

Flooding and Sewage

Alvington Parish

Appendix 9

Printable Version – (Double sided/duplex)

September 2018

FLOODING – overview

There are two main areas in Alvington where flooding is a problem.

1. Clanna Lane continuing onto the A48 main road.
2. A48 at Swan Hill, sewage is also a problem at Swan Hill.

Extensive maintenance work has recently been carried out on the system by Severn Trent Water. This has improved the sewage problem at Swan Hill, but has not resolved the issue completely. The reason being the system has reached its capacity and the surface water is adding to the problem.

Surface water is a highways problem, resulting in two Amey reports, one for Clanna Lane and one for Swan Hill.

The recommendation to hopefully resolve the problems at Swan Hill as described in section 3 and 4 of the Amey Report, has been promised to be carried out by April 2017.

There are four possible ways to resolve the Clanna Lane problem, pages 7, 8, 9 and 10 of Amey Report. However they are all very expensive, and unlikely to be carried out in the near future. The Installation Cost is shown on page 10.

The Amey recommendation for repair at 1 Tudor Cottage, Swan Hill, Alvington was carried out during March / April 2017. So far so good, but the winter rain storms will put it to a real test.

However there are still problems with sewage in the garden, twice this summer (2017) when there has been heavy rain not torrential rain.

An email has been sent to Dave Hadley Severn Trent Water awaiting a response.

Some repair work (March 2017) to drainage pipes, has been carried out in Clanna Lane. Hopefully this will reduce the previous flooding in Clanna Lane, time will tell.

Attachments:

1. Severn Trent Water Letter **Flooding at Swan Hill**, Alvington GL15 6AA (2 pages) ~ 28th January 2016.
2. Severn Trent Water Letter **Developments in general at Alvington** GL15 6AA (2 pages) ~ 8th April 2016.
3. Severn Trent Water Letter **Flooding in Clanna Road**, Alvington (2 pages) ~ 7th June 2016.
4. Severn Trent Water Letter **Ref X816899** Flooding (No scheme) (2 pages) ~ 4th June 2018.
5. Glos County Council Letter **Risk of Flood from Surface Water** ~ 2nd July 2018.
 - a. Flooding Map (Surface Water) Alvington Parish
 - b. Flooding Map (Surface Water) Alvington Village
6. Severn Trent Water **Tile Numbers** request for Water and Sewage (3 pages) ~ 13th July 2018.
7. Severn Trent Water **Apparatus Location Enquiry** ~ 22nd August 2018.
8. Severn Trent Water **Important Communication** ~ 22nd August 2018.
9. Severn Trent Water **General Conditions** (3 Pages) ~ 22nd August 2018
10. Flooding Occurrences in 2016, 2017 and up to 14th May 2018
11. Two Amey Reports. One for Clanna Lane, one for A48 at Swan Hill (18 pages) ~ 25th February 2016.
12. Severn Trent Emails:
 - a. Flooding & Sewage Report – Alvington NDP ~ 27th August 2017.
 - b. RE Flooding and Sewage Report – Alvington NDP ~ 3rd October 2017
 - c. Re RE Flooding and Sewage Report – Alvington NDP ~ 3rd October 2017

Mrs Verlie Eagles
Bwau Maen
Knapp Lane
Alvington
Lydney
Gloucestershire
GL15 6BJ

28 January 2016

Dear Mrs Eagles,

Flooding at Swan Hill, Alvington GL15 6AA

Thank you for your letter dated 12th November 2015 regarding flooding issues at the above named location. I apologise for the delay in contacting you due to a backlog of work and I needed to consult other colleagues in our organisation. I was hoping to call you for a chat but unfortunately you did not put your telephone number on the letter.

Our team called Asset Protection deal with the impact of new developments on the sewerage system hydraulically and initiate growth schemes to increase capacity in the system where this is necessary. I can see on our sewer records that the sewer in question is a 150mm diameter combined sewer and conveys flows from the village catchment area.

Our hydraulic modelling records indicate that surcharge and flooding occurs on minor storm events exactly where the flooding occurs in front of Tudor Cottages. We also have a history of flooding here with five reports of external flooding in the last three years. I note that you also called in to report this problem on 27th January and a team have attended to investigate and take photos. We are also looking at the pumping station downstream of the sewer.

Sewers from Swan Hill are also on our planned cleansing register and the last visit was on 9th December 2015 with roots being removed from the sewer line. We also have two entries on our Hydraulic Flooding Risk Register. I agree with

SEVERN

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WATER

Severn Trent Water

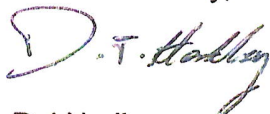
you that an increase in capacity is probably required here to prevent existing flooding in storm conditions and allow for any future development in the area. This could be either upsizing sewer pipework, storage or separation works. In this respect I have forwarded your letter along with all the information we hold to our Strategic Planning Analyst where feasibility for such a scheme will be investigated further. You will appreciate that schemes to alleviate internal flooding will have a greater priority than external flooding to the frontage of a property but if the frequency is often enough, Severn Trent have a duty to ensure that a satisfactory level of service is maintained for our customers.

Regarding the backdrop manhole you have mentioned on The Knapp, this is simply a vertical pipe either outside or inside the manhole chamber that conveys flows from a higher level to a lower level. Capacity is not an issue with these chambers but the backdrop pipework can occasionally get blocked on the bend from horizontal to vertical.

We are unable to object to development if the request is reasonable. However, in this respect we can talk to the planning officers and request special conditions are adhered to enabling Severn Trent to undertake capacity improvements before development is connected to the system. It is really important that if you or anyone else you know in the village experiences further sewerage problems such as sewer flooding, blockages or restricted toilet use, these incidents should be reported using our free phone number 0800 783 4444 where an incident number will be generated on our system.

I trust this information is helpful and I will contact you again regarding progress of a scheme to alleviate these flooding occurrences.

Yours Sincerely,



D J Hadley
Asset Protection (Waste Water) West
Wholesale Network Control and Asset Management



Severn Trent Water

Severn Trent Water Ltd
Regis Road
Tettenhall
Wolverhampton
WV6 8RU

Tel: 01902 793871
Fax: 01902 793971

www.stwater.co.uk
net.dev.west@severntrent.co.uk

Contact: Dave Hadley

Your ref:
Our ref: 2015111320402

Mrs Verlie Eagles
Bwau Maen
Knapp Lane
Alvington
Lydney
Gloucestershire
GL15 6BJ

08 April 2016

Dear Mrs Eagles,

Developments in general at Alvington GL15 6AA

I write to inform you that we have recently carried out extensive maintenance work on 399 metres of our sewerage system from the A48 main road down to our St Annes Well pumping station. This consisted of removing up to 20% of silt and debris from the pipelines and up to 30% of roots from various lengths of sewer line. This combined with the cleaning out of the gully pots by the highways department that you talked to me about, will have created much needed additional capacity in the sewer system.

I would be grateful if you could inform the local residents at Tudor Cottages of this work and ask them to call on our freephone number 0800 783 4444 if any further flooding is experienced or they notice the manhole cover in the road lifting again during heavy rainfall.

I note that that one of the developments in the village did not get planning consent and that an appeal has been lodged. With regard to sewer capacity I would like to confirm that any foul flows from the small scale development envisaged would be extremely small and would not have an adverse hydraulic impact on our network. Surface water is a different matter and the developer has to satisfy planning policy guidelines in relation to sustainable urban development systems (SUDS) and agree all surface water designs with the Lead Local Flood Authority (LLFA) in this case Gloucester City Council.



Severn Trent Water

Infiltration systems would be considered first followed by a connection to a local ditch, watercourse or culverted watercourse. If these methods are proved unsuitable then as a last resort we could consider a very small restricted flow to a sewer in the region of 1 or 2 litres per second. With the work we have done recently there should be enough capacity in the network for a very small increase in load.

As mentioned to you previously the flooding occurrences to date have not been severe enough or frequent enough to warrant any capacity upgrade scheme in the area so we will monitor the situation over the coming years. If the flooding increases and is reported, this will increase the priority on our flooding register list.

I trust this information is helpful.

Yours Sincerely,

A handwritten signature in blue ink, appearing to read 'D.J. Hadley'.

D J Hadley
Asset Protection (Waste Water) West
Wholesale Network Control and Asset Management



04 June 2018

Mrs V Eagles
Bwau Maen
Knapp Lane
Alvington
Lydney
GL15 6BJ

Severn Trent Water
Customer Care
PO Box 407
Darlington
DL1 9WD

Our Reference: X816899

Dear Mrs Eagles

I'd like to start by apologising for the delay in this letter being sent to you.

Thank you for your latest correspondence. I'm really sorry with much regret I'd like to inform you that there is currently no scheme to alleviate flooding in Alvington.

As a Company, our strategic aim is to eliminate flooding of properties from sewers particularly for internal flooding, except as a result of exceptionally high rainfall which exceeds the design standards for our system. As you will appreciate, our investment to resolve flooding issues across our operational area, which includes 97,000km of public sewers has to be prioritised. We prioritise by taking into account whether the flooding is inside our customer's property, the impact on our customers, the frequency and severity of sewer flooding.

We also consider the views of our regulator, OFWAT, and our customers who are represented by the Consumer Council for Water (CCW). This approach means that we direct our resources to areas where there is the greatest impact and thus need. Our approvals board review this programme of work and prioritise this investment continually.

When the problems that you describe do occur, it is vital that Mrs Higgs calls our emergency line on 0800 783 4444 so that we are aware. That gives us the opportunity to understand where the flooding is coming from. When we attend we can also carry out a clean-up. We would also be grateful if she can take digital images of the flooding and where it is coming from at the time of the event. The reason for this is that often during these events we get many calls and do not always arrive in time to see the event, so cannot get a full understanding of it. These images help us to verify the source and mechanism of the flooding. You can send these images to us at WoGloWasteCounty@severntrent.co.uk.



I can only apologise at this time we are not able to resolve your issue but in the meantime it is vital that we receive evidence from yourself and Mrs Higgs. I'm aware that you and Mrs Higgs have Jonathan's contact number should you have any further issues or concerns.

If there is anything else I can help you with please contact me on 0800 032 0142 and I'll be happy to help.

Yours sincerely,

A handwritten signature in black ink, appearing to read "Rumaisa Hussain".

Rumaisa Hussain
Customer Care Team

I've reviewed your case at Stage 1. Details can be found in the enclosed leaflet

SEVERN

TRENT

WATER

Severn Trent Water

Severn Trent Water Ltd

Regis Road
Tettenhall
Wolverhampton
WV6 8RU

Tel: 01902 793871

Fax: 01902 793971

www.stwater.co.uk

net.dev.west@severntrent.co.uk

Contact: Dave Hadley

Your ref:

Our ref: 2015111320402

Mrs Verlie Eagles
Bwau Maen
Knapp Lane
Alvington
Lydney
Gloucestershire
GL15 6BJ

07 June 2016

Dear Mrs Eagles,

Flooding in Clanna Road, Alvington

Thank you for your phone call recently regarding flooding in the highway at Clanna Road.

Firstly I checked our flooding register to see if we have any reported incidents on our database and we don't.

Secondly I checked with my colleague in our maintenance department for the area to see if he had any knowledge or history of any call outs to this road in the past. He could only find one incident in this area and it turned out to be tarmac in the sewer from road resurfacing on the main road back in 2014.

Looking at the sewer records and ordnance survey map base it is evident that there is a culvert or open watercourse/ditch at the side of the road and I would imagine that all surface water from the highway discharges to this watercourse. As I have previously explained to you the highway drains, including the gullies in the road are the responsibility of the Highway Authority who in this case is Gloucestershire County Council. As it happens overland flows discharging onto the highway including any ditches, watercourses or culverts are also the responsibility of Gloucestershire County Council as the Land Drainage Authority for the area.

My advice would be to contact them to check if there are any blocked gullies or whether any additional ones are required to alleviate the highway flooding. It is also worth them checking



Severn Trent Water

the culvert/watercourse condition and adequacy to convey the storm water flows without backing up and flooding.

I hope this information is useful.

Yours Sincerely,

A handwritten signature in blue ink, appearing to read 'D J Hadley'.

D J Hadley
Asset Protection (Waste Water) West
Wholesale Network Control and Asset Management

Alec Davis

From: Alec Davis [alecd@btopenworld.com]
Sent: ~~10 January 2005 16:02~~ 27 August 2017
To: 'Dave HADLEY (Severn Trent)'
Cc: 'Alec Davis'
Subject: Flooding and Sewerage Report - Alvington NDP ~ 27th August 2017

Dave

Your reference: 2015111320402

Several members of the steering group for Alvington NDP including myself, are very concerned about "1 Tudor Cottage, Swan Hill, Alvington, Lydney, GL15 6AA". The resident Mrs May HIGGS has had sewerage in her garden twice this summer, when there was heavy rain, not torrential rain. Previously you told me that if Mrs May HIGGS rang every time she has sewerage in her garden, she would move up the priority list.

1. What exactly is the priority for?
2. Does she stand a chance of ever reaching the top of this priority list, as only one property is effected?

This is a very unacceptable situation as sewerage must have been in this garden at least 4 times in the last 12 months. We believe this is health and safety issue, thus requiring urgent attention to resolve this issue.

Amey have completed the recommendations as stated in their report dated 2nd November 2015. So far so good, it has worked very well.

Your reply and this email will be included in the Flooding and Sewerage report.

If this can happen without extra housing how can you confirm that extra housing will not exacerbate the situation.

Yours sincerely

Verlie EAGLES

Alec Davis

From: Alec Davis [alecd@btinternet.com]
Sent: 03 October 2017 19:53
To: net.dev.west@severntrent.co.uk
Cc: 'Alec Davis'
Subject: RE: Flooding and Sewerage Report - Alvington NDP ~ 3rd October 2017

FAO of Dave HADLEY or to whom it may concern

Hello Dave,

Just a friendly prompt to enquire how is progress regarding our recent request.

Regards,

Alec

From: SevernTrent.Development@severntrent.co.uk [<mailto:SevernTrent.Development@severntrent.co.uk>]
On Behalf Of net.dev.west@severntrent.co.uk
Sent: 27 August 2017 12:39
To: alecd@btopenworld.com
Subject: Re: Flooding and Sewerage Report - Alvington NDP

Thank you for your e-mail to the Asset Protection Team (West).

This is an automatic response to inform you that we have received your e-mail. We will endeavour to respond to your email within 10 working days. For statutory consultations (such as under New Roads and Streetworks Act 1991, Town and Country Planning Act 1990, Building Regulations 2000/2010) we will adhere to the relevant statutory deadlines for response. Please note, if further information is required you may be contacted by e-mail or telephone.

Please do not reply to this email. We thank you again for contacting the Asset Protection Team (West).

*

Severn Trent Plc (registered number 2366619) and Severn Trent Water Limited
(registered number 2366686) (together the "Companies") are both limited
companies
registered in England & Wales with their registered office at Severn Trent
Centre,
2 St John's Street, Coventry, CV1 2LZ

This email (which includes any files attached to it) is not contractually
binding on its

own, is intended solely for the named recipient and may contain CONFIDENTIAL,



To: Mrs Eagles
Bwau Maen
Knapp Lane
Alvington
Lydney
GL15 6BJ

Flood Risk Management Team
Shire Hall
Gloucester
GL1 2TH

email: Peter.Siret@gloucestershire.gov.uk

Please ask for: Peter Siret

Phone: 01452 427493

Date: 02/07/2018

Dear Mrs Eagles,

Risk of Flood from Surface Water

Please find enclosed the maps of the parish I agreed to send. There are two maps showing the risk of Flooding from Surface Water for the whole of Alvington parish and one showing this for the village. I'd like to briefly explain each map and how they are used.

The Risk of Flooding from Surface Water map was produced by the Environment Agency in around 2013 and shows the extents of potential flooding from rainfall. When rainfall cannot infiltrate into the ground it pools on the surface creating surface water runoff. This can then flow downhill and accumulate in low lying areas of land. Several factors can enhance the rate surface water is created. One is land type, whether its clay soil or tarmac; another is if the ground is already saturated with water following a period of rain; one is if the land is sloped; or if the rainfall is so intense it simply can't infiltrate fast enough. Three different sized rainfall events are used and are labelled according to the probability of each happening in any given year, the larger events being less likely to occur. The events mapped are the 1 in 30 year event (or one that has a 3.3% chance of happening in any given year), the 1 in 100 year event (1%) and the 1 in 1000 year event (0.1%). These different rainfall events are simulated over a computer generated topographic layer of the land and records where the surface water accumulates. The model incorporates major structures like buildings or bridges but may miss small features that impact the drainage of land. This makes the maps useful on a national and strategic level but shouldn't be used at too low a level as it misses out many other factors that can contribute to flooding.

In reality, a flood is likely to be a combination of surface water, river and sewer flooding as well as failure of infrastructure, e.g. highway drainage. The map I have provided you is a simplified scenario of a specific type of flood so should be used with care. They are useful in highlighting areas most at risk, rather than saying a particular house or street is going to flood.

If you have any questions about these maps or computer models then please don't hesitate to contact me on the above details.

Yours sincerely

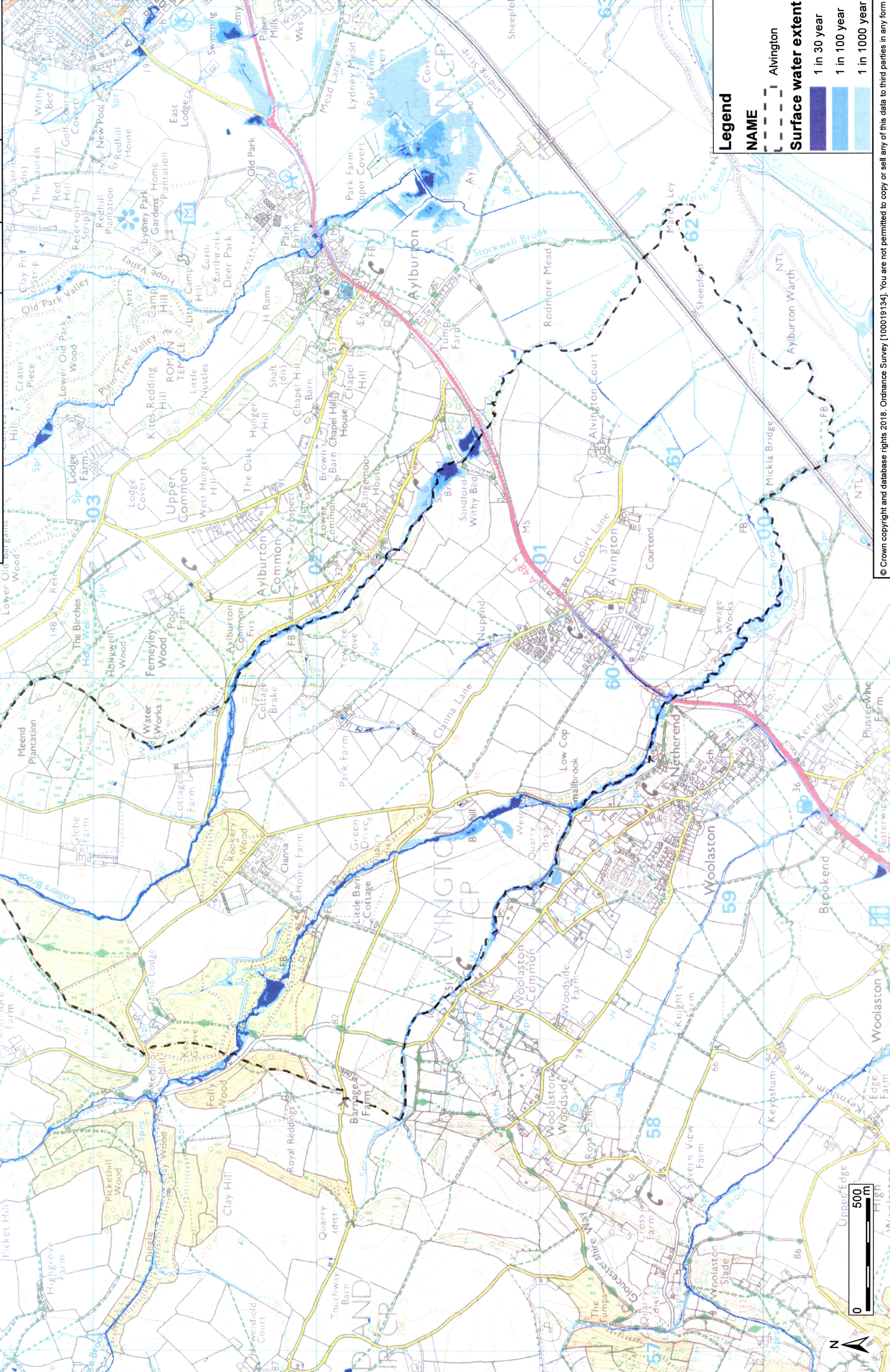
Peter Siret
Flood Risk Management Officer



Risk of Flooding from Surface Water

Scale 1:15,000
Date 28/06/2018

Flood Risk Management,
Shire Hall, Westgate,
Gloucester, GL1 2TH
Tel: (01452) 426740
Fax: (01452) 425674
www.gloucestershire.gov



Legend

NAME
 - - - - - Aylburton
 - - - - - Alvington

Surface water extent

- 1 in 30 year
- 1 in 100 year
- 1 in 1000 year

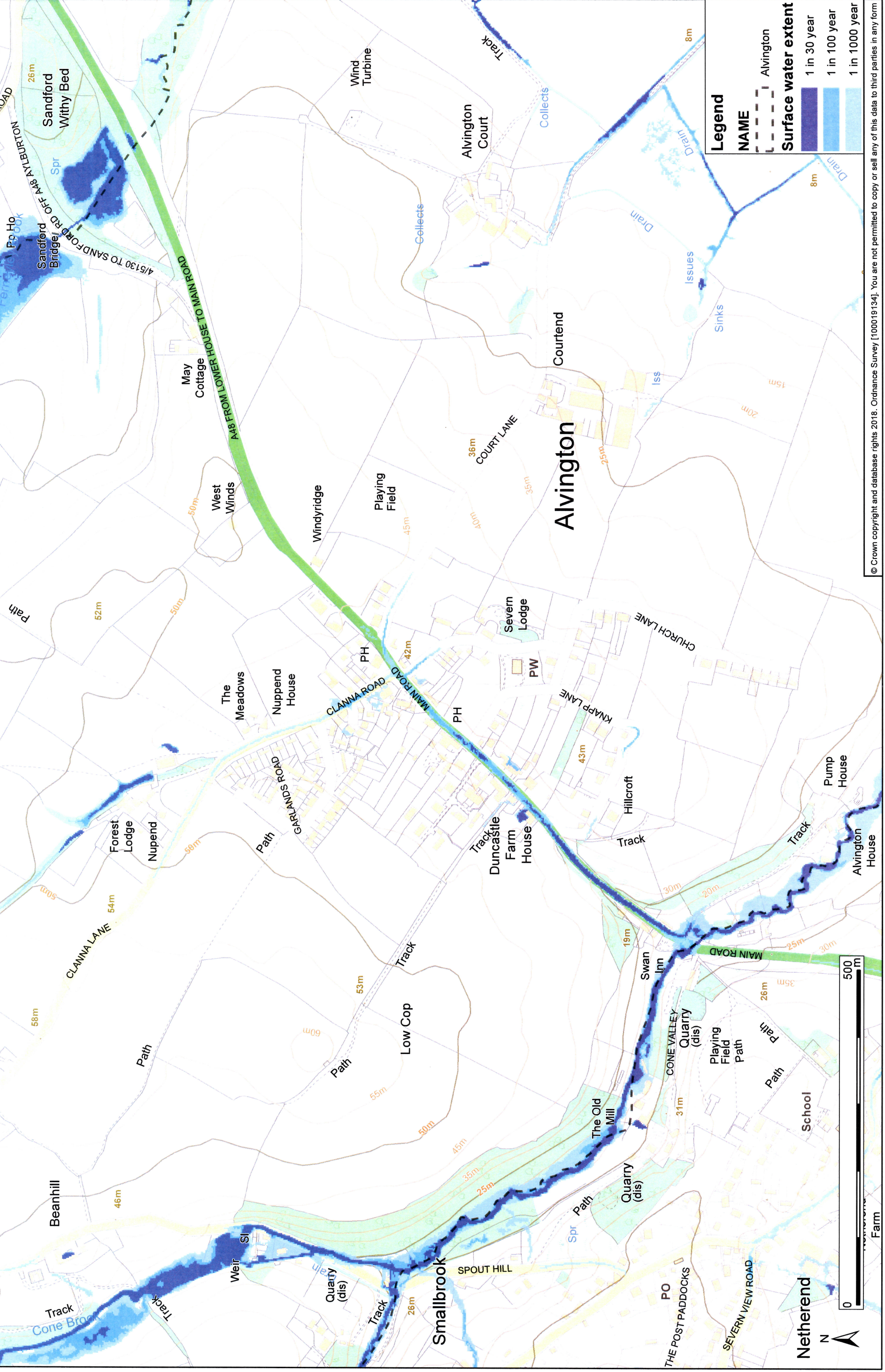
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Risk of Flooding from Surface Water

Gloucestershire
COUNTY COUNCIL

Flood Risk Management,
Shire Hall, Westgate,
Gloucester, GL1 2TH
Tel: (01452) 426740
Fax: (01452) 425674
www.gloucestershire.gov

Scale 1:5,000 Date 28/06/2018



Legend

NAME

- Alvington

Surface water extent

- 1 in 30 year
- 1 in 100 year
- 1 in 1000 year

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SEVERN TRENT WATER Ltd

Asset Data Management
GISmapping Team
PO Box 5344
Coventry
CV3 9FT

Tel 0345 601 6616

Fax 02477 715862

Contact

Our Ref 82818

22 August 2018

Apparatus Location Enquiry

Further to your enquiry re: Parish of alvington

Enclosed is a copy of the plans showing the approximate positions of the **Water mains and sewer mains** situated within the vicinity of the land/property which is the subject of your enquiry.

Asset Data Management can only provide plans of the location of the Company's underground assets. Therefore service pipes and drains are the responsibility of the property owner and should be anticipated during any excavation.

However, we wish to inform you that although most private lateral drains and sewers were transferred to Severn Trent Water's ownership on 1st October 2011, the Company does not possess complete records of these assets and therefore they may not be shown on these maps.

Please also find enclosed a copy of Severn Trent Water's General Conditions and Precautions for your information.

VAT and card payment receipts (where appropriate) are attached herewith together with your enquiry documentation. Please forward VAT receipt to your finance department.

Kind Regards

A handwritten signature in black ink, appearing to be 'G.M.T.', written in a cursive style.

GISmapping Team

Enquiry received
GISmapping:
22 August 2018



SEVERN TRENT WATER Ltd
Asset Data Management
GIS Mapping Team
PO Box 5344
Coventry
CV3 9FT
Tel: 0345 601 6616

Important Communication

Dear Customer

In your recent correspondence with this office you have asked for a copy of information held on Severn Trent Water's underground assets within an identified area.

Please note that the A1 maps provided to you are subject to the following restriction as printed on each map.

Users must not scan or otherwise copy / reproduce the map "Document users other than SEVERN TRENT WATER business users are advised that this document is **provided for reference purpose only and is subject to copyright, therefore, no further copies should be made from it**"

Kind regards,

A handwritten signature in blue ink, appearing to be 'G.M.T.', written in a cursive style.

GIS Mapping Team



SEVERN TRENT WATER

GENERAL CONDITIONS AND PRECAUTIONS TO BE TAKEN WHEN CARRYING OUT WORK ADJACENT TO SEVERN TRENT WATER'S APPARATUS

Please ensure that a copy of these conditions is passed to your representative and/or your Contractor on site. If any damage is caused to STW apparatus, the person, Contractor or Subcontractor responsible must inform STW immediately on:

0800 783 4444 (24 hours)

These general conditions and precautions apply to the public sewerage, water distribution and telemetry systems. The conditions include sewers which are the subject of an Agreement under Section 104 of the Water Industry Act 1991 and mains installed in accordance with the Agreement for the self construction of water mains. Please be aware that due to The Private Sewers Transfer Regulations June 2011, the number of public sewers has increased, but many of these are not shown on the public sewer record. However, some idea of their positions may be obtained from the position of inspection covers and their existence must be anticipated.

On request, STW will issue a copy of the plan showing the approximate locations of STW apparatus although in certain instances a charge will be made. The position of private drains, private sewers and water service pipes to properties are not normally shown but their presence must be anticipated. This plan is furnished as a general guide only and no warranty as to its accuracy is given or implied. The plan must not be relied upon in the event of excavations or other works in the vicinity of STW apparatus. No person or Company shall be relieved from liability for damage caused by reason of the actual position and/or depths of STW apparatus being different from those shown on the plan.

In order to achieve safe working conditions adjacent to any apparatus the following should be observed:

1. All STW apparatus should be located by hand digging prior to the use of mechanical excavators.
2. All information set out in any plans received from us, or given by our staff at the site of the works, about the position and depth of the mains, is approximate. Every possible precaution should be taken to avoid damage to our apparatus. You or your contractor must ensure the safety of our equipment and will be responsible for the cost of repairing any damage caused.
3. Water mains are normally laid at a depth of 900mm. No records are kept of customer service pipes which are normally laid at a depth of 750mm; but some idea of their positions may be obtained from the position of stop tap covers and their existence must be anticipated.
4. During construction work, where heavy plant will cross the line of STW apparatus, specific crossing points must be agreed with the Company and suitably reinforced where required. These crossing points should be clearly marked and crossing of the line of STW apparatus at other locations must be prevented.
5. Where it is proposed to carry out piling or boring within 20 metres of any STW apparatus, STW should be consulted to enable any affected STW apparatus to be surveyed prior to the works commencing.
6. Where excavation of trenches adjacent to any STW apparatus affects its support, the STW apparatus must be supported to the satisfaction of STW. Water mains and some sewers are pressurised and can fail if excavation removes support to thrust blocks to bends and other fittings.
7. Where a trench is excavated crossing or parallel to the line of any STW apparatus, the backfill should be adequately compacted to prevent any settlement which could subsequently cause

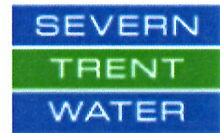
damage to the STW apparatus. In special cases, it may be necessary to provide permanent support to STW apparatus which has been exposed over a length of the excavation before backfilling and reinstatement is carried out. There should be no concrete backfill in contact with the STW apparatus.

8. No apparatus should be laid along the line of STW apparatus irrespective of clearance. Above ground apparatus must not be located within a minimum of 3 metres either side of the centre line of STW apparatus for smaller sized pipes and 6 metres either side for larger sized pipes without prior approval. No manhole or chamber shall be built over or around any STW apparatus.
9. A minimum radial clearance of 300 millimetres should be allowed between any plant being installed and existing STW apparatus. - We reserve the right to increase this distance where strategic assets are affected.
10. Where any STW apparatus coated with a special wrapping is damaged, even to a minor extent, STW must be notified and the trench left open until the damage has been inspected and the necessary repairs have been carried out. In the case of any material damage to any STW apparatus causing leakage, weakening of the mechanical strength of the pipe or corrosion-protection damage, the necessary remedial work will be recharged.
11. It may be necessary to adjust the finished level of any surface boxes which may fall within your proposed construction. Please ensure that these are not damaged, buried or otherwise rendered inaccessible as a result of the works and that all stop taps, valves, hydrants, etc. remain accessible and operable. Minor reduction in existing levels may result in conflict with apparatus such as valve spindles or tops of hydrants housed under the surface boxes. Checks should be made during site investigations to ascertain the level of such apparatus in order to determine any necessary alterations in advance of the works.
12. With regard to any proposed resurfacing works, you are required to contact STW on the number given above to arrange a site inspection to establish the condition of any STW apparatus in the nature of surface boxes or manhole covers and frames affected by the works. STW will then advise on any measures to be taken, in the event of this a proportionate charge will be made.
13. You are advised that Severn Trent Water Limited will not agree to either the erection of posts, directly over or within 1.0 metre of valves and hydrants,
14. No explosives are to be used in the vicinity of any STW apparatus without prior consultation with STW.

TREE PLANTING RESTRICTIONS

There are many problems with the location of trees adjacent to sewers, water mains and other STW apparatus and these can lead to the loss of trees and hence amenity to the area which many people may have become used to. It is best if the problem is not created in the first place. Set out below are the recommendations for tree planting in close proximity to public sewers, water mains and other STW apparatus.

15. Please ensure that, in relation to STW apparatus, the mature root systems and canopies of any tree planted do not and will not encroach within the recommended distances specified in the notes below.
16. Both Poplar and Willow trees have extensive root systems and should not be planted within 12 metres of a sewer, water main or other STW apparatus.
17. The following trees and those of similar size, be they deciduous or evergreen, should not be planted within 6 metres of a sewer, water main or other STW apparatus. E.g. Ash, Beech, Birch, most Conifers, Elm, Horse Chestnut, Lime, Oak, Sycamore, Apple and Pear.



18. STW personnel require a clear path to conduct surveys etc. No shrubs or bushes should be planted within 2 metre of the centre line of a sewer, water main or other STW apparatus.
19. In certain circumstances, both the Company and landowners may wish to plant shrubs/bushes in close proximity to a sewer, water main of other STW apparatus for screening purposes. The following are shallow rooting and are suitable for this purpose: Blackthorn, Broom, Cotoneaster, Elder, Hazel, Laurel, Privet, Quickthorn, Snowberry, and most ornamental flowering shrubs.

PAYMENT REQUEST – TILE COMPILATION SHEET

ORGANISATION NAME: Alvington Parish Council

Site Location: Parish of Alvington

DATE: 13/07/2018

COMPILED BY: LD

JOB ID: 13464

TILE NUMBERS

Y = YES there are STW assets on this OS tile within the boundary marked on your plan.

N = NO, no record of STW assets on this OS tile within the boundary marked on your plan. Tiles without assets **will not** be sent.

Tile No. / X & Y	W	S	COST	SITE No.	MAP SIZE	SEWER TABS
SO5803SE	N	N		RODMORE GROVE		
SO5903NW	N	N		HOME WOOD		
SO5903NE	N	N		ALBURTON LODGE		
SO5903SW	Y	N	£5	GLEBE FARM	A1	N
SO5903SE	N	N		MEEND PLATATION		
SO6003SW	N	N		UPPER COMMON		
SO5802NW	Y	N	£5	RODMORE MILL	A1	N
SO5802NE	N	N		CLANNA LODGE		
SO5802SW	Y	N	£5	ROYAL REDDINGS	A1	N
SO5802SE	Y	N	£5	CLANNA PONDS HOME FARM	A1	N
SO5902NW	Y	N	£5	FIELD NW OF PARK FARM	A1	N
SO5902NE	Y	N	£5	COTTAGE FARM	A1	N
SO5902SW	Y	N	£5	CLANNA COUNTRY PARK	A1	N
SO5902SE	Y	N	£5	COTTAGE BRAKE FERNLEY COTTAGE	A1	N
SO6002SW	Y	N	£5	ALBURTON COMMON	A1	N

CONTINUED OVER **Y** / N

Page 1 TOTAL= £45

TOTAL No. WATER

9

TOTAL No. SEWER

0

TILE NUMBERS

Y = YES there are STW assets on this OS tile within the boundary marked on your plan.

N= NO, no record of STW assets on this OS tile within the boundary marked on your plan. Tiles without assets **will not** be sent.

Tile No. / X & Y	W	S	COST	SITE No.	MAP SIZE	SEWER TABS
SO5801NW	Y	N	£5	BARNAGE FARM	A1	N
SO5801NE	Y	N	£5	LITTLE BARN COTTAGE	A1	N
SO5801SE	Y	N	£5	WOOLASTON COMMON	A1	N
SO5901NW	N	N		CLANNA STRAIGHT		
✓ SO5901NE	Y	N	£5	PARK FARM	A1	N
SO5901SW	Y	N	£5	BEAN HILL	A1	N
SO5901SE	N	N		CLANNA LANE		
SO6001NW	Y	N	£5	YEW TREE GROVE	A1	N
SO6001NE	Y	N	£5	LOWER COMMON	A1	N
✓ SO6001SW	Y	Y	£30	NUPEND TOP OF GARLANDS ROAD	A1	Y
SO6001SE	N	N		WITHY BED SANDFORD HILL		
SO6101SW	N	N		ALBURTON SANDFORD BRIDGE		
SO6101SE	N	N		ALBURTON TRUMP FARM		
SO5900NW	Y	N	£5	SMALL BROOK	A1	N
✓ SO5900NE	Y	Y	£10	SWAN HILL FIELD	A1	Y
SO5900SE	Y	Y	£10	SWAN HILL LANE BY MAYS HOUSE	A1	Y
✓ SO6000NW	Y	Y	£10	GARLANDS RD COURT LANE CLANNA RD KNAPP LANE	A1	Y
SO6000NE	N	N		PLAYING FIELD COURT LANE		
SO6000SW	Y	Y	£10	SEWAGE WORKS	A1	Y
SO6000SE	N	Y	£5	MICKLA BRIDGE CONE BROOK	A1	N
CONTINUED OVER Y / N						
TOTAL No. WATER		13(22)		Page 2 TOTAL= £115		
TOTAL No. SEWER		6				

TILE NUMBERS

Y = YES there are STW assets on this OS tile within the boundary marked on your plan.

N = NO, no record of STW assets on this OS tile within the boundary marked on your plan. Tiles without assets will not be sent.

Tile No. / X & Y	W	S	COST	SITE No.	MAP SIZE	SEWER TABS
SO6100NW	N	N		COURT FARM		
SO6100NE	N	Y	£5	RODMORE MEAD	A1	N
SO6100SW	N	Y	£5	FIELDS BY RAILWAY LINE	A1	N
SO6100SE	N	Y	£5	FIELD SOUTH OF RAILWAY LINE	A1	N
SO6200SW	N	N		MACOS LBY SOUTH OF RAILWAY LINE		
ST6099NW	N	Y	£5	FISHING LAKES BELOW SEWAGE WORKS	A1	N
ST6099NE	N	Y	£5	MICKLA BRIDGE	A1	N
ST6199NW	N	N		FIELDS SOUTH OF MICKLA BRIDGE		
CONTINUED OVER Y / N				Page 3 TOTAL= £20		
TOTAL No. WATER		0(22)		Total cost= £180 TOTAL COST including 20% VAT =£216		
TOTAL No. SEWER		5(11)				

1. Flooding Occurrences in 2016

The suggestion of an attenuation pond or an infiltration basin by the applicant is very problematical and is unlikely to solve the current surface water flooding from surrounding fields, let alone the extra water from concreting over 60% of land on a new development.

Contrary to the applicants assessment there is a highly increased risk of flooding due to the proposed new buildings. In the winter, gardens downstream are badly affected by flooding frequently.

Any increase in flooding from buildings situated higher up would render gardens downstream unusable in anything but the most prolonged dry spell.

The report written by R.J. Fillington Associates dated January 2016 is based on statistics not in the real world living next to the site. A 100 year event occurrence could occur three times in several weeks as earlier this year experienced in Cumbria. So the data presented is very suspect and theoretical. Not substantiated.

Road flooding Clanna Lane, Clanna Road and on the proposed development land.

(Note: ONLY 2016 flooding occurrences dates listed below)

Day	Date	Time of Day	Duration
Tues/Wed	26 th & 27 th Jan	Continuous	24 hours
Friday/Saturday	29 th & 30 th Jan	Continuous	9 hours
Saturday	6 th February	Morning	5 hours
Saturday	6 th February	Evening	5 hours
Sunday	7 th February	Evening	4 hours
Wednesday	9 th March	Overnight until 10 am	4 hours+
Wednesday	11 th May	Evening	2 hours
Wed to Sunday	11 th to 15 th May	Evening until Afternoon	5 days **
Friday	10 th June	Evening	2 hours

** It was noted that one (1) of the four (4) trenches excavated during the Archaeological dig on the 3rd and 4th May 2016, was flooded to a depth of approx 1 metre for five days from 11th May due to the high water table in the field. The trenches reinstated) on 20th June 2016.

The Lead Local Flood Authority (LLFA) objects to the development.

2017 Flooding occurrences not recorded until the latter part of the year.

Day	Date
Tuesday	26 th December 2017
Wednesday	27 th December
Friday	29 th December

2018 Flooding occurrences – upto 14th May 2018

Day	Date
Monday	1 st January 2018
Sunday	15 th January
Friday	9 th March
Saturday	10 th March
Thursday	29 th March
Friday	30 th March
Sunday	1 st April
Monday	2 nd April
Tuesday	3 rd April



0582: A48 Swan Hill Alvington

Drainage Report:

Drainage Proposals to prevent Greenfield Runoff
flooding Clanna Road

Amey Gloucestershire

Swan Hill

Alvington, Lydney GL15 6AA

Grid Reference 360245, 200978

Special Inspection Report

Date – 25th February 2016


JOB NUMBER: COGL43014378			DOCUMENT REF: P:\STRUCTURES DRAINAGE GEOTECH\Drainage\Scheme Files 2015~2016\0582 - A48 Swan Hill Alvington\2.0 Design - Calcs & Options		
0	Draft First Issue	P Coombs	E Mellou	C Swain	25/02/16
		Originated	Checked	Authorised	Date
Revision	Purpose Description				

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1. Foreword

Clanna Road has suffered flooding as outlined in the figure 1 and 2 below:



Figure 1. Flooding on Clanna Road looking NW

Figure 2. Flooding on Clanna Road looking SE

Flood water running off fields has been reported as quickly blocking the culverts and drains along Clanna Road with the mud, soil runoff and debris from neighbouring fields.

The upslope field areas have two entry points to Clanna Road as indicated in figure 3 below:

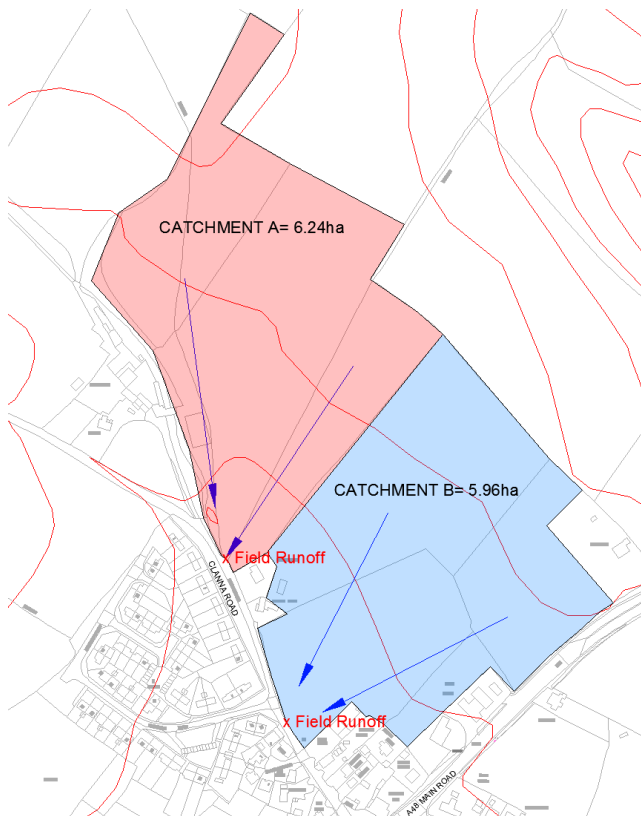


Figure 3. Indicative field runoff routes

Proposals to control the Water flowing off the two areas will also need to consider the transfer of soil and debris from neighbouring fields.

Data has been collected from the Amey LVF (Map Server) and historical CCTV information is available from previous studies for this location. It should be noted a full CCTV survey to the outfall is not available so assumptions have been made in this regard.

Catchment Areas:

The catchment has been split into Area A and Area B which consists of multiple fields as indicated in figure 4 below.

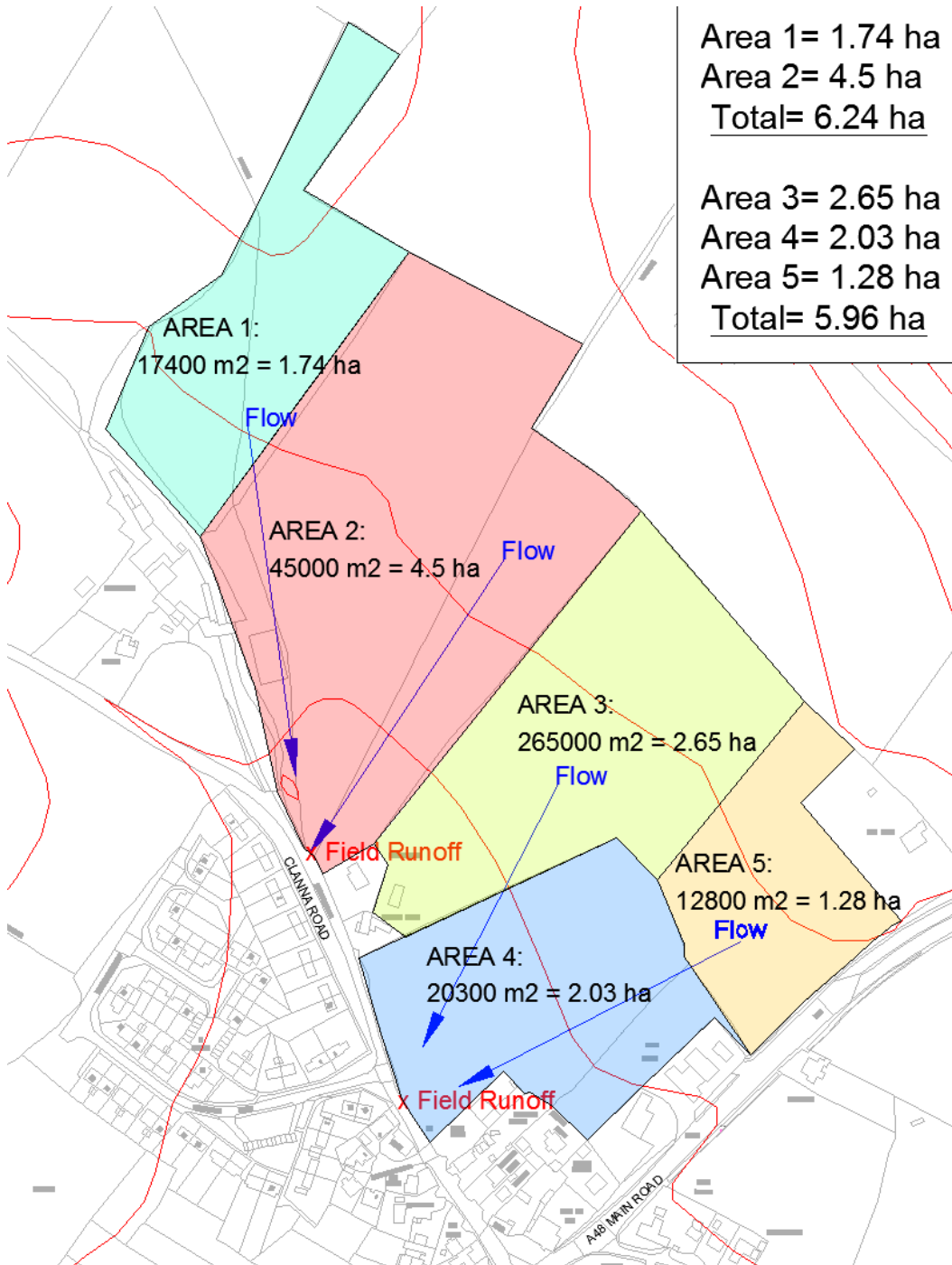


Figure 4. Field boundaries

Topographical Information:

There is limited information available in relation to the land type/use at this time so further investigations will be required. The area generally drains from surrounding areas in towards Clanna Lane (shown in red below on figure 5) and then on towards the A48 (shown in blue).

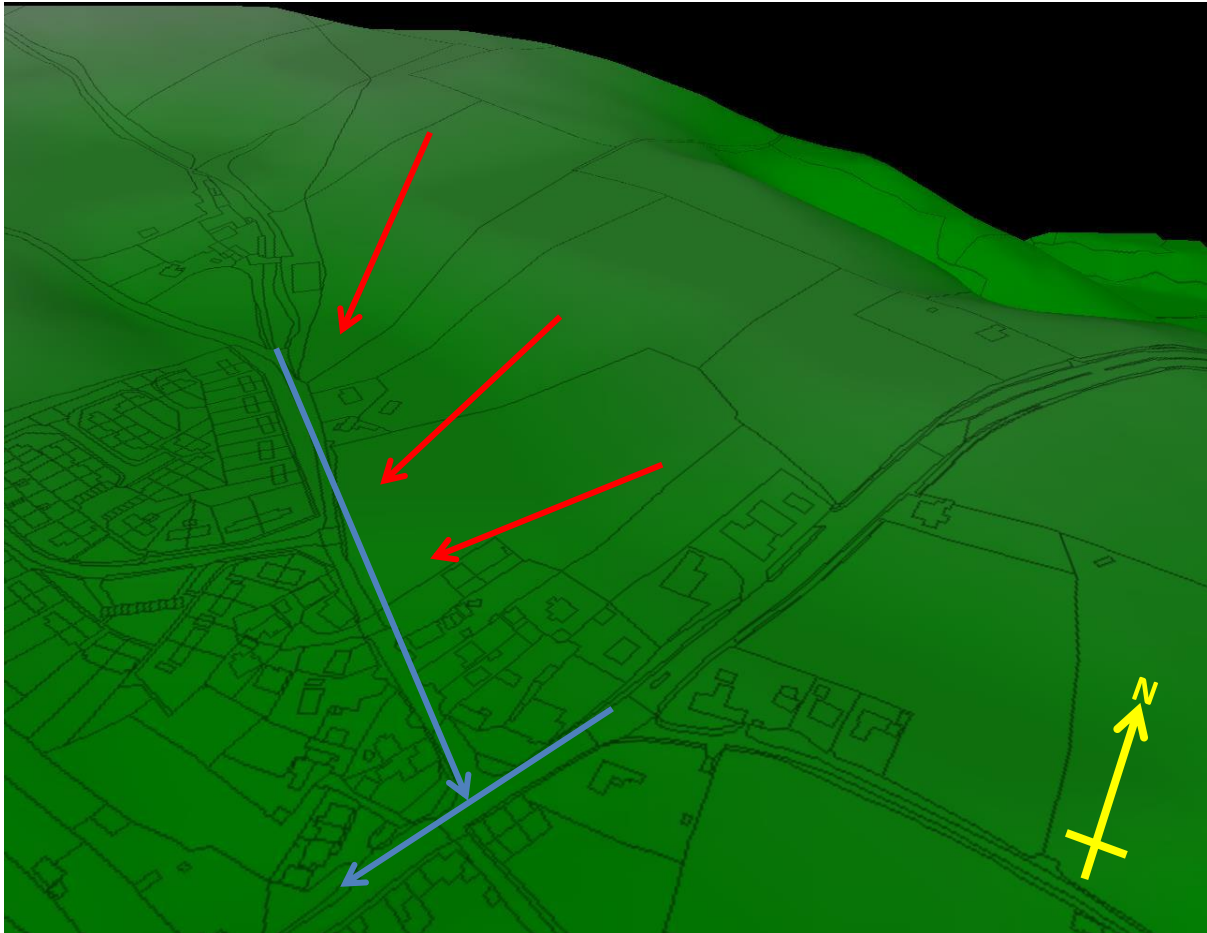


Figure 5. Flood water flow paths

2. Drainage Scheme

2.1. Flood Prevention Options

1. Upsize the existing Drainage System in order to deal with the Flows that have runoff from the fields.

The Outfall, Cone Brook, is approximately 850m away and this route would involve heavy disruption to the A48. By upsizing the existing pipe network, any pollutants and debris running-off the fields are likely to be deposited downstream, reducing the capacity of the storm drainage and increasing the maintenance requirements on the system.

There will also be an increased flood risk to downstream areas if the flow discharge was not controlled, further investigation would need to be undertaken to determine the impact.

In order to provide capacity for the field drainage the existing Pipe Network (300mm Diameter) would need to be upsized to approximately 750mm Diameter, pending further investigation, in order to provide Flood Protection for a 30 Year Storm Return.

Access to the existing Network appears to run to the rear of properties as well as along the main road which makes access more difficult than if it were located along the main road.

Figure 6 below shows the line of the existing Network which would require upsizing. There is also CCTV information to illustrate the route of the existing drainage in a separate document: [0582-P1-P1 Subtek CCTV.pdf](#)

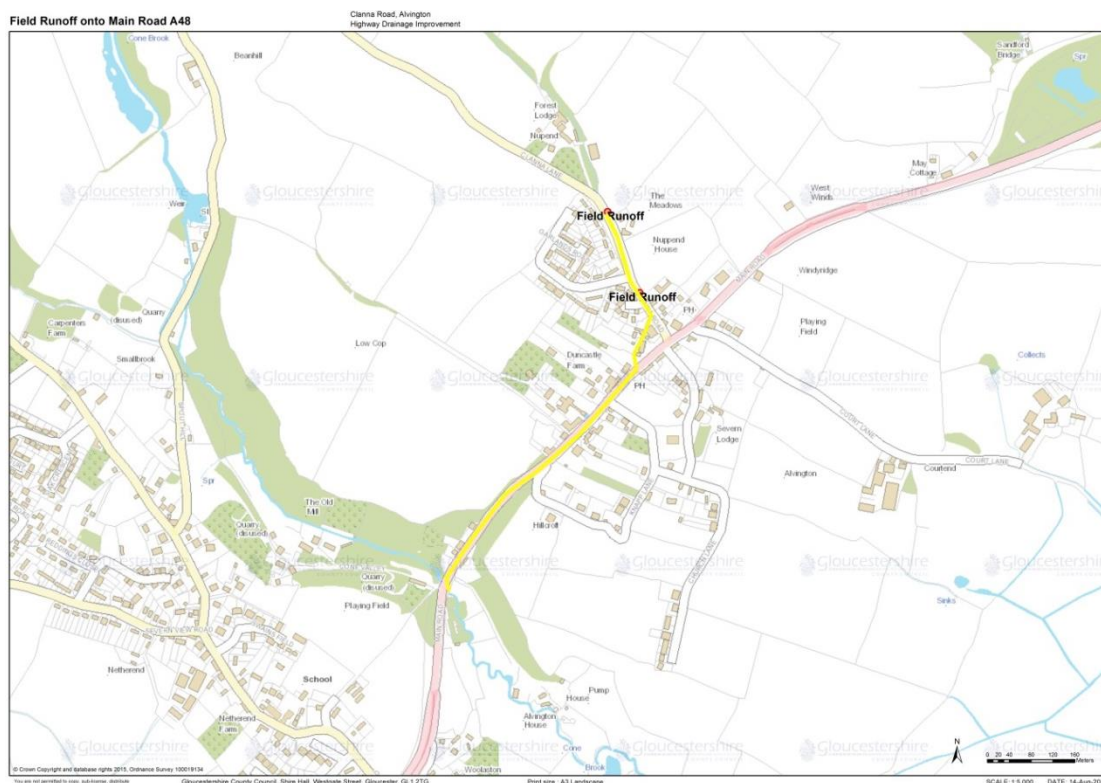


Figure 6. Approximate line of existing pipe network

2. **Control Flows at Source:** A more sustainable approach would be to consider controlling the flows at source and storing rainfall locally in the fields before discharging into the highway network.

This option will also allow pollutant treatments to take place to reduce the volume of mud, soil runoff and debris from neighbouring fields from entering the highway network which would then reduce maintenance requirements.

Flows could be collected at the low lying areas using Trenches or Swales that are vegetated and laid fairly flat in order to reduce flow velocity and help settlement of pollutants reducing the impact on the downstream system.

Flows could then collect in a storage pond with a flow control device to limit the discharge from the area.

Figure 7 below shows the potential location of detention basins and a cross section which has been produced to minimise the soil removal. Soil that has been excavated can be built up in Engineering fill layers to provide storage. Water that is stored will build-up and spill over the crest into a downstream storage area

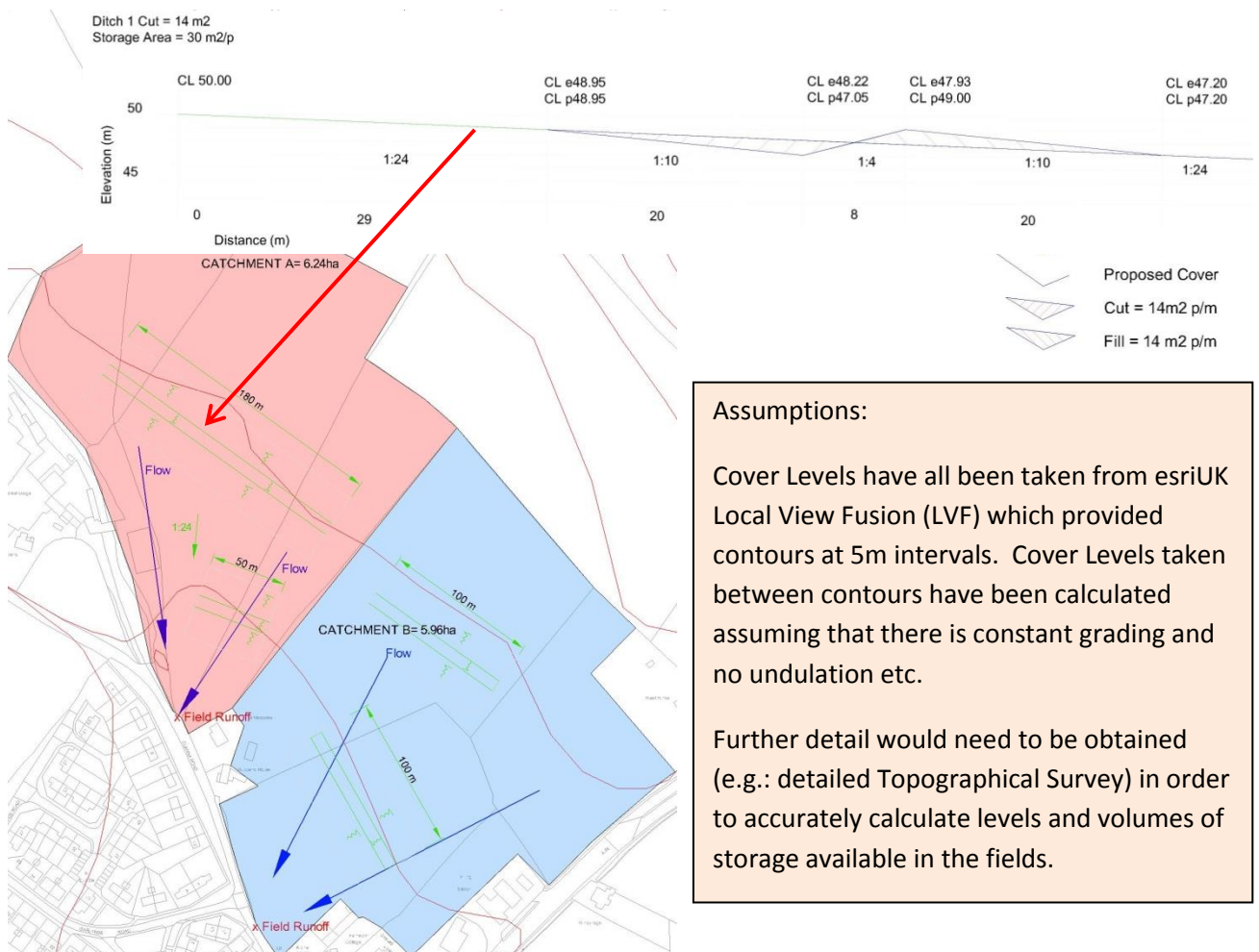


Figure 7. Potential location of detention basins

3. **Below Ground Storage:** If space is not available for Surface Storage then Below Ground Storage could be considered with restricted discharge into the existing Highway Network in order to limit the impact of runoff.

It would be unlikely that entry to underground storage could be added in the middle of a field and therefore the runoff from the fields would need to be collected before discharging onto the highway and then get released at Greenfield rates.

Should below-ground storage be considered, the ability for farm vehicles etc. would need to be considered as well as any planned future land-use and further guidance and approvals would need to be sought before underground storage was considered e.g. cellular storage.

Another way of Storing Flows below ground would be to use oversized pipes or box culverts and a similar way of catching flows using trenches should be considered prior to storage to prevent clogging-up of any below ground storage structure. Potential locations are shown in figure 8 below.

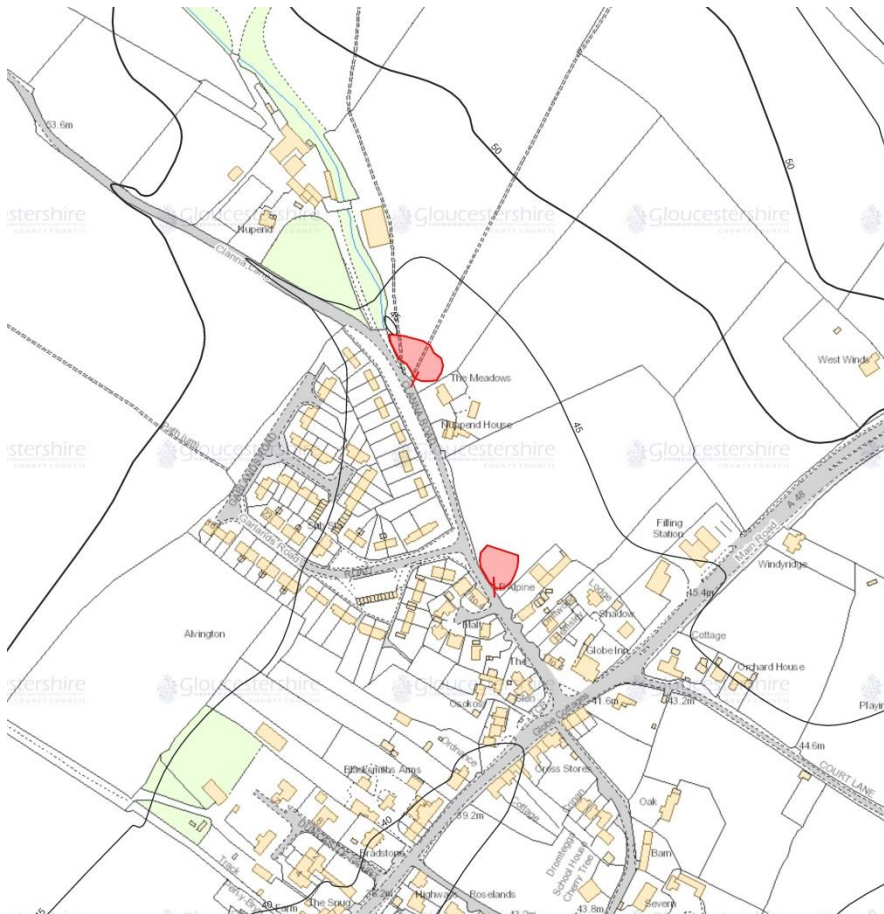


Figure 8. Potential locations for underground storage options

4. Bypass Channel or Pipe across third party land

Divert flows away from Clanna Road and along Garlands Road. Take a large pipe (approximately 750mm diameter) across the frontage of properties along Garland Road into open fields and then parallel to the A48 Main Road using a shallow ditch.

After the pipe passes the track behind 'Wollaston & Alvington & Aylburton Church' (along the A48), the Pipe depth could be reduced while the direction is taken towards the A48.

Once the pipe is located in clear open land and away from properties the flows could then be conveyed in either an open Ditch or continue in a shallow pipe which will Outfall to the Cone Brook. Figure 9 below shows a possible route.

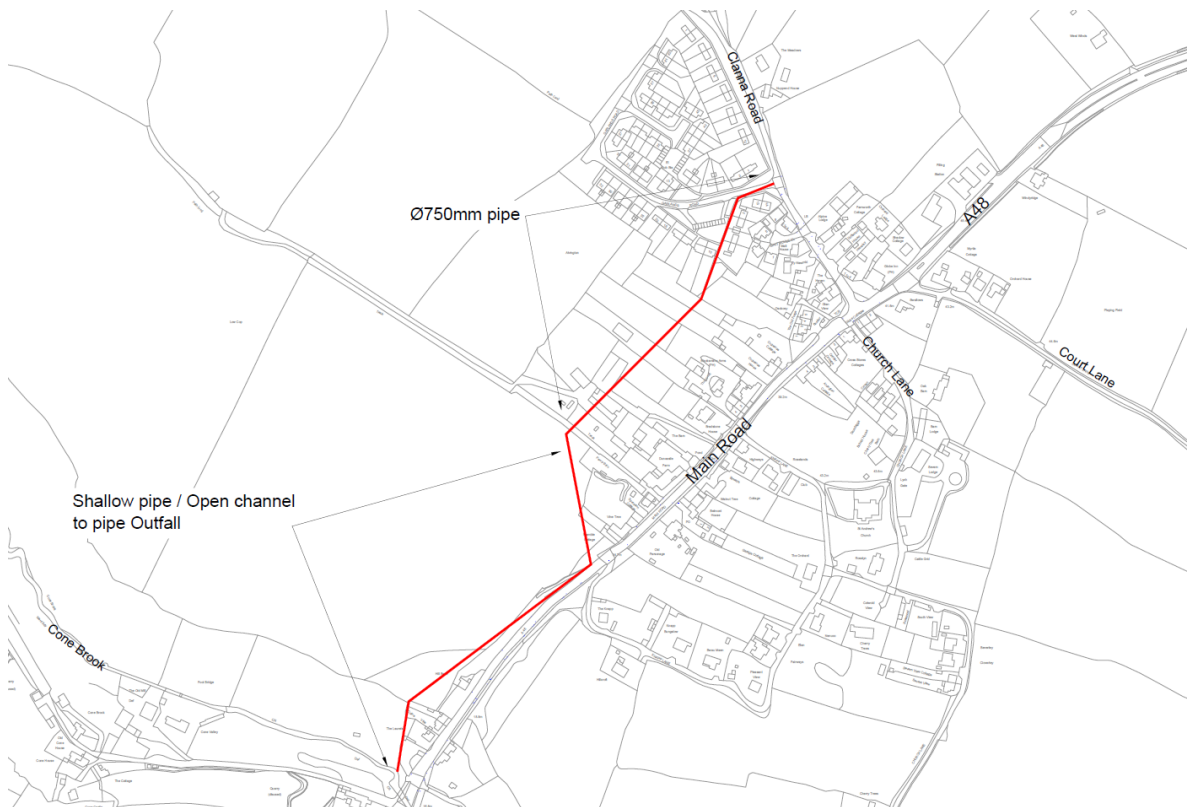


Figure 9. Possible route of new pipeline

3. Hydraulic Modelling

3.1. Hydraulic Modelling and Simulations

The hydraulic modelling was undertaken using MicroDrainage 2014 software. The hydraulic modelling can be broken down into two stages. Existing Network modelling and Proposed Network modelling.

3.1.1. Existing Network Models

Information required to build the existing hydraulic model was largely based on manhole survey data under Clanna Road. Further information was derived from the topographical survey and OS mapping. In order to build a hydraulic model, the following key information was required.

- Pipe diameters
- Chamber Diameters
- Chamber Locations
- Chamber Depths
- Chamber cover levels
- Pipe Upstream and Downstream depths
- Drainage Areas and surface type

The aforementioned information required assumptions to be made in order to create models and run the simulations. A list of these assumptions has been provided in Appendix B. Following completion of the model build exercise, a simulation was run with the following criteria for each network:

- Return Period: 1 year, 30 year & 100 year +30% Climate Change
- M5-60 (depth of rainfall from a 60 minute storm with a return period of 5 years): 19.700mm
- Ratio R (M5-60 value divided by the M5-2 value): 0.343

When specified (and assumed) the Areas contributing to the Existing Drainage Network has a Percentage Impervious (PIMP / Percentage Runoff) of 100% which will lead to an over-estimation of Flows, however contribution from lateral connections and any upstream network has been ignored which would likely increase the flows in the section of the Network being reviewed.

Greenfield Areas have been input into MicroDrainage as Unit Hydrograph(s) using the Flood Studies Report (FSR) Method which matches the Simulation Rainfall used to test the network.

The models were run for a variety of storm durations ranging from 15 minutes to 1440 minutes. The critical storm was identified by that which gave the largest peak flow in the outfall pipe.

3.1.2. Proposed Network Models

The proposed hydraulic models were built to determine the flow control and online storage requirements to prevent flooding in Clanna Road by adding Storage in the fields in the form of open trenches.

For the purpose of the 1D Design Simulation, the trenches were connected with 150mm Diameter Pipes with an Orifice in order to restrict the flows and encourage the Storage to be used in the Trenches whereas in reality, the Trenches will not be connected by 150mm Pipe.

3.1.3. Rural Runoff Results

From the Greenfields, the following peak discharge rates have been identified using the Source Control Module in MicroDrainage.

Larger Northern Area (Area A):

The Volume of water discharged from the larger area for a 100 Year Return, 6hour duration Storm has been calculated at 1348m³

IH 124	Greenfield Volume					
ICP SUDS	Greenfield Runoff Volume Input					
ADAS 345	Rainfall Model	FSR Rainfall	Return Period (years)	100	Results	
FEH			Storm Duration (mins)	360	PR%	33.51
Greenfield Volume	Region	England and Wales	Area (ha)	6.240	Greenfield Runoff Volume (m ³)	1347.420
	Map	M5-60 (mm)	19.500	SAAR (mm)	911	
		Ratio R	0.350	CWI	122.161	
				Urban	0.000	
	Areal Reduction Factor	1.00	SPR	30.000		

The peak rate of discharge is summarised below:

IH 124	ICP SUDS					
ICP SUDS	ICP SUDS Input (FSR Method)					
ADAS 345	Return Period (Years)	5	Partly Urbanised Catchment (QBAR)			Results
FEH	Area (ha)	6.240	Urban	0.000	QBAR rural (l/s)	15.9
Greenfield Volume	SAAR (mm)	934	Region	Region 9	QBAR urban (l/s)	15.9
	Soil	0.300				
	Growth Curve	(None)	Calculate			
	Return Period Flood					
	Region	QBAR (l/s)	Q (5yrs) (l/s)	Q (1 yrs) (l/s)	Q (30 yrs) (l/s)	Q (100 yrs) (l/s)
	Region 9	15.9	19.3	14.0	28.1	34.7

Area A: The discharge Volume and Rates are summarised below for different returns:

Return Period (Year)	1	5	30	100
Volume (m ³)	416	621	980	1348
Discharge Rate (l/s)	14	19.3	28.1	34.7

Smaller Southern Area (Area B):

The Volume of water discharged from the smaller area for a 100 Year Return, 6hour duration Storm has been calculated at 1287m³

Greenfield Volume																											
IH 124	<table border="1"> <thead> <tr> <th colspan="2">Greenfield Runoff Volume Input</th> </tr> </thead> <tbody> <tr> <td>Rainfall Model</td> <td>FSR Rainfall</td> </tr> <tr> <td>Return Period (years)</td> <td>100</td> </tr> <tr> <td>Storm Duration (mins)</td> <td>360</td> </tr> <tr> <td>Region</td> <td>England and Wales</td> </tr> <tr> <td>Area (ha)</td> <td>5.960</td> </tr> <tr> <td>M5-60 (mm)</td> <td>19.500</td> </tr> <tr> <td>SAAR (mm)</td> <td>911</td> </tr> <tr> <td>Ratio R</td> <td>0.350</td> </tr> <tr> <td>CWI</td> <td>122.161</td> </tr> <tr> <td>Urban</td> <td>0.000</td> </tr> <tr> <td>Areal Reduction Factor</td> <td>1.00</td> </tr> <tr> <td>SPR</td> <td>30.000</td> </tr> </tbody> </table>	Greenfield Runoff Volume Input		Rainfall Model	FSR Rainfall	Return Period (years)	100	Storm Duration (mins)	360	Region	England and Wales	Area (ha)	5.960	M5-60 (mm)	19.500	SAAR (mm)	911	Ratio R	0.350	CWI	122.161	Urban	0.000	Areal Reduction Factor	1.00	SPR	30.000
Greenfield Runoff Volume Input																											
Rainfall Model		FSR Rainfall																									
Return Period (years)		100																									
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Ratio R	0.350																										
CWI	122.161																										
Urban	0.000																										
Areal Reduction Factor	1.00																										
SPR	30.000																										
ICP SUDS																											
ADAS 345																											
FEH																											
Greenfield Volume																											

Results	
PR%	33.51
Greenfield Runoff Volume (m ³)	1286.959

The peak rate of discharge is summarised below:

ICP SUDS																			
IH 124	<table border="1"> <thead> <tr> <th colspan="2">ICP SUDS Input (FSR Method)</th> </tr> </thead> <tbody> <tr> <td>Return Period (Years)</td> <td>5</td> </tr> <tr> <td>Area (ha)</td> <td>5.960</td> </tr> <tr> <td>SAAR (mm)</td> <td>934</td> </tr> <tr> <td>Soil</td> <td>0.300</td> </tr> <tr> <td>Growth Curve</td> <td>(None)</td> </tr> </tbody> </table> <table border="1" style="margin-left: 200px;"> <thead> <tr> <th colspan="2">Partly Urbanised Catchment (QBAR)</th> </tr> </thead> <tbody> <tr> <td>Urban</td> <td>0.000</td> </tr> <tr> <td>Region</td> <td>Region 9</td> </tr> </tbody> </table>	ICP SUDS Input (FSR Method)		Return Period (Years)	5	Area (ha)	5.960	SAAR (mm)	934	Soil	0.300	Growth Curve	(None)	Partly Urbanised Catchment (QBAR)		Urban	0.000	Region	Region 9
ICP SUDS Input (FSR Method)																			
Return Period (Years)		5																	
Area (ha)		5.960																	
SAAR (mm)		934																	
Soil	0.300																		
Growth Curve	(None)																		
Partly Urbanised Catchment (QBAR)																			
Urban	0.000																		
Region	Region 9																		
ICP SUDS																			
ADAS 345																			
FEH																			
Greenfield Volume																			

Return Period Flood					
Region	QBAR (l/s)	Q (5yrs) (l/s)	Q (1 yrs) (l/s)	Q (30 yrs) (l/s)	Q (100 yrs) (l/s)
Region 9	15.2	18.4	13.4	26.8	33.2

Area B: The discharge Volume and Rates are summarised below for different returns:

Return Period (Year)	1	5	30	100
Volume (m ³)	398	593	936	1,287
Discharge Rate (l/s)	13.4	18.4	26.8	33.2

4. Project Recommendations

4.1. Design Solutions

It is recommended that Field runoff is controlled at source within the fields rather than upsizing the Pipe Network under the Highway in order to prevent Flooding in Clanna Road and also to reduce the mud, soil runoff and debris from neighbouring fields from entering the Existing Network.

The Existing Highway Drainage Network has been created from limited detail, therefore following additional Site Investigations, if the highway scheme layout is modified, the drainage solution will need to be rechecked and amended where necessary.

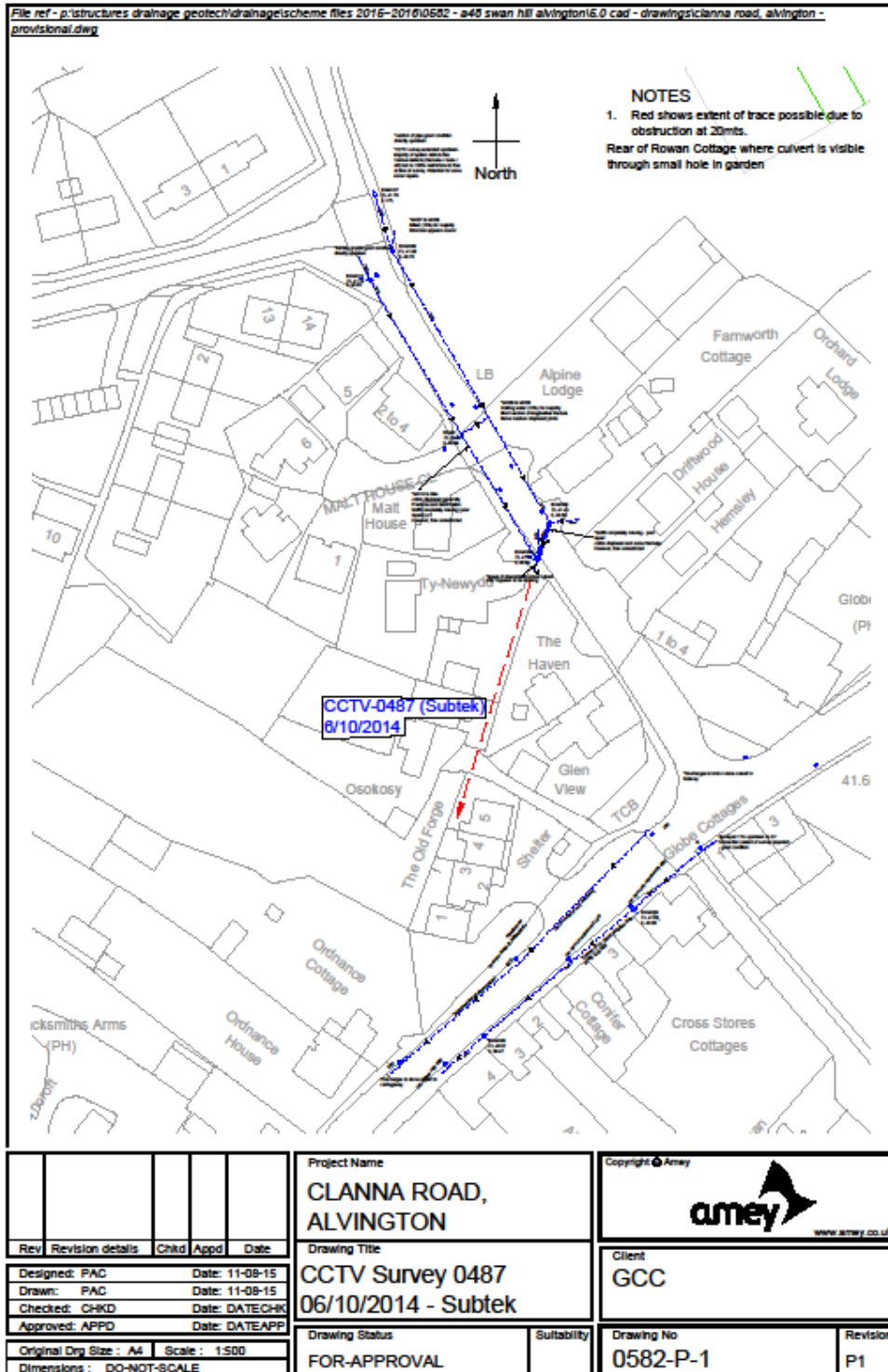
4.2. Maintenance

The maintenance for the Highway Network will not significantly increase due to the nature of the Proposed system. Following completion of the works, maintenance of the Field Drainage would lie with the landowner(s) in order to check the capacity of any Flow Controls that are used to limit the discharge are cleared to allow optimum performance during rainfall events.

A. Drawings:

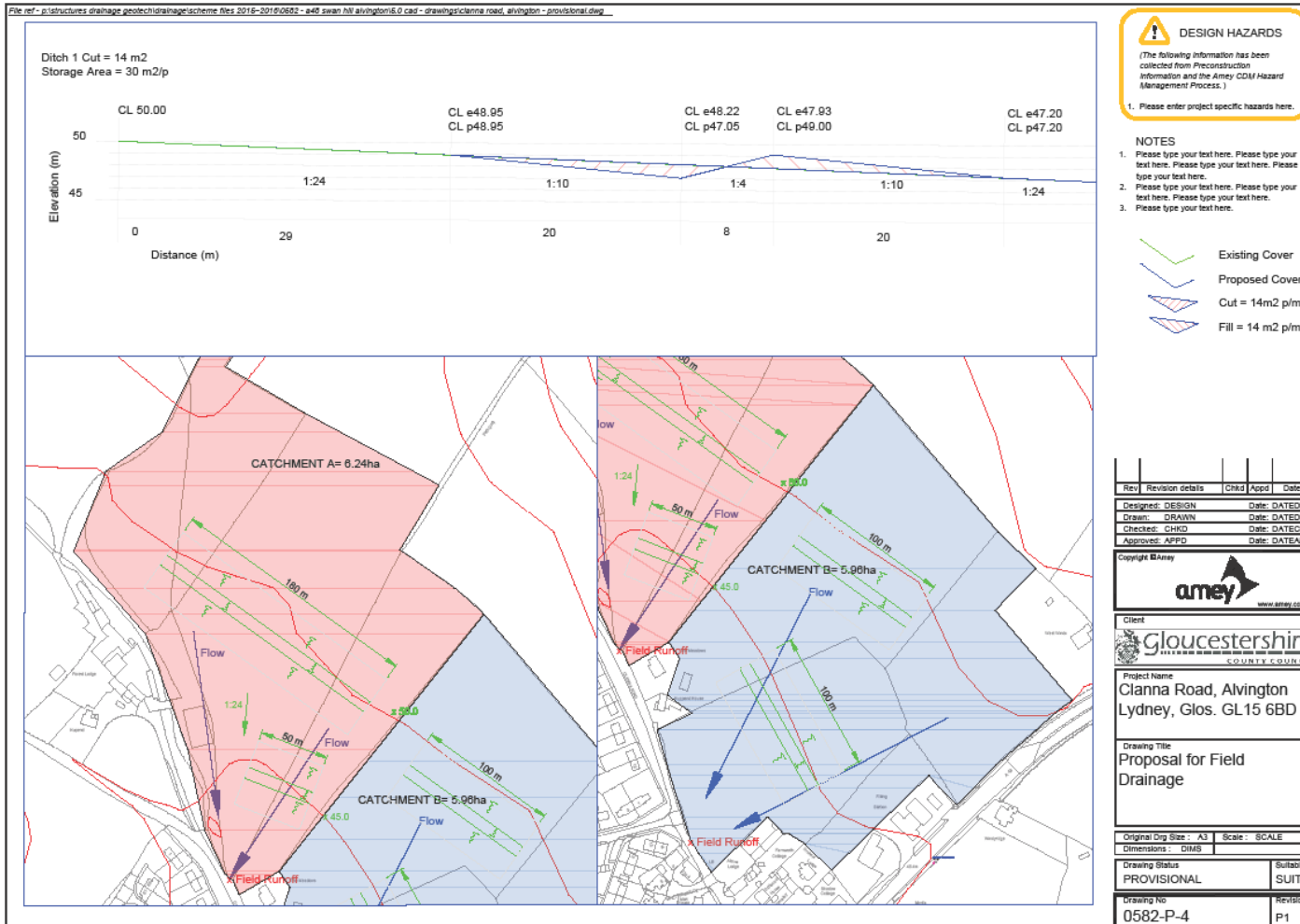
A.1. CCTV Survey

0582-P-1-p1: CCTV Survey 0487 – Subtek 6/10/2014



A.2. Proposal for Field Drainage

0582-P-4-p1: Proposal for Field Drainage



Appendix B: Assumptions

B.1. Modelling Assumptions

Cover Levels have all been taken from esriUK Local View Fusion (LVF) which provided contours at 5m intervals. Cover Levels taken between contours have been calculated assuming that there is constant grading and no undulation etc.

Further information would need to be obtained (eg: Topographical Survey) in order to calculate levels and volumes of storage available in the fields further

Contributing Areas have been assumed for the Existing Drainage in order to see Flows which would prevent Field Runoff from entering the Highway Network however the Areas contributing to Manholes could be larger / smaller than assumed in the MicroDrainage Network.

The level of protection will need to be agreed in order to determine the amount of Storage Volume required prior to detailed design. The 5 year discharge rate is recommended in the Highway Design Manual DMRB Volume 4 and incorporated into the Design Input Statement.

