

NatVal 2.2 – Sub-project 5 Development of Methods for Pathogen Isolation, Culture, Detection and Enumeration



Lead organisation

Water Research Australia
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Sub-project Leader

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Sub-project summary

A number of issues exist with the enumeration of the reference pathogens used in the *Australian Recycled Water Guidelines* to demonstrate treatment system performance. The reference pathogens include human enteric viruses (in particular adenovirus and rotavirus), *Campylobacter* and *Cryptosporidium*. A variety of methods are used for isolation, culture and detection of reference pathogens, which makes comparison of data difficult. The methods are in some cases limited in application (such as *Campylobacter*) due to highly variable results and may be improved through application of new technologies.

The project aims to deliver improved methods for the detection and enumeration of the reference pathogens *Cryptosporidium*, *Campylobacter*, adenovirus and rotavirus that are relevant for the development of validation protocols for individual treatment processes under investigation within other NatVal 2.2 subprojects and includes a literature review that summarises the current status of methods for use in wastewater matrices, as a starting point for any method improvement.

The objectives of this sub-project are to:

- undertake a literature and data review to establish appropriate methods for viruses, *Campylobacter* and *Cryptosporidium* and identify any appropriate pathogen-surrogate pairs that may be of use in other sub-projects
- develop improved methods for the isolation, culture, detection and enumeration of reference pathogens (*Cryptosporidium*, *Campylobacter*, adenovirus and rotavirus) in wastewater matrices
- undertake inter-laboratory trials to confirm the wider use of methods across Australian laboratories
- provide guidance to which surrogates/pathogens coupled with appropriate protocols are suitable for validation activities across particular wastewater treatment processes and source waters destined for reuse.

Participants

SA Water/AWQC
CSIRO
Sydney Water Corporation
Melbourne Water

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Budget

Salaries	Operating costs	In-kind contribution	Total value
\$ 215,204	\$ 247,000	\$ 506,128	\$ 968,332

Milestones

- 31 December 2013** Literature review and technical requirements
- 30 April 2014** Intermediate report on research on Recovery and PCR methods
- 27 February 2015** Final report on research on Culture-based methods and inter-laboratory testing
- 30 June 2015** Final reference methods



Work program

