



Flood Investigation Report

Report Title:

Breckland

Dereham

Yaxham Road

Report Reference: 000018

July 2013

Report Status: Approved Report

	Name	Date
Prepared by:	Alys Bishop	26 / 06 / 2013
Checked by:	Graham Brown	03 / 07 / 2013
Approved by:	Phil Bennett-Lloyd	03 / 07 / 2013

Prepared by Flood and Water Management Team

Contents

1.	Location of flooding incident	3
2	Flood Incident as reported	3
3	Desk Study	3
4	Summary of site investigation and information received.....	4
5	Summary of impacts	6
6	Investigation findings	7
7	Recommendations.....	8
8	Disclaimer	10
9	Annotated map	11

Flood Investigation Report

1. Location of flooding incident

- 1.1 Dereham is located approximately 24.5 km North-West of Norwich. Yaxham Road is situated on 1.6km from the Centre of Dereham. The area of reported flooding are the gardens of residential properties on Yaxham Road.

2 Flood Incident as reported

- 2.1 Norfolk County Council's Flood and Water Management Team was contacted on 9th August 2012 regarding external flooding to the back gardens of a number of residential properties on Yaxham Road, Dereham that occurred on 23rd July 2012. The report stated that gardens were frequently water logged, however the flood water was not reported to have entered the properties.
- 2.2 The issue raised was that the ditch running adjacent to the footpath on Safari Way overflowed at the time of the reported flood incident. It was stated that flooding had not been prior to the construction of the George Wimpey housing development known as 'South Green' situated to the south of Yaxham Road.
- 2.3 More flooding to the gardens was reported by Breckland Council to the Flood and Water Management Team on 14th November and the 17th December 2012.
- 2.4 Numerous other incidents of flooding relating to insufficient drainage have been reported in and around the flood location at Yaxham Road. These reports highlighted serious inadequacies and limitations in the Dereham Stream catchment.

3 Desk Study

- 3.1 The location of the flooding:
- Lies within the Dereham Stream catchment. This watercourse is a 5.8 km tributary of Wendling Beck which is in turn a tributary of the River Wensum.
 - Is sited within an area of geology likely to have low rates of infiltration.
 - Is located within Breckland District Council's administrative boundary.
 - Is located within the Environment Agency (EA) Central Admin area and the EA Eastern Water Management area.
 - Lies adjacent to surface water accumulations and is to the

West of significant overland flow paths associated with the course of Dereham Stream.

- There are a number of pre-existing drainage systems associated with this flow path apparent on the 1905 map.
- Does not lie within Flood Zone 2 or Flood Zone 3.
- Information taken from Anglian Water's asset location maps show that Anglian Water have an adopted surface water sewer out falling into an open ditch adjacent to the vicinity of the flooding location.
- Is approx. 2 km from an EA rain gauge.
- Has been mentioned within Breckland District Council's Water Cycle Study, Strategic Flood Risk Assessment and has been referenced in the Eastern Daily Press (June 2012). Further investigation into published reports on the Dereham catchment identified other serious inadequacies in the wider drainage system.

3.2 From the desk study it is indicated that the management of local drainage is primarily the responsibility of Anglian Water, Norfolk County Council Highways and where appropriate riparian owners.

4 Summary of site investigation and information received

4.1 As there were concerns from residents that new development had increased flood risk experienced at the flooding location Norfolk County Council reviewed the details of the planning decision.

4.2 The planning application for the South Green development, along with accompanying documentation highlighted that:

- The Environment Agency requested that a surface water drainage condition (Condition 11) should be applied to the permission to ensure that "prior to the commencement of any development, a scheme for the provision and implementation of surface water drainage shall be submitted and agreed in writing with the Local Authority..." to prevent the increased risk of flooding and/or pollution of the environment.
- The Dereham Stream (see point C on the attached map) has no spare capacity and that any anticipated increase in surface water run off should be communicated to Anglian Water and the Kings Lynn Consortium of IDB's (as part of Dereham Stream is an IDB Main Drain).
- Following further information submitted by Wimpey Homes (the developer of the South Green Housing estate) the EA still felt unable to recommend the discharge of Condition 11 due to there still being inadequate information regarding surface water drainage on the site.
- Concerns highlighted by the Environment Agency and neighbouring residents of the development regarding known surface water drainage issues were not resolved and

Breckland Council subsequently discharged Condition 11. Following this discharge of condition construction on the South Green site is presumed to have started on the 2nd of November 2006.

- 4.3 Correspondence with Anglian Water established that;
- The surface water drainage system on the South Green site (see point A on the attached map) outfalls at the headwall adjacent to the ditch (Safari Way) (see point B on the attached map) and was adopted by Anglian Water in April 2010.
 - Anglian Water have informed NCC that arrangements were made with the developer, George Wimpy, as to rights for discharge into the ditch (under Section 104 of the Water Industry Act 1991)
- 4.4 A site visit was conducted in October 2012 by a Norfolk County Council officer.
- 4.5 No outfall point was identified for the open ditch (see point C on the attached map), confirming that the ditch is not connected to any other drainage system. The ditch stretches for approximately 100m adjacent to the Safari Way footpath, which runs for 200m between Yaxham Road and South Green.
- 4.6 Correspondence with the Norfolk County Council Highway Engineer for Dereham indicated that Norfolk County Council do not own any culverts in the vicinity of the ditch. In addition, no Risk Management Authority confirmed the existence of culverts in the vicinity of the ditch suggesting that the water in the ditch cannot be conveyed off site.
- 4.7 The ditch was seen to be at capacity and was found to be poorly maintained, reducing the capacity of the watercourse further. The surface water sewer outfall from the new development was found to be submerged, so there was no free outfall to this system
- 4.8 Reports that the height of the footpath had been altered (raised and straightened) or that it had in any way influenced the direction of flood water could not be confirmed; however the ditch did appear to be level with the South Green development.
- 4.9 Evidence collected during the search process would suggest that the ditch used to continue through the back of the gardens on Yaxham Road, but is since presumed to have been filled in.
- 4.10 The riparian owner of the ditch could not be identified and the ditch is not apparent on land registry searches (it should be noted however that Land Registry Searches operate using the 'General Boundaries Rule' and ditches tend to get excluded by default rather

than by design).

- 4.11 Analysis of the rainfall data requested from Anglian Water shows that on the date the flood event was recorded, a significant rainfall event was registered at the East Dereham Sewage Treatment Works rain gauge 2.01km from the flood site which registered 34mm in 30 minutes.

5 Summary of impacts

- 5.1 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: None

Internal Flooding: None

External Flooding: Residential gardens

Critical services: None

Priority Gritting Routes: None

Obstruction of Access: None

- 5.2 Other incidents experienced at this flooding location and reported to Norfolk County Council over the last 4 years by members, these comprise the following;

- 20 July 2012: Flooding to gardens of residential properties on Yaxham Road following heavy rainfall over the previous 4 weeks. Resident spoke to Anglian Water regarding the issue who directed them to Norfolk County Council.
- 25 January 2012: External flooding on Cabinet Close reported to be obstructing the use of the footpath due to large pooling of water after periods of heavy rain.
- 13 April 2011: The ditch was reported to be poorly maintained.
- 17 July 2009: Drainage problems reported outside a residential property on Yaxham Road.
- 23 July 2008: Resident of Yaxham Road raised concerns regarding works being carried out on the footpath as part of construction works for the South Green development.

- 5.3 Records show 4 informal drainage investigations were undertaken in Dereham between 2012 and 2013, all of which are within a 1km radius of the flood site and relate to the insufficient capacity of the

Dereham Stream. These are as follows;

- February 2013, Neatherd Moor; external flooding restricted access to a public right of way following the overloading of the adjacent watercourse during heavy rainfall.
- July 2012, Larners Road; internal flooding to residential properties and flooding of the highway resulting from surface water accumulation due to insufficient drainage.
- August 2012, Pine Grove; external flooding to residential properties caused by sewerage surcharge during heavy rainfall.
- November 2012, William Cowper Close; internal and external flooding to residential properties resulting from inadequate drainage of the adjacent land (Shipdham Road) and the overloading of the drainage system during heavy rainfall.

6 Investigation findings

6.1 What caused the flooding?

6.1.1 The flooding at this location was experienced due to a number of factors. These are set out below. It should be noted that the order in which these are listed does not reflect the significance of the issue and that a number of factors require more detailed analysis or surveying to ascertain their level of influence over the incidents experienced at this location.

- Overloading of the drainage system which serves the flood site has resulted in repeated flooding to residential gardens due to an increase in the rate of discharge from the adjoining site into the ditch at the rear of Yaxham Road.
- Drainage investigations have showed that the ditch has no identifiable outfall point, with site visits concluding any original outfall has either been blocked or did not exist.
- The insufficient capacity of the ditch to convey or attenuate additional volumes of water is exacerbated during periods of heavy rainfall.
- A culmination of these factors caused the system to breach, resulting in external flooding to the gardens off Yaxham Road.

6.2 Who has responsibilities to manage the cause(s) of the flood?

6.2.1 With reference to the above factors, responsibility to manage the causes of the flood are listed below;

- Efforts to identify the riparian owner of the ditch, including land registry searches, were unsuccessful.
- The discharge rates and arrangements from the adjacent development site into the ditch were approved by Breckland District Council. The drainage condition applied to the planning permission was discharged contrary to advice given by the Environment Agency. The discharge of surface water into a ditch that cannot convey water off-site is a contributory factor to the flooding of the gardens at Yaxham Road.

6.3 What was their response in relation to the cause of the flood?

6.3.1 The responses of the organisations to the cause of the flooding are listed below;

- No responsive maintenance from riparian owners adjacent to the ditch has been evident following the flood events experienced.
- Breckland District Council's letter dated 25th January 2013, stated that with regards to the outline planning application and the reserved matters planning application for the South Green development, the following applied;
 - No assessments or calculations were undertaken by the developer in response to the issues highlighted by the Environment Agency.
 - There was ambiguity over the drainage conditions set at the outline planning stage.

7 Recommendations

7.1 The recommendations highlighted below are referenced against the factors detailed above.

7.1.1 Recommendation 1: Breckland District Council could lead and support the the identification of potential mitigation measures for the flood risk experienced by properties on Yaxham Road. This could include attenuation of surface water on adjacent land. An example of this support could be that any future development in the area could include provision of the acceptance of surface water from the South Green development that currently outfalls into the ditch.

7.1.2 Recommendation 2: Breckland District Council could develop technical capacity within the planning department to assess flood risk to ensure that any future planning applications with drainage

implications are appropriately assessed.

- 7.1.3 Recommendation 3: Anglian Water could investigate the potential to update and incorporate the surface water sewer network serving the South Green Development to determine if an alternative sewer network could be utilised to reduce the surface water flows that outfalls into the ditch that flows into the Yaxham Road gardens.
- 7.1.4 Recommendation 4: Norfolk County Council, in cooperation with other Risk Management Authorities could support the establishment and identification of a suitable organisation to take ownership of the open ditch system that is currently conveying surface water into the gardens on Yaxham Road. This would enable maintenance to take place that may increase to a small degree the storage capacity of the ditch and reduce the frequency of impact of the surface water flooding experienced on Yaxham Road.
- 7.1.5 Recommendation 5: Identify structures or features that have an effect on local flood risk within Dereham in order to;
- establish an overview of the drainage and watercourse systems in the affected area, allowing for quicker identification of the responsible authority in incidences of flooding.
 - develop more informed maintenance regimes which take account of assets considered important for managing local flood risk. Where structure or features are associated with significant flood risk these will be included on a public register. This will provide transparency for residents as to ownership and condition.
- 7.1.6 Recommendation 6: Residents could seek further guidance and advice from the Upper Tribunal (Lands Chamber) (formally Agricultural Lands Tribunal) who may be able to enforce against those riparian owners who are required to maintain their watercourse and seek appropriate costs.

8 Disclaimer

Although every effort has 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.

Norfolk County Council forbids the reproduction of this report or its contents by any third party without prior agreement.

Annotated Map

Flood Investigation Report: Dereham

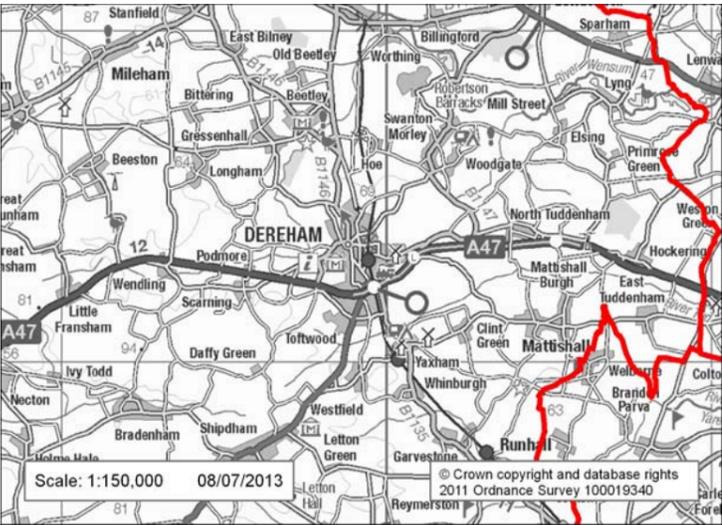
A	The surface water drainage system on the South Green site
B	Outfall for the surface water drainage system on the South Green site at the headwall adjacent to the ditch
C	Dereham Stream – This falls from the Yaxham Rd towards South Green



Dereham



Scale 1: 1500 Centred on 599136 312602



Legend

- Parish Boundaries
- District Boundaries

