

Review of monitoring approaches to deliver healthy ecosystems for Scotland's protected fresh waters and wetlands

Section 1: Project Overview

Introduction

The Centre of Expertise for Waters (CREW) intends to commission a **capacity building project** aligned with CREW's **Land and Water Resource Management** that informs NatureScot's new approach to protected area monitoring to deliver healthy ecosystems.

Background & knowledge gap

NatureScot's current approach to monitoring protected areas (**Site Condition Monitoring, SCM**) is based on an assessment of designated features and their associated attributes and targets. Whether these targets are met or not determines whether features are considered to be in favourable or unfavourable condition. The system assesses features in isolation, so there can be conflicting targets between different features at site level, the direct link to management action is poor, and challenging catchment-wide pressures such as diffuse pollution and invasive species are poorly addressed. Furthermore, climate change effects and the need to monitor increasingly dynamic habitats and species adds to the problem, and an expected increase in the number of protected habitats by 2030 puts pressure on monitoring budgets and capabilities.

The current approach is therefore no longer fit for purpose given the need to inform actions for effective restoration of freshwater and wetland ecosystems at pace and scale. A change in approach is needed in the face of the twin challenge of the climate and biodiversity crises.

To tackle these issues NatureScot is reforming protected area monitoring to deliver healthy ecosystems. This new approach will better inform practical conservation by transitioning to site-based assessments, prioritise indicators that inform management, and incorporate the wider landscape thus allowing us to identify and address pressures at appropriate scales. The approach will more effectively support the key elements of ecosystem functions, habitat diversity and connectivity, all of which are vital for achieving biodiversity recovery.

NatureScot's new approach to monitoring is expected to be rolled out in 2025. NatureScot is currently in the process of creating a new protected area IT platform (InformedINSIGHT) to replace the old SCM database during 2024. The platform is being constructed with flexibility in mind, to incorporate new approaches, data from new evidence sources and from multiple spatial scales. This project is both essential and timely as it will help to shape NatureScot's new approach to monitoring and inform the follow-up actions needed to restore ecosystem health for Scotland's protected fresh waters and wetlands¹.

This project proposal builds on the findings and recommendations of a previous CREW study: [CRW2019_03 Moderating extremes in water availability – a review of the role of functioning wetlands](#). This study provided a compilation of existing knowledge regarding wetland functions.

¹ Note that this project **will include all protected freshwater and wetland habitats and species. Reservoirs that are designated as protected areas also will be included.**

For the purposes of SCM a wider focus including lakes and rivers² is needed, and NatureScot is now looking to take the next step in improving its monitoring programme for protected fresh waters and wetlands to inform the practical solutions necessary to improve ecosystem health.

Specifically, the knowledge gaps to be addressed are:

- Definition of ecosystem health with a focus on freshwater and wetland protected areas, building on assumption that a healthy ecosystem is unimpeded by pressures or threats.
- Updated and fit for purpose metrics for site condition monitoring to inform practical assessment of ecosystem health.
- Consideration of the wider catchment scale (beyond the protected site boundary) in assessing ecosystem health. As SEPA and others monitor and collect relevant data, the project will identify overlaps to prevent duplication.

This work should build on key elements of Site Condition Monitoring and NatureScot's scoping work around monitoring to deliver healthy ecosystems and not develop completely new from first principles. This will ensure that outputs are practical and relevant to NatureScot's activities around protected areas.

The Scottish Biodiversity Strategy ([SBS](#)) will set a clear ambition for Scotland to be nature positive by 2030 and to have restored and regenerated biodiversity by 2045. Tackling biodiversity decline requires a shift in the pace and scale of actions to achieve these aims. As a consequence, there is a need to develop a more holistic, ecosystem-level approach to conservation, management and monitoring. A greater understanding of priority monitoring metrics to deliver ecosystem health will support efforts to deliver SBS ambitions for Scotland's fresh waters and wetlands. In delivering the SBS, the area of Scotland's protected or conserved land will increase from 18% to 30% by 2030, including for fresh waters and wetlands. Consequently, protected area monitoring needs to become more efficient (as well as more effective), incorporating new approaches and technologies. Robust monitoring is also required to underpin Scotland and UK-level reporting obligations under the Habitats Regulations.

Healthy ecosystems also play a vital role in supporting Scotland's climate change targets and ambitions as set out in the Climate Change Plan Update ([2020](#)). Healthy and dynamic fresh waters and wetlands have greater resilience during extreme events, such as flooding and drought, ensuring continuity in the range of ecosystem services provided by these habitats.

² Note that this project will **not** include man-made waters (reservoirs, canals) that are **not designated** as **protected areas**. Also, this project will **not** include peatlands (which already have well-developed approaches through the Peatland ACTION project).

Aim and key questions

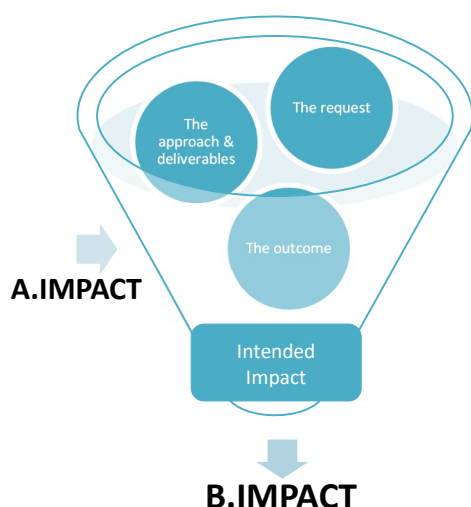
The overall aim of this project is to review and make recommendations on what metrics to measure, to support the effective delivery of ecosystem health for Scotland’s protected fresh waters and wetlands.

The key questions to be addressed are:

1. What are the key issues that need to be acted on to deliver healthy ecosystems and (building from Site Condition Monitoring) what must be measured to facilitate this?
2. Define ‘ecosystem health’ in the specific context of Scotland’s freshwater and wetland protected areas. What are the key elements of healthy lakes, rivers, and wetlands in terms of hydrology, biology, chemistry and morphology and the pressures and threats that may act upon these?
3. For lakes, rivers and wetlands what are the thresholds for “good” health, “bad” health, and the stages in between? Understanding this is a key step in knowing what to monitor and how to assess condition.
4. Which indicators should be used in assessing ecosystem health, including for key biodiversity elements such as ecosystem functioning, habitat diversity and connectivity? Consider scale, including site-level and wider catchment indicators.
5. What datasets exist to support analysis of ecosystem health and what gaps need to be filled for an effective approach? Consider new survey methods, new technologies, ease of access and integration, data flows.
6. How can monitoring results and assessments be developed to better inform site management and tackle the pressures that currently account for biodiversity loss.

Intended impacts

There are multiple pathways for a project to achieve impact, and multiple factors that can impact the project’s ability to achieve what it intends to do; both along the project lifecycle (A.IMPACT) and beyond project completion (B.IMPACT) (Figure 1).



- **The request:** the problem/ gap that has been identified that drives the project.
- **The approach & deliverables:** the ‘methods’ that explain how the request is being answered and the ‘outputs’ that are tangible products delivered by the project.
- **The outcome:** this is directly correlated to the findings; this is short to mid-term change because of the research.
- **Intended impact:** Explicitly what this project intends to achieve to address, which is connected to the request.
- **Along impact:** the conditions and causal factors that can influence the project during its life cycle.
- **Beyond impact:** more significant wider change that occurs at a longer timescale following the project’s completion.

Figure 1: Pathways to impact

Along Impact (A.Impact):

These stakeholders are anticipated to be a key influence on this project:

- Scottish Government;
- NatureScot;
- SEPA;
- Scottish Water;
- Cairngorms National Park Authority;
- Loch Lomond and Trossachs National Park Authority.

Beyond Impact (B.Impact):

The intended audience for the project deliverables (outlined in the following section) include:

- Scottish Government;
- NatureScot;
- SEPA;
- Scottish Water;
- Cairngorms National Park Authority;
- Loch Lomond and Trossachs National Park Authority.
- Other protected area site managers

The project deliverables (see following section) will be used by NatureScot to inform the development of NatureScot's new Ecosystem Health approach to monitoring for Scotland's freshwater and wetland protected areas. This approach is expected to be up and running during 2025/26 and will be used by NatureScot staff to assess the condition of Scotland's protected fresh waters and wetlands. As such, the results will feed into Scotland and UK level reporting on protected area condition and will be used to assess progress against Scottish Government targets for biodiversity recovery. The forthcoming Natural Environment Bill will introduce statutory nature recovery targets, meaning that NatureScot's new approach to monitoring for protected areas will have even greater importance. The outputs from this project will directly inform and support Scotland's nature recovery goals.

As a regulator of the water environment, SEPA has a shared interest in NatureScot's approach to assessing the condition of Scotland's protected areas, and currently provides some of the data used in condition assessments. Meanwhile, Scottish Water relies on water security and other ecosystems services from healthy rivers, lakes, and wetlands. As such, the recommendations on monitoring to deliver healthy ecosystems will be directly relevant to both SEPA and Scottish Water's ongoing activities, future plans and investment decisions.

The National Park Authorities work closely with NatureScot, SEPA and others in managing the conservation and restoration of biodiversity within Scotland's national parks. Monitoring for healthy ecosystems will inform their ongoing planning and delivery of restoration projects relating to freshwater and wetland habitats and species. Both national parks are also currently looking at their monitoring. In fact, the Cairngorm National Park Authority are working on the Cairngorm Nature Index (based on the Norwegian Nature Index).

Deliverables

The project will:

- Define 'ecosystem health' in the specific context of Scotland's freshwater and wetland protected areas.
- Provide an overview of protected area site condition monitoring current and new approaches, datasets, and indicators.
- Develop and run/facilitate³ one knowledge exchange stakeholder in-person workshop.⁴ The purpose of the workshop will be to engage with staff from relevant stakeholder organisations (data providers and data users) via a workshop to ensure that revised monitoring approaches are both practical and streamlined, and their results are effective in meeting the needs of all stakeholders.
- Develop metrics for NatureScot's new protected area site condition monitoring approach that is expected to be more focused on the causes of unfavourable condition (pressures & impacts) and to better inform site management.

Events/meetings

- Three (3) Project Steering Group meetings (two online and one in-person) (throughout the project lifecycle⁵)
- One (1) in-person stakeholder workshop

The deliverables will be presented via:

- Interim post-workshop report of up to 10 pages, excluding annexes and the bibliography and including:
 - Workshop background, aims, and objectives;
 - Outcomes of workshop.
- Final report of up to 25 pages, excluding annexes⁶ and the bibliography, and including:
 - Project background, aims and objectives;
 - Literature and policy summaries;
 - Summary of healthy ecosystem definitions, causes of unfavourable conditions (pressures and impacts), and key issues that need to be acted on to deliver healthy ecosystems
 - Review of protected area site condition monitoring current and new approaches, datasets, and indicators
 - A concise set of recommendations including Site Condition Monitoring approaches and metrics to facilitate delivery of healthy ecosystems in freshwater and wetlands in Scotland
 - Cover image(s) with associated photo credits.
- A plain English summary of aims and results (up to 1 page)
- Infographics
- Website summary (200 words)

³ Workshop facilitation can be subcontracted.

⁴ To include outreach/engagement from research scientists, policy, and industry experts as well as representatives of the wider community.

⁵ Please note, CREW requests a brief written update c. two weeks prior to project steering group meetings.

⁶ The final report annex will include the interim post-workshop report.

Section 2: Further information for applicants

Project management

Day-to-day communication will be between the research/review team (the contractor) and a CREW Project Manager and is likely to involve short catchups as agreed.

Project steering group

A small group including representatives of Scottish Government and its delivery partners plus a CREW representative, will meet with the preferred bidder for a pre-contract meeting and provide feedback on the bidder's proposed approach.

Anticipated timescale

A precontract meeting will be held in **mid-July 2024**. The project will commence in **late July 2024**, depending on contract processing and signage, with the project outputs signed off by the CREW Director by **end of January 2025**.

Funding

The maximum amount of funding available **exclusive of VAT** (where applicable) is **£72,000**

This includes an associated costs (excluding sub-contractor) budget of £3,000

- £1,420 for 1 workshop room and equipment hire
- £1,200 for travel and subsistence (to one PSG meeting and one workshop)
- £380 for room hire and catering for one project steering group in-person meeting.

Submitting a proposal

Please send a completed application form using the most recent version (the link to this form is available on the CREW Call for Proposal webpage [Call for Proposals | CREW | Scotland's Centre of Expertise for Waters](#)) addressing the project requirements.

A copy of expectations and the award criteria are provided below for reference.

Proposals need to be submitted to Procurement@crew.ac.uk for evaluation **by noon on 20th June 2024**. We aim to notify the successful bidder by **w.b. 15th July 2024**.

Please contact Procurement@crew.ac.uk if you would like any clarification on any of the above **by 13th June, 2024**. You should highlight any potential conflicts of interest in your proposal. For queries about what may constitute a potential conflict of interest please contact the CREW Deputy Manager (Nikki.Dodd@hutton.ac.uk).

Expectations

No.	Criteria	Descriptor
1	Duration	The proposed duration will align closely to the details provided in the anticipated timescales section of the specification.
2	Staff time and effort	The proposed allocation of staff time and effort is appropriate and includes all deliverables. The proposal provides a commitment that named staff members will be available to work on the contract if the bid is successful. For any unnamed staff, appropriate risk identification and mitigation measures are provided.
3	Project costs	The estimated breakdown of project costs is realistic and inclusive of all deliverables.

Award criteria

No.	Criteria	Descriptor
1	Understanding the project ask and policy background	The proposal should include an introduction which demonstrates a clear understanding of the project requirements. This should include an understanding of the policy background and the supporting role of this project; the need for this research; the project aim; and how the proposal will address this aim.
2	Proposed methodology	The proposal should demonstrate a high quality and workable methodology, including how the evidence will be identified, reviewed and assessed; consulting relevant stakeholders and/or experts where appropriate to address the key questions and produce the deliverables in the timescales required. It should explain the suitability, robustness and limitations of the proposed methodology.
3	Milestones	The project milestones are logical, practical and include all deliverables.
4	Project Management	The staff, resources and expertise are appropriate for conducting the proposed project. The proposal should name the project lead and outline their project management experience.
5	General and specific topic expertise and experience	The proposal should provide details of individual staff members who will work on this project and demonstrate how they will meet the project requirements, specifically: <ul style="list-style-type: none"> - general research experience and expertise; - specific experience and expertise on the topic of freshwater and wetland ecosystem monitoring.
6	General communication and deliverables	The proposal should describe the approach to producing the deliverables, which will be published on the CREW website. It should detail who will take lead responsibility for report-writing and overall report quality. It should provide examples of previously published reports, studies related to freshwater and wetland ecosystem monitoring in which they have been involved.
7	Quality assurance	The proposal should provide details of quality assurance procedures to demonstrate how the contract will be continuously delivered to a high standard. It should specifically address issues of quality control at different stages of the project, including evidence gathering, analysis and report writing. It should include a timetable for delivery of tasks, project milestones and allocation of staff and staff time against each task, covering the duration of the contract.
8	Risk	The proposal should provide a risk assessment matrix detailing any risks identified in relation to the delivery of this contract, and proposed mitigation measures to minimise their probability and impact, focused particularly on risk to completion on time.

Annex A. Relevant reports, studies, and policies

- Site Condition Monitoring data for protected freshwater and wetland habitats & species. Dataset readily available without restrictions from NatureScot.