Key:
Investigation
Surveillance
Project Appraisal

5.17 Collaborative Monitoring Plan

AIMS

+ To identify and investigate the indicators of soil health and catchment resilience, linking soil health to water quality and river health.

+ To develop tools and ways of working that support catchment understanding, project identification, and prioritisation following a natural capital approach.

+ To empower citizen scientists to co-create survey design, collect and analyse data which informs catchment understanding and decision making.

OBJECTIVES

i To investigate, co-design and trial citizen science soil monitoring approaches within the Arun Demo area through a soil method audit and Soil SmArt Project.

ii To train farmers and catchment stakeholders as part of the Soil SmArt project on soil health and co-created citizen science monitoring methods to test, analyse and report findings.

iii Create a citizen science monitoring programme to investigate water quality and river health, embedding the data into a data hub to support and inform decision making within the catchments.

iv Develop a natural capital model that builds a shared understanding of the Arun Demo area and identifies potential Nature-based Solutions (NbS) projects and shared priorities.

v To measure our success of collaboration and empowerment of our citizen scientists and catchment stakeholders.

Objectives: i ii v **Owner: ARRT, SWS**

Why: What citizen science methods are most representative to determine the status soil health?

What: Identify which soil tests are feasibly undertaken by citizen scientists through co-design and can represent the status of soil health. Co-develop a soil health metric to support analysis.

Methods: Literature review, citizen science method co-design, testing (against higher tier monitoring), citizen science method review (cost, usability, feasibility etc.), and expert-led data audit.

Who: Farmers/landowners and interested groups (schools/ community groups). Local agronomist and soils expert.

Objectives: ii iii v **Owner: ARRT**

Why: How can we improve the detail of spatial and temporal coverage of water quality monitoring using citizen scientists?

What: Field assessments of PO4, nitrates and turbidity, TDS, temp. Visual assessment survey e.g. ecosystems; pollution; river characteristics; wildlife.

Methods: Citizen Science methods utilising guidance from PRAGMO, CaBa and established CS programmes (e.g. West Country CSI).

Who: Citizen scientists

Objectives: iii v **Owner: SWS**

Why: Can citizen science collected data inform targeting of SWS catchment risk surveillance monitoring?

What: To observe potential hotspots on sub-catchment level to support risk identification to raw water abstraction.

Methods: Data analysis package, SWS lab analysis (Monitoring for 191 WQ determinants (88 pesticides and 101 non-pesticides (Nutrients, algae and sediment; Microbiological; Hydrocarbon (PAH) and Metals).

Who: SWS, ARRT, Citizen scientists

Objectives: v **Owner: SWS, ARRT**

Why: Have we successfully collaborated with and empowered our citizen scientists?

What: Understand whether methods of citizen scientist engagement (such as co-design workshops) utilised by demo partners are considered collaborative and empowering.

Methods: Periodic interviews, feedback forms, volunteer events (social).

Who: CCRI, SWS, ARRT, and citizen scientists.

Objectives: iii iv v **Owner: SWS, ARRT**

Why: Using a demo subcatchment, can we map, control, and monitor impacts of *I. glandulifera* management?

What: Monitor the environmental outcomes of *I. glandulifera* management to understand the link between presence/absence and soil health, erosion, water quality, and sedimentation.

Methods: Literature review, citizen science surveys.

Who: Farmers/landowners and interested groups (schools and community groups).

Objectives: iv v **Owner: SWS**

Why: Can we use a natural capital model, which focuses on water resources, to identify what areas/habitats could be 'protected' and 'restored' for catchment resilience in the Arun demo area?

What: Identify and ground truth indicators of catchment resilience.

Methods: Catchment stakeholder knowledge embedded in model. Ground truthing catchment surveys.

Who: SWS, catchment technical expert (SERT), ARRT

Objectives: iv v **Owner: SWS**

Why: Can we develop the natural capital model to create a functional and effective NbS opportunity map and high-level natural capital benefits assessment?

What: A demonstration of potential NbS opportunities for catchment resilience that deliver multiple environmental benefits. An engagement tool.

Methods: Citizen Science survey data and ground truthing catchment walkovers.

Who: SWS, catchment technical expert (SERT), ARRT