



# **Norfolk** County Council

## Flood Investigation Report

Report Title:  
South Norfolk  
Station Road  
Wymondham

Report Reference: 000140

May 2014

Report Status: Approved Report

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Prepared by Flood and Water Management Team

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# **Flood Investigation Report**

## **1. Reason for Flood Investigation**

It was deemed necessary to complete a formal investigation into the flood incident at Station Road, Wymondham which occurred on 4<sup>th</sup> April 2012 as;

The highway, which is a primary gritting route and the main access point for local residents and emergency services, was flooded under the railway bridge and rendered inaccessible.

There is ambiguity surrounding the source or responsibility of the flood incident.

This met Norfolk County Council's threshold for triggering the undertaking of a formal flood investigation.

## **2. Location of flooding incident**

- 1.1 Wymondham is located approximately 9 miles South-West of Norwich. Station Road is situated to the south of Wymondham. The area of reported flooding is Station Road / Silfield Road Railway bridge.

## **3. Flood Incident as reported**

- 3.1 Flooding of the highway under the rail bridge blocked the road and trapped cars as they tried to drive through the water

In addition flooding under the rail bridge has also been reported to NCC on the following dates:

6 July 2012  
13 July 2012  
18 July 2012  
9 September 2012  
11 May 2013  
2 August 2013  
7 October 2013  
22 and 27 May 2014

## **4 Desk Study**

- 4.1 The location of the flooding:

- Lies within the River Tiffey catchment.
- Is sited within an area of geology likely to have good rates of infiltration.

- Is located within South Norfolk District Council's administrative boundary.
- Is located within the Environment Agency Eastern Administration and Water Management areas.
- Does lie within predicted significant surface water overland flow paths.
- Does not lie within Flood Zone 2 or Flood Zone 3.
- Does not lie within 2.5km of a registered rain gauge and no known flow data exists for the local drainage system.
- All immediate public roads are adopted by NCC as Highway Authority.

## 5 Summary of site investigation and information received

- 5.1 Consulting Engineers carried out an in-depth Drainage Report of the existing surface water drainage system. The Highway drainage was proven to outfall at the River Tiffey. The outfall is lower than the existing river bed due to a build up of silt in the river, so there is no free outfall. The pipe has previously been noted as being partially obscured.
- 5.2 Please see the annotated Map attached to this report summarising the information received by third parties and through on-site investigations.

## 6 Summary of impacts

- 6.1 Information relating to the impacts experienced at the flood location are detailed below; *(Please see Annex 6 within the PFRA Annexes to the final guidance for the classification of property types to be used in filling in the section below).*

**Risk to life:** No

**Internal Flooding:** None

**External Flooding:** highway

**Critical services:** highway

**Priority Gritting Routes:** yes

**Obstruction of Access:** Yes. One incident involved rescuing a person who became stranded in a car. In addition this is the main access point for the emergency services to access properties.

## 7 Investigation findings

## **7.1 What caused the flooding?**

7.1.1 The flooding at Station Road / Silfield Road Railway Bridge was experienced due to a number of factors;

- The highway surface water outfall outfall is lower than the river bed level due to a build up of silt in the river. This partially obscures the outfall pipe.
- The rainfall event was greater than the existing capacity of the existing highway drainage system. In effect there is no storage capacity within the existing pipes.
- The natural low point on the highway is under the railway bridge and the surface water run-off all flows down to this point.

## **7.2 Who has responsibilities to manage the cause(s) of the flood?**

7.2.1 With reference to the above factors, responsibility to manage the causes of the flood are identified below;

- The pipe that drains the flooded area outfalls into a section of the River Tiffey which is a Norfolk Rivers Internal Drainage Board main drain.
- Norfolk County Council manage the highway surface water drainage system.

## **7.3 What was their response in relation to the cause of the flood?**

7.3.1 In response to a flood event under the bridge in Station Rd, the NCC emergency response team erected temporary flood warning signs. In addition, in 2013 work was undertaken to clear the outfall as it appeared sandbags had blocked the system. Following this, the system was jetted to ensure it could function to its maximum capacity.

7.3.2 Norfolk County Council as a Highway Authority have undertaken survey work to determine the highway drainage system is clear and to identify the outfall at the River Tiffey.

7.3.1 Additional survey work by consultants has been undertaken because there is a proposed new housing development to the south of the railway bridge and this section of road is the entrance to the area. Consulting Engineers have modelled the surface water network.

## 8 Recommendations

8.1 The recommendations highlighted below are referenced against the factors detailed above and should not be considered in isolation and are not in order of priority.

8.1.1 NCC Developer services could agree a developer funded scheme to address the current flooding issues on Station Road in connection with the consented South Wymondham growth area. This could include a pre-commencement condition to bring forward remedial measures prior to the development. NCC developer services should work in conjunction with South Norfolk District Council to ensure the implementation of this approach.

In conjunction with an agreed developer funded scheme and 8.1.2 (a) the Norfolk Rivers IDB could also clear and re-grade the river to aid the drainage at the outfall.

8.1.2 NCC Highways team could work closely with regards to the implementation and adoption of any mitigation measures provided by the development (as per section 8.1.1) and could consider the following resolutions:

- a) Increase the size of the pipe from the road to the River Tiffey in addition to ensuring that it is able to effectively outfall into the river. This could include improvements to the outfall to reduce the risk of blockage. This option would require funding to enable an initial feasibility study to be undertaken. The findings from this study would then need to be considered against competing priorities within a future Highways Capital Programme.
- b) An alternative to the options suggested in a) above is for Norfolk County Council Highways to consider installing a pump in the manhole chamber at the railway bridge and for a new outfall to be constructed to raise the outfall level above the river level. This option would require funding to enable an initial feasibility study to be undertaken. The findings from this study would then need to be considered against competing priorities within a future Highways Capital Programme.

- c) In the short term, Norfolk County Council could place permanent signage to warn highway users that the road is liable to flooding. A depth gauge could also be installed so that drivers are fully aware of the water depth in any flooding situation.

8.1.4 In light of recent changes and the frequency of flooding at this location NCC Highways could review their existing risk based approach in relation to their response to flooding incidents where there are implications for highways systems e.g. place a depth gauge so that drivers are fully aware of the water depth in any flooding situation (as described in 8.1.2, C above)

8.1.5 Norfolk County Council will work with the Environment Agency to assess the possibility of securing funding to mitigate flood risk. This recommendation will be subject to priorities and availability of resources.

## **9 Disclaimer**

Although every effort as been taken to ensure the accuracy of the information contained within the pages of the report, we cannot guarantee that the contents will always be current, accurate or complete.

This report has been prepared as part of Norfolk 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.

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

Norfolk 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 Norfolk 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.

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# Annotated Map

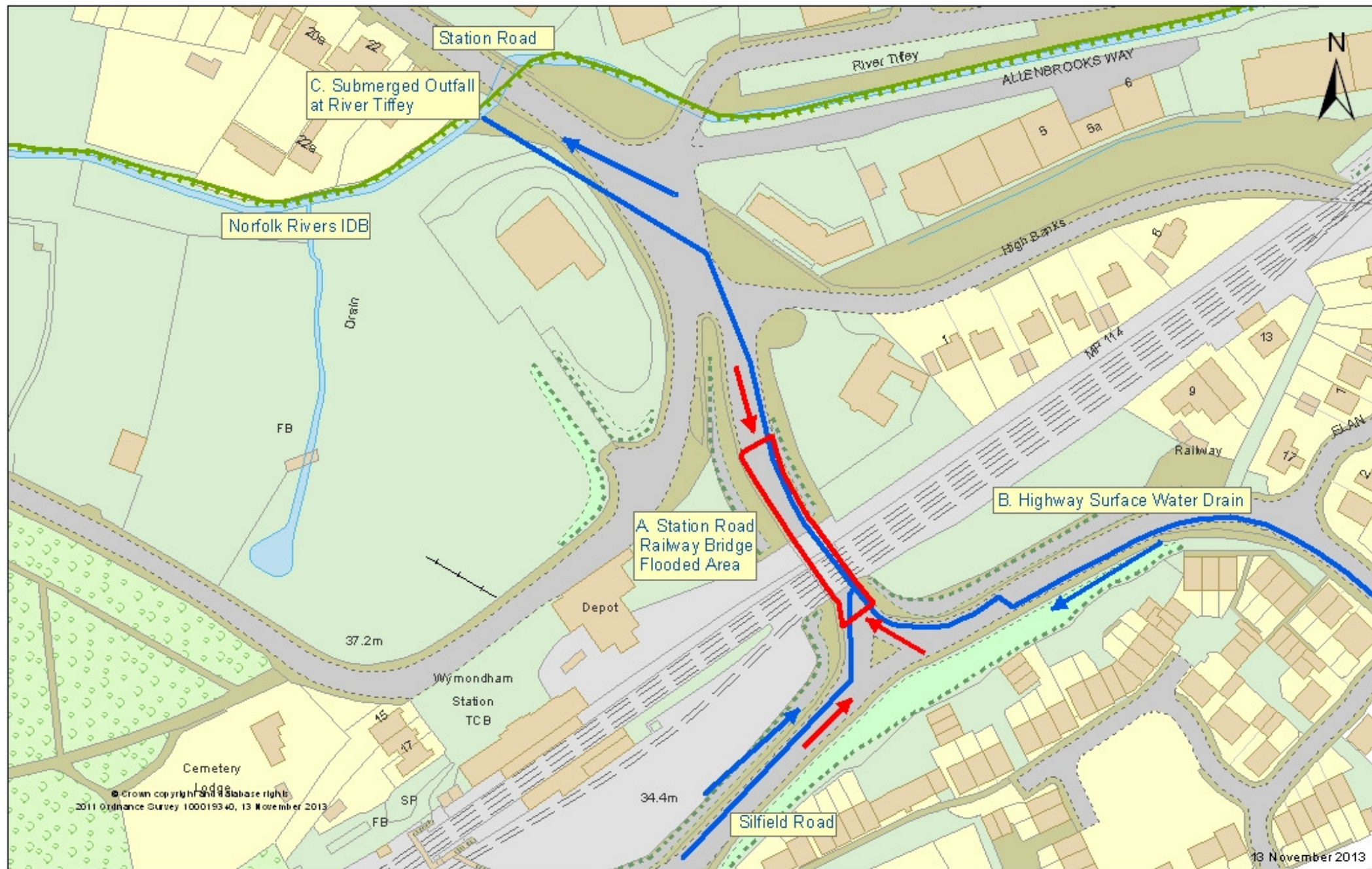
Flood Investigation Report: Station Road, Wymondham

It should be noted that the order in which these are listed does not reflect the significance of the issue and may require more detailed analysis or surveying to ascertain their level of influence over the incidents experienced at this location.

**A** The Flooded Area is in a natural low point on the highway under the railway bridge and the overland surface water run-off all flows down to this point. (see red arrows which denote the surface water flow)

**B** Highway surface water drain flows towards the River Tiffey (see blue arrows which denote the direction of flow)

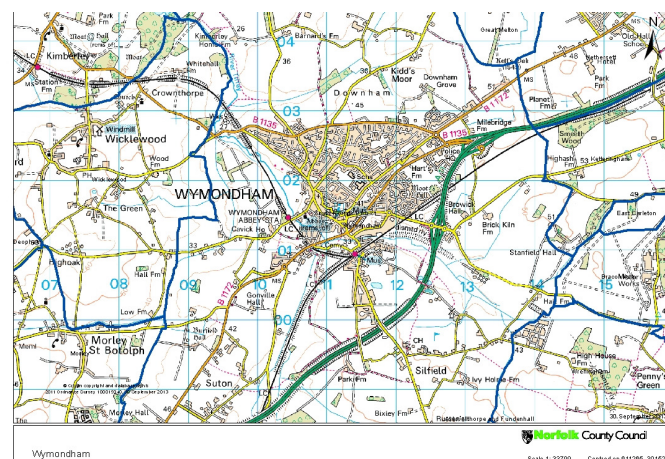
**C** The highway surface water drain outfall is lower than the river bed level due to a build up of silt in the river and is submerged. The River Tiffey is maintained and managed by Norfolk Rivers IDB.



Station Rd Flood  
Wymondham



Scale 1: 1350 Centred on 611468 301046



## Legend

- Parish Boundaries
- District Boundaries