



Contaminated industrial stormwater networks - live monitoring and pollution detection

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Biography:

Heath is an enthusiastic, passionate and professional Environmental Engineer with ten years of diverse International and Australian experience. His previous positions within Melbourne, Regional Victoria and the United Kingdom have involved planning, designing and supervising construction of water, wastewater, irrigation and recycled water projects. He also has experience developing long term water security strategies and management of bulk water entitlements. Effective collaboration of water efficiency and conservation programs including Integrated Water Management and water sensitive urban design projects have recently allowed him to deliver innovative, cost effective integrated solutions to complex problems. Recent experience in urban catchment management and industrial pollution prevention has proven to be highly challenging and rewarding, and is a rapidly becoming a passion.

The contaminated industrial stormwater networks - live monitoring and pollution detection project aims to improve stream water quality within Dandenong Creek by preventing illegal discharges from industrial land areas. One sub catchment area; Old Joes Creek, has been specifically targeted.

These works investigate the viability of using a combination of new and existing technology to detect abnormal flow events within the trunk drainage network, and to identify the location of key pollution sources within the connecting stormwater infrastructure of the sub catchment. Detection is enabled by the utilisation of two technologies; ultrasonic level/flow sensors with gas detection and rainfall radar detection capabilities and prototype Arduino units (low cost multiple gas and flow rate sensor devices), for the trunk and minor drainage systems respectively.

Water quality monitoring results (undertaken by CAPIM {Centre for Aquatic Pollution Identification and Management} from 2011 to 2018) identified Old Joes Creek as a major source of heavy metal pollution, amongst a variety of other organic and inorganic pollutants. These results were also used to identify the types of businesses that may be negatively impacting the waterway, and what technology may enable live detection to identify the source.

Based on the previous work undertaken, there is a broad understanding of the type of contaminants entering Dandenong Creek via the Old Joes Creek industrial catchment. A number of these contaminants are likely to cause alterations in the flow and air environments within the stormwater system, potentially making detection of pollutants possible using this emerging technology.

An extensive network of prototype loggers has been installed within the Old Joes Creek catchment, based on the evidence provided by the CAPIM research over the past 7 years. These loggers transmit live data back to servers, overlay rainfall data and provide information and alarms about the operating environment of the stormwater system in real time.