

ANNEXE C – SURFACE WATER DRAINAGE SURVEY APRIL TO JUNE 2020

(with amendments and additions to February 2021)



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Carried out by
Andrew Scarth CEng FICE

Surface Water Drainage Survey

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Revision History		
Revision	Date	Description
1	25 July 2010	First Issue
2	22 December 2020	Amendment to Drain B
3	30 January 2021	Additions to west end.
4	11 February 2021	Survey added
5	8 April 2021	Minor corrections
6	5 May 2021	Paragraph 7.1 amended.

While every effort has been made to ensure the accuracy of this report, the author accepts no responsibility or liability for any use that is made of this document.

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1 Background

In April and May 2020 the author carried out a walk round survey of the ditches and drains surrounding the village of Down Ampney. This paper indicates the results. A location plan of the drains and ditches is shown overleaf.

2 Drain A

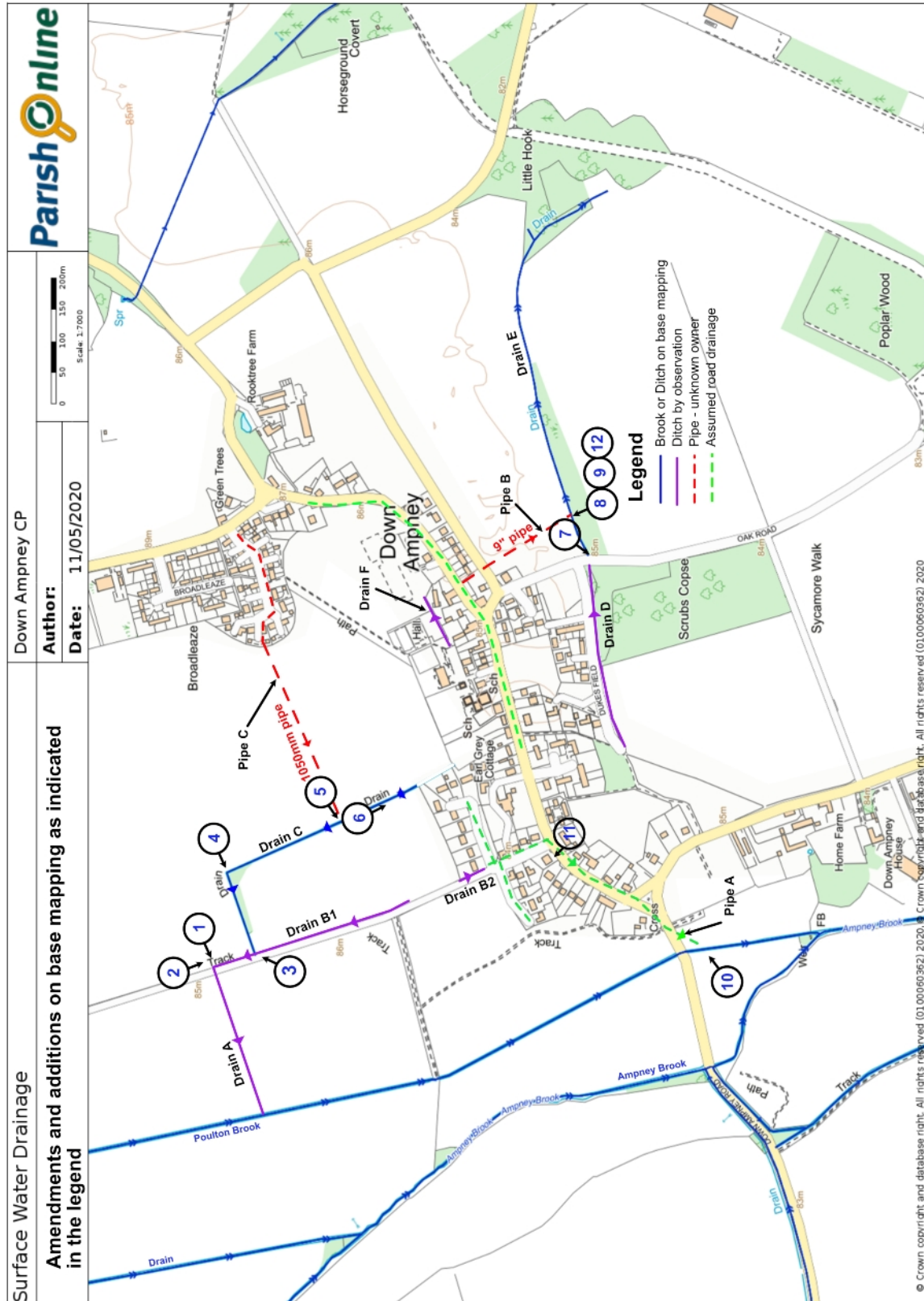
Drain A is the main outlet from the northern end of Drain B as well as the water from Linden Lea and, it is assumed, Broadleaze via the 1050 mm diameter pipe and Drain C. It should be noted that Drain C flows northwards and not southwards as shown on the base mapping.

Photograph 1 shows Drain A from the pipe under Charlham Lane track looking west. Some overgrown vegetation is evident.



Photograph 1 - Drain A

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3 Drain B

Drain B1 runs beside the Charlham Lane track. It flows northwards past its junction with Drain C to Drain A flowing under the track via a pipe. Drain B2 flows southward to a headwall and 300 mm diameter pipe next to 1 Suffolk Place. From there it is assumed to join the highway drainage system which eventually outfalls into Poulton Brook just to the west of the village. It is not clear whether there is a pipe connecting Drain B1 to Drain B2.

At the time of writing the Drain B1 is blocked between its junction with Drain C and its junction with Drain A. The drain and the obstruction can be seen in Photograph 2.



Photograph 2 – Drain B1 looking south showing obstruction

The junction with Drain C is shown in photograph 3. It is noticeable that even after a stretch of dry weather water is flowing from Drain C. This is noted later in the next section.

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Photograph 3 – Drain C and Drain B1 junction

4 Drain C

Drain C runs northwards from the end of Suffolk Place, picking up the 1050 mm pipe from Linden Lea before turning at a right angle to join Drain B1. Photograph 4 is taken at the bend

There is a manhole at the junction with the pipe leading from Linden Lea. This is shown in Photograph 5. At the time of writing the manhole cover and frame were displaced and there appears to be some damage within the manhole (Photograph 5a).

Drain C runs through a heavily wooded corridor which can be seen in Photographs 4 and 6.



Photograph 4 – Drain C at the right angle bend

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Photograph 5 - Manhole



Photograph 5a - Inside the manhole

The water flowing at the junction between Drains C and B1 mentioned in the last section is coming from the pipe from Linden Lea. Water could be seen flowing from it. This part of the drain is very overgrown.

Photograph 6 is taken from further upstream near the start of Drain C at the end of Suffolk Place.



Photograph 6 - Drain C looking South

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5 Drain D

Drain D runs along the south side of Duke's Field to a pipe under Oak Road and thence to Drain E. The drain appears to be in reasonable condition.

6 Drain E

Drain E is the main recipient of water from the east of the village from about the war memorial eastwards taking in what will be the new development at Broadway Farm and as far as Peartree Cottage. This water is taken by the highway drains to a manhole opposite Little Court to the back road to Castle Hill Farm and the road between Kempsford and the A419, and thence across the field to the south to Drain E. It is thought that the pipe is a 9" diameter clay pipe.

Photograph 7 is the start of Drain E from where the pipe joining Drain D to it passes under Oak Road.



Photograph 7 - Drain E Looking back to Oak Road



Photograph 8 - The point where the 9" pipe joins Drain E

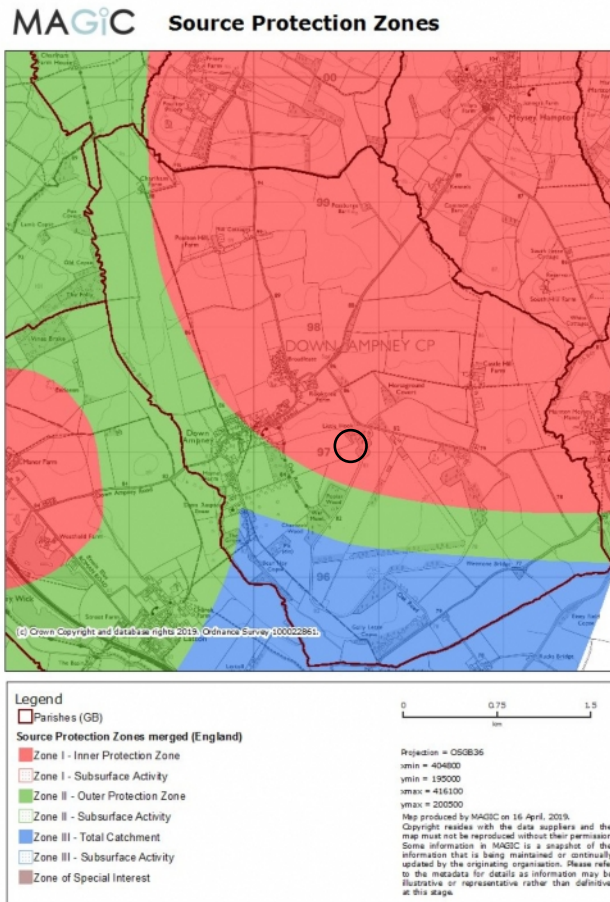


Photograph 9 - The headwall of the pipe joining Drain E after clearing

Photograph 8 is where the 9" pipe mentioned above joins the Drain E. Drain E is very overgrown but after clearing the area it is possible to see a dry-stone headwall (Photograph 9). It was not possible to see the the pipe and confirm that it is 9" diameter pipe (see also the section on Pipe B).

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Drain E terminates at the woodland of Little Hook near the north-east of the old airfield. This area is within a groundwater Source Protection Zone 1 designated by the Environment Agency for water resources.



7 Pipe A (West of Village)

As was mentioned earlier under section 3 on Drain B the bottom end of Drain B2 and the highway drainage from Chestnut Close, Suffolk Place and the west end of Main Street outfalls into Poulton Brook (see Photograph 10). It is worth noting that water is flowing from the outfall despite there having been no rain for several weeks at the time of Photograph 10. It was noted that Poulton Brook is overgrown at this location and downstream to its confluence with Ampney Brook. From observation the outfall is a 12" pipe. The basic slope on the pipework must be in the region of 1 in 200; applying the Manning formula the maximum flow rate should be about 60 litres/sec.



Photograph 10 – Highway drain outfall into Poulton Brook

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7.1 Observed Problem

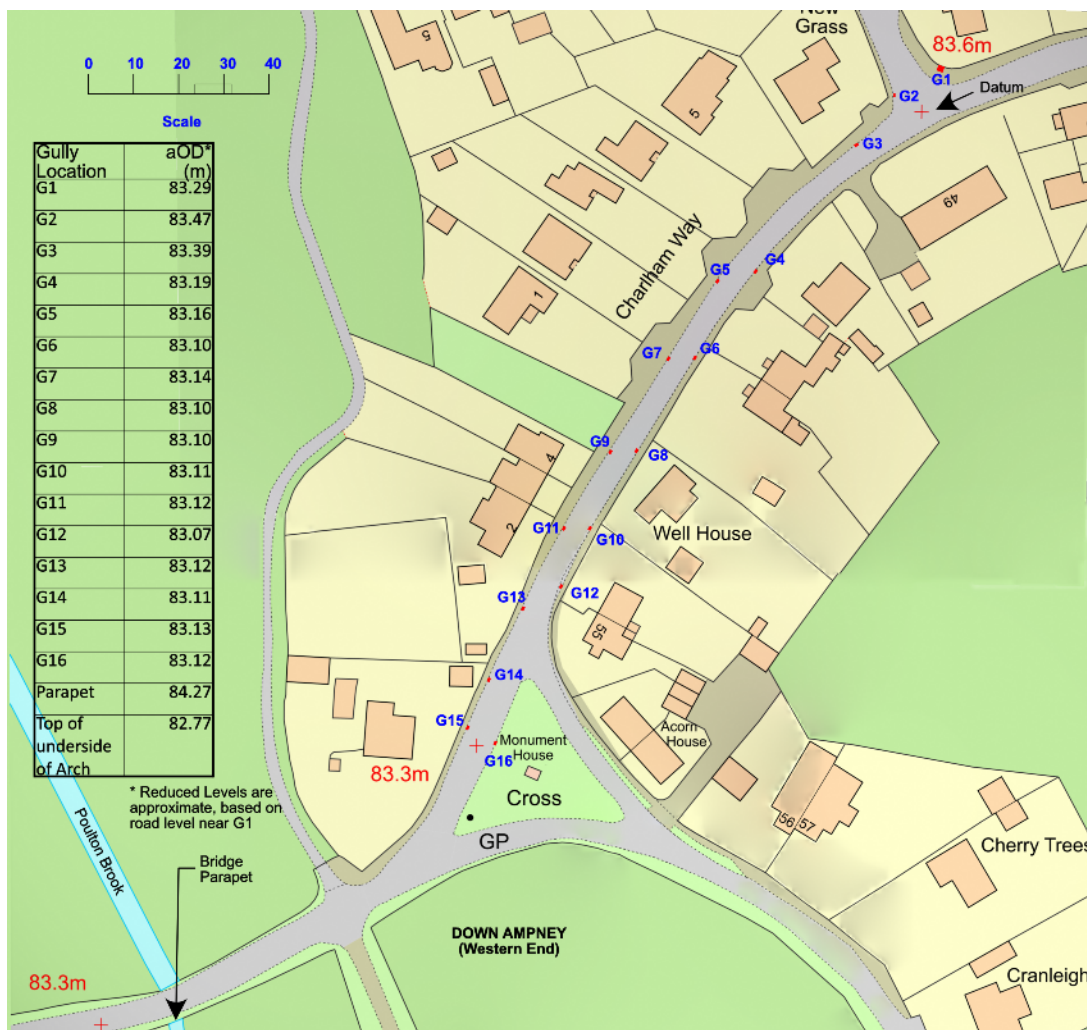
In times of heavy rainfall Poulton Brook runs bank full and standing water is observable from the Red House eastwards as far as Charlham Lane. On 30th January 2021 water could be seen bubbling from the manhole at the bottom of Charlham Lane (see Photograph 11). The head difference between this standing water and the water in Poulton Brook when this photograph was taken, however, would still be in the region of 0.5 metres (See next paragraph) therefore the flow rate should be nearly 40 litres/sec. This was clearly not the case when Photograph 11 was taken. A number of the gullies were not taking an appreciable quantity of water. The conclusion can only be that the road drainage pipes were blocked or restricted on that date. Cleaning and jetting was carried out at the beginning of February 2021. This may have solved the problem.



Photograph 11 - The end of Charlham Lane (31/01/2021)

7.2 Gully Survey

A level survey was undertaken by the author on 10 February 2021 to ascertain the relative levels of the gully gratings and Poulton Brook where the road drainage outfalls. The information is given below.



The minimum height difference between the lowest gully grating and the underside of the bridge at Poulton Brook is 0.3 metres. The author (resident in the village for 40 years) has never seen Poulton Brook this full even in the storm of July 2007. A realistic maximum would be 0.5 metre difference. This is still quite small but should be enough to prevent ponding between the Red House and the bottom of Charlham Lane, provided that the pipes are cleaned and jetted regularly and not just after a storm event when it is too late.

8 Pipe B (East of Village)

Pipe B is apparently a 9" clay pipe. The fall on the pipe is unlikely to be greater than 1 in 500. The flow rate calculated from the Manning formula is less than 20 litres/sec. As noted under the section on Drain E it was not possible to positively identify the size of the pipe because the outfall is a dry-stone construction with only a slit exit. Photograph 12 is an attempt to see behind the dry-stone headwall.



Photograph 12 – Inside the dry-stone outfall

9 Conclusion

The drainage paths for surface water around Down Ampney are reasonably easy to follow. There are three main outlet points: two into Poulton Brook to the west and one soakaway at Little Hook to the east.

The highway drains accept water from non-road locations.

There is doubt that the full length of the 9" pipe starting opposite Littlecourt flowing southwards is either well-maintained or has the capacity for storm flows.

The road drainage to the west of the village outfalling in Poulton Brook is either partially blocked or inadequate for the flows experienced on a relatively frequent occurrence.

The highways agency responsible should maintain both these areas of pipework.

Many of the ditches forming the main drains are poorly maintained. The riparian owners should be encouraged to carry out their duties of maintenance under the Land Drainage Act 1991.

10 Further Work

It proved impossible to ascertain the destination of drainage from Broadleaze, although the assumption was that it connects with the Linden Lea drain.

A precise definition of who is responsible for each part of the drainage system would be extremely useful to all parties. The list is likely to include: Gloucestershire Highways Authority, Cotswold District Council, Thames Water Utilities Ltd, Farmcare Ltd, and the Co-operative Wholesale Society, with perhaps the Environment Agency also taking an interest.