



ENVIRONMENT AND SUSTAINABILITY

Flooding and Drainage

Authors - Del HENTY; Chris REED and Phil BOTTOMER

Introduction

The European Union (EU) 'Floods Directive' defines a flood as a covering by water of land not normally covered by water.

Findon is a semi-rural village located within the South Downs National Park (SDNP) that occupies a wooded valley location bounded by Cissbury Ring to the east and Church Hill to the west. There are no major water courses within the village curtilage or, indeed, close to the village and, in the opinion of the lead agency for flooding, the Environment Agency (EA) Findon is, in this respect, a low risk flood area. However the EA do consider Findon to be at risk to surface water flooding mainly, but not exclusively, within areas along Horsham Road and the High Street especially at its junctions with School Hill and the A24 together with sections of the A24. The risk varies by very specific area (a matter of a 50 yards can alter the risk value from low to high and back to low) between low (less than 1 in 1000 chance of flooding), through medium risk (1 in 100) to high (1 in 30). (see EA surface water flood risk map at www.gov.uk/government/organisations/environment-agency).

Evidence of Flooding and Possible Causes

The causes of flooding are a science in themselves and, due to the constraints of time and funding, way beyond the remit of this sub-committee. We have therefore, while making passing comment on the larger aspects of flooding, confined our investigation to observation,

local knowledge and such information as can be obtained from reliable sources via the internet. It is obvious that flooding is caused when excessive amounts of water cannot drain at sufficient speed. The reasons for this are many including blocked drains; insufficient or poorly sited drains; blocked/overgrown gulleys and ditches; the loss of ponds and loss of natural soakaways due to development.

Findon Village has suffered several major floods in recent history as reported in The Worthing Herald on 3rd June 2012 and 17th January 2014 (see www.worthingherald.co.uk/news/local) and the on-line history of Findon Village - 'This is Findon Village' written by local historian Valerie MARTIN (see www.findonvillage.com and follow links). This second publication shows photographs of flooding as long ago as 1912 together with more recent episodes in 1981; 1987; 2002; 2010 and 2014 (we are sure there must be instances of serious flooding other than the incidents we have identified but, again, the constraints of time prevent further investigation). The most devastating of the recent major floods is the event of 1st March 2002 when heavy rain on recently ploughed fields resulted in more than 100 tonnes of topsoil being deposited into the heart of the village causing many thousands of pounds worth of damage.

The fact that serious flooding was evidenced in the village over 100 years ago in 1912, may be indicative not only of the failure to solve these problems, but also an indication that they CANNOT be solved. We state this not as a conclusion but merely as a warning of what may prove to be an unpalatable fact. While total prevention may be unattainable, there are many courses of action that can be implemented to reduce the degree of flooding and these will be discussed later in this report.

The above may be the worst scenarios but they are by no means the whole story. Localised, or what may be termed 'minor' flooding is a very common occurrence. Over several decades Del HENTY, a local parish councillor, has witnessed flooding, especially in the areas at the southern end of the village in the vicinity of his home, and he has produced maps (see App 'A' Maps 1 & 2) detailing the flow of water and the sites where that water collected causing flooding. From his extensive observations he states that with only moderate rainfall the water runs down from the village through the southern end of both the High Street and Nepcote Lane, bringing with it any detritus which is lying in the roadway. The water then flows (mainly) south across the A24 to its west side and from there into the driveways and gardens of the houses on the A24 to the north of The Quadrangle (Map 1). He states that the water also flows north along both sides of the A24 across the western boundary of The Black Horse public house (Map 2) causing further flooding on the A24 (this is a major cause of traffic congestion as detailed in The Worthing Herald 17th January 2014). Mr HENTY has further observed that water runs down the driveway from St John's Parish Church, again bringing with it mud and other detritus, which then flows south along the pathway on the north side of the A24 past the bus stop, causing serious problems for bus passengers wishing to travel to or from the village.

Mr HENTY notes several changes in the geography of the land in this and other areas of the village that he believes add to the effects of flooding. These include the loss of ponds, most notably in the High Street in the vicinity of The Black Horse pub and in Nepcote Lane about 1/2 mile south of Cissbury Ring car park, together with blocked/overgrown drains, ditches or culverts again notably on the north edge of the driveway leading to St John's Church and the

east side of the A24 between School Hill and Nepcote Lane. Add to this the extensive growth in the number of dwellings across the village, which are acknowledged to reduce natural soakaway by covering soil with concrete, then the number of incidents and serious nature of some of those incidents are to be expected.

The authors have undertaken a fact finding walk around Findon with the specific intention of identifying lost ponds, blocked or overgrown culverts, blocked drains and other physical features that appear to contribute to flooding. The result of this (unscientific) investigation are much as expected.

Findon has several country lanes that lack any type of modern drains. (The lack of drains is probably as it should be, country lanes rarely, if ever, have modern drains). One example is Nepcote Lane from Cissbury Ring to the village square (A similar scenario occurs along the section of Nepcote Lane which runs through Nepcote and down to the A24 just south of Cross Lane). With its natural fall into the village, excess rainwater will flow down Nepcote Lane from Cissbury Ring, and, having travelled approximately a mile without any drains prior to its junction with Convent Gardens, continues on towards the square. The only existing culvert is on the south side of Nepcote Lane, midway along the length of Nepcote Green, which drains into the pond on the green.

These country lanes are bordered by fields containing sheep, horses and some arable crops, that shed their loose matter, straw, soil and grass cuttings onto the roadway where they are mixed with the dead matter from trees such as twigs and, in the latter part of the year, leaves and then carried towards the village blocking such drains as there are. This scenario has been witnessed by the authors on several occasions over many years and is common knowledge amongst villagers.

The authors walked the length of Nepcote Lane from Convent Gardens to the square and noted many drains all of which appear to be clear and in working order. However observations during rainy conditions and especially in the latter part of the year, show that the detritus deposited from the fields to the east collects in and around these drains rendering the useless.

A similar scenario exists for the section of Nepcote Lane from its junction with Nepfield Close to its most southern tip at the A24. There are no drains in this section of Nepcote Lane and any rainwater continues (mainly) across the A24 to its west side and then into the driveways and gardens of the dwellings north of The Quadrangle. Indeed the first drain on this section of the A24 is to the southern end of these houses and of little, if any, use in preventing the flooding of their gardens. Add to this the fact that Steep Close, which runs down from Nepcote Green to the High Street, has only one drain and that is at its western most point near the High Street. This results in virtually all of its rain water flowing south along the High Street and onto the A24.

The final area examined was south along the Worthing (south) bound carriageway of the A24 from School Hill to its junction with Nepcote Lane. Flooding in the vicinity of the cemetery and at the southern end of this section is extremely common and, while it causes little direct impact on the village, it does result in traffic backing up as far north as Washington roundabout. This then leads to the Horsham Road and High Street becoming a 'rat run' for drivers attempting to circumnavigate the problem. That in turn causes the movement of flood water from roads onto adjoining properties due to the 'bow wave' surge caused by the traffic

and, in all probability, results in damage to these properties. It also washes even more detritus from gardens onto the roads and adds to the blocking of drains.

A walk in the height of a summer, which has generally been hot and dry, south along the east side of the A24 from School Hill reveals numerous drains. However unlike those examined in Nepcote Lane, some of these are overgrown and blocked rendering them useless. While no direct evidence is available it is fair to say that the same scenario, which causes drains in Nepcote Lane to become blocked, probably occurs in this section of the A24.

Ponds have been lost throughout the village, most notably one at the southern end of the High Street. These natural soakaways would have accepted much of the excess rain water which now floods gardens, cellars and roads. It appears unlikely that any new ponds will be formed or old ones rebuilt, indeed the area of the Black Horse pond is now completely covered by tarmac and cement.

Responsibility for Flood Planning

The Flood & Water Management Act 2010 (see www.legislation.gov.uk), makes it the responsibility of the Environment Agency (EA) to '*develop, maintain, apply and monitor a strategy for flood (and coastal erosion) risk management in England*'. It does not place an onus on the agency for active flood prevention or drainage (flooding), merely to design implement and monitor a strategy. The responsibility for flooding is a much more complex matter as no single agency is responsible. Indeed flooding is not just, or even largely, the responsibility of government agencies but, as a general rule, it can be said that whomsoever owns the land is responsible. That list (see App 'B') includes the Highways Department; County councils; District councils; Parish; councils; companies and individuals.

Findon being within the South Downs National Park (SDNP) is subject, in certain matters, e.g. planning, to the rules and regulations of its governing Authority. The Authority is in the process of drawing up a 'Local Plan' and, as part of the process is undertaking a water cycle study (including a strategic flood risk assessment) which is scheduled to be completed in November 2014. SDNP 'Water Policy Officer - Dr Christopher MANNING, South Downs Centre, North Street, Midhurst, West Sussex, GU29 9DH. Tel: | Mobile: 01730 819263, 07557 923840 (www.southdowns.gov.uk). Dr MANNING has been kind enough to offer, to whomsoever from the village is dealing with flooding at the time, a sight of the completed study together with a meeting during which he will attempt to assist in whatever way he can.

Flood Prevention and Damage Reduction

Flood prevention appears to be something of an unattainable target. Quite simply if you live at or near the bottom of a hill you must expect some flood risk. That is not to say that the effects of excess rain cannot be reduced, indeed, part of the SDNP local plan will include, within the section on new development planning, advice on flood risk reduction through the use of Sustainable Drainage Systems (SUDS). These are the preferred approach to managing rainfall from hard surfaces and can be used on any site. There are many different SUDS features available to suit the constraints of a site. These include green roofs, and more natural features such as ponds, wetlands and shallow ditches. Hard engineered elements are often used in high density, commercial and industrial developments and these include permeable paving, canals, treatment channels, attenuation storage and soakaways.

The main purpose of SUDS is to mimic the natural drainage of the site before development. This is achieved by capturing rainfall and allowing as much as possible to evaporate or soak into the ground close to where it fell. The rest is directed to the nearest watercourse to be released at the same rate and volumes as before development.

The EA offer advice on planning for a flood under the heading 'Before/During/After a Flood' (www.environment-agency.gov.uk/floodsouth) This advice, which can be seen in full on the above noted web site, includes

Before

- Planning for a flood with advice for employers on protecting staff; dealing with hazardous equipment and reducing the risk from polluting materials There is a download available of guidance on preparing for flooding together with a flood plan template which is especially suitable for schools or other community groups.
- Obtaining advice from a building surveyor, architect or other independent professional on permanent flood protection measures.

During

- Contact the local fire brigade via their NON-Emergency number for help pumping out water but be aware you may be charged a fee

After

- Contact local council for assistance with temporary accommodation
- Citizens Advice Bureau for help in obtaining emergency money
- Contact Public Health England for advice on how to clear up.

These are but a few of the suggestions contained within the site but possibly the most important is to ensure you are fully and correctly insured but, be aware, if you live in a designated flood area, then insurance will be difficult, if not impossible, to obtain.

The following are thoughts, no investigation has taken place, indeed they are simplistic arguments.

Water butts, fitted to downpipes, are an excellent method of collecting rainwater. They come in many sizes including ones which hold upwards of 50 gallons. These butts can be connected to further butts allowing householders to store hundreds of gallons of rainwater. If each household in Findon (approx 1000) fits just one butt and, by constantly using the collected water on, say, their gardens, keeps them close to empty, then during heavy rainfall, up to 50,000 gallons of water would not be flowing into the village drains. (The actual amount collected during a single storm will, of course, depend on the volume of rainfall and surface area (roof size) available however, any rain which does not enter the drains leaves space for that which does).

Other, simple, forms of flood defences include raising the height of kerbstones and repairing damaged kerbs; building raised vehicle crossovers at the entrance to drives or sleeping policemen to divert the direction of rainwater flow. These have the effect of denying flood

water a route into individual properties or specific roads however, in the absence of a complete flood plan, they just move the problem further down the hill.

Conclusions

There have been several serious floods in Findon causing many tens of thousands of pounds worth of damage. These floods have mainly, but certainly not solely, affected properties along the High Street, Horsham Road and the A24 to the south of the cemetery. The floods are the result of excess surface rainwater overpowering the drainage system and collecting at, what might be termed, the low points of the village. Given that flooding has been part of village life in Findon, probably since the village came into being, and nothing anyone, or any agency, has done has cured that problem, then it must be accepted that total prevention is not possible.

The outer margins of Findon including the area to the west of the A24 towards St John's Church, east of Convent Gardens towards Cissbury Ring and along Nepcote Lane south of its junction with Nepfield Close have few if any drains. The immediate low points in these areas are the roads (Nepcote Lane and the A24), which once would have been compacted soil and acted as natural soakaways, but now are covered with tarmac and only serve to move the rainwater in greater quantity and at greater speed towards the village.

The central area, inside the above noted parameters, is, with the exception of Steep Lane, well served by drains and, in theory, should cope with all but the most extreme rainfall. Unfortunately, due to the very nature of the surrounding farm and woodland, large quantities of twigs, hay, grass, leaves and soil are carried by any excess rainfall down into the village or onto the A24. This detritus blocks the drains and results in the vast majority of the water running into Horsham Road; the High Street and the A24 causing flooding. The extent of the flooding, quite naturally, is related to the volume and intensity of rainfall but also to the inadequacy of the drainage system. There is little doubt that the lack of any drainage system outside the central area of the village and blocked drains within the central area, are major contributors to the problems.

Given the frequency, and at times the magnitude, of the flooding, it is unfortunate that no single person or committee, within the village, has responsibility for flooding, add to that the fact that Findon Village does not have a flood plan, then it is no wonder we continue to suffer.

Recommendations

Flood prevention (e.g. digging of major drains) can be extremely expensive and may be beyond the purse of the PC or even Arun District Council (ADC) and, while such solutions should not be discounted, it is more likely that other 'flood prevention methods' must be considered. These recommendations should be considered as 'best case scenario' and may not all be attainable.

- We believe that flooding is far too important to be dealt with on a ad hoc basis and therefore our first, and perhaps most important, recommendation is that FPC appoints a councillor as a flood officer. This officer should liaise with all interested parties and produce, as matter of urgency, a flood plan.
- That plan should pay particular attention to the identification of all current drainage systems and ensure those systems are in working order.
- Whatever action is taken to keep drains clear and in good working order will come to nought if they are blocked during a rainstorm. We would therefore recommend that a call is put out for volunteers to clear detritus from around drains (probably those close to their homes) during storms. This idea may be fanciful to the point of being foolish, however, if just 10% of drains are cleared in this fashion we believe that flooding will be reduced considerably.
- Identify where new drainage systems are required and, where possible, cause them to be built.
- Liaise with landowners/farmers in an attempt to reduce the amount of detritus being washed into the village.
- Ascertain what, if any, other flood prevention systems are available, assess their relevance and, where necessary, implement them.
- That FPC Planning sub-committee ensures that SUDS become a requirement of any future planning application. (We believe that this will be included in the SDNP Local Plan).
- Investigations should be carried out to ascertain whether the fitting of water butts to downpipes would sufficiently reduce the amount of water entering drains. If so then urge residents to fit such butts or additional butts.
- Ensure that the streets of Findon are swept on a regular and frequent basis to reduce the amount of detritus that can block drains.
- The FPC 'flood officer' should take up the offer of assistance from SDNP officer Dr MANNING.

Appendix 'B'

The following is an abridged extract from the ADC website regarding 'Drainage' and explains the complexities of responsibility.

Watercourses can be divided into a number of different categories including pipes, culverts, etc. Responsibility is a complicated but as a general rule:

- Culverted Watercourses beneath a public road - Highways Agency for all trunk roads (ie.A24) or West Sussex County Council for all other public roads;
- Culverted Watercourses beneath a private road - Landowner / Estate Residents;
- Ditches dug to drain the public highway - Highways Agency for all trunk roads (ie.A27) or West Sussex County Council for all other public roads;
- Roadside Ditches adjacent to public roads - Landowner or adjoining landowner (unless dug solely to drain the highway);
- Highway Gullies and drains --Highways Agency for all trunk roads (ie.A27) or West Sussex County Council for all other public roads;
- Sustainable Urban Drainage Systems on new developments - Landowner / management Company / Lead Local Flood Authority (WSSCC) / Arun District Council / Parish Council;
- Watercourses within the Internal Drainage District - Landowner supported by the Environment Agency;
- Public Surface Water Sewer - Southern Water Services Ltd;
- Private Surface Water Sewer - Landowner / Property Owner / Estate Residents;
- West Sussex County Council is responsible for all public highway drains across the district on public roads, not classified as motorway or trunk roads, e.g. A24 which is the responsibility of the Highways agency, or private estates.
- Landowners and estate residents or associations: Responsible for all private estate road drains.