

APPENDIX F

SECTION 19 REPORT – RADCLIFFE ON TRENT FEBRUARY 2020

Introduction

Section 19 of the Flood and Water Management Act 2010 states:

1. On becoming aware of a flood in its area, a lead local flood authority must, to the extent that it considers it necessary or appropriate, investigate:
 - (a) Which Risk Management Authorities (RMAs) have relevant flood risk management functions.
 - (b) Whether each of those Risk Management Authorities has exercised, or is proposing to exercise, those functions in response to the flood.
2. Where an authority carries out an investigation under subsection (1) of Section 19 it must:
 - (a) Publish the results of its investigation.
 - (b) Notify any relevant Risk Management Authorities.
3. The objective of this report is to investigate which Risk Management Authorities had relevant flood risk management functions during the flooding in February 2020 and whether the relevant Risk Management Authorities have exercised, or propose to exercise, their risk management functions (as per section 19(1) of the Flood and Water Management Act 2010).
4. The Risk Management Authorities with a responsibility for this flooding incident are Nottinghamshire County Council (NCC) as Lead Local Flood Authority (LLFA) and Rushcliffe Borough Council (RBC).
5. It should be noted that this duty to investigate does not guarantee that flooding problems will be resolved and cannot force others into action.

Background

6. Over the weekend of the 15th and 16th of February 2020 Storm Dennis hit parts of Nottinghamshire with 34mm (an average month's worth) of rain falling in 48 hours. Across the UK a record 594 flood warnings and alerts were in place over the weekend with 38 flood warnings and 16 flood alerts across Nottinghamshire as shown in Figure 2 below. Storm Dennis followed Storm Ciara which had hit the week previous bringing heavy rain and winds of over 90mph resulting in more than 220 flood warnings and alerts in place across England. Both storm events followed some 6 months of persistent and often heavy rainfall across the UK.

During Storm Dennis, Via East Midlands Ltd. (on behalf of Nottinghamshire County Council) facilitated 51 road closures, placed over 70 flood signs on the network to warn motorists and delivered over 4000 sandbags.

Storm Dennis is believed to have caused the worst winter floods in recent times, in part because the rain was so widespread but also because the ground was already saturated from Storm Ciara the previous week. It triggered a record-breaking number of Environment Agency flood warnings and alerts in England on Sunday the 16th.

A major incident was declared at 07:00 on Sunday the 16th by the Tactical Co-Ordinating Group.

With the ground already saturated following one of the wettest autumn and winter periods on record, the heavy rain that fell on the 16th of February resulted in extensive flooding across the Nottinghamshire area including Radcliffe on Trent, a village with a population of approximately 8200 at the 2011 Census. Radcliffe is located on the south side of the River Trent as shown on Figure 1.

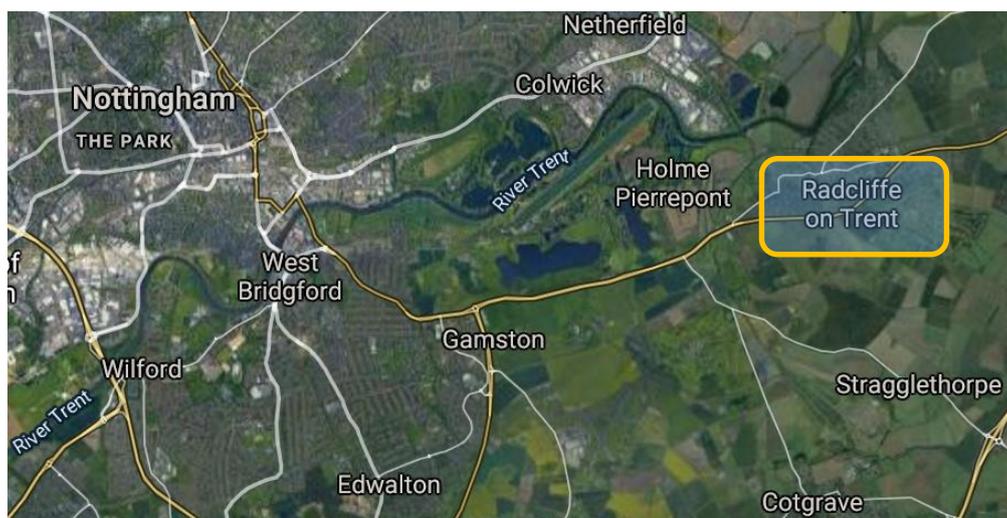


Figure 1. Location Plan

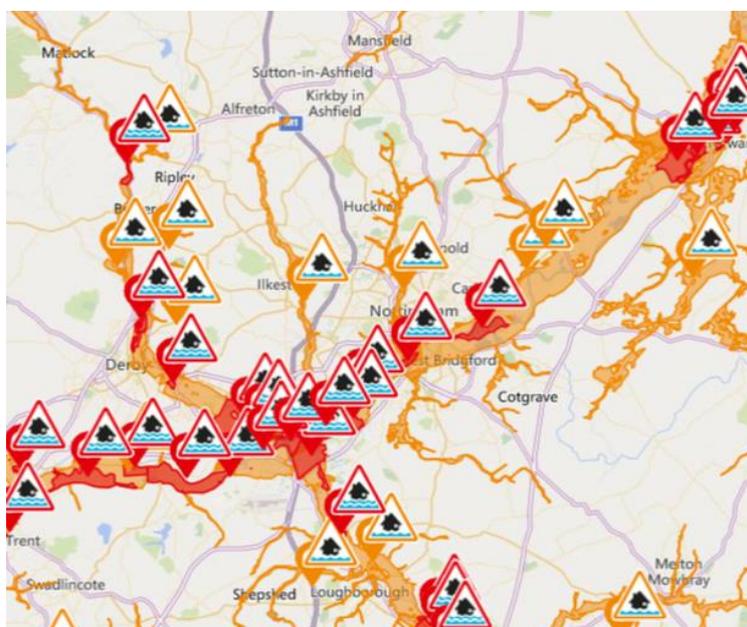


Figure 2. Flood Warnings and Alerts Issued during February 2020.

On the 16th of February 2020 parts of Radcliffe on Trent suffered a significant flood event with 37 reported incidents of internal property flooding and many gardens, curtilages and public highways in the village affected. Figure 3 shows the areas of Radcliffe on Trent that were affected by internal property flooding.

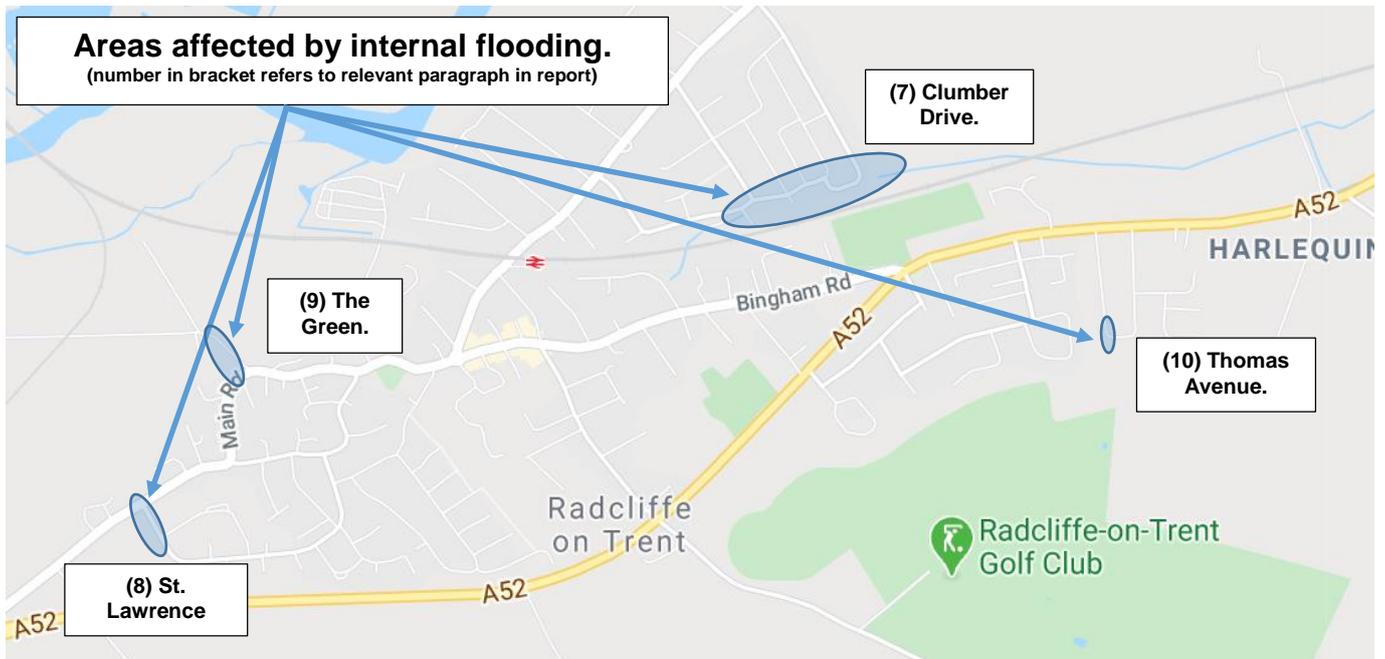


Figure 3. Plan highlighting areas affected by internal flooding

Summary of flooding and its causes

7. Clumber Drive and surrounding area

In the very early hours (from approx. 2:30am) of Sunday 16th Feb the area shown on Figure 4 below was subjected to flooding with 29 properties reporting internal flooding and at-least 11 others suffering external flooding. Some residents had to be rehomed due to the severity of the flooding.

The area affected lies along the line of the Sykes Drain, an ordinary watercourse that serves a rural area to the east of Radcliffe and ultimately flows into the centre of the village via a primarily culverted route. Figure 4 overleaf shows the approximate line of the Sykes Drain, shown dotted, in the area affected by flooding. The star on Figure 4 shows the point that the Sykes Drain enters its culverted section, to the rear of Number 87 Clumber Drive.



Figure 4. Flood outline for Clumber Drive area and line of (culverted) Sykes Drain.

Figure 5 is an extract from the Environment Agency's surface water flood risk maps that shows the area to be at risk of surface water flooding however it is important to understand that the only other recorded incident of flooding in this area was in February 1977.

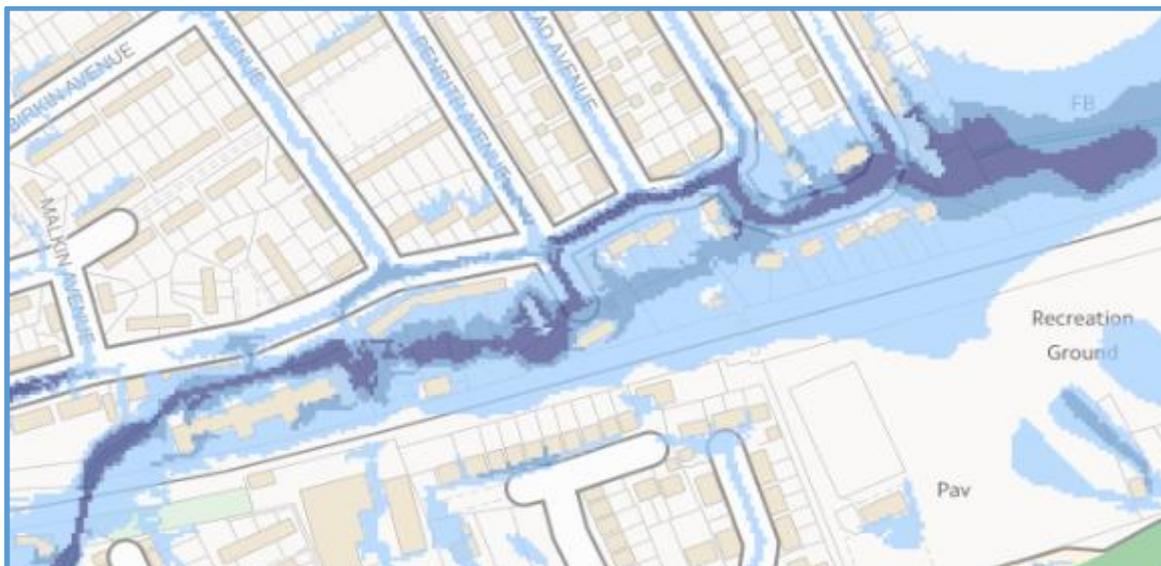


Figure 5. Extract from the Environment Agency's Surface Water Flood Risk mapping for Clumber Drive.

Investigations carried out into the 1977 flooding concluded it was caused by blockages to the trash screen at the mouth of the culvert and resulted in modifications being made to the trash screen layout, with a second trash screen being installed upstream of the mouth of the culvert and ultimately a revised design screen being fitted onto the mouth of the culvert.

Since those modifications were carried out in 1977 there have been no further recorded flooding events in the area.

Video evidence from very early morning of 16th February shows flood water coming from the rear of 87 Clumber Drive and flowing overland, through properties and down towards the open section of the Sykes Drain in front of Addington Court.

The land shown outlined red on Figure 6 is part of land currently owned and being developed by William Davis Ltd. with the development known as Prince's Place. Responsibility for the length of Sykes Drain that runs through this land falls to William Davis Ltd. As land owners and this responsibility was formally acknowledged by them in an email to a Nottinghamshire County Council Land Drainage Officer in September 2019.

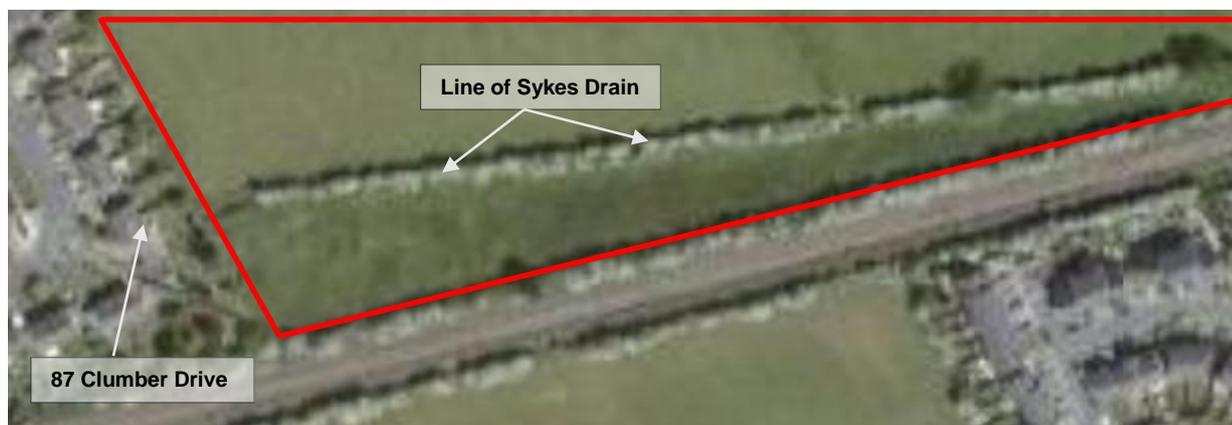


Figure 6. Land to east of Clumber Drive under William Davis Ltd. Ownership.

As daylight broke on the 16th, at approximately 5:45am further photographic evidence (examples shown overleaf) captured the scale of the floods including the surcharged Sykes Drain upstream of the culverted section. The information gathered during the event also evidences water flowing over the boundary of 87 Clumber Drive.



Photo 1. View of flooding from driveway of 83 Clumber Drive



Photo 2. (left) Sykes Drain looking upstream from boundary of 87 Clumber Drive showing surcharge on Sunday 16th February and Photo 3. (right) after trash screens and banks of watercourse cleared on Monday 17th February.



Photo 4. taken at 0730 on Sunday 16th February from the garden of 87 Clumber Drive and showing water still flowing over the boundary from the surcharged Sykes drain.

As the flood water started to subside it became apparent that there was a significant amount of debris in the Sykes Drain and both trash screens were holding a large amount of this debris.

Evidence shown in Photo 5. overleaf shows the upstream trash screen to be completely blocked with the flow of water finding its own path around the outside of the screen. It also shows a drainage ditch constructed by William Davis Ltd. that discharged surface water directly into the ditch and bypassed the onsite attenuation facility that forms an integral part of the surface water management for the development. Photo 6. shows the trash screen on the mouth of the culvert almost entirely blocked with a significant amount of debris to the point that it is not visible.



Photo 5. (Sunday 16th February) showing the trash screen upstream of the culvert to be completely blocked to the extent that water is bypassing the screen on the left-hand side and the additional drainage ditch.



Photo 6. (Sunday 16th February.) showing the debris blocking the trash screen on the mouth of the culvert. The trash screen is not visible due to the amount of debris.

The significant volume of debris held by the trash screens was something that warranted further investigation as it appeared unusual for the circumstances. The debris itself was primarily heavy-set brambles and further investigations showed this type of debris to be very evident further along the upstream banks of the Sykes Drain.

It was also clear that a strip of land (approximately 6-10m) wide and shown highlighted in red on Figure 7. overleaf) had been cleared of overgrowth (brambles) at some point before the flooding event.

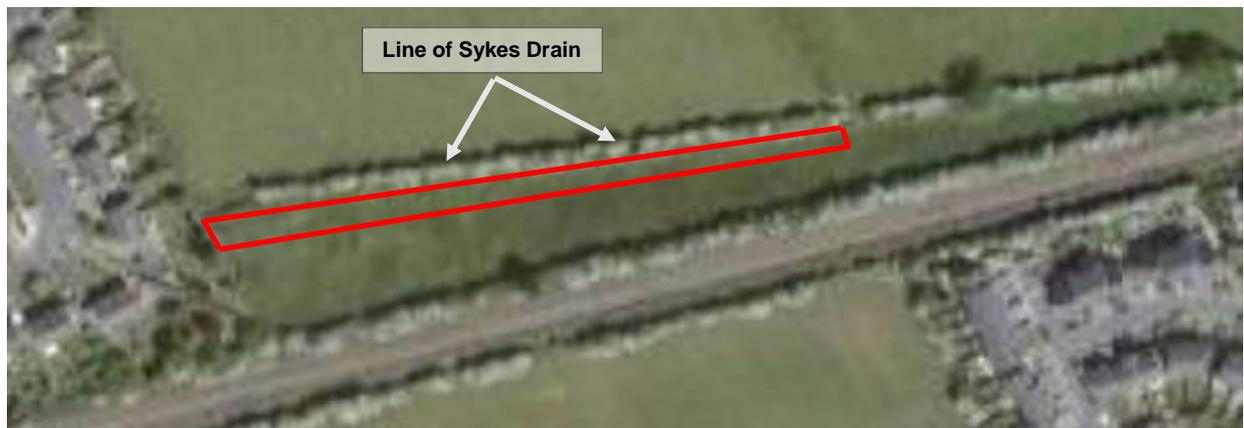


Figure 7. Area of land that had been stripped of vegetation and overgrowth before the flooding event.



Photo 7. The strip of land adjacent to the Sykes Drain in William Davis Ltd.'s land that had been cleared prior to the flooding event. (this photo was taken on Monday 17th February after the debris had been cleared).

The pictures below show both the trashscreens before (Sunday 16th) and after (Monday 17th) cleaning.



Photos 7. (left) and 8. (right) of the trashscreen on mouth of culvert.



Photos 9. (left) and 10. (right) of the second trashscreen upstream of the mouth of culvert.

The evidence collated during the investigations suggests that the blockages to both the trashscreens was caused primarily by the debris left on site during the site clearance discussed earlier in the report, with potential less obvious contributions from other debris washed down from upstream of the trashscreen.

8. St. Lawrence Boulevard

The area shown on Figure 5 was subjected to flooding on the 16th February. This area has a history of flooding. However, apart from in November last year, the severity of past incidents has prevented internal flooding. On this occasion the flooding affected 4 properties internally and the curtilages of several others.



Figure 5. Flood outline for St. Lawrence Boulevard area.

The flooding emanates from the ordinary watercourse that runs along the rear boundaries of properties on St. Lawrence Boulevard, as shown by the dotted line on Figure 5. Under excessive rainfall conditions the watercourse surcharges and starts to flood Nottingham Road in the location shown by the star on Figure 5 and its junction with St Lawrence Boulevard. Due to the volume of rain on this occasion the flooding spread resulting in internal flooding to properties and curtilages.



Photo 11. View of flooding to rear of property on St Lawrence Boulevard.

Figure 6 below shows an extract from the Environment Agency's surface water flood risk mapping. This information suggests that flooding should be retained primarily within the highway network and watercourse to rear of properties on St. Lawrence Boulevard.

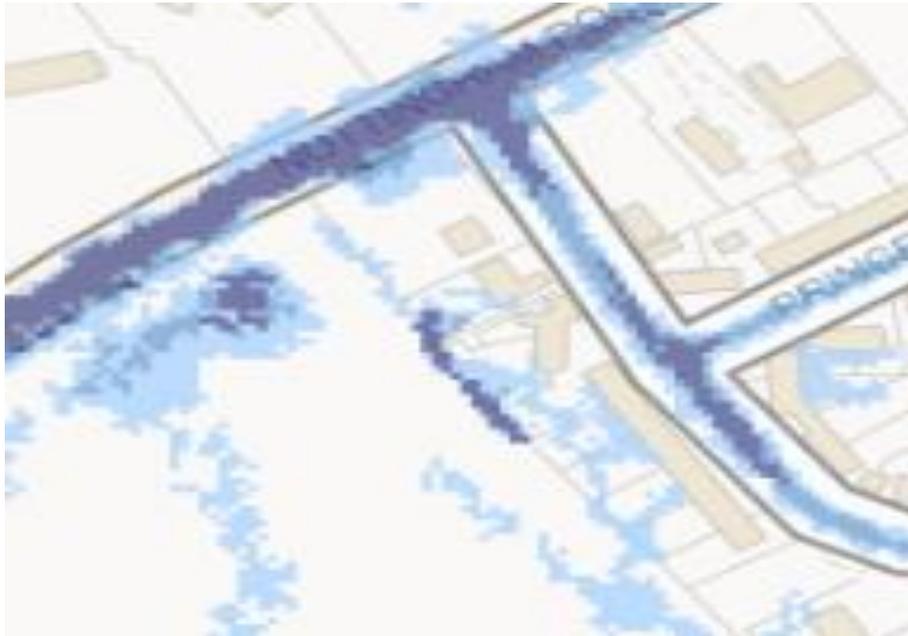


Figure 6. Extract from the Environment Agency's Surface Water flood risk mapping.

9. The Green

Figure 7 shows the area affected by flooding on The Green. Three properties reported internal flooding with several others narrowly missing out thanks to proactive measures taken by residents during the flooding.

Affected residents confirmed that the flooding at this location was a result of excessive overland flows running off Main Road and into The Green.

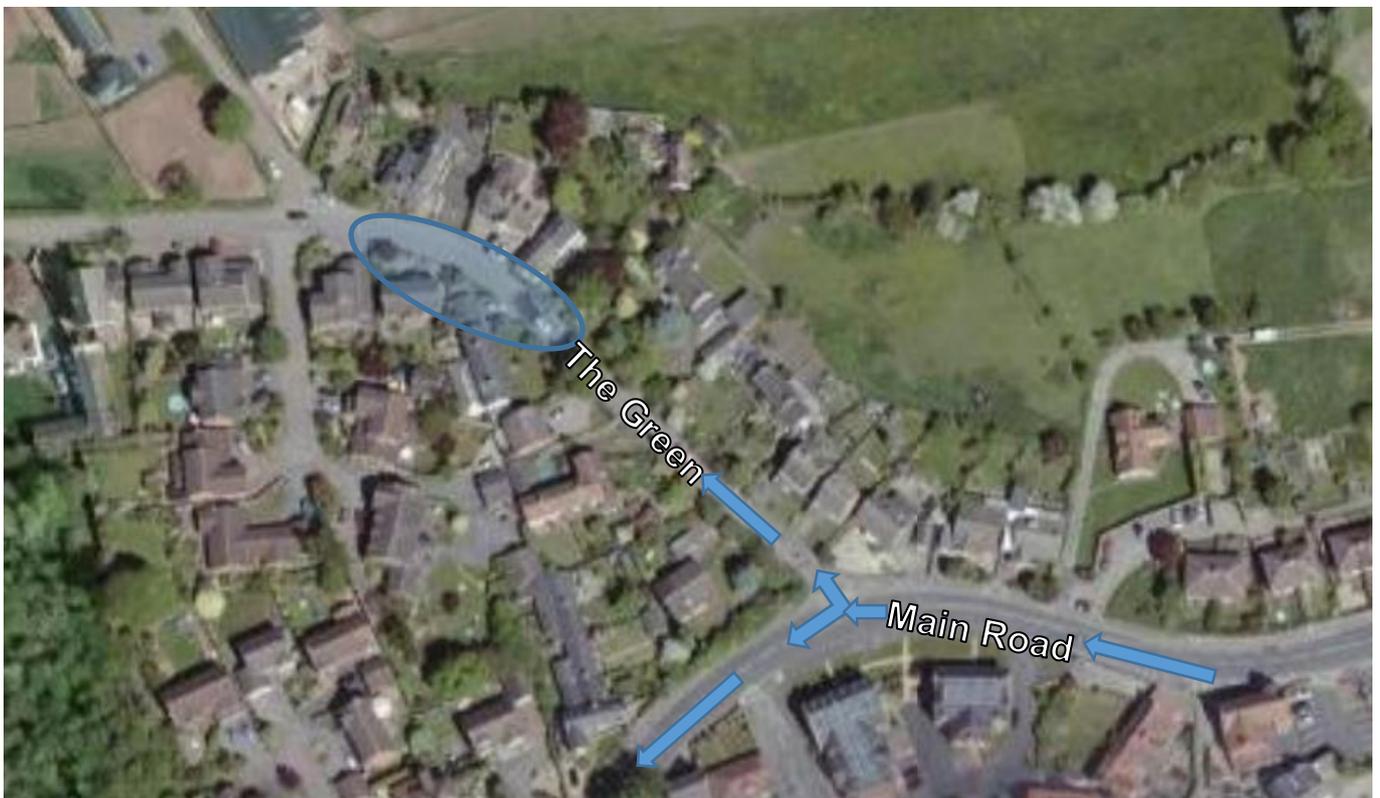


Figure 7. Flood outline for The Green area showing surface water flow paths.

Figure 7 below shows an extract from the Environment Agency's surface water flood risk map for the area clearly showing the reported surface water flooding and flow paths.

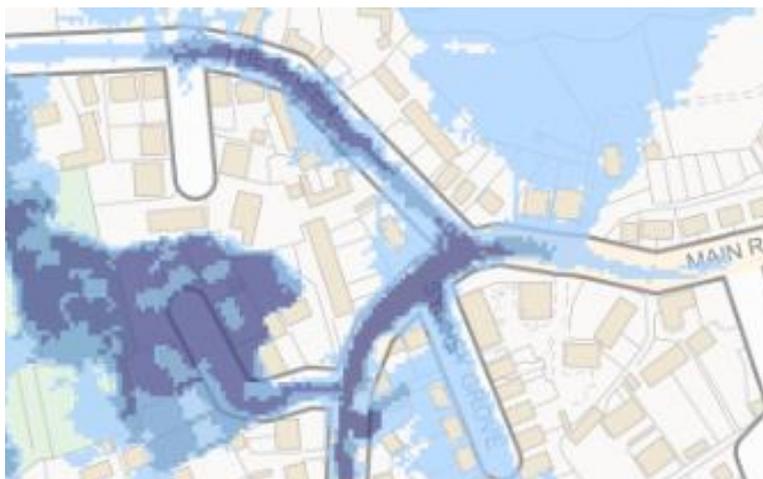


Figure 7. Extract from the Environment Agency's Surface Water flood risk mapping.

10. Thomas Avenue

One property on Thomas Avenue reported internal flooding. This flooding was already being investigated prior to the event of 16th February and occurs where water gathers against an exterior wall of the property and seeps through the brickwork into the property.

Nottinghamshire County Council are working with the resident to identify ways of reducing the likelihood and impact of any reoccurrences.

Risk Management Authorities and their responsibilities

11. Nottinghamshire County Council

a) Lead Local Flood Authority

- i. Investigate significant local flooding incidents and publish the results of such investigations.
- ii. Play a lead role in emergency planning and recovery after a flood event.
- iii. Lead Local Flood Authorities also have a duty to determine which risk management authorities have relevant powers to investigate flood incidents to help understand how they happened, and whether those authorities have or intend to exercise their powers.
- iv. By working in partnership with communities, Lead Local Flood Authorities can raise awareness of flood risks.
- v. Lead Local Flood Authorities should encourage local communities to participate in local flood risk management.

b) Emergency Planning

- i. If a flood happens, all local authorities are 'category one responders' under the Civil Contingencies Act. This means they must have plans in place to respond to emergencies and control or reduce the impact of an emergency.

- c) Highway Authority (VIA East Midlands Ltd. on behalf of The Nottinghamshire County Council)
 - i. Maintenance of the public highways including highway drainage assets.
 - ii. Provided site-based presence and investigations immediately following the event.

12. Rushcliffe Borough Council

- a) Category one responder under the Civil Contingencies Act. This means they must have plans in place to respond to emergencies and control or reduce the impact of an emergency.

Risk Management Authority Responses to Flood

13. The following lists the actions taken by each Risk Management Authority in response to the flooding both in the immediate aftermath as well as in the longer term:

a) Nottinghamshire County Council:

- i. Initiated and co-ordinated Emergency Planning procedures.
- ii. Delivered sandbags to affected residents.
- iii. Initiated and led the Section 19 Flood Investigation.
- iv. Administered Flood Hardship Grant.
- v. Liaised with William Davis Ltd. regarding immediate post event watercourse maintenance.
- vi. Served notice on William Davis Ltd. to ensure removal of temporary surface water connection from William Davis Ltd. site.

b) Rushcliffe Borough Council

- i. Provided emergency response support in management of flooding event.
- ii. Delivered sandbags to affected residents.
- iii. Managed and continue to manage recovery in affected Rushcliffe communities.
- iv. Administered the flood hardship fund and Community recovery grant.
- v. Administered council tax and business rate relief grant scheme.
- vi. Actively engaged in the Section 19 Flood Investigation.
- vii. Continues to administer the property flood resilience grant scheme.
- viii. Arranged additional emotional support for residents through British Red Cross team visits to the community.

Additional information and future actions

- 14. All the Risk Management Authorities involved in this event are committed to continuing the investigations into the causes of the incidents detailed in this report. Those investigations may identify further actions not listed below.
- 15. The local community spirit and resilience during the flooding must be recognised as without their efforts the impacts of the flooding could have been worse.

16. William Davis are currently completing their own independent investigation into the flooding and have provided the following statements:
- a) William Davis have indicated that they have a cyclical maintenance regime in place to clear the trash screens. Evidence has previously been supplied to highlight that the trash screens were cleared on February 12th.
 - b) In relation to officers' reference to bank clearance works and that *"Discussions with William Davis Ltd.'s Site Manager on Monday 17th February confirmed that the strip of land had been cleared as part of the site development works and that the debris from the clearance work had not been removed from the site"*, William Davis consider that this statement is disingenuous on the basis that information supplied by them indicates that the cleared material was not removed from the site because it was processed into 18mm chippings using a MIDIFORST forestry mulcher with the arisings stored on site, outside of the flood profile of the Watercourse.
 - c) William Davis has also supplied evidence highlighting that the downstream culvert is blocked with concrete which is restricting the culvert capacity by at least 60% of its profile for approximately 6m of its length and that this blockage coincides with the location of an extension consented to be built in 1991. No reference is made to this blockage which clearly has an impact on the flow dynamics of the watercourse even in non-storm conditions (as highlighted in reports and photographs previously supplied).
 - d) Consultants acting for William Davis have now had the opportunity to model the reduced capacity of the culvert that results from the concrete blockage and this shows that under the rainfall conditions over the weekend of February 15th and 16th that the culvert would have been forced into surcharge.
17. Subsequent to the flooding incident a CCTV survey of the culverted section of the watercourse was commissioned by William Davis Ltd. and the results shared with the LLFA. The CCTV survey found that there was a significant blockage within the brick-built section of the culvert. The blockage was identified as being made of foundation concrete. The location of the blockage coincides with the location of a garage extension consented in 1991. William Davis have supplied written testament which highlights that the culvert was encountered during the construction of the extension. Consultants acting for William Davis have modelled the reduced capacity of the culvert resulting from the blockage. This highlights that during Storm Dennis the culvert would have been forced into surcharge. That is to say that water would not been able to flow away from the open watercourse effectively whether the trash screens had been clear or not. Nottinghamshire County Council acknowledges the information provided by William Davis Ltd and detailed in paragraph 16 and is grateful to them for bringing this to our attention. While the County Council does not consider the blockage to have been a significant contributor to the flooding on 16th February 2020 the County Council will nonetheless carry out further investigations into the partial blockage of the culvert (paragraph references 16c and 16e) with a view to ensuring the removal of any blockage, ensuring the structural and hydraulic integrity of the culvert and enabling it to work at its peak design efficiency.
18. Nottinghamshire County Council will liaise with William Davis Ltd. in order to ensure robust future maintenance regimes for the trash screens and Skyes Drain within the Princes Place estate.

19. Nottinghamshire County Council Property Team are considering ways of reducing overland flows from land they own in the Thomas Avenue to help reduce the impacts downstream.
20. Investigations into the condition and connectivity of the surface water system in the St. Lawrence Boulevard area and Main Road / The Green are scheduled for mid 2020. These findings will be shared and actioned as appropriate.
21. Nottinghamshire County Council has offered to support a Flood Action Group within the community and has made this offer to the Parish Council. The Authority has already started to establish a local residents forum with residents of The Green and it is hoped this will be extended to cover the wider Radcliffe on Trent catchment.
22. Rushcliffe Borough Council will be arranging community drop in sessions for all those affected. The date and arrangements for these are currently on hold due to the Covid – 19 situation.
23. Where appropriate Nottinghamshire County Council and the Environment Agency administer a Flood Warden scheme, including supporting the provision of local sandbag stores, and a Community Flood Signage Scheme in communities at risk of potential flooding. All equipment and training is provided for free should there be sufficient volunteer interest in the community. Further information on these services are available on Nottinghamshire County Council's website.
24. As the Lead Local Flood Authority we have witnessed and have experience of how flooding devastates communities. The most vulnerable in the community will be our priority. NCC will continue to work closely with partners and communities to identify ways of proactively reducing the risk, likelihood and consequences of future flooding events.