

Muck is Brass

How SRD Wireless Technology has helped to
reduce pollution and achieve regulatory compliance
in the European Wastewater Sector



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The Rough Facts of Life



Population of Europe 742 Million:

99% have Access to Clean Drinking Water

95% Have Access to Good Sanitation (Sewage)



Globally 780 Million have no Access to Clean Water

2.5 Billion no Access to Sanitation



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European Legal Frameworks Driving up Standards



Urban Wastewater Treatment Directive 97/271/EEC

European Water Framework Directive 2000/60/EC

Environmental Liabilities Directive 2004/35/EC

European Bathing Water Directive 2006/7/EC

Classifications: **Excellent**
Good
Sufficient
Poor



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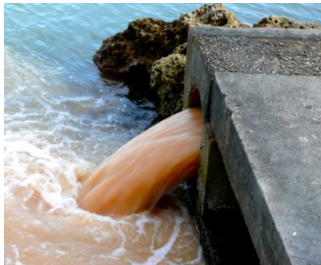
Drivers for Sewer Network Monitoring & Alarms



Blockages = Pollutions and Backflow (Surcharge)

Monitor and Alarm for High Levels

Spills = €€€€ Fines



Sewer Overflows – Combined Sewer Overflows

**= Contaminated Beaches and Bathing Water
+ Contamination of Shellfisheries**

Monitor for Flow & Duration of Events (EDM)

Alarm if Event Not Linked to Rainfall

Warn Bathers & Shellfishery Owners

Poor Bathing Water = €€€€ Fines & Beach Closures

**Equipment Failure – Pumps & Treatment Plant Can Lead to
Illegal Discharges, Surcharges and Overflows**



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The Practical Need for Real-Time Data

We need to reduce pollutions, improve water quality and protect the environment

With real-time data we have a chance to mitigate events

With real-time data you can be confident that you have working sensors and communications

With real-time data we find it much easier to verify the validity of alarms

Send out real-time warnings to bathers & Shellfisheries

With real-time data you can cross-correlate alarms

We need to improve energy & resource efficiency – we can only do this with real-time data

We can see how things interact with real-time data



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The Sewer Network Monitoring Challenge



Estimated to be > 10,000,000 km of Sewer and Drains



99.99% of the sewer network length without power

99.99% of the sewer network length below ground

100% Potential for Hazardous Gases

100% Corrosive Atmosphere – Acidic and Damp

100% Risk of Total Flooding of Equipment



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The Access Challenge

Sewer Access is Highly Restricted:



H & S Confined Space – Entry Restricted to Trained Operatives

95% of Sewers Below Roads : Road Traffic Management

Can be costly €2000 per closure

Road Closure Permits Take up to 6-Weeks



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The Ultimate Challenge – When the Cover is Closed

The Manhole Cover Challenge



99% Cast Iron Construction up to 100Kg Weight

99% Sealed to be Air Tight with Overlapping Lip Seal

H&S in Most Countries Prohibit Modification or Attachment

1000s of Designs – No Standard Aside from Load Testing

Equates to about 90% RF Signal Attenuation

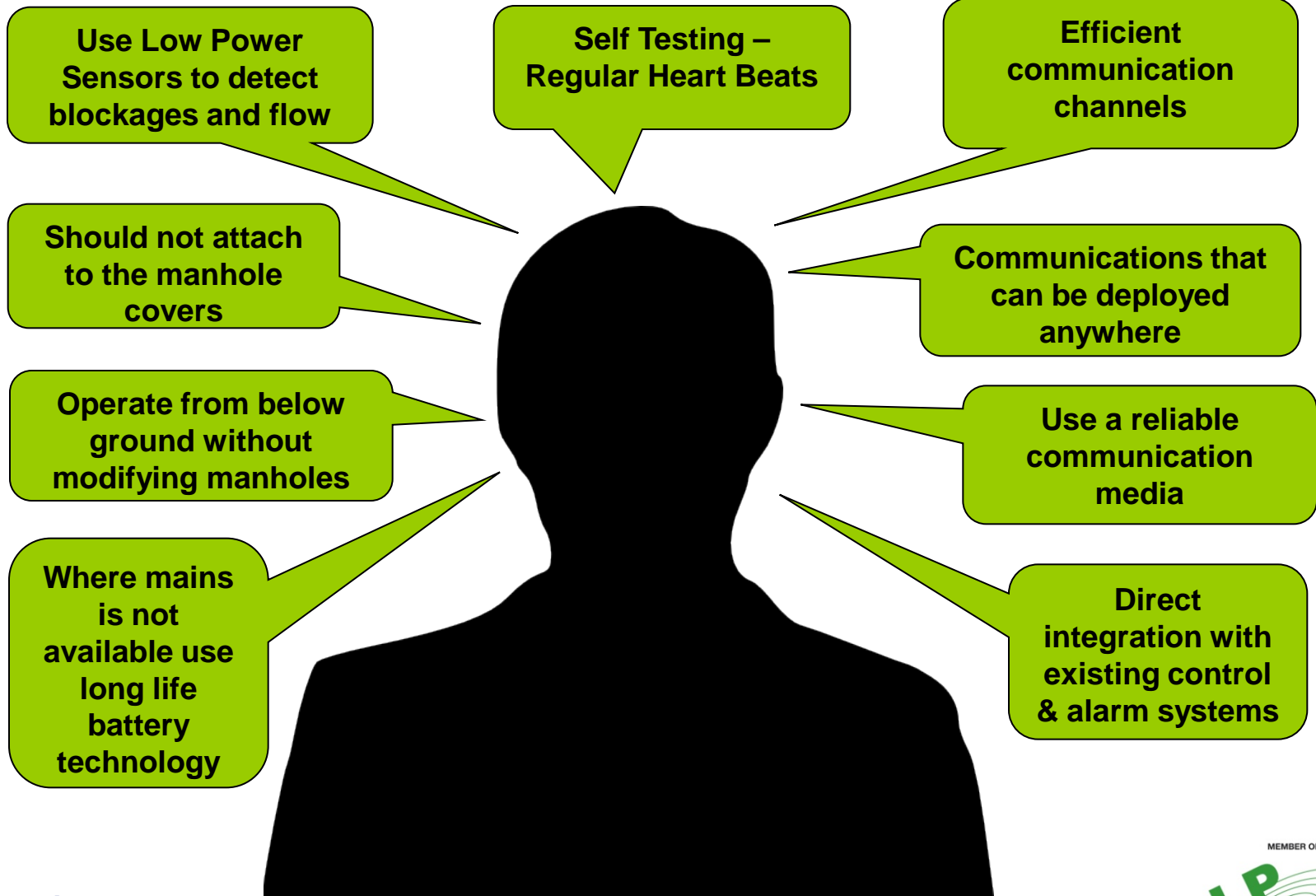


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Summary Requirement for Real-Time Data & Alarms



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The Options



Low Power Radio (SRD)

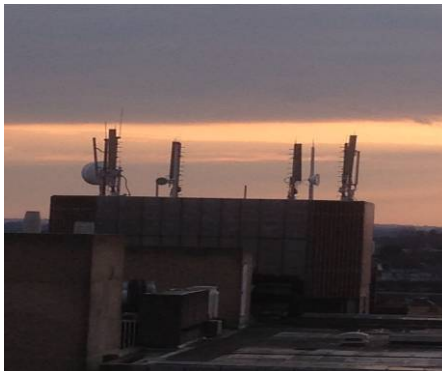
Network has to be constructed

Have total control and can optimise performance

Low power = long battery life

Mix with licenced radio for backbone communications

Easy to interface with local control systems



Cellular

Have no control over networks

Risk of cellular obsolescence 2G --- 5G

Coverage not optimised for below ground use

Network existing in many regions

Power consumption per message high

Cost per message / per Mb

No SLA available

Network outages and congestion

Difficult to test

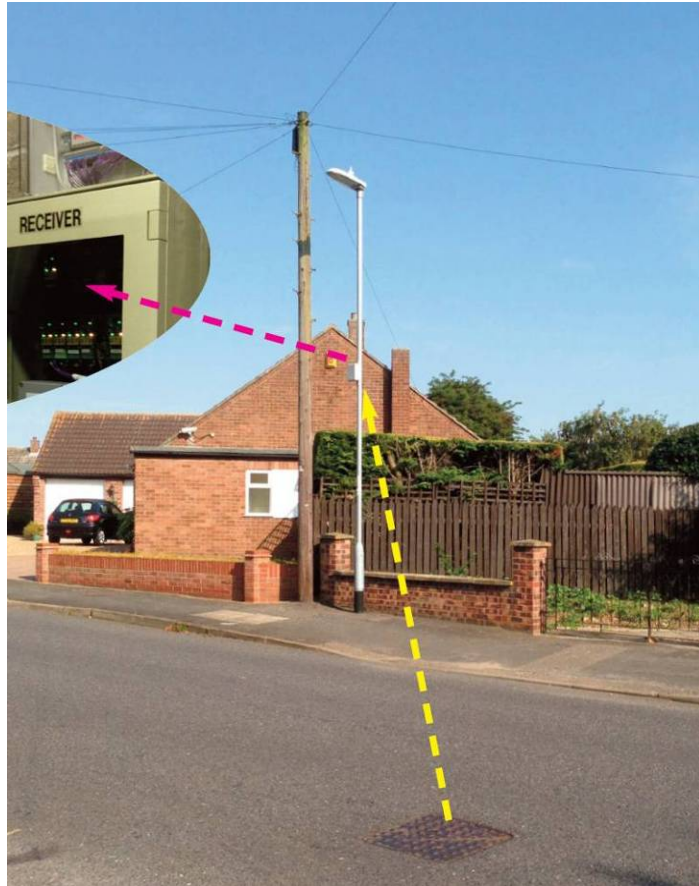


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Solution – SRD Uplink & Licenced Back-link



Battery Powered Booster



SRD Integrated Sensor

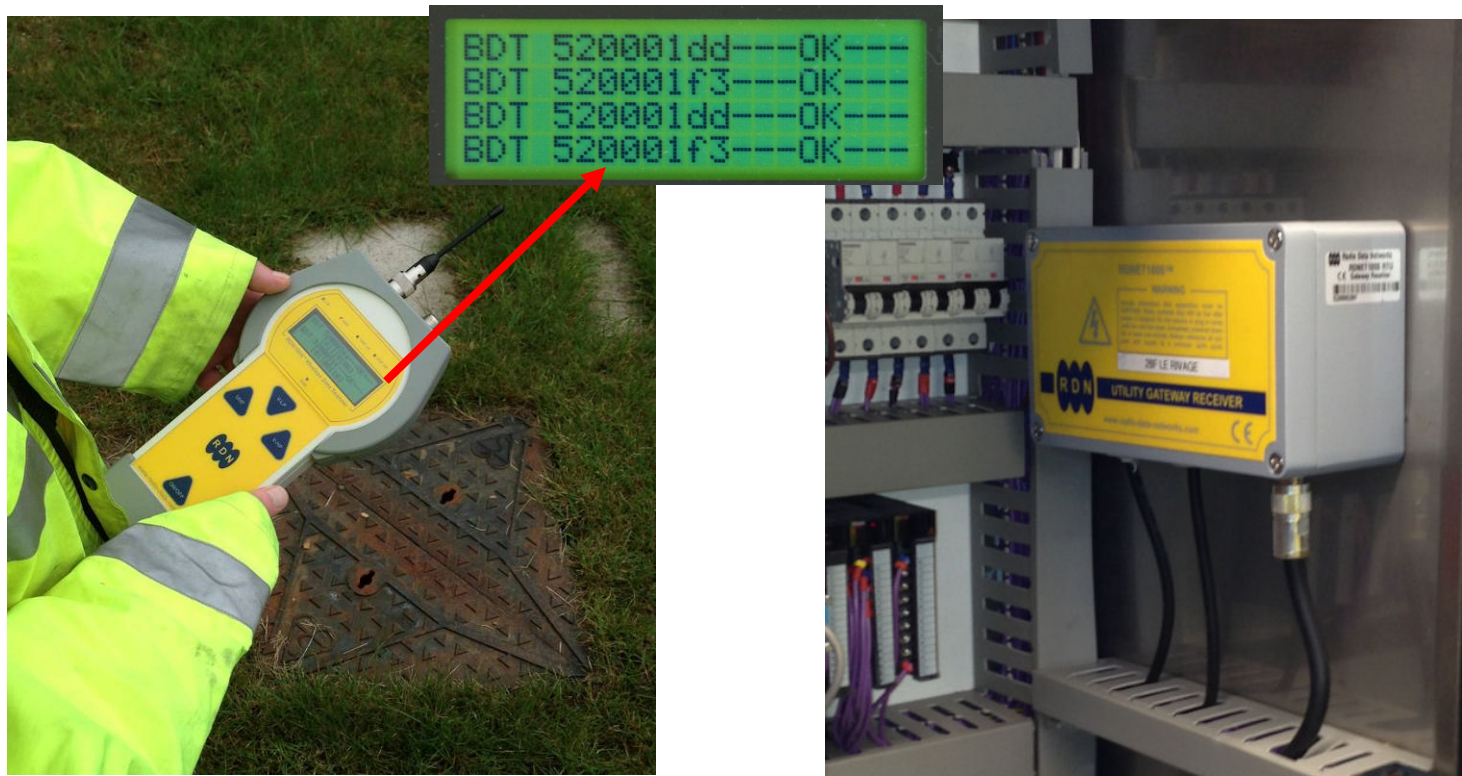


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SRD Read in the Field – Interface to Control



Unlike GSM - Sensors can be monitored in the field without lifting a manhole, plus data delivered live to local control



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A SRD Enabled Success Story

Success Story: Now Used at circa 1000 Locations in the UK and Channel Islands of Jersey & Guernsey = 100,000,000 messages per year!

Has reportedly assisted in the reduction of pollutions incidents at “hotspots” by 60%

Used to implement real-time control / pollution mitigation – control pumps and close of valves

Used by commercial factories, schools and restaurants to warn of blockages and surcharges

Delivers live real-time warnings to bathers and shellfisheries

Free from turmoil in cellular market

A good example of where SRD technology has made a positive contribution to an industry sector and the environment.



Containment valve



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Thank you – Any Questions



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