

Background to CIWEM

The Chartered Institution of Water and Environmental Management (CIWEM) is the leading professional and qualifying body for those who are responsible for the management of environmental assets. The Institution provides independent comment on a wide range of issues related to water and environmental management, environmental resilience and sustainable development.

CIWEM welcomes the opportunity to submit this response to the Canal and River Trust on its water resources strategy. In formulating this response we have consulted with our members that work in water resource management. Whilst representing themselves as individuals, our Water Resources Expert Panel garners experience from those working for the Government, regulators, water companies, non-governmental organisations and a number of leading consultancy companies.

Response to consultation questions

For questions 1-7 and 9-14 the following categories have been used:

a) Strongly agree b) Agree c) Neither agree, nor disagree d) Disagree e) Strongly disagree

Key concept definitions

Q1: Do you think these definitions will be understood?

a) Strongly agree for most definitions

e) Strongly disagree for frequency of drought and navigational drought closure, and hence levels of service.

The definitions provided for navigational drought, hydrological units and level of service (on pages 7 and 10) are likely to be understood by all. The definition of frequency of drought and navigational drought closure (p10) is multi-faceted and may not be fully understood by the general public. A definition based on duration of low water levels (and hence navigational restriction) may be easier to understand.

It is surprising that no mention is made of climate variability, volatility and change in the discussion of drought and drought uncertainty, on pages 6 and 10. It features on p10 and on p20, but in too specific a context. This is a missed opportunity to explain the limits to which level of service (defined in frequency terms) can be delivered.

The level of service should not be decided by taking a survey of customers, for example, boaters, who would be affected by the level of service.

Aspirational level of service

Q2: Do you agree that the Trust should maintain the same aspirational minimum level of service of a 1 in 20 year drought and that this should apply across the network?

d) Disagree and e) Strongly disagree

It might be better to state a minimum acceptable standard and an aspirational standard to define a likely range.

There is no compelling driver to have a uniform level of service for every canal. Different canals have different numbers of users and hydrology. Some have commercial use, most do not; some are strategic links, some are not and there are alternative routes. Some canals would require much more investment to bring them to the 1 in 20 year level of service. CIWEM considers that to achieve optimum levels of service, they should be defined locally by reference to hydrology, cost proportionality and affordability.

Regarding water sales (or transfers, for the same reason), CIWEM considers there being little attractiveness to buyers of being able to buy water when there is plenty of it, but not when there is a shortage of it.

Regarding the example in paragraph 2 on p12, those who expect to enjoy a high level of service should expect to have to pay proportionately more for it, subject to other factors.

The key point of the data shown in Table 1 and Figure 3 is the rise in deficit in each individual unit, not the differences in deficit between the units. We consider a time series plot would be more suitable than a bar chart to show this data in Figure 3.

The point that providing higher levels of service costs more is rather laboured on p13 and 14. It may be better to focus on defining the level of service that could be provided for a defined cost in each hydrological unit, with costs of service maps being used to show geographic variation around the network.

Stakeholder surveys on levels of service need to provide costs against different level of service, for the various hydrological units. We question if such data were provided and if the surveys provide reliable evidence and opinion.

Restorations and new canals

Q3: Do you agree that the Trust should expect a water resources study to be undertaken for any proposed restoration or new canal, to assess the supply and demand of water and that there should be no net impact on levels of service of the existing canal network due to a restoration or new canal?

b) Agree, but

CIWEM agrees that the minimum acceptable level of service of individual hydrological units could still be delivered, within all units that would be affected by connecting a restored unit into the system; but not that the aspirational level of service of each unit must remain deliverable. It may be a case of balancing the merits of extra area/length versus extra level of service.

Our five year modelling plan

Q4: Do you agree with the current five year modelling plan?

d) Disagree

CIWEM agrees that the performance of each hydro unit should be determined using a suitable water resources modelling system, for a wide range of plausible water resources/demand futures/scenarios.

However we are disappointed that it will be another five years before a full modelling of the canal network. Presumably the data is available so could this not be prioritised in the next two years?

Appendix 2 shows that 16 of the units to be modelled with the Aquator system will be modelled within the first five year cycle of the Water Resources Strategy, but the other 19 will not be modelled in that period. Given the importance of the work to the Trust, we consider there to be a need for prioritisation and advancement of the modelling programme.

Uncertainties

Q5: Do you agree that we should continue with our current approach to minimise risks associated with uncertainty by concentrating on improving understanding and quality of water supply and demand profiles?

The question is too narrow, and capable of being answered as either (a) or (e) strongly agree or strongly disagree. All sources of uncertainty need to be evaluated.

The headroom approach evaluates the magnitude and impacts of uncertainty in estimates (on supply and demand, from factors including measurement error, model error and climate change uncertainty).

Scenario and sensitivity modelling of possible futures should be used to determine the robustness and resilience of decisions.

It is also important to improve understanding of canal loss and lock loss.

Q6: Do you think that we should use, where appropriate, techniques outlined in Environment Agency and Defra guidelines to determine our strategic water resource requirements, including the use headroom to account for uncertainty within our modelling output?

c) Neither agree nor disagree

The problem with using headroom is that it depends on the risk factor chosen and is not in itself a robust output. The Canal and River Trust would need to demonstrate why it has chosen to use this technique and how it has selected the risk factors over the various time horizons, considering that in the longer term the risk can be mitigated by taking other actions.

Future pressures

Q7: Do you agree with how we intend to progress with the future pressures we have listed and our modelling plan?

b) Agree c) Neither agree, nor disagree

It is important that the Canal and River Trust uses the latest climate change projections for its climate impacts analyses (UKCP09 not UKCIP02).

We agree with the listed pressures of climate change, increased boating, reduced funding and reduced water availability. We agree with the approach to water transfers and water rights trading. It is pleasing to see that water availability changes arising from new environmental legislation will be assessed on a case by case basis for some canal feeders, at least.

We support the proposed use of scenario modelling in other cases, using severe, moderate and zero reductions in abstraction entitlements. We also support the use of modelling of impacts from future pressures using lower and upper boundary assumptions (p23).

If the government, (i.e. the Environment Agency), propose to reduce an abstraction licence, then surely the government, (i.e. Defra) must adjust the grant accordingly to pay for the change.

The proposed plan for modelling the impacts of future pressures extends over five years. This is clearly resource-dependent, but every effort should be made to shorten the programme.

Q8. Have we missed out any future pressures? If so, please tell us about them.

The impacts of different possible outcomes from Defra's on-going Abstraction Reform programme need to be included. The possible outcomes for analysis should include the Current System Plus (CSP) and the Water Shares (WS) options consulted upon by Defra in 2014, and a hybrid option based on the use of a water shares framework in catchments that are deemed to be over-abstracted, over-licensed or 'closed' for new abstraction permits at any stage of the year or under a defined condition.

There could also be drivers from the Water Framework Directive for water quality, for example any requirements for canal boats to not discharge to canals.

Whole life costs of schemes

Q9: Do you agree with our proposal to assess future water resource schemes based on whole life costs (NPV) and water resources benefits (£ per MI/d), rather than only capital cost?

e) Strongly disagree

On the methodology outlined in Figure 5

- The hydrological work included in Stage 2 of the proposed process should include modelling of impacts in (a) both historical droughts (including those of the late 1800s, not just those in the last 90 years) and (b) future climate droughts, using data from the UKCP09 projections and from CEH's Future Flows simulations.

- The costs included in Stage 4 should include social and environmental costs, assessed to eliminate externalities as far as possible; and the benefits assessed in Stage 3 should include the corresponding social and environmental ones.
- The risk factor adjustment proposed in Stage 5 may be too crude a method. Uncertainties should be factored into the analyses, not adjusted for in such a way as is proposed.
- The benefits of the use of the canal network do not appear to be included. The Cardiff University work on p32 only includes the impacts. Benefits need to be included to make a comparison, for example some schemes would only benefit a limited number of boaters whilst others would benefit many more.
- Net present values for costs and benefits need to include social and environmental elements.
- Environmental acceptability filters need to be applied to the methodology, consistent with the parallel process adopted in the Water Resource Management Plans. The Canal and River Trust's charitable objectives include caring for the environment.

CIWEM welcomes the discussion on environmental care on p27, but considers that the conclusions reached (on the difficulties of the inclusion of environmental and social considerations, and the proposal to weigh the environmental impacts of proposed options "as schemes are progressed") are wrong.

Environmental and social considerations should be a first consideration. Adoption of the proposed approach could lead to environmentally-poor outcomes, and reputational damage to the Canal and River Trust. Seeking "environmental enhancement" and "opportunities for wider social benefits" on a programme of schemes selected on costs and benefits analyses that place insufficient weight on environmental and social considerations may be sub-optimal at best.

Phasing of schemes

Q10: Do you agree that we should continue to phase the delivery of our water resource schemes using investment profile plots?

b) Agree

Yes, but taking uncertainties into account (the profiles should be seen as bands, rather than lines), and undertaking sensitivity tests of different possible packages of options.

Adaptive planning approaches should be taken to safeguard the ability to change plans in light of emergent information and experience, including exposure to extreme events.

Dredging

Q11: Do you agree with our proposals for dredging for water resources?

b) Agree

We support consideration of dredging for navigation, but in our experience dredging for storage is very expensive and of very limited benefit.

Side ponds

Q12: Do you agree with our proposals for side ponds?

b) Agree

Lock leakage

Q13: Do you agree with our proposals for lock leakage?

b) Agree

Lock leakage in some systems is very important, partly as it occurs all the time. It is not clear what action is proposed in the first sentence of the last paragraph.

Strategy cycle

Q14: Do you agree that we should produce a Water Resources Strategy every five years, based on the cycle described?

b) Agree

Yes if this is to be aligned with the water company five year cycle. If appropriate it could alternatively be aligned with the 6 year Water Framework Directive cycle.

Q15: Do you have any further water resource related comments on our consultation? If so, please tell us about them.

See previous answers.