

# Water Management

*Water is the driving force of all nature. (Leonardo da Vinci)*

## *The Vision*

*Current flooding and drainage issues will be alleviated working in conjunction with the agencies responsible for the upkeep of drainage, sewerage and water supply.*

## *The Water Management Objective*

*WMO1 To identify areas in the Parish that have been found to be at risk of flooding and overloading sewers in association with the relevant bodies*

*WMO2 Working with landowners and The Bedfordshire Ivel Drainage Board to maintain the integrity and effectiveness of existing land drainage*

*WMO3 to liaise with Highways to reduce or alleviate highway flooding*

## **Water Management Report Summary**

Following the NPNP workshops and Parish Questionnaire held last year a detailed appraisal of the Parish's water related issues was undertaken. The evidence from parishioners on maintenance and provision for the future together with statutory requirements and the NPNP Vision and Objectives together with input of information from relevant responsible bodies is identified. A number of priorities for action are identified below:

- 1. Provide for future development within foul sewer network.*
- 2. Ensure adequate maintenance of ditches and drains*
- 3. Provide SUDS in new development*
- 4. Provide raised floor levels in all development*
- 5. Withhold development in areas at risk of Main River Flooding*
- 6. Developers to provide report on capacity of downstream sewer network and provide necessary updating. This can be done by Anglia Water at a reasonable cost.*
- 7. Highway drainage to be kept separate from foul sewer system*

## **Introduction**

Very soon after the start of the Northhill Parish Neighbourhood Plan it became clear that Water was an issue of importance to parishioners. Evidence on their concerns was established at the Parish wide Workshops held in spring and early summer 2015. In addition and of no less importance the Parish wide Questionnaire identified a significant concern with a desire to alleviate sewerage and flooding problems

## **Relevant organisations**

A number of Statutory Bodies are involved with the water cycle and the duties of organisations affecting Northhill Parish are outlined below:

The overall supervision of land drainage, rivers and the environment is in the hands of the Environment Agency who issue guidelines and flood maps. It is their responsibility for consents relating to main rivers. The River Ivel is the Main River flowing northwards along the east side of Northhill Parish. Their work includes tackling flooding and pollution incidents, cleaning up rivers, and improving wildlife habitats.

Central Bedfordshire is the Lead Local Flood Authority for the area. Under the Flood and Water Management Act 2010 Central Bedfordshire includes responsibility for: developing and maintaining a Local Flood Risk Management Strategy, maintaining a register of physical features that have a 'significant' effect on flooding in the area and issue of consents. Flooding associated with any public road should be reported to the Highways team.

The Bedfordshire and River Ivel Drainage Board undertakes to manage water levels and reduce the risk from flooding within their district. Much of their work involves the maintenance and improvement of watercourses and related infrastructure such as pumping stations, weirs, sluices, culverts and embankments within their drainage districts. Under the Land Drainage Act 1991, each Drainage Board (DB) exercises a general power of supervision over all matters relating to water level management within its district. They are responsible for consenting on ordinary watercourses that are streams, drains and ditches and passages through which water flows that do not form part of the main river. In pursuance of this role they can prohibit the obstruction of watercourses within their district. Thus, anyone constructing or altering a weir, bridge, embankments, culvert or similar obstruction must seek the consent of the DB before undertaking work.

The responsibilities of a Riparian owner (generally a property adjacent to watercourse) include maintenance of the watercourse and to clear any obstructions (natural or otherwise) so the normal flow of water is not impeded, maintain the banks and bed of the watercourse and any flood defences that exist on it to accept the natural flow from your upstream neighbour and transfer it downstream without obstruction, pollution or diversion. They also maintain any structures on riparian owner's stretch of watercourse including culverts, weirs and mill gates.

Water Supply and Foul Water sewers are maintained by Anglian Water together some Surface Water sewers. Highway sewers are the responsibility of the Highways Team Central Bedfordshire. The A1 trunk road is the responsibility of Highways England.

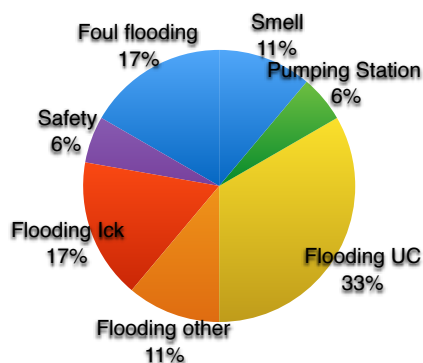
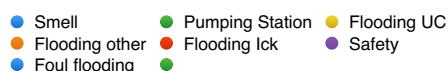
## Evidence

Workshops organised for Parishioners were held during the Spring of 2015. Comments from parishioners were placed on a comprehensive spreadsheet to provide a comprehensive database and audit trail. It was decided to simplify the data available into specific issues reflecting the comments within the Workshop documentation. The result is shown in the table below:

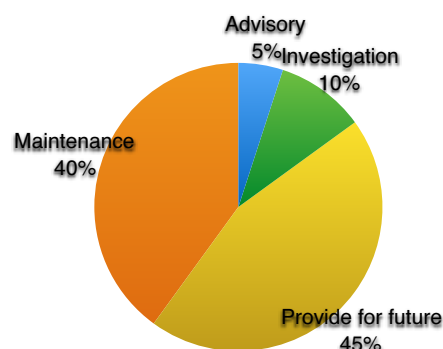
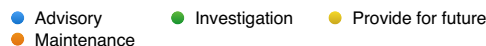
**Summary of Workshop Comments on Water Management**

<i>Topic</i>	<i>No</i>	<i>Summary comment</i>
Smell	2	Ickwell Road Upper Caldecote, Biggleswade Road Upper Caldecote
Flooding UC	6	Off Hitchin Road, the Green, Ashby Drive, Cemetary, A1 (2 places)
Flooding other	2	Hatch, Lower Caldecote
Flooding Ickwell	3	Next to Ickwell/Northill PS (investigation required), Warden Road
Foul flooding	3	Northill Road Ickwell, Swallow Fields UC, A1 (B'Wade Rd
Foul water PS	1	A1 P Stn breaks down
Advisory	1	Note concerning reinforcement of surface water control from homes
Investigation	2	Golf range influence on water table. Drainage behind new build UC
Safety	1	Piping ditch next to Pond Close
Provide for future	9	General concern expressed at Workshops
Maintenance	8	General worry expressed at workshops

## Specific Issues



## General Issues



## Questionnaire

The Parish wide Questionnaire included a single question about water :- should alleviating flooding and sewerage problems be included in the Neighbourhood Plan? There were 277 votes responding to the question representing 67% of the votes returned. The votes returned represent xxx % of the population of the Parish that figure is considered to be an acceptable return.

## Analysis

The presentation of parishioners concerns from the Workshops and Questionnaire will be used together with information from the responsible organisations involved. Thus maps showing areas at risk of flooding and the means of disposing water used with appropriate additional supporting information.

## Specific Issues

The workshop data is illustrated in the two pie charts above and whilst flooding in Upper Caldecote is the most significant and the more important issue is the foul flooding, a potential health issue. The smell problem is also linked to foul water problems and indicative of possible sewer problems. The safety problem is related to a ditch adjacent to Vinegar Hill and is likely to result in the piping of the ditch so as to give more security to pedestrians walking to Pound Close housing and the Cemetery.

The flooding problems are either highway drainage inadequacies or surface water from river or land surfaces. Reference will be made to the Environmental Agencies flood maps which show both river and surface water flooding. In addition the Bedfordshire and River Ivel Drainage Board have plans showing the watercourses for which they are responsible and their programmes of works. These are relevant issues for assessment and evaluation.

## River and Surface Water Flooding

The Environmental Agency's flood maps show shaded areas at risk of flooding. The maps available are:

- Rivers and Sea for Planning purposes showing Flood Risk Zones
- Rivers and Sea to show areas of high, medium and low risk
- Surface Water showing areas where rainfall fails to drain away and lies on the ground

Zone category 3 shows areas with a annual probability of flooding of 1 in 100 or greater

Zone category 2 shows outlying areas with a probability of flooding of up to 1 in 1000 a year.

*These maps not included in this version as labelling is required*

It is necessary to elaborate a little further the use of the term 'probability of flooding', it can be shown through statistics that there is approximately a 63.4% chance of one or more 100-year floods occurring in any 100-year period.

The planning map marking Zone 3 flood risk indicates that areas adjacent to the River Ivel and following the watercourse that drains roughly west to east crossing the road between Ickwell and Northhill are at greatest risk of flooding. Planning recommendations advise that houses should not be built in Zone 3 areas. The Housing Assessment work has followed this advice on housing sites identified for consideration in the Neighbourhood Plan between Sainsbury's and the River Ivel and between Ickwell and Northhill.

There does not appear to be potential housing development within Zone 2.

A number of areas subject to surface water flooding may be identified, the potential housing sites with this risk probability of 1 in 1000 are located in Northhill (Thorncote Road) and Upper Caldecote (west of Hitchin Road, south of Ickwell Road, and Water Lane).

None of these identified flood zones or areas have allowance for potential climate change. As such it is prudent for all new builds to be given additional protection from potential flooding by such means as raised floor levels and or flood entry devices.

#### Bedfordshire and R. Ivel Drainage Board watercourses

The drainage board's map of the watercourses within the parish shows the priority given to maintenance. It will be seen that from the map that the Parish watercourses are given degrees of priority. It is surprising that the outfall watercourse from Water Lane is given such a low priority. This of concern because not only is the condition poor, a bicycle and fallen trees are readily to be seen but perhaps of more importance is that the watercourse drains some 25% of Upper Caldecote from the south west including the Hitchin Road area, The Green and Water Lane. Part of The Green has been subject to flooding in the past including property garden. An investigation by Central Beds of the Water Lane drainage and outfall is planned. The other drainage board plan shows planned maintenance work.

*These maps not included in this version as labelling is required*

#### Highway Drainage

Identified highway flooding occurs at the entrance to Ashby Drive UC (blocked gully), at Tingey's Corner UC and at the entrance to the Sainsbury's roundabout from Hills Road. Central Bedfordshire need to attend to these occurrences as a matter of good housekeeping.

#### Foul sewers

The villages within Northhill Parish each have their own sewer network and pumping station with a rising main to transfer sewage forward. Thus Thorncote and Hatch pump to Northhill which then pumps to Ickwell. From Ickwell sewage is pumped to Upper Caldecote where it outfalls along Biggleswade Road to a further pumping station on the eastern side of the A1 trunk road. Lower Caldecote sewage is pumped a short way to an outfall sewer that links to the sewer crossing to the A1 pumping station. From there all sewage is pumped to Biggleswade Sewage Treatment Works. The consequence of this whole network is increasing downstream vulnerability in the event of development.

*Awaiting Anglia water for further information. Future capacity evaluation (RAG)*

*These maps not included in this version as labelling is required*

#### Water Supply

*Awaiting Anglia water for further information.*

## Maintenance

The lack of adequate maintenance is all too evident and is strongly related to lack of resources, an issue that is not likely to be resolved easily or quickly. A matter of encouragement to find effective solutions and priorities is part of the remedy. Every opportunity to link with the organisations involved should be taken so as to reinforce the required priority actions. Part of the Neighbourhood Plan should identify such priorities.

## Provide for the future

Future development in the Parish is unlikely to be avoided and it is understandable that concern is expressed at the continuing erosion of capacity in our infrastructure network while improvements fail to be seen to occur.

The relatively small scale of localised development may not cause problems to foul sewers in the short term but several additional connections would contribute additional load to the main village outfalls and pumping stations making the downstream sewers, pumping stations and rising mains more vulnerable. *The above subject Anglian Water comments and RAG assessment.*

Surface water flooding on roads may often be attributed to blocked gulleys but again good quality maintenance and prompt remedial action is rewarded with customer satisfaction. New development should never connect surface water to the foul sewers and surface water from hard surfaces should be drained to soakaways or to SUDS, or sustainable urban\* drainage systems that are a sequence of water management practices and facilities designed to drain surface water in a manner that will provide a more sustainable approach than what has been the conventional practice of routing run-off through a pipe to a watercourse.

## Conclusion

The evidence from parishioners on maintenance and provision for the future together with statutory requirements and the NPNP Vision and Objectives need to be combined and identified as follows:

- 1. Provide for future development within foul sewer network.**
- 2. Ensure adequate maintenance of ditches and drains**
- 3. Provide SUDS in new development**
- 4. Provide raised floor levels in all development**
- 5. Withhold development in areas at risk of Main River Flooding**
- 6. Developers to provide report on capacity of downstream sewer network and provide necessary updating. This can be done by Anglia Water at a reasonable cost.**
- 7. Highway drainage to be kept separate from foul sewer system**

## Policy. To be discussed

Version 3. 17/04/2016