Ability to analyse and evaluate environmental and/or water problems.

You may wish to identify a project or a piece of work for which you have had responsibility (e.g. community / user / infrastructure / environment / economic / compliance) demonstrating that you understand why the work is needed and the implications of potential solutions.

Undertake research (site surveys / mapping / desktop research) to demonstrate you have considered the implications of potential solutions, including the legislative, social, historical, ecological, environmental and/or financial as appropriate, this will include all stakeholders' perspectives (client / public / regulators / users).

Key Questions

- What was the **problem or opportunity** you needed to address?
- What **research/investigation** did you carry out?
- What were the main factors (including topography, other services, funding, hydrology, compliance standards etc) which needed to be considered in investigating the problem and considering potential solutions?
- Who were the **stakeholders**?
- How did you **consult** with key stakeholders?
- How did you ensure that the nature and extent of the problem was **fully understood**?
- Did you prepare and agree a brief for **investigatory work**?
- When evaluating problems, what is the importance of **professional neutrality**?

Examples

- Following an asset failure, I am leading a national review of the performance of a particular asset type. Circulated a questionnaire to 2,500 asset owners (design, guidance, mitigating measures to reduce any flood risk. Used the data to develop a £40M investment plan to replace these assets. While developing this plan I consulted with colleagues with responsibilities in the field but also lead contacts for MEICA, legal, procurement and estates teams before presenting to directors. I used a range of consultation techniques from face to face meetings, site visits and mass webinars. Once the directors approve the approach, I will prepare a brief for delivery in the form of a business case.
- I am often called to analyse and evaluate both environmental and water problems in the Strategic Flood Risk Assessments (SFRA) I undertake. This work involves analysing flood risk from multiple sources to evaluate the many competing development sites within a Local Authority (LA) to identify more suitable sites for development that would not increase flood risk elsewhere. I do this by employing a range of methods including practical review of historic flooding, and review of the predicted flood risk to all areas based on theoretical assessment. Used to promote an environmental perspective to planners and developers. I effected behavioural and cultural change by demonstrating the opportunities that integration of SuDS and water sensitive urban design principles into developments.
- I reviewed Hydrological Risk Assessments (HRA's) and developed conceptual hydrogeological models following a field and desk-based review to understand the associated risks and suitable mitigation measures. For example, planned pile bridges had the potential to cause turbidity during construction so understanding borehole proximity, operational status, regional and local groundwater flow directions and aquifer transmissivity. Enabled me to make recommendations including the need for a monitoring strategy, avoiding peak demand summer periods and working with operations to use alternate supply sites temporarily during construction.

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- Drought conditions and flooding events put the deployable output from their Water Company assets at risk. I project managed, field-tested and calibrated a Strategic Main Network Model for CLIENT. Included the Water Treatment Works (WTW) in LOCATION that has suffered from a number of severe flooding incidents. Covered a large geographical area and large number of stakeholders. Required a lot of liaison and coordination with WTW site owners, county distribution/supply and trunk main teams. A challenging aspect of the project was working around the CLIENT teams daily tasks. This caused a number of changes to the programme. The logging sites posed differing risks and environments - specific, clear and precise risk assessments and method statements. The aqueducts high-pressure mains were critical to S CLIENT, so great care had to be taken not to disrupt CLIENT's operations. A number of trunk mains ran along main roads (including dual carriageways). Consider road safety and traffic management. Enabled CLIENT to simulate strategic operations and later merge with other models to create a larger strategic grid model.

Discussion Activity

Discuss on the forum or with your peers at work:

- Identify a project or a piece of work for which you have had responsibility
- Why was the work needed and the what were the implications of potential solutions
- What research did you consider regarding the implications of potential solutions
- Who were the stakeholders and what was their perspectives
- When evaluating problems, what is the importance of professional neutrality?

Written activity

This week…

- Spend 15 mins answering the 'key questions' discussed today
- Prepare 5 bullet points to evidence your ability to analyse and evaluate environmental and/or water problems

Related professional registrations

While looking at B1 you may want to consider incorporating the following related professional regulations for Chartered Env/Eng/Sci.

- (CEng, B1) Identify potential projects and opportunities.
- (CEng, B2) Conduct appropriate research, and undertake design and development of engineering solutions.
- (CSci, A2) Use theoretical and practical methods in the analysis and solution of problems.
- (CSci, B1) Plan and organise projects effectively.
- (CEnv, A3)
  Analyse and evaluate problems from an environmental perspective, develop practical sustainable solutions and anticipate environmental trends to develop practical solutions.