



# Smart Sewer Monitoring

Operational benefits

# What are we trying to achieve

- 💧 **Prevent system overflows**
- 💧 **Reduction in operational costs**
- 💧 **Understanding the network behaviour in different weather conditions**
- 💧 **Improve scheduling of maintenance and inspections**
- 💧 **Pin point problem areas in the network**



# Primary Areas of Concern

- 💧 **Understanding how the sewer responded in wet weather events**
- 💧 **Value for money in further investment of inflow and infiltration**
- 💧 **Response times and actions in dry weather events**



# Defining Technology Requirements

## Existing Technology



## New Technology



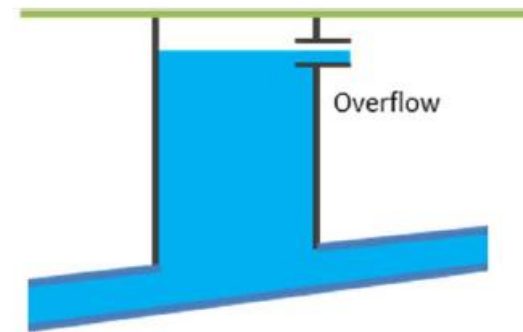
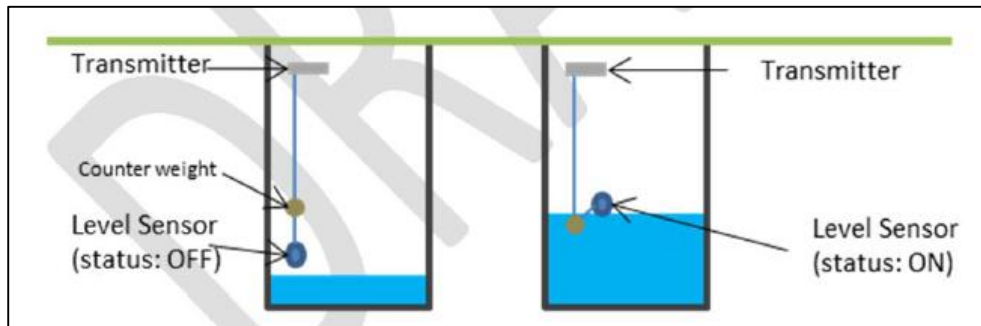
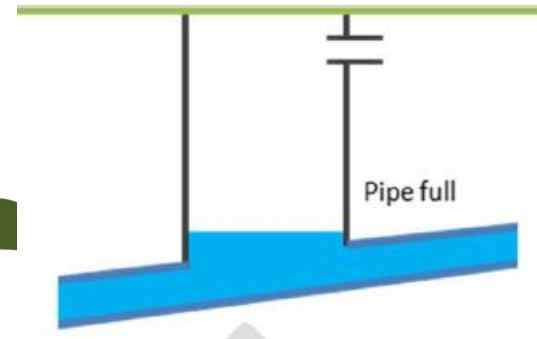
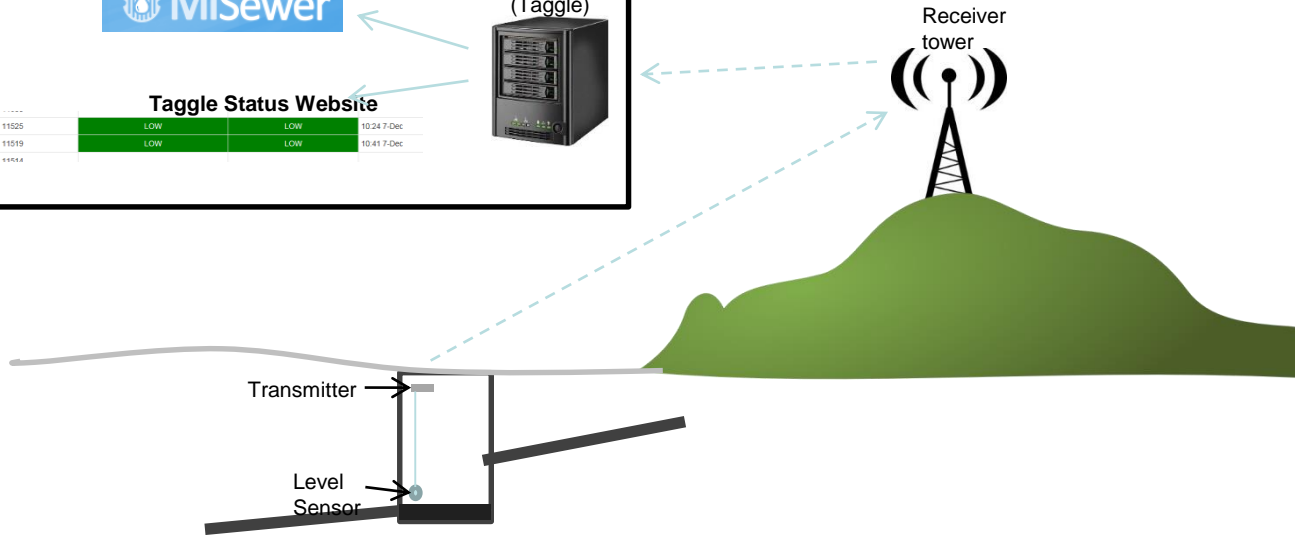
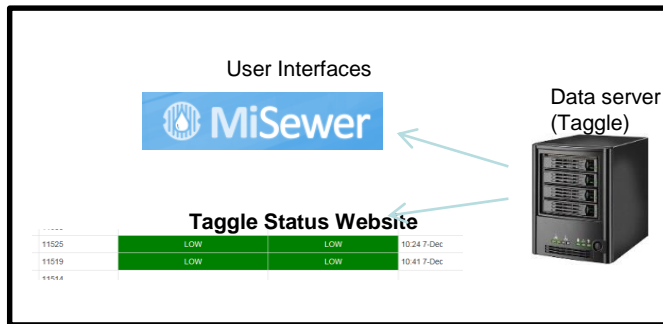
# Data Requirements

- 💧 Preventing rain events resulting in this outcome



- 💧 Pinpointing the problems within the network

# How The Sewer sensors Work





# Finding a Solution

- 💧 we worked with the manufacturer to design/develop a low cost device that delivered the basic requirements.
- 💧 First device consisted of 2 float switches, attached to a transmitter



# Typical Taggle Installation

**\*Transmitter positioned at top of manhole**

**\*Low level float positioned at obvert of pipe**

**\*High level float positioned at overflow level**





Internet Explorer window showing the status of various sewer monitoring points in Mackay. The address bar displays <https://web.taggle.com.au/mackay/status>.

Location	ID	Status 1	Status 2	Time
MACKAY 2 MANSFIELD DRIVE	11451	LOW	LOW	19:49 15-Apr
MACKAY PSMC05 GOLDSMITH STREET SPS	11474	LOW	NO SENSOR	19:13 15-Apr
MACKAY PSWA03 KENNEDY STREET SPS	11488	LOW	NO SENSOR	01:10 15-Apr
MACKAY PSAN03 BEDFORD ROAD NO 1 SPS	11501	LOW	LOW	19:48 15-Apr
MACKAY PSNM03 GOOSEPONDS SPS	11504	LOW	LOW	19:09 15-Apr
MACKAY PSNM15 OASIS DRIVE SPS	11505	LOW	NO SENSOR	19:26 15-Apr
MACKAY PSWA01 BOLD STREET SPS	11506	HIGH	LOW	19:09 15-Apr
MACKAY BEACONSFIELD SPS1	11508	LOW	LOW	19:41 15-Apr
MACKAY PSSA02 PLACE AVENUE SPS	11509	LOW	LOW	19:22 15-Apr
MACKAY PSBE01 BEACONSFIELD NO 1 SPS	11510	LOW	LOW	18:58 15-Apr
MACKAY PSBE01 BEACONSFIELD NO 1 SPS	11511	LOW	LOW	19:38 15-Apr
MACKAY PSMI01 MACKAY-EUNGELLA ROAD SP	11512	LOW	LOW	19:32 15-Apr
MACKAY PSMP02 SUNCREST COURT SPS	11513	LOW	LOW	19:18 15-Apr
MACKAY PSNM01 BASSET STREET SPS	11514			
MACKAY BEACONSFIELD SPS1	11515	LOW	LOW	19:51 15-Apr
MACKAY PSMC01 SYDNEY STREET SPS	11516	LOW	LOW	19:49 15-Apr
MACKAY PSSA01 BILTOFT STREET SPS	11517	LOW	LOW	19:10 15-Apr
MACKAY PSBU01A DUMP ROAD SPS	11518	LOW	NO SENSOR	19:54 15-Apr

The taskbar shows the system time as 8:07 PM on 15/04/2015.

## Examples of sewer monitoring from Jaie Harris (Team Leader Sewer)

### 💧 Tag 11526 Gooseponds SPS catchment

This taggle warned of a dry weather blockage, caused by top hat failure during sewer relining program.

### 💧 Tag 5545 Beaconsfield Rd No.1 SPS catchment

This taggle is located on a trunk main and warned of a dry weather overflow at the Beaconsfield No1 SPS, caused by pump failure. The device alerted of the issue before SCADA.

### 💧 Tag 11514 Queens Street, North Mackay

This device is located at the end of Hamilton street SPS rising main. Networks reported that this device has activated often and has been useful in preventing sewer spills. It is used to warn pump station operators of imminent spills allowing them to manage the sewer network and pump stations to release at controlled spill sites.

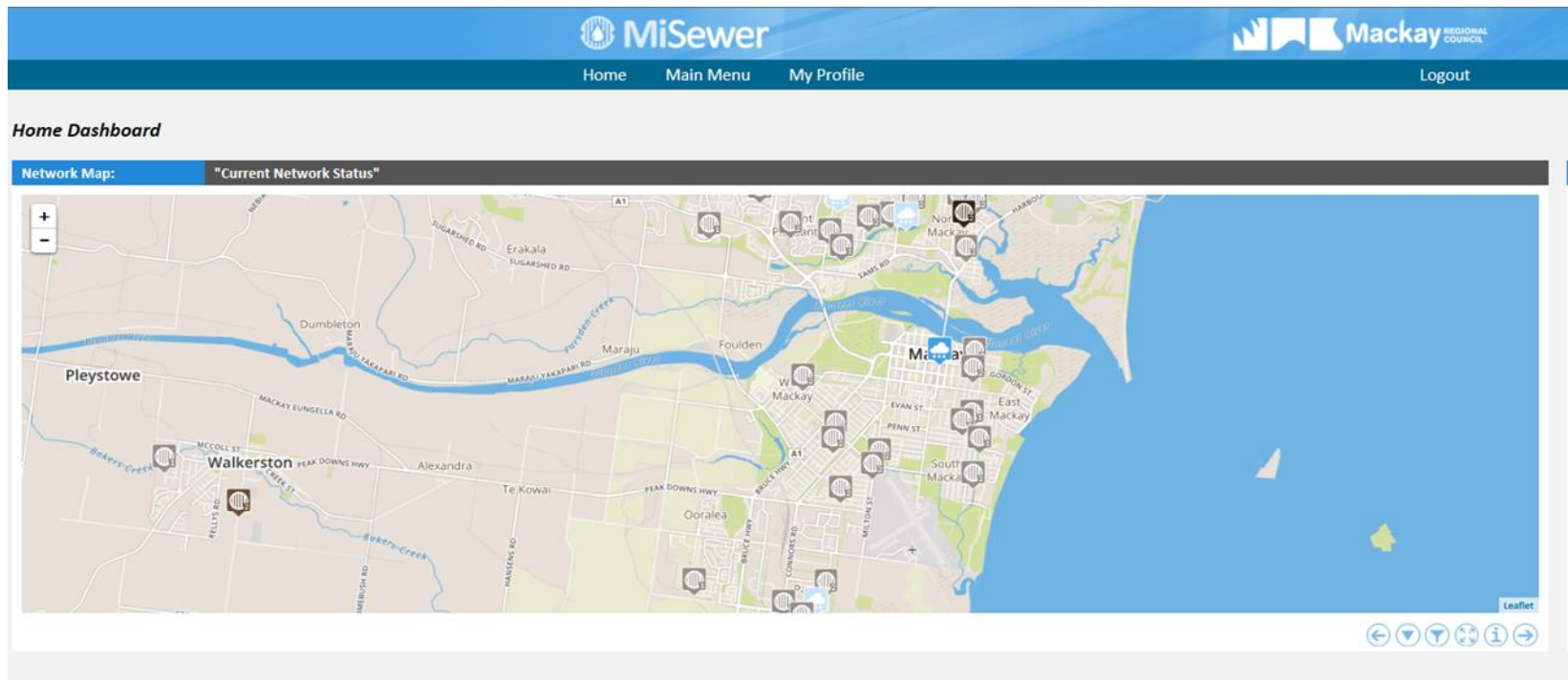


# Manufacturers redesigned device



# Mi Sewer Portal

- ◆ We are still developing MiSewer this is how the portal looks and is soon to be released for operational use.
- ◆ It shows where the sewer sensors are located and what the status of the device is.



# Sensor Upgrade

- ◆ **More advanced processor within the transmitter(i.e. embed processing capability within the device located in the manhole).**
- ◆ **The devices were also redesigned so that the float switches were now connected to the transmitter in a detachable manner.**
- ◆ **High quality connectors able to withstand harsh environments in sewer manholes**



# Conclusion

- 💧 We still have a lot of work to do with our planning team identifying new installation locations for new sensors to be installed.
- 💧 The addition of sewer sensors has helped reduce staff time spent cleaning up after spills have occurred.
- 💧 Creating the ability to plan better for maintenance practices through understanding where potential issues are in the network
- 💧 Better work force planning in wet weather events understanding better how the network is behaving and through data patterns identify if it is out of character.
- 💧 There will be further development of MiSewer once implemented with reports created and alarms signalling out to inform of issue areas.



# Questions

