6. GENERIC INSPECTION & MAINTENANCE SCHEDULES

The following pages provide schedules of the type of identification, inspection and maintenance that can be carried out to the various types of drainage systems, and frequencies for doing this.

These can be used to plan a community wide programme of inspection and maintenance.

6.1 Natural Watercourses

Maintenance Tasks	Frequency	What to look for	What can be done
Identification	Ongoing	Ordnance Survey plans indicate most natural watercourses of a certain size. The Maintenance Plan indicates some other sections of watercourse which have been identified during site inspections. Specific features such as large trees, structures along the watercourses and means of access can be identified on the ground. Specific locations to go to on a regular basis to inspect watercourses can be identified. Confirm ownership and maintenance responsibilities. Confirm which sections of watercourse are Main River or Ordinary Watercourse as these have different consenting systems through the Environment Agency or IDB.	Use Maintenance Plan to assist in location and ownership. Add any other specific details to the Maintenance Plan. Share any new information with the Councils' Flood & Water Management team.
Inspection and monitoring	Monthly, but increase or reduce frequency based on experience. When a Flood Alert or other Weather Warning is received Following heavy rainfall Increase frequency in autumn/winter	Excessive amounts of vegetation (e.g. trees, weeds, reeds, grass). This may be affecting the flow of water, or making it very difficult to inspect and monitor. Excessive amounts of debris (litter, grass cuttings, fallen trees and branches, large rocks and rubble). Excess silt on the bed and banks of the watercourse, particularly at any structures and pipes.	Record the locations and types of faults and report to the owner of the watercourse. Consider maintenance work detailed in the following rows.
Vegetation removal	Yearly After vegetation die back in late September/October and throughout mid-Autumn.	Excessive amounts of vegetation (e.g. trees, weeds, reeds, grass). This may be affecting the flow of water, or making it very difficult to inspect and monitor.	Keep growth of vegetation under control, outside of bird nesting seasons. Follow the guidance in the section 5.1 for these activities.
Silt and large debris removal	As required	Excessive amounts of debris (litter, grass cuttings, fallen trees and branches, large rocks and rubble). Excess silt and stones on the bed and banks of the watercourse, particularly at any structures and pipes.	Remove physical obstructions so that water can flow freely. Remove silt along the length of the watercourse to ensure water flows properly in the right direction. Remove silt to below the bottom of any pipes. Follow the guidance in the section 5.1 for these activities.
Maintain slope and cross section of watercourse	As required	Build up of soil or vegetation causing substantial narrowing or deviation of original watercourse.	Cut bed and banks of watercourse back to the original slope and cross section. Follow the guidance in the section 5.1 for these activities.

6.2 Ditches

Maintenance Tasks	Frequency	What to look for	What can be done
Identification	Ongoing	The Maintenance Plan indicates lengths of ditches which have been identified during site inspections. Specific features such as large trees, structures along the ditch and means of access can be identified on the ground. Specific locations to go to on a regular basis to inspect ditches can be identified. Confirm ownership and maintenance responsibilities. This is often the adjacent landowner and not Northamptonshire Highways. Consider any areas that might be an historic ditch which has become filled in over many decades. Consider any locations that regularly flood that would benefit from concrete lining next to headwalls to reduce vegetation growth. West Northamptonshire Council, Highways and the IDB should be contacted in respect of specifications and carrying out work of this type.	Use Maintenance Plan to assist in location and ownership. Add any other specific details to the Maintenance Plan. Share any new information with the Councils' Flood & Water Management team.
Inspection and monitoring	Monthly, but increase or reduce frequency based on experience. When a Flood Alert or other Weather Warning is received Following heavy rainfall Increase frequency in autumn/winter	Excessive amounts of vegetation (e.g. trees, weeds, reeds, grass). This may be affecting the flow of water, or making it very difficult to inspect and monitor. Excessive amounts of debris (litter, grass cuttings, fallen trees and branches, large rocks and rubble). Excess silt on the bed and banks of the ditch, particularly at any structures and pipes. Anything preventing water from easily flowing into a ditch, such as a build up of earth or vegetation.	Record the locations and types of faults and report to the owner of the ditch.
Vegetation removal	Yearly After vegetation die back in late September/October and throughout mid-Autumn.	Excessive amounts of vegetation (e.g. trees, weeds, reeds, grass). This may be affecting the flow of water, or making it very difficult to inspect and monitor.	Keep growth of vegetation under control, outside of bird nesting seasons Follow the guidance in the section 5.1 for these activities.
Silt and large debris removal	As required	Excessive amounts of debris (litter, grass cuttings, fallen trees and branches, large rocks and rubble). Excess silt and stones on the bed and banks of the ditch, particularly at any structures and pipes.	Remove physical obstructions so that water can flow freely. Remove silt along the length of the ditch to ensure water flows properly in the right direction. Remove silt to below the bottom of any pipes. Follow the guidance in the section 5.1 for these activities.
Reinstate historic ditches.	As required	Evidence of an historic ditch system that has become filled in over many decades. In some cases this is indicated on the Maintenance Plan.	Cut banks and bed of a ditch back to the original slope and cross section. The LLFA and the IDB should be contacted before work is carried out. Locate existing, or provide new, headwalls and connecting pipework to other ditches and drainage systems. The LLFA and the IDB should be contacted before this work is carried out. Follow the guidance in the section 5.1 for these activities.

6.3 Piped Drainage Systems and Manholes

Maintenance Tasks	Frequency	What to look for	What can be done
Identification	Ongoing	Location of surface features, such as gullies, rain water pipes, manhole covers. How does each surface feature connect? Can underground pipe routes be traced?	Use Maintenance Plan to assist in location. Trace pipe routes with drain tracing dye. Employ a company to use specialist equipment to jet through pipes, carry out a camera survey and use other tracing techniques to identify the exact pipe route. Add locations of drainage systems to Maintenance Plan. Try to ascertain ownership e.g. Water Authority sewer, Highway drain, private drainage. Share information on drainage systems with property owners. Share any new information with the Councils' Flood & Water Management team.
Inspection and monitoring	Monthly When a Flood Alert or other Weather Warning is received Following heavy rainfall Increase frequency in autumn/winter	High water levels in manhole chambers which could mean a pipe is blocked. Water bubbling out of manhole covers during heavy rain. Road gullies, rainwater pipes, slot drains not flowing or emptying.	Record locations of faults and advise drainage system owners. Keep roof gutters, gullies and slot drains clear of leaves, silt and debris. DO NOT open gullies on the public highway, inform the Highway Authority via Street Doctor/Fix My Street
Litter/debris removal	6 Monthly Increase frequency based on monitoring Increase frequency in autumn/winter	Leaves, litter and debris in and around the pond and the inlets/outlet pipe-work.	Leaves, litter and debris can be collected and disposed of in an appropriate way.
Flush through drainage system	Yearly	Particular drainage systems that build up with silt or other debris on a regular basis.	Drain rods can be used on a regular basis to keep pipework and manholes running clear. Gully pots and channel drains can be cleared of silt and leaves manually. DO NOT open gullies on the public highway, inform the Highway Authority via Street Doctor/Fix My Street
Jetting/Camera Survey	As required	Ongoing drainage problems which are likely to be as a result of blockages or other failures in the pipe and manhole system.	Drain rods can be used to try to clear domestic drains. Employ a company to use specialist equipment to jet through pipes and carry out a camera survey to identify any repairs that may be needed.
Drainage repairs	As required	Evidence of failures from visual inspection or camera survey.	Follow recommendations of camera survey specialist. Remote repairs such as lining, patching and root cutting. Full reconstruction of drainage system.

6.4 Road Gullies

Maintenance Tasks	Frequency	What to look for	What can be done
Identification	Ongoing	Location and type of road gully. Ditch or underground drainage system that gully outfalls to. Broken or dangerous gully gratings.	Use Maintenance Plan to assist in location. Add details of outfall pipework to Maintenance Plan. Give reference numbers to individual road gullies. Share any new information with the Councils' Flood & Water Management team.
Inspection and monitoring	Monthly When a Flood Alert or other Weather Warning is received Following heavy rainfall Increase frequency in autumn/winter	Leaves, silt and debris along the edge of the road and across gully grating. High level of silt visible in top of gully, or use a rod to feel depth of silt. Standing water around gully during rain. Water flowing over gully or water bubbling out of gully during rain. Consider any areas where additional gullies would be beneficial.	Record gully locations and faults and report to Street Doctor/Fix My Street if Highway gully.
Litter/debris removal	6 Monthly Increase frequency based on monitoring Increase frequency in autumn/winter	As Inspections and Monitoring above.	Record gully locations and faults and report to Street Doctor/Fix My Street if Highway gully. Leaves, litter and debris can be collected and disposed of in an appropriate way.
Silt removal	Yearly Increase frequency based on monitoring	As Inspections and Monitoring above.	Record gully locations and faults and report to Street Doctor/Fix My Street if Highway gully. Silt can be dug out of gully pots and disposed of in an appropriate way. DO NOT open gullies on the public highway, inform the Highway Authority via Street Doctor/Fix My Street
Jetting or Rodding	As required	As Inspections and Monitoring above.	Record gully locations and faults and report to Street Doctor/Fix My Street if Highway gully. Outlet pipes can be jetted or rodded to ensure they are free flowing. A CCTV camera survey can be carried out to identify any other faults. DO NOT open gullies on the public highway, inform the Highway Authority via Street Doctor/Fix My Street

6.5 Verge Grips

Maintenance Tasks	Frequency	What to look for	What can be done
Identification	Ongoing	Location and type of verge grip. Ditch that verge grip outfalls to. Broken concrete verge grip. Clarify ambiguous verge grip locations.	Use Maintenance Plan to assist in location. Add locations of verge grips to Maintenance Plan. Give reference numbers to individual verge grips. Share any new information with the Councils' Flood & Water Management team.
Inspection and monitoring	Monthly When a Flood Alert or other Weather Warning is received Following heavy rainfall Increase frequency in autumn/winter	Leaves, silt and debris along the edge of the road and through the verge grip channel. Grass or other vegetation preventing easy run-off of surface water during rain. Level of verge grip the same or higher than road surface, preventing run-off. Continued regular issues with specific verge grips that would benefit from concrete lining or enlargement. Consider any areas where additional verge grips would be beneficial.	Record verge grip locations and faults and report to Street Doctor/Fix My Street if in the Public Highway. Discuss the possibility of additional verge grips with the Highway Authority.
Litter/debris removal	6 Monthly Increase frequency based on monitoring Increase frequency in autumn/winter	Leaves, litter and debris at the road edge and in the verge grip channel.	Leaves, litter and debris can be collected and disposed of in an appropriate way.
Vegetation clearing	Yearly Increase frequency in summer To be determined following monitoring	Very long grass or other vegetation at the road edge and in the verge grip channel.	Record verge grip locations and faults and report to Street Doctor/Fix My Street if in Public Highway. Grass and other vegetation can be cut with a strimmer or mower. All material to be disposed of in an appropriate way.
Silt removal	Yearly To be determined following monitoring	Excessive amounts of silt at the road edge and in the verge grip channel meaning water cannot flow off the road and through the verge grip.	Record verge grip locations and faults and report to Street Doctor/Fix My Street if in Public Highway. Verge grip can be dug out manually to improve the flow of surface water off the road and through the channel. All material to be disposed of in an appropriate manner.

6.6 Storage Ponds

Maintenance Tasks	Frequency	What to look for	What can be done
Identification	Ongoing	Location and type of storage pond. The purpose of the pond, such as a specific development or drainage system that it serves. The location and type of inlet and outlet pipes and other structures and flow control devices. Access and inspection arrangements and any equipment needed.	Use Maintenance Plan to assist in location. Add locations of ponds and associated pipework to the Maintenance Plan. Try to ascertain ownership e.g. Water Authority, Highway Authority, land owner. Obtain a copy of any existing maintenance plans. Obtain reports, drawings or calculations to show how the pond is supposed to function in heavy rainfall. Share any new information with the Councils' Flood & Water Management team.
Inspection and monitoring	Monthly, but increase or reduce frequency based on experience. When a Flood Alert or other Weather Warning is received Following heavy rainfall Increase frequency in autumn/winter	Excessive amounts of vegetation (e.g. trees, weeds, reeds, grass). This may be affecting the flow of water, or making it very difficult to inspect and monitor. Excessive amounts of debris (litter, grass cuttings, fallen trees and branches, large rocks and rubble). Excess silt on the bed and banks of the pond, particularly at any structures and pipes.	Record the locations and types of faults and report to the owner of the pond.
Vegetation removal	Yearly After vegetation die back in late September/October and throughout mid-Autumn.	Excessive amounts of vegetation (e.g. trees, weeds, reeds, grass). This may be affecting the flow of water, or making it very difficult to inspect and monitor.	Keep growth of vegetation under control, outside of bird nesting seasons Follow the guidance in the relevant section of this report for these activities.
Silt and large debris removal	Yearly	Excessive amounts of debris (litter, grass cuttings, fallen trees and branches, large rocks and rubble). Excess silt and stones on the bed and banks of the pond, particularly at any structures and pipes.	Remove physical obstructions so that water can flow freely and no storage volume is lost. Remove silt from the bed of the pond at inlets and outlets. Clear any specific silt trap chambers or micro-pools. Follow the guidance in the relevant section of this report for these activities.
Maintain slope and cross section of pond	As required	Build up of soil or vegetation causing substantial narrowing of pond, reducing its storage capacity.	Cut bed and banks of pond back to the original slope and cross section. Follow the guidance in the relevant section of this report for these activities.

7. SPECIFIC INVESTIGATIONS & MAINTENANCE

Carrying out full investigations and maintenance of all drainage systems in Deanshanger is an ongoing project with multiple responsible parties and funding streams.

In some areas drainage systems have clearly identified ownership and maintenance responsibilities. Resources and prioritising of work by the responsible owner can often be a factor in some areas receiving more attention than others.

In other areas the ownership and maintenance responsibilities for drainage systems are less well defined. It is important for the community to discuss and agree responsibilities with all stakeholders at an early stage.

The Parish Council and Flood Wardens can take the first steps in engaging with owners of drainage systems to discuss an ongoing programme of maintenance work.

Most communities have people with skills and equipment that could be engaged on a voluntary basis, or for negotiated terms.

This section details specific areas of Deanshanger which are considered priority areas, and where small amounts of funding or community resources could be put to meaningful use in the short term.

Each area is highlighted on the Maintenance Plan in Appendix C by a yellow star with a number corresponding to the sub-sections below. eg Section 7.1 = 

7.1 Mapping and Clarifying Ownership of Drainage Systems

The Community Flood Warden can act as a single point of contact with local authorities and land owners to try to determine precise responsibilities for each part of the various drainage systems and watercourses in Deanshanger.

Local Authorities and other stakeholders need to balance resources and budgets, so this may be an ongoing process.

The Maintenance Plan in Appendix C is the first attempt at combining drainage of various ownerships onto a single master plan. This should be developed in detail as more information is made available by local authorities and private land owners.

Where it appears that drainage has not been adopted by a local authority in certain areas of the village, this should be investigated further to understand what the maintenance responsibilities are.

Arrangements can be made for the community to carry out regular inspections, reporting of issues, and light maintenance to parts of the drainage systems. This will require the correct permissions to be in place, particularly any areas relating to the public sewerage system or public highway.

Cost: Free – volunteers time only.

7.2 Clearance Works to Main Watercourses

There are some points along the main watercourses in and around Deanshanger where clearance of excessive vegetation, silt and debris could improve water flow. This is a major programme of work, but smaller areas could be carried out at different times to spread resources. The ultimate responsibility for maintenance of this type of watercourse sits with the Riparian (private) landowner.

With the permission of land owners, a detailed inspection of the open sections of watercourses is recommended. This will identify the main areas that could benefit from clearance work.

The inspection will identify a priority order of work so that this can be phased with available time and financial resources.

It may be possible for some works to be carried out by the community with basic tools.

Specialist teams with the correct equipment and work procedures are likely to be required for all but the most minor of clearance work. This would include:

- Reducing the spread of larger trees and bushes.
- Removal of significant volumes of silt and debris requiring mechanical excavators
- Repairs to structures such as privately-owned bridges (some road bridges are maintained by the Highway Authority).

It is recommended that clearance starts from the downstream end of watercourses, with attention paid to the following areas:

- Kings Brook downstream/east of Deanshanger to the confluence with the River Great Ouse.
- Kings Brook through the village. Siltation can occur to a greater extent at bends in the brook. Consideration can be given to installation of a new weir to reinstate the original (south) course of the brook at The Green, subject to necessary consents.

- Sections of open watercourse, including repurposed sections of disused canal, from Honey Hill Drive to Hayes Road and Stratford Road, continuing south to Kings Brook at the west of the school. Including the balancing pond to ensure this maintains full capacity.
- Section of disused canal and watercourse at Greenell Close.
- Kings Brook and the two contributing tributaries to the west of Deanshanger, to ensure the watercourse upstream of the village is maximising its flow and storage capacity.
- Roadside ditches on Puxley Road, Folly Road and Buckingham Road on the approaches to the village from the west and south.
- Roadside ditches on Stratford Road, opposite the school.

This major programme of work on the watercourses should result in simpler inspection and routine light maintenance taking place in future.

Cost: Selection of tools for the community in a 'Flood Store', eg rakes, shovels, chainsaws, strimmers, rubble bags, personal protective equipment

- £500

Specialists to undertake larger sections of work

- Allow £500 -£1000 per day

7.3 Localised Clearance of Ditches and Smaller Watercourses

There are specific priority areas that could benefit from localised ditch and watercourse clearance. This would involve clearing excessive vegetation and clearing silt and debris for just a few metres around pipes and headwalls, and at debris grilles. This would allow the pipes to be easily inspected and kept clear in future.

Particular areas that could benefit from this localised work include:

- Kings Brook
    - Culverts under Stratford Road. North and south channels.
    - Field access bridge downstream (east) of Stratford Road.
    - Culverts under Patricks Lane.
    - Culvert under Church Lane.
    - Footbridge at Church Lane property

- Surface water sewer outfalls to Kings Brook. West of Elizabeth Woodville School, between Bridge Walk and High Street, south of Home Farm Close and east of Church Lane.
- Inlet/outlet headwalls at balancing pond south of Honey Hill Drive.
- Headwalls to pipes on watercourse/disused canal from Honey Hill Drive to Hayes Road and Stratford Road.
- Roadside ditches on Stratford Road, opposite the school.

Cost: Selection of tools for the community in a 'Flood Store', eg rakes, shovels, chainsaws, strimmers, rubble bags, personal protective equipment

- £500

Specialists to undertake larger sections of work

- Allow £500 -£1000 per day

7.4 Survey of Buried Pipework

There are numerous privately owned buried pipework systems in the village, many of which link watercourses and ditch systems. The routes of these pipe systems are assumed only, or not known at all.

A specialist contractor can attempt to clear and CCTV survey buried pipe sections of private drainage systems in and around Deanshanger.

This helps to identify exactly where pipes are located and what repairs might be required.

Any work to Anglian Water sewers or Highway Authority drainage systems is not allowed without permission.

A 'dye survey' and 'Radar Sonde' survey can sometimes be sufficient where pipes are running well.

Coloured dye is shaken into the water at the upstream end of a pipe, and traced at various points downstream to understand how pipework is linked.

A Sonde is a small unit that emits a signal to a receiver at ground level. The Sonde is pushed through the pipe and its location marked at ground level at regular intervals.

To fully understand the pipe system, a camera can be pushed through. This gives a full picture of the condition of the pipe and can identify where 'blind' connections are made into the side of a pipe from other sources.

The above survey work can be accompanied by high pressure jetting where possible but can be limited by types of blockage or failure that might be present in buried pipes, for example:

- Large solid blockage, rock, concrete;
- Excessive roots in pipe that cannot be cut remotely;
- Excessive silting of pipe along many metres;
- Major settlement/displacement of sections of pipe so that remote equipment cannot be pushed through;
- Completely collapsed/broken pipes.

Specific areas are recommended for a survey of buried pipework. These include:

- Pipes connecting open watercourses/disused canal from Canal Lane to Hayes Road.
- Areas of the village where no surface water public sewer networks are recorded such as Church Lane, Puxley Road, Ridgmont, High View, Glebe Road, The Green and The Beeches.
- Any private areas with known issues with water flowing away from the dwelling.
- Private areas where residents desire a better understanding of their responsibilities, or where these are in dispute with neighbours etc.
- Private properties with a relatively large impermeable area, where effective drainage is important to manage potential run-off. Such as schools and community buildings.
- Pipes from ends of roadside ditches on Puxley Road, Folly Road, Stratford Road and Buckingham Road.
- Pipes from ends of ditches on Stratford Road, opposite the school.
- Pipes entering and leaving the open chamber at the junction of Hayes Road and Glebe Road.

In many areas of the village, particularly the centre, there are no surface water drains indicated on local authority asset maps. It is likely that various networks exist to take run-off from roofs and paved areas. These are likely to be historic pipes in private ownership. A full survey of all pipework in this area to establish locations and ownership is therefore an ongoing concern.

Cost: Tools and dye for basic surveying

- Up to £200

Specialist Drainage Survey Team

- Allow £750 per day.

7.5 Road Gullies and Verge Grip Drains

Gullies and verge grip drains should be maintained so that surface water from the roads can flow readily into the ditches, watercourses or pipes.

Much of this work is the responsibility of the Highway Authority, and work by individuals should not be undertaken on the public highway without permission and agreed traffic management.

Verge grip drains are recorded on rural roads outside of the town. There may be opportunities to introduce these in urban areas, where safe to do so, to help to manage flood water on the public highway and divert this to safe areas. This might help with the removal of water from the road in areas of High Street, The Green and Hayes Road.

The community may be able to carry out light maintenance to ensure gully gratings are kept clear of leaves and debris. Again, permission from the Highway Authority would be required for these works.

Cost: Selection of tools for the community in a 'Flood Store', eg rakes, shovels, chainsaws, strimmers, rubble bags, personal protective equipment

- £500

7.6 Assessment of Flood Water Management Options

Various options could be viable over the wider catchment to slow the flow of water into watercourses and sewers, or manage flood flows in other ways. One principle of Natural Flood Management is to hold water higher in the catchment away from vulnerable areas at low points in the community. Water can be held in soil or on vegetation, or in newly created wetlands or storage ponds.

Another strategy is to form pathways to create overland flood flow routes free of obstructions, and away from vulnerable areas.

Engagement with land owners and other stakeholders is essential at an early stage for all options.

Specialists can assess the catchment and draw up a shortlist of potential options that can be taken forward.

Different solutions lend themselves to different catchment types, taking into account land use, contours, willingness of land owners and cost. Often existing features, such as watercourses and flat areas of land, can be adapted slightly to maximise the potential for holding water in heavy rainfall events.

Creating shallow channels, or introducing earth bunds or walls, can help to define an overland flood flow route to help control heavy water flows across the ground. Removing or adapting significant obstacles such as walls and fences can allow flood water to flow over ground without significantly increasing in depth at dwellings. Slight alterations to kerb heights on roads can help to manage the location where flood water will start to overtop from the carriageway.

Physical measures put in place to manage water flow will need regular inspection and maintenance which needs to be included in the overall cost.

Topographical Surveys would be required to allow detailed options to be designed and engineering drawings developed.

Specific areas that could be assessed further for natural flood management options are:

- Consider options to manage flows in the two main tributaries contributing to Kings Brook. Opportunities may exist to slow the flow and provide storage in safe areas upstream of Hurst Farm, between The Folly and Deanshanger, upstream of Wicken, and between Sparrow Lodge and Deanshanger.
- Restricting flows and increasing the capacity of the balancing pond and watercourse between Canal Lane and Honey Hill Drive.
- Increasing the capacity of Kings Brook at bends in the watercourse between High Street and Bridge Walk.
- Adapting ground levels to divert flow paths and provide storage, to manage overland flood flows
    - North of Hayes Road/Glebe Road bend.
    - North of Puxley Road/Westfield Avenue
    - West of The Beeches.
- Adapting ground levels to provide storage in areas of open space at The Green and Stratford Road.
- Adapting ground and road levels so that deepening water at The Green can overspill to fields downstream at the east.
- Assess any benefits of providing temporary storage areas in fields downstream (east) of Stratford Road, to reduce the reliance on the capacity of Kings Brook between Deanshanger and the River Great Ouse to remove water from the village.
- At some locations in the village, residential properties are located through the base of shallow natural valleys or strong flow paths. This includes areas such as Glebe Close through to Honey Hill Drive, Puxley Road through Little London to Church Lane, and The Green/Patricks Lane.

Surface water will always try to follow these historic low points in drainage exceedance events. A coordinated approach would be required between residents to make adaptations to gardens and boundaries to allow excess flood water to flow through safely and unimpeded in extreme events. This would reduce the risk of water deepening at any particular point, or of water being directed towards doorway thresholds.

The coordinated approach is required to ensure that changes made at one property do not adversely impact another property, and this may need to be led by the Parish Council a formal community group.

Cost: Engagement with landowners and other stakeholders

- Free

Specialists to assess catchment and shortlist options

- Allow £500-750 per day, potentially several days or weeks work depending on extent and accuracy.

Topographical Surveys and Engineering Design

- Allow £500-750 per day, again potentially several days or weeks depending on extent.

Implementation of measures on the ground

- Variable – options such as woodland creation could be undertaken by the community or other volunteers.
- Adaptations to fences, walls and ground levels in gardens could be undertaken by private property owners.
- Options requiring earthworks or new structures are likely to require cost comparison amongst various Contractors and are likely to be in the tens of thousands.

7.7 Flood Resilience Measures

Many measures to reduce flooding from drainage systems and watercourses are costly and can take many years of planning and implementation.

Options can be considered that focus on communities preparing for, and being more resilient to, existing levels of flooding. A Community Emergency Plan is invaluable for the community to be able to take the correct action.

Barricades and diversionary signing can be used to close roads, subject to discussions and permissions from the Highway Authority and Emergency Services.

Items subject to damage in external areas can be relocated when weather warnings are received. The flood maps and local eye-witness experience can help to define the potential extent of the floodplain, and the use of these areas can be adapted so that they can readily flood and recede with minimal impact to people or property.

A 'Flood Store' can house various tools, equipment and signs to help the community manage a flood event and reduce the impacts. Full details of what to consider for a flood store, and potential costs can be found at How to….Get a Community Flood Store.

Where buildings are at risk of flooding internally, permanent and temporary measures can be taken to try to keep the water out. These could include flood barriers and flood doors, flood proof air-bricks and non-return valves on drains.

Alternatively, the building could be designed to allow flood water in, but with minimal impact and clean up afterwards. Typical measures include tiled floors, electrics and valuables at high level, synthetic doors and skirting boards.

Further details can be found at How to Protect Your Home.

8. USEFUL CONTACTS

West Northamptonshire Council

Highways:

Tel: Street Doctor (Highways) 0300 126 1000

Website: https://fixmystreet.northamptonshire.gov.uk/

Email: highways.ncc@westnorthants.gov.uk

Emergency Planning:

Tel: 0300 1261012 (office hours)

Website: http://www.northamptonshire.gov.uk/emergencies

Email: emergencyplanning1.ncc@northnorthants.gov.uk

Flood and Water Management Team:

Tel: 01604 366014 (Mon-Fri, 9am - 5pm)

Email: floodandwater@northamptonshire.gov.uk

Environment Agency

General Tel: 03708 506 506 (Mon-Fri 8-6) Call charges apply.

Incident Hotline: 0800 807060 (24 hrs)

Floodline: 0345 988 1188

Website: https://www.gov.uk/government/organisations/environment-agency

Email: enquiries@environment-agency.gov.uk

Anglian Water

Emergency Tel: 03457 145145 (select option 1)

Website:

http://www.anglianwater.co.uk/household/water-recycling-services/sewers-and-drains.aspx

Deanshanger Parish Council

Website: https://www.deanshangerparishcouncil.org.uk/

Email: clerk@deanshangerpc.com

The Flood Toolkit "Who is responsible" page:

http://www.floodtoolkit.com/contacts/

9. USEFUL LINKS

Highways Act 1980:

http://www.legislation.gov.uk/ukpga/1980/66/contents

Water Resources Act 1991:

http://www.legislation.gov.uk/ukpga/1991/57/contents

Land Drainage Act 1991:

http://www.legislation.gov.uk/ukpga/1991/59/contents

Guidance on Owning a Watercourse Your responsibilities and rules to follow for watercourses on or near your property, and permissions you need to do work around them

https://www.gov.uk/guidance/owning-a-watercourse

EA - Prepare your Property for Flooding:

How to reduce flood damage Flood protection products and services

https://www.gov.uk/government/publications/prepare-your-property-for-flooding

Private Sewer Transfer

https://www.water.org.uk/wp-content/uploads/2019/03/Private-Sewer-Transfer-Water-UK-Template.pdf

Lead Local Flood Authority Web Pages:

http://www.floodtoolkit.com/

Northamptonshire Local Flood Risk Management Strategy:

https://www.floodtoolkit.com/wp-content/uploads/2017/11/Northamptonshire-LFRMS-Report-November-2017-Final-1.pdf

Flood and Water Management Act 2010

http://www.legislation.gov.uk/ukpga/2010/29/contents

DISCLAIMER

This report has been prepared to provide context and information to support communities in their own flood resilience plans and should not be used for any other purpose.

Features identified in this report in relation to flooding are based on a single limited inspection in dry weather conditions. Inspections were carried out from public rights of way and open access land only.

The findings of the report are based on a subjective assessment of the information available by those undertaking the investigation and therefore may not include all relevant information. As such it should not be considered as a definitive assessment of all factors that may trigger or contribute to flooding.

The relevant responsible body or persons for property or drainage features has not been identified or considered.

Any recommendations will be for the relevant responsible body or persons to assess in terms of resource implications, priority and cost/benefit analysis of the proposal. Moving forward, these may be included in the Action Plan linked to the Local Flood Risk Management Strategy or in the relevant risk management authority's future work programmes as appropriate.

The opinions, conclusions and any recommendations in this Report are based on assumptions made by David Smith Associates and West Northamptonshire Council when preparing this report, including, but not limited to those key assumptions noted in the Report, including reliance on information provided by others.

David Smith Associates and West Northamptonshire Council expressly disclaim responsibility for any error in, or omission from, this report arising from or in connection with any of the assumptions being incorrect.

The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the time of preparation and David Smith Associates and West Northamptonshire Council expressly disclaim responsibility for any error in, or omission from, this report arising from or in connection with those opinions, conclusions and any recommendations.

The implications for producing this report and any consequences of blight have been considered. The process of gaining insurance for a property and/or purchasing/selling a property and any flooding issues identified are considered a separate and legally binding process placed upon property owners and this is independent of and does not relate to the Council highlighting flooding to properties at a street level.

David Smith Associates and West Northamptonshire Council do not accept any liability for the use of this report or its contents by any third party.