK108 highlighting the indicative location of the detention basins, swales, rain garden/bio-remediation and possible on-line attenuation can be located in Appendix H.

The table below summarises the attenuation volumes for each development parcel or Link Road section, against the proposed restricted greenfield run-off rates. The Microdrainage calculations for the proposed attenuation can be located in Appendix G.

Land Parcel	Imp Area (ha)	Proposed Greenfield Runoff Rates & Attenuation Volumes			
		Max. Discharge Q_{30} (l/s)	Max. Discharge $Q_{100+40\%}$ (l/s)	Volume Q_{30} (m^3)	Volume $Q_{100+40\%}$ (m^3)
Hi-A	2.19	31.6	38.8	827	1677
Hi-B	1.77	25.6	31.4	667	1355
Hi-C	0.38	5.4	6.6	144	293
Hi-D	0.20	-	5.0*	-	136
Hi-R	0.44	6.4	7.8	166	337

The outline total attenuation volume required for the Masterplan Development Site Area based on the above table would be 1,940m³ for the 30-year event and 3,798m³ for the 100 year plus climate change (40%) event.

As noted earlier in this document, further engineering assessment is required to agree the drainage strategy for these land parcels at detail design stage as the land parcels are brought forward with developed layouts and external levels and reserved matter are addressed.

5.4.2 Redrow Homes

The masterplan surface water drainage strategy drawing 4072/SK107 highlighting the indicative location of the detention basins, swales, rain garden/bio-remediation and possible on-line attenuation can be located in Appendix H.

The table below summarises the attenuation volumes for each development parcel or Link Road section, against the proposed restricted greenfield run-off rates. The Microdrainage calculations for the proposed attenuation can be located in Appendix G.

Land Parcel	Imp Area (ha)	Proposed Greenfield Runoff Rates & Attenuation Volumes			
		Max. Discharge Q_{30} (l/s)	Max. Discharge $Q_{100+40\%}$ (l/s)	Volume Q_{30} (m^3)	Volume $Q_{100+40\%}$ (m^3)
Red-A	4.49	63.0	77.2	1713	3475
Red-B	1.20	16.8	21.8	458	911
Red-C	0.08	-	5.0*	-	38
Red-R	0.11	-	5.0*	-	60

The outline total attenuation volume required for the Masterplan Development Site Area based on the above table would be 2,269m³ for the 30-year event and 4,484m³ for the 100 year plus climate change (40%) event.

As noted earlier in this document, further engineering assessment is required to agree the drainage strategy for these land parcels at detail design stage as the land parcels are brought forward with developed layouts and external levels and reserved matter are addressed.

5.4.3 VHW Land Partnership (Walshaw) Limited

The masterplan surface water drainage strategy drawing 4072/SK109 highlighting the indicative location of the detention basins, swales, rain garden/bio-remediation and possible on-line attenuation can be located in Appendix H.

The table below summarises the attenuation volumes for each development parcel or Link Road section, against the proposed restricted greenfield run-off rates. The Microdrainage calculations for the proposed attenuation can be located in Appendix G.

Land Parcel	Imp Area (ha)	Proposed Greenfield Runoff Rates & Attenuation Volumes			
		Max. Discharge Q_{30} (l/s)	Max. Discharge $Q_{100+40\%}$ (l/s)	Volume Q_{30} (m^3)	Volume $Q_{100+40\%}$ (m^3)
VHW-A	0.67	9.5	11.8	254	514
VHW-B	2.38	33.8	41.5	903	1833
VHW-C	1.32	18.8	23.0	501	1017
VHW-D	0.43	6.1	7.6	163	330
VHW-E	1.08	15.4	18.8	409	832
VHW-F	0.15	-	5.0*	-	92
VHW-G	2.17	30.9	37.9	823	1670
VHW-H	1.62	23.0	28.2	615	1249
VHW-I	1.58	22.4	27.5	600	1218
VHW-R1	0.47	6.7	8.2	178	362
VHW-R2	0.26	-	5.0*	-	193
WWH-R3	0.63	9.0	11.0	239	485
BC-SFES	1.28	18.2	22.3	486	986

The outline total attenuation volume required for the Masterplan Development Site Area based on the above table would be 5,456m³ for the 30-year event and 10,781m³ for the 100 year plus climate change (40%) event.

As noted earlier in this document, further engineering assessment is required to agree the drainage strategy for these land parcels at detail design stage as the land parcels are brought forward with developed layouts and external levels and reserved matter are addressed.

The existing ordinary watercourse network will be maintained and enhanced where possible through the masterplan development site with sections of watercourse/ditch abandoned, diverted and/or culverted as required where they conflict with the proposed development parcels and/or Link Road sections.

Work to assess the wider watercourse network and its implications on the development parcels, including hydraulic modelling and drainage surveys which will be undertaken as part of the engineering assessment noted above. This will be discussed in further detail with Bury Council as Lead Local Flood Authority.

Subject to further discussions, it is proposed to offer the surface water drainage system for adoption to United Utilities under S104 of the Water Industry Act. This will only be achievable where the drainage system receives development run-off from adjacent land parcels. Where the system is only draining the Link Road, the system will be offered to Bury Council as the highway authority who would also be responsible for the proposed rain garden/bio-remediation, together with the more traditional road gullies and connections.

Given the phased approach of the development, it will be necessary to have discussions with Bury Council and United Utilities as the surface water drainage strategy is developed to discuss and agree what will be acceptable and who will take ownership and maintenance of the various elements of the drainage systems and attenuation facilities.

In addition, due to the phased nature, discussions and agreement will also be required as to who will be responsible for the drainage systems and attenuation facilities in the interim with Bury Council, as United Utilities are likely to only adopt sections of the drainage once it is receiving a minimum 50% of development run-off.

The above will be discussed and agreed as part of the S38/S104 process with Bury Council and United Utilities respectively.

6.0 Summary

This summary relates to the outline masterplan drainage strategy associated with the proposed residential developments and a one form entry primary school to be brought forward independently by the separate four landownerships comprising HIMOR, Redrow Homes, VHW Land Partnership (Walshaw) Limited and Bury Council.

The outline masterplan drainage strategy has been developed to provide an overview for the whole 64ha development site and bring together the general principles developed in the RoC Flood Risk Assessments and Outline Drainage Strategies for outline masterplan planning stage.

Separate foul and surface water drainage networks are proposed within the land parcels and beneath the Link Road which are intended to serve both the primary infrastructure and the adjacent development parcels. Points of connection and flow rates have yet to be agreed and are subject to formal consent and technical approval with the LLFA and United Utilities.

Primary surface water attenuation is proposed in the form of a combination of detention basins, rain garden/bio-remediation, swales, geo-cellular tanks and/or oversized pipework to be developed for each land parcel and Link Road at detail design stage. Supported by the incorporation of suitable SUDS techniques as practical within the development land parcels.

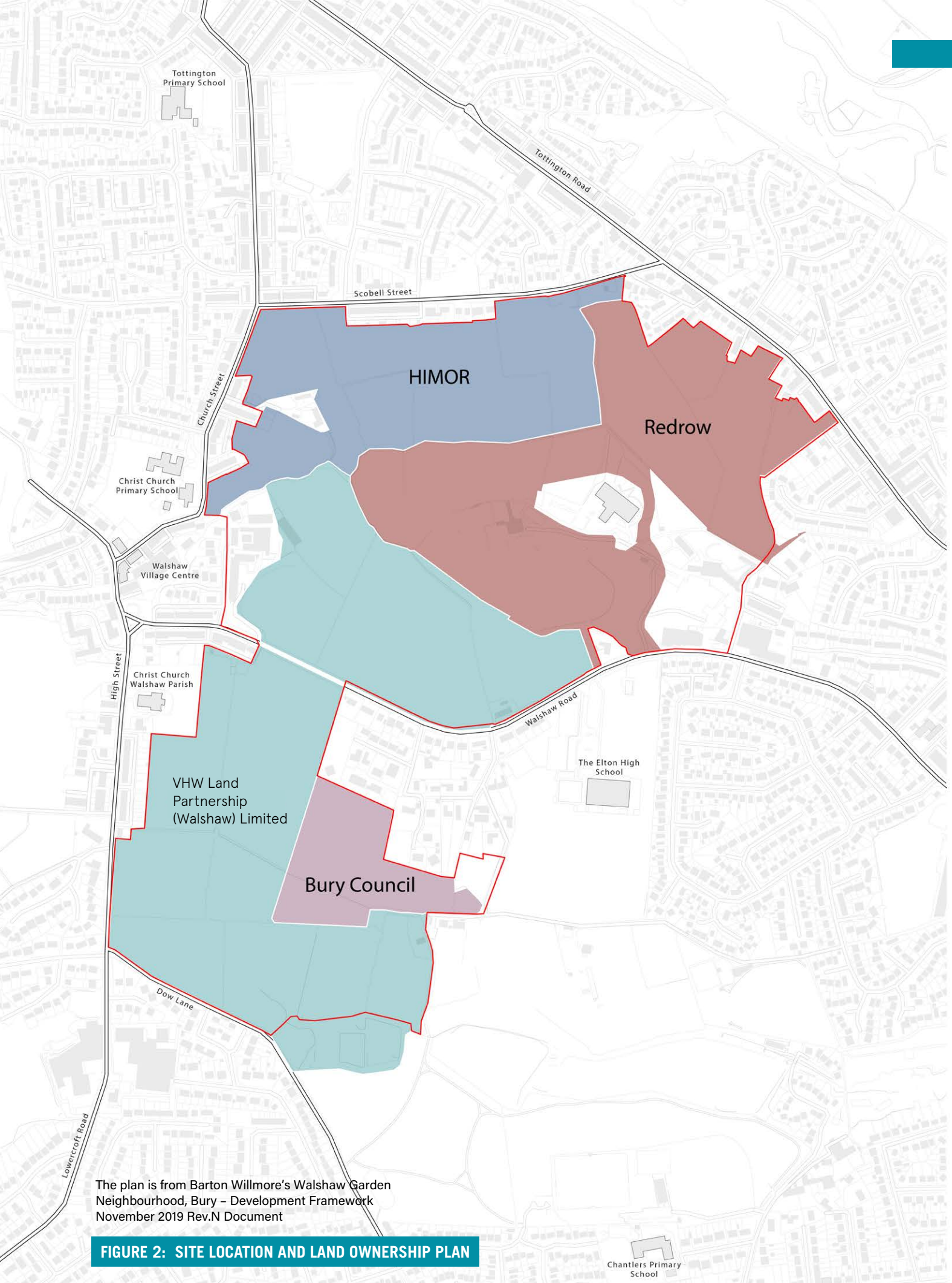
Gravity foul water drainage is proposed to serve the individual land parcel developments and the site development. To meet the requirement of site levels, pumping stations and pumping mains may be required in low lying areas.

It is proposed that both the foul and surface water drainage systems will be offered for adoption to United Utilities under Section 104 of the Water Industry Act, with any surface water drainage which does not receive development flows being adopted by Bury Council as highway drainage through the S38 adoption process.

As this masterplan drainage strategy is based on a concept masterplan layout to support an application for the allocation of the site through the GMSF, additional site Investigation, drainage surveys, hydraulic modelling and further engineering assessments will need to be undertaken to further develop the MDS as the site masterplan id developed. This will further inform the land parcel layout, levels, drainage and the wider development. This will impact on the current Barton Willmore Concept Masterplan for the Walshaw Garden Neighbourhood Development Framework and outline masterplan concept drainage strategy scheme and therefore this report is subject to change.

COMPLEX CHALLENGES ...
MADE SIMPLE

APPENDIX A – BARTON WILLMORE LOCATION AND LAND OWNERSHIP PLAN



The plan is from Barton Willmore's Walshaw Garden Neighbourhood, Bury – Development Framework November 2019 Rev.N Document

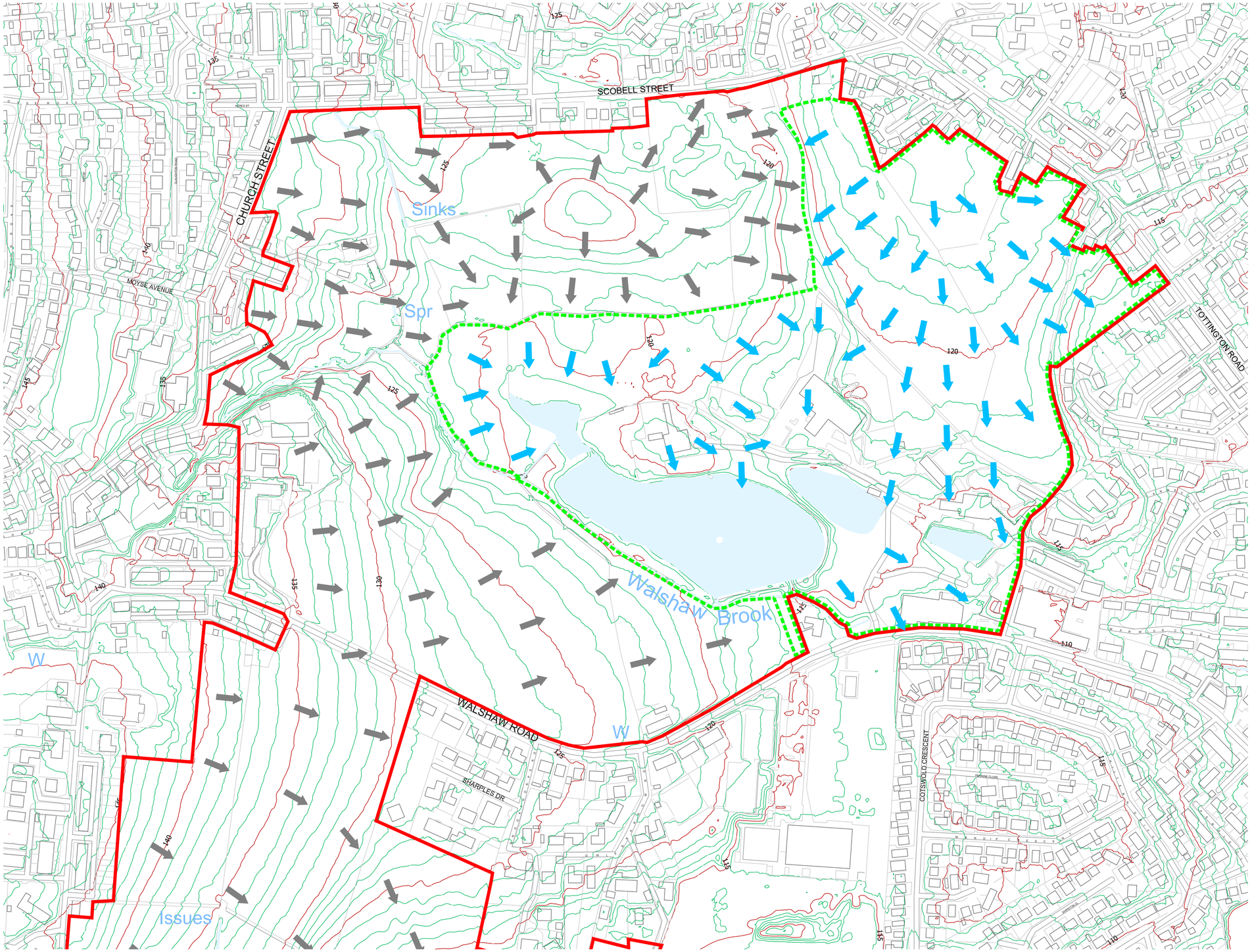
FIGURE 2: SITE LOCATION AND LAND OWNERSHIP PLAN

APPENDIX B – BARTON WILLMORE CONCEPT MASTERPLAN

The plan is from Barton Willmore's Walshaw Garden Neighbourhood, Bury – Development Framework November 2019 Rev.N Document

FIGURE 10: CONCEPT MASTERPLAN

APPENDIX C – EXISTING TOPOGRAPHY PLANS



NOTES

1. ALL DIMENSIONS ARE IN METRES UNLESS NOTED OTHERWISE.
2. THIS DRAWING SHOULD BE READ IN CONJUNCTION WITH THE ROC FLOOD RISK ASSESSMENT REPORT AND MASTERPLAN DRAINAGE STRATEGY REPORT.
3. THE INFORMATION SHOWN ON THIS DRAWING IS INDICATIVE ONLY AND SUBJECT TO FURTHER CONSULTATION AND DETAILED DESIGN.
4. CONTOURS ARE BASED ON OS INFORMATION PROVIDED BY BARTON WILLMORE.

KEY

- 5m CONTOUR LINE
- 1m CONTOUR LINE
- OVERLAND FLOW ROUTE
- OFFSITE OVERLAND FLOW ROUTE
- RED LINE BOUNDARY

REV.	DATE	DETAILS	DRN.	CHK.
01	17/01/20	FIRST ISSUE	RM	DAE

DRAWING STATUS
INFORMATION

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RoC CONSULTING
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W rocconsulting.com

DRAWN RM	DATE 17.01.20	SCALES 1:2,000
CHECKED DAE	DATE 17.01.20	THE ABOVE SCALES APPLY WHEN PLOTTED AT A1 SIZE —DO NOT SCALE—
APPRVD. PAW	DATE 17.01.20	EMAIL FOR DRAWINGS info@rocconsulting.com

CLIENT
Redrow Homes

PROJECT TITLE
WALSHAW GARDEN NEIGHBOURHOOD
BURY

DRAWING TITLE
EXISTING TOPOGRAPHY & OVERLAND FLOW ROUTES
SHEET 1 OF 3

PROJECT No.	DRAWING No.	REV.
4072	SK101	01

NOTES

1. ALL DIMENSIONS ARE IN METRES UNLESS NOTED OTHERWISE.
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3. THE INFORMATION SHOWN ON THIS DRAWING IS INDICATIVE ONLY AND SUBJECT TO FURTHER CONSULTATION AND DETAILED DESIGN.
4. CONTOURS ARE BASED ON OS INFORMATION PROVIDED BY BARTON WILLMORE.

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- 1m CONTOUR LINE
- OVERLAND FLOW ROUTE
- OFFSITE OVERLAND FLOW ROUTE
- RED LINE BOUNDARY
- LAND OWNERSHIP BOUNDARY

REV.	DATE	DETAILS	DRN.	CHK.
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CHECKED DAE	DATE 17.01.20	THE ABOVE SCALES APPLY WHEN PLOTTED AT A1 SIZE --DO NOT SCALE--
APPRVD. PAW	DATE 17.01.20	EMAIL FOR DRAWINGS info@rocconsulting.com

CLIENT
HIMOR

PROJECT TITLE
WALSHAW GARDEN NEIGHBOURHOOD
BURY

DRAWING TITLE
EXISTING TOPOGRAPHY & OVERLAND FLOW ROUTES
SHEET 2 OF 3

PROJECT No.	DRAWING No.	REV.
4072	SK102	01

NOTES

1. ALL DIMENSIONS ARE IN METRES UNLESS NOTED OTHERWISE.
2. THIS DRAWING SHOULD BE READ IN CONJUNCTION WITH THE ROC FLOOD RISK ASSESSMENT REPORT AND MASTERPLAN DRAINAGE STRATEGY REPORT.
3. THE INFORMATION SHOWN ON THIS DRAWING IS INDICATIVE ONLY AND SUBJECT TO FURTHER CONSULTATION AND DETAILED DESIGN.
4. CONTOURS ARE BASED ON OS INFORMATION PROVIDED BY BARTON WILLMORE.

KEY

- 5m CONTOUR LINE
- 1m CONTOUR LINE
- OVERLAND FLOW ROUTE
- OFFSITE OVERLAND FLOW ROUTE
- RED LINE BOUNDARY
- LAND OWNERSHIP BOUNDARY
- BURY COUNCIL LAND

REV.	DATE	DETAILS	DRN.	CHK.
01	17/01/20	FIRST ISSUE	RM	DAE

DRAWING STATUS

INFORMATION

RIBA STAGE

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DRAWN RM	DATE 17.01.20	SCALES 1:2,000
CHECKED DAE	DATE 17.01.20	THE ABOVE SCALES APPLY WHEN PLOTTED AT A1 SIZE --DO NOT SCALE--
APPRVD. PAW	DATE 17.01.20	EMAIL FOR DRAWINGS info@rocconsulting.com

CLIENT

VHW Land Partnership (WALSHAW) Limited

PROJECT TITLE

WALSHAW GARDEN NEIGHBOURHOOD
BURY

DRAWING TITLE

EXISTING TOPOGRAPHY & OVERLAND FLOW ROUTES
SHEET 3 OF 3

PROJECT No.	DRAWING No.	REV.
4072	SK103	01

APPENDIX D – SEWER RECORDS

Reece McGuinness

From: Wastewater Developer Services <WastewaterDeveloperServices@uuplc.co.uk>
Sent: 06 January 2020 13:14
To: Reece McGuinness; Wastewater Developer Services
Subject: RE: File Transfer: 4072 - Land at Walshaw Bury Pre-Development Enquiry (HIMOR) - 4200029694

Dear Customer

We have carried out an assessment of your application which is based on the information provided; this pre development advice will be valid for 12 months

Foul will be allowed to drain to the public combined sewer network at an unrestricted rate. The connection(s) to the public sewer can be at a point(s) convenient to yourself

Surface water from this site should drain to either soak away/infiltration system or directly to watercourse. Discharge rates and consents must be discussed and agreed with all interested parties.

If you require any further guidance please follow http://www.unitedutilities.com/builders-developers.aspx

If you need a make further enquiry relating to this matter please send your enquiry to WastewaterDeveloperServices@uuplc.co.uk Please quote your DEXXXX/42XXXXXXX/GEXXXX reference number

Please Note:- enquiries sent to any other United Utilities e-mail address will be deleted.

Connection Application

Although we may discuss and agree discharge points & rates in principle, please be aware that you will have to apply for a formal sewer connection. This is so that we can assess the method of construction, Health & Safety requirements and to ultimatley inspect the connection when it is made. Details of the application process and the form itself can be obtained from our website by following the link below

http://www.unitedutilities.com/connecting-public-sewer.aspx

Please be aware that on site drainage must be designed in accordance with Building Regulations, National Planning Policy, Planning Conditions and local flood authority guidelines, we would recommend that you laise and make suitable agreements with the relevant statutory bodies.

Neil O'Brien
Wastewater Pre-Development Engineer
Great Manchester Area
Developer Services & Metering
Customer Services
T: 01925 679410
unitedutilities.com

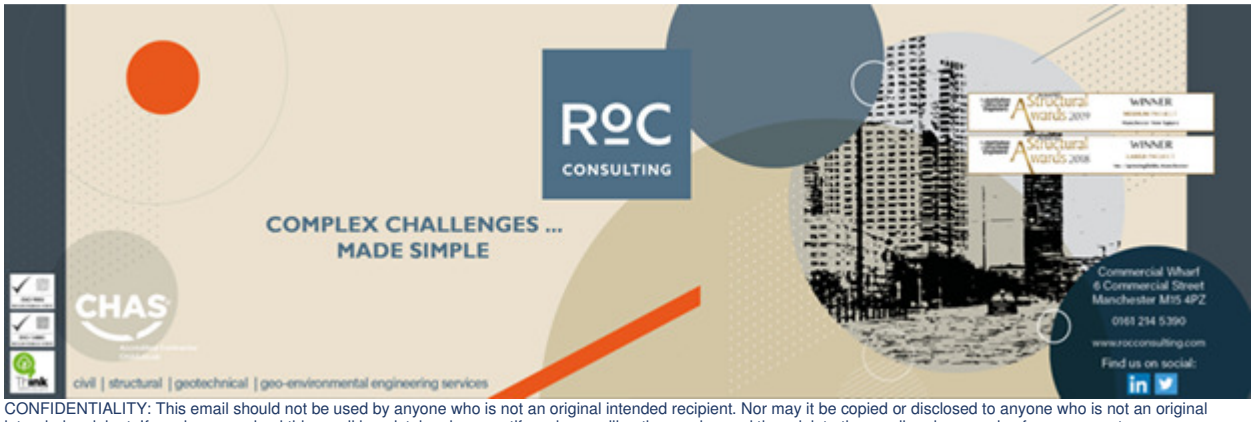
From: Reece McGuinness [mailto:reece.mcguinness@rocconsulting.com]
Sent: 24 December 2019 12:33
To: Wastewater Developer Services <WastewaterDeveloperServices@uuplc.co.uk>
Subject: File Transfer: 4072 - Land at Walshaw Bury Pre-Development Enquiry (HIMOR) - Land at Walshaw, Bury

IMPORTANT: Click a link below to access files associated with this transmittal that came in through the RoC Consulting Info Exchange web site.
Download all associated files

Additional links:

Reply to All

Project Name:	Land at Walshaw, Bury
Project Number:	4072
From:	Reece McGuinness
To:	WastewaterDeveloperServices@uuplc.co.uk
CC:	David Eato; Paul White (RoC Consulting)
Subject:	4072 - Land at Walshaw Bury Pre-Development Enquiry (HIMOR)
Sent via:	Info Exchange
Expiration Date:	1/23/2020
Remarks:	Dear Sir/Madam, Please find attached pre-development enquiry for the above site. Also attached is a plan indicating layout and an ownership plan. this pre-development enquiry relates to the HIMOR land. **Kind regards** **Reece McGuinness** **Strategic Land Graduate Engineer** T 0161 214 5390 www.rocconsulting.com



Transferred Files

NAME	TYPE	DATE	TIME	SIZE
Transmittal - 00001.pdf	PDF File	12/24/2019	12:37 PM	190 KB
30860-MR-M-02I-Block Layout-A1_PT_1.2500-01-01.jpg	JPEG Image	12/24/2019	12:05 PM	6,446 KB
30860-MR-M-04-Land Ownership Plan-A1_PT_1.2500-01.jpg	JPEG Image	12/24/2019	12:06 PM	12,405 KB
Himor Pre Development Enquiry.pdf	PDF File	12/24/2019	12:22 PM	1,457 KB

Kind regards
Reece McGuinness
Strategic Land Graduate Engineer
T 0161 214 5390
www.rocconsulting.com

passed on, or arising from the alteration of the contents of this message by a third party.

United Utilities Group PLC, Haweswater House, Lingley Mere Business Park, Lingley Green Avenue, Great Sankey, Warrington, WA5 3LP
Registered in England and Wales. Registered No 6559020

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www.unitedutilities.com/subsidiaries

Refno	Cover	Func	Invert	Size x	Size y	Shape	Matl	Length	Grad
5111	148.78	SW	146.92	225			VC	57.72346	1 in 21
5107	148.72	CO	146.87	225			VC	52.63079	1 in 16
5105		CO		100			VC	7.270683	
6452	140.83	SW	139.1	150			VC	34	1 in 56
6402	140.82	CO	139.15	150			VC	31	1 in 38
5505	145.53	SW	143.9	150			VC	46.09772	1 in 13
5305	143.67	SW	142.04	150			VC	56.44366	1 in 43
5308		SW		100			VC	15.69661	
5312		SW		100			VC	11.81512	
5302	146.9	CO	144.57	150			VC	67.47582	1 in 17
5301	146.84	CO	144.79	150			VC	51.22783	1 in 17
5304	142.85	CO	140.6	150			VC	89.00562	1 in 19
5303	142.78	SW	140.69	225			VC	89.00562	1 in 19
5209	147.56	SW	145.22	150			VC	31.257	1 in 71
5207	147.54	CO	145.55	150			VC	17.02939	1 in 61
5201	147.57	CO	145.22	150			VC	76.41989	1 in 21
5206	147.51	SW	145.77	150			VC	16.03122	1 in 38
5202	147.54	SW	145.24	150			VC	72.44326	1 in 22
5212		CO		100			VC	9.532503	
5211		CO		100			VC	9.218842	
5101	149.43	SW	147.76	225			VC	46.01087	1 in 16
5104	148.77	SW	146.59	300			VC	49.72627	1 in 49
5102	148.5	CO	146.61	225			VC	6	1 in 19
5103	148.15	CO	146.26	225			VC	20.62494	1 in 12
5105	146.8	CO	144.58	225			VC	53.16014	1 in 55
5117		CO		150			VC	17.68696	
5401		SW	0	450			VC	26.07661	
5403	142.69	SW	140.83	150			VC	17.02939	1 in 14
5402	146.45	SW	143.57	150			VC	60.30833	1 in 22
5404	142.59	CO	140.73	225			VC	34.1321	1 in 14
5401	146.54	CO	143.64	225			VC	65.03676	1 in 22
5006		SW		100			VC	11.68991	
5004		SW		100			VC	11.68991	
5009		SW		100			VC	8.425817	
5008		SW		100			VC	8.425817	
5003	146.12	SW	144.63	300			VC	61	1 in 3050
5003	146.12	SW	144.63	300			VC	61	1 in 3050
5001	150.47	SW	148.6	225			VC	47	1 in 12
5001	150.47	SW	148.6	225			VC	47	1 in 12
5004	147.65	CO	146.18	225			VC	61	1 in 39
5004	147.65	CO	146.18	225			VC	61	1 in 39
4202	149.58	SW	147.92	150			VC	37.01351	1 in 17
4311		CO		100			VC	20.26013	
4902	152.71	CO	151.26	225			VC	36.68787	1 in 10
4902	152.71	CO	151.26	225			VC	36.68787	1 in 10
4302	148.1	SW	146.3	150			VC	32.24903	1 in 18
4301	148.11	SW	146.56	150			VC	34	1 in 19
4320		FO		150			VC	19.07129	
5952	147.64	SW	146.02	300			VC	43.2218	1 in 180
5952	147.64	SW	146.02	300			VC	43.2218	1 in 180
5903	147.64	CO	146.06	225			VC	41.41967	1 in 153
5903	147.64	CO	146.06	225			VC	41.41967	1 in 153
5907		CO		100			VC	8.634017	
5907		CO		100			VC	8.634017	
5901	147.9	CO	146.28	225			VC	32.4757	1 in 149
5901	147.9	CO	146.28	225			VC	32.4757	1 in 149
5951	147.89	SW	146.31	225			VC	31.75702	1 in 110
5951	147.89	SW	146.31	225			VC	31.75702	1 in 110
4509		CO		150			VC	4.029942	
4453	148.67	SW	147.07	450			CO	19	
4452	151.2	SW	148.15	225			VC	21.84003	1 in 29
4403	148.51	CO	146.17	225			VC	13.0384	1 in 5
4402	151.25	CO	149.7	225			VC	23.34524	1 in 7
4102		CO		150			VC	19.58792	
7501	132.85	CO	130.95	225			VC	36.60745	1 in 58
8503	129.65	CO	128.75	225			VC	78.60026	1 in 167
6502	142.08	SW	140.29	150			VC	156.4238	1 in 26
6509		CO		100			PVC	11.71412	
6506		CO		225			VC	11.99336	
6504		CO	0	225			VC	13.8405	
6453	140.56	SW	138.31	225			VC	54.14795	1 in 27
6403	140.49	CO	138.24	225			VC	48.50773	1 in 24
6404	137.62	CO	136.17	225			VC	45.1885	1 in 21
6401	137.73	CO	136.91	150			VC	44.18144	1 in 67
6451	137.83	SW	136.95	150			VC	49.0406	1 in 75
6454	137.68	SW	136.18	225			VC	27.313	1 in 9
6507		SW	0	225			VC	13.80739	
6505		CO	0	225			VC	12.94215	
7452	134.86	SW	133.42	375			VC	17.88854	1 in 19
7402		CO		100			VC	9.133412	
8401	131.87	CO	129.06	300			VC	51.0099	1 in 131
8402	131.51	CO	129.42	300			VC	48.01041	1 in 141
0511		CO		100			VC	5.949281	
0511		CO		100			VC	5.949281	
0509		CO		100			VC	6.789241	
0509		CO		100			VC	6.789247	
0508		CO		100			VC	6.808056	
0508		CO		100			VC	5.808056	
0404		CO		150			VC	2.481385	
0404		CO		150			VC	2.481385	
8502	131.94	CO	128.62	300			VC	85	1 in 193
9505		CO		100			VC	14.87616	
9401	127.4	SW	125.89	225			VC	63.78872	1 in 114
9401	127.4	SW	125.89	225			VC	63.78872	1 in 114
9402	127.49	SW	124.88	150			VC	62.96825	1 in 89
9402	127.49	SW	124.88	150			VC	62.96825	1 in 89
9502	129.64	CO	128.77	150			VC	40	1 in 9
9502	129.64	CO	128.77	150			VC	40	1 in 9
9514		CO		150			VC	13.25243	
9514		CO		150			VC	13.25243	
9512		CO		150			VC	4.193076	
9512		CO		150			VC	4.193076	
6302	136.16	CO	135.84	150			VC	43.41659	1 in 21
6352	138.07	SW	136.05	225			VC	43.28972	1 in 34
6405	135.27	CO	134.03	225			VC	47.29521	1 in 169
7304	136.26	SW	134.68	375			VC	52.03845	1 in 42
6303	139.62	SW	137.92	225			VC	56.22277	1 in 30
8201	141.21	SW	140.28	225			VC	26.16026	1 in 12
7302	136.35	CO	133.74	225			VC	87.20665	1 in 349
7251	137.39	SW	135.91	300			VC	88.27787	1 in 74
8306		CO		100			VC	7.756478	
8302		CO		100			VC	7.23737	
8311		CO		100			VC	10.22624	
8204		FO	0	150			VC	26.3705	
8310		SW	0	1200			CO	25.59933	
9301	126.55	SW	124.75	300			VC	79.05694	1 in 68
9301	126.55	SW	124.75	300			VC	79.05694	1 in 68
9404	126.54	SW	125.3	225			VC	31.14482	1 in 59
9404	126.54	SW	125.3	225			VC	31.14482	1 in 59
9302	125.69	CO	123.57	225			VC	28.28427	1 in 141
9302	125.69	CO	123.57	225			VC	28.28427	1 in 141
7401	132.29	CO	130.9	225			VC	35.22783	1 in 24
8301	131.36	CO	128.3	300			VC	23.02173	1 in 85
9204	143.58	SW	141.9	225			VC	24.35159	1 in 58
5203	143.6	CO	141.62	150			VC	13	1 in 108
5206	143.07	SW	141.48	225			VC	31.14482	1 in 26
5205	143.06	CO	141.21	150			VC	29.06868	1 in 23
5205	138.43	SW	137.38	150			VC	34.20525	1 in 19
7201	137.35	CO	133.48	225			VC	23.19483	1 in 331
6209		FO		100			VC	6.159784	
8202	141.14	CO	139.93	150			VC	30.09659	1 in 13
6204	139.78	CO	137.59	150			VC	50.35872	1 in 26
9101	128.33	CO	124.49	375			VC	64.24303	
9205		FO	0	150			VC	25.32687	
9207		FO	0	150			VC	62.99191	
9206		FO	0	150			VC	13.61131	
9104		FO	0	150			VC	30.94014	
9103	125.68	SW	123.43	225			VC	58.69412	
9103	125.68	SW	123.43	225			VC	58.69412	
9102	125.39	SW	123.7	225			VC	80.09994	1 in 30
9102	125.39	SW	123.7	225			VC	80.09994	1 in 30
9203	125.2	SW	123.57	300			VC	51.0099	1 in 116
9203	125.2	SW	123.57	300			VC	51.0099	1 in 116
9105		FO	0	150			VC	8.769351	
9105		FO	0	150			VC	8.769351	
9212		CO		100			VC	28.92301	
9212		CO		100			VC	28.92301	
7106	134.96	CO	133.26	300			VC	41.54111	1 in 23
7254	134.73	SW	133.02	225			VC	25.01999	1 in 19
7254	134.64	CO	132.55	225			VC	34.23449	1 in 17
7255	132.99	SW	131.72	225			VC	18.43909	
7210		CO		100			VC	46.62286	
7108	133.36	CO	131.45	300			VC	16.05292	1 in 13
7206	132.57	CO	130.48	225			VC	29.15478	1 in 29
7110		SW	0	225			VC	21.37756	
8313		SW	0	225			VC	11.40112	
8206		FO	0	150			VC	9.879977	
8214		SW	0	225			VC	11.63949	
8207		FO	0	150			VC	10.14789	
8205		FO	0	150			VC	14.64333	
8311		SW	0	1200			CO	10.42294	
8206		FO	0	150			VC	27.52164	
8215		SW	0	1200			CO	29.1768	
9204		FO	0	150			VC	15.54262	
9205		SW	0	150			VC	8.339096	
8201	131.75	CO	127.84	300			VC	49.0102	1 in 189
8202	131.89	CO	127.55	300			VC	52.03845	1 in 186
8101	132.35	CO	127.19	375			VC	87.0919	1 in 32
8312		SW	0	225			VC	12.64748	
8209		FO	0	150			VC	15.32173	
5106	145.68	CO	143.6	225			VC	46.17358	1 in 19
5105	145.66	SW	143.56	300			VC	42.42641	1 in 24
6106	142.97	SW	141.53	225			VC	33.54102	1 in 96
6104	142.85	CO	141.5	225			VC	33.37644	1 in 88
6103	143.15	CO	141.1	225			VC	24.18677	1 in 18
6108	137.76	SW	136.15	300			VC	30.80584	1 in 62
6107	137.78	CO	136.17	300			VC	29.20616	1 in 56
6102	143.19	SW	141.15	300			VC	50.24930	1 in 19
6109	140.03	SW	137.58	300			VC	32.01562	1 in 23
6106	140.02	CO	137.5	300			VC	34.05677	1 in 26
9106		CO	0	375			VC	73.83726	
9106		CO	0	375			VC	73.83726	
9205	124.92	SW	123.43	225			VC	61.61169	1 in 36
9205	124.92	SW	123.43	225			VC	61.61169	1 in 36
7206		CO		100			VC	27.4681	
7202	137.01	CO	133.41	225			VC	40.22437	1 in 161
7252	136.99	SW	135.46	150			VC	35.51056	1 in 34
7253	136.28	SW	134.38	150			VC	30.8707	1 in 23
7203	136.24	CO	133.15	225			VC	30.08322	1 in 56
7107	135.01	SW	133.35	300			VC	39.05125	1 in 24
7105	137.07	SW	134.96	150			VC	8	1 in 10
8152	132.12	SW	130.66	300			VC	42.10701	1 in 16
7103	137.65	CO	135.62	300			VC	39.0526	1 in 17
7109	133.49	SW	131.48	300			VC	41.7732	1 in 52
8101	142.77	CO	141.77	150			VC	41.04875	1 in 61
6001	143.15	CO	141.1	150			VC	13	1 in 16
6001	143.15	CO	141.1	150			VC	13	1 in 16
5120		CO		100			VC	11.5146	
5126		CO		100			VC	1.46613	
7003	134.31	CO	127.82	375			VC	12.64911	
7003	134.31	CO	127.82	375			VC	12.64911	

Refno	Cover	Func	Invert	Size x	Size y	Shape	Matl	Length	Grad
7062	134.41	CO	0	375			VC	15.23155	
7116		CO		100			VC	8.511727	
7052	138.82	SW	136.76	300			VC	36.01316	1 in 34
7052	138.69	SW	137.67	225			VC	41.01219	1 in 73
7052	138.69	SW	137.67	225			VC	41.01219	1 in 73
7104	137.72	SW	135.63	300			VC	11.04536	1 in 28
7051	138.8	SW	137.11	225			VC	11	1 in 73
7101	138.8	CO	136.71	300			VC	44.01136	1 in 70
7061	136.75	CO	137.12	225			VC	12	1 in 52
7064	138.69	CO	137.67	225			VC	14	
7064	138.69	CO	137.67	225			VC	14	
6003	142.71	SW	141.81	150			VC	46.09772	1 in 39
6003	142.71	SW	141.81	150			VC	46.09772	1 in 39
6011		CO		150			VC	15.45388	
6011		CO		150			VC	15.45388	
5011		CO		150			VC	6.109969	
5011		CO		100			VC	6.109969	
5012		CO		100			VC	7.33593	
5012		CO		100			VC	7.33593	
5013		CO		100			VC	5.333201	
5013		CO		100			VC	5.333201	
5010		SW		100			VC	10.36825	
5010		SW		100			VC	10.36825	
5014		CO		100			VC	5.018884	
5014		CO		100			VC	5.018884	
6017		CO		150			VC	5.374222	
6017		CO		150			VC	5.374222	
6002	142.03	CO	139.61	225			VC	35	
6002	142.03	CO	139.61	225			VC	35	
7902	134.56	CO	132.2	225			VC	25.07967	
7902	134.56	CO	132.2	225			VC	25.07967	
7901	134.66	CO	128.28	375			VC	96.38464	1 in 219
7901	134.66	CO	128.28	375			VC	96.38464	1 in 219
8003		CO		100			VC	7.527914	
8003		CO		100			VC	7.527914	
8002		CO		0			UN	35.34637	
8002		CO		0			UN	35.34637	
6902	140.45	CO	0	225			VC	86.12201	
6902	140.45	CO	0	225			VC	86.12201	
6901	142.65	CO	140.62	150			VC	33.52611	
6901	142.65	CO	140.62	150			VC	33.52611	
5912		CO		100			VC	6.036177	
5912		CO		100			VC	6.036177	
6012		CO		100			VC	14.06792	
6012		CO		100			VC	14.06792	
7901	130.56	CO	128.09	375			VC	125.4631	1 in 155
8005		CO		150			VC	27.56443	
8005		CO		150			VC	27.56443	
5021		CO		100			VC	16.50526	
5021		CO		100			VC	16.50526	
5029		CO		100			VC	8.621748	
5002	149.63	CO	147.6	225			VC	28.95601	1 in 20
5002	149.63	CO	147.6	225			VC	28.95601	1 in 20

LEGEND

Abandoned — Foul — Surface Water — Combined

- Public Sewer
- Privata Sewer
- Section 104
- Rising Main
- Sludge Main
- Overflow
- Water Course
- Highway Drain

All point assets follow the standard colour convention:
red - combined blue - surface water
brown - foul purple - overflow

- Manhole
- Head of System
- Extent of Survey
- Rodding Eye
- Inlet
- Discharge Point
- Vortex
- Penstock
- Washout Chamber
- Valve
- Air Valve
- Non Return Valve
- Soakaway
- Gully
- Cascade
- Flow Meter
- Hatch Box
- Oil Interceptor
- Summit
- Drop Shaft
- Orifice Plate
- Side Entry Manhole
- Outfall
- Screen Chamber
- Inspection Chamber
- Bifurcation Chamber
- Lamp Hole
- T Junction / Saddle
- Catchpit
- Valve Chamber
- Vent Column
- Vortex Chamber
- Penstock Chamber
- Network Storage Tank
- Sewer Overflow
- Ww Treatment Works
- Ww Pumping Station
- Septic Tank
- Control Kiosk
- Change of Characteristic

MANHOLE FUNCTION

FO	Foul
SW	Surface Water
CO	Combined
OV	Overflow

SEWER SHAPE

CI	Circular	TR	Trapezoidal
EG	Egg	AR	Arch
OV	Oval	BA	Barrel
FT	Flat Top	HO	HorseShoe
RE	Rectangular	UN	Unspecified
SQ	Square		

SEWER MATERIAL

AC	Asbestos Cement
BR	Brick
PE	Polyethylene
RP	Reinforced Plastic Matrix
CO	Concrete
CSB	Concrete Segment Bolted
CSU	Concrete Segment Unbolted
CC	Concrete Box Culverted
PSC	Plastic / Steel Composite
GRC	Glass Reinforced Plastic
DI	Ductile Iron
PVC	Polyvinyl Chloride
CI	Cast Iron
S	Spun Iron
ST	Steel
VC	Vitrified Clay
PP	Polypropylene
PF	Pitch Fibre
MAC	Masonry Coursed
MAR	Masonry Random
U	Unspecified

Address or Site Reference:

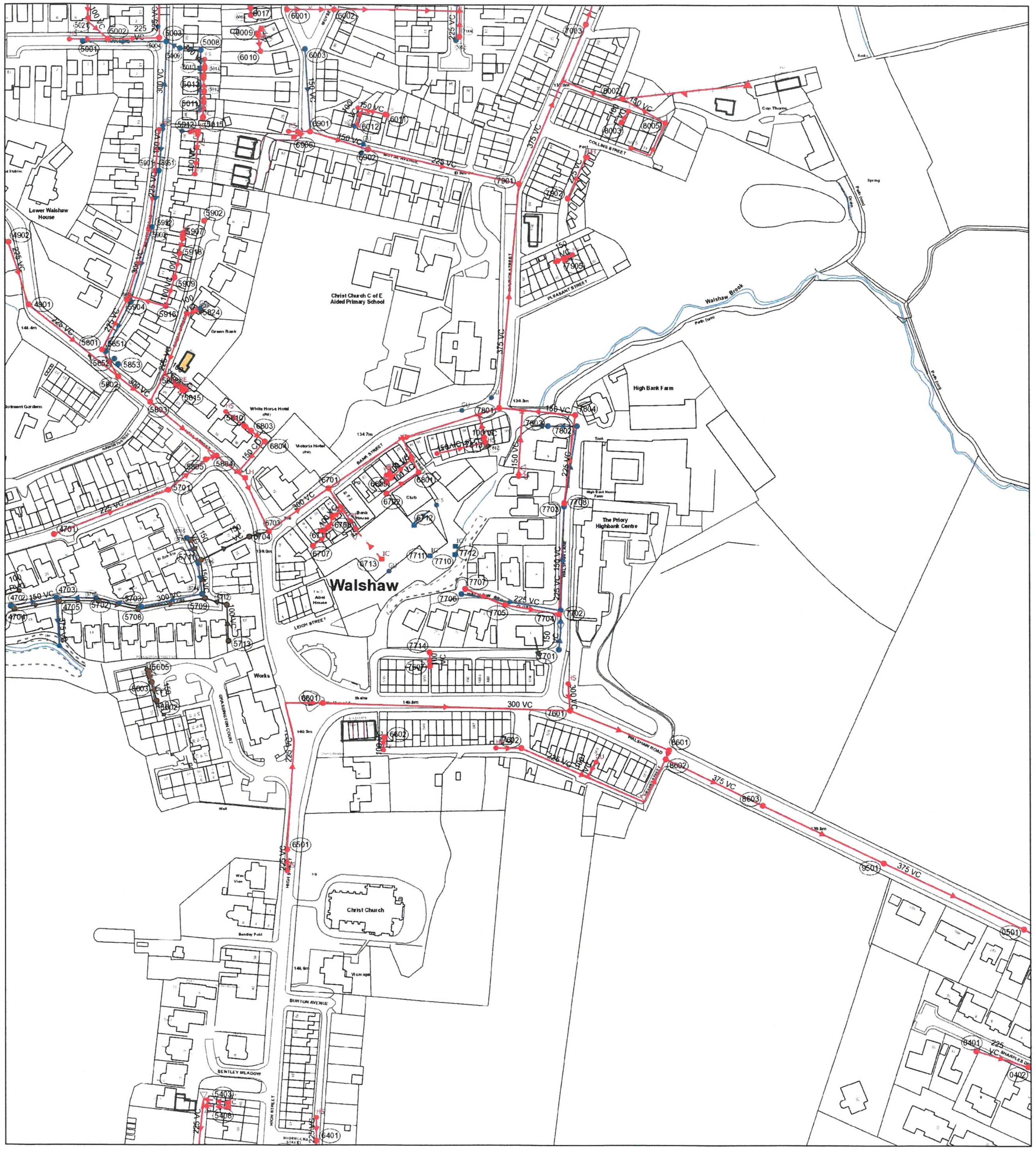
467 WALSHAW ROAD,
BURY,
BL8 3AA

OS sheet Number: SD7712SE
Scale: 1:1250 **Date:** 19/04/2018
Nodes: 254
Sheet: 1 of 8

Printed by: Property Searches

SEWER RECORDS

United Utilities — helping life flow smoothly



Refno	Cover	Func	Invert	Size x	Size y	Shape	Matl	Length	Grad
5008		SW		100			VC	11.68991	
5008		SW		100			VC	11.68991	
5009		SW		100			VC	8.425817	
5009		SW		100			VC	8.425817	
5003	146.12	SW	144.63	300			VC	61	1 in 3050
5003	146.12	SW	144.63	300			VC	61	1 in 3050
5001	150.47	SW	148.6	225			VC	47	1 in 12
5001	150.47	SW	148.6	225			VC	47	1 in 12
5004	147.65	CO	146.18	225			VC	61	1 in 39
5004	147.65	CO	146.18	225			VC	61	1 in 39
6401	146.42	CO	143.53	225			VC	56.22277	
6401	146.42	CO	143.53	225			VC	56.22277	
4703		SW	0	375			VC	27.01545	
4704		FO	0	150			VC	25.11486	
5707		FO	0	150			VC	22.70248	
5703		SW	0	300			VC	25.82755	
4702		SW	0	150			VC	25.4234	
4705		FO	0	150			VC	21.92	
5702		SW	0	300			VC	22.34151	
4701	145.94	CO	144.39	225			VC	68.70953	1 in 27
5801	146.79	CO	145.29	300			VC	17.49286	1 in 15
4901	149.28	CO	147.64	225			VC	64.03124	1 in 16
5953	147.29	SW	145.78	300			VC	31.30495	1 in 98
5851	146.82	SW	145.46	300			VC	2.236068	1 in 13
5904	147.29	CO	145.79	225			VC	31.30495	1 in 63
4902	152.71	CO	151.25	225			VC	36.68787	1 in 10
4902	152.71	CO	151.25	225			VC	36.68787	1 in 10
5952	147.64	SW	146.02	300			VC	43.2218	1 in 180
5952	147.64	SW	146.02	300			VC	43.2218	1 in 180
5903	147.64	CO	146.06	225			VC	41.41967	1 in 153
5903	147.64	CO	146.06	225			VC	41.41967	1 in 153
5918		CO		100			VC	13.77841	
5907		CO		100			VC	8.634017	
5907		CO		100			VC	8.634017	
5901	147.9	CO	146.28	225			VC	32.6757	1 in 149
5901	147.9	CO	146.28	225			VC	32.6757	1 in 149
5951	147.89	SW	146.31	225			VC	31.75702	1 in 110
5951	147.89	SW	146.31	225			VC	31.75702	1 in 110
6101	142.77	CO	141.77	150			VC	41.04875	1 in 61
6001	143.15	CO	141.1	150			VC	13	1 in 16
6001	143.15	CO	141.1	150			VC	13	1 in 16
7003	134.31	CO	127.82	375			VC	12.64911	
7003	134.31	CO	127.82	375			VC	12.64911	
7052	138.69	SW	137.67	225			VC	41.01219	1 in 73
7052	138.69	SW	137.67	225			VC	41.01219	1 in 73
7004	138.69	CO	137.67	225			VC	14	
7004	138.69	CO	137.67	225			VC	14	
6003	142.71	SW	141.81	150			VC	46.09772	1 in 39
6003	142.71	SW	141.81	150			VC	46.09772	1 in 39
6011		CO		150			VC	15.45388	
6011		CO		150			VC	15.45388	
5011		CO		100			VC	6.109969	
5011		CO		100			VC	6.109969	
5012		CO		100			VC	7.33593	
5012		CO		100			VC	7.33593	
5013		CO		100			VC	5.333201	
5013		CO		100			VC	5.333201	
5010		SW		100			VC	10.36825	
5010		SW		100			VC	10.36825	
5014		CO		100			VC	5.018884	
5014		CO		100			VC	5.018884	
6017		CO		150			VC	5.374222	
6017		CO		150			VC	5.374222	
6002	142.03	CO	139.61	225			VC	35	
6002	142.03	CO	139.61	225			VC	35	
7905		CO		150			VC	5.015236	
7902	134.56	CO	132.2	225			VC	25.07987	
7902	134.56	CO	132.2	225			VC	25.07987	
7901	134.66	CO	128.28	375			VC	96.38464	1 in 219
7901	134.66	CO	128.28	375			VC	96.38464	1 in 219
8003		CO		100			VC	7.527914	
8003		CO		100			VC	7.527914	
8002		CO		0			UN	35.34637	
8002		CO		0			UN	35.34637	
6902	140.45	CO	0	225			VC	86.12201	
6902	140.45	CO	0	225			VC	86.12201	
6901	142.65	CO	140.62	150			VC	33.52611	
6901	142.65	CO	140.62	150			VC	33.52611	
5912		CO		100			VC	6.036177	
5912		CO		100			VC	6.036177	
6012		CO		100			VC	14.06792	
6012		CO		100			VC	14.06792	
5701	144.21	CO	141.87	225			VC	27.01851	1 in 17
6804		CO	0	150			CO	22.96299	
5805	142.31	CO	140.27	225			VC	3.162278	1 in 4
6803		CO	0	150			CO	9.616122	
5810		CO	0	150			CO	4.742204	
5815		CO		100			VC	1.249111	
5817		CO		100			VC	1.468934	
5916		CO		100			VC	21.76227	
5909		CO		100			VC	16.76423	
5706		SW	0	150			VC	17.34454	
5705		SW	0	150			VC	15.37948	
5711		FO	0	150			VC	29.92419	
5710		FO	0	150			VC	12.46	
6707		CO		100			VC	14.35133	
6704		FO	0	150			VC	11.40439	
5804	142.28	CO	138.81	300			VC	52.31526	1 in 14
6703	138.89	CO	135.13	300			VC	40.80441	1 in 38
6711		CO		100			VC	6.140095	
6708		CO		100			VC	7.307223	
7705	138.77	CO	137.14	150			VC	30.41381	1 in 25
7704	137.53	CO	135.86	150			VC	62.07254	1 in 26
7702	137.58	SW	135.57	225			VC	58.03447	1 in 28
7706	139.04	SW	137.07	225			VC	55.7315	1 in 38
7707	138.94	CO	137.4	150			VC	23.76973	1 in 99
7703	135.97	SW	133.36	225			VC	45.54119	
7708	135.98	CO	133.39	150			VC	49.36598	
7812		CO		150			VC	2.864057	
7802		SW	0	225			VC	16	
7803		SW	0	225			VC	8	
7804		CO	0	150			VC	42.19004	
7801	130.56	CO	129.09	375			VC	125.4831	1 in 155
6601	139.94	CO	134.38	300			VC	137.0584	1 in 70
6701	137.34	CO	133.09	300			VC	106.2615	1 in 27
6702	136.08	CO	134.84	100			VC	21.63331	1 in 8
6805		CO		100			VC	15.67945	
6801	134.01	CO	131.98	100			VC	21.0238	
6501	144.32	CO	143.68	225			VC	93.71804	
5603		FO		150			VC	10.75062	
5713		FO		100			VC	20.2518	
5708		FO	0	150			VC	37.98947	
5704		SW	0	300			VC	34.63587	
5712		FO		100			VC	12.55988	
5709		FO	0	150			VC	21.61366	
9501	129.11	CO	125.75	375			VC	86.33076	1 in 81
0401	128.32	CO	126.14	225			VC	30.36445	1 in 43
0401	128.32	CO	126.14	225			VC	30.36445	1 in 43
0401	128.32	CO	126.14	225			VC	30.36445	1 in 43
0401	128.32	CO	126.14	225			VC	30.36445	1 in 43
0501	126.95	CO	124.22	375			VC	51.88449	1 in 89
0501	126.95	CO	124.22	375			VC	51.88449	1 in 89
0501	126.95	CO	124.22	375			VC	51.88449	1 in 89
0501	126.95	CO	124.22	375			VC	51.88449	1 in 89
0402	127.8	CO	125.43	225			VC	22.80351	1 in 17
0402	127.8	CO	125.43	225			VC	22.80351	1 in 17
0402	127.8	CO	125.43	225			VC	22.80351	1 in 17
0402	127.8	CO	125.43	225			VC	22.80351	1 in 17
7602	139.29	CO	137.36	225			VC	74.32362	
7701	138.05	SW	136.18	150			VC	11.04536	1 in 38
7601	137.54	CO	132.43	300			VC	59.23681	1 in 67
8601	134.49	CO	131.5	300			VC	5.385165	
8602	134.49	CO	130.59	375			VC	59.9333	1 in 71
8603	131.9	CO	128	375			VC	74.24958	1 in 62
8005		CO		150			VC	27.56483	
8005		CO		150			VC	27.56483	
6602		CO		100			VC	7.140544	
5808		CO		100			VC	12.75175	
5020		CO		100			VC	8.621748	
5824		CO		100			VC	6.678972	
5021		CO		100			VC	16.50526	
5021		CO		100			VC	16.50526	
5802	145.85	CO	142.66	300			VC	22.80351	1 in 18
5803	144.68	CO	141.38	300			VC	47.63402	1 in 19
5002	149.63	CO	147.6	225			VC	28.95601	1 in 20
5002	149.63	CO	147.6	225			VC	28.95601	1 in 20

Refno	Cover	Func	Invert	Size x	Size y	Shape	Matl	Length	Grad

LEGEND

Abandoned / Foul / Surface Water / Combined

- Public Sewer
- Private Sewer
- Section 104
- Rising Main
- Sludge Main
- Overflow
- Water Course
- Highway Drain

All point assets follow the standard colour convention:
red - combined, blue - surface water, brown - foul, purple - overflow

- Manhole
- Head of System
- Extent of Survey
- Rodding Eye
- Inlet
- Discharge Point
- Vortex
- Penstock
- Washout Chamber
- Valve
- Air Valve
- Non Return Valve
- Soakaway
- Gully
- Cascade
- Flow Meter
- Hatch Box
- Oil Interceptor
- Summit
- Drop Shaft
- Orifice Plate
- Side Entry Manhole
- Outfall
- Screen Chamber
- Inspection Chamber
- Bifurcation Chamber
- Lamp Hole
- T Junction / Saddle
- Catchpit
- Valve Chamber
- Vent Column
- Vortex Chamber
- Penstock Chamber
- Network Storage Tank
- Sewer Overflow
- Ww Treatment Works
- Ww Pumping Station
- Septic Tank
- Control Kiosk
- Change of Characteristic

MANHOLE FUNCTION

- FO Foul
- SW Surface Water
- CO Combined
- OV Overflow

SEWER SHAPE

- CI Circular
- EG Egg
- OV Oval
- FT Flat Top
- RE Rectangular
- SQ Square
- TR Trapezoidal
- AR Arch
- BA Barrel
- HO HorseShoe
- UN Unspecified

SEWER MATERIAL

- AC Asbestos Cement
- BR Brick
- PE Polyethylene
- RP Reinforced Plastic Matrix
- CO Concrete
- CSB Concrete Segment Bolted
- CSU Concrete Segment Unbolted
- CC Concrete Box Culverted
- PSC Plastic / Steel Composite
- GRC Glass Reinforced Plastic
- DI Ductile Iron
- PVC Polyvinyl Chloride
- CI Cast Iron
- SI Spun Iron
- ST Steel
- VC Vitrified Clay
- PP Polypropylene
- PF Pitch Fibre
- MAC Masonry Coursed
- MAR Masonry Random
- U Unspecified

Address or Site Reference:

467 WALSHAW ROAD,
BURY,
BL8 3AA

OS sheet Number: SD7711NE
Scale: 1:1250
Date: 19/04/2018
Nodes: 156
Sheet: 2 of 8

Printed by: Property Searches

The position of the underground apparatus shown on this plan is approximate only and is given in accordance with the best information currently available. United Utilities Water will not accept liability for any loss or damage caused by the actual position being different from those shown.

SEWER RECORDS

United Utilities
helping life flow smoothly

The position of the underground apparatus shown on this plan is approximate only and is given in accordance with the best information currently available. United Utilities Water will not accept liability for any loss or damage caused by the actual position being different from those shown.

Refno	Cover	Func	Invert	Size x	Size y	Shape	Matl	Length	Grad
7401	136.91	FO	134.28	225			VC	47.01064	1 in 51
7403		CO		100			VC	12.70256	
7404		CO		100			VC	11.13654	
6405		CO		150			VC	2.927649	
6406		CO		100			VC	6.599826	
6407		CO		100			VC	10.55865	
6408		CO		100			VC	4.098691	
6507		SW	0	225			VC	18.97367	
6512		FO	0	225			VC	24.59675	
5913	125.96	CO	125.41	175			CI	13.92839	1 in 116
5913	125.96	CO	125.41	175			CI	13.92839	1 in 116
5910	126.8	CO	125.76	175			CI	36.23534	1 in 104
5910	126.8	CO	125.76	175			CI	36.23534	1 in 104
9402	130.26	FO	128.7	225			VC	30.41381	1 in 19
9402	130.26	FO	128.7	225			VC	30.41381	1 in 19
9502	132.58	CO	131.18	300			VC	119.3315	1 in 17
0407	127.91	SW	125.24	300			VC	22.84732	1 in 99
0407	127.91	SW	125.24	300			VC	22.84732	1 in 99
0406	127.94	FO	125.6	225			VC	8.062258	1 in 50
0406	127.94	FO	125.6	225			VC	8.062258	1 in 50
0408	126.97	SW	125.44	225			VC	24.59675	1 in 224
0408	126.97	SW	125.44	225			VC	24.59675	1 in 224
8405	134.62	SW	132.25	225			CO	57.03508	1 in 124
8406	134	SW	132.65	225			CO	26.92582	1 in 67
9501		CO	0	300			VC	39.81206	
7053	118.71	SW	116.68	225			VC	13	1 in 65
7053	118.71	SW	116.68	225			VC	13	1 in 65
7052	118.91	SW	117.01	225			VC	36.67424	1 in 115
7052	118.91	SW	117.01	225			VC	36.67424	1 in 115
7010		FO		100			VC	12.07382	
7010		FO		100			VC	12.07382	
7004	119	CO	117.29	225			VC	12.20656	
7004	119	CO	117.29	225			VC	12.20656	
7003		CO	0	225			VC	41.14608	
7051		SW	0	225			VC	8.944272	
8909	119.71	FO	118.4	225			VC	47.67599	1 in 101
8909	119.71	FO	118.4	225			VC	47.67599	1 in 101
7906	119.4	FO	117.92	225			VC	55.44366	1 in 154
7906	119.4	FO	117.92	225			VC	55.44366	1 in 154
7910	119.87	SW	118.05	300			VC	53.33854	1 in 56
7910	119.87	SW	118.05	300			VC	53.33854	1 in 56
7908	119.54	SW	117.06	300			VC	25.52377	1 in 41
7908	119.54	SW	117.06	300			VC	25.52377	1 in 41
7907	119.65	FO	117.53	225			VC	14.03567	
7907	119.65	FO	117.53	225			VC	14.03567	
7009		CO	0	225			VC	58.69412	
7009		CO	0	225			VC	58.69412	
7056	119.18	SW	116.42	300			VC	6.819517	
7056	119.18	SW	116.42	300			VC	6.819517	
7054	118.81	SW	116.36	300			VC	19.2521	
7054	118.81	SW	116.36	300			VC	19.2521	
7006	119.11	CO	116.41	225			VC	4.921517	1 in 3
7006	119.11	CO	116.41	225			VC	4.921517	1 in 3
7005		CO	0	225			VC	34.05877	
7005		CO	0	225			VC	34.05877	
5906	123.89	SW	122.89	150			VC	31.01612	1 in 12
5906	123.89	SW	122.89	150			VC	31.01612	1 in 12
7919	129.01	FO	126.4	225			VC	7.990388	
7917	125.41	FO	123.1	225			VC	12	1 in 22
7917	125.41	FO	123.1	225			VC	12	1 in 22
7921	125.19	SW	122.57	225			VC	11.04536	1 in 14
7921	125.19	SW	122.57	225			VC	11.04536	1 in 14
5908	121.54	SW	120.19	150			VC	13	1 in 13
5908	121.54	SW	120.19	150			VC	13	1 in 13
7916	123.66	FO	120.15	225			VC	13	1 in 11
7916	123.66	FO	120.15	225			VC	13	1 in 11
7913	122.97	SW	120.39	225			VC	7	1 in 12
7913	122.97	SW	120.39	225			VC	7	1 in 12
5909	120.41	SW	119.13	150			VC	85.07056	
5909	120.41	SW	119.13	150			VC	85.07056	
7912	120.77	SW	118.97	225			VC	10.63015	1 in 17
7912	120.77	SW	118.97	225			VC	10.63015	1 in 17
7915	120.05	FO	118.93	225			VC	8.246211	1 in 3
7915	120.05	FO	118.93	225			VC	8.246211	1 in 3
7911	120.06	SW	118.32	225			VC	26.01922	1 in 113
7911	120.06	SW	118.32	225			VC	26.01922	1 in 113
6907	120	CO	116.94	225			VC	81.00617	1 in 62
6907	120	CO	116.94	225			VC	81.00617	1 in 62
7920	119.8	CO	115.61	300			VC	29.41088	
7920	119.8	CO	115.61	300			VC	29.41088	
6909		CO	0	150			VC	4.123106	
6909		CO	0	150			VC	4.123106	
6908	119.79	CO	117.04	225			VC	22	1 in 220
6908	119.79	CO	117.04	225			VC	22	1 in 220
5054	119.24	SW	116.53	600			CO	7.81025	
5054	119.24	SW	116.53	600			CO	7.81025	
6007	119.17	SW	117.57	375			CO	8.062258	1 in 8
6007	119.17	SW	117.57	375			CO	8.062258	1 in 8
5051	121.84	SW	119.9	375			CO	47.19004	1 in 23
8910	119.72	SW	118.6	225			VC	45.54119	1 in 31
8910	119.72	SW	118.6	225			VC	45.54119	1 in 31
7012		SW		1800				113.1991	
7012		SW		1800				113.1991	
8908	120.49	FO	119.11	225			VC	26	1 in 37
8908	120.49	FO	119.11	225			VC	26	1 in 37
8911	120.51	SW	119.43	225			VC	29.54657	1 in 36
8911	120.51	SW	119.43	225			VC	29.54657	1 in 36
8903	123.82	FO	122.23	225			VC	47.50789	1 in 15
7922		FO		100			VC	12.70196	
7930		FO		100			VC	12.71219	
7902	128.53	SW	127.12	225			VC	22	
7904	124.77	SW	123.96	150			VC	27.29469	
7904	124.77	SW	123.96	150			VC	27.29469	
7903	126.76	SW	125.78	150			VC	18.11077	1 in 3
7903	126.76	SW	125.78	150			VC	18.11077	1 in 3
7932		FO		150			VC	9.673963	
7932		FO		150			VC	9.673963	
7933		FO		100			VC	18.59845	
7933		FO		100			VC	18.59845	
7931		FO		100			VC	18.33444	
7931		FO		100			VC	18.33444	
6806		FO		100			VC	10.47647	
6804	131.18	SW	129.6	150			VC	41	1 in 21
6805		FO		100			VC	21.47455	
6803	131.59	FO	129.92	150			VC	30.26549	1 in 11
6903	131.18	SW	129.6	225			VC	31.40091	1 in 19
6902	129.8	FO	127.74	150			VC	37.05402	1 in 81
6901	129.28	FO	127.27	225			VC	24	1 in 28
6905	129.26	SW	127.65	225			VC	32.01562	1 in 36
6904	129.57	SW	127.97	225			VC	20.02498	1 in 65
6910		CO		100			VC	30.70697	
6910		CO		100			VC	30.70697	
8803	127.9	SW	126.11	225			VC	47.29694	1 in 49
9803	122.02	FO	120.39	225			VC	44.72136	
9802	126.27	FO	122.9	150			PVC	63.07139	1 in 115
9801	126.28	SW	122.69	225			VC	59.05929	1 in 69
8902	124.76	SW	122.27	225			VC	13.60147	1 in 45
8904	124.64	FO	123.07	150			VC	14.31782	1 in 20
8901	123.8	SW	121.86	225			VC	48.33218	1 in 20
9951	118.23	SW	113.75	450			CO	54.91812	
9951	118.23	SW	113.75	450			CO	54.91812	
9003	113.94	CO	112.64	375			VC	5.830952	1 in 5
9003	113.94	CO	112.64	375			VC	5.830952	1 in 5
9001	113.64	CO	110.82	525			CO	2.236068	
9001	113.64	CO	110.82	525			CO	2.236068	
8102	121.6	CO	113.92	375			CO	114.2147	1 in 38
7927		FO		150			VC	29.27374	
8801	128.78	SW	127.48	150			VC	20.02498	1 in 19
8907	127.85	SW	126.42	150			VC	9.899495	1 in 15
8905	127.13	FO	124.99	150			VC	49.0408	1 in 26
8906	127.16	SW	125.65	225			VC	48.04165	1 in 14
7806		SW		100			VC	17.31094	
7805	131.8	FO	129.16	225			VC	32.24903	1 in 14
7801	132.37	FO	130.86	225			VC	79	1 in 48
7804	131.84	SW	129.22	225			VC	52.08647	1 in 25
7802	132.38	SW	130.59	225			VC	59.03389	1 in 44
4857	134.53	SW	131.84	225			VC	51.3057	1 in 40
4856	134.52	SW	132.04	225			VC	45.25483	1 in 24
4802	134.36	FO	131.8	225			VC	41.86884	1 in 24
4858	134.76	SW	132.06	225			VC	4	1 in 40
4752	137.6	SW	136.38	225			VC	42.19004	1 in 13
4803	135.58	FO	133.44	225			VC	13.60147	1 in 8
4855	133.59	SW	132.4	225			VC	35.35534	1 in 110
4804	136.02	FO	133.99	225			VC	14.76482	1 in 27
7803	131.11	SW	129.46	150			VC	51.0098	1 in 30
8802	129.38	SW	127.68	225			VC	53.15073	1 in 35
6801	133.82	SW	131.93	225			VC	57.03508	1 in 46
6802	133.7	FO	132.05	225			VC	47	1 in 41
7919	129.01	FO		225			VC	27.0239	
7901	128.56	FO	126.83	225			VC	41.04875	1 in 98
7923		FO		100			VC	43.83807	
7923		FO		100			VC	43.83807	
7914	128.95	SW	126.73	225			VC	38.0526	1 in 16
5704		SW		100			VC	9.424415	
6701	135.3	SW	133.6	225			VC	59.6825	1 in 37
5802	135.48	SW	133.65	150			VC	83.25864	1 in 20
6807		FO		100			VC	10.5365	
0707	124.95	SW	121.46	450			CO	15.40469	
0707	124.95	SW	121.46	450			CO	15.40469	
0708		SW	0	450			CO	39.6066	
0708		SW	0	450			CO	39.6066	
0801	125.29	SW	120.19	450			CO	85.69222	
0801	125.29	SW	120.19	450			CO	85.69222	
9805		CO		0			VC	6.960497	
9804	127.02	SW	125.11	225			VC	49.64877	1 in 21
9851		SW	0	450			CO	39.96248	
9851		SW	0	450			CO	39.96248	
0901	113.34	CO	109.9	525			AC	99.0404	1 in 165
0901	113.34	CO	109.9	525			AC	99.0404	1 in 165
0901	113.34	CO	109.9	525			AC	99.0404	1 in 165
0901	113.34	CO	109.9	525			AC	99.0404	1 in 165
9002	113.42	CO	110.56	525			VC	93.13431	1 in 141
9002	113.42	CO	110.56	525			VC	93.13431	1 in 141
4701	137.08	FO	134.83	225			VC	14.4222	1 in 17
4702	137.62	FO	136.24	150			VC	9.848858	1 in 7
5905	130.82	SW	126.83	225			VC	18.43909	
5912	129.67	CO	126.64	175			CI	5	1 in 16
5917		FO		100			VC	15.54444	
5702	137.88	SW	137.04	225			VC	206.9636	
5901	124.88	SW	123.3	150			VC	6.324555	1 in 16
5901	124.88	SW	123.3	150			VC	6.324555	1 in 16
9705		FO		100			PVC	10.74888	
9703	128.14	SW	123.9	450			CO	17.28319	1 in 20
9702	128.16	FO	126.34	939			CO	19.17345	1 in 60
9609	127.74	SW	123.02	450			CO	76.72817	1 in 183
9602	127.78	FO	126.02	939			CO	76.23384	1 in 22
9602	127.78	FO	126.02	939			CO	76.23384	1 in 22
0706	125.06	SW	122.6	450			CO	68.03998	1 in 60
0703	124.89	FO	123.03	939			CO	67.76073	1 in 151
0703	124.89	FO	123.03	939			CO	67.76073	1 in 151
7651	132.53	SW	128.46	450			CO	84.48077	1 in 39

Refno	Cover	Func	Invert	Size x	Size y	Shape	Matl	Length	Grad
7601		FO	0	225			VC	81.3941	
7706		FO		100			VC	41.37611	
8710		FO		100			VC	18.09166	
8701	130.72	SW	128.97	450			CO	25.88181	1 in 144
8702	130.42	SW	128.79	450			CO	37.60959	1 in 85
8705	130.82	FO	128.97	939			CO	26.58193	1 in 47
8706	130.39	FO	128.41	939			CO	37.04357	1 in 100
8709	129.87	FO	127.51	225			CO	30.04278	1 in 107
9604	129.83	SW	125.23	450			CO	24.85618	1 in 56
8651	131.38	SW	126.26	450			CO	44.11641	
8704	129.86	SW	128.15	450			CO	50.53435	1 in 17
8708	129.89	FO	127.86	939			CO	43.95328	1 in 126
8707	130.06	FO	128.04	939			CO	17.41156	1 in 97
8703	130.09	SW	128.35	450			CO	20.64111	1 in 103
5701	136.81	SW	135.23	150			VC	58.24946	1 in 36
6705		FO		100			VC	34.40716	
6614		FO		150			VC	17.09214	
5602	140.66	SW	139.49	225			VC	75.60423	1 in 31
4753	139.68	SW	138.36	225			VC	22.80351	
4710		FO		150			PF	9.876245	
7652	133.11	SW	130.08	375			CO	35.4683	1 in 68
7752	132.3	SW	128.68	300			CO	18.24829	1 in 130
7702	132.28	FO	129.63	225			VC	22.09072	
7705		FO		100			VC	8.426228	
7705		FO		100			VC	21.25406	
6604	136	SW	133.93	225			VC	69.52697	1 in 18
6603	135.01	FO	132.48	225			VC	68.76772	1 in 38
7703		FO		100			VC	9.781967	
9614	128.72	FO	126.33	225			VC	62.5551	1 in 95
9614	128.72	FO	126.33	225			VC	62.5551	1 in 95
0505	128.76	SW	127.05	939			CO	59.81812	1 in 162
0505	128.76	SW	127.05	939			CO	59.81812	1 in 162
0603		SW		0			VC	35.44939	
0603		SW		0			VC	35.44939	
9612	129.5	FO	126.88	225			VC	22.68798	1 in 151
9613	129.99	FO	126.73	225			VC	59.07065	1 in 148
9606	129.92	SW	128.26	450			CO	21.0802	1 in 43
9603	128.65	SW	126.68	939			CO	60.94535	1 in 27
9603	128.65	SW	126.68	939			CO	60.94535	1 in 27
9611	129.05	FO	127	225			VC	19.34231	1 in 161
9607	129.49	SW	127.77	450			CO	19.64998	1 in 6
9610	129.66	FO	127.23	225			VC	32.14328	1 in 140
9605	129.69	SW	124.79	450			CO	31.6363	1 in 66
9608	128.98	SW	124.31	450			CO	36.36266	1 in 28
5601	138.74	SW	136.61	300			CO	41.88078	1 in 30
6602	137.48	FO	135.01	300			VC	50.77402	1 in 20
6608		FO		150			VC	19.65233	
6607		FO		150			VC	7.769871	
0507	128.64	FO	125.67	225			CO	42.45197	1 in 38
0507	128.64	FO	125.67	225			CO	42.45197	1 in 38
0514		FO		100			VC	10.18797	
0514		FO		100			VC	10.18797	
0604		FO		100			VC	9.323336	
0604		FO		100			VC	9.323336	
0516		FO		100			VC	5.787055	
0516		FO		100			VC	5.787055	
0515		FO		100			VC	11.16586	
0515		FO		100			VC	11.16586	
7603	133.85	FO	131.26	225			VC	35.73514	1 in 143
7653	133.83	SW	130.38	375			CO	35.44009	1 in 111
7605		FO		0			VC	11.28121	
7602	133.09	FO	131	225			VC	36.79674	
0511		FO		100			VC	8.575326	
0511		FO		100			VC	8.575326	
9503	131.34	SW	129.81	939			CO	12.93917	1 in 26
9504	131.02	SW	129.31	939			CO	46.06453	1 in 44
9505	130.97	FO	129.01	225			VC	42.3201	1 in 19
0512		SW		0			VC	6.908939	
0512		SW		0			VC	6.908939	
6551	137.83	SW	134.94	300			CO	51.61395	1 in 29
6501	137.7	FO	135.11	300			CO	46.87217	1 in 33
6607		FO		150			VC	5.141829	
6651	136.51	SW	132.91	300			CO	49.1935	1 in 33
6601	136.52	FO	133.64	225			VC	50.08992	1 in 30
7551	135.3	SW	131.36	300			CO	32.44996	1 in 54
7501	135.29	FO	131.9	225			VC	26.62705	1 in 89
7604	134.58	FO	131.33	225			VC	38.0526	1 in 951
7654	134.51	SW	130.74	375			CO	37.05402	1 in 247
8502	133.91	FO	131.02	225			VC	74.09454	1 in 77
8552	133.92	SW	130.94	300			CO	75.54935	1 in 85
8601	131.11	FO	129.01	225			VC	62.19009	1 in 259
8551	131.89	SW	130.05	300			CO	43.78757	1 in 33
8602	131.66	FO	128.94	225			VC	67.41157	1 in 33
8501	131.91	FO	130.06	225			VC	25.12753	1 in 19
6505		SW	0	225			VC	15.65248	
6506		SW	0	225			VC	22.02271	
6511		FO	0	225			VC	17.11724	
6504		SW	0	225			VC	11.18034	
6502		SW	0	225			CO	24.73863	
6508		FO	0	225			CO	24.73863	
7405		CO		100			VC	11.51569	
8503	134.77	SW	133.23	225			VC	29	1 in 39
7505	134.67	SW	132.02	225			VC	56.88585	1 in 58
7504	134.68	FO	131.33	225			VC	56.71861	1 in 210
7502	133.91	SW	132.33	225			VC	38.20995	1 in 136
7503	134.09	FO	131.33	225			VC	31.257	
4406		CO		100			UN	5.514241	
4412		CO		150			VC	10.83996	
4400	146.92	SW	145.13	225			VC	6.082763	
4401	146.78	CO	144.14	225			VC	64.60784	
4416		CO		150			VC	3.492679	
5914	125.84	CO	125.29	175			CI	49.40789	
5914	125.84	CO	125.29	175			CI	49.40789	
7716		FO		100			VC	12.86955	
7721		SW		300			CO	17.71227	
6703	133.63	FO	130.62	225			VC	41.23771	
7751	132.1	SW	129.05	300			CO	33.12099	1 in 107
7720		SW		100			VC	16.78276	
7715		FO		100			VC	10.39799	
6516		FO		100			VC	3.693306	
7722		FO		225			VC	22.79353	
6517		FO		100			VC	6.981816	
6509		FO	0	225			VC	10.29563	
6751	133.64	SW	130.04	300			CO	46.31897	
7701	132.07	FO	129.72	225			VC	30.23243	1 in 432
7704		FO		100			VC	41.64567	
6510		FO	0	225			VC	15.26434	
6519		FO		100			VC	11.70322	

LEGEND

Abandoned	Foul	Surface Water	Combined	
				Public Sewer
				Private Sewer
				Section 104
				Rising Main
				Sludge Main
				Overflow
				Water Course
				Highway Drain

All point assets follow the standard colour convention:
red - combined blue - surface water
brown - foul purple - overflow

- Manhole
- Head of System
- Extent of Survey
- Rodding Eye
- Inlet
- Discharge Point
- Vortex
- Penstock
- Washout Chamber
- Valve
- Air Valve
- Non Return Valve
- Soakaway
- Gully
- Cascade
- Flow Meter
- Hatch Box
- Oil Interceptor
- Summit
- Drop Shaft
- Orifice Plate
- Side Entry Manhole
- Outfall
- Screen Chamber
- Inspection Chamber
- Bifurcation Chamber
- Lamp Hole
- T Junction / Saddle
- Catchpit
- Valve Chamber
- Vent Column
- Vortex Chamber
- Penstock Chamber
- Network Storage Tank
- Sewer Overflow
- Ww Treatment Works
- Ww Pumping Station
- Septic Tank
- Control Kiosk
- Change of Characteristic

MANHOLE FUNCTION

FO Foul
SW Surface Water
CO Combined
OV Overflow

SEWER SHAPE

CI Circular TR Trapezoidal
EG Egg AR Arch
OV Oval BA Barrel
FT Flat Top HO HorseShoe
RE Rectangular UN Unspecified
SQ Square

SEWER MATERIAL

AC Asbestos Cement
BR Brick
PE Polyethylene
RP Reinforced Plastic Matrix
CO Concrete
CSB Concrete Segment Bolted
CSU Concrete Segment Unbolted
CC Concrete Box Culverted
PSC Plastic / Steel Composite
GRC Glass Reinforced Plastic
DI Ductile Iron
PVC Polyvinyl Chloride
CI Cast Iron
SI Spun Iron
ST Steel
VC Vitrified Clay
PP Polypropylene
PF Pitch Fibre
MAC Masonry, Coursed
MAR Masonry, Random
U Unspecified

Address or Site Reference:

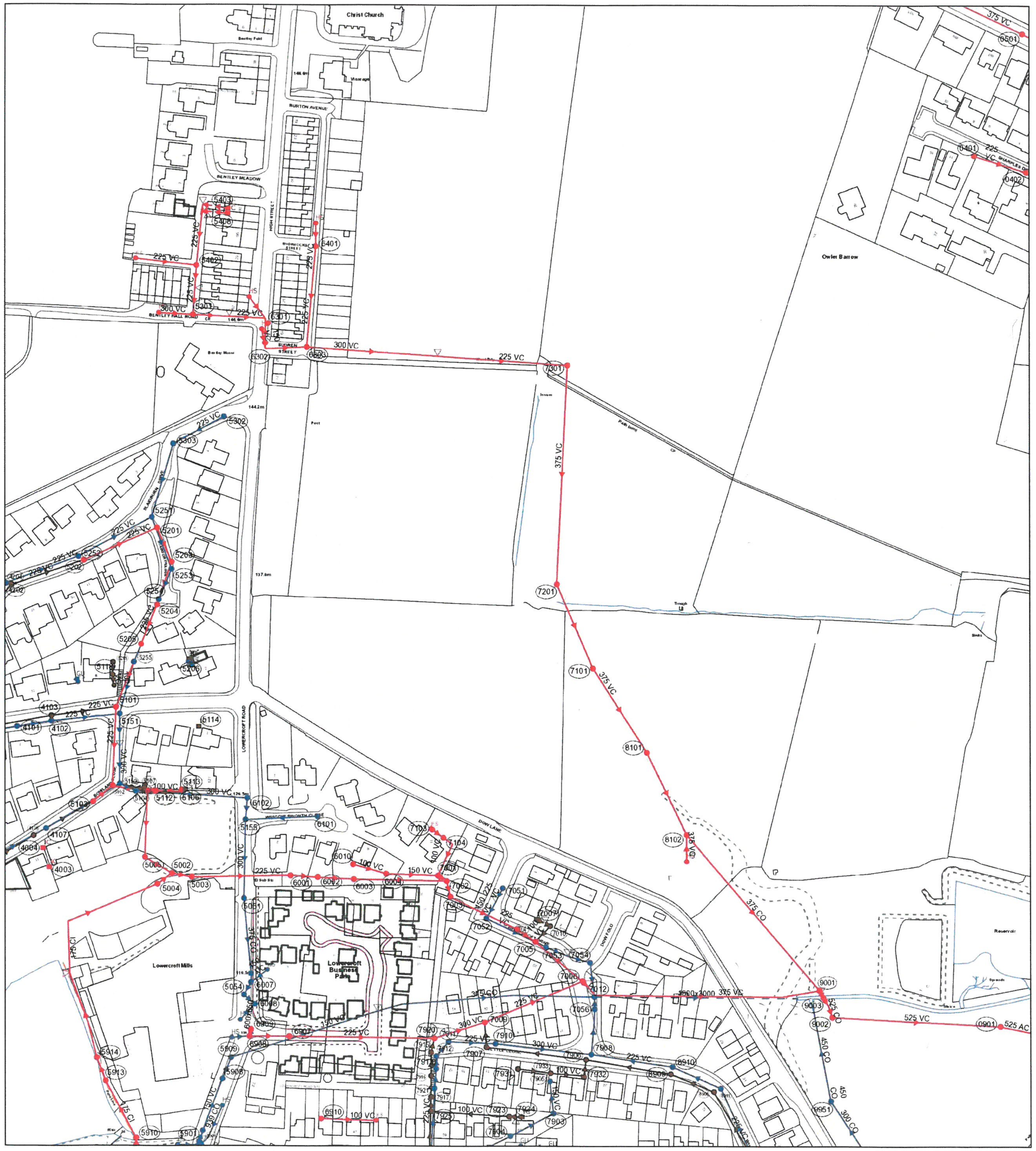
467 WALSHAW ROAD,
BURY,
BL8 3AA

OS sheet Number: SD7710NE
Scale: 1:1250 Date: 19/04/2018
Nodes: 319
Sheet: 3 of 8

Printed by: Property Searches

SEWER RECORDS

United Utilities
helping life flow smoothly



Refno	Cover	Func	Invert	Size x	Size y	Shape	Matl	Length	Grad
4108	132.45	FO	130.12	225			VC	38.07887	1 in 127
4107	132.44	SW	130.13	300			VC	48.02083	1 in 107
4102	138.4	SW	134.39	225			VC	38.20995	1 in 49
4103	138.33	FO	134.3	225			VC	36.34556	1 in 58
5103	132.61	CO	129.8	225			VC	14.21267	1 in 102
5913	125.96	CO	125.41	175			CI	13.92839	1 in 116
5913	125.96	CO	125.41	175			CI	13.92839	1 in 116
5910	126.8	CO	125.76	175			CI	36.23534	1 in 104
5910	126.8	CO	125.76	175			CI	36.23534	1 in 104
5102	132.62	CO	129.42	225			VC	19.83834	
5101	135.87	CO	131.48	225			VC	44.04543	1 in 22
5152	132.83	SW	129.42	300			VC	9.848858	1 in 7.80169344
5255	140.81	SW	136.73	225			VC	30.08322	1 in 8
5151	135.82	SW	131.48	225			VC	19	1 in 19
5104		CO	0	225			VC	37.09184	
5112		CO		100			VC	4.360823	
5205	140.78	CO	135.98	225			VC	37.69616	1 in 14
5254	141.18	SW	138.98	225			VC	37.69616	1 in 17
5204	141.23	CO	138	225			VC	23.76973	1 in 12
5203	142.69	CO	140.59	225			VC	25.29822	1 in 16
5253	142.62	SW	140.49	225			VC	18.38478	1 in 12
4204	147.81	FO	144.98	225			VC	42.37924	1 in 43
4202	147.79	SW	145	225			VC	42.72002	1 in 53
5201	144.71	CO	142.26	225			VC	20.61553	1 in 12
5202	146.47	CO	143.97	225			VC	44.77723	1 in 34
5251	144.72	SW	141.92	225			VC	31.01612	1 in 22
5252	146.65	SW	144.16	225			VC	46.52956	1 in 21
5303	146.22	SW	143.09	225			VC	42.72002	1 in 75
5302	145.12	SW	143.5	225			VC	31.76476	1 in 88
6303	145.51	CO	0	300			VC	73.17104	
6302	145.88	CO	142.1	300			VC	23.02173	
6301	146.42	CO	142.42	300			VC	17	1 in 61
6401	146.42	CO	143.53	225			VC	56.22277	
6401	146.42	CO	143.53	225			VC	56.22277	
5301	148.32	CO	145.22	300			VC	20.02498	1 in 14
4101		SW	0	225			VC	19.23538	
9501	129.11	CO	125.75	375			VC	86.33076	1 in 81
0401	128.32	CO	126.14	225			VC	30.36445	1 in 43
0401	128.32	CO	126.14	225			VC	30.36445	1 in 43
0401	128.32	CO	126.14	225			VC	30.36445	1 in 43
0401	128.32	CO	126.14	225			VC	30.36445	1 in 43
0501	126.95	CO	124.22	375			VC	51.88449	1 in 89
0501	126.95	CO	124.22	375			VC	51.88449	1 in 89
0501	126.95	CO	124.22	375			VC	51.88449	1 in 89
0501	126.95	CO	124.22	375			VC	51.88449	1 in 89
0402	127.8	CO	125.43	225			VC	22.80351	1 in 17
0402	127.8	CO	125.43	225			VC	22.80351	1 in 17
0402	127.8	CO	125.43	225			VC	22.80351	1 in 17
0402	127.8	CO	125.43	225			VC	22.80351	1 in 17
5402		CO		225			VC	12.51991	
5155	125.61	SW	0	300			VC	44.01136	
7001	121.33	CO	118.43	150			VC	5.830952	1 in 7
6002	122.42	CO	119.98	225			VC	20.02498	1 in 154
5002	125.56	CO	123.71	225			VC	11.18034	1 in 102
6001	122.74	CO	120.24	225			VC	15.0333	1 in 58
5003	124.68	CO	123.6	225			VC	55.00909	1 in 16
7104		CO		100			VC	25.66818	
6004	121.13	CO	119.11	150			VC	29.01724	1 in 44
6010		CO		100			VC	19.2215	
5005		CO	0	225			VC	17.49286	
6102	127.12	SW	124.57	300			VC	12.04159	
6101		SW	0	225			VC	40.04997	
5153	132.02	SW	128.83	300			VC	62.1289	1 in 0.49203213
5113		CO		100			VC	14.93359	
7053	118.71	SW	116.68	225			VC	13	1 in 65
7053	118.71	SW	116.68	225			VC	13	1 in 65
7052	118.91	SW	117.01	225			VC	36.67424	1 in 115
7052	118.91	SW	117.01	225			VC	36.67424	1 in 115
7010		FO		100			VC	12.07382	
7010		FO		100			VC	12.07382	
7004	119	CO	117.29	225			VC	12.20656	
7004	119	CO	117.29	225			VC	12.20656	
7003		CO	0	225			VC	41.14608	
7051		SW	0	225			VC	8.944272	
8101	124.47	CO	119.68	375			VC	50.9902	1 in 12
7101	124.82	CO	122.02	375			VC	55.75841	
7201	129.88	CO	124.59	375			VC	51.07837	1 in 31
7301	133.86	CO	128.5	375			VC	122.1475	1 in 99
8909	119.71	FO	118.4	225			VC	47.67599	1 in 101
8909	119.71	FO	118.4	225			VC	47.67599	1 in 101
7906	119.4	FO	117.92	225			VC	55.44366	1 in 154
7906	119.4	FO	117.92	225			VC	55.44366	1 in 154
7910	119.87	SW	118.05	300			VC	53.33854	1 in 56
7910	119.87	SW	118.05	300			VC	53.33854	1 in 56
7908	119.54	SW	117.06	300			VC	25.52377	1 in 41
7908	119.54	SW	117.06	300			VC	25.52377	1 in 41
7907	119.65	FO	117.53	225			VC	14.03567	
7907	119.65	FO	117.53	225			VC	14.03567	
7009		CO	0	225			VC	58.69412	
7009		CO	0	225			VC	58.69412	
7056	119.18	SW	116.42	300			VC	6.819517	
7056	119.18	SW	116.42	300			VC	6.819517	
7054	118.81	SW	116.36	300			VC	19.2521	
7054	118.81	SW	116.36	300			VC	19.2521	
7006	119.11	CO	116.41	225			VC	4.921517	1 in 3
7006	119.11	CO	116.41	225			VC	4.921517	1 in 3
7005		CO	0	225			VC	34.05877	
7005		CO	0	225			VC	34.05877	
5906	123.89	SW	122.89	150			VC	31.01612	1 in 12
5906	123.89	SW	122.89	150			VC	31.01612	1 in 12
7919	129.01	FO	126.4	225			VC	7.990388	
7917	125.41	FO	123.1	225			VC	12	1 in 22
7917	125.41	FO	123.1	225			VC	12	1 in 22
7921	125.19	SW	122.57	225			VC	11.04536	1 in 14
7921	125.19	SW	122.57	225			VC	11.04536	1 in 14
5908	121.54	SW	120.19	150			VC	13	1 in 13
5908	121.54	SW	120.19	150			VC	13	1 in 13
7916	123.66	FO	120.15	225			VC	13	1 in 11
7916	123.66	FO	120.15	225			VC	13	1 in 11
7913	122.97	SW	120.39	225			VC	7	1 in 12
7913	122.97	SW	120.39	225			VC	7	1 in 12
5909	120.41	SW	119.13	150			VC	85.07056	
5909	120.41	SW	119.13	150			VC	85.07056	
7912	120.77	SW	118.97	225			VC	10.63015	1 in 17
7912	120.77	SW	118.97	225			VC	10.63015	1 in 17
7915	120.05	FO	118.93	225			VC	8.246211	1 in 3
7915	120.05	FO	118.93	225			VC	8.246211	1 in 3
7911	120.06	SW	118.32	225			VC	26.01922	1 in 113
7911	120.06	SW	118.32	225			VC	26.01922	1 in 113
6907	120	CO	116.94	225			VC	81.00617	1 in 62
6907	120	CO	116.94	225			VC	81.00617	1 in 62
7920	119.8	CO	115.61	300			VC	29.41088	
7920	119.8	CO	115.61	300			VC	29.41088	
6909		CO	0	150			VC	4.123106	
6909		CO	0	150			VC	4.123106	
6908	119.79	CO	117.04	225			VC	22	1 in 220
6908	119.79	CO	117.04	225			VC	22	1 in 220
5054	119.24	SW	116.53	600			CO	7.81025	
5054	119.24	SW	116.53	600			CO	7.81025	
6007	119.17	SW	117.57	375			CO	8.062258	1 in 8
6007	119.17	SW	117.57	375			CO	8.062258	1 in 8
5051	121.84	SW	119.9	375			CO	47.19004	1 in 23
7002	119.37	CO	117.56	225			VC	9.219544	
5004	125.57	CO	123.78	175			CI	10	1 in 143
6003	122	CO	119.85	225			VC	52.00961	1 in 23
8910	119.72	SW	118.6	225			VC	45.54119	1 in 31
8910	119.72	SW	118.6	225			VC	45.54119	1 in 31
7012		SW		1800				113.1991	
7012		SW		1800				113.1991	
8908	120.49	FO	119.11	225			VC	26	1 in 37
8908	120.49	FO	119.11	225			VC	26	1 in 37
8911	120.51	SW	119.43	225			VC	29.54657	1 in 36
8911	120.51	SW	119.43	225			VC	29.54657	1 in 36
8903	123.82	FO	122.23	225			VC	47.50789	1 in 15
7904	124.77	SW	123.96	150			VC	27.29469	
7904	124.77	SW	123.96	150			VC	27.29469	
7903	126.76	SW	125.78	150			VC	18.11077	1 in 3
7903	126.76	SW	125.78	150			VC	18.11077	1 in 3
7932		FO		150			VC	9.673963	
7932		FO		150			VC	9.673963	
7933		FO		100			VC	18.59845	
7933		FO		100			VC	18.59845	
7931		FO		100			VC	18.33444	
7931		FO		100			VC	18.33444	
6910		CO		100			VC	30.70697	
6910		CO		100			VC	30.70697	
8901	123.8	SW	121.86	225			VC	48.33218	1 in 20
9951	118.23	SW	113.75	450			CO	54.91812	
9951	118.23	SW	113.75	450			CO	54.91812	
9003	113.94	CO	112.64	375			VC	5.830952	1 in 5
9003	113.94	CO	112.64	375			VC	5.830952	1 in 5
9001	113.64	CO	110.82	525			CO	2.236068	
9001	113.64	CO	110.82	525			CO	2.236068	
8102	121.6	CO	113.92	375			CO	114.2147	1 in 38
7919	129.01	FO		225			VC	27.0239	
7923		FO		100			VC	43.83807	
7923		FO		100			VC	43.83807	
7914	128.95	SW	126.73	225			VC	38.0526	1 in 16
0901	113.34	CO	109.9	525			AC	99.0404	1 in 165
0901	113.34	CO	109.9	525			AC	99.0404	1 in 165
0901	113.34	CO	109.9	525			AC	99.0404	1 in 165
0901	113.34	CO	109.9	525			AC	99.0404	1 in 165
9002	113.42	CO	110.56	525			VC	93.13431	1 in 141
9002	113.42	CO	110.56	525			VC	93.13431	1 in 141
5905	130.82	SW	126.83	225			VC	18.43909	
5912	129.67	CO	126.64	175			CI	5	1 in 16
5702	137.88	SW	137.04	225			VC	206.9636	
5901	124.88	SW	123.3	150			VC	6.324555	1 in 16
5901	124.88	SW	123.3	150			VC	6.324555	1 in 16
5914	125.84	CO	125.29	175			CI	49.40789	
5914	125.84	CO	125.29	175			CI	49.40789	
5206		SW		100			VC	2.64441	
5207		FO		100			VC	3.419007	
5211		FO		100			VC	7.093125	
5118		FO		100			VC	6.544968	

Refno	Cover	Func	Invert	Size x	Size y	Shape	Matl	Length	Grad

LEGEND

Abandoned | Foul | Surface Water | Combined

- Public Sewer
- Private Sewer
- Section 104
- Rising Main
- Sludge Main
- Overflow
- Water Course
- Highway Drain

All point assets follow the standard colour convention:
red - combined | blue - surface water
brown - foul | purple - overflow

- Manhole
- Head of System
- Extent of Survey
- Rodding Eye
- Inlet
- Discharge Point
- Vortex
- Penstock
- Washout Chamber
- Valve
- Air Valve
- Non Return Valve
- Soakaway
- Gully
- Cascade
- Flow Meter
- Hatch Box
- Oil Interceptor
- Summit
- Drop Shaft
- Orifice Plate
- Side Entry Manhole
- Outfall
- Screen Chamber
- Inspection Chamber
- Bifurcation Chamber
- Lamp Hole
- T Junction / Saddle
- Catchpit
- Valve Chamber
- Vent Column
- Vortex Chamber
- Penstock Chamber
- Network Storage Tank
- Sewer Overflow
- Ww Treatment Works
- Ww Pumping Station
- Septic Tank
- Control Kiosk
- Change of Characteristic

MANHOLE FUNCTION

FO	Foul
SW	Surface Water
CO	Combined
OV	Overflow

SEWER SHAPE

CI	Circular	TR	Trapezoidal
EG	Egg	AR	Arch
OV	Oval	BA	Barrel
FT	Flat Top	HO	HorseShoe
RE	Rectangular	UN	Unspecified
SQ	Square		

SEWER MATERIAL

AC	Asbestos Cement
BR	Brick
PE	Polyethylene
RP	Reinforced Plastic Matrix
CO	Concrete
CSB	Concrete Segment Bolted
CSU	Concrete Segment Unbolted
CC	Concrete Box Culverted
PSC	Plastic / Steel Composite
GRC	Glass Reinforced Plastic
DI	Ductile Iron
PVC	Polyvinyl Chloride
CI	Cast Iron
S	Spun Iron
ST	Steel
VC	Vitrified Clay
PP	Polypropylene
PF	Pitch Fibre
MAC	Masonry Coursed
MAR	Masonry Random
U	Unspecified

Address or Site Reference:

467 WALSHAW ROAD,
BURY,
BL8 3AA

OS sheet Number: SD7711SE
Scale: 1:1250 | Date: 19/04/2018
Nodes: 185
Sheet: 4 of 8

Printed by: Property Searches

SEWER RECORDS

Refno	Cover	Func	Invert	Size x	Size y	Shape	Matl	Length	Grad
3501	125.51	FO	123.46	150			CO	55.44241	1 in 15
3410	121.68	SW	119.45	300			CO	71.31841	1 in 17
3502	125.49	SW	123.82	150			CO	53.05423	1 in 16
3401	122.04	CO	118.41	600			CO	15.53446	
3402	122.46	CO	0	600			CO	50.2609	
3411	123.74	SW	122.1	150			CO	23.98211	1 in 48
3408	123.65	FO	121.53	150			CO	20.60849	1 in 61
4410	123.3	SW	119.57	150			CO	28.01653	1 in 11
4409	123.26	SW	121.5	150			CO	18.8314	1 in 9
4403	123.27	FO	121.19	150			CO	20.44136	1 in 11
4404	123.29	FO	119.26	150			CO	24.80179	1 in 4
4405	121.96	SW	116.97	150			CO	17.50477	1 in 10
4406	120.03	SW	115.23	150			CO	14.8256	1 in 32
4402	117.84	CO	114.61	825			CO	59.09315	1 in 52
4401	121.95	CO	113.75	825			CO	44.78347	
5404	117.63	CO	113.47	900			CO	16.40122	
5403		CO	0	900			CO	62.68174	
2504	125.12	FO	123.15	150			CO	25.54655	1 in 9
2507	125.28	SW	123.7	150			CO	29.78914	1 in 11
2410	121.55	CO	118.74	600			CO	58.95068	1 in 184
2413	121.43	SW	118.9	300			CO	58.78921	1 in 131
2407		SW	0	150			VC	18.82503	
3404		SW	0	900			CO	22.65708	
3406	122.34	FO	119.66	150			CO	12.96614	1 in 10
3407	121.71	CO	118.42	600			CO	10.29073	1 in 1020
3409	122.42	SW	120.58	150			CO	15.29454	1 in 14
4407	117.89	SW	115.23	939			CO	26.59718	
2201	117.55	CO	115.07	450			VC	54.38112	
2306		FO		100			PVC	31.26718	
2303		CO		100			VC	4.383643	
2304		CO		100			VC	9.630923	
2201	117.55	CO		450			VC	1.312183	
3303	121.44	SW	114.29	525			VC	27.22215	1 in 97
1302	121.15	CO	114.01	600			VC	63.07193	1 in 1577
3310		CO		100			PVC	2.70683	
3311		CO		150			PVC	43.55569	
3301	116.88	SW	114.01	600			VC	31.19753	
3307		SW	0	1200			CO	12.28105	
3306		SW	0	900			CO	16.34686	
3308		SW	0	150			VC	4.709405	
3309		SW	0	150			VC	13.89602	
3206	119.63	SW	117.49	300			PVC	8.507165	1 in 108
2214	121.96	FO	119.03	150			VC	9.549798	1 in 68
2211	122.45	SW	120.55	150			VC	14.27273	1 in 26
2210	122	SW	120.13	225			VC	7.729482	1 in 64
2213	122.23	FO	119.16	150			VC	10.53399	1 in 81
2209	122.26	SW	120.24	225			VC	9.555045	1 in 87
2208	122.17	SW	120.56	225			VC	17.68954	1 in 55
2205	122.19	FO	119.35	150			VC	17.09632	1 in 90
2207	123.04	SW	121.48	150			VC	14.22097	1 in 18
2204	123.06	FO	120.42	150			VC	13.53197	1 in 13
2203	124.56	FO	121.73	150			VC	26.4061	1 in 20
2206	124.73	SW	123.14	150			VC	29.74626	1 in 18
3201	120.79	CO	117.94	225			VC	55.08337	
4201	121.01	CO	119.82	225			VC	24.73863	
1212		CO		100			VC	8.560339	
3213		CO		150			VC	15.57697	
4101	123.71	CO	121.2	225			VC	95.95419	
4217		CO		150			VC	15.95358	
4214		CO		100			VC	35.96318	
4208		CO		100			VC	4.520051	
5100	122.15	CO	119.54	375			VC	63.24555	1 in 30
2503	126.4	CO	125.17	150			VC	56.84404	1 in 94
2517		CO		100			VC	14.14791	
1551	127.47	SW	124.66	225			CO	68.8186	1 in 156
2411	123.04	SW	121.77	225			CO	37.08344	1 in 100
2408	123.22	FO	121.11	150			CO	34.10463	
2508	124.47	SW	121.98	300			CO	25.30915	1 in 211
2505	124.53	FO	120.44	150			CO	25.25582	1 in 87
1503	125.44	SW	123.84	225			CO	39.89339	1 in 16
1502	125.48	FO	123.45	150			CO	35.67051	1 in 26
2506	125.08	SW	121.4	300			CO	55.87791	1 in 175
2501	126.09	FO	121.69	150			CO	56.01735	1 in 45
0401	127.8	CO	123.49	525			VC	149.8905	
0503	128.01	CO	123.9	225			VC	12.0394	1 in 652
1501	127.56	CO	124.17	225			CO	34.05877	1 in 131
1402	125.87	SW	124.56	225			CO	40.68954	1 in 57
1401	125.82	FO	123.9	150			CO	40.7949	1 in 91
2406		SW	0	150			VC	22.53142	
2402	122.22	CO	118.85	675			CO	41.36455	1 in 259
2405		CO	0	150			VC	16.61417	
2412	123.08	SW	120.96	300			CO	30.02278	1 in 28
2409	123.16	FO	120.15	150			CO	28.85642	1 in 20
2401	121.51	CO	118.74	600			CO	4.656627	
0511		CO		100			VC	6.949281	
0511		CO		100			VC	6.949281	
0509		CO		100			VC	6.789247	
0509		CO		100			VC	6.789247	
0508		CO		100			VC	6.808056	
0508		CO		100			VC	6.808056	
0404		CO		150			VC	2.481385	
0403		CO		150			VC	2.481385	
0401	127.4	SW	125.89	100			VC	31.28447	
9401	127.4	SW	125.89	225			VC	63.78872	1 in 114
9402	127.49	SW	124.88	150			VC	63.78872	1 in 114
9502	129.64	CO	128.77	150			VC	62.96825	1 in 89
9514		CO		150			VC	62.96825	1 in 89
9512		CO		150			VC	40	1 in 9
1353	126.07	SW	123.62	225			VC	62.64982	1 in 99
1303	125.99	CO	123.38	225			VC	37.12142	1 in 52
1301	125.66	CO	122.66	225			VC	18.68154	1 in 83
0304	125.63	CO	122.81	225			VC	24.04163	1 in 65
0353	125.74	SW	123.49	225			VC	44.92215	1 in 90
1304	121.25	FO	0	525			VC	27.20794	
0306		CO		100			VC	13.65297	
0352	125.79	SW	123.79	150			VC	17.44425	1 in 65
0303	125.79	CO	123.36	225			VC	46.26164	1 in 84
0301	125.59	CO	123.71	150			VC	20.22375	1 in 81
0351	125.54	SW	124.1	150			VC	21.17756	1 in 97
9301	126.55	SW	124.75	300			VC	79.05694	1 in 68
9303	126.55	SW	124.75	300			VC	79.05694	1 in 68
9404	126.54	SW	125.3	225			VC	31.14482	1 in 59
9404	126.54	SW	125.3	225			VC	31.14482	1 in 59
0302	125.89	CO	123.57	225			VC	26.28427	1 in 141
0302	125.89	CO	123.57	225			VC	26.28427	1 in 141
1352	125.54	SW	122.96	300			VC	94.02127	1 in 78
1302	125.69	CO	122.39	225			VC	77.62967	1 in 80
2105	119.72	FO	116.89	150			VC	13.536	1 in 47
2106	119.26	CO	116.6	450			VC	61.78039	1 in 76.2720833
3101	119.26	CO	116.62	225			VC	37.43061	1 in 44
2101	118.59	CO	115.71	450			VC	62.24214	1 in 135
2102	119.87	SW	118.18	225			VC	5.265672	
2217	120.68	FO	118.67	150			VC	24.72985	1 in 14
2104	119.03	SW	114.92	1500			CO	75.45509	1 in 443.853498
2212	122.65	SW	120.01	225			VC	42.60234	1 in 23
3203	119.43	FO	117.2	150			PVC	23.77831	1 in 47
3204	119.28	SW	117.85	225			PVC	26.25806	1 in 105
2215	121.65	FO	118.89	150			VC	18.74032	1 in 85
9101	128.33	CO	124.49	375			VC	84.24303	
9104		FO	0	150			VC	30.94614	
9103	125.68	SW	123.43	225			VC	58.69412	
9103	125.68	SW	123.43	225			VC	58.69412	
9102	125.39	SW	123.7	225			VC	80.09994	1 in 30
9102	125.39	SW	123.7	225			VC	80.09994	1 in 30
9203	125.2	SW	123.57	300			VC	51.0066	1 in 116
9203	125.2	SW	123.57	300			VC	51.0066	1 in 116
9105		FO	0	150			VC	8.769351	
9105		FO	0	150			VC	8.769351	
9213		CO		100			VC	26.82301	
9212		CO		100			VC	26.82301	
0102	121.67	CO	118.41	450			VC	128.4144	1 in 71
0103	122.48	CO	119.17	375			VC	26.99611	1 in 36
0153	122.21	SW	120.16	225			VC	16.45122	1 in 117
0101	121.52	CO	119.19	300			VC	13.92839	1 in 41
0209		FO		150			VC	6.427929	
2216	122.35	FO	119.45	150			VC	8.843946	1 in 16
9106		CO	0	375			VC	73.83726	
9106		CO	0	375			VC	73.83726	
0205	124.92	SW	123.43	225			VC	61.61169	1 in 36
0205	124.92	SW	123.43	225			VC	61.61169	1 in 36
0152	122.62	SW	121	225			VC	17.02339	
0201	124.06	CO	121.65	225			VC	21.2132	1 in 106
0151	122.07	SW	120.18	300			VC	10.04988	
0201	122.4	CO	120.6	225			VC	19.92486	1 in 16
0202	123.99	CO	121.41	225			VC	56.32051	1 in 73
0204	123.75	SW	121.72	300			VC	34	1 in 46
4207	121.12	FO	118.65	300			VC	11.68171	1 in 83
4205	121.34	FO	119.38	150			VC	12.07747	1 in 93
4304	121.32	SW	119.07	750			CO	13.09836	1 in 436
4206	121.17	SW		225			VC	0.3112202	
1406		CO		100			VC	12.503	
4306	121.29	SW	118.89	900			CO	34.8793	1 in 436
4306	121.1	SW	119.81	900			CO	24.9724	1 in 357
5301	121.4	SW	119.22	750			CO	27.19953	1 in 194
4209	121.23	FO	118.99	300			VC	29.9487	1 in 136
4303	121.16	FO	119.41	150			VC	26.51647	1 in 884
5303	121.36	FO	119.58	150			VC	18.66913	1 in 111
4205	121.66	FO	118.77	300			VC	20.71889	1 in 173
4302	121.16	SW	119.13	750			CO	23.67344	1 in 395
3207	121.06	CO	118.51	225			VC	80.39213	1 in 149
4307	121.3	FO	119.25	150			VC	36.29447	1 in 147
4204	121.69	SW	118.74	900			CO	29.29535	1 in 419

LEGEND

Abandoned | Foul | Surface Water | Combined

- Public Sewer
- Private Sewer
- Section 104
- Rising Main
- Sludge Main
- Overflow
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- Highway Drain

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- Penstock
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- Side Entry Manhole
- Outfall
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- Bifurcation Chamber
- Lamp Hole
- T Junction / Saddle
- Catchpit
- Valve Chamber
- Vent Column
- Vortex Chamber
- Penstock Chamber
- Network Storage Tank
- Sewer Overflow
- Ww Treatment Works
- Ww Pumping Station
- Septic Tank
- Control Kiosk
- Change of Characteristic

MANHOLE FUNCTION

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CI	Cast Iron
SI	Spun Iron
ST	Steel
VC	Vitrified Clay
PP	Polypropylene
PF	Pitch Fibre
MAC	Masonry Coursed
MAR	Masonry Random
U	Unspecified

Address or Site Reference:

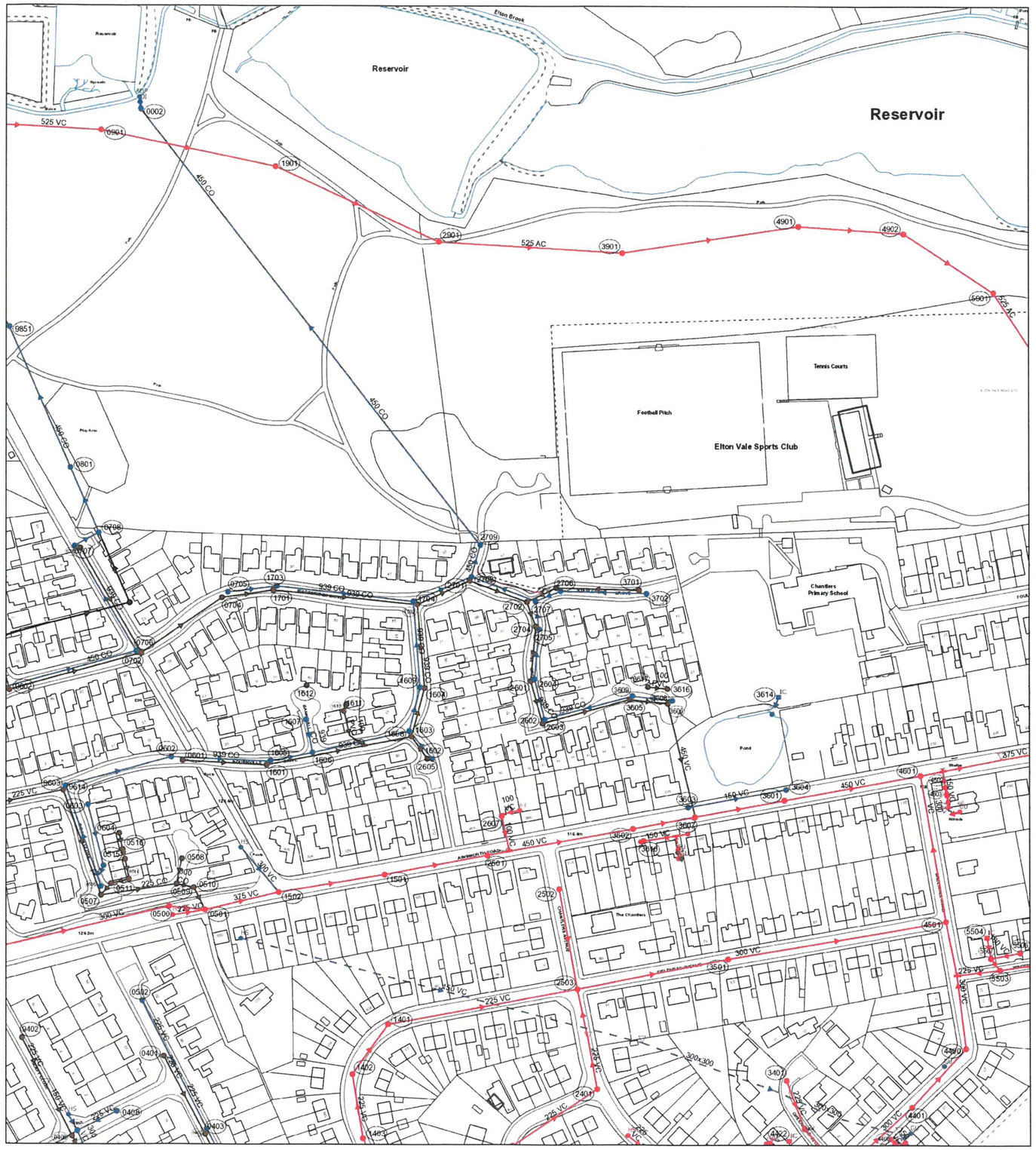
467 WALSHAW ROAD,
BURY,
BL8 3AA

OS sheet Number: SD7812SW
Scale: 1:1250 **Date:** 19/04/2018
Nodes: 177
Sheet: 5 of 8

Printed by: Property Searches

SEWER RECORDS

United Utilities — helping life flow smoothly



Refno	Cover	Func	Invert	Size x	Size y	Shape	Matl	Length	Grad
4601	112.4	CO	107.4	450			VC	45.89177	1 in 57
5503	110.75	CO	109.1	225			VC	24.18677	
5504		CO		100			VC	11.87962	
5507		CO		0			VC	8.255043	
5506		CO		100			VC	16.43022	
4401	109.75	CO	108.8	300			VC	44.59821	1 in 1487
4400	109.87	CO	108.77	300			VC	71.89787	1 in 378
3501	113.47	CO	111.3	300			VC	122.8088	1 in 49
4501	111.65	CO	108.56	300			VC	83.18654	1 in 126
3606	116.35	FO	114.04	450			VC	65.24146	
3607		CO	0	450			VC	50.19583	
3603		SW	0	150			VC	54.91812	
3601	114.15	CO	109.5	450			VC	77.27872	1 in 37
4603		CO		150			VC	4.020587	
4602		CO		150			VC	9.137178	
4404	110.56	CO	109.25	225			VC	31.89044	1 in 100
4406		CO		150			VC	3.069742	
3401	110.85	CO	109.51	225			VC	28.79236	1 in 125
2703	117.72	FO	115.22	939			CO	18.1496	1 in 151
2706	117.7	SW	114.75	939			CO	14.99106	1 in 125
3701	116.6	FO	115.51	939			CO	46.08526	1 in 159
3702	116.57	SW	114.95	939			CO	47.82631	1 in 239
3901	109.69	CO	108.12	525			AC	99.14131	1 in 198
3606	116.33	SW	115.18	939			CO	22.34252	1 in 172
3617		FO		100			PVC	11.02864	
4901	110.18	CO	107.62	525			AC	59.13544	1 in 219
4901	110.18	CO	107.62	525			AC	59.13544	1 in 219
4902	110.88	CO	107.35	525			AC	59.90826	1 in 182
4902	110.88	CO	107.35	525			AC	59.90826	1 in 182
5901	110.32	CO	107.02	525			AC	140.0643	1 in 241
2401	115.35	CO	113.66	225			VC	28.44292	1 in 43
2502	116.29	CO	114.58	225			VC	56.88585	1 in 35
2503	114.84	CO	112.12	300			VC	85.78297	1 in 105
2501	117.69	CO	112.3	450			VC	82.37718	1 in 61
2601	117.83	FO	114.85	939			CO	24.51979	1 in 91
2603	117.59	SW	114.91	939			CO	23.16537	1 in 154
2602	117.61	FO	114.58	939			CO	50.42191	1 in 174
3609	116.88	SW	115.05	939			CO	50.73539	1 in 362
3605	116.88	FO	114.29	939			CO	21.34643	1 in 85
3602	115.92	CO	110.92	450			VC	35.3542	
3610		CO		150			VC	1.772545	
1402	121.45	CO	118.97	225			VC	34.4093	1 in 49
1401	120.23	CO	118.26	225			VC	106.8878	1 in 18
1403	121.91	CO	119.4	225			VC	36.49657	1 in 81
0403	124.97	FO	123.52	225			VC	95.71311	1 in 77
0402	125	SW	123.28	225			VC	87.94697	1 in 78
0401	125.94	FO	124.21	225			VC	49.64877	1 in 72
0502	126.58	SW	124.6	225			VC	80.49844	1 in 63
0402	130.26	FO	128.7	225			VC	30.41381	1 in 19
0402	130.26	FO	128.7	225			VC	30.41381	1 in 19
9502	132.58	CO	131.18	300			VC	119.3315	1 in 17
0407	127.91	SW	125.24	300			VC	22.84732	1 in 89
0407	127.91	SW	125.24	300			VC	22.84732	1 in 89
0406	127.94	FO	125.6	225			VC	8.062258	1 in 50
0406	127.94	FO	125.6	225			VC	8.062258	1 in 50
0408	126.97	SW	125.44	225			VC	24.59675	1 in 224
0408	126.97	SW	125.44	225			VC	24.59675	1 in 224
0707	124.95	SW	121.46	450			CO	15.40469	
0707	124.95	SW	121.46	450			CO	15.40469	
2709	119.12	SW	114.32	450			CO	308.0742	1 in 90
0708		SW	0	450			CO	39.6066	
0708		SW	0	450			CO	39.6066	
0801	125.29	SW	120.19	450			CO	85.69222	
0801	125.29	SW	120.19	450			CO	85.69222	
9851		SW	0	450			CO	39.94248	
9851		SW	0	450			CO	39.94248	
1901	111.27	CO	109.3	525			AC	100.2247	1 in 154
1901	111.27	CO	109.3	525			AC	100.2247	1 in 154
0901	113.34	CO	109.9	525			AC	99.0404	1 in 165
0901	113.34	CO	109.9	525			AC	99.0404	1 in 165
0901	113.34	CO	109.5	525			AC	99.0404	1 in 165
0901	113.34	CO	109.5	525			AC	99.0404	1 in 165
9002	113.42	CO	110.56	525			VC	93.13431	1 in 141
9002	113.42	CO	110.56	525			VC	93.13431	1 in 141
0002	112	SW	114.32	450			CO	3.664265	1 in 1
0002	112	SW	114.32	450			CO	3.664265	1 in 1
9702	128.16	FO	126.34	939			CO	19.17345	1 in 60
9409	127.74	SW	123.02	450			CO	76.72817	1 in 183
9402	127.78	FO	126.02	939			CO	76.23384	1 in 22
9602	127.78	FO	126.02	939			CO	76.23384	1 in 22
0706	126.06	SW	122.6	450			CO	68.03996	1 in 60
0703	124.89	FO	123.03	939			CO	67.76073	1 in 151
0703	124.89	FO	123.03	939			CO	67.76073	1 in 151
0702	124.97	FO	122.58	939			CO	54.52753	1 in 18
0704	121.7	FO	119.47	939			CO	28.59478	1 in 119
0705	121.52	SW	119.84	939			CO	27.21299	1 in 118
1701	121.2	FO	119.23	939			CO	80.4444	1 in 32
1703	121.23	SW	119.61	939			CO	76.59409	1 in 24
1609	118.96	SW	117.15	939			CO	48.24271	1 in 63
1704	120.56	SW	116.38	939			CO	35.04111	1 in 16
1702	120.49	FO	116.69	939			CO	31.90487	1 in 56
1604	119.91	FO	116.83	939			CO	46.86666	1 in 335
2901	110.87	CO	108.65	525			AC	102.1763	1 in 193
2901	110.87	CO	108.65	525			AC	102.1763	1 in 193
2701	119.55	FO	116.11	939			CO	33.94033	1 in 34
2708	119.5	SW	114.44	450			CO	18.32681	1 in 153
2707	118.2	SW	114.63	939			CO	34.20148	1 in 201
2702	118.28	FO	115.1	939			CO	14.62768	1 in 133
2704	118.09	FO	114.99	939			CO	30.60627	1 in 219
2604	117.8	SW	114.76	939			CO	28.06021	1 in 351
2705	118.06	SW	114.68	939			CO	15.7646	1 in 315
0602	126.16	SW	124.41	939			CO	55.04092	1 in 16
0601	125.9	FO	123.69	939			CO	46.65357	1 in 15
1601	122.57	FO	120.5	939			CO	82.35822	1 in 23
1605	122.54	SW	120.97	939			CO	24.62366	1 in 12
1607	120.59	SW	119.19	939			CO	18.77445	1 in 78
1610		FO		100			PVC	3.946628	
1606	120.82	SW	118.95	939			CO	56.34325	1 in 35
1611		FO		100			PVC	24.17977	
2605	118.86	SW	117.66	939			CO	20.06008	1 in 65
1608	119.65	SW	117.35	939			CO	25.19908	1 in 126
1602	118.91	FO	117.18	939			CO	15.17729	1 in 117
1603	119.58	FO	117.05	939			CO	26.13189	1 in 128
2607		CO		100			VC	20.04526	
9614	128.72	FO	126.33	225			VC	62.5551	1 in 95
9614	128.72	FO	126.33	225			VC	62.5551	1 in 95
0505	128.76	SW	127.05	939			CO	59.81812	1 in 162
0505	128.76	SW	127.05	939			CO	59.81812	1 in 162
9603		SW		0			VC	35.44939	
9603		SW		0			VC	35.44939	
9613	129.99	FO	126.73	225			VC	59.07065	1 in 148
9603	128.65	SW	126.68	939			CO	60.94535	1 in 27
9603	128.65	SW	126.68	939			CO	60.94535	1 in 27
0507	128.64	FO	125.67	225			CO	42.45197	1 in 38
0507	128.64	FO	125.67	225			CO	42.45197	1 in 38
0514		FO		100			VC	10.18797	
0514		FO		100			VC	10.18797	
0604		FO		100			VC	9.323336	
0604		FO		100			VC	9.323336	
0516		FO		100			VC	5.787055	
0516		FO		100			VC	5.787055	
0515		FO		100			VC	11.16586	
0515		FO		100			VC	11.16586	
0600	125.87	CO	124.19	300			VC	20.09975	
0508	126.39	FO	124.78	939			CO	14.54563	1 in 53
0509	126.72	FO	124.55	300			CO	9.804251	1 in 8
0511		FO		100			VC	8.573326	
0511		FO		100			VC	8.573326	
0512		SW		0			VC	6.908939	
0512		SW		0			VC	6.908939	
0501	124.49	CO	119.79	375			VC	42.2019	1 in 17
0510	126.21	FO	123.35	300			VC	13.99287	1 in 4
1502	122.17	CO	117.34	450			VC	59.84146	1 in 23
1501	119.55	CO	114.76	450			VC	58.9517	1 in 24

Refno	Cover	Func	Invert	Size x	Size y	Shape	Matl	Length	Grad

LEGEND

Abandoned | Foul | Surface Water | Combined

- Public Sewer
- Private Sewer
- Section 104
- Rising Main
- Sludge Main
- Overflow
- Water Course
- Highway Drain

All point assets follow the standard colour convention:
red - combined, blue - surface water, brown - foul, purple - overflow

- Manhole
- Head of System
- Extent of Survey
- Rodding Eye
- Inlet
- Discharge Point
- Vortex
- Penstock
- Washout Chamber
- Valve
- Air Valve
- Non Return Valve
- Soakaway
- Gully
- Cascade
- Flow Meter
- Hatch Box
- Oil Interceptor
- Summit
- Drop Shaft
- Orifice Plate
- Side Entry Manhole
- Outfall
- Screen Chamber
- Inspection Chamber
- Bifurcation Chamber
- Lamp Hole
- T Junction / Saddle
- Catchpit
- Valve Chamber
- Vent Column
- Vortex Chamber
- Penstock Chamber
- Network Storage Tank
- Sewer Overflow
- Ww Treatment Works
- Ww Pumping Station
- Septic Tank
- Control Kiosk
- Change of Characteristic

MANHOLE FUNCTION

FO Foul
SW Surface Water
CO Combined
OV Overflow

SEWER SHAPE

CI Circular, EG Egg, OV Oval, FT Flat Top, RE Rectangular, SQ Square, TR Trapezoidal, AR Arch, BA Barrel, HO HorseShoe, UN Unspecified

SEWER MATERIAL

AC Asbestos Cement
BR Brick
PE Polyethylene
RP Reinforced Plastic Matrix
CO Concrete
CSB Concrete Segment Bolted
CSU Concrete Segment Unbolted
CC Concrete Box Culverted
PSC Plastic / Steel Composite
GRC Glass Reinforced Plastic
DI Ductile Iron
PVC Polyvinyl Chloride
CI Cast Iron
SI Spun Iron
ST Steel
VC Vitrified Clay
PP Polypropylene
PF Pitch Fibre
MAC Masonry Coursed
MAR Masonry Random
U Unspecified

Address or Site Reference:

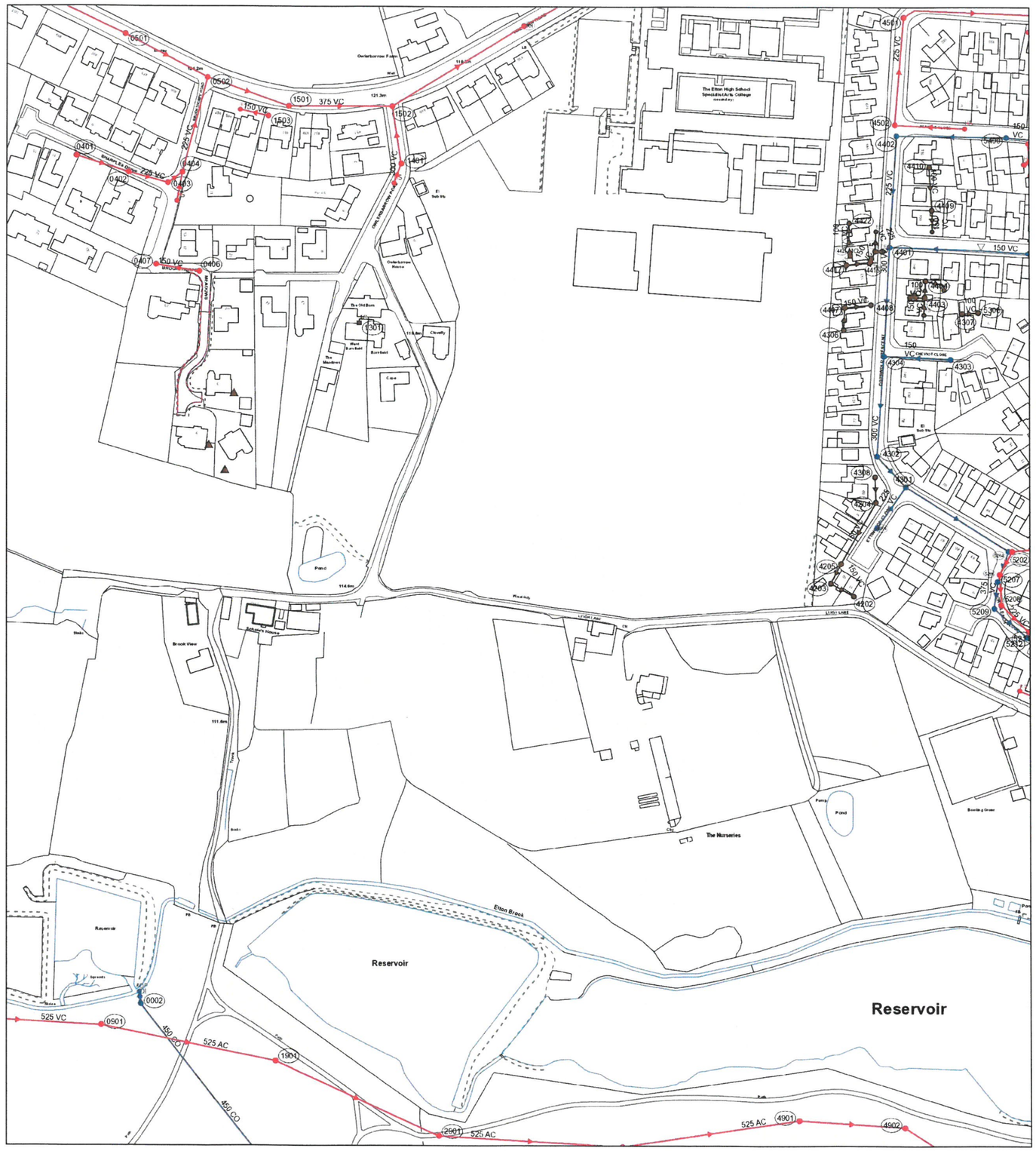
467 WALSHAW ROAD,
BURY,
BL8 3AA

OS sheet Number: SD7810NW
Scale: 1:1250 **Date:** 19/04/2018
Nodes: 144
Sheet: 6 of 8

Printed by: Property Searches

SEWER RECORDS

United Utilities — helping life flow smoothly



Retho	Cover	Func	Invert	Size x	Size y	Shape	Matl	Length	Grad
5209	109.89	SW	107.34	375			VC	24.0819	1 in 127
5208	109.87	CO	107.93	225			VC	21.2132	1 in 116
5212	109.5	SW	107.16	375			VC	23.34524	1 in 1167
5211	109.58	CO	107.74	225			VC	25.45584	1 in 283
5400	116.79	SW	115.07	225			VC	61.2082	1 in 24
5400	116.79	SW	115.07	225			VC	61.2082	1 in 24
4307		FO		100			VC	8.913309	
4302	112.41	SW	110.15	300			VC	23.34524	1 in 60
4304	113.14	SW	111.16	300			VC	56.14267	1 in 56
4502	114.18	CO	112.29	225			VC	60.29797	1 in 97
4502	114.18	CO	112.29	225			VC	60.29797	1 in 97
4501	114.56	CO	111.64	225			VC	60.27272	1 in 96
4501	114.56	CO	111.64	225			VC	60.27272	1 in 96
4407		FO		150			VC	14.71017	
4417		FO		100			VC	13.04198	
4416		FO		150			VC	6.58352	
4415		FO		225			VC	11.03855	
4415		FO		225			VC	11.03855	
4401	113.45	SW	111.75	300			VC	61.07373	1 in 107
4401	113.45	SW	111.75	300			VC	61.07373	1 in 107
4303	114.96	SW	113.43	150			VC	37.05402	1 in 17
4402	114.15	SW	112.55	225			VC	62.1289	1 in 80
4402	114.15	SW	112.55	225			VC	62.1289	1 in 80
4403		FO		150			VC	9.295542	
4404		FO		150			VC	12.92523	
4410		FO		100			VC	24.20906	
4410		FO		100			VC	24.20906	
4409		FO		150			VC	11.75707	
4409		FO		150			VC	11.75707	
4201	111.71	SW	110.37	225			VC	28.01785	1 in 46
4301	111.55	SW	110.26	300			VC	67.41662	1 in 32
5207	110.25	SW	107.35	375			VC	15.13275	
5204	110.42	SW	107.5	375			VC	18.62776	1 in 164
5206	110.07	CO	108.09	225			VC	17.02939	1 in 122
5202	110.04	CO	108.19	225			VC	14.76482	1 in 148
3901	109.69	CO	108.12	525			AC	99.14131	1 in 198
4901	110.18	CO	107.62	525			AC	59.13544	1 in 219
4901	110.18	CO	107.62	525			AC	59.13544	1 in 219
4902	110.86	CO	107.35	525			AC	59.90826	1 in 182
4902	110.86	CO	107.35	525			AC	59.90826	1 in 182
9501	129.11	CO	125.75	375			VC	86.33076	1 in 81
0401	128.32	CO	126.14	225			VC	30.36445	1 in 43
0401	128.32	CO	126.14	225			VC	30.36445	1 in 43
0401	128.32	CO	126.14	225			VC	30.36445	1 in 43
0401	128.32	CO	126.14	225			VC	30.36445	1 in 43
0501	126.95	CO	124.22	375			VC	51.88449	1 in 89
0501	126.95	CO	124.22	375			VC	51.88449	1 in 89
0501	126.95	CO	124.22	375			VC	51.88449	1 in 89
0501	126.95	CO	124.22	375			VC	51.88449	1 in 89
0402	127.8	CO	125.43	225			VC	22.80351	1 in 17
0402	127.8	CO	125.43	225			VC	22.80351	1 in 17
0402	127.8	CO	125.43	225			VC	22.80351	1 in 17
0402	127.8	CO	125.43	225			VC	22.80351	1 in 17
0406		CO		150			VC	24.42898	
0403	127.14	CO	124.11	225			VC	10	1 in 14
0403	127.14	CO	124.11	225			VC	10	1 in 14
0404	126.91	CO	123.22	225			VC	54.81788	1 in 322
0404	126.91	CO	123.22	225			VC	54.81788	1 in 322
0502	125.85	CO	122.62	375			VC	47.75982	1 in 87
0502	125.85	CO	122.62	375			VC	47.75982	1 in 87
1503		CO		150			VC	15.83225	
1503		CO		150			VC	15.83225	
1501	124.13	CO	120.03	375			VC	58	1 in 57
1501	124.13	CO	120.03	375			VC	58	1 in 57
1502	121.27	CO	116.95	375			VC	85.76546	1 in 74
1502	121.27	CO	116.95	375			VC	85.76546	1 in 74
1401	122.4	CO	117.52	300			VC	32.38627	1 in 95
1401	122.4	CO	117.52	300			VC	32.38627	1 in 95
2501	117.64	CO	114.51	375			VC	55.9454	
2501	117.64	CO	114.51	375			VC	55.9454	
4306		FO		150			VC	12.39667	
2709	119.12	SW	114.32	450			CO	308.0742	1 in 90
1901	111.27	CO	109.3	525			AC	100.2247	1 in 154
1901	111.27	CO	109.3	525			AC	100.2247	1 in 154
0901	113.34	CO	109.9	525			AC	99.0404	1 in 165
0901	113.34	CO	109.9	525			AC	99.0404	1 in 165
0901	113.34	CO	109.9	525			AC	99.0404	1 in 165
0901	113.34	CO	109.9	525			AC	99.0404	1 in 165
9002	113.42	CO	110.56	525			VC	93.13431	1 in 141
9002	113.42	CO	110.56	525			VC	93.13431	1 in 141
0002	112	SW	114.32	450			CO	3.664265	1 in 1
0002	112	SW	114.32	450			CO	3.664265	1 in 1
2901	110.87	CO	108.65	525			AC	102.1763	1 in 193
2901	110.87	CO	108.65	525			AC	102.1763	1 in 193
4205		FO		150			VC	12.27264	
4204		FO		150			VC	39.58903	
4308		FO		150			VC	14.1418	
4203		FO		150			VC	14.7361	

Retho	Cover	Func	Invert	Size x	Size y	Shape	Matl	Length	Grad

LEGEND

Abandoned | Foul | Surface Water | Combined

- Public Sewer
- Private Sewer
- Section 104
- Rising Main
- Sludge Main
- Overflow
- Water Course
- Highway Drain

All point assets follow the standard colour convention:
red - combined, blue - surface water, brown - foul, purple - overflow

- Manhole
- Head of System
- Extent of Survey
- Rodding Eye
- Inlet
- Discharge Point
- Vortex
- Penstock
- Washout Chamber
- Valve
- Air Valve
- Non Return Valve
- Soakaway
- Gully
- Cascade
- Flow Meter
- Hatch Box
- Oil Interceptor
- Summit
- Drop Shaft
- Orifice Plate
- Side Entry Manhole
- Outfall
- Screen Chamber
- Inspection Chamber
- Bifurcation Chamber
- Lamp Hole
- T Junction / Saddle
- Catchpit
- Valve Chamber
- Vent Column
- Vortex Chamber
- Penstock Chamber
- Network Storage Tank
- Sewer Overflow
- Ww Treatment Works
- Ww Pumping Station
- Septic Tank
- Control Kiosk
- Change of Characteristic

MANHOLE FUNCTION

FC Foul
SW Surface Water
CO Combined
OV Overflow

SEWER SHAPE

CI Circular, EG Egg, OV Oval, FT Flat Top, RE Rectangular, SQ Square, TR Trapezoidal, AR Arch, BA Barrel, HO HorseShoe, UN Unspecified

SEWER MATERIAL

AC Asbestos Cement
BR Brick
PE Polyethylene
RP Reinforced Plastic Matrix
CO Concrete
CSB Concrete Segment Bolted
CSU Concrete Segment Unbolted
CC Concrete Box Culverted
PSC Plastic / Steel Composite
GRC Glass Reinforced Plastic
DI Ductile Iron
PVC Polyvinyl Chloride
CI Cast Iron
SI Spun Iron
ST Steel
VC Vitrified Clay
PP Polypropylene
PF Pitch Fibre
MAC Masonry Coursed
MAR Masonry Random
U Unspecified

Address or Site Reference:

467 WALSHAW ROAD,
BURY,
BL8 3AA

OS sheet Number: SD7811SW
Scale: 1:1250 **Date:** 19/04/2018
Nodes: 88
Sheet: 7 of 8

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SEWER RECORDS

United Utilities — helping life flow smoothly

Refno	Cover	Func	Invert	Size x	Size y	Shape	Matl	Length	Grad
5400	116.79	SW	115.07	225			VC	61.0082	1 in 24
5400	116.79	SW	115.07	225			VC	61.0082	1 in 24
4502	114.18	CO	112.29	225			VC	60.20797	1 in 97
4502	114.18	CO	112.29	225			VC	60.20797	1 in 97
4501	114.56	CO	111.64	225			VC	60.27272	1 in 96
4501	114.56	CO	111.64	225			VC	60.27272	1 in 96
4603	112.92	CO	109.34	375			CO	105.0994	1 in 84
5401	111.63	CO	109.42	375			CO	20.17738	
4601	112.17	CO	110.03	375			VC	65.49046	1 in 107
4416		FO		150			VC	6.59352	
4415		FO		225			VC	11.03855	
4415		FO		225			VC	11.03855	
4401	113.45	SW	111.75	300			VC	61.07373	1 in 107
4401	113.45	SW	111.75	300			VC	61.07373	1 in 107
4402	114.15	SW	112.55	225			VC	62.1289	1 in 80
4402	114.15	SW	112.55	225			VC	62.1289	1 in 80
4410		FO		100			VC	24.20906	
4410		FO		100			VC	24.20906	
4409		FO		150			VC	11.75707	
4409		FO		150			VC	11.75707	
0501	129.11	CO	125.75	375			VC	86.33076	1 in 81
0401	128.32	CO	126.14	225			VC	30.36445	1 in 43
0401	128.32	CO	126.14	225			VC	30.36445	1 in 43
0401	128.32	CO	126.14	225			VC	30.36445	1 in 43
0401	128.32	CO	126.14	225			VC	30.36445	1 in 43
0501	126.95	CO	124.22	375			VC	51.88449	1 in 89
0501	126.95	CO	124.22	375			VC	51.88449	1 in 89
0501	126.95	CO	124.22	375			VC	51.88449	1 in 89
0402	127.8	CO	125.43	225			VC	22.80351	1 in 17
0402	127.8	CO	125.43	225			VC	22.80351	1 in 17
0402	127.8	CO	125.43	225			VC	22.80351	1 in 17
0402	127.8	CO	125.43	225			VC	22.80351	1 in 17
0403	127.14	CO	124.11	225			VC	10	1 in 14
0403	127.14	CO	124.11	225			VC	10	1 in 14
0404	126.91	CO	123.22	225			VC	54.81788	1 in 322
0404	126.91	CO	123.22	225			VC	54.81788	1 in 322
0502	125.85	CO	122.62	375			VC	47.75882	1 in 87
0502	125.85	CO	122.62	375			VC	47.75882	1 in 87
1503		CO		150			VC	15.83225	
1503		CO		150			VC	15.83225	
1501	124.13	CO	120.03	375			VC	58	1 in 57
1501	124.13	CO	120.03	375			VC	58	1 in 57
1502	121.27	CO	118.95	375			VC	85.75546	1 in 74
1502	121.27	CO	118.95	375			VC	85.75546	1 in 74
1401	122.4	CO	117.52	300			VC	32.38627	1 in 95
1401	122.4	CO	117.52	300			VC	32.38627	1 in 95
2501	117.64	CO	114.51	375			VC	55.9464	
2501	117.64	CO	114.51	375			VC	55.9464	
3501		CO	0	375			VC	62.76942	
3601		CO	0	375			VC	61.76581	

Refno	Cover	Func	Invert	Size x	Size y	Shape	Matl	Length	Grad

LEGEND

Abandoned | Foul | Surface Water | Combined

- Public Sewer
- Private Sewer
- Section 104
- Rising Main
- Sludge Main
- Overflow
- Water Course
- Highway Drain

All point assets follow the standard colour convention:
red - combined, blue - surface water, brown - foul, purple - overflow

- Manhole
- Head of System
- Extent of Survey
- Rodding Eye
- Inlet
- Discharge Point
- Vortex
- Penstock
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- Non Return Valve
- Soakaway
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- Orifice Plate
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- Bifurcation Chamber
- Lamp Hole
- T Junction / Saddle
- Catchpit
- Valve Chamber
- Vent Column
- Vortex Chamber
- Penstock Chamber
- Network Storage Tank
- Sewer Overflow
- Ww Treatment Works
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- Control Kiosk
- Change of Characteristic

MANHOLE FUNCTION

FC	Foul
SW	Surface Water
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OV	Overflow

SEWER SHAPE

CI	Circular	TR	Trapezoidal
EG	Egg	AR	Arch
OV	Oval	BA	Barrel
FT	Flat Top	HO	HorseShoe
RE	Rectangular	UN	Unspecified
SQ	Square		

SEWER MATERIAL

AC	Asbestos Cement
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PE	Polyethylene
RP	Reinforced Plastic Matrix
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CSU	Concrete Segment Unbolted
CC	Concrete Box Culverted
PSC	Plastic / Steel Composite
GRC	Glass Reinforced Plastic
DI	Ductile Iron
PVC	Polyvinyl Chloride
CI	Cast Iron
SI	Spun Iron
ST	Steel
VC	Vitrified Clay
PP	Polypropylene
PF	Pitch Fibre
MAC	Masonry: Coursed
MAR	Masonry: Random
U	Unspecified

Address or Site Reference:

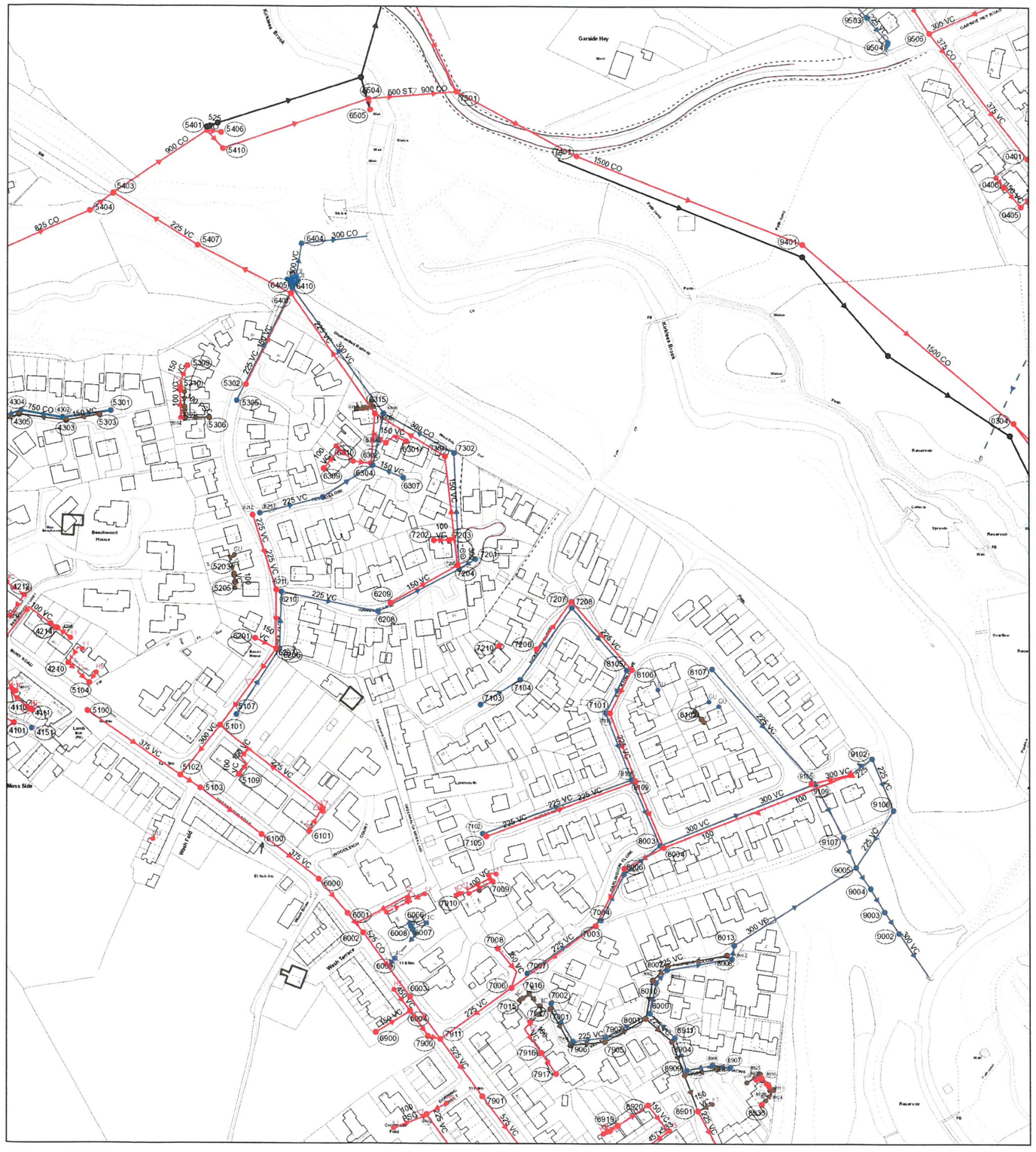
467 WALSHAW ROAD,
BURY,
BL8 3AA

OS sheet Number: SD7811NW
Scale: 1:1250 **Date:** 19/04/2018
Nodes: 51
Sheet: 8 of 8

Printed by: Property Searches

SEWER RECORDS

United Utilities — helping life flow smoothly



Refno	Cover	Func	Invert	Size x	Size y	Shape	Matl	Length	Grad
6002	115.67	CO	113.28	525			CO	44.40721	1 in 15
6002	115.67	CO	113.28	525			CO	44.40721	1 in 15
8107		SW	0	225			VC	85.70297	
5102	120.89	CO	117.41	375			VC	13.0344	1 in 35
7008		CO	0	150			VC	26.25601	
7008		CO		150			VC	26.25601	
4302	121.16	SW	119.13	750			CO	23.67344	1 in 395
4302	121.16	SW	119.13	750			CO	23.67344	1 in 395
9002	94.13	SW	90.54	300			VC	30.23243	1 in 40
9002	94.13	SW	90.54	300			VC	30.23243	1 in 40
7204	119.25	CO	116.64	150			VC	61.49033	
6206	119.73	SW	117.96	225			VC	33.28963	1 in 104
7103		SW	0	225			VC	26.07661	
6306		SW	0	300			VC	84.60831	
8102		FO		100			VC	2.127585	
5302	119.64	CO	118.23	150			VC	56.79788	1 in 18
7105		CO	0	225			VC	89.90395	
6106		CO		225			PSC	6.237417	
6900	113.89	CO	113.38	150			VC	22.4722	1 in 39
6900	113.89	CO	113.38	150			VC	22.4722	1 in 39
8924		FO		100			PVC	8.621299	
8924		FO		100			PVC	8.621299	
0401	108.47	CO	106.95	375			VC	49.09177	1 in 234
5301	121.4	SW	119.22	750			CO	27.19953	1 in 194
5301	121.4	SW	119.22	750			CO	27.19953	1 in 194
6405		CO		150			VC	12.21487	
8013		SW	0	300			VC	80.56516	
8013		SW	0	300			VC	80.56516	
7101		SW	0	225			VC	39.93935	
8004		CO	0	225			VC	25.06993	
6410	115.97	SW	113.89	225			VC	2	
5100	122.15	CO	119.54	375			VC	63.24555	1 in 30
5100	122.15	CO	119.54	375			VC	63.24555	1 in 30
6303		CO		150			VC	8.564957	
5410	116.05	CO	112.19	900			CO	85.70297	
4305		CO	0	225			VC	81.64131	
7911	112.99	CO	109.1	525			VC	39.84592	1 in 36
7911	112.99	CO	109.1	525			VC	39.84592	1 in 36
5304		FO		100			PSC	13.43004	
7104		SW	0	225			VC	49.44305	
4304	121.32	SW	119.07	750			CO	13.08636	1 in 436
4304	121.32	SW	119.07	750			CO	13.08636	1 in 436
9503	109.06	SW	107.76	225			VC	18.43909	
8905		FO	0	225			VC	21.47375	
8905		FO	0	225			VC	21.47375	
8907		SW	0	150			VC	9.884341	
8907		SW	0	150			VC	9.884341	
7003		CO	0	225			VC	58.49034	
7003		CO	0	225			VC	58.49034	
7102		SW	0	225			VC	68.21908	
6316		FO		100			PVC	5.293731	
6504	113.09	CO	0	600			ST	6.082763	
7006	112.71	CO	109.37	225			VC	48.7056	
7006	112.71	CO	109.37	225			VC	48.7056	
6001	116.43	CO	113.92	525			CO	14.21267	1 in 23
6001	116.43	CO	113.92	525			CO	14.21267	1 in 23
8105		SW	0	225			VC	26.8787	
4000	117.56	CO	114.57	375			VC	24.83949	1 in 39
7301		CO	0	150			VC	45.78901	
8003	111.4	SW	109.47	300			VC	92.84634	1 in 28
6901	106.42	CO	105.92	225			VC	27.12194	
6901	106.42	CO	105.92	225			VC	27.12194	
9005	104.65	SW	100.67	300			VC	14.4222	1 in 27
9105	108.83	SW	106.14	300			VC	34	1 in 33
5203		FO		100			VC	4.848907	
6301		CO		150			VC	13.45422	
7206		CO	0	225			VC	33.11818	
4208		CO		100			VC	4.520051	
4208		CO		100			VC	4.520051	
8909		SW	0	225			VC	19.24719	
8909		SW	0	225			VC	19.24719	
9102	107.35	SW	104.99	225			VC	31.38471	1 in 21
5305	119.84	SW	118.54	225			VC	70.21396	1 in 16
6404	108.44	SW	106.59	300			CO	37.21559	1 in 3
5303	121.36	FO	119.58	150			VC	18.86913	1 in 111
5303	121.36	FO	119.58	150			VC	18.86913	1 in 111
0304	105.75	CO	99.83	1500			CO	125.0886	1 in 22
7905		FO	0	225			VC	26.31776	
7905		FO	0	225			VC	26.31776	
8008		FO	0	225			VC	33.73531	
8008		FO	0	225			VC	33.73531	
5403		CO	0	900			CO	62.58174	
5403		CO	0	900			CO	62.58174	
5407	116.87	CO	114.35	225			VC	55.22681	
7501	113.81	CO	107.67	1500			CO	76.05919	1 in 585
7907		SW	0	225			VC	28.25712	
7907		SW	0	225			VC	28.25712	
8904		FO	0	225			VC	20.08104	
8904		FO	0	225			VC	20.08104	
6010		SW	0	300			VC	9.321567	
6010		SW	0	300			VC	9.321567	
8009		SW	0	300			VC	17.56417	
8009		SW	0	300			VC	17.56417	
0304	105.75	CO	99.83	1500			CO	124.8079	1 in 22
9004	101.5	SW	97.69	300			VC	15.26434	1 in 22
7206		SW	0	225			VC	46.41362	
6001		FO	0	225			VC	19.37983	
6001		FO	0	225			VC	19.37983	
7009		CO		100			VC	8.437524	
5103	120.57	CO	117.03	375			VC	42.80187	1 in 28
8108		CO	0	225			VC	40.37045	
6211	119.94	CO	118.42	225			VC	33	1 in 136
4101	123.71	CO	121.2	225			VC	95.95419	
4101	123.71	CO	121.2	225			VC	95.95419	
9107	107.09	SW	103.95	300			VC	18.38478	1 in 32
6208	119.25	SW	117.87	225			VC	51	1 in 49
5401	116.87	CO	0	525			CO	8.062258	
7904		SW	0	225			VC	29.06888	
7904		SW	0	225			VC	29.06888	
4402	117.64	CO	114.61	525			CO	59.09315	1 in 52
4303	121.16	FO	119.41	150			VC	26.51647	1 in 884
4303	121.16	FO	119.41	150			VC	26.51647	1 in 884
7205	118.32	SW	116.42	300			CO	65.06919	
6315		FO		100			PVC	2.848055	
8106		CO	0	225			VC	27.19759	
8007		FO	0	225			VC	11.67666	
8007		FO	0	225			VC	11.67666	
6207	120.09	CO	118.17	225			VC	25.60698	1 in 103
8908		SW	0	225			VC	14.7813	
8908		SW	0	225			VC	14.7813	
8006		CO	0	225			VC	38.77709	
8919		CO		150			VC	20.4935	
8919		CO		150			VC	20.4935	
7207		CO	0	225			VC	50.94445	
7202		CO		100			VC	8.458601	
8012		SW	0	300			VC	7.747568	
8012		SW	0	300			VC	7.747568	
6212	120.27	CO	118.66	225			VC	43.9659	1 in 191
9401	110.89	CO	100.13	1500			CO	154.6738	1 in 516
6309		CO		100			VC	13.90909	
6201		CO		150			VC	13.03142	
8002		FO	0	225			VC	21.63916	
8002		FO	0	225			VC	21.63916	
6410	115.97	SW	113.9	225			VC	2	
6210	119.87	SW	118.11	225			VC	55.10898	1 in 134
7302		SW	0	300			CO	44.77723	
6405	116.05	SW	113.88	300			VC	2.236068	
8110		CO	0	225			VC	40.58732	
8924		FO		100			PVC	11.27263	
8924		FO		100			PVC	11.27263	
7901	111.9	CO	107.97	525			VC	43.90946	1 in 61
7901	111.9	CO	107.97	525			VC	43.90946	1 in 61
7203		CO		100			VC	3.03937	
6003	113.96	CO	110.22	525			CO	28.97422	1 in 27
6003	113.96	CO	110.22	525			CO	28.97422	1 in 27
8920		CO		150			VC	18.40066	
8920		CO		150			VC	18.40066	
6206	120.03	SW	118.53	225			VC	32.01562	1 in 84
6253	120.26	SW	118.48	225			VC	36.13662	1 in 74
5107	120.36	SW	118.83	225			VC	44.10215	1 in 152
6504	113.09	CO	0	600			ST	25.07987	
9504	108.82	SW	107.73	225			VC	5.09902	1 in 255
6004	113.61	CO	112.8	450			VC	8.602325	1 in 57
6004	113.61	CO	112.8	450			VC	8.602325	1 in 57
6100	119.18	CO	115.47	375			VC	40.60788	1 in 46
4305	121.34	FO	119.38	150			VC	12.07767	1 in 93
4305	121.34	FO	119.38	150			VC	12.07767	1 in 93
5406		CO		150			VC	14.38634	
7907		SW	0	225			VC	50.80354	
7907		SW	0	225			VC	50.80354	
8109	114.54	SW	111.13	225			VC	40.31129	1 in 25
6310		CO		150			VC	10.02921	
8911		SW	0	225			VC	19.63043	
8911		SW	0	225			VC	19.63043	
5101	120.47	CO	117.82	300			CO	35.60899	1 in 123
7401	114.07	CO	107.84	1500			CO	135.1926	1 in 815
7900	113.23	CO	112.5	525			VC	6.870932	1 in 2
7900	113.23	CO	112.5	525			VC	6.870932	1 in 2
4214		CO		100			VC	35.96316	
4214		CO		100			VC	35.96316	
6302	119.88	CO	117.78	150			VC	28.07134	
8011		SW	0	300			VC	36.81654	
8011		SW	0	300			VC	36.81654	
6209	119.08	CO	117.63	150			VC	42.54409	1 in 47
6304	119.64	SW	117.62	225			VC	29.61419	
9109	108.86	CO	106.48	300			VC	22.79488	
5404	117.63	CO	113.47	900			CO	16.40122	
5404	117.63	CO	113.47	900			CO	16.40122	
6403	116.09	CO	114.95	225			VC	58.59181	1 in 101
6307	119.72	SW	118.04	150			VC	18.38478	1 in 50
9505	108.45	CO	107.06	375			CO	26.6125	
8906		FO	0	150			VC	18.73331	
8906		FO	0	150			VC	18.73331	
5401	116.87	CO	112.76	900			CO	13.48362	1 in 24
8005		SW	0	225			VC	25.6125	
5205		FO		100			VC	3.368508	
7201	118.06	SW	116.68	225			VC	10.37023	
9106	107.07	SW	103.37	225			VC	38.27532	1 in 35
5310		CO		100			VC	5.016795	
9003	97.9	SW	93.27	300			VC	14.4222	1 in 24
9003	97.9	SW	93.27	300			VC	14.4222	1 in 24
7001		FO	0	225			VC	23.18482	
7001		FO	0	225			VC	23.18482	
7916		CO		100			VC	14.38278	
7916		CO		100			VC	14.38278	
7906		SW	0	225			VC	18.25481	
7906		SW	0	225			VC	18.25481	
7904		FO	0	225			VC	19.17797	
7904		FO	0	225			VC	19.17797	
8931		CO		100			PVC	6.388364	
8931		CO		100			PVC	6.388364	

Refno	Cover	Func	Invert	Size x	Size y	Shape	Matl	Length	Grad
7002		SW	0	225			VC	24.47787	
7002		SW	0	225			VC	24.47787	
8930		CO		100			VC	2.979499	
8930		CO		100			VC	2.979499	
6902	111.89	CO	110.28	225			VC	53.00943	1 in 24
6902	111.89	CO	110.28	225			VC	53.00943	1 in 24
5109		CO		100			VC	12.0469	

LEGEND

Abandoned | Foul | Surface Water | Combined

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- Cascade
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- Hatch Box
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- Inspection Chamber
- Bifurcation Chamber
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- Change of Characteristic

MANHOLE FUNCTION

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SEWER SHAPE

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CI	Cast Iron
SI	Spun Iron
ST	Steel
VC	Vitrified Clay
PP	Polypropylene
PF	Pitch Fibre
MAC	Masonry, Coursed
MAR	Masonry, Random
U	Unspecified

Address or Site Reference:

Land at Walshaw Bury,

OS sheet Number: SD7812SE
Scale: 1:1250 **Date:** 14/05/2019
Nodes: 208
Sheet: 4 of 5

Printed by: Property Searches

SEWER RECORDS

United Utilities — helping life flow smoothly

Refno	Cover	Func	Invert	Size x	Size y	Shape	Matl	Length	Grad
8501	104.33	CO	102.88	225			VC	58.68412	1 in 95
6803		CO		150			VC	16.97083	
6413	106.38	SW	106.17	225			VC	41.10961	1 in 75
9002	94.13	SW	90.54	300			VC	30.23243	1 in 40
9002	94.13	SW	90.54	300			VC	30.23243	1 in 40
5501		CO		150			VC	13.29916	
5906	103.88	CO	0	525			VC	16.40122	
5620	109.87	SW	106.32	750			CC	14.82588	1 in
6900	113.89	CO	113.38	150			VC	22.4722	1 in 39
6900	113.89	CO	113.38	150			VC	22.4722	1 in 39
8423	104.64	CO	102.89	150			VC	20.24445	
5605	110.31	CO	107.42	525			CO	39.84972	
8013		SW	0	300			VC	80.56516	
8013		SW	0	300			VC	80.56516	
5604	110.81	CO	109.18	225			VC	24.02082	1 in 15
9503	103.42	CO	100.57	225			VC	26.1725	1 in 74
7400	108.65	SW	107.45	225			VC	71.8401	1 in 19
8905		FC	0	225			VC	21.47375	
8905		FC	0	225			VC	21.47375	
8907		SW	0	150			VC	9.884341	
8907		SW	0	150			VC	9.884341	
8404	105.56	CO	103.88	300			VC	20.61553	1 in 59
7501	107.38	CO	103.98	600			CO	55.9017	1 in 112
8401	110.06	CO	107.79	225			VC	19.30937	1 in 80
6000	117.56	CO	114.57	375			VC	24.83949	1 in 39
7805	108.81	CO	106.17	300			VC	64.62198	
7702		CO	0	225			VC	41.04475	1 in
5620	109.87	SW	106.32	700			CC	13.34166	1 in
8401	106.46	CO	104.19	375			VC	74.33035	1 in 0.72109375
8620	106.67	CO	104.54	225			VC	11.18034	
8909		SW	0	225			VC	19.24719	
8909		SW	0	225			VC	19.24719	
7408		FC	0	150			VC	21.27787	
7503	106.16	CO	103.48	600			CO	26.3196	1 in 71
8700	107.82	CO	105.71	225			VC	71.11962	1 in 48
7905		FC	0	225			VC	26.31776	
7905		FC	0	225			VC	26.31776	
8716		SW	0	225			VC	61.20457	
8400	104.93	CO	100.96	750			CO	47.42362	1 in 431
7619	107.62	CO	104.78	225			VC	2.162278	
7903		CO		100			VC	17.15315	
8401	103.64	CO	100.46	300			VC	24.83949	1 in 44
7707		SW	0	150			VC	26.1725	
8605	104.79	SW	103.5	375			VC	67.80178	1 in 615
6500	113.48	CO	111.96	225			VC	93.30831	1 in 91
7711	107.84	SW	106.13	300			VC	15.13275	1 in 84
7500	108.39	CO	105.96	600			CO	48.25971	1 in 91
7703		SW	0	225			VC	11.18034	
8606	104.87	CO	101.71	375			VC	55.44366	1 in 139
8606	104.12	CO	101.14	375			VC	4.123106	1 in 206
7004		SW	0	225			VC	29.06888	
7004		SW	0	225			VC	29.06888	
8410		FC	0	225			VC	13.62237	
7502	106.05	CO	102.71	300			VC	31.82766	1 in 152
6800	112.54	CO	110.71	225			VC	44.65423	1 in 76
5606		SW		750			CO	16.12452	
4410		FC		100			VC	24.20906	
4410		FC		100			VC	24.20906	
8908		SW	0	225			VC	14.7813	
8908		SW	0	225			VC	14.7813	
8906		CO	0	225			VC	35.77706	
7802	110.01	CO	106.74	225			VC	55.9017	1 in 85
6502	109.22	CO	106.55	600			CO	51.5461	1 in 87
7614	105.57	SW	103.98	225			VC	35.31794	1 in 82
9726	107.7	CO	105.11	225			VC	8	1 in 7
9602	105.5	CO	102.93	300			VC	21.93171	1 in 82
8002		FC	0	225			VC	21.83915	
8002		FC	0	225			VC	21.83915	
7616	107.23	SW	105.6	225			VC	30.26543	1 in 90
6603		SW		700			CO	35.97664	1 in
5411		FC		150			VC	10.8619	
9704	107.45	CO	103.02	610			VC	45.27892	1 in 75
7612		CO	0	225			VC	32.98484	
8702		SW	0	150			VC	23.5372	
9620	105.08	CO	102.36	300			VC	42.0119	1 in 61
6802	111.45	CO	109.32	225			VC	91.7578	1 in 107
8530	104.32	CO	0	300			VC	22.67167	
5401	117.05	SW	115.81	150			VC	50.15974	1 in 68
7901	111.9	CO	107.97	525			VC	43.60046	1 in 61
7901	111.9	CO	107.97	525			VC	43.60046	1 in 61
8920		CO		150			VC	18.40066	
8920		CO		150			VC	18.40066	
5603	110.46	CO	107.53	525			CO	11.40175	1 in 104
8900	109.98	CO	107.15	450			VC	57.2014	1 in 122
7907		SW	0	225			VC	50.80354	
7907		SW	0	225			VC	50.80354	
6402		FC		150			VC	21.04525	
8500	105.64	CO	103.96	225			VC	19.69772	1 in 39
8901	108.42	CO	105.82	225			VC	17.17253	
8901	108.42	CO	105.82	225			VC	17.17253	
7900	113.23	CO	112.5	525			VC	6.870932	1 in 2
7900	113.23	CO	112.5	525			VC	6.870932	1 in 2
8405	103.55	SW	102.17	375			VC	50.93133	1 in 392
8404	103.8	CO	99.89	750			CO	28.42634	1 in 406
7618	106.6	SW	104.83	225			VC	19.64585	1 in 151
7604	110.36	SW	108.44	225			VC	50	1 in 76
4502	114.18	CO	112.29	225			VC	60.20797	1 in 97
5608		CO		150			VC	9.660321	
8402	109.25	CO	105.02	610			VC	29.83287	1 in 81
8906		FC	0	150			VC	18.73331	
8906		FC	0	150			VC	18.73331	
7710	107.7	SW	105.81	375			VC	40.39634	1 in 113
8902		CO	0	225			VC	42.42808	
4409		FC		150			VC	11.75707	
4409		FC		150			VC	11.75707	
9505	103.7	CO	101.27	300			VC	75.00667	1 in 115
5606		SW		700			CO	17.50624	
8403	104.02	CO	99.95	750			CO	10	1 in 167
9003	97.9	SW	93.27	300			VC	14.4222	1 in 24
9003	97.9	SW	93.27	300			VC	14.4222	1 in 24
7611		SW	0	150			VC	23.19483	
6002	115.67	CO	113.28	525			CO	44.40721	1 in 15
6002	115.67	CO	113.28	525			CO	44.40721	1 in 15
5701	106.46	CO	104.22	225			VC	66.0303	1 in 47
9502	103.84	CO	101.4	375			VC	22.2036	1 in 159
9504	104.33	CO	101.66	300			VC	19.20937	1 in 113
7008		CO		150			VC	26.25601	
7008		CO		150			VC	26.25601	
8913		CO		225			UN	15.06073	
6609		CG		100			VC	5.423247	
8624	105.04	SW	103.25	225			VC	25.61201	1 in 88
6501		CO		150			VC	8.950204	
8607		CO		225			UN	11.39582	
7903	110.89	CO	107.9	300			VC	31.62278	1 in 102
8924		FC		100			PVC	5.621299	
8924		FC		100			PVC	5.621299	
9705	107.28	CO	104.56	300			VC	19.72308	1 in 104
6401	115.89	SW	114.88	150			VC	46.64761	1 in 43
7617	105.77	SW	104.21	225			VC	24.02082	1 in 104
9905	104.11	CO	101.11	525			VC	56.85064	1 in 105
8808		CO		225			UN	6.382769	
9603	104.11	CO	101.75	300			VC	21.40893	1 in 428
7911	112.89	CO	108.1	525			VC	39.84592	1 in 36
7911	112.99	CO	109.1	525			VC	39.84592	1 in 36
8502	105.6	CO	102.46	300			VC	33.94112	1 in 75
4603	112.92	CO	109.34	375			CO	105.0994	1 in 84
9720	106.31	CO	103.93	300			VC	39.82462	1 in 38
7003		CO	0	225			VC	56.60034	
7003		CO	0	225			VC	56.60034	
9901		CO		225			UN	18.08664	
7509		CO		100			VC	14.23507	
7006	112.71	CO	109.37	225			VC	48.7066	
7006	112.71	CO	109.37	225			VC	48.7066	
7706		CO	0	225			VC	17.69181	
6001	116.43	CO	113.82	525			CO	14.21267	1 in 23
6001	116.43	CO	113.92	525			CO	14.21267	1 in 23
5405		SW		150			VC	17.68511	
5403	115.8	SW	113.79	150			VC	40.11234	1 in 47
8715		SW	0	150			VC	23.4094	
8901	108.42	CO	105.92	225			VC	27.12194	
8901	108.42	CO	105.92	225			VC	27.12194	
7803	110.04	CO	106.1	525			CO	51.22499	
8425	105.34	SW	103.54	225			VC	32.55764	1 in 112
6705	110.67	CO	108.87	225			VC	49.0306	1 in 93
0612		SW		150			PVC	7.519473	
8405	110.06	CO	107.27	375			VC	26.1725	1 in 46
8008		FC	0	225			VC	33.73531	
8008		FC	0	225			VC	33.73531	
8700	109	CO	104.64	610			VC	70.66116	1 in 88
9500	103.96	CO	101.33	375			VC	22.62742	1 in 453
7907		SW	0	225			VC	28.25712	
7907		SW	0	225			VC	28.25712	
8904		FC	0	225			VC	20.09104	
8904		FC	0	225			VC	20.09104	
7613	107.11	SW	104.91	375			CO	51.87115	1 in 66
8010		SW	0	300			VC	9.321567	
8010		SW	0	300			VC	9.321567	
7701	108.56	SW	106.92	225			VC	23.43075	
8009		SW	0	300			VC	17.56417	
8009		SW	0	300			VC	17.56417	
8402	103.66	CO	100.57	300			VC	7.81025	1 in 87
9004	101.5	SW	97.69	300			VC	15.26434	1 in 22
8001		FC	0	225			VC	19.37983	
8001		FC	0	225			VC	19.37983	
7610		CO		375				52.93445	1 in
6400	114.87	SW	112.9	225			VC	66.8431	1 in 34
9703	107.48	CO	103.01	610			VC	3.695581	
5502		CO		150			VC	14.52961	
7704		CO	0	225			VC	23.76573	
7615	106.4	SW	105	225			VC	7.28011	1 in 104
4501	112.17	CO	110.03	375			VC	65.49046	1 in 107
8601	104.49	CO	101.61	300			VC	54.67175	1 in 248
8603		CO	0	525			CO	11.40175	
4501	114.56	CO	111.64	225			VC	60.27272	1 in 96
4501	114.56	CO	111.64	225			VC	60.27272	1 in 96
8007		FC	0	225			VC	11.67666	
8007		FC	0	225			VC	11.67666	
8919		CO		150			VC	20.4935	
8919		CO		150			VC	20.4935	
8012		SW	0	300			VC	7.747568	
8012		SW	0	300			VC	7.747568	
6400	109.79	CO	106.33	225			VC	21.54066	1 in 46
9702	107.69	CO	103.79	300			VC	23.43075	
7713	107.41	SW	105.35	375			CO	30.59412	1 in 73
5700	111.82	CO	110.04	225			VC	57.77543	1 in 50
9400	103.64	SW	102.04	375			VC	60.87693	
5400	116.79	SW	115.07	225			VC	51.0082	1 in 24
5400	116.79	SW	115.07	225			VC	51.0082	1 in 24
6505		CO		100			VC	9.493975	
5610	111.09	CO	107.96	525			CO	44.38468	1 in 103
9600	106.11	CO	103.36	375			VC	57.70615	

Refno	Cover	Func	Invert	Size x	Size y	Shape	Matl	Length	Grad
8500	104.72	CO	102	300			VC	38.8373	
9701	108.32	CO	103.9	610			VC	35.8469	1 in 43
9601	105.21	CO	102.11	300			VC	66.11755	1 in 296
6003	113.96	CO	110.22	525			CO	28.97422	1 in 27
6003	113.96	CO	110.22	525			CO	28.97422	1 in 27
9603	105.46	CO	104.1	300			VC	104.4845	1 in 39
7902	111.01	CO	107.24	525			VC	13.60059	1 in 59
7510		CO		100			VC	4.397091	
6401	109.51	CO	107.85	225			VC	31.79476	
6608		CO		100			VC	4.746457	
6804		CO		150			VC	14.81982	
9004	113.81	CO	112.6	450			VC	8.602325	1 in 57
9004	113.81	CO	112.6	450			VC	8.602325	1 in 57
5500	113.94	CO	110.25	225			VC	60.16644	1 in 57
9706	106.17	CO	103.88	300			VC	28.83564	
8622	104.58	CO	102.1	225			VC	5.385165	1 in 16
8911		SW	0	225			VC	18.63043	
8911		SW	0	225			VC	18.63043	
5601	111.63	CO	109.42	375			CO	25.17738	
5601	111.63	CO	109.42	375			CO	25.17738	
8011		SW	0	300			VC	36.81654	
8011		SW	0	300			VC	36.81654	
7709		CO	0	225			VC	44.28318	
8606		CO		225			UN	17.22537	
6801	111.66	CO	110.14	225			VC	67.20919	1 in 56
7908		CO		300			VC	9.71132	
7708		CO	0	225			VC	30.41381	
8630		CO	0	225			VC	52.79255	
7407		FC		150			VC	31.56059	
7712		CO	0	225			VC	34.9285	
5600	110.04	SW	106.41	700			CO	17.20465	
7720		FO		100			VC	6.373189	
8701	107.99	CO	105.34	300			VC	12.29656	1 in 58
8503	104.81	CO	100.39	375			VC	17.69181	1 in 111
7001		FO	0	225			VC	23.18482	
7001		FO	0	225			VC	23.18482	
7916		CO		100			VC	14.38278	
7916		CO		100			VC	14.38278	
8903	110.24	CO	107.5	375			VC	31.62278	1 in 158
9803	93.5	FO	91	150			VC	26.52051	1 in 10
8418		CO		100			VC	5.069366	
8407		CO		100			VC	5.967808	
5702	111.34	SW	109.08	375			CC	34.1764	
0602	92.05	FO	88.05	150			PVC	36.62058	1 in 102
5701	111.81	SW	109.51	300			CC	14.76482	
9905	95.24	SW	90.7	1200			VC	38.3414	1 in 18
0805	91.95	SW	88.13	750			CO	46.48409	1 in 930
0804	92.51	SW	90.2	225			PVC	17.03687	1 in 14
7906		SW	0	225			VC	18.25481	
7906		SW	0	225			VC	18.25481	
4418		FO		150			VC	15.01898	
4418		FO		150			VC	15.01898	
9405	101.62	SW	99.68	1200			VC	104.4151	
7904		FO	0	225			VC	19.17797	
7904		FO	0	225			VC	19.17797	
8931		CO		100			PVC	6.388364	
8931		CO		100			PVC	6.388364	
7002		SW	0	225			VC	24.47787	
7002		SW	0	225			VC	24.47787	
8930		CO		100			VC	2.976499	
8930		CO		100			VC	2.976499	
7900	110.5	CO	106.67	525			CO	39.40817	1 in 69
7901	110.05	CO	106.85	225			VC	7.211102	
3904	94.1	SW	91.94	225			PVC	24.20683	1 in 14
0808	91.95	SW		0			UN	0.3709463	
6902	111.89	CO	110.28	225			VC	53.00943	1 in 24
6902	111.89	CO	110.28	225			VC	53.00943	1 in 24

LEGEND

Abandoned | Foul | Surface Water | Combined

- Public Sewer
- Private Sewer
- Section 104
- Rising Main
- Sludge Main
- Overflow
- Water Course
- Highway Drain

All point assets follow the standard colour convention:
red - combined | blue - surface water
brown - foul | purple - overflow

- Manhole
- Head of System
- Extent of Survey
- Rodding Eye
- Inlet
- Discharge Point
- Vortex
- Penstock
- Washout Chamber
- Valve
- Air Valve
- Non Return Valve
- Soakaway
- Gully
- Cascade
- Flow Meter
- Hatch Box
- Oil Interceptor
- Summit
- Drop Shaft
- Orifice Plate
- Side Entry Manhole
- Outfall
- Screen Chamber
- Inspection Chamber
- Bifurcation Chamber
- Lamp Hole
- T Junction / Saddle
- Catchpit
- Valve Chamber
- Vent Column
- Vortex Chamber
- Penstock Chamber
- Network Storage Tank
- Sewer Overflow
- Ww Treatment Works
- Ww Pumping Station
- Septic Tank
- Control Kiosk
- Change of Characteristic

MANHOLE FUNCTION

FO	Foul
SW	Surface Water
CO	Combined
OV	Overflow

SEWER SHAPE

CI	Circular	TR	Trapezoidal
EG	Egg	AR	Arch
OV	Oval	BA	Barrel
FT	Flat Top	HO	HorseShoe
RE	Rectangular	UN	Unspecified
SQ	Square		

SEWER MATERIAL

AC	Asbestos Cement
BR	Brick
PE	Polyethylene
RP	Reinforced Plastic Matrix
CO	Concrete
CSB	Concrete Segment Bolted
CSU	Concrete Segment Unbolted
CC	Concrete Box Culverted
PSC	Plastic / Steel Composite
GRC	Glass Reinforced Plastic
DI	Ductile Iron
PVC	Polyvinyl Chloride
CI	Cast Iron
SI	Spun Iron
ST	Steel
VC	Vitrified Clay
PP	Polypropylene
PF	Pitch Fibre
MAC	Masonry, Coursed
MAR	Masonry, Random
U	Unspecified

Address or Site Reference:

Land at Walshaw Bury,

OS sheet Number: SD7811NE
Scale: 1:1250 **Date:** 14/05/2019
Nodes: 268
Sheet: 5 of 5

Printed by: Property Searches

SEWER RECORDS

United Utilities — helping life flow smoothly

The position of the underground apparatus shown on this plan is approximate only and is given in accordance with the best information currently available. United Utilities Water will not accept liability for any loss or damage caused by the actual position being different from those shown.

Reece McGuinness

From: Wastewater Developer Services <WastewaterDeveloperServices@uuplc.co.uk>
Sent: 06 January 2020 11:17
To: Reece McGuinness; Wastewater Developer Services
Subject: RE: File Transfer: 4072 - Land at Walshaw Bury Pre-Development Enquiry - 4200029693

Dear Customer

We have carried out an assessment of your application which is based on the information provided; this pre development advice will be valid for 12 months

Foul will be allowed to drain to the public combined sewer network at an unrestricted rate. The connection(s) to the public sewer can be at a point(s) convenient to yourself

Surface water from this site should drain to either soak away/infiltration system or directly to watercourse. Discharge rates and consents must be discussed and agreed with all interested parties.

If you require any further guidance please follow http://www.unitedutilities.com/builders-developers.aspx

If you need a make further enquiry relating to this matter please send your enquiry to WastewaterDeveloperServices@uuplc.co.uk Please quote your DEXXXX/42XXXXXXX/GEXXXX reference number

Please Note:- enquiries sent to any other United Utilities e-mail address will be deleted.

Connection Application

Although we may discuss and agree discharge points & rates in principle, please be aware that you will have to apply for a formal sewer connection. This is so that we can assess the method of construction, Health & Safety requirements and to ultimatley inspect the connection when it is made. Details of the application process and the form itself can be obtained from our website by following the link below

http://www.unitedutilities.com/connecting-public-sewer.aspx

Please be aware that on site drainage must be designed in accordance with Building Regulations, National Planning Policy, Planning Conditions and local flood authority guidelines, we would recommend that you laise and make suitable agreements with the relevant statutory bodies.

Neil O'Brien
Wastewater Pre-Development Engineer
Great Manchester Area
Developer Services & Metering
Customer Services
T: 01925 679410
unitedutilities.com

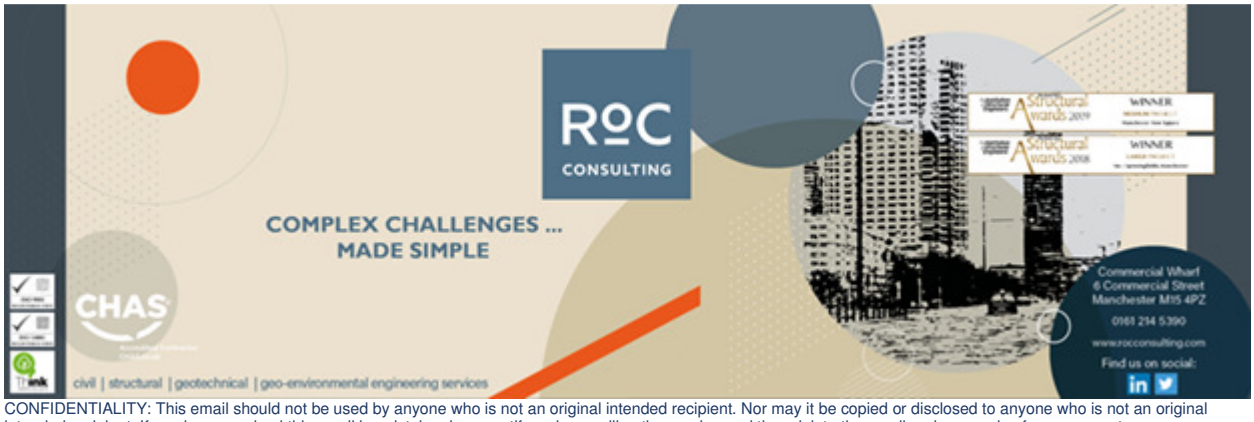
From: Reece McGuinness [mailto:reece.mcguinness@rocconsulting.com]
Sent: 24 December 2019 12:36
To: Wastewater Developer Services <WastewaterDeveloperServices@uuplc.co.uk>
Subject: File Transfer: 4072 - Land at Walshaw Bury Pre-Development Enquiry (Redrow Homes) - Land at Walshaw, Bury

IMPORTANT: Click a link below to access files associated with this transmittal that came in through the RoC Consulting Info Exchange web site.
Download all associated files

Additional links:

Reply to All

Project Name:	Land at Walshaw, Bury
Project Number:	4072
From:	Reece McGuinness
To:	WastewaterDeveloperServices@uuplc.co.uk
CC:	David Eato; Paul White (RoC Consulting)
Subject:	4072 - Land at Walshaw Bury Pre-Development Enquiry (Redrow Homes)
Sent via:	Info Exchange
Expiration Date:	1/23/2020
Remarks:	Dear Sir/Madam, Please find attached pre-development enquiry for the above site. Also attached is a plan indicating layout and an ownership plan. This pre-development enquiry relates to the Redrow Homes land. **Kind regards** **Reece McGuinness** **Strategic Land Graduate Engineer** T 0161 214 5390 www.rocconsulting.com



Transferred Files

NAME	TYPE	DATE	TIME	SIZE
Transmittal - 00003.pdf	PDF File	12/24/2019	12:39 PM	190 KB
30860-MR-M-02I-Block Layout-A1_PT_1.2500-01-01.jpg	JPEG Image	12/24/2019	12:05 PM	6,446 KB
30860-MR-M-04-Land Ownership Plan-A1_PT_1.2500-01.jpg	JPEG Image	12/24/2019	12:06 PM	12,405 KB
Redrow Pre Development Enquiry.pdf	PDF File	12/24/2019	12:04 PM	1,472 KB

Kind regards
Reece McGuinness
Strategic Land Graduate Engineer
T 0161 214 5390
www.rocconsulting.com

passed on, or arising from the alteration of the contents of this message by a third party.

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

Reece McGuinness

From: O'Brien, Neil <Neil.O'Brien@uuplc.co.uk>
Sent: 06 January 2020 11:04
To: Reece McGuinness; Wastewater Developer Services
Subject: RE: File Transfer: 4072 - Land at Walshaw Bury Pre-Development Enquiry (Vernon & Co) - Land at Walshaw, Bury - 4200029692

Dear Customer

We have carried out an assessment of your application which is based on the information provided; this pre development advice will be valid for 12 months

Foul will be allowed to drain to the public combined sewer network at an unrestricted rate. The connection(s) to the public sewer can be at a point(s) convenient to yourself

Surface water from this site should drain to either soak away/infiltration system or directly to watercourse. Discharge rates and consents must be discussed and agreed with all interested parties.

If you require any further guidance please follow http://www.unitedutilities.com/builders-developers.aspx

If you need a make further enquiry relating to this matter please send your enquiry to WastewaterDeveloperServices@uuplc.co.uk Please quote your DEXXXX/42XXXXXXX/GEXXXX reference number

Please Note:- enquiries sent to any other United Utilities e-mail address will be deleted.

Connection Application

Although we may discuss and agree discharge points & rates in principle, please be aware that you will have to apply for a formal sewer connection. This is so that we can assess the method of construction, Health & Safety requirements and to ultimatley inspect the connection when it is made. Details of the application process and the form itself can be obtained from our website by following the link below

http://www.unitedutilities.com/connecting-public-sewer.aspx

Please be aware that on site drainage must be designed in accordance with Building Regulations, National Planning Policy, Planning Conditions and local flood authority guidelines, we would recommend that you laise and make suitable agreements with the relevant statutory bodies.

From: Reece McGuinness [mailto:reece.mcguinness@rocconsulting.com]
Sent: 24 December 2019 12:35
To: Wastewater Developer Services <WastewaterDeveloperServices@uuplc.co.uk>
Subject: File Transfer: 4072 - Land at Walshaw Bury Pre-Development Enquiry (Vernon & Co) - Land at Walshaw, Bury

IMPORTANT: Click a link below to access files associated with this transmittal that came in through the RoC Consulting Info Exchange web site.
Download all associated files

Additional links:

Reply to All

Project Name: Land at Walshaw, Bury

Project Number: 4072

From: Reece McGuinness

To: WastewaterDeveloperServices@uuplc.co.uk

CC: David Eato; Paul White (RoC Consulting)

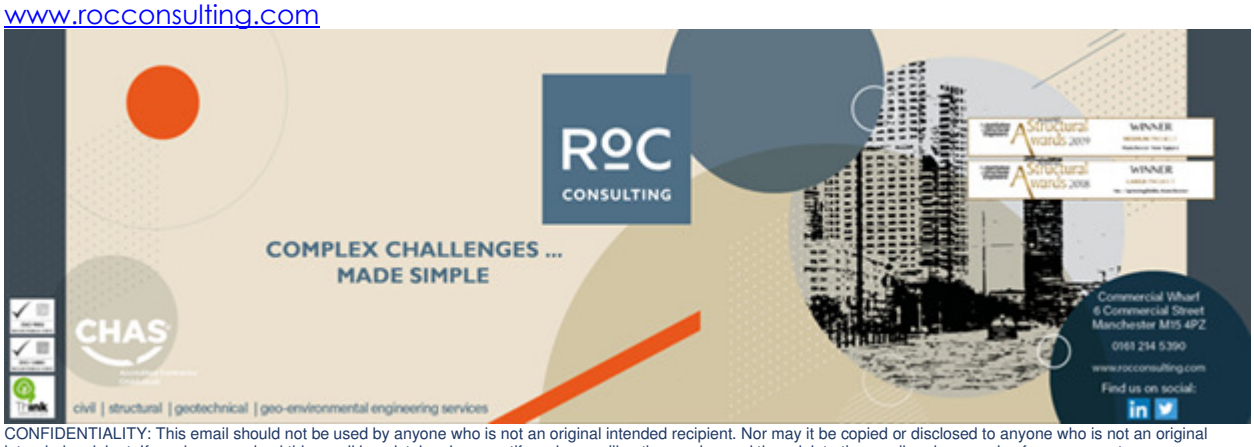
Subject: 4072 - Land at Walshaw Bury Pre-Development Enquiry (Vernon & Co)

Sent via: Info Exchange

Expiration Date: 1/23/2020

Remarks: Dear Sir/Madam,
Please find attached pre-development enquiry for the above site.
Also attached is a plan indicating layout and an ownership plan. This pre-development enquiry relates to the Vernon & Co land.

Kind regards
Reece McGuinness
Strategic Land Graduate Engineer
T 0161 214 5390
www.rocconsulting.com



Transferred Files

NAME	TYPE	DATE	TIME	SIZE
Transmittal - 00002.pdf	PDF File	12/24/2019	12:38 PM	190 KB
30860-MR-M-02I-Block Layout-A1_PT_1.2500-01-01.jpg	JPEG Image	12/24/2019	12:05 PM	6,446 KB
30860-MR-M-04-Land Ownership Plan-A1_PT_1.2500-01.jpg	JPEG Image	12/24/2019	12:06 PM	12,405 KB
Vernon Pre Development Enquiry.pdf	PDF File	12/24/2019	12:10 PM	1,447 KB

Kind regards
Reece McGuinness
Strategic Land Graduate Engineer
T 0161 214 5390
www.rocconsulting.com

APPENDIX E – CATCHMENT AREA PLANS

NOTES

1. ALL DIMENSIONS ARE IN METRES UNLESS NOTED OTHERWISE.
2. THIS DRAWING SHOULD BE READ IN CONJUNCTION WITH THE ROC FLOOD RISK ASSESSMENT REPORT & MASTERPLAN DRAINAGE STRATEGY REPORT.
3. THE INFORMATION SHOWN ON THIS DRAWING IS INDICATIVE ONLY AND SUBJECT TO FURTHER CONSULTATION AND DETAILED DESIGN.
4. SITE LAYOUT AND DEVELOPMENT BLOCKS ARE BASED ON THE BARTON WILLMORE CONCEPT MASTERPLAN FROM THEIR DEVELOPMENT FRAMEWORK DOCUMENT 2019 REVISION N.

KEY

- REDLINE BOUNDARY
- LAND OWNERSHIP BOUNDARY
- CATCHMENT BOUNDARY
- Red-A CATCHMENT DESCRIPTOR

REV.	DATE	DETAILS	DRN.	CHK.
01	17/01/20	FIRST ISSUE	RM	DAE

DRAWING STATUS: INFORMATION

RIBA STAGE: PLANNING

RoC CONSULTING
Commercial Wharf
6 Commercial Street
Manchester M15 4PZ
T 0161 214 5390
W rocconsulting.com

DRAWN: RM	DATE: 17.01.20	SCALES: 1:2,000
CHECKED: DAE	DATE: 17.01.20	THE ABOVE SCALES APPLY WHEN PLOTTED AT A1 SIZE --DO NOT SCALE--
APPRVD.: PAW	DATE: 17.01.20	EMAIL FOR DRAWINGS: info@rocconsulting.com

CLIENT: Redrow Homes

PROJECT TITLE: WALSHAW GARDEN NEIGHBOURHOOD BURY

DRAWING TITLE: CATCHMENT AREAS SHEET 1 OF 3

PROJECT No.	DRAWING No.	REV.
4072	SK104	01

NOTES

1. ALL DIMENSIONS ARE IN METRES UNLESS NOTED OTHERWISE.
2. THIS DRAWING SHOULD BE READ IN CONJUNCTION WITH THE ROC FLOOD RISK ASSESSMENT REPORT & MASTERPLAN DRAINAGE STRATEGY REPORT.
3. THE INFORMATION SHOWN ON THIS DRAWING IS INDICATIVE ONLY AND SUBJECT TO FURTHER CONSULTATION AND DETAILED DESIGN.
4. SITE LAYOUT AND DEVELOPMENT BLOCKS ARE BASED ON THE BARTON WILLMORE CONCEPT MASTERPLAN FROM THEIR DEVELOPMENT FRAMEWORK DOCUMENT 2019 REVISION N.

KEY

- REDLINE BOUNDARY
- LAND OWNERSHIP BOUNDARY
- CATCHMENT BOUNDARY
- Hi-B CATCHMENT DESCRIPTOR

REV.	DATE	DETAILS	DRN.	CHK.
01	17/01/20	FIRST ISSUE	RM	DAE

DRAWING STATUS
INFORMATION

RIBA STAGE
PLANNING

RoC CONSULTING
Commercial Wharf
6 Commercial Street
Manchester M15 4PZ
T 0161 214 5390
W rocconsulting.com

DRAWN RM	DATE 17.01.20	SCALES 1:1,000
CHECKED DAE	DATE 17.01.20	THE ABOVE SCALES APPLY WHEN PLOTTED AT A1 SIZE --DO NOT SCALE--
APPRVD. PAW	DATE 17.01.20	EMAIL FOR DRAWINGS info@rocconsulting.com

CLIENT
HIMOR

PROJECT TITLE
WALSHAW GARDEN NEIGHBOURHOOD
BURY

DRAWING TITLE
CATCHMENT AREAS
SHEET 2 OF 3

PROJECT No.	DRAWING No.	REV.
4072	SK105	01

NOTES

1. ALL DIMENSIONS ARE IN METRES UNLESS NOTED OTHERWISE.
2. THIS DRAWING SHOULD BE READ IN CONJUNCTION WITH THE ROC FLOOD RISK ASSESSMENT REPORT & MASTERPLAN DRAINAGE STRATEGY REPORT.
3. THE INFORMATION SHOWN ON THIS DRAWING IS INDICATIVE ONLY AND SUBJECT TO FURTHER CONSULTATION AND DETAILED DESIGN.
4. SITE LAYOUT AND DEVELOPMENT BLOCKS ARE BASED ON THE BARTON WILLMORE CONCEPT MASTERPLAN FROM THEIR DEVELOPMENT FRAMEWORK DOCUMENT 2019 REVISION N.

KEY

- REDLINE BOUNDARY
- LAND OWNERSHIP BOUNDARY
- CATCHMENT BOUNDARY
- VHW-A CATCHMENT DESCRIPTOR

SCOBELL STREET
CHURCH STREET
MOYSE AVENUE
WALSHAW ROAD
DOW LANE
LEIGH LANE
Hi-C
Hi-B
Hi-A
Hi-R
Hi-D
Red-B
Red-C
VHW-R1
VHW-C
VHW-B
VHW-A
VHW-E
VHW-R2
VHW-D
VHW-F
BC-A
VHW-G
VHW-R3
VHW-H
VHW-I
Sinks
Walshaw Brook
Resr
Elton Brook
Spreads
Issues

REV.	DATE	DETAILS	DRN.	CHK.
01	17/01/20	FIRST ISSUE	RM	DAE

DRAWING STATUS
INFORMATION

RIBA STAGE
PLANNING

RoC CONSULTING
Commercial Wharf
6 Commercial Street
Manchester M15 4PZ
T 0161 214 5390
W rocconsulting.com

DRAWN RM	DATE 17.01.20	SCALES 1:2,000
CHECKED DAE	DATE 17.01.20	THE ABOVE SCALES APPLY WHEN PLOTTED AT A1 SIZE --DO NOT SCALE--
APPRVD. PAW	DATE 17.01.20	EMAIL FOR DRAWINGS info@rocconsulting.com

CLIENT
VHW Land Partnership (WALSHAW) Limited

PROJECT TITLE
WALSHAW GARDEN NEIGHBOURHOOD
BURY

DRAWING TITLE
CATCHMENT AREAS
SHEET 3 OF 3

PROJECT No.	DRAWING No.	REV.
4072	SK106	01

COMPLEX CHALLENGES ...
MADE SIMPLE

APPENDIX F – SURFACE WATER RUNOFF CALCULATIONS

ICP SUDS Mean Annual Flood

Input

Return Period (years)	1	SAAR (mm)	1123	Urban	0.000
Area (ha)	2.130	Soil	0.470	Region Number	Region 10

Results	l/s
QBAR Rural	17.9
QBAR Urban	17.9
Q1 year	15.6
Q1 year	15.6
Q30 years	30.3
Q100 years	37.2

ICP SUDS Mean Annual Flood

Input

Return Period (years)	1	SAAR (mm)	1137	Urban	0.000
Area (ha)	3.650	Soil	0.470	Region Number	Region 10

Results	**l/s**
QBAR Rural	31.1
QBAR Urban	31.1
Q1 year	27.0
Q1 year	27.0
Q30 years	52.7
Q100 years	64.7

ICP SUDS Mean Annual Flood

Input

Return Period (years)	1	SAAR (mm)	1137	Urban	0.000
Area (ha)	2.950	Soil	0.470	Region Number	Region 10

Results	**l/s**
QBAR Rural	25.1
QBAR Urban	25.1
Q1 year	21.9
Q1 year	21.9
Q30 years	42.6
Q100 years	52.3

ICP SUDS Mean Annual Flood

Input

Return Period (years)	1	SAAR (mm)	1137	Urban	0.000
Area (ha)	0.620	Soil	0.470	Region Number	Region 10

Results	l/s
QBAR Rural	5.3
QBAR Urban	5.3
Q1 year	4.6
Q1 year	4.6
Q30 years	9.0
Q100 years	11.0

ICP SUDS Mean Annual Flood

Input

Return Period (years)	1	SAAR (mm)	1137	Urban	0.000
Area (ha)	0.320	Soil	0.470	Region Number	Region 10

Results	**l/s**
QBAR Rural	2.7
QBAR Urban	2.7
Q1 year	2.4
Q1 year	2.4
Q30 years	4.6
Q100 years	5.7

ICP SUDS Mean Annual Flood

Input

Return Period (years)	1	SAAR (mm)	1137	Urban	0.000
Area (ha)	0.440	Soil	0.470	Region Number	Region 10

Results	**l/s**
QBAR Rural	3.7
QBAR Urban	3.7
Q1 year	3.3
Q1 year	3.3
Q30 years	6.4
Q100 years	7.8

ICP SUDS Mean Annual Flood

Input

Return Period (years)	1	SAAR (mm)	1109	Urban	0.000
Area (ha)	7.480	Soil	0.470	Region Number	Region 10

Results	**l/s**
QBAR Rural	61.9
QBAR Urban	61.9
Q1 year	53.8
Q1 year	53.8
Q30 years	104.9
Q100 years	128.7

ICP SUDS Mean Annual Flood

Input

Return Period (years) 1 SAAR (mm) 1109 Urban 0.000
Area (ha) 2.000 Soil 0.470 Region Number Region 10

Results l/s

QBAR Rural 16.5
QBAR Urban 16.5

Q1 year 14.4

Q1 year 14.4
Q30 years 28.0
Q100 years 34.4

ICP SUDS Mean Annual Flood

Input

Return Period (years)	1	SAAR (mm)	1109	Urban	0.000
Area (ha)	0.120	Soil	0.470	Region Number	Region 10

Results	**l/s**
QBAR Rural	1.0
QBAR Urban	1.0
Q1 year	0.9
Q1 year	0.9
Q30 years	1.7
Q100 years	2.1

ICP SUDS Mean Annual Flood

Input

Return Period (years)	1	SAAR (mm)	1109	Urban	0.000
Area (ha)	0.110	Soil	0.470	Region Number	Region 10

Results	**l/s**
QBAR Rural	0.9
QBAR Urban	0.9
Q1 year	0.8
Q1 year	0.8
Q30 years	1.5
Q100 years	1.9

ICP SUDS Mean Annual Flood

Input

Return Period (years)	1	SAAR (mm)	1123	Urban	0.000
Area (ha)	1.120	Soil	0.470	Region Number	Region 10

Results	**l/s**
QBAR Rural	9.4
QBAR Urban	9.4
Q1 year	8.2
Q1 year	8.2
Q30 years	15.9
Q100 years	19.6

ICP SUDS Mean Annual Flood

Input

Return Period (years)	1	SAAR (mm)	1123	Urban	0.000
Area (ha)	3.960	Soil	0.470	Region Number	Region 10

Results	l/s
QBAR Rural	33.2
QBAR Urban	33.2
Q1 year	28.9
Q1 year	28.9
Q30 years	56.4
Q100 years	69.1

ICP SUDS Mean Annual Flood

Input

Return Period (years)	1	SAAR (mm)	1123	Urban	0.000
Area (ha)	2.200	Soil	0.470	Region Number	Region 10

Results	**l/s**
QBAR Rural	18.5
QBAR Urban	18.5
Q1 year	16.1
Q1 year	16.1
Q30 years	31.3
Q100 years	38.4

ICP SUDS Mean Annual Flood

Input

Return Period (years)	1	SAAR (mm)	1123	Urban	0.000
Area (ha)	0.720	Soil	0.470	Region Number	Region 10

Results	l/s
QBAR Rural	6.0
QBAR Urban	6.0
Q1 year	5.3
Q1 year	5.3
Q30 years	10.2
Q100 years	12.6

ICP SUDS Mean Annual Flood

Input

Return Period (years)	1	SAAR (mm)	1123	Urban	0.000
Area (ha)	1.800	Soil	0.470	Region Number	Region 10

Results	l/s
QBAR Rural	15.1
QBAR Urban	15.1
Q1 year	13.1
Q1 year	13.1
Q30 years	25.6
Q100 years	31.4

ICP SUDS Mean Annual Flood

Input

Return Period (years)	1	SAAR (mm)	1123	Urban	0.000
Area (ha)	0.240	Soil	0.470	Region Number	Region 10

Results	l/s
QBAR Rural	2.0
QBAR Urban	2.0
Q1 year	1.8
Q1 year	1.8
Q30 years	3.4
Q100 years	4.2

ICP SUDS Mean Annual Flood

Input

Return Period (years)	1	SAAR (mm)	1123	Urban	0.000
Area (ha)	3.620	Soil	0.470	Region Number	Region 10

Results	l/s
QBAR Rural	30.4
QBAR Urban	30.4
Q1 year	26.4
Q1 year	26.4
Q30 years	51.5
Q100 years	63.2

ICP SUDS Mean Annual Flood

Input

Return Period (years)	1	SAAR (mm)	1123	Urban	0.000
Area (ha)	2.690	Soil	0.470	Region Number	Region 10

Results	l/s
QBAR Rural	22.6
QBAR Urban	22.6
Q1 year	19.6
Q1 year	19.6
Q30 years	38.3
Q100 years	47.0

ICP SUDS Mean Annual Flood

Input

Return Period (years)	1	SAAR (mm)	1123	Urban	0.000
Area (ha)	2.630	Soil	0.470	Region Number	Region 10

Results	l/s
QBAR Rural	22.1
QBAR Urban	22.1
Q1 year	19.2
Q1 year	19.2
Q30 years	37.4
Q100 years	45.9

ICP SUDS Mean Annual Flood

Input

Return Period (years)	1	SAAR (mm)	1123	Urban	0.000
Area (ha)	0.470	Soil	0.470	Region Number	Region 10

Results	l/s
QBAR Rural	3.9
QBAR Urban	3.9
Q1 year	3.4
Q1 year	3.4
Q30 years	6.7
Q100 years	8.2

ICP SUDS Mean Annual Flood

Input

Return Period (years)	1	SAAR (mm)	1123	Urban	0.000
Area (ha)	0.260	Soil	0.470	Region Number	Region 10

Results	**l/s**
QBAR Rural	2.2
QBAR Urban	2.2
Q1 year	1.9
Q1 year	1.9
Q30 years	3.7
Q100 years	4.5

ICP SUDS Mean Annual Flood

Input

Return Period (years)	1	SAAR (mm)	1123	Urban	0.000
Area (ha)	0.630	Soil	0.470	Region Number	Region 10

Results	l/s
QBAR Rural	5.3
QBAR Urban	5.3
Q1 year	4.6
Q1 year	4.6
Q30 years	9.0
Q100 years	11.0

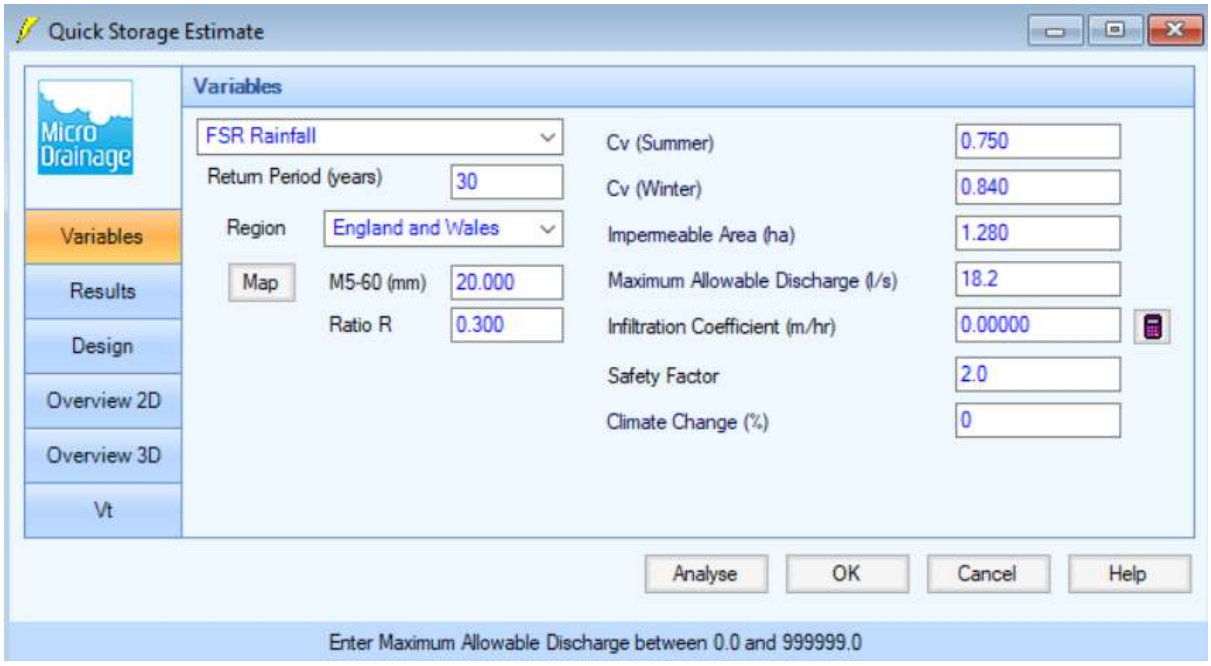
COMPLEX CHALLENGES ...
MADE SIMPLE

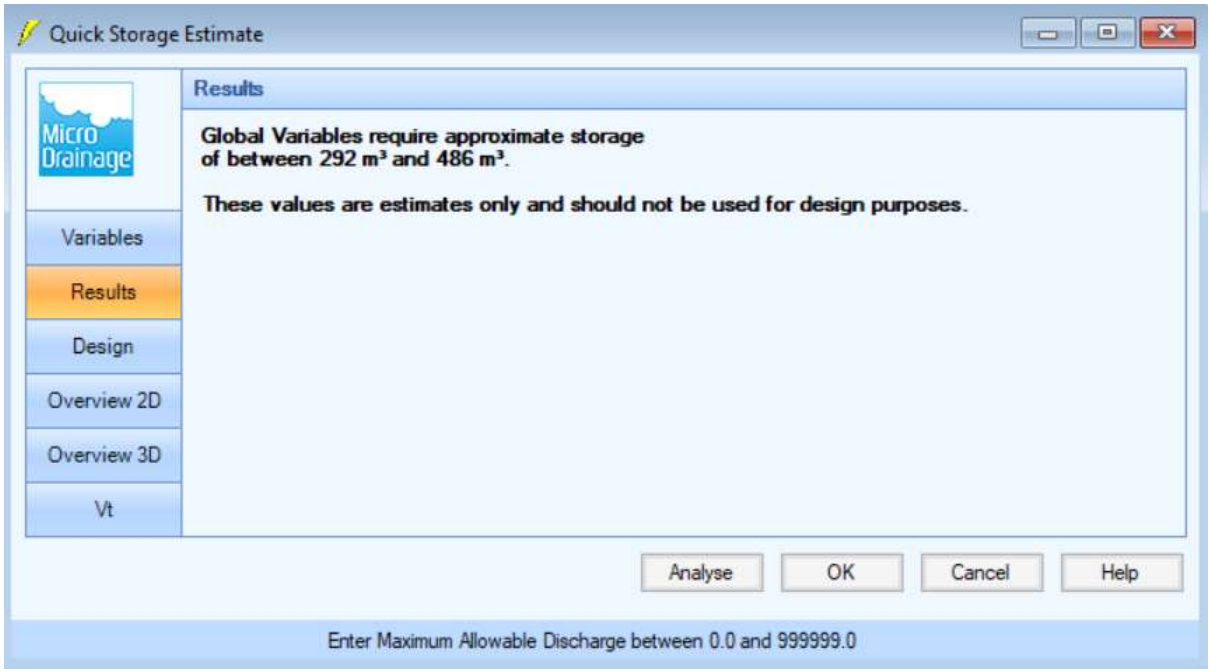
APPENDIX G – SURFACE WATER ATTENUATION CALCULATIONS

4072 Primary School, Bury Council, Walshaw, Bury Quick Storage Estimate Calculation 03.01.2020

(MicroDrainage Source Control 2019.1)

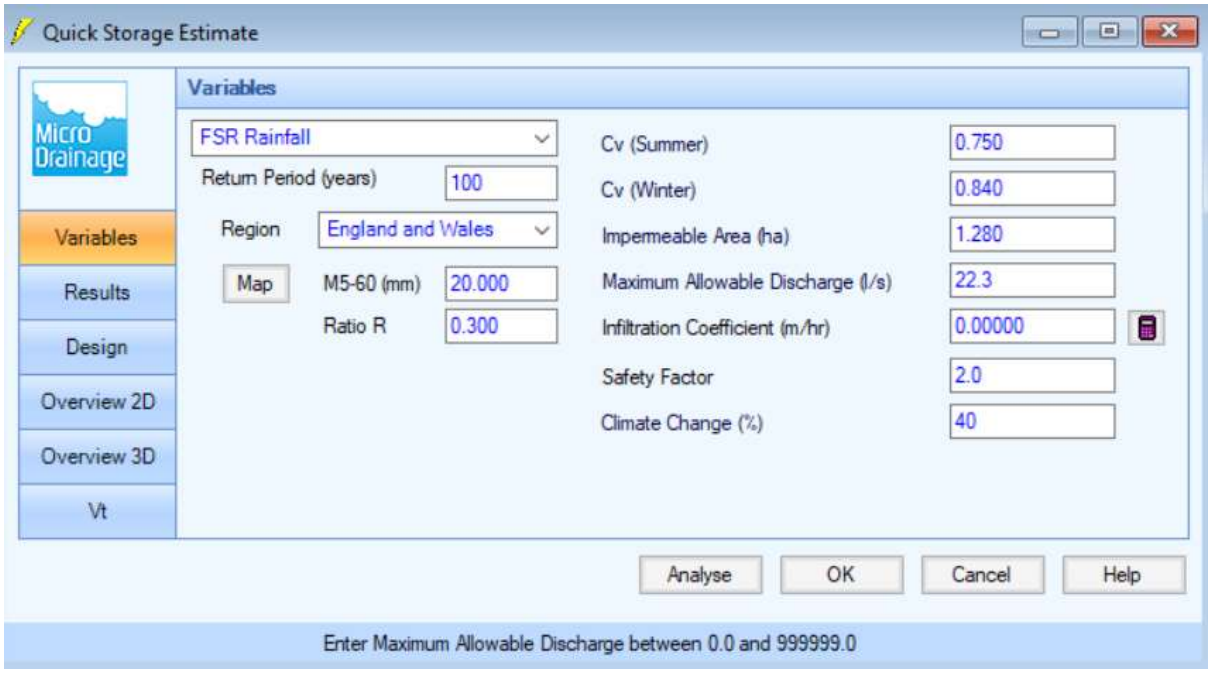
3.33% RP Event on Development Impermeable Area 1.28Ha, Qmax= 18.2 litres/sec

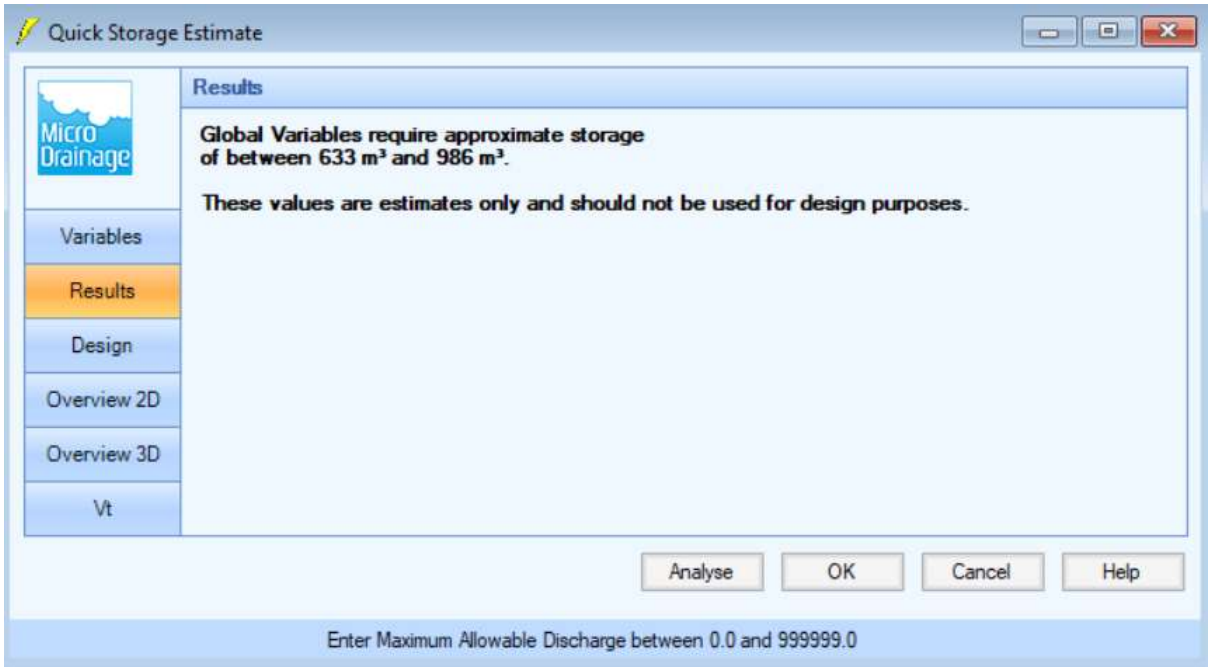




NB: Approximate attenuation volume taken as 486m³ upper limit.

1.00% RP Storm + 40% Climate change Event on Development Impermeable Area 1.28Ha, Qmax= 22.3 litres/sec



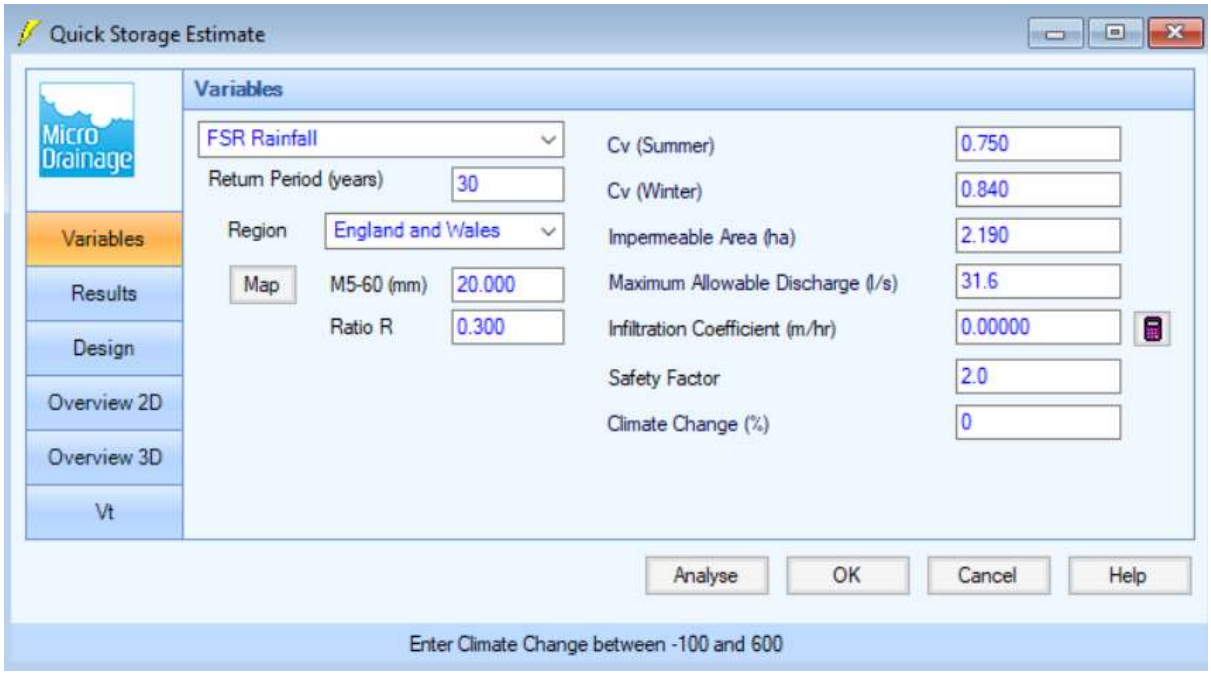


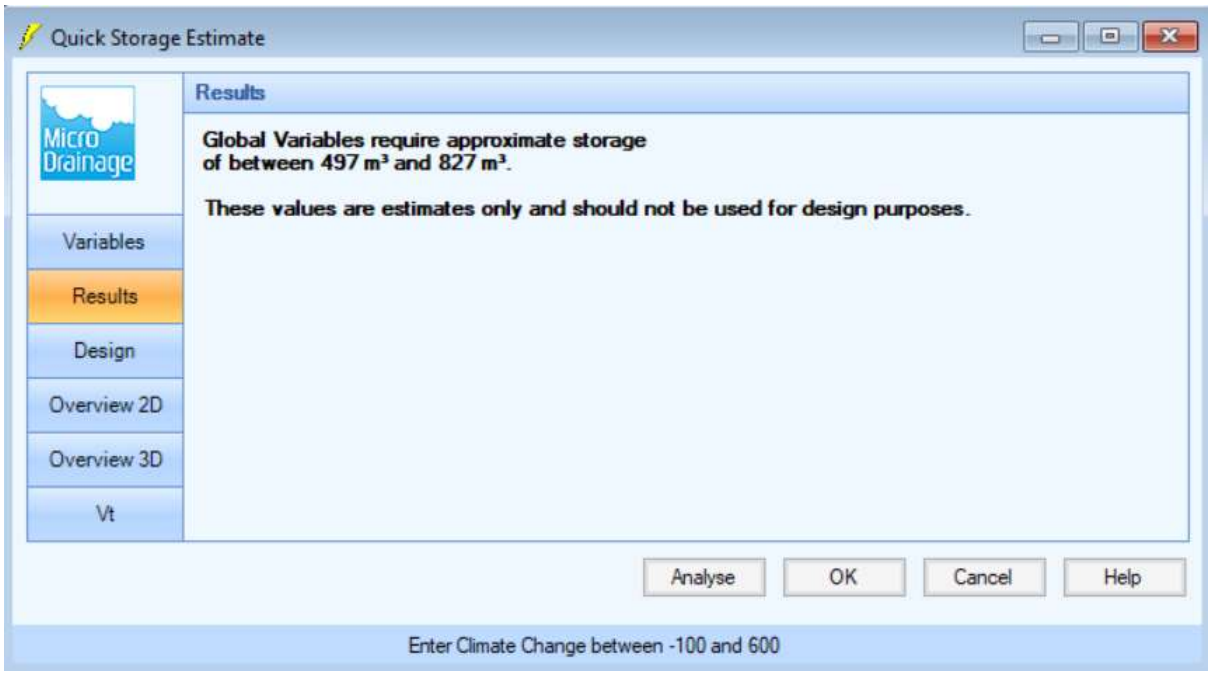
NB: Approximate attenuation volume taken as 986m³ upper limit, subject to further development at detail design stage when 100yr Storm 6hr duration pre/post-development volumes are checked.

4072 Parcel A Himor, Walshaw, Bury Quick Storage Estimate Calculation 07.01.2020

(MicroDrainage Source Control 2019.1)

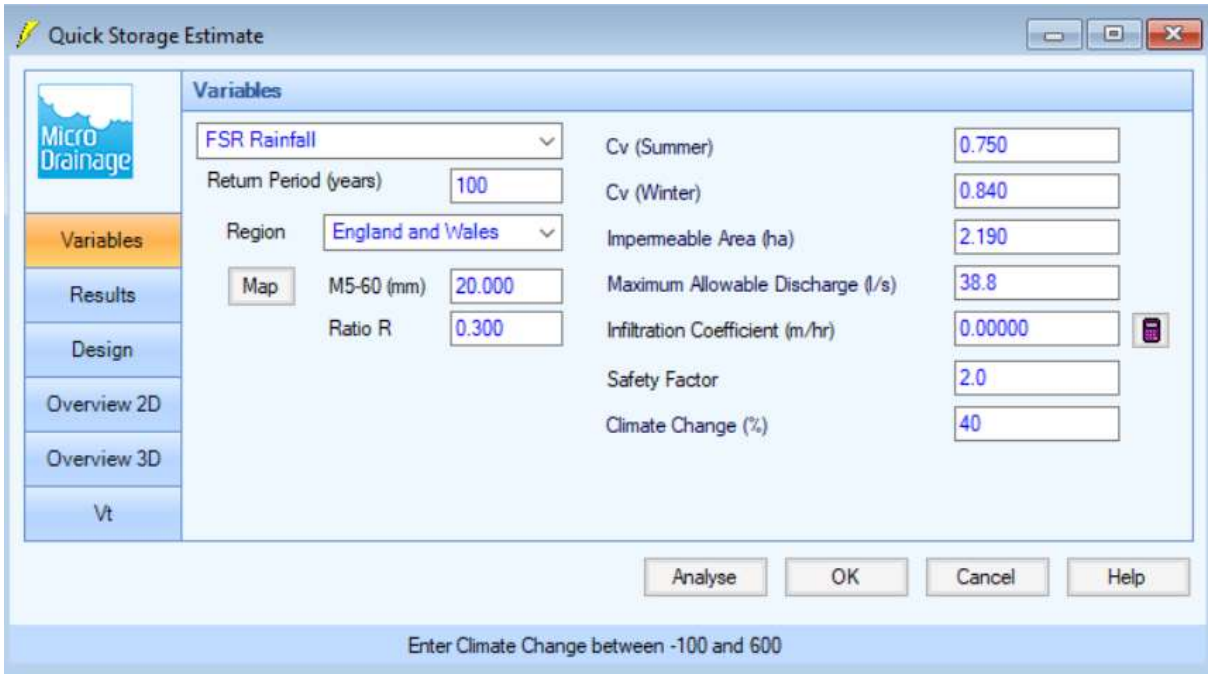
3.33% RP Event on Development Impermeable Area 2.19Ha, Qmax= 31.6 litres/sec

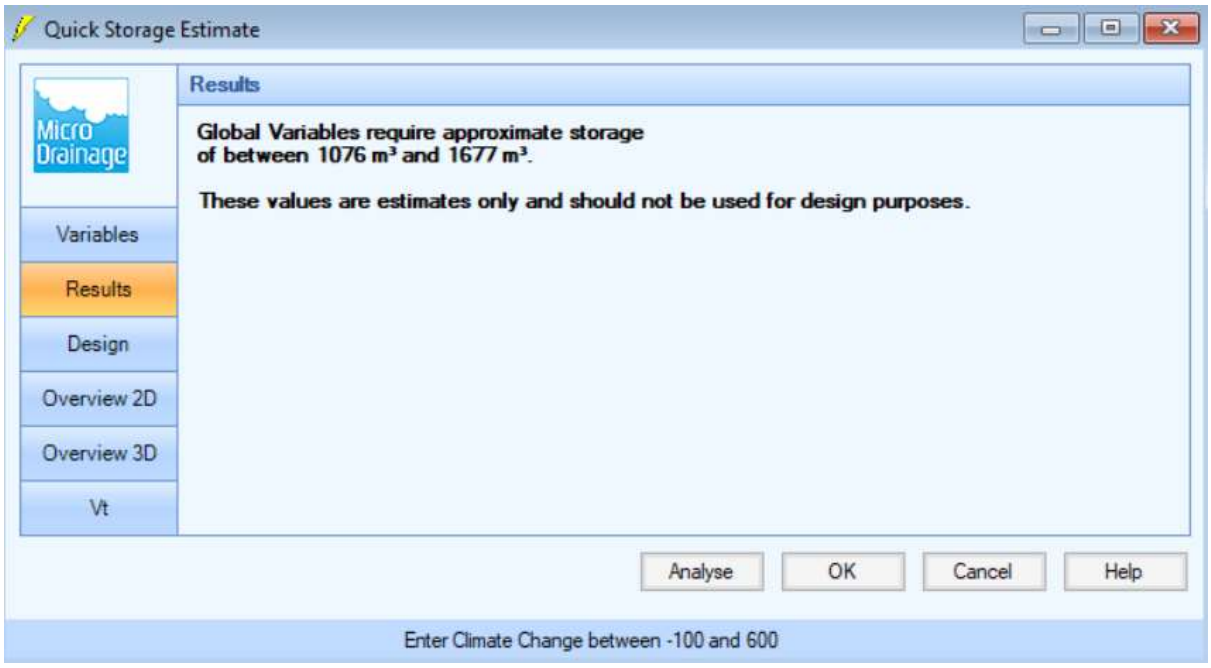




NB: Approximate attenuation volume taken as 827m³ upper limit.

1.00% RP Storm + 40% Climate change Event on Development Impermeable Area 2.19Ha, Q max= 38.8 litres/sec



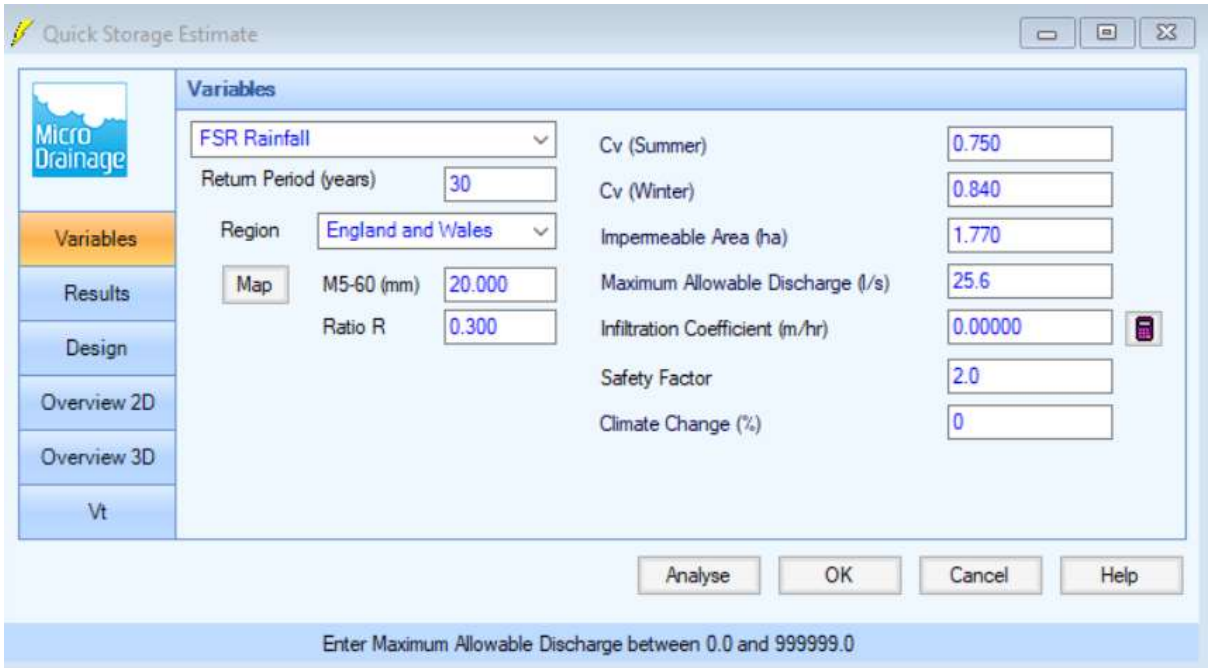


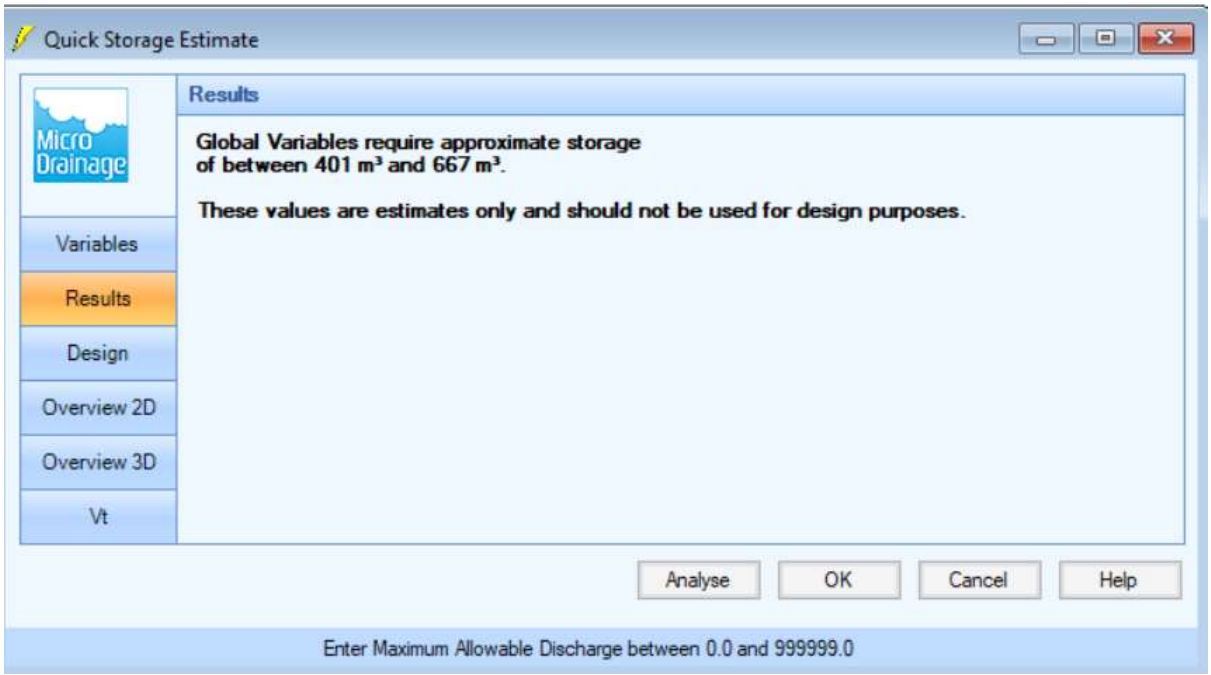
NB: Approximate attenuation volume taken as 1677m³ upper limit, subject to further development at detail design stage when 100yr Storm 6hr duration pre/post-development volumes are checked.

4072 Parcel B Himor, Walshaw, Bury Quick Storage Estimate Calculation 07.01.2020

(MicroDrainage Source Control 2019.1)

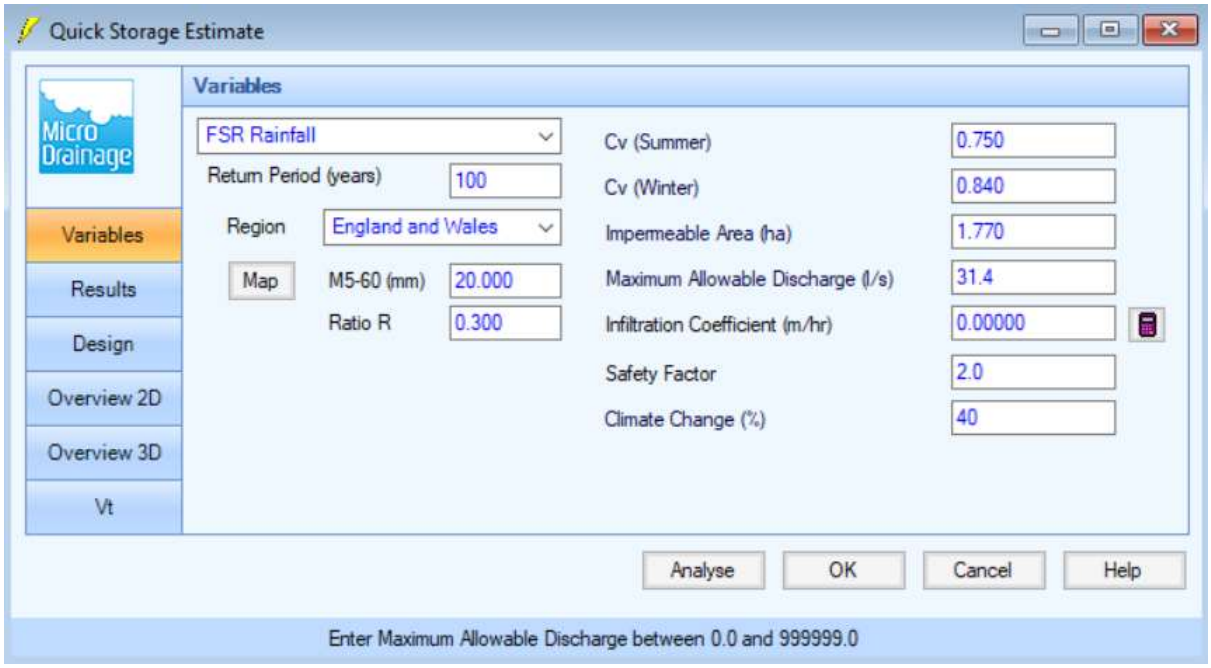
3.33% RP Event on Development Impermeable Area 1.77Ha, Qmax= 25.6 litres/sec

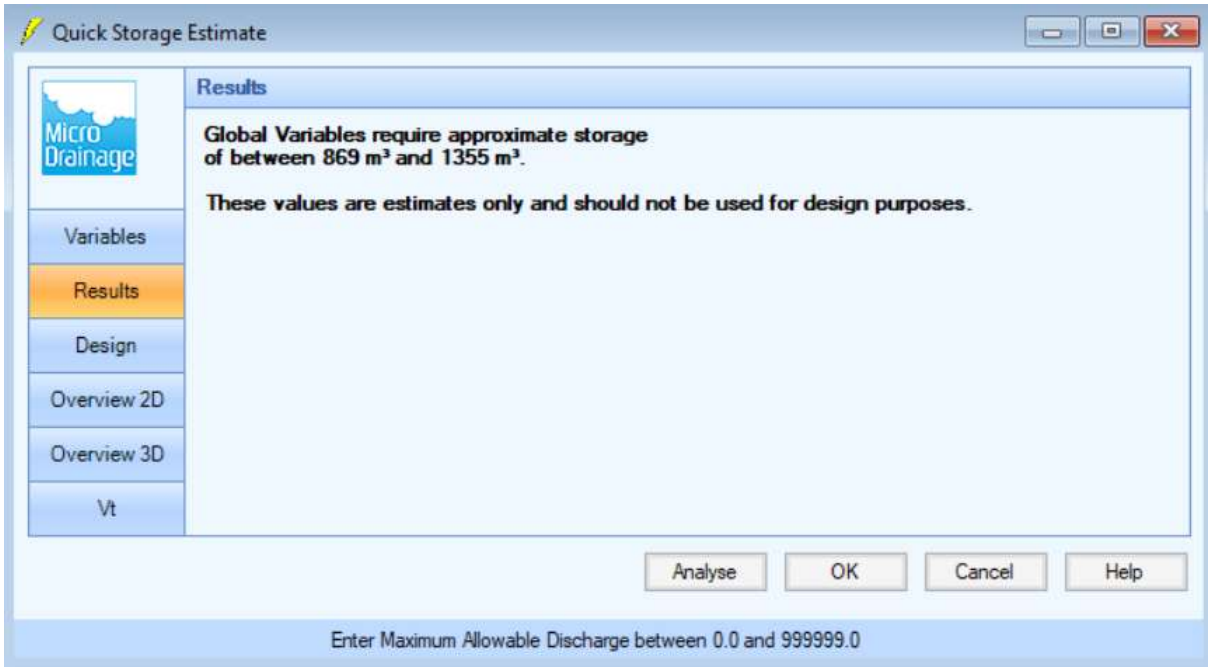




NB: Approximate attenuation volume taken as 667m³ upper limit.

1.00% RP Storm + 40% Climate change Event on Development Impermeable Area 1.77Ha, Qmax= 31.4 litres/sec



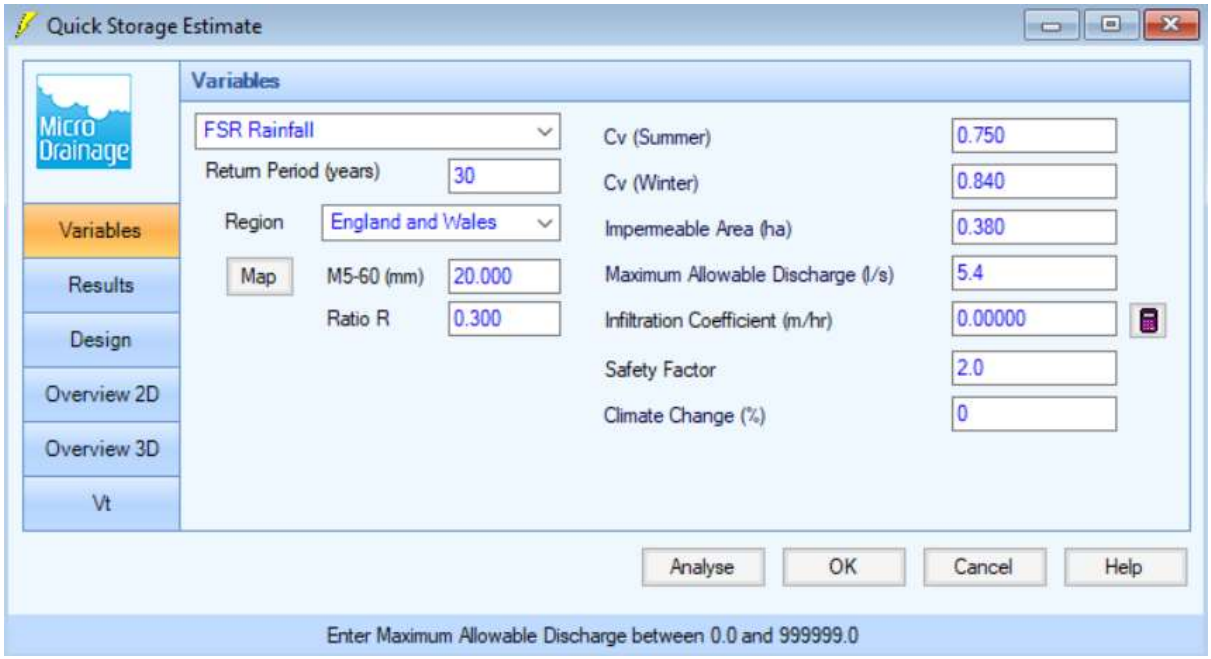


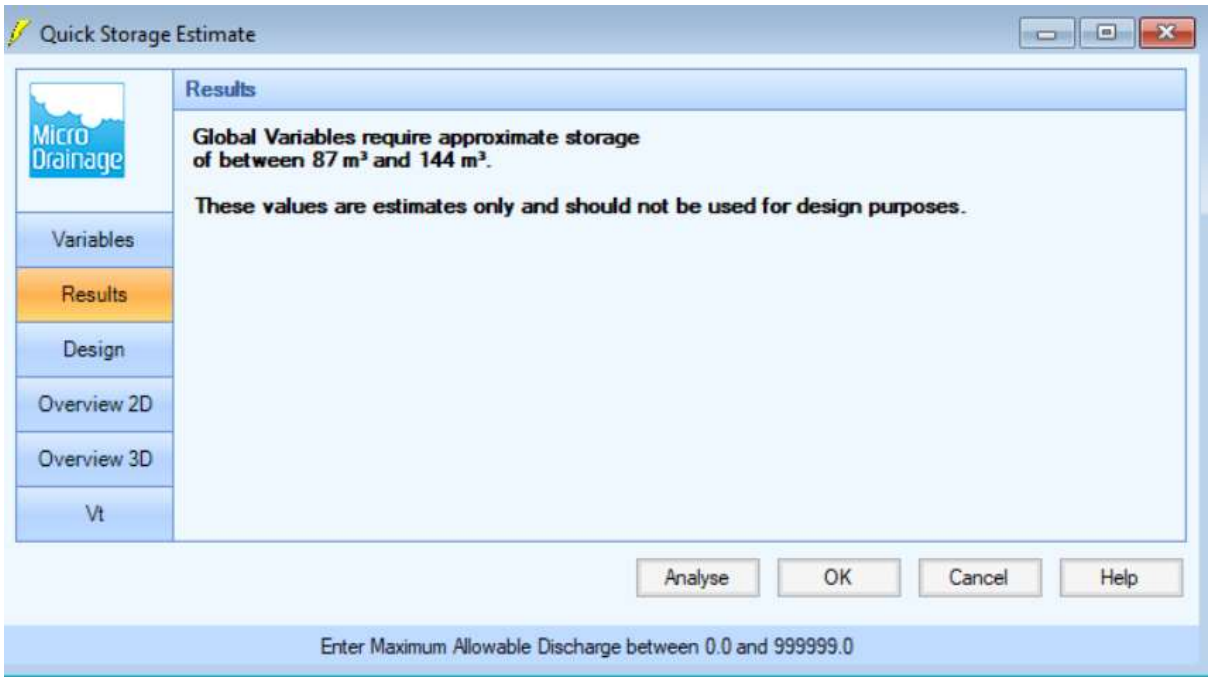
NB: Approximate attenuation volume taken as 1355m³ upper limit, subject to further development at detail design stage when 100yr Storm 6hr duration pre/post-development volumes are checked.

4072 Parcel C Himor, Walshaw, Bury Quick Storage Estimate Calculation 07.01.2020

(MicroDrainage Source Control 2019.1)

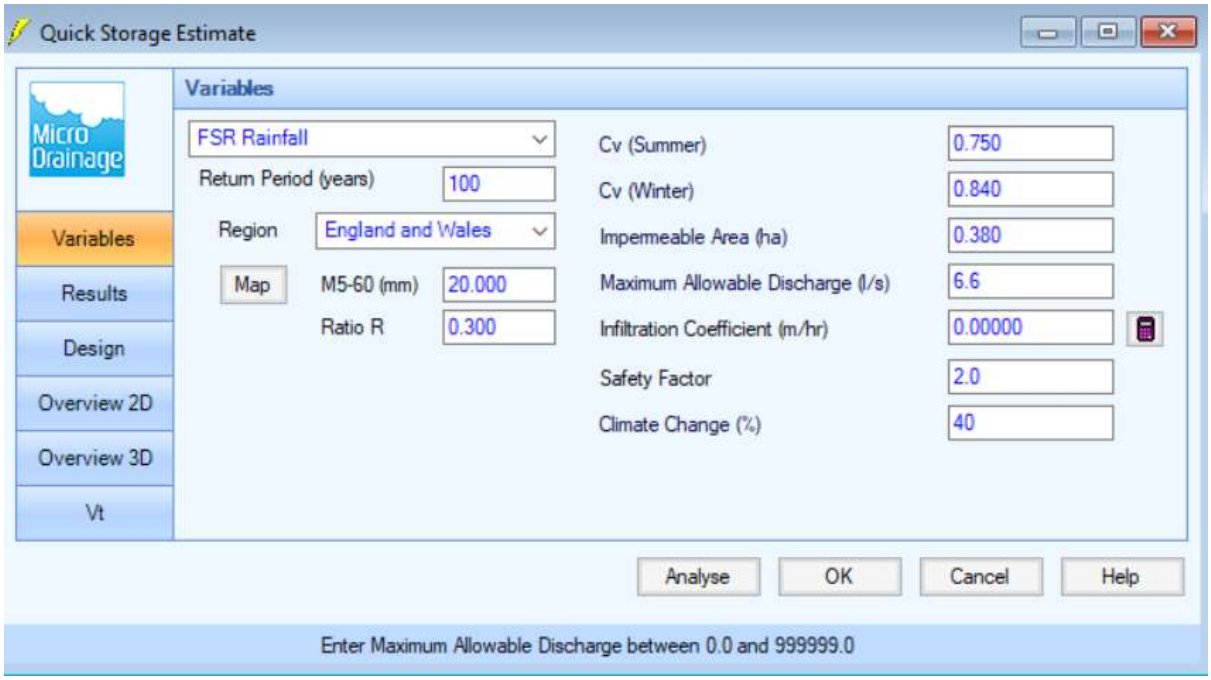
3.33% RP Event on Development Impermeable Area 0.38Ha, Qmax= 5.4 litres/sec

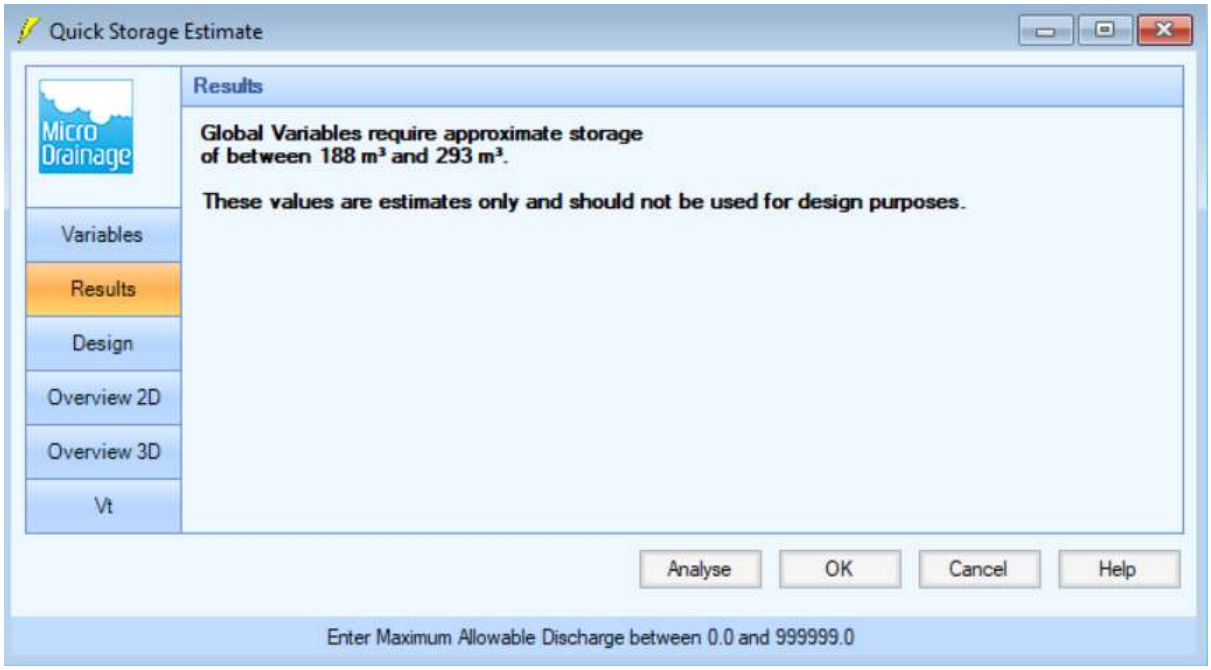




NB: Approximate attenuation volume taken as 144m³ upper limit.

1.00% RP Storm + 40% Climate change Event on Development Impermeable Area 0.38Ha, Qmax= 6.6 litres/sec



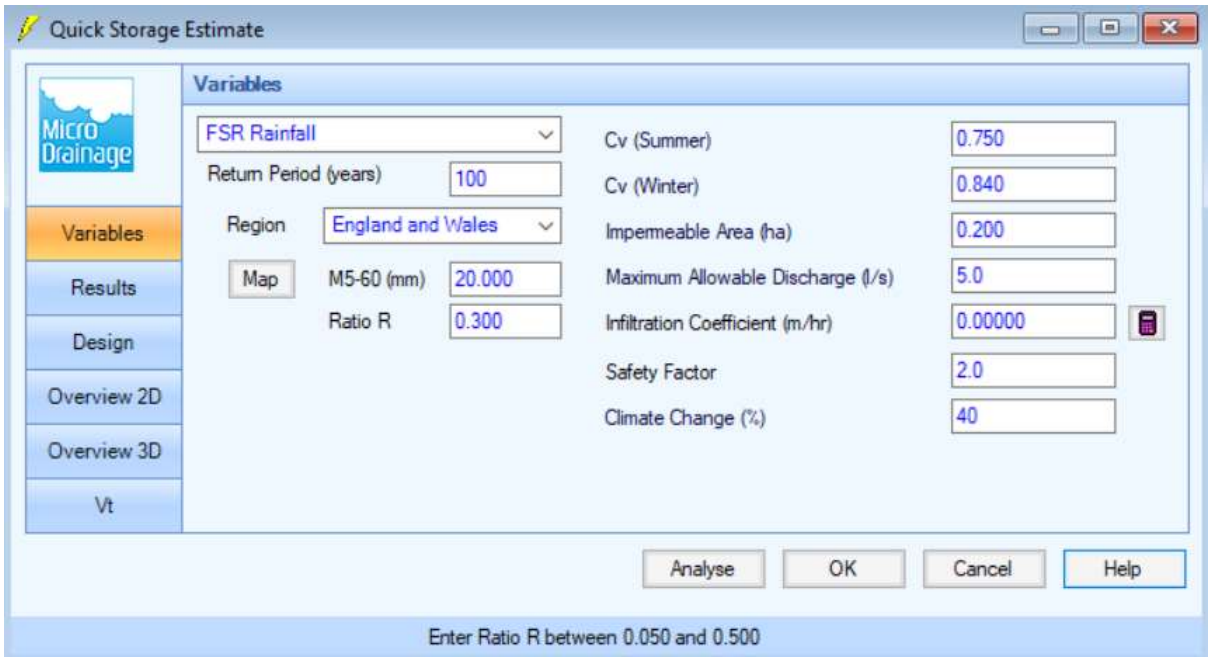


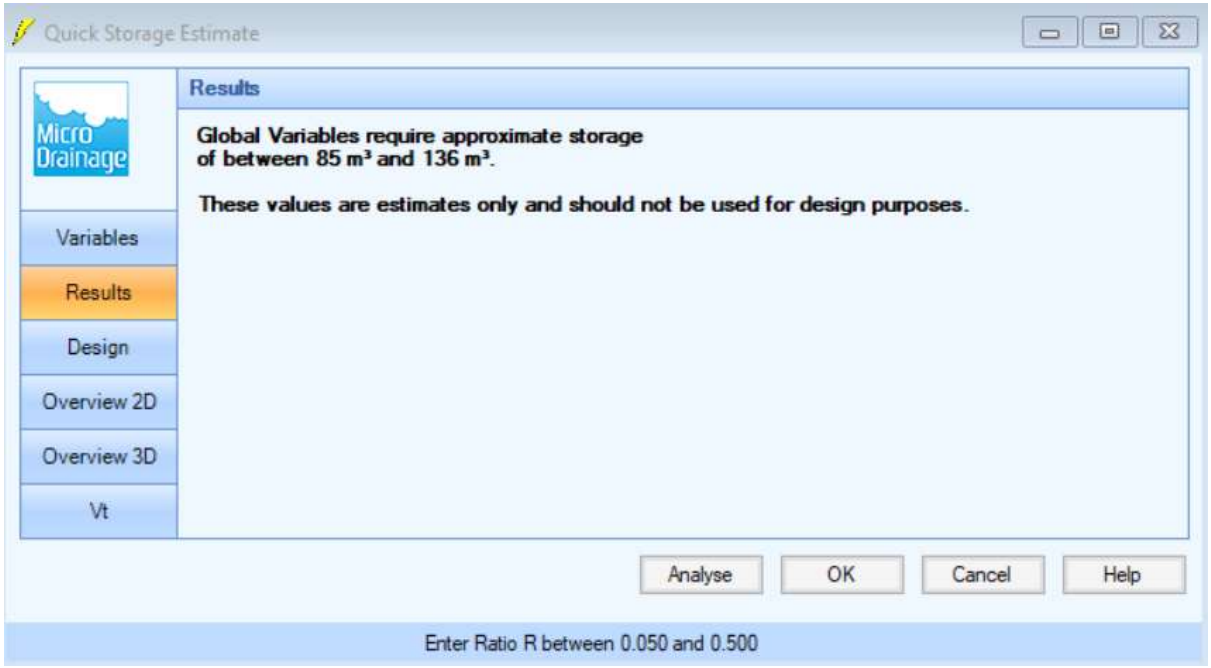
NB: Approximate attenuation volume taken as 293m³ upper limit, subject to further development at detail design stage when 100yr Storm 6hr duration pre/post-development volumes are checked.

4072 Parcel D Himor, Walshaw, Bury Quick Storage Estimate Calculation 07.01.2020

(MicroDrainage Source Control 2019.1)

1.00% RP Storm + 40% Climate change Event on Development Impermeable Area 0.20Ha, Qmax= 5 litres/sec



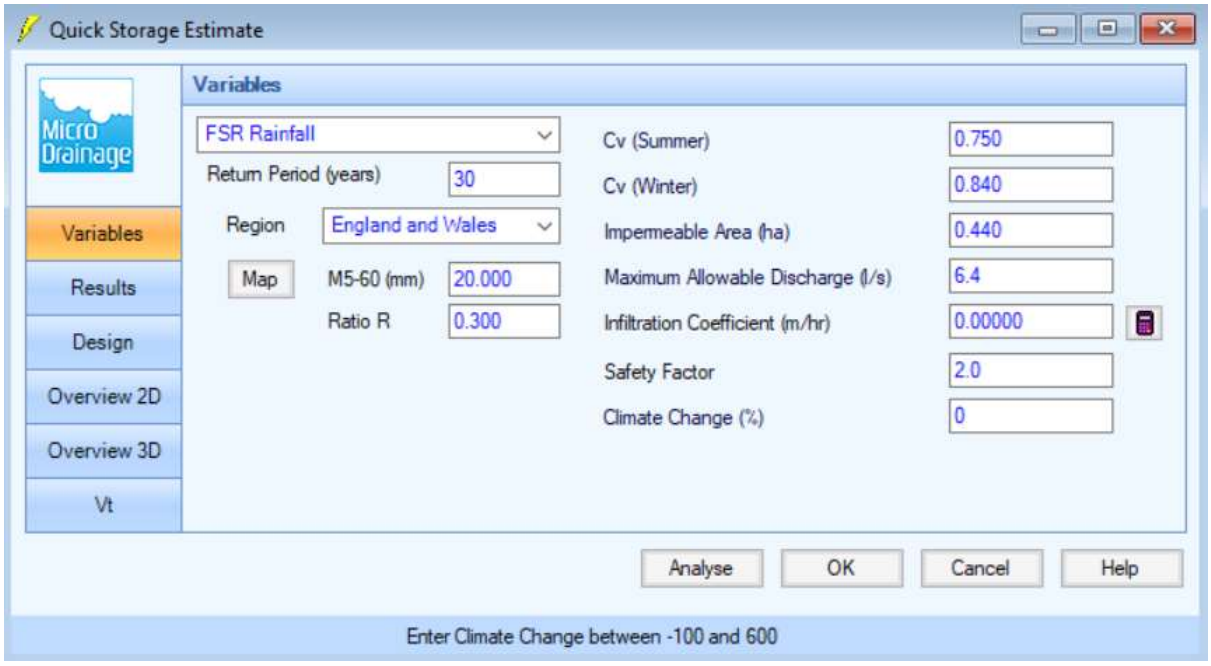


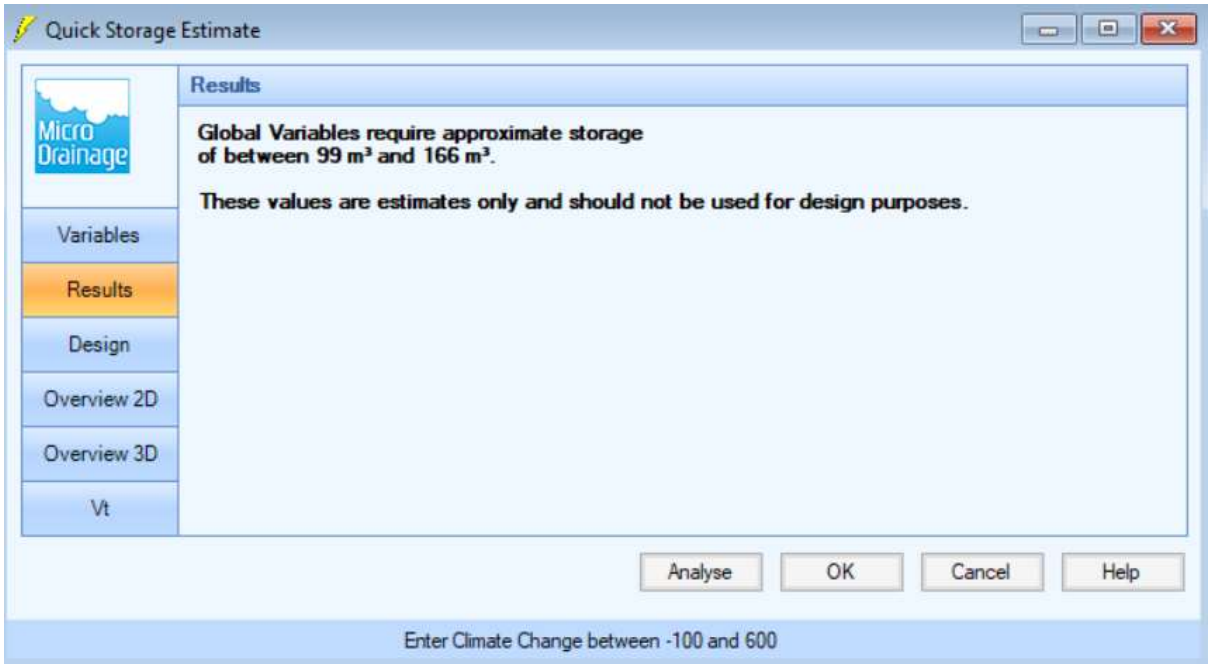
NB: Approximate attenuation volume taken as 136m³ subject to confirmation at detail design, maximum discharge restricted to minimum practical rates of 5 l/s in accordance with NPPF Guidelines.

4072 Parcel R1 Himor, Walshaw, Bury Quick Storage Estimate Calculation 03.01.2020

(MicroDrainage Source Control 2019.1)

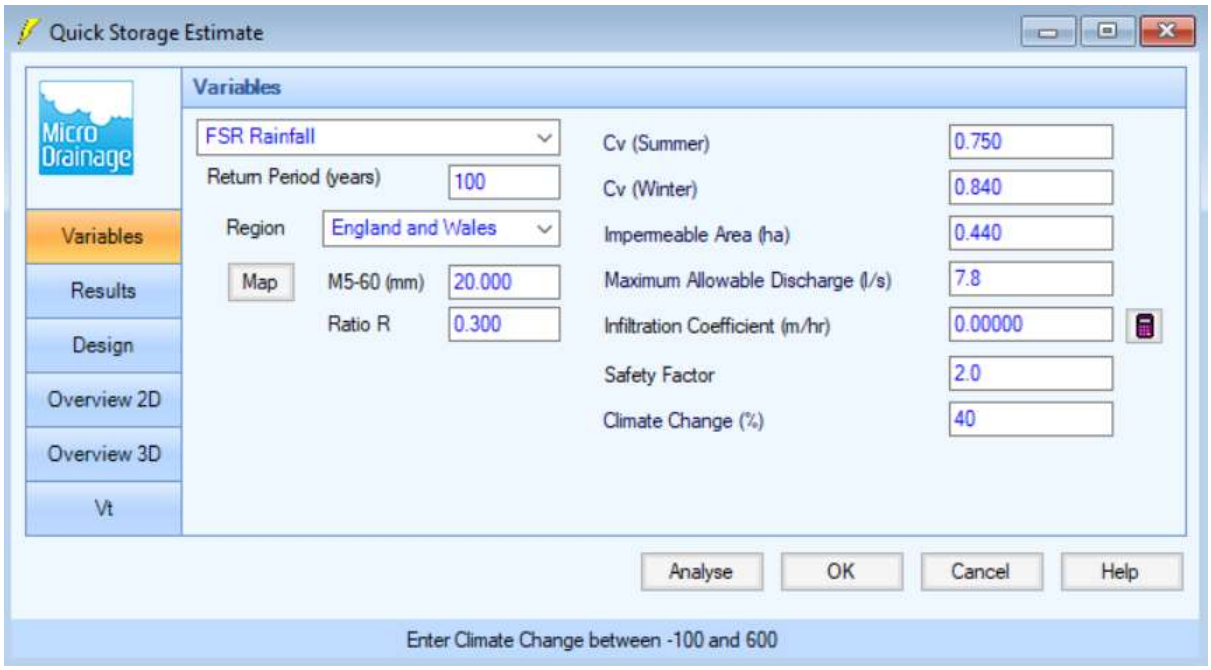
3.33% RP Event on Development Impermeable Area 0.44Ha, Qmax= 6.4 litres/sec

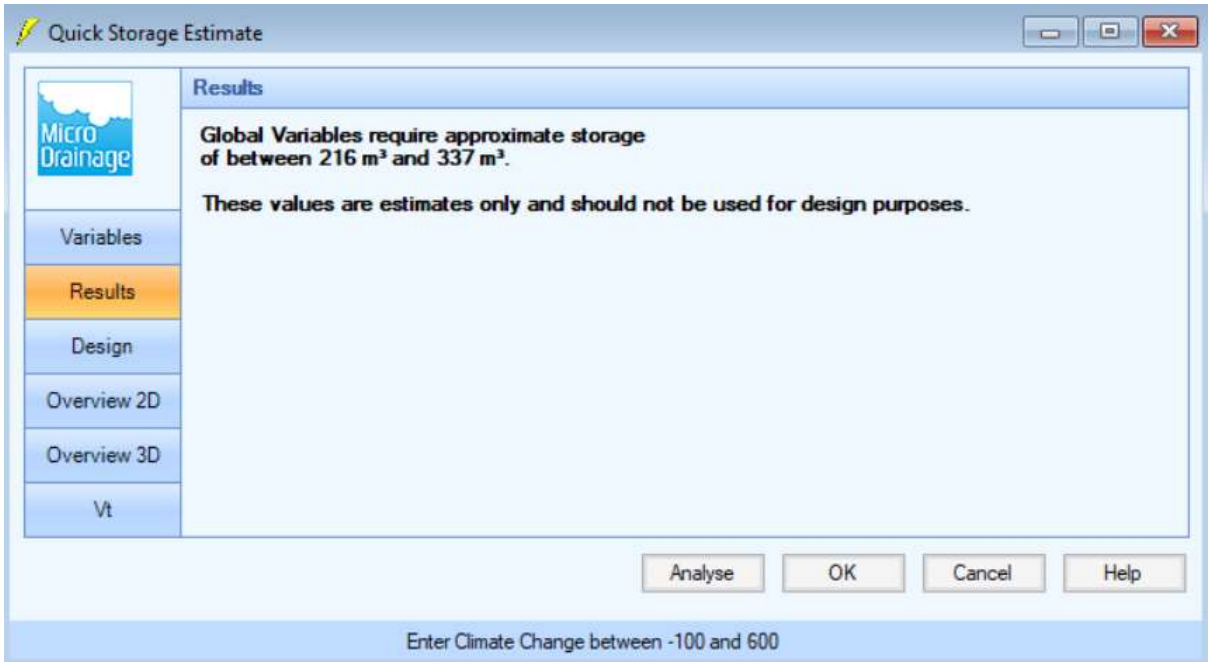




NB: Approximate attenuation volume taken as 166m³ upper limit.

1.00% RP Storm + 40% Climate change Event on Development Impermeable Area 0.44Ha, Qmax= 7.8 litres/sec



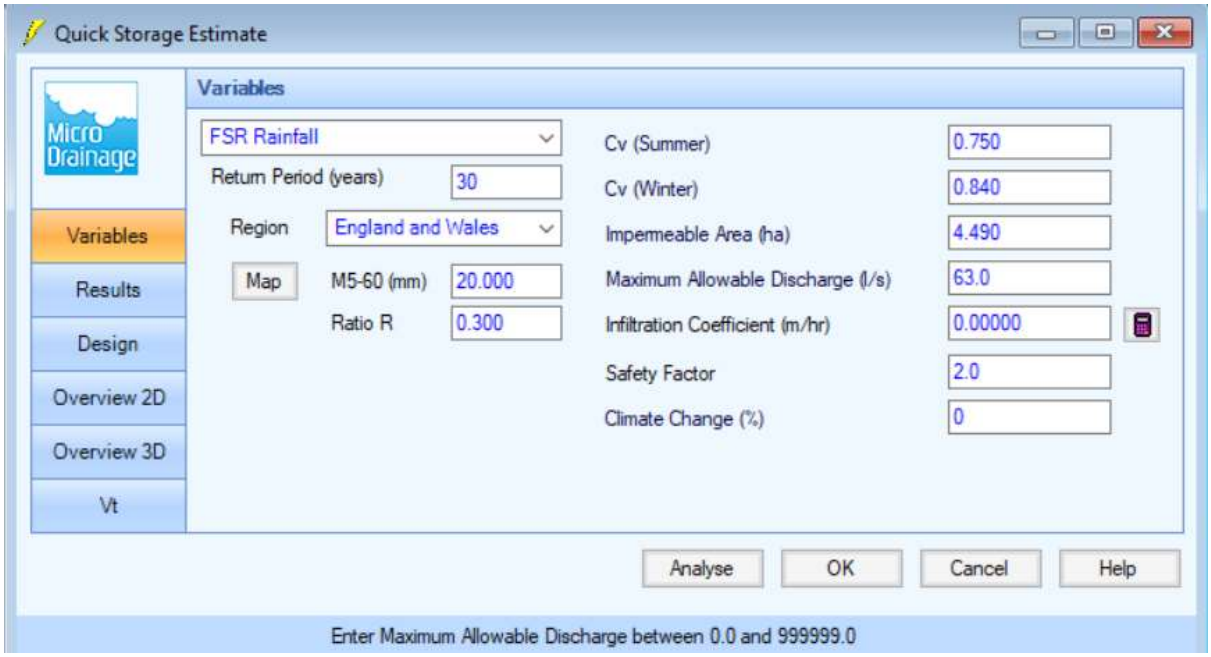


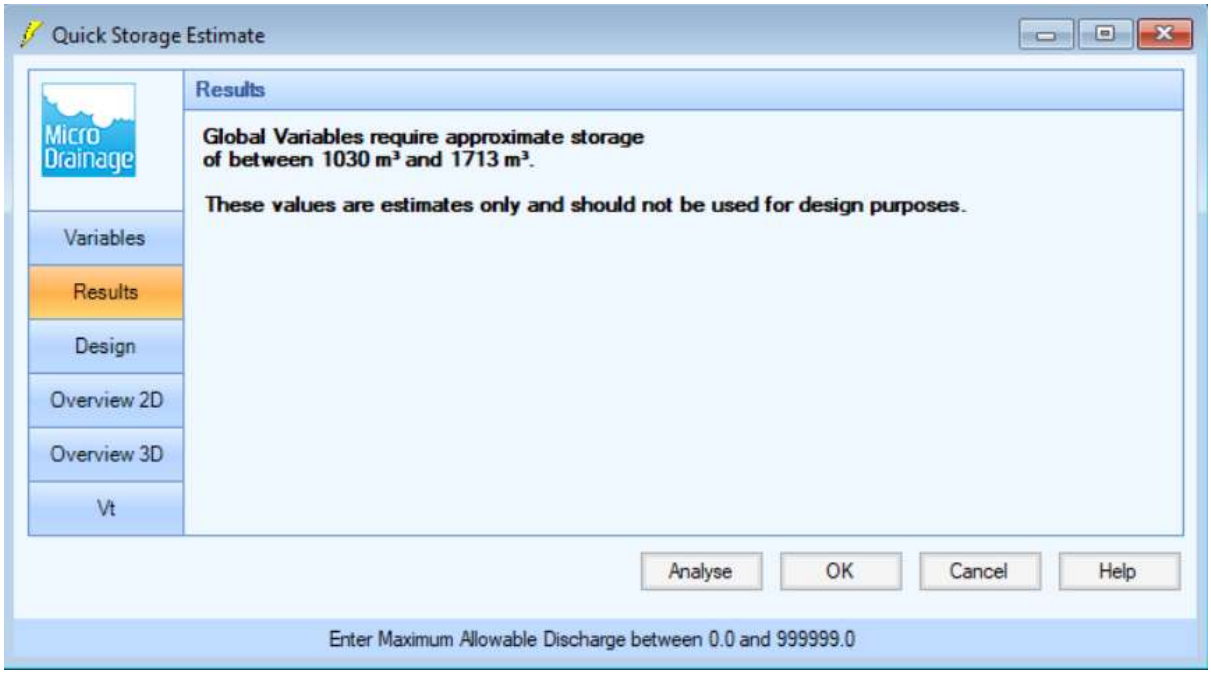
NB: Approximate attenuation volume taken as 337m³ upper limit, subject to further development at detail design stage when 100yr Storm 6hr duration pre/post-development volumes are checked.

4072 Parcel A Redrow Homes, Walshaw, Bury Quick Storage Estimate Calculation 02.01.2020

(MicroDrainage Source Control 2019.1)

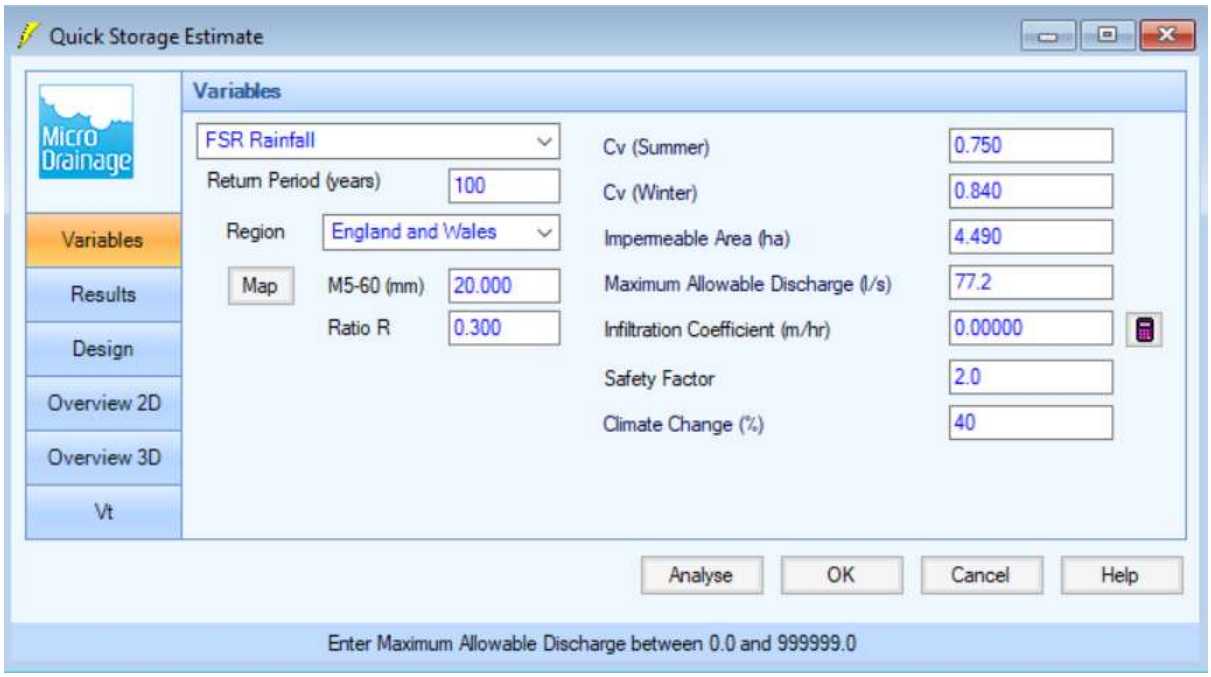
3.33% RP Event on Development Impermeable Area 4.49Ha, Qmax= 63.0 litres/sec

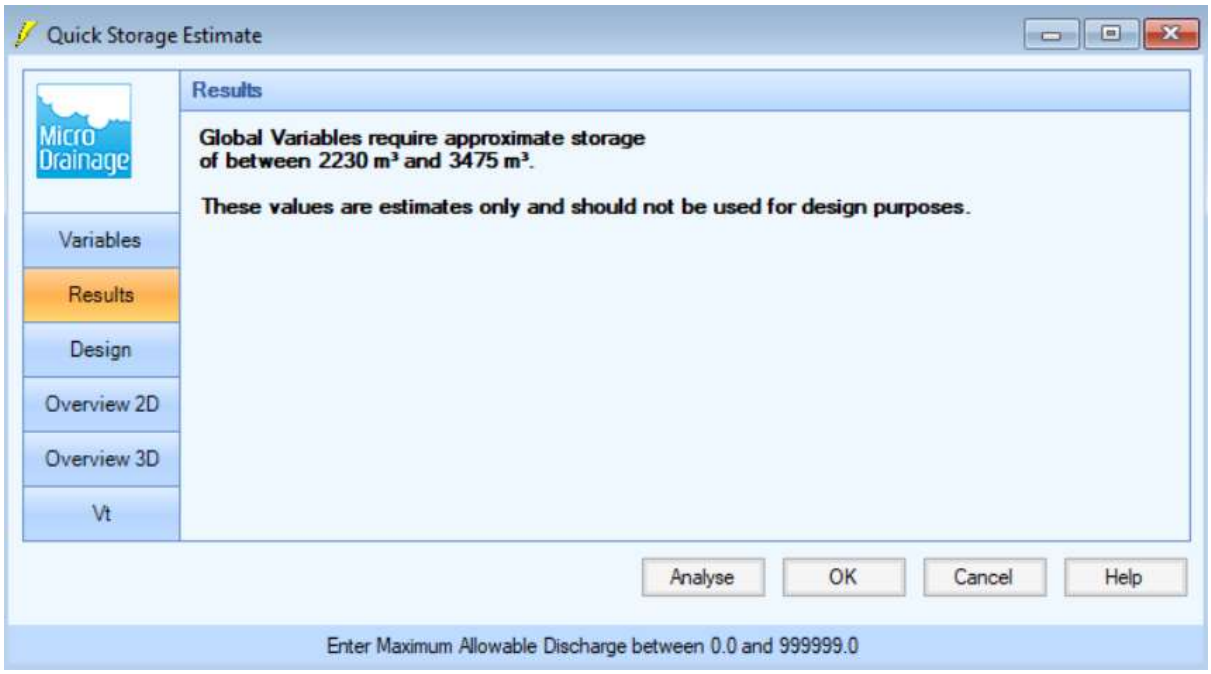




NB: Approximate attenuation volume taken as 1713m³ upper.

1.00% RP Storm + 40% Climate change Event on Development Impermeable Area 4.49Ha, Qmax= 77.2 litres/sec



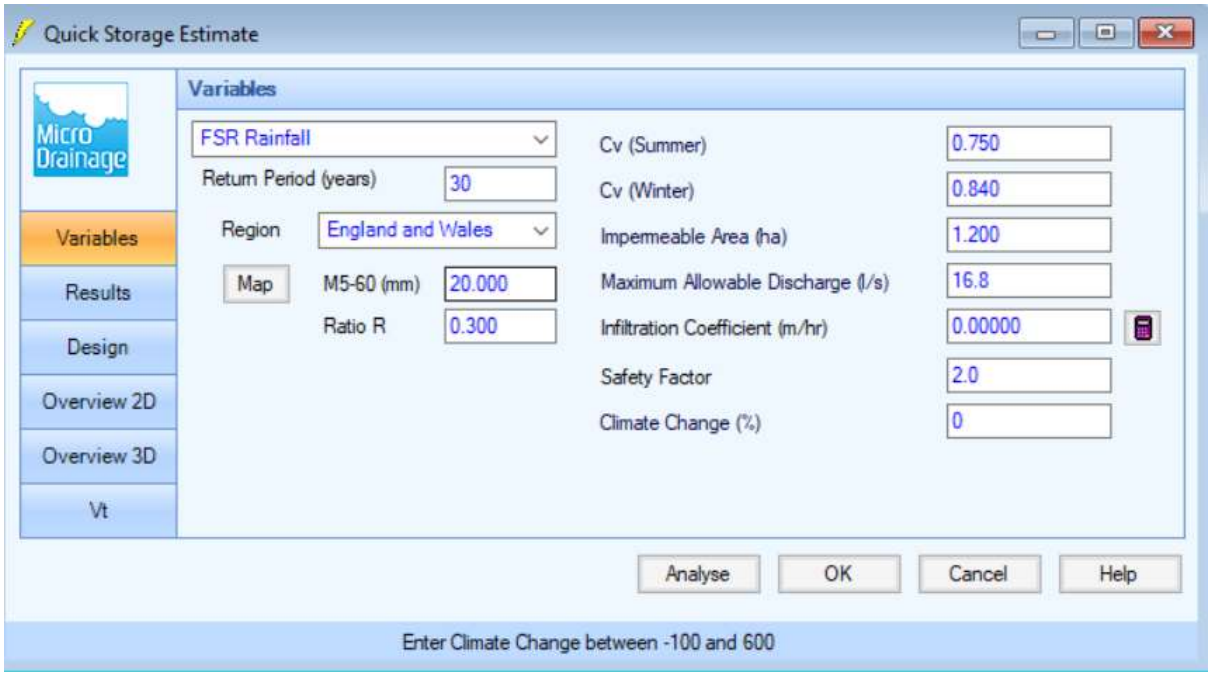


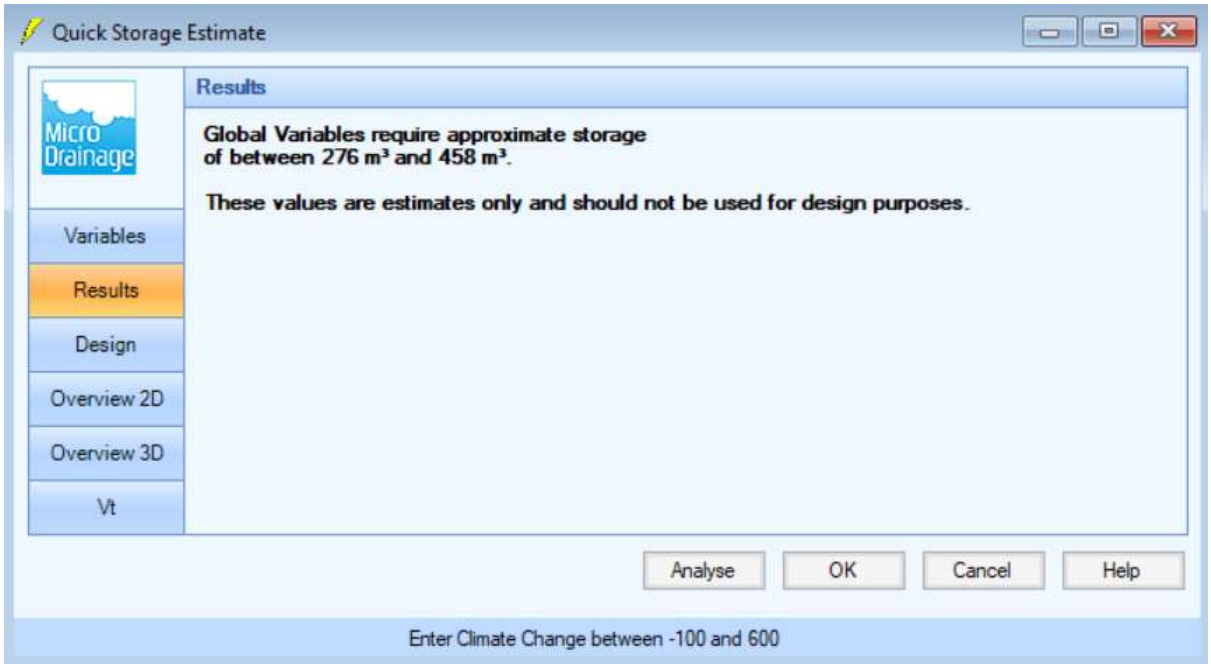
NB: Approximate attenuation volume taken as 3475m³ upper limit, subject to further development at detail design stage when 100yr Storm 6hr duration pre/post-development volumes are checked.

4072 Parcel B Redrow Homes, Walshaw, Bury Quick Storage Estimate Calculation 02.01.2020

(MicroDrainage Source Control 2019.1)

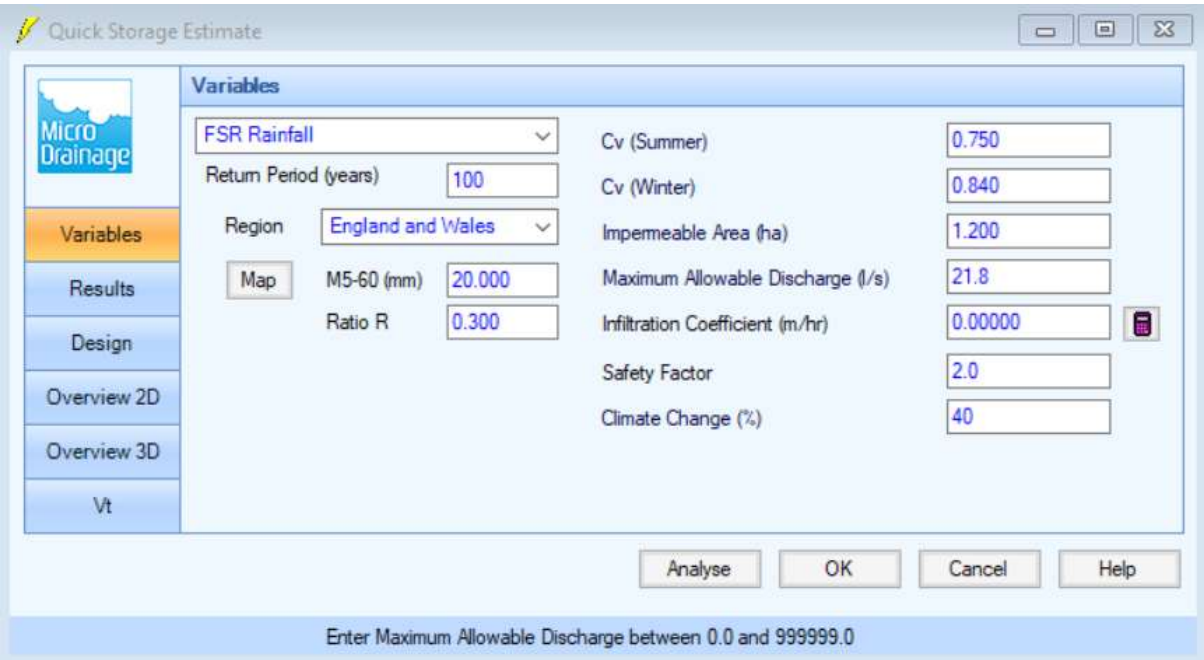
3.33% RP Event on Development Impermeable Area 1.20Ha, Qmax= 16.8 litres/sec

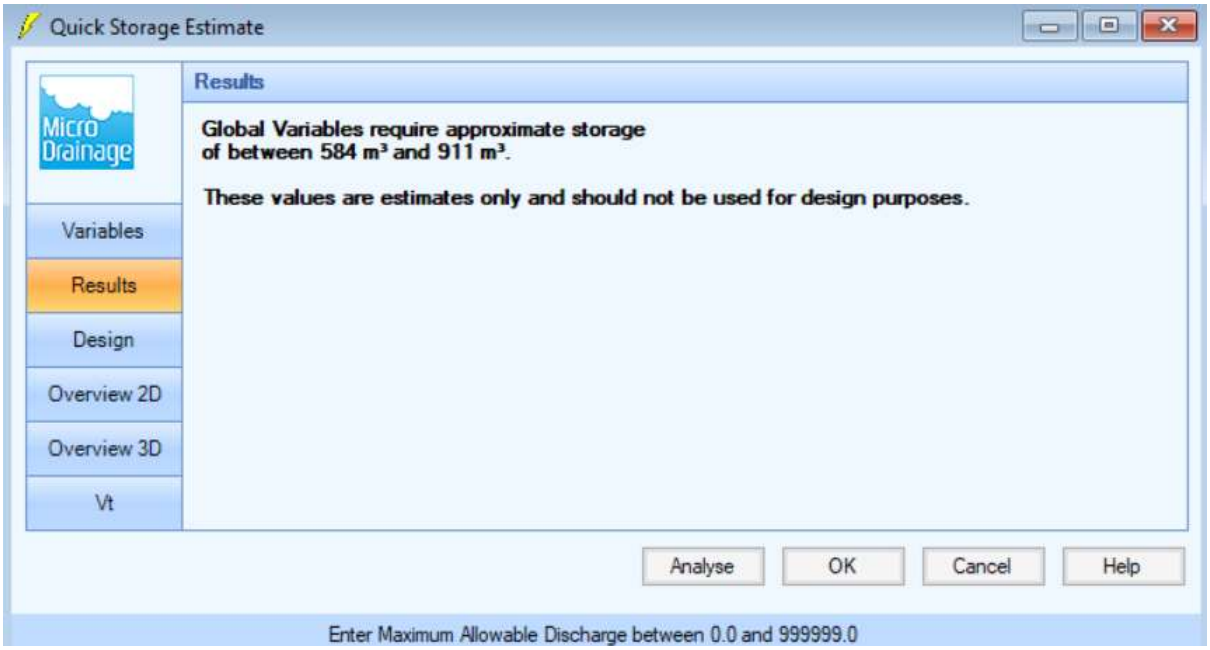




NB: Approximate attenuation volume taken as 458m³ upper limit.

1.00% RP Storm + 40% Climate change Event on Development Impermeable Area 1.20Ha, Qmax= 21.8 litres/sec



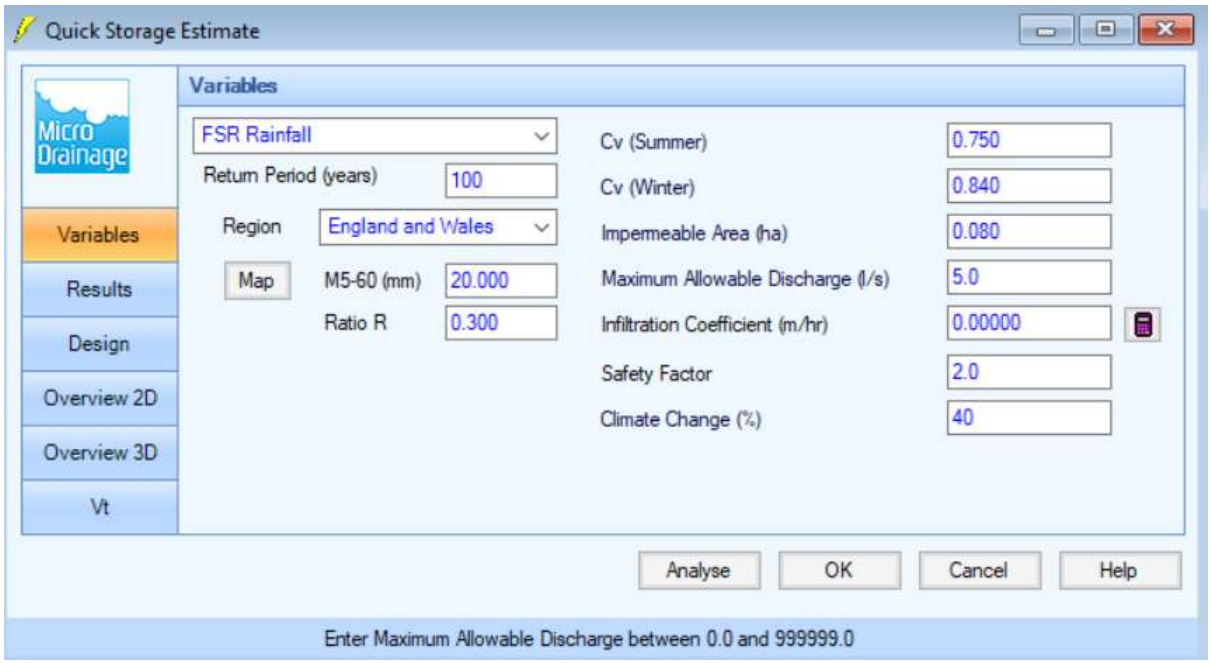


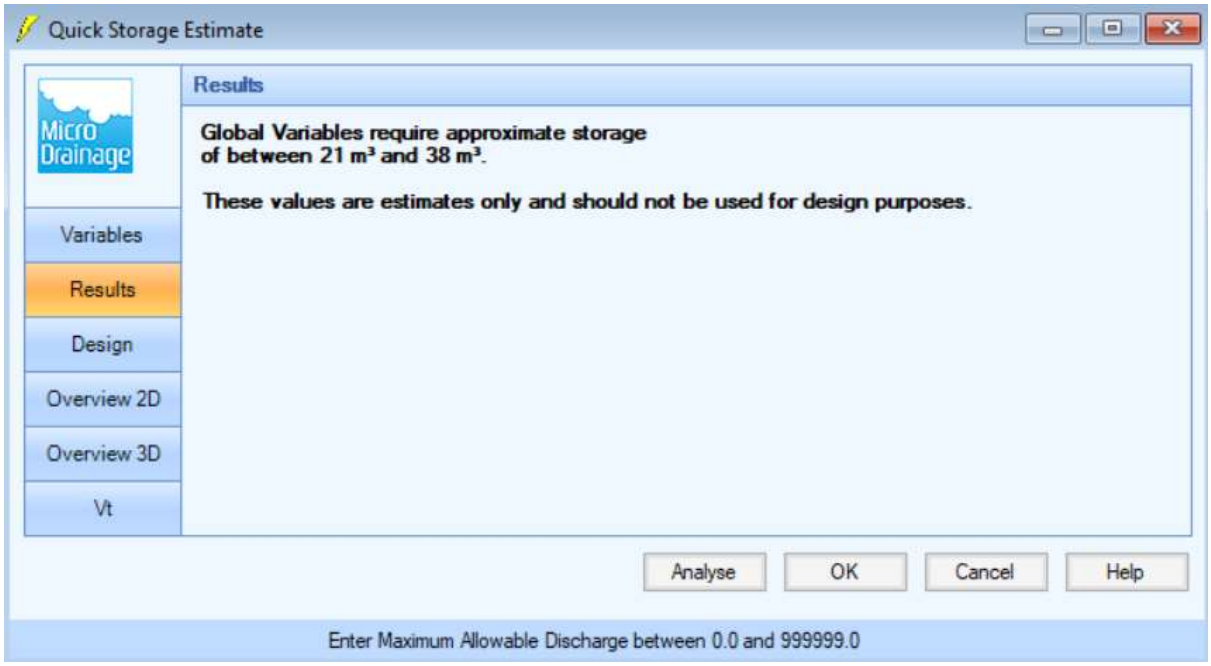
NB: Approximate attenuation volume taken as 911m³ upper limit, subject to further development at detail design stage when 100yr Storm 6hr duration pre/post-development volumes are checked.

4072 Parcel C Redrow Homes, Walshaw, Bury Quick Storage Estimate Calculation 02.01.2020

(MicroDrainage Source Control 2019.1)

1.00% RP Storm + 40% Climate change Event on Development Impermeable Area 0.08Ha, Qmax= 5 litres/sec



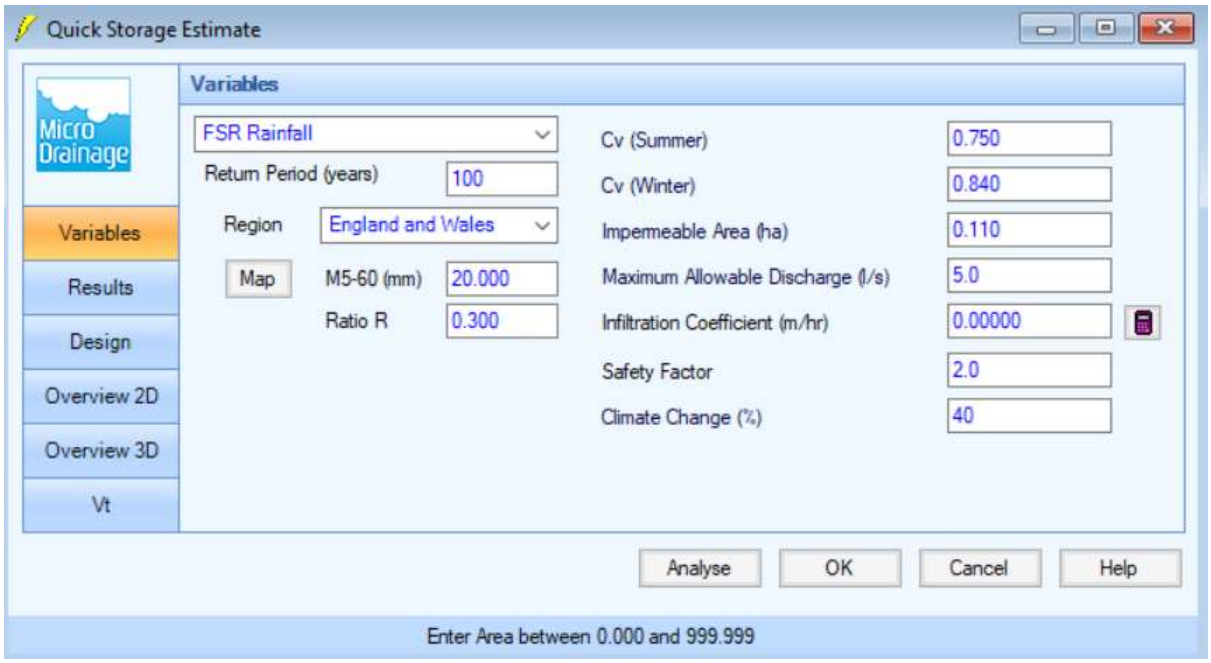


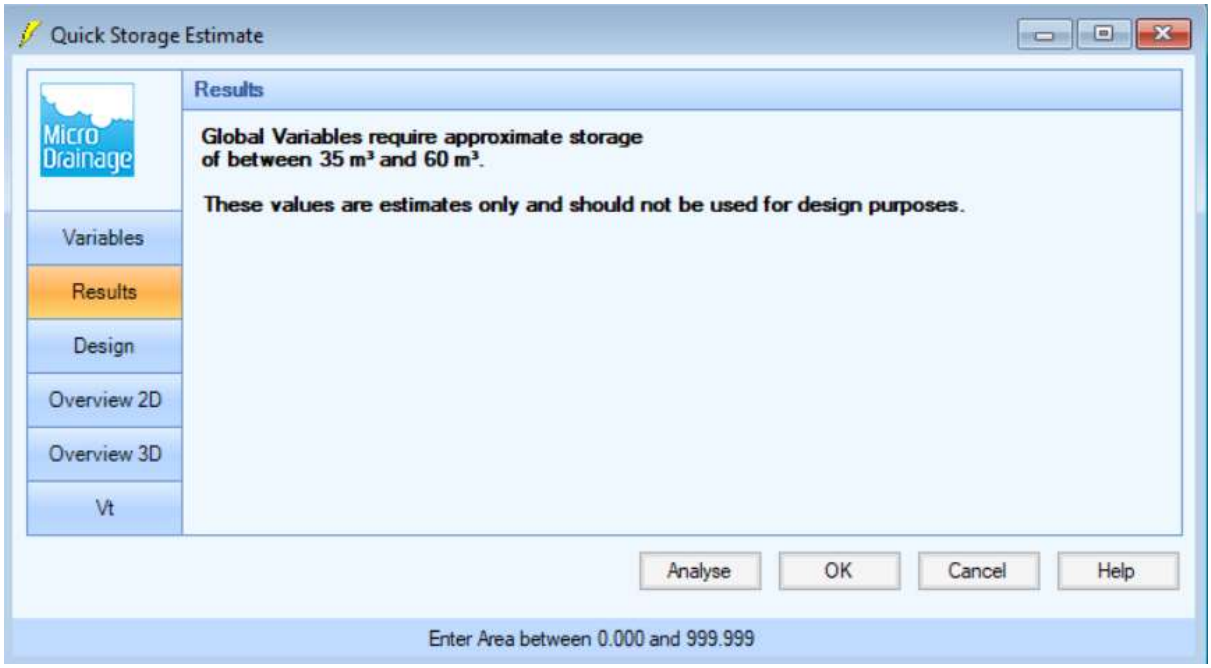
NB: Approximate attenuation volume taken as 38m³ subject to confirmation at detail design, maximum discharge restricted to minimum practical rates of 5 l/s in accordance with NPPF Guidelines.

4072 Road Redrow Homes, Walshaw, Bury Quick Storage Estimate Calculation 02.01.2020

(MicroDrainage Source Control 2019.1)

1.00% RP Storm + 40% Climate change Event on Development Impermeable Area 0.11Ha, Qmax= 5 litres/sec



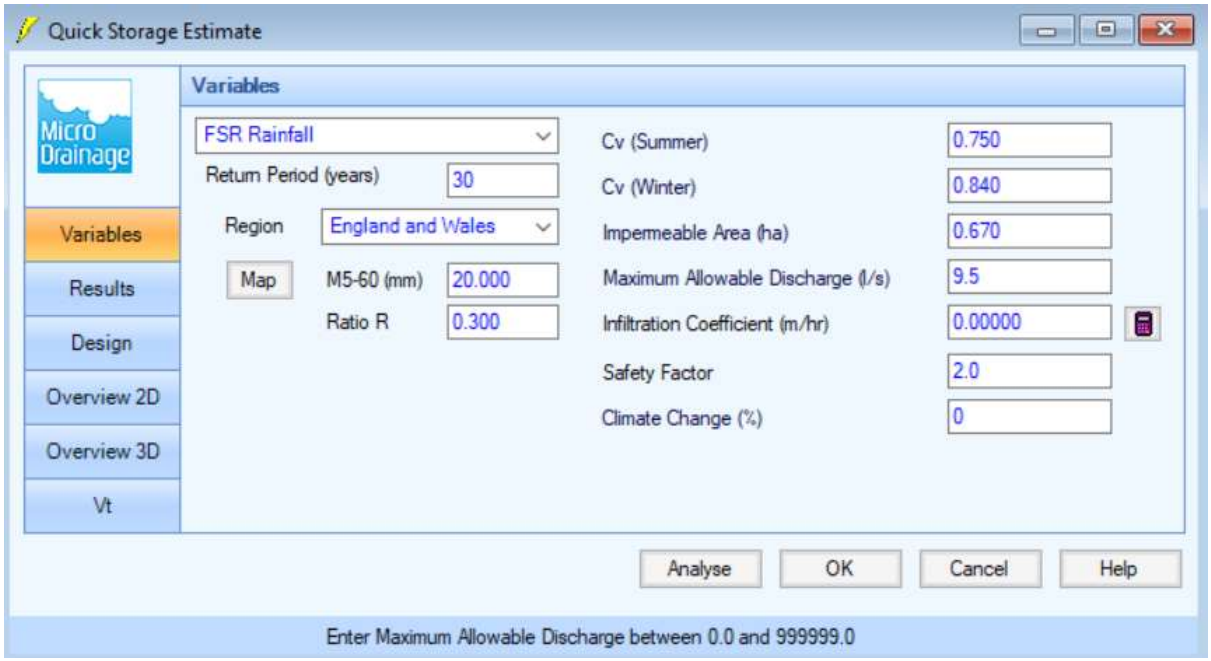


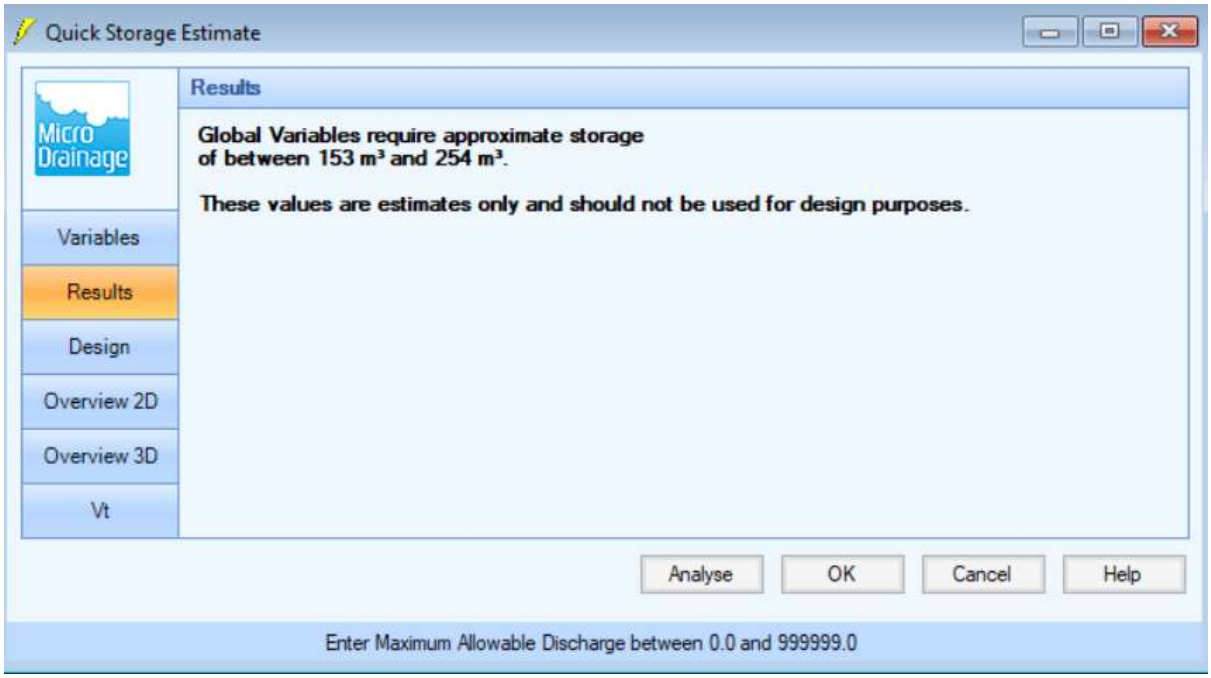
NB: Approximate attenuation volume taken as 60m³subject to confirmation at detail design, maximum discharge restricted to minimum practical rates of 5 l/s in accordance with NPPF Guidelines.

4072 Parcel A VWH Land Partnership (Walshaw) Limited , Walshaw, Bury Quick Storage Estimate Calculation 03.01.2020

(MicroDrainage Source Control 2019.1)

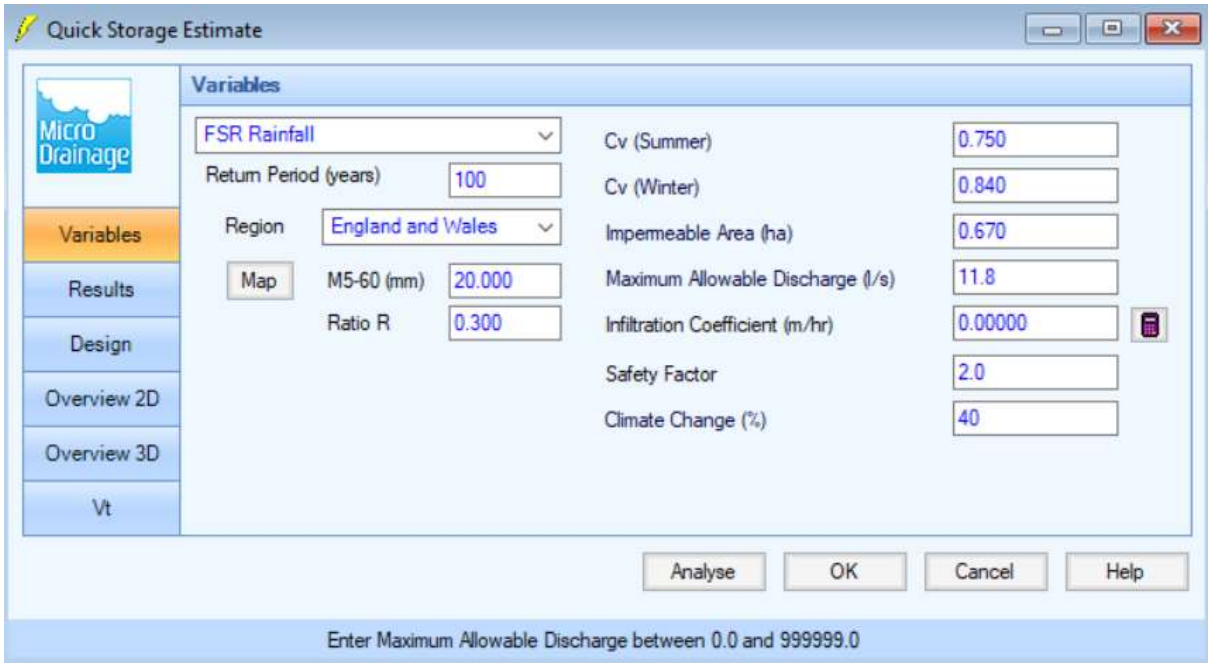
3.33% RP Event on Development Impermeable Area 0.67Ha, Qmax= 9.5 litres/sec

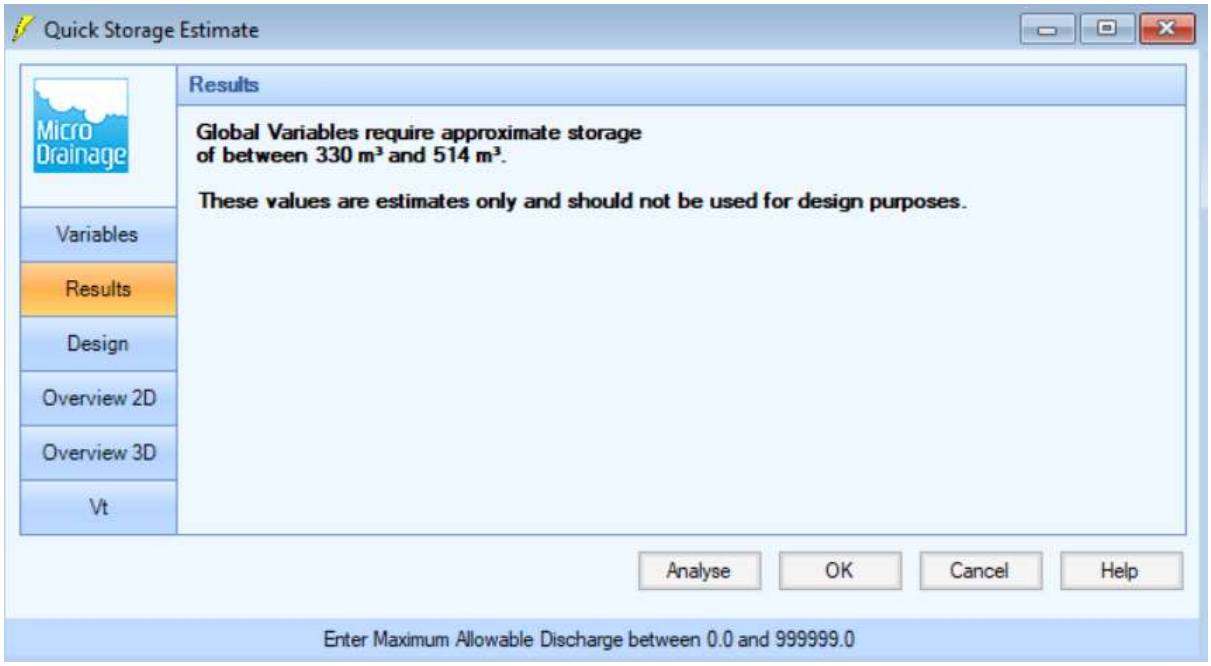




NB: Approximate attenuation volume taken as 254m³ upper limit.

1.00% RP Storm + 40% Climate change Event on Development Impermeable Area 0.67Ha, Qmax= 11.8 litres/sec



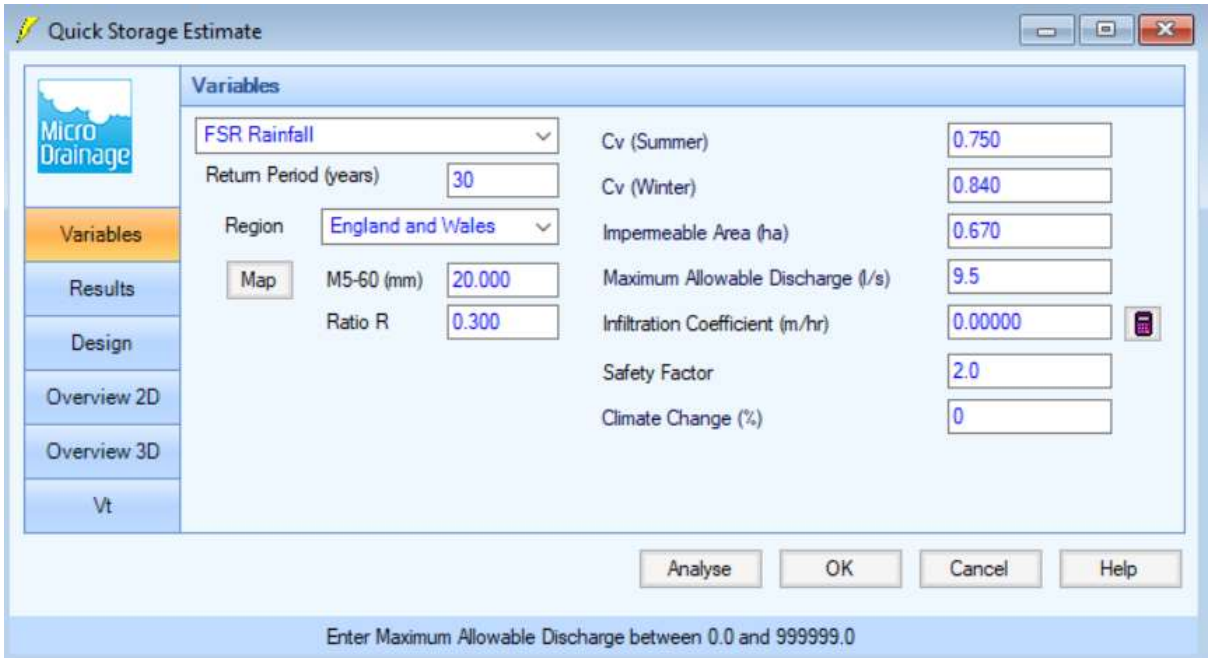


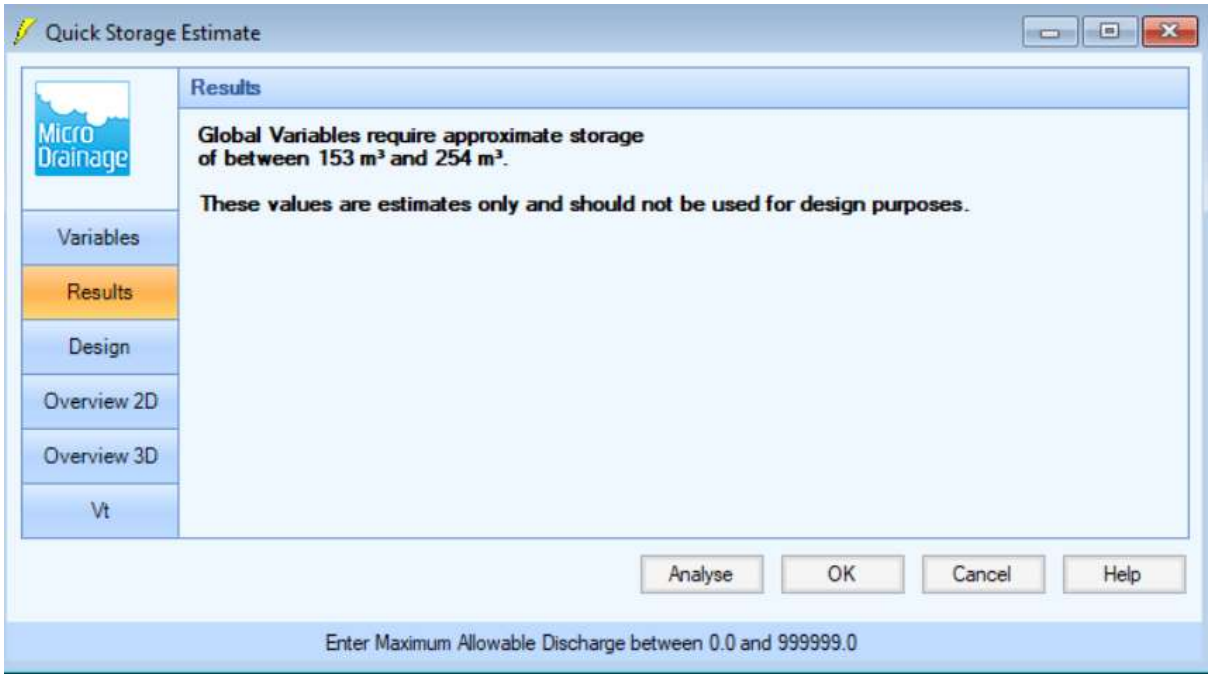
NB: Approximate attenuation volume taken as 514m³ upper limit, subject to further development at detail design stage when 100yr Storm 6hr duration pre/post-development volumes are checked.

4072 Parcel B VWH Land Partnership (Walshaw) Limited , Walshaw, Bury Quick Storage Estimate Calculation 03.01.2020

(MicroDrainage Source Control 2019.1)

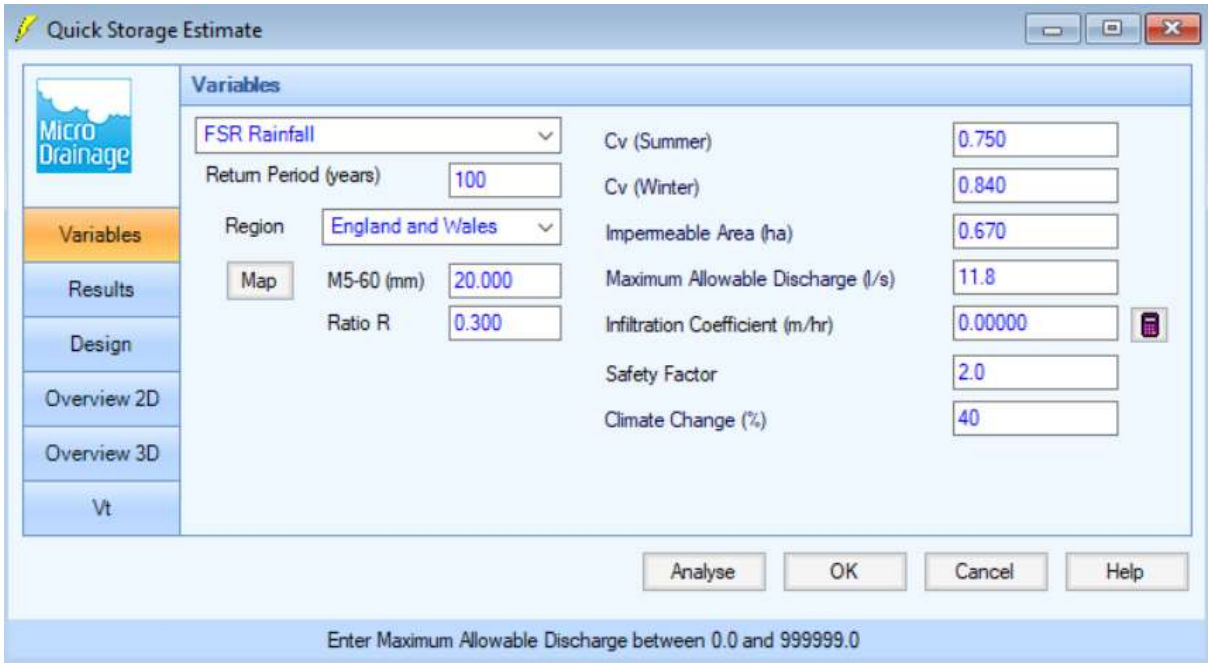
3.33% RP Event on Development Impermeable Area 2.38Ha, Qmax= 33.8 litres/sec

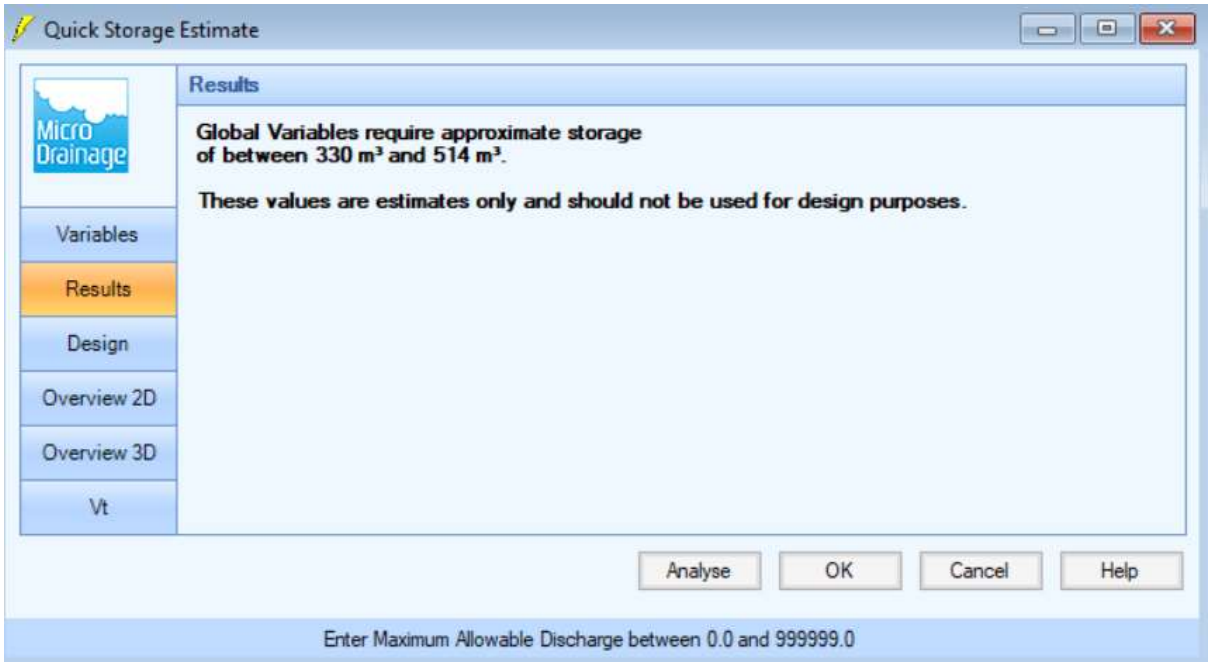




NB: Approximate attenuation volume taken as 254m³ upper limit.

1.00% RP Storm + 40% Climate change Event on Development Impermeable Area 2.38Ha, Qmax= 41.5 litres/sec



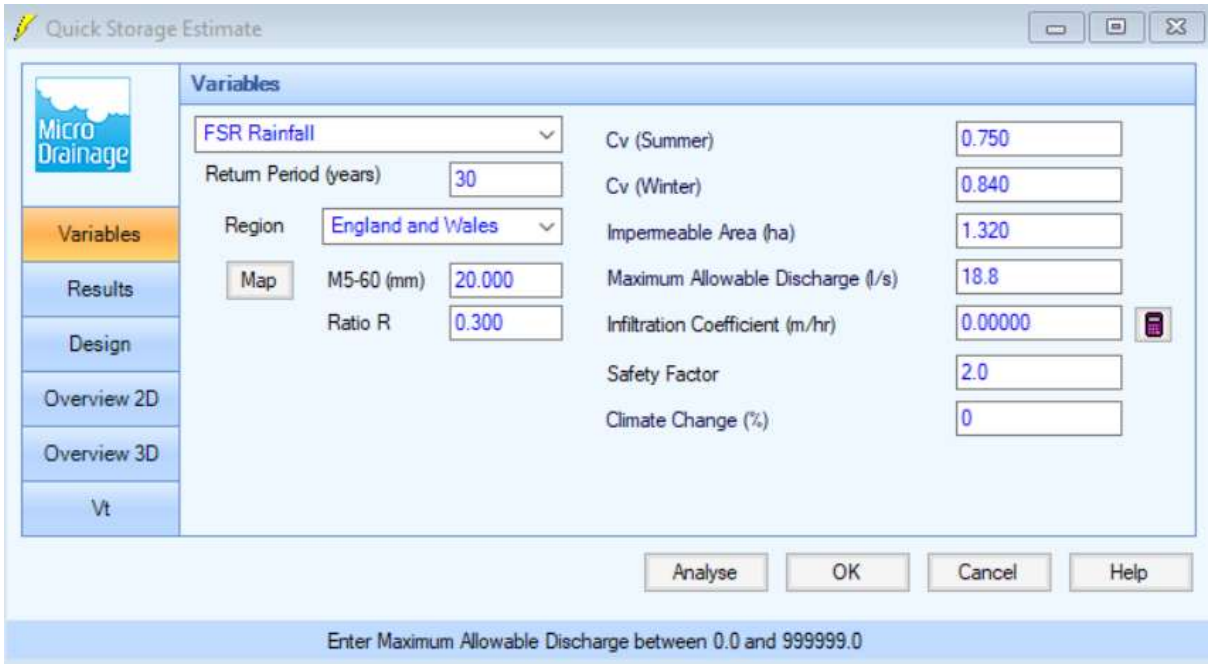


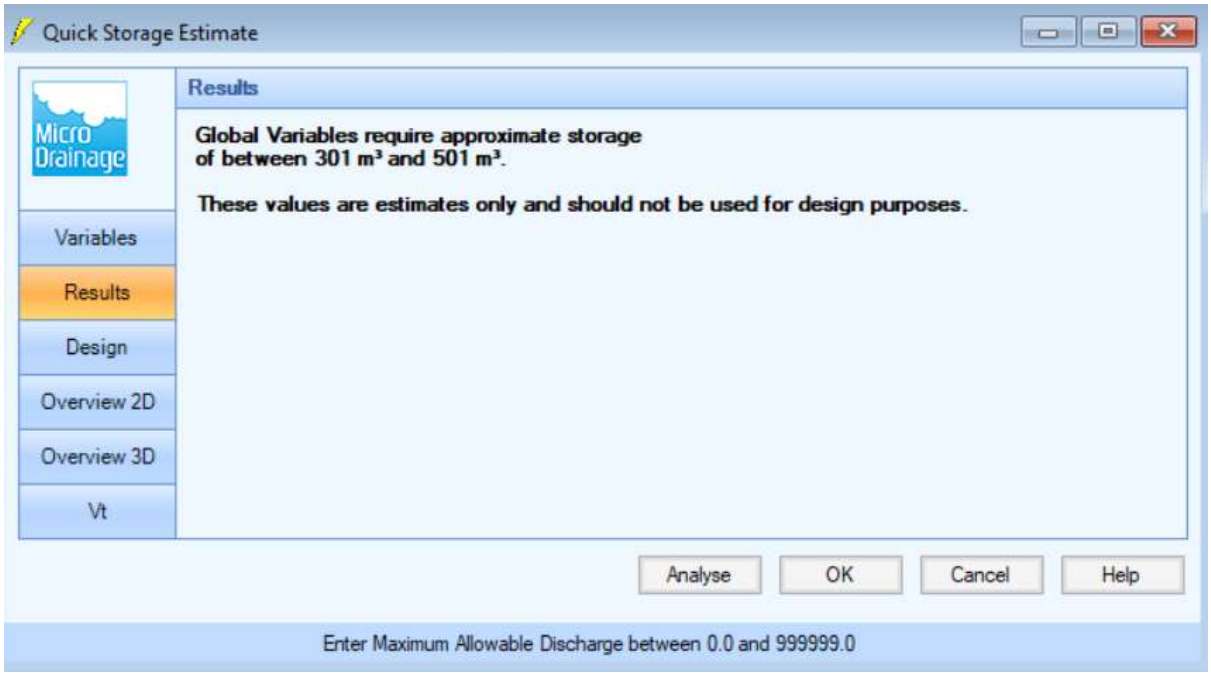
NB: Approximate attenuation volume taken as 514m³ upper limit, subject to further development at detail design stage when 100yr Storm 6hr duration pre/post-development volumes are checked.

4072 Parcel C VWH Land Partnership (Walshaw) Limited , Walshaw, Bury Quick Storage Estimate Calculation 03.01.2020

(MicroDrainage Source Control 2019.1)

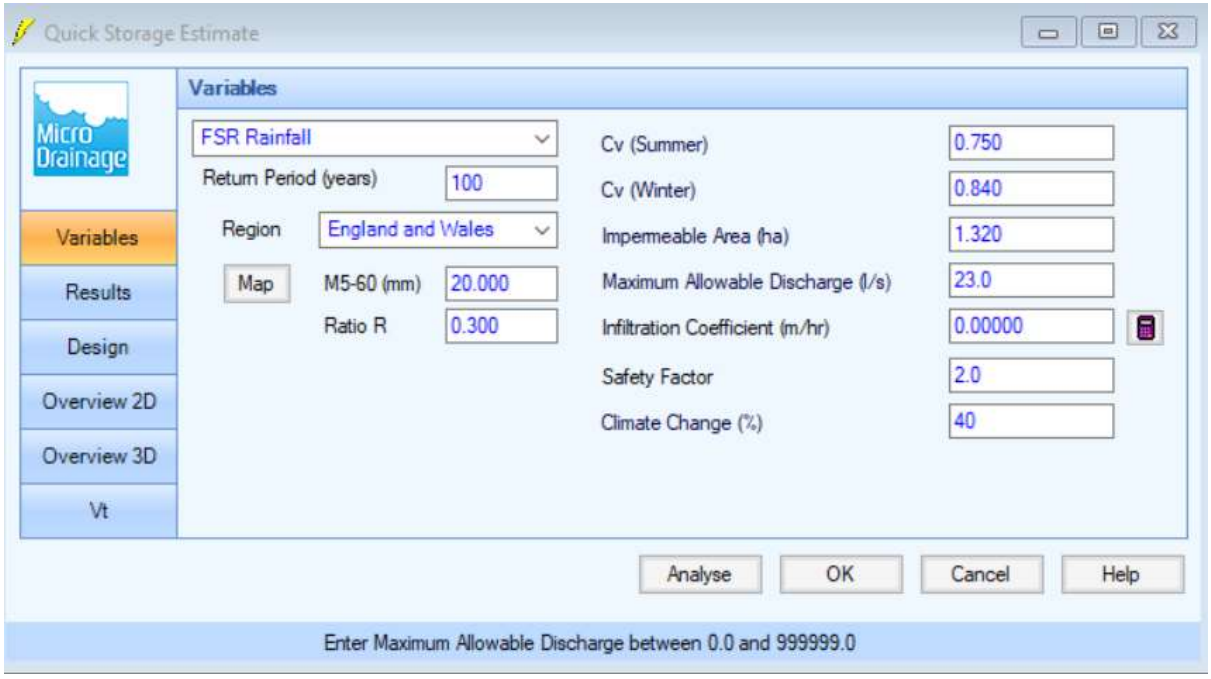
3.33% RP Event on Development Impermeable Area 1.32Ha, Qmax= 18.8 litres/sec

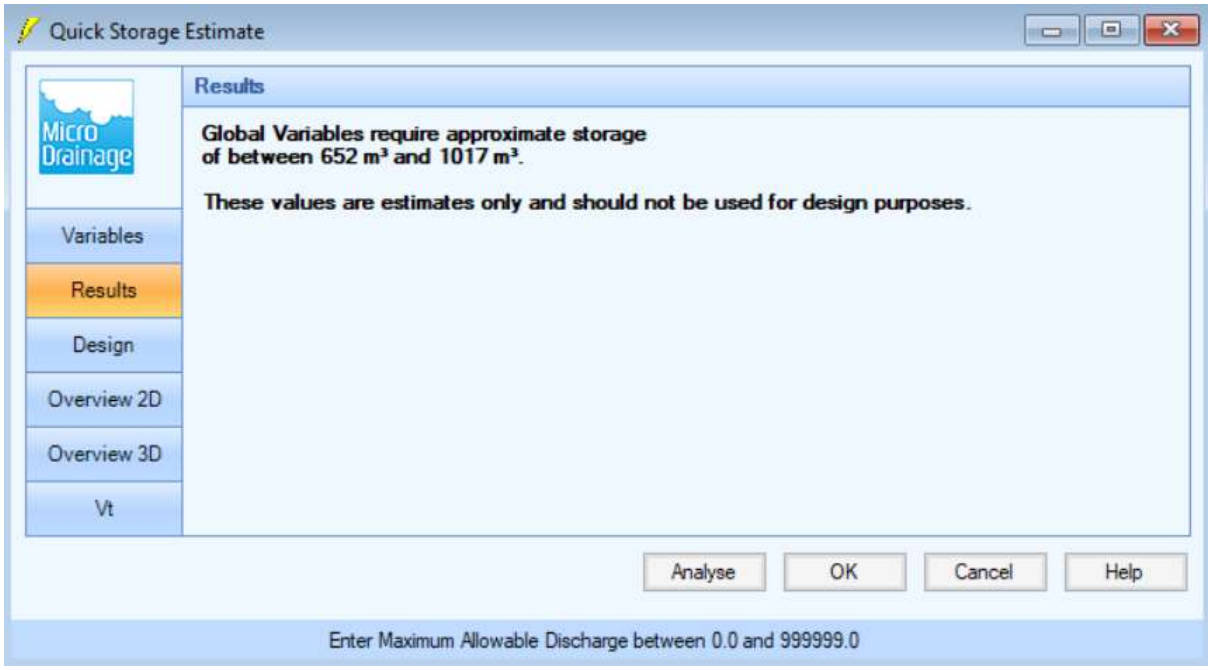




NB: Approximate attenuation volume taken as 501m³ upper limit.

1.00% RP Storm + 40% Climate change Event on Development Impermeable Area 1.32Ha, Qmax= 23.0 itres/sec



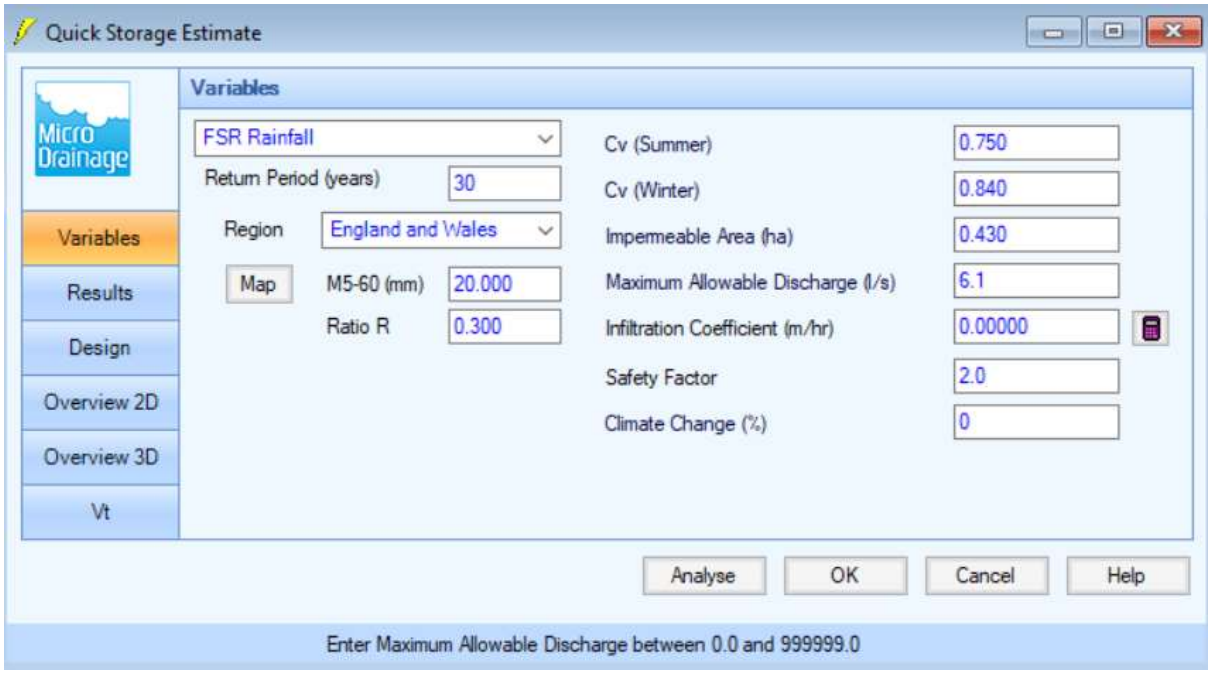


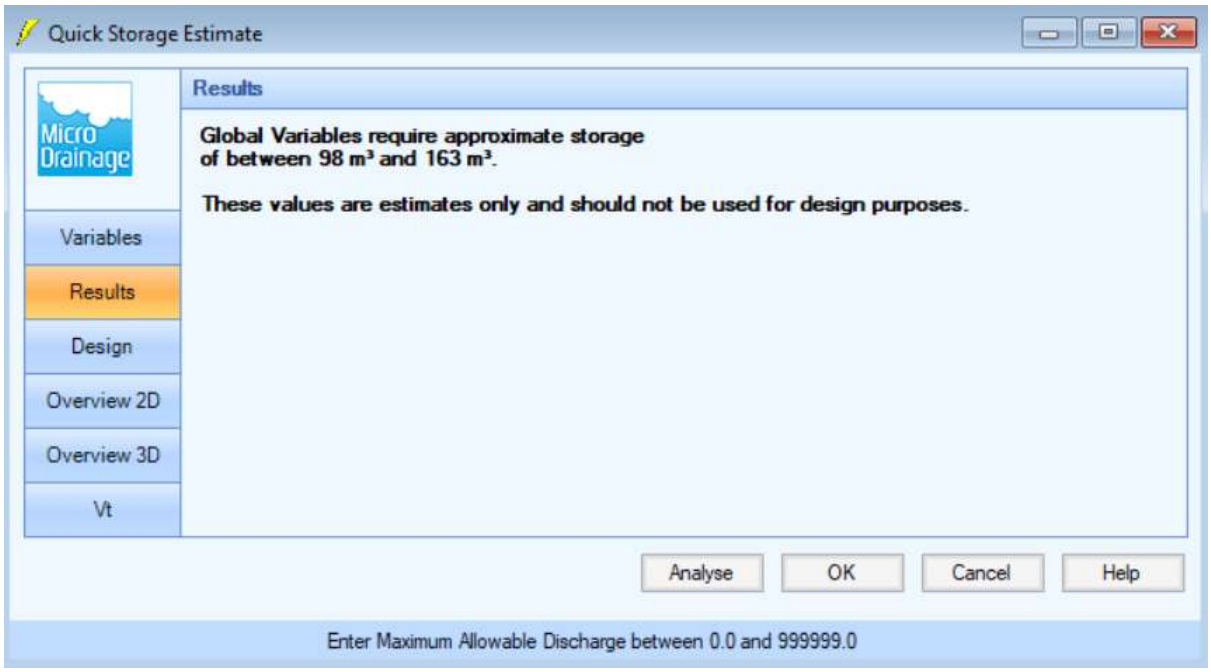
NB: Approximate attenuation volume taken as 1017m³ upper limit, subject to further development at detail design stage when 100yr Storm 6hr duration pre/post-development volumes are checked.

4072 Parcel D VWH Land Partnership (Walshaw) Limited , Walshaw, Bury Quick Storage Estimate Calculation 03.01.2020

(MicroDrainage Source Control 2019.1)

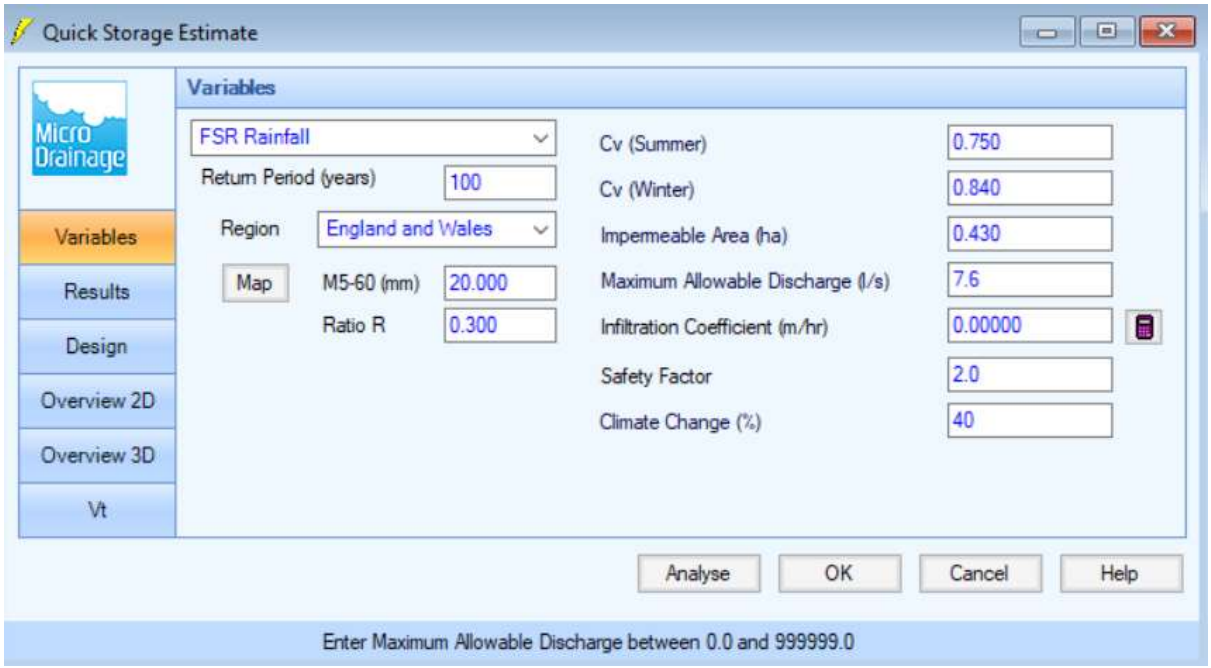
3.33% RP Event on Development Impermeable Area 0.43Ha, Qmax= 6.1 litres/sec

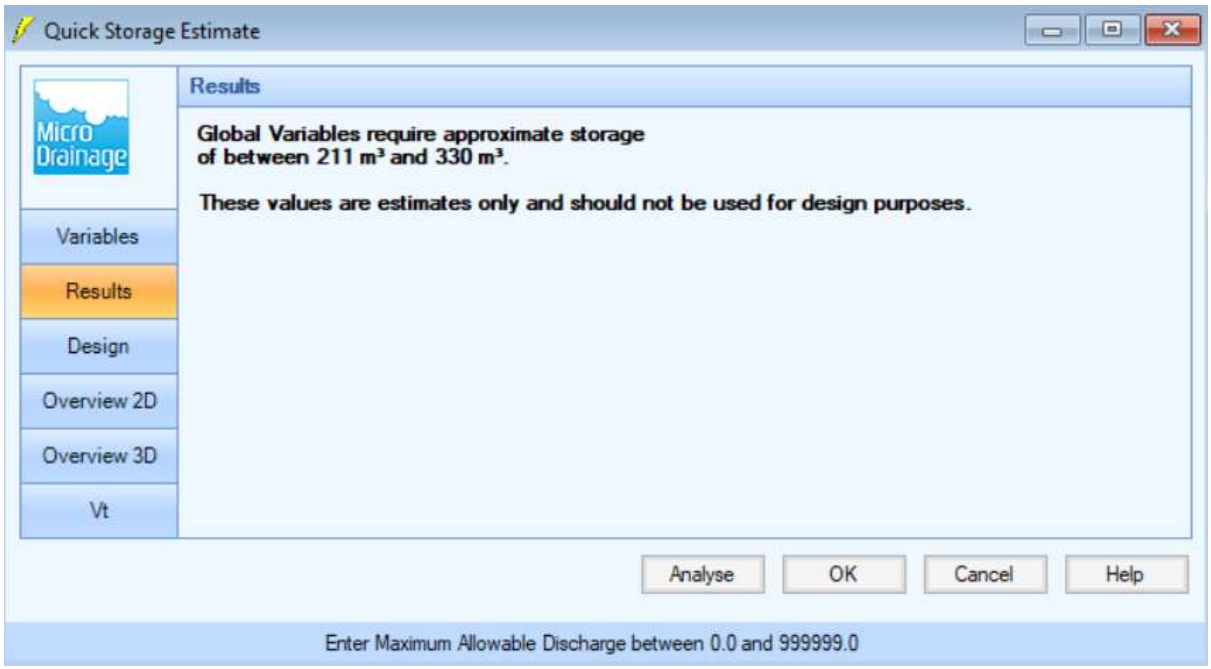




NB: Approximate attenuation volume taken as 163m³ upper limit.

1.00% RP Storm + 40% Climate change Event on Development Impermeable Area 0.43Ha, Qmax= 7.6 litres/sec



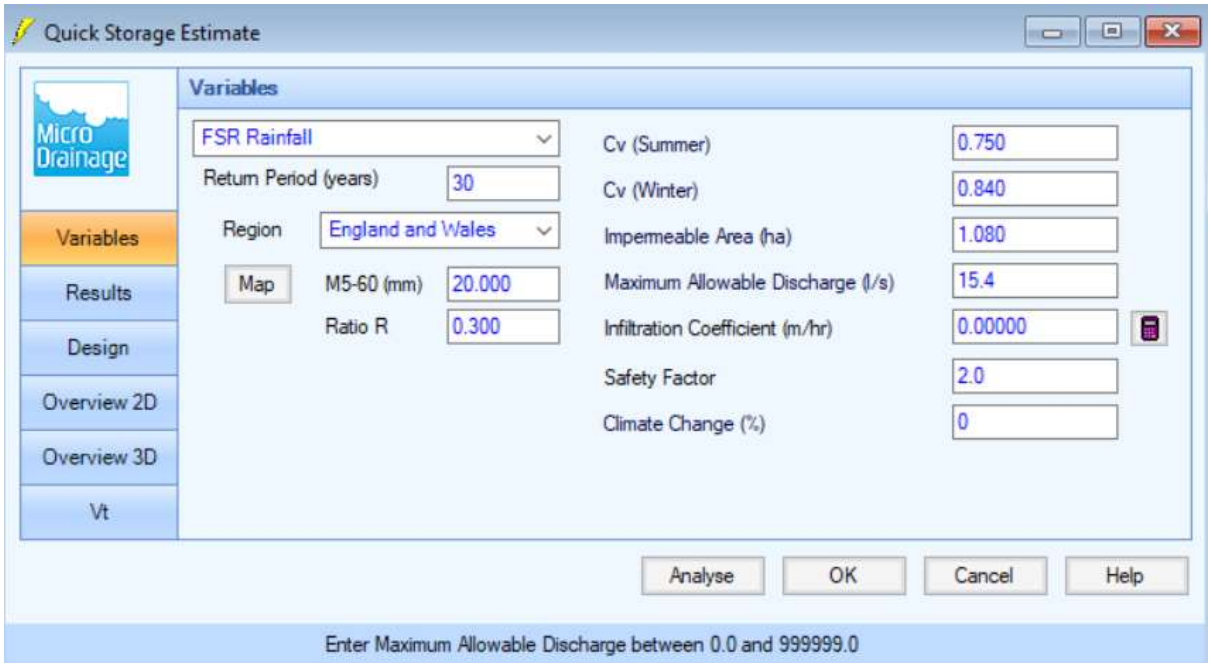


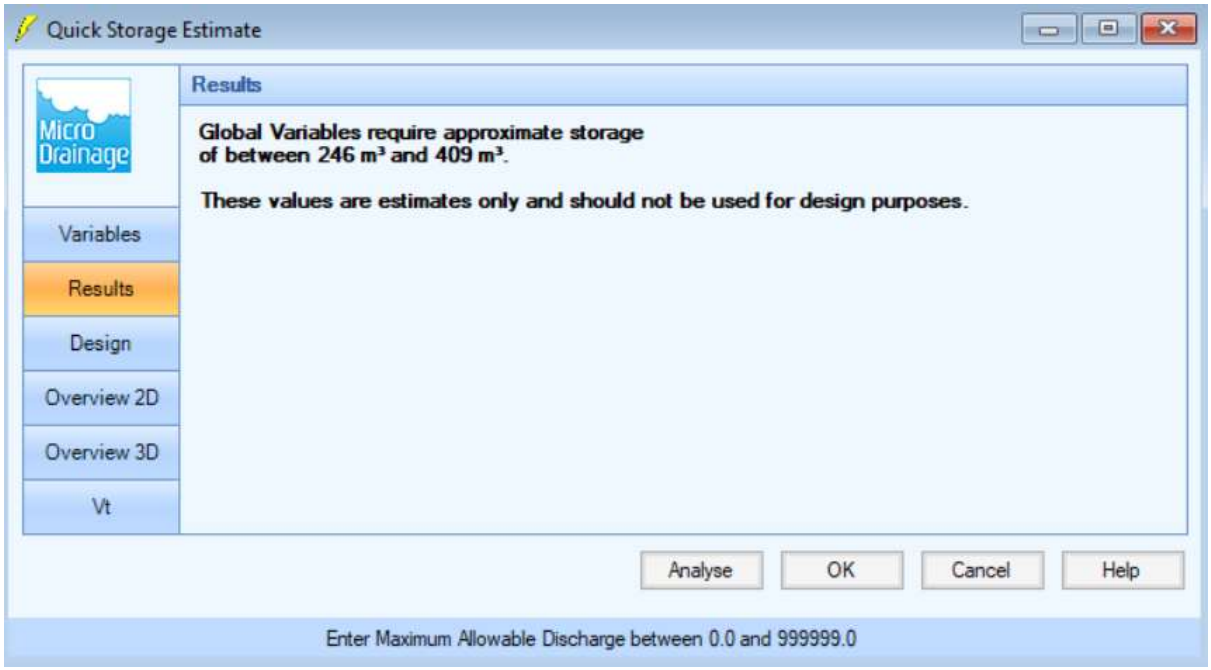
NB: Approximate attenuation volume taken as 330m³ upper limit, subject to further development at detail design stage when 100yr Storm 6hr duration pre/post-development volumes are checked.

4072 Parcel E VWH Land Partnership (Walshaw) Limited , Walshaw, Bury Quick Storage Estimate Calculation 03.01.2020

(MicroDrainage Source Control 2019.1)

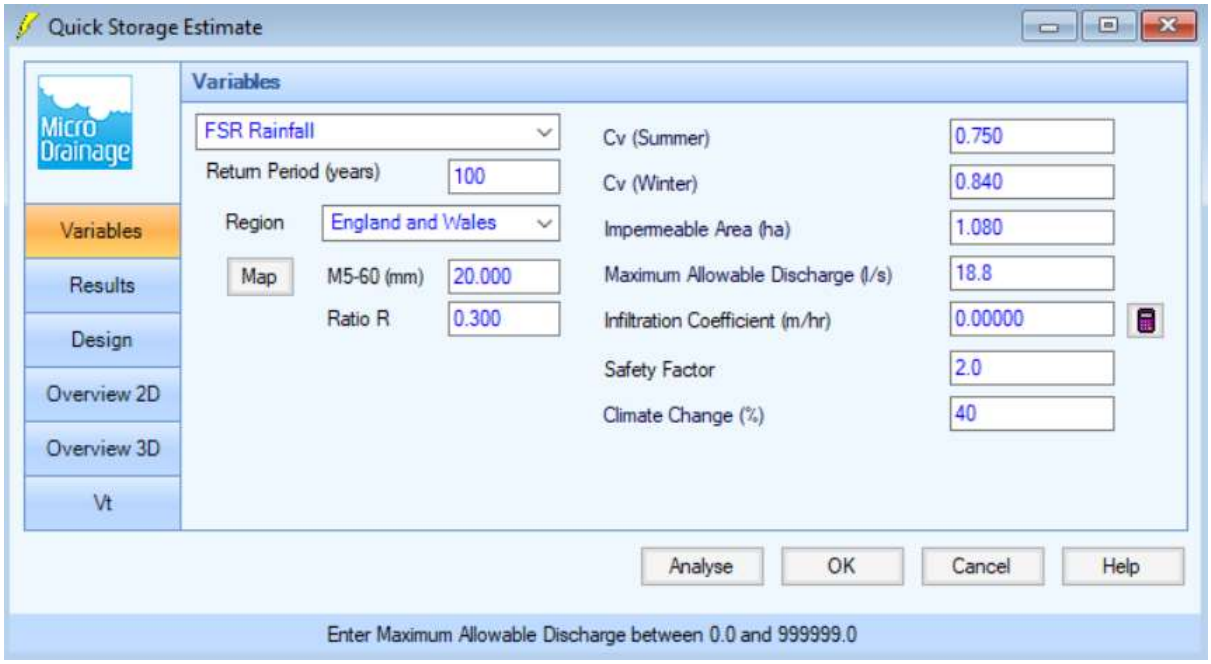
3.33% RP Event on Development Impermeable Area 1.08Ha, Qmax= 15.4 litres/sec

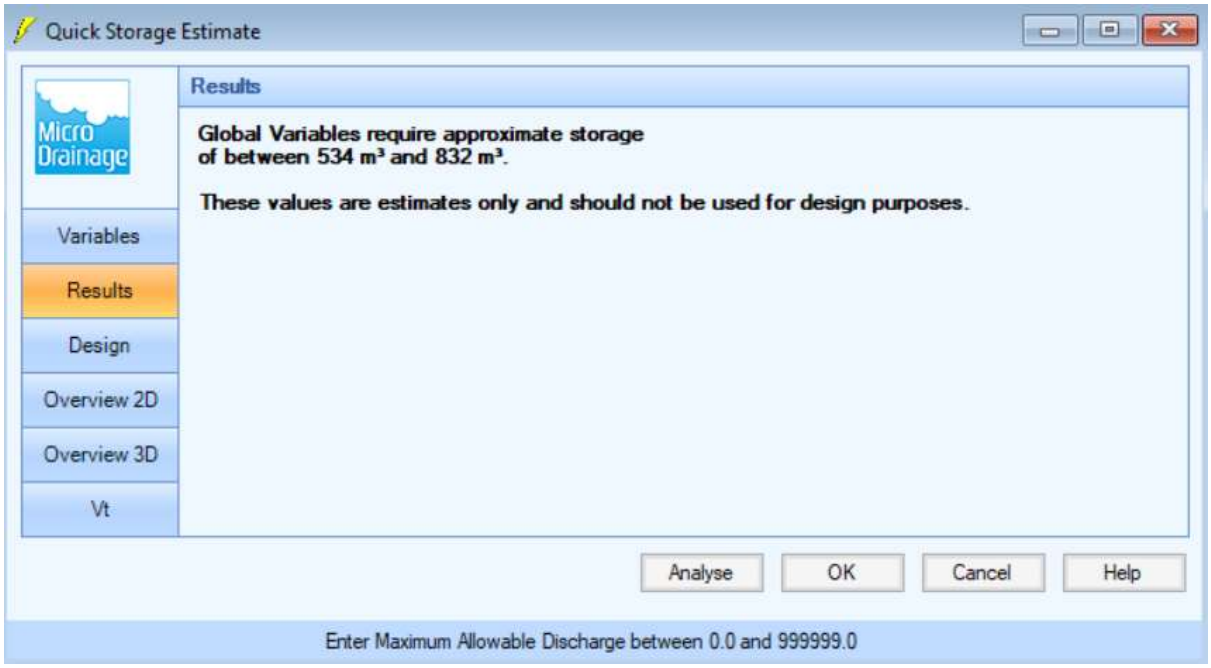




NB: Approximate attenuation volume taken as 409m³ upper limit.

1.00% RP Storm + 40% Climate change Event on Development Impermeable Area 1.08Ha, Qmax= 18.8 litres/sec



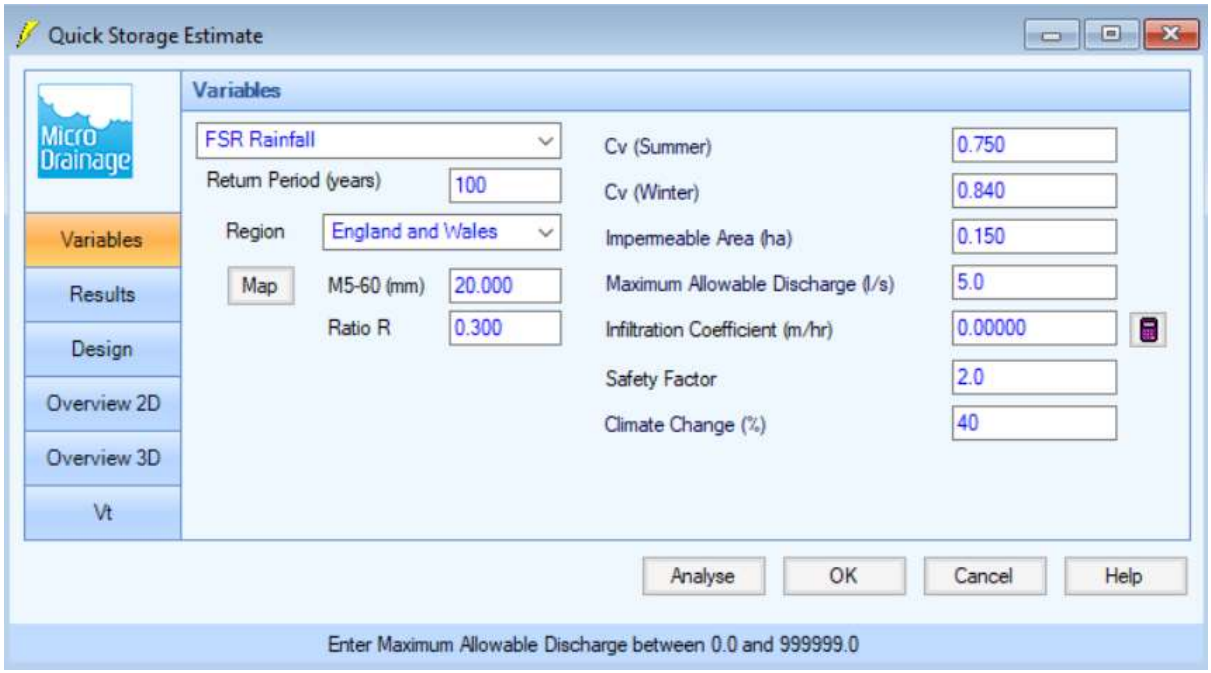


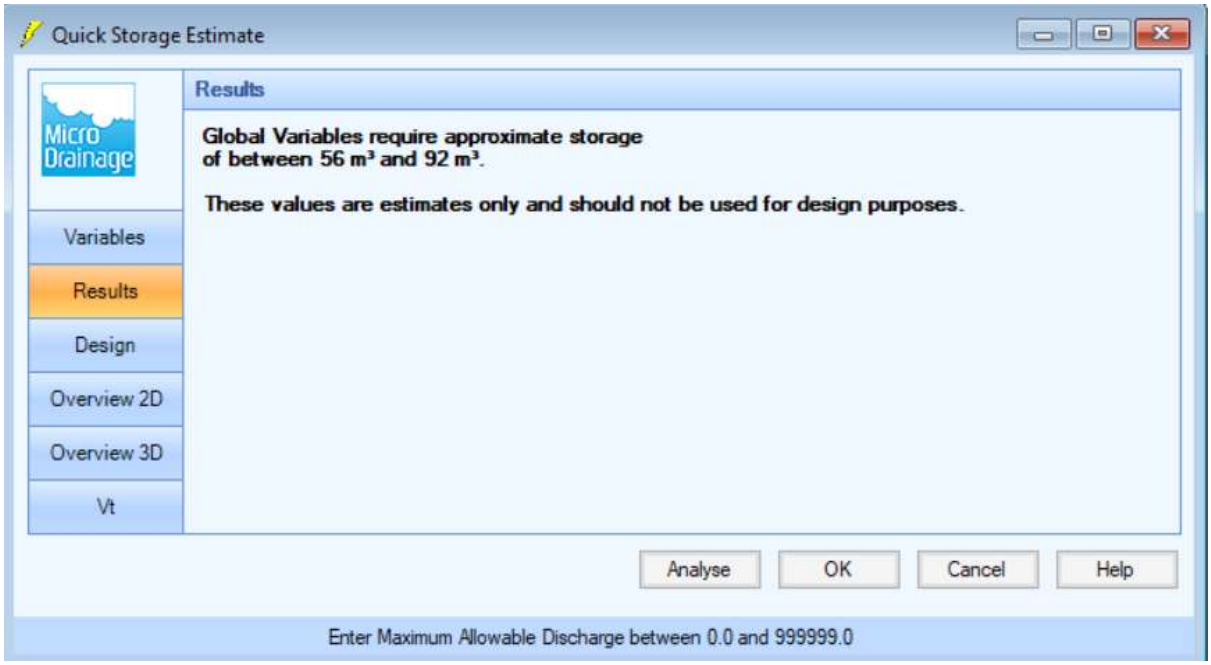
NB: Approximate attenuation volume taken as 832m³ upper limit, subject to further development at detail design stage when 100yr Storm 6hr duration pre/post-development volumes are checked.

4072 Parcel F VWH Land Partnership (Walshaw) Limited , Walshaw, Bury Quick Storage Estimate Calculation 03.01.2020

(MicroDrainage Source Control 2019.1)

1.00% RP Storm + 40% Climate change Event on Development Impermeable Area 0.15Ha, Qmax= 5 litres/sec



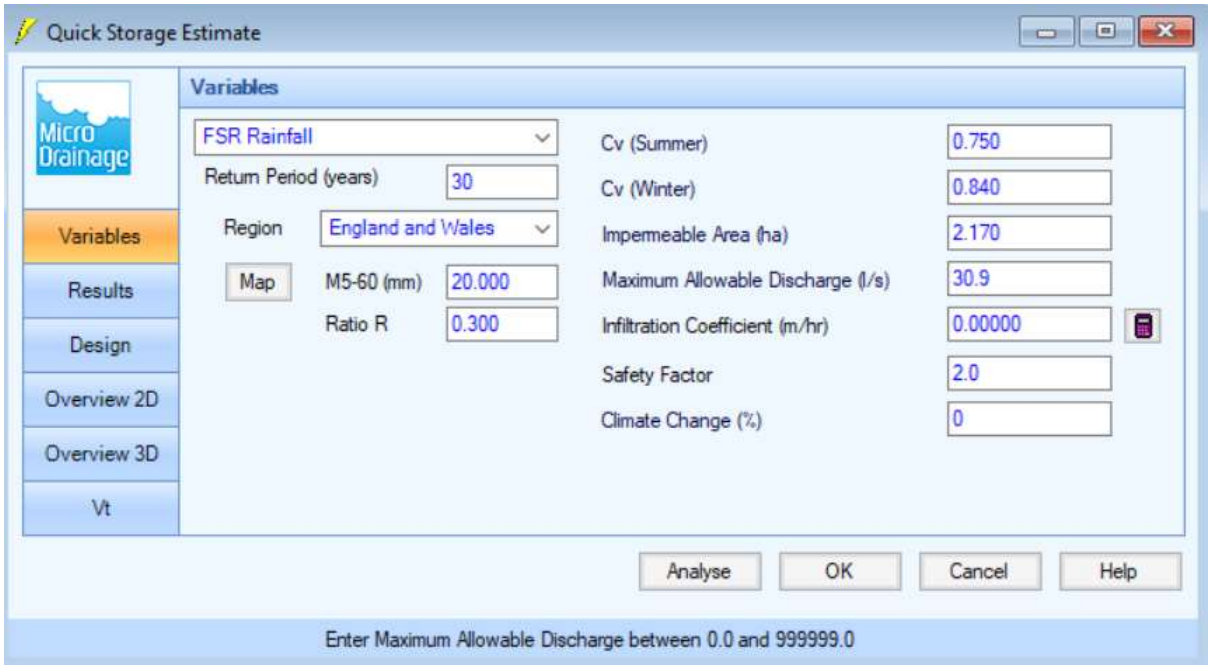


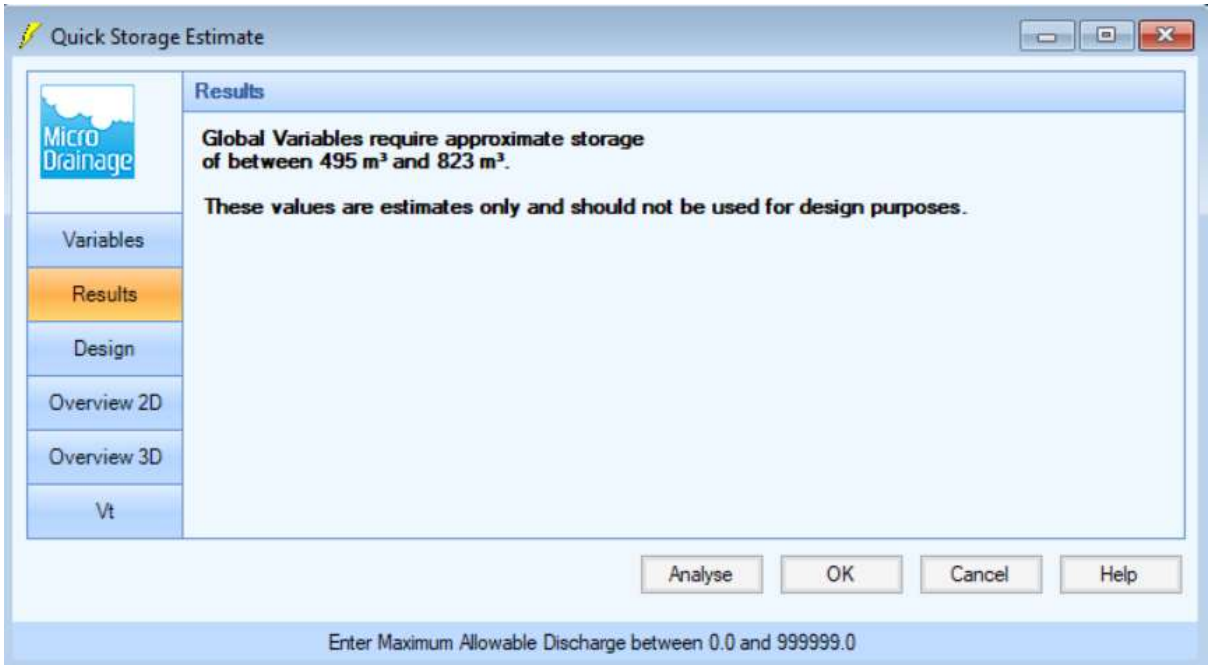
NB: Approximate attenuation volume taken as 92m³ subject to confirmation at detail design, maximum discharge restricted to minimum practical rates of 5 l/s in accordance with NPPF Guidelines.

4072 Parcel G VWH Land Partnership (Walshaw) Limited , Walshaw, Bury Quick Storage Estimate Calculation 03.01.2020

(MicroDrainage Source Control 2019.1)

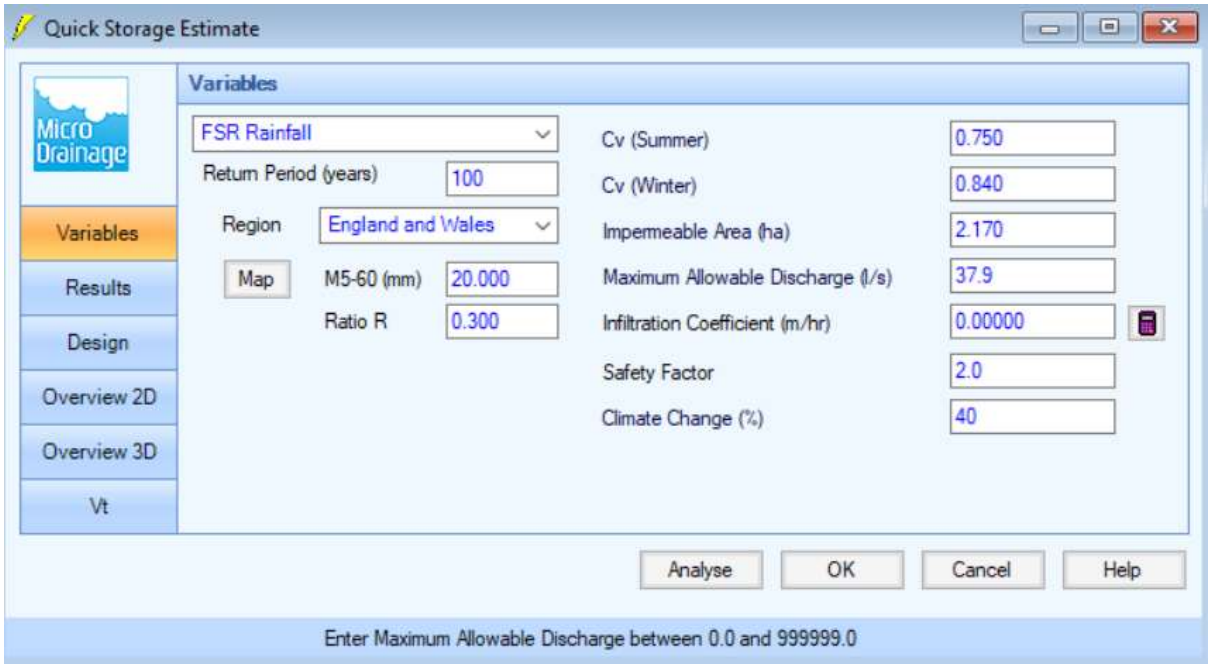
3.33% RP Event on Development Impermeable Area 2.17Ha, Qmax= 30.9 litres/sec

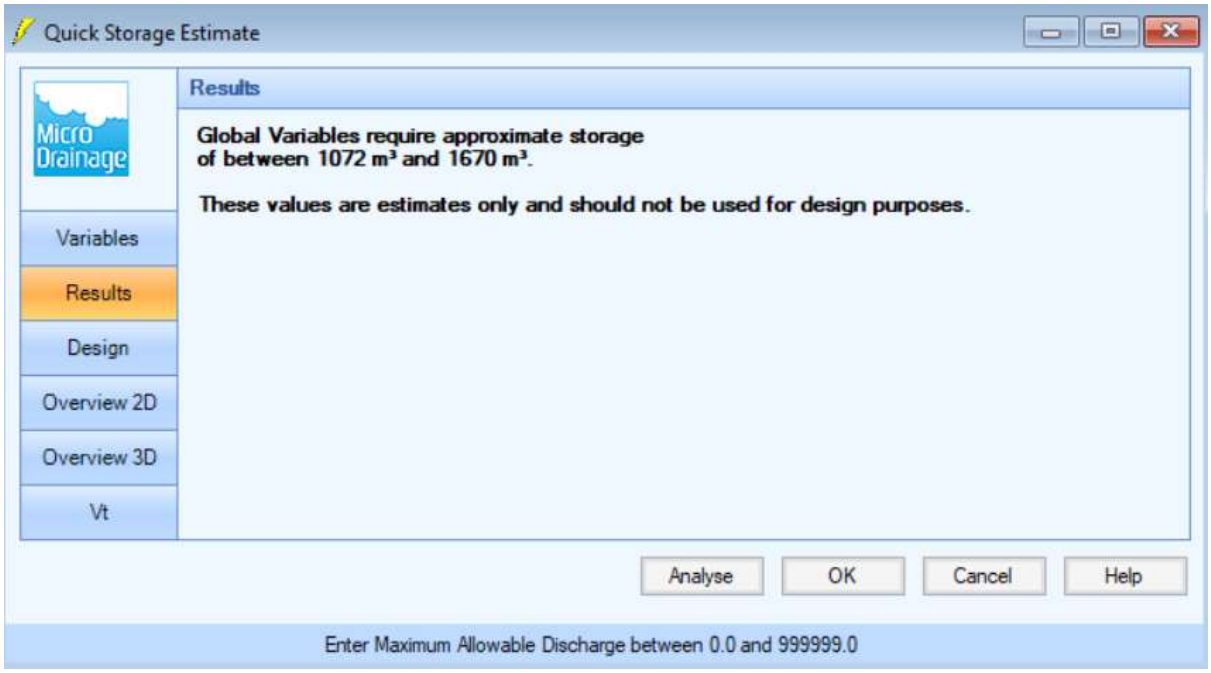




NB: Approximate attenuation volume taken as 823m³ upper limit.

1.00% RP Storm + 40% Climate change Event on Development Impermeable Area 2.17Ha, Qmax= 37.9 litres/sec



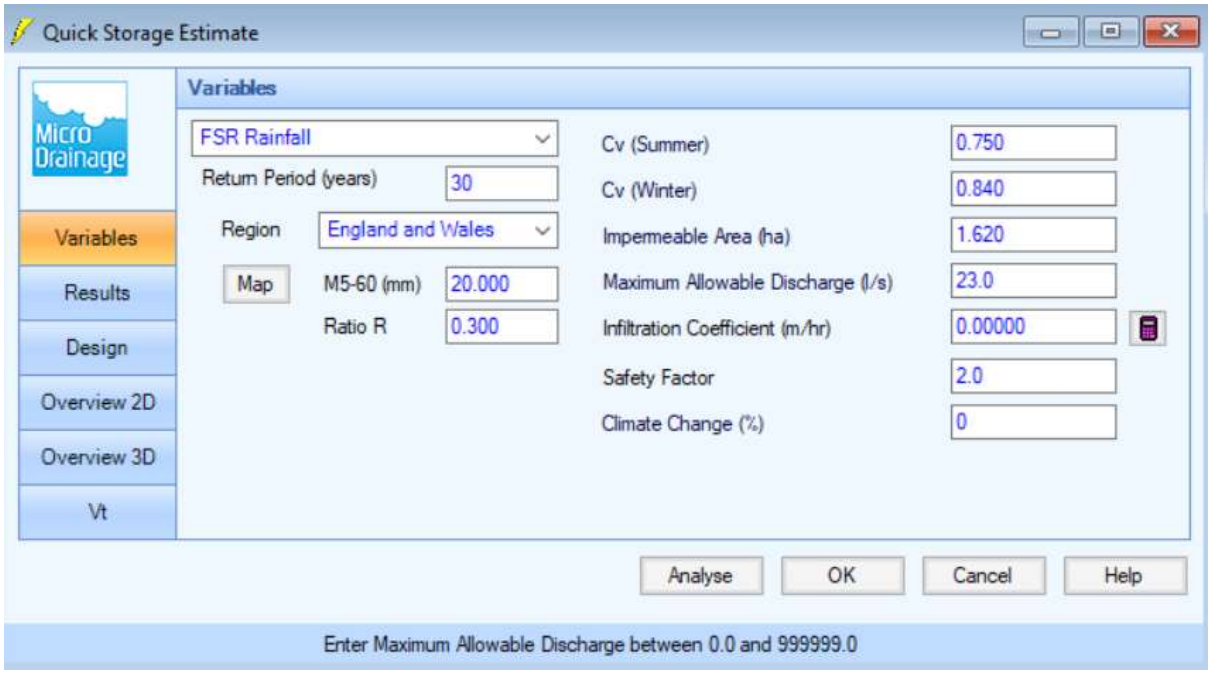


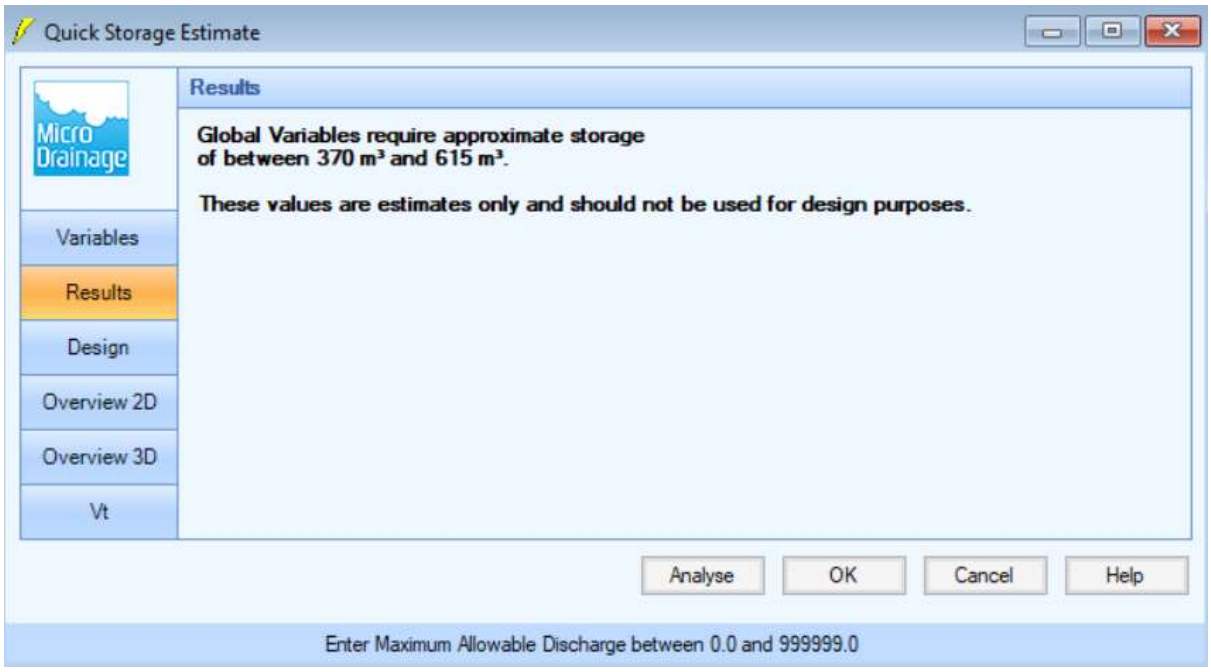
NB: Approximate attenuation volume taken as 1670m³ upper limit, subject to further development at detail design stage when 100yr Storm 6hr duration pre/post-development volumes are checked.

4072 Parcel H VWH Land Partnership (Walshaw) Limited , Walshaw, Bury Quick Storage Estimate Calculation 03.01.2020

(MicroDrainage Source Control 2019.1)

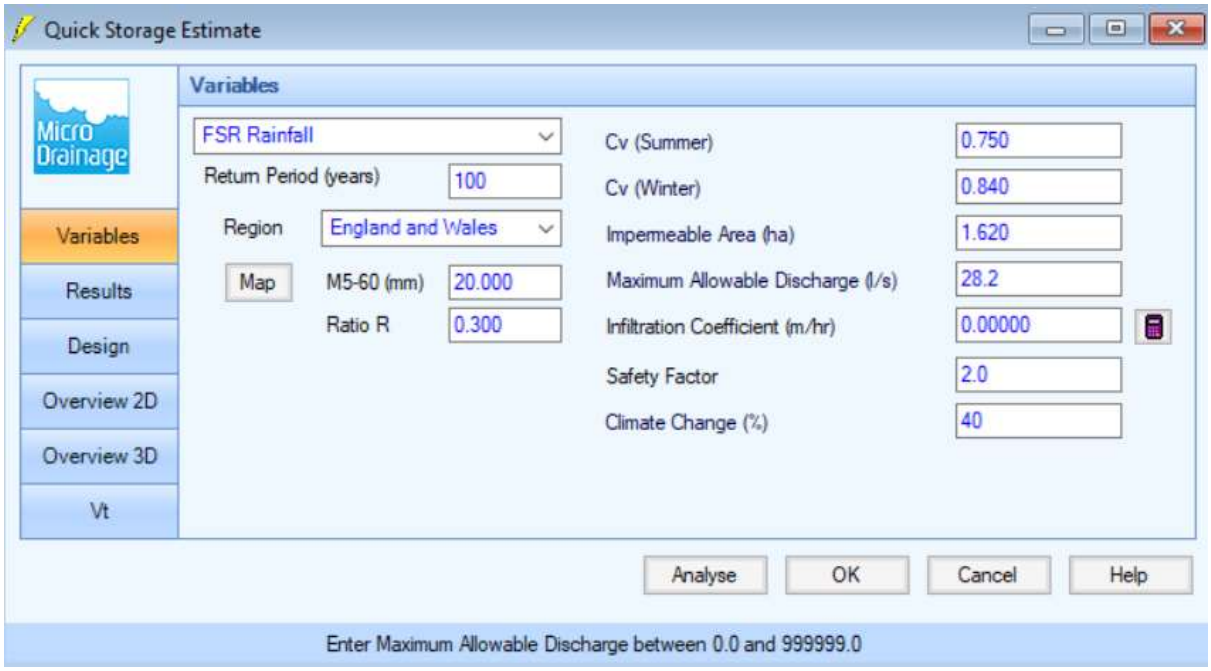
3.33% RP Event on Development Impermeable Area 1.62Ha, Qmax= 23.0 litres/sec

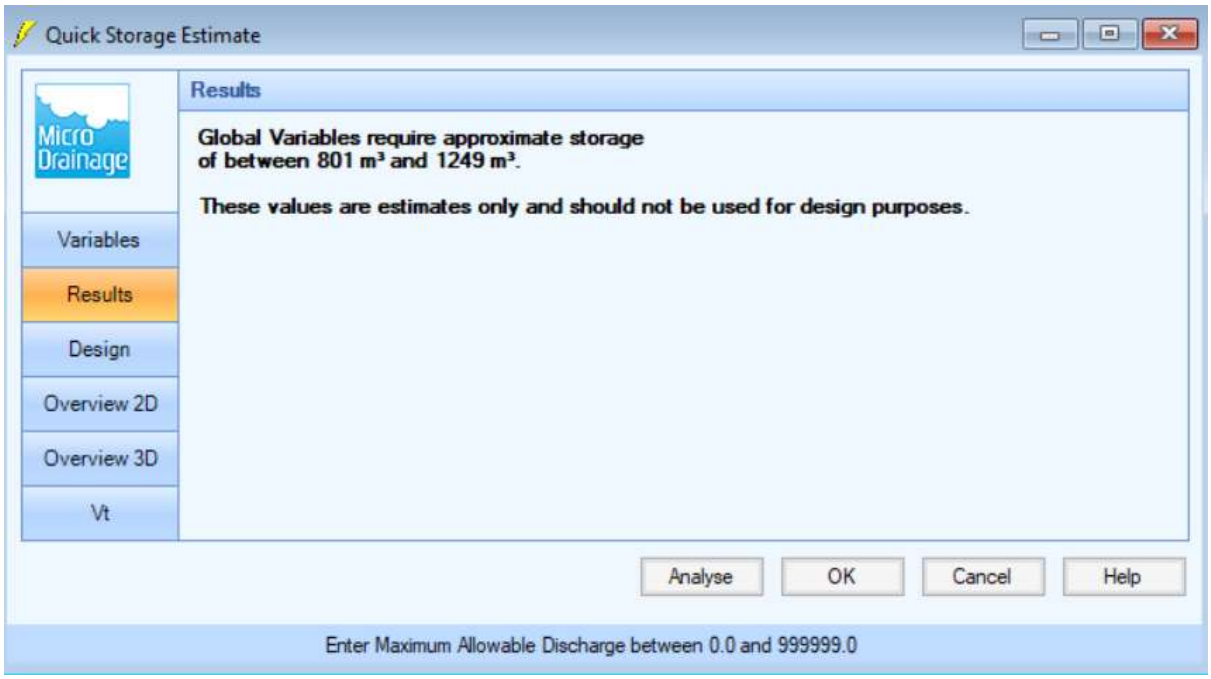




NB: Approximate attenuation volume taken as 615m³ upper limit.

1.00% RP Storm + 40% Climate change Event on Development Impermeable Area 1.62Ha, Qmax= 28.2 litres/sec



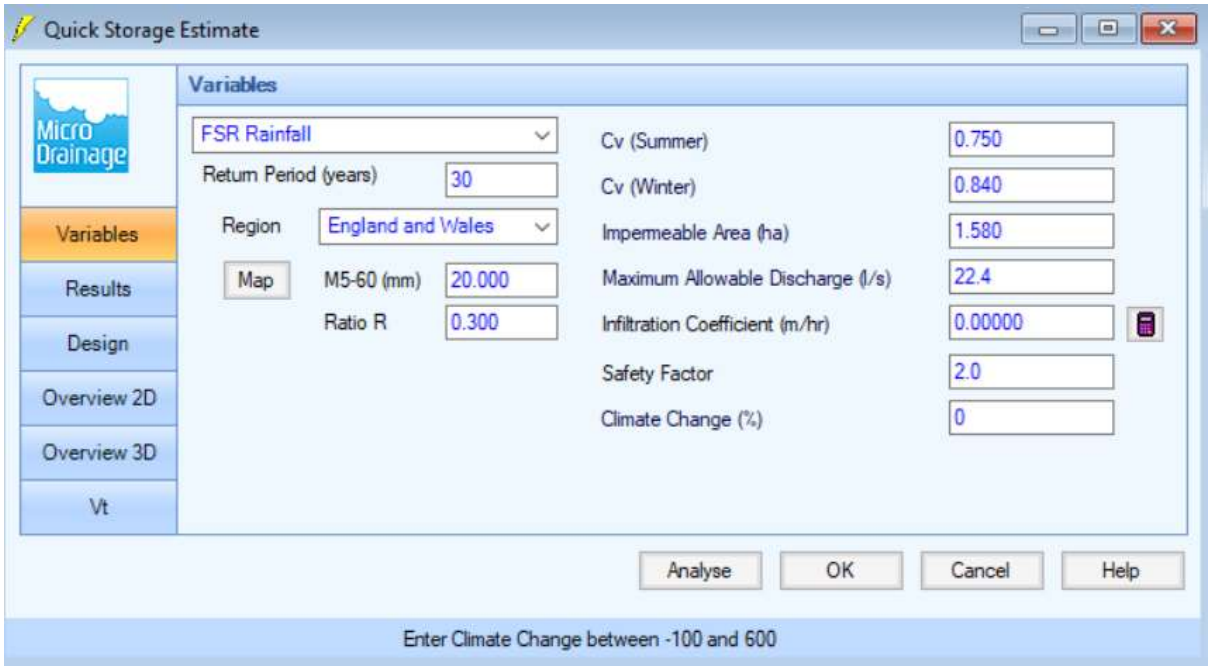


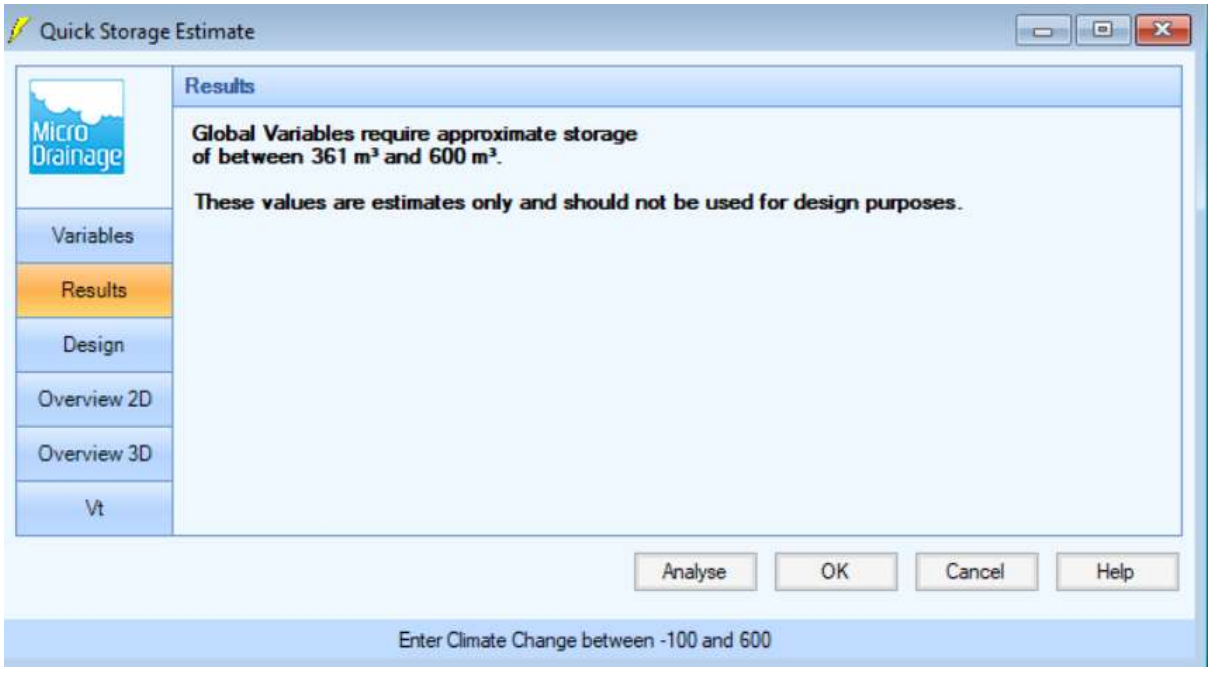
NB: Approximate attenuation volume taken as 1249m³ upper limit, subject to further development at detail design stage when 100yr Storm 6hr duration pre/post-development volumes are checked.

4072 Parcel I VWH Land Partnership (Walshaw) Limited , Walshaw, Bury Quick Storage Estimate Calculation 03.01.2020

(MicroDrainage Source Control 2019.1)

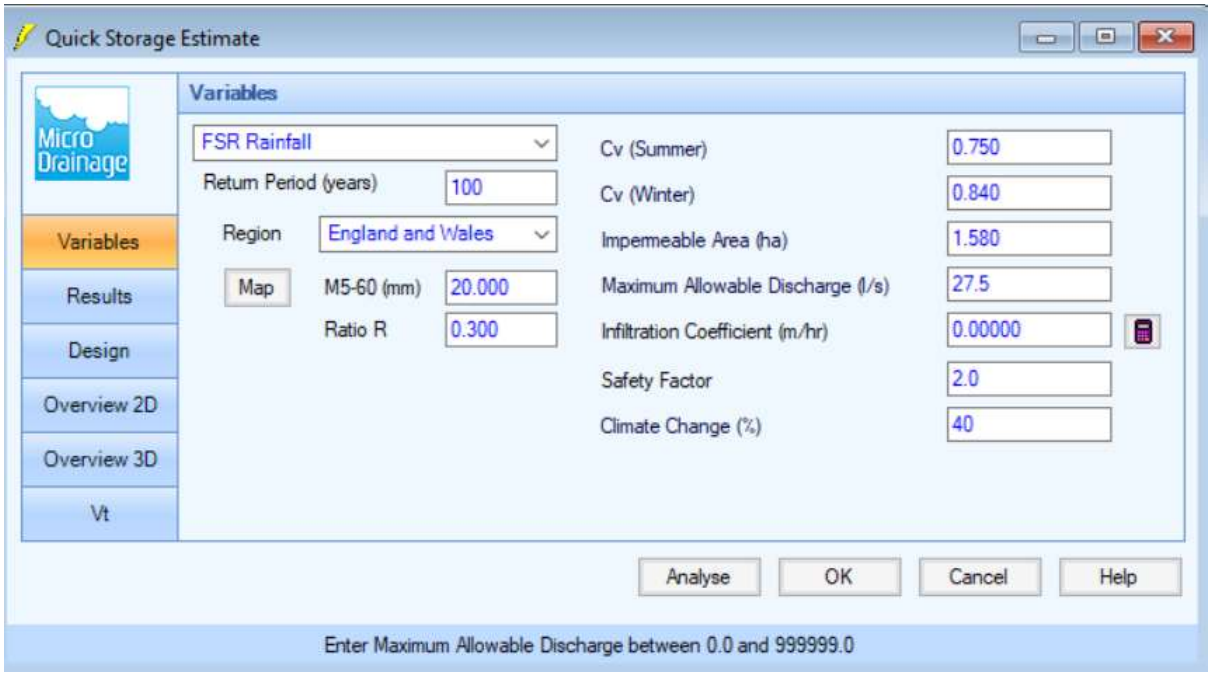
3.33% RP Event on Development Impermeable Area 1.58Ha, Qmax= 22.4 litres/sec

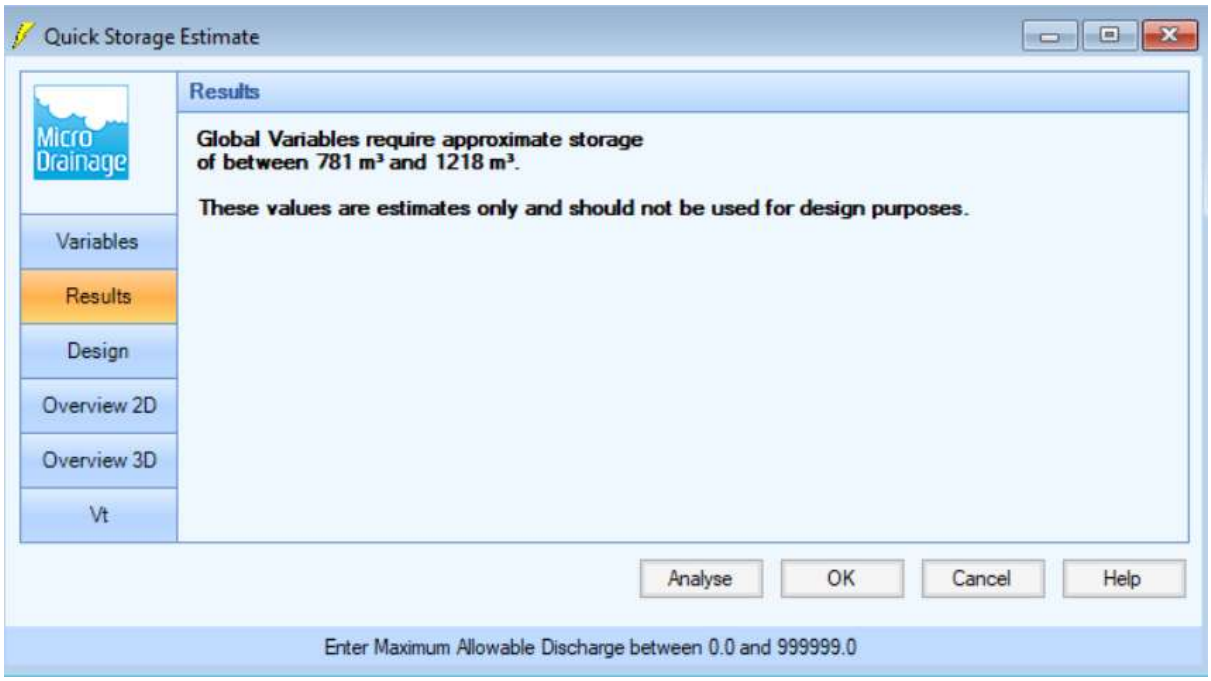




NB: Approximate attenuation volume taken as 600m³ upper limit.

1.00% RP Storm + 40% Climate change Event on Development Impermeable Area 1.58Ha, Qmax= 27.5 litres/sec



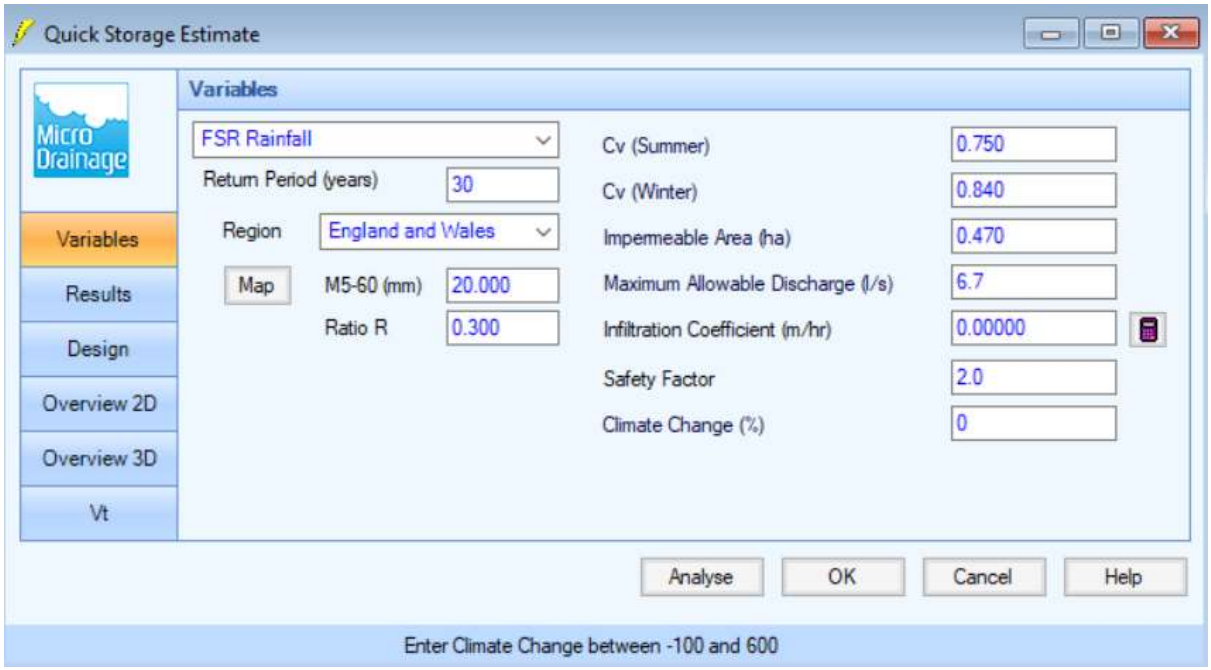


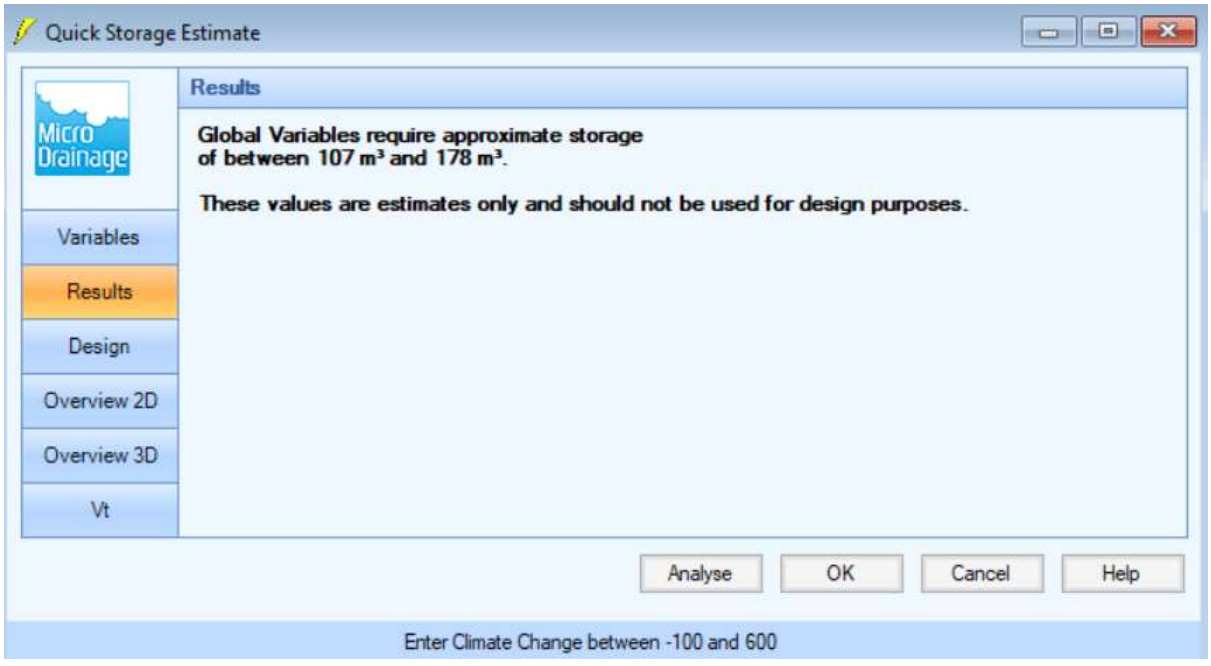
NB: Approximate attenuation volume taken as 1218m³ upper limit, subject to further development at detail design stage when 100yr Storm 6hr duration pre/post-development volumes are checked.

4072 Spine Road 1 VWH Land Partnership (Walshaw) Limited , Walshaw, Bury Quick Storage Estimate Calculation 03.01.2020

(MicroDrainage Source Control 2019.1)

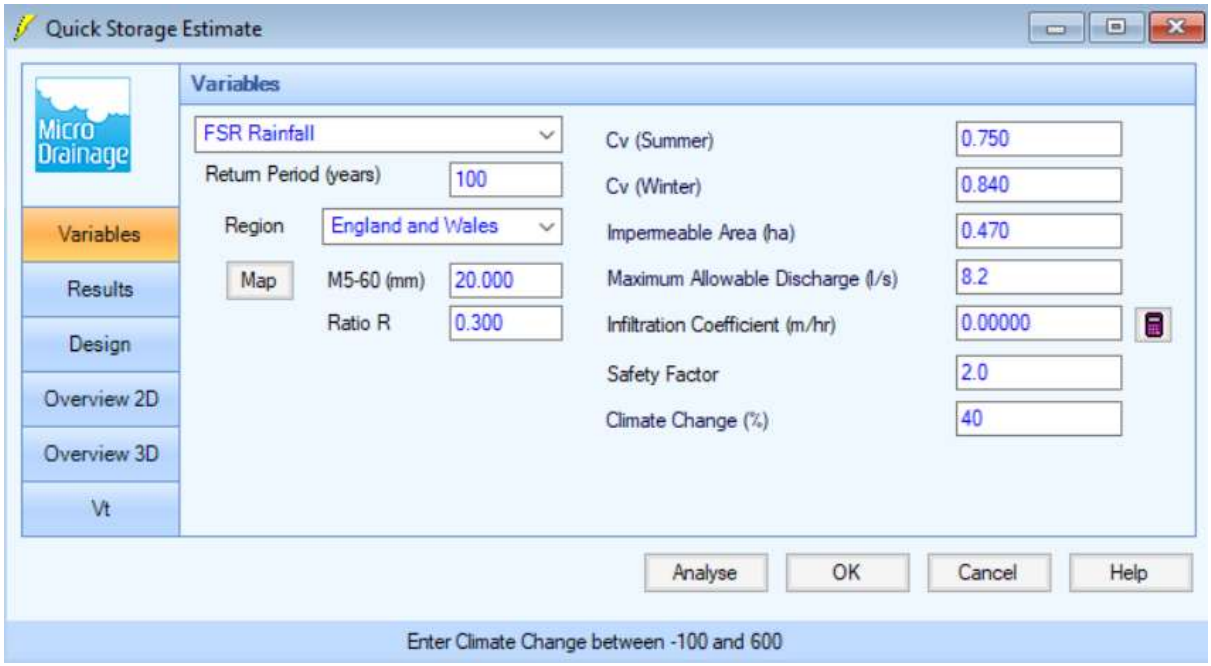
3.33% RP Event on Development Impermeable Area 0.47Ha, Qmax= 6.7 litres/sec

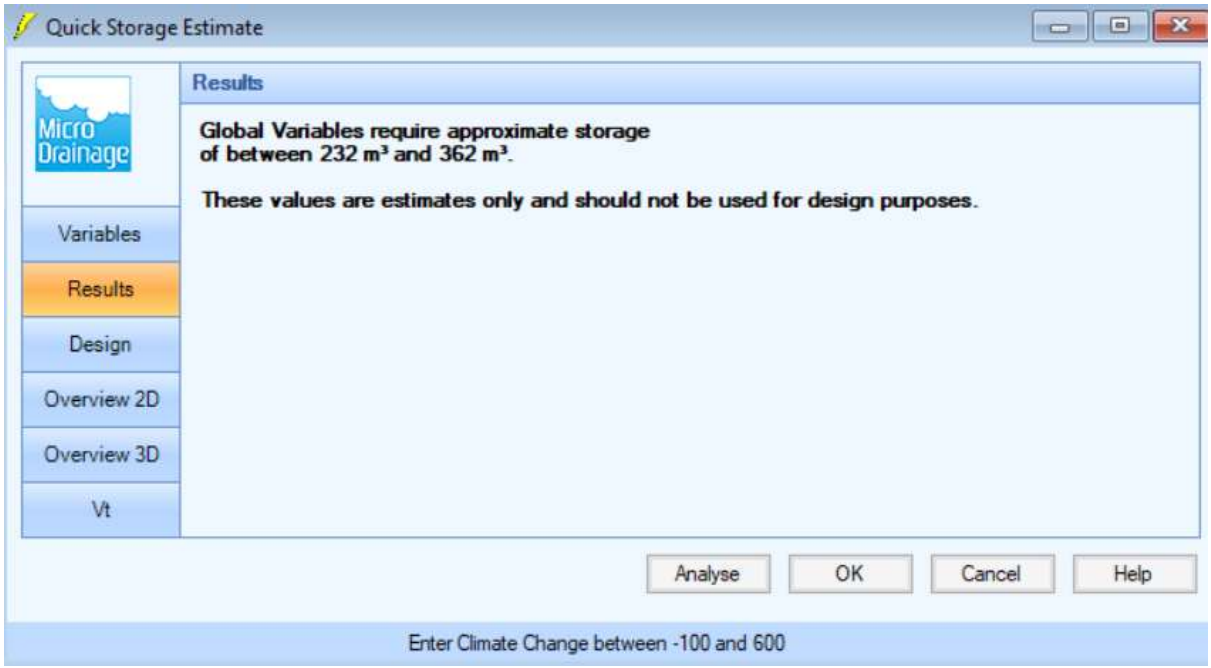




NB: Approximate attenuation volume taken as 178m³ upper limit.

1.00% RP Storm + 40% Climate change Event on Development Impermeable Area 0.47Ha, Qmax= 8.2 litres/sec



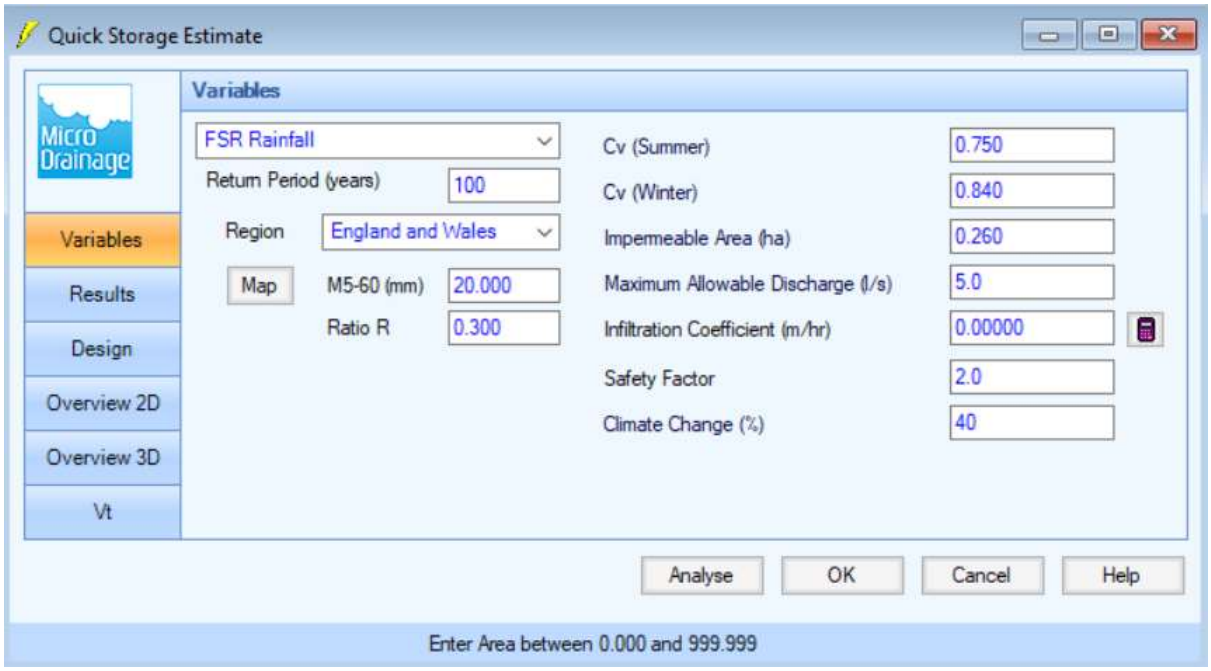


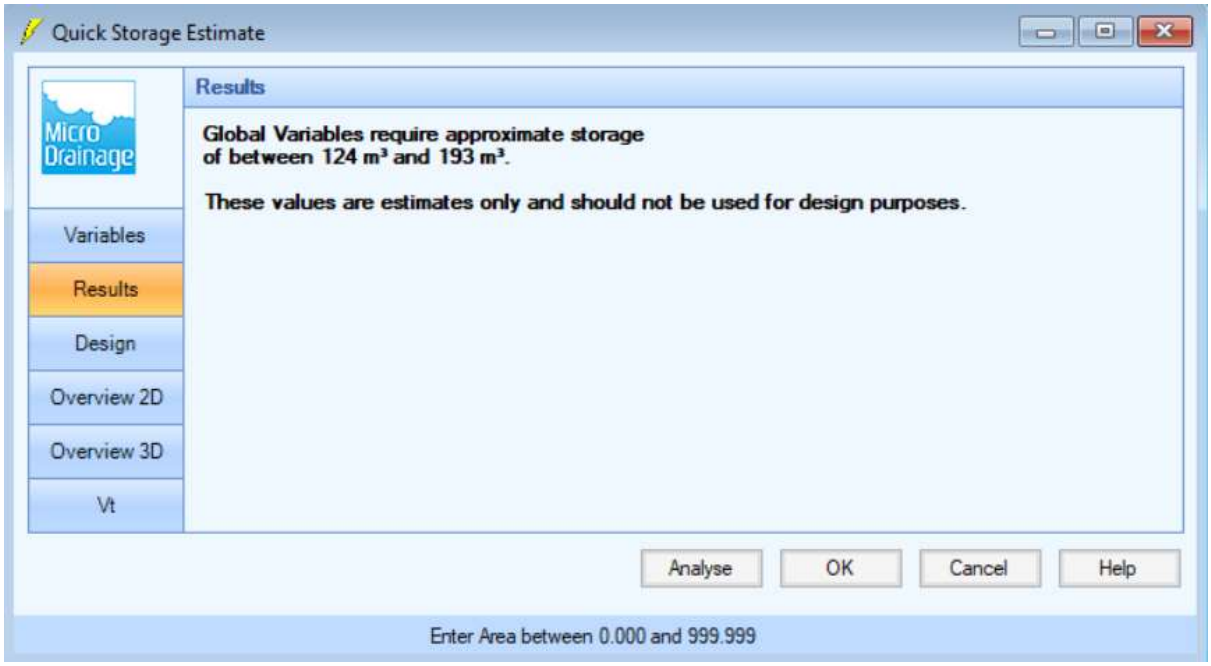
NB: Approximate attenuation volume taken as 362m³ upper limit, subject to further development at detail design stage when 100yr Storm 6hr duration pre/post-development volumes are checked.

4072 Spine Road 2 VWH Land Partnership (Walshaw) Limited , Walshaw, Bury Quick Storage Estimate Calculation 03.01.2020

(MicroDrainage Source Control 2019.1)

1.00% RP Storm + 40% Climate change Event on Development Impermeable Area 0.26Ha, Qmax= 5.0 litres/sec



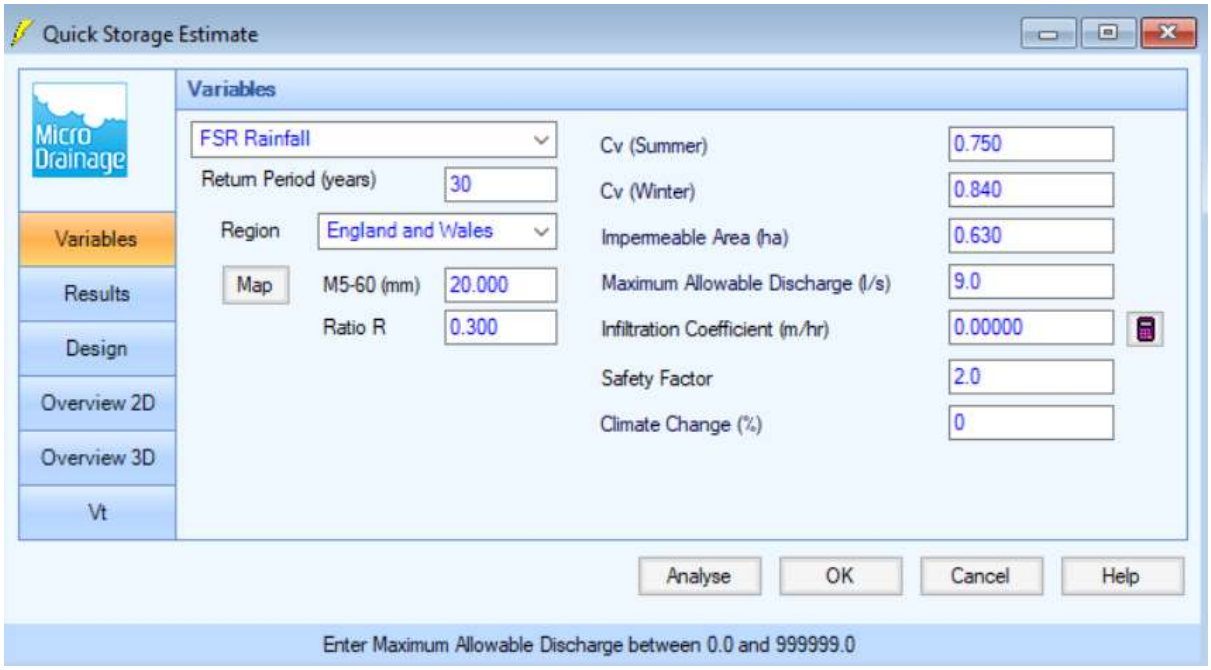


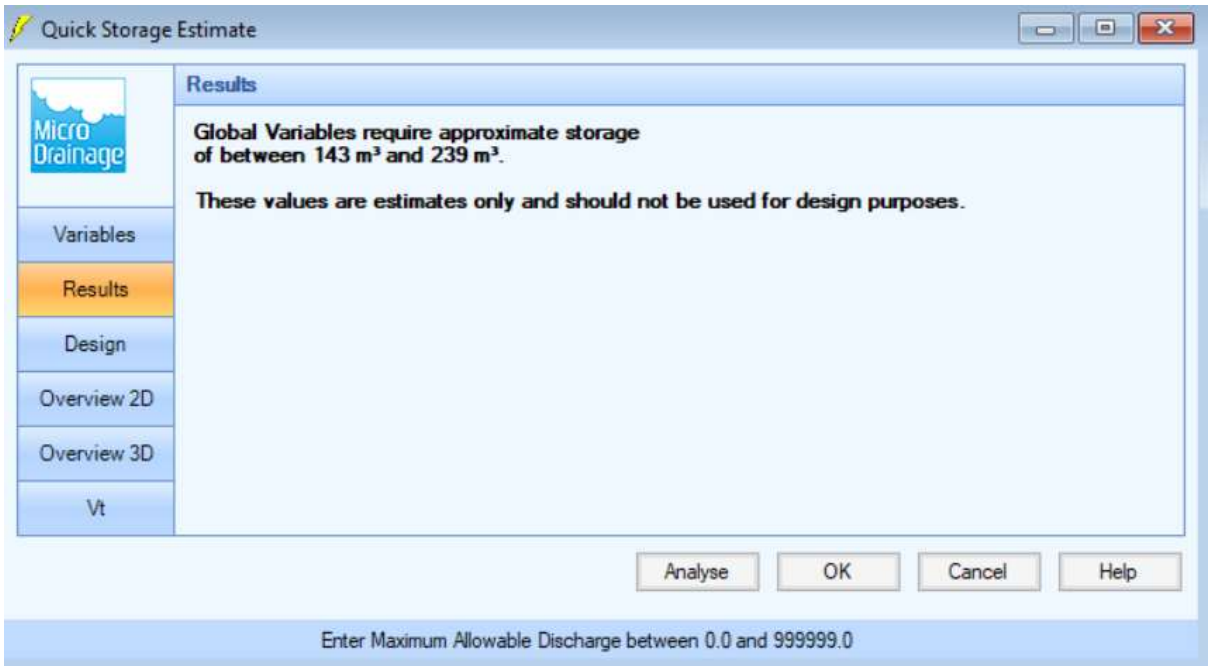
NB: Approximate attenuation volume taken as 193m³ subject to confirmation at detail design, maximum discharge restricted to minimum practical rates of 5 l/s in accordance with NPPF Guidelines.

4072 Spine Road 3 VWH Land Partnership (Walshaw) Limited , Walshaw, Bury Quick Storage Estimate Calculation 03.01.2020

(MicroDrainage Source Control 2019.1)

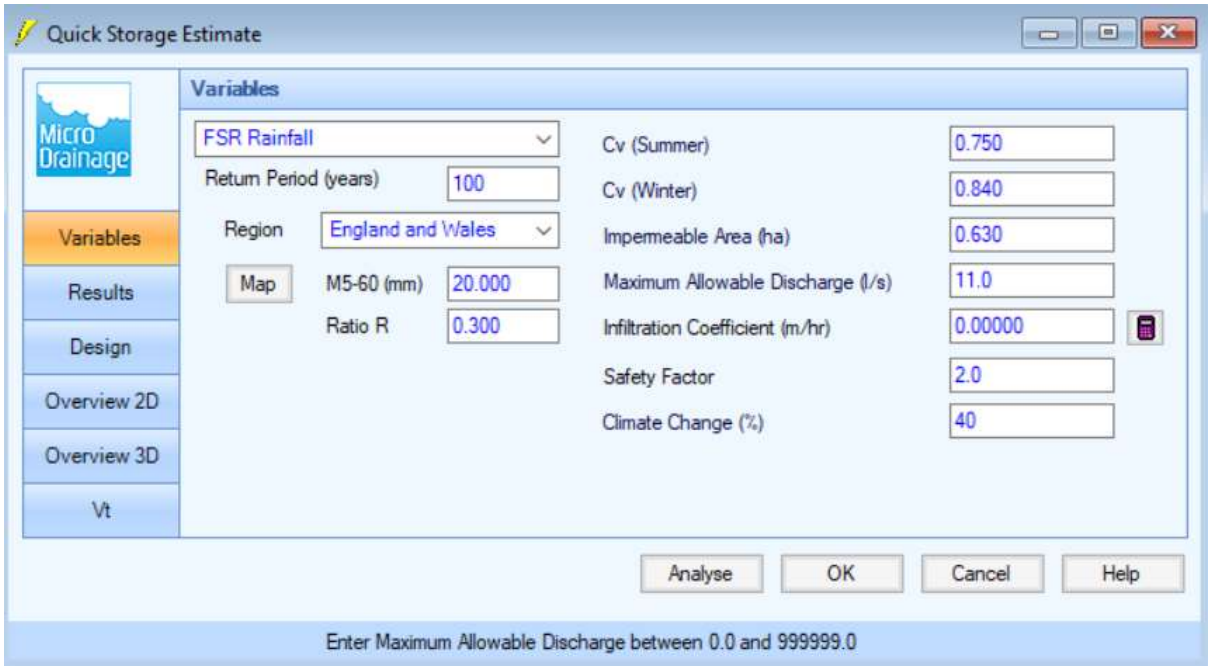
3.33% RP Event on Development Impermeable Area 0.63Ha, Qmax= 9.0 litres/sec

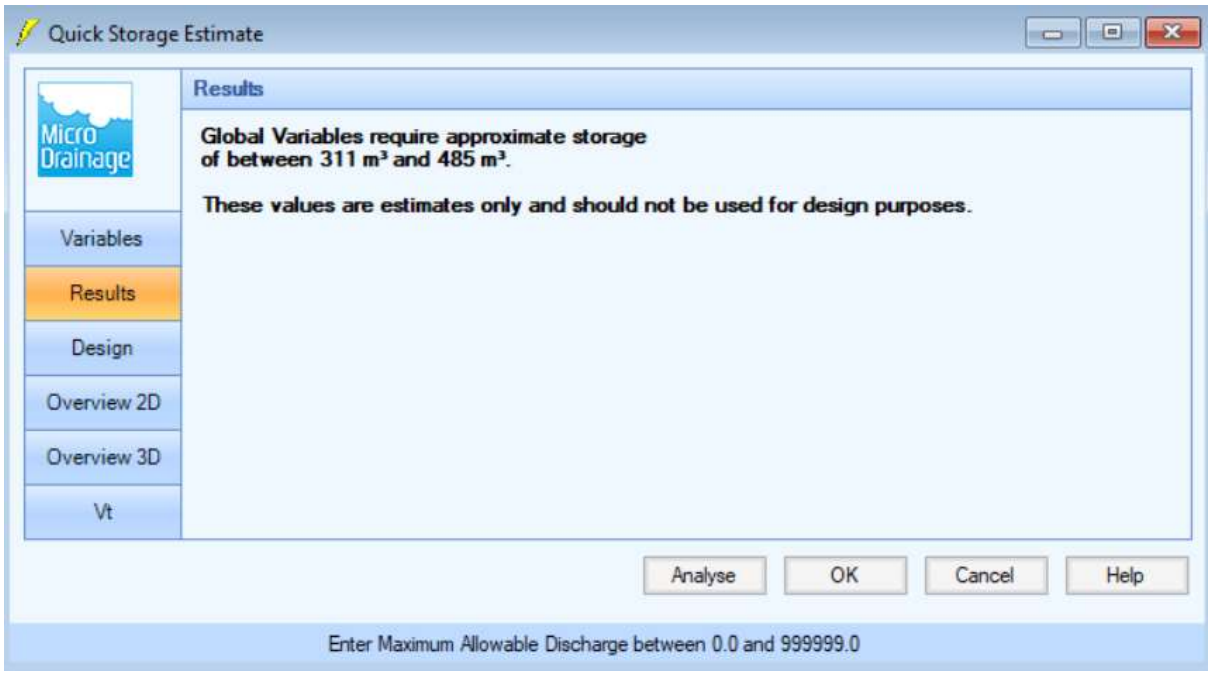




NB: Approximate attenuation volume taken as 239m³ upper limit.

1.00% RP Storm + 40% Climate change Event on Development Impermeable Area 0.63Ha, Qmax= 11.0 litres/sec





NB: Approximate attenuation volume taken as 485m³ upper limit, subject to further development at detail design stage when 100yr Storm 6hr duration pre/post-development volumes are checked.

COMPLEX CHALLENGES ...
MADE SIMPLE

APPENDIX H – MASTERPLAN SURFACE WATER DRAINAGE STRATEGY PLANS

NOTES

1. ALL DIMENSIONS ARE IN METRES UNLESS NOTED OTHERWISE.
2. THIS DRAWING SHOULD BE READ IN CONJUNCTION WITH THE ROC FLOOD RISK ASSESSMENT REPORT & MASTERPLAN DRAINAGE STRATEGY REPORT.
3. THE INFORMATION SHOWN ON THIS DRAWING IS INDICATIVE ONLY AND SUBJECT TO FURTHER CONSULTATION AND DETAILED DESIGN.
4. EXISTING SEWER LOCATIONS ARE APPROXIMATE ONLY AND BASED UPON UNITED UTILITIES SEWER RECORDS.
5. SITE LAYOUT AND DEVELOPMENT BLOCKS ARE BASED ON THE BARTON WILLMORE CONCEPT MASTERPLAN FROM THEIR DEVELOPMENT FRAMEWORK DOCUMENT 2019 REVISION N.

KEY

- PROPOSED SURFACE WATER SEWER
- PROPOSED SWALE
- PROPOSED DIVERTED WATERCOURSE
- PROPOSED DETENTION BASIN
- PROPOSED GEOCELLULAR ATTENUATION
- EXISTING COMBINED SEWER
- EXISTING COMBINED SEWER TO BE ABANDONED
- PROPOSED DIVERTED COMBINED SEWER
- EXISTING WATERCOURSE / SURFACE WATER FEATURE
- Red-A — CATCHMENT DESCRIPTOR
- CATCHMENT BOUNDARY
- LAND OWNERSHIP BOUNDARY
- RED LINE BOUNDARY

SCOBELL STREET

CHURCH STREET

MOYSE AVENUE

Hi-C

Hi-R

Hi-D

Hi-B

Hi-A

Sinks

Red-A

Red-B

Red-C

Red-R

RED-R SURFACE WATER RUNOFF EITHER THROUGH POROUS PAVING AND SOAKAWAY OR 60m3 OF ATTENUATION STORAGE IN DETENTION BASIN DEPENDING ON GROUND CONDITONS OUTFALLING TO SWALES

PROPOSED OUTFALL TO WALSHAW BROOK

DETENTION BASIN R2 911m^3. OUTFALL TO WALSHAW BROOK

LOWPOINT POSSIBLE PUMPING STATION REQUIRED SUBJECT TO CONFIRMATION OF LEVELS AND DETAILED DESIGN

DETENTION BASIN R1 3475m^3. OUTFALL TO WALSHAW BROOK

GEOCELLULAR ATTENUATION R3 38m^3. OUTFALL TO PROPOSED SURFACE WATER SEWER PRIOR TO OUTFALL TO WALSHAW BROOK

PROPOSED OUTFALL TO WALSHAW BROOK

Walshaw Brook

WALSHAW ROAD

ALL ATTENUATION VOLUMES ARE INDICATIVE ONLY AND SHOULD BE UPDATED AS REQUIRED FOLLOWING DEVELOPMENT OF THE MASTERPLAN AND IN CONSULTATION WITH THE RELEVANT STATUTORY BODIES

NB: ALL TREE LINED HIGHWAYS TO DRAIN TO RAIN GARDENS / BIO REMEDIATION

REV.	DATE	DETAILS	DRN.	CHK
03	29/07/20	REVISED TO SUIT COMMENTS	RM	PAW
02	09/04/20	LOCATION OF DETENTION BASIN R1 REVISED	RM	DAE
01	17/01/20	FIRST ISSUE	RM	DAE

DRAWING STATUS
INFORMATION

RIBA STAGE
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W rocconsulting.com

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CHECKED DAE	DATE 17.01.20	THE ABOVE SCALES APPLY WHEN PLOTTED AT A1 SIZE –DO NOT SCALE–
APPRVD. PAW	DATE 17.01.20	EMAIL FOR DRAWINGS info@rocconsulting.com

CLIENT
Redrow Homes

PROJECT TITLE
WALSHAW GARDEN NEIGHBOURHOOD
BURY

DRAWING TITLE
MASTERPLAN S.W
DRAINAGE STRATEGY
SHEET 1 OF 3

PROJECT No.	DRAWING No.	REV.
4072	SK-107	03

NOTES

1. ALL DIMENSIONS ARE IN METRES UNLESS NOTED OTHERWISE.
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KEY

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- PROPOSED SWALE
- PROPOSED DIVERTED WATERCOURSE
- PROPOSED DETENTION BASIN
- PROPOSED GEOCELLULAR ATTENUATION
- EXISTING COMBINED SEWER
- EXISTING COMBINED SEWER TO BE ABANDONED
- PROPOSED DIVERTED COMBINED SEWER
- EXISTING WATERCOURSE / SURFACE WATER FEATURE
- Hi-A CATCHMENT DESCRIPTOR
- CATCHMENT BOUNDARY
- LAND OWNERSHIP BOUNDARY
- RED LINE BOUNDARY
- SURFACE WATER RISING MAIN
- SURFACE WATER PUMPING STATION

SCOBELL STREET
ACRES ST
CHURCH STREET
CLAUGHTON ROAD
BOOTHWAY
LINDEN CRES
SYCAMORE AVENUE
HAZEL AVE
BIRCH AVENUE
LARCH AVE
CAMBER
B6213
Links
Hi-A
Hi-B
Hi-C
Hi-D
Hi-R
Red-B
VHW-R1
DETENTION BASIN Hi3 293m³ OUTALL TO WALSHAW BROOK
DETENTION BASIN Hi-1 1677m³. OUTFALL TO SURFACE WATER PUMPING STATION AND WALSHAW BROOK DRAINAGE DITCH
DETENTION BASIN Hi-2 1355m³. OUTFALL TO WALSHAW BROOK DRAINAGE DITCH
RISING MAIN
GEOCELLULAR ATTENUATION Hi-4 136m³. OUTFALL TO WALSHAW BROOK.
SWALE TO BE SIZED TO ACCOMODATE 337m³ TO ATTENUATE HI-R
LOWPOINT POSSIBLE PUMPING STATION REQUIRED SUBJECT TO CONFIRMATION OF LEVELS AND DETAILED DESIGN

ALL ATTENUATION VOLUMES ARE INDICATIVE ONLY AND SHOULD BE UPDATED AS REQUIRED FOLLOWING DEVELOPMENT OF THE MASTERPLAN AND IN CONSULTATION WITH THE RELEVANT STATUTORY BODIES

NB: ALL TREE LINED HIGHWAYS TO DRAIN TO RAIN GARDENS / BIO REMEDIATION

REV.	DATE	DETAILS	DRN.	CHK.
02	29/07/20	REVISED TO SUIT COMMENTS	RM	PAW
01	17/01/20	FIRST ISSUE	RM	DAE

DRAWING STATUS: INFORMATION

RIBA STAGE: PLANNING

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APPRVD. PAW	DATE 17.01.20	EMAIL FOR DRAWINGS info@rocconsulting.com

CLIENT: HIMOR

PROJECT TITLE: WALSHAW GARDEN NEIGHBOURHOOD BURY

DRAWING TITLE: MASTERPLAN S.W DRAINAGE STRATEGY SHEET 2 OF 3

PROJECT No.	DRAWING No.	REV.
4072	SK-108	02

NOTES

1. ALL DIMENSIONS ARE IN METRES UNLESS NOTED OTHERWISE.
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5. SITE LAYOUT AND DEVELOPMENT BLOCKS ARE BASED ON THE BARTON WILLMORE CONCEPT MASTERPLAN FROM THEIR DEVELOPMENT FRAMEWORK DOCUMENT 2019 REVISION N.

KEY

- PROPOSED SURFACE WATER SEWER
- PROPOSED SWALE
- PROPOSED DIVERTED WATERCOURSE
- PROPOSED DETENTION BASIN
- PROPOSED GEOCELLULAR ATTENUATION
- EXISTING COMBINED SEWER
- EXISTING COMBINED SEWER TO BE ABANDONED
- PROPOSED DIVERTED COMBINED SEWER
- EXISTING WATERCOURSE / SURFACE WATER FEATURE
- VHW-I CATCHMENT DESCRIPTOR
- CATCHMENT BOUNDARY
- LAND OWNERSHIP BOUNDARY
- RED LINE BOUNDARY

SCOBELL STREET

CHURCH STREET

MOYSE AVENUE

WALSHAW ROAD

LEIGH LANE

COTSWOLD CRESCENT

DOW LANE

Hi-A

Hi-B

Hi-C

Hi-D

Hi-R

Red-B

Red-C

VHW-A

VHW-B

VHW-C

VHW-D

VHW-E

VHW-F

VHW-G

VHW-H

VHW-I

VHW-R1

VHW-R2

VHW-R3

BC-A

Sinks

Walshaw Brook

Resr

Elton Brook

Spreads

DETENTION BASIN VHW-1 1249m³. OUTFALL TO WALSHAW BROOK

DETENTION BASIN VWH2 2195m³ (ACCOMODATING FOR 362m³ FROM VWHR1). OUTFALL TO WALSHAW BROOK

DETENTION BASIN VWH3 514m³ OUTFALL TO WALSHAW BROOK

DETENTION BASIN VWH4 1355m³. OUTFALL TO WALSHAW BROOK

EXISTING WATERCOURSE TO BE REALIGNED THROUGH THE DEVELOPMENT. SUBJECT TO LAND DRAINAGE CONSENT. TO BE CONFIRMED AND AGREED WITH THE LEAD LOCAL FLOOD AUTHORITY

DETENTION BASIN VWH5 927m³. OUTFALL TO PROPOSED REALIGNED WATERCOURSE

DETENTION BASIN VWH6 835m³. OUTFALL TO PROPOSED REALIGNED WATERCOURSE OR ALTERNATIVELY TO PROPOSED REALIGNED COMBINED SEWER

PROPOSED REALIGNMENT OF EXISTING 375Ø VC COMBINED SEWER THROUGH THE SITE

PROPOSED NEW MH ON EXISTING 375Ø VC COMBINED SEWER

EXISTING WATERCOURSE THROUGH THE SITE TO BE SURVEYED TO CONFIRM ALIGNMENT AND CONNECTIVITY

DETENTION BASIN BC-1 485m³ OUTFALL TO REALIGNED WATERCOURSE

DETENTION BASIN VWH8 1249m³. OUTFALL TO TRIBUTARY OF ELTON BROOK.

DETENTION BASIN VWH7 1734m³. OUTFALL OFF SITE TO ELTON BROOK

PROPOSED NEW MH ON EXISTING 375Ø CO COMBINED SEWER

INDICATIVE OUTFALL OFF SITE TO ELTON BROOK

EXISTING 375Ø COMBINED SEWER TO BE DIVERTED AND ABANDONED

ALL ATTENUATION VOLUMES ARE INDICATIVE ONLY AND SHOULD BE UPDATED AS REQUIRED FOLLOWING DEVELOPMENT OF THE MASTERPLAN AND IN CONSULTATION WITH THE RELEVANT STATUTORY BODIES

NB: ALL TREE LINED HIGHWAYS TO DRAIN TO RAIN GARDENS / BIO REMEDIATION

REV.	DATE	DETAILS	DRN.	CHK.
02	29/07/20	REVISED TO SUIT COMMENTS	RM	PAW
01	17/01/20	FIRST ISSUE	RM	DAE

DRAWING STATUS: INFORMATION

RIBA STAGE: PLANNING

RoC CONSULTING
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W rocconsulting.com

DRAWN: RM	DATE: 17.01.20	SCALES: 1:2,000
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APPRVD.: PAW	DATE: 17.01.20	EMAIL FOR DRAWINGS: info@rocconsulting.com

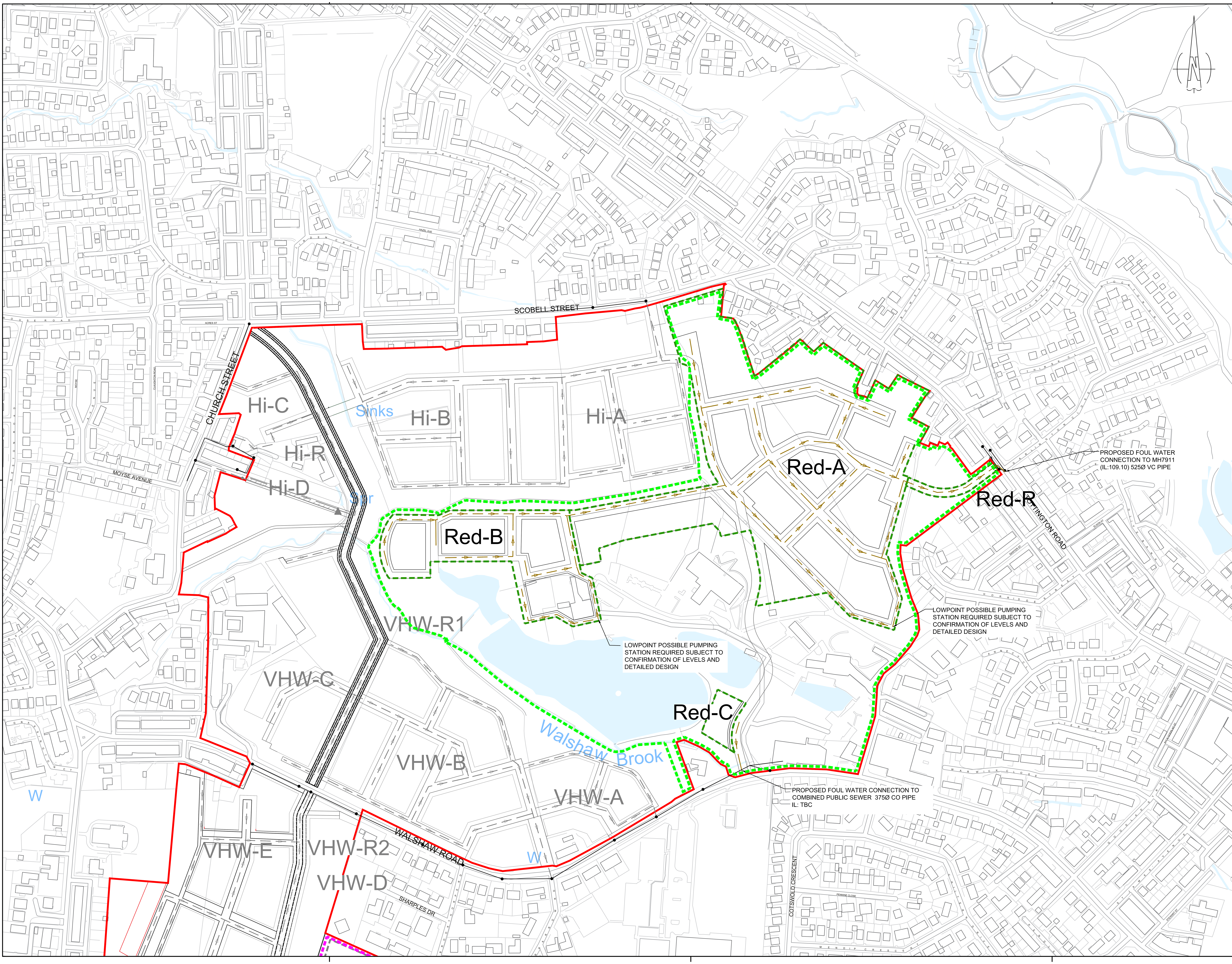
CLIENT: VHW Land Partnership (WALSHAW) Limited

PROJECT TITLE: WALSHAW GARDEN NEIGHBOURHOOD BURY

DRAWING TITLE: MASTERPLAN S.W DRAINAGE STRATEGY SHEET 3 OF 3

PROJECT No.	DRAWING No.	REV.
4072	SK109	02

APPENDIX I – MASTERPLAN FOUL WATER DRAINAGE STRATEGY PLANS



NOTES

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5. SITE LAYOUT AND DEVELOPMENT BLOCKS ARE BASED ON THE BARTON WILLMORE CONCEPT MASTERPLAN FROM THEIR DEVELOPMENT FRAMEWORK DOCUMENT 2019 REVISION N.

KEY

- PROPOSED FOUL SEWER
- PROPOSED FOUL WATER RISING MAIN
- PROPOSED PUMPING STATION
- EXISTING COMBINED SEWER
- PROPOSED DIVERTED COMBINED SEWER
- Red-A LAND PARCEL NUMBER
- CATCHMENT BOUNDARY
- LAND OWNERSHIP BOUNDARY

REV.	DATE	DETAILS	DRN.	CHK.
01	17/01/20	FIRST ISSUE	RM	DAE

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RIBA STAGE
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APPRVD. PAW	DATE 17.01.20	EMAIL FOR DRAWINGS info@rocconsulting.com

CLIENT
Redrow Homes

PROJECT TITLE
WALSHAW GARDEN NEIGHBOURHOOD BURY

DRAWING TITLE
MASTERPLAN F.W DRAINAGE STRATEGY SHEET 1 OF 3

PROJECT No.	DRAWING No.	REV.
4072	SK110	01

NOTES

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KEY

- PROPOSED FOUL SEWER
- PROPOSED FOUL WATER RISING MAIN
- PROPOSED PUMPING STATION
- EXISTING COMBINED SEWER
- PROPOSED DIVERTED COMBINED SEWER
- Hi-A — LAND PARCEL NUMBER
- CATCHMENT BOUNDARY
- LAND OWNERSHIP BOUNDARY

HAZEL AVE
BIRCH AVE
LINDEN CRES
BOOTHWAY
CAMBERLEY
SCOBELL STREET
ACRES ST
CLAUGHTON ROAD
CHURCH STREET
COLLINS STREET
Sinks
Sink
Hi-C
Hi-B
Hi-A
Hi-R
Hi-D
Red-B
VHW-R1
PROPOSED FOUL WATER CONNECTION POINT TO MH2101 (IL: 115.71) 450Ø VC PIPE
PROPOSED NEW MH IN CHURCH STREET
PROPOSED NEW OFF SITE FOUL WATER SEWER IN COLLINS STREET
PROPOSED FOUL PUMPING STATION TO FACILITATE FOUL DRAINAGE FROM LOW SPOT TO PROPOSED NEW MH IN CHURCH STREET
LOWPOINT POSSIBLE PUMPING STATION REQUIRED

REV.	DATE	DETAILS	DRN.	CHK.
01	17/01/20	FIRST ISSUE	RM	DAE

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APPRVD.: PAW	DATE: 17.01.20	EMAIL FOR DRAWINGS: info@rocconsulting.com

CLIENT: HIMOR

PROJECT TITLE: WALSHAW GARDEN NEIGHBOURHOOD BURY

DRAWING TITLE: MASTERPLAN F.W DRAINAGE STRATEGY SHEET 2 OF 3

PROJECT No.	DRAWING No.	REV.
4072	SK111	01

NOTES

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KEY

- PROPOSED FOUL SEWER
- PROPOSED FOUL WATER RISING MAIN
- PROPOSED PUMPING STATION
- EXISTING COMBINED SEWER
- PROPOSED DIVERTED COMBINED SEWER
- VHW-I LAND PARCEL NUMBER
- CATCHMENT BOUNDARY
- LAND OWNERSHIP BOUNDARY

SCOBELL STREET
CHURCH STREET
MOYSE AVENUE
WALSHAW ROAD
SHARPLES DR
COTSWOLD CRESCENT
LEIGH LANE
DOW LANE
HAZEL AVE
ACRES ST
SETTLE CL
SKIPTON CL

Hi-C
Hi-R
Hi-D
Hi-B
Hi-A
Red-B
Red-C
VHW-R1
VHW-C
VHW-B
VHW-A
VHW-E
VHW-R2
VHW-D
VHW-F
BC-A
VHW-G
VHW-R3
VHW-H
VHW-I

Sinks
Spr
Walshaw Brook
Sinks
Resr
Elton Brook
Spreads
Issues

PROPOSED FOUL WATER CONNECTION TO PUBLIC COMBINED SEWER IN WALSHAW ROAD IL: TBC 375Ø VC PIPE

PROPOSED FOUL WATER CONNECTION TO MH3501 IL: TBC 375Ø VC PIPE

PROPOSED FOUL WATER CONNECTION TO MH1502 IL: 116.95 375Ø VC PIPE

PROPOSED FOUL WATER CONNECTIONS TO PROPOSED COMBINED SEWER DIVERSION

PROPOSED NEW MH ON EXISTING 375Ø VC COMBINED SEWER

PROPOSED FOUL WATER CONNECTION FROM SCHOOL

PROPOSED FOUL WATER CONNECTIONS TO PROPOSED COMBINED SEWER DIVERSION

POSSIBLE ROUTE OF EXISTING COMBINED SEWER DIVERSION

PROPOSED FOUL PUMPING STATION

FOUL WATER DRAINING FROM PLOTS VHW PLOT G & VHW PLOT PLOT H TO OUTFALL TO PROPOSED DIVERTED 375Ø PUBLIC COMBINED SEWER

EXISTING 375Ø COMBINED SEWER TO BE DIVERTED AND ABANDONED

PROPOSED NEW MH ON EXISTING 375Ø CO COMBINED SEWER

REV.	DATE	DETAILS	DRN.	CHK.
01	17/01/20	FIRST ISSUE	RM	DAE

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DRAWN	DATE	SCALES
RM	17.01.20	1:2,000
CHECKED	DATE	THE ABOVE SCALES APPLY WHEN PLOTTED AT A1 SIZE --DO NOT SCALE--
DAE	17.01.20	
APPRVD.	DATE	EMAIL FOR DRAWINGS
PAW	17.01.20	info@rocconsulting.com

CLIENT
VHW Land Partnership (WALSHAW) Limited

PROJECT TITLE
WALSHAW GARDEN NEIGHBOURHOOD
BURY

DRAWING TITLE
MASTERPLAN F.W DRAINAGE STRATEGY
SHEET 3 OF 3

PROJECT No.	DRAWING No.	REV.
4072	SK112	01

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