General Enquiries on the form should be made to:
Defra, Procurements and Commercial Function (Evidence Procurement Team)
E-mail: research.competitions@defra.gsi.gov.uk

Evidence Project Final Report

- Note
  In line with the Freedom of Information Act 2000, Defra aims to place the results of its completed research projects in the public domain wherever possible. The Evidence Project Final Report is designed to capture the information on the results and outputs of Defra-funded research in a format that is easily publishable through the Defra website. An Evidence Project Final Report must be completed for all projects.

- This form is in Word format and the boxes may be expanded, as appropriate.

ACCESS TO INFORMATION
The information collected on this form will be stored electronically and may be sent to any part of Defra, or to individual researchers or organisations outside Defra for the purposes of reviewing the project. Defra may also disclose the information to any outside organisation acting as an agent authorised by Defra to process final research reports on its behalf. Defra intends to publish this form on its website, unless there are strong reasons not to, which fully comply with exemptions under the Environmental Information Regulations or the Freedom of Information Act 2000.

Defra may be required to release information, including personal data and commercial information, on request under the Environmental Information Regulations or the Freedom of Information Act 2000. However, Defra will not permit any unwarranted breach of confidentiality or act in contravention of its obligations under the Data Protection Act 1998. Defra or its appointed agents may use the name, address or other details on your form to contact you in connection with occasional customer research aimed at improving the processes through which Defra works with its contractors.

### Project identification

1. Defra Project code
   - ERG1201

2. Project title
   - An analysis of water company raw water monitoring data for 2009-2011 (DWI 70/2/281)

3. Contractor organisation(s)
   - ESI Limited
     - New Zealand House
     - 160 Abbey Foregate
     - Shrewsbury
     - SY2 6FD

4. Total Defra project costs (agreed fixed price)
   - £ 44,050

5. Project: start date
   - September 2012

   end date
   - September 2013
6. It is Defra’s intention to publish this form.  
Please confirm your agreement to do so. ................................................................. ***YES [ ] NO [ ]***

(a) When preparing Evidence Project Final Reports contractors should bear in mind that Defra intends that they be made public. They should be written in a clear and concise manner and represent a full account of the research project which someone not closely associated with the project can follow.  
Defra recognises that in a small minority of cases there may be information, such as intellectual property or commercially confidential data, used in or generated by the research project, which should not be disclosed. In these cases, such information should be detailed in a separate annex (not to be published) so that the Evidence Project Final Report can be placed in the public domain. Where it is impossible to complete the Final Report without including references to any sensitive or confidential data, the information should be included and section (b) completed. NB: only in exceptional circumstances will Defra expect contractors to give a “No” answer.  
In all cases, reasons for withholding information must be fully in line with exemptions under the Environmental Information Regulations or the Freedom of Information Act 2000.

(b) If you have answered NO, please explain why the Final report should not be released into public domain

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**Executive Summary**

7. The executive summary must not exceed 2 sides in total of A4 and should be understandable to the intelligent non-scientist. It should cover the main objectives, methods and findings of the research, together with any other significant events and options for new work.

Not Required
8. As a guide this report should be no longer than 20 sides of A4. This report is to provide Defra with details of the outputs of the research project for internal purposes; to meet the terms of the contract; and to allow Defra to publish details of the outputs to meet Environmental Information Regulation or Freedom of Information obligations. This short report to Defra does not preclude contractors from also seeking to publish a full, formal scientific report/paper in an appropriate scientific or other journal/publication. Indeed, Defra actively encourages such publications as part of the contract terms. The report to Defra should include:

- the objectives as set out in the contract;
- the extent to which the objectives set out in the contract have been met;
- details of methods used and the results obtained, including statistical analysis (if appropriate);
- a discussion of the results and their reliability;
- the main implications of the findings;
- possible future work; and
- any action resulting from the research (e.g. IP, Knowledge Exchange).

Water companies in England and Wales have a legal requirement to monitor the quality of raw water abstracted for drinking water supplies. The purpose of such monitoring is to inform drinking water safety plan risk assessments for each water treatment works and associated supply system. This approach assesses and manages hazards and hazardous events that could potentially impact on the source of the water used for public supplied. The adequacy of the data parameters and temporal changes in concentrations from the raw water monitoring provides a view of future potential treatment challenges and compliance with drinking water standards. In addition the analysis may identify locations where existing treatment may not be needed thus potentially reducing operating costs and damaging environmental emissions.

ESI Ltd was contracted by DWI to review the raw water quality data collected by the water companies since 2009. This work has provided a first review of these data regarding:

- The quality of the data provided by individual companies;
- The variability of parameters provided by individual companies;
- The variability of data for the same parameters provided by different companies;

This project has concluded:

- That most water companies provided data to assess general water quality parameters such as turbidity, nitrogen species, hydrogen ion (pH), colour, metals, etc. However there was a lot of variation, and some companies did not provide any data for some parameters and this issue needs to be considered further.

- Most companies also provided data on pesticides and other organic chemicals.

- Many companies provided data on a large number of pesticide results which were never observed above the level of detection. It is possible that water companies schedule analysis by pesticide groups rather than individual pesticides that may be a risk to supplies.

- All companies, except one, provided data for some or all of the microbiological indicator parameters. Likewise all companies, except two, provided data for some or all of the microbiological-pathogen parameters. Eight companies provided some form of limnological data, mainly for surface water sources. We note that presumptive data were excluded from this study. We suggest that the provision of data for microbiological parameters is considered further.

- Analysis of the entire dataset also suggested that some water companies may need to review their analytical methods for certain parameters as they did not appear to be sufficiently low. (However it is possible that in some cases the limit of detection data were reported in the wrong units.) We suggest that companies review their analytical methods to ensure that the level of detection values are appropriate.

- Suggestions have also been made regarding how future data is collected by the companies and subsequently stored by DWI. In particular, it is suggested that the certainty between supplied raw
water data and planned monitoring programme is improved. It is also suggested that for any future data analysis, source locations are not restricted from the analysis so that waters can be characterised by aquifer and river basin as this will provide a much more meaningful analysis of the data.

## References to published material

9. This section should be used to record links (hypertext links where possible) or references to other published material generated by, or relating to this project.

| Not Applicable |