

Monitoring and evaluating the DEFRA funded Natural Flood Management projects: Summary

This guide summarises the basic data that should be collected by all Defra funded **Community** Scale Natural Flood Management (NFM) schemes. Catchment scale schemes are also required to collect this data, but are also expected to supplement this with more detailed monitoring and evaluation described in the full Monitoring and Evaluation guidance, to be re-released shortly.

During construction you should collect the information in table 1 below. The Arc GIS Online Tool (AGOL tool) [Link](#) provides a simple and consistent way to do this for all 60 projects that make up the Defra program. Once the projects are completed in 2021 additional information will be required for each project to allow Defra to evaluate the success, or otherwise, of the overall program. The AGOL tool includes a built in User Guide and a feedback form. If you encounter any issues please record these in the feedback form and submit the form to us so that we can refine both the tool and the User Guide. As the tool develops all the data that you have entered will be retained and the tool will become more flexible, allowing you to edit and re-use your own data. The tool will build a database of the Natural capital you are creating, as each intervention or structure is a NFM ‘asset’ that creates or adds Natural Capital . This is a key requirement of the Governments 25 year Environment Plan.

Objective	NOW	Later (2021)
FR1. Locations & types of each NFM project and all NFM assets	AGOL	-
FR2. NFM asset performance	-	AGOL + template
FR3. Hydrological changes of NFM asset & the overall project	AGOL	AGOL + Template
FR4. Maintaining the benefit of the NFM project	-	AGOL + Template
HAB1. Pre- and post-project mapping of habitat created/restored	-	AGOL + Template
ES1. What are the multiple benefits of the NFM Project	-	AGOL
PAR1. What partnerships have been created by the project	-	AGOL + Template
RES1. Research grade information collected to fill knowledge gaps	-	AGOL + Template

Table 1: Summary of the monitoring and evaluation requirements for all Defra NFM projects.

The recording of this information is a condition of the funding so please complete retrospectively for all interventions created as part of the programme.

FR1. Location of projects and NFM 'assets. The most basic information required is the location of each of the 60 projects and the objectives of each project. This information has been collected from your applications and loaded into the AGOL tool. **Action:** Check that the data we have uploaded on your project is correct and let us know any changes you require via the feedback form.

As you build your project it is also important to record basic information about each new NFM asset that you are creating on the ground. **Action:** Record location, date, type and photo of each new NFM asset in the AGOL tool. This can be done on a smart phone in the field or on the computer. Photos should be taken from both upstream/upslope and downstream/downslope. If it is difficult to do this, e.g. improvements to soil structure, just take two from different angles. There will be an opportunity to record additional information about each structure over the next few months so we can start to create a complete asset record for the whole programme.

FR2. Is your NFM asset performing as designed? Until the whole project is completed, we may not know how it is performing, **Action:** Record photos of the interventions working. This information will be a valuable resource for demonstrating how the project is performing once it is complete in 2021. The AGOL tool will be developed to record information about performance.

FR3. Estimate the hydrological changes created by each new NFM asset. This is just a rough estimate at this stage to give Defra a feel for the hydrological changes and therefore potential flood benefit that the overall NFM scheme is delivering. NFM provides flood benefit by changing hydrological characteristics in four ways, see below. **Action:** Use the AGOL tool to record an estimate for each of the potential benefits.

Storage (m³). Estimate the volume of additional storage provided by each asset. This may be zero for certain types of NFM (e.g. tree planting). No matter how sophisticated your monitoring this can only ever be an estimate. Storage features may leak into the underlying geology (meaning that volume recorded is an underestimate) or storage may fill before the flood peak arrives (meaning that the volume recorded is an overestimate). Record a volume that can be justified.

Roughness (Ha). The rougher the catchment, the slower the flow. Roughness can be changed by changing the vegetation over an area or by roughening up a channel with LWDD. For in-channel roughening record the area of land draining to the roughened channel.

Increased infiltration or evapotranspiration (Losses) (Ha). This is the area of land over which infiltration has been increased so that there is less water running off into watercourses.(e.g. by improving the soil structure). Many types of NFM increase infiltration. Tree planting improves soil structure and therefore permeability AND by storing and evaporating rainfall from it's canopy. You can include both the area of land improved and the area of land-draining to the asset or intervention.

Changes to flow Pathways. (Yes or No). Swales can route water away from vulnerable properties. Cross slope woodland, bunds and hedgerows can be used to break flow pathways. If the aim of the asset is to change the flow path of runoff record a yes in this option.

FR4 What are the maintenance/inspection or observation requirements of the project? Specify the type and interval period for your inspection or observation. This can only be done once the scheme is completed, however, it will be useful to collect some information during construction. **Action:** Predict

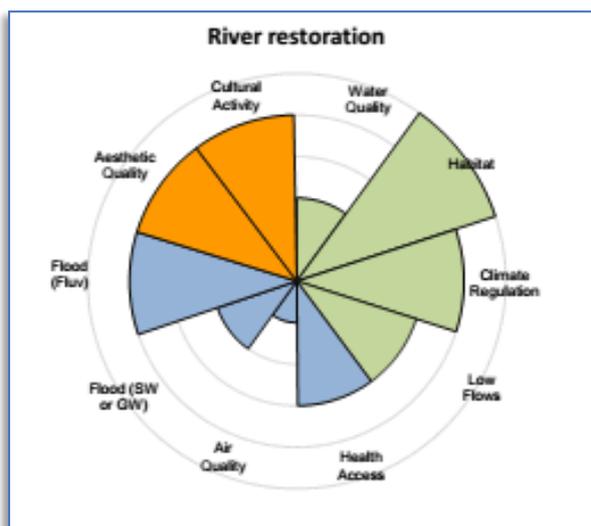
what maintenance you are expecting to have to do and monitor whether you are correct. This information will be a valuable resource for estimating the future maintenance needs of the project once it is complete in 2021. The AGOL tool will be developed to record information about maintenance

HAB 1. Has habitat been created by the project? This can only be done once the scheme is completed, however, it will be useful to collect some information during construction. **Action:** Do a baseline habitat survey so that any habitat gains can be quantified. This information will be a valuable resource for estimating the habitat benefit of the project once it is complete in 2021. The AGOL tool will be developed to record information about habitat gained.

ES1. What are the multiple benefits of the project? This can only be done once the scheme is completed, however, it will be useful to collect some information during construction. **Action:** Record evidence of benefits for each of the 'segments' identified in the WWNP guidance, Fig 2 below. Current thinking is that we will ask each project to identify whether their project has significantly increased (score 2), Increased (score 1) Made no difference (score 0) or reduced (score -1) each of the 10 potential benefits of an NFM scheme. This information will be a valuable resource for estimating the wider benefits of the project once it is complete in 2021. The AGOL tool will be developed to record information about multiple benefits.

PAR1. Have partnerships been created or strengthened because of the project? This can only be done once the scheme is completed, however, it will be useful to collect some information during construction. **Action:** Record the number of partners and meetings that have been required to deliver the project. This information will be a valuable resource for estimating the 'Social Capital' that the project has built once it is complete in 2021. The AGOL tool will be developed to record information about social capital.

RES1 to 5. Are you working with a University or research institute? If you are not working with one of these organisations it is very unlikely that your monitoring will be precise enough to provide research grade parameter values that can be used in modelling and future research. All the other data you have collected is valuable data which can and will be used in research. **Action.** Record if you have University or a research institute working with you.



Cultural Activity, e.g. school visits

Water Quality e.g. sediment trapped

Habitat e.g. woodland created

Climate Regulation e.g. riparian shade

Low Flows e.g. health of blanket bog

Health Access e.g. recreational opportunities

Air Quality e.g. trees downwind of a busy road

Flood (SW and GW) Community at risk

Flood Fluvial Community at risk

Aesthetic e.g. river restoration

Figure 2. Multiple benefit wheel from WWNP guidance