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1. Overview



Flooding is the most common and costly natural disaster in the UK with Doncaster having the 3rd highest risk to residential property in the Yorkshire and Humber Region, primarily due to its topography and the majority of the borough siting within 10 metres of sea lev-



Floods can happen anywhere, not just in flood zones or near rivers. Urban flooding (or surface water flooding) can be just as impactful as Main River flooding and is also less predictable and harder to respond to due to the speed in which these floods occur.



This winter we want to make sure that you as councillors are prepared and ready for potential severe weather events that may cause flooding, so we have prepared this booklet to supply you with access to resources and advice that will better enable you to support Doncaster's residents.

Surface Water Flooding

Also known as flash flooding, is caused by heavy rainfall which overwhelms the existing draining system and cannot drain away fast enough. It is more likely to occur in areas with a high proportion of hard ground surfaces, as the only exit route for the rainwater is the drainage network rather than gradual infiltration into the ground.

Key Features / Impacts:

- Happens when heavy rain cannot drain away.
- Is difficult to predict as it depends on rainfall volume and location
- Can happen up hills and away from rivers and other bodies of water.
- Is more widespread in areas with harder surfaces like roads and paved areas.
- Is likely to drain off shortly after the rain eases off.
- Unpredictability of locations make responding difficult.
- Can lead to property flooding in extreme circumstances.
- More commonly seen as road and garden flooding.



Rain falls faster than it can drain away which results in natural low spots (usually on the highway) flooding for a short while until the surface water system can drain the water away. Often this is caused by lack of capacity within the main public sewer due to the amount of rain falling in a short space of time, if the water quickly drains off then there is unlikely to be a blockage or collapse sewer.

The image below demonstrates how the surface water gullies are de-

signed to work, debris and silt, is collected within the gully pot and surface water runs into the sewer connection, which is usually (approx.) 10cm below the top of the gully cover. Gullies are often reported as blocked as water can be seen sat in the gully pots, however generally this is not the case.



River Flooding

Also known as a fluvial flood, is when the water level in a river, lake or stream exceeds the maximum which can be contained and overflows onto the surrounding land, which is known as the floodplain.

Doncaster has river flooding risks along the river Don in Bentley, Conisbrough, Sprotbrough, Fishlake. Along with ordinary water course risks on the EA Beck Adwick & Tollbar, Kearsley Brook (Conisbrough) and Mill Dyke (Tickhill).



Ground Water Flooding

Ground water flooding can happen when the water table rises up to above ground level. This is most likely to occur after periods of heavy or prolonged rainfall and can contribute towards overland flow, or even present itself as a fast flowing spring out of the ground. Properties with cellars are at additional risk of ground water flooding caused by rising water tables.



- Natural springs can appear fast and flood properties or land again with little warning
- Cellars and low lying land are more vulnerable to this type of flooding

Sewer Flooding

Happens when the sewer system is overwhelmed by heavy rainfall, or the system becomes blocked. The resulting floodwater is particularly dangerous to health as it contains raw sewage.



Key Features / Impacts:

- Occurs due to blockage or when surface water accesses the waste water sewer.
- Can back up into people's homes
- Will cause surcharging and contamination issues
- Is a public health risk
- Can occur where no incidents for flooding have been reported before

Environment Agency



The Environment Agency has a strategic overview of all sources of flooding and coastal erosion (as defined in the Flood and Water Management Act 2010). It is also responsible for flood and coastal erosion risk management activities on main rivers and the coast, regulating reservoir safety, and working in partnership with the Met Office to provide flood forecasts and warnings.

It must also look for opportunities to maintain and improve the environment for people and wildlife while carrying out all of its duties.

Contact Number: 0800807060

Email: enquiries@environment-agency.gov.uk

Internal Drainage Boards



Internal Drainage Boards (IDBs) are locally accountable independent public authorities responsible for the general supervision of drainage within their districts, except main rivers.

IDBs raise local taxes (rates) in order to carry out maintenance works on arterial watercourses and some rivers, they also operate pumping stations, sluices and other flood risk management structures.









The Danvm Drainage Board is one of the largest in the region and serves communities between the River Don and the River Aire.

A map of the area covered by Doncaster East can be found below shaded in grey.

Contact Number: 01430 430237

Web Site: https://yorkshirehumberdrainage.gov.uk



Lead Local Flood Authorities (LLFA)



LLFAs are county councils and unitary authorities. They lead in managing local flood risks (i.e. risks of flooding from surface water, ground water and ordinary (smaller) watercourses). This includes ensuring co-operation between the Risk Management Authorities in their area.

Doncaster Council is a LLFA responsible for all highway drainage and ordinary water course enforcement within its boundaries (excluding those managed by IDB's).



Water & Sewerage Companies

Water companies are Risk Management Authorities (RMAs) and play a major role in managing flood and coastal erosion risks. They manage the risk of flooding to public sewers both foul and surface water.

Yorkshire Water - are responsible for the public sewer network for the majority of the borough for both foul and surface water sewers.



Contact Number: 03451 242424

Web Site: <u>Yorkshire Water - Water com-</u> pany

Severn Trent Water — are responsible for the public sewer network for the south of the borough from Edlington to Bawtry for both foul and surface water sewers



Contact Number: 0800 7834444

Web Site: <u>Severn Trent Water</u> (stwater.co.uk)



Flood Alert: Prepare – This means flooding is possible be prepared to act (these alerts are common all year round when heavy rain is forecast, they do not indicate that a flood will occur but highlight the risk of a potential flood. Doncaster receives an average of 8 flood alerts per year).

What to do:

- Be prepared to act on your flood plan.
- Prepare a flood kit of essential items.
- Monitor local water levels on our website.

4. Resources & Monitoring

Flood Warning: Act – Flooding is expected immediate action is required (these warning need to be taken seriously, at this point the councils emergency planning processes will be in action to ensure the situation is monitored and resources are ready to be deployed if required. Doncaster receives at least 1 of these warnings every year since the 2019 floods).

What to do:

- Protect yourself, your family and help others.
- Move family, pets and valuables to a safe place.
- Keep a flood kit ready.
- Turn off gas, electricity and water supplies if safe to do so.
- Put flood protection equipment in place.

Severe Warning: Survive – Severe flooding, danger to life (These warnings are very rare and will only be served during a major flooding event, such as the 2007 and 2019 floods).

What to do:

- Stay in a safe place with a means of escape.
- Be ready should you need to evacuate from your home.
- Co-operate with the emergency services.
- Call 999 if you are in immediate danger.

4. Resources & Monitoring

Web Based Data Resources

You need to be aware of flooding and flood risk, to keep an eye on the water levels or to access other weather and flood resources, you can do this by accessing the resources below.

River Levels – <u>River and sea levels in England</u> - <u>GOV.UK (check-for-flooding.service.gov.uk)</u>

This website provides details of all EA river gauges (telemetry) along with key information about river level ranges and trigger points for flooding. Limited gauges also provide forecasting of river levels over the next 12 to 24 hours.

Met Office – UK weather warnings - Met Office

The Met Office web site provides a detailed forecast and includes resources where you can view satellite and radar images of the weather patterns for the next 24 hours.

Flood Warnings – <u>Check for flooding in England - GOV.UK (check-for-flooding.service.gov.uk)</u>

This is an EA resource that lets you view current and in some cases forecast river levels in your area, no sign up is required and information is available on normal river ranges and exceedance points.

Flood Warning Sign Up – <u>Sign up for flood warnings - GOV.UK</u> (www.gov.uk)

This website allows you to sign up for the flood warnings for your area.

4. Resources & Monitoring

Long Term Flood Risk – <u>Check the long term flood risk for an area in</u> England - GOV.UK (www.gov.uk)

By entering a post code you can view the long term flood risk for an area, it includes access to mapping data for the area selected where different levels of flood risk can be viewed.

Short Term Flood Risk – Check for flooding - GOV.UK (www.gov.uk)

By entering a post code you can view the short term flood risk for an area, it includes access to mapping data for the area selected where different levels of flood risk can be viewed.



5. Recommendations for Residents

Understand and know your flood risk

All Cllrs are urged to understand the specific flood risks and impacts flooding may cause within their ward. Similarly it is the responsibility of the residents to understand the specific risks to their property and make plans for reacting to severe weather events. The following information is the minimum action residents should be taking.

Review insurance arrangements

For residents that are frequently flooded and face high insurance premiums it is suggested that Flood RE is considered as an alternative insurance option. Details of this scheme can be found using the following link: Flood Re - A flood re-insurance scheme



5. Recommendations for Residents

Have an emergency flood plan

Prepare an Emergency Flood Response Plan and ensure this is communicated to others who might need to act during (or to prepare for) a flood. Collaborating with neighbours on response plans can help to build resilience and reduce losses. The exact contents of an Emergency Flood Response Plan may vary depending on your site and the nature of your land or business activity, but it is recommended that the following items are included:

- Details of your insurance such as policy, contact and claims numbers.
- Other useful contact numbers such as local council, utility providers, and emergency contacts.
- Information on how to shut off your electricity, gas and water supplies.
- Location of chemicals and fuels which may cause a pollution incident, and where to move them to in order to prevent such an incident occurring.
- Details of any flood mitigation materials / temporary flood defences, including where they are stored and how to use them effectively
- Identify suitable locations, such as higher ground, where vehicles or livestock may be able to be moved.
- Know where to go in the event of an evacuation
- Prepare an emergency flood kit to include: (a torch, medications, waterproofs and warm clothing).

Government advice on how home owners can prepare for floods can be found following this link: <u>LIT 5216.pdf (publishing.service.gov.uk)</u>

6. Resource & Preparation

During a potential flood Doncaster Council will monitor the weather forecasts and river levels discussing with partner organisations such as the met office and environment agency the likelihood a flood will occur.

Emergency Planning

Once the council emergency protocols are activated the highway service plays a lead role in the delivery of the councils operational response on the ground, the following structure highlights the interaction between the council emergency panning hierarchy and operational teams during flooding events. All teams will work on a rota basis providing 24/7 cover for the entirety of the event.



6. Resource & Preparation

Highways & Street Scene Operational Deployment

During the colder months (October to April) Highways services operates a winter service primarily treating the highway networks with grit salt to mitigate the risks of frost, ice and snow on the boroughs key route network. During flood events this service are used to provide on the ground operational resources to deploy sand bags, support key operations and infrastructure, as well as deploying road closures and pumping resources. Supported by other highway teams and street scene operatives this operational response provides 24 hour cover 7 days a week for as long as the flood event is in progress.

This winter service operational cover will commence in November 2022 and be on call through to April 2023 ready to be deployed should any Flood Warnings be received over this period.



Sand Bag Usage

Traditionally, sandbags have been used to block doorways, drains and other openings into properties as well as to weigh-down manhole covers, garden furniture and to block sink, toilet and bath drains to prevent water backing up.

They can keep water out for short periods which can be improved by using them in conjunction with plastic sheeting. However it's important to remember that sand bags are a last resort to add resilience to a property they are not a solution to property flooding and only serve as a temporary resilience measure to allow additional time for residents to activate their emergency plans.

Advice to deploy sandbags to add resilience to residential properties:

- Building a sand bag wall up to 60cm in height and 1 metre in length would require approximately 80 sand bags, it is not safe or practical to use sand bags as an outright barrier or bund, you should instead focus on placing the bags around entrances to your property such as doors and air vents.
- Clear any debris from the area where the bags are to be placed.
- If you can, put a large sheet of heavy-duty plastic between the sandbags and the wall of your house. Place the bags lengthways, tucking the open end under the filled half of the bag and position it pointing into the direction of water flow.
- Place bags in layers. Like a brick wall, make sure that in the next layer each bag overlaps the one below by half.

- Stamp bags firmly into place to eliminate gaps and create a tight seal.
- To lay sandbags in a doorway, it may be necessary to empty some of the contents out or shape the sandbags to achieve a good fit without overlapping



Provision of Sand Bags

Doncaster Council or any other local authority is not statutorily obliged to deploy sand bags to residents, ultimately it is the residents responsibility to protect their property, however when resources are available the council will attempt to deploy sand bags to previously flooded properties on a priority basis. The average number of sand bags deployed during the last two near miss flood events was 50,000 with over 80,000 being deployed during the 2019 flood.

To meet the demand for this number of sand bags the council has contracts with two local suppliers to hold a stock of 10,000 sand bags each for immediate deployment. Both suppliers can then replenish stocks with up to 5000 sand bags per day per supplier. The council also holds details of other sand bag suppliers who can be used to provide additional sand bags should they be required.

The highways service also holds a supply of 500 sand bags at North Bridge which is rotated and replenished through business as usual operations to ensure the bags are kept in a suitable condition to be immediately deployed.

3 stores of hydro sacks are also in position in Bentley, Conisbrough and Fishlake as an emergency provision should the council not be able to respond to events and supply regular sand bags. Bentley and Fishlake have been provided with these emergency supplies due to the scale of impact on the community caused by the main river flooding and Conisbrough due to the double risk or flooding from both the river Don and Kearsley Brook.

The provision of 1 tonne sand bags for infrastructure or structure supporting existing flood defences will be considered during events on a site specific basis, provision of these bags will be through our suppliers with access to the bags within 1 hour of placing an order.



Collection of Sand Bags

Due to responding to an emergency event the council's resources are redeployed on mass to the distribution of sand bags during the early preparation for a flood, however following the flood these resources are reprioritised back to business as usual duties, leaving a small resource within the highway service to collect and either dispose of or restock the sand bags. Due to the huge difference in resource between the deployment and collection stages, your patience would be appreciated when reporting sandbags that require collection.



Bentley

River Don

Flooding to the Willow Bridge Caravan site and the Hunt Lane area for Town end occurs when river levels exceed the bank between St Marys Bridge and the Railway Line. Significant flooding occurs to over a 300 residential properties and several businesses.

Bentley Ings

Flooding around the Bentley Frank Road area is primarily caused by the backing up of the Bentley ings, this flood plain captures water from the Bentley flood corridor and river Don at various overtopping points, however it will at a certain point back up and flood the Frank Road area, eventually joining up with the main river flood water around Hunt Lane.

Bentley Flood Corridor

Both areas of Bentley town end are affected by water accessing the flood corridor from Sprotbrough, Scawsby and Cusworth. Localised land drainage and land saturation can compound the issues caused by Main River flooding and add to the level of flood water entering the area.

Surface Water

Again localised rain fall can add to the impact of main River flooding as the drainage system is unable to cope with the river flood water and localised rainfall.

Hydro Sack Storage

Due to the flooding complexities of the area hydro sacks have been deployed in the town end area of Bentley for emergency deployment only.

For your information – Hydro Sacks are only to be deployed as a last resort should Doncaster Council not be able to provide traditional sand bags.

Conisbrough

River Don

The river Don at Conisbrough will during heavy rainfall events burst its banks and cause property flooding to Duftons Court, areas of Mexborough and Old Denaby. A scheme for Duftons Close is being developed however funding this scheme through existing channels is proving problematic.

Kearsley Brook

Kearsley Brook is fed from a fast reacting local catchment that can cause flooding to residential properties and the highway. Property level resilience has been deployed to homes in the area and a flood device can be deployed to capture flood water and redeploy it back into the brook due to a culvert inhibiting capacity. A Scheme is being developed to slow the flow within the Kearsley Brook catchment to ease the pressure on pinch points within the village.

Hydro Sack Storage

Due to the fast reacting nature of the catchment hydro sacks have been provided in two locations within Conisbrough as an emergency precaution.

For your information – Hydro Sacks are only to be deployed as a last resort should Doncaster Council not be able to provide traditional sand bags.

Fishlake

River Don & Tidal Influence

Overtopping points down stream of Fishlake fill the ings area and have on occasion overtopped the secondary barrier bank at Fishlake Village causing severe flooding to village. This flooding and the draining of the ings is compounded by the tidal influence from the Humber which locks in the flood water keeping levels artificially high.

Land Drainage & Surface Water

Capacity within the ings area is reduced due to the amount of land drainage and localised surface water drainage in the area, this compounds the river flooding and hinders post flood land drainage.

Sour Lane Drain & Camels Hump

A scheme is being developed to keep flood water that overtops from the river Don past the village from backing up into Sour lane drain and flooding the village internally. While this scheme is being designed a temporary winter ready solution will be activated in agreement with the local flood wardens, the EA, IDB and DMBC.

Hydro Sack Store

Due to resource availability and the number of properties that would be affected by flooding in Fishlake a rationalisation of where hydro sacks can be deployed to has been developed to ensure the low lying and most vulnerable properties receive the limited supply of hydro sacks.

For your information – Hydro Sacks are only to be deployed as a last resort should Doncaster Council not be able to provide traditional sand bags.

Scawthorpe

North Swaithe Dike

When the North Swaithe Dike culvert is blocked it can create local flooding issues and increase the risk of property flooding. The council will actively check the condition of the culvert before and after every sever weather warning to mitigate the impact a blockage at this location can have.

Surface Water System

Capacity issues with the existing public sewer network also contribute to Scawthorpe flood risk during severe rainfall events, this does lead to the risk of residential property flood and can compound the problem should there be issues with the North Swaithe Dike culvert. Doncaster council has won a £1m funding incentive to introduce retrospective highway drainage measures within this area working with Yorkshire Water, draft designs have been produced for preparation and consultation within the New Year.

Tickhill

Protocols are in place to drain the mill pond before a severe rainfall event to allow extra capacity for flood water and allow the land drainage system to drain more efficiently. However due to the fast reacting localised catchment in the area, risks to properties are still high during severe events such as the 2007 and 2019 floods. A Scheme is being developed to slow the flow within the Tickhill catchment to ease the pressure on pinch points within the village.



Doncaster council has identified several key infrastructure sites that are routinely cleansed before, during and after the forecast of heavy rainfall events. These sites are selected due to the risk of property flooding should they fail or become blocked with debris. Additions to the Key Infrastructure list will only be considered if they are of proven risk to residential properties or life.



List of Key Infrastructure Sites

- 1. Wong Lane, Tickhill Trash Screen
- 2. Rowlands Bridge, Tickhill
- 3. Lindrick, Tickhill Sluice Gate
- 4. Sheffield Road, Conisbrough Trash Screen
- 5. Low Road, Conisbrough Culvert
- 6. Duftons Close, Conisbrough Culvert
- 7. Mexborough Road, Mexborough Trash Screen
- 8. Denaby Lane, Denaby Soakaway
- 9. Lords Head Lane, Edlington Trash Screen
- 10. Broomhouse Lane, Edlington Trash Screen
- 11. Broomhouse Lane, Edlington Road Gully (o/s 93)
- 12. Churchfield Road, Clayton Road Gullies
- 13. Common Road, Clayton Soakaway
- 14. Holywell Lane, Braithwell Trash Screen
- 15. Holywell Lane, Braithwell Road Gullies
- 16. Boat Lane, Sprotbrough Road Gully (o/s Toll House)
- 17. Bowland Close, Bentley Trash Screen
- 18. Cardinal Close, Rossington Trash Screen
- 19. Sycamore Crescent, Bawtry Soakaways

- 20. Fieldside, Edenthorpe Soakaways
- 21. Westminster Crescent, Intake Road Gullies
- 22. Jefferson Avenue, Clay Lane Road Gullies
- 23. Princess Road, Bessacarr Trash Screen
- 24. Lawn Avenue & Beaumont Avenue, Woodlands Road Gullies























CONTACT

If you have any further questions or queries around flood risk in your ward please don't hesitate to get in touch with our Flood Risk and Highway Drainage Manager Paul Evans.

Phone: 01302 735162 Email: paul.evans@doncaster.gov.uk

Web: Flood Risk Management - Doncaster Council

