**“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?
* **Reporting tool and reporting output –** How will your collected monitoring data be recorded and the analysis outputs reported?

| **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) | **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) & if points indicated on map (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: High (All CRF projects were encouraged to prioritise FPP) | Yes/ No | A time-series of fixed point photographsState if included in e.g. final report |
| Confidence: Please state (only grey if both confidence and priority are High) |

**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) | **Key reporting tool and reporting output** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Confidence** High/medium/low robustness of monitoring |
| Increased habitat diversity on the river Welland at Market HarboroughWorks to start 17th of Feb 2014 | Increased habitat diversity through creation of a new 2-stage channel, with appropriately-sized meander spacing and habitat mosaics (riffle, pool, runs, bars) in the low flow channel. | InvertebratesQuantitative sampling using Hess and Surber samplers in habitat grid, randomly, identification to species and counting and measuring for secondary productivity. | One sampling before; quarterly sampling after for two year duration, starting April 2014 | PhD students until 2015; research will design a citizen-science monitoring protocols for WRT to manage thereafter | EA data one site | 4 personnel, est 200k/annum | Invertebrates: poor; target: goodMorphology: poor; target goodHydrology: moderate(Diatoms: poor; target: goodPhosphate: moderateDissolved oxygen: poor) | Priority: High | Yes | Reporting tools – data recorded on forms and spread sheetsOutput – reports to CRF; final report; community, academic theses, scientific publications |
| Confidence: Medium (but High if monitoring continues >3years) |
| Benthic algaeSpecies identified and biomass measured as Chlorophyll ‘a’ from stone samples and implanted tiles in range of velocity types at uniform depths. | As above | As above | Priority: Medium (as not a WFD specific quality element, but might substitute diatom/WQ monitoring) |
| Confidence: High |
| HabitatGrid formed from transects ever 5m with 1 m intervals. Depth, current speed, substrate size % and biotope name.  | Complete survey of impact stretch done before restoration, also control example stretch upstream. Immediate survey after, then annual | As above | No previous data | Priority: High |
| Confidence: High |
| Fixed-point photography (in addition to morphological survey) | Before, during, after sets of photos. Points mapped out | WRT for two years then handed over to volunteer | Priority: High |
| Confidence: High |
| Increased diversity of aquatic vegetation | MacrophytesSubmerged, marginal and emergent identified to species and mapped and fixed-point photography | Annual (before and after) | CRF project staff | Previous data from two scientific surveys, 1 published one MSc | 5 pax p-t | Macrophytes: poor; target: good | Priority: High |
| Confidence: High |
| Increased diversity of riparian zone and floodplain | BioBlitz of BAP (and other) species(Improvement for otter, water vole, kingfisher & fish) | Pre monitoring: May 2013Planned post survey: May 2014, 2015 | WRT and volunteers | No previous data except scattered in Museum & county records | Many volunteers, equivalent to ½ pax/annum | No site designation, but presence of BAP species; target: improve habitats for BAP (and other) species  | Priority: High |
| Confidence: High |
| Increase community involvement | Increased community involvement | Number of people/groups involved in events/meetings/monitoring | Public meetings;Invertebrate monitoring;BioBlitz: May 2013 | WRT | No previous data | In kind | Improvement of ecosystem services; public engagement | Priority: Medium | Yes | Reports and attendance from eventsFinal report |
| Confidence: High |