**RRC Catchment Restoration Fund monitoring protocol**

**Key:**

* **Target/why –** What is the overall objective of the works which are to be monitored?
* **What –** What are you trying to observe from your monitoring? E.g. increased sinuosity and habitat heterogeneity through re-meandering and adding large wood / reduction in nutrient inputs by installing SuDS.
* **How –** What techniques are being used to collect data and what assessment methods are you using? E.g. electro-fishing monitoring diversity, abundance, density, length and age.
* **When –** When are you collecting data (month/season)? Duration/length of monitoring period, how many sampling repeats, how regularly?
* **Who –** Who is the individual and/or organisation responsible for monitoring? Will this be done by more than one organisation?
* **Data –** Do you have access to any pre-project data? E.g. monitoring data from the Environment Agency.
* **Cost –** Cost of monitoring. Are all costs in kind, or are there expenditures for e.g. external lab analysis.
* **Which WFD objective is this helping to achieve –** Which WFD quality element will be addressed by your works? If not WFD, does the work/undertaking aim to improve favourable conditions (for designated sites or species, e.g. SSSI/SAC/SPA/BAP) or does it relate to any other policy drivers (e.g. public engagement, socio-economics, flood management, ecosystem services)
* **Priority and confidence:**Priority: High/Medium/Low importance that your monitoring method can show potential improvement of the related WFD quality element; the favourable condition (i.e. designated site or species such as SSSI, SAC, SPA, BAP); and/or other policy drivers (e.g. socio-economics, flood management, ecosystem services).
Confidence: High/Medium/Low confidence that the monitoring is robust, suitable and has the potential to show what you are trying to observe within the CRF project time limit.

| **Target/Why**What is the overall objective of the works which are to be monitored? | **What**What are you trying to observe from your monitoring? | **How**What methods are you going to use? | **When**What periods over the year and how often? (to indicate variability)And where if possible | **Who**Who is going to do this? | **Data**What existing data is available in addition to the monitoring being outlined here | **Cost**(can be in kind) | **Which WFD quality element is this helping to achieve?****If not WFD specify (e.g. SSSI, SAC, BAP or other policy driver)** | **Priority**High/medium/low linked to WFD or other designation  | **On target**Are the monitoring tasks outlined running to schedule?(if no specify)NOTE- can use RRC update questionnaires as a start. | **Key reporting tool and reporting output** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Confidence** High/medium/low robustness of monitoring |
| **Will be different for each project – what is the project aim for the area being photographed?**  | A visual change in (please specify) as a result of (please specify) | Fixed point photography – for methodology, refer to RRC’s Practical river monitoring guidance (2011)X number of photos (state if known) & indicate if RRC have been provided with a map of points (Y/N) | E.g. Before, immediately after and post works recommended (state dates if known, e.g. month and year) | Project team/ Volunteers | State if fixed point photography or any anecdotal/ ad-hoc photography prior to CRF | Through project/ In-kind | State which of the following, the FPP demonstrates: a) WFD targets, b) designated river or c) other e.g. social science targets | Priority: Please state (only grey if High) | Yes/ No | A time-series of fixed point photographsState if any other analysis is being done |
| Confidence: Please state (only grey if High) |

* **On target –** Are the monitoring tasks outlined running to schedule? If no, why not?
* **Reporting tool and reporting output –** How will your collected monitoring data be recorded and the analysis outputs reported?

**Example of Fixed Point Photography:**

| **Target/Why**What is the overall objective of the works which are to be monitored? | **What**What are you trying to observe from your monitoring? | **How**What methods are you going to use? | **When**What periods over the year and how often? (to indicate variability)And where if possible | **Who**Who is going to do this? | **Data**What existing data is available in addition to the monitoring being outlined here | **Cost**(can be in kind) | **Which WFD quality element is this helping to achieve?****If not WFD specify (e.g. SSSI, SAC, BAP or other policy driver)** | **Priority**High/medium/low linked to WFD or other designation  | **On target**Are the monitoring tasks outlined running to schedule?(if no specify)NOTE- can use RRC update questionnaires as a start. | **Key reporting tool and reporting output** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Confidence** High/medium/low robustness of monitoring |
| **Improve migratory fish passage for all species on the Polgooth Stream.** | Presence of salmonid species in the watercourse, where Fisheries Classification Scheme (FCS2) modelling showed they should be present. | Semi-quantitative Fry index electro-fishing survey as fish abundance indicator upstream | Before and after removal (2014):2013 Pre-construction semi-quantitative electro-fishing baseline survey2014 Post-construction repeat survey | WRT staff members and next EA FCS2 survey | Existing EA fisheries data to establish baseline | Through project (Staff time-salary) | Bad- failure for fishMove from bad to moderate then good | Priority: High | Yes | Electrofishing and FSC2 classification. Data including EA data to be uploaded to a GIS database & report to be done Winter 2014/15 |
| Confidence: Medium (only 1 pre and post) |
| **Reduction in the level of phosphate in the Lower Par waterbody + improve river corridor** | Assessment of diatoms as a proxy for water qualityReduction in the level of phosphates as a result of CRF (fencing and work with SWW STW) | Diatoms - Kelly et al. (2001) method for sampling and analysis. 5 stones were scrubbed per sampling point.Fixed point photography (FPP) @ each site where works are completed | Pre data 2012Post data 2014 | Ben Goldsmith (UCL) – reporting on data sampled by WRT for diatomsWRT staff members (FPP) | Existing Environment Agency data –physiochemical and phytobenthos (diatoms) | Through project (Staff time-salary)+ UCL charge per sample | Lower Par is failing for chemical phosphate and Phytobenthos | Priority: High | Yes | Diatom surveys to TDI level for WFDTime-series of photographs |
| Confidence: Medium (only 1 pre and post) |
| **Improve habitat for all species of fish including salmonids on the lower St Austell River** | Increase in the presence of salmonid species (including juvenile fish) in the watercourse. | Semi-quantitative Fry index electro-fishing survey as fish abundance indicator at the same siteFixed point photography (FPP) @ each site where works are completed | Pre works survey completed summer 2013 and FPP takenPost works survey summer 2014 | WRT staff members and next EA FCS2 survey | Existing EA fisheries data to establish baseline | Through project (Staff time-salary) | Catchment fails WFD for fish, generally due to low density of trout | Priority: High | Yes | Electrofishing and FSC2 classification. Data including EA data to be uploaded to a GIS database & report to be done Winter 2014/15Time-series of photographs |
| Confidence: Medium (only 1 pre and post) |
| **Soil testing work** | Change in management behaviour by farmers | Soil testing pre and post Survey- Asking the farmer whether they have implemented changes to fertiliser management since soil tests available. | Survey towards the end of the project-Jan 2015 | WRT staff member | Any previous nutrient management advice retained by the famer can be used to assess whether the famer requires more information or updated results | Through project (Staff time-salary) | Phosphate failures in the Lower Parr | Priority: High | Yes | Small statement to be written after each set of soil tests highlighting findings from soil tests and advice |
| Confidence: Medium (only 1 pre and post) |
| **Improve habitat for all species of fish including salmonids on the Portmelon stream** | Increase in the presence of salmonid species (including juvenile fish) in the watercourse. | Semi-quantitative Fry index electro-fishing survey as fish abundance indicator at the same siteFixed point photography (FPP) @ each site where works are completed | Pre works survey completed summer 2013 and photos takenPost works survey summer 2014 | WRT staff members | There is no data available for this small catchment | Through project (Staff time-salary) | There is no fisheries data for this catchment. An improvement in fish numbers is the outcome | Priority: Medium (investigative, project objective) | Yes | Electrofishing and FSC2 classification. Data including EA data to be uploaded to a GIS database & report to be done Winter 2014/15Time-series of photographs |
| Confidence: Medium (only 1 pre and post)  |
| **Improve migratory fish passage for all species on the river Lerryn** | Presence of salmonid species in the watercourse, where Fisheries Classification Scheme (FCS2) modelling showed they should be present. | Semi-quantitative Fry index electro-fishing survey as fish abundance indicator upstreamFixed point photography (FPP) @ each site where works are completed | Before and after removal (2014):2013 Pre-construction semi-quantitative electro-fishing baseline survey2014 Post-construction repeat survey | WRT staff members and next EA FCS2 survey | Existing EA fisheries data to establish baseline | Through project (Staff time-salary) | Fisheries improvement –risk of losing ‘Good’ Fish WFD status | Priority: Medium (already at ‘Good’ status) | Yes | Electrofishing and FSC2 classification. Data including EA data to be uploaded to a GIS database & report to be done Winter 2014/15Time-series of photographs |
| Confidence: Medium (only 1 pre and post)  |
| **Confirm the presence/absence of fish species in 3 small coastal catchments and establish a baseline of data for invertebrates and diatoms** | Presence of salmonids in small coastal streamsPresence of macroinvertebrates in small coastal streamsAssessment of diatoms as a proxy for water quality | Semi-quantitative Fry index electro-fishing survey as fish abundance indicatorStandard 3-minute WFD kick sample method (endorsed by statutory organisations)Diatoms - Kelly et al. (2001) method for sampling and analysis. 5 stones were scrubbed per sampling point. | All 3 completed in Summer 2013 | WRT staff members (FPP and invertebrate sampling)Ben Goldsmith (UCL) – reporting on data sampled by WRT for diatoms | None | Through project (Staff time-salary) | Catchments with no data (Default to ‘Moderate’) | Priority: Medium (investigative, project objective) | Yes | Electrofishing and FSC2 classification. Data including EA data to be uploaded to a GIS database & report to be done Winter 2014/15Invertebrates to WFD level Diatoms to TDI level |
| Confidence: High |
| **Improvement in environment for leisure, recreation, education and amenity value** | Increase in use and value of riparian zone | Site visitor count interview/survey fisherman and local users after improvements  | Summer/Autumn 2014 after works are completed  | WRT staff members | There maybe some existing data on level of use | Through project (Staff time-salary) | Not WFD based. Focus on wider social benefits -Catchment Based Approach (CaBA) | Priority: Low (a secondary project objective) | No – pre-data to be collected | Calculate number of visitors to siteAnecdotal data/ evidence from the interviews |
| Confidence: Low (may not be an opportunity to gather this before project starts, so only ‘after’ data) |