

Somerset County Council

Lead Local Flood Authority

Section 19 Investigation Report

As the Lead Local Flood Authority for Somerset, we have a duty to investigate flood incidents as outlined within Section 19 of the Flood & Water Management Act 2010.

Date of Incident:	20 th October 2021	Date of Report: 27th January 2023 Version: 5.0 Status: Final
Site / Catchment Location:	Ilminster	

Contents

Introduction	3
Area Information.....	4
Impact and Extent of Flooding - Summary	11
Historical Information:	20
Drainage Assets:.....	22
Bunds Around Station Road and Home Parks	27
Rainfall Information:	31
Surface Water:.....	31
Fluvial:	34
Coastal:.....	35
Groundwater:	36
Soil Moisture Deficit:	36
Probable Causes.....	36
Risk Management Authority Responsibilities.....	41
Risk Management Authority Actions During and Immediately After the Event	41
Recommendations	43
Development Planning	45
Ongoing Works	45
Planning Policy and Future Development	45
Appendix: Risk Management Authority Responsibilities	47

Introduction

The function of a Section 19 report is to gather information on the happenings during a particular flood event. They are known as a Section 19 report because they are required under Section 19 of the 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. A Section 19 report will often detail any ongoing work with regards to flooding in the area, and will signpost additional work that should be considered, usually in the form of investigations to be undertaken.

It is not the function of a Section 19 to provide concrete solutions for flooding. This requires far more detailed technical work, liaison with landowners, and decision making about schemes in concert with the public and other stakeholders, although the Section 19 report can help in proving the need for this work and securing funding. Also, it is impossible to prevent absolutely *all* flooding – rainfall events vary widely in intensity, and whatever drainage systems or flood mitigation schemes are put in place, there is always the possibility, however remote, that an extreme rainfall event will overwhelm them. We can, however, plan for the vast majority of rainfall events, and in the course of doing so, make extreme events less bad. Even a small difference in the final height or path of flood water can be the difference for some between their homes flooding and not, so even small schemes can have value in an extreme rainfall event.

The usual way to describe the severity of rainfall events is described in terms of '*1 in X years*'. If we take the example of a 1 in 100 year event, this is an event of a size that will be equalled or exceeded *on average* once every 100 years. This means that over a period of 1,000 years you would expect the one in 100 year event would be equalled or exceeded ten times. But several of those ten times might happen within a few years of each other, and then none for a long time afterwards. This report deals with a rainfall event of 1 in 38 year intensity. Reports of flooding extents from residents suggest that the flooding was not nearly as extensive as that resulting from a 1 in 100 year flooding event, which is what is shown on Environment Agency flood maps.

This report includes selected photographs supplied by residents showing flooding in progress, and maps showing more detail of the area. We are grateful to residents for the information they have provided which has enabled the compilation of this report.

Area Information

Ilminster is a town in South Somerset located west of Yeovil and Southeast of Taunton on the intersection between the A303 and A358. It is a small market town with about 5,800 residents recorded on the 2011 census. The town is positioned within an agricultural landscape. Its form is broadly linear in the valley formed between Beacon Hill, Pretwood Hill and Herne Hill. It is referred to in the Somerset Local Plan as an historic market town of Saxon origin originally centred on the Market Place and church and extending between the Shudrick Stream and lower slopes of Beacon Hill. The town subsequently spread along the route of the watercourse and part way up the surrounding hills. More recent residential development is identified as having expanded north, south and southwest. Industrial and trading areas have been sited predominantly on the western edge of the town. This area is known historically to have been wet and marshy. The parish includes the hamlet of Sea, 1.5 miles to the south west.

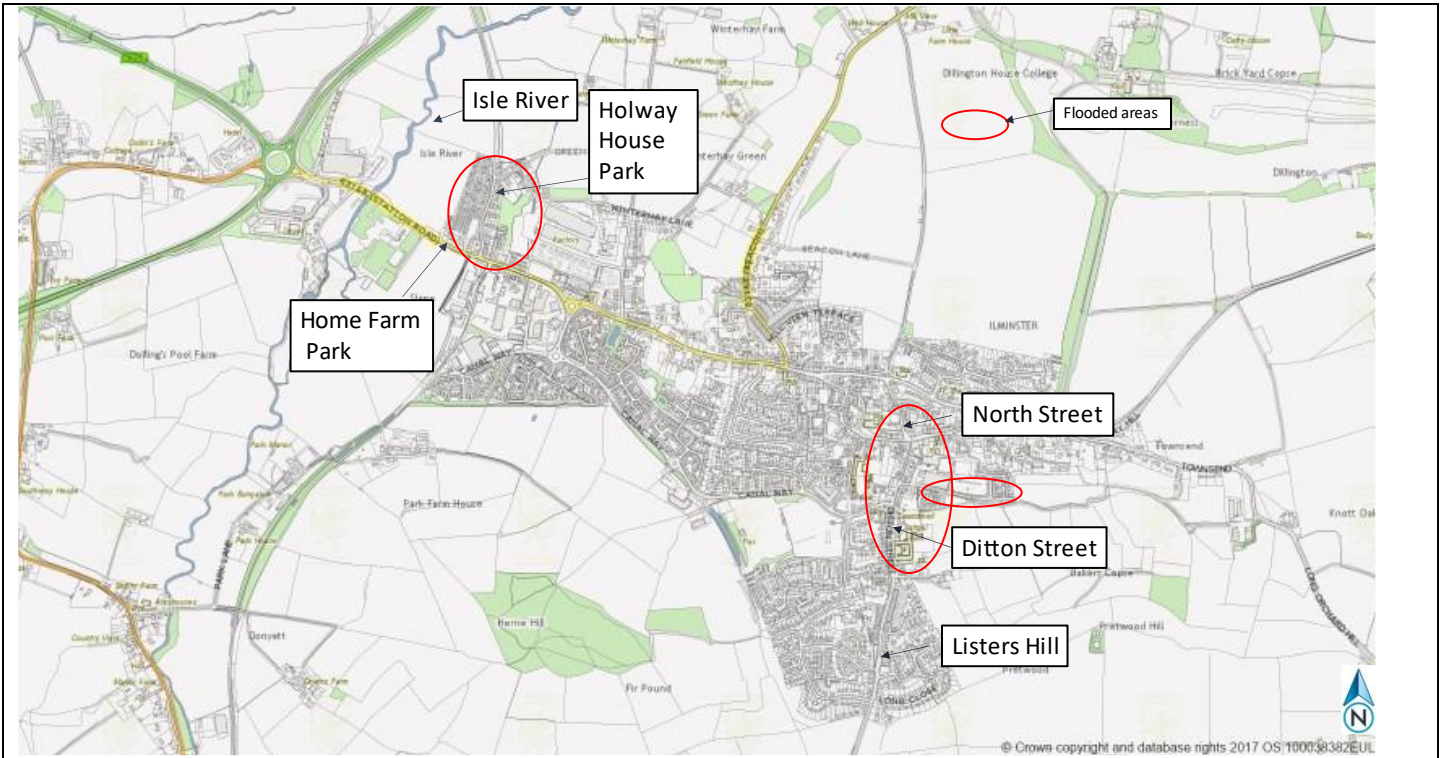


Figure 1: Catchment of this report, Ilminster

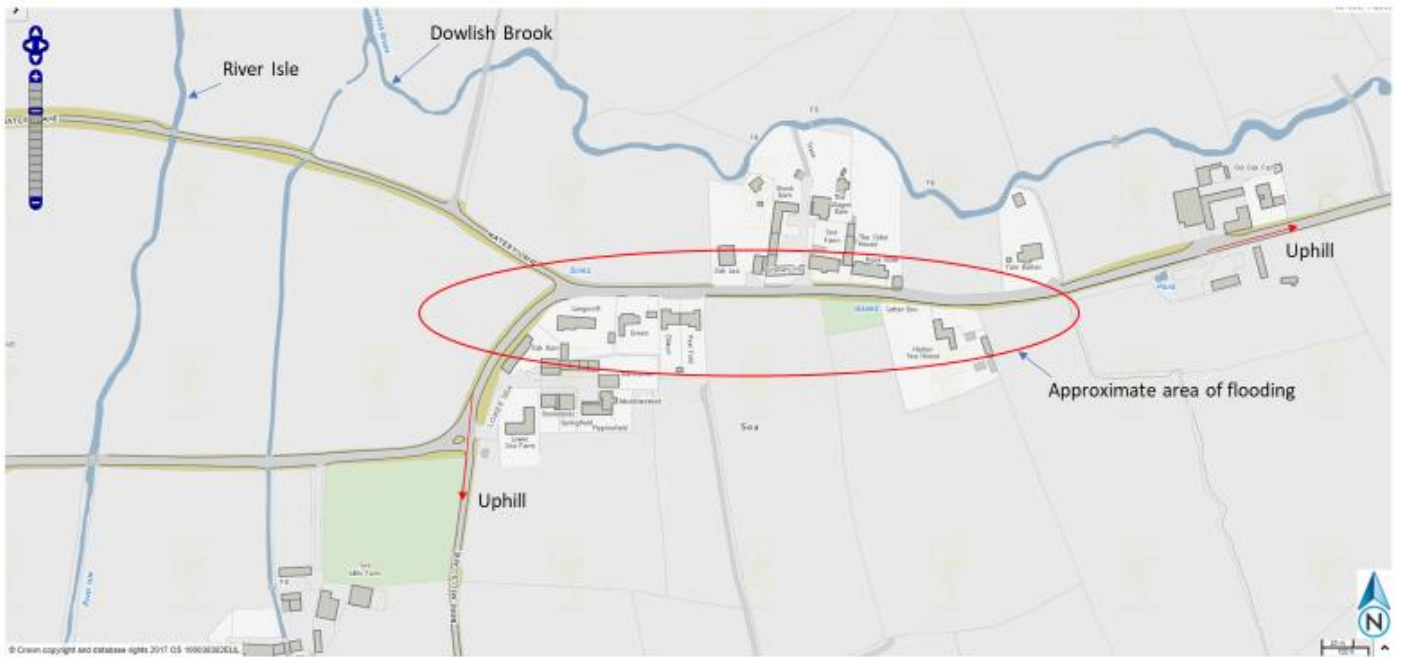


Figure 2: Catchment of this report, Sea

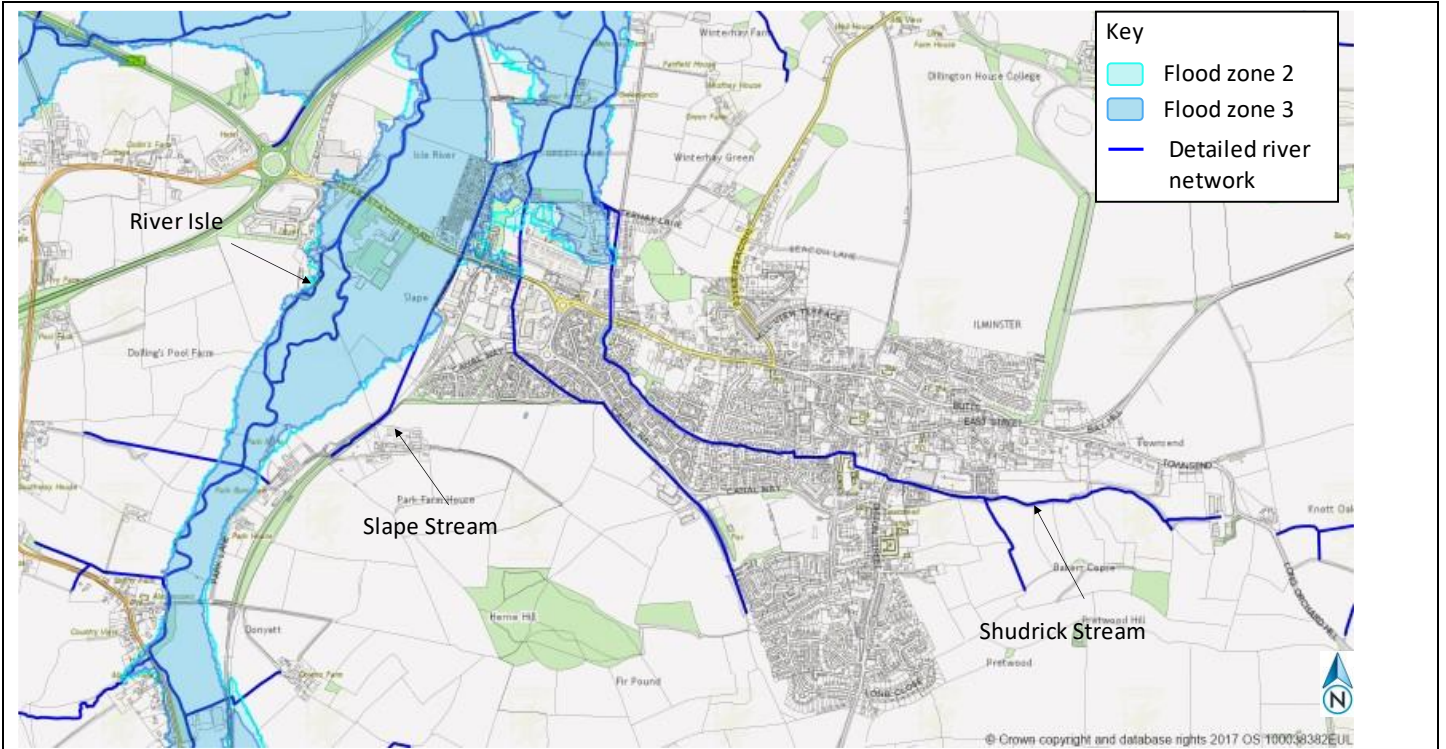


Figure 3: Flood zones and detailed river network from the Environment Agency. (Ilminster)

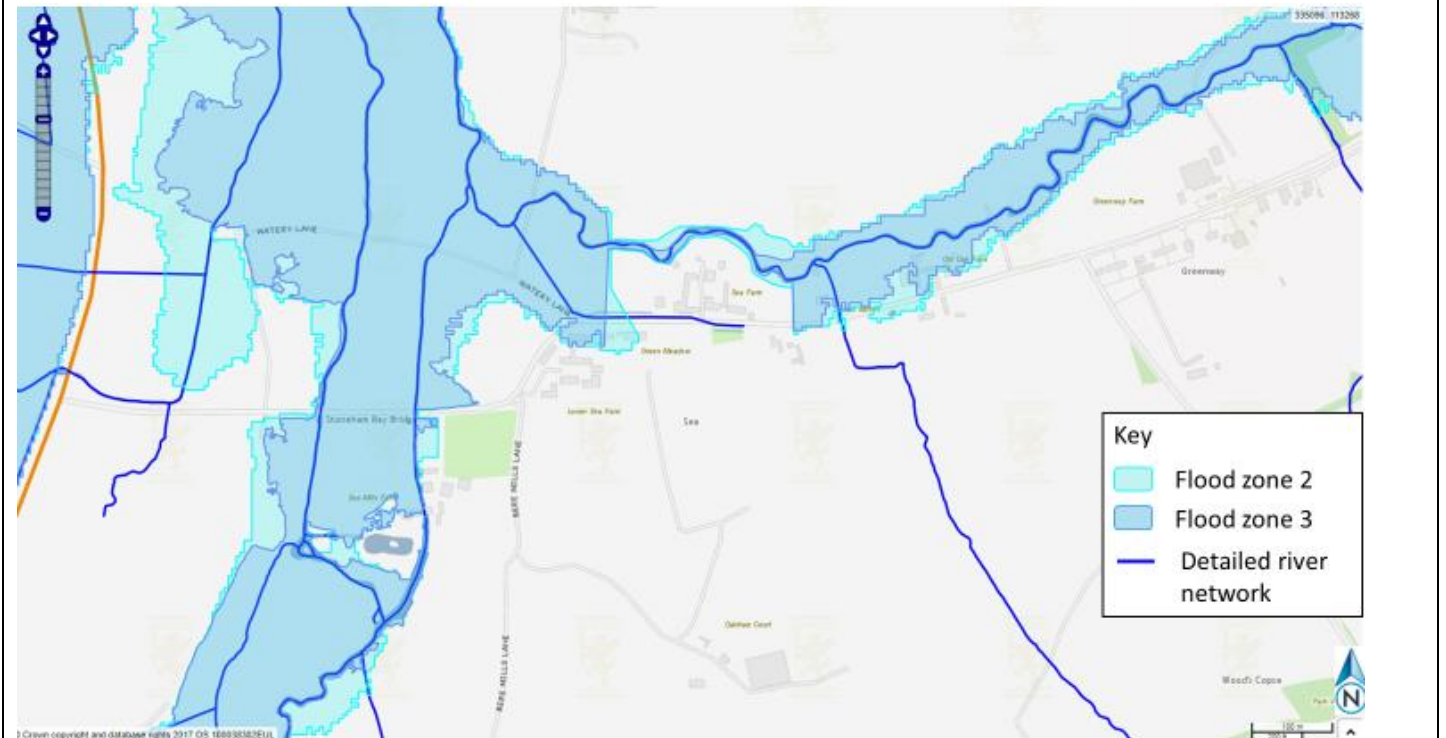


Figure 4: Flood zones and detailed river network from the Environment Agency. (Sea)

The above maps also show the risk of fluvial flooding – that is, from the river alone. Flood zone 2 consists of areas that have 0.1-1% chance of flooding from rivers in any year, and Flood zone 3 consists of areas that have a 1% or higher chance of flooding from rivers.

Ilminster is in the catchment of the River Isle, which discharges into the River Parrett at Midelney on the Somerset Levels. The Isle runs to the west of the town, with a tributary (the Shudrick Stream) running across the town east to west. Both the River Isle and the Shudrick Stream are main rivers.

The Shudrick Stream enters the Isle to the north of Ilminster. Ilminster is surrounded by high ground to the north, south and east, with further high ground across the river to the southwest. The low points are next to the Isle to the west, and along Old Road, North Street and Ditton Street on the East of town.

The following map shows the form and, most importantly, height of the land surrounding Ilminster. Pink and red land is the highest, with blue at the lowest points. Beacon Hill summit is around 103m Above Ordinance Datum (AOD), Pretwood Hill 107m AOD and Herne Hill 110m AOD. The land falls to about 55m AOD, at the head of the Shudrick Stream then down to around 30m AOD at the downstream confluence with the River Isle. Within the town the lower levels are generally on land between the Shudrick Stream and Canal Way at about 33m to 34m AOD. Note that the majority of the area which flooded is at the same low point as the river Isle, and the steep slopes from the Beacon down to the east end of town.

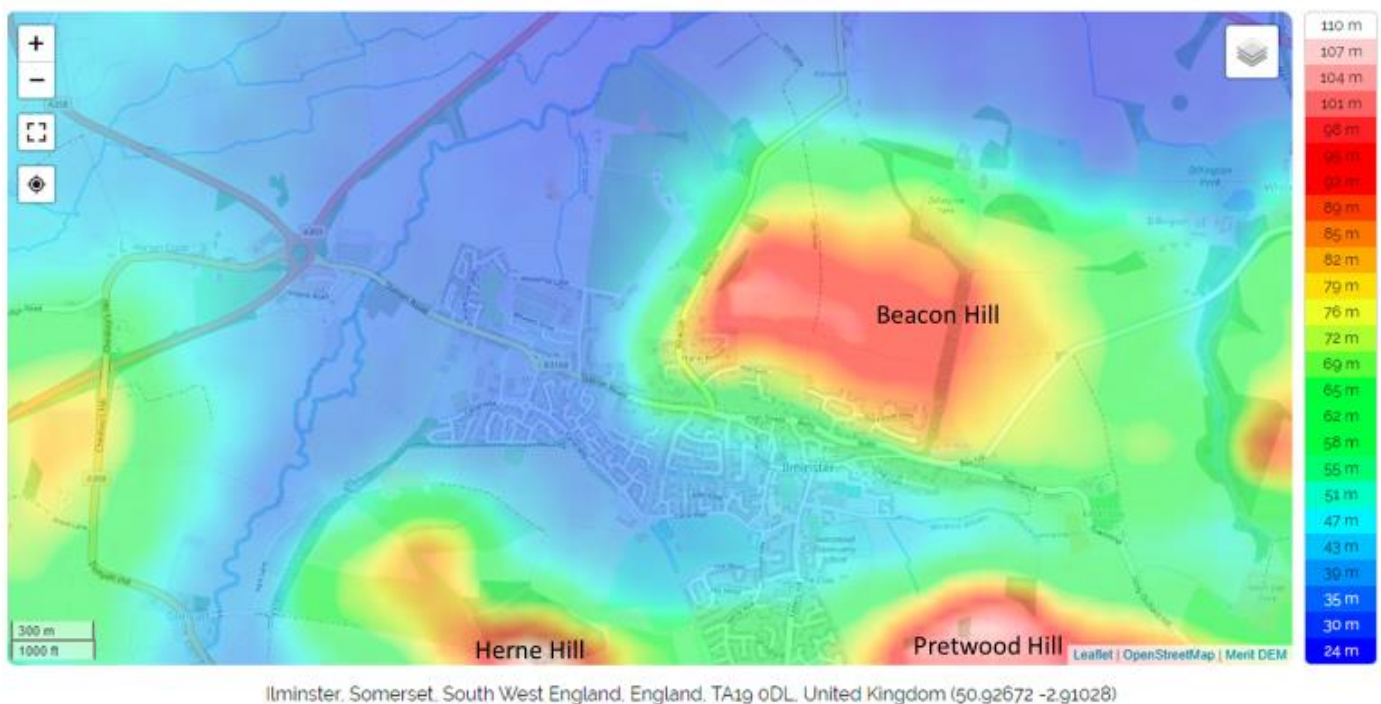


Figure 5: Topographic map of Ilminster area.

50 properties have been reported as flooding in Ilminster during the event. The actual number affected may be higher, as those affected sometimes do not report having been flooded.

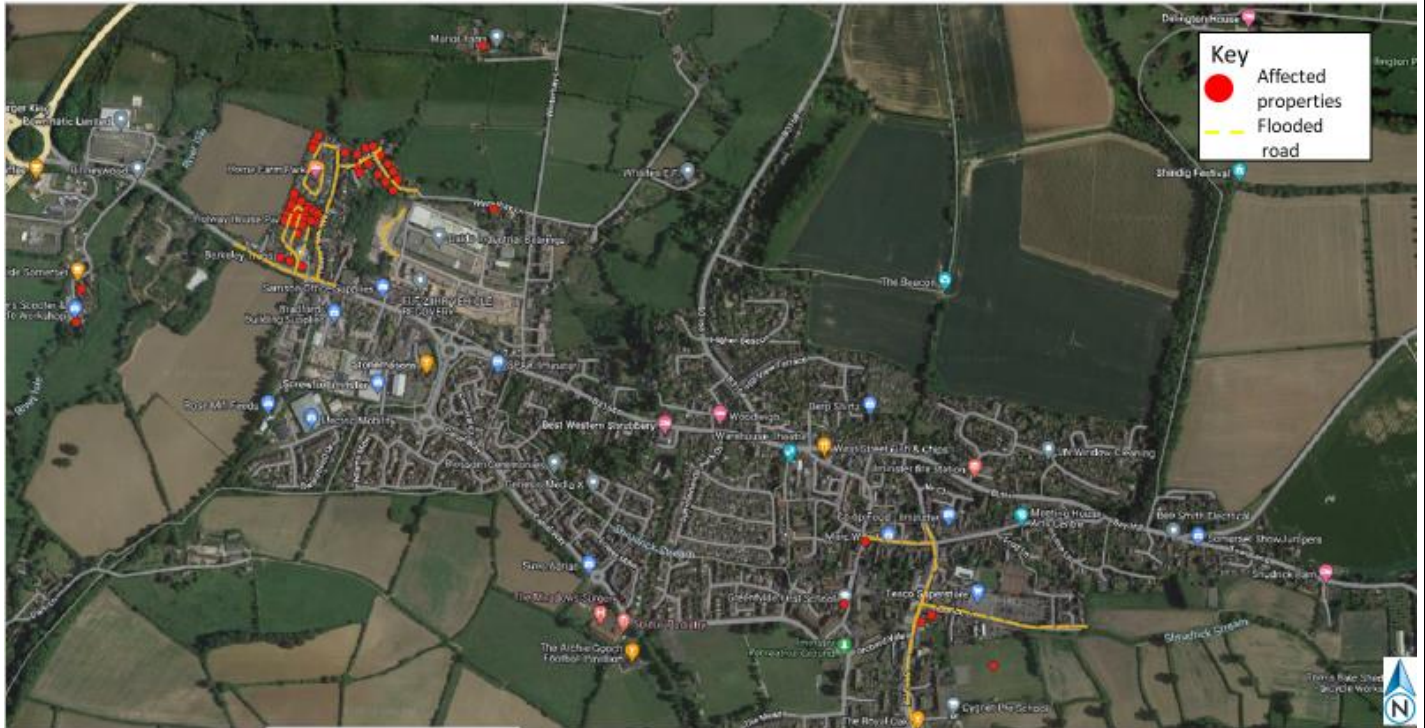


Figure 6: Areas affected in Ilminster

Six Properties were reported as being affected by flooding in Sea, and one in Dowlish Ford.

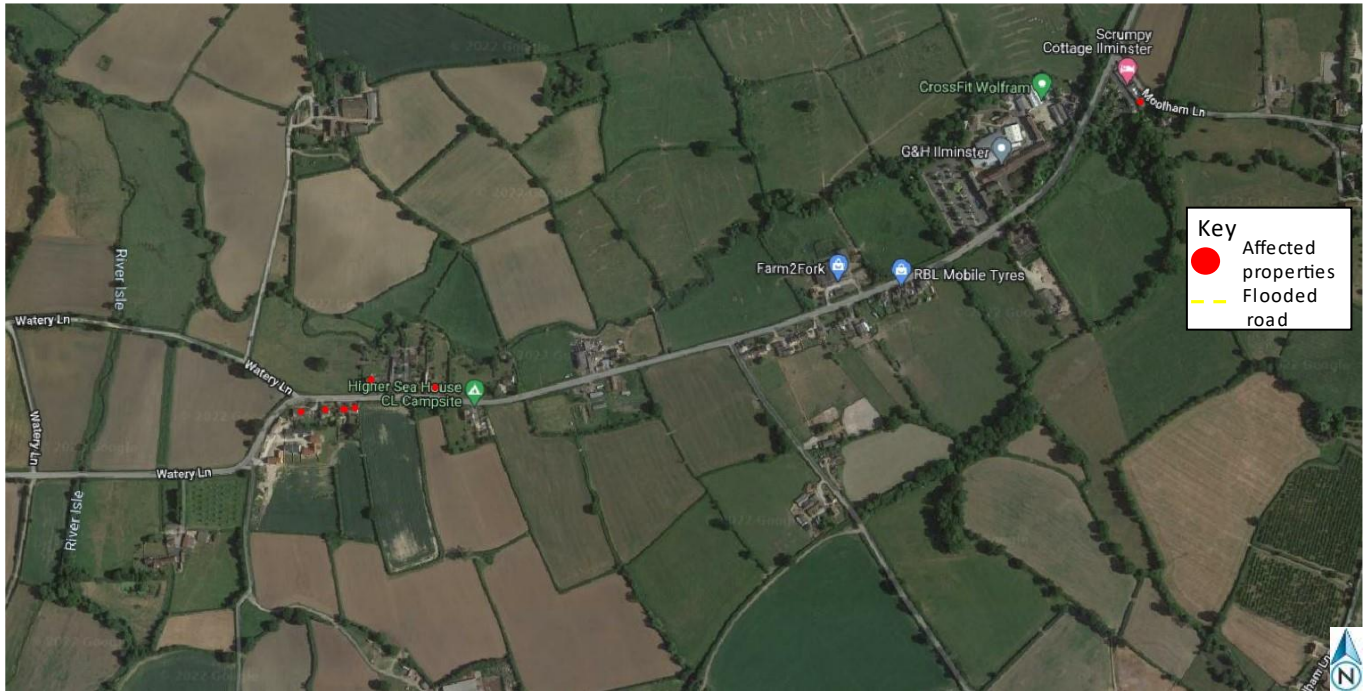


Figure 7: Areas affected in Sea and Dowlish Ford

One property was reported as being affected in Dowlish Wake. Roads were flooded in Allowenshay. Horton Village was also reported as being badly affected, but no details have been received.

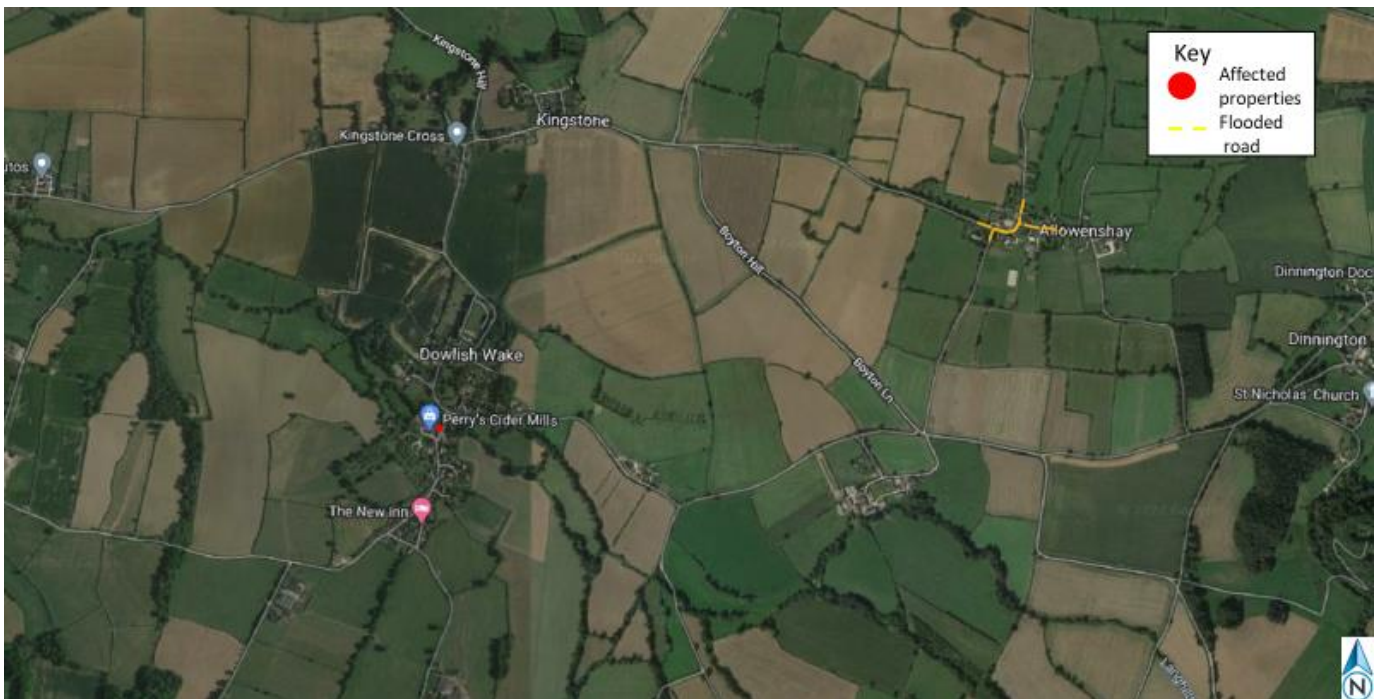


Figure 8: Areas affected in Allowenshay and Dowlish Wake

The main areas reported as being affected by flooding in October 2021 are highlighted in the figure below. Flooded farmland or forestry is not shown.



Figure 9: Watercourses around the Park Home sites

Both Holway House Park and Home Farm Park park home sites were particularly impacted. Houses in Station Road, Green Way and Home Farm Way, and the industrial area around Whites Drive also experienced flooding.

Although the Slape Stream is marked on this map as running down Home Farm Way, alongside the residential parks, Station Road, where it appears as a ditch running alongside the small industrial area on the old station site. The stream has been culverted under the park homes developments.

Impact and
Extent of
Flooding -
Summary

Severe flooding took place in Ilminster and Sea on the 20th of October 2021. High rainfall on the back of previous wet weather created high river flows and overland surface water flows in the area.

This is combined with a relatively impermeable underlying geology and soils (see section on [Groundwater](#)), which would have been saturated prior to the rainfall event occurring. The River Isle experienced one of the highest water levels in 30 years gauge history. The resultant flooding was in excess of what any residents of the area had seen in their lifetimes, and flows on the river Isle were the highest recorded. This created two issues – the Isle coming out of its bank and flooding areas to the west of town, and rainwater accumulating in North Street, Ditton Street and Shudrick Lane.

This report will examine how the infrastructure and stakeholders managed with the excess of surface water, and investigate what can be done to reduce the effects of extreme rainfall events in future.

Impact and
extent of
Flooding

Over the 20th and 21st October 2021, flooding was extremely severe in Ilminster and Sea. In an incident of this nature it is difficult to collate exact numbers of properties affected, and whether flooding was internal, or external. From reports, it is known that at least 50 properties were affected.

The principal cause of flooding in Ilminster and Sea was the high volume of rain and saturated ground conditions. This caused the Isle to burst its banks, and there was a resultant overland flow of water. The bursting of the Isle caused severe flooding at the western edge of Ilminster, causing residents to be evacuated, while the accumulated rainfall running down from the Beacon caused surface water flooding at the eastern end of town. In Sea, surface water ran down the main road and entered properties mostly via the front doors. This water could have come from rainfall, or from local drains and streams, or a combination of the two.

A variety of agencies were present on the night of the event, fulfilling their statutory duties. This flooding incident was wider than the Ilminster area, so many agencies were having to prioritise across the county. The Fire Brigade were attending life threatening emergencies, and in Ilminster they evacuated residents. The Police were out assisting with emergencies across the county. The Civil Contingencies Unit had two duty officers out who opened a flood relief centre and organised the distribution of sandbags. They were also active securing alternative emergency accommodation for evacuated residents, and trying to find transport to get them there. They worked in concert with Fire and Rescue, and other District Council, County Council and Parish Council officers. Members of Ilminster Town council were out helping residents to protect their homes and handing out sandbags. The Highways Authority had no statutory duties on the night, and were not required to be called out. Over the following days they visited various sites where debris has been washed into the road, to clear up and identify road areas which needed repair. The Environment Agency fulfilled their statutory duty on the night by issuing flood warnings on main rivers. There were no reports of sewer flooding, so Wessex Water were not involved.

Timeline of events: 21st October 2021

- 19:00 - Following heavy rainfall on Wednesday 20th October 2021, levels on the River Isle began to rise.
- 22:00 - Civil Contingency Officer (CCO) called to action.
- 22:36 - CCO called Fire & Rescue who confirmed that they were dealing with multiple incidents.

- 22:42 - Flood Warning for this area was issued; River Isle from Chard Reservoir to Hambridge, 112FWFISL10A. Levels continued to rise, peaking at Donyatt at approximately 23:30 and at Hort Bridge at 23:45. Over the course of the event, 61.8mm of rain fell on the nearby Snowdon Hill in 24 hours (71% monthly average). 52.4mm of that fell during a 7 hour window, which equates to 60% of the average monthly rainfall for the area.
- 24:00 – Peak rainfall predicted for now.
- 01:00-01:30 – Flooding started in the areas of Station Road, Holway House Park, Green Lane and the Old Orchard. All reports are consistent that the onset and rate of rise was very rapid, with peak depths being reached within 20-25 mins.
- 02:00 – Fire & Rescue began rescuing people from park home development. River Isle reported to have burst its banks.
- The time when the Ditton Street end of Ilminster and Sea began to flood are unknown.

Ditton Street:

According to the reports of agencies out on the night, the flooding at Ditton Street was believed to be due to a combination of urban surface water, surface water coming off of land at the end of Shudrick Lane and the top of Listers Hill, and water spilling from the Shudrick Stream. Drains were reported by residents as being blocked. There have also been reports that ditches have not been cleared by land owners. The Shudrick stream runs along Shudrick Lane, and at one point enters a culvert, which feeds into a large drain running under the Tesco petrol station, and emerges in Abbots Close. The culvert appears to have been overwhelmed by the volume of water coming down the Shudrick Stream. If it had been blocked, we would expect to see more debris attached to the grate in front of the culvert in the photograph below. The overwhelming effect was supported by the testimony of a local resident, who said that he had never seen so much water coming down the Shudrick catchment into the culvert by Tesco, and that it appeared to overwhelm the stream and culvert, which then compounded the subsequent surface water flooding on Ditton Street. The culvert, at 600mm diameter, is comparatively undersized for a catchment from which it collects.



Figure 11: Culvert in Shudrick Lane, taken some time after the incident.

This section of the Shudrick Stream, including the culverted reach in question, is Main River and as such the EA is the flood risk management authority for this section. Under their permissive powers, they undertake periodic inspections of the culvert and channel. If there are significant concerns, and if they are able to, they exercise their powers to mitigate the situation. Ultimately the responsibility falls to the riparian owner. The EA's last culvert survey was undertaken in February 2017. This survey found no problems in the majority of the culvert from the inlet on down, but in the lower section (where it becomes an old masonry arch structure), there are two service pipes passing across the culvert, which pose a potential blockage risk. The pipes would be very difficult to remove, and at least one is currently in use for conveying sewage.



Figure 12: Storage area near Station Road. (Taken after flood waters had subsided)

Within the culvert, the Shudrick Stream then flows to the west under Ditton Street and Wharf Lane. Further downstream on the Shudrick the watercourse passes through a housing development in an open channel before flowing into a storage feature upstream of Station Road (as seen in Figure 12).



Figure 13: East end of Shudrick Lane at Walnut Close.

This photograph was taken close to where the road ends and the fields begin; the surface water floods down the road and into Ditton Street (which is half a metre lower than the top of the town culvert in Shudrick Lane) where it floods homes and shop premises. This roadway leads into fields where the area is in Flood Zone 2-3. On the right, on the other side of the wooden fence, is the Shudrick Stream.



Figure 14: Looking west down Shudrick Lane.

Tesco car park is on the right, just outside of the photograph, and there is a small car park on left. Further to the left is the Swanmead school playing field, part of which also flooded. The entrance to the small car park, where the wooden fence ends, is the start of the town culvert on the Shudrick Stream.

North Street:

Flow down North Street was not a problem early in the event, but flow down Listers Hill was. Drains on Listers Hill and High Street were reported by residents as having been blocked for some time.

Residents reported runoff coming straight down from the fields to the north of Ilminster, from the beacon, coming right down the Old Road past the allotments, crossing the road and going straight down into North Street. The first obstacle it comes to is the shops at the bottom of the Market Square. A Local long-term resident observed that problems on the night were due to the overwhelming volume of water.

Station Road, Home Farm Park, and Holway House Park:

The River Isle overflowed into the park homes developments, Rose Mill Industrial Estate, and the Station Road area. Flooding started in the areas of Station Road, Holway House Park, Home Farm Way, Green Lane, and the Old Orchard area around about 1:30am. Water levels rose rapidly. Flood water was reported as flowing towards the north east, from the field to the South of Station Road, crossing Station Road and entering Holway House Park. It flowed down the lane next to Holway House and into Home Farm Way and, according to resident reports, it was increased by flood water flowing from the Isle downstream of Hort bridge. The water then crossed the field to the West of Home Farm Park and over topped the informal bank around Home Farm Park, continuing through the park to Home Farm Way. The combined flow then carried on down Green Lane and the Old Orchard area, reaching significant depth.

Four residential properties were reported as being flooded on Station Rd, with water flowing with sufficient force to destroy a masonry garden wall. There is a ditch going past the old station which has flooded on several occasions, and another that goes through a culvert by the Stonemasons pub and comes out in the industrial area. Residents have reported that that these were not properly maintained, and they feel that this has contributed to the flooding.

Holway House Park was one of the worst affected areas with depths of water being described as up to 1.25 meters. Around 19 of the park homes were flooded internally, with nine being damaged beyond repair. A further 13 properties along Green Lane and three in Home Farm Way flooded with depths to around a metre. Thanks to its elevated ground level, none of the park homes in Home Farm Park were flooded internally, although there was external damage to garages and vehicles. There were an additional three commercial properties flooded in the Rose Mills Industrial Estate, which is on the left bank of the Isle upstream of Hort Bridge. From the damage witnessed in the buildings it was evident that there were water depths of up to 10 centimetres.

There are defences on the river Isle upstream of Hort Bridge which are maintained by the Environment Agency. It is believed that there was some outflanking of those defences at the very upstream end, and that this is the first time that has happened since they were built in the 1970s. On the night, park residents were lifting manholes to get water to drain away – but these are thought to have been sewage manholes so doing this would have caused and/or added to flooded sewers elsewhere.

There is a network of small drainage ditches around the park homes, Home Farm, and the old station, which overflowed on the night. Ownership and responsibility for these assets is not definitively known, but is probably riparian. Residents feel that the flooding would have been contributed to because they have not been maintained. There is also a cattle grid which was installed to catch field runoff. Residents reported that water was overflowing from the cattle grid and contributing to flooding.



Figure 15: Holway House Park

Lamplighters:

There is a new development called Lamplighters, just off Wharf Lane to the South of the town centre. Water is reported as coming off of the development and flowing into the middle of town.

Sea:

In Sea, surface water ran down the main road and entered properties mostly via the front doors. Six properties were flooded internally, some to over 1/2m in depth. One property had a flood door fitted, which failed. Residents said they believed that road

	<p>drains were blocked. There is also concern that a pond along Watery Lane is adding to the risk by not being properly maintained or managed, and that a ditch near the corner in the road is overgrown.</p>
<p>Historical Information:</p>	<p>District Council records are likely incomplete, but they show the following previous flooding episodes:</p>

Date	Location	Receptor
23/07/2017	Ditton St /Wharf Lane/ Silver St.	x10 properties, Highway
31/01/2014	Greenway	Highway
16/01/2014	Station Road	Highway
24/12/2013	Station Road	x3 properties
22/02/2013	Herne Rise	Highway
12/01/2013	Ditton Street	Highway
24/11/2012	Ditton Street	x5 properties
21/11/2012	Winterhay Lane	Highway
21/11/2012	Station Road	Highway x2 properties
21/11/2012	Green Lane	Highway 1x property
21/11/2012	Horton Cross	Highway
21/11/2012	Townsend	Highway
29/04/2012	Listers Hill	Highway
16/01/2012	Shudrick Lane	Highway
13/12/2011	Station Road	Layby
11/01/2011	Greenway	Highway
01/10/2010	B3168 Beacon	Highway
13/12/2008	Ditton Street	x6 properties
29/05/2008	Shudrick Lane	Highway
16/04/1998	High Street	Highway
1947	Ditton Street	Highway

Drainage
Assets:

The drainage assets in question are the gulleys in the road and their connecting drainage pipes, plus any culverts and connections to the sewerage system or surface water bodies. The local authority keeps records of drainage under their care, mostly belonging to the Highways Department. Private drainage is not generally recorded. The drainage network around the affected areas is extensive, as Figures 15 to 18 show. However, significant problems with draining the accumulated rainfall during the incident have been noted by many parties.

For the most part, this is due to the severity and intensity of the rainfall – during a flooding incident, it is very difficult to tell if a gully is blocked, or if it just being overwhelmed by the sheer volume of water. Some gullies reported as blocked by residents could be due to this overwhelming effect. Further investigation of the drainage system would be required to ascertain the exact problem in each location, and clean as required.

Current design standards for highways drainage require drains to cope with a 1 in 5 year event plus 20% allowance for climate change, and that a 1 in 100 year event not exceed the bounds of the highway. This event was a 1 in 38 year rainfall event. Drainage meeting the current design standard would not have coped with the intensity of rainfall during the flood event, and would have overflowed onto the highway or failed to drain all the water away even without any obstruction.

When a new housing estate is built, planning policy states that the outflow from any surface water collection system should not be greater than the volumes of water which flowed from that site as a green field.

However, these standards only apply to modern sites. Previously, housing and highways drainage were built on principles of coping with average rainfall, and were designed for the rainfall levels and groundwater levels of the time. With the effect of climate change over the years, many of these installations are no longer adequate for even average rainfall, let alone the 1 in 38 year event that occurred on 20th October.

Many of the sewers in Ilminster are combined foul and surface water systems. The modelling undertaken for the Integrated Catchment Report indicates that they often do not have sufficient hydraulic capacity to contain flows during a 1 in 5 year (20% annual probability) event. The model indicates flooding to the highway from sewers during the 1 in 5 year event and by the 1 in 20 year event, the model shows that combined flows contribute to property flooding.

Lister Hill, North Street, and the High Street saw large amounts of surface water emanating from the fields uphill of the eastern end of town. This water is likely to have carried large amounts of soil and debris, and could well have caused gullies and drains to become impaired on the night. Residents felt that gullies and drains were blocked in any case before the event.

The Shudrick Stream was the eventual recipient of large amounts of this runoff water, which caused it to also flood. The Shudrick Stream runs through a culvert underneath the Tesco filling station, and there are reports that this became partially blinded with debris during the night, adding to the flooding issues, although this is not supported by photographs. There are varying reports of the size and extent of this drain, ranging all the way up to 'big enough to stand up in', although EA records show it is only 600mm in diameter. Ownership is also uncertain, but the EA would have flood-related responsibility as this is a main river.

In Sea, there were reports that highways drains in Green Meadows were blocked.

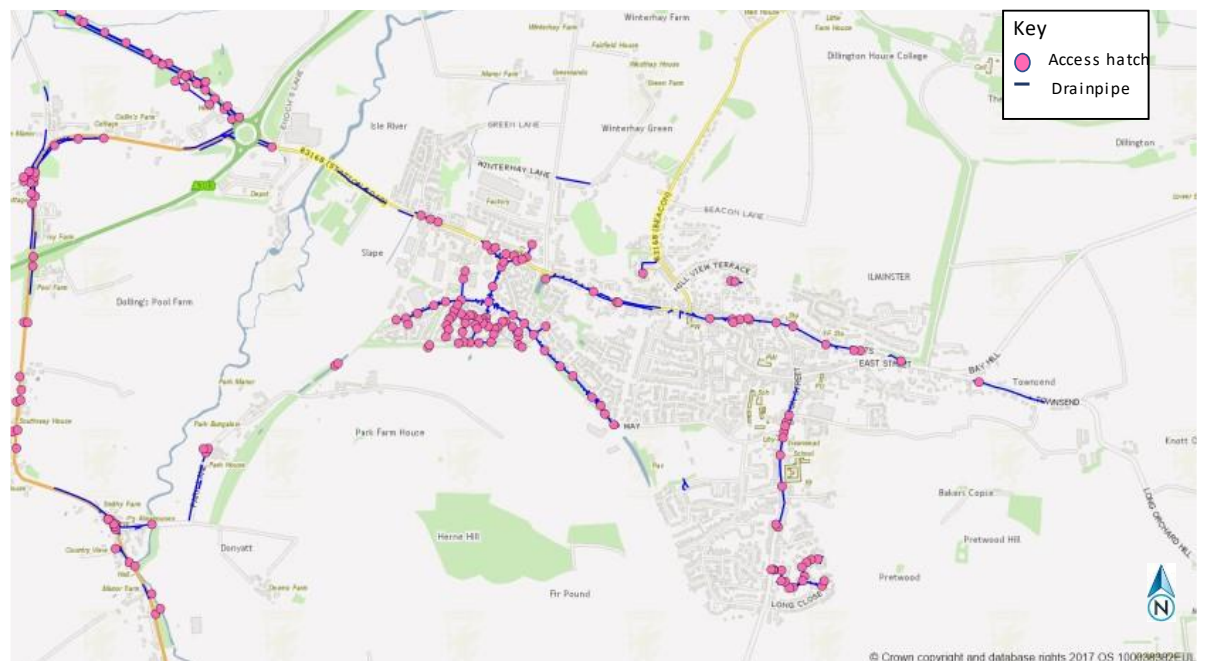


Figure 16: Highways surface water drainage pipes in town

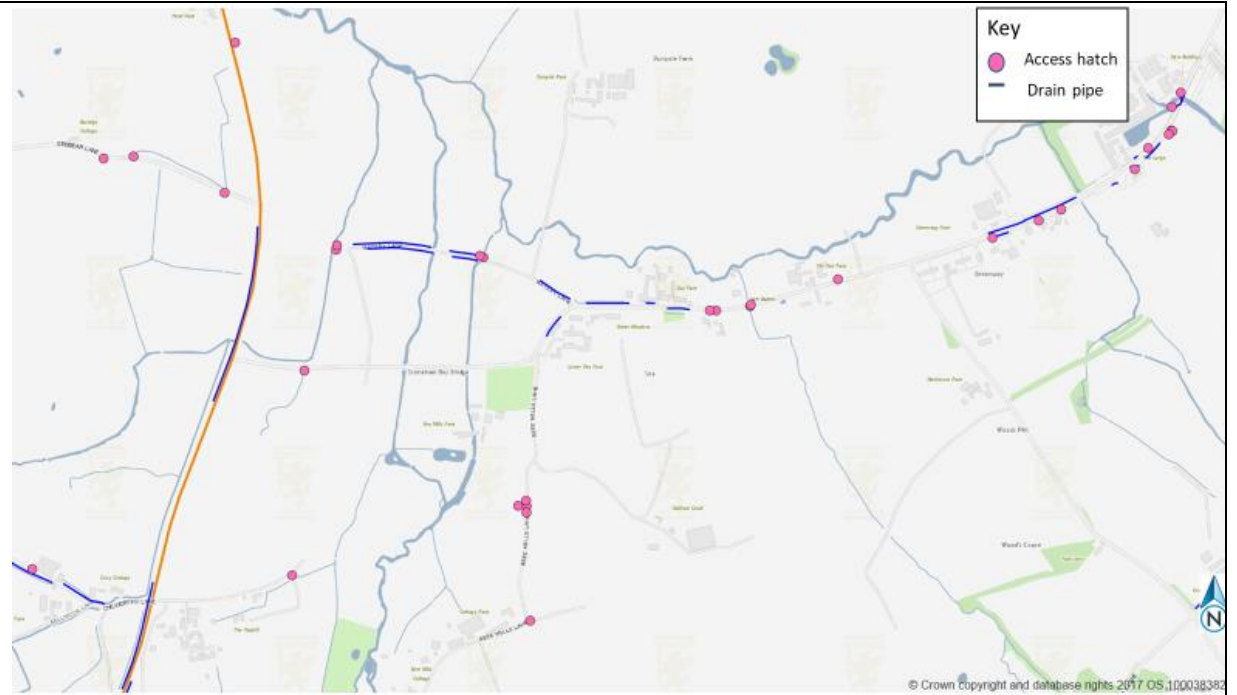


Figure 17: Highways surface water drainage pipes in Sea



Figure 18: Highways gullies in Ilminster

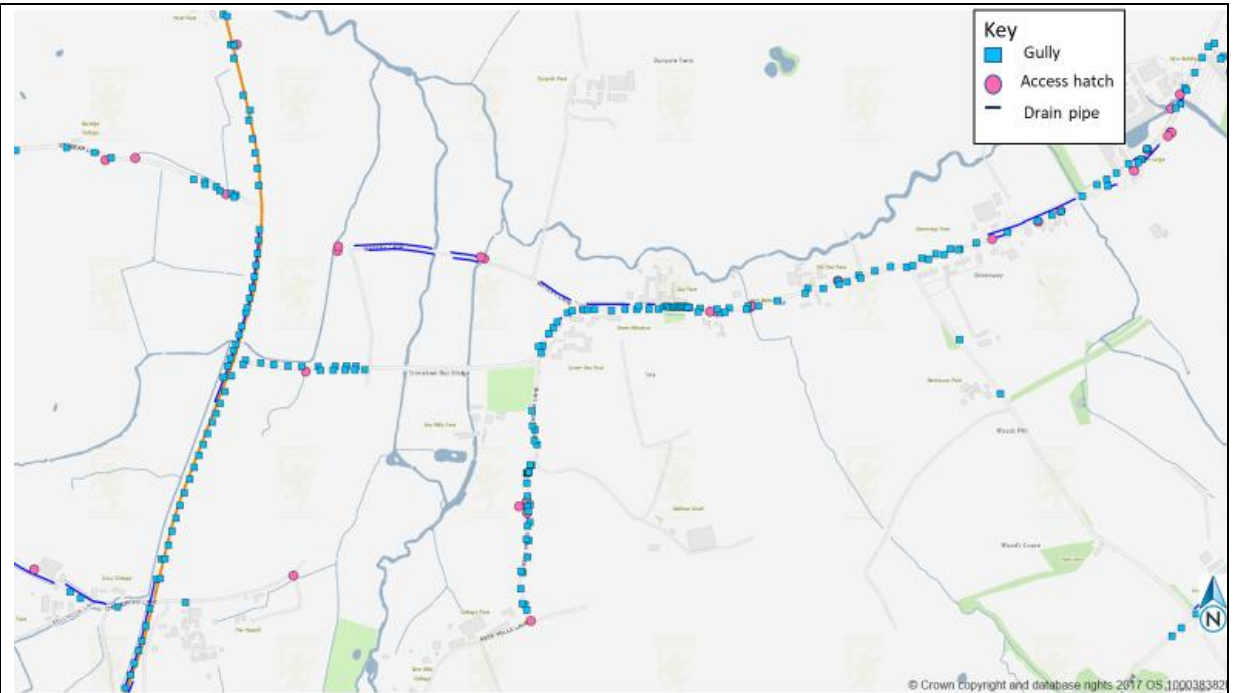


Figure 19: Highways gullies in Sea

The drainage network around the affected areas is extensive, as the figures show. However, residents and others have noted some significant problems with draining the accumulated rainfall during the incident.

In part, this could just be due to the severity of the rainfall – during a flooding incident, it is very difficult to tell if a gully is blocked, or if it just being overwhelmed by the sheer volume of water. Many gullies reported as blocked by residents could be due to this overwhelming effect.

Current design standards for highways drainage require drains to cope with a 1 in 5 year event plus 20% allowance for climate change, and that a 1 in 100 year event not exceed the bounds of the highway. Drainage meeting the current standard would not have coped with the intensity of rainfall during the flood event, and would have overflowed onto the highway or failed to drain all the water away even without any obstruction.

When a new housing estate is built, planning policy states that the outflow from any surface water collection system should not be greater than the volumes of water which flowed from that site as a green field.

However, these standards only apply to modern sites. Previously housing and highways drainage were built on principles of coping with average rainfall, and were designed for the rainfall levels and groundwater levels of the time. With the action of climate change over the years, many of these installations are no longer adequate

for even average rainfall, let alone the more intense events we have seen in recent years.

Within the residents' testimony of the flooding to Home Farm Park and Holway Park there were many references to 'the bund behind Home Farm Park'. Investigation has revealed some of the history and detail of this bund, and a cattle grid installed around the same time on Station Road.

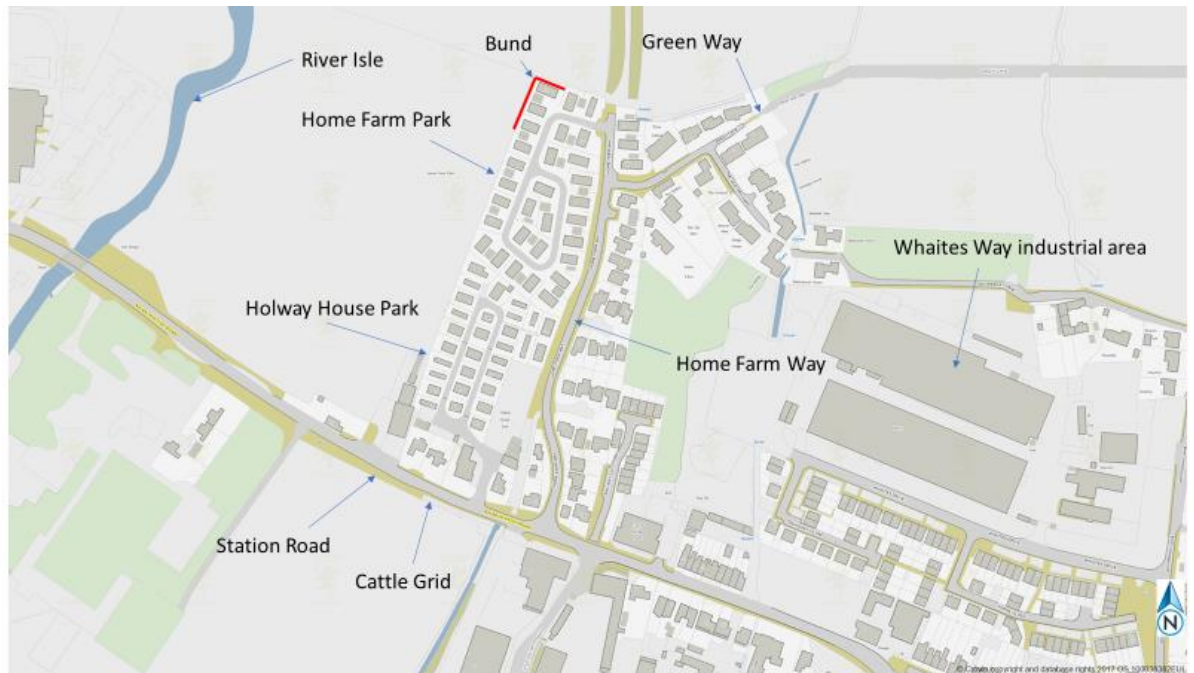


FIGURE 20: BUND LOCATION.

A copy form has been found, dated 26th June 2013, which details the application by Ilminster Town Council and the West Ilminster Flood Mitigation Group (made up mostly of residents of Holway House Park and Station Road). This form details the proposal to construct a bund, at the back of the north most corner of Home Farm Park, and a cattle grid and ditch along Station Road, as shown in the following maps:

Bunds
Around
Station Road
and Home
Parks

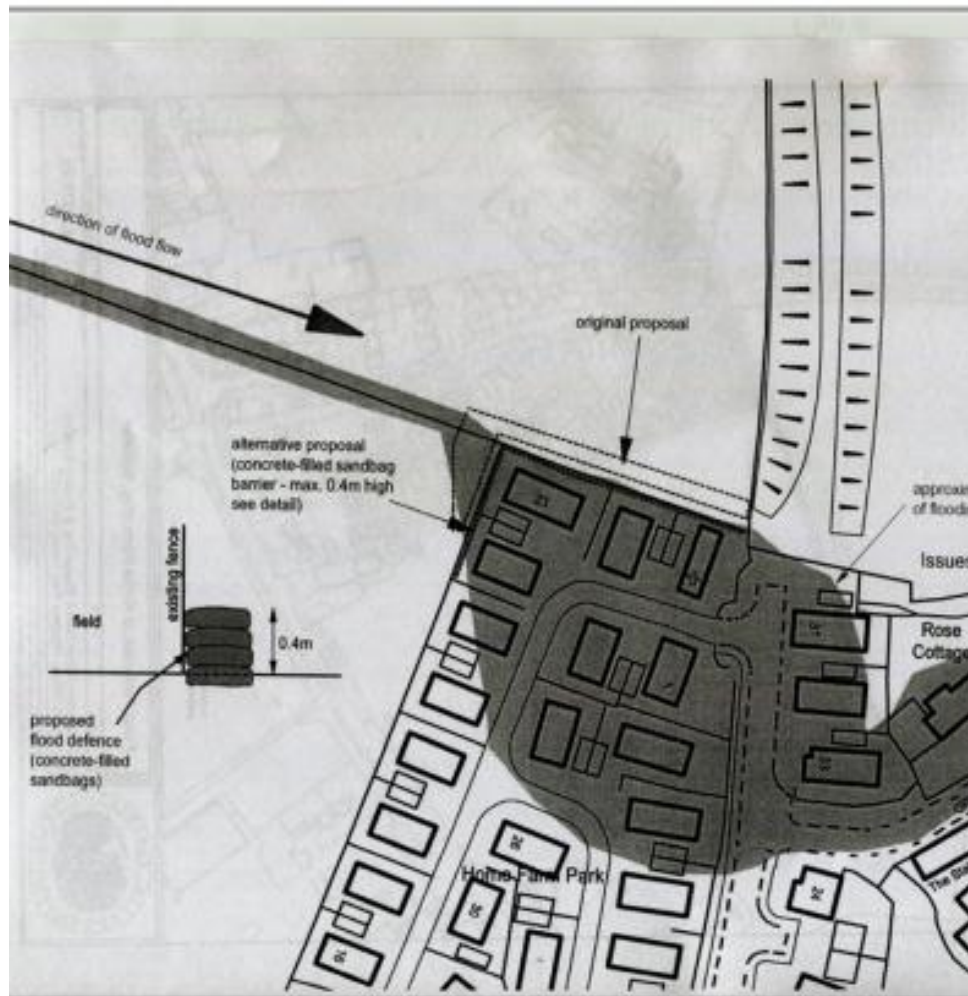


Figure 21: Proposed bunds at the back of Home Farm Park.

The deep grey area shows the area flooded in 2008.

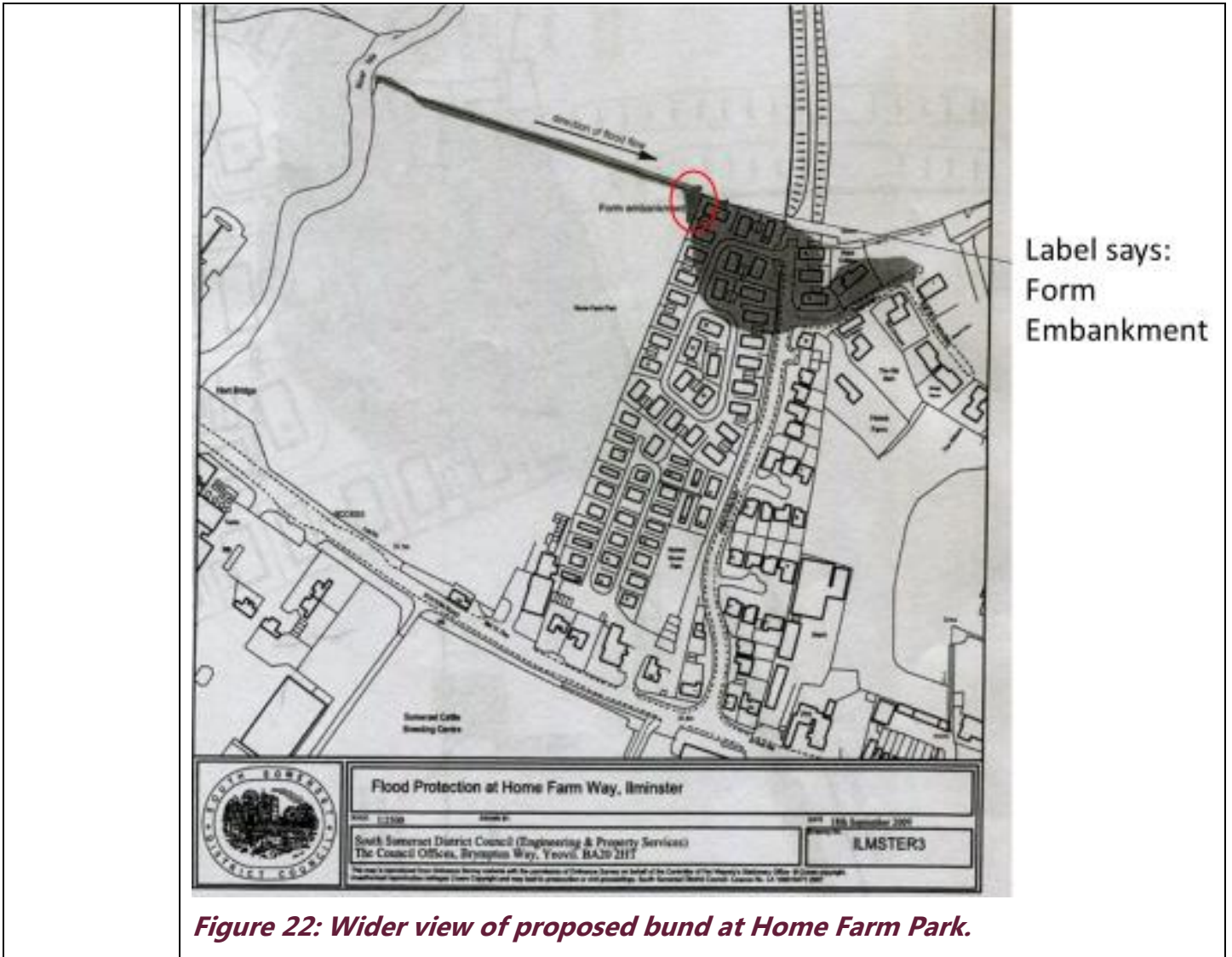


Figure 22: Wider view of proposed bund at Home Farm Park.



Cattle grid to be located at gate, and ditch along Station Road

Figure 23: Proposed cattle grid and ditch on Station Road.

Further works were proposed to install a cattle grid structure next to the drainage ditch on Station Road, designed to divert water coming across the field away from the main Station Road surface, and down the ditch that runs alongside the old station area.

SCC records show that the funds were granted to Ilminster Town Council as requested. However, there are other records which suggest (but don't state explicitly) that this funding was used only to build the cattle grid and drainage system on the south of Station Road. In the event, the bund was built by South Somerset District Council on 23rd September 2014. The bund, ditch and cattle grid are all visible on site. Furthermore, the bund is visible on Lidar data¹, and the cattle grid has been referred to during residents' testimony of the October 2021 event. Details of the construction of the cattle grid were included with the application, but unfortunately full details of the proposed bund were not included. As originally applied for to Somerset County Council, it had a central core of sacks of concrete,

¹ [LIDAR terrain map of \(archiuk.com\)](http://archiuk.com)

with an earthen bund of unspecified original height over the top. However, it is not known whether this was how it was actually built, nor what the design parameters of the bund were; it appears to have been constructed in response to floods in the area in 2008, but it is not known whether it was designed to withstand, for instance, a 1 in 100 year rainfall event, or another parameter.

The land that the bund is on belongs to Dairygold, however it appears that their land agents were unaware of the bunds existence. Residents around the Home Parks, Green Lane and Old Orchard have produced various records around the construction of the bund. They state that the bund was constructed by SSDC on 23rd September 2014, over the course of a single working day, using bulldozers. They state that the scheme was designed and supervised by an SSDC engineer, now retired. Another officer who worked alongside this engineer, and still works for SSDC, has managed to track down some paperwork relating to the original installation.

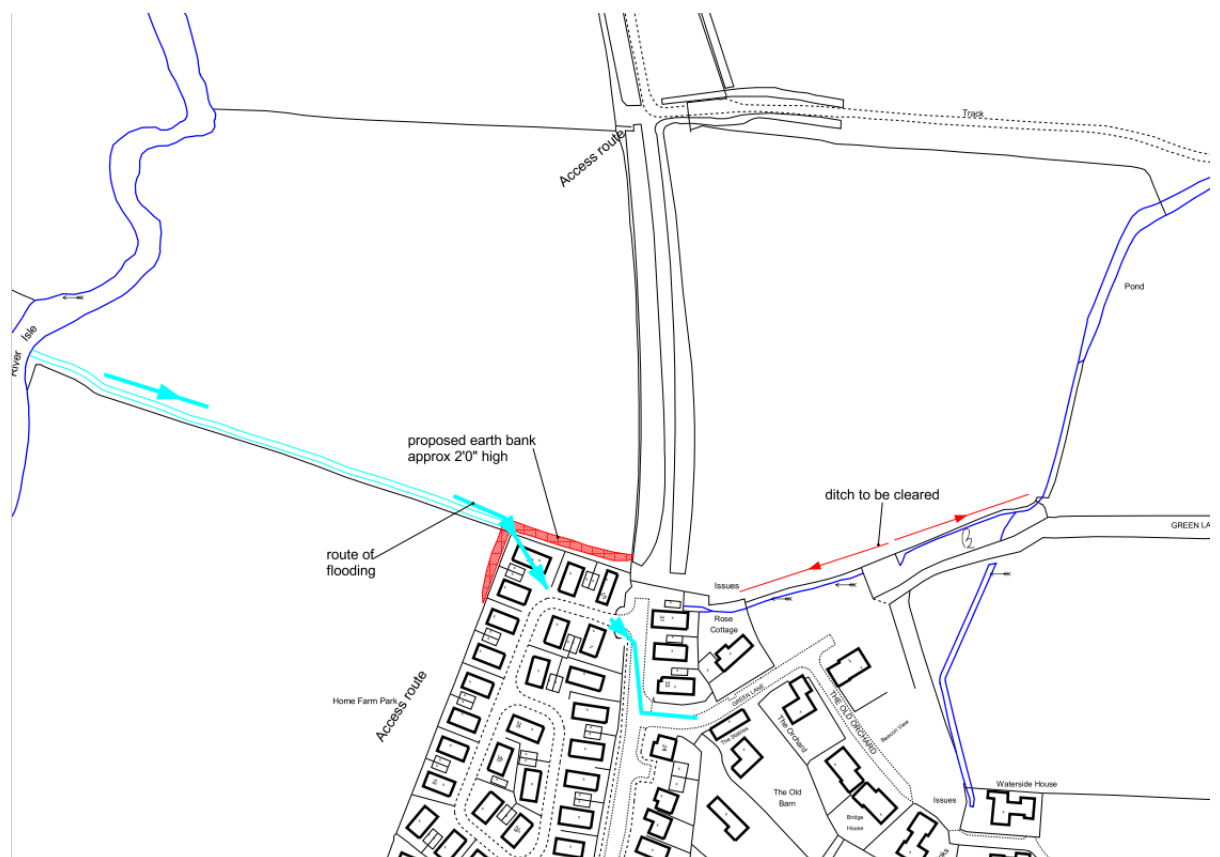
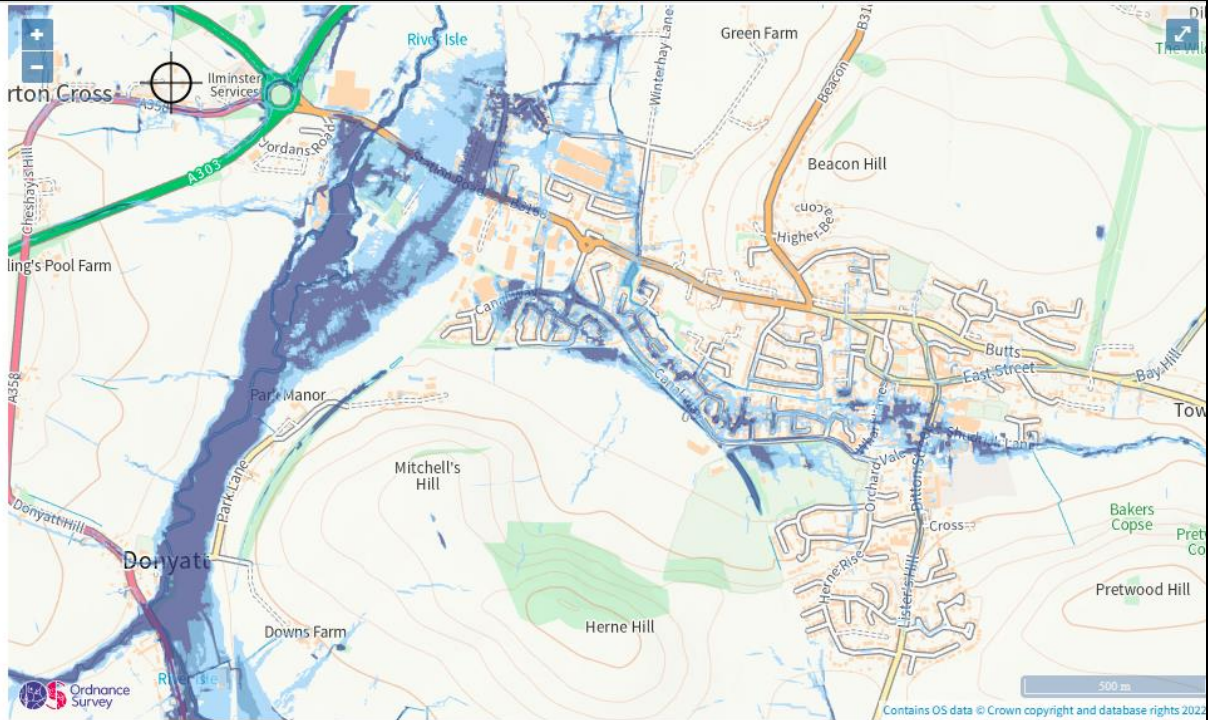


Figure 24: Design records for Bund around Home Farm Park, SSDC.

Reports from residents as to the current state of the bund and the reason for it vary. Some maintain that the bund has degraded and been flattened, others that it is intact. Some maintain that an increase in size of the gardens of some of the Park Homes has intruded into the bund, some that annual ploughing of the Dairygold

	<p>field has caused problems. A survey of the bund needs to be undertaken as part of re-instatement and/or improvement works. It may be better, rather than try and restore the bund to an original condition of unknown resilience, to ascertain what design parameter we wish to use and rebuild to that standard.</p>
<p>Rainfall Information:</p>	<p>There was very heavy rain on the 20th and 21st of October, on the back of previous heavy rain saturating the catchment.</p> <p>The amount of rain, which the Environment Agency estimate at around 62 millimetres in 24 hours, was 71% of the monthly average, just in that 24-hour period.</p> <p>The nearest river gauge is at Donyatt, which is just upstream of Ilminster. This gauge is used by the Environment Agency to predict flooding and issue flood warnings for the main river Isle. On the 20th of October, this gauge returned the record highest level for the river Isle, over the gauges 30-year history.</p> <p>Below is an excerpt from EA Monthly water situation report for Wessex:</p> <p>“October was a wet month for Wessex, with ‘above normal’ rainfall at 187% of the LTA (149 mm). There was light rain at times throughout the month, but the main rainfall events occurred on 1 – 4, 19 – 20 and 28 – 31 October which combined produced around 90% of the month’s total rain. The highest accumulation was on 19 and 20 October when 33% of the month’s rain fell, distributed across most of Wessex.”</p>
<p>Surface Water:</p>	<p>Most of the flooding witnessed around eastern Ilminster during the event was apparently due to heavy rainfall accumulating and moving across the land – this is usually referred to a pluvial or surface water flooding.</p> <p>The basic mechanism appeared to be the movement of overland flow downhill, and as the east of Ilminster is in a valley, heavy flooding was experienced in these topographical low areas around Ditton Street and the Shudrick Stream.</p> <p>Flows in transit also caused significant flooding and damage to roads and property, and carried the debris from this along, blocking drains in the process.</p>



Extent of flooding from surface water

● High ● Medium ● Low ○ Very Low ⊕ Location you selected

Figure 25: Surface water flood risk map for the Ilminster

Maps later in this report will show the estimated flow paths of flood water through Ilminster.



Extent of flooding from surface water

● High
 ● Medium
 ● Low
 Very low
 ⊕ Location you selected

Figure 26: Surface water flood risk for Sea.

Surface water flood risk maps show the risk of flooding from pluvial sources – from rainfall accumulating and forming an overland flow. It considers the drainage systems in the area. It does not show predicted fluvial flooding – that is, flooding resulting from rising levels in rivers and streams. However, the two effects often occur together, as both pluvial flow and rivers and streams will naturally locate in the lowest topographical points.

The maps show four different grades or frequencies of flooding – dark blue areas (high risk) will flood most frequently, with an average 3.3% chance of flooding in each year.

Mid blue areas (medium risk) will flood only after heavier rainfall – in these areas there is an average chance of flooding between 1% and 3.3% each year.

Light blue areas (low risk) only flood after very heavy rain – here there is an average chance of flooding of between 0.1% and 1% per year.

Areas with no colouration have an average chance of flooding each year of less than 0.1%.

In context, the rainfall event that fell on Ilminster and Sea in October 2021 has a 2.6% chance of occurring every year.

The western side of Ilminster was particularly badly affected by fluvial flooding from the River Isle. The river appears to have bypassed the Environment Agency flood defences upstream of the Hort bridge and spread out over the old Dairygold site and fields next to the river. It then entered the two park homes sites and surrounding roads, both from the east and from the south, as water ran across Station Road, as shown in figure 27. It also affected the Rose Mill Industrial estate on the Horton Cross side of the river.

The nearest fluvial gauge is at Donyatt. The highest level recorded at this gauge during the incident was 2.649m on the 20th of October. This had dropped slightly to a high of 2.608m the following day. This is not the highest this gauge has ever recorded: 3.91m was recorded on 16th March 2013 and 4.11m on 17th March 2014. This is from riverlevels.co.uk, where the records only go back as far as January 2013.

Fluvial:

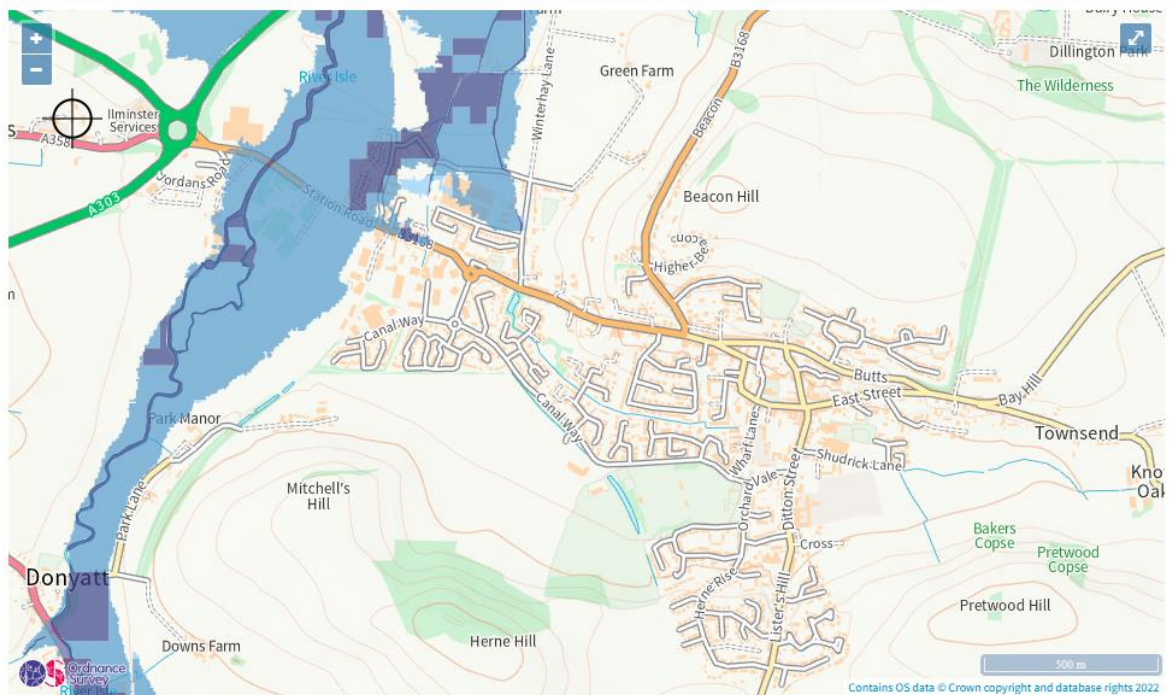
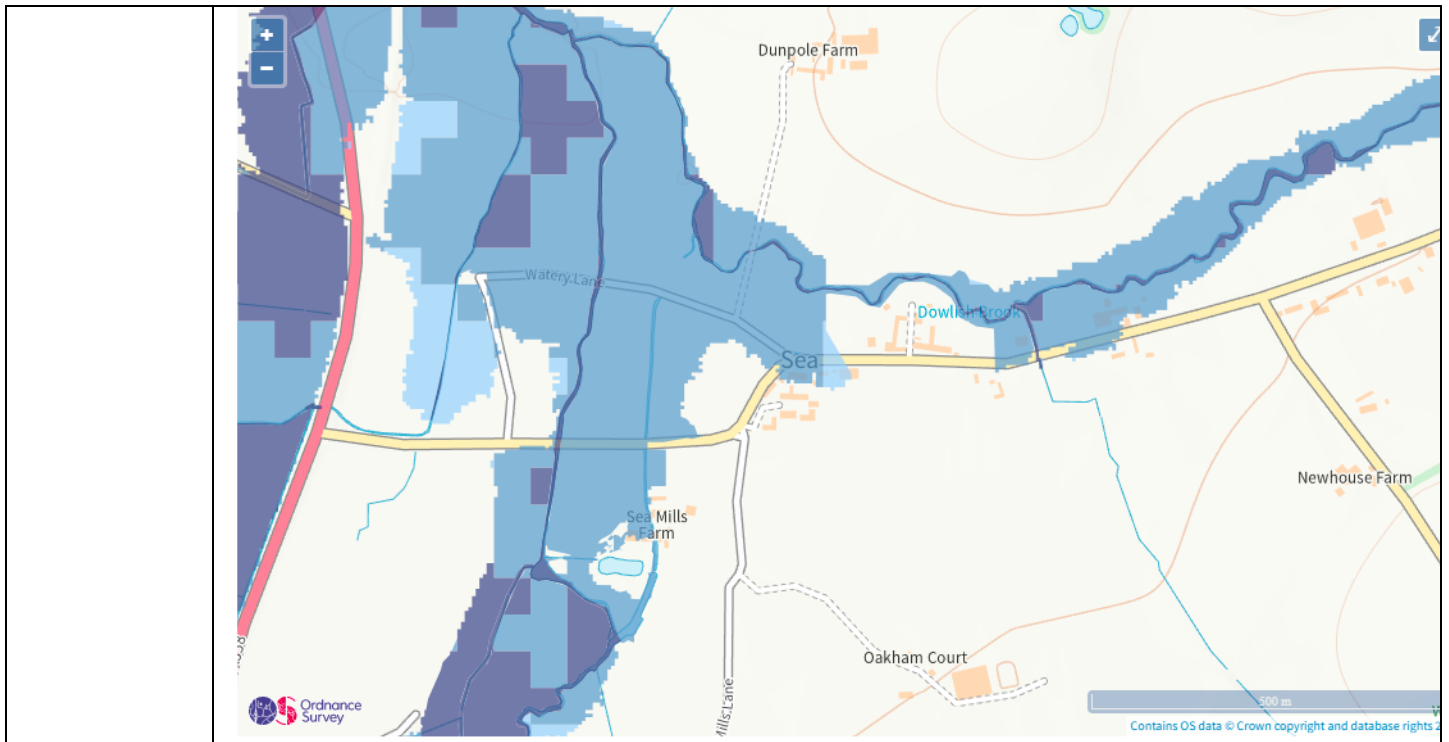


Figure 27: Fluvial flood risk Ilminster



Extent of flooding from rivers or the sea

● High
 ● Medium
 ● Low
 ● Very low
 ⊕ Location you selected

Figure 28: Fluvial flood risk Sea

The EA defences in Ilminster undergo routine maintenance inspections three times a year. During these inspections, the embankments are subject to hand paring to maintain conveyance and debris is removed from the weir at Hort Bridge. As part of recovery works of the 2013/14 flood, the raised embankment on the right bank upstream of Hort Bridge was extended to tie into high ground. During the latest inspection of these assets, they were all deemed to be up to the standard to which they had been designed in the 1970's. One of the reasons the EA is bidding for funds for a flood alleviation study, is to bring flood protection in this area up to a more modern standard.

The study area, particularly around the residential home parks, has a network of smaller streams and drainage ditches, aside from main rivers. The ownership of many of these watercourses is unclear but is assumed to be riparian. In several areas these watercourses were directly implicated by residents in contributing to the flooding, either because they felt they had not been kept clear, or they were simply overwhelmed by the volume of water.

Coastal:	There is no risk of coastal flooding in this area.
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<p>Groundwater :</p>	<p>Most of Ilminster is underlain by loam and clay soils with impeded drainage. This is seen in the centre of the town and through Herne Hill to the south. To the north, the slopes of Beacon Hill, are generally freely draining loamy soils, while Pretwood Hill is overlain with shallow soils over chalk/ limestone.</p> <p>The available mapping indicates that the ground around Ilminster has poor infiltration, which indicates that runoff from rural areas is likely to be high. Historically the land on which Ilminster has been developed was low lying land known to be water meadows and marsh land.</p> <p>The eastern parts of Ilminster, and the catchment to the east, are underlain by a Principal Aquifer (able to yield significant quantities of groundwater). Central Ilminster and western Ilminster are underlain by Secondary A and Secondary undifferentiated aquifers (small amounts of groundwater stored in cracks and fissures in the rock). The EA also identifies the catchment as being in an area of Ground Water Vulnerability.</p> <p>In summary; the geology underneath Ilminster makes it more likely to flood. Once rain falls it takes a long time to drain away.</p>
<p>Soil Moisture Deficit:</p>	<p>The Soil Moisture Deficit generally decreased throughout October, interspersed with a slight increase due to a relatively drier spell towards the middle of the month. The heavy rainfall on the 19th and 20th October decreased deficit to 12 mm by the end of October which is 40% less than the LTA (40 mm) but similar to this time last year (15 mm).</p> <p>When the rain fell during the storm event, the ground was already saturated. This increased the severity of flooding as water could not be absorbed into the soil, and instead ran over the top to form surface water flooding.</p>
<p>Probable Causes</p>	<p>West end of Ilminster:</p> <p>The Environment Agency compiled the following map of flow paths at the west end of Ilminster during the event:</p>

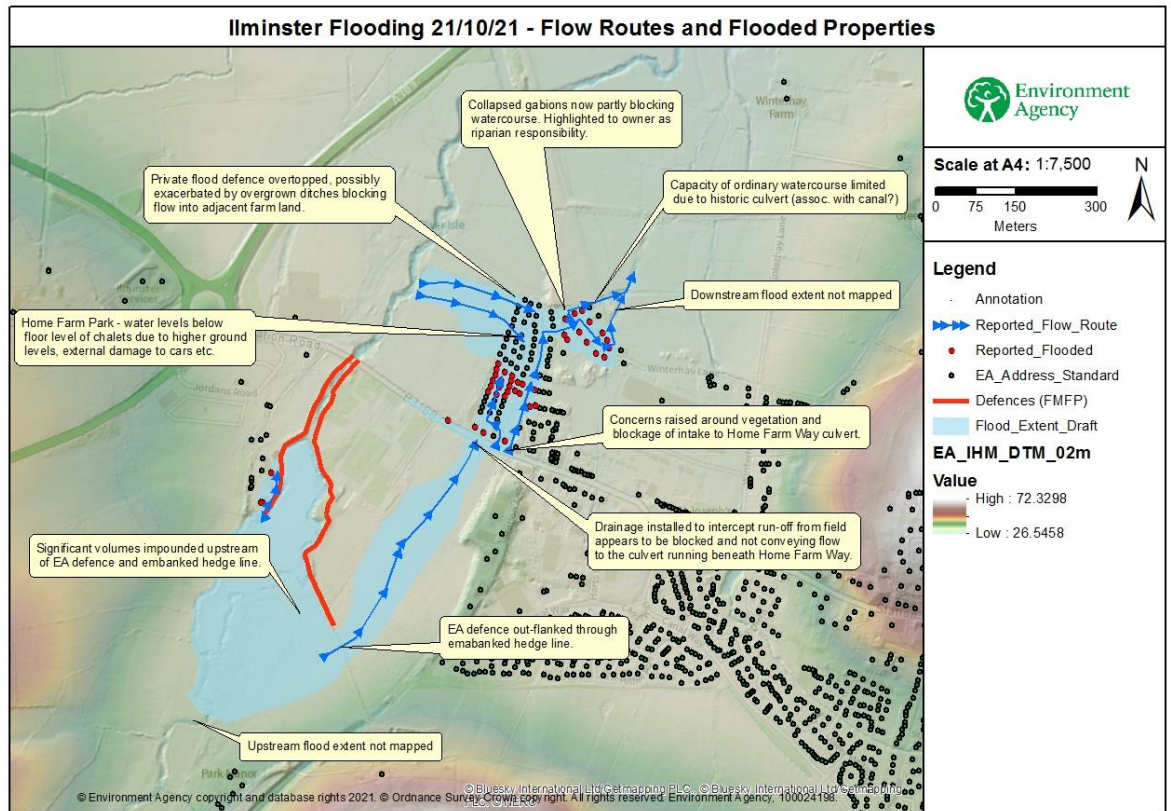


Figure 29: Flow paths at the west end of Iminster. Source: Environment Agency, November 2021.

The information in this map represents an outline estimate of the flood mechanisms and flooded properties during the flood of 20/21 October 2021 on the west side of Iminster. It is based on information gathered in the aftermath of the flood and may not be a complete and accurate summary, but is based on the best data and resource available at the time.

Data collected from residents of the area during the drop-in session at The Shrubbery, Iminster, on 17th November 2021, suggest the following additional mechanisms:

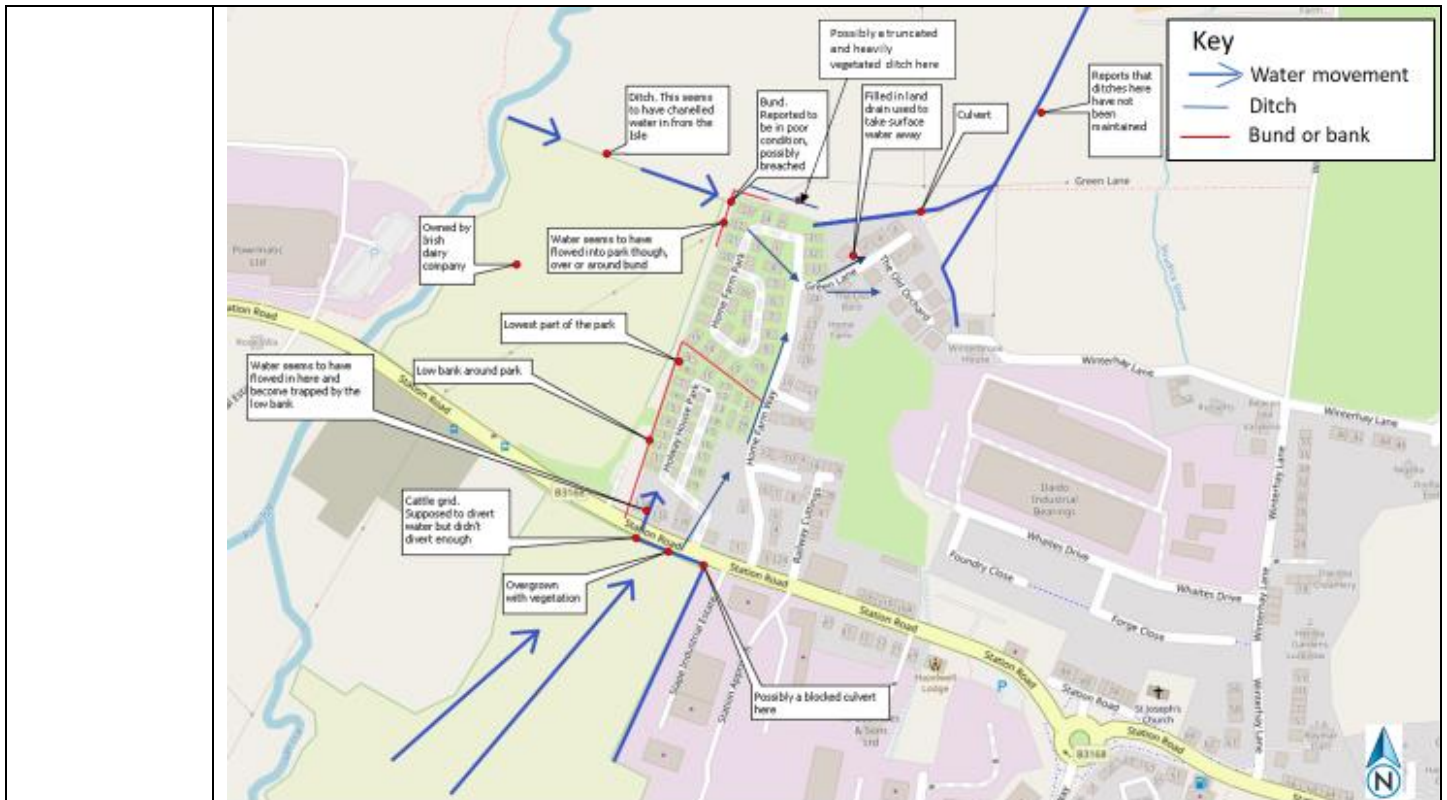


Figure 30: Further detail of west Ilminster

Most of the volume of water has come from the river Isle. The river spilled over its banks both to the north of the Hort bridge, and around the flood defences to the south of the bridge. Water from the northern spill flowed up over the field, to the west of Home Farm Park. From here it flowed through, around and/or over the bund into Home Farm Park, and across into Green Lane. Water coming up from the south combined with pluvial flow across the fields, flowed into and over the cattle grid, and across Station Road into Holway House Park and the houses next to it. This water was trapped in situ by the low bank around the park. Another portion of the water that came up from the south flowed across Station Road and across into Home Farm Way. This flowed down Home Farm Way to join up with the water from the north in Green Lane and the Old Orchard.

A resident has reported that, during development of Green Lane in 2018/19, changes were made to the culverting system and ground levels, which has negatively affected the passage of water away from the area. This should be considered within future modelling and flood mitigation planning. The ditches downstream of Green Lane are also reported as being overgrown, and the owner (assumed to be riparian) should be encouraged to clear the excess.

A lot of work has been done previously to try and protect this area from flooding. Not all elements of the scheme seem to be functioning as intended, and they may not have been correctly specified for an event of this size. The EA defences were built in the 1970's. The EA is bidding for money to undertake a flood risk management study for Ilminster over the next couple of years, subject to gaining central government funding. If successful, this will review the current and future flood risks, including the current defences, as well as considering potential future partnership options to better mitigate flood risk, taking account of any developments in the area.

East end of Ilminster:

Pluvial flow from the hills to the north and south of Ilminster flowed down into the centre of town and gathered in the low spot at the junction of Ditton Street and Shudrick lane. Flow from the north came from Beacon hill, down the track past the allotments, along Old Road and into North Street. Water heading into town from the south flowed down Listers Hill and into Ditton Street. Rainwater also flowed in from the fields to the east of Ilminster and down Shudrick Lane, where it again collected at the low point. This was added to by water from the Shudrick Stream itself, which came out of bank, possibly due to the culvert that leads under Ditton Street becoming blinded with debris or overwhelmed by the large quantity of water.

EA, local residents and Councillors observed these flow paths, and also that the pluvial flow comes off fields, carrying soil, stones, and debris with it. This will tend to collect in and possibly block drains during an event. Long term local residents also observed the high volumes of water coming from these sources, and said that they felt even free running drains would not have coped with all of it.



Figure 31: Pluvial flows around east Ilminster

Residents have raised the issue of the crops being grown around the periphery of Ilminster and the surrounding villages. Maize has recently started to be grown, and this particular crop is associated with high levels of runoff. This could be exacerbating the surface water and pluvial flow element of the flooding experienced.

Sea:

Residents reported that water entered their properties from the highway, via the front and back doors. One resident further reported that highways drains outside their property were and are blocked. Sea is at a low point in the landscape, and it's entirely possible that the surface water running down Watery Lane originated on Herne Hill or Pretwood Hill as rainfall. There is also a stream just to the north of the main road through Sea, which also crosses the road near the dairy farm. There are no

	<p>records of flow in this stream at the time, but it is possible that the water running through the centre of Sea originated, in whole or in part, from this watercourse. More detailed data and/or modelling will be required to determine the origin of this water.</p>	
Risk Management Authority Responsibilities	<p>See Appendix (link)</p>	
Risk Management Authority Actions During and Immediately After the Event	Somerset County Council (in their roles as LLFA and Highways Authority)	<p>Highways Authority: Were not called out on the night. Began clear up work the following day.</p> <p>LLFA: No emergency role. After the event commissioned the Section 19 report and began to gather information from residents and RMAs about their activities, and when and how flooding happened.</p>
	Environment Agency	<p>Issued flood warnings. Flood warning was issued at about 10:20pm for the river Isle from Chard Reservoir to Hambridge. Levels continued to rise, peaking around about 11:30pm.</p>
	Wessex Water	<p>No emergency role.</p>
	Devon and Somerset Fire and Rescue Service	<p>Fielded 33 calls from Home Park Farm, Holway House Park, and Station Road. Some were to rescue people from vehicles in water. Undertook specialist rescue by boat from the caravan park for 10 people.</p>
	South Somerset District Council	<p>The duty Civil contingency officer (CCO) was called at 10pm. They called Fire and Rescue at 22:36 who confirmed that they were dealing with multiple incidents and were only attending where life was at risk. Peak rainfall was predicted for midnight, at around 60mm/hour. The CCO was called again by Police at 2am, and informed that Fire and Rescue were deploying boats to rescue people from the park homes</p>

		<p>development. It appeared that the river had burst its banks and mixed in with sewage from a septic tank. At 2:30am the CCO identified a rest centre nearby in case it was needed. At 2:45am Fire and Rescue confirmed that 8 people were being rescued, and the CCO purchased rooms at a nearby hotel for them. The CCO was also trying to sort out taxis who could get there without going through flood water, when Fire and Rescue reported they had found a volunteer with a Land Rover to shuttle people to the hotel. The first evacuees arrived at the hotel at 4am.</p> <p>Lines of communication became confused early in the event because some information was going directly between SSDC and others, rather than via the central control system.</p> <p>There also seems to be an emergency duty team that was available but not used. This could have helped to make things run more smoothly. There were also some issues on the night with CCOs not being able to get through to the police control centre because all lines were busy, and with confusion over payment for the hotel rooms.</p> <p>SSDC Councillor Sherman took calls from the public about Ditton Street flooding as he lives near there. He communicated on to other (town) councillors, SSDC, SCC and emergency services. Town councillors were out delivering sandbags around Ditton Street area, but the water was already in some houses. No-one contacted their office about the problems at Station Road end, even by a couple of days later.</p> <p>After the event they have been talking to other agencies and community members about community resilience arrangements, supporting Parish Councils with the development of community resilience plans, and developing grant applications for resilience equipment.</p>
	<p>Avon and Somerset Police</p>	<p>No recorded actions in Ilminster on the night.</p>

	Parish Council	No report from Sea Parish Council.
Recommendations	<ol style="list-style-type: none"> 1. Ilminster Town Council are keen to develop a resilience plan and a local resilience group – this should be progressed in concert with the SRA, and possibly the EA. 2. Stakeholders should liaise with FWAG and local landowners to discuss the issue of maize growing in the area, ascertain if it is a problem, and see if more benign crops or growing methods can be found. 3. The Shudrick Valley and the area around the River Isle have the potential for Natural Flood Management (NFM) schemes. These should be investigated as part of further work to model flood flows in the area and evaluate mitigation schemes. 4. Anecdotal evidence suggests that many residents and landowners have an incomplete understanding of riparian responsibilities. Communities should be educated on riparian rights and responsibilities. SRA may be best placed to do this. 5. There was some confusion during the incident as to communication between parties and the use of the Emergency Duty Team. In particular, this should include the Town Council and the SSDC Homelessness Team, who were unaware of the problems at Station Road and the residential parks until late the following day. Emergency plans should be reviewed to ensure that all parties involved with flooding incidents to have a method statement setting out line of communication, contact details, and full information about who can be called upon to do what during an emergency. 6. Audit gully cleaning contractors to ensure the job is being done correctly, and see if improvements can be made – e.g. informing residents in advance of gully clearing so cars can be moved to facilitate access. The frequency of gully cleaning has already been increased from around every 4 years to an annual round. 7. It took a long while to get the electricity back on at the residential parks, and this delayed people getting back into their homes and being able to start getting dried out. In future Western Power Distribution need to prioritise getting vulnerable people reconnected so they can get back into their homes. 8. Information needs to be distributed more widely about how to prepare yourself and your property for flooding. 9. Information needs to be distributed more widely about who to contact with different concerns e.g. to whom should people report a blocked culvert, or an overgrown ditch? 10. There should be a review of post incident support to residents, to ensure that it is adequate and correctly targeted. Those most at risk are mainly elderly and often uninsured. They can find it hard to access help and services, due to mobility problems or lack of internet access. People often need help 4 or 5 days after an incident when they can no longer stay with relatives or in a hotel. This package also needs to include mental health care, as many are completely shocked and bewildered by what has happened. 	

	<ol style="list-style-type: none"> 11. The modelling that has been done for the integrated catchment study to be extended to include fluvial and surface water movement around Ilminster. The EA are hoping to start a flood alleviation study next year (23/24), subject to a funding bid (previously mentioned), which they hope to link to the previous integrated catchment study. 12. As a separate piece of work on their modelling programme, they are updating the catchment fluvial model for the River Isle and adding in the Shudrick Stream for the first time. This model will be at a catchment scale (going from head of main river down to Isle Brewers near the Somerset Levels), so it will cover a much larger area than just Ilminster. A greater local focus in Ilminster will come from the flood alleviation study. The catchment fluvial model will likely not complete until 2025 at the earliest. 13. Changes in local planning policy should be considered. Currently the standard requirement for drainage in a housing development is to cope with a 1 in 5 year event for highways drains, and to cope with greenfield runoff rates for surface water drainage. Consideration should be given to adopting a higher standard, and/or specifying a policy of betterment. 14. The path of the old canal in Ilminster should be investigated, and it should be ascertained which other waterbody it joins into and where. Any changes required should be communicated to the Environment Agency and Ordnance Survey as appropriate. 15. Further work needs to be done to understand the parties responsible for ownership and improvement of the bund around the Park Homes. The condition of the bund needs to be examined and improved or repaired as required. 16. The culverting of Green Lane should be looked at to see if changes have been made without the proper permissions, and the arrangement should be taken into account in flood modelling and mitigation strategies.
<p>Stakeholders and Funding Opportunities</p>	<p>The EA have overall responsibility for the management of flood risk on main rivers in England and Wales. This means they have powers to oversee, undertake and regulate flood risk management works on Main Rivers. Other risk management authorities and individuals, such as riparian owners, can be authorised by the EA to undertake works on Main Rivers in accordance with the environmental permitting regulations. Flood risk management works, such as projects and maintenance, depend upon the availability of central government funding. The availability of funding from central government (DEFRA) depends on a comprehensive assessment of options, including cost/benefit analysis, and on the environmental impacts. Central government funding might be available to cover part of the cost of the works; in such cases the rest has to be found from other local sources, such as Local Levy, local authorities, other government departments, or the private sector. Where</p>

	<p>the EA or another risk management authority are not funded for maintenance or development works, responsibility falls to the riparian owner. The EA can provide advice in such cases.</p>
Development Planning	<p>The most recent local plan for Ilminster (adopted 2015) mentions fluvial flooding as a constraint to development in Ilminster, but surface water flooding is not considered.</p> <p>Previous local plans have identified an area in the Shudrick Valley as being allocated for housing. This area was rejected by the Planning Inspector prior to adoption of the latest Local Plan.</p> <p>The Plan also brings forward allocations of employment land with an enabling development of housing for sites around the River Isle, in the vicinity of Hort Bridge, and between the isle and the static home parks. Flooding is considered as a significant issue for the sites around the River Isle, and the improvement of flood defences or other suitable mitigation solutions along the river should be a core consideration by any developer. The issues of surface water flooding need to be taken into account here too, and again any developer should be required to provide betterment on this issue.</p>
Ongoing Works	<p>The modelling that has been done for the integrated catchment study is to be extended to include fluvial and surface water movement around Ilminster. The EA is hoping to start a flood alleviation study next year (2023/24), subject to a funding bid, which they hope to link to the aforementioned integrated catchment study, previously completed by SCC and Wessex Water. This will require the input and collaboration of all other authorities, communities, and stakeholders.</p>
Planning Policy and Future Development	<p>In order for a planning application to be granted, they must have conditions applied to them or a design detailed within them which ensure that surface water runoff from the development is attenuated on site and leaves the development at no more than greenfield runoff rates. This should ensure that no development makes flooding in the area around it worse. This is in accordance with National planning policy and the Government standards for SUDS, published on the .gov.uk website. These documents deal with rainfall intensity of a 1 in 1 year and 1 in 100 year event – much more common than the event covered in this report.</p> <p>In order for the Local Authority to require any stricter standards to be applied (such as accounting for events at greater than 1 in 100 years return period, or requiring runoff at less than greenfield rates, or if development is proposed within Flood Zone</p>

3, it should also seek to provide flood mitigation to existing properties, as well as those proposed in the new development), this needs to be stated in local planning policy.

It is recommended that further work be undertaken with a view to requiring stricter standards to be applied to surface water management by developers in affected areas in and around Ilminster.

Appendix: Risk Management Authority Responsibilities

<p>Risk Management Authority Responsibilities</p>	<p>Somerset County Council (in their roles as LLFA and Highways Authority)</p>	<p>As the LLFA they are required to develop a strategy to tackle local flood risks, involving flooding from surface water, 'ordinary watercourses', for example ditches, dykes, and streams, groundwater, canals, lakes and small reservoirs. Along with all LLFAs, they are required to:</p> <ul style="list-style-type: none"> • investigate all significant flooding incidents; • maintain a register of flood defence assets; • act as a statutory consultee in the planning process on surface water for major developments; and • build partnerships and ensure effective working between authorities that have control over flood risk. <p>They also have to undertake specific tasks associated with the Flood Risk Regulations, and this includes completing a Preliminary Flood Risk Assessment and identifying flood risk areas.</p> <p>As the highways authority they have the lead responsibility for providing and managing highway drainage and roadside ditches under the Highways Act 1980. The owners of land adjoining a highway also have a common-law duty to maintain ditches to prevent them causing a nuisance to road users.</p>
	<p>Environment Agency</p>	<p>The Environment Agency has a strategic overview of all sources of flooding and coastal erosion (as defined in the Flood and Water Management Act 2010). It is also responsible for flood and coastal erosion risk management activities on main rivers and the coast, regulating reservoir safety, and working in partnership with the Met Office to provide flood forecasts and warnings.</p>
	<p>Wessex Water</p>	<p>They manage the risk of flooding to water supply and sewerage facilities and flood risks from the failure of their infrastructure.</p>
	<p>Somerset Rivers Authority (SRA)</p>	<p>Somerset Rivers Authority's main aim is to give Somerset greater flood protection and resilience.</p>

		Somerset Rivers Authority focuses heavily on providing additional maintenance and improvements to rivers and their catchments, roads prone to flooding, and structures such as culverts and drains.
	Devon and Somerset Fire and Rescue Service	The Fire Brigade is typically the lead responder for a flooding incident. The Fire Brigade role includes saving life and carrying out rescue of casualties or persons stranded by flooding, including by boat. They may pump out floodwater.
	Avon and Somerset Police	The police co-ordinate the emergency services during a major flood and help with evacuation of people from their homes where necessary. They also close roads and take other actions to ensure public safety.
	South Somerset District Council	They are key partners in planning local flood risk management. They can carry out flood risk management works on minor watercourses (outside of IDB areas).
	All bodies are required to work in partnership to support the local flood risk strategy, to ensure flood management activities are well co-ordinated, and work in partnership to reduce the severity and impact of flooding.	