Flood Investigation Report

Storm Henk

2nd January 2024

Sileby

CONTENTS

Flood Investigation Report

18 Sileby 1

18.1 Local Drainage Context 1

18.1.1 Geology 3

18.1.2 National Predictive Flood Mapping 3

18.1.3 Hydrometry 4

18.1.4 Flood Warnings 5

18.2 What Happened and Why? 5

18.3 What Has Been Done? 8

18.4 Sileby Actions 9

18.4.1 Short-term Actions (0 - 6 months) 9

18.4.2 Medium-term Actions (6 - 12 months) 12

18.4.3 Long-term Actions (12 months +) 13

LIST OF FIGURES

Figure 18-1: Sileby Location Plan, relevant Watercourse Catchment and Flow Routes through Flood Area (INSET 3) 2

Figure 18-2: Sileby Brook FEH Web Service Catchment Extent upstream of Mill Lane 2

Figure 18-3: Sileby EA Flood map for Planning Flood Zones and Risk of Flooding from Surface Water Extents in Flood Areas (INSET 3) 3

Figure 18-4: Sileby Brook at Silby Gauge (Station ID 4254) Water Level from 08:00 hours on 01/01/2024 to 18:00 hours on 04/01/2024 4

LIST OF PHOTOGRAPHS

Photograph 18-1:Sileby Brook flooding along Brook Street, looking south towards railway arches ... 5

Photograph 18-2: Footbridge across Sileby Brook south east of Cygnet Close 6

Photograph 18-3: Footbridge during the Storm Henk event, showing water overtopping from the Sileby Brook onto Cygnet Close 7

18 SILEBY

Sileby village is located in Charnwood borough located approximately 7km north east of Leicester City Centre and is situated within the Soar Valley.

A formal investigation was not triggered for Sileby following Storm Henk because the source of the flooding is known.

Sileby previously met the criteria for a formal flood investigation following a surface water flood event on 10th June 2016. The report of the investigation was published in April 2019, and it can be found on the County Councils website[1]. Previous river flooding occurred during Easter 1998 (recorded in the Bye Report[2]), October 2019, and February 2020 (Storm Dennis). At the time of Storm Henk actions were already being progressed by RMAs to try to mitigate future flooding.

18.1 LOCAL DRAINAGE CONTEXT

The Sileby Brook is an EA designated Main River flowing through the urban extent of Sileby and runs through the centre of Sileby, as illustrated in Figure 18-1. 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. The properties that experienced internal flooding within Sileby during Storm Henk are located within Flood Areas A and B illustrated in Figure 18-1.

The UK Centre for Ecology & Hydrology's (CEH) Flood Estimate Handbook (FEH) Web Service[3] provides strategic level catchment mapping. The catchment of 11km^2 down to Mill Lane south of Sileby Cricket Club stretches north west to Six Hills, and is predominantly rural upstream of the village (see Figure 18-2). The within this catchment soils are predominantly clayey with some loam, which have slightly impeded drainage[4].

Sileby Brook is a constrained channel with limited natural floodplain. The Bye Report (Easter 1998) references the heavy engineering of the channel in 1957 by Barrow Upon Soar Rural District Council (now reorganised as part of Charnwood Borough Council (CBC)). These works included the creation of a concrete channel and flood berms. The Brook has clearly been engineered to quickly convey flows within channel through the urban extent of Sileby and out to the Soar floodplain.

[1] Leicestershire County Council (2019) Highgate Road, Sileby Flood Report. https://www.leicestershire.gov.uk/sites/default/files/field/pdf/2020/7/15/Highgate-Road-Sileby-final-report-April-2019.pdf
[2] Environment Agency (1998) 1998 Easter Floods Final assessment by the Independent Review Team – Volume 2. https://assets.publishing.service.gov.uk/media/5a7c3b10e5274a1f5cc76ae6/geho0807bnaz-e-e.pdf
[3] Centre for Ecology & Hydrology (2026) FEH Web Service https://fehweb.ceh.ac.uk/Map
[4] LandIS Soilscapes https://www.landis.org.uk/soilscapes/

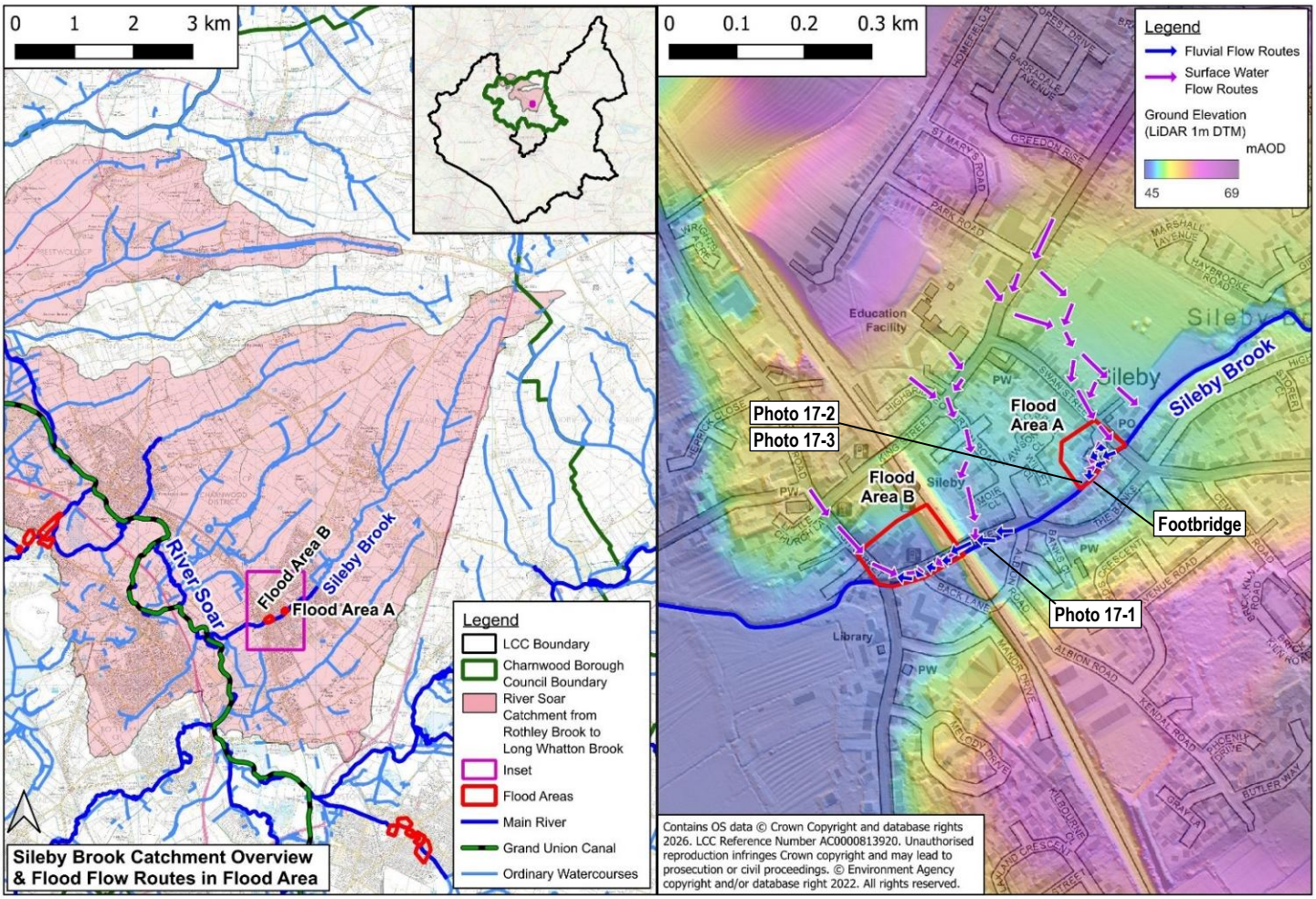


Figure 18-1: Sileby Location Plan, relevant Watercourse Catchment and Flow Routes through Flood Area (INSET 3)

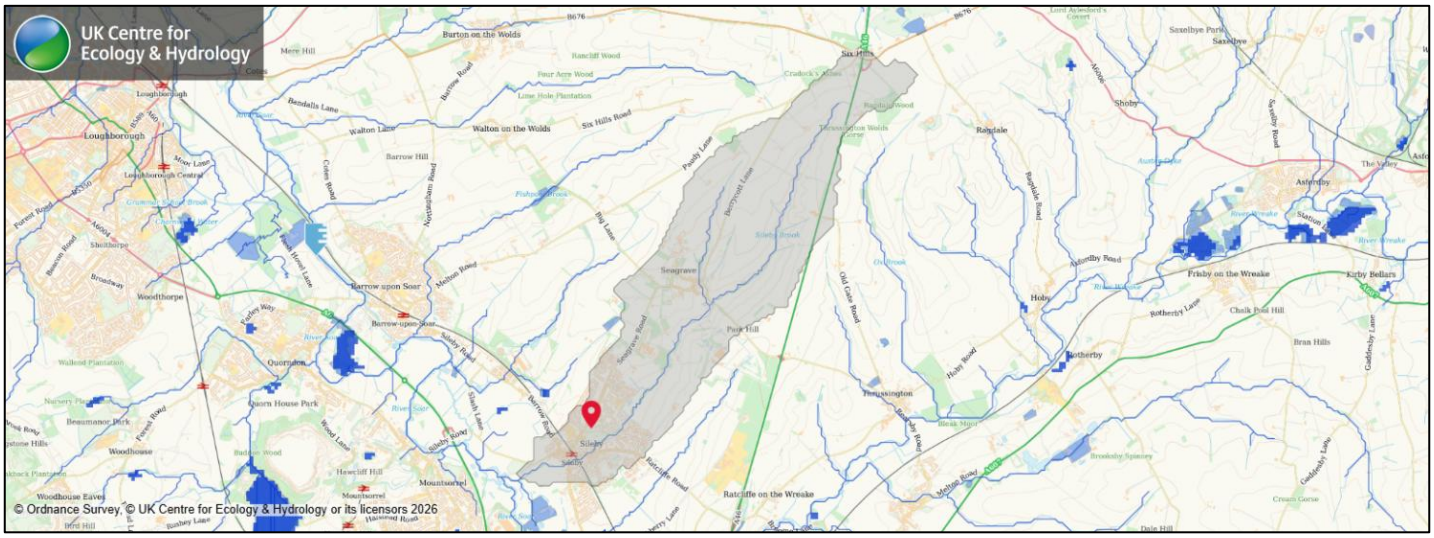


Figure 18-2: Sileby Brook FEH Web Service Catchment Extent upstream of Mill Lane

18.1.1 GEOLOGY

A review of geological information from the BGS online mapping system[5] identified that the Sileby Brook catchment is dominated by Mudstone and Limestone bedrock and various other glaciofluvial superficial deposits and sand and gravel indicative of mixed permeability. Sileby itself has low permeability. The predominant topsoil type across the majority of Sileby comprises slightly acid or lime rich loamy and clayey soils with impeded drainage. The soils to the south east have naturally occurring high groundwater. Sileby's topsoil therefore comprises generally poor drainage and low permeability.

18.1.2 NATIONAL PREDICTIVE FLOOD MAPPING

Figure 18-3 illustrates the extents of EA Flood Zones 2 and 3 (Medium and High risk respectively) (NaFRA2) associated with Sileby Brook and the EA's Risk of Flooding from Surface Water (RoFSW) map (NaFRA2) 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.

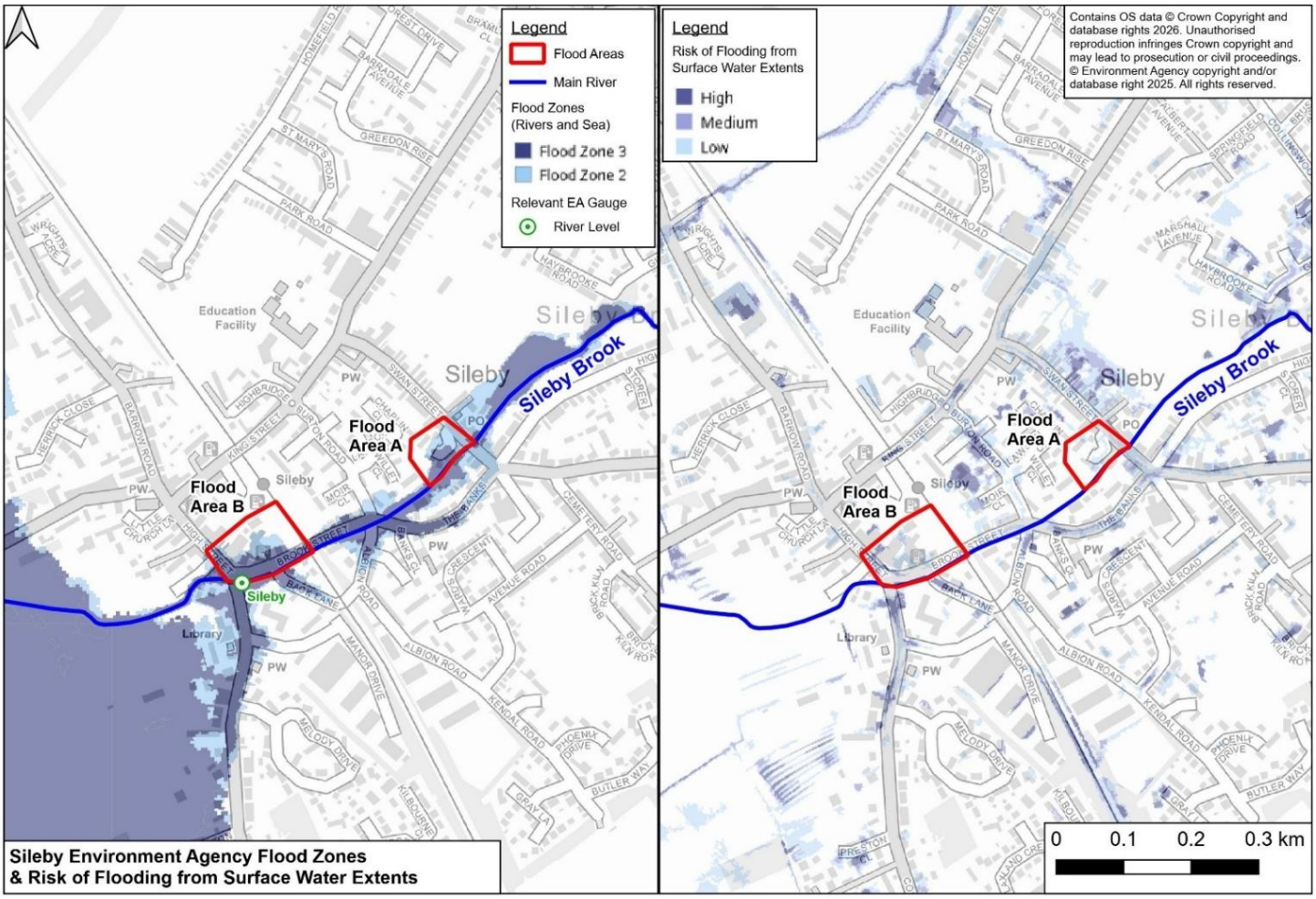


Figure 18-3: Sileby EA Flood map for Planning Flood Zones[6] and Risk of Flooding from Surface Water Extents[7] in Flood Areas (INSET 3)

[5] British Geological Survey (2026) BGS Geology Viewer. https://geologyviewer.bgs.ac.uk/
[6] Environment Agency (2026) Flood Map for Planning – Flood Zones https://flood-map-for-planning.service.gov.uk/map
[7] Environment Agency (2026) Risk of Flooding from Surface Water map. https://check-long-term-flood-risk.service.gov.uk/map

18.1.3 HYDROMETRY

The EA monitor water levels along Sileby Brook at a hydrometry gauge situated immediately upstream of Cossington Road at Ordnance Survey National Grid Reference (OSNGR) SK 60193 15060 (see Figure 18-3).

Levels in Sileby Brook at Cossington Road were already higher than normal levels following rainfall in the preceding days to 2nd January 2024. Levels then responded quickly to rainfall, rising further from mid-morning as illustrated in Figure 18-4, peaking at 17:30hrs on Monday 2nd at 1.93 metres above the gauge station datum (mASD), only 0.04m lower than the record level recorded during Storm Dennis (16th February 2020).

Sileby is situated within the River Soar floodplain. The channel gradient through Sileby increases with distance from the River Soar which limits back water effects. High levels in the River Soar therefore do not appear to significantly increase the risk of flooding from Sileby Brook and it is believed that despite record levels being reached on the Soar during Storm Henk that it did not significantly influence the event at Sileby. The River Soar was also identified to peak later than Sileby Brook.

The short duration of the peak on the hydrograph is reflective of the low permeability of the geological composition which produces flashy runoff as witnessed during the Storm Henk event.

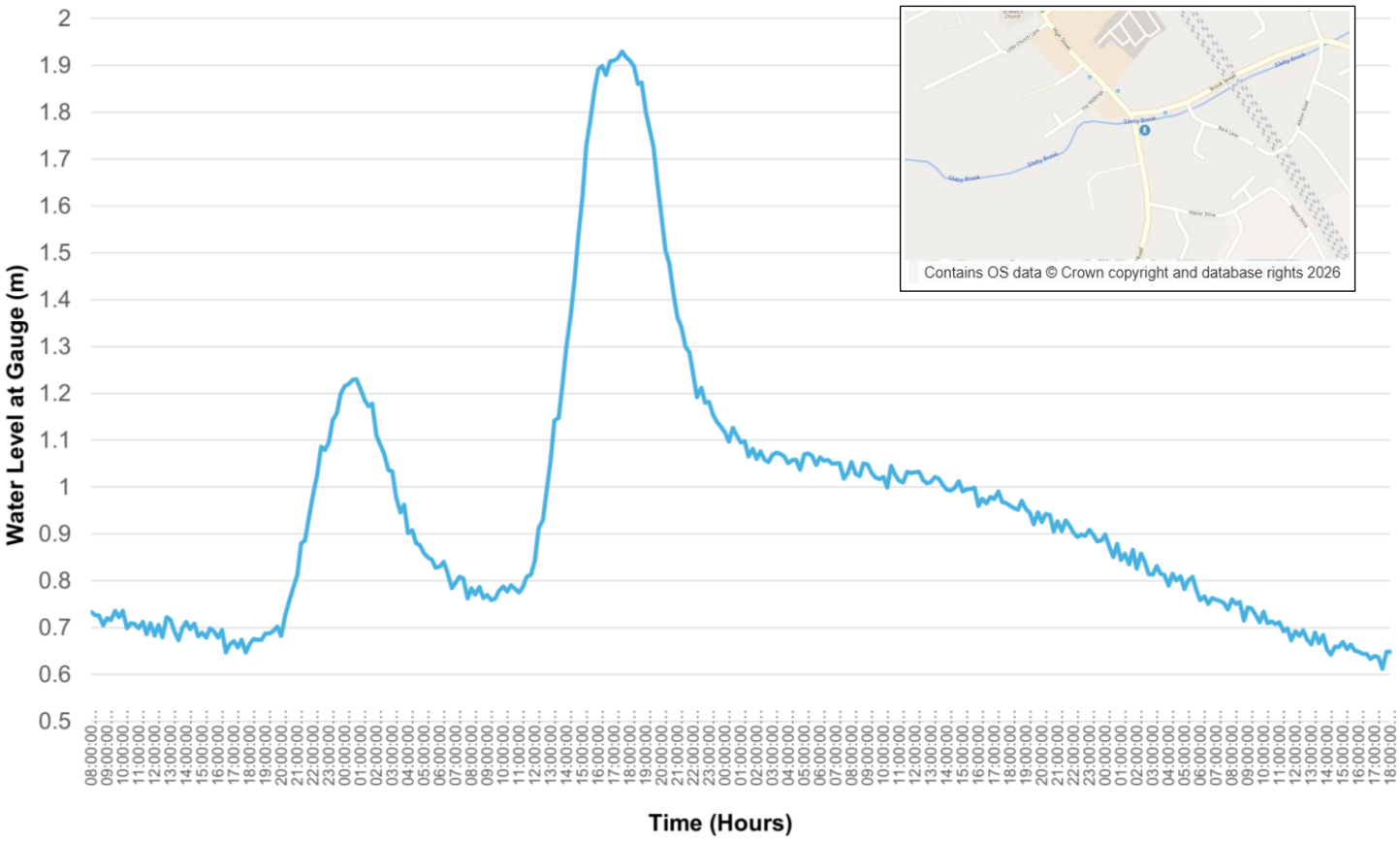


Figure 18-4: Sileby Brook at Sileby Gauge (Station ID 4254[8]) Water Level from 08:00 hours on 01/01/2024 to 18:00 hours on 04/01/2024

[8] Defra (2026) Check For Flooding - Sileby water level gauge https://check-for-flooding.service.gov.uk/station/9605

18.1.4 FLOOD WARNINGS

At the time of Storm Henk, there was no EA Flood Warning service for Sileby Brook. A Flood Warning service was later introduced by the EA in August 2024.

18.2 WHAT HAPPENED AND WHY?

WHO OR WHAT WAS AFFECTED?

7 properties reported as internally flooded

At least 1 property reported as externally flooded

Flooding from Sileby Brook is reported to have started at around 15:00hrs at both Cygnet Close (Flood Area A) depicted in Photograph 18-1 and Brook Street (Flood Area B). Reported flood extents were similar to those predicted by the EA's national flood risk mapping (Figure 18-3).

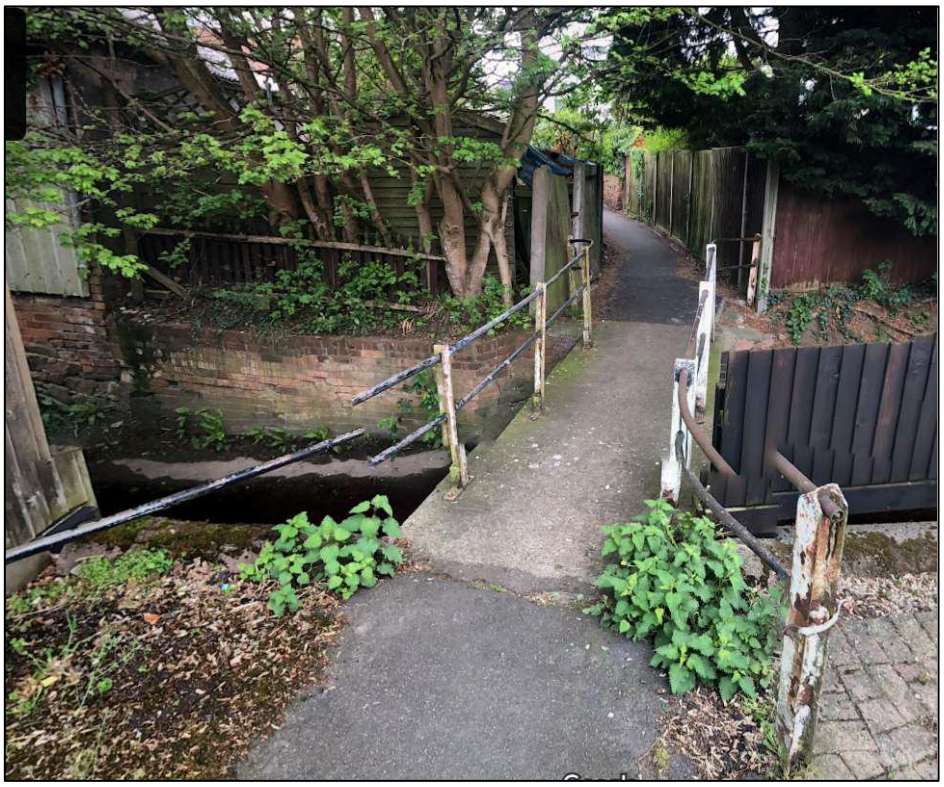
Photograph 18-1:Sileby Brook flooding along Brook Street, looking south towards railway arches[9]

Cygnet Close was also reported to have been affected by surface water and surcharging unadopted private drainage networks (it is a private road with private drainage), not being able to discharge into the brook. This was due to the outfalls being submerged, but also the sheer volume of water that fell, overwhelming network capacity. Anecdotal reports were received of pooling surface water, which reached a depth of several inches before Sileby Brook rose out of bank as the gullies were unable to discharge.

[9] Narrowboat Super 'B' (2024) Flooded Again-Just When Will It Stop Raining !!. https://www.youtube.com/watch?v=G31VN5x7y74

A public footbridge crossing the brook (location identified in Figure 18-1, see Photograph 18-2) was reported by local residents to have partially restricted flows in Sileby Brook, increasing the amount of overtopping into Cygnet Close. Photographs taken during the event show water flowing over the top of the footbridge, and onto Cygnet Close (see Photograph 18-3). This combined with the already pooled surface water, increasing it to a maximum depth of 2ft in places at around 6pm, leading to one property flooding internally through doors and airbricks. The flooding appears to be of a similar extent and nature to Easter 1998, although Cygnet Close was constructed in the early 2000's. A number of the properties impacted were also affected in October 2019 and February 2020.

On 24th April 2024 a petition was started by the local community to remove the footbridge.



Photograph 18-2: Footbridge across Sileby Brook south east of Cygnet Close[10]

[10] Environment Agency (July 2024)

Photograph 18-3: Footbridge during the Storm Henk event, showing water overtopping from the Sileby Brook onto Cygnet Close

In July 2024, the EA published a modelling report which indicated that the footbridge did have an impact on flood risk. However, due to the severity of the flood event, it is unlikely that removal of the bridge alone would have prevented properties flooding internally. The modelling also does not account for the accumulated depths of surface water from the blocked unadopted highway drains.

The report commissioned by the EA, built upon modelling information undertaken by Riverscape Environmental Consultants Ltd for the Council and the EA in 2021. This model provided detailed surface water and fluvial modelling of Sileby Brook Catchment focussing on understanding the flooding mechanisms of the brook, and potential interventions to reduce long term flood risk. The report summarised that there were limited cost effective solutions available for Sileby.

Sileby Mill Boatyard and Sileby Cricket Club were also affected in Storm Henk by floodwater from the River Soar, as they are located within the Soar floodplain. The EA issued a Flood Warning for the River Soar at Sileby on Tuesday 3rd January 2024 at 04:09am, around 10 hours after Sileby Brook peaked.

Following Storm Henk, the local community raised concerns that development in Sileby contributed towards the flooding including that SuDS (sustainable drainage system) were not functioning correctly in the Ratcliffe Road development site. CBC inspected the site to investigate the concerns and found that it had been built as per agreed plans. At the time of Storm Henk, the system may have appeared to not be working but it is designed to manage only surface water that falls within the specific development site it was built for.

New development is required to comply with the National Planning Policy Framework (NPPF) (and previously Planning Policy Statement 25) and associated guidance. By complying with these requirements, new development is designed to mitigate the impact downstream by restricting flows on-site through provision of on-site storage for surface water. Additionally, development design also accounts for climate change in line with EA guidance, which would further protect the downstream catchment in the future. Leicestershire County Council (LCC), as the Lead Local Flood Authority (LLFA), has been responsible for reviewing all major planning applications since 2015 (prior to this, the EA was responsible), to ensure that the correct level of mitigation provided.

18.3 WHAT HAS BEEN DONE?

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 Sileby is provided in Section18.4.

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 about personal and community preparedness can be found in Section 21.8 of the main Storm Henk report.

18.4 SILEBY ACTIONS

The following actions will be monitored by LCC 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 aftermaths 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[11].

18.4.1 SHORT-TERM ACTIONS (0 - 6 MONTHS)

ACTION	ACTION DETAIL	LEAD RMA OR ORGANISATION	CURRENT STATUS
Site Walkovers to Inform Investigation	A multi-agency site walkover was completed on 14th June 2024 to review key locations affected within the community. Other site visits have also taken place to collect further supporting information for this investigation.	EA	Complete
Public Sewer Outfall Checks	STW to check the condition of public sewer outfalls	STW	Complete
Refuse Collection and Street Cleansing	Clear up of bulky waste and additional street cleansing was completed following Storm Henk	CBC	Complete
Flood Resilience Equipment	Aqua sacks were provided to the Parish Council in advance of the Storm Henk to create a centralised stock for community.	CBC	Complete

[11] 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

<table>
<tr><th>ACTION</th><th>ACTION DETAIL</th><th>LEAD RMA OR ORGANISATION</th><th>CURRENT STATUS</th></tr>
<tr><td>Henk Flood Recovery Framework Support</td><td>CBC administered the National Flood Recovery Grant tax relief, business rates relief and also one-off sums of funding to affected homeowners in the immediate aftermath of Storm Henk.</td><td>CBC</td><td>Complete</td></tr>
<tr><td>Highways Asset Maintenance</td><td>Completed targeted gully cleansing (in addition to routine maintenance) after Storm Henk across Sileby (and many other affected parts of the County).

The data collected from this process was used to help reprioritise gully cleansing in flood affected areas. The specific roads pertaining to Sileby as detailed in the table below were reviewed and the frequency of cleanse increased.

<table><tr><th>Street Name</th><th>Old Priority</th><th>New Priority</th></tr><tr><td>Finsbury Avenue</td><td>P2</td><td>P1</td></tr><tr><td>Chalfont Drive</td><td>P2</td><td>P1</td></tr><tr><td>Swan Street</td><td>P2</td><td>P1</td></tr><tr><td>Cemetery Road</td><td>P2</td><td>P1</td></tr><tr><td>Highgate Road</td><td>P2</td><td>P1</td></tr></table>Priority (P) 1 – Cleansed every 10 months, P2 – Cleansed every 20 months

Other roads such as Cygnet Close remain on the highest level of cleanse frequency (P1).</td><td>LCC Local Highways Authority (LHA)</td><td>Complete</td></tr>
</table>

ACTION	ACTION DETAIL	LEAD RMA OR ORGANISATION	CURRENT STATUS
Community Drop-in Sessions	A number of public flood drop-in sessions were arranged and attended by all Risk Management Authorities including EA, CBC, LCC LHA, LCC LLFA and the LRF. The aim of these sessions was to better understand what happened after the flood events but also to promote flood resilience for future events.	LCC LLFA	Complete Following Storm Henk five drop in events were arranged in Loughborough, Blaby, Melton and Syston.

18.4.2 MEDIUM-TERM ACTIONS (6 - 12 MONTHS)

ACTION	ACTION DETAIL	LEAD RMA OR ORGANISATION	CURRENT STATUS
Assessment of Local Development (including Ratcliffe Road)	CBC to check Sustainable Drainage Systems (SuDS) either recently completed or in construction	CBC	Complete
Main River Inspection	Monthly maintenance check of Sileby Brook watercourse and any culverts. Debris removed where observed. Permissive maintenance including desilting, additional blockage removals, and vegetation management	EA	Completed and ongoing
Flood Warning Area	Provide a new Flood Warning service for the Sileby Brook at Sileby	EA	Completed in August 2024[12].
Cygnet Close Footbridge Review	Hydraulic modelling to assess impact of removal or raising of the footbridge upon flood risk	EA	Completed August 2024.

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

18.4.3 LONG-TERM ACTIONS (12 MONTHS +)

ACTION	ACTION DETAIL	LEAD RMA OR ORGANISATION	CURRENT STATUS
Cygnet Close Footbridge Raising	Raise footbridge with ramp and railing works for accessibility	LCC LLFA	Design phase complete. Funding secured. Works date TBC
Henk Property Flood Resilience Repair Grants	LCC LLFA administered the National Flood Grant for Property Flood Resilience on behalf of DEFRA following Storm Henk. One grant awarded and four being used as contribution to EA scheme (described below)	LCC LLFA	Complete
Property Flood Resilience	Provision of Property Flood Resilience to five at risk properties	EA	Complete