Increasing flood resilience: residential and community rainwater run-off retention solutions

Section 1: Project Overview

Introduction

The Centre of Expertise for Waters (CREW) wishes to commission a **capacity building project** within CREW's **Hydrological Extremes, Coasts and Risk Management theme** aligned to Scottish Government's Water-Resilient Places and National Planning Frameworks, and which supports the development of the flood resilience strategy for Scotland.

Background & knowledge gap

In recent years there has been an increased awareness and need to address surface water (rainfall) management in urban environments. This includes understanding where flood risk may arise, increase or change in the future due to increased urban creep[1] and the impacts of climate change to rainfall patterns. To support resilient surface water management in urban environments, the identification, efficacy, cost effectiveness and prioritisation of solutions that can be implemented to mitigate and adapt to flood risk and increase residential and community[2] property[3] resilience, is essential. This aligns with the Scottish Governments Water-Resilient Places: policy framework, several elements of the National Planning Framework 4, and supports the development of the Flood Resilience Strategy for Scotland. This project will also support local authorities, as part of their climate adaptation duties, in assessing how urban creep and rainfall intensity changes due to climate change, impact the future water retention capacity of Scottish urban areas and consequently their ability to be flood resilient.

Aim and key questions

The project aim is to evaluate and compare the cost effectiveness and efficacy of residential and community property rainwater run-off retention solutions[4] to increase flood resilience and, develop a decision support infographic to inform future planning and/or development decisions[5].

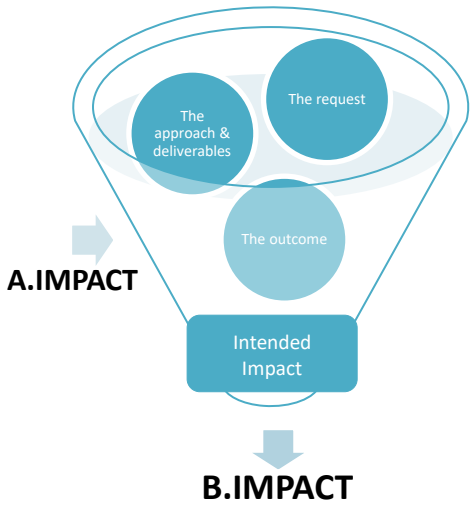
To support the aim, the research team will produce a review[6] of the cost effectiveness and efficacy of both residential and community property rainwater run-off retention solutions based on selected case studies[7]. The review will consider the:

- rainfall run-off retention capacity of different urban land types;
- impact of urban creep and changes in rainfall intensity due to climate change;
- barriers to adopting solution measures at both residential and community property level.

[1] Defined as small-scale changes to urban settlements, which includes building house extensions, or conversion of gardens and other vegetated areas to built-up impervious surfaces and/or semi permeable surfaces e.g., decking.
[2] E.g., Community facilities, churches etc.
[3] A building or buildings and the land belonging to it or them.
[4] Solutions may be available and, on the market, (tried and tested) or may be new innovations in this space.
[5] To compliment the Benefit Estimation Tool (B£ST) - W047b B£ST Guidance – Guidance to assess the benefits of blue and green infrastructure using B£ST
[6] To include an evaluation of the efficacy and cost-effectiveness of different solution combinations and scenarios at both the residential and community property level. Consideration should also be given to the certainty/uncertainty of the effectiveness of different solutions available.
[7] It is envisioned c.3-5 Scottish case studies will be agreed with input from the Project Steering Group (data dependent) however, wider international case-studies (from a similar climate the Scotland) can be used to compliment.

Anticipated 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

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

- Consumer Scotland
- SEPA
- Scottish Water
- Scottish Government
- NatureScot
- Local Authority representative(s)

Beyond Impact

Consumer Scotland (project requester) will use the project deliverables (see following section) to engage with local authorities on their climate adaptation planning to include water resilience strategies that incentivise the uptake of residential and community property rainwater run-off retention solutions. Indirectly, this project will help inform consumers of the benefits and impacts of potential changes they make to their homes, gardens, and community spaces. This may be achieved through improved knowledge exchange to consumers through local authorities, or organisations operating in the sustainability space.

Deliverables

1. Project communications and impact plan – supported by CREW at the start of the project.
2. Cost-benefit analysis of different rainwater run-off retention solutions for both residential and community properties.
3. Evaluation (including maps[8]) of the impact different rainwater run-off retention solutions may have with comparison of both residential and community property solutions considering:
    - Rainfall run-off retention capacity of different urban land types;
    - Impact of urban creep and changes in rainfall intensity due to climate change.
4. Summary of the cost effectiveness and efficacy of residential and community property rainwater run-off retention solutions based on selected case studies[9].
5. Review of the barriers to adopting solution measures at both residential and community property level.
6. Decision support infographic for different rainwater run-off retention solutions[10]
7. Final report of 20-30 pages, excluding annexes and the bibliography, including:
    - Deliverables 2 to 6 above;
    - Detailed recommendations[11];
    - Cover image(s) with associated photo credits.
8. Plain English summary of aims and results (up to one page).
9. Website summary (200 words).

Events/meetings

- 3 Project Steering Group meetings (throughout the project lifecycle), 1 in person[12].

[8] Scale to be agreed with the Project Steering Group (case study/data dependent).

[9] It is envisioned c.3-5 Scottish case studies will be agreed with input from the Project Steering Group (data dependent), however wider international case-studies (from a similar climate the Scotland) can be used to compliment.

[10] Audience of the decision support graphic to be determined following wider discussion between the project steering group and the project research team.

[11] To consider education and anticipated solution maintenance recommendations, among others.

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

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 – c. 6 months

The pre-contract start-up meeting will take place **between c. 7th - 17th Nov 2023**. The project will commence **on Monday 11th Dec 2023**. All project outputs should be signed off by the CREW Director by **the end of June 2024.**

Funding

The maximum amount of funding available exclusive of VAT (where applicable) is **£90,000.**

This includes an associated costs (excluding sub-contractor) budget of: £700

- £500 for in-person project steering group room and equipment hire
- £200 for travel and subsistence

Submitting a proposal

Please send a completed application form 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 Monday 9th October 2023, 15:00.** We aim to notify the preferred bidder by **31st October 2023.**

Please contact procurement@crew.ac.uk by **Monday 2nd October 2023** if you would like any clarification on any of the above. 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 must also provide a commitment that named staff members will be available to work on the contract if the bid is successful.
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: - general research experience and expertise; - specific experience and expertise on the topic of flood resilience and rainwater run-off retention solutions.
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 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

- Building Back Blue – Citizens Advice Scotland
- B£ST (Benefits EStimation Tool)
- W047b B£ST Guidance – Guidance to assess the benefits of blue and green infrastructure using B£ST
- 10,000 Raingardens – The Green Action Trust
- Water-resilient places - surface water management and blue-green infrastructure: policy framework
- Flood Resilience Strategy for Scotland