Research objectives

The need for a fast, accurate method to enumerate bacteria in water is of high priority for public health (ref). Spectroscopy based methods have been suggested by several experts (refs), however, most methods are either too expensive, not sensitive enough or have not been tested in real situations. This study aims to examine two spectroscopy methods: Low resolution Raman spectroscopy and fluorescence spectroscopy. The specific aims of this study are:

1. Test the detection thresholds of low resolution Raman spectroscopy for detecting bacteria in water
2. Test and compare the detection threshold of fluorescence spectroscopy, both single wavelength and full EEM analysis, for detecting bacteria in water
3. Compare both methods and outline a recommendation for further studies
4. Assess the ability of detecting bacteria in real drinking water samples
5. Evaluate the ability of both low resolution Raman and fluorescence spectroscopy at differentiation between different species of model bacteria