City of York Gulley Data Management Tools

Overview

The known 42,690 gullies in the City of York Council area have been cleansed and managed on a mainly reactive basis over many years, although the majority of the system is mapped and available on asset databases and mapping layers no data and information on the asset type and cleansing process is captured in a meaningful and usable way.

Revenue budgets across all authorities are under pressure and it is essential that CYC utilise the available budget to deliver an effective and efficient gulley cleansing process. The Well Maintained Highways Code of Practice underpins all highway maintenance activities and the revised code to go live in October 2018 incorporates the recommendations of the HMEP (Highways Maintenance Efficiency Programme) Guidance on the Management of Highway Drainage Assets, the processes developed in this work will deliver the recommendations and begin the process of the development of an effective and efficient gulley management strategy.

Improved data collection

Gulley cleansing data was confined to paper records, any mapping or cleansing metrics were handed to the Highways team from operatives and these records were often stockpiled and little further action was taken.

Discussions were held with colleagues in the CYC GIS team and development began on the utilisation of the 'Collector for ArcGIS' tool that can be used to remotely gather data to be included in the councils corporate GIS layers that utilise ESRI ArcGIS outputs. The existing gulley spatial management data is managed by the Benley/Exor asset management system

The gulley layer map service is accessed via the Collector for ArcGIS app using either an Android or Apple device, Android tablets have been procured for Flood Risk Management Engineers and the gulley cleansing operatives. Gullies can be added to the map using the GPS location to define the x:y position or added manually to the map where the GPS is poor. Attribute info is then added using dropdown menus. Recorded information includes:

- ID (Exor)
- Type
- Inaccessible (Y/N)
- Cover (condition)
- Debris (amount)
- Debris type (leaves/silt etc)
- Pot (type)
- Pot size
- Trap (type)
- Final condition (after cleansing)
- Notes
- Amended by (name)
- Date of cleanse
- Cleaning frequency (recommendation)
- Date last cleansed
- Outlet direction (12 hr clock to help map connecting pipework)

All data appears live on the CYC GIS layers and defective gullies can be mapped and reported and included in repair programmes. Gullies can also be deleted or moved from the map using the tablet or phone interface and the app includes other flood risk related layers to assist users such as lamp columns and adopted roads.

Benefits

The app uses an OS base map alongside the council's business data in a live environment, the data is collected using Master Map Topography as a backdrop ensuring detail at small scale to support location finding where GPS quality is low. The App was developed in house, thereby making considerable savings in terms of having to pay an outside supplier, the costs of the app are included with the wider support/maintenance of ArcGIS as our corporate GIS product so there was no extra funding required to use the license.

Any changes made to the gullies layer in the app are immediately available for display in ArcMap and web based applications. Flood Risk Management Engineers used the devices during the Boxing Day 2015 flood event to identify the location and severity of flooding to homes and businesses, this information appeared almost instantly on the Flood Risk Management mapping layers which were viewable to users in the Strategic Control Room providing real time updates on flood risk information for officers working with all partners to manage flood response efforts.
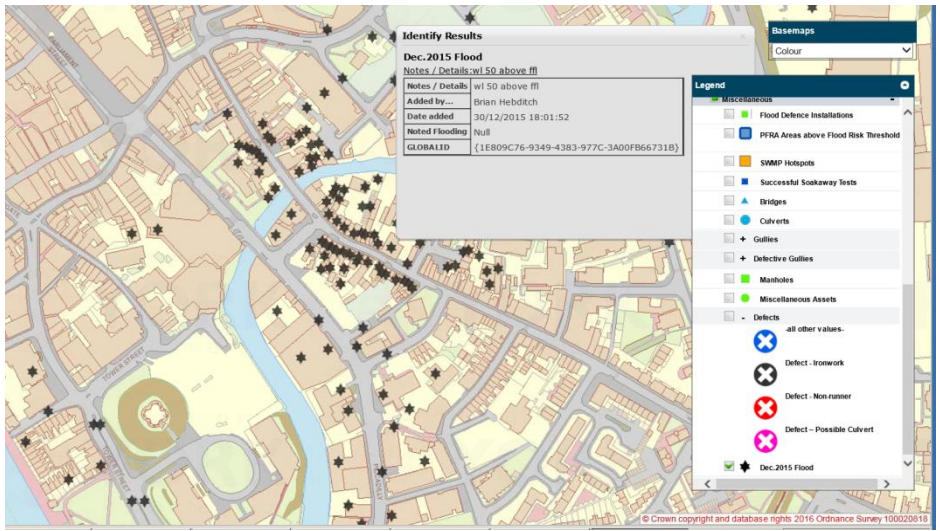
Outputs

After a slow start with all users learning and developing the approach more than 35,000 assets have been captured or updated on the system to date. 53% of those cleaned were found to be blocked.

Many of the blocked gullies required significant works to unblock due to many years of build up of debris. This significantly slowed the rate of cleansing for the crew and has raised questions over the proactive cleansing schedules that we can achieve and will drive requests for additional capital investment to ensure the asset stock is in a working condition before routine/proactive schedules can keep the network effectively clean. Even after cleansing more than 900 'none runners' were identified and require further investigation work of their connecting pipework.
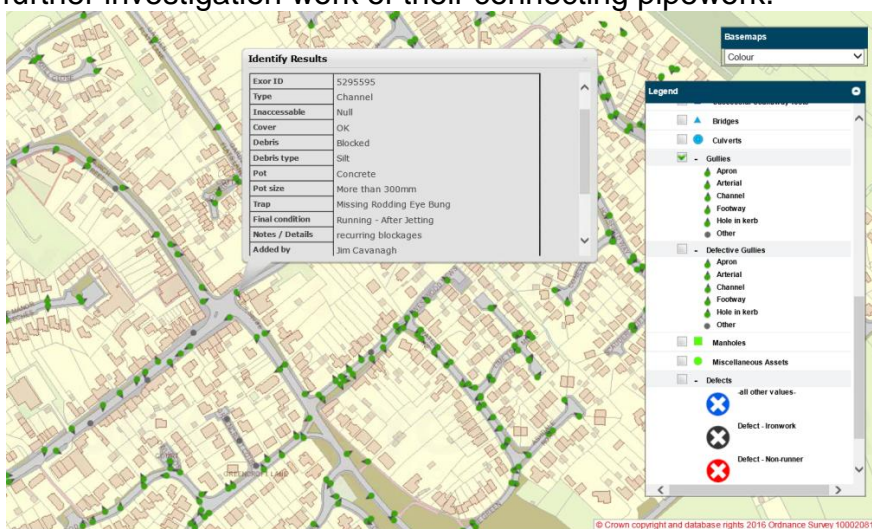
Example Gulley Cleansing Data Outputs

Example Flood Response/Post Event Survey Outputs