**“How to use” guide for the River Restoration Centre’s 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.
* **On target –** Are the monitoring tasks outlined running to schedule? If no, why not?

| **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) |

* **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 that 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 |
| **Phase 1 - protect riparian habitats to prevent further decline in Salmonid populations in the Upper Wenning sub-catchment:**Fence to protect riparian and buffer strip areas on: 1. 270m of Clapham Beck2. 2010m of Austwick Beck inc. planting trees | Improvement in riparian habitat | Photographic record | Post constructionUpper Wenning tributaries | Lune Rivers Trust | none | £5,000 for coordinator | Improve status of WFD waterbody:GB112072065990From bad to good. | Priority: High | Complete | Evaluate data as part of end of project report - carried out by contracted coordinator and project manager. |
| Confidence: High |
| Reduction in diffuse pollution | Measurement of parr densities during electro-fishing survey:Improve parr densities to “a” (86+/100m2) | Post project Electro Fishing survey to be carried out in 2014/15Upper Wenning tributaries | EA / LRT / Lune & Wyre Fisheries Assoc | parr densities “d” (9-23/100m2) | Priority: High | awaiting EA input |
| Confidence: Medium (some uncertainty on times) |
| Counting redds | Redd counts in the improved sections will be carried out annually the winter months (Nov - Jan) | Lune & Wyre Fisheries Assoc | 20 redds in upper Wenning sub-catchment | Priority: High  | Yes |
| Confidence: High |
| **Phase 2 - Improve degraded juvenile habitats in key nursery areas in the Upper Wenning sub-catchment:**Restore 1460 meters of habitat on Clapham Beck, including buffer strips and fencing. | Improvement in riparian habitat | Photographic record | Post construction Upper Wenning tributaries | Lune Rivers Trust | none | Priority: High | Yes |
| Confidence: High |
| Reduction in diffuse pollution  | Measure parr densities during electro-fishing survey:Improve parr densities to “a” (86+/100m2) | Post project Electro Fishing survey to be carried out in 2014/15Upper Wenning tributaries | EA / LRT / Lune & Wyre Fisheries Assoc. | 5-yearly reviews of R. Lune juvenile stock abundance – inc. Wenning sub-catchment.Parr densities “e” (<9/100m2)Lancaster University Student project work. *'An Assessment of the Physical Factors Affecting Sea Trout Spawning Habitats in the River Wenning Catchment*'  Andrea Cowling20 redds in upper Wenning sub-catchment | Priority: High | awaiting EA input |
| Confidence: Medium (some uncertainty on times) |
| Counting redds | Redd counts in the improved sections will be carried out annually the winter months (Nov - Jan) | Lune & Wyre Fisheries Assoc | Priority: High  | Yes |
| Confidence: High |
| **Phase 3 - resolve issues within the wider Upper Wenning sub-catchment:** 1. Mitigate for acidification caused by peat acidification on Clapham Common by liming Keasden\* | Reduced acidification  | PH Testing under high and low flow conditions & compare with data recorded in 2012 | Pre and post projectKeasden Beck, Kettle Beck & Fenn Beck | Lancaster Uni. with Lune & Wyre Fisheries Assoc / LRT | 2012 pH data5-yearly Juvenile stock surveys | Priority: High | Yes - Pre project survey complete by LWFA but may need validation by Lanc Uni field studies. |
| Confidence: High |
| 2 Further improve degraded habitats on Austwick Beck and Crook Beck3. Remove a weir on Kettles Beck to improve connectivity for fish. | Improved riparian habitats  | Photographic record | Post constructionAustwick Beck, Crook Beck, Pre-, and post construction on Kettles Beck | Lune Rivers Trust | Priority: High | Yes |
| Confidence: High |
| 4. Survey for fish easements on barriers at Keasden, Clapham and Austwick Becks. | Potential for improved access for fish  | Photographic record | Pre-, and post- construction Austwick Beck Clapham Beck, Keasden Beck | EA | Priority: High | Not started |
| Confidence: High |

**NOTE**

The narrowing of rivers and introducing gravels component of this project was removed on the advice of the EA.

\* Liming of side streams is to be conducted on a small-scale, experimental basis only (under advice from EA).

**EA Surface Water Stations:** See <http://www.eea.europa.eu/themes/water/interactive/soe-wfd/wfd-river-basin-district-info-viewer>

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| **Waterbody** | **Station** | **Type** |
| Fen Beck | NWMORPGB112072066090 | Morphological |
| Kettles Beck | NWMORPGB112072066070 | Morphological |
| Fen Beck PTC Kettles Beck | NWWIMS88022197 | Water Information Management System |
| River Wenning @ conf Fen and Kettles Becks | NWWIMS88003989 | Water Information Management System |
| Fen Beck @ Waters Bridge | NWNFPD27557 | National Fisheries Database |
| DS of Waters Bridge | NWBIOS66709 | Biological |
| Fen Beck | NWMORPGB112072066080 | Morphological |
| PTC R. Wenning | NWBIOS67968 | Biological |
| Austwick Beck | NWMORPGB112072066100 | Morphological |
| U/S A65 | NWBIOS144319 | Biological |
| A65 bridge | NWNFPD8404 | National Fisheries Database |
| Austwick Beck PTC River Wenning | NWWIMS88003990 | Water Information Management System |
| Crina Farm  | NWNFPD8400 | National Fisheries Database |
| Clapham Beck | NWMORPGB112072071840 | Morphological |
| Clapham Beck PTC River Wenning | NWWIMS88003991 | Water Information Management System  |
| Wenning @ Wenning Bridge, Clapham  | NWWIMS88022195 | Water Information Management System |
| Clapham Station | NWNFPD10145 | National Fisheries Database |
| D/s Bridge @ Clapham Station | NWBIOS65910 | Biological |
| River Wenning | NWMORPGB112072066060 | Morphological |
| Keasden Beck | NWMORPGB112072066030 | Morphological |
| PTC R Wenning | NWBIOS67880 | Biological |
| Clapham Hall Wood | NWNFPD27659 | National Fisheries Database |
| Keasden Beck PTC River Wenning | NWWIMS88003993 | Water Information Management System |
| River Wenning at High Bentham | NWWIMS88003995 | Water Information Management System |