Section 19

Flood and Water Management Act 2010

Ref S19-865

Number of properties covered in this document – 10

Date and version number – 11/11/2024

Version 2

Table of Contents

Abbreviations / Acronyms

- AWS – Anglian Water Services
- EA – Environment Agency
- IDB – Internal Drainage Boards
- LCC – Lincolnshire County Council
- LLFA – Lead Local Flood Authority
- LTA – Long Term Average
- PFR – Property Flood Resilience
- RMA – Risk Management Authority
- S19 – Section 19 of the Flood and Water Management Act 2010
- SKDC – South Kesteven District Council

Property Information

Address /Addresses

Location	Storm	Extent	Confirmed Extent
10 High Street, Pointon, Sleaford, NG34 0LX	Henk	Internal	Internal
12 High Street, Pointon, Sleaford, NG34 0LX	Henk	Internal	Internal
14 High Street, Pointon, Sleaford, NG34 0LX	Henk	Internal	Internal
16 High Street, Pointon, Sleaford, NG34 0LX	Henk	Internal	Internal
Kyme House, 20 High Street, Pointon, Sleaford, NG34 0LX	Henk	Internal	Internal
The Old Ship Inn, 22 High Street, Pointon, Sleaford, NG34 0LX	Henk	Internal	Internal
23 High Street, Pointon, Sleaford, NG34 0LX	Henk	Internal	Internal
7 West Road, Pointon, Sleaford, NG34 0NA	Henk	Internal	Internal

Rowan Cottage, 9 West Road, Pointon, Sleaford, NG34 0NA	Henk	Internal	Internal
Dales Cottage, 13 West Road, Pointon, Sleaford, NG34 0NA	Henk	Internal	Internal
Oakwood, High Street, Pointon, Sleaford, NG34 0LX	Henk	External	Unconfirmed
West Road, Pointon, Sleaford	Henk	Highway	Highway
High Street, Pointon, Sleaford	Henk	Highway	Highway

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For further information regarding this report, please contact FloodRisk@lincolnshire.gov.uk

Version History

Revision	Purpose description	Originated	Checked	Reviewed	Authorised	Date
1.0	Draft LCC Comment	LB	LB	RH	RH	04.10.24
2.0	Revised Draft	RD (LCC)	AM (LCC)	AM (LCC)	AM (LCC)	11.11.24

Authorities with Flood Risk Management Functions

The following Risk Management Authorities have flood risk functions within Lincolnshire:

Lead Local Flood Authority - Are responsible for coordinating the mitigation of risk of flooding from surface water, groundwater and ordinary watercourses (non-main rivers). The LLFA is also responsible for developing, maintaining and applying a strategy for local flood risk management in their area and for maintaining a register of flood risk assets. LLFAs also have a statutory duty to investigate significant flood events to the extent they consider necessary.

Environment Agency - Is tasked with the protection and conservation of the water environment in England, the natural beauty of rivers and wetlands and the wildlife that lives there. There responsibilities include: water quality and resources; fisheries; conservation and ecology; and operational responsibility for managing the risk of flooding from main rivers (usually large streams and rivers), reservoirs, estuaries and the sea. Flood risk management work can include: constructing and maintaining 'assets' (such as flood banks or pumping stations) and works to main rivers to manage water levels and make sure flood water can flow freely; operating flood risk management assets during a flood; dredging the river; and issuing flood warnings. The Environment Agency can also do work to prevent environmental damage to watercourses, or to restore conditions where damage has already been done.

Internal Drainage Board - Are independent public bodies, established in areas of special drainage need known as drainage districts. The IDB is responsible for the supervision of land drainage, water level management and flood risk management works and regulation of ordinary watercourses within their Drainage District. The IDB also plays an important role in the areas they cover (approximately 10% of England at present) in working in partnership with other authorities to actively manage and reduce the risk of flooding.

Highways Authority - Is responsible for maintaining the highway drainage system to an acceptable standard and ensuring that road projects do not increase flood risk.

Water & Sewage Company - Water and sewerage companies are responsible for the provision of wastewater collection and treatment systems, including for managing the risks of flooding from surface water and foul or combined public sewer systems providing drainage from buildings and yards.

In addition to the above, other parties that may have responsibilities include:

Riparian Landowners - Riparian landowners who own land or property crossed by or next to a river, stream or ditch, (including where this runs through a pipe or culvert), have rights and responsibilities over the management of the land including: a responsibility to let water flow through the land without any obstruction, pollution or diversion which affects the rights of

others; keeping banks clear of anything that could cause an obstruction and increase flood risk; maintaining the bed and banks of the watercourse; and keeping structures clear of debris.

Residents - Should find out about any flood risk in the area, sign up for the Environment Agency's free flood warnings and make a written plan of how they will respond to a flood situation. Business owners should also make a flood plan for their business. There are measures that can be taken to reduce the amount of damage caused by flooding and properties at risk should be insured. Local residents can find out if their property is at risk, prepare for flooding, get help during a flood and get help after a flood.

Executive Summary

The purpose of this Section 19 (S19) Flood Investigation Report is to identify the cause of flooding. The report will provide an overview of the problem, identify the flooding mechanisms, identify relevant Risk Management Authorities (RMAs) and stakeholders, and provide a list of recommendations.

Following Storm Henk (2nd January 2024) ten properties reported internal flooding within the area of Pointon.

It is recognised that, like many areas, the numbers of properties reporting flooding to RMAs may differ to the number which experienced internal property flooding during this event.

The predominate flooding mechanism identified was a combination of overland flows and overtopping of ordinary watercourses.

During the site walkover conducted by residents it was observed that there are significant issues with the drainage network. This includes blockages, collapsed culverts and insufficient pipework to allow water to sufficiently flow through the network of drainage ditches/ channels within the village.

No images of the internal flooding reported have been provided for inclusion within this S19.

In relation to this flood event, the following RMAs have relevant flood risk management functions:

- Lincolnshire County Council (LCC) as Highways Authority
- Lincolnshire County Council as Lead Local Flood Authority (LLFA)
- South Kesteven District Council (SKDC)

A record as to whether the above RMAs have exercised or are proposing to exercise those functions in response to the flood shall be monitored through the existing Joint Lincolnshire Flood Risk and Water Management Partnership.

The report details the responses of the RMAs during and directly after the event and concludes with a number of recommendations.

Three recommendations have been made:

a) SKDC should consider re-establishing the full extent of their maintenance programme on the ordinary watercourse north of West Road. This should extend to include the diversion channel previously constructed which flows under High Street to the north of the affected properties. Following completion of any required maintenance, LCC as LLFA, in collaboration with SKDC should consider undertaking a level survey on the

watercourse to the north of West Road to better understand the impact any field culverts may be having on the natural flow of water.

b) LCC as LLFA should consider undertaking CCTV and cleansing of the piped surface water drainage network that flows along West Road and High Street to outfall. Subject to the outcome of this survey, further remediation works should be considered as required.

c) LCC as LLFA should provide guidance to affected properties and landowners with respect to how they can enhance their resilience to flooding alongside riparian rights and responsibilities.

1. Introduction

1.1 The purpose of this S19

The purpose of this investigation is threefold:

1. To understand and determine the cause of flooding following a recent flood event that occurred between the dates of the 2nd of January to the 8th of January 2024.
2. To suggest recommendations that may alleviate potential future flooding events or if the affected properties or location should be considered as suitable for a capital project.
3. To determine which Risk Management Authorities (RMAs) have relevant flood risk management functions.

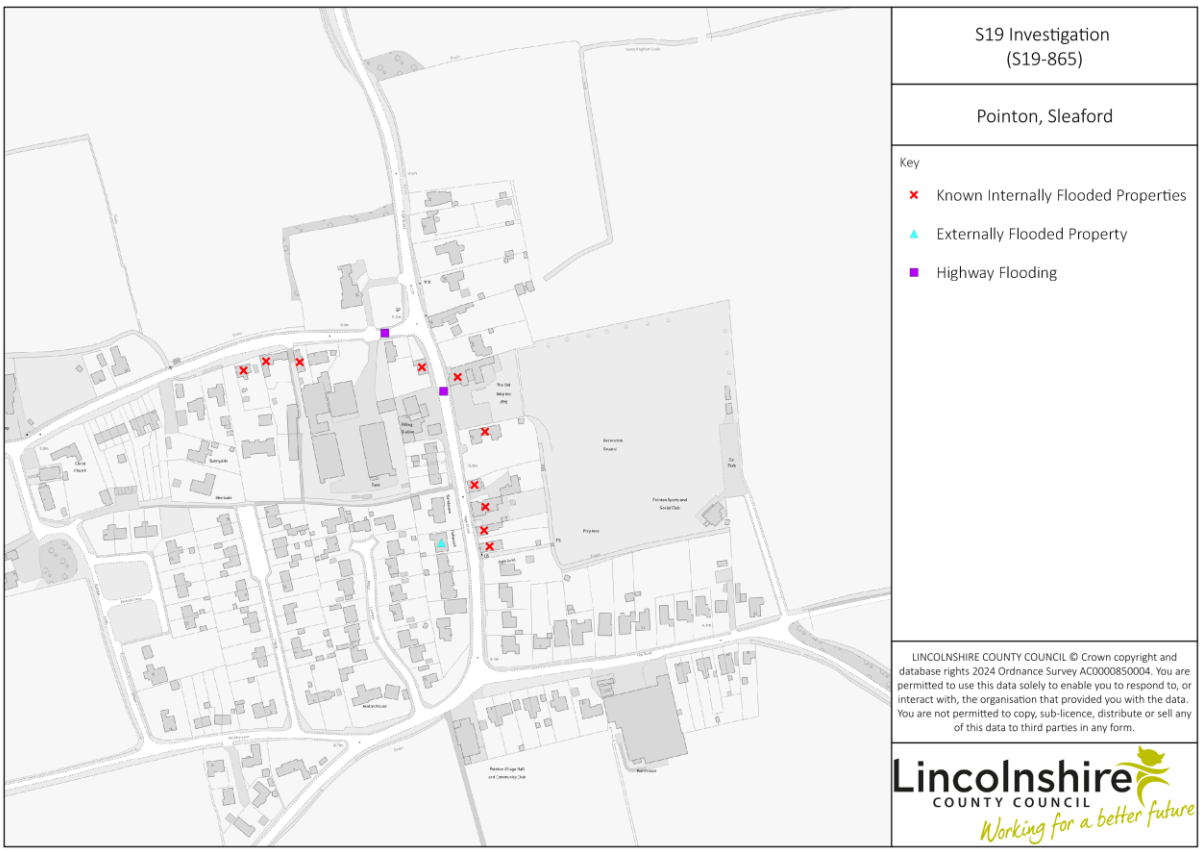
1.2 Previous S19 investigations

There are no previous S19 reports for this area.

2. Background Information

2.1 Site location

The properties are located in the village of Pointon within the South Kesteven District Council area of Lincolnshire (Figure 1). The properties are also situated within the extended area of Black Sluice Internal Drainage Board.



(Figure 1 – Location of known affected properties)

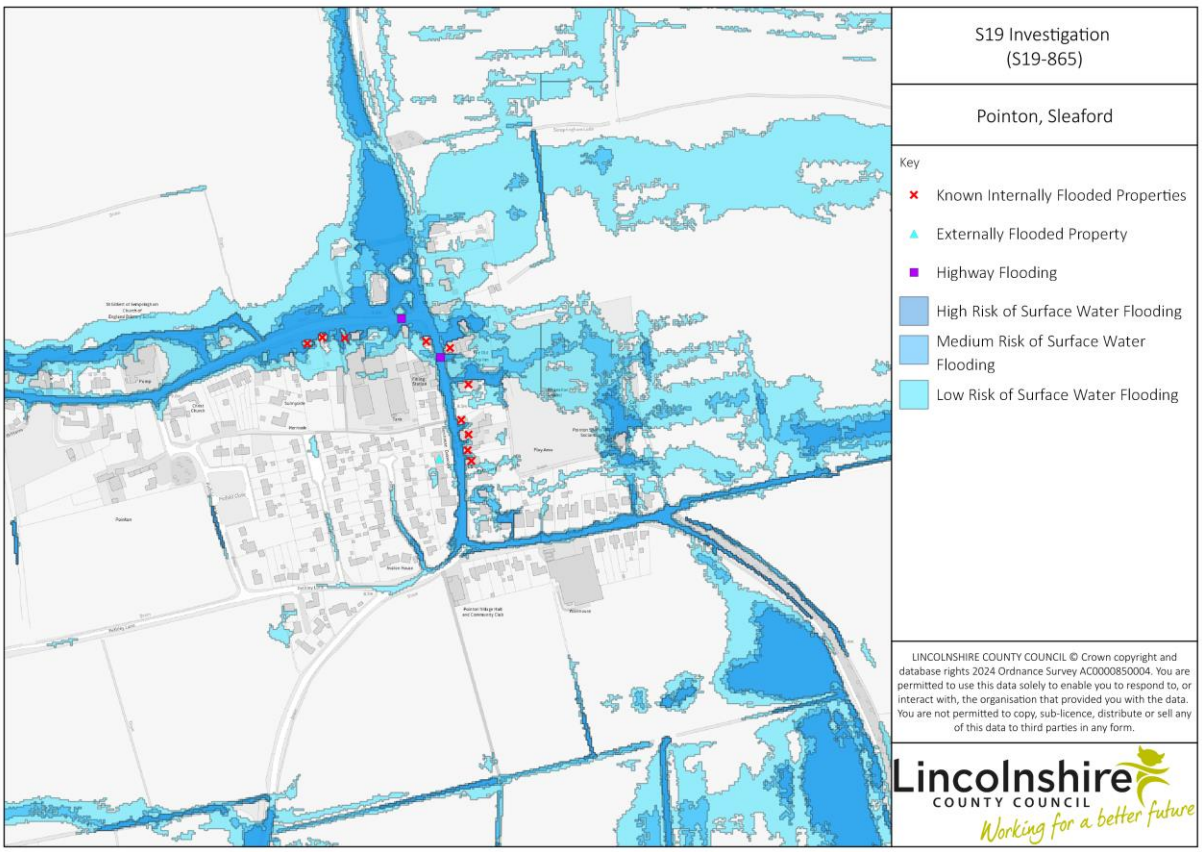
The properties are situated on the Kellaways Clay Member bedrock, with portions of the upstream catchment being overlain by superficial deposits of till – diamicton. Based on data from the Cranfield Environment Centre, the bedrock and superficial geology of the upstream catchment is overlain by soils classified as Soilscape 18, that is; "*slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils*". Infiltration, therefore, is expected to occur albeit at varying rates.

The properties are situated on land that is relatively flat but gradually slopes from west to east. 13 West Road is situated at approximately 9.2m AOD, 7 West Road is situated at approximately 9.1m AOD and 23 High Street is situated at approximately 8.8m AOD. All the properties are positioned level with their respective adjacent highways.

2.2 Flood risk overview

Based on the Environment Agencies (EA) Flood Map for Planning Purposes, the properties are situated on land designated as Flood Zone 1, which indicates the land has a low probability of flooding from rivers and the sea.

In addition to the above, and based on national scale surface water flood risk modelling, the properties are situated on land where the risk of surface water flooding is identified as ranging from high to medium (Figure 2).



(Figure 2 – Surface water flooding risk to the affected properties)

A high risk of surface water flooding means an area has an annual chance of flooding of 3.3%, whilst a medium risk of surface water flooding means an area has an annual chance of flooding of between 1% and 3.3%.

It should however be noted that the above analysis carries the following disclaimer -

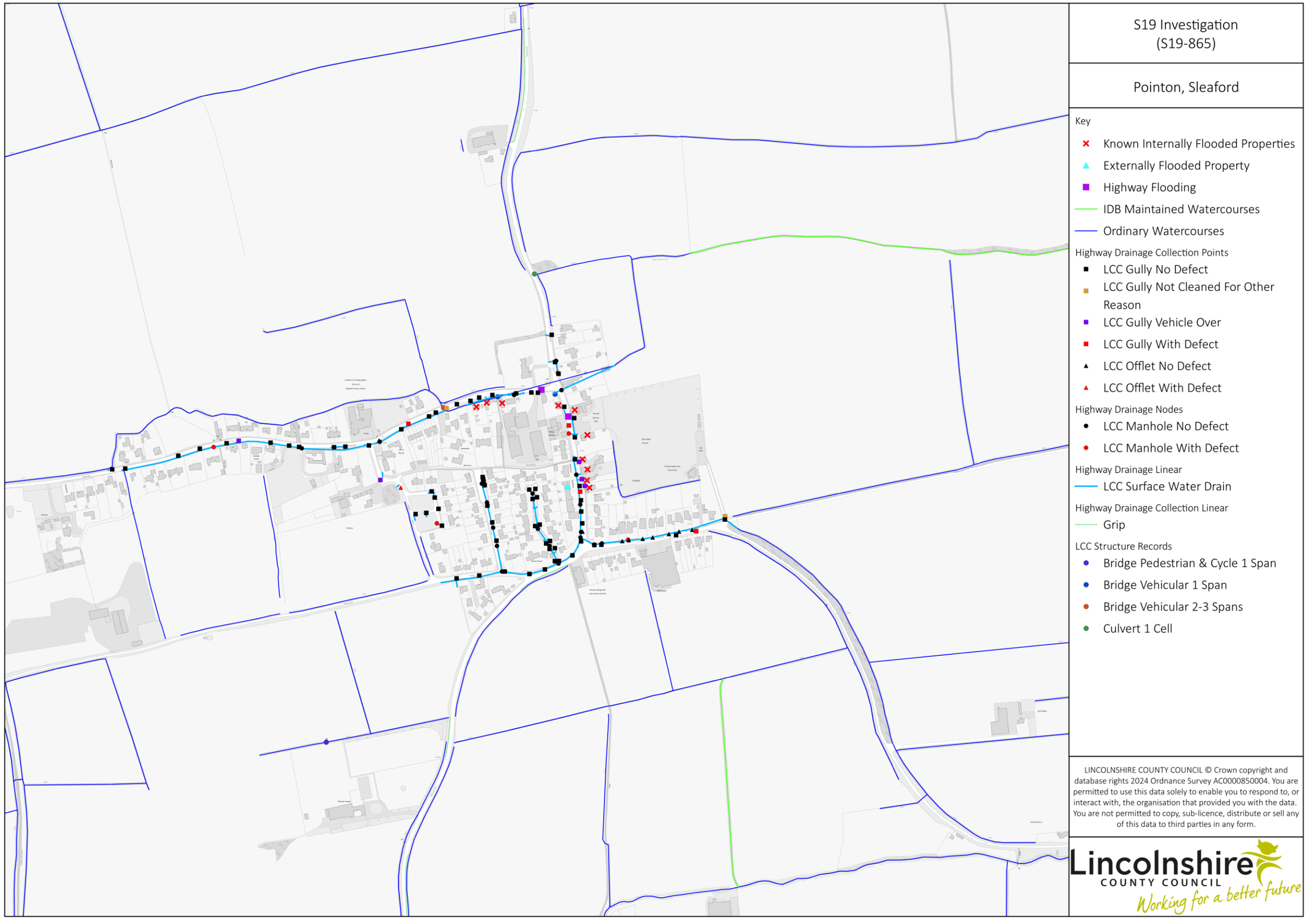
"All information, particularly the likelihood of surface water flooding, is a general indicator of an area's flood risk. As such, it is not suitable for identifying whether an individual property will flood. This service uses computer models to assess an area's long-term flood risk from rivers, the sea, surface water and some groundwater. It does not include flood risk from sources such as blocked drains and burst pipes."

2.3 Drainage arrangement

The drainage arrangement of the surrounding land is outlined in Figure 3.

Residents affected by flooding in Pointon have conducted a site walkover of their own which has identified various issues within the surrounding area which may have contributed to the flooding experienced in January 2024.

The following images (Figure 4) were submitted by residents from the site walkover in January 2024. The images are part of a larger map of Pointon highlighting areas of concern identified by residents. The purpose of this map will aid in the completion of this S19 and support potential flood alleviation projects and emergency planning.



(Figure 3 – Drainage arrangement of surrounding land)

Fig. 1.

600mm Ø concrete pipe has become disjointed and partially blocked.

Fig. 2.

Further cracking/damage to concrete pipe.

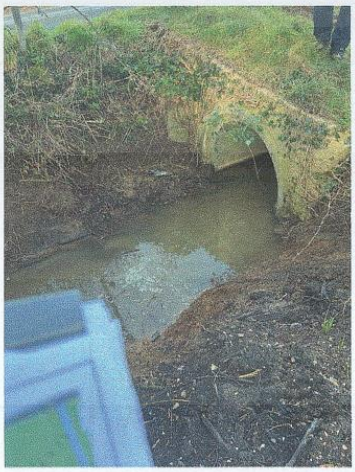


Fig. 3.

1150mm Ø pipe over farmer's entrance is an appropriate diameter but approximately 1/4 full of silt, reducing capacity.

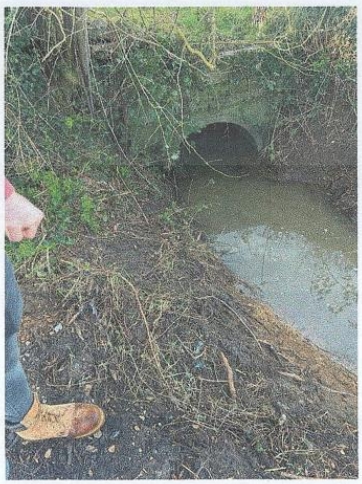


Fig. 4.

1150mm Ø pipe under main road from SKDC owned dyke is a suitable diameter but approximately 1/3 - 1/2 full of silt and debris.

Fig. 5.

1150mm Ø pipe viewed from Pointon House side of main road. Full of debris hence reducing flow and capacity considerably.

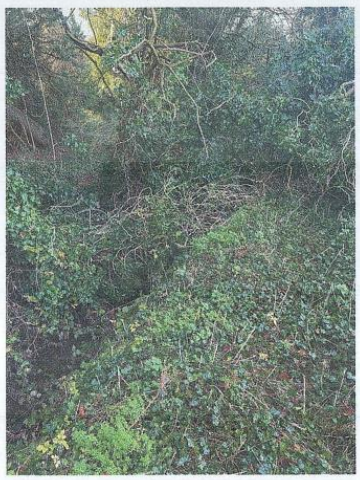


Fig. 6.

Dyke full of overgrown, self planted trees ivy and shrubs behind Pointon House - SKDC owned dyke.

Fig. 7.

SKDC dyke has not been maintained in years. Needs grubbing out.

Fig. 8.

Dyke full of brambles and other undergrowth.

Fig. 9.

450mm Ø pipe beneath west road at brick headwall. This is working fine in principle as it was designed to lower the volume of water able to go under the road towards the houses on West Road.

Fig. 10.

The area to the left of the head wall and 450mm Ø pipe is full of sediment putting increased pressure on the small pipe.

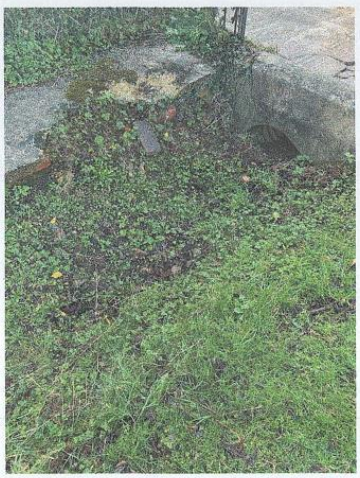


Fig. 11.

Shallow ditch above a buried 450mm Ø piped run beneath. Ditch could do with a light grubbing out and jetting out debris in above ground pipes where vehicle bridges are.

Fig. 12.

Just one example of many blockages along the dyke which runs behind the houses and school to the north of West Road.

Fig. 13.

Parts of the dykes are not even visible as there is that much undergrowth.

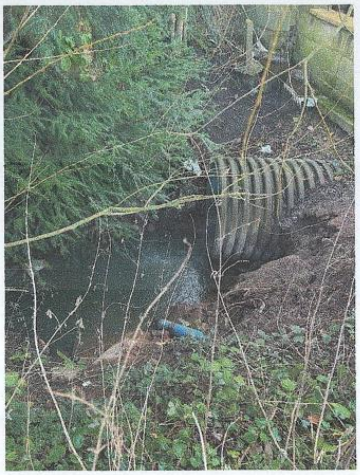


Fig. 14.

900mm Ø pipe where householder at number 42 West Road has piped the ditch. It is unknown as to if permission was sought for this. However this drastically reduces capacity compared to the open ditch.

Fig. 15.

Pipe viewed from the other end of number 42 West Road.

Fig. 16.

Example of one of the many road gulleys throughout the village which clearly haven't been opened and cleaned due to the fact their perimeter is partially covered by road planings.

Fig. 17.

Undergrowth means that the 450mm Ø pipe cannot even be seen at a farmers entrance.

Fig. 18.

450mm Ø concrete pipe at farmers entrance is totally blocked and the pipe diameter is nowhere near large enough given the capacity of the open dyke either side.

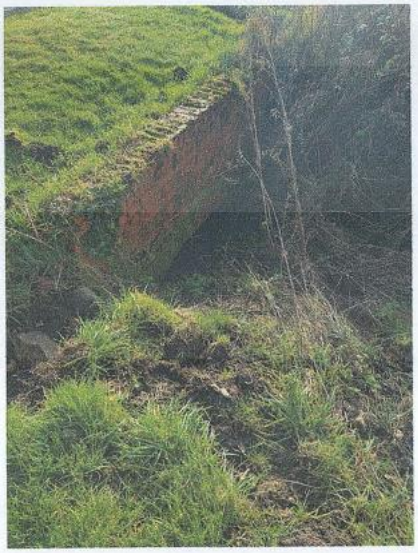


Fig. 19.

Old brick bridge almost full of sediment and undergrowth caused by years of no maintenance.

(Figure 4 – Photos taken by residents of Pointon)

2.4 Previous flood incidents

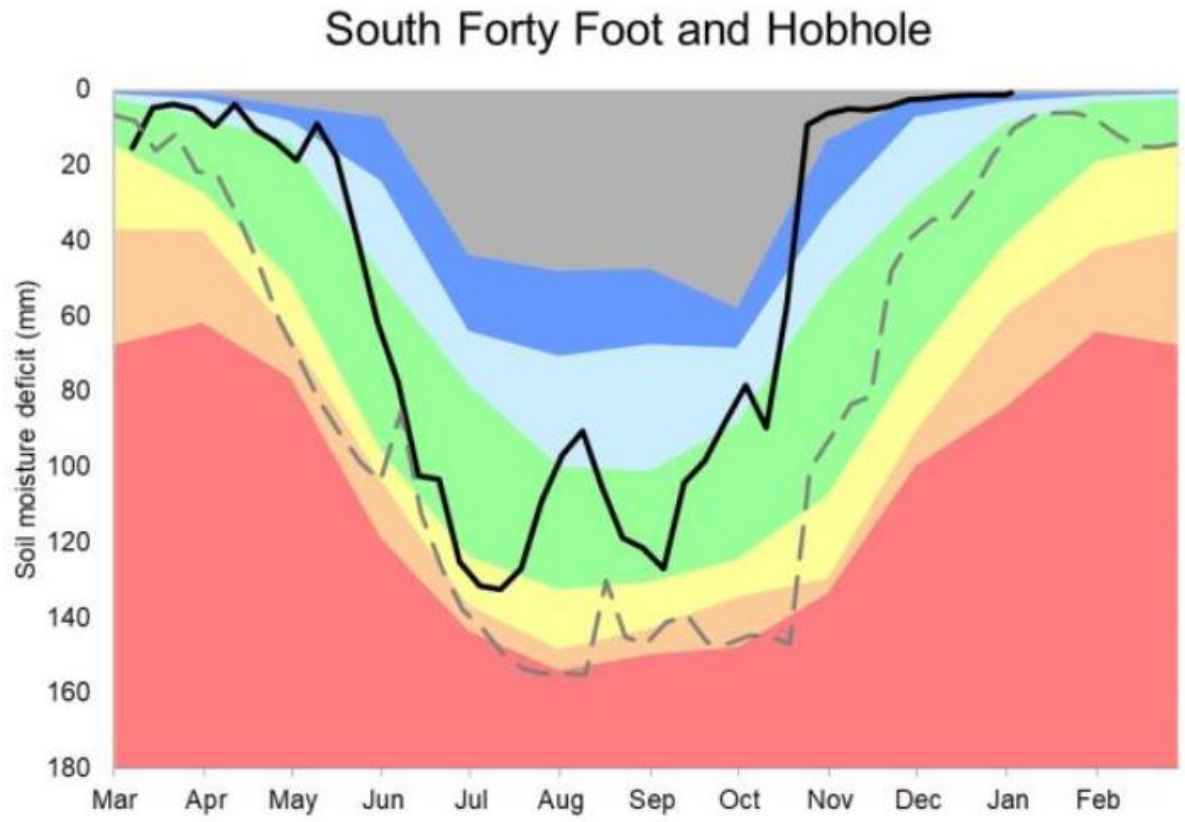
The table below highlights historic flood events that have been reported to and recorded by Lincolnshire County Council (LCC) in the area since the 1st of January 2019 to the 31st of December 2023:

Report No.	Enquiry No.	Status	Enquiry description	Address
1	2300654	Enquiry Resolved	After re-surfacing of road extra height causes flooding if there is heavy rain.	32 High Street, Pointon
2	4129613	Enquiry Resolved	Over the last few years had issues with water flooding onto drive not into the storm drains, road resurfaced this weekend and now the water cant access the storm drain at all.	O/S 32 High Street, Pointon

3. Flood Event

3.1 Conditions prior to the event

A succession of weather fronts in December brought significant rainfall totals across Lincolnshire and Northamptonshire. December saw an exceptionally high rainfall of 114mm which was 206% of the Long Term Average (LTA). The rainfall total varied from 219% of the LTA in the Witham to Chapel Hill to 183% of the LTA in the Steeping Great Eau and Long Eau. On average, Soil moisture deficits (SMD) decreased from 4.5mm at the end of November to 1.2mm by the end of December, which is in the notably low category for the time of year (Figure 5). In response to the high rainfall totals, river flow at all indicator sites showed high mean monthly flow ranging between 242% – 398% of the LTA. All indicator sites reported exceptionally high flows for the time of year. Groundwater continued to recharge at majority of the indicator sites. At all sites with data, groundwater levels were classified as above normal to exceptionally high for the time of year.



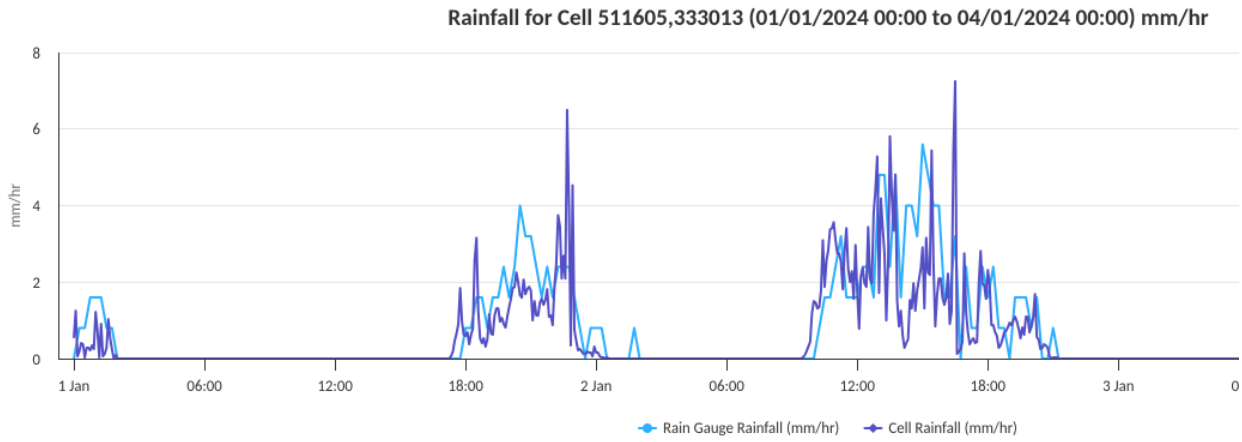
(Figure 5 – South Forty Foot and Hobhole soil moisture deficit. (Source: Met Office. Crown copyright, 2024). All rights reserved. Environment Agency, 100024198, 2024)

3.2 Rainfall Analysis

The closest available rainfall data to the property for the 1st to the 2nd of January 2024 has been analysed as part of this investigation. This rainfall data was captured by the Met Office's Radar technology and made available from the Meniscus MapRain Analytics Platform and relates to rainfall recorded at the Osbournby rain gauge (E1606 – TF0752038270).

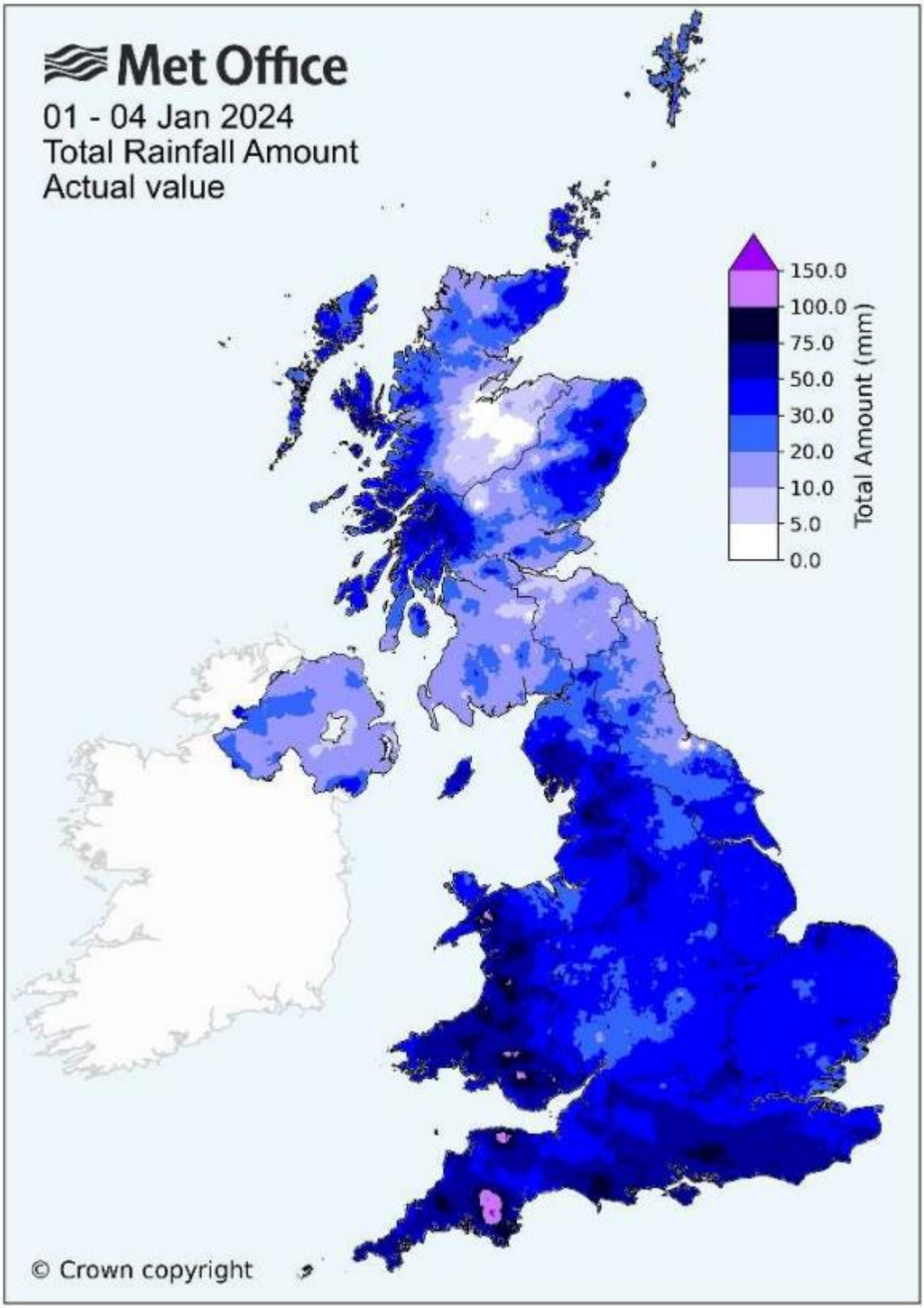
A rainfall depth of 48.60mm was recorded at the Osbournby rain gauge for the 69 hour period between 00:15 31/12/2023 and 21:15 02/01/2024.

The hyetograph below (Figure 6) shows the peak intensity of the storm event at around 16:30 of the 02/01/2024.



(Figure 6 – Rainfall Hyetograph for the Osbournby rain gauge)

Analysis of this rainfall data indicates that Storm Henk was equivalent to a 1 in 2.20 annual chance event, or having an annual exceedance probability of between 45.5%. Note that rainfall intensities and depths vary across catchments, and as such the rainfall data included should be used as an indicative guide only, especially as the rain gauge is located c. 7.5km northwest of the properties. Additionally, due to the antecedent conditions of the catchment it is, on the balance of probabilities, highly likely that the response observed by watercourses within the catchment would be more pronounced than if the catchment was at normal deficits and able to infiltrate water. Furthermore, this data does not take into account the fact that this depth of rainfall was observed across the entirety of the catchment as shown in Figure 7 and therefore downplays the total amount of rainfall that fell upstream of the properties.



(Figure 7 - Met Office total rainfall for Storm Henk (Met Office, 2024)

3.3 Flooding Mechanism / Causation

Through engagement with local residents and Pointon Parish Council it is understood that flooding at the properties was from a combination of sources but predominately due to out of channel flows from ordinary watercourses alongside overland flows from higher land.

Out of channel flows was realised from watercourses adjacent to and at the rear of West Road and Brittains Lane, which subsequently flowed overland from west to east in line with the local topography.

Further detail of the flooding were provided by the owner / occupiers of No. 23 High Street, and 7 and 13 West Road.

23 High Street

The resident of 23 High Street notes that water was inside the property for approximately 4-6 hours, and entered via walls, doors and the floor. The resident recalls estimated internal flood depths of approximately 4 inches and estimated external flood depths of 10 inches. The resident suggests the following as possible sources of the flooding: drain/ ditch, surface water, road drainage/ blocked. The water was travelling eastwards down West Road, through the property's house and garden, and then north along the High Street, according to the resident's report. No utilities were affected at this property. The resident contacted Lincolnshire Fire and Rescue, and the response they were given was noted as being helpful.

7 West Road

The resident of 7 West Road recalls that flood water was within their property for approximately 1-2 days and entered via air bricks/ vents, walls, doors and the floor. It is noted by the resident that there were internal flood depths of approximately 150mm and approximate external flood depths of up to 400mm. It is suggested by the resident that the cause of flooding was a result of a drain/ ditch, surface water, waves caused by vehicles, and/or road drainage/ blocked. Water was travelling south from the field and east along West Road, according to the resident's account. The flooding affected the properties water supply. The resident contacted the following authorities in response to the flooding: LCC, SKDC and the Parish Council. The resident notes that the following could have been done better *"a quicker response, even recorded advice. We did not get hardship payment or Council Tax rebate so a more proactive response would improve things".*

Dales Cottage, 13 West Road

The resident of Dales Cottage reports that flood water was inside their property for approximately 12-24 hours. Approximate internal flood depths of 4 inches and approximate external flood depths of 3 feet were recorded by the resident. The resident is unsure of how water entered the property. It is suggested by the resident that the cause of flooding is from blocked road drainage. Water was reported to have been flowing west to east by the resident's account. Utilities were affected at this property with the resident recording that they experienced a power cut, had their water supply and toilet facilities affected, in addition to flood water affecting their gas/ oil, and log burner. The resident contacted the following authorities regarding the flooding: LCC, SKDC, Parish Council, the EA, Lincolnshire Fire and Rescue, and their utility companies. The resident cites that the maintenance of drains and ditches could be better managed to prevent flooding.

The residents of the village have held meetings in addition to the site walkover around Pointon in order to aid efforts in understanding the cause of flooding and work towards resolving the issues. Residents report the following as main issues:

- For the drainage that runs around the back of the village, the scheme and land is believed, by residents, to have been brought from the Crown by SKDC in around 1988 and the site walkover found blocked drains and pipes, full blockages of the ditches which will have diverted the water to West Road. There is also evidence of some parts where a householder has changed the pipe widths on the land where the ditch has been filled in and built on it, limiting the flow of water. Trees and debris in the ditches all the way along from the top West Road to the point it meets West Road at the bottom of the hill, with many places where the ditches sit so low on the West Road side that the water just runs off to the road rather than the ditches. Along the way the pipe diameters are changing and the free flow of water is impacted by this and many of these pipes are blocked/ part-blocked, siting at different heights, which impedes the flow of water.
- Highway drains along West Road - many are blocked and have no evidence of clearance in recent times, residents raise questions over the suitability of the drains and how these connect into the main surface water drainage. It was also noted by residents that recent works on West Road may have filled drains with debris.
- The main pipe to the farmland at the back of the High Street was observed by residents to have collapsed and is also blocked at the point it meets the farmland, again the sizes of the drains have been noted as questionable in relation to how the water can flow freely. Residents also raise questions about the pipe running from the High Street across the property of 24 High Street, as it may have restrictions there too.
- Residents note that the ditches have not been well maintained leaving some of the ditches full of debris, which again contributes to the build-up and inability for the water to flow along the route of a flood alleviation scheme which residents believe to have been planned in the 1980's.

No photos of flooding inside properties have been submitted for inclusion within this S19 but Photo 2 and Photo 3 show the extent of external flooding in January 2024.

(Photo 2 – External flooding during Storm Henk in Pointon)

(Photo 3 – External flooding during Storm Henk in Pointon)

4. Issues Identified

4.1 Rainfall and antecedent conditions

The volume of rainfall experienced, which fell onto an already saturated catchment, was likely a significant contributory factor in deciding the depth, duration, and extent of the flooding.

4.2 Blocked drainage ditches, culverts and highway drains

A major issue identified as the cause of flooding in Pointon is that most drainage assets within the village have become blocked with debris due to a lack of maintenance by various landowners / those with a responsibility to maintain these assets. The blockages have prevented the free flowing of water and caused water to back-up overflowing onto the highway and subsequently flood neighbouring properties.

4.3 Capacity of drainage network

Upon inspection by local residents of Pointon it has been noted that there are varying pipe diameters within the system. Some of which significantly reduce the flow of water due to their narrow diameter, and others vary between sections of drainage channels resulting in pinch points where water backs up as a result.

4.4 Alternations to drainage system by private landowners

It is a possibility that some landowners within Pointon and the surrounding area have made adjustments to the drainage systems on their land without considering possible impacts further downstream. This may include creating culverts, diverting the flow of water or altering pipe diameters.

5. Risk Management Authorities

In relation to this flood event, the following RMAs have relevant flood risk management functions:

- Lincolnshire County Council as Highways Authority
- Lincolnshire County Council as Lead Local Flood Authority
- South Kesteven District Council

A record as to whether the above RMAs have exercised, or are proposing to exercise those functions in response to the flood shall be monitored through the existing Joint Lincolnshire Flood Risk and Water Management Partnership.

6. Recommendations for Consideration

6.1 Investigation of Drainage Network

SKDC should consider re-establishing the full extent of their maintenance programme on the ordinary watercourse north of West Road. This should extend to include the diversion channel previously constructed which flows under High Street to the north of the affected properties. Following completion of any required maintenance, LCC as LLFA, in collaboration with SKDC should consider undertaking a level survey on the watercourse to the north of West Road to better understand the impact any field culverts may be having on the natural flow of water.

In addition to this, LCC as LLFA should consider undertaking CCTV and cleansing of the piped surface water drainage network that flows along West Road and High Street to outfall. Subject to the outcome of this survey, further remediation works should be considered as required.

6.2 Provision of Guidance

LCC as LLFA should provide guidance to affected properties and landowners with respect to how they can enhance their resilience to flooding alongside riparian rights and responsibilities.

7. Appendices

7.1 Glossary of Terms

Culvert - Where a watercourse flows through a pipe, often underground.

Flap valve - Hinged valve placed on a pipe outlet into a river. Stays open during normal flow but closes when it is submerged, to prevent flow from backing up the pipe.

Foul sewer - Sewer which carries wastewater (e.g. from toilets, sinks, showers and kitchen appliances) to a sewage works for treatment.

Gully - Drainage pit covered by an open metal grate, located at the edge of a road. Drains rainwater from the road into either the surface water sewer or into nearby watercourses.

HYRAD - Real-time radar display system for weather.

Lead Local Flood Authority - County councils and unitary authorities which lead in managing local sources of flood risk (i.e. flooding from surface water, groundwater and ordinary watercourses)

Internal Drainage Boards - A public authority that managed water levels within an Internal Drainage District.

Main river - A large river or stream designated on the Main River Map. The Environment Agency has permissive powers to maintain and carry out improvements on main rivers, to manage flood risk.

Ordinary Watercourse - All rivers which are not designated as 'Main rivers'. Lead local flood authorities and internal drainage boards can carry out flood risk management work on ordinary watercourses.

Public sewer - Sewers owned and maintained by a Sewerage Company (e.g. Thames Water). Are usually located in roads or public open spaces by may run through private gardens.

Riparian owner - The owner of land that is next to a watercourse or has a watercourse running through or beneath it.

Surface water sewer - Sewer which carries rainwater directly to a watercourse.

Telemetry - Instruments used to monitor the level of water in a watercourse.

Weir - A small dam structure built across a watercourse to raise the water level or to divert flow.