

# Norwich Urban Fringe Surface Water Drainage Scheme

## Final Update - February 2018

In April 2015 Norfolk County Council was successful in its bid for Department for Transport Challenge funding and was awarded £9.1 million to fund surface water drainage infrastructure improvements in the city and north city fringe area. Norfolk County Council also contributed an additional £1.2 million to the costs of the scheme.

The funding allowed Norfolk County Council to improve the drainage systems in the Greater Norwich area in order to offer better protection to domestic and business properties during times of heavy rain. More than 100 properties were left under water during summer 2014 as flash floods hit communities in Norwich, Thorpe St Andrew and Costessey causing £2m worth of damage.

Surface water flooding can have a huge detrimental effect on properties and therefore local communities, as we saw in Broadland and North Norwich in 2014. The northern suburbs of Norwich have experienced substantial housing growth since the 1950's and the surface water drainage systems struggled to cope with high rainfall levels.

Rainfall which lands on solid (impervious) surfaces within private land such as roofs, driveways and on the highway including the carriageway, footways and verges can lead to flooding if it is not channeled away through drainage systems.

In most urban areas this is achieved through gullies positioned regularly on the highway which connect into small scale pipe networks which through gravity discharge to existing water courses. In many residential areas on the northern fringes of Norwich the existing gullies discharge into soakaways and boreholes which connect to underground aquifers. Unfortunately these systems are old and no longer work efficiently which lead to flooding incidents during prolonged or heavy rainstorms.

Outline draft plans were produced in 2015 identifying those areas around the City where the new drainage systems needed to be assessed and investigated. Areas of Hellesdon, Old Catton, Sprowston, Thorpe St Andrew and within the Norwich City Boundary were included within the scope of the project.

During 2015 and 2016 a range of surveys were undertaken to allow design work to go forward on the assessment of solutions which also included computer surface water run off modelling.

Drainage modelling commenced in 2015 and the final phase of modelling was completed in September 2017. The intention was to design systems which could deal with higher intensity storm events than what the current systems can cope with.

Detailed design commenced in December 2015 and the majority of the design was completed by October 2017.

The list below shows areas where small to medium sized drainage improvement schemes took place:

- **Costessey – Sidney Road**
- **Great and Little Plumstead – Plumstead Road**
- **Hellesdon – Lilian Close**
- **Hellesdon - Hammond Road**
- **Hellesdon – Holt Road**
- **Sprowston – Trendall Road**
- **Drayton – Low Road**  
New soakaways and a carrier drainage system was installed.
- **Taverham – St Edmunds Rise**  
A new carrier drainage system was installed which linked to an existing system on Costessey Road.
- **Sprowston Phase 3 : Blithemeadow Drive, Blithewood Gardens, Cere Road, Bewit Road, Mantle Close**  
New carrier drainage system and aquacell infiltration system was installed.
- **Sprowston Phase 4 : Cannerby Lane**  
Two large aquacell surface water storage systems were installed to increase the available capacity of the existing drainage system which was surcharging during severe rainfall events.
- **Norwich City : Plumstead Road East**  
Several aquacell storage systems were installed to improve the available capacity of the existing Anglian Water surface water drainage system.
- **Old Catton : Oak Lane**  
This phase involved the installation of a large bank of aquacells to store up to 200m<sup>3</sup> of surface water within Catton Park to reduce the impact of the existing system from surcharging and to reduce flooding issues near to the Chartwell Road junction.

A large scale scheme in the Cozens Hardy Road area of Sprowston (Sprowston Phase 1) took place between March 2016 and December 2016. The work was delivered by Eurovia Contracting through the Eastern Highway Alliance Framework and involved the installation of:

- **3,532 metres of carrier pipes**
- **48 Manhole Chambers / Catchpits**
- **62 new gullies**
- **89 new connections to existing gullies**

Large Scale drainage infrastructure works in Thorpe St Andrew took place between January 2017 and November 2017. The work was split into four phases and involved installing a large carrier pipe (between 500mm to 900mm in diameter) along the Ring Road and St Williams Way, which enabled new drainage systems to be installed in the adjacent estate roads. The existing soakaways and boreholes will continue to be utilized, but when these become full, surface water will flow into the new carrier drainage system. The list below

### **Thorpe St Andrew Drainage Improvements**

- **10,045 metres of carrier pipes**
- **163 Manhole Chambers / Catchpits**
- **150 new gullies**
- **284 new connections to existing gullies**
- **Banks of aquacells in Gorse Road, Broom Avenue, Furze Road and Longfields Road (similar to a stack of milk crates) which will store up to 275m<sup>3</sup> of water and enable water to soak away into the ground**

The final drainage improvement works took place in Hellesdon between October 2017 and February 2018.

Installation of new carrier drainage systems in estate roads including Links Avenue, Windsor Road, Hawthorne Avenue, Waldemar Avenue, Waldemar Park and on the A140 Cromer Road between Waldemar Avenue and Brabazon Road were constructed. As part of the Hellesdon improvements, additional drainage connections were also made into some estate roads which will enable further drainage improvement work to take place in the future without having to excavate and disrupt any of the main routes in the Parish. These connections have been made on Middletons Lane at the Westgate Road junction, Middletons Lane at the Windsor Road junction and on the A140 Cromer Road at the Heath Crescent junction.

The Norwich Fringe Drainage Project was completed in late February 2018 and resulted in almost 10 miles of carrier pipes and over 270 chambers being installed.