**Specification**

# Background to Requirement

We apply the Polluter Pays Principle (PPP) in water quality planning through the Fair Share Approach (Annex 2). This has been an underlying principle for our water quality planning since the 1980s. Fair share is embedded throughout our measure development for River Basin Management Plans including that for protected areas such as those designated under Habitats Directive. It was recently reapproved by Defra in 2016 to aid with PR19 planning. It was agreed with Defra that after September 2018 the EA would commence a review looking at the different options for sector contributions that may be considered beyond PR19. This work will be part of that review.

There are no other contracts that may affect this requirement.

The output from this work will be used to inform Environment Agency decisions on guidance. The output should be produced for an EA Environment and Business audience. It will also be used to inform our conversations with Defra about the application of polluter pays.

Natural England are an interested stakeholder. It is likely that we will share the output of the project with Natural England.

We will supply the successful consultant with copies of the following EA reports:

* Fair Share options paper (2016)
* Fair Share annex to Fair Share options paper (2016)
* Guiding Principles – Fair Share for PR19 Final

When determining what action should be taken to improve or to prevent deterioration of the water environment, consideration should be given to the proportion each sector, business or individual contributes to the problem. Action to reduce pollutants should be targeted on a ‘fair share’ basis, whereby each sector, business or individual deals with its proportional contribution. This approach is rooted in the ‘polluter pays’ principle.

In our 2016 Fair Share review we formed a Task and Finish Group to develop the ‘fair share’ approach to be used for PR19. In particular we focused on phosphorus. However, the methodology can be applied to other water quality parameters.

All waterbodies within a catchment have a target concentration for phosphorus. This is the concentration (or EQS) that must be achieved to meet the objective assigned to that waterbody (eg Good ecological status[[1]](#footnote-1)). The phosphorus EQS is expressed as an annual mean concentration.

Within a catchment, the phosphorus concentration at any one point in a river is determined by the load of phosphorus arising from the point sources and diffuse sources in the catchment upstream of that point.

Many waterbodies are failing their current objectives (ie the target phosphorus concentration is being exceeded). In order to achieve the EQS at a point in a catchment, the phosphorus load from the upstream sources will need to be reduced. The fair share approach aims to ensure that the load reductions from point and diffuse sources are equitable. The amount of reduction required from point sources and diffuse sources should be in proportion to their respective contributions to the in-river phosphorus concentration.

We can use water quality models to calculate how much load reduction is required to achieve the EQS at any point in a catchment. We do this by setting a ‘target concentration’ to be achieved in the waterbody and then working out by how much we need to reduce point and diffuse source loads in order to achieve the target concentration.

The aim of the fair share approach is to calculate a ‘fair share’ of the EQS for both point and diffuse sources, and hence a ‘fair share’ target concentration to be met by reducing point source loads and a ‘fair share’ target concentration to be met by reducing diffuse source loads.

 For example, an EQS for a waterbody may be 0.1 mg/l.

The current concentration of phosphorus in that waterbody may be 0.2 mg/l. If the relative contributions of point sources and diffuse sources are 60% and 40% respectively.

Point source target concentration = point share \* EQS = 0.6\*0.1 mg/l = 0.06 mg/l

Diffuse source target concentration = diffuse share \* EQS = 0.4 \* 0.1mg/l = 0.04 mg/l.

The water quality model can then be used to work out the load reduction from the point sources upstream of the location that would be required to achieve the 0.06 mg/l point source target concentration.

There are a number of different ways of calculating the “point share” and the “diffuse share”. At a single point in a catchment, it is relatively straight forward to use a water quality model to calculate the contributions from point and diffuse sources upstream of that location. However, the WFD advocates a catchment approach to planning and it is more challenging to determine point and diffuse share at a catchment scale.

There were a number of possible approaches to calculating catchment ‘fair share’ and these were reviewed by E&B water quality during the Summer of 2016. It was agreed that three potential approaches would be given further consideration. These were:

* End of catchment approach;
* PR19 Proportional catchment reduction approach (referred to as the local approach in [Fair Share: options for water quality (v2)](file:///%5C%5Cprodds.ntnl%5Cshared%5CSW%5CHHO%5CBristol%5CLand_%26_Water_Quality%5CMaxs%20files%5CFair%20Share%5CT%26F%20Gp%5CFair%20Share%20options%20%20v2.docx) – see footnote 2 ); and
* Catchment percentile approach.

In order to decide the approach to be used for PR19 the T&F group considered:

* The technical advantages and disadvantages of each approach;
* How easily each approach could be applied in practice, with the tools and models we have available, and taking into account the fairly tight timescales for PR19 planning;
* How easily we could explain and justify each approach to 3rd parties, particularly water companies and Natural England; and
* How ‘future-proof’ each approach is.

# Specific Objectives/Deliverables

The aim of this work is to be able to better understand the implications of the three potential approaches generated in the 2016 fair share review. This will help the Environment Agency determine a) the long term suitability of these approaches, b) how different the outcome from the is, c) whether investing in our staff and models to implement any of these approaches would be beneficial investment. The final project report is likely to be used to inform future internal conversations and conversations with external stakeholders such as Defra and Natural England.

Our request of the consultant is that they review each of these three potential approaches and consider:

* How much difference each approach makes to the sectors in terms of loads that they should reduce. This is the primary project output that is sought.
	+ To support this it would be useful to see examples of the approach applied to different catchments. The consultants should work with EA staff to identify the example catchments to be used. We expect a minimum of three catchments to be provided as case studies, possibly more.

In addition it would be useful to understand:

* + The technical advantages and disadvantages of each approach;
	+ The difference in outcome that each approach will deliver
	+ How ‘future-proof’ each approach is.

We would expect that the consultants would review the following documents:

* Fair Share options paper (2016)
* Fair Share annex to Fair Share options paper (2016)
* Review any more detailed modelling that is available
* Discuss the views of two key EA staff involved in the 2016 TaF, Paul Davidson (OCS) and Neil Murdoch (E&B)

The key deliverable is a project report in XXX. We expect a draft report to be provided 1 month before the final report.

We would like the consultants to supply brief fortnightly project updates to the project manager to advise if there is any project slippage, project risks and if there is further information / input required from the EA. Brief email updates are acceptable.

### Timescales/Deadlines

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Task No. | Deliverable | Responsible party | Format / Compatibility Requirements | Date of completion, end: |
| 1 | Inception meeting | EA/ Consultant |  | XXXX |
| 2 | Draft report | Consultant |  | XXXX |
| 3 | EA comments on draft report | EA |  | Two weeks after submission of draft report |
| 4 | Final report | Consultant |  | XXXX |

### Skills of Personnel Required

Consultants must have:

1. a strong technical background in water quality modelling including SAGIS
2. good knowledge of how the Environment Agency generate indicative permit limits
3. knowledge of Polluter Pay’s Principle
4. excellent communication skills (both written and verbal)

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1. The default objective under WFD is to achieve ‘Good’ ecological status. However a lower interim objective (eg Moderate status) may have been set for a waterbody if it is technically infeasible, or disproportionally expensive to achieve Good status. [↑](#footnote-ref-1)