ADEPT Buckinghamshire Live Labs Programme
Gulley Sensors and Flood Management System

Key statistics

The trial involves the installation of the following hardware:

- 20 InTouch SmartWater Gulley Sensors to:
  a. Measure silt levels;
  b. Measure water flow levels;
  c. Detect above gulley obstructions,
- 12 InTouch SmartWater Data Concentrators to:

  Collect and transmit real-time data wirelessly from the sensors to an IoT dashboard to allow the Contractor to empty the right drains at the right time to prevent flooding.

Overview of trial

Timeline and progress

- The sensors and data concentrators were installed in March 2021, with data integration in May 2021 (the go-live date).
- The trial, which was originally due to end in November 2021, was extended to run until the end of April 2022 to cover for the winter season when there was an increase in rainfall hence increasing water flow and silt levels in the gullies which causes flooding if the right gullies are not emptied at the right time.

Successes

- Given the challenge that Covid presented, simply conducting the trial can be seen as a success as it may have needed to be paused.
- Over the last 12 months, the smart drainage system alerted the Contractor to 138 potential flooding incidents allowing the Contractor to proactively empty the right drains at the right time, preventing flooding.
- The data received from the sensors has allowed the Contractor to target maintenance activities on emptying the right gullies at the right time. Data from the trial shows that only 20% of the gullies required emptying – this could produce an 80% reduction in the level of maintenance required. The smart drainage system allowed the Contractor to identify problem areas early on, allowing them to efficiently target their resources, saving time and effort.



Lessons

We identified a number of lessons to be taken forward for future implementation.

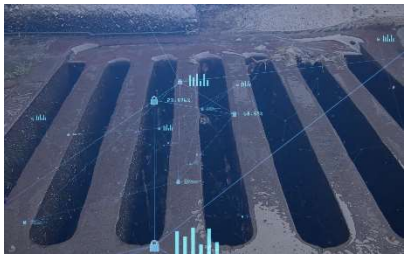
- In order to achieve the optimum benefits of the smart drainage technology sensors should be installed in high flood-risk areas.
- Gullies should be emptied prior to installation of sensors to help aid installation of the gulley probes.
- The trial was using the UHF short-range frequency (up to 150m Line of sight), this caused loss of communications to a limited number of the sensors due to their location hence was not capturing any data. For any future deployments, it is recommended to use LoRa (Long Range) communications which can reach up to a 1km line of sight.
- Better deployment planning is recommended to mitigate commissioning issues such as asset ownership and adoption.

Business case

Benefits

The Gulley Sensors and Flood Management System has the potential to help Buckinghamshire Council achieve these objectives:

- Cleaner, safer and healthier Buckinghamshire.
- Adaptation to climate change.
- Collecting real-time data to inform strategic decision making that creates operational and financial benefits.
- Effective low-cost, smart and flexible solution for condition monitoring and infrastructure management.
- Early detection of drainage water level and blockages in the drainage

Costs

Trial costs:

- £182k for the installation and operation of all 20 sensors and 12 data concentrators. Includes up to one year of supplier support (May 2021-End April 2022)

Next Steps

- Subject to business case being proven, planning the adoption of the permanent deployment of the solution.