Leicestershire County Council

Flood Investigation Report

Storm Henk

2nd January 2024

Whetstone

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11 WHETSTONE

Whetstone is a large village located is the Blaby District of Leicestershire, approximately 8km south of Leicester City centre.

11.1 LOCAL DRAINAGE CONTEXT

The primary watercourse within the area is the Whetstone Brook, a major tributary of the River Soar, as illustrated in Figure 11-1. Whetstone Brook enters the village from the south, flowing northwards until reaching the Brook Street roundabout, where it changes course to the west. It eventually discharges into the River Soar approximately 1km downstream of the village at Ordnance Survey national grid reference (OSNGR) SP 54872 97395.

Whetstone Brook is classified as an ordinary watercourse upstream of Dog and Gun Lane bridge, transitioning to a Main River designation downstream of this point, as defined by the Environment Agency (EA) mapping, illustrated in Figure 11-1. The responsible agency for managing the risk from Main Rivers is the EA. Details relating to RMA responsibilities can be found in Section 21 of the main Storm Henk report.

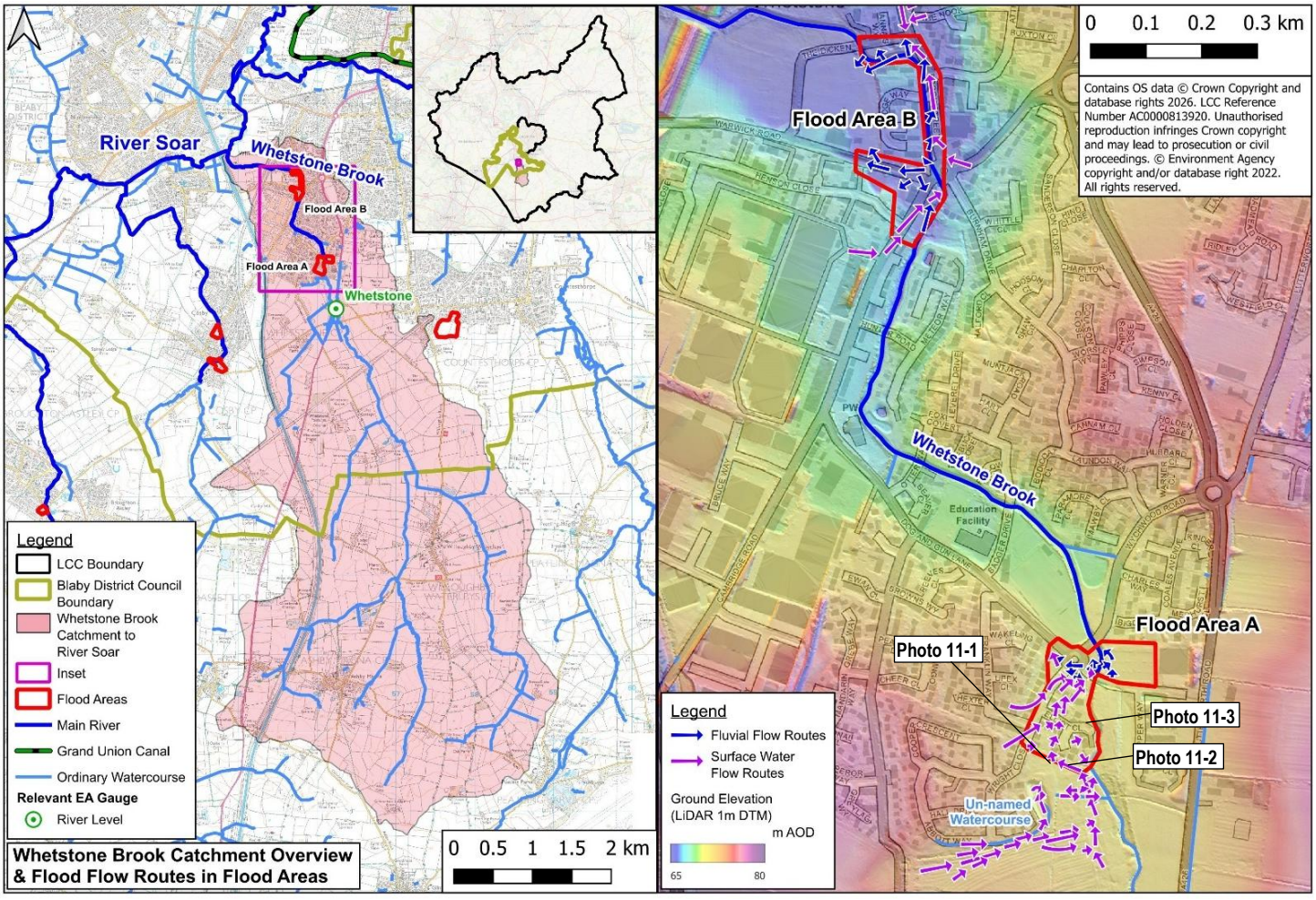

Figure 11-1: Whetstone Location Plan, relevant Watercourse Catchment and Flow Routes through Flood Areas (INSET 12)

Whetstone Brook underwent considerable modifications between 1964 and 1968, with sections running through the village being ‘retrenched’ and culverted by Blaby Rural District Council (BRDC) (former administrative designation of the now Blaby District Council (BDC)). The original bridge (known as ‘Bottom End Bridge’), which connected Brook Street and Grove Road, was replaced with a larger culverted bridge and roundabout.

The Dog and Gun Lane Road Bridge is a twin-arch structure (as depicted in Photograph 11-1), built on the site of a ford in the 1960’s, and is believed to have been part of the wider flood works undertaken by BRDC to reduce the occurrence and severity of flooding in Whetstone. The structure is designed to control Whetstone Brook in heavy flow but has a lowered road deck to allow severe flooding to pass over the bridge and into the brook on the downstream side.

Photograph 11-1: The Dog and Gun Lane Twin Arch Bridge

The Flood Estimation Handbook (FEH) Web Service[1] provides strategic level catchment mapping. The Brook drains a catchment of approximately 22 km² to the River Soar at the M1 (of which 18.5km^2 is upstream of Elliot Close (upstream extent of Flood Area A) and 20.8km^2 upstream of Grove Road (downstream extent of Flood Area B) as illustrated in Figure 11-2.

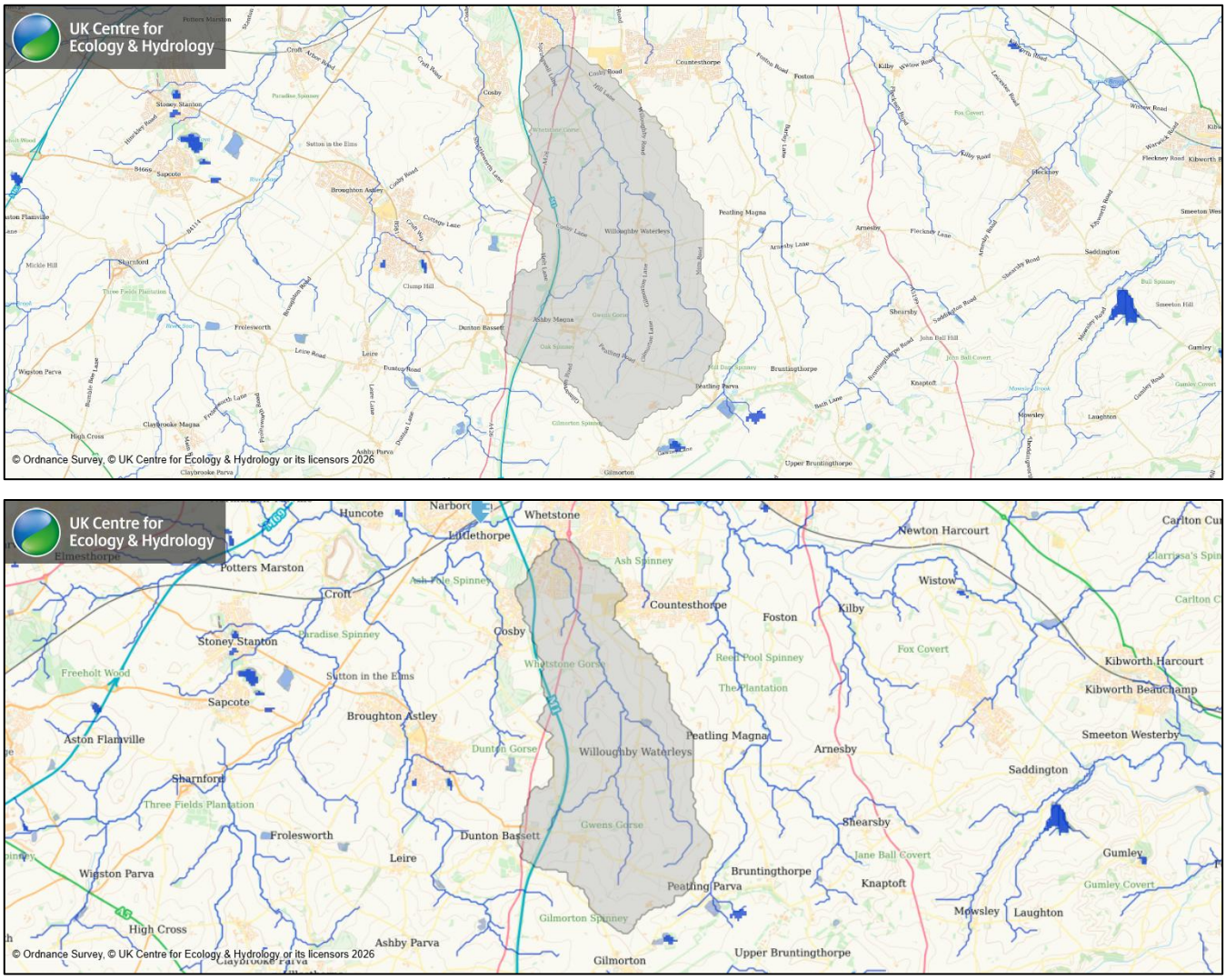

Figure 11-2: Whetstone Brook FEH Web Service Catchment Extents upstream of Elliot Close (top) and Grove Road (bottom)

11.1.1 GEOLOGY

The catchment comprises predominantly agricultural land interspersed with small urban settlements south of Whetstone and exhibits typical lowland vale characteristics: a shallow, gently sloping valley with a central watercourse. Soils within the catchment are loamy and clayey with slowly permeable seasonally wet characteristics (impeded drainage)[2]. Gradients decrease progressively toward the River Soar valley, becoming almost level within Whetstone itself.

[1] Centre for Ecology & Hydrology (2026) FEH Web Service https://fehweb.ceh.ac.uk/Map
[2] LandIS Soilscapes https://www.landis.org.uk/soilscapes/

Historic land management practices, including field drainage and channel modifications, have accelerated runoff from agricultural areas, reducing natural attenuation. As a result, Whetstone is vulnerable to both fluvial flooding from Whetstone Brook and pluvial flooding caused by rapid surface water runoff from surrounding fields and impermeable urban surfaces. The combination of these mechanisms during high-intensity rainfall events significantly increases flood risk within the village.

11.1.2 NATIONAL SCALE PREDICTIVE FLOOD MAPPING

The EA provides flood risk mapping nationally for both rivers and surface water as detailed within Section 2.7.6 of the main Storm Henk report. Figure 11-3 illustrates the extents of the EA's Flood Map for Planning Flood Zones 2 and 3 (medium and high risk respectively) (NaFRA2) associated with Whetstone Brook, and the EA's Risk of Flooding from Surface Water (RoFSW) (NaFRA2) map (high, medium and low risk) in the vicinity of the Flood Areas. This risk however can be exacerbated by localised ground elevation detail or drainage infrastructure limitations which are not always represented within the strategic level RoFSW mapping.

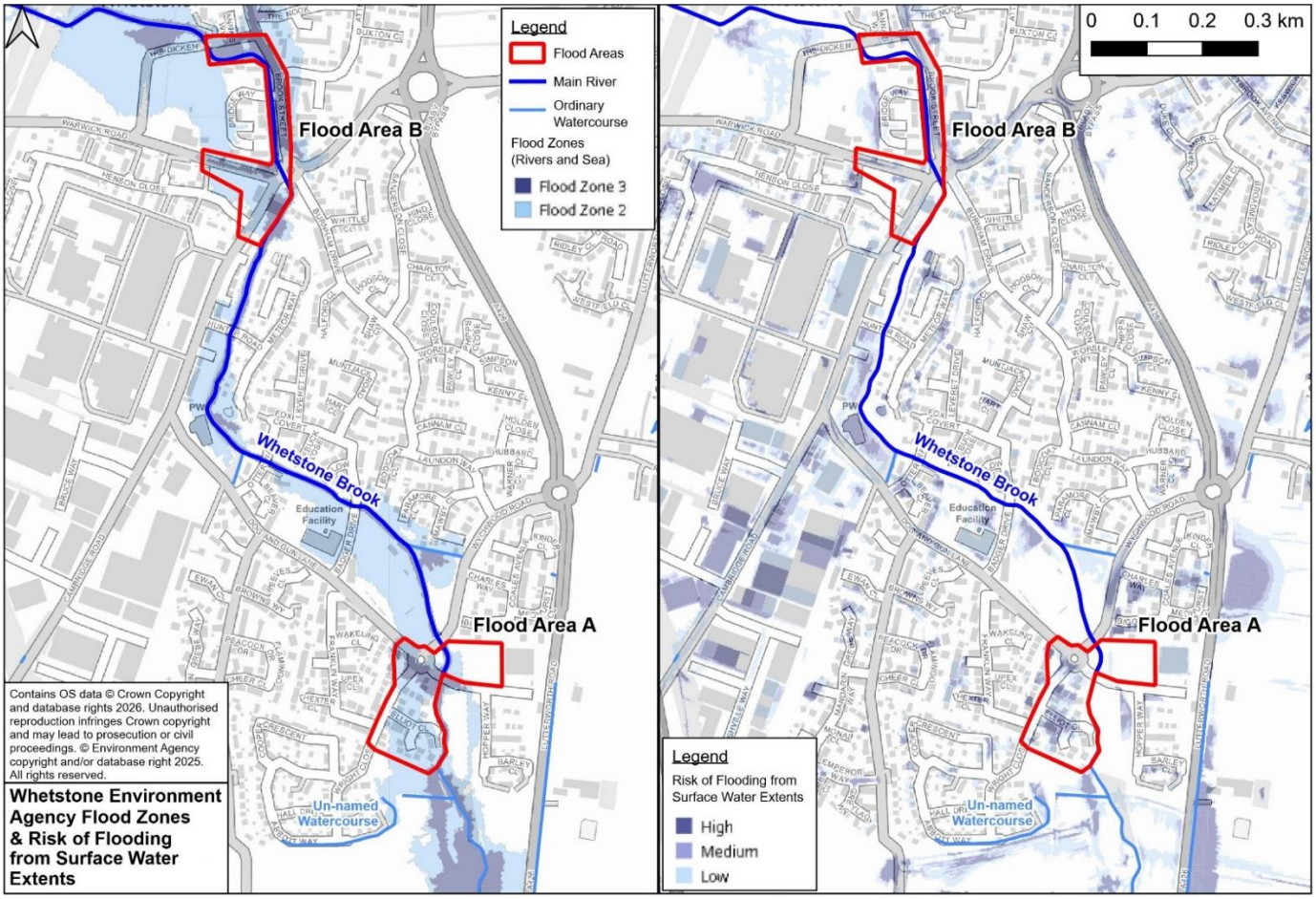

Figure 11-3: Whetstone EA Flood Map for Planning Flood Zones[3] and Risk of Flooding from Surface Water[4] Extents in Flood Areas (INSET 12)

[3] Environment Agency (2026) Flood Map for Planning – Flood Zones https://flood-map-for-planning.service.gov.uk/map
[4] Environment Agency (2026) Risk of Flooding from Surface Water map. https://check-long-term-flood-risk.service.gov.uk/map

11.1.3 FLOOD HISTORY

Historical reports show that Whetstone has a long history of experiencing flooding and flooding impacts. With records showing serious flooding events recorded as far back as 20th July 1875, where passengers on the South Leicestershire Railway where Whetstone and Blaby *'is described as like a sea, the water in some places rolling over hedge tops while hay and grass were seen floating in all directions'.* Further severe flood events were frequent in Whetstone until the 1960's. When the flood works undertaken by BRDC were completed. Further events were recorded in 1980 and 1998. In 2008, the Whetstone river level gauge reported (up until that point) its highest recorded level at 1.447mASD.

11.1.4 HYDROMETRY

The EA monitor water levels along Whetstone Brook at the Whetstone hydrometry gauge[5] located upstream of the A426 Lutterworth Road, Whetstone (Ordnance Survey grid reference SP 56240 95390) (see Figure 11-1:).

Observed river levels (water depth in) at the Whetstone gauge peaked at 1.76 metres above the gauge station datum (mASD) at 18:30hrs, 4hrs after the peak rainfall at 9mm (recorded between 12:00-14:00hrs) (Figure 11-4). The previous record was 1.45mASD.

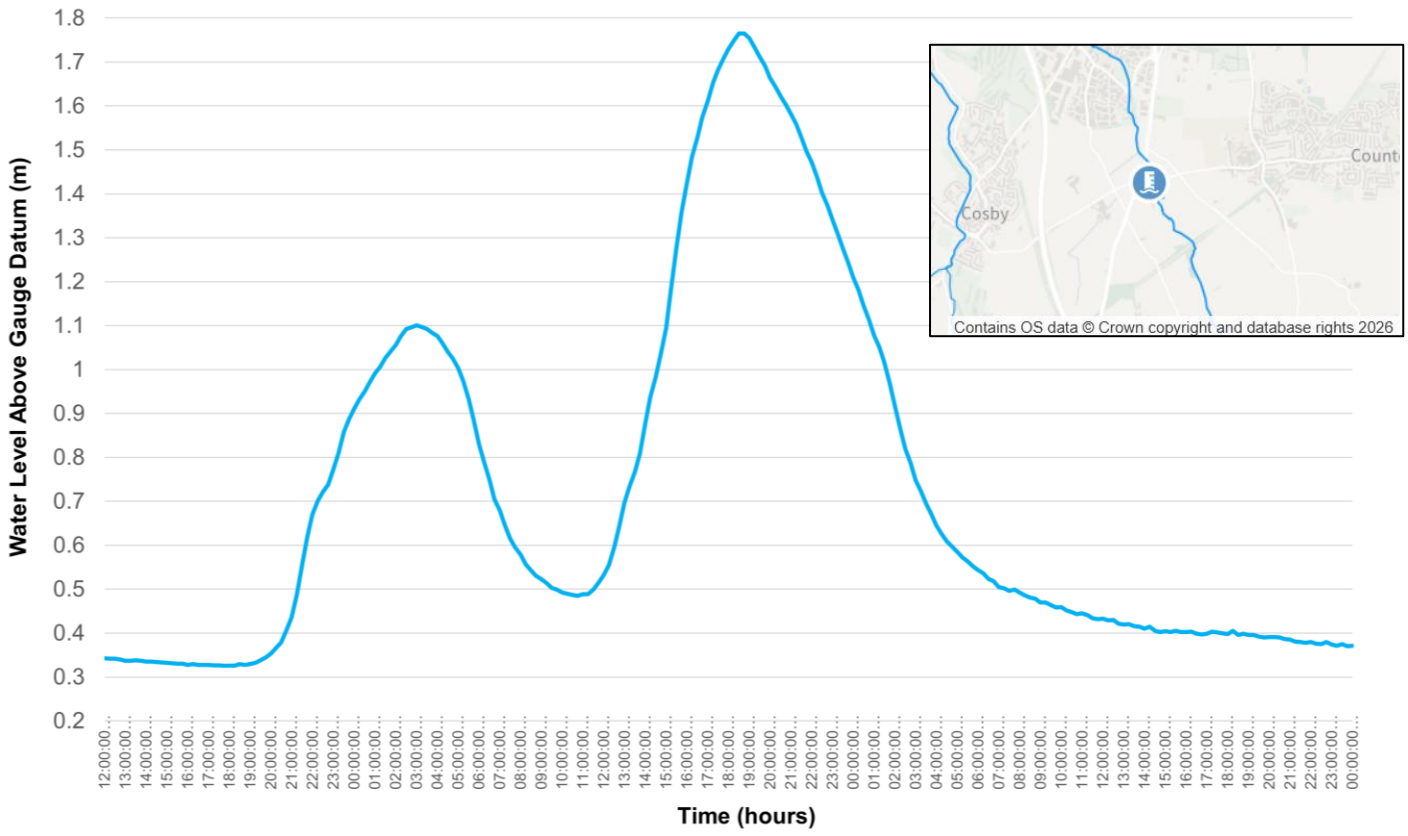

Figure 11-4: Whetstone Brook at Whetstone Gauge (Station ID 4195[6]) - River Levels from 12:00 hours on 01/01/2024 to 00:00 hours on 04/01/2024

[5] Defra (2026) Hydrology Data Explorer – Whetstone – river level gauge. https://environment.data.gov.uk/hydrology/station/a20cd5cd-3cd7-4571-a24a-9edb515cfebb

[6] Defra (2026) Hydrology Data Explorer – Whetstone Brook water level gauge https://environment.data.gov.uk/hydrology/station/a20cd5cd-3cd7-4571-a24a-9edb515cfebb

11.1.5 FLOOD WARNINGS

At 14:32hrs on 2nd January 2024, the EA issued a Flood Warning for the Whetstone Brook at Whetstone (Code 034FWFWBWHETSTNE[7]); an area which includes both Flood Areas A and B. Subsequent flood reporting from residents impacted indicate that many residents were unaware of the potential flood risk to their properties, and had not signed up for Flood Warnings.

11.2 WHAT HAPPENED AND WHY

WHO OR WHAT WAS AFFECTED?

24 properties reported as internally flooded

At least 22 properties reported as externally flooded

In total, at least 24 residential properties (including at least two commercial properties) across Whetstone were reported to have flooded internally, with at least 22 reporting external property flooding. The number of external property flooding reports received was likely lower than the actual number. There were two key areas of the village that were mostly impacted. The location of these areas is illustrated on Figure 11-1:, identified as Flood Areas A and B.

During the high-intensity rainfall event on 2nd January 2024, Whetstone Brook catchment (watercourses, ditches and drainage features) quickly became overwhelmed. Pre-existing soil saturation within agricultural land rapidly reduced infiltration capacity, resulting in accelerated surface runoff into Whetstone Brook.

The brook quickly reached maximum capacity conditions, limiting the capacity of both drainage networks along the Brook to convey adequate flows due to the systems being overwhelmed and outfalls into the brook becoming submerged.

11.2.1 FLOOD AREA A

By approximately 13:00hrs on 2nd January 2024, a substantial surface water flow path had developed south of Whetstone village, following the land height west of the Brook from the area alongside the southern edge of Abbott Way. This overland flow progressed northwards, crossing public open space adjacent to Elliot Close (Photograph 11-2). Anecdotal observations and photo evidence from witnesses corroborate that the local ground elevations restricted surface water from getting into the Brook, creating a secondary parallel flow route. The witnessed flow routes are illustrated on Figure 11-1:. These flows were of shallow depths but high flow velocities.

Anecdotal reports indicate these overland flows entered the residential area around Elliot

[7] Environment Agency (2026) Whetstone Brook at Whetstone flood warning area. https://check-for-flooding.service.gov.uk/target-area/034FWFWBWHETSTNE

Close and Wrights Close via private rear gardens flowing from the public open space (as depicted in Photograph 11-3). The houses in this area sit lower than the area of public open space to the south and have around a 150mm threshold above the surrounding ground levels.

Photograph 11-2: Photo taken from Elliot Close shows surface water flow across public open space towards Elliott Close looking south-east

Photograph 11-3: Surface water flowing across public open space towards Elliott Close looking south towards Balancing Pond

Internal and external residential property flooding occurred, with water depths reaching between ankle and knee deep in places (Photograph 11-4). Due to the volume of overland surface water flows, the highway and residential surface water drainage systems were overwhelmed, unable provide effective drainage. The time of flooding of residential properties in this flood area was recorded as being between 16:30 and 18:45hrs, approximately 2 hours after the Flood Warning was issued, and coinciding with the peak water level at the Whetstone gauge (18:30hrs). It should be noted that the Flood Warning is triggered by water levels in the brook reaching a predetermined level based on historic depths and rainfall levels.

Photograph 11-4: Ponded surface water flow within residential street (Elliott Close)

Whilst Whetstone Brook reached record levels, it is reported to have stayed within the bank until the Dog and Gun Lane bridge, which overtopped, with water anecdotally reported to be flowing over the road deck and back into the Whetstone Brook. The water level was high enough to flow across the eastern edge of the bridge and onto the lower region of the car park at the Co-op.

However, the high level of Whetstone Brook also likely submerged outfalls of both private drainage networks and of public sewer networks that service the wider development of Flood Area A, into the Brook. This would have limited their ability to discharge any floodwater from the car park/local highways. As water builds up within a network, the capacity is exhausted, resulting in surcharging through manholes and gullies.

STW sewer records identify a 150mm diameter (dia) public surface water sewer running initially northwards beneath Elliot Close before it splits into two runs:

1. a short run that proceeds westwards between numbers 3 and 4 Elliot Close which appears to have an unmapped connection.
2. a second, short run that branches eastwards and connects into a 450mm dia run proceeding northwards alongside the west bank of Whetstone Brook. This discharges into the Brook via an outfall south of Wychwood Road.

Beneath Wright Close, a 375 mm dia public surface water sewer runs north-eastwards increasing to 450mm dia and proceeds across the Dog and Gun Lane junction, joining the aforementioned pipe.

Road drainage networks are designed to accommodate rainfall events up to a certain magnitude on the contributing area of highway itself but are not designed to accommodate additional volumes of overland flow originating from land adjacent, or outflowing from watercourses onto the highway, as was observed here. As flood water recedes into the drainage systems, it can naturally draw in flood debris and sludge into them, particularly around gully grates. This can make it appear as though the gullies and systems are blocked and that this was an initial cause of the flooding. However, this is generally not the case, especially where the drainage outfalls are submerged, and the capacity is exceeded, resulting in surcharging (as described above). Because of the risk of material being washed into drains during storms. It is standard practice to undertake reactive cleansing of the drainage systems to ensure that any silt or debris that entered the system during the storm can be cleared out. Ensuring that the system is fully operational again for any repeat events which may occur in the short term.

It was anecdotally reported that a manhole was lifted along Elliot Close, following which “all the water dissipated within a few minutes”. It was confirmed during a site visit with residents to be a public foul sewer manhole. Any spare capacity in the foul sewer network would have only enabled this temporarily. **This is not recommended as this will increase the risk of foul sewer flooding, as foul sewers are not designed to accommodate large volumes of surface water flow. It also poses a serious health and safety risk.**

Despite anecdotal claims, there are no known artificial flood features such as sluices or gates upstream of Whetstone that could have been opened or closed to affect the level of Whetstone Brook. An anecdotal report was made of potential issues with the Balancing Pond facilitating highway drainage from a recent development upstream of Elliot Close (Cooper Crescent, Hall Drive, Abbott Way and the southern area of Wright Close). This discharges eastwards into Whetstone Brook via a 375mm dia STW public surface water sewer, as illustrated in Figure 11-5. The Balancing Pond can be seen in the rear of Photograph 11-3.

There has been no evidence received to suggest that this Balancing Pond overtopped, with residents confirming the water level was high but well within capacity. An inspection was undertaken by STW officers shortly after the event, who confirmed that the pond functioned as designed and there was no evidence of overtopping. The pond is outside of the EA’s modelled RoFSW flow path that flows eastwards south of Abbott Way.

The catchment contributing towards that flow path originates west of Springwell Lane and extends further south outside the development boundary.

Anecdotal evidence, supported by post-event site investigations undertaken by LLFA and EA officers, identified several blockages upstream of Whetstone on Whetstone Brook. These ranged from minor accumulations of woody debris to more substantial obstructions, including at least one fallen tree. Residents raised concerns that these blockages may have contributed to downstream flooding by causing or exacerbating the overland flow route that entered Elliots Close and Wrights Close. Investigations indicate that the blockages may have locally forced water out of the channel and contributed to localised flooding. However, due to the local topography, it is unlikely that they directly contributed to the surface water flow in a significant way. Hydrological modelling further indicates that this surface water flow route occurs irrespective of the condition of the brook. The EA's modelled RoFSW mapping (Figure 11-3) closely matches the route of the surface water flow path that crossed adjacent fields and public open space before flooding residential properties during Storm Henk.

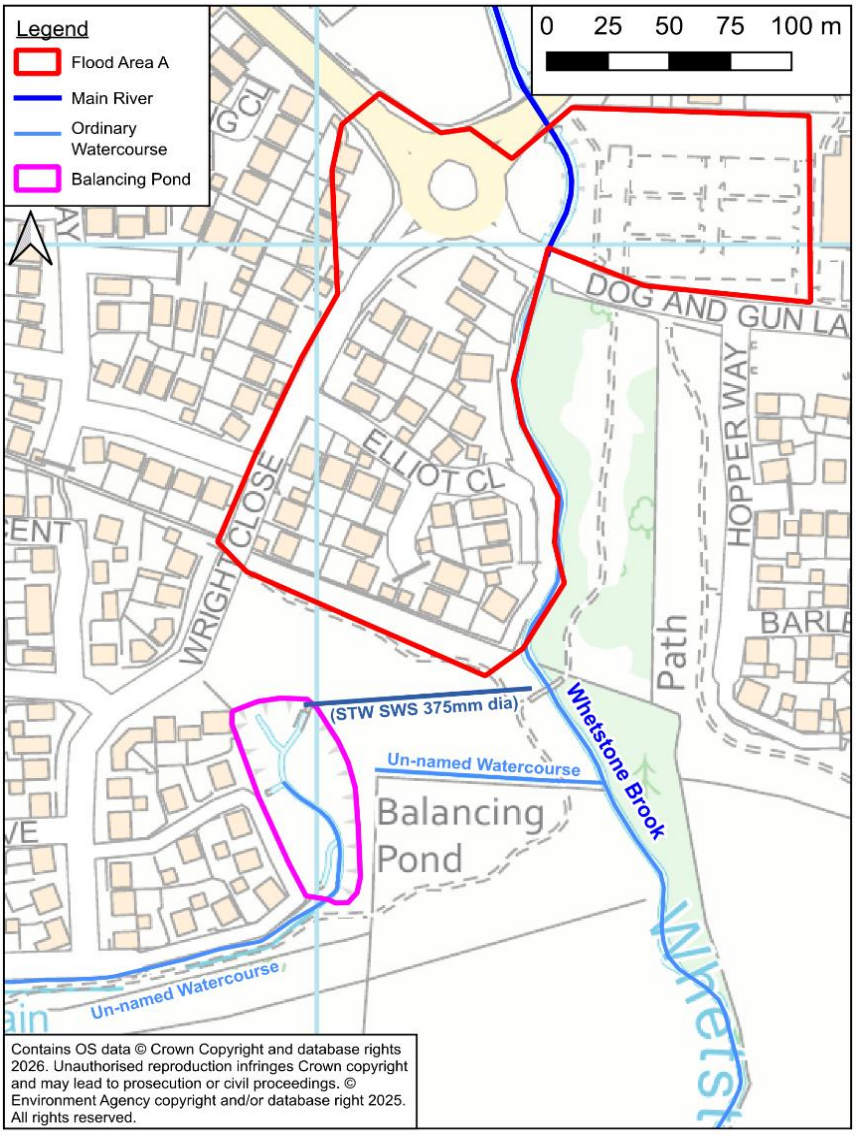

Figure 11-5: Surface Water Balancing Pond and public sewer outfall into Whetstone Brook upstream (south) of Flood Area A

11.2.2 FLOOD AREA B

Further downstream, within the village centre, Whetstone Brook became overwhelmed as rapid upstream inflows converged with slower baseflow and urban runoff from surface water sewer outfalls. Under flood conditions, Whetstone Brook's discharge capacity is constrained by high water levels in the River Soar further downstream. Reports confirm that by early afternoon on 2nd January 2024, the River Soar floodplain near the confluence was inundated, significantly impeding outflow from Whetstone Brook. This backwater effect contributed to the overspilling of floodwater out from Whetstone Brook at multiple locations, including Cambridge Road, Brook Street, Warwick Road, The Dicken and other isolated extents along the Brook in Flood Area B. This was due to hydraulic overload of the river channel itself, rather than specific problems arising from maintenance or any blockages.

Consequent impacts included widespread external property flooding, internal damage to a public house and commercial premises. It also resulted in local highway closures, rendering several routes impassable due to the volume of floodwater. The flow routes in Flood Area B are illustrated in Figure 11-1:.As stated above, road drainage networks are not designed to accommodate volumes of overland flow overtopping onto them from watercourses, as was observed here.

STW sewer records within Flood Area B identify a 150mm dia public surface water sewer running eastwards beneath Henson Close, which increases to a 300mm dia run as it crosses Cambridge Road and outflows into Whetstone Brook east of Thacker Court. A 450mm dia public surface water sewer also drains Brook Street near the junction of The Dicken and a wider area of highway to the east and north-east. This outfalls into Whetstone Brook to the west of Brook Street, south of the Whetstone Memorial Garden.

However, there are no further public surface water sewers draining the length of Brook Street to the south of this, or Warwick Road, Grove Road within Flood Area B. In these locations, highway gullies are drained into bespoke highway drainage networks, which outfall into Whetstone Brook at various points along its bank in the near vicinity of Flood Area B. The exception to this is two small private drainage networks (type unknown) that drain Bridge Way and Grove Road and outfall along the reach of Whetstone Brook between Bridge Way and The Dicken.

The high water-levels in Whetstone Brook also impeded the functionality of these drainage networks by submerging their outfalls, rendering them unable to effectively discharge water into the Brook. The storage capacity within the network upstream therefore became exceeded by inputs of both highway surface water runoff and river floodwater, which caused them to surcharge onto the highways.

11.3 WHAT HAS BEEN DONE?

On 6th January 2025, another major countywide flood event occurred which resulted in widespread internal property flooding to Whetstone. This 2025 flood event is being investigated separately.

This report will therefore focus on the actions agreed and undertaken in relation to this 2024 event only. Any actions, investigations or engagement undertaken following the 6th January 2025 event will be covered in that report.

A summary table of the actions undertaken by the relevant RMAs across Leicestershire is provided in Section 2.7 of the main Storm Henk report. A summary table of actions and any relevant next steps specific to Whetstone is provided in Section 11.4.

Whilst the actions from this investigation will help to reduce flood risk, communities should also take steps to be prepared for future flooding, especially with climate change increasing the risk of occurrence. More information can be found in Section 21.8 of the main Storm Henk report.

11.4 WHETSTONE ACTIONS

The following actions will be monitored by the Leicestershire County Council (LCC), as Lead Local Flood Authority (LLFA), through their local coordination role. This action plan is live and will be subject to change as actions are progressed.

Actions taken during and in the immediate aftermath of the event, such as the closure of roads and set-up of rest centres are not detailed. Further details on RMAs and their roles, and how they work in partnership, can be found in the Leicestershire Local Flood Risk Management Strategy[8].

11.4.1 SHORT-TERM ACTIONS (0 - 6 MONTHS)

ACTION	ACTION DETAIL	LEAD RMA OR ORGANISATION	CURRENT STATUS
Data Gathering and Site Investigations	Door knocking. Reviewed key impacted locations and gathered data. Other site visits have also taken place, sometimes by a single RMA. A bespoke Parish Meeting coordinated by a Local LCC Member was attended by affected residents and RMAs.	LCC LLFA, LCC Local Highways Authority (LHA), EA, BDC, Flood Warden, Parish Council	Completed 9th January 2024 Conducted 2nd February 2024
Immediate Humanitarian Support and Assistance	BDC co-ordinated immediate assistance actions following Storm Henk. Actions conducted and completed by BDC include additional welfare checks to vulnerable residents, comprehensive mechanical road sweep of all affected roads, and bulky waste removal.	BDC	Completed

[8] Leicestershire County Council (2024) Leicestershire Local Flood Risk Management Strategy - https://www.leicestershire.gov.uk/environment-and-planning/flooding-and-drainage/lead-local-flood-authority/flood-risk-management

ACTION	ACTION DETAIL	LEAD RMA OR ORGANISATION	CURRENT STATUS
Henk Flood Recovery Framework Support	BDC administered £500 residential grants, £2,500 business grants, council tax exemptions and business relief.	BDC	Completed
Drop-in Sessions	Multi-agency drop-in sessions accessible to Whetstone have been coordinated by LCC LLFA and attended by RMAs in March 2024, October 2024, and March 2025.	LCC LLFA	Completed
Highways' Additional Asset Maintenance	Additional cleansing followed Storm Henk across all impacted areas of Whetstone. Cleansing frequency had been reviewed and increased for 26 roads. Confirmed to be the highest priority (every 10 months) in 22 locations, including Elliot Close, Wrights Close, Dog and Gun Lane, Cambridge Road, Brook Street, Avon Drive and Otter Way. Cleansing and CCTV surveys were undertaken on the known highway drainage assets within the flood locations.	LCC LHA	Completed Completed May 2024
Highway Structures	LCC-owned highway structures such as bridges and culverts were inspected following the flood events, removal of some detritus caused by the flooding was removed, with ongoing monitoring for 12 months following event.	LCC LHA	Completed

ACTION	ACTION DETAIL	LEAD RMA OR ORGANISATION	CURRENT STATUS
Whetstone Brook (Main River) Inspection and Maintenance	Site walkover and initial assessment. Initial list of blockages and issues captured and removed.	EA	Completed March 2024 Completed March 2024
Whetstone Brook (Ordinary Watercourse) Inspection and Maintenance	Following Storm Henk, LCC LLFA completed a walkover of the Ordinary watercourse section of Whetstone Brook on 2nd February 2024, several issues were noted, and contact was made with the landowners for rectification. Improvements were undertaken by the landowners to install a low earth bund along the boundary of the POS and Elliot Close to provide a flood defence for an equivalent event based on anecdotal evidence of water depths and flow routes witnessed during Storm Henk.	LCC LLFA	Completed February 2024 Completed July 2024. Proved ineffective during the more severe 6th January 2025 event.

11.4.2 MEDIUM-TERM ACTIONS (6 - 12 MONTHS)

ACTION	DETAILS	LEAD RMA	CURRENT STATUS
Support of Flood Wardens	Flood warden engagement and training sessions are offered to volunteers, along with support for Community Response Plans offered to Parish Councils.	LLR Prepared (since re-named the Leicestershire Local Resilience Forum (LLRF))	Completed
Detailed Inspection and Cleansing of Highway Assets	Following jetting and CCTV investigation, where required maintenance has been carried out on highway drainage assets.	LCC LHA	Completed
Detailed Inspection of the Public Sewer Network	STW completed initial inspection and cleansing of the foul, surface water and combined (if any) sewers network across affected areas following Storm Henk.	STW	Completed
Review of the Flood Warning Service for Whetstone	The EA confirm that the Flood Warning and Alert services in Whetstone were working correctly and issued at appropriate times.	EA	Completed

11.4.3 LONG-TERM ACTIONS (12 MONTHS +)

ACTION	ACTION DETAIL	LEAD RMA	CURRENT STATUS
Henk Property Flood Resilience Repair Grants	Sixteen Flood Resilience Repair Grants (FRRG) were awarded from a possible twenty-four eligible properties. Formal communication was sent to properties who reported internal flooding on two occasions. With the scheme promoted at both Drop-in Sessions and the Parish meeting. See Section 2.6.4 in the main Storm Henk report for further information on FRRG.	LCC LLFA	Completed
Review of LCC LLFA Comments to Blaby Local Plan	The Council has contacted the BDC Local Planning Authority (LPA) to request further time to review the newest version of their draft Local Plan, as more details on housing allocations have been put forward, including new parcels east of Springwell's Lane.	LCC LLFA BDC LPA	Ongoing
Structure Review	Initial review into the Dog and Gun Lane Bridge structure completed September 2024: Amendments to the bridge itself are unviable due to cost and the increased flood risk to downstream properties from increasing flow through the structure. Options to raise the footbridge in compliance with the Disability Access Act 2010 are still being considered.	LCC LHA LCC LLFA	Completed
Explore Opportunities for Flood Alleviation Schemes	LCC LLFA is continuing to work with private landowners and other risk management authorities to identify and deliver schemes to provide flood benefits. The EA is committed to working closely with other Risk Management Authorities to identify opportunities for investment in the future and will continue to keep our plans under review.	LCC LLFA EA	Ongoing Ongoing

ACTION	ACTION DETAIL	LEAD RMA	CURRENT STATUS
Public Sewer Network Cleansing	STW extended the scope of the local planned cleansing programme to include additional areas impacted by flooding. Further engagement has also been completed with local commercial properties being fitted with devices to reduce fats, oils and greases (FOG) and their impacts the network.	STW	Completed
Main River Improvements	One off desilting work has been identified and programmed in for from Cambridge Road to the Dicken to remove long term silt and bank encroachment on the channel. Work has been held up due to the presence of protected species on the riverbank that are to be removed and relocated. Expected to be completed by end of March 2026. Additional sections between Dog and Gun Lane and Cambridge Road also considered for later desilt and management work.	EA	First phase completed March 2026. Ongoing