Leicestershire County Council

Flood Investigation Report

Packington

18th September 2023

To discuss this report, please contact the Flood Risk Management Team by email flooding@leics.gov.uk or by phone 0116 305 0001

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EXECUTIVE SUMMARY

In the early morning of Thursday, 18th September 2023, 9 residential properties in Packington were internally flooded across 2 locations. Properties were also externally affected, and roads were flooded and impassable.

SUMMARY OF FLOOD SOURCES

Ordinary Watercourse	☑	**Public Sewer**	☐
Main River	☑	**Canal**	☐
Surface Water	☑	**Land Drainage**	☐
Groundwater	☐	**Highway Drainage**	☑

RECEPTORS IMPACTED (NUMBER)

Residential	Business	Other Buildings	Roads	Critical Infrastructure
13 (internal) 18 (external)	2	0		0

1 INTRODUCTION

1.1 SECTION 19 INVESTIGATIONS – DUTY TO INVESTIGATE

Section 19 of the Flood and Water Management Act (FWMA) states:

(1) On becoming aware of a flood in its area, a Lead Local Flood Authority (LLFA) must, to the extent that it considers it necessary or appropriate, investigate:

a. *which Risk Management Authorities (RMAs) have relevant flood risk management functions, and*
b. *whether each of those RMAs has exercised, or is proposing to exercise, those functions in response to a flood event.*

(2) Where an authority carries out an investigation under section 1 (above) it must:

- *publish the results of its investigation, and*
- *notify any relevant RMAs."*

1.2 FORMAL FLOOD INVESTIGATIONS CRITERIA

Leicestershire County Council, from herein referred to as *"The Council",* identified local thresholds for formally investigating flood incidents across Leicestershire within the Local Flood Risk Management Strategy published in August 2015. This policy advises when a formal flood investigation should be undertaken, including where one or more of the thresholds in Table 1 occurs as a result of a flooding incident.

A formal investigation into the flood incident in Packington on the 18th of September 2023 has been undertaken as the event triggered the locally agreed flooding characteristics or discretionary items as indicated below:

Table 1: Locally Agreed Criteria for Formal Flood Investigations

Mandatory Investigation	
Loss of life or serious injury	☐
Critical infrastructure flooded or nearly flooded from unknown or multiple sources	☐
Internal property flooding from unknown or multiple sources	☑
Discretionary Investigation	
A number of properties have been flooded or nearly flooded	☐
Other infrastructure flooded	☐
Repeated instances	☐
Investigation requested	☐
Risk to health (foul water)	☐
Environmental or ecologically important site affected	☐
Depth/area/velocity of flooding a cause for concern	☐

1.3 RISK MANAGEMENT AUTHORITIES (RMAS)

The following RMAs were identified as relevant to the flooding in Packington:

- Leicestershire County Council (LCC) – LLFA
- LCC – Local Highways Authority
- Environment Agency (EA)– Responsible for strategic flood risk management with regards to Main Rivers and reservoirs.
- North West Leicestershire District Council (NWLDC) - Local Planning Authority and Land Drainage Authority who can carry out flood risk management works on minor watercourses.
- Severn Trent Water Ltd (STW) - Statutory undertaker for public wastewater and water supply assets in Packington.
- National Highways – Responsible for the strategic road network.

2 FLOOD INVESTIGATION

2.1 LOCATION AND SETTING

Packington is a village located in the North West Leicestershire District, approximately one and a half miles south of Ashby de la Zouch and approximately 15 miles north-west of Leicester. The village lies within the catchment of the Gilwiskaw Brook which flows southwards through Packington and is a tributary of the River Mease (Figure 1). The geology in the Packington area is dominated by the Moira bedrock formation, composed of a subangular conglomerate and sandstones interbedded with mudstones. The upstream catchment is dominated by bedrock consisting of mudstone, siltstone and sandstone. The superficial deposits in the catchment are characterised by sand and gravel, with localised lenses of silt, clay or peat. Both ground formations are associated with poor infiltration ability, high water table and groundwater flooding[1].

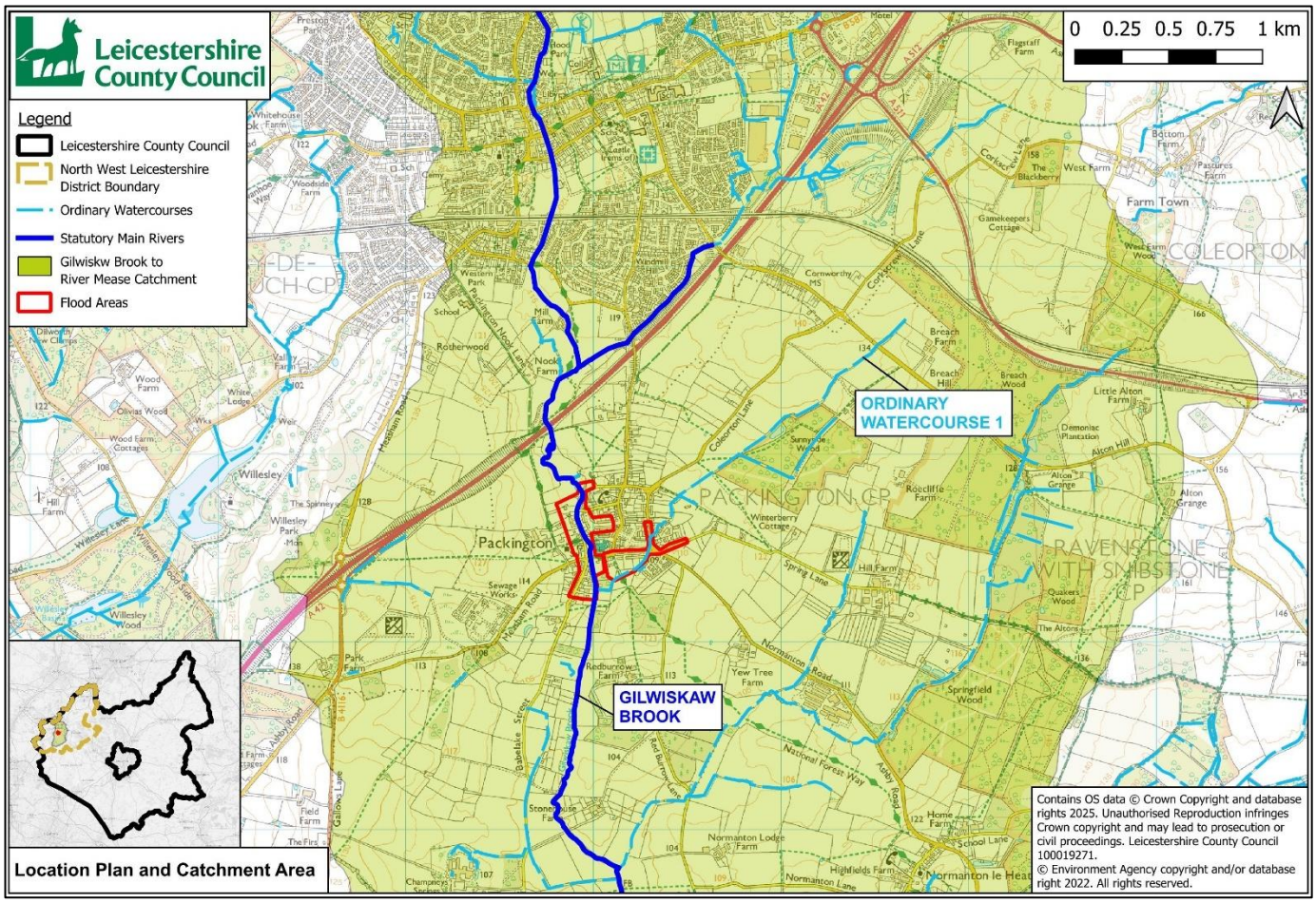

Figure 1: Location Plan - Packington

[1] British Geological Survey (2025) GeoIndex
https://mapapps2.bgs.ac.uk/geoindex/home.html?_ga=2.126588623.377520356.1649146089-1757798915.1649146089

2.2 LOCAL DRAINAGE

The Gilwiskaw Brook is a major tributary of the River Mease, originating in the rural areas north of Ashby de la Zouch. It flows southward through Ashby de la Zouch and beneath the A42, a key transport corridor located approximately 0.75 km north of Packington. The brook is conveyed under the A42 via a box culvert structure approximately 1.8 metres wide. This structure is shown in Figure 2 (identified as Feature 1) and illustrated in Photograph 1 and Photograph 2.

In addition to the culvert, the A42 interacts with the downstream catchment through four 300mm outfalls that discharge highway drainage into the Gilwiskaw Brook on both sides of the culvert. Along the Coleorton Brook—a significant tributary of the Gilwiskaw that joins near the culvert—there are also between seven and ten known highway outfalls. According to National Highways, approximately 11 hectares of highway surface area ultimately drain into the Gilwiskaw Brook upstream of Packington.

Within Packington, the Gilwiskaw Brook passes beneath three road bridge structures: a single-span brick arch bridge on Mill Street (3.8m wide, identified as Feature 2 on Figure 2), a twin-arch bridge on Hall Lane (two 2.45m spans, Feature 3), and another twin-arch bridge on Bridge Street (two 2.9m spans, Feature 5). Additionally, there is at least one wooden footbridge located along Mill Street, just north of Packington Church of England Primary School (identified as Feature 4 on Figure 2).

A significant ordinary watercourse tributary of the Gilwiskaw Brook (referenced herein as ordinary watercourse 1) originates in the rural areas to the north-east of Packington and flows in a south-westerly direction through Packington. The tributary flows through two culvert structures, one at Drum and Monkey Lane in north-eastern Packington (identified as Feature 7 on Figure 2), and the second beneath Normanton Road and Heather Lane (identified as Feature 8 on Figure 2). The tributary joins the Gilwiskaw Brook at the southern end of Packington, where the Gilwiskaw Brook continues in a southerly direction for 1.5 miles before turning to the south-west towards the River Mease south of Measham. The Gilwiskaw Brook joins the River Mease approximately three miles south-west of Packington.

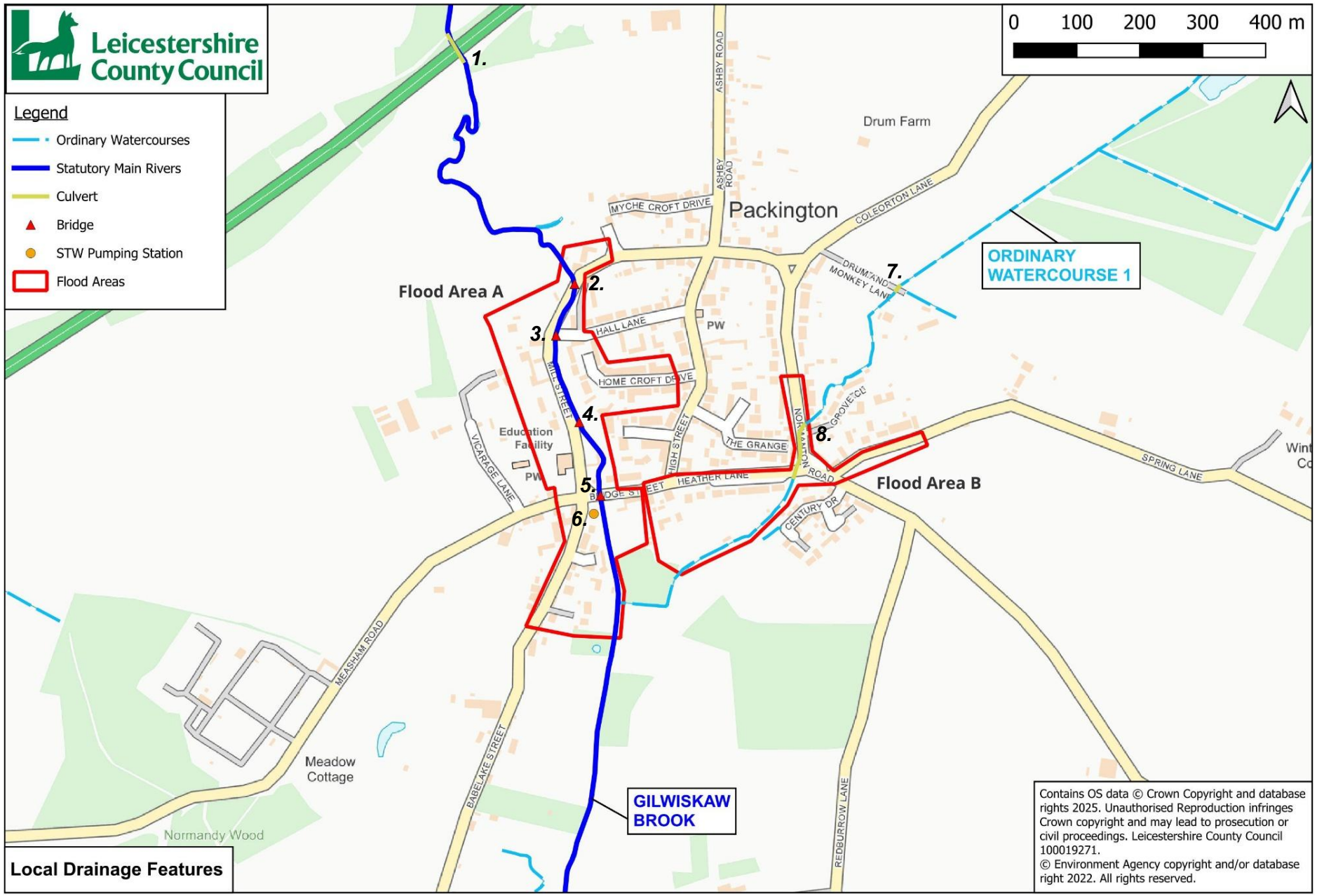

Figure 2: Local Drainage Features

Photograph 1: Upstream of A42 showing bridge inlet and incoming drainage pipe

Photograph 2: Downstream of the A42 also showing a 300mm national highways outfall

The village is served by a public sewer network, which is made up mostly of 225mm-300mm combined sewers. These combined sewers generally follow the road network and converge at the STW pumping station near Babelake Street. The pumping station (identified as Feature 6 on Figure 2) then pumps the wastewater to the Packington Treatment Works. The treated water is then released into a culverted outfall and ordinary watercourse, which joins with the Gilwiskaw Brook approximately 1.5km downstream of Packington.

The highway systems are drained via traditional roadside gullies; the majority of Packington's roadside gullies outfall via bespoke drainage networks into the Gilwiskaw Brook or ordinary watercourse 1.

3 FLOODING INCIDENT ON 18TH SEPTEMBER 2023

The majority of the information supporting the description of the flooding incident is based on first-hand accounts and flood survey information provided by affected residents.

3.1 PRIOR TO THE EVENT

The weather conditions in the first half of September were characterised by stormy (anticyclonic) conditions, resulting in predominantly dry periods punctuated by localised thunderstorms bringing heavy rainfall. From mid-September, conditions became more unsettled with outbreaks of more persistent rain and localised thunderstorms and very heavy rainfall. According to the Met Office data for September, the United Kingdom as a whole received 131% of the average monthly rainfall.

Table 2: Significant Rainfall Events throughout September 2023

Date and Time	Rainfall Measured (Mount St Bernard Rain Gauge[2])
12/09/2023 04:00 – 20:00	11.6 mm
14/09/2023 08:00 – 12:00	2.4 mm
17/09/2023 17:00 – 19:00	0.8 mm
18/09/2023 03:00 – 07:00	38.8 mm

The rainfall experienced on the 18th September was very localised and not accurately picked up by the nearest rain gauge. A local resident anecdotally recorded that their gauge overtopped at 50mm on 18th September.

The Gilwiskaw Brook is designated as a Main River, and the EA has a flood warning area for the Gilwiskaw Brook at Packington, including Mill Street and Brook Close. The EA installed a water level gauge in the Gilwiskaw Brook at Packington[3], south of Bridge Street (OSNGR Eastings 435990, Northings 314415), in July 2001. On the 18th September 2023 the water level at the gauge reached a peak level of 2.251m at 05:15 hours, exceeding the previous highest observed level of 2.10m over the entire period of record[4]. The following flood warning was issued in this area by the EA on 18th September 2023 at 05:43 hours:

"*Flooding is expected in this area. This means properties are at risk of flooding. Please take action to protect yourself and your property and monitor local weather and river conditions. Avoid contact with, walking or driving through flood water. Consider activating any property flood protection products you may have. Environment Agency*

[2] Department for Environment, Food and Rural Affairs (2025) Hydrology Data Explorer – Mount St. Benards Rainfall Gauge. https://environment.data.gov.uk/hydrology/station/3944527a-7e03-49e4-b50b-d9e46bce380a

[3] Department for Environment, Food and Rural Affairs (2025) Hydrology Data Explorer – Packington Gilwiskaw Brook Water Level Gauge. https://environment.data.gov.uk/hydrology/station/ac500b13-ff2b-46dc-81cd-6bdda72e68d7

[4] Environment Agency (2025) Gilwiskaw Brook Level at Packington. https://check-for-flooding.service.gov.uk/station/9092

Flood Warning Officers set the river or tidal levels that have triggered this message. During industrial action this message has been automatically issued based on rising river or tidal levels."

Packington benefits from an active flood resilience network, including a Flood Warden, the local Packington FLOAT group, and the Parish Council's community plan. Prior to the flood event on 18th September 2023, representatives from these groups had been monitoring weather forecasts and were prepared to respond to potential flooding.

Despite these efforts, the speed and intensity of the flooding exceeded expectations. The rapid onset left insufficient time to implement planned resilience measures, resulting in property flooding before community actions could take effect.

This event highlights the challenges faced by even well-prepared communities in flashy catchments, where flood conditions can escalate within minutes. It underscores the need for enhanced early warning systems but also continued support for local flood groups to adapt their response strategies to increasingly unpredictable weather patterns and very short response times.

3.2 FLOOD EVENT

There were two key areas of the village impacted by the flooding and they are discussed separately below. The Flood Areas are indicated on Figure 2.

3.2.1 FLOOD AREA A – MILL STREET, HOME CROFT DRIVE, BABELAKE STREET, BROOK CLOSE

The Gilwiskaw Brook reportedly burst its banks from the east of Mill Street, on the section between the bridge at The Old Water Mill at its northern extent, to the bridge at Bridge Street at its southern extent. Flood water was described as flowing through properties on Mill Street and down Mill Street towards the junction of Mill Street, Bridge Street, Measham Road and Babelake Street. Flood water accumulated at this junction to a reported depth of up to 3 ft. The local primary school was also cut off and unable to be accessed for the day. The extent of flooding can be seen in Photograph 3 and flow paths illustrated on Figure 3.

Photograph 3: Drone footage of the flooding in Packington on 18/09/2023, looking southwards towards the bridge junction around Mill St, Bridge St, Measham Rd, Babelake St. By kind permission of G. Saunt

The flooding occurred suddenly, with the brook level rising quickly from its normal level of 1.2m Above Local Datum (ALD) to a peak of 2.251m ALD within 2 hours. The maximum recorded level of 2.118m is the highest recorded depth of the brook since the flow gauge was installed in 2001. The previous peak was 2.1m, recorded at 5.30am on 16th February 2020.

Residents reported that flood water entered homes before the flood warning arrived and therefore, they reported being unprepared. Six properties reported internal flooding initially after the event. Three additional properties confirmed internal flooding in the following weeks.

3.2.2 FLOOD AREA B – HEATHER LANE, NORMANTON LANE, SPRING LANE

The ordinary watercourse reportedly flooded onto the highway upstream of the culvert beneath Normanton Road and Heather Lane. A manhole cover on the pavement immediately above the culvert inlet also lifted, contributing additional overland flow onto the highway. Flood water was described as flowing down Normanton Road in a southward direction, accumulating at the junction with Heather Lane. Additional flows were anecdotally reported from Spring Lane, where surface water reportedly flowed off agricultural land onto the highway and down to the junction of Normanton Road and Heather Lane.

Flood water accumulated at the junction of Normanton Road and Heather Lane before subsequently flowing down onto the Heather Lane slip road. The flood water overtopped kerbs on the southern side of the highway initially causing external property flooding to the frontage of several properties. Three residential properties on Heather Lane reported internal flooding from the front but also from the rear as the ordinary watercourse overtopped its banks behind the properties. An additional three residential properties reported external property flooding from this source also. Two residential properties on Normanton Road also reported external property flooding, as a result of the ordinary watercourse overflowing into rear gardens upstream of the junction at Heather Lane and Normanton Road.

On Spring Lane, one residential property reported external property flooding, and one reported internal property flooding. This was anecdotally caused by surface water flows from adjacent agricultural land.

All flow paths are illustrated on Figure 3.

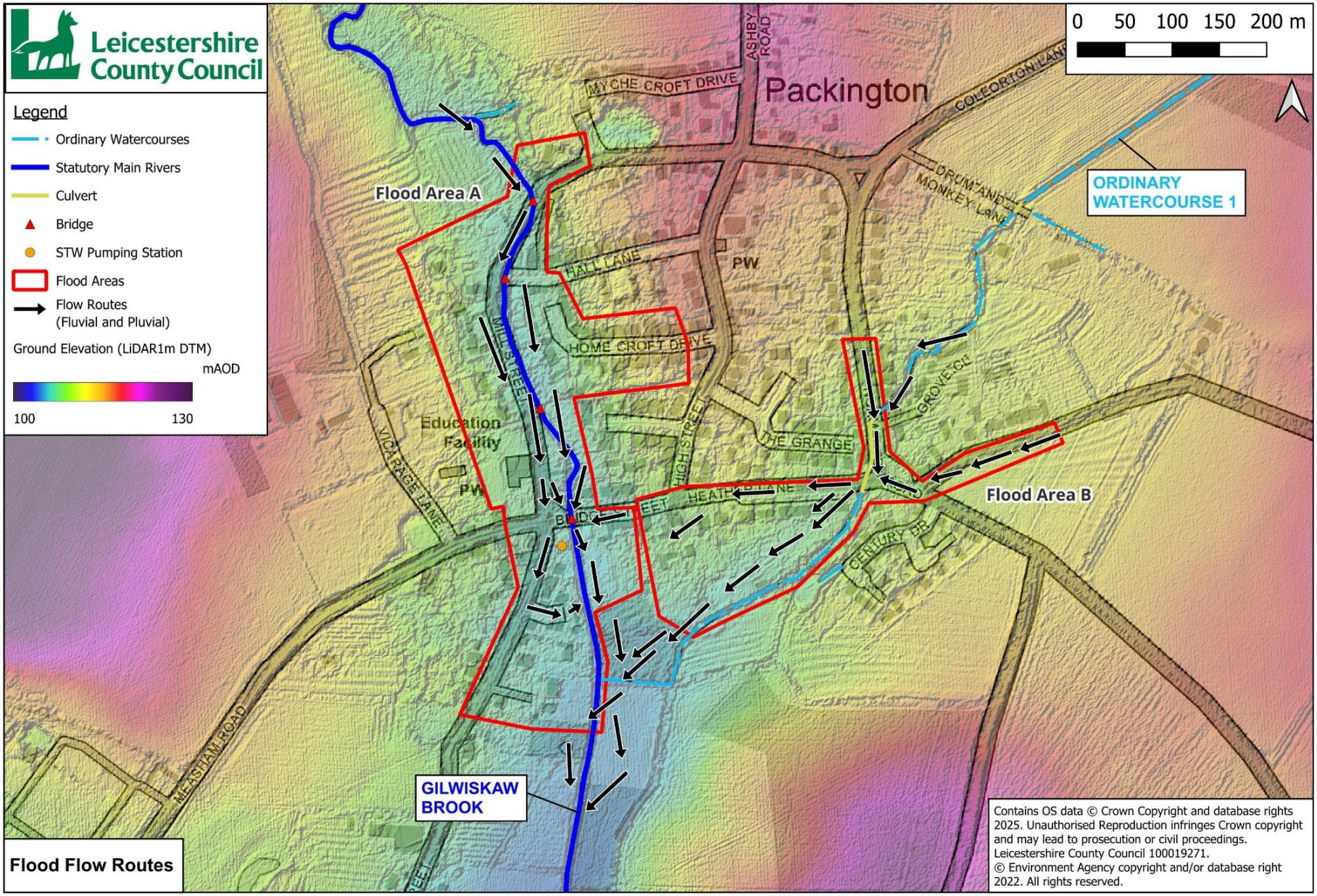

Figure 3: Topography and Flow Pat

3.3 POST FLOOD EVENT

Following the 18th September 2023 event, the Council met with relevant RMAs and residents to gather information and coordinate actions. This included:

- Immediately following reports of flooding, several RMAs responded to the reports by delivering sandbags and undertaking welfare checks. The Fire and Rescue Service were called on the 18th of September 2023 and were in attendance during the flooding assisting residents. It is understood that no residents had to be temporarily rehoused.
- A number of site walkovers were conducted with affected residents and the Flood Action Group following the event which was attended by all key RMAs.
- A public meeting with affected residents was held on the 26th September 2023 which was coordinated by the LLFA and attended by NWLDC and the EA also.
- A Packington Flood Group was set up by the LLFA to coordinate the short, medium and long term actions that were identified from the public meeting which included all RMAs and also representatives from the local Flood Action Group and the community. This group met regularly to start with and then less frequently as actions progressed.

Post-flood report forms compiled by the LLFA indicated that, while a number of at risk residents had access to both formal and informal flood defence equipment, only a limited number were able to deploy these measures effectively. This was primarily due to the rapid onset of flooding and the delayed flood alert. Similarly, the Parish Council and the local flood action group were unable to mobilise stored resources, such as sandbags, in time to mitigate the impact, owing to the speed at which the flooding occurred.

3.3.1 DATA ANALYSIS

RIVER (FLUVIAL) FLOOD RISK

Figure 4 shows the EA's modelled Flood Zones associated with the Gilwiskaw Brook.

Flood Zones are a composite dataset produced by the EA including national and local modelled data, and information from past floods. The Flood Zones data shows the extent of land at present day risk of flooding from rivers and the sea, *ignoring the benefits of defences (undefended)*. Flood Zone 3 shows the area that could be affected with a 1 in 100 (1%) or greater chance of happening each year (**High to Medium risk**). Flood Zone 2 (**Low risk**) shows the extent of an extreme flood from rivers with up to a 1 in 1000 (0.1%) chance of occurring each year and recorded flood outlines. These are based on long-term flood risk maps published on www.gov.uk/check-long-term-flood-risk.

The fluvial flooding that occurred on 18th September 2023 in Flood Area A appears to have been very well correlated with the Flood Zone 3 extents. Please note that fluvial Flood Zones represent the potential risk of flooding directly from the Gilwiskaw Brook only.

As described in Section 3.1, a water level gauge exists in the Gilwiskaw Brook in Packington[4], south of Bridge Street. This was installed in July 2001 as a way of capturing real-time water level information and feeding it into and informing a local flood warning system. The Gilwiskaw Brook catchment is characterised by a rapid hydrological response to rainfall, commonly referred to as a "flashy" catchment. In recognition of this, the river gauge was originally installed at a location deemed optimal for providing timely data to support flood warning issuance.

However, during the referenced flood event, several residents reported receiving the flood warning from the Packington river gauge only after internal property flooding had already occurred. This delay highlights a known challenge in flashy catchments: the short window between river levels reaching critical thresholds, the data being transmitted and verified by the EA flood officers, and the subsequent issuance of a public warning. This compressed timeline often results in flood warnings being perceived as too late to enable effective response.

On 18th September 2023, flood warnings for the Gilwiskaw Brook catchment were issued via an automated system due to staff shortages caused by industrial strike action within the EA. While automation enables rapid alerts, it lacks the contextual judgment and situational awareness that trained personnel bring to the process. Manual monitoring allows for real-time interpretation of river level data, consideration of local conditions, and cross-referencing with other sources of information. In contrast, automated alerts rely solely on predefined thresholds and algorithms, which may lead to either premature or delayed warnings, particularly in complex or rapidly changing scenarios.

In flashy catchments like Gilwiskaw Brook, river levels can rise quickly, leaving little time for residents to act, even when warnings are issued promptly based on thresholds. Given these constraints, further investigation into the placement and performance of the river gauge was recommended to ensure it continues to provide the most timely and actionable data possible for flood warning purposes.

SURFACE WATER (PLUVIAL) FLOOD RISK

A map of the Risks of Flooding from Surface Water (RoFSW) (Figure 5) has been produced by the EA, published on www.gov.uk/check-long-term-flood-risk, using high level modelling which represents where water could flow and accumulate during certain rainfall events[5]. The modelling does not consider property threshold levels, and therefore cannot accurately predict internal flooding.

The map illustrates the flood extents during the following probability/magnitude rainfall events:

- **High risk** - greater than or equal to 1 in 30 (3.3%) chance of flooding in each year;
- **Medium risk** – less than 1 in 30 (3.3%) but greater than or equal to 1 in 100 (1%) chance of flooding in each year; and
- **Low risk** – less than 1 in 100 (1%) but greater than or equal to 1 in 1000 (0.1%) chance of flooding in each year.

In the absence of or smaller watercourse modelling, surface water flood models are often good indicators of ordinary watercourse floodplain extents, as surface water models take into account rapid runoff from non-fluvial sources (such as roads, fields etc), from which smaller watercourses are more responsive. The surface water flooding outlines, as illustrated on Figure 4, clearly illustrate the flow path and likely flood extents of ordinary watercourse 1 and the extents of the high risk of surface water flooding closely match those that were observed during the 18th of September 2023 flood event. This therefore confirms that these properties are at high risk of flooding.

It must be noted however that the modelled rainfall magnitude/duration and spatial distribution of rainfall may vary substantially to what was experienced during the 18th September 2023 flood event, which explains why some of the areas identified in the EA's RoFSW map did not flood at that time

[5] Environment Agency (2025) Check the long term flood risk for an area in England – Packington.https://check-long-term-flood-risk.service.gov.uk/map?easting=435982&northing=314070

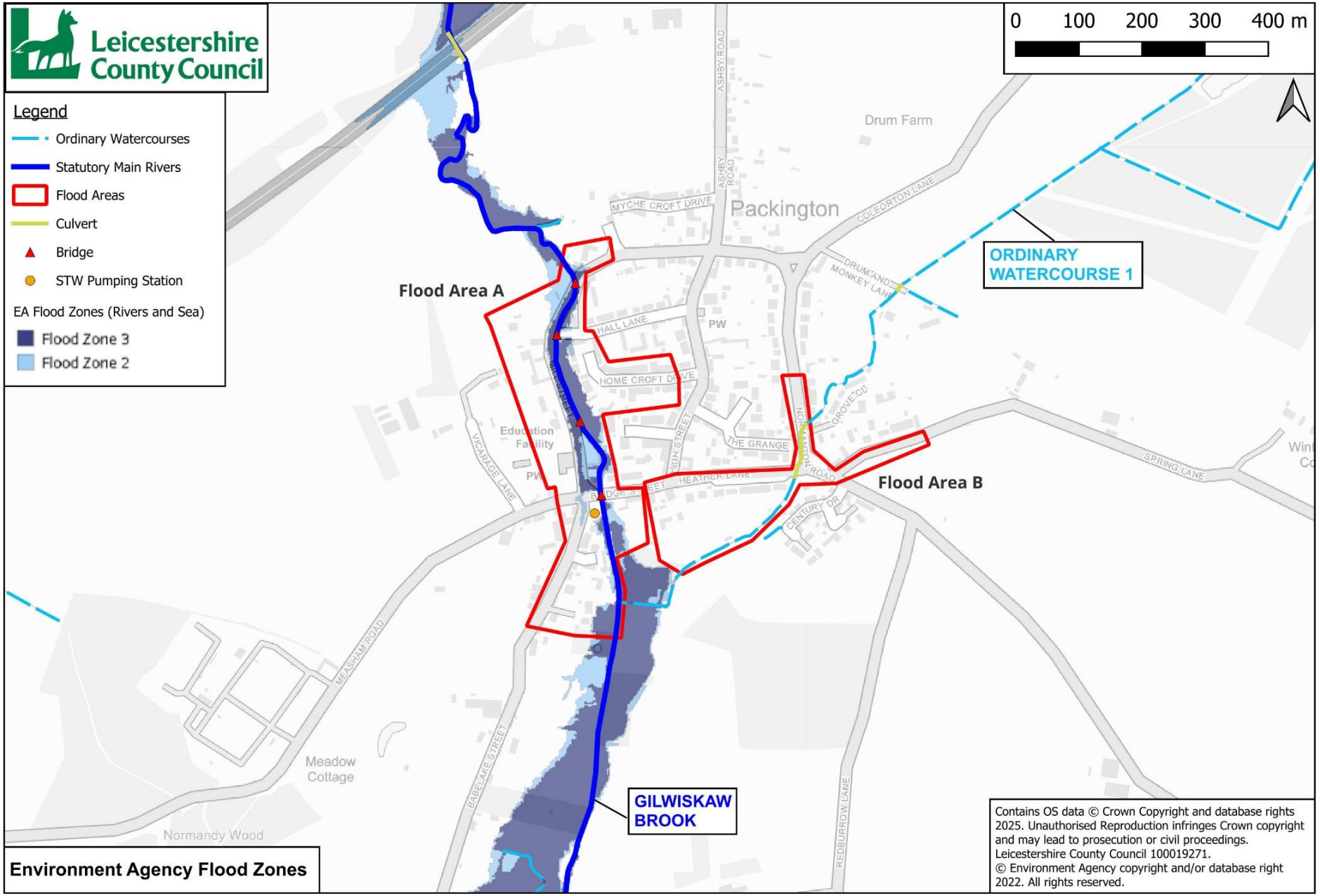

Figure 4: River (Fluvial) EA Flood Zone Extents (EA Flood Zones)

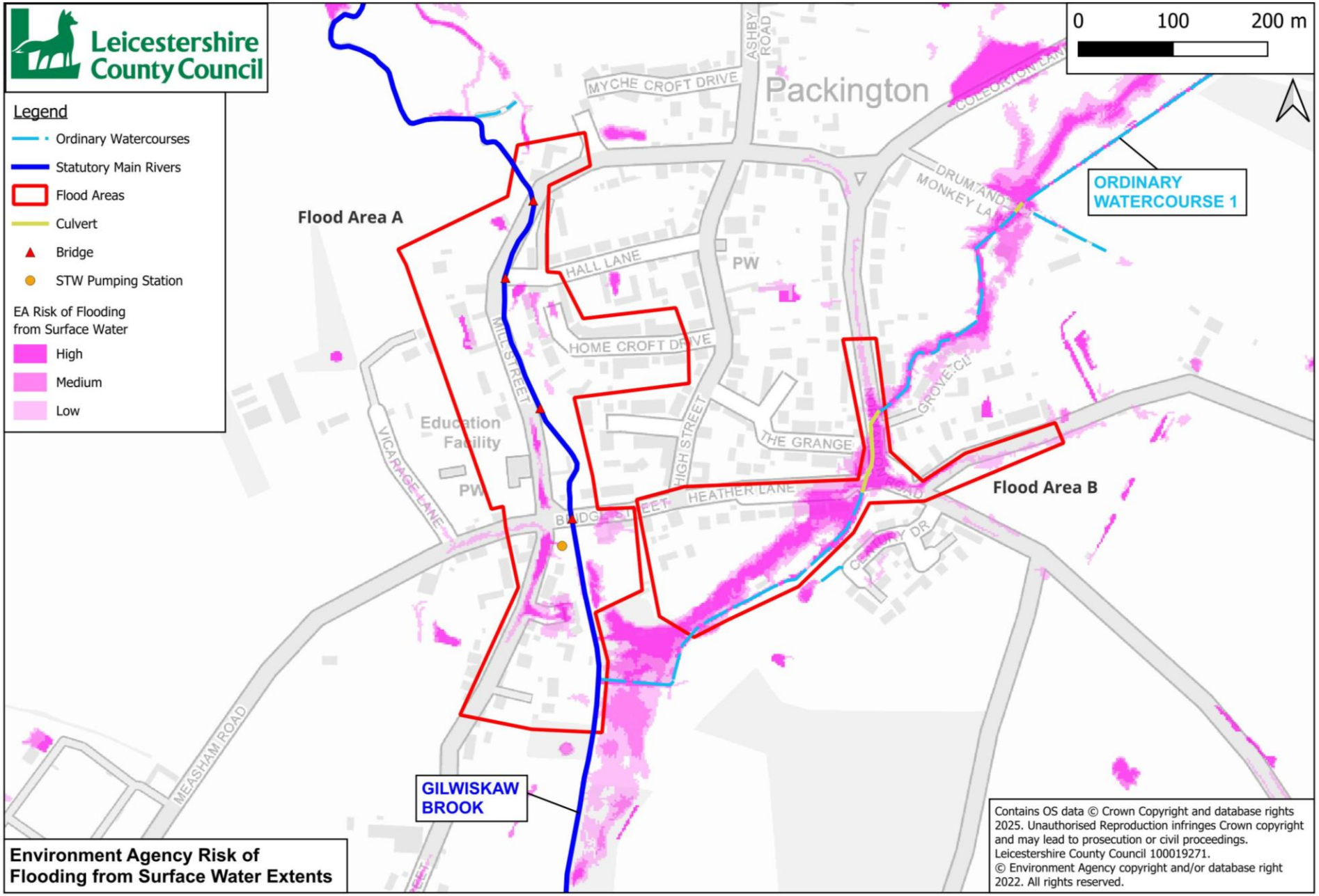

Figure 5: EA Risk of Flooding from Surface Water (Pluvial) Flood Extents

SITE INSPECTIONS AND ANECDOTAL REPORTS

Anecdotal evidence suggests that, prior to the flood event on 18th September 2023, land in the upstream reaches of ordinary watercourse 1 had recently been ploughed. This practice, particularly when carried out without appropriate soil conservation measures, can significantly increase surface runoff and sediment transport during heavy rainfall. The exposed soil is more susceptible to erosion, resulting in silt and debris being washed into downstream channels and structures. This influx of material can reduce channel capacity, block culverts, and accelerate flow velocities, compounding flood risk. Photograph 4 illustrates the silty water and Photograph 5 illustrates visible scouring of the ploughed field following the event. Traditional agricultural practices in sensitive catchments like Gilwiskaw Brook can therefore exacerbate flooding by altering natural drainage patterns and increasing sediment loads. These impacts highlight the importance of catchment sensitive farming practices.

Photograph 4: View looking downstream of agricultural fields where ordinary watercourse 1 then flows through residential gardens

Photograph 5: Taken after the flood event on site visit of 26th September 2023 illustrating scour across land and ploughed fields adjacent to ordinary watercourse 1 upstream of residential dwellings

Ordinary watercourse 1 runs through the rear gardens of the properties along Heather Lane. During a post-flood site visit on 10th November 2023, it became clear that before the flooding, an informal foot bridge existed across the watercourse within the back garden of 1 Heather Lane (remains as illustrated in Photograph 7). This footbridge was described as having washed away during the flood event. No evidence of consent for the works was identified by the LLFA. Any works within or in proximity to an ordinary watercourse require consent under the Land Drainage Act (1991). This allows the LLFA to permit works on ordinary watercourses that do not increase flood risk. Due to the size of the flood event and in the absence of detailed flood modelling or details around the size of the structure, it is not known to what extent this informal footbridge may have impacted the flooding around Heather Lane. It is likely to have exacerbated the backing up of water before the structure was eventually washed away.

In addition to the identification of the above pre-existing footbridge, an unconsented weir obstruction was also identified within ordinary watercourse 1 to the rear of 4 Heather Lane (refer to Photograph 9). Parts of ordinary watercourse 1 also appeared to require some maintenance as per the requirements of being a riparian landowner (refer to Photograph 10). The weir may have increased the flood extents during the event. In the absence of flood modelling, it is not known if this weir obstruction increased the flood risk. This weir has been logged as unconsented under Section 24 of the Land Drainage Act (1991). During the site walkover after the event, a discussion was held with landowners over riparian responsibility. Further actions to liaise with other landowners regarding riparian responsibilities were also noted.

Initial anecdotal reports suggested that the culvert beneath Heather Lane may have been blocked during the flood event on 18th September 2023. However, post-event visual inspection confirmed that the culvert itself was not blocked. Water was observed flowing from the outlet during the event, and no evidence has been provided to indicate a blockage at that time.

Significant debris accumulation was identified immediately downstream of the culvert outlet after the event, just upstream of an informal footbridge located in the rear garden of 1 Heather Lane (see Photograph 6). Water was reported to be surcharging from highway inspection chambers at the junction during the event, indicating the local drainage system was overwhelmed as no blockages were identified.

It is most likely that the debris at the culvert inlet originated from upstream field scouring during the flood event. The Council undertook silt and debris clearance from ordinary watercourse 1 in April 2024, removing a substantial volume of material from the downstream section beneath the highway.

Photograph 6: deposits from upstream in ordinary watercourse 1 downstream of outlet adjacent to 1 Heather Lane

Photograph 7: Remains of the informal footbridge crossing from 1 Heather Lane

Residents drew attention to a discharge point into ordinary watercourse 1 (at the rear of 2 Heather Lane, Photograph 8) at the time of the site walkover on 10th November 2023. No concerns have been identified with this outfall. The outfall appeared to be discharging freely at the time. The discharge details of which were agreed and approved by the planning process at the time approval was given for the development.

It is likely that this outfall would have been unable to discharge during the flood event as ordinary watercourse 1 would have resulted in the outfall becoming submerged. No flood concerns were raised within the development that it serves.

Photograph 8: Outfall into watercourse from estate. Located to the rear of 3 Heather Lane

Photograph 9: Unconsented weir to rear of 4 Heather Lane

Photograph 10: Ordinary watercourse 1 downstream of land to the rear of properties in Heather Lane

Anecdotal reports suggested that the Gilwiskaw Brook bridge at Bridge Street was obstructed, causing water to back up and exacerbate flooding upstream. A post-event inspection (see Photograph 11) confirmed debris accumulation beneath one of the twin arches, including silt, sand, and organic material likely deposited during the flood and over time. Water was observed flowing over and around the obstruction, while this may have contributed to localised slowdown of flow immediately upstream, the watercourse narrows downstream of the bridge (Photograph 12), which would have naturally limited flow regardless of the obstruction.

The EA has undertaken an analysis of the Gilwiskaw Brook in the vicinity of Packington, the results of this analysis suggests that at Bridge Street the channel is over-wide and silt naturally deposits here as the flow slows down. The Bridge Street spans are larger than those upstream. Flooding conditions in the channel actually start further upstream at the Old Water Mill and then flows down Mill Street rather than being caused directly by backing up from Bridge Street.

Given that water continued to pass through the structure and the second arch remained largely unobstructed, it is unlikely that the condition of the blocked arch alone had a significant impact on the overall extent of flooding. The restriction downstream would have been the dominant control on flow capacity during the event.

Following the event, The Environment Agency released the following statement in response to accusations that the silting significantly contributed to flooding, and to calls for further, regular desilting of the structure and the Gilwiskaw Brook:

The EA's current position is that *"dredging/ de-silting projects undertaken by the EA can be extremely costly, which, alongside not having any tangible benefits (in this case), is part of the reason why we would not be carrying out de-silting of the bridge at this time." The EA will however, monitor the level of silt at this bridge and review it regularly.*

Photograph 11: Taken immediately after the event illustrating one of the twin arch bridges were partially obstructed (junction of Bridge Street and Mill Street)

Photograph 12: Illustrating the channel width just downstream of the twin arch bridge

Anecdotal reports were also made about an accumulation of natural woody debris which created restrictions on the downstream end of the historic flood plain (adjacent to Babelake Street). This would have likely reduced the ability of the Gilwiskaw Brook to convey water away quickly and created an additional build-up of water in the immediate upstream sections of channel. Whilst this woody debris may have created a local restriction, the impact on the flood extents would have likely been limited due to the number of other channel restrictions upstream (bridges, narrowed channel etc).

As outlined in Section 1, a notable portion of the A42 highway contributes drainage to the upstream Gilwiskaw Brook catchment. National Highways has estimated that approximately four hectares of highway surface drain into the four outfalls located near the 1.8m culvert (identified as Feature 1 on Figure 2). An additional seven hectares are understood to drain via smaller outfalls along the Coleorton Brook.

Given these figures, the volume of water entering the catchment from the A42 is likely to be considerable. However, it is important to note that this discharge is distributed across a substantial length of the upstream watercourse. As a result, it is not currently possible to determine the precise influence this additional flow may have had on flood extents or the rate at which flooding occurred.

Anecdotal reports indicated that highway gullies in Packington were blocked or ineffective. While some gullies may have been partially obstructed, it is important to note that highway drainage systems are designed to manage rainfall falling directly onto the carriageway within a limited event. Drainage systems such as those in Packington can be expected to accommodate rainfall up to the 10-15-year event. They are not intended to intercept large volumes of surface water flowing from adjacent land, as occurred during this event.

In several locations, riparian-owned roadside ditches and sections of Main River and ordinary watercourse were found to be overgrown, reducing their capacity to convey flow. However, given the exceptional volume and speed of surface water during the event, the impact of these conditions is considered negligible. The ordinary watercourse and Main River were likely overwhelmed regardless of maintenance status of all assets.

Immediately after the event, there were anecdotal reports of foul waste smells. The amount of flood water that occurred during the flood event may have overwhelmed the local sewage network and resulted in some foul sewage escaping, however this was not confirmed at the time.

As mentioned previously, some residents had already installed their own measures to try to prevent water ingress, but deployment of some measures was not possible due to the speed in which the flooding occurred (refer to Photograph 13 and Photograph 14).

Photograph 13: Makeshift barrier to rear of 53, Mill Street

Photograph 14: Flood wall installed around 55, Mill Street

3.3.2 SUMMARY OF IMPACTS AND FINDINGS

The result of the combination of factors described below resulted in the ingress of storm flood water to 13 residential properties in Packington and the external flooding of 18 properties on the 18th September 2023:

- Higher than average rainfall over the previous months had saturated the surrounding farmland and greatly reduced the already 'flashy' catchments ability to absorb any water.
- Extremely heavy rainfall fell in such a short time that water could not infiltrate the ground. It flowed quickly across farmland and into the watercourses and overwhelmed the local drainage network. The local drainage infrastructure is not designed to take such a huge amount of water in a short space of time.
- The fast flow of surface water into the watercourses led to a rapid increase in water levels on the Gilwiskaw Brook and its tributaries. This caused the Main River and ordinary watercourse 1 to overflow their banks and flood highways and properties adjacent to them.
- Surface water that found its way onto the highway could not drain due to overwhelmed gullies and submerged highway outfalls (outfalls could not discharge due to river levels submerging them. This led to pooling surface water on highways not inundated by the brooks. It also increased water levels at locations flooding due to the watercourse networks. This was particularly severe on Babelake Street, Heather Lane, Normanton Road and Spring Lane.

There are many factors that may have exacerbated the impacts of the flood event. Whilst these factors may have made a difference to the volume and peak flood levels, at the time of writing this report, there is no firm evidence that these factors would have prevented any of the internal flooding experienced by this event. These include:

- The speed of flooding meant that the official EA flood alerts and flood warning did not activate with sufficient time for Flood Wardens to implement the emergency plans. This meant that residents were unable to organise effective measures to protect their properties and belongings. Such measures include moving vehicles or protecting their properties with flood barriers, sandbags and silica gel bags etc may have reduced the impact.
- The build-up of silt under the Bridge Street and Heather Lane culverts may have impacted hydraulic performance and slowed down the flow of water. The Heather Lane culvert is sufficiently sized and no evidence was provided of significant obstruction before or during the event and is unlikely to have made any significant negative impact on the flooding. Both culverts were anecdotally reported to have water flowing significantly from outlets during the events, albeit there was obstruction to one of the bridge arches on Bridge Street. Immediately downstream restrictions limit the impact this build up of material at Bridge Street would have had on the overall flooding.
- The riparian owned roadside ditches along several of the village's roads, and sections of Main River and ordinary watercourse 1 were found to have been overgrown and as such had a reduced capacity to convey flow during the event. Given the sheer volume of water experienced during the flood event in such a short time, the impact of this is however considered to be negligible.
- The unconsented obstructions identified on ordinary watercourse 1 may have exacerbated local flooding to Heather Lane, however in the absence of river modelling it is not known to what extent. Due to the speed of flooding it is unlikely that this would have caused the flooding but it may have increased the extent. The wooden footbridge was washed away during the event and the weir has been logged as unconsented and the landowner informed.
- The flood water washed a large amount of natural woody debris into the drainage network creating restrictions on the downstream end of the historic flood plain (adjacent to Babelake Street). This would have reduced the ability of the Gilwiskaw Brook to convey water away as quickly at that bridge location however the impact is considered negligible due to the speed of the event and the additional watercourse constraints identified immediately downstream.

3.3.3 FLOOD EVENT – STORM BABET (20TH OCTOBER 2023)

On 20th October 2023, a significant storm event hit the East Midlands and widespread flooding occurred including in Leicestershire. As a result of this event, 6 residential properties suffered internal flooding again in Packington. The flood event followed a similar pattern to the flow routes identified in this report for September 2023, but the rainfall experienced was not as intense as that experienced from the September event. The rainfall that fell during Storm Babet fell over a longer period and although slightly more rain fell overall it gave more time for the local drainage network to cope with the water. This is likely to have explained why the impacts were slightly less than the September event.

Storm Babet was nationally significant enough to trigger the activation of the National Flood Recovery Framework and the properties affected during this event were able to access recovery funding. The actions from this event have also been captured within the action list of this investigation. Note that the National Flood Recovery Framework was not activated for the September 2023 event as that event was not considered nationally significant.

4 RESPONSIBILITIES

4.1 LEAD LOCAL FLOOD AUTHORITY (LCC)

As the LLFA, the Council has the responsibility to co-ordinate the management of local flood risk and the interaction of RMAs across Leicestershire. For more information please refer to the Local Flood Risk Management Strategy[6].

4.2 ENVIRONMENT AGENCY (EA)

The Environment Agency has a strategic overview responsibility under the FWMA as well as permissive powers to carry out maintenance work on Main Rivers under Section 165 of the Water Resources Act (WRA). Main Rivers include all watercourses indicated on the statutory Main River maps held by the Environment Agency and the Department of Environment, Food and Rural Affairs. This includes any structure or appliance for controlling or regulating the flow of water into, in or out of the channel. Gilwiskaw Brook is a Main River and therefore the Environment Agency has responsibility for investigating flood risk from overtopping.

The Environment Agency has permissive powers to carry out works of maintenance and improvement on these rivers. These powers can be used to undertake works where there is an immediate risk of flooding where landowners fail to undertake their responsibilities under the WRA.

The Environment Agency can undertake enforcement action where third-party asset owners fail to maintain their property/land in appropriate condition. They may consider undertaking maintenance or repair of third-party assets in order to safeguard the public interest and where other options are not appropriate.

4.3 NORTH WEST LEICESTERSHIRE DISTRICT COUNCIL (NWLDC)

NWLDC have powers under Section 14 of the Land Drainage Act 1991 (LDA) to undertake flood risk management works on ordinary watercourses (excluding Main Rivers), where deemed necessary. Under Section 20 of the LDA, District Councils have the power (by agreement of any person and at their expense) to undertake drainage work which that person is entitled to carry out and maintain.

[6] Leicestershire County Council (2024) Flood risk management strategy for Leicestershire. https://www.leicestershire.gov.uk/environment-and-planning/flooding-and-drainage/lead-local-flood-authority/flood-risk-management

4.4 LOCAL HIGHWAY AUTHORITY (LCC)

The Local Highway Authority has a duty to maintain the Highway under Section 41 of the Highways Act (1980). Section 100 states that the Council also has the responsibility and power to prevent water running onto the highway from adjoining land.

4.5 SEVERN TRENT WATER (STW)

Water and sewerage companies are responsible for managing flood risk related to surface water, foul water and combined sewer systems. Public sewers are designed to protect properties from flood risk in normal wet weather conditions. In extreme weather conditions however, there is a risk of these public sewers being overwhelmed resulting in sewer flooding. STW has a responsibility to maintain the public sewerage system. As a water and sewerage company, STW manage the risk of flooding from their water supply and sewerage facilities. This includes:

i. Surface water sewers – these carry rainfall and surface water away from properties to watercourses.

ii. Foul water sewers – these carry wastewater away from properties to be treated.

iii. Combined water sewers – these drain both wastewater and surface water from properties along with run off from highways.

iv. Managing the impact of flooding to their networks by ensuring their systems have the appropriate level of resilience to flooding.

v. Engage with Risk Management Authorities on how water and sewerage company assets impact on local flood risk.

vi. STW are Category 2 responders under the Civil Contingencies act, providing emergency response and supporting the management of flooding events.

4.6 HIGHWAY AUTHORITY (HIGHWAYS ENGLAND)

As Highways England have the role of highway authority for **motorways and major (trunk) roads**, they have a duty to maintain the Highway under Section 41 of the Highways Act (1980). Section 100 states that the Council also has the power to prevent water running onto the highway from adjoining land. Refer to the Useful Links section of the report for further information on the Highways Act (1980).

4.7 RIPARIAN LANDOWNERS OF WATERCOURSES AND HOMEOWNERS

Riparian landowners have certain rights and responsibilities including:

- They must maintain the bed and banks of their watercourse, including the trees and shrubs growing on the banks;
- They must clear any debris, even if it did not originate from their land. This debris may be natural or man-made;
- They must keep any structures that they own clear of debris. These structures include (but are not limited to) culverts, trash screens, weirs and mill gates.

A full explanation of the rights and responsibilities of riparian ownership are given on the 'Owning a Watercourse' government webpage found at: https://www.gov.uk/guidance/owning-a-watercourse

Local residents and tenants who are aware that they are at risk of flooding should take action to ensure that they and their properties are protected.

Community resilience is important in providing information and support to each other if flooding is anticipated. Actions taken can include; signing up to Flood Alerts and Warnings[7] (if available), nominating a community flood warden, producing a community flood plan[8], implementing property level protection and moving valuable items to higher ground. More permanent measures are also possible at property level such as; installing floodgates, raising electrical sockets, and fitting non-return valves on pipes.

[7] Environment Agency (2025) Flood alerts and warnings. https://check-for-flooding.service.gov.uk/alerts-and-warnings

[8] Environment Agency (2025) Guidance Community Flood Plan. https://www.gov.uk/government/publications/community-flood-plan-template

5 RECOMMENDATIONS / ACTIONS

An action list has been formulated following the investigation.

STATUS OF REPORT AND DISCLAIMER

This report has been prepared as part of the Council's responsibilities under the FWMA.

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 have triggered or contributed to the flood event.

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

The Council expressly disclaims 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 the Council expressly disclaims responsibility for any error in, or omission from, this report arising from or in connection with those opinions, conclusions and any recommendations.

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