Catchment Regeneration Fund

Monitoring and Evaluation Guidance

January 2026

Version: 1

Catchment Regeneration Fund Monitoring Guidance for Applicants

Rationale behind Project Monitoring

Over the next five years Anglian Water has been given the opportunity to trial our Catchment Regeneration Fund as part of our Advanced WINEP scheme. The Catchment Regeneration Fund aims to enable partnership working and delivery to happen on the ground and to demonstrate the benefit of working collectively to put in Nature-based Solutions (NbS) to target water quality and water resource issues across 11 target catchments. As such, we need to be able to evidence the impact of their project on one of the two Primary Catchment Regeneration Fund scheme objectives of:

1. Mitigating the impact of diffuse pollution, primarily phosphate and nitrate.
2. Mitigate the impact of low flows such as through river restoration or Nature-based Solutions that focus on aquifer recharge and storing water within the catchment

We are also interested in assessing the impact of your project on biodiversity, amenity and recreation opportunities.

This will be done using a Control-Impact approach outlined below or by using before-after monitoring where there is long term existing data for the site.

This evidence will be used to demonstrate the benefits of the A-WINEP approach and of Nature-based Solutions to our Regulators (OFWAT and the EA) and be able to guide future regulatory policy and planning. This presents a really exciting opportunity for our region and the water sector as a whole to begin to deliver differently for the environment and enact positive change. To do this, the evidence collected as part of the projects funded under the Catchment Regeneration Fund Scheme is absolutely vital.

How did we devise the Monitoring Strategy?

To devise the Monitoring Strategy for the Catchment Regeneration Fund scheme we have referred to the Water Resources East Nature-based Solutions Monitoring document available here, and sought advice and expert opinion from the University of East Anglia.

How will we support you to develop your Monitoring Strategy?

Where appropriate, successful applicants will be able to seek advice to check and confirm their monitoring strategy to ensure robust data is collected. Tables 4-8 in this document are given as a guide only.

What should be measured as part of my Catchment Regeneration Fund Project?

Monitoring should primarily focus on demonstrating the impact of the intervention on either or both of the Catchment Regeneration Fund Scheme Primary Objectives which are outlined below:

Primary Objectives

Primary Objective 1 – Mitigating diffuse pollution

Projects that improve water quality.

Definition: Measurement of the impact of Nature-based Solutions on the water quality of the receiving waterbody.

Key Performance Indicator (KPI): Improvement in water quality status and/or reduction in nutrient load.

Primary Objective 2 – Impact of the project on mitigating the impact on low flows

Projects that increase aquifer recharge and/or result in a wetter river corridor.

These could include projects such as floodplain reconnection and wetland and pond creation. These store water and keep the river corridor wetter for longer through the spring/summer.

1a. Definition: Measurement of the impact of Nature-based Solutions on either aquifer recharge and/or quantity of surface water.

1b. **KPI:** Resilience of water resources (m3/yr of groundwater replenished or returned to surface water).

Capturing RNAG metrics

We are also interested in understanding how projects contribute to tackling the Reasons for Not Achieving Good (RNAG) ecological status of waterbodies, so we also ask successful applicants to monitor for Water Framework Directive parameters including:

- Ammoniacal nitrogen
- Orthophosphate
- Dissolved Oxygen
- pH
- Water temperature

Monitoring the project's Secondary Benefits:

We are also interested in understanding the impact of each Catchment Regeneration Fund Project on the Fund's Secondary Objectives of improving biodiversity, social, recreation and amenity value. More detail on how these will be measured and what information will be captured is shown below.

Biodiversity improvement

Definition: Measurement of the impact of the project on the terrestrial and aquatic biodiversity

KPI: Improvement in biodiversity compared to baseline. This must be measured via the indicators (where relevant to your project) in the below Table 1 plus basic biodiversity monitoring as given in Tables 4-8 where appropriate.

Item	KPI Detail	How is indicator measured	Unit
Physical habitat	Improve condition of rivers/lakes in terms of physical habitat restored	Condition of rivers and lakes	kilometres of river/ hectares of lake
Natural	New water habitat created for biodiversity	Extent of wetlands/ponds, etc., created	Hectares
Natural	Improved land management to benefit biodiversity	Extent of land under improved management and/or arable reversion	Hectares

Table 1 – KPI's and Indicators that will be measured to show the Biodiversity Benefits of a Catchment Regeneration Fund project.

Social and recreational benefits

The KPI's that will need to be used to measure the social and recreational benefits are shown in Table 2.

Item	KPI Detail	How is indicator measured	Unit
Recreation	Area of land that has been improved for recreation	Uplift in public access and recreation	Hectares of recreational areas improved
Social	Impact the project has in terms of volunteer engagement	Number of volunteer hours associated with the project and Number of volunteers associated with the project	Hours/number of volunteers
Social	Impact project has had in terms of educational outreach	Number of people benefiting from educational visits and number of educational visits	Number of people

Table 2 – KPI's and Indicators that will be measured to show the Social and Recreational benefits of a Catchment Regeneration Fund project

Key monitoring principles

Your Monitoring Programme should adopt a Before-After and/or Control-Impact (BACI) approach to assess the impact of the Nature-based Solutions on one of the two primary objectives. The purpose of the BACI approach is to compare the manipulated site (impact) with a non-manipulated site (control) before and after the implementation of Nature-based Solutions.

To put in place the BACI approach, where possible, monitoring should take place pre-deployment of Nature-based Solutions (before) and provide a baseline against which to compare post-deployment conditions (after).

A neighbouring control site with very similar environmental characteristics (geology, topography, land use, soils) should be monitored to provide additional reference data that can be used to remove confounding effects from natural variability in the weather.

When the project timeframe does not allow Before-After monitoring, a well-designed Control-Impact scheme can still yield valuable results.

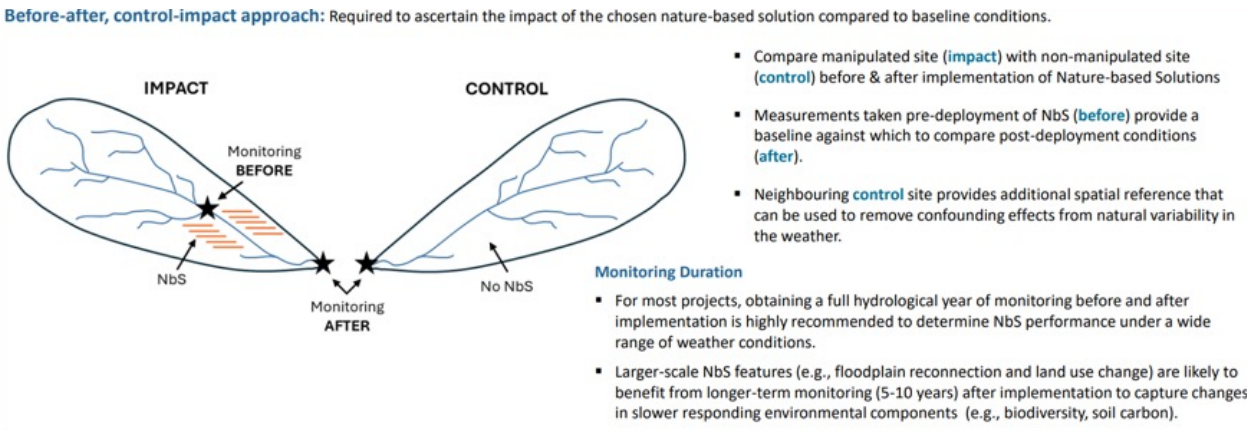

Figure 1 – Diagram showing Before-After, Control-Impact approach infographic to explain the approach required for the Catchment Regeneration Project Monitoring. Source: Norfolk Water Strategy Programme Best Practice Guidance- In-field monitoring of Nature-based Solutions for improved water management.

A real world example of Control and Impact monitoring is shown in Figure 2. This demonstrates that the Control and Impact site are very close together - which is beneficial as it means that the geology, soil type, weather etc are as similar as possible so that the only differing factor is the intervention itself. For example when looking for a control site we would need to choose a site as close as possible to the Impact site in terms of crop grown, land use (as determined by Google Earth/Google Maps), geology (as determined by British Geological Survey), soil types (as shown on Soilscapes), topography (determined by eye) and climate.

Figure 3 shows an example of a real-world groundwater monitoring scenario at a runoff attenuation feature (RAF) in the Wendling Beck catchment. This demonstrates the Control-Impact monitoring approach whereby CB1 and C1 are the Control groundwater monitoring boreholes and the boreholes marked 'R' or 'RB' are the Impact boreholes. A further real world example of the Control-Impact approach is shown in Figure 4.

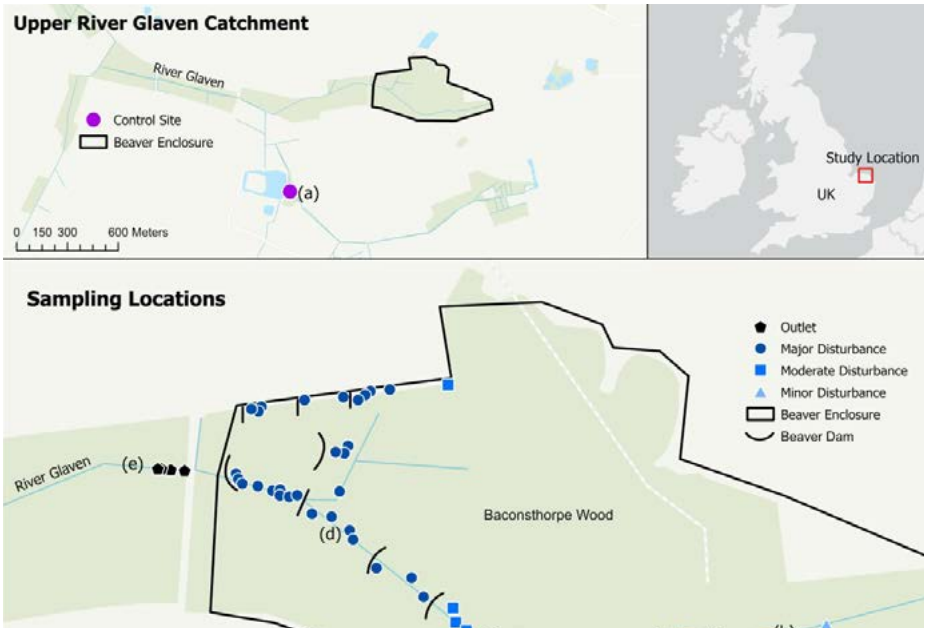

Figure 2- Image showing Control and Impact diagram for the Upper Glaven Catchment. The control site is shown by the purple dot and the Impact site is shown by the black line denoting the beaver enclosure.

Figure 3- An example of a real life monitoring scenario of a RAF in the Wendling Beck. This demonstrates the Control-Impact monitoring approach whereby CB1 and C1 are the Control boreholes and the boreholes marked 'R' or 'RB' are the Impact boreholes. Source: WRE.

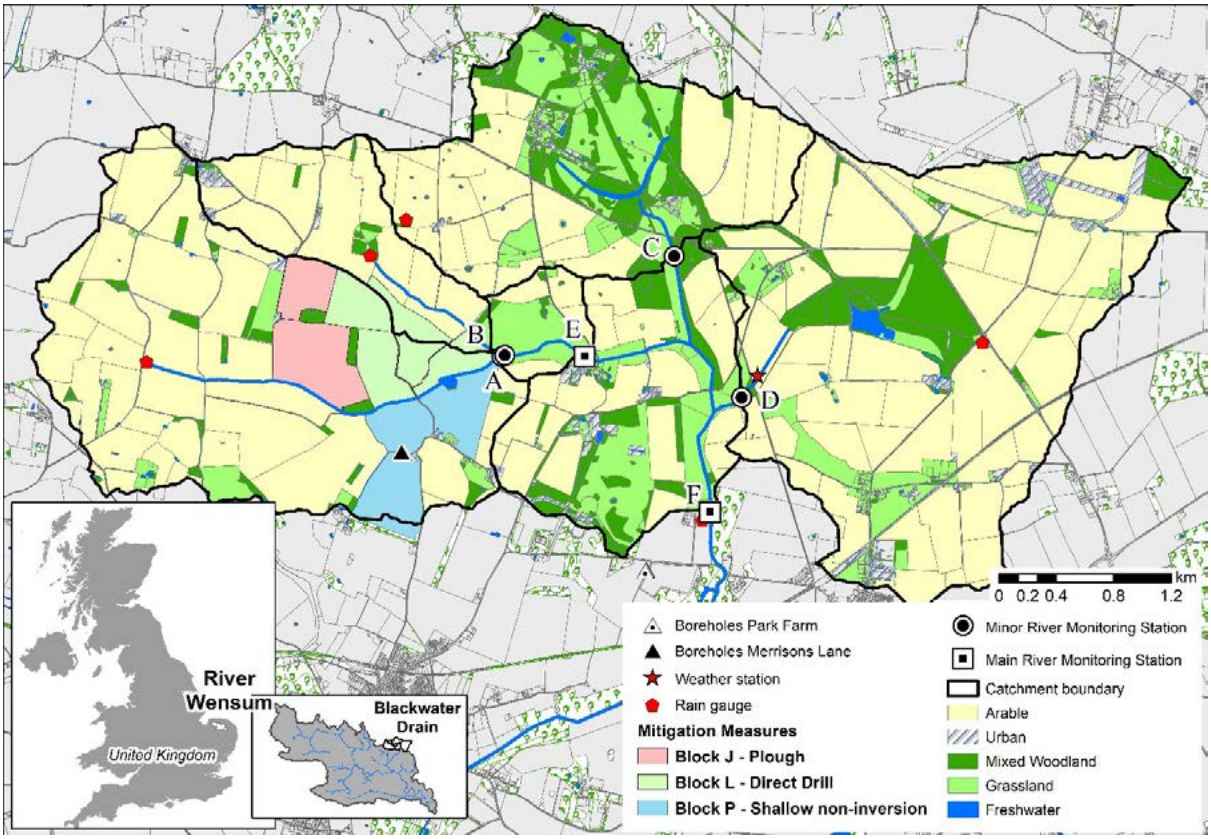

Figure 4 – Example of Control-Impact approach focused on assessing land use change (cover cropping and conservation tillage in Blocks J, L, P) in the Wensum catchment. Sites marked C and D are the Control areas, whilst B, A and E are the Impact locations.

What level of monitoring is required for my project?

The level of monitoring required for your project will depend on project size, with larger projects potentially requiring more extensive levels of monitoring.

It is anticipated that up to **20% of the total project budget** should be spent on monitoring the impact of the Nature-based Solutions.

Suggested monitoring for each of the Nature-based Solutions are shown below, divided by project size.

Project size (£ asked for from Anglian Water A-WINEP Fund)			
Up to £50,000	**£50,000-£100,000**	**£100,000- £200,000**	**£200,000 +**
Basic water quality and flow impact monitoring as stated below	Standard water quality and flow impact monitoring as stated below plus basic biodiversity monitoring	Standard water quality and flow impact monitoring as stated below plus basic biodiversity monitoring	Standard Plus water quality monitoring and flow impact monitoring plus biodiversity monitoring

Table 3 – Monitoring Requirements for different projects based on the amount of grant asked for from Anglian Water (£)

Monitoring and evaluation strategy key points

- The monitoring regimes below have been put together to guide your Monitoring Programme.
- Monitoring will be site specific and will be guided by the specific interventions you are delivering as part of your project.
- Where appropriate, successful applicants will be able to seek advice to check and confirm their monitoring strategy to ensure robust data is collected.
- Any in-kind volunteer time that is given towards your Monitoring Programme will count towards your in-kind contribution for the Catchment Regeneration Fund scheme.
- If you would like to locate a local citizen science group to work with to help with your monitoring scheme, you can speak to your local Catchment Partnership Group (CaBA group). The A-WINEP Grant Team can let you know your local CaBA contact lead or you can find them here: Catchment Partnership Pages | Catchment Data Explorer
- You can adjust the monitoring your project does in line of your project budget, bearing in mind that we expect up to 20% of the total project budget to be spent on monitoring
- You MUST monitor the impacts of the project on diffuse pollution (focusing on phosphate and nitrates) and/or mitigating the impact of low flows.
- You will need to report progress on your monitoring as part of the project reporting and will need to keep accurate records of the data you collect.
- The data you collect needs to be provided to Anglian Water as part of your project in a clear, easy to understand way, using the templates provided by Anglian Water for data collection.

Tables 4-8 outline the different parameters that could be measured under each of the different monitoring regimes. Please note, the costs given below are indicative only to help you estimate an overall project budget.

Table 4 – Monitoring strategy by type for nature-based solutions measure – **Land use change**

Parameter	Basic Monitoring	Standard Monitoring	Standard Plus Monitoring
Water Quality	**Parameter:** Surface water – Nitrate (mg/L) and Orthophosphate (mg/L) **Method:** Citizen scientist methods such as basic colorimetric test strips or hand-held nutrient checkers **Resolution:** Monthly **How many locations:** 2 – Control and Impact. **Cost:** £500 per year	**Parameter:** Surface water – Nitrate (mg/L), Orthophosphate (mg/L), ammoniacal-N (mg/L) and Turbidity (NTU) **Method:** Manual sampling and laboratory analysis **Resolution:** Fortnightly **How many locations:** 2 – Control + Impact **Cost:** £4,800 per year	**Parameter:** Surface water – Nitrate (mg/L), Orthophosphate (mg/L), turbidity/SPM (NTU), ammoniacal-N (mg/L) and temperature **Method:** Manual sampling and laboratory analysis **Resolution:** Weekly **How many locations:** 2 – Control + Impact **Cost:** £10,400 per year
Water Quality	**Parameter:** pH, temperature, conductivity **Method:** citizen science method **Cost:** £200-£300 per year	**Parameter:** Dissolved Oxygen, pH, Conductivity, Temperature **Resolution:** Monthly **Method:** HI-98194 Multiparameter Waterproof Meter or similar **Cost:** £2,310.60 one off cost	**Parameter:** Dissolved Oxygen, pH, Conductivity, Temperature **Resolution:** Weekly **Method:** HI-98194 Multiparameter Waterproof Meter or similar **Cost:** £2,310.60 one off cost
Water Quantity	**Parameter:** Surface water – discharge **Method:** River discharge spatially extrapolated from closest gauging station using Hydrology Data Explorer **Resolution:** Daily **Locations:** 1 x at project site **Cost:** Free	**Parameter:** Surface water – stage **Method:** In-situ pressure transducer in stilling well **Resolution:** Near continuous automatic readings **Locations:** 2x – Control + Impact **Cost:** £250-£1,000 per location	**Parameter:** Surface water-Hydrological **Method:** Flow meter or flow derived from manual stage-discharge calibration **Resolution:** Near continuous automatic readings **Locations:** 2x - Control + Impact **Cost:** £250-£1,000 if river stage is used, £2,500-7,500 per unit if flow meter is used In total need 2x units to cover control + Impact. Total cost: £500-£15,000

Parameter	Basic Monitoring	Standard Monitoring	Standard Plus Monitoring
Water Quality		**Parameter:** Field drainage – Nitrate (mg/L) and Orthophosphate (mg/L) OR Soil Water analysis using porous pots. **Method:** Manual sampling + laboratory analysis **Resolution:** Monthly **How many locations:** 10 (5x Control + 5x Impact) **Cost:** £9,000 per year (costed at £75/sample)	**Parameter:** Field drainage – Nitrate (mg/L) and Orthophosphate (mg/L) OR Soil Water analysis using porous pots. **Method:** Manual sampling + laboratory analysis **Resolution:** Weekly **How many locations:** 10 (5x Control + 5x Impact) **Cost:** £39,000 per year (costed at £75/sample
Hydrology		**Parameter:** Field drainage – hydrological – flow **Method:** Manual measurement with graduated bucket **Resolution:** Monthly **How many locations:** 10 (5x Control + 5x Impact) **Cost:** This is labour cost dependent, suggest £300-500 per day for a field technician which would give a total cost of: £3600-6000 if doing monthly.	**Parameter:** Field drainage – hydrological – flow **Method:** Manual measurement with graduated bucket **Resolution:** Monthly **How many locations:** 10 (5x Control + 5x Impact) **Cost:** This is labour cost dependent, suggest £300-500 per day for a field technician which would give a total cost of: £3600-6000 if doing monthly.
Biodiversity	**Parameter:** Birds **Method:** Manual species survey (visual point counts) or citizen science BioBlitz. **Resolution:** Annual **Location:** 2 – Control + Impact **Cost:** ~£300/day to support citizen scientists per year	**Parameter:** Terrestrial- Pollinators, birds, plants **Method:** Manual species survey (e.g., sweep netting, point counts) or citizen science method. **Resolution:** Annual **Location:** 2 – Control + Impact **Cost:** ~£3,000 per year	**Parameter:** Terrestrial- Pollinators, birds, plants **Method:** Manual species survey (e.g., sweep netting, point counts) or citizen science method. **Resolution:** Seasonal **Location:** 2 – Control + Impact **Cost:** ~£12,000 per year

Parameter	Basic Monitoring	Standard Monitoring	Standard Plus Monitoring
Biodiversity	**Parameter:** Biodiversity Net Gain Units **Method:** Completion of BNG metric and relevant Condition Assessment for each habitat type onsite, completed by competent person **Resolution:** Before Intervention, After Intervention and End of project (surveys take place during summer growing season) **Location:** Across site **Cost:** Free/£300/day to support citizen scientists per year	**Parameter:** Biodiversity Net Gain Units **Method:** Completion of BNG metric and relevant Condition Assessment for each habitat type onsite, completed by ecological consultancy **Resolution:** Before Intervention, After Intervention and End of project (surveys take place during summer growing season) **Location:** Across site **Cost:** Paid for ecological consultancy	**Parameter:** Biodiversity Net Gain Units **Method:** Completion of BNG metric and relevant Condition Assessment for each habitat type onsite, completed by ecological consultancy **Resolution:** Before Intervention, After Intervention and End of project (surveys take place during summer growing season) **Location:** Across site **Cost:** Paid for ecological consultancy
Geomorphology	**Parameter:** Photograph taken each time the site is visited at a fixed point marked out by a stake in the ground. At a minimum, you will need to provide photographs before change, during change and 3, 6, 9 and 12 months post change. **Resolution:** As above **Cost:** Free	**Parameter:** Photograph taken each time the site is visited at a fixed point marked out by a stake in the ground. At a minimum, you will need to provide photographs before change, during change and 3, 6, 9 and 12 months post change. **Resolution:** As above **Cost:** Free	**Parameter:** Photograph taken each time the site is visited at a fixed point marked out by a stake in the ground. At a minimum, you will need to provide photographs before change, during change and 3, 6, 9 and 12 months post change. **Resolution:** As above

Table 5 – Monitoring strategy by type for nature-based solutions measure – **Run off attention features and wetland monitoring**

Parameter	Basic Monitoring	Standard Monitoring	Standard Plus Monitoring
Water Quality	**Parameter:** Surface water – Nitrate (mg/L) and Orthophosphate (mg/L) **Method:** citizen scientist methods such as basic colorimetric test strips or handheld nutrient checkers **Resolution:** Monthly **How many locations:** 3 in total – 1x Upstream of RAF, 1X Downstream of RAF and 1x in RAF **Cost:** £500 per year	**Parameter:** Surface water – Nitrate (mg/L), Orthophosphate (mg/L), ammoniacal-N (mg/L) and Turbidity (NTU) **Method:** Manual sampling + laboratory analysis **Resolution:** Monthly **How many locations:** 3 – 1x Upstream of RAF, 1X Downstream of RAF and 1x in RAF **Cost:** £2700 per year	**Parameter:** Surface water – Nitrate (mg/L), Orthophosphate (mg/L), turbidity (NTU), ammoniacal-N (mg/L) **Method:** Manual sampling + laboratory analysis **Resolution:** Weekly **How many locations:** 3 - 1x Upstream of RAF, 1X Downstream of RAF and 1x in RAF **Cost:** £12,600 per year
Water Quality	**Parameter:** pH, temperature, conductivity **Resolution:** Monthly **Method:** citizen science method **Cost:** £200-£300 per year	**Parameter:** Dissolved Oxygen, pH, Conductivity, Temperature **Resolution:** Monthly **Method:** HI-98194 Multiparameter Waterproof Meter or similar **Cost:** £2,310.60	**Parameter:** Dissolved Oxygen, pH, Conductivity, Temperature **Resolution:** Weekly **Method:** HI-98194 Multiparameter Waterproof Meter or similar **Cost:** £2,310.60
Hydrology	**Parameter:** Surface water – Hydrological **Method:** In-situ telemetered stilling well pressure transducer **Resolution:** Near Continuous **Locations:** 1 x in RAF **Cost:** ~£,1000 per unit	**Parameter:** Surface water – Hydrological **Method:** In-situ telemetered stilling well pressure transducer **Resolution:** Near Continuous **Locations:** 1 x in RAF **Cost:** ~£1,000 per unit	**Parameter:** Surface water – Hydrological **Method:** In-situ telemetered pressure transducer in stilling well OR in-situ telemetered flow meter if the RAF is in channel. **Resolution:** Near Continuous **Locations:** 3 = upstream + downstream + RAF **Cost:** £250 - £1000 per unit OR £2,500 - £7,500 per flow meter Cost range – £750-3,000 for 3x in situ telemetered pressure transducers in stilling well OR £7,500-£22,500 for 3x flow meters.

Parameter	Basic Monitoring	Standard Monitoring	Standard Plus Monitoring
Hydrology			**Parameter:** Shallow groundwater levels (up to 10m depth) **Method:** In-situ telemetered pressure transducers in piezometers **Resolution:** Near-continuous **Locations:** 10 = 8 impact + 2 control **Cost:** £1,500-£5,000 per hole £250-£1000 per transducer **Cost range:** £17,500-£60,000 (one off cost)
Hydrology			Data processing for groundwater level assessment. **Resolution:** 1 -2 days staff time per month to download and analyse the data. **Cost:** £350-900/day + VAT
Biodiversity	**Parameter:** Biodiversity Net Gain Units **Method:** Completion of BNG metric and relevant Condition Assessment for each habitat type onsite, completed by competent person **Resolution:** Before Intervention, After Intervention and End of project (surveys take place during summer growing season) **Location:** Across site **Cost:** Free/£300/day to support citizen scientists per year	**Parameter:** Biodiversity Net Gain Units **Method:** Completion of BNG metric and relevant Condition Assessment for each habitat type onsite, completed by ecological consultancy **Resolution:** Before Intervention, After Intervention and End of project (surveys take place during summer growing season) **Location:** Across site **Cost:** Paid for ecological consultancy	**Parameter:** Biodiversity Net Gain Units **Method:** Completion of BNG metric and relevant Condition Assessment for each habitat type onsite, completed by ecological consultancy **Resolution:** Before Intervention, After Intervention and End of project (surveys take place during summer growing season) **Location:** Across site **Cost:** Paid for ecological consultancy

Parameter	Basic Monitoring	Standard Monitoring	Standard Plus Monitoring
Geomorphology	**Parameter:** Photograph taken each time the site is visited at a fixed point marked out by a stake in the ground. Photographs before change, during change and 3, 6, 9 and 12 months post change. **Resolution:** As above **Cost:** Free	**Parameter:** Photograph taken each time the site is visited at a fixed point marked out by a stake in the ground. At a minimum, you will need to provide photographs before change, during change and 3, 6, 9 and 12 months post change. **Resolution:** As above **Cost:** Free	**Parameter:** Photograph taken each time the site is visited at a fixed point marked out by a stake in the ground. At a minimum, you will need to provide photographs before change, during change and 3, 6, 9 and 12 months post change. **Resolution:** As above **Cost:** Free

Table 6 – Monitoring strategy by type for nature-based solutions measure – **Riparian restoration**

Parameter	Basic Monitoring	Standard Monitoring	Standard Plus Monitoring
Water Quality	**Parameter:** Surface water – Nitrate (mg/L) and Orthophosphate (mg/L) **Method:** citizen scientist methods such as basic colorimetric test strips or handheld nutrient checkers **Resolution:** Monthly **How many locations:** 2x – 1 x Upstream and 1x Downstream **Cost:** £500 per year	**Parameter:** Surface water – Nitrate (mg/L), Orthophosphate (mg/L), ammoniacal-N (mg/L) and Turbidity (NTU) **Method:** Manual sampling + laboratory analysis **Resolution:** Monthly **How many locations:** 2x – 1 x Upstream and 1x Downstream **Cost:** £1800 per year	**Parameter:** Surface water – Nitrate (mg/L), Orthophosphate (mg/L), turbidity/SPM (NTU), ammoniacal-N (mg/L) **Method:** Manual sampling + laboratory analysis **Resolution:** Weekly **How many locations:** 2x – 1 x Upstream and 1x Downstream **Cost:** £8,400 per year
Water Quality	**Parameter:** pH, temperature, conductivity **Method:** citizen science method **Cost:** £200-£300	**Parameter:** Dissolved Oxygen, pH, Conductivity, Temperature **Resolution:** Monthly **Method:** HI-98194 Multiparameter Waterproof Meter or similar **Cost:** £2,310.60	**Parameter:** Dissolved Oxygen, pH, Conductivity, Temperature **Resolution:** Weekly **Method:** HI-98194 Multiparameter Waterproof Meter or similar **Cost:** £2,310.60
Hydrology	**Parameter:** Surface water – hydrological **Method:** River discharge spatially extrapolated from closest gauging station Hydrology Data Explorer – Explore **Resolution:** Daily **Location:** 1x at site of project **Cost:** Free	**Parameter:** Surface water – hydrological **Method:** In-situ pressure transducer in stilling well **Resolution:** Near continuous automatic readings **Location:** 2x – Upstream + downstream of restoration site **Cost:** £500-2000	**Parameter:** Surface water – hydrological **Method:** Flow meter or in-situ stilling well pressure transducer with manual stage-discharge calibration **Resolution:** Near continuous automatic readings **Location:** 2x – Upstream + downstream of restoration site **Cost:** £250-£1,000 if river stage is used, £2,500-£7,500 per unit if flow meter is used. In total need 2x units to cover control + Impact. Total cost: £500-£15,000

Parameter	Basic Monitoring	Standard Monitoring	Standard Plus Monitoring
Geomorphology	**Parameter:** Photograph taken each time the site is visited at a fixed point marked out by a stake in the ground. At a minimum, photographs before change, during change and 3, 6, 9 and 12 months post change. **Resolution:** As above **Cost:** Free	**Parameter:** Photograph taken each time the site is visited at a fixed point marked out by a stake in the ground. At a minimum, you will need to provide photographs before change, during change and 3, 6, 9 and 12 months post change. **Resolution:** As above **Cost:** Free	**Parameter:** Photograph taken each time the site is visited at a fixed point marked out by a stake in the ground. At a minimum, you will need to provide photographs before change, during change and 3, 6, 9 and 12 months post change. **Resolution:** As above
Geomorphology		**Parameter:** Riparian habitat **Method:** River habitat survey (RHS) or MoRPH **Frequency:** Annual **Location:** 2 = control + impact **Cost:** £500-1000 for per day for field ecologist	**Parameter:** Riparian habitat **Method:** River habitat survey (RHS) or MoRPH **Frequency:** Bi-Annual **Location:** 2 = control + impact **Cost:** £500-1000 for per day for field ecologist
Biodiversity	If citizen science support is available; **Parameter:** Aquatic – Invertebrates; macrophytes **Method:** Benthic kick sampling; visual observations, Riverfly or other citizen science method **Resolution:** Annual **Location:** 2x – Control + Impact **Cost:** £750 for citizen scientist	**Parameter:** Aquatic – Invertebrates; fish; macrophytes; diatoms **Method:** Benthic kick sampling; electrofishing; LEAFPACS; DARLEQ or Extended Riverfly (typically 2-3 surveys per year), or SmartRivers typically 2 surveys per year. **Resolution:** Bi-annual **Location:** 2x – Control + Impact **Cost:** Range – depending on which method used, up to £6,000 per year	**Parameter:** Aquatic – Invertebrates; fish; macrophytes; diatoms **Method:** Benthic kick sampling; electrofishing; LEAFPACS; DARLEQ or Extended Riverfly (typically 2-3 surveys per year), or SmartRivers typically 2 surveys per year. **Resolution:** Bi-annual **Location:** 2x – Control + Impact **Cost:** Range – depending on which method used, up to £6,000 per year

Parameter	Basic Monitoring	Standard Monitoring	Standard Plus Monitoring
Biodiversity	If citizen science support is available; **Parameter:** Birds **Method:** Manual species survey (visual point counts) and/or citizen science BioBlitz **Resolution:** Annual **Location:** Control + Impact **Cost:** £750 for citizen scientist support	**Parameter:** Terrestrial – Habitat types; birds **Method:** Manual habitat survey; visual point surveys; sweep netting; Longworth traps use citizen science support **Resolution:** Bi-annual **Location:** 2x- Control + Impact **Cost:** £3,000 per year	**Parameter:** Terrestrial – Habitat types; birds; pollinators; mammals **Method:** Manual habitat survey; visual point surveys; sweep netting; Longworth traps or use citizen science support **Resolution:** Seasonal **Location:** 2x – Control + Impact **Cost:** Range, depending on method used, up to £24,000 per year
Biodiversity		**Parameter:** Watercourse Biodiversity Net Gain Units **Method:** MoRPH survey results translated into watercourse Condition Assessment **Resolution:** Before Intervention, After Intervention and End of project **Location:** Riparian zone(s) onsite **Cost:** Paid for consultancy	**Parameter:** Watercourse Biodiversity Net Gain Units **Method:** MoRPH survey results translated into watercourse Condition Assessment **Resolution:** Before Intervention, After Intervention and End of project **Location:** Riparian zone(s) onsite **Cost:** Paid for consultancy

Table 7 – Monitoring strategy by type for nature-based solutions measure – **Floodplain reconnection**

Parameter	Basic Monitoring	Standard Monitoring	Standard Plus Monitoring
Water Quality	**Parameter:** Surface water – Nitrate (mg/L) and Orthophosphate (mg/L) **Method:** citizen scientist methods such as basic colorimetric test strips or handheld nutrient checkers **Resolution:** Monthly **Location:** 1x upstream and 1x downstream **Cost:** £500/year	**Parameter:** Surface water – Nitrate (mg/L), Orthophosphate (mg/L) and Turbidity (NTU), ammoniacal-N (mg/L) **Method:** Manual sampling + laboratory analysis **Resolution:** Monthly **How many locations:** 2x – 1 x Upstream and 1x Downstream **Cost:** £1800/year	**Parameter:** Surface water – Nitrate (mg/L), Orthophosphate (mg/L), turbidity/SPM (NTU), ammoniacal N (mg/L) **Method:** Manual sampling + laboratory analysis **Resolution:** Weekly **How many locations:** 2x – 1 x Upstream and 1x Downstream **Cost:** £8,400/year
Water Quality	**Parameter:** pH, temperature, conductivity **Method:** citizen science method **Cost:** £200-£300	**Parameter:** Dissolved Oxygen, pH, Conductivity, Temperature **Resolution:** Monthly **Method:** HI-98194 Multiparameter Waterproof Meter or similar **Cost:** £2,310.60	**Parameter:** Dissolved Oxygen, pH, Conductivity and TDS Temperature **Resolution:** Weekly **Method:** HI-98194 Multiparameter Waterproof Meter or similar **Cost:** £2,310.60
Hydrology	**Parameter:** Surface water-hydrological Floodplain surface water level **Method:** In-situ telemetered pressure transducer in stilling well **Resolution:** Near continuous **Locations:** 1x in impact floodplain **Cost:** £250-£1,000 per unit	**Parameter:** Surface water- hydrology **Method:** In-situ telemetered pressure transducer in stilling well with manual stage discharge calibration **Resolution:** Near continuous automatic readings **Locations:** 3x – 1x Upstream, 1x downstream and 1x floodplain **Cost:** £750-£3,000	**Parameter:** Surface water- hydrology **Method:** Flow meters in river; in-situ telemetered pressure transducer in stilling well on floodplain **Resolution:** Near continuous automatic readings **Locations:** 3x – 1x Upstream, 1x downstream and 1x floodplain **Cost:** £5,000-£16,000

Parameter	Basic Monitoring	Standard Monitoring	Standard Plus Monitoring
Hydrology			**Parameter:** Shallow groundwater levels (up to 10m depth) **Method:** In-situ telemetered pressure transducers in piezometers **Resolution:** Near-continuous **Locations:** 5= 1 control + 4 impact **Cost:** £1500-£5000 per borehole; £250-£1000 per transducer **Total cost:** £7,500-£25,000 for the 5 x holes plus £1,250-£5,000 for the transducers
Geomorphology	**Parameter:** Photograph taken each time the site is visited at a fixed point marked out by a stake in the ground. At a minimum, you will need to provide photographs before change, during change and 3, 6, 9 and 12 months post change. **Resolution:** As above **Cost:** Free	**Parameter:** Photograph taken each time the site is visited at a fixed point marked out by a stake in the ground. At a minimum, you will need to provide photographs before change, during change and 3, 6, 9 and 12 months post change. **Resolution:** As above **Cost:** Free	**Parameter:** Photograph taken each time the site is visited at a fixed point marked out by a stake in the ground. At a minimum, you will need to provide photographs before change, during change and 3, 6, 9 and 12 months post change. **Resolution:** As above
Biodiversity	If citizen science support is available **Parameter:** Aquatic – Invertebrates, macrophytes **Method:** Benthic kick sampling; visual observations, Riverfly or other citizen science method **Resolution**: Annual **Location:** 2x – Control + Impact **Cost:** £750 for citizen scientist/year	**Parameter:** Aquatic – Invertebrates; fish; macrophytes; diatoms **Method:** Benthic kick sampling; electrofishing; LEAFPACS; DARLEQ or Extended Riverfly (typically 2-3 surveys per year), or SmartRivers typically 2 surveys per year. **Resolution:** Bi-annual **Location:** 2x – Control + Impact **Cost:** Range, depending on method used, up to £6,000 per year	**Parameter:** Aquatic – Invertebrates; fish; macrophytes; diatoms **Method:** Benthic kick sampling; electrofishing; LEAFPACS; DARLEQ or Extended Riverfly (typically 2-3 surveys per year), or SmartRivers typically 2 surveys per year. **Resolution:** Bi-annual **Location:** 2x – Control + Impact **Cost:** Range, depending on method used, up to £6,000 per year

Parameter	Basic Monitoring	Standard Monitoring	Standard Plus Monitoring
Biodiversity	If citizen science support is available; **Parameter:** Birds **Method:** Manual species survey (visual point counts) and/or BioBlitz **Resolution:** Annual **Location:** Control + Impact **Cost:** £750 for citizen scientist	**Parameter:** Terrestrial – Pollinators, birds, plants **Method:** Manual species survey (e.g., sweep netting, point counts) or citizen science method. **Resolution:** Annual **Location:** 2 – Control + Impact **Cost:** £3,000 per year	**Parameter:** Terrestrial – Pollinators, birds, plants **Method:** Manual species survey (e.g., sweep netting, point counts) or citizen science method. **Resolution:** Seasonal **Location:** 2 – Control + Impact **Cost:** Range, depending on method used, up to £12,000 per year
Biodiversity	**Parameter:** Biodiversity Net Gain Units **Method:** Completion of BNG metric and relevant Condition Assessment for each habitat type onsite, completed by competent person **Resolution:** Before Intervention, After Intervention and End of project (surveys take place during summer growing season) **Location:** Across site **Cost:** Free/£300/day to support citizen scientists per year	**Parameter:** Biodiversity Net Gain Units **Method:** Completion of BNG metric and relevant Condition Assessment for each habitat type onsite, completed by ecological consultancy **Resolution:** Before Intervention, After Intervention and End of project (surveys take place during summer growing season) **Location:** Across site **Cost:** Paid for ecological consultancy	**Parameter:** Biodiversity Net Gain Units **Method:** Completion of BNG metric and relevant Condition Assessment for each habitat type onsite, completed by ecological consultancy **Resolution:** Before Intervention, After Intervention and End of project (surveys take place during summer growing season) **Location:** Across site **Cost:** Paid for ecological consultancy

Table 8 – Monitoring strategy by type for nature-based solutions measure – **Soil management practices**

Parameter	Basic Monitoring	Standard Monitoring	Standard Plus Monitoring
Water Quality	**Parameter:** Surface water – Nitrate (mg/L) and Orthophosphate (mg/L) **Method:** citizen scientist methods such as basic colorimetric test strips or hand-held nutrient checkers **Resolution:** Monthly **How many locations:** 2 - Control + Impact **Cost:** £500 per year	**Parameter:** Surface water – Nitrate (mg/L), Orthophosphate (mg/L) and Turbidity (NTU), ammoniacal-N (mg/L) **Method:** Manual sampling + laboratory analysis **Resolution:** Monthly **How many locations:** 2 - Control + Impact **Cost:** £1,800 per year	**Parameter:** Surface water – Nitrate (mg/L), Orthophosphate (mg/L), turbidity (NTU), ammoniacal-N (mg/L) **Method:** Manual sampling + laboratory analysis **Resolution:** Weekly **How many locations:** 2 - Control + Impact **Cost:** £8,400 per year
Water Quality	**Parameter:** pH, temperature, conductivity **Method:** citizen science method **Cost:** £200-£300	**Parameter:** Dissolved Oxygen, pH, Conductivity, Temperature **Resolution:** Monthly **Method:** HI-98194 Multiparameter Waterproof Meter or similar **Cost:** £2,310.60	**Parameter:** Dissolved Oxygen, pH, Conductivity, Temperature **Resolution:** Weekly **Method:** HI-98194 Multiparameter Waterproof Meter or similar **Cost:** £2,310.60
Hydrology	**Parameter:** Surface water – hydrological River discharge spatially extrapolated from closest gauging station **Method:** River discharge spatially extrapolated from closest gauging station Hydrology Data Explorer – Explore **Resolution:** Daily **Location:** 1x at site of project **Cost:** Free	**Parameter:** Surface water – hydrological **Method:** River stage with manual stage-discharge calibration using in-situ telemetered stilling well pressure transducer **Resolution:** Near continuous automatic readings **Location:** 2x for control + impact sites **Cost:** £500-2,000	**Parameter:** Surface water – hydrology **Method:** Flow meter **Resolution:** Near continuous automatic readings **Location:** 2x – Control + Impact **Cost:** £2,500-7,500 per unit if flow meter is used. In total need 2x units to cover control + Impact. Total cost: £5,000-£15,000

Parameter	Basic Monitoring	Standard Monitoring	Standard Plus Monitoring
Water Quality		**Parameter:** Field drainage – Nitrate (mg/L) and Orthophosphate (mg/L) OR Soil Water analysis using porous pots. **Method:** Manual sampling + laboratory analysis **Resolution:** Monthly **How many locations:** 10 (5x Control + 5x Impact) **Cost:** £9,000 per year	**Parameter:** Field drainage- Nitrate (mg/L) and Orthophosphate (mg/L) OR Soil Water analysis using porous pots. **Method:** Manual sampling + laboratory analysis **Resolution:** Weekly **How many locations:** 10 (5x Control + 5x Impact) **Cost:** £39,000 per year
Hydrology		**Parameter:** Field drainage – hydrological – flow **Method:** Manual measurement with graduated bucket **Resolution:** Monthly **How many locations:** 10 (5x Control + 5x Impact) **Cost:** £3,000 - 6,000 per year	**Parameter:** Field drainage – hydrological – flow **Method:** Manual measurement with graduated bucket **Resolution:** Weekly (estimated 30 weeks per year drains flowing) **How many locations:** 10 (5x Control + 5x Impact) **Cost:** £19,000 - 15,000 per year
Biodiversity	If citizen science support is available; **Parameter:** Birds **Method:** Manual species survey (visual point counts) or citizen science bioblitz. **Resolution:** Annual **Location:** 2 – Control + Impact **Cost:** £750 for citizen scientist	**Parameter:** Terrestrial – Pollinators, birds, plants **Method:** Manual species survey (e.g., sweep netting, point counts) or citizen science method. **Resolution:** Annual **Location:** 2 – Control + Impact **Cost:** Range, depending on method used, up to £3,000 per year	**Parameter:** Terrestrial – Pollinators, birds, plants **Method:** Manual species survey (e.g., sweep netting, point counts) or citizen science method. **Resolution:** Seasonal **Location:** 2 – Control + Impact **Cost:** Range, depending on method used, up to £12,000 per year

Parameter	Basic Monitoring	Standard Monitoring	Standard Plus Monitoring
Biodiversity		**Parameter**: Biodiversity Net Gain Units **Method:** Completion of BNG metric and relevant Condition Assessment for each habitat type onsite, completed by ecological consultancy **Resolution:** Before Intervention, After Intervention and End of project (surveys take place during summer growing season) **Location:** Across site **Cost:** Paid for ecological consultancy	**Parameter:** Biodiversity Net Gain Units **Method:** Completion of BNG metric and relevant Condition Assessment for each habitat type onsite, completed by ecological consultancy **Resolution**: Before Intervention, After Intervention and End of project (surveys take place during summer growing season) **Location:** Across site **Cost:** Paid for ecological consultancy
Geomorphology	**Parameter:** Photograph taken each time the site is visited at a fixed point marked out by a stake in the ground. Photographs before change, during change and 3, 6, 9 and 12 months post change. **Resolution:** As above **Cost:** Free	**Parameter:** Photograph taken each time the site is visited at a fixed point marked out by a stake in the ground. At a minimum, you will need to provide photographs before change, during change and 3, 6, 9 and 12 months post change. **Resolution:** As above **Cost:** Free	**Parameter:** Photograph taken each time the site is visited at a fixed point marked out by a stake in the ground. At a minimum, you will need to provide photographs before change, during change and 3, 6, 9 and 12 months post change. **Resolution:** As above **Cost:** Free

Relevant links:

- For further information, including diagrams of monitoring scheme designs, case studies and examples of equipment mentioned in the tables above, please go to: Best-Practice-Guide-for-In-field-Monitoring-of-Nature-based-Solutions_Final-Report_April-2025_V2.pdf.pagespeed.ce.sCS20c4rZE.pdf

- You can find information on low cost flow monitoring on the Free station website: www.FreeStation.org – Applications

- You can find your local Catchment Partnership webpage and contact details here: Catchment Partnership Pages | Catchment Data Explorer

- The CaSTCo project did a lot of work focused around auditing different citizen science methods. A full list of the methods they audited is here: Methods list and categories – CastCo

- You can find information on the Riverfly partnership here: The Riverfly Partnership and you can find a local Riverfly monitor using the contact form: Contact information – The Riverfly Partnership and see the CaSTCo method audit here: Method audit: Extended Riverfly – CastCo

- MoRPH river survey – you can find a CaSTCo case study on the MoRPH survey here: MoRPh: Diving into detail – CastCo and CaSTCo MoRPH audit here: Method audit: MoRPh – CastCo and the MoRPH website here: Modular River Survey Training – Modular River Survey

- The citizen River Habitat Survey (cRHS) – cRHS | the River Restoration Centre and to find a certified surveyor: RHS Certified Surveyors | the River Restoration Centre and the CaSTCo method audit here: Method audit: Citizen River Habitat Survey (cRHS) – CastCo

- Method audit: Phosphate – Hanna Checker – CastCo

- pH/conductivity/Temperature: COM-300: Waterproof Professional Series pH/EC/TDS/Temp Meter

- Phosphate: HI-713 Low Range Phosphate Checker for Saltwater and Freshwater Aquariums | Hanna Instruments UK

- Ammonia: HI-715 Medium Range Ammonia Checker for Freshwater Aquariums | Hanna Instruments UK | Reliable Digital Ammonia Tester for Freshw

- Turbidity: Transparency turbidity tube with Secchi disk – Water Rangers

- FreshWater Watch – Earthwatch Europe

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