

APPENDIX 1

Interview Guide

Clarification: For these interviews, the definition of an ecological objective is a desired long term ecological outcome that delivery of e-water is aiming to achieve (e.g. increase the abundance and age class of native fish).

This differentiates from a flow recommendation or hydrological objective which is the hydrological requirement to meet the ecological objective (e.g. a spring fresh of certain magnitude and duration)

A. Participant's and organisation's role

1. What is your organisation's role in the management of environmental water?
2. Can you describe your role in e-water management?
3. How long have you worked in environmental water management?
4. Are you involved in short term operational decisions or longer term strategic decisions, or both?

B. Current objective setting process and decision making (inputs, information sources, timeframes)

5. How does your organisation determine long term flow objectives? e.g. is there a particular method or process you use?
6. Have you been involved in setting long term flow objectives?
7. Other than your organisation, who else provides inputs to these objectives? (*what kinds of information do they contribute?*)

Tick	
Scientists – researchers, consultants	
Resource/water manager	
Other government departments	
Community	
Indigenous community	
Others	

7B. Do you think any of these groups have more influence than others?
Can you list them in order of most influential to least influential?
What are the reasons for the differences in influence?

8. When developing objectives, are you aware of efforts to link to other strategies of your organisation, or state or commonwealth agencies?
Which ones? If no, why not.

9. When ecological objectives were set, do you know what kind of information was considered?

9A. Was information on future water availability considered (i.e. 20+ yr time frame)?

If yes, where did this information come from?

Do you know whether the inclusion of that information (if it occurred) altered the suite of objectives?

10. Is there an explicit timeframe over which your organisation (or method) sets e-flow objectives for?

Yes/no. If so, how long? 5, 10, 20 years? Any longer?

11. Do these timeframes allow you to consider long term outlooks of climate and ecology?

12. How do you consider your long term objectives when setting annual priority watering actions?

13. Do you consider spatial scale when setting your objectives?

14. [FOR THE WATER HOLDERS ONLY]

Has there been a time when annual priorities (of basin states) did not focus on long term or BP objectives?

If yes, when has this occurred and how did you deal with this?

C. Planning for the future – specifically climate change (timeframe – next 20 – 30yrs)

15. How much would you say your organisation considers climate change an issue?

1= not important 2= slightly important 3= moderately important 4= very important

16. Does your organisation consider climate change as issue for environmental water management? (yes/no)

1= not important 2= slightly important 3= moderately important 4= very important

17. How do you think climate change could impact river health and e-water management?

18. From the literature I have gathered a list of climate change impacts to aquatic ecosystems. Can you rank how important you think the following impacts will be in your catchment?

	Not important	Slightly important	Moderately Important	Important	Very important
More frequent and longer droughts					
Altered seasonality of rainfall					
Increased blackwater events					
Increased fire frequency and severity					
Reduced frequency and extent of floodplain inundation					
Increased water temperature					

and pressure on spp thermal tolerances → range shifts					
Altered life cycle cues for many species					
Disruption of food webs					
Increased invasive spp					

19. Can you rank which issues around climate change and e-water are you most concerned about? (20-30 year timeframe)

	Not at all	Slight concern	Moderate concern	High concern	Very high concern
Water availability					
Water quality					
Suitability of environment to sustain current values					
Species range shifts					
Species extinction					
Changing structure of food webs					
Overall ecosystem transformation					
Other					

20. Can you think of ways that climate change could be included in e-flow planning? If yes, provide e.g.

21. Do you think incorporating climate change scenarios into planning would change your organisation's objectives?
If yes, how? (*e.g.* prioritise one site over another, timeframe of achieving objectives)

22. *A vulnerability assessment looks at the pressures that climate change will have on a particular species or taxonomic group by assessing their sensitivity, exposure and capacity to adapt to the predicted change, such as potential range and habitat changes and extinction probabilities.*

Do you think incorporating species vulnerability assessments into planning would change your objectives?

23. Is it feasible for your organisation to undertake such assessments in planning for environmental water (CC scenarios and vulnerability assessment)?

D. Adaptation and barriers to planning for the future

24. Are you and your team aware if your organisation has a climate adaptation plan?

25. Are you and your team aware of adaptations that could be incorporated into e-water plans or objectives to manage for CC?

26. Are any of these issues incorporated in management plans and objectives? [if no, go to Q27]
If yes – how are you doing this and what information are you using
27. If climate change considerations are not being incorporated into e-water mgt by your organisation, why do you think this might not be the case?
28. What do you think your organisation needs to be able to include climate change adaptations to e-water planning?
29. Would additional information or a different information format from what you currently have, help to incorporate climate change into e-water mgt?
30. From the literature, I have gathered a list of barriers to incorporation of climate change adaptations for different organisations. In addition to the issues you listed in the previous questions, can you also consider the relevance of the following?

	Relevant (Y/N)
Uncertainty of climate change predictions	
Uncertainty of ecological response to climate change	
Not knowing how or where to start	
Availability of useable (including local) information	
Insufficient funding for adaptation	
Lack of clarity around what organisation responsible	
Conflicting objectives of organisations managing e-water	
Institutional/organisation unwillingness	
Lack of political leadership	
Lack of public support for adaptation	
Other	

31. Given the impacts of climate change do you think it will be possible for your organisation to maintain the full suite of existing environmental objectives in the future?
[Yes Not sure No]

If no, why not?
32. Does your organisation have an approach for deciding how to deal with unachievable objectives? If yes, can you please describe this approach.
33. Do you think there is a better way to develop objectives in light of future climate change challenges
If so, please provide detail
34. Is there anything else you would like to add?