



## **Flood Investigation Report**

Flood Incident Report: **Didcot Rail Station Didcot**

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### **Revision Schedule**

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## FOREWORD

One of the roles of Oxfordshire County Council as the Lead Local Flood Authority (LLFA) is to carry out investigations into flooding incidents, if they meet the set thresholds.

### The LLFA will:

- Identify and explain the likely cause/s of flooding;
- Identify which authorities, communities and individuals have relevant flood risk management powers and responsibilities;
- Provide recommendations for each of those authorities, communities and individuals; and
- Outline whether those authorities, communities or individuals have or will exercise their powers or responsibilities in response to the flooding incident.

### The LLFA cannot:

- Resolve the flooding issues or provide designed solutions; or
- Force Authorities to undertake any of the recommended actions.

## CONTENTS

		Page
1.	<b>Introduction</b>	5
1.1	Lead Local Flood Authority Investigation	5
1.2	Flooding Incident	6
1.3	Previous Flood Incidents	6
1.4	Rainfall Analysis	6
2.	<b>Site Location, Potential Flood Sources and Investigation</b>	7
2.1	Site Location and Context	7
2.2	Potential Flood Sources	7
2.3	Drainage Systems	8
2.4	Inspection Results	8
2.5	Remedial Work Undertaken	8
2.6	Future Maintenance	9
3	<b>Conclusion</b>	9
4	<b>Rights and Responsibilities</b>	10

4.1	Communities and Residents	10
4.2	Lead Local Flood Authority (LLFA)	10
4.3	Highway Authority (Oxfordshire Highways)	11
4.4	Water Authority Thames Water Utilities (TW)	11
4.5	South & Vale District Councils	12
4.6	Environment Agency (EA)	12
4.7	Land Owners and Developers	13
5	<b>Recommendations</b>	14
5.1	General	14
5.2	Actions	14
5.3	Property Owners	14
5.4	Lead Local Flood Authority (LLFA)	15
5.5	Highway Authority (Oxfordshire Highways)	15
5.6	Water Authority - Thames Water Utilities (TW)	16
5.7	District Council (DC)	16
5.8	Environment Agency (EA)	16
5.9	Land Owners and Developers	16
6.	<b>Disclaimer</b>	17

## APPENDIX A Location Plan & Incident Plan

## EXECUTIVE SUMMARY

This Flood Investigation Report (FIR) has been completed by Oxfordshire County Council (OCC) under its duties as the Lead Local Flood Authority (LLFA) in accordance with [Section 19 of the Flood and Water Management Act 2010 \(F&WMA\)](#).

### Statutory Context

Section 19 of the F&WMA states that on becoming aware of a flood which meets certain predetermined criteria, the LLFA must undertake a formal flood investigation in order to determine the relevant flood risk management authorities involved and which flood risk management functions have been, or should be taken to mitigate future flood risk. Where an authority carries out an investigation it must publish the results.

Within the Oxfordshire Local Flood Risk Management Strategy the approved thresholds for undertaking a FIR are:

### Oxfordshire LLFA Adopted Flood Investigation Protocol:

The investigating officer will use the following guidance to determine whether an investigation should be carried out. This will be based on the assessment of the consequences of flooding that are considered to be sufficiently serious in terms of risk to loss of life, residential & commercial property, critical infrastructure, transport, cultural sites and environmental sites.

The Council's thresholds for formal investigation of residential and commercial properties are as follows. A formal flood investigation will be carried out if one or more of the following occurs:

### Criteria for flood investigation:

- Internal flooding (excluding to basements) to five or more residential properties or businesses within an area of 1km<sup>2</sup>
- Internal flooding of a business premises employing more than 10 people within an area of 1km<sup>2</sup>
- Internal flooding (excluding to basements) of at least one property or business for one week or longer
- Flooding of one or more items of critical infrastructure, which could include hospitals, health centres, clinics, surgeries, colleges, schools, day nurseries, nursing homes, emergency services (police, fire, ambulance) stations, utilities and substations.

## **Caused a transport link to be impassable:**

- Motorways, trunk roads, Class A and B highway closures shall all be investigated.
- Class C highways – 10 hours or more unless the route is the only means of access, or is primary route for critical infrastructure then reduce to 4 hours
- Class U highways – 24 hours or more unless the route is the only means of access, or is primary route for critical infrastructure then reduce to 4 hours
- All rail link closures shall be investigated.

Any flooding event that a risk management authority deems significant but does not meet the agreed thresholds should be put forward to the Strategic Flooding Group committee for consideration.

## **1 INTRODUCTION**

### **1.1 Lead Local Flood Authority Investigation**

1.1.1 Section 19 of the Flood and Water Management Act (F&WMA) 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 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.

1.1.2 Within the Oxfordshire Local Flood Risk Management Strategy the thresholds for undertaking a Formal Investigation Report in the County have been determined as:-

#### **Criteria for flood investigation:**

- Internal flooding (excluding to basements) to five or more residential properties or businesses within an area of 1km<sup>2</sup>
- Internal flooding of a business premises employing more than 10 people within an area of 1km<sup>2</sup>
- Internal flooding (excluding to basements) of at least one property or business for one week or longer

- Flooding of one or more items of critical infrastructure, which could include hospitals, health centres, clinics, surgeries, colleges, schools, day nurseries, nursing homes, emergency services (police, fire, ambulance) stations, utilities and substations.

### **Caused a transport link to be impassable:**

- Motorways, trunk roads, Class A and B highway closures shall all be investigated.
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- Class U highways – 24 hours or more unless the route is the only means of access, or is primary route for critical infrastructure then reduce to 4 hours
- All rail link closures shall be investigated.

## **1.2 Flooding Incident**

- 1.2.1 It was deemed necessary to complete a formal investigation into the flood incident at The Parkway (Didcot Railway Station), Didcot on 31<sup>st</sup> May 2018. Given the importance of this transport interchange, this event was considered to meet the threshold for investigation as set out above.
- 1.2.2 During the incident Oxfordshire Fire & Rescue Service attended the station and assisted commuters and staff.
- 1.2.2 Oxfordshire County Council therefore set up a flood investigation working group in June 2018 with South Oxfordshire District Council, Network Rail, Great Western Railway, Thames Water, Thames Flood Advisors and the Environment Agency.
- 1.2.3 Great Western Railway were unable to provide photographs or footage of the event, however local news sites provided some footage, which was reviewed as part of this investigation.

## **1.3 Previous Flood Incidents**

- 1.3.1 The station experienced similar flooding on 16th September 2016. An investigation into this flood event was published on Oxfordshire County Council's flood toolkit website. This investigation identified that Thames Water's outfall to Network Rail's ditch was obstructed due to maintenance being required on the ditch system.

## **1.4 Rainfall Analysis**

- 1.4.1 Rainfall event data in Didcot is unavailable for the May 2018 incident.

1.4.2 For context, rainfall gauge data at RAF Brize Norton reported 21.2mm of rain between 17:00 and 18:00.

## **2 SITE LOCATION, POTENTIAL FLOOD SOURCES AND INVESTIGATION**

### **2.1 Site Location and Context**

2.1.1 The site is known as The Parkway (Didcot Railway Station) and is located in Station Road, Didcot, see Appendix A.

2.1.2 A site walkover meeting was arranged with Great Western Rail representatives on 02 August 2018 at The Parkway to discuss the event and investigate potential causes.

2.1.3 It was confirmed that the property that experienced internal flooding was the station building and subway, with external flooding also to the car drop off area and entrance.

2.1.4 There are no adjacent watercourses or rivers and the main access road serving the property is drained by gullies and channels connected to surface water sewers.

2.1.5 The property is adjacent to the rail track and station parking areas, with Station Road and adjacent car parks opposite.

### **2.2 Potential Flood Sources**

2.2.1 With reference to mapping on Oxfordshire County Council's online [Flood Toolkit](#), there is a high risk of surface water flooding on Station Road and to the front of the Parkway Rail Station building. The site is located at a general low point when considering the surrounding topography.

2.2.2 The site is not located adjacent to watercourses or rivers and is not within an area at risk of fluvial flooding.

2.2.3 The British Geological Survey national hazard dataset for ground water flooding indicates that the flooding incident was in an area deemed to have limited potential for ground water flooding to occur. JBA national groundwater flood maps confirm that flooding from groundwater is not likely.

2.2.4 The main access road serving the property is drained by a system of gullies and channels. Sewers collecting water from these discharge to a Network Rail ditch to the east of the station.

2.2.5 With consideration for the above potential sources, the focus of the investigation was therefore concentrated on the drainage system within the vicinity of the station and the downstream ditch network.

## **2.3 Drainage Systems**

- 2.3.1 Local Authority asset maps indicate that there is a system of Foul and Surface Water Public Sewers serving the whole of Didcot.
- 2.3.2 In the area of the station, it was identified that statutory asset maps and Network Rail plans did not show the full extent of sewer apparatus. Network Rail therefore traced sewers using CCTV equipment and historical records were obtained from South Oxfordshire District Council's and Oxfordshire County Council's archives.
- 2.3.3 This enabled station sewer records and statutory maps to be updated and also provided a condition assessment of surface water sewers in the forecourt area and downstream system.
- 2.3.4 Downstream ditches were also surveyed by Network Rail and South Oxfordshire District Council to assess silt levels and potential flow restrictions. Downstream manhole chambers were also inspected.

## **2.4 Inspection Results**

- 2.4.1 CCTV footage identified that the majority of the system was in good condition. A large blockage was however identified in a sewer downstream of Network Rail's ditch (a section of ditch cleared previously by Network Rail following the previous flood event) near the Cow Lane underpass to the east of the station. This blockage was caused by traffic cones wedged within the centre of the sewer.
- 2.4.2 Restrictions were also identified within the stations drainage system. Debris had collected within two sections of pipe causing serious flow restrictions close to surface water storage tanks. These restrictions affected the volume of flow that could flow into and out of the storage tanks and was causing the system to surcharge.
- 2.4.3 A Network Rail sewer draining the underpass was found to have a grade 5 defect in need of repair.
- 2.4.4 There were other minor sewer defects noted, that were not considered to have contributed to the event being investigated.
- 2.4.5 There was a section of Network Rail ditch downstream where base levels were raised slightly above the main outfall sewer invert level from Thames Water and Network Rail sewers.

## **2.5 Remedial Work Undertaken**

- 2.5.1 Remedial works undertaken during the course of the investigation of the incident are detailed below.



- 2.5.2 Network Rail undertook work to break out the sewer near Cow Lane to remove the traffic cones as sewer maintenance equipment was unable to dislodge the restrictions. An access chamber was placed in the location with the sewer reconnected.
- 2.5.3 A replacement sewer was placed by Network Rail in a small section of open ditch between the existing sewer outfall (highlighted above) and the pipe where the major blockage was identified. This measure reduces access for items such as traffic cones to enter and become lodged within the sewer, improves channel geometry at a critical junction and reduces overall maintenance liability.
- 2.5.4 Network Rail removed blockages identified in the forecourt drainage system and improved the connectivity of sewers to surface water storage tanks located under the station car park.
- 2.5.5 A downstream ditch was cleared by Network Rail and Oxfordshire County Council programmed in clearance work further downstream. South Oxfordshire District Council and Network Rail cleared debris from the banks of the watercourse and trash screen adjacent to the Orchard Centre Car Park.
- 2.5.6 Network Rail repaired the grade 5 sewer defect identified.

## **2.6 Future Maintenance**

- 2.6.1 The importance of future maintenance was highlighted during the investigation and all relevant organisations agreed to update and review maintenance schedules.
- 2.6.2 Thames Water updated statutory asset records based on the information obtained from the survey and historical records (Appendix B). Plans were circulated confirming which organisation had maintenance responsibility.

## **3 CONCLUSION**

- 3.1.1 Flooding at Didcot Parkway station affected a busy public transport interchange, with flooding affecting the main building, subway and car park.
- 3.1.2 Emergency services and station staff responded to the event in accordance with protocols.
- 3.1.3 A thorough inspection of the surface water drainage system in the vicinity of the station was undertaken by Network Rail and South Oxfordshire District Council, with potential flood sources examined.
- 3.1.4 Flooding was attributed to surface water sewer exceedance as a result of severe rainfall. Several blockages within pipework caused by road cones being wedged within a sewer, debris at critical points in pipework, a grade 5

sewer defect and interceptor maintenance were considered to be potentially contributing factors.

- 3.1.5 Network Rail have removed blockages identified by the investigation and made improvements to reduce the risk of a reoccurrence.
- 3.1.6 Network Rail have undertaken to clear debris and silt from the main outfall ditch and Oxfordshire County Council have made arrangement to clear silt from the watercourse further downstream.
- 3.1.7 Network Rail and Thames Water drainage records have been updated.
- 3.1.8 Ongoing maintenance will be required and relevant authorities have agreed to update and review their maintenance schedules.

## **4 RIGHTS AND RESPONSIBILITIES**

### **4.1 Communities and Residents**

- 4.1.1 Communities may consist of the Town or Parish Council, Flood Forum, Community Group and affected residents, amongst others.
- 4.1.2 Communities and residents who are aware that they are at risk of flooding should take action to ensure that they and their properties are protected.
- 4.1.3 Community resilience is important in providing information and support to each other if flooding is anticipated. Actions taken can include [subscribing to MET Office email alerts](#) for weather warnings, nominating a Community Flood Warden, producing a community flood plan, implementing property level protection and moving valuable items to higher ground.
- 4.1.4 Oxfordshire County Council has produced a number of flood guides covering various subjects, some of which relate to this type of flood incident. The relevant guides have been identified and are available at: [www.oxfordshirefloodtoolkit.com](http://www.oxfordshirefloodtoolkit.com)

### **4.2 Lead Local Flood Authority (LLFA)**

- 4.2.1 As stated within the introduction section, Oxfordshire County Council as the LLFA has a responsibility to investigate flood incidents under Section 19 of the F&WMA.
- 4.2.2 The LLFA also has a responsibility to maintain a register of assets which have a significant effect on flooding from surface runoff, groundwater or ordinary watercourses (non-Main River) as detailed within Section 21 of the F&WMA. The register must contain a record about each structure or feature, including the ownership and state of repair. Oxfordshire County Council is also required to keep a record of flooding hotspots across the county.

- 4.2.3 Oxfordshire County Council's practices relating to third party assets is to notify third party owners of their asset forming part of a flood risk system and assist by advising those third party owners on the condition of their assets and their maintenance responsibilities.
- 4.2.4 As Lead Local Flood Authority, Oxfordshire County Council will be looking for support from other risk management authorities, communities and individual home owners to ensure flood incidents are reported, and any assets which have a significant effect on flood risk are recorded on the asset register.
- 4.2.5 While Oxfordshire County Council can suggest possible causes of flooding in Didcot and make recommendations to ensure flood risk is mitigated as far as possible, the F&WMA does not provide Oxfordshire County Council with the mandate or funding to act on identified causes of flooding or force risk management authorities to undertake any recommended actions.

### **4.3 Highway Authority (Oxfordshire Highways)**

- 4.3.1 Oxfordshire Highways have a duty to maintain the highway under Section 41 of the Highway Act 1980 but subject to the special defence in Section 58.
- 4.3.2 New highway drainage systems are designed to Highways England's Design Manual for Roads and Bridges (Volume 4, Section 2). They are only required to be constructed to drain surface water runoff from within the highway catchment rather than from the wider catchment.
- 4.3.3 There are historic drainage systems in historic highways which can become the responsibility of the Highway Authority due to dedication, as opposed to adoption. These drainage systems may not have been designed to any standard.

### **4.4 Water Authority - Thames Water Utilities (TW)**

- 4.4.1 Water and sewerage companies are responsible for managing the risks of flooding from surface water, foul water or combined sewer systems. Public sewers are designed to protect properties from the risk of flooding in normal wet weather conditions. However, in extreme weather conditions there is a risk that sewer systems can become overwhelmed and result in sewer flooding.
- 4.4.2 Since October 2011, under the 'Private Sewer Transfer', AWS adopted piped systems on private land that serve more than one curtilage and were connected to a public sewer on 1<sup>st</sup> July 2011. Sewerage Undertakers have a duty, under Section 94 of the Water Industry Act 1991, to provide sewers for the drainage of buildings and associated paved areas within property boundaries.

- 4.4.3 Sewerage Undertakers are responsible for public sewers and lateral drains. A public sewer is a conduit, normally a pipe that is vested in a Water and Sewerage Company or predecessor, that drains two or more properties and conveys foul, surface water or combined sewage from one point to another, and discharges via a positive outfall.
- 4.4.4 There is no automatic right of connection for other sources of drainage to the public sewer network. Connection is therefore discretionary following an application to connect.

#### **4.5 South and Vale of White Horse District Councils**

- 4.5.1 District Councils has powers under Section 14 of the Land Drainage Act 1991 (LDA) to undertake flood risk management works on ordinary watercourses (non-Main River) where deemed necessary.
- 4.5.2 Under Section 20 of the LDA, District Councils have the powers to (by agreement of any person and at that person's expense) carry out any drainage work which that person is entitled to carry out. Agreement may not be required in certain emergency or legally upheld situations.
- 4.5.3 District Council's also has powers to serve notice on persons requiring them to carry out necessary works to maintain the flow of ordinary watercourses under Section 25 of the LDA.
- 4.5.4 The above powers are subject to consent from Oxfordshire County Council as Lead Local Flood Authority.
- 4.5.5 District Councils are the Planning Authorities and have a role in Building Control and the Building Regulations.

#### **4.6 Environment Agency (EA)**

- 4.6.1 The EA has a strategic overview responsibility of all sources of flooding and coastal erosion under the F&WMA.
- 4.6.2 The responsibility for maintenance and repair of Main Rivers lies with the riparian owner, but the EA have permissive powers to carry out maintenance work on Main Rivers under Section 165 of the Water Resources Act 1991 (WRA).
- 4.6.3 Main River means all watercourses shown as such on the statutory Main River maps held by the Environment Agency and the Department of Environment, Food and Rural Affairs, and can include any structure or appliance for controlling or regulating the flow of water into, in or out of the channel.

4.6.4 The EA will encourage third party asset owners to maintain their property in appropriate condition and take enforcement action where it is appropriate. They may consider undertaking maintenance or repair of third party assets only where it can be justified in order to safeguard the public interest and where other options are not appropriate.

4.6.5 Other work carried out by the EA includes:

Working in partnership with the Met Office to provide flood forecasts and warnings. Developing long-term approaches to Flood and Coastal Erosion Risk Management (FCERM). This includes working with others to prepare and carry out sustainable Flood Risk Management Plans (FRMPs). FRMPs address flood risk in each river catchment. The Environment Agency also collates and reviews assessments, maps and plans for local flood risk management (normally undertaken by Lead Local Flood Authorities (LLFAs)). Providing evidence and advice to support others. This includes national flood and coastal erosion risk information, data and tools to help other risk management authorities and inform Government policy, and advice on planning and development issues. The EA are statutory consultees of the Local Planning Authorities. Working with others to share knowledge and the best ways of working. This includes work to develop FCERM skills and resources.

4.6.6 Monitoring and reporting on FCERM. This includes reporting on how the national FCERM strategy is having an impact across the country.

## **4.7 Land Owners and Developers**

4.7.1 Land owners are responsible for the drainage of their land and controlling any movement of sediment from their land. Legally, owners of lower-level ground have to accept natural land drainage from adjacent land at a higher level. The exception to this is where the owner of the higher level land has carried out “improvements” such that the runoff from the land cannot be considered “natural”.

4.7.2 Agricultural practices by land owners can be considered as “improvements” to the land, so that cultivation of crops or other land uses can take place. Mitigation works are required on improved land to account for the change in natural land drainage and changes to surface water runoff this can create.

4.7.3 Land owners and developers are responsible for working with the Local Planning Authority to ensure that their development is completed in accordance with the planning permission and all conditions that have been imposed.

4.7.4 Advice for developers is available on the Oxfordshire Flood Toolkit.  
[www.oxfordshirerefloodtoolkit.com/planning/developers/](http://www.oxfordshirerefloodtoolkit.com/planning/developers/)

## **5 RECOMMENDATIONS**

### **5.1 General**

- 5.1.1 Listed below are the recommended course of actions emanating from this formal Flood Investigation Report.
- 5.1.2 It is important to note that it is for the relevant responsible body or persons to assess each recommendation in terms of the legal obligation, resource implications, priority and cost/benefit analysis of undertaking such action.
- 5.1.3 The recommendations may be included within the Action Plan linked to the Local Flood Risk Management Strategy or in the relevant risk management authority's future work programmes, as appropriate.

### **5.2 Actions**

#### **5.2.1**

- Network Rail to inspect surface water drains as part of a regular future maintenance programme.
- Great Western Railway to include the maintenance of the flow control, foul water backflow valve and drainage interceptor on their regular maintenance schedule. Great Western Railway also to inspect surface water drains within their remit as part of this maintenance programme.
- Thames Water to include for maintenance of the syphon in their regular maintenance programme.
- The Highway Authority to investigate gully emptying frequency schedule with a view to increasing emptying at this critical location.
- The Highway Authority to monitor downstream ditches and highway culverts.
- Oxfordshire County Council to review drainage plans and consider adding a section of ditch and culvert to the critical drainage register.
- Thames Water to inspect sewer pipework at regular intervals.
- Network Rail to look at making adjustments to its entrance to restrict the access to flood waters.
- South Oxfordshire District Council to check and make sure its adjacent car park's drainage systems are cleansed and working.
- Environment Agency to check maintenance plans for the downstream sections of main river culvert.
- Thames Flood Advisors to set up a flood study group for the wider Didcot area.

### **5.3 Property Owners**

- 5.3.1 Nominate a Flood Warden to help coordinate the following:  
Review and update Emergency Plans. Regular inspection and maintenance of drainage assets as above. Report blockages or other issues to station manager and the LLFA. Explore options for property level protection and implement any recommendations. Information on Flood Prevention measures

for Home Owners, Communities and Businesses can be found on the Flood Toolkit:

[www.oxfordshirefloodtoolkit.com/risk/prevention](http://www.oxfordshirefloodtoolkit.com/risk/prevention)

Permanent measures such as installing floodgates, raising electrical sockets and fitting non-return valves on pipes can also be considered. Oxfordshire County Council and the EA can provide advice on these matters and more information can be found at:

[www.oxfordshirefloodtoolkit.com/emergency/preparation](http://www.oxfordshirefloodtoolkit.com/emergency/preparation)

Explore community wide solutions (e.g. attenuation areas, overflow routes, tree planting). Use the Flood Toolkit Funding Tool to find sponsors who may be willing to help fund improvement projects:

[www.oxfordshirefloodtoolkit.com/risk/funding](http://www.oxfordshirefloodtoolkit.com/risk/funding)

Continue to report flood incidents to the Lead Local Flood Authority at: [www.oxfordshirefloodtoolkit.com/emergency/report-flood](http://www.oxfordshirefloodtoolkit.com/emergency/report-flood). Endeavour to obtain as much evidence of flood events as possible, such as photographic and video evidence.

## **5.4 Lead Local Flood Authority (LLFA)**

- 5.4.1 Work with the Oxfordshire County Council Emergency Planning Team and the Environment Agency to support the community-based Flood Wardens.
- 5.4.2 Work with the Oxfordshire County Council Emergency Planning Team, the Environment Agency and other flood management authorities to support the community in the production of a Community Flood Plan and provide advice to residents on how to explore options for property level protection.
- 5.4.3 Inform owners of the drainage systems and watercourses within the overall surface water catchment area of their legal responsibilities.

## **5.5 Highway Authority (Oxfordshire Highways)**

- 5.5.1 Undertake regular highway drainage cleansing throughout Didcot, including the carriageway channel. Consider adjusting general schedules to reflect critical drainage areas. Identify and develop a detailed plan of their assets.
- 5.5.2 If flooding occurs Oxfordshire County Council will assess the capacity of the highway assets and identify any areas with insufficient capacity for draining runoff from the highway. Where this leads to flood risk to properties improvement works should be considered.
- 5.5.3 Assess the suitability of third-party drainage systems accepting discharge from Highway Drainage systems and report any unsatisfactory areas to the relevant Risk Management Authorities.

5.5.4 Work with the community and LLFA to clarify ownership and maintenance responsibilities for watercourses, particularly where these are located within or near to the highway.

## **5.6 Water Authority Thames Water Utilities (TW)**

5.6.1 Assess the sources of water entering the public sewerage system.

5.6.2 Assess the capacity of their assets and identify any areas of insufficient capacity where improvement works may be required.

5.6.3 Section 94 of the Water Industry Act requires a sewerage company to provide, improve and extend a system of public sewers to ensure an area is effectually drained.

## **5.7 District Councils**

5.7.1 Continue to consult with the Environment Agency and Lead Local Flood Authority (Drainage Team) as required in respect of planning applications for new developments to reduce flood risk. Aim to ensure that all works are carried out in accordance with the approved plans and documents.

5.7.2 Review the planning policies relating to developments in the vicinity of the flooding incident, together with any flood risk assessments and drainage designs. Consider contacting the developers to take action in the event that any items relating to surface water drainage and flood risk are not evident or ineffective in the final developments or in the construction period.

5.7.3 Utilise their enforcement powers under Section 25 of the Land Drainage Act 1991 where it is considered that riparian owners are failing to maintain ordinary watercourses in their ownership.

5.7.4 Endeavour to assist other flood risk management authorities and land owners in the preparation of a detailed plan of assets relating to drainage and flood risk, to share with the LLFA and the community.

## **5.8 Environment Agency (EA)**

5.8.1 Work with the Oxfordshire County Council Emergency Planning Team and the LLFA to support the community in the instatement of a community-based Flood Wardens.

## **5.9 Land Owners and Developers**

5.9.1 Developers should work with local authorities to ensure all development is completed in accordance with approved plans and documents, and planning policy. Where land comes up for development, proposals should seek to reduce overall flood risk for the benefit of the community.



- 5.9.2 Land owners should undertake regular inspection and maintenance of their drainage systems in accordance with a defined maintenance regime. Further, they should identify and develop a detailed plan of their assets to share with the LLFA, other flood risk management authorities and the community.
- 5.9.3 Land owners should assess the capacity of their drainage systems and identify any areas with insufficient capacity for the collection, conveyance, storage and disposal of surface water. Where this could lead to runoff to the public highway or nuisance to third party private property, improvement works should be considered.
- 5.9.4 Review the library of flood guides on the Oxfordshire Flood Toolkit.
- 5.9.5 Agricultural land owners should carry out works to their land to reduce surface water runoff. These include following principles of good soil husbandry and providing land drainage systems such as ditches. [The Single Payment Scheme, Cross Compliance Guidance for Soil Management, 2010 edition, should be referenced.](#)

These works help to retain the natural land drainage regime and provide the best soil conditions for the continued agricultural use of the land. Farmers in receipt of Common Agricultural Policy (CAP) payments are required to carry out a Soil Protection Review which should identify any problems with soil erosion and runoff and help identify solutions to the problem.

Examples of good practice for reducing surface water runoff from agricultural land are:

Ploughing fields in a perpendicular direction to the slope of the land, reducing the effect of channelling of water over the land when it rains; Using techniques and machinery to limit compaction of soils; Growing crops that match the capability of the land, particularly in relation to the timings of activities and not overworking soils through the year; Providing new ditches, sub-soil drainage and outfalls, and re-instating and regularly maintaining existing ditches. Old existing ditches may be completely filled and difficult to see. The type of soil make-up, type of flora and overall lie of the land can help to determine the routes of filled in historic ditches;

Preventing changes to the levels of the land that would cause channelling of surface water to a single point where this would not naturally occur. It should be noted that following good practice for managing surface water runoff cannot completely remove the risks of natural land drainage and the associated quantities and flow routes of runoff that can cause flooding.

## 6 DISCLAIMER

This report has been prepared as part of Oxfordshire County Council's responsibilities under the Flood and Water Management Act 2010. It is intended to provide context and information to support the delivery of the

Local Flood Risk Management Strategy and should not be used for any other purpose.

The findings of the report are based on a subjective assessment of the information available by those undertaking the investigation and therefore may not include all relevant information. As such it should not be considered as a definitive assessment of all factors that may have triggered or contributed to the flood event.

Whilst remedial actions undertaken during the course of the investigation are included in the report for clarity, these actions may not be exhaustive and were taken following review of information and investigations by the authority(s) concerned.

Any recommended actions outlined in this FIR will be for the relevant responsible body or persons to assess in terms of resource implications, priority and cost/benefit analysis of the proposal. Moving forward, these may be included in the Action Plan linked to the Local Flood Risk Management Strategy or in the relevant risk management authority's future work programme as appropriate.

The opinions, conclusions and any recommendations in this Report are based on assumptions made by Oxfordshire County Council when preparing this report, including, but not limited to those key assumptions noted in the Report, including reliance on information provided by others.

Oxfordshire County Council expressly disclaims responsibility for any error in, or omission from, this report arising from or in connection with any of the assumptions being incorrect.

The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the time of preparation and Oxfordshire County Council expressly disclaims responsibility for any error in, or omission from, this report arising from or in connection with those opinions, conclusions and any recommendations.

The implications for producing Flood Investigation Reports and any consequences of blight have been considered. The process of gaining insurance for a property and/or purchasing/selling a property and any flooding issues identified are considered a separate and legally binding process placed upon property owners and this is independent of and does not relate to the County Council highlighting flooding to properties at a street level.

Oxfordshire County Council do not accept any liability for the use of this report or its contents by any third party.

## ACRONYMS

EA Environment Agency  
TWA Thames Water Authority  
FIR Flood Investigation Report  
F&WMA Flood and Water Management Act 2010  
LDA Land Drainage Act 1991  
LLFA Lead Local Flood Authority  
WRA Water Resources Act 1991

## USEFUL LINKS

### Highways Act 1980:

[www.legislation.gov.uk/ukpga/1980/66/contents](http://www.legislation.gov.uk/ukpga/1980/66/contents)

### Water Resources Act 1991:

[www.legislation.gov.uk/ukpga/1991/57/contents](http://www.legislation.gov.uk/ukpga/1991/57/contents)

### Land Drainage Act 1991:

[www.legislation.gov.uk/ukpga/1991/59/contents](http://www.legislation.gov.uk/ukpga/1991/59/contents)

**EA - 'Living on the Edge'** a guide to the rights and responsibilities of riverside occupation:

[www.gov.uk/government/publications/riverside-ownership-rights-and-responsibilities](http://www.gov.uk/government/publications/riverside-ownership-rights-and-responsibilities)

### EA - Prepare your Property for Flooding:

How to reduce flood damage Flood protection products and services

[www.gov.uk/government/publications/prepare-your-property-for-flooding](http://www.gov.uk/government/publications/prepare-your-property-for-flooding)

### Oxfordshire County Council Flood and Water Management Web Pages:

[www.oxfordshirefloodtoolkit.com](http://www.oxfordshirefloodtoolkit.com)

### Flood and Water Management Act 2010

<http://www.legislation.gov.uk/ukpga/2010/29/contents>

## USEFUL CONTACTS

### Oxfordshire County Council Highways:

Tel: 0345 310 1111

Website: [www.fixmystreet.oxfordshire.gov.uk](http://www.fixmystreet.oxfordshire.gov.uk)

### Environment Agency:

General Tel: 08708 506 506 (Mon-Fri 8-6) Call charges apply.

Incident Hotline: 0800 807060 (24 hrs)

Floodline: 0345 988 1188

Email: [enquiries@environment-agency.gov.uk](mailto:enquiries@environment-agency.gov.uk)

Website: [www.environment-agency.gov.uk](http://www.environment-agency.gov.uk)

### Thames Water

Emergency Tel: 0800 316 9800 (select option 1)

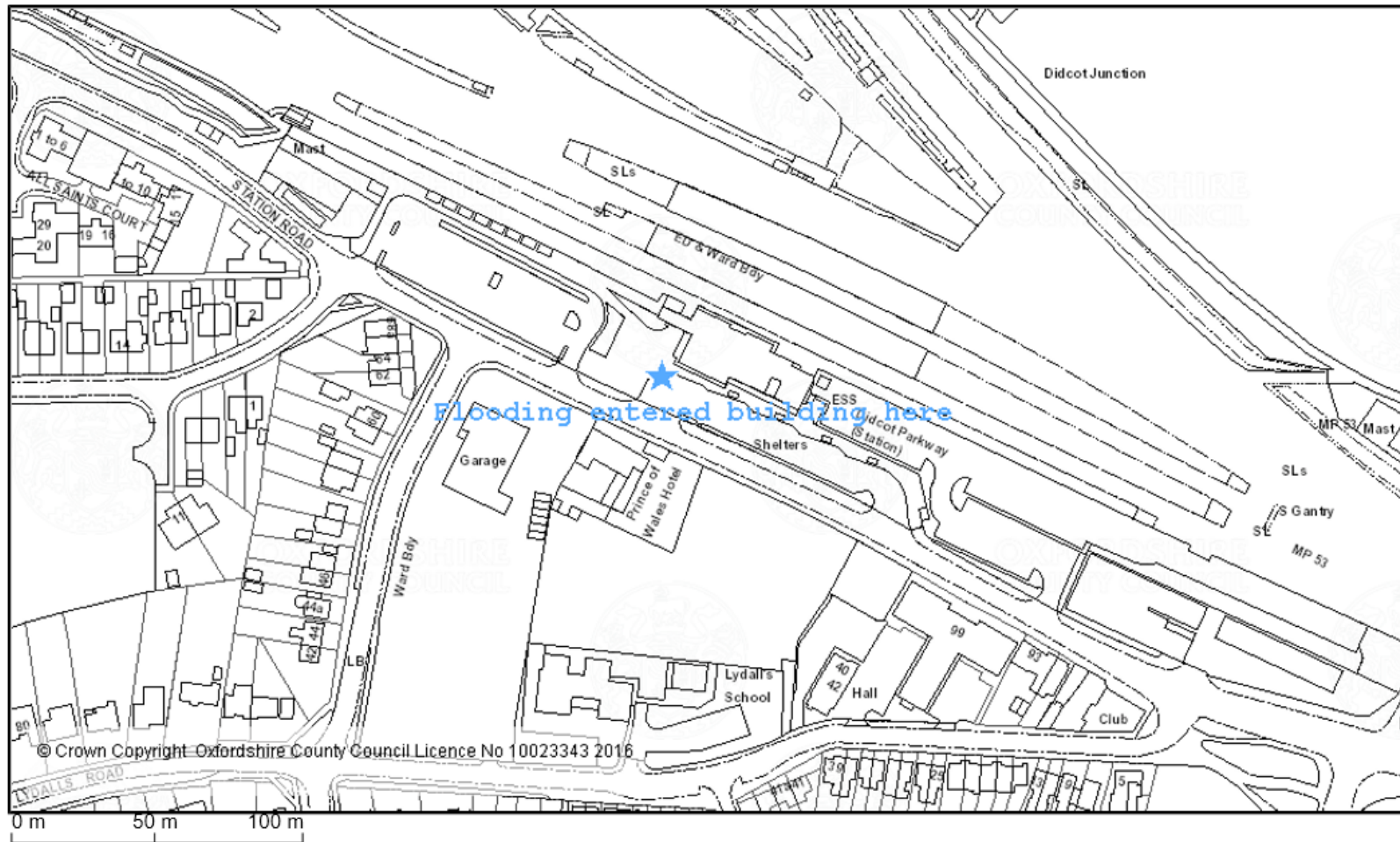
Website: [www.thameswater.co.uk/help-and-advice/bursts-and-leaks/report-a-leak-or-burst-pipe](http://www.thameswater.co.uk/help-and-advice/bursts-and-leaks/report-a-leak-or-burst-pipe)



# Appendix A - Location Plan

02 January 2017

Didcot Rail Station Flooding



Scale 1: 1738

Oxfordshire County Council, Spectrum Software

**Appendix B – Updated Thames Water Drainage Records**  
(includes Network Rail drains in dashed line type)

