SuDS+

Community-led futures

SuDS + community adoption framework

Feasibility report

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1st March 2024

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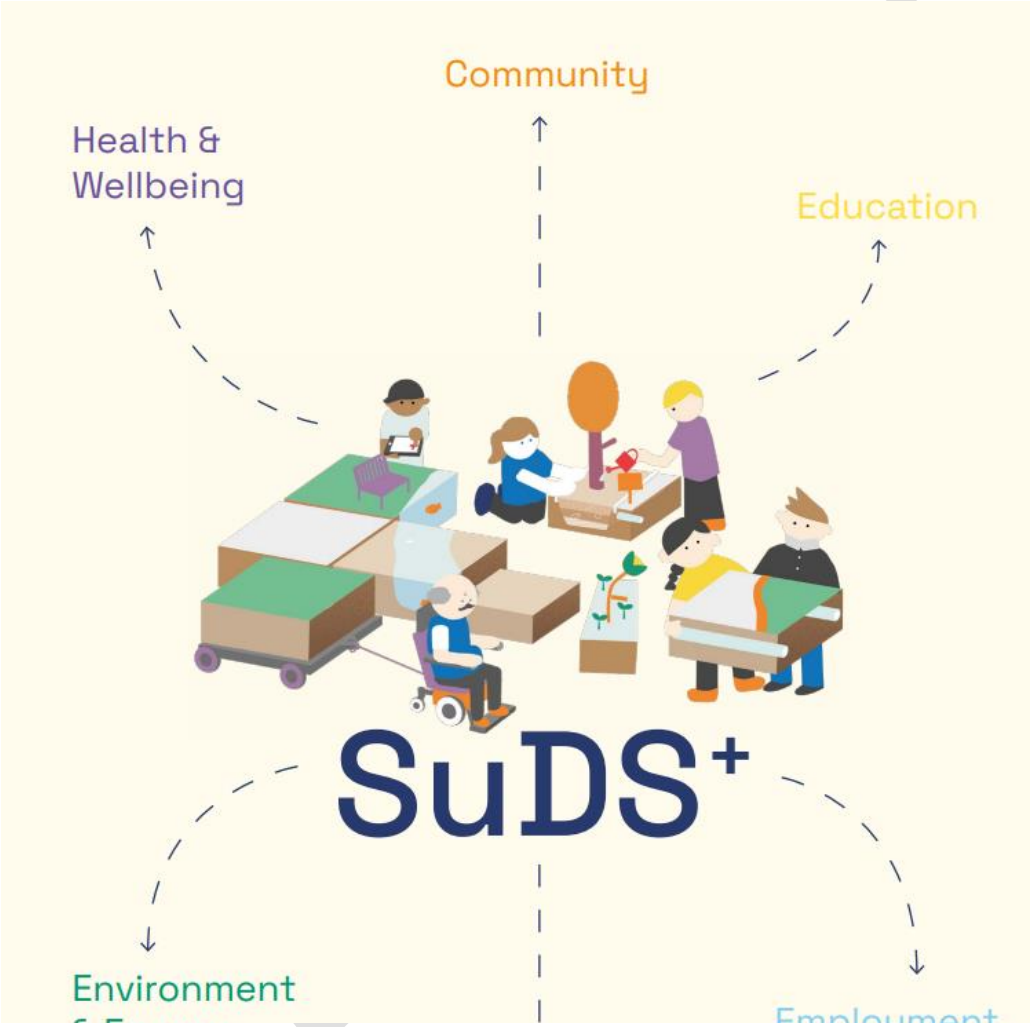

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1. Introduction

1.1 Background to SuDS+

The SuDS + project aims to establish a community-based approach for designing, delivering, and monitoring Sustainable Drainage Systems (SuDS) that provides multiple benefits to the local community and their environment.

Flooding is one of the most pressing environmental challenges in the UK and is further exacerbated by the changing climate. Like many 21st Century challenges, flooding is a wicked problem[1]. It is dynamic, interdependent, and complex – solving a wicked problem is fundamentally a social process[2]. 1 For responses to wicked problem to be effective and long-lasting, they need to have broad community support and resonate with people's values and aspirations. Therefore, addressing flooding systemically and holistically requires interventions that create an inclusive environment in which community feedback is embraced, considered, and acted upon.

SuDS + represents one such intervention that has this potential. The project aims to meet diverse stakeholder and community needs by considering SuDS and urban drainage as not only water management infrastructure and instead as drivers of urban (re-)development that can enrich the public realm and build the resilience of places and communities.

It approaches traditional flood risk management from a wider angle; encouraging everyone to think about water not as a problem, but as an asset that can provide opportunities to enhance the natural environment and improve people's quality of life. While traditional drainage systems are hidden away below the ground, SuDS can provide access to new urban green spaces that incorporate water and water management alongside new habitats for the local flora and fauna and opportunities for the community to interact and relax, like playgrounds, nature trails or allotments. These new 'urban commons' are community-focused assets which help enhance the liveability our towns and cities.

To realise these ambitions, not only do the physical SuDS + need to be designed, but new governance structures are necessary to ensure the promised benefits can be realised well into the future[3][4]. It is only by working with communities in design, delivery, and monitoring of SuDS + that we can open new opportunities for community training, job creation, and other socio-economic and cultural enrichment, now and in the future.

To establish new ways for how the community is involved in the design and management of flood prevention infrastructure, a paradigm shift is necessary. We need to move away from traditional infrastructure design approaches that limit meaningful community involvement and fair value sharing, to transform to a proposed SuDS + future (as shown in Figure 1).

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[1] Wicked problem: These are problems with many interdependent elements making them appear impossible to solve and unable to be addressed by quick fixes. As the components are often interconnected, incomplete, in flux, challenging to define, and usually deemed "too big", solving wicked problems requires a deep understanding of the unique context and the many stakeholders involved. Complex issues such as healthcare, education and poverty are wicked problems. This term was initially coined in 1973 by Horst Rittel in 'Dilemmas in a General Theory of Planning'.

[2] Conklin, J. (2001). Wicked Problems and Social Complexity. CogNexus Institute.

[3] Frantzeskaki, N. (2019). Seven lessons for planning nature-based solutions in cities. Environmental Science & Policy, [online] 93, pp.101–111. doi:10.1016/j.envsci.2018.12.03

[4] Van der Jagt, A.P.N., Smith, M., Ambrose-Oji, B., Konijnendijk, C.C., Giannico, V., Haase, D., Lafortezza, R., Nastran, M., Pintar, M., Železnikar, Š. and Cvejić, R. (2019). Co-creating urban green infrastructure connecting people and nature: A guiding framework and approach. Journal of Environmental Management, [online] 233, pp.757–767. doi:10.1016/j.jenvman.2018.09.083

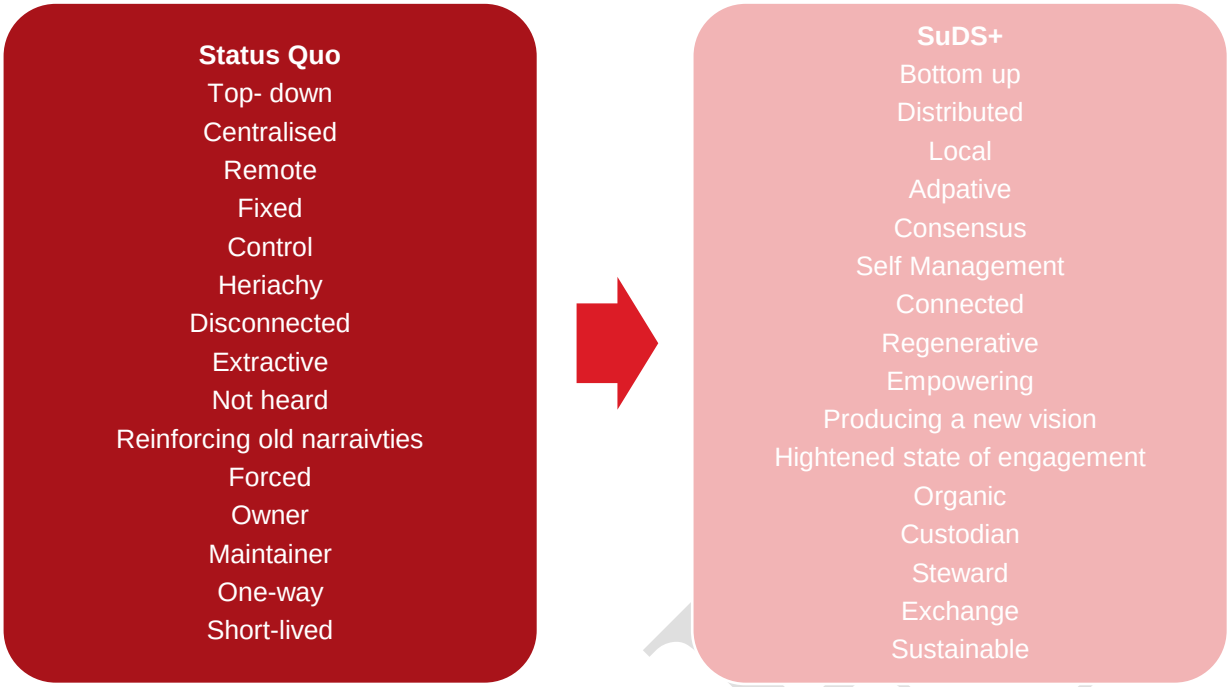

Figure 1: From status quo to SuDS+ future

Taking a strategic design approach[5], this project will set out to understand, define and overcome challenges to delivering community SuDS by employing new ways of thinking, partnership working and making the best use of existing and new technologies. We term this the SuDS + approach.

1.2 Project aims

The following seven aims set the innovation drivers for this project. Each reflects a shift that is needed within the design, delivery, and management of infrastructure assets, and forms a philosophy for the SuDS+ project.

The aims are:

1. Diversify and multiply the value created.
2. Work together with the whole stakeholder ecosystem.
3. Build holistic community resilience.
4. Design for long-term stewardship.
5. Be led by the community.
6. Design for scalability.
7. Innovate by doing.

1.2.1 Diversify and multiply the value created

Nature-based solutions, like SuDS, are recognised not only for their flood resilience benefits, but as drivers of many types of value. As place-based interventions, SuDS can increase flood resilience while also being:

- A platform for public space improvements.
- A vehicle for community building.

[5] Strategic Design Approach A design methodology drawing making uses both Design Thinking and Service Design methods to solve complex problems.

- At activator for new jobs, careers, or local industries.
- An exemplar to connect people with the wider natural world.
- A connector between communities and stakeholders.
- A place where the future citizen can be developed.

This recognises a broader shift in infrastructure ambitions, to move beyond one intervention, for one benefit – like a pipe for managing water – to, one intervention for the creation of many benefits. Only by doing this is it possible to design the infrastructure required to meet the challenges of the 21st Century and deliver flooding infrastructure that also sequesters carbon, makes space for nature, and enables economic regeneration. It is key to recognise this potential at the outset of the design process of SuDS schemes and to design for these benefits, rather than adding them on as an afterthought.

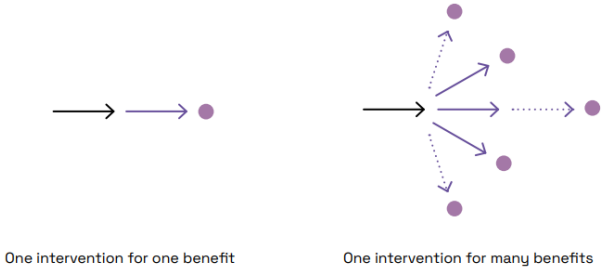

Figure 2: Expanding the benefits created by interventions like SuDS

1.2.2 Work together with the whole stakeholder ecosystem

By setting more holistic ambitions, a multiplicity of stakeholders are invited into the SuDS dialogue, each with a new vested interest in SuDS. With a greater diversity of actors working together to drive a breadth of outcomes, from health, to housing, the potential impact and value that can be generated is amplified. For example, a stakeholder like the NHS is primarily interested in health outcomes, while the Environment Agency invests in creating benefits like flood risk mitigation. If a SuDS scheme is designed by only one of these organisations, then it is unlikely to address both health and environmental challenges. SuDS+ is looking to maximise the value generated by SuDS. SuDS+ sets out to facilitate collaboration between the full spectrum of stakeholders invested in the public urban realm. This provides a richer canvas of ideas and inputs around the potential impacts of SuDS+ on the street, which can lead to win-win schemes being developed between institutions and the community.

1.2.3 Build holistic community resilience.

Delivering ‘resilience’ is foundational to successfully delivering all UK flood and coastal risk projects. However, resilience is not a universally agreed-upon term, and different disciplines define resilience differently. There are two primary ways to think about resilience:

- **Engineering resilience** focuses on taking action to help people and communities plan for, react to, and recover from floods, back to the ‘normal’ state that they lived in before they flooded. This is often termed ‘bouncing back’. This type of resilience can be created by writing flood plans, building flood defences, and organising flood wardens and flood groups, amongst other things.
- **Social resilience** focuses on building strong and well-connected communities. It seeks to support communities to work together and with institutions and adapt the way they think about and react to stresses, like floods, so that ‘normal’ gets better each time they are overcome. This type of resilience is developed by building relationships, social learning, and dialogue within and between communities and institutions such as local authorities, to enable collaborative working to improve communities for everyone.

Social resilience isn’t targeted to specific problems or challenges, such as flooding. It is about making everyday life better and our ability to respond to and recover from any shocks (like flooding) easier. The SuDS+ approach extends beyond engineering resilience to include social resilience thinking. **In the project, the process of developing a SuDS scheme through dialogue and shared vision-setting is as crucial as the actual scheme that is installed**.

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1.2.4 Design for long-term stewardship

A focus solely on engineering resilience is one of the primary reasons SuDS fail to deliver the promised benefits beyond flooding mitigation. This thinking tends to think of them as static assets and often does not consider how they are cared for in the long term. As a result, many fall into disrepair. Re-framing resilience around the social structures that underpin it, in turn, drives a new way of thinking about the whole lifecycle of SuDS features, which designs equally for adoption and long-term care. Therefore, to support this shift, there is a need to re-balance the roles between stakeholders and devise more community-led approaches, which prepare the community for adoption throughout project delivery.

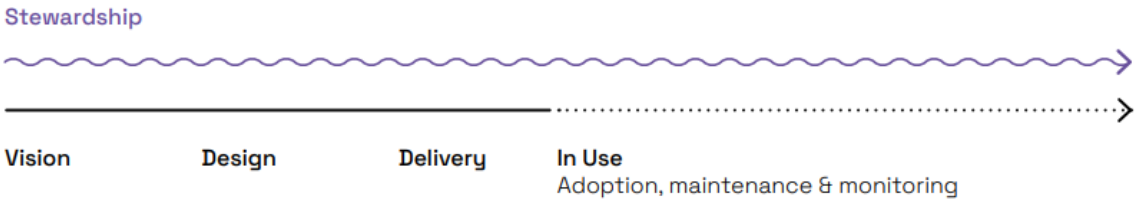


Figure 3: Current SuDS asset lifecycle

1.2.5 Led by the community

Today, communities are often disenfranchised by traditional engagement processes as they don't see long-lasting benefits, have a fair share of equity, have a meaningful role in shaping local infrastructure investment and don't always understand the value that SuDS bring. Recognising that the top-down approaches of design and management that lead to these community sentiments have not succeeded in delivering well-loved and managed SuDS assets, SuDS+ seeks to take a bottom-up approach. There is a need to explore the conditions where such an approach can flourish and the new forms of partnerships that will be fundamental to realising a genuinely community-led ambition. Unlike in a top-down approach, where the designs and functions of the infrastructure are determined by a select group of stakeholders who might not be the end-users, the bottom-up approach flips this hierarchical, oneway dynamic. It suggests that the local community, who will be the end-users of the infrastructure, be equal partners within the process, contributing their views and ideas to inform the designs and functions of the future infrastructure. The bottom-up approach also suggests that the ownership and management of the infrastructure can take a more decentralised structure. Traditionally owned and managed centrally by one organisation that funds and maintains the asset, the bottom-up system could be shaped as a distributed network of local agents that each play a unique role in activating the infrastructure, looking after it and directly benefiting from its functions.

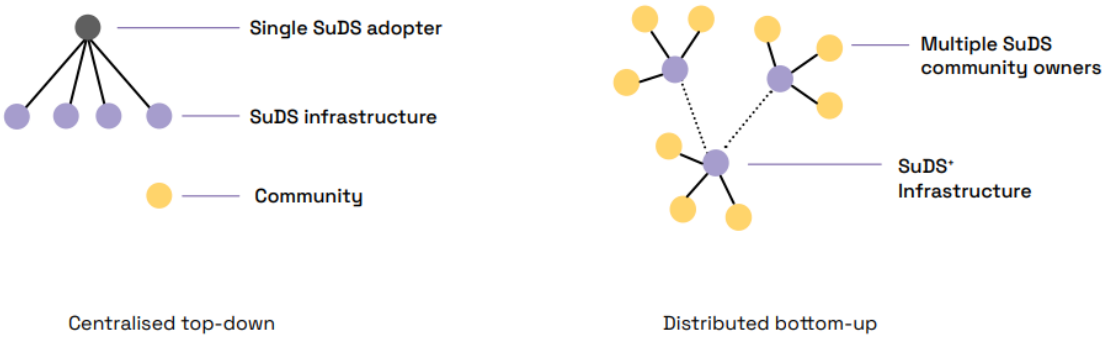


Figure 4: Top-down vs bottom up governance

1.2.6 Design for scalability

SuDS+ aims to develop mechanisms to enable a transformational change in how SuDS are implemented and the scale at which this is done. This is key for SuDS to meet its potential, as distributed infrastructure needs to be implemented on a large scale to be effective. Due to this, SuDS+ will prioritise scalable and potentially proven solutions in other sectors while adopting an open, transparent approach to the distribution of knowledge and resources. SuDS+ is intended to be applicable across the UK and globally and across other infrastructures from water to housing retrofit. The term 'open-source' means a commitment to sharing

knowledge and source materials, facilitating access to the design and implementation of solutions. An open-source culture in SuDS promotes a technology innovation paradigm that delivers an accelerated transition towards more sustainable solutions. Scalability is also embedded into the location we have chosen. SuDS+ will be grounded in a place, South Stanley. This is to act as a testbed for SuDS+ and as a place with a diverse housing typology, hydrology, and community drivers, representative of hundreds of other towns and cities across the UK.

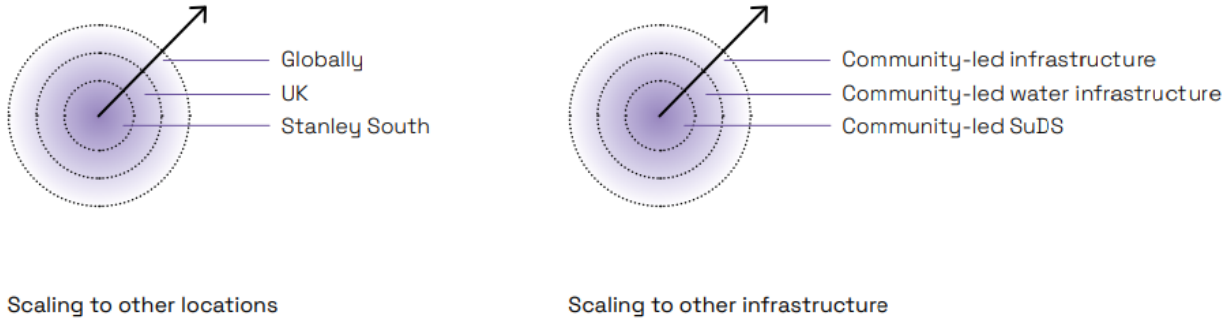


Figure 5: Scalability of SuDS+

1.2.7 Innovate by doing

To meet the challenge of delivering a transformational SuDS+ approach, the project establishes a culture of innovation, driven by the 'fail fast, learn fast' philosophy. This approach breaks the problem of 'designing sustainable infrastructure to manage flooding and maximise wider benefits' into smaller, short-term pilot projects where rapid learning is valued – allowing for mistakes, quick adapting, and for lessons to be shared widely. This is a departure from traditional development models, which often involve 'picking winners' and making significant financial and time investments, without certainty of their success until the final outputs are delivered. When tacking this problem, taking an iterative approach allows elements of the problem, with high potential impact, to be focused on, and for secondary non-direct innovations to be discovered within each iteration. Taking a practical and iterative approach, also allows for continuous engagement with the community and stakeholders across a wide range of problems. Being embedded locally and being led by the community, creates opportunities to build local skills and knowledge. By working through this pilot process, the project can devise a scalable SuDS+ process that has led to a series of secondary outcomes.

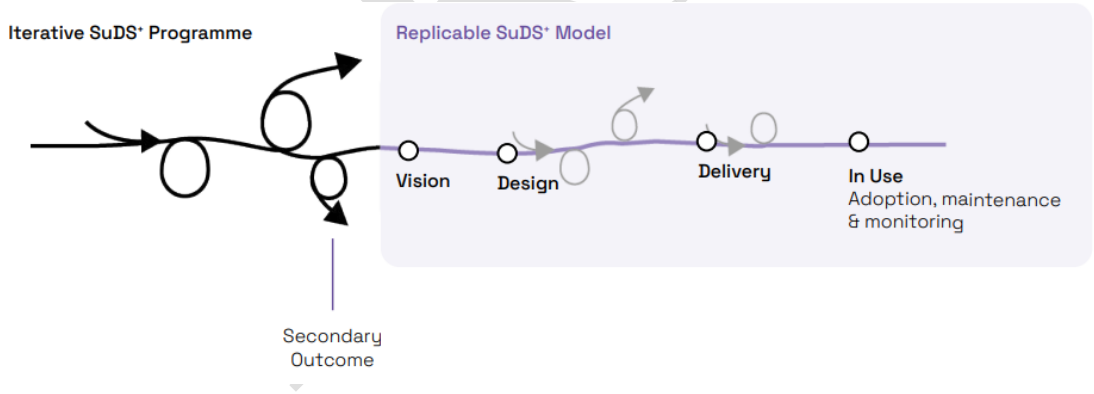
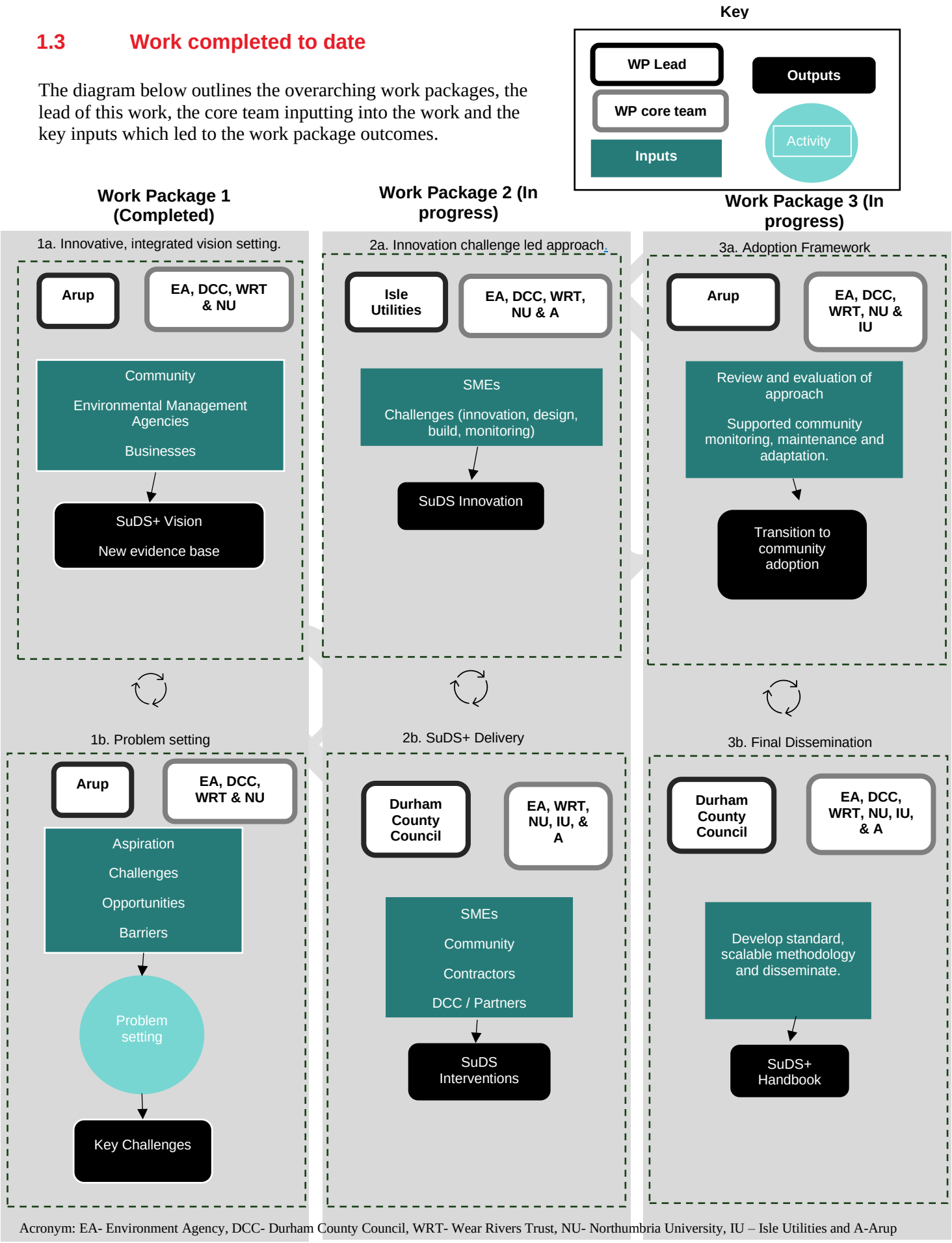


Figure 6: Creating a scalable design process through iteration.

1.3 Work completed to date

The diagram below outlines the overarching work packages, the lead of this work, the core team inputting into the work and the key inputs which led to the work package outcomes.



Acronym: EA- Environment Agency, DCC- Durham County Council, WRT- Wear Rivers Trust, NU- Northumbria University, IU – Isle Utilities and A-Arup

The SuDS+ approach involves five main areas of activity, referred to as Work Packages.

Work Package/phase 1 focuses on identifying problems and opportunities within the study area for implementing SuDS interventions. Through extensive community and stakeholder engagement, a local development vision is co-created. This vision aligns with available funding for SuDS. Challenge statements are then formulated, addressing unique project goals. These include flood risk protection targets and co-benefits like creating paid opportunities for residents in SuDS maintenance. The emphasis on community engagement aims to enhance local resilience and foster transparent relationships with flood management organizations. Co-working can also improve community capacity to understand and respond to flooding.

Work Package/phase 2 takes a strategic design-led approach to foster innovation and break away from established patterns. Building on the vision and problem statements from WP1, WP2 presents challenges to the industry. These challenges aim to tackle identified issues in the study area and maximize opportunities. Technology providers, SMEs, and industry organizations collaborate to create competitive bids for these challenges. The selected solutions are then implemented locally. By emphasizing design-led innovation, SuDS solutions become more targeted and effective, offering a broader spectrum of resilience benefits. Community involvement in the design process enhances project literacy and promotes stronger partnerships between project delivery partners and local communities.

The third component of the SuDS+ approach (**Work Package/phase 3**) focuses on long-term sustainability and the ongoing benefits beyond the initial capital works. Collaborating closely with host communities, SuDS+ aims to achieve the following:

- Adoption and Maintenance: Encouraging communities to adopt and maintain SuDS interventions where feasible.
- Alternative Solutions: Developing sustainable, long-term solutions for interventions when host communities are unwilling or unable to adopt them directly.
- Avoiding ‘Helicopter Projects’: Unlike traditional capital flood expenditure, which often lacks a sustainable legacy, SuDS+ provides lasting support for interventions.
- Capital Injection: Initial capital interventions serve as an investment to support long-term development and benefits. These may include employment opportunities or improved health outcomes.

To note phase 2 and 3 are currently occurring concurrently.

1.4 Findings of phase 1

The following findings of phase 1 will form the basis for this project (phase 3). The phase 1 research and design activities provided an initial scaffolding for the SuDS + project this forms the strategic framework for the project. This framework is represented as several layers, the framework, unpacks the why, what who and the how of the SuDS+.

The layers of this framework are explained in more detail below and their relevance to phase 3 is reflected.

1.4.1 Vision-setting and goals

The seven vision statements, and 21 accompanying goals (as shown in Figure 1), represent the breadth of needs and opportunities expressed by the diverse group of engaged community members and stakeholders. These inform the direction for SuDS+, guiding what types of value can be delivered to the community beyond flooding resilience. A valuable SuDS+ intervention and process can materialise by designing to meet these goals.

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Figure 7: Vision statements and goals

Relevance to the adoption framework

The adoption framework should try help the scheme meet all the proposed vision statements either directly or indirectly. However, the focus of the adoption framework will be on directly achieving vision statements: 2, 4, 5 and 6.

1.4.2 Innovative SuDS+ interventions

A series of SuDS concepts were generated collectively by community members and stakeholders. Each concept responds to at least one vision statement, but many creatively address several. The four concepts illustrate innovative SuDS+ designs that create value for Stanley South. Not only have these groups thought of what can be created, but they have considered by whom and how they will work together. These initial

ideas were a starting point for SuDS+ designs and can be a starting point and inspiration for the designs that will be developed throughout the programme (phase 2).

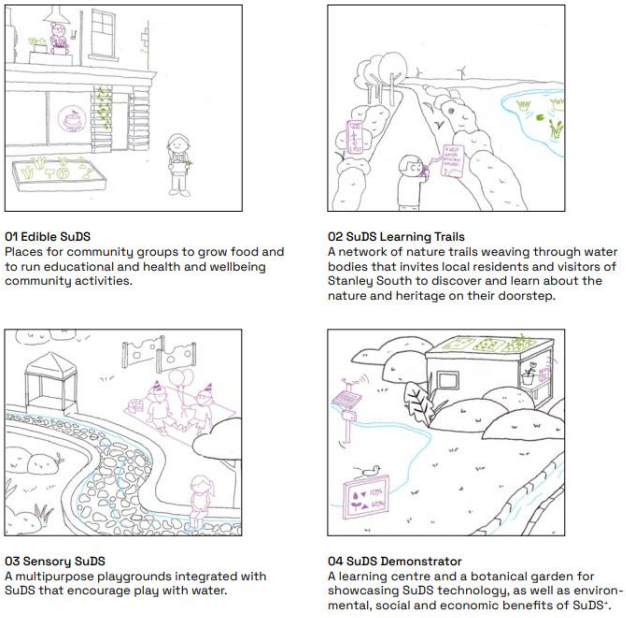

Figure 8: Community SuDS concepts

Relevance to the adoption framework

It is anticipated that these community SuDS concepts will be built on within the co-design of SuDS projects (Phase 2b). These projects will form the basis for what needs considered for what needs to be maintained and monitored within the adoption framework.

1.4.3 Partnership models

During the SuDS + co-design workshop, the community explored how the four SuDS+ concepts be realised. In groups, community participants discussed and documented their ideas about:

- What local partners should be involved to make the concept happen?;
- In what capacity should partners be involved? What would be their contribution?;
- What is their motivation?;
- How can partners work together to support one another and what value is being exchanged?

The exercise resulted in four distinct partnership typologies that formed organically around each of the SuDS + concepts. At the workshop, participants created maps linking existing local stakeholders into a hypothetical cooperative networks, detailing the value being exchanged and interdependencies between the partners. Participants were also invited to challenge the sustainability of the imagined partnerships and assess its components and links from a perspective of potential vulnerabilities, ways these can be counteracted, and potential strengths and ways these can be amplified.

These maps were then distilled into four partnership models outlined in this section. Represented as network topology diagrams, they illustrate the essence of the partnership structure, where partners and SuDS amenities are depicted as nodes, and lines represent the relationship between the nodes. Each shape implies a unique configuration of relationship and how partners may interact with each other and with the SuDS + infrastructure. The type of roles required to sustain the system is common across all four. However, how these roles relate to each other, the way they are organised, and type of stakeholders performing these roles varies in each configuration. The type of value that is being exchanged and the value generated is common across all four types.

The outlined partnership typologies are not exhaustive and serve as an example of potential partnership formats. These need to be revised and developed further once the final SuDS+ designs, functionalities and

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locations are decided, so the optimal configuration of the partnership can be co-developed with the local community and stakeholders. For more information on these typologies please see the SuDS+ phase 1 report.

While SuDS is not a partner per se, it represents a critical node around which a partnership structure can be formed. As its one of the most fixed parts of the system, the physical topology of SuDS infrastructure may influence the way the partnership system of stakeholders is organised.

The SuDS topology will vary, ranging from a single SuDS feature, to a network of distributed rain gardens, or a ribbon of interconnected SuDS and local nature sites. The SuDS physical design and its geographical distribution is likely to influence the form of a partnership structure, and how partners relate to each other on the organisational level.

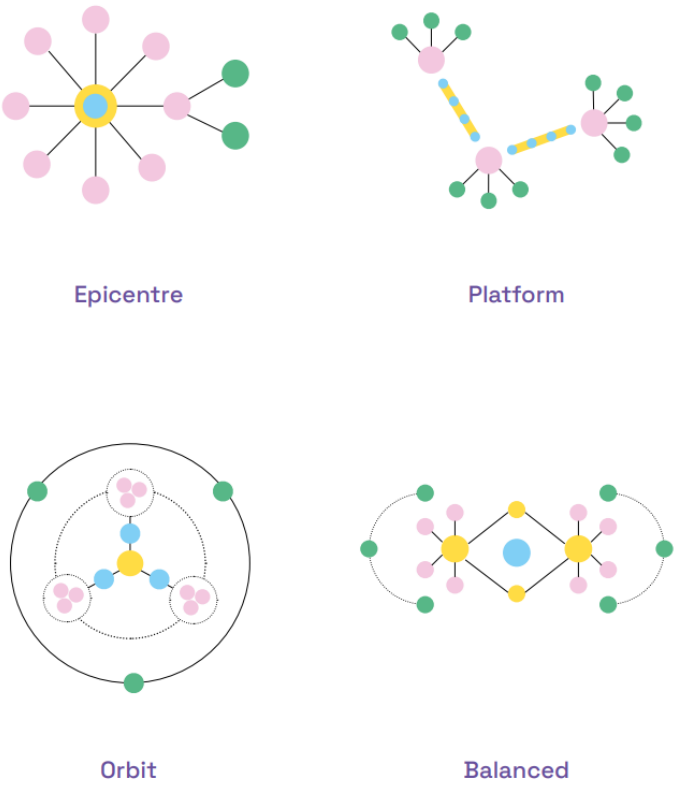

Figure 9:Overview of the partnership typologies

Relevance to the adoption framework

The literature review maps the case studies to one of the four partnership typologies developed by SuDS+ (if appropriate). The proposed adoption frameworks to be prototyped will be further mapped against the adoption typologies.

1.4.4 Addressing system barriers

The barriers for delivering SuDS+ type projects, have been divided into 11 problem statements across the areas of Design, Adoption and Monitoring. The problems have been defined through community and stakeholder engagement, and desk research. This involved validating the proposed problem areas through discussions with experts within the project partnership and broader industry stakeholders including the Environment Agency, Rivers Trust, Northumbrian Water, Greater London Authority, United Utilities and Dark Matter Labs. Each brought a diversity of perspectives to inform the SuDS+ system redesign process.

The problem statements have been assigned to problem areas: design, adoption, and monitoring. These problems are both technical and human in nature. Each problem statement reflects one of the system barriers that is inhibiting the transition from the status quo to the proposed SuDS+ future. By addressing each through market facing challenges, it becomes possible to realise a transition to a SuDS+ future.

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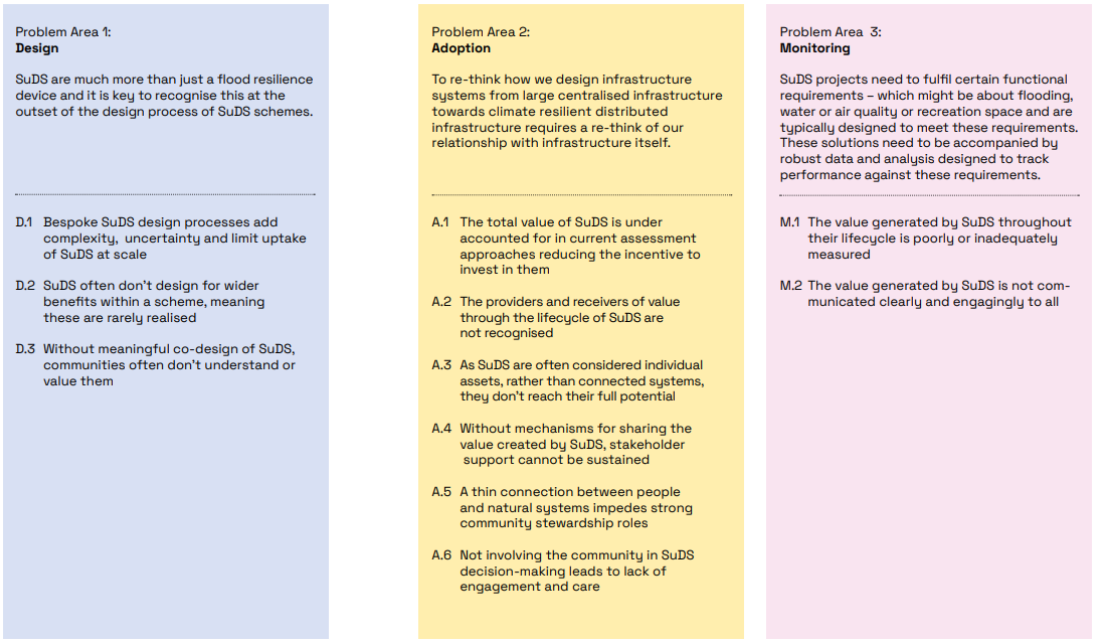

Relevance to the adoption framework

All the problem statements within the adoption problem area, will be considered and attempted to be addressed within the adoption framework. The mechanism for addressing these problems will be through prototyping the potential adoption mechanisms with the community and key stakeholders.

1.4.5 Community engagement strategy

SuDS+ recognises the importance of meaningful and inclusive community engagement and seeks to place the decision-making power into the hands of the local community. By designing the engagement strategy in line with the SuDS+ principles (Project aimspg 2), the project's long-term ambition is to support the local community with the necessary functional capabilities to fully participate in decision-making processes that affect their everyday lives.

The community engagement strategy is to concentrate activities being based on one of the four key themes:

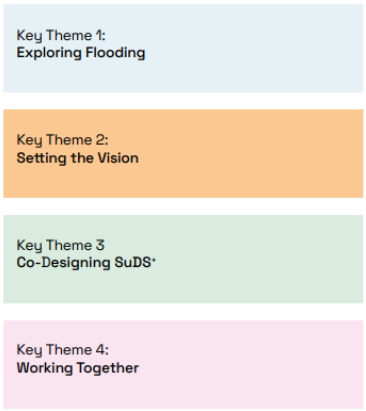

Figure 10: Community engagement key themes

Relevance to the adoption framework

The community engagement strategy will be implemented in this adoption framework through:

- Completing a prototyping workshop with the community to understand which adoption mechanism they prefer (theme 3).

- Interviews have been carried out with similar community owned or maintained schemes. These learning have been presented to back to partner in a partnership workshop (theme 4).

1.5 Aim of the community adoption framework

The aim of the community adoption framework is to develop a mechanism for the on-going community adoption of the Suds+ assets which sustains the community group through the transfer of value generated by SuDS infrastructure from traditional asset owners to the people of Stanley (this is innovative and new approach to adoption is shown in Figure 11).

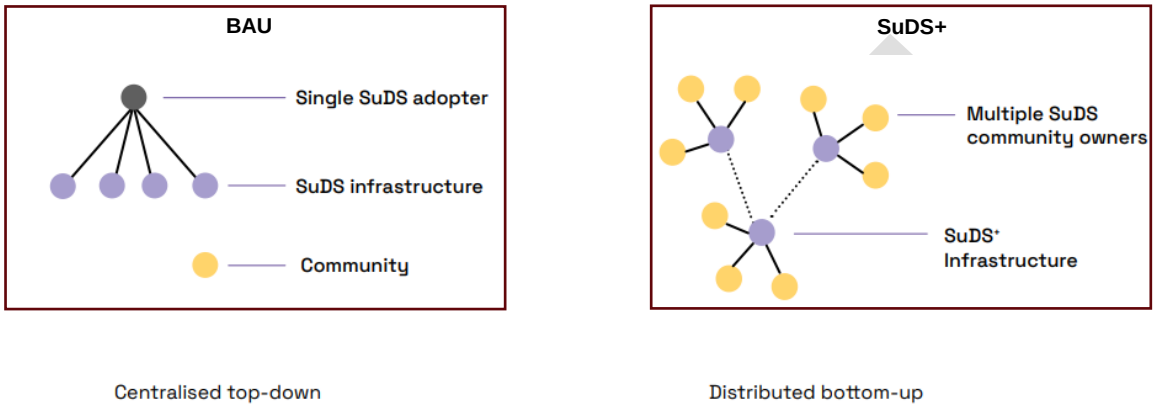

Figure 11: Business as usual (top-down) and innovative SuDS+ (bottom-up) approaches to adoption

1.6 Objectives of the community adoption framework

This adoption framework will deliver this aim through achieving the following objectives:

1. Develop governance models that support the delivery of co-benefits via SuDS.
2. Develop a clear service proposition for the adoption of SuDS in Stanley.
3. Get support from both the community and stakeholders (EA, NWG, DCC etc) to ensure the long-term viability of co-benefits.
4. Develop a model for prototyping SuDS in place to enable community governance and decision making.
5. Outline the tools required to enable this community governance mechanism. Please note that the outputs might not be financial. Other value instruments may include improving trust, feelings of ownership and governance in local place.
6. Deliver a draft SuDS+ 'blueprint' that combines learnings to apply elsewhere.
7. Summary of key work package activities and outcomes.

2. Approach

2.1 Key principles for adoption

The partnership principles generated during phase 1, are deemed also appropriate principles to underpin and influence decisions for the adoption framework. The principles have been created with the project aims (1.2) in mind.

The partnership principles illustrate how the overarching SuDS+ principles outlined in the introduction (1.2) can be applied to the SuDS+ partnership design and implementation. Just as the SuDS+ general principles/aims do, partnership principles set the aspirational trajectory of the project and articulate the project values. These principles reflect the Stanley South ambitions. Principles have also informed the partnership's core elements, including the suggested roles, how they relate to each other, value exchange and partnership structures. Agnostic of the configuration or scale, SuDS+ partnerships should carry the same community-led and social value-driven intent. Throughout the SuDS+ adoption framework these principles

will be continuously referred-to to ensure that future partnerships evolve in accordance with the original intention.

Figure 12: Partnership and adoption principles

2.2 Adoption definitions

Alongside these principles there is a need for transparent definition around adoption, to ensure all of those involved in the adoption development understand the meaning and importance of definitions.

Engagement is defined as the active involvement, participation, or interaction with a group or individual. Engagement involves being attentive, responsive, and actively participating in conversations, activities, or relationships. Engagement is important as it fosters connection, collaboration, and a sense of belonging.

Community is defined as a collective of people who share an interest in the social, cultural, or environmental wellbeing of a locality (in this case, Stanley). The strength of a community lies in the relationships and mutual support among its members.

Monitoring: is defined as the activities required to observe, record, and check the performance of SuDS over a specific period (this period is to be agreed).

Monitoring agreement (contract): is an agreement which requires the organisation/group or individuals responsible for SuDS monitoring to adhere to.

Maintenance is defined as the activities required to ensure SuDS are preserved to an agreed design and functionality standards. If the SuDS design changes both the SuDS design (and functionality standards) will need to be updated.

Maintenance agreement: is an agreement which requires the organisation/group or individuals responsible for SuDS monitoring to adhere to.

Adoption refers to the process of accepting, embracing, and/or taking soft ownership of a particular asset or responsibility as a collective effort. This can happen when a community decides to assume the care, maintenance, or management of a public resource that was previously under the responsibility of another entity, such as a government or private organization.

Community adoption of assets often involves active participation, collaboration, and engagement from community members to ensure the proper upkeep, utilization, and improvement of the asset. This can include tasks such as maintenance, monitoring, or implementing sustainable practices. The goal is to create a sense of ownership, pride, and collective responsibility within the community, fostering a stronger connection and investment in the asset's utility.

2.2.1 Roles and responsibilities definitions

SuDS+ Owner: This organisation or individual is the legal owner responsible for ensuring that the SuDS feature performs its intended flooding resilience function. They provide monitoring of SuDS + performance, remedial maintenance, such as repairs due to damage, replacement of the equipment, and any significant maintenance activities which cannot be completed by SuDS+ adopters.

SuDS+ Adopter: It is a formal role responsible for ensuring that the SuDS feature performs its intended flooding and community resilience function. They provide monitoring of SuDS+ performance, remedial maintenance, such as repairs due to damage, replacement of the equipment, and vegetation management.

End user: these are all people and groups that will be benefiting from the future SuDS+ amenities. These could be local residents, that use it daily, or occasionally, or be visitors.

Local connector: They are the main mediator between the local community and other project partners, bringing different parties together. They are local and are acting as a face and point of contact of the project, especially during early stages. They communicate the value of SuDS to local people contextualising it through local examples and speaking to relevant issues.

Community coach: They are groups and organisations that support local residents by providing capacity building, life skills, counselling, and education programmes, helping with issues around mental health, confidence and employment.

Nature Steward They are individuals of all ages that create and look after the living habitats, whether planting flowers, building a bug hotel in a rain garden, or keeping the local riverside free of litter. They watch and sense the health of the living environment and attend to it when needed.

SuDS+ technical expert: As industry specialists, they know SuDS technology inside and out. They provide technical expertise throughout all stages, from visioning to monitoring.

SuDS+ Designer: This hybrid role is most likely to be performed by a range of specialists, covering civil engineering, hydrology, landscape design, product design and urban planning disciplines.

SuDS+ Builder: Contractors that perform the construction and landscaping of SuDS and related amenities.

Practical benefactor: They are local and external businesses that can provide practical skills, materials, and resources.

Sponsor: They are the financial benefactors of the SuDS+ amenities and activities. Their monetary contribution can range from a small personal donation to a large grant or bigger investment.

2.3 Approach to adoption framework

The adoption framework has been structured to be completed through the following phases as outlined in the diagram below.

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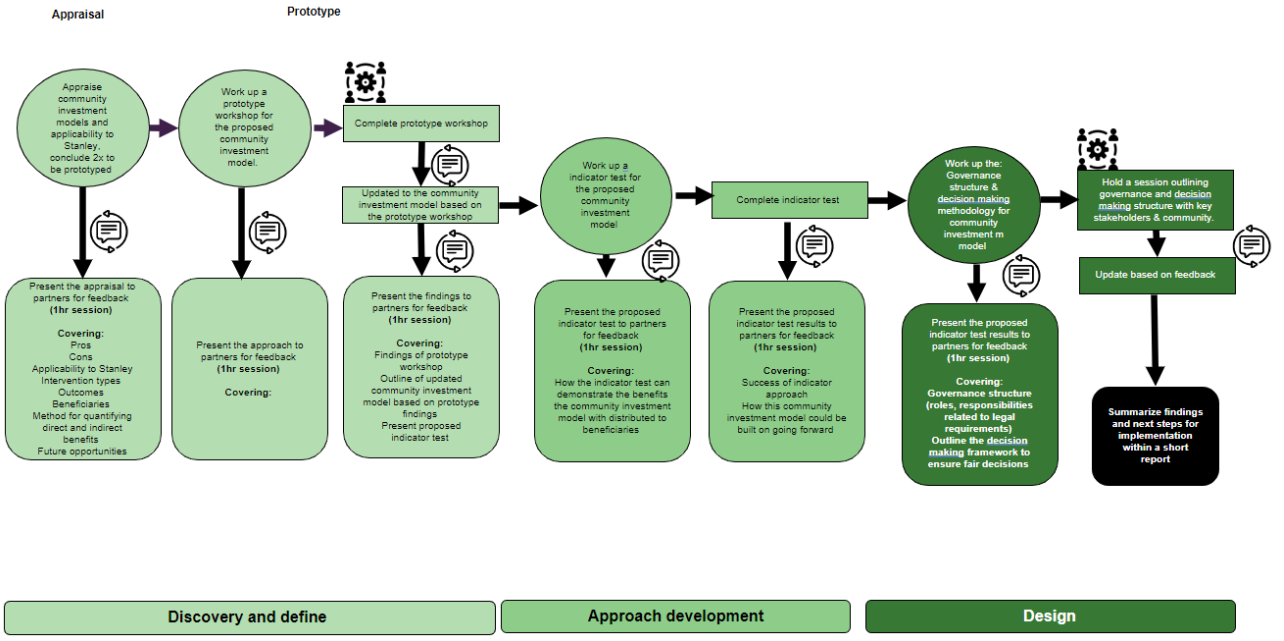

Figure 13: Approach to the adoption framework

The approach to the adoption framework has deviated slightly from the approach outlined in Figure 13. The approach is further broken down to looking into adoption from the

1. maintenance & monitoring governance perspective within which the community will be engaged.
2. funding & financing where the partners are working through the viable mechanisms before bringing it to the community for feedback and input.

To note this is an innovation project so the proposed approach may deviate and vary to accommodate the innovative and iterative nature of the project.

3. Discover – feasibility assessment & literature review

A series of case studies have been explored to build an understanding of community ownership and adoption of green infrastructure, energy and any assets. These case studies are presented in the form of a literature review, with an analysis of each case study to see whether the proposed approach could be applied to the SuDS+ Project.

3.1 Osney Lock Hydro

Osney Lock Hydro is a 200-household riverside community in West Oxford, which was set up by a group of local residents to enable the development of the first community-owned hydro scheme to be built on the Thames. It became fully operational in May 2015, generating clean electricity for the equivalent of 50 households, and a long-term income stream for local environmental projects. Since becoming fully operational, Osney Lock Hydro Limited has ceased trading, and all assets and liabilities have been taken over by Oxford Community Renewables Limited under the transfer of engagements arrangement available to registered societies.

Based on a community energy fund model, the project has generated several beneficial outcomes, including:

- 200 community members becoming part of the community scheme;
- 40% of investors live within one-mile of the scheme;
- 50 householders are supplied with clean energy;

- £2 million surplus revenue from energy generation; and
- 40-years of generation expected.

Challenges that have been identified to date with the scheme comprise a skills gap in legal and marketing. To assist with this, a low carbon hub (social enterprise) stepped into help.

Table 1: Osney Lock Hydro appraised against partnership principles and typologies

Community led	Locally Rooted	Reciprocal	Inclusive	Trusted	Amplified	Supported	Generating value	Partnership typology
High: Osney Lock Hydro is a **community led** initiative, driven by local residents who came together to create a sustainable hydro scheme. Their active involvement and ownership demonstrate a strong commitment to community leadership.	**High**: The project is deeply rooted in the local context of Osney Island and the River Thames. It reflects the community's connection to their environment and heritage.	**Medium**: While the scheme involves collaboration with local stakeholders, such as the Environment Agency and the University of Oxford, further emphasis on reciprocal relationships could enhance its impact.	**High**: Osney Lock Hydro aims to involve the broader community. By providing educational opportunities, engaging with schools, and promoting awareness, it fosters inclusivity.	**High**: As a community-owned project, Osney Lock Hydro has gained trust from local residents. Transparency, accountability, and community involvement contribute to this trust.	**Medium**: While the project has made strides in raising awareness, there's potential for greater amplification through outreach, media, and partnerships.	**High**: The community's active participation, along with collaboration from institutions, demonstrates strong support for the scheme.	**High**: Osney Lock Hydro generates value by producing clean energy, contributing to environmental sustainability, and fostering community resilience.	Orbit
Green: This principle is successfully achieved. Amber: This principle is almost achieved. Red: This principle isn't likely to be achieved.								

3.2 Buan Citizen Power Generation

Buan Citizen Power Generation (BCPG) is a local non-governmental organisation (NGO), in South Korea set up in 2006. The project occurred within a national policy culture that favoured nuclear energy, and was not particularly conducive for community-based renewable energy. Protests against nuclear energy raised awareness of the potential for renewable energy in the Buan region, and built a shared counter-culture and resistance spirit between residents. Formed on the basis of being a partnership project, 75% of the initial investment was provided by ten local people, with the remainder of the investment from government. Ultimately, the BCPG has put into practice what mainstream energy policy and dominant cultural norms neglect.

The outcomes of the project to date include:

- The electricity generated from the BCPG is sold to the Korean Electric Power Company under a fixed feed-in tariff; and
- Revenue generated is distributed to project investors (partners), and any remaining profits are allocated for further solar and community heating projects.

Appraised against the partnership principles

Community let	Locally Rooted	Reciprocal	Inclusive	Trusted	Amplified	Supported	Generating value	Partnership typology
High: The BCPG project was initiated by local people, with 75% of the initial investment coming from ten local residents. This indicates a strong community leadership role in the project.	**High**: The BCPG project was initiated by local people, with 75% of the initial investment coming from ten local residents. This indicates a strong community leadership	**Medium:** While there is a distribution of revenue to project investors and allocation for further projects, the principle of reciprocity would be stronger if there was clearer evidence of ongoing mutual exchange and benefits among all	**Medium**: The project involves local investors and benefits the community, but the text does not specify the extent of inclusiveness regarding broader community participation and involvement beyond the	**High:** Given that the project was a response to local protests and built a shared counter-culture and resistance spirit, it is likely that the project enjoys a high level of trust within the community.	**Medium**: The generation of electricity and revenue distribution, but it does not provide detailed information on the amplification of benefits or broader influence beyond the immediate project.	**High**: The project received government investment for the remaining 25% of the initial funding, indicating a level of institutional support.	**High**: The project not only generates electricity sold under a fixed feed-in tariff but also distributes revenue to investors and funds further community projects, clearly generating economic and social value.	Orbit

Community let	Locally Rooted	Reciprocal	Inclusive	Trusted	Amplified	Supported	Generating value	Partnership typology
	role in the project.	community members.	initial ten investors.					
Green: This principle is successfully achieved. Amber: This principle is almost achieved. Low: This principle isn't likely to be achieved.								

3.3 Eigg Electric

Eigg Electric is a community-owned, managed and maintained company that provides electricity from renewable sources for all residents on the Isle of Eigg, Scotland. The scheme comprises 110 kilowatt (kW) hydro projects, 24 kW wind turbines, and a 20 kW solar plant, totalling 184 kW.

Ownership of the electric scheme is co-operative, owned, operated and maintained by the community. £1.66 million of the scheme was funded by the European Union regional development fund, as well as by national bodies and islanders.

To date the scheme has been an overwhelmingly success, with key outcomes including:

- Renewable sources have provided around 95% of the island's electricity since the scheme was first switched on in 2008;
- Occasions of more electricity being produced than needed by residents, which is used to heat community buildings; and
- The community have agreed on every aspect of the system to date, including, pricing, etc.

Overall, despite technical challenges associated with the uniqueness of the scheme, success is owed to all specialists and the collaborative effort of the islanders.

Community led	Locally Rooted	Reciprocal	Inclusive	Trusted	Amplified	Supported	Generating value	Partnership typology
High: Eigg Electric is a **community led** initiative, driven by local residents who came together to create a sustainable electricity scheme. Their active involvement and ownership demonstrate a strong commitment to community leadership.	**High**: The project is deeply rooted in the local context of the Isle of Eigg. It reflects the community's connection to their environment and the needs of the community.	**Medium**: While the scheme involves collaboration with locals, further emphasis on reciprocal relationships could enhance its impact.	**High**: Eigg Electric aims to involve the broader community. By providing opportunities for involvement across the scheme, it fosters inclusivity.	**High**: As a community-owned project, Eigg Electric has gained trust from local residents. Transparency, accountability, and community involvement contribute to this trust.	**Medium**: While the project has made strides in raising awareness, there's potential for greater amplification through outreach, media, and partnerships beyond those of and on the Isle of Eigg.	**High**: The community's active participation, along with collaboration from institutions, demonstrates strong support for the scheme.	**High**: Eigg Electric generates value by producing clean energy, contributing to environmental sustainability, and fostering community resilience.	Orbit
Green: This principle is successfully achieved. Amber: This principle is almost achieved. Low: This principle isn't likely to be achieved.								

3.4 Creacombe Solar Farm

Creacombe Solar Farm in Devon is one of the first community ground-mount solar farms, which has been successfully generating clean solar power since December 2019. With a capacity of 7.3MWp (Mega Watts power; measure of the maximum potential output of power) and powered by solar inverters, enough power can be generated to power around 2,500 homes across five parishes, saving an estimated 3,100 tonnes of carbon dioxide annually.

The Farm encompasses 27 acres of low-grade land and the site design incorporates traditional Devonshire hedgerows to ensure minimal visual impact alongside many planned biodiversity elements including

beehives as they are located within the South Devon "B-Lines". Of great benefit is that the land remains in agricultural use with sheep grazing during winter.

Based on a community energy fund model (Yealm Community Energy), outcomes to date from the scheme include:

- Community ownership across five parishes (Newton & Noss, Holbeton, Yealmpton, Wembury and Brixton);
- Very high level of public support at 92% from the consultation; and
- Carefully designed with low panel height and screening to ensure minimal visual impact.

A key challenge that the scheme has faced is the location within an Area of Outstanding Natural Beauty (AONB). However, a key consideration for selecting the site was the need for the solar farm to be located within the community it will serve. The significant long-term economic, social and environmental benefits of the project demonstrate the exceptional circumstances and public benefit required to approve development in the AONB.

Community led	Locally Rooted	Reciprocal	Inclusive	Trusted	Amplified	Supported	Generating value	Partnership typology
Medium: The Scheme is a community benefit society, aimed at providing clean, low carbon electricity. Greater opportunities could be sought for community involvement, adding to the benefits the scheme delivers beyond clean energy.	**High**: The project is deeply rooted in the local context of Devon. It reflects the community's connection to their environment and agricultural land use.	**Medium**: While the scheme involves collaboration with local stakeholders, further emphasis on reciprocal relationships could enhance its impact.	**Low**: By providing educational opportunities, engaging with schools, and promoting awareness, it could foster inclusivity.	**High**: With community ownership opportunities, trust for the scheme is considered high.	**Medium**: There's potential for greater amplification through outreach, media, and partnerships.	**High**: Public support for the scheme has been high, notably during the consultation period.	**High**: The scheme generates value by producing clean energy, contributing to environmental sustainability, and fostering community resilience.	Balanced
Green: This principle is successfully achieved. Amber: This principle is almost achieved. Low: This principle isn't likely to be achieved.								

3.5 Braemar Hydro Scheme

Braemar Hydro Scheme, Scotland is a community benefit society, formed to construct a 100 kiloWatt (kW) hydro scheme. The intentions of the scheme are to generate clean, low carbon electricity from the Corriemulzie Burn on the outskirts of Braemar. Surplus income from the enterprise is intended to go to a community benefit fund to be used for projects and worthy causes in the local community. Over the lifetime of the project, it is envisioned that £500,000 will be generated for the community benefit fund.

Possible future challenges that the project will face include the possibility of slope erosion, and the need for fencing to keep local deer out of the project-housing on the Burn. There is also ongoing landscape concern that there has been little to no effective restoration of the channel which was cut through to divert the Burn and enable the hydro plant to be constructed.

Community led	Locally Rooted	Reciprocal	Inclusive	Trusted	Amplified	Supported	Generating value	Partnership typology
Medium: Braemar Hydro Scheme is a community benefit society, aimed at providing clean, low carbon electricity. Greater opportunities could be sought for community involvement, adding to the benefits the scheme delivers	**Low**: Despite having the community needs in mind with the surplus income benefitting the local community, challenges remain with regards to local wildlife and landscape.	**Medium**: While the scheme involves collaboration with local stakeholders, further emphasis on reciprocal relationships could enhance its impact.	**Low**: By providing educational opportunities, engaging with schools, and promoting awareness, it could foster inclusivity.	**Medium**: Little to no direct involvement of the community, therefore, trust with the community is considered to be limited.	**Medium**: There's potential for greater amplification through outreach, media, and partnerships.	**Low**: Little to no evidence for support for the scheme, therefore, scope for involvement of local institutions, and in particular the local community.	**High**: The scheme generates value by producing clean energy, contributing to environmental sustainability, and fostering community resilience.	Orbit

beyond clean energy.								
Green: This principle is successfully achieved. Amber: This principle is almost achieved. Low: This principle isn't likely to be achieved.								

3.6 Settle Hydro Scheme

Settle Hydro Scheme is a micro hydroelectric scheme located on the River Ribble at Settle Weir near Bridge End Mill in Settle, Yorkshire. It generates 50 kW of electricity using a screw turbine in part of the former mill race. Settle Hydro is owned by Settle Hydro Limited, a Registered Society under the Co-operative and Community Benefit Societies Act 2014. Membership of the Society is open to any person, organisation or business that meets the requirements of the Society's rules and invests at least £250 in the Society's shares. A key outcome of the scheme is that profits will be divided between the shareholders and the local community. The community money is anticipated to be used to fund other energy projects.

The scheme has not been without challenges, which included concern over the potential disruption to local Salmon farming, and subsequently harm to the operation of the local angling community. However, this is something that with careful design considerations, ensuring that fish can travel down the screw without harm and the control system will only allow water into the system within strict limits governed by the Environment Agency.

Community led	Locally Rooted	Reciprocal	Inclusive	Trusted	Amplified	Supported	Generating value	Partnership typology
Medium: Settle Hydro Scheme is a community benefit society, aimed at providing clean, low carbon electricity. Greater opportunities could be sought for community involvement, adding to the benefits the scheme delivers beyond clean energy.	**Medium**: Despite having the community needs in mind with the surplus income benefitting the local community, challenges remain with regards to local wildlife and landscape.	**Medium**: While the scheme involves collaboration with local stakeholders, further emphasis on reciprocal relationships could enhance its impact.	**Low**: By providing educational opportunities, engaging with schools, and promoting awareness, it could foster inclusivity.	**Medium**: Little to no direct involvement of the community, therefore, trust with the community is considered to be limited.	**Medium**: There's potential for greater amplification through outreach, media, and partnerships.	**Low**: Little to no evidence for support for the scheme, therefore, scope for involvement of local institutions, and in particular the local community.	**High**: The scheme generates value by producing clean energy, contributing to environmental sustainability, and fostering community resilience.	Orbit
Green: This principle is successfully achieved. Amber: This principle is almost achieved. Low: This principle isn't likely to be achieved.								

3.7 Community-owned natural swimming ponds

East London Waterworks Park have the vision of transforming an East London industrial site into community-owned natural swimming ponds and biodiverse park. The community group behind the project is diverse with a common factor that they are all passionate about enhancing the environment and ensuring that as many people as possible can enjoy nature. The group have come together to realise their vision for the land to support the health and wellbeing of the local community. Outcomes of the project that are anticipated include:

- Swim free all year-round in rainwater cleaned by reed beds and aquatic plants;
- Be able to meet people and develop ideas in beautiful and affordable community spaces;
- Be able to give different aspects of sustainable living a go; and
- Provide forest school spaces.

Several challenges remain with the project, including the need for planning permission, and for community 'buy-in' to be able to purchase the land. The land is also currently a contaminated brownfield site, requiring

clearing. Nevertheless, project members are keen to highlight the improvements to well-being, biodiversity, air quality, as well as circular economy and the ability to generate renewable energy (generating solar power from solar panels and hydropower from the river) the project would bring.

Community led	Locally Rooted	Reciprocal	Inclusive	Trusted	Amplified	Supported	Generating value	Partnership typology
High: Community-owned natural swimming ponds is a community led vision, driven by local residents who came together to create a sustainable and multi-use scheme. Their active involvement demonstrates a strong commitment to community leadership.	**High**: It reflects the community's connection to their environment and needs of the local population.	**Medium**: While the scheme involves collaboration with locals, further emphasis on reciprocal relationships could enhance its impact.	**High**: The scheme aims to involve the broader community. By providing opportunities for involvement across the scheme, it fosters inclusivity.	**High**: As a community-owned project it has gained trust from local residents. Transparency, accountability, and community involvement contribute to this trust.	**Medium**: While the project has made strides in raising awareness, there's potential for greater amplification through outreach, media, and partnerships beyond those outlets in the local area.	**High**: The community's active participation, along with collaboration from institutions, demonstrates strong support for the scheme.	**High**: It is anticipated that the scheme will contribute to environmental sustainability, and fostering community resilience.	NA
Green: This principle is successfully achieved. Amber: This principle is almost achieved. Low: This principle isn't likely to be achieved.								

3.8 Neen Sollars Community Hydro

Neen Sollars Community Hydro owns and operates a 12.5 kW hydroelectric installation at Tetstill Mill, Neen Sollars on the River Rea in Shropshire. The project is funded by a co-operative share issue and owned by local people. The turbine provides green electricity to the local electrical grid, which is approximately 10-20% of the domestic power use in Neen Sollars.

Since it's installation in 2019, the Hydro scheme has generated several positive outcomes, including:

- Practical generation of green electricity;
- Local involvement in owning and running a renewable generation system;
- Awareness raising and education in the local area;
- A modest annual income for a local charity; and
- Working alongside wider attempts to improve the ecological status of the River Rea.

Community led	Locally Rooted	Reciprocal	Inclusive	Trusted	Amplified	Supported	Generating value	Partnership typology
High: Neen Sollars Community Hydro scheme is a **community led** initiative, driven by local residents who came together to create a sustainable hydro scheme. Their active involvement and ownership demonstrate a strong commitment to community leadership.	**High**: The project is part owned by the local people, involving them in running the system.	**Medium**: While the scheme involves collaboration with local stakeholders, further emphasis on reciprocal relationships could enhance its impact.	**High**: By providing educational opportunities, engaging with schools, and promoting awareness, it offers opportunities for inclusivity.	**High**: Involvement of the community, therefore, trust with the community is considered to be in existence.	**Medium**: There's potential for greater amplification through outreach, media, and partnerships.	**High**: The community's active participation, along with collaboration from institutions, demonstrates strong support for the scheme.	**High**: It is anticipated that the scheme will contribute to environmental sustainability, and fostering community resilience.	Platform
Green: This principle is successfully achieved. Amber: This principle is almost achieved. Low: This principle isn't likely to be achieved.								

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3.9 Community Rain Gardens, Waltham Forest

The first SuDS scheme comprising community rain gardens was installed in Waltham Forest, London in October 2021. It is the first of many phases across the borough, with the aim of reducing future flood risks, whilst bringing nature to people's doorstep. Both local residents and schools joined up to assist with some of the planting, learning about the species planted, and the importance the rain gardens have to their homes and local community. The borough is also working closely with the residents to assign gardening stewards to care for the rain gardens, maintaining and managing them.

The success to date of the scheme has been largely down to the inclusive approach, empowering the community. Residents have been part of the process throughout from the outset planning stage. Despite the challenges associated with 'fitting into' the urban landscape, the rain gardens have been adapted to serve a purpose to the community, with the gardens incorporating trees and aromatic herbs like sage and rosemary. This has enabled the community to enjoy not only the beauty of nature but also the benefits of a sustainable and edible landscape.

Community led	Locally Rooted	Reciprocal	Inclusive	Trusted	Amplified	Supported	Generating value	Partnership typology
Amber: The Community Rain Gardens is an initiative with **community involvement** at its core, supported by local residents who came together to create a SuDS scheme. Their involvement demonstrates a strong commitment to their community.	**High**: The project is deeply rooted in the local context of Waltham Forest. It reflects the community's needs and the environmental benefits of rain gardens.	**Medium**: While the scheme involves collaboration with local stakeholders, further emphasis on reciprocal relationships could enhance its impact.	**High**: By providing educational opportunities, engaging with schools, and promoting awareness, it offers opportunities for inclusivity.	**High**: Involvement of the community, therefore, trust with the community is considered to be in existence.	**Medium**: There's potential for greater amplification through outreach, media, and partnerships.	**High**: The community's active participation, along with collaboration from institutions, demonstrates strong support for the scheme.	**High**: It is anticipated that the scheme will contribute to environmental sustainability, and fostering community resilience.	Balanced
Green: This principle is successfully achieved. Amber: This principle is almost achieved. Low: This principle isn't likely to be achieved.								

3.10 Bangweulu Wetlands

The Bangweulu Wetlands are a community-owned protected wetland in north-eastern Zambia, Africa. Not just a life source for wildlife, such as endemic black lechwe and hundreds of bird species, but also for the 6,000 people who live there. Bangweulu is unique in that it is made up of Game Management Areas, where community members have retained the right to sustainably harvest natural resources. Following unsustainable pressure on Bangweulu's wildlife and fish stocks, in 2008, six Community Resource Boards and the Department of National Parks and Wildlife entered into a long-term agreement with African Parks to deliver on a shared vision to sustainably manage and protect these natural assets long into the future.

Community led	Locally Rooted	Reciprocal	Inclusive	Trusted	Amplified	Supported	Generating value	Partnership typology
High: The project involves six Community Resource Boards, indicating a strong role for local community leadership in managing and protecting the wetlands.	**High**: The wetlands are a life source for both wildlife and the 6,000 local people, and the community members have rights to sustainably harvest resources, showing a deep connection to local needs and traditions.	**High**: The wetlands are a life source for both wildlife and the 6,000 local people, and the community members have rights to sustainably harvest resources, showing a deep connection to local needs and traditions.	**Medium:** While community members have retained rights to harvest resources and are involved through Community Resource Boards, the extent of inclusiveness regarding all community members' participation is not specified.	**High**: The involvement of community members and long-term agreements with trusted organizations like African Parks and the Department of National Parks and Wildlife suggest a high level of trust.	**Medium:** The project has significant local benefits, but the extent to which these benefits and practices are amplified beyond the immediate region is not detailed.	**High:** The project is supported by both the Department of National Parks and Wildlife and African Parks, indicating robust institutional support.	**High**: The sustainable management of wildlife and natural resources benefits both the environment and the local community, providing ecological, economic, and social value.	Balanced
Green: This principle is successfully achieved. Amber: This principle is almost achieved. Low: This principle isn't likely to be achieved.								

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3.11 Sea Ranger Service

The Sea Rangers Service is a social enterprise that has pioneered a model which simultaneously creates social and environmental impact. It was launched in The Netherlands in 2018, and has since been scaled up internationally. The Service is on a mission to affect social-economic regeneration of coastal regions whilst improving conservation of the world's oceans. The Sea Ranger Service has three primary activities to achieve this mission:

- Training young people to become Sea Rangers as a start to their maritime career;
- Carrying out sustainable offshore services and ocean conservation work at sea; and
- Constructing purpose-built sailing work vessels to carry out this work cost-effectively and clean.

One of the overarching benefits of the Service is the opportunity it creates for young people from predominantly deprived backgrounds to gain skills, enjoying the environment and learning about the importance of protecting the coastal marine landscape.

Community led	Locally Rooted	Reciprocal	Inclusive	Trusted	Amplified	Supported	Generating value	Partnership typology
Medium: The project trains young people and involves local communities, but it is primarily driven by a social enterprise rather than being directly led by the community itself.	**High**: The project focuses on the socio-economic regeneration of coastal regions and directly engages with local communities, reflecting a strong connection to local needs and contexts.	**High**: Sea Rangers provides young people with career opportunities while simultaneously benefiting from their participation in conservation work, indicating a mutual exchange of benefits.	**High**: The project specifically targets young people from predominantly deprived backgrounds, ensuring inclusiveness and opportunities for those who might otherwise lack access.	**High:** The successful scaling of the project internationally and its engagement with local communities suggest it has built a significant level of trust.	**High:** The project's international scaling demonstrates its potential for widespread influence and the amplification of its model and benefits.	**High:** The project is supported by the social enterprise structure and has been able to expand internationally, indicating strong organizational and possibly institutional support.	**High**: The project creates social value by training young people and providing career opportunities, and environmental value through ocean conservation efforts, achieving significant impact in both areas.	Epicentre
Green: This principle is successfully achieved. Amber: This principle is almost achieved. Low: This principle isn't likely to be achieved.								

3.12 Greener Grangetown

Greener Grangetown is a partnership with the City of Cardiff Council, Welsh Water, and Natural Resources Wales. The aim was to pioneer a sustainable approach to rainwater treatment. Greener Grangetown's rain gardens are planted to catch and clean rainwater, to reduce the burden on water utilities, and reduce flood risk. During heavy storms, water that cannot be absorbed by soil and vegetation travels through pipes at the base of each rain garden and is conveyed to the nearby River Taff.

The project was intended to be innovative and forward-thinking, taking client vision and community feedback into account. Rather than focusing on single solutions or individual parts of our environment, the approach was to look at the whole picture: contribute to a healthy and resilient local environment, and also supports economic and social prosperity.

Despite council partnership working, a challenge has been to engage with the community and educate them about the rain gardens prior to installation. This is something that can be explored further in SuDS+, empowering the community to be involved where possible, involving them in decision-making, and understanding what they want, and what benefits the project can bring.

Community led	Locally Rooted	Reciprocal	Inclusive	Trusted	Amplified	Supported	Generating value	Partnership typology
Amber: The Greener Grangetown is an initiative with **community involvement** at its core, supported by local residents	**High**: The project is deeply rooted in the local context of Cardiff City. It reflects the community's	**Medium**: While the scheme involves collaboration with local stakeholders, further emphasis on reciprocal	**High**: By providing educational opportunities, engaging with schools, and promoting awareness, it	**High**: Involvement of the community, therefore, trust with the community	**Medium**: There's potential for greater amplification through outreach,	**High**: The community's active participation, along with collaboration from institutions,	**High**: It is anticipated that the scheme will contribute to environmental sustainability, and fostering	Balanced

Community led	Locally Rooted	Reciprocal	Inclusive	Trusted	Amplified	Supported	Generating value	Partnership typology
who came together to create a SuDS scheme. Their involvement demonstrates a strong commitment to their community.	needs and the environmental benefits of rain gardens.	relationships could enhance its impact.	offers opportunities for inclusivity.	is considered to be in existence.	media, and partnerships.	demonstrates strong support for the scheme.	community resilience.	
Green: This principle is successfully achieved. Amber: This principle is almost achieved. Low: This principle isn't likely to be achieved.								

3.13 The Green Estate

The mission is to grow engaging, adaptive and resilient urban places. The Green Estate was originally set up in 2003 as a heritage and environmental regeneration project in the Manor area of Sheffield. The Green Estate team of staff, volunteers and partners have turned 42 hectares of derelict land and heritage buildings into a unique, beautiful, and sustainable landscape where people and nature can thrive together.

In response to fly-tipping of green waste in Sheffield housing developments, the CIC has a green waste recycling service: turning green waste from local landscapers, universities, local councils, and domestic gardeners into PAS100 peat-free compost.

They provide Resilience and Meadows Landscaping consultancy services: from SuDS to pictorial Meadows. They have constructed their own SuDS in public parks that they manage in Sheffield. To date several outcomes have been achieved, including:

- Support and housing of a collective social enterprise;
- Education via a community food growing group; and
- Environmental activities in the local community.

Additionally, there are future opportunities that can be explored, such as ownership and maintenance of the SuDS. Thus, creating social enterprise opportunities and associated multiple social benefits.

Community led	Locally Rooted	Reciprocal	Inclusive	Trusted	Amplified	Supported	Generating value	Partnership typology
High: Green Estate involves staff, volunteers, and partners from the local community, indicating strong community leadership and engagement in its activities.	**High:** The project focuses on the Manor area of Sheffield, addressing local issues such as derelict land and fly-tipping, and transforming these areas into sustainable landscapes, demonstrating a deep connection to local needs and context.	**High:** The Green Estate provides services such as green waste recycling and SuDS construction, while benefiting from community participation and support, indicating a mutual exchange of benefits.	**High:** The Green Estate involves a diverse group of stakeholders, including local landscapers, universities, councils, and gardeners, and provides educational and environmental activities for the community, showing a commitment to inclusiveness.	**High:** The long-term success and ongoing community engagement since 2003 suggest that the project has built a significant level of trust within the local community.	**Medium:** The long-term success and ongoing community engagement since 2003 suggest that the project has built a significant level of trust within the local community.	**High:** The Green Estate is supported by various stakeholders, including local councils and social enterprises, indicating robust institutional and community support.	**High:** The project generates multiple forms of value, including environmental (green waste recycling, sustainable landscapes), social (education, community activities), and economic (social enterprise opportunities), achieving significant impact.	Orbit
Green: This principle is successfully achieved. Amber: This principle is almost achieved. Low: This principle isn't likely to be achieved.								

3.14 Governance of schemes

The governance arrangements of each of the case studies were reviewed and outlined in Table 2.

Table 2: Governance of case studies

Case Study Example	Governance and Legally responsible	
Osney Lock Hydro	Community interest companies (CIC) is a kind of non-charitable limited company that's set up primarily for the benefit of a community. (Orbit)	On 31 December Osney Lock Hydro Limited ceased to trade. All assets and liabilities were taken over by Oxford Community Renewables Limited under the transfer of engagements arrangement available to registered societies.
Buan Citizen Power Generation		Led and owned by Buan Citizen Power Generation, a local NGO set up in 2006.
Eigg Electric		Eigg is owned by the Isle of Eigg Heritage Trust who have managed it on behalf of the community since the community buyout of 1997.
Creacombe Solar Farm	Partnership (balanced)	Creacombe Solar Farm is a community owned asset held by Community Owned Renewable Energy Partners (CORE) and Yealm Community Energy (YCE).
Braemar Hydro Scheme	CIC (Orbit)	Braemar Community Limited – responsible for several projects in Braemar including the Braemar Hydro Scheme.
Settle Hydro Scheme	CIC (Orbit)	Settle Hydro is owned by Settle Hydro Limited, a registered society under the Co-operative and Community Benefit Societies Act 2014. The Society is managed by a group of voluntary Directors who are appointed by the Society's Members (Shareholders) at Annual General Meetings.
Community-owned natural swimming pools	NA	Not yet in operation – funding still being raised; awaiting planning permission.
Neen Sollars Community Hydro	Cooperative shares (Platform)	The project is funded by a co-operative share issue and owned by local people.
Community Rain Gardens, Waltham Forest	Council owns Local residents manage (Balanced)	Managed by the local resident group but owned by the London Borough of Waltham Forest.
Bangweulu Wetlands	Partnership (balanced)	The Bangweulu Wetlands Project is overseen through a collaboration between African Parks, the Department of National Parks and Wildlife (DNPW), and six Community Resource Boards (CRBs). These entities work together to manage the wetlands, involving local communities in landscape management.
Sea Ranger Service	Charity (Epicentre)	Sea Ranger Foundation with board of trustees.

The governance review outlined the following of the partnership arrangements are most popular: Orbit (Community interest company) and Balanced (Partnership ownership) These two partnership arrangements will be investigated further in the funding and financing feasibility alongside the potentially suitable platform arrangement.

3.15 Applicability of case studies to SuDS+

Across the case studies presented there are several aspects applicable to SuDS+, including the models which could be applied, lessons learned and ways of working with local communities for the benefit of the environment and beyond. Aspects from each of the case studies which are applicable to Stanley SuDS+ are presented in Table 3-3.

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Table 3-3 Applicability of case studies to Stanley SuDS+

Case Study Example	What from this approach could be applied in Stanley to SuDS+?
Osney Lock Hydro	Set up by local residents, community owned.
Buan Citizen Power Generation	Local NGO set up, partnership project.
Eigg Electric	Community-owned, electricity generation.
Creacombe Solar Farm	Within parishes, fit in with surrounding area, use of land with previous low ecological value.
Braemar Hydro Scheme	Located within community, community in mind with creation/design.
Settle Hydro Scheme	Community shares/investment.
Community-owned natural swimming pools	Community wanting something so they are trying to get it, multiple benefits, well-being of locals.
Neen Sollars Community Hydro	Owned by local people, ecological benefits.
Community Rain Gardens, Waltham Forest	SuDS, joined up working between locals and schools, stewardship opportunities, inclusivity.
Bangweulu Wetlands	Designed to benefit local community, educational opportunities.
Sea Ranger Service	Young person involvement in conservation, poverty-action, deprivation.
Greener Grangetown	Council partnership, contribution to the local environment, with multiple benefits.
The Green Estate	Links with social enterprise, with the intention of generating multiple social benefits.

3.16 Key findings from informal interviews

Based on applicability to the SuDS+ Project, case studies were short-listed for further investigation, to understand more from the people involved via informal interviews. Four case studies were short-listed for interviews, with key findings presented in Table 3-4.

Table 3-4 Key findings from informal interviews

Case study	Key findings
Community-owned natural swimming ponds	The community actively wanted to defend their green spaces. Community enhancement is seen as a key benefit, along with opportunities for "ecological" design, outdoor education, and cleaning up of the local river through the use of SuDS including filtration beds. Individuals won't necessarily have a direct personal return, but it's creating something exciting for the community. Community ownership – people doing something for free but thinking about wider opportunities/benefits. Important to have conversations with the community without pre-conceived outcomes. Consider what the community want – rather than "do you want what we (the partners/project) think you want?" Sustainability – people will come and go but the idea in itself has to continue in its own entity for generations. Community influencers are key – they can bring people in.
Community rain gardens in Waltham Forest	Meristem maintained the rain gardens for 6 months – then handed over to group of resident stewards (horticultural interests). Engagement with the community was led by 'What If', and was encouraged via leaflets. Lead residents drummed up interest for volunteers – driver was wanting to make their community look nice. Residents were keen for 'edible' plants, such as herbs.
Eigg Electric	Very defined island community, where the island is the 'land lord', however, opportunities for community involvement in the provision of electricity. Community involvement unanimous because electric was something that all needed, they agreed on all aspects – group rather than individual decisions were and continue to be key. No profit made as of yet, however, any future profit will be invested back into the community for their benefit. Community team who do the maintenance on a daily basis – due to the nature of the work, the roles are salaried roles. Every project on the Isle of Eigg tries to have added benefits for the community.

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Case study	Key findings
	Upskilling of the community is one of these benefits, as people on the Island have several seasonal jobs. The ethos is community ownership – the community knows best what needs to be done. Bottom-up.
Sea Ranger Service	The role of a Ranger comes with a uniform, which brings pride, sense of belonging, and sense of worth. Identified a gap: unemployment crisis in Port Talbot, an area with strong maritime heritage. Opportunity: Sea Farers provide entry point into maritime profession, with keen support from government. Employ veterans from Royal Navy to train young sea farers intergenerational knowledge. Sea Rangers is a combined environmental and social organisation, bringing environmental jobs. Sea Rangers are employees, so quality control of data collected is easier than if they were volunteers. Time spent at sea contributes to commercial sailing qualifications. Sea Rangers can work towards a Diploma in civil service there is an output into existing jobs. Skills gap: currently 1% female seafarers in industry. Opportunity: train female Sea Rangers, to enable and inspire women and girls to consider this career option.

3.17 Funding and Financing Discovery

Investigations have been conducted regarding the number of BNG (Biodiversity Net Gain) credits that can be sold per SuDS (Sustainable Drainage Systems) site and the costs and revenue which is likely per site. This crucial information is necessary as we delve deeper into exploring potential funding and financing mechanisms suitable for SuDS schemes. At this stage, the following mechanisms are considered appropriate: community interest companies, partnership ownership, and cooperative shares.

[To be updated with Angus's work]

4. Define

4.1 What is feasible within the context of SuDS+

As stated earlier the approach to the adoption approach has been further broken down to two routes of investigation:

- maintenance & monitoring governance perspective within which the community will be engaged.
- funding & financing where the partners are working through the viable mechanisms before bringing it to the community for feedback and input.

These two routes will be brought together, however, to progress the project within the programme these two routes need to be separated first. The maintenance and monitoring will be developed with the community during a prototyping workshop. This is assumed to take place immediately following a co-design workshop. The individuals attending this workshop will be the potential primary, secondary and tertiary partners for the SuDS+ project.

It appears all partnership arrangements are feasible within the context of SuDS+. However, the funding and financing mechanisms are not all suitable. The following partnership and funding arrangements which will be investigated further for SuDS + are:

- Community Interest Company
- Partnership ownership: and
- Cooperative shares.

These partnership and funding arrangements will be investigated with the SuDS+ partnership before bringing to the community for input.

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5. Next steps

The following next steps are suggested:

1. Organisation of a co-design workshop with the community which the adoption prototype workshop can build upon in the afternoon.
2. Further investigation into the costs, and revenue generated for the potential BNG credits per site to inform the funding and financing options.
3. Set up a workshop with partners to review the viable options for the governance and ownership of the viable BNG credits alongside the maintenance and monitoring suggested by the community.
4. Detailed development of the adoption framework based on steps 2 and 3.
5. There is the potential for development of further resources to support other communities looking into generating BNG credits.

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Appendix A: Theory behind the project aims

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