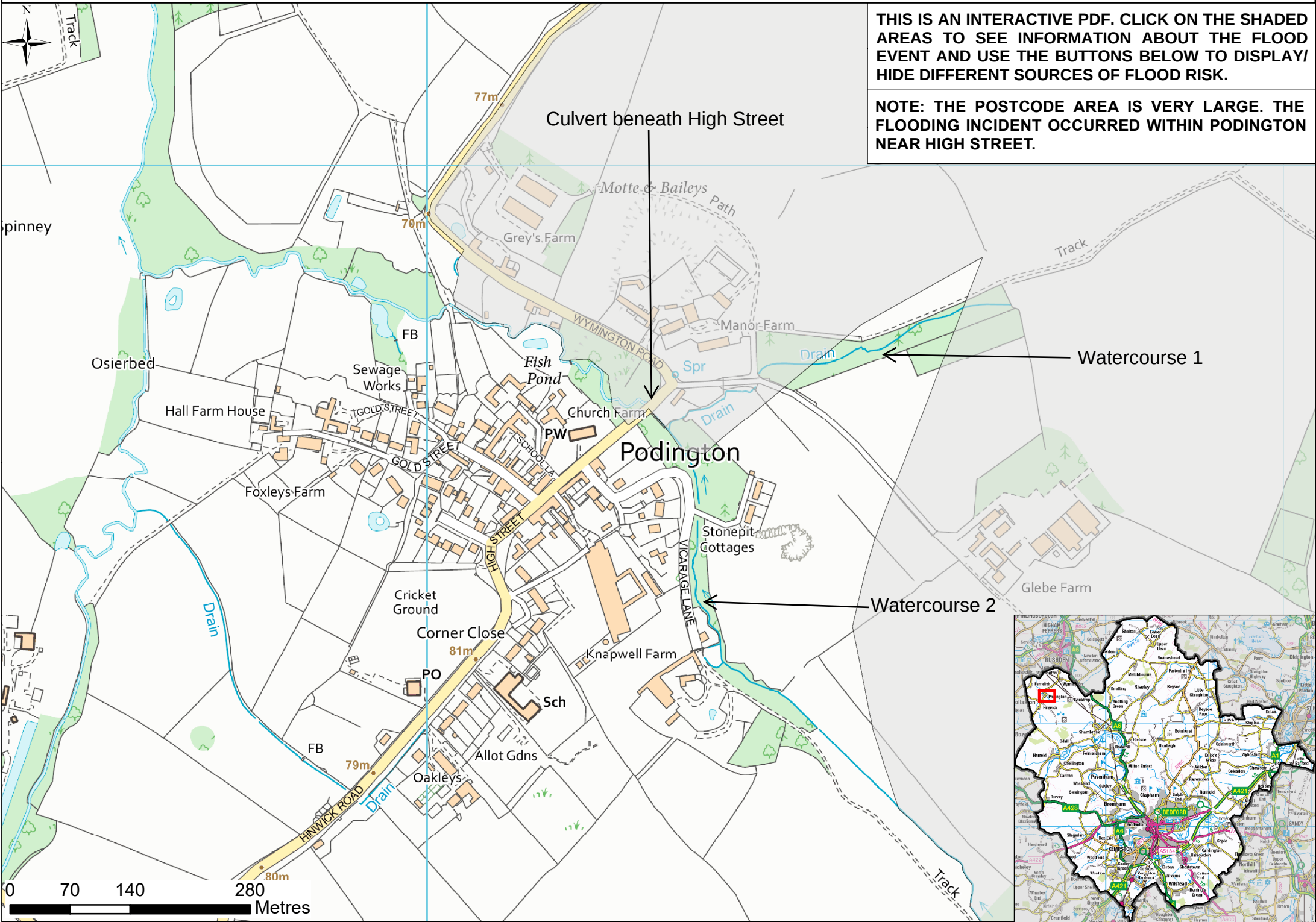


The village of Podington suffered flooding in December 2020. Under the Flood and Water Management Act 2010, Bedford Borough Council as the Lead Local Flood Authority (LLFA) has the duty to investigate the flood event. The scope of this flood investigation is to identify the source, cause and impact of flooding from available information; identify actions completed by relevant Risk Management Authorities (RMAs) in response to the flood event; and consider actions to better understand and manage the risk of flooding in the affected area.



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Legend

- Postcode Boundary

EA Flood Warning Areas

Flood Warning Areas

Areas benefitting from flood defences
- Flood Map for Planning

Flood Zone 3

Flood Zone 2

- Risk of Flooding from Surface Water
- High risk of flooding (3.3% AEP)

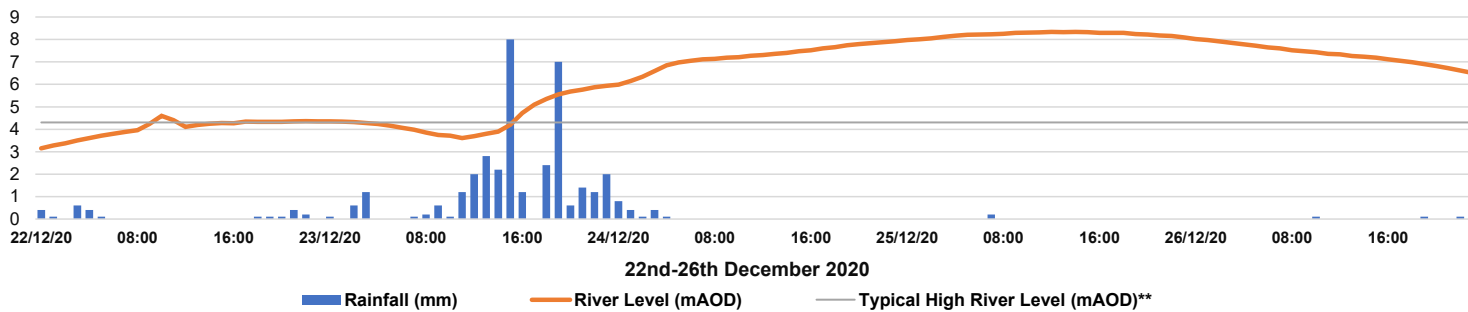
Medium risk of flooding (1% AEP)

Low risk of flooding (0.1% AEP)

CLICK ON THESE BUTTONS

- FLOOD MAP FOR PLANNING
- RISK OF FLOODING FROM SURFACE WATER
- FLOOD WARNING AREAS
- BACKGROUND MAP

Rainfall and River Data *



Rainfall and River Gauges

Nearest Rain Gauge	Thurleigh
Distance to Gauge	11 km
Nearest River Gauge	Wellingborough
Distance to Gauge	5.61 km

*Rainfall and River data was obtained from the Environment Agency (May 2021)

**River levels below this level 90% of the time.

Rainfall and River Data Interpretation

The graph identifies that the main rainfall event at the nearest rainfall gauge to Podington occurred between 08:00 on December 23rd and 04:00 on December 24th. The total rainfall volume is recorded as 34.7mm with a peak rainfall intensity of 8mm/hour. This single event saw more than half of the 55mm of rainfall which is expected for the whole month of December on average.

The nearest river gauge is located on the River Nene in Wellingborough, and the river levels at that gauge are shown on the graph to provide context. The graph shows that the river level started to peak at 04:00 on December 24th immediately following the rainfall event. The graph also shows that the river level is recorded to have briefly risen above the ‘typical high river level’ on December 22nd, and significantly risen above this level from 15:00 on December 23rd. River levels stayed above the ‘typical high river level’ until beyond December 26th. The ‘typical high river level’ at the nearest gauge station is identified as 44.3m Above Ordnance Datum (AOD) and river levels above this are only expected to be recorded 5% of the time.

SOURCE OF FLOODING: Watercourse

FLOOD EVENT & CAUSE

One residential property located near the confluence of two watercourses at High Street reported internal flooding on December 23rd, causing damage to the floor and furniture and resulting in a loss of electricity. Vicarage Lane was reported to be impassable due to the floodwater.

The two watercourses merge just upstream of High Street, prior to being culverted beneath the road. The watercourse then joins a tributary to the River Nene (designated Main River) approximately 600m to the west. The watercourses convey flows from a catchment area of approximately 465ha¹ and it is thought that the flow in the watercourses is closely related and responsive to rainfall.

The affected property is located in Environment Agency modelled Flood Zone 3², which means that the chance of river flooding is greater than 1% in any given year. Concerns relating to flooding were reported to the Fire Service for 15 other properties off Vicarage Lane, however none reported internal flooding. Vicarage Lane follows the alignment of watercourse 2 (see map annotation). Vicarage Lane is also identified in the Flood Zone 3 extent and is recorded to have suffered flooding.

December 2020 was a very wet month with an average rainfall of 108mm across East Anglia, which is 95% higher than the December average³. The three months leading up to December also saw higher than average rainfall such that by December 23rd the ground was already saturated. This, combined with the rainfall recorded during the dates in question, meant that surface water was less able to infiltrate into the ground and more likely to run off into the watercourses and form overland flood flow routes.

In conclusion, the heavy rainfall experienced on December 23rd is thought to have overwhelmed the capacity of the watercourses, causing them to overtop their banks and flood the property. Water levels in the tributary of the River Nene are likely to have influenced water levels of the watercourses within Podington. In addition, the British Geological Survey (BGS) records⁴ shows that the geology beneath the area is a designated aquifer, which means there is the potential for elevated groundwater. Ordnance Survey (OS) mapping indicates a 'Spring' located in this location, which suggests that the flooding could have been exacerbated by groundwater emergence.

FLOOD WARNINGS & INITIAL RESPONSE

- **23/12/2020:** Lead Local Flood Authority (LLFA) officers monitored/assessed locations based on the conditions and forecast predicted.
- **23/12/2020 15:45:** Fire service provided flooding advice to residents of properties off Vicarage Lane.
- **24/12/2020 daytime:** LLFA officers visited those flooded on December 23rd to gain information on damage caused and offer assistance.
- **25/12/2020 14:30:** Flooding experienced in the wider area declared a major incident by Bedford Borough Council.
- **28/12/2020:** LLFA, Bedford Flood Response Team, and volunteers from the Council visited properties to carry out impact assessment to help with recovery and clean up.

ACTIONS

Timescale	Action	Responsible Party
Short term (1-6 months)	Liaise with the landowner to ensure watercourses are kept clear, setting a suitable inspection and maintenance regime as necessary.	Lead Local Flood Authority / Riparian Owner
Medium term (6-12 months)	Investigate the condition of the culvert beneath High Street to set a suitable inspection and maintenance regime. Undertake an assessment of the culvert's capacity.	Bedford Highways
Medium term (6-12 months)	Investigate the influence of downstream river levels and the culvert on the flood level in the vicinity of Vicarage Lane. Outputs to inform whether localised works or a capital scheme are more suitable.	Lead Local Flood Authority / Environment Agency
Medium term (6-12 months)	Investigate the potential benefits and local appetite for a community flood group. The flood group should enable access to flood kits, flood action plans, and information about flood warnings/alerts and Property Flood Resilience (PFR).	Lead Local Flood Authority
Long-term (2-4 years)	Investigate the potential benefits of a flood warning system in watercourse 2 upstream of Podington.	Lead Local Flood Authority
Long term (2-4 years)	Investigate the potential for Natural Flood Management (NFM) in the form of a flood storage area to decrease the amount of water entering the village in a flood event.	Lead Local Flood Authority / Riparian Owner

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¹ Flood Estimation Handbook (FEH) web service, <https://fehweb.ceh.ac.uk/> [accessed June 2021].

² Environment Agency Flood Map for Planning, <https://flood-map-for-planning.service.gov.uk/>. [accessed June 2021].

³ Environment Agency, December 2020 Flooding Great Ouse Catchment Summary.

⁴ Aquifer Designation Map, <https://magic.defra.gov.uk/magicmap.aspx>. [accessed June 2021].