

**Timsbury and Farmborough area:
Flooding Incident May 2016**
Flood and Water Management Act, Section 19 Flood
Investigation Report

June 2016

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Prepared by Bath and North East Somerset Council

June 2016

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1. Executive summary

This Flood Investigation Report has been completed by Bath & North East Somerset Council (BANES) under its duties as the Lead Local Flood Authority (LLFA) in accordance with Section 19 of the Flood and Water Management Act 2010 (F&WMA).

Flood and Water Management Act 2010: Section 19

Local Authorities: Investigations

- 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 have relevant flood risk management functions, and
 - 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) it must –
 - a) publish the results of its investigation, and
 - b) notify any relevant risk management authorities.

Flood and Water Management Act (2010), S.19, c.29, London: HMSO

A Section 19 investigation will be initiated by Bath & North East Somerset Council where any of the following flooding scenarios occur:

- five or more dwellings at an urban location experience internal property flooding;
- two or more dwellings at a rural location experience internal property flooding;
- where the event resulted in a loss of life: or
- where critical infrastructure (e.g. power station, pump station, electricity supply, critical transport route) was affected by flooding for a significant period of time.

1.1 (Flood) Risk Management Authorities

Certain organisations were defined in the Flood and Water Management Act (2010) as Risk Management Authorities and given specific responsibilities around flooding. This includes both new responsibilities from the Flood and Water Management Act (2010), and longstanding ones from previous legislation such as the Highways Act (1980), and the Land Drainage Act (1991).

Within the Bath and North East Somerset region, Risk Management Authorities include:

- Bath & North East Somerset Council;
- the Environment Agency;
- Highways England;
- Bristol Water; and
- Wessex Water.

Table 1.1 below lists the Risk Management Authorities and their responsibilities in terms of flood risk management. For more details see Bath & North East Somerset Council's [Local Flood Risk Management Strategy](#).

Table 1.1: Risk Management Authorities in the Bath and North East Somerset area

Flood Source	Responsible Risk Management Authority				
	Environment Agency	Bath & North East Somerset Council	Bristol Water	Wessex Water	Highways England
Main River	✓				
Surface Water		✓ (as the Lead Local Flood Authority)			
Surface Water (on or coming from the highway)		✓ (as the Local Highways Authority)			✓ (for A4 and A36)
Sewer Flooding				✓	
Ordinary Watercourse		✓ (as the Lead Local Flood Authority)			
Ground Water		✓ (as the Lead Local Flood Authority)			
Reservoirs	✓		✓		

This investigation report will summarise the flooding incidents and identify which Risk Management Authorities are responsible for the flood incident.

This report also includes recommendations for flood risk management actions that could be undertaken to address and reduce the risk of flooding.

2. Incident summary

2.1 Summary

On the evening of Friday 27 May intense rainfall fell over the Timsbury and Farmborough area. As a consequence surface water runoff was generated on farmland and roads and in turn 5 properties were internally flooded and a further 8 suffered from flooding to outbuildings such as garages or garden sheds and driveways.

Table 2.1 and Figure 2.1 summarise the areas affected.

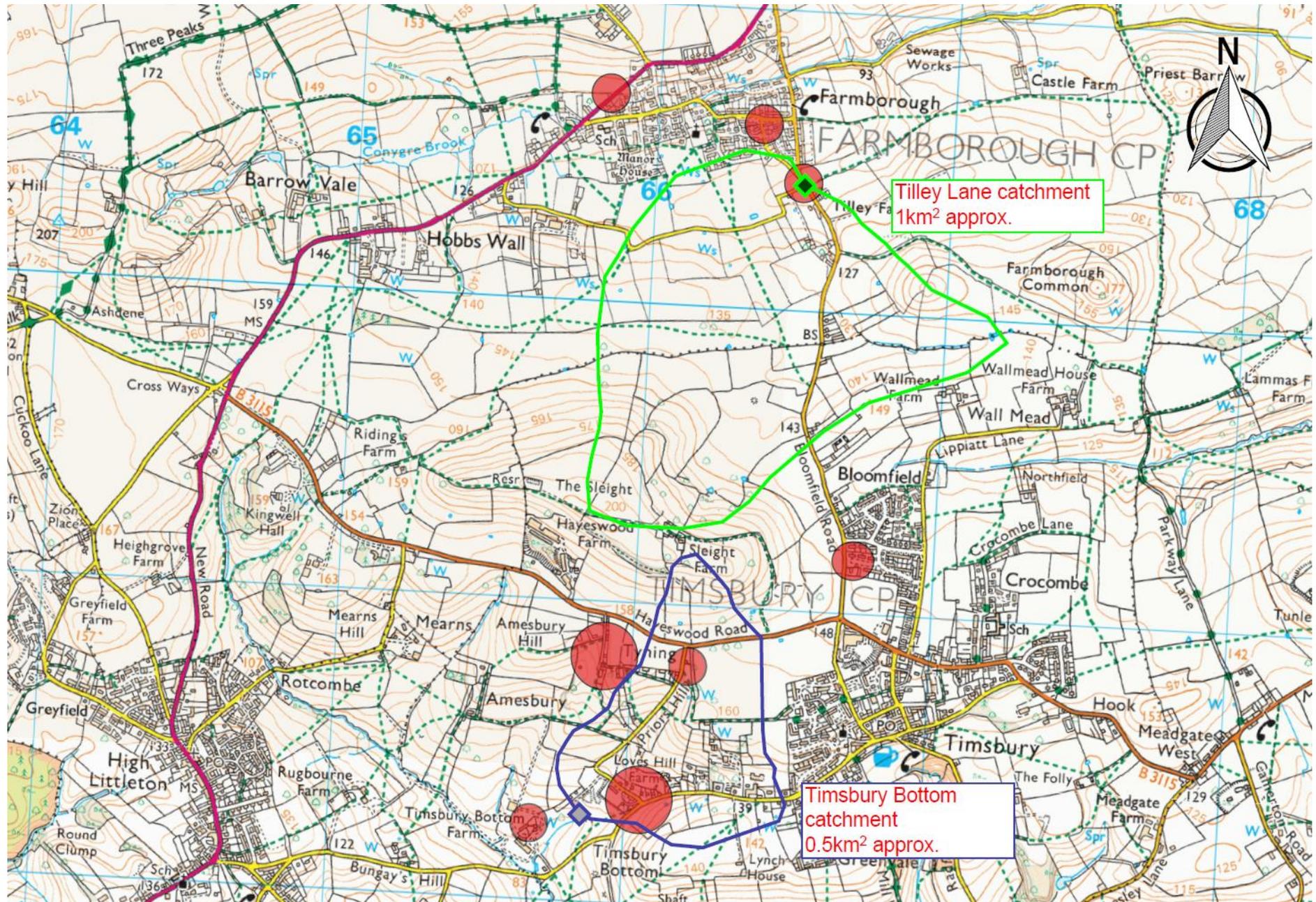
Table 2.1: Summary of property flooding locations

Location	Internal property flooding	Significant highway flooding	Flooding to outbuildings (garages/ sheds) and grounds
Tilley Lane/ Timsbury Road, Farmborough	-	1	1
Bellifants/ Timsbury Road, Farmborough	-	-	1
Bath Road, Farmborough	-	-	1
Tynning area, Timsbury	1	-	1
Timsbury Bottom area, Timsbury	4	-	2
Bloomfield Road area, Timsbury	-	-	1
Top of Priors Hill	-	-	1
Totals	5	1	8

2.2 Probable causes

It is believed that the cause of the majority of flooding was due to high volumes of surface water runoff resulting from locally intense rainfall. It is likely that the rainfall was more extreme in the Timsbury/ Farmborough area than that recorded by the nearest rain gauge. Anecdotally residents reported an incredibly heavy downpour of around 1 hour.

Figure 2.1: Locations of flood affected areas (size of circle indicates severity)



2.2 Evidence gathering

Flooding reports

Reports of flooding were gathered primarily from the Council's Council Connect customer service records. Further information was supplied to the Council's Drainage and Flooding team via email and telephone.

Wessex Water was asked for any reports of property flooding that occurred on Friday 27 May.

Avon Fire and Rescue were asked to provide details of any call outs to flood affected locations that occurred on Friday 27 May.

The Environment Agency was asked for any reports of property flooding that occurred on Friday 27 May.

Rainfall data

Rainfall data was obtained via the Environment Agency for the rainfall gauging station at Paulton, which is around 1,600m from the centre of Timsbury.

Wessex Water also supplied radar based rainfall data for the Timsbury/ Farmborough area.

Initial investigation/ interviews

Representatives of Bath & North East Somerset Council's Drainage and Flooding team visited flood affected locations in the week following the incident and spoke to homeowners where available.

It should be noted that this report is only based on the information brought to the attention of Bath & North East Somerset Council through its professional partners and the public and where further investigation by the authorities have identified additional flooded properties. Therefore, it cannot be guaranteed to contain an exact or exhaustive list of affected communities during this reported period.

Historic incidents

Bath & North East Somerset Council's [Surface Water Management Plan](#) was reviewed for any previous recent flooding incidents in the locations.

3. Flooding extent and impact

The flooding incidents were believed to be caused by extremely heavy and localised rainfall over a period of around one hour on Friday 27 May.

Rainfall data from the Paulton gauging station showed a total of 30mm of rain falling between 18:45 and 19:45 on Friday 27 May. This period included a particularly intense 15 minute duration of rain where more than 16mm fell.

Using Flood Estimation Handbook methods (Centre for Ecology and Hydrology, 2016), this rainfall event has around a 1 in 30 chance of occurrence in any given year.

The catchment (or watershed) for the Timsbury Bottom area is around 0.5km² with an average slope of around 100m per 1km (or 1 in 10). 16mm of rainfall falling on this area would generate a volume of water of around 8,000m³ or 8,000,000 litres. To put this in context, this volume of water would more than fill three Olympic sized swimming pools in this fifteen minute period.¹

Whilst not all of the rainwater falling during this time would have generated runoff, it is highly likely that the intensity of rainfall meant that surface water was unable to enter drainage systems effectively or significantly overwhelmed them causing them to surcharge. Typically these highway drainage and sewer systems are not designed to cope with such high intensity short duration rainfall events.

As part of the investigation process it will be recommended that Bath & North East Somerset Council Highway Maintenance and Drainage review the highway drainage systems in the affected areas and consider whether any maintenance issues require attention.

Rainfall runoff was also witnessed as flow paths of water on agricultural fields.

3.1 Tilley Lane/ Timsbury Road

The junction of the eastern end of Tilley Lane and Timsbury Road are located at a natural low spot for a predominantly rural catchment of just over 1km². Environment Agency surface water flood maps show that this area is at high risk of surface water flows (greater than 1 in 30 chance of occurrence in any year). At this junction Timsbury Road is raised above the level of the adjoining Tilley Lane resulting in a restriction to overland flows.

On the evening of Friday 27 May surface water runoff flowed into this area reaching depths of around 500mm on some parts of Tilley Lane and significant depths on Timsbury Road. One property in the area used sandbags to try to stop ingress of water and parts of a workshop/garage for this property were flooded to a low level. Motorised traffic travelling through flood waters on Timsbury Road posed a risk to life. Debris from the flood water (including parts of damaged cars) ended up being deposited on downstream private land.

This area experienced similar flooding in February 2016 and has a general history of flooding.

¹ Based on Olympic standard pool with a length of 50m, width of 25m and depth of 2m)



(Left – Tilley Lane on the evening of 27 May. Right: Tilley Lane normal conditions)

3.2 Bellifants/ Timsbury Road

Sandbags were issued to a resident that felt at risk of property flooding in this location. At this location the highway drainage system outfalls to the Congyre Brook behind a number of garages set lower than the road. Water was seen surcharging from one of the highway gullies in this location. Garages were subject to flooding.

3.3 Bath Road, Farmborough

Highway drainage systems on Bath Road were overwhelmed and surface water flowed along Bath Road. Some surface water flows entered the grounds of a property via a dropped curb/ driveway arrangement.

Bath & North East Somerset Council has already identified a small scheme of work to re-profile the footway/ access to driveway from the road in order to reduce risk of highway surface water entering property grounds. Similar surface water runoff on Bath Road has previously been reported.

3.4 Tynning area, Timsbury

A steeply sloping highway/ lane and neighbouring field were subject to surface water runoff.

One property backing onto the field to the east of Tynning suffered from internal property flooding primarily from water entering from the field. A further property received flood water to a garage and flood flows caused a garden retaining wall to collapse.

It should be noted that there is no formal highway drainage on this section of highway.

3.5 Timsbury Bottom area

Surface water runoff along Priors Hill, Loves Hill and surrounding hillslopes contributed to flood water pooling in the Timsbury Bottom area. Highway drainage systems were overwhelmed and flooding to properties and private grounds occurred.

In this area three properties were subject to internal property flooding and Avon Fire and Rescue were in attendance to attempt to divert flows of water away from properties.

Flood damage was also caused to two garages.

Residents reported highway gullies surcharging and perceived blockages/ restrictions to highway drainage.

Initial investigations on Priors Hill showed a main highway drainage system with a limited number of highway gully connections.

A nearby farm house also reported runoff from fields directly entering into the property.

3.6 Bloomfield Road area, Timsbury

Surface water flows were restricted from entering a highway drainage system due in part to blockages/ debris in the system. A garage set at a low position relative to the road received surface water flows from Bloomfield Road. This garage has previously been subject to flooding.

Bath & North East Somerset Council has identified a small scheme of work to improve highway drainage in this area.

Similar surface water flooding on Bloomfield Road has been reported in recent years.

3.7 Top of Priors Hill, Timsbury

Water from Priors Hill entered the front garden area of a property at the top of Priors Hill to a depth of around 100mm. Pumps were used to remove water from the area.

4. Appropriate Risk Management Authority

Flooding of homes and highways in the Timsbury and Farmborough area was due to surface water runoff from rural hillslopes and highways.

As such, the Risk Management Authority with responsibility for these types of flooding is Bath & North East Somerset Council (in its capacity as the Lead Local Flood Authority and Local Highways Authority).

5. Recommended actions

As a result of this investigation report, several recommendations have been made for actions to be taken in specific locations. These are either as a result of initial site or desktop investigations, or the continuation of works or investigations already in progress. There are also a series of general actions recommended to be considered in all of the locations.

At this stage the majority of actions focus on surveys or investigations to understand the current condition of drainage systems and site constraints.

Table 5.1: Recommended actions for affected areas

Action By	Recommended Action	How
General actions recommended for the areas		
Bath & North East Somerset Council (as the Local Highways Authority)	Review existing highway drainage assets to clarify if they are working efficiently.	CCTV or other surveys to evaluate condition of existing highway drainage. Review of maintenance regime.
Property Owners	Review localised flood risk (at a property level) including areas where flood flow paths may be restricted, or where improved drainage could be made. Particular consideration given to flow paths around properties including walls and driveways. Consider requirement for Property Level Resilience measures.	Visual assessment. Can be informed by professional survey.
In addition to the general actions the following should be considered at specific locations:		
Tilley Lane/ Timsbury Road, Farmborough		
Bath & North East Somerset Council (as the Lead Local Flood Authority and Local Highways Authority)	Carry out surveys and investigations to identify feasible schemes to reduce frequency of flooding at this location.	Surveys of existing drainage system and upstream catchment to identify constraints and opportunities to reduce risk. Investigations should consider the catchment as a whole.

Tynning area, Timsbury		
Bath & North East Somerset Council (as the Local Highways Authority)	Identify opportunities to improve highway drainage in this area.	Survey existing drainage arrangements. Carry out feasibility study for scheme to reduce risk of flooding in this area.
Timsbury Bottom area		
Bath & North East Somerset Council (as the Lead Local Flood Authority/ Local Highways Authority)	Review existing highway drainage system including ongoing system to outfall. Review maintenance requirements.	CCTV surveys and other investigations to establish present condition of highway drainage system. Consider requirement for Property Level Resilience measures for individual residents.
Priors Hill, Timsbury		
Bath & North East Somerset Council (as the Local Highways Authority)	Review existing highway drainage assets to clarify if they are working efficiently.	CCTV or other surveys to evaluate condition of existing highway drainage. Review of maintenance regime.

6. Next steps

The next steps following this report will be for Bath & North East Somerset Council as the Lead Local Flood Authority to ensure that the recommended actions are taken forward by the identified responsible Risk Management Authority. Bath & North East Somerset Council will prioritise the actions and monitor, whilst working in partnership with the local communities affected.

There is an expectation from Bath & North East Somerset Council of itself and its partners that all authorities involved will cooperate and work together to, wherever possible and financially viable, improve the flood risk in the vulnerable areas identified in this report by completing the recommended actions.

As the Lead Local Flood Authority, Bath & North East Somerset Council has a responsibility to oversee the delivery of these actions.

Where minor works and quick win schemes have been identified, these will be prioritised in line with other commitments and subject to available funding and resources will be carried out as soon as possible by the relevant authority or landowner. Any major works requiring capital investment will be considered through the Council's Highway Maintenance and Drainage Capital programmes budget.