



greenminds

greenminds final report

insight papers, case studies,
and evaluations



**REAL
IDEAS**



**ARTS
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Green Minds Overview

Green Minds piloted new ways of implementing nature-based solutions within urban environments, developing an approach which we call urban wilding.

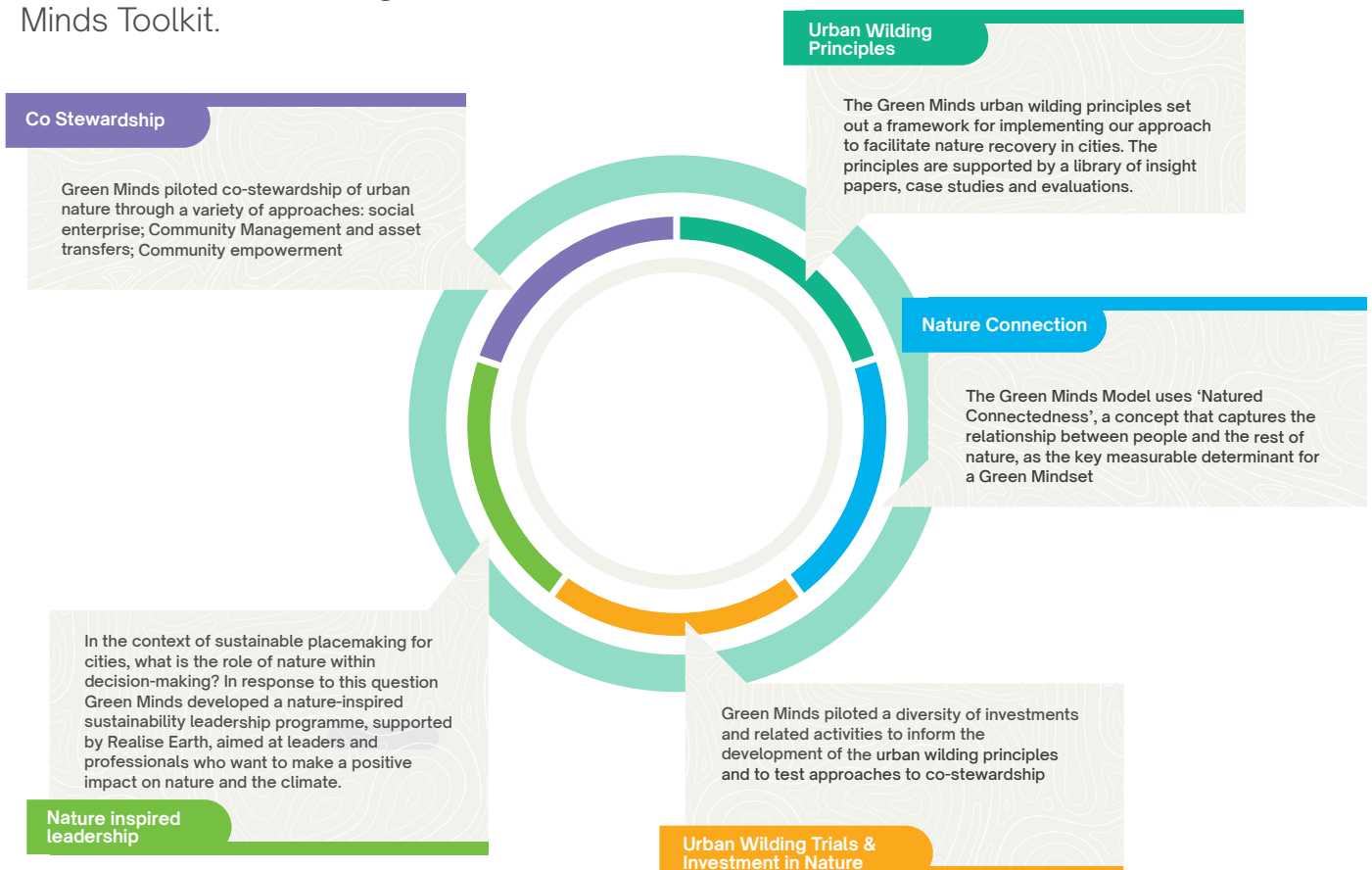
This summary publication provides the briefest of overviews of this 5 year programme, funded through the European Regional Development Fund's Urban Innovative Actions initiative, and Plymouth City Council and partners.

Locally, Green Minds has forged new relationships, changed policy and led to significant improvements in the quality of green spaces in the city – both for people and wildlife.

To share what we have learned through this process and to guide others to successfully follow a similar path, we have created a Knowledge Hub and Green Minds Toolkit.

The Green Minds Toolkit is made up of a series of papers which examine key projects, trials, and work schemes which took place through the course of Green Minds. It has been co-authored by partners across the project, and offers a real breadth of insight and knowledge; from information on engaging children with nature to blue carbon research, social media studies to grassland management trials – there's something of interest for everyone!

To access the full Toolkit visit our [Knowledge Hub](#)



Green Minds Urban Wilding Principles and Toolkit

Green Minds piloted new ways of implementing nature-based solutions within urban environments to bring about systemic change.

The Green Minds Model (see page 12) is organised to deliver an integrated approach, where various nested elements work together as a system. It reflects the particular challenges and scales of focus in urban areas – from individuals, to communities and neighbourhoods, and at a city-wide level. It focuses on particular leverage points for change with regard to nature in cities, and is guided at its core by a set of underlying principles to inform practice – which we call Urban Wilding.



Nature Connection

Having a Green Mindset is about recognising that one is part of the natural world and giving high priority to the relationship between humans and the rest of nature. This leads to pro-environmental behaviours in decision-making such as the restoration and enhancement of habitats, and delivering health and wellbeing and biodiversity benefits.

We have adopted 'Nature Connectedness', a concept that captures the relationship between people and the rest of nature, as the key measurable determinant for a Green Mindset.

Nature Connection can be used as a tool to engage communities in support of wider nature-based solutions, leading them to adopt pro-environmental behaviours.

The 5 Pathways to Nature Connection, developed by the University of Derby Nature Connectedness Research Group, serve as a typology of activities that can

be used to design policy or physical interventions, from school curricula to public parks to urban centres, aiming to improve human-nature relationships at a range of scales.

A Green Minds policy analysis noted significant gaps for integrated policy for urban nature. As a result, the Green Minds delivery team used the strength of its multi-sector partnership to influence policy and practice as the project developed, which will go on to influence future citywide strategic priorities.

Case study: Pathways to Nature Connectedness- Insight Paper:
[Pathways to Nature Connectedness](#)

48,615 engaged in Green Minds activities

45.9% of people participating in Green Minds activities strongly agreed with the statement 'I felt closer to nature'

1,296 nature inspired events

02 new nature connection educational facilities- the Beaver Lookout at Poole Farm and the Orchard Classroom at National Trust's Saltram property

01 New Living Lab technology established in Plymouth's largest park and National Trust property grounds



Nature Inspired Leadership

In the context of sustainable placemaking for cities, what is the role of nature within decision-making?

Green Minds developed and delivered a Nature-Inspired Sustainability Leadership programme, supported by Realise Earth, aimed at leaders and professionals who want to make a positive impact on nature and the climate.

Other innovative nature inspired leadership programmes within Green Minds included:

- **Creative Commissions** – Green Minds launched a series of five creative commissions to support communities and artists in Plymouth to work together to explore new ways of engaging in local sustainability and ecological issues. Core to the creative commissions' approach was the Pathways to Nature Connectedness framework with each of the five tenders being designed to support at least one of the five 'pathways'. [Click here](#) to read the Creative Commissions evaluation paper.

10K

Through Green Minds, Arts University Plymouth students spent 10,000 curriculum hours across 23 creative nature projects

613

people connected with nature through the Green Minds Creative Commissions

07

apprenticeships, all of whom went into green industry jobs

04

Nature Connection badges live through the Green Communities project

- **Apprenticeships for green estate management** – for integrated management of nature it is important for our place-making workforce to acquire a high degree of 'Nature Connection', enabling them to spot opportunities for positive change. [Click here](#) to read the Apprenticeships for Land Management insight paper.
- **Digital Badges for nature-based skills** – Delivered through the Green Communities legacy project, [digital badges](#) are fun, free ways of recognising how people have connected with, and done their bit for, nature in Plymouth. The badges not only act as an incentive for young people to explore and enjoy nature, but can also provide skills recognition to support employability.
- **Creative Nature Connection work experience opportunities.** Over 400 students from Arts University Plymouth participated in and contributed to the success of the Green Minds project, working for a combined total of nearly 10,000 curriculum hours on 23 projects, producing seventeen creative works and two public exhibitions, including murals, interpretation boards, sculpture, photography and textiles.



Artwork by Shri Gunasekara, former AUP student

Co-Stewardship

Green Minds piloted co-stewardship, the management of the ‘green estate’ jointly with communities, around three key themes:

Social enterprise	Community management and asset transfers	Community empowerment
green assets used as the basis of a non-profit enterprise bringing benefit to the community	green spaces managed by the community, permitted through a contractual arrangement (and optionally, with a transfer of assets from public to community control)	deepening nature connection and enabling community leadership on urban wilding and the improvement of urban green spaces through a Growing with Nature Network.

Green Communities

The principal legacy of Green Minds has been the development of new neighbourhood-based multi-skilled, multi-functional teams to deliver services in a more integrated and therefore effective way through ‘hyper-local’ community engagement.

These teams replace a siloed approach, and help to deliver integrated policy across spatial planning, public health, and street services (operational) divisions. They are managed by a team leader, ensuring a practical, accessible action-oriented approach and supported with expertise from [Green Minds partners and others](#).

Case study: Green Minds supported the development of social enterprises as an innovative co-stewardship model, supported with start-up grants and asset transfers. **To read more about co-stewardship and social enterprise, read [this insight paper](#).** Within the Green Minds toolkit, there is also a case study around **Urban Wildling and Co-stewardship, which can be [read here](#).**

The projects showed how nature can be a core element of the business model, an integrated model, that helps to sustain and develop nature as an integral part of business development.

05 asset transfers

10 businesses introducing natural improvements

01 Growing with Nature Network and map established and ongoing across Plymouth

Urban Wilding Trials

Green Minds activities had a strong focus on investment in nature through urban wilding trials, designed to test the feasibility and impact of the Green Minds approach.

Five key investments areas

Central Park
[READ MORE](#)

Derriford Community Park
[READ MORE](#)

Urban trees, Keyham green spaces
[READ MORE](#)

Social enterprise investments
[READ MORE](#)

Wildflower meadows
[READ MORE](#)

CASE STUDY: URBAN BEAVERS

Derriford Community Park is surrounded by housing and industry and forms an important open space within the city. Localised flooding often occurs during heavy rain storms, closing roads, and threatening property.

Beavers are natural engineers that change their surroundings by felling trees, damming sections of river, slowing the flow of water during and after rainfall, helping to reduce flooding downstream.

They provide an alternative to costly engineered solutions and also create wetland spaces, great for birds, fish, amphibians, and bugs to live and feed in.

The arrival of the beavers and their enduring popularity has given rise to a whole new range of services which make use of the natural environment of the park and the opportunities it provides to connect people to nature

[Click here](#) to read the **Urban beavers case study**.



CASE STUDY: WILDLIFE MEADOWS

Before 2020, 85% of the 700 hectares of Plymouth City Council grassland was managed as amenity grassland, mown every four weeks. This approach needed to be brought up to date to align with regional, national and global priorities regarding the climate crisis (cutting fuel use), the biodiversity crisis, and managing costs and operational capacity.

The new approach, introduced through a wildflower meadow campaign, has resulted in the team and other stakeholders ‘thinking differently’ about grassland management and seeking to understand the best approach to mowing different sites, to ensure they are managed optimally based on their use by communities and specific user groups.

[Click here](#) to read the public grassland management case study.

3000 Over 3000 ecological records made

10 40% of Plymouth’s grassland is now managed for wildlife, 60% is managed for amenity





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Green Minds Model

Green Minds Model summary

The Green Minds Model aims to summarise the structure of the Green Minds approach, to aid its transfer and replication to other urban areas and authorities.

Green Minds piloted new ways of implementing nature-based solutions within an urban environment. The project's central aim was to collaborate with stakeholders to recognise how humans, as part of nature, interact with nature in a complex system and to identify ways in which *systemic* change is brought about.

The model is presented as an integrated approach, where various nested elements are shown working together as a system. It reflects the particular challenges and scales of focus in urban areas – from individuals, to communities and neighbourhoods and at a citywide level. It focuses on particular leverage points for change (best practices) with regard to nature in cities, and is guided at its core by a set of underlying principles to inform practice.

At the centre of the model sits the system goal – *Urban Wilding. A set of guiding Principles have been created to inform the practice of Urban Wilding. These principles have emerged from our experiences designing and implementing Urban Wilding in Plymouth.

The eight Principles that have emerged from our programme of testing and development represent key leverage points to effect system change and to successfully integrate nature within urban place shaping. This includes exploring deeply held beliefs and values around our relationship to nature

and to others, the creation of new organisational and digital infrastructures which empower citizens, and the development of new policy, planning and financial frameworks to support this.

Complex systems can behave differently at differing scales and so these are reflected too in the model to recognise the importance of understanding *who* needs to be engaged and *how*. This takes into account the need for multiple perspectives and the importance of equity (who participates), through an inclusive process of engagement from individuals to groups and organisations, and at neighbourhood and citywide scales.

Finally, the model acknowledges the importance of an ongoing and iterative co-design process. This process recognises that resilience requires the ability to adapt as solutions emerge within a complex and constantly changing environment. It is delivered through a cyclical, action learning approach in which lessons learned influence the next cycle of implementation to ensure a progressive approach.

The model is brought to life through our suite of Insight Papers, Guides and Case Studies which aim to illustrate how the model was implemented and what we learnt.

*We have chosen to use the term 'wilding' instead of 'rewilding', as it better reflects the reality of nature in urban areas - to rewild implies a return to nature before urbanisation, which is not possible.

Green Minds Urban Wilding Principles

The quality and quantity of nature has declined significantly in recent decades. Across the UK and Europe, nature recovery and restoration, rather than just preserving or conserving what remains, has become a high priority, as we have become more aware of society's dependence on nature^[1].

We know that spaces that are more biodiverse can deliver multiple health and wellbeing benefits as well as other nature-based solutions such as improvements in water drainage, increased carbon sequestration, removal of air pollutants and increased pollination for food security^[2].

'Rewilding' has gained prominence as one approach to achieving such improvements in biodiversity, with a growing research body assessing its impact.

Urban (re)wilding, however, is still a new concept. We define Urban Wilding as 'any initiative, both human-aided and natural colonization, that aims to encourage biodiversity, ecosystem function and native species in urban settings'^[3].

Urban Wilding is fundamentally different from wilding/rewilding/renaturing elsewhere. Cities and towns are dominated by human infrastructure and activity. Consequently, many natural ecosystem processes are significantly modified or constrained in urban areas.

We rely upon ecosystem services for our health and wellbeing. Urban ecologies, which deliver these ecosystem services, are complex and poorly understood. However, we know that more biodiverse systems deliver more or better ecosystem services. We also know that we can mimic, or engineer, some specific ecosystem services such as storm water management. Whilst we don't know enough to design urban ecosystems to deliver all the services we need, we do know that more nature is good for people and urban living and that arranging it in certain ways can deliver certain specific benefits. We can't achieve this by doing nothing – positive interventions are required, which in turn demand enabling policy, community action and practical delivery mechanisms.

The Green Minds understanding of Urban Wilding recognises the need to shift from nature conservation to nature recovery - to focus on restoring much of what is rare or has gone and a recognition that we need to bring high quality Nature into places where people live.^[4]

The Urban Wilding Principles below are designed as a set of prompts to help guide initiatives for nature to thrive in cities: to survive and reproduce, to expand, and to function as a system and so deliver more and better services to support urban environmental health, our economy, and human wellbeing.

[1] Nature Recovery for Our Survival, Prosperity and Wellbeing: A Joint Statement by the Statutory Nature Conservation Bodies of the UK. jncc.gov.uk/our-role/the-uk/nature-recovery-joint-statement

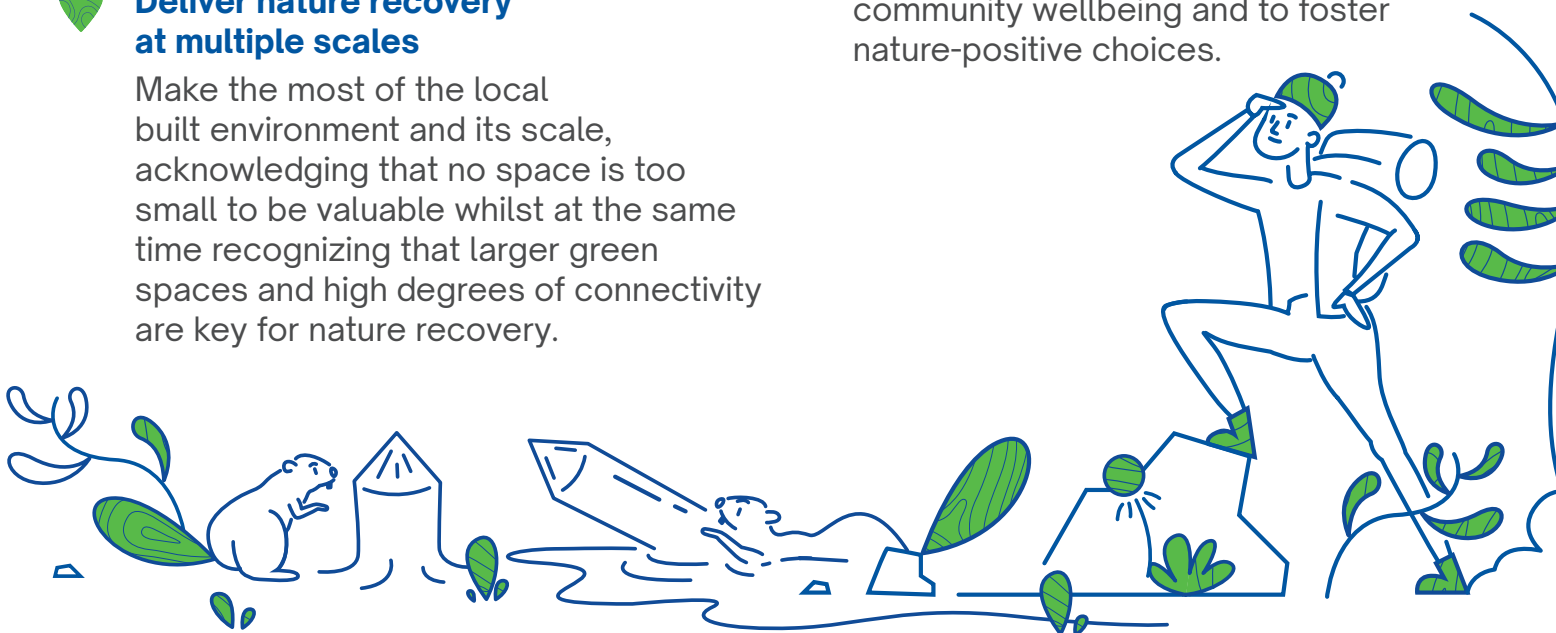
[2] Dasgupta, P. (2021). The Economics of Biodiversity: the Dasgupta Review. London (HM Treasury); Maller, C. (2018) Healthy Urban Environments. Routledge

[3] Maller, C., Mumaw, L., & Cooke, B. (2019). Health and social benefits of living with 'wild' nature. Ch 9 in Rewilding. Pettoelli, N., Durant, S., and du Toit, J. (eds). Cambridge University Press

[4] Juniper, T. (2022) Tony Juniper: Green Paper – an opportunity for an integrated approach to Nature recovery - Natural England

Urban Wilding Principles

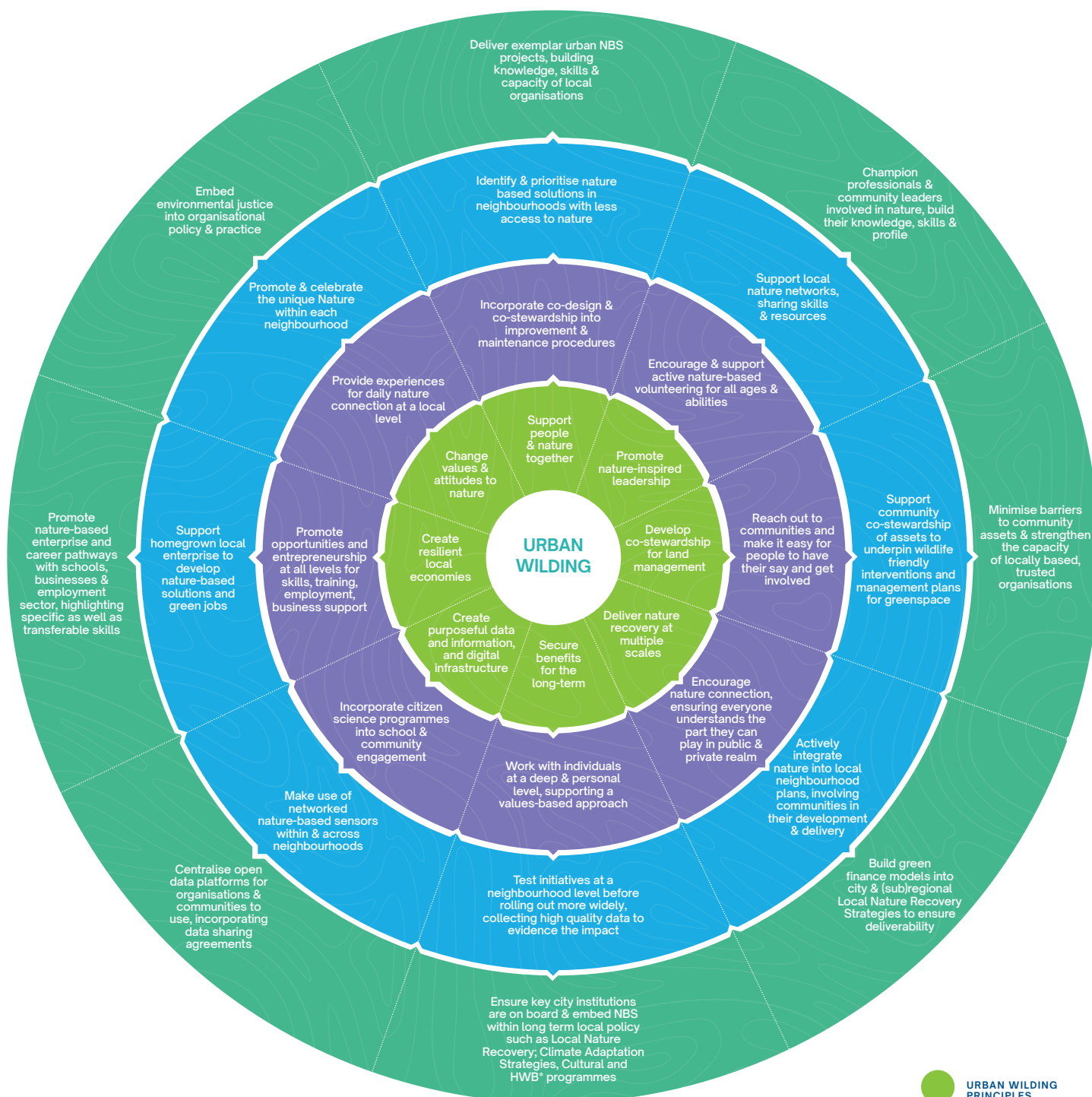
-  **Support people and nature together**
Promote a just transition to wilder cities through equitable access to nature, socially just policy and involvement in the co-creation and co-stewardship of nature-based solutions that are adapted to climate change, biodiverse and support nature connection.
-  **Secure benefits for the long-term**
Develop integrated policy instruments that embed urban wilding in development practice, led by communities and advised and supported by public administrations to create resilient cities and a population connected to nature.
-  **Promote nature-inspired leadership**
At all levels of management (individual, community/neighbourhood, city administration, business, etc) enable nature positive actions to enhance urban liveability through education, training, and policy.
-  **Create purposeful data and information supported by digital infrastructure**
Develop new digital infrastructures to generate community-owned and insightful knowledge of urban nature to support nature connection, and nature-positive policy and practice.
-  **Develop co-stewardship for land management**
Democratise land management and ownership through the development of co-stewardship solutions with user communities, introducing inclusive and empowering processes for engagement, creating community assets, and utilising diverse governance structures.
-  **Create resilient local economies**
Promote and empower nature-related careers, cooperatives and social enterprise across all sectors, to create new jobs and new value in green and blue infrastructure.
-  **Deliver nature recovery at multiple scales**
Make the most of the local built environment and its scale, acknowledging that no space is too small to be valuable whilst at the same time recognizing that larger green spaces and high degrees of connectivity are key for nature recovery.
-  **Change values and attitudes to nature**
Promote nature connection amongst citizens, to enhance individual and community wellbeing and to foster nature-positive choices.



greenmindsmodel

The model illustrates the three system levels at which the Urban Wilding principles are applied to drive action: the individual, with neighbourhoods, and within organisations.

Permeability, both within and between segments, reflects the need for adaptability through local learning gained through an action learning approach, in which lessons learned influence the next cycle of implementation.



- URBAN WILDING PRINCIPLES
- INDIVIDUAL BEST PRACTICE
- NEIGHBOURHOOD BEST PRACTICE
- ORGANISATIONAL BEST PRACTICE

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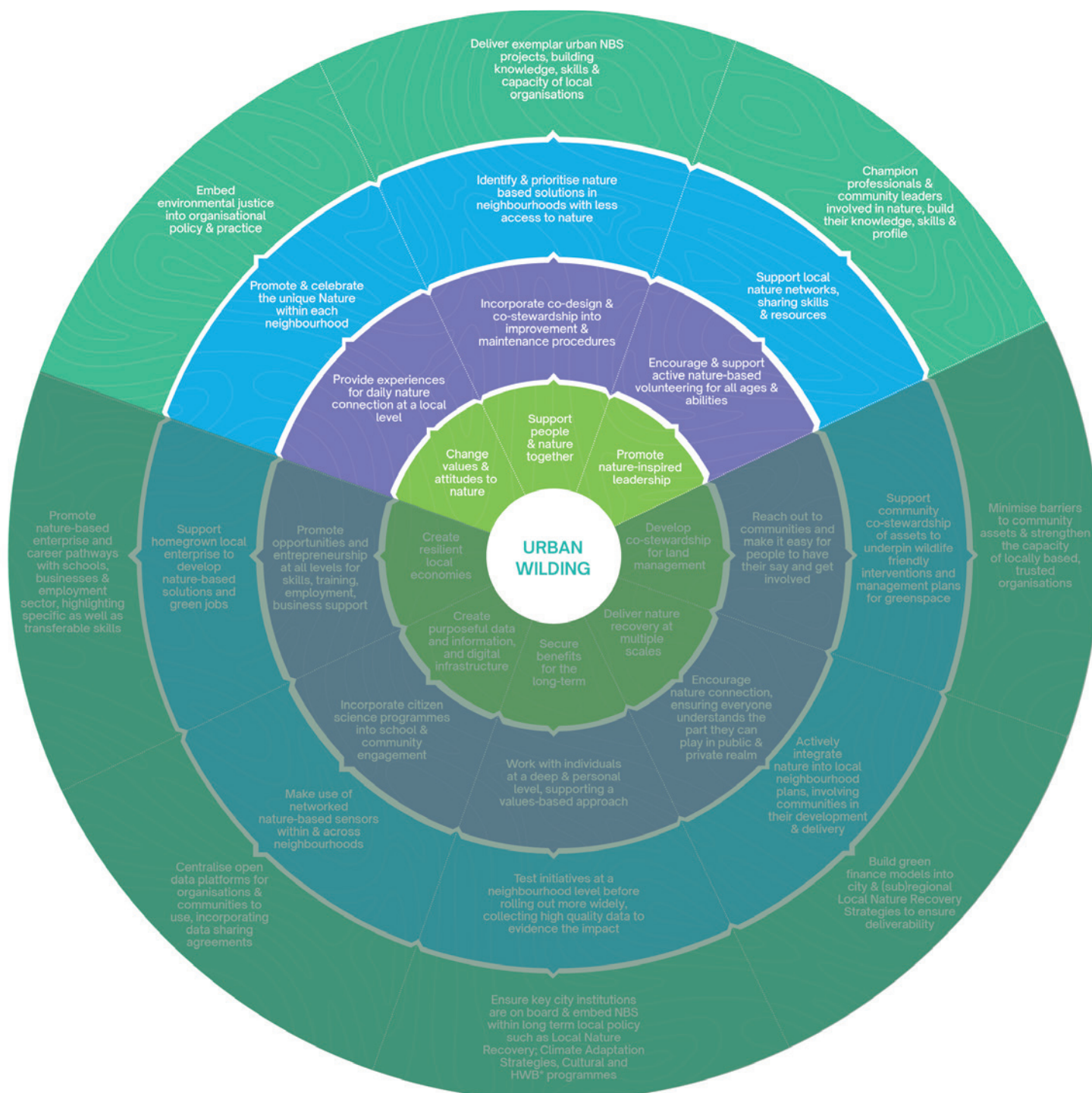
greenminds insight paper

**Pathways to Nature
Connectedness**

greenmindsmodel

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Introduction

Green Minds is an ambitious, pioneering, 4 year programme (2019-2023) which aims to test new ways of thinking and acting for nature within the city of Plymouth by focusing on 3 themes – urban rewilding, a systems approach to land management, and creating ‘Green Mindsets’.

Having a Green Mindset is about recognising one is part of nature and giving high priority to the relationship between humans and the rest of nature. This leads to pro-environmental behaviours in decision-making such as the restoration and enhancement of habitats, for example for biodiversity net gain and habitat banking, delivering health and wellbeing and biodiversity benefits.

We have adopted ‘Nature Connectedness’, a concept that captures the relationship between people and the rest of nature, as the key, measurable determinant for a Green Mindset. An approach recognised by academics at the University of Derby Nature Connectedness Research Group¹.

Nature Connection can be used as a tool to engage communities in support of wider nature-based solutions, leading them to adopt pro-environmental behaviours.

Green Minds has used the University of Derby’s Nature Connectedness Framework² to inform and evaluate our interventions to support both individual and societal-scale shifts in the human-nature relationship.

This paper gives some examples of how we have applied the framework, the impact and what we have learnt.

Image: tree planting with local residents

¹Nature Connectedness Research Group derby.ac.uk/research/centres-groups/nature-connectedness-research-group/

²Applying the pathways to nature connectedness at a societal scale: a leverage points perspective [tandfonline.com/doi/full/10.1080/26395916.2020.1844296](https://doi.org/10.1080/26395916.2020.1844296)



Pathways to Nature Connectedness

The Pathways to Nature Connectedness serve as a typology of activities that can be used to design policy or physical interventions, from school curricula to public parks to urban centres, aiming to improve human-nature relationships at a range of scales.

From individual change...

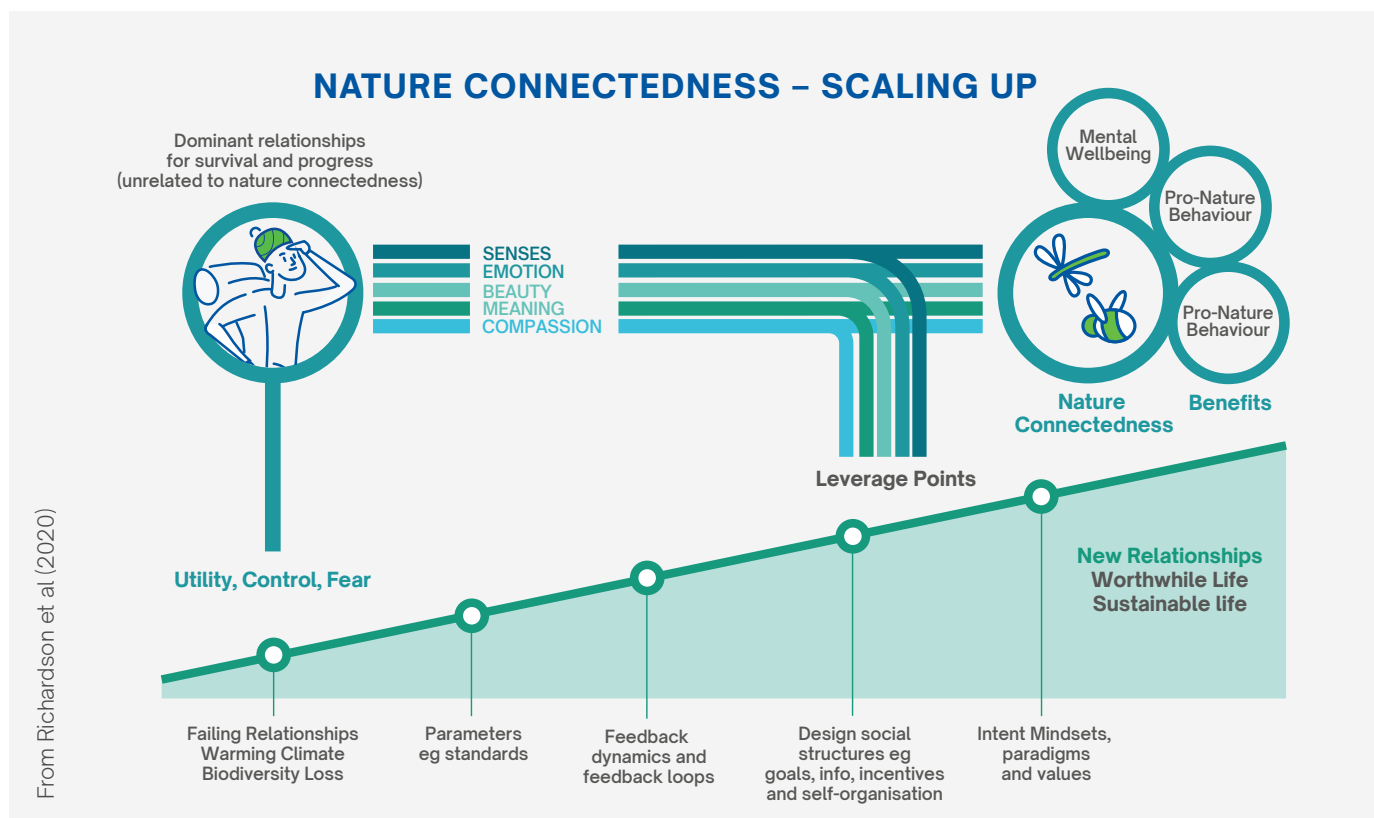
This new relationship with nature can move beyond use and control of nature, and beyond knowledge and identification. A new closer, healthier and more sustainable relationship with nature comes through noticing, feeling, beauty, celebration and care. The pathways are:

SENSES	tuning in to nature through the senses
EMOTION	feeling alive through the emotions and feelings nature brings
BEAUTY	noticing nature's beauty
MEANING	nature bringing meaning to our lives
COMPASSION	caring and taking action for nature

...to societal impact...

Scaling up the pathways can encourage new policy design and standards, social structures and systems that recognise nature as an asset and which deliver ecological, social and economic value. This can lead to increased investment and a new sustainable land management system that - as illustrated in the figure below - leads to valuable societal outcomes.

‘89% of people participating in Green Minds activities strongly agreed with the statement ‘I felt closer to nature’



Applying pathways to nature in practice – Green Minds, Plymouth

Research shows that there are a range of barriers which prevent people from connecting to nature. The Green Minds approach is to reach out to new communities and professionals and empower them to engage with the natural world in ways that are meaningful to them.

Using the Green Minds Theory of Change, we identified key areas in which to apply the

five Pathways to Nature Connectedness at individual and societal scale. This enabled us to better link our actions with our desired outcomes and to make the most of key leverage points in the system to increase positive attitudes to nature.

The table below illustrates how we implemented the Nature Connection pathways, in the form of practical actions.

Adopting the pathways to Nature Connectedness as the Green Mindsets activity framework:

Examples of Green Minds interventions under each pathway.

1. Contact	2. Beauty	3. Meaning	4. Emotion	5. Compassion
The act of engaging with nature through the senses for pleasure e.g. listening to birdsong, smelling wildflowers and watching the sunset	Engagement with the aesthetic qualities of nature, e.g. appreciating natural scenery or engaging with nature through the arts	Using nature or natural symbolism (e.g. language and metaphors) to represent an idea, thinking about the meaning of nature and signs e.g. the first swallow of summer.	An emotional bond with, and love for nature e.g. talking about, and reflecting on your feelings about nature.	Extending the self to include nature, leading to a moral and ethical concern for nature e.g. developing pro-environmental behaviours and nature stewardship
Green Minds Interventions • Access improvements such as all access paths with resting points and improved seating • Delivering outreach activities to non-users of parks and greenspaces, supporting nature connection • Traditional and digital signage raising awareness of particular species in an area • Building in nature connection into all our activities - including group, guided and self-led, responding to different audience needs	Green Minds Interventions • Facilitating student art projects to raise awareness of nature • Installing camera points to develop a public led photographic collection of landscape changes • Bringing nature into citywide arts programmes such as Illuminate Light Festival and Immersive Nature Films • Commissioning 8 citywide arts/ cultural projects	Green Minds Interventions • Online and digital communications that talk about nature in creative and engaging ways, bringing to life the non-human. • Working with school children to create nature inspired poetry and walking trails • Creation of a citizen nature dictionary	Green Minds Interventions • Facilitating student art projects to raise awareness of nature • Installing camera points to develop a public led photographic collection of landscape changes • Bringing nature into citywide arts programmes such as Illuminate Light Festival and Immersive Nature Films • Commissioning 8 citywide arts/ cultural projects	Green Minds Interventions • Support nature based enterprise to steward local natural spaces and provide facilities that help engage a wider audience • Providing webinars and online toolkits to enable local communities to take action for wildlife in their local area • Developing a volunteer programme at each Green Minds site • Building a rewilding network to build local capacity for action

Societal Scale – Implications for placemaking

Psychological Nature Connectedness has now become, for Plymouth, a key factor in place-making.

Evidence shows that physical access to green space and health are linked, with lower life expectancy in areas of the city that also have less green space. This understanding lies at the heart of our efforts to ‘level-up’ access to nature across the city, designing interventions to green the poorer neighbourhoods where green space is in short supply, aiming to create happy, healthy places to live and work.

Through our systems approach, we have also used the Nature Connectedness Pathways at scale to identify system leverage points where we can target activities to have a wider societal impact. Leverage points range from shallow (easy to implement but less impactful) to deep (difficult but transformational). We have set out some examples of our use of deeper leverage point, which follow.

Leverage Points

A Influencing values and goals through citywide campaigns

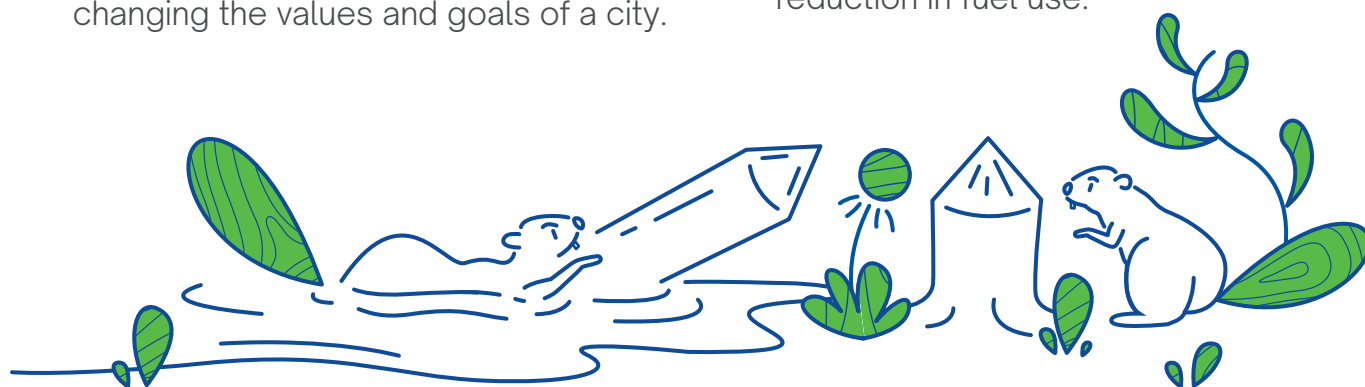
Research shows that arts based approaches and nature engagement campaigns are a key tool to support changing the values and goals of a city.

Green Minds set out to test this by taking an innovative approach to engage residents, stakeholders and staff in changes to our grassland management across the city to support nature recovery.

Our partnership with environmental and social charities, education and the cultural sectors, enabled us to co-design and deliver creative digital technology interventions with communities to support attitude and behaviour change.

Using the ‘See, Think, Do, Care’ digital marketing framework⁴, the interventions aimed to move people on a journey from seeing/noticing social media and online content, to understanding more about the natural world and our land management, through to taking action for wildlife and caring for local parks and greenspaces.

This has led to significant citywide support for urban meadow creation, enabled 40% of our land to be managed for wildlife, has increased the environmental quality of spaces, has increased connection to nature and volunteering, and has reduced grass cutting in 1310 sites, leading to a 33% reduction in fuel use.



Societal Scale – Implications for placemaking

Campaign examples

- Online information and engagement – changing our website to support public understanding of our changed approach. This has changed from a ‘report an issue/complaint’ approach to proactively providing information on grass cutting schedules and how we are supporting urban wildlife.
- Social media campaign – 30 Days Wild (June 2022), including our Urban Meadows films, featuring the Council’s Grass Cutting Team Leader describing the wildflowers you can find in our local spaces. See an example here [Wildflowers in Plymouth: Common Sorrel in Whiteleigh – YouTube](#)
- Digital, online co-design workshops with Arts University Plymouth (Fab Lab5) and residents/community groups to design playful meadow signs to install on site to promote understanding of parks management. Local creatives use digital design skills to protect Plymouth’s wildflower meadows.
- Workshops with local secondary school pupils and University of Plymouth to pilot digital interventions to make nature more visible in our largest urban park. This involved installing a LOWARAN mobile network across the park with environmental sensors and trialling a chatbot installed on the park café wall, enabling people to ask the park questions.
- Augmented reality creative commission. ‘Ashnihilation’ reaches new audiences through digital technology, promoting engagement and learning around insect and wider wildlife habitat
- Large scale public arts events – including a ‘Rewilded’ building installation at our 2021 Illuminate festival to engage people in the concept of nature recovery. This also included a community co-created ‘rewilding immersive experience’ in Europe’s only immersive dome, where participants were surrounded from all angles by Plymouth nature sights and sounds
- Language of Rewilding creative projects, including partnering with the Boat Poets to fund two young Plymouth poets to explore the language of rewilding. Also included the creation of two nature inspired children’s writing anthologies, alongside University of Plymouth MA Publishing students and school children across Plymouth.



Societal Scale – Implications for placemaking

B Embedding Nature Connection within institutional and social structures

The city's institutions and social structures have an important leadership role in promoting Nature Connection in a way that is equitable, addressing lack of access to nature associated with particular geographic areas and demographic groups. The Green Minds partnership includes large city educational, cultural, and political institutions and an important part of our Theory of

Change is to use the Green Minds programme to influence from within.

Key insights during the programme have been:

- The value of including Environmental Justice within organisational principles as a driver for implementing Nature Connection within strategies and delivery. Two of the Green Minds partners have now adopted Environmental Justice as a core theme of their work: Arts University Plymouth and Real Ideas Organisation.
- Recognising the value of social and community enterprises to encourage Nature Connection in a way that responds to local need and is financially sustainable. Bringing these organisations together to share best practice and collaborate has enabled them to raise their profile and attract increased investment and support.
- Maximising policy links between health and wellbeing and Nature Connection, including embedding Nature Connection within the city's health strategy 'Active to Thrive' has enabled us to raise the profile of access to nature for health and bring in new forms of investment.
- Celebrating diversity – sharing positive and personal stories that demonstrate how Nature Connection is relevant to a broad range of people, geographies and sectors is inspiring a broader range of interest and involvement.



Societal Scale – Implications for placemaking

C Creating reinforcing loops: rewilded areas and experiences where people can connect to wilder nature, which support community stewardship

It is important to recognise that there are areas of the city where residents have less access to nature, leading to a poverty of experience. Targeting these areas is critical to supporting equitable opportunities for Nature Connection.

We have found that working within these communities to identify areas for wilder nature that don't detract from other amenity and recreation needs, ensures support and sustained opportunities for Nature Connection. This requires time to engage with different groups, co-design initiatives together, and negotiate co-stewardship frameworks alongside land managers.

Creating examples of what works has been critical – testing interventions at a small scale and organising site visits, delivering presentations and films have proved critical to enable community and policymaker buy-in for scaling up.

D Embedding Nature Connection within local and national strategies, standards and policies across sectors

Small scale tweaks to existing land management

As one of the largest landowners in the city, encouraging the Local Authority to trial smaller scale nature-positive land management has been critical to gaining buy-in for larger scale change. This has included a reduction in grass cutting and increase in wildflower meadows, the success of which is building the support for wider initiatives that will come with the implementation of the UK Environment Act.

UK Local Nature Recovery Strategies

As a result of the UK Environment Act 2021, Local Authorities have statutory obligations to develop strategies for nature recovery. This provides an opportunity to use the development of Local Nature Recovery Strategies as a leverage tool to provide more opportunities and funding streams for Nature Connection within the placemaking agenda. In urban environments this necessitates the design and re-design of public spaces to provide space for and nurture biodiversity, as well as providing additional social value. Nature Connection provides a framework for these design processes.

Developing a set of standards for urban wilding

Recognising that wilding in an urban area requires a different approach, we have worked with partners and local communities to come up with a set of urban wilding principles to adopt as a city. These will support understanding and ensure interventions are guided by a consistent set of standards.

Encouraging cross-sector nature inspired leadership

Green Minds developed an action-orientated programme aimed at managers of teams and projects across different sectors to develop their strengths as leaders for nature recovery, and to enable positive action on some of society's biggest challenges such as inequality, climate change, and loss of biodiversity. Using a competitive application process and reaching out beyond the usual suspects, to construction, education, health and community enterprise sectors, this has enabled us to create a citywide network of cross-sector professionals, collaborating and supporting one another as sustainability change agents.

How will we know if we have succeeded?

BELOW: 'Ashnihilation' creative commission by Tom Milnes – an augmented reality wilding experience



Measuring Nature Connectedness

In line with a national survey led by Natural England, we have embedded 3 Nature Connectedness Index questions within our Green Minds activity evaluations.

Using a Likert Scale, the questions ask people to rate:

- (A) I feel part of nature
- (B) Being in nature makes me very happy
- (C) I am taking more time to notice and engage with everyday nature (e.g. listening to birdsong, noticing butterflies)

We have also provided a short guide alongside a suite of tools to enable other Local Authority led projects to use these questions to ensure consistency and comparability across their environmental programmes.

To understand Nature Connectedness at a citywide scale, we have embedded the same questions within our City Survey. This goes out bi-annually to over 4000 residents and will enable us to collect data over time.

The first survey was carried out in 2022. Results were collated and analysed alongside demographic and geographic data to give us a snapshot of the Nature Connectedness of the city as a whole. Data will also help to inform where and how we target future interventions.

“Green Minds is a great example of taking and adapting research-based approaches to fit the needs and circumstances of a particular situation. Then communicating the new approaches to a diverse audience.”

CASE STUDY

Park-based Green Social Prescribing

Green Minds supported a multi-disciplinary approach to improving mental and physical health through the provision of a social prescribing project in one of the city's largest parks.

"I love things like this- it just makes nature so much more accessible. I've even started to notice more bird songs on my walks"

GREEN MINDS EVENT PARTICIPANT

The project brought together sports, arts, wildlife, and health partners to offer a varied programme of activities for health and wellbeing through connection with nature, using the park's new Community Hub as a base.

How are participants referred?

Link workers: Through a visit to their local GP, patients are referred to a social prescribing link worker who identifies opportunities in the local area that meet the patient's needs and preferences. Green Minds provided the link worker with a programme of activities in the park that the patient could get involved in.

Outreach groups: We took a proportionate universalism approach³ by working through community leaders and community groups to enable access for people who may not use healthcare services.

What happened?

Over the year, the project engaged 502 participants in Nature Connection activities: health walks, sports, and theatre in the park. This included older people who have been recently bereaved; veterans; children from low-income families and disabled adults/young people.

As a result, we are now looking to embed wider use of park and park buildings to support more Nature Connection for health and wellbeing, active travel, and social prescribing initiatives across the city.

³Proportionate universalism is the resourcing and delivering of universal services at a scale and intensity proportionate to the degree of need. Services are therefore universally available, not only for the most disadvantaged, and are able to respond to the level of presenting need

CASE STUDY

Park-based Green Social Prescribing

What did we learn?

Park-based social prescribing provides more opportunity for Nature Connection

Basing social prescribing within a park environment enabled us to embed the pathways to Nature Connection within a wider range of activities. For example, we used traditional approaches such as nature identification to lead into activating the pathways, e.g. within walking for health sessions for the over 55s, encouraging conversations about the beauty of nature to support the beauty pathway. We also provided practical conservation activities within the park as part of a physical activity session to support the care and compassion pathway.

Working with the Council, who manage the park, we have also been able to offer ongoing stewardship opportunities to support the compassion pathway beyond the life of the project.

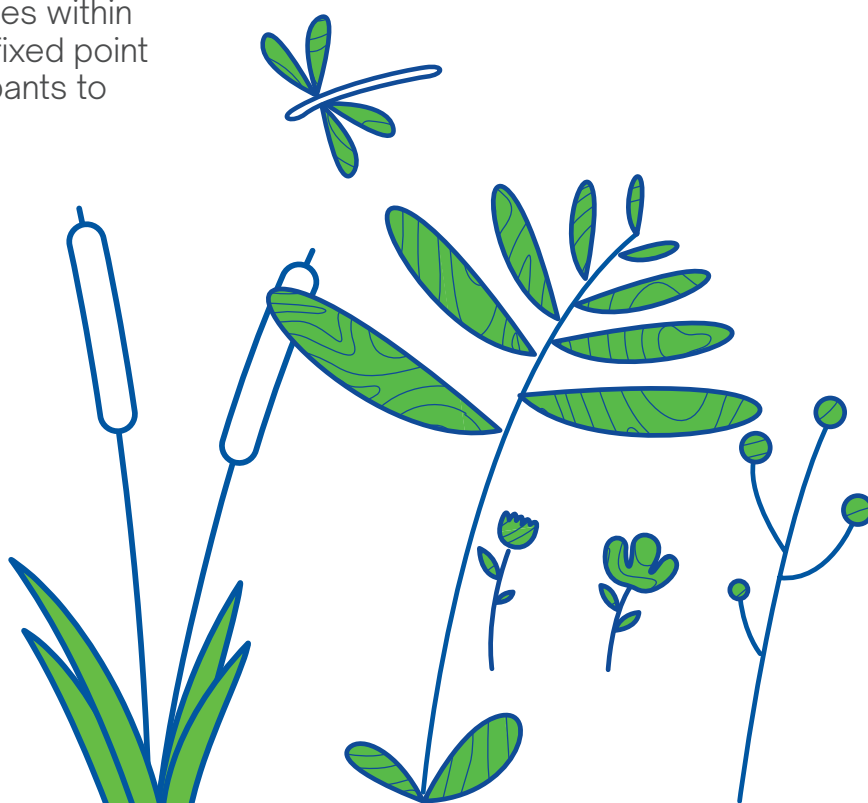
The work has also helped inform the development of self-guided activities within the park, such as digital trails and fixed point photography to encourage participants to return independently.

Attitudinal and practical barriers can prevent participation

The project showed a clear gap between being referred from the social prescribing link worker and actually attending a session in the park. This was down to both attitudinal and practical barriers. In line with national evidence, we noticed a variability in patient and referrer perceptions as to the benefits of green social prescribing and the benefits of Nature Connection.

As a result of our learning, we are looking to:

- provide link worker training and information on park-based social prescribing
- identify staff and/or volunteers that can 'buddy up' with a new participant to support them to attend their first session
- develop a broader range of marketing and communication materials to present Nature Connection activities in accessible, appealing and non-stigmatising ways





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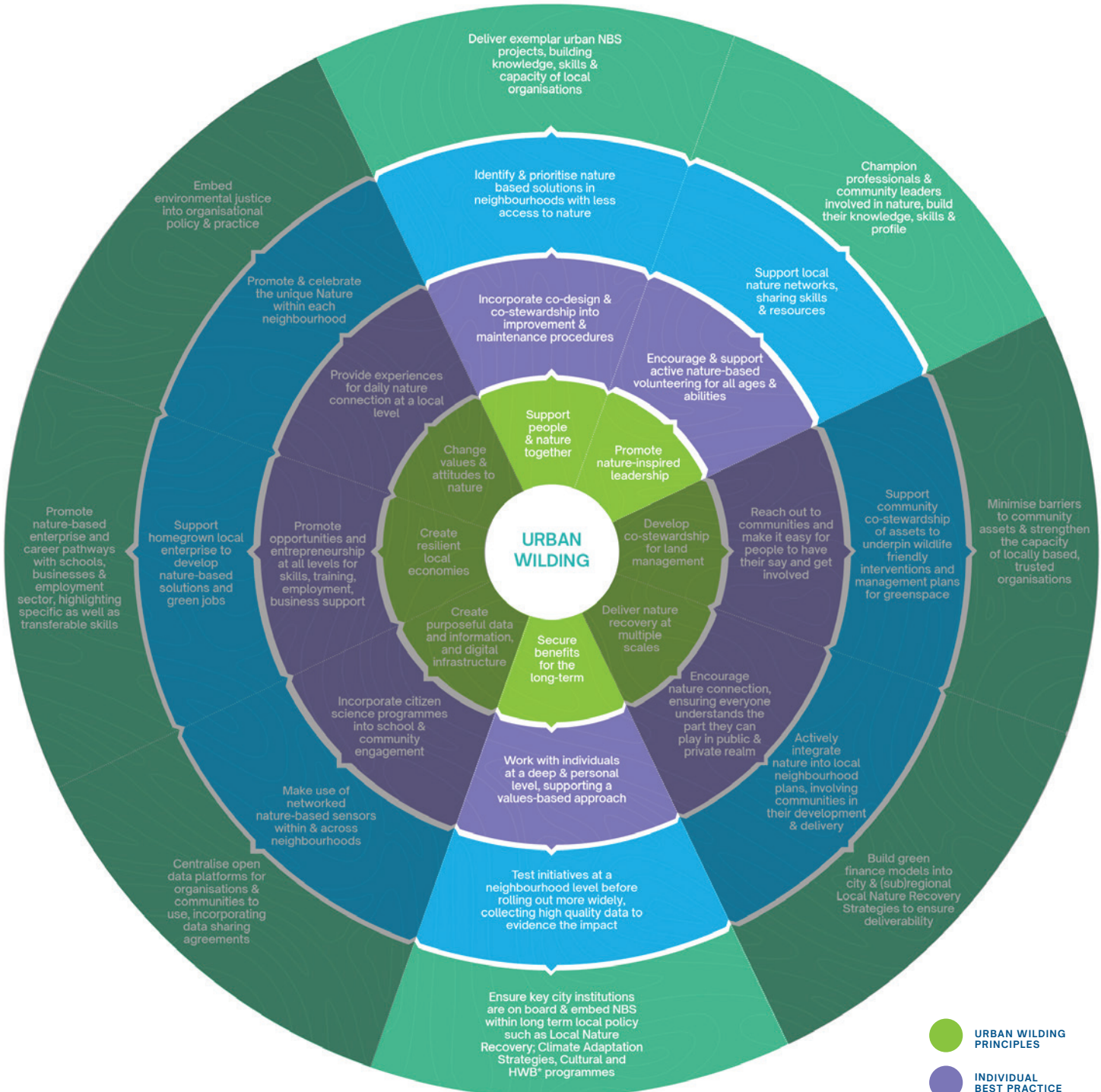
greenminds insight paper

**Nature-Based Solutions
in Plymouth Policy:
Analysis and Action**

greenmindsmodel

The model illustrates the three system levels at which the Urban Wilding principles are applied to drive action: the individual, with neighbourhoods, and within organisations.

Permeability, both within and between segments, reflects the need for adaptability through local learning gained through an action learning approach, in which lessons learned influence the next cycle of implementation.



Introduction

Green Minds aims to put nature at the heart of decision making, and policy is a critical part of that. This means embedding nature-based solutions in all aspects of policy, practice, planning and finance.

We set out to analyse the status of nature within 12 key Plymouth policies at the beginning of Green Minds to identify where the project could have impact.

Nature provides a multitude of benefits for society and the economy, such as food and water, climate regulation, nutrient cycling, recreation, health and wellbeing, and social cohesion.^{1,2} However, these benefits are not linked solely to the presence or absence of natural spaces, but also to the quality of nature itself.³ This evidence is transforming perspectives on green spaces in urban areas as ‘something nice to have’ towards recognising the broader value of nature for the environment, society and the economy.⁴



From a city perspective, it is therefore imperative that nature is thoroughly represented and prioritised across all areas of planning and policy. Policy documents use evidence to set principles and a high-level framework for decision making in relation to issues that affect people and places. These documents map the future of the planning landscape across areas such as land use, transportation, housing, health and wellbeing, culture, and more. As such, to realise the full benefits of nature, it is essential that it is comprehensively featured and linked across all city policies.

This research serves as a case study to assess multiple policy documents across a city landscape to;

- 1 Understand how nature is currently represented and connected throughout Plymouth policy documents.
- 2 Identify gaps and opportunities for future policy reform.

The Green Minds partnership used this information to influence Plymouth policy and practice, during the course of the project.

‘There is clear evidence that interventions using the natural environment can deliver cost savings for health and health-related services and improve physical and mental health outcomes. So increasing the amount, and more crucially the quality, of green spaces and improving access to them, can be part of a cost-effective package to address health inequalities and improve health outcomes.’ – PLYMOUTH PLAN (HEA7)

1.Dasgupta, P. (2021) The Economics of Biodiversity: The Dasgupta Review. London: HM 2.Treasury Millenium Ecosystem Assessment (2005) Ecosystems and Human Well-being: Synthesis. Island Press, Washington, DC. 3.DLovell, Rebecca, Mathew White, B. Wheeler, T Taylor and L Elliot. (2020) ‘A rapid scoping review of health and wellbeing evidence for the Green Infrastructure Standards’, In For: Natural England, Department for the Environment, Food and Rural Affairs, Public Health England, and Ministry for Housing, Communities and Local Government,

England. University of Exeter Medical school.European Centre for Environment and Human Health.

4.Mell, I and M. Whitten (2021) ‘Access to nature in a post Covid-19 world: Opportunities for green infrastructure financing, distribution and equitability in urban planning’, International Journal of Environmental Research and Public Health, 18(4), pp. 1527.

What we did

We analysed 12 policy documents sourced from the Plymouth Plan 2014-2034 and the Plymouth and South West Devon Joint Local Plan 2014-2034.

We summarised the overall purpose of each policy and conducted a text keyword search for explicit links to nature and green or blue spaces in these documents. Findings were documented on a table and visualised using a radar map to show the frequency of words relating to nature that appeared in each of the analysed documents.

Plymouth policy documents:

Plymouth Plan 2014-2034	Plymouth and South West Devon Joint Local Plan 2014-2034	Local Transport Plan 2011-2026	Health and Wellbeing Strategy 2014
Safer Plymouth Partnership Plan 2018-2020	Plymouth Housing Plan 2018	Green Space Strategy 2008-2023	Delivering Economic Growth for the City of Plymouth 2019-2024
Plymouth's Children and Young People Partnership 2019-2020	Child Poverty Action Plan 2019-2022	Culture Plan: A Place Based Strategy for Plymouth 2021-2030	Plymouth Municipal Waste Strategy 2007-2030



What we found

Throughout the policy documents, links to nature were predominantly limited to documents within the same sector, such as transport or green space. **There were no mentions of nature in 33% of city-wide policy documents**, including those for health and wellbeing, housing, children and young people, or child poverty.

Green environment

Nature keywords linked to the green environment were more abundant than those linking to the blue environment, mainly through mentions of green corridors, recreation spaces, and as a means of mitigating climate change through promoting biodiversity. Within the Plymouth Plan, the Health and Wellbeing benefits of the Natural Environment (HEA7) is a key policy aiming to better integrate individuals and communities with their natural environment.

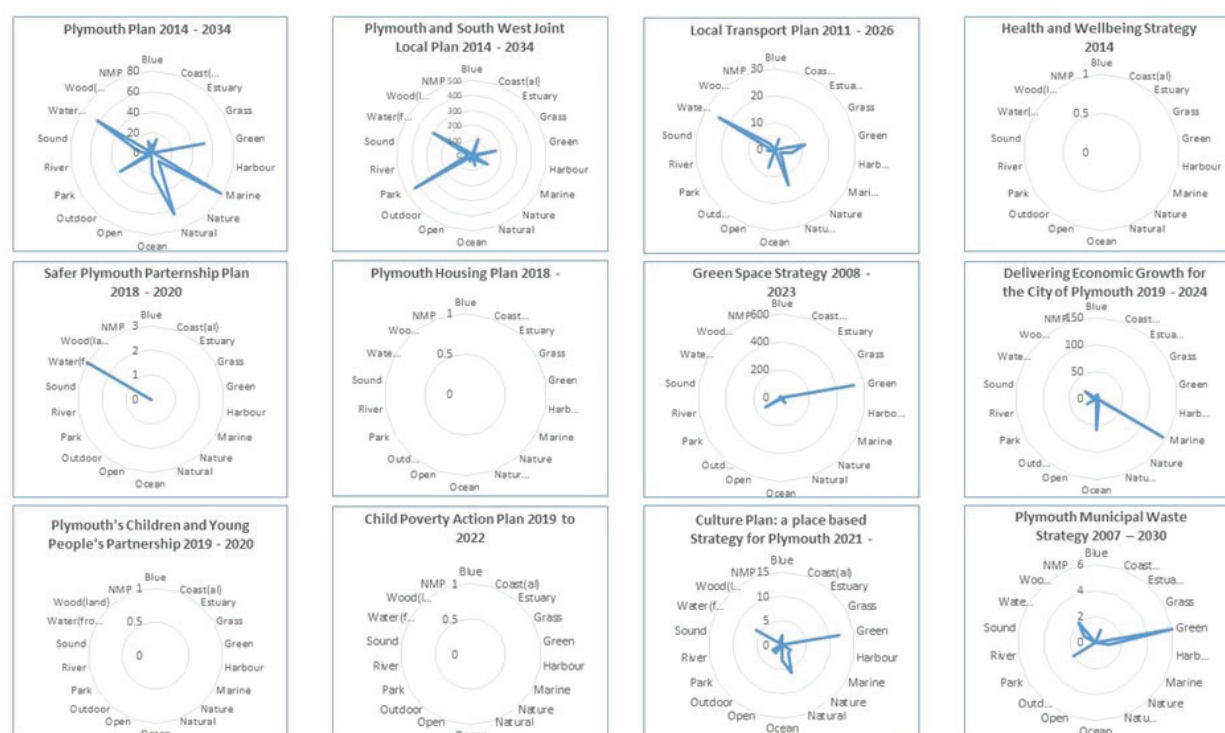
Blue environment

Notably, the Health and Wellbeing benefits of the Natural Environment policy makes no mention of Plymouth Sound or the Coast in aiding health and wellbeing benefits. Further, throughout the reviewed documents, nature terms linked with the blue environment were predominantly in reference to the blue environment as an investment asset and were most evident in economic documents. Whilst half of the documents repeated Plymouth's vision of being a waterfront city, assessment of the role of nature in supporting that ambition was limited.

Mental health and environmental quality

The mental health benefits of urban parks and the coast were also not represented in city policy. Additionally, none of the documents made a link between the quality of the environment and the associated social and economic benefits.

Radar map visualisations



Radar map visualising the frequency of words relating to nature. Note the numbers on the scale circle to denote the number of occurrences as they vary across the documents.

Using the analysis to influence policy and practice

Whilst the integration of the natural environment varies across policy documents, the analysis identified opportunities in city wide planning and policy to embed the role of nature into future iterations of Plymouth strategy documents on the themes of Health and Wellbeing, Housing, Children and Young People, and Child Poverty.

Noting the gaps identified through the policy analysis, the Green Minds delivery team capitalised on the fact that the lead Partner was the Local Planning Authority and used the strength of the multi-sector partnership team to influence policy and practice as the project developed.

Progress

• Since the time of this analysis, the work of Green Minds has played a role in influencing various policy documents and initiatives. These include:

- The Active to Thrive Plan, a Public Health led document, now makes explicit links between green and blue spaces and the health of children and young people.
- Inclusion of the Green Minds behaviour change work surrounding nature connection and stewardship in the Climate Emergency Action Plan 2021 and 2022.
- Advocating for Green Skills as a key theme within the Net Zero Action Plan to 2030.
- Supporting the inclusion of Environmental Justice into the organisational visions of both Arts University Plymouth and Real Ideas Organisation.
- Investing into the development of the Plymouth Local Nature Recovery Plan, nested within the Devon Local Nature Recovery Plan, a new Government legislative requirement coming out of the 2021 Environment Act.
- Creating opportunities for Green Finance, in particular through the development of the first UK Local Authority Habitat Banking Vehicle, responding to the UK's Biodiversity Net Gain legislation which came into effect in November 2023.



‘The city will ensure that the natural environment is fully considered and embedded in the delivery of the city’s vision for growth. The Natural Network will consist of a functional network of green and blue spaces that support a high quality of life for communities as well as providing an attractive environment for investment, space for nature to thrive and increased resilience to the impacts of climate change.’

Plymouth Plan (GRO6) – Plymouth Plan (HEA7)





“Green Minds is a great example of taking and adapting research-based approaches to fit the needs and circumstances of a particular situation. Then communicating the new approaches to a diverse audience.”

University of Plymouth researcher



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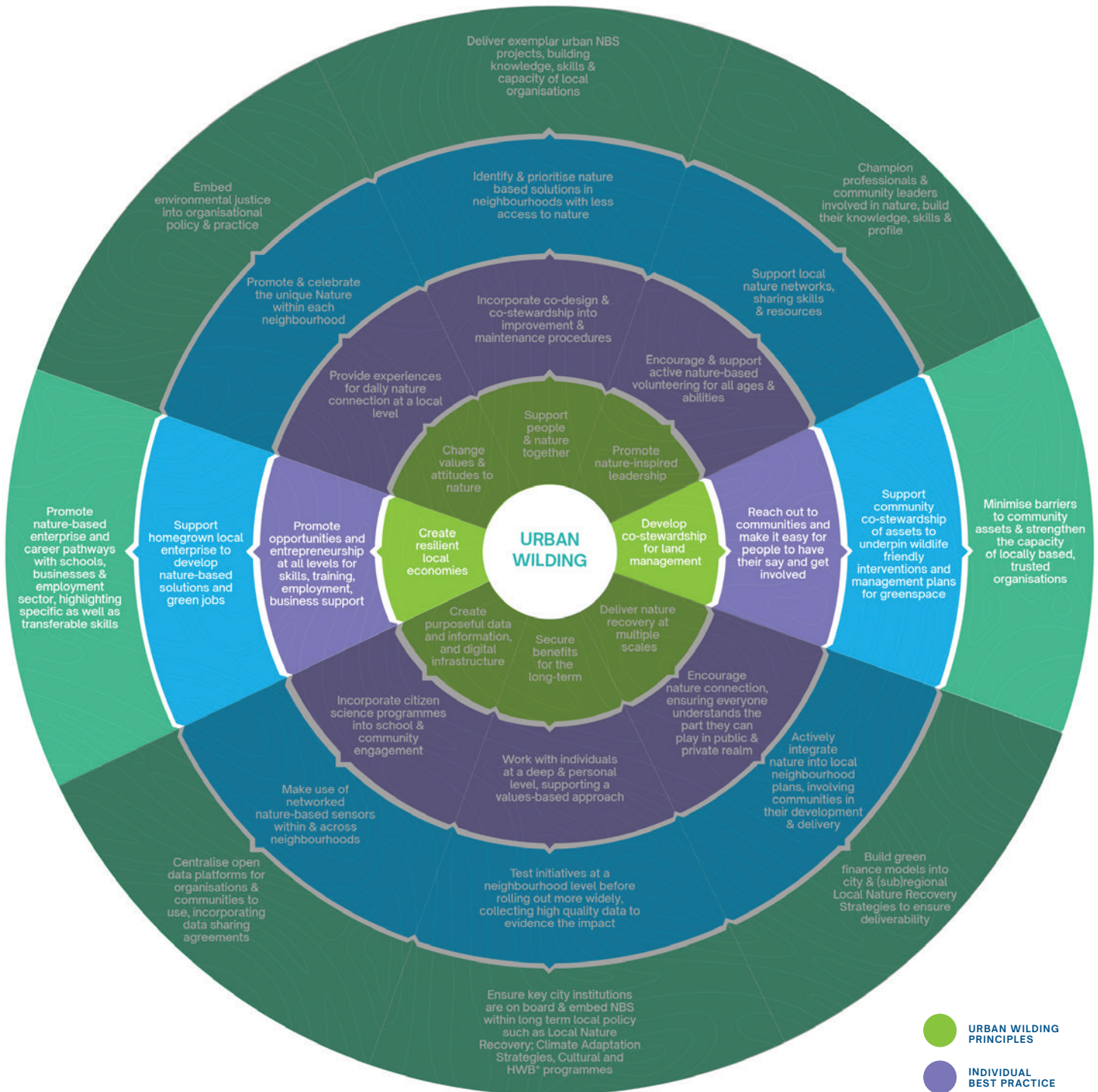
greenminds insight paper

**Environmental
Co-Stewardship Models:
Enabling Social
Enterprise**

greenmindsmodel

The model illustrates the three system levels at which the Urban Wilding principles are applied to drive action: the individual, with neighbourhoods, and within organisations.

Permeability, both within and between segments, reflects the need for adaptability through local learning gained through an action learning approach, in which lessons learned influence the next cycle of implementation.



Introduction

The Pioneering Community Businesses in Parks (PCBP) initiative forms part of Plymouth City Council's Green Minds programme.

Plymouth City Council's Green Minds programme aims to put nature at the heart of decisions and inspire a new wave of investment in nature-based solutions. PCBP aimed to create and develop more enterprising, community-led activity in parks to support their financial, social, and environmental sustainability.

PCBP was delivered by Real Ideas, a partner in the Green Minds programme that works with individuals and organisations to harness the power of social enterprise to deliver real and lasting social change.

PCBP demonstrates the value of working with community businesses for local authorities and landowners, for the benefits they can bring financially, environmentally, and socially for parks and green spaces.

'It's about enabling social enterprise to flourish in parks, to meet the Green Minds vision.'
GREEN MINDS PROJECT MANAGER

Local nature-based enterprise 'The Village Hub' supported by a Green Minds grant



Origins of the programme

PCBP builds on other work in the city, in particular the Enrich Programme.

PCBP builds on other work in the city, in particular the Enrich Programme, a one-year programme of work delivered by Real Ideas and Plymouth City Council as a Future Parks Accelerator initiative.

Enrich brought together experts from across social enterprise sectors and council departments to explore how greater social enterprise thinking could be brought to parks and green spaces to bring about financial, environmental, and social benefits. Participants collectively identified areas for development to kick-start new and greater community business activity in parks.

The focus of PCBP was on putting these recommendations and the aims of Green Minds into practice to generate learning about what works in creating more enterprising activity in parks; to understand the financial, social, and environmental benefits; and to create examples of good practice for others to follow.

It was hoped that this work would also develop strengthened networks of businesses and groups who could support one another; raise the profile of opportunities that exist for enterprise in parks; bring other voices into decisions around management of green spaces; bring in new audiences, all of which can support sustainable management of parks and green spaces.

How sites and assets included in PCBP were chosen:

1 A focused approach:

PCBP was piloted in three parks, rather than citywide, to enable the team to focus their energy to achieve action within the short timeframe available.

2 Going where the energy is:

Three sites already had active groups and community businesses “doing great things in these spaces,” on which PCBP could capitalise and build. Similarly, the team focussed on assets where there was already community interest, but where extra support was needed to get ideas off the ground. This included assets in natural spaces outside of the three initial parks.

3 Leveraging relationships:

Real Ideas had pre-existing relationships with many of the community businesses in Victoria Park and Devonport Park, helping to progress the work swiftly.

Putting it into practice

Working together under the PCBP initiative.

Work under the PCBP initiative was focussed on two key areas: bringing together community businesses and groups based in parks to collectively create more enterprising activity:

- supporting enterprising activity in parks through the use of assets.
- development of a resource hub to provide information and materials for communities and landowners interested in social enterprise in parks and green spaces.

There were four planned key phases to the work, as outlined below.

1. Mapping and Defining Activity	2. Developing the Approach	3. Implementing the Approach	4. Embedding the Legacy
Green Minds Intentions • Mapping social enterprise and other activity within each site • Mapping stakeholders within each park, their activity, and their relationships • Identifying key sites and assets to include in PCBP, based on agreed criteria • Creating a forum to launch PCBP, and to engage stakeholders • Establishing leadership groups to bring engaged stakeholders together	Green Minds Intentions • Assessment of strengths/ weaknesses/ opportunities/ challenges within each site • Ongoing engagement and input from leadership groups • Collective idea generation for creating enterprising activity in sites	Green Minds Intentions • Public engagement • Ongoing meetings with leadership groups • Ongoing provision of social enterprise advice and guidance to new and established community	Green Minds Intentions • Creation of an online Resource Hub • Established relationships with supporting Council departments • Community Asset Transfers



Victoria Park

Support through the planning process.

Snapdragons, a Community Interest Company, had recently taken on the lease of a disused bowling green and building. Snapdragons was provided with support through the planning application process, to enable them to carry out improvements to develop the site to provide forest school activities. Their application was successful and work to develop the site is currently ongoing.

This process opened up conversations between the city Council's Parks and Planning teams, helping the Planning team to recognise the challenges that community businesses face in navigating the planning system. This has resulted in the development of simple guidance materials which will support other community businesses in the future, as well as a reduced fee for pre-application enquiries for community businesses. The guidance includes information on the rationale for planning requirements, how to navigate the application process, and signposting to free advice and support.

Trialling multi-use of changing rooms

The mapping process identified underutilisation of the park changing room block, limited to weekend use by football teams. Engagement with the park leadership group identified interest from the Friends of Victoria Park group to use it as a storage space for events and gardening equipment, as well as interest from a local health and wellbeing business, Be:Unique, to use it as a base to set up outdoor fitness sessions in the park. After negotiation with the football club regarding requirements, Plymouth City Council worked with Real Ideas to

draw up licences for both the Friends group and Be:Unique to have a permanent locked room within the building. This has supported Be:Unique to expand their business offer, reach new customers, and helped bring new users to the park. Be:Unique were also awarded a seed grant from the Green Minds programme to support their work in the park.

The success of this pilot has led to Plymouth City Council expanding this approach to other areas of the city. For example, in the north of the city where investment has already been made into high quality football pitches, with a requirement to provide changing rooms, the council is working in partnership to explore the reconfiguration of a community centre to accommodate football changing. This both enables access to a wider range of funding sources as well as minimising pressure on the service to build new facilities without long term maintenance funding in place.

RIGHT: Hedgerow creation at Snapdragons



The Resource Hub

Resource hub to help to enable enterprise within parks.

An online resource hub has been created, consisting of information and tools for those interested in social enterprise in parks and green spaces, focussing on:

- the benefits of social enterprise in parks
- legal structures; funding and finance
- community engagement
- impact

- assets and spaces
- the planning process
- business models

These resources are invaluable for both future entrepreneurs and communities who may want to start something in a park or green space, as well as local authorities and landowners who may want to explore social enterprise in a park setting.

‘It’s about people being more involved in the spaces they live in and having more autonomy and power. They’re on the ground so they know what is needed. It’s tapping into that grassroots expertise. Allowing them to do it themselves is to import and makes best use of the assets.’

REAL IDEAS PROJECT COORDINATOR

‘We have some really strong examples of what’s possible, which will help with some of the fears that surround businesses coming into public spaces and the implications of that.’

**GREEN MINDS
PROJECT MANAGER**



LEFT: Demonstrating how to use Fixed Point Photography in parks

Success factors

Key success factors have been identified through delivery of the PCBP initiative, providing the following key recommendations for others who want to create and build more enterprising, community led activity in parks and green spaces.

1. Understand and respond to local context

Taking time to understand your green spaces, enterprises, partners, assets, and available resources and skills is invaluable for informing decisions around where to focus work, what can be achieved within a given timeframe, and how to achieve it.

Choosing sites where activity was already happening, where there was already interest in utilising an asset, and where relationships were already established, enabled progress to be made faster and benefits realised sooner. This is important for gaining trust and credibility and building relationships within the community business sector.

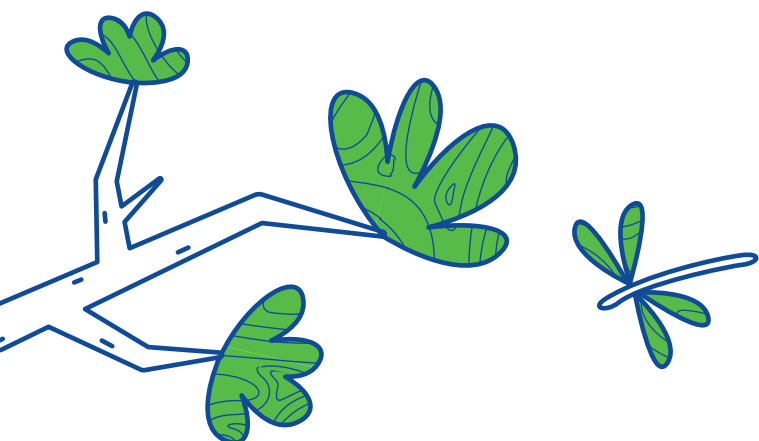
This includes being flexible in approach. For example, where a leadership group was not working, it was dropped, and focus shifted to other activity which did have momentum. It is important to adapt to the different contexts of green spaces and the assets and community businesses within them.

Having this local understanding helped to bring different community businesses and groups together, align them around a shared vision, helping to drive work forward and support its ongoing sustainability.

2. Work with independent enterprise experts

Embarking on initiatives like PCBP is difficult for local authorities to do alone; additional independent expertise in developing enterprising activity can be beneficial, by:

- Helping to develop a clear vision and aspirations for the initiative, providing a focus to achieve action and impact;
- Translating this vision when working on the ground to create shared goals between community businesses and other groups;
- Providing additional capacity to support delivery to happen on the ground, from idea generation to implementation;
- Providing credibility to the work, helping to develop relationships and trust with community businesses and groups;
- Providing enterprise support, unpick complexities, network facilitation, and hold the middle ground;
- Providing social enterprise learning to reach a shared enterprise culture and practice across all partners (councils, landowners, and communities). This can help to overcome challenges around individuals and organisations finding it difficult to adopt an enterprising mindset and defaulting to simply 'doing what they know,' something which can be exacerbated by parks not being seen as enterprising places.



Success factors

3. Design for the long term, with flexibility

Change takes time, and people, priorities and resources can shift. Have an approach, rather than a strict plan, which can be refocused to opportunities as they emerge.

Be enterprising: Income, funding and investment enables long term sustainability, paying for people and running costs, resulting in more social-environmental-economic benefit on an ongoing basis.

Develop resources and tools, which are easy to find and follow, to support people to develop enterprising activity and to overcome common challenges encountered. This will support capacity building and expertise within the sector and among partners, to grow the work and result in greater benefit.

4. Collaborate and be accountable to one another

Multiple departments in local authorities often have responsibility for different aspects of built assets. Effective cross-departmental working is thus essential for enabling progress to be achieved.

Different departments' processes and timetables can impact progress. It is important to understand this, particularly for managing communications and expectations with community businesses and groups.

Building internal relationships can have added benefits in supporting future work of a similar nature and enabling learning to be shared more widely, to improve processes and outcomes for both landowners and community stakeholders.

To ensure buy-in internally, it is important to ensure the work aligns with broader strategic priorities, including inclusive growth, green recovery, and job generation.

Community businesses and groups have limited capacity to engage in initiatives like PCBP. Encouraging and facilitating collaboration between them can help to overcome these challenges, enabling each to take on roles based on their capacity and expertise to achieve action.

Respect that each partner has something to bring to the table, no matter what size or shape, and that trusted relationships may take time to develop.

Demonstrate accountability, promoting honesty and transparency and delivering against agreed objectives.

5. Consider how to demonstrate, celebrate, and build on success

It is important to consider how to measure and evidence the impact of this work, given that it is inherently hard to measure the additional requirements it may place on participating community businesses, and because it takes time for impact to be seen.

Being able to demonstrate impact and success can help to lay the groundwork for more work along similar lines and garner buy-in internally, where concerns can be allayed, value demonstrated, and where impact aligns with strategic priorities.

Start small and build on success; an iterative approach helps businesses test and prove an idea, gain a good reputation, to then scale or replicate the offer.



'This is one way to bring the community together. Everyone is really keen and enthusiastic about it.'

KEYHAM NEIGHBOURHOOD WATCH, PROJECT LEAD





“Supporting local nature-based enterprise is a way of bringing other voices into decisions around what’s best for the park in that community, enabling effective stewardship as well as supporting environmental and financial sustainability.”

GREEN MINDS
PROJECT MANAGER



greenminds

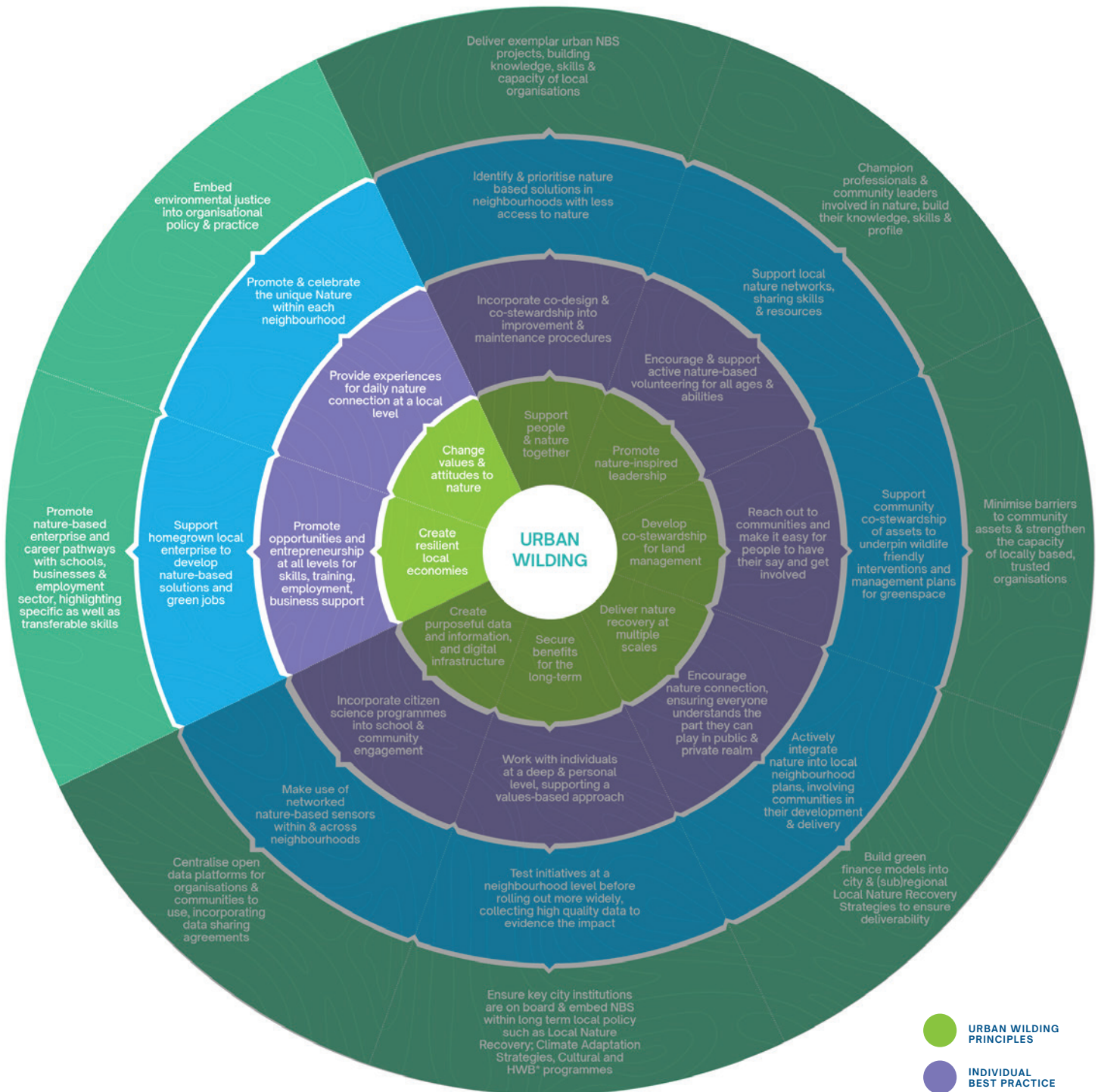
greenminds insight paper

**A Collaborative Approach
for Art, Education &
External Partnerships**

greenmindsmodel

The model illustrates the three system levels at which the Urban Wilding principles are applied to drive action: the individual, with neighbourhoods, and within organisations.

Permeability, both within and between segments, reflects the need for adaptability through local learning gained through an action learning approach, in which lessons learned influence the next cycle of implementation.



Introduction

The Green Minds model engages ‘Changing Values and Attitudes to Nature’ as central to the mission of rewilding people and places. The arts help us express how we relate to the world as human beings and a defining proposition from Arts University Plymouth is that the world needs creatives now, more than ever.

Society faces a critical and urgent need to rebuild its relationship with the environment and as a catalyst for change the arts have a crucial role to play.¹

Arts University Plymouth was the creative partner in the Green Minds project, as it resonated with the university’s established mission for creative learning and social and environmental justice. It was important to model an approach that drew from the shared values and missions of the university and the Green Minds project, and embed these within our working method.

Arts University Plymouth’s Development Team represented the university in the project partnership, worked with partners to identify and create opportunities, and managed these within the university; a dedicated Project Coordinator provided crucial consistency and momentum to the activity.

As part of Green Minds, students from Arts University Plymouth produced seventeen creative works and two exhibitions that have been showcased at partner and public sites; these include murals, interpretation boards, sculpture, photography and textiles. Alongside these works, staff and students have also created digital assets, designed the Green Minds brand identity, hosted workshops, photographed community projects, and participated in Green Minds public events. We are extremely proud of the high quality of work our students produced and this is only part of the story.

In our approach to this project we made a commitment to value students’ participation just as much as their output. We understand the importance of this balance in enhancing students’ creative and professional development, as well as their relationship with nature.

This paper outlines the approaches we took, provides some case studies, and reflects on lessons learned.

Arts University Plymouth’s Participation in Green Minds:

- 428 students
- 9838 student curriculum hours
- 23 projects
- 17 public art works and 2 exhibitions
- 11 paid commissions

¹ Prof. Stephen Felmingham, Pro-Vice Chancellor (Academic)
Arts University Plymouth, 2022: see [youtube.com/watch?v=Iso9i9x0mW8&feature=youtu.be](https://www.youtube.com/watch?v=Iso9i9x0mW8&feature=youtu.be)



Arts University Plymouth principles

All activity should be reciprocal, meaningful, and impactful for our students both in terms of the project objectives and the creative learning journey.

It is important that all participation has the potential to contribute to the students' artistic and professional development; Arts University Plymouth staff are best placed to assess this potential.

Students are not to be considered a low cost option for producing prescribed work. Partners are required to invest in these projects in various ways including time, shared knowledge, feedback, and fees.

In line with the Green Minds model we also recognise that our students are complex individuals who can themselves be impacted by these experiences as well as impacting others. Participation in the project will affect their own connection with nature and shape their future actions.

From the very start and throughout this project it was important for us to recognise the benefits for all stakeholders involved in this process; and to continually assess the opportunity for further or future benefit.

Because of this we were able to recognise the dual benefits of a greater depth of individual engagement coupled with more broad involvement across the wider student body.

Challenges

At the start of the Green Minds project activity we identified that some of our partners had not worked closely with a creative institution before. For some this presented itself as preconceptions regarding the potential of collaboration and how it might work, including possible results and output. While this presented a challenge it was also an opportunity for us to positively impact their values and attitudes towards creative practice and demonstrate how art can be utilised as an effective instigator of societal change.

Some additional parameters for us to consider during planning included the structure of the academic year and the importance of giving priority to curriculum and assessment activities for staff and students. Overall, it was clear that the Green Minds project would benefit if the activity we promoted supported these priorities.

RIGHT: clay workshops hosted by Arts University Plymouth students at Blockhouse Park, Plymouth



Our approach

Our approach developed over time. On reflection, our best-practice examples had the following characteristics:

Solutions focused

We encouraged partners to present us with challenges or opportunities they had identified rather than pre-empting the outcome. This was realised to a varied extent across projects. Though influenced by external parameters, this mindset helped us create an exploratory dialogue with partners – to exchange knowledge and explore areas of expertise. We also encouraged partners to recognise the value of this activity as part of their own community engagement remits, and our recognition of this was an enabling factor for some partners to invest additional time and energy in the collaborative elements of the process.

Co-creation of briefs

Where possible creative briefs were written collaboratively between all relevant stakeholders including Arts University Plymouth Academic and Development Team staff and Green Minds partners, plus any other relevant community or commercial partners. Similar to a rewilded ecological process, this involved a process of ‘letting go’ regarding specific creative outcomes. We encouraged partners to write briefs which offered clear parameters where necessary but which were also non-prescriptive where possible. This would allow students to begin with an initial point of inspiration and then evolve and develop their own creative outcomes.

These then became ‘live briefs’ for students to respond to, with our external partners situated as their ‘client’. From here there were two delivery routes:

Integration into the curriculum: This was best suited to projects where the partner was open to exploring a range of potential outcomes that responded to the challenge or opportunity set.

Open-call: If a project brief was tightly defined or required timelines which didn’t align with the curriculum the brief became an ‘open-call’ to students. This also applied in situations where the work required was felt to be too similar to previously completed briefs.

For both routes we aimed to provide students with access to the stakeholders during the briefing process. This ranged from one-off briefing meetings to more intensive engagements such as site visits and workshops depending on partner capacity.



LEFT: Arts University Plymouth students painting a nature-inspired mural at Derriford Community Park

Our Approach

Samples, pitches and prototypes

Early projects aimed to deliver a final body of work through the curriculum period. However, as the Green Minds project progressed we transitioned to a preferred delivery model whereby students worked towards a final pitch, sample, or prototype as the culmination of their work. This enabled us to promote the value of participation rather than focus only on the final results.

Sharing and pitch events were taken as important moments to celebrate the students' work as well as to undertake any assessment required for the purpose of the curriculum or commissioning processes. Typically these events were attended by

the partner (as client) as well as any other relevant stakeholders and the students, who either individually or working as groups presented their concepts. This included sharing their inspiration, process, sketches or drafts of their ideas, and examples of their previous work.

In order to maximise the impact of the experience for students, Arts University Plymouth sought to ensure that students received feedback on their ideas and their pitches. This was provided by Academic and Development Team staff, clients, and other stakeholders. This feedback was an invaluable part of the students' professional development.

“The value even at the pitching level is incredible – any student who has undertaken this and received feedback will have been functioning at a very assertive and professional level. As far as the course goes the impact is positive, largely in the fact that there is a professional and ethically minded presence adjacent to study. Having opportunities and briefs orbiting the curriculum so students can trial their learning is where we really want our programme to be.

BEN WRIGHT, BA ILLUSTRATION COURSE LEADER

Photo: Tom Milnes's 'Ashnihilatation' augmented reality, immersive wilding experience on Plymouth Hoe



Our approach

Student outcomes and opportunities

At the start of every project, we ensured that the expected and potential outcomes were explicit; typically these included exhibition opportunities or commissions.

In the open-call route the commission opportunities were detailed in full and a commitment made by the partner against this; as students worked on these in their own time it was important that this commitment was in place.

For projects delivered via the curriculum route the commission opportunities were often more loosely defined with the partner confirming that funds were available and commissions a possibility should they find a good fit; here students were able to take more innovative approaches to the brief but the commissioning partner retained discretion on how to proceed. In these examples students were still given credit for their work through their course and the partner was credited for their participation as a community engagement activity. The opportunity to pitch to the client also, in several examples, led to direct commissions for other briefs.

RIGHT: Willow sculpture created for Derriford Community Park



“I had a lot of great feedback today about the depth, quality and integrity of your work”

**JEMMA SHARMAN
(GREEN MINDS PROJECT LEAD)**

CASE STUDY

Interpretation boards

The National Trust Saltram, a Green Minds partner, wanted an illustrated series of interpretation boards to inform their visitors about the changing habitats that would evolve in their newly fenced off rewilding areas. The Arts University Plymouth Development Team discussed the requirements and matched it to BA (hons) Illustration; course leaders agreed to incorporate it into the curriculum for sixty Year 2 students as part of a professional practice unit with the National Trust Saltram as the client.

The students undertook a site visit to the Saltram estate, learned about their rewilding work, and had time to observe and draw. They then formed teams to collaborate on design proposals over a four week period. At the end of the design period, the students pitched their ideas to the client.

All of the students who participated were credited for their learning as part of the course and received feedback from the client about their work. The selected teams went on to design the final signs; they continued to work and were required to liaise with the client and project manage the work with their peers. When the final works were installed at the National Trust Saltram a celebration event for the students was organised and hosted by the National Trust staff.

Ongoing impacts

Following the success of this project, the Arts University Plymouth Green Minds Coordinator was approached by partners with other opportunities for signage, posters, or interpretation boards.

RIGHT: Arts University Plymouth Illustration students next to their interpretation at the National Trust's Saltram House

On these occasions it was decided that the open call route was more appropriate as: repeating a similar project was of limited benefit at the curriculum level; it is better that students have the opportunity to expand their practice; it was important to extend the student body participation beyond a single cohort; the clients would benefit from the opportunity to be exposed to a higher diversity of responses and creative approaches.

It was therefore agreed that these would result in paid commissions for selected students following the final pitch. This ensured that the students would: be appropriately compensated; gain practical experience of managing the business and commercial aspects of their practice; be able to represent this work within their portfolio as a professional commission.

In this approach students were successful in securing commissions against their pitches as well as being further commissioned directly for other opportunities. Once the commission was awarded the primary relationship was between the student and client as a professional arrangement; however Arts University Plymouth remained on hand to assist either side as and when required.



CASE STUDY

Interpretation boards

The emergent process was managed by the Arts University Development Team who:

- Encouraged and enabled partners to be open to new ideas and approaches, gauged their appetite for risk and innovation, and guided the project to ensure that their needs would be met
- Identified the most appropriate way to allocate or disseminate opportunities
- Co-wrote briefs to ensure that the creative voice was present from the outset and that briefs provided scope for students to respond creatively and innovate
- Ensured that the client was fully invested in the process and committed resources to the process both as time and/or finance; this included working in partnership with university on the delivery of the brief and providing additional information and resources to the students where required
- Ensured that all expectations and parameters were clear and appropriately managed
- Identified emergent opportunities and instigated ongoing discussions around future working

Outcomes and Impacts

Co-creative processes with reciprocal exchange between stakeholders mirror the natural ecological processes of rewilding. In a classic ecological rewilding context, a key factor is that of ensuring that all the key species are present that are necessary for a fully functioning ecosystem; in a Green Minds context, this means ensuring that all stakeholders are engaged to complete the picture and ensure equitable outcomes. For Arts University Plymouth, the co-creation and co-delivery of creative briefs was an essential part of this. As with ecological rewilding, the co-creative process required

a collaborative and non-prescriptive approach to outcomes. The outcome of this is the evolution of diverse networks and unexpected and socially inclusive developments.

In terms of learning impacts, the students learned how to use their unique creative talents to communicate and promote nature-based solutions from a better informed perspective; enabling students to make a positive difference for nature and to see the value of this for their professional development.

Arts University Plymouth and the Green Minds project benefited from the outlined working model which brings tangible advantages in terms of stakeholder collaboration more broadly:

Students: develop professional skills, confidence, experience, portfolio, grow professional and client networks, impact on their creative practice

Partners: gain experience of the creative and commissioning processes, benefit from exposure to a diverse range of creative responses, source professional creative assets

Project: public engagement deliverables are enhanced at multiple points in the activity, the deep interaction between partners and participant students creates possibility for meaningful impact on values and attitudes, creative works, the final works are a vehicle with which to inform and impact the public, semi-permanent or permanent works create a legacy beyond the end of the project delivery period

Interpretation boards

“We were so impressed with the professionalism and enthusiasm of the Arts University Plymouth students”

OWEN FINNIE, (POLLENIZE)

University: supports and enhances students vocational skills and employability, raises the profile of the student body and individual students, contributes to public and community engagement deliverables, establishes new networks and partnerships and deepens relationships with current partners, instigates opportunities for emergent research and knowledge exchange activity

Arts University Plymouth’s participation in the Green Minds project has benefited our students and our project partners through collaboration on creative projects through the curriculum and live briefs. The model we have developed will continue to influence the way Arts University Plymouth engages with external partners in future projects. For some partner organisations these collaborations have supported their subsequent grant and funding applications by providing evidence of their community and collaborative practices.

When co-creation, co-delivery, and knowledge exchange are applied to a shared commitment to sustainability and environmental justice the impact and legacy of this work is extended and amplified. For Arts University Plymouth, this has provided a catalyst for institutional advances within our own practices, our teaching, research and knowledge exchange; the potential for this to be amplified through our public and community engagement work and as our staff and students pursue their professional practice is substantial. This is demonstrated in our case study of Exploring Hidden Details a collaboration between the University Textiles team and National Trust Saltram as part of Green Minds.

Institutional advances

As part of the Green Minds partnership project, Arts University Plymouth students from BA (Hons) Textile Design visited National Trust Saltram in March 2022, for a design project: Exploring Hidden Details.

Staff from the National Trust hosted the visit and shared their expertise about the estate and its history with the students. The students gathered inspiration from the land, the unique gardens, the flora and fauna, as well as the house at Saltram; they learned that historically the fabrics at Saltram would have been natural. The students then devised a collection of designs using knit and print techniques. The designs created by the students celebrated and highlighted the importance of preserving and developing our outdoor space and allowed them to use nature and the local environment of Saltram to stimulate creative thinking. Their work was exhibited at National Trust Saltram, Arts University Plymouth, and at Plymouth's Lord Mayor's Festival 2022.

"I went to Arts University Plymouth to see the students present their work and it was really inspiring"

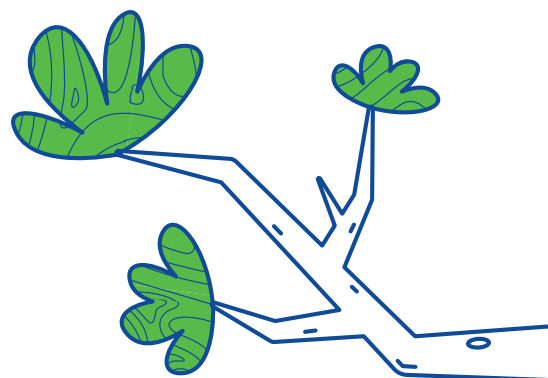
ANDREW CLANFIELD
(PCC NATURAL INFRASTRUCTURE
OFFICER & CENTRAL PARK LEAD)

Ongoing impacts:

Exploring Hidden Details will now be used as a basis for an annual curriculum project for the BA (hons) Textile course and a continued partnership with the National Trust Saltram.

The work has been the inspiration for an Arts University Plymouth Knowledge Exchange project funded by Research England; the project is a partnership between the university and the National Trust to establish a dye garden and through the exchange of expertise explore the potential of this for further education, research, and development purposes. Outputs and actions include:

- A series of natural dye workshops at Arts University Plymouth and the National Trust Saltram
- Showcase Exhibition in a regional gallery space
- A digital and physical colour reference archive of colour swatches
- Production of natural dyes for use by the university BA (hons) Textiles Team in curriculum projects
- Continued research and Knowledge Exchange work to expand the scope and scale of activity
- The establishment of a natural dye green house on the university campus



LEFT: Exhibition of natural dyes made by Arts University Plymouth students

**“To say you fulfilled the brief
is an understatement – the
results are better
than I had ever hoped.”**

**JERRY GRIFFITHS (DERRIFORD
COMMUNITY PARK) PCC**





greenminds

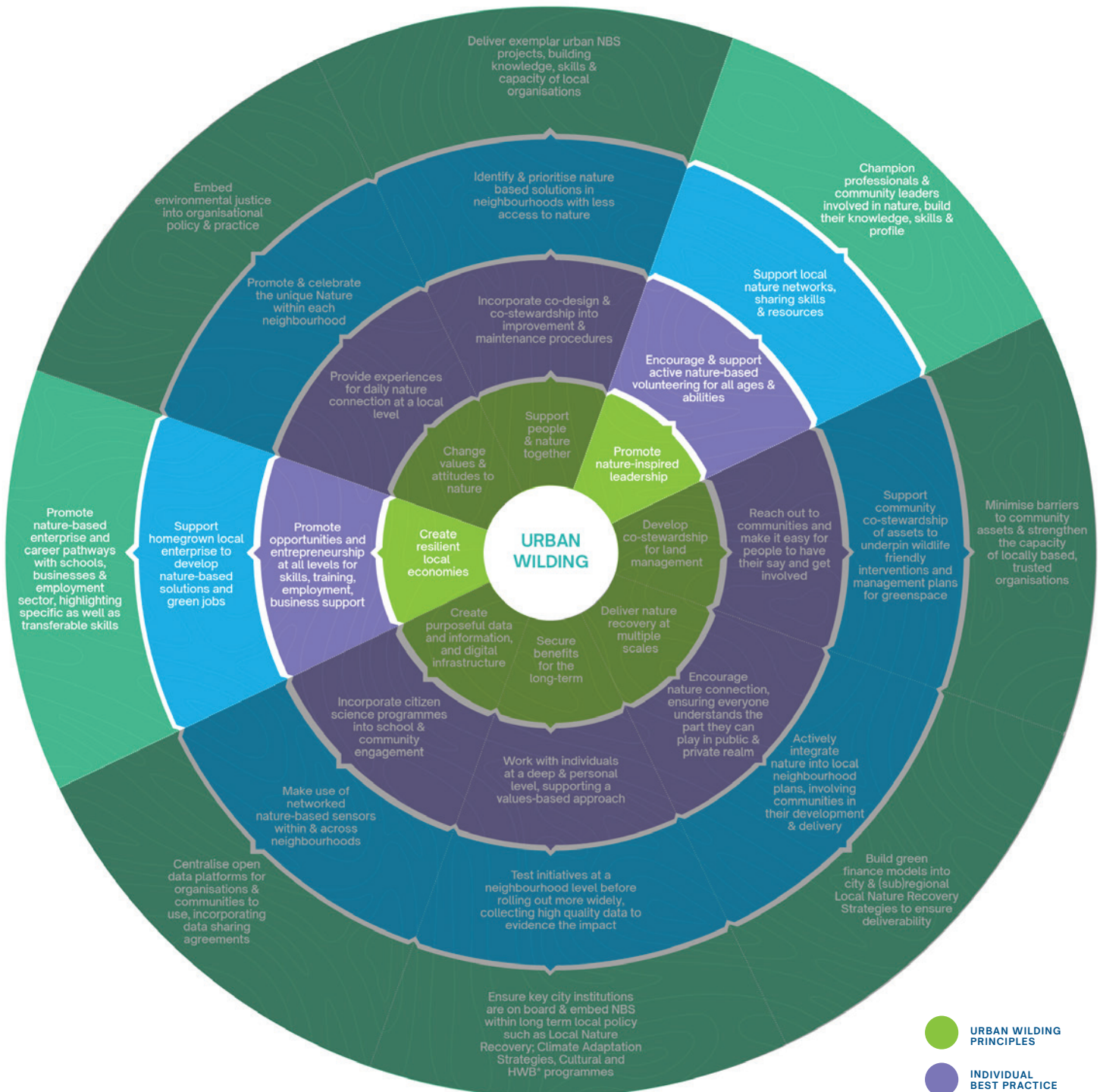
greenminds insight paper

**Apprenticeships
for Land Management:
The Role of Nature
Connection**

greenmindsmodel

The model illustrates the three system levels at which the Urban Wilding principles are applied to drive action: the individual, with neighbourhoods, and within organisations.

Permeability, both within and between segments, reflects the need for adaptability through local learning gained through an action learning approach, in which lessons learned influence the next cycle of implementation.



Introduction

The current biodiversity and climate crises require a green skills workforce who can take a system-wide view of management and support the creation of nature recovery networks through urban wilding.

Apprenticeship schemes are an important pathway to employment within the green skills sector. However, green skills apprentice training schemes often focus on the physical skills (e.g., tree planting) required for the management of nature but do not connect how an intervention in one area (e.g., the treatment of weeds) may impact or influence outcomes in another (e.g., downstream). This can lead to a disconnection in the management of nature across an urban landscape. So, it is important for our workforce to acquire a high degree of 'Nature Connection', enabling them to spot opportunities for positive change.

In the Green Minds project, with the support of Devon Wildlife Trust, National Trust, and Devon Biodiversity Records Centre, we led a programme of training on 'best practice for nature-led land management' to complement Plymouth City Council's land management apprenticeships. Alongside this training we worked with the University of Plymouth to find out the apprentice's motivations; how the Green Minds training influenced the apprentice's attitudes to nature, and how the apprenticeship scheme influenced their well-being.

The information gathered from this research can be useful for managers, natural infrastructure officers, and apprenticeship training providers to develop future cohorts of land managers with the green skills to connect nature for the benefit of the climate and biodiversity.



'One of the things that I learned so far with this apprenticeship is that nature is community, nature is being together and doing something for someone else. You can do your garden just for yourself, but then you also have to consider wildlife, and so it's such a complex world that you have to consider other than yourself. I have most recently learnt about intersectionality from Poole Farm'
INTERVIEW, APRIL 2022



The programme

‘Best practice and impact of Nature Connection’

The training sessions

Five training sessions were developed between Green Minds partners at the University of Plymouth and Devon Wildlife Trust. These sessions included theoretical and practical knowledge relating to terrestrial and marine environments and were aimed at creating a ‘green-blue’ interface.

- Tree planting
- Terrestrial biodiversity theory
- Terrestrial biodiversity practical
- Marine biodiversity theory
- Marine biodiversity practical



Biodiversity practical training

In May 2022, a training day event was held at Poole Farm. This was a practical training session on UK ecology and biodiversity led by Devon Biodiversity Records Centre (DBRC) as a follow up from the February theory session.

What happened?

The session was focused on biodiversity surveying techniques in the field. DBRC led a quadrat demonstration and identified differences between common grasses and wildflowers in the meadow at Poole Farm. Methods for repeatable biodiversity surveys were discussed, and the apprentices were given an opportunity to participate in their own biodiversity survey in the field, in small groups. DBRC supplied a diverse array of identification guides which the apprentices were encouraged to look through, and was on hand to answer any questions. Methods for bee and butterfly identification and transect surveys were discussed, although the windy weather in the afternoon meant that a practical demonstration was not possible at that time.

Key findings

Overall, following the training event, the collective group reported an increase in personal confidence about understanding ecology and biodiversity monitoring and an increase in self-reported wellbeing. Apprentices also reported that participation in the day event was likely to lead to them to enact other pro-environmental behaviours in the future.

What did the apprentices think?

When asked, 'how will this training session help you in your role as an apprentice/in your role?', the apprentices responded:

- Useful for field ID and meadow management
- It will help me understand how surveying takes place and its importance
- I will be able to monitor the grounds at Poole Farm
- Understanding species (plants) and biodiversity methods

'The biodiversity surveying techniques developed my knowledge in situations I see daily and areas directly affected by my action in my job.'

APPRENTICE



Marine biodiversity practical training

Wembury Marine Centre

In May 2022, a practical and specialised training session on marine conservation and identification was led by The Marine Biological Association. The session began with a presentation about marine-life in Plymouth Sound, including an interactive quiz ‘home or away?’, information about legal protection, marine protected areas and habitats, and a reflection on our connection to the sea and how we all benefit from a healthy ocean. The presentation discussed the interconnectedness between the city and the sea, the parks and the coast, sewerage/overflow/drainage systems in the local context of Plymouth and the designation of Plymouth Sound National Marine Park. The MBA provided a diverse array of identification guides, and further links and resources were shared following the session.

At the tide line on Wembury Beach, the group gathered items found on the strandline and put them in a bucket. These items were sorted into ‘anthropogenic’ (human made), ‘terrestrial’ (of the land) and marine (‘of the sea’). Items found included sand hoppers, hold fast kelp, wire weed, mermaids purses, cuttlefish, micro-plastic. After exploring the marine life in the rock pools, there was an exercise where individuals were asked to create and justify a Marine Protected Area, in relation to the theoretical context given of habitats, potential threats and legal protection discussed in the morning session.

Key findings

Overall, following the training event, the collective group reported an increase in personal confidence in understanding the marine context of Plymouth Sound and surrounding area and an increase in self-reported wellbeing. Apprentices also reported that participation in the day event was likely to lead to them enacting other pro-environmental behaviours in the future.

What did the apprentices think?

When asked, ‘how will this training session help you in your role as an apprentice/in your role?’, apprentices responded:

- It has helped me understand how connected the shore and coast is to the land
- More knowledge on how day to day role affects the rest of the environment, even in towns
- More knowledge of why we are designating MPAs and what values they have
- It will give a deeper understanding of Plymouth and its natural diversity
- Gives me new context between link of green and blue

Apprentices' changed attitudes over time

What we found

This research took place between April 2021 and June 2022, and consisted of a baseline survey, qualitative interviews, and focus groups.

Motivations for joining the apprenticeship¹

All the apprentices stated that their motivation to join the apprenticeship was to 'learn new skills'. Other factors included wanting to learn more about nature, to spend more time outside, and to make a difference in their local area.

Skills, nature knowledge, and confidence¹

All apprentices reported learning new skills, and that opportunities to use these skills contributed to increases in confidence. Green Minds training events were shown to increase apprentice knowledge of biodiversity and the likelihood of continued pro-environmental behaviours in their own lives, such as volunteering to help the environment, educating others using what they had learned, or partaking in activities such as planting trees or monitoring biodiversity. Additionally, all apprentices reported sharing their new knowledge with friends and family.

Health and Wellbeing¹

Between the 2021 and 2022 surveys, the apprentices reported happiness remained constant with a slight decrease in average levels of reported anxiety. However, specific worries about future jobs, politics, and climate change increased from 2021 to 2022. The apprentices broadly agreed with

statements listing the mental, physical, and social benefits of spending time in nature. The majority of apprentices agreed that being in parks and by the coast 'makes me happy'. The majority also agreed that 'I feel less anxious when by the sea' and 'in parks'. Apprentices reported that participating in Green Minds training improved their overall wellbeing.

Connections with green and blue spaces¹

The apprentices reported that they sought to spend more time in nature as a result of the Green Minds training programme, increasing from spending time in nature 'more than twice a week but not every day' in 2021 to 'every day' in 2022. This includes increasing the time spent in blue spaces.

CHANGING PERSPECTIVE OF PLYMOUTH

'I did think of Plymouth as a bit grey, and a bit not good to look at, but finding out it is one of the greenest cities in the country, and trying to link up all these different green spaces. I'm glad to be part of such a project'

APPRENTICE
OCTOBER 2022

¹ McGrath, E., 2022, Rees, S. Green Minds Apprentices: changes over time, WP5. A report by research staff at the Marine Social Science Unit, University of Plymouth, pp.1-42.

A manager's perspective

In early May 2023, the land managers in Plymouth City Council overseeing the Green Minds apprenticeship programme met to share their thoughts on the value, challenges, and future of land management apprenticeships in Plymouth City Council. These key themes emerged.

The need for supplementary training on wildlife-friendly practices

Working in partnership with Devon Wildlife Trust and Devon Biodiversity Records Centre, they were able to access best practice training for wildlife-friendly land management, which would not otherwise have been possible.

This additional training was able to be extended to Council staff, alongside the apprentices which supported dissemination and sustainability of new ways of working. To continue this relationship going forward, Green Minds is looking to create an online training 'hub' to share training opportunities and case studies showing how wildlife friendly practices have been applied across the Estate.

Value of apprenticeships

There is a growing recognition of the 'ageing workforce' of the land management sector, with members of staff possessing a wealth of knowledge, but often without an upcoming generation to pass it onto. The managers stressed the importance of apprenticeships in aiding in the continuity and exchange of skills and knowledge to support a 21st century workforce that can respond effectively to biodiversity and climate challenges.

They also spoke of apprentices 'complementing the existing workforce' and of the value of apprentices bringing additional capacity and new perspectives from their various backgrounds. Apprentices were seen as a 'positive influence' bringing 'motivation', 'enthusiasm', and 'positivity' to their teams.

6 of the 7 apprenticeships have moved onto contracts with the Council or other land

management organisations in the city and the managers felt that this clearly demonstrated the value of investing in land management apprenticeships for the wider ambition of the Council and the city to value nature.

'Doing things differently' requires additional resources

The aim of the Green Minds apprentice programme was to support a new generation of land management apprenticeships with a focus on biodiversity and climate friendly practice. However, managing a cohort of apprentices on different courses with different colleges required additional manager time. Due to staff changes and the impact of Covid, this proved challenging, and Green Minds is aware that, at times, the apprentices felt unsupported or unclear of their role and value within the organisation. Moving forward, Green Minds proposes to:

- Develop a 'Handbook' to increase clarity around expectations of apprentices as well as managers.
- Increase frequency of meetings between apprentices, managers, and college tutors.
- Facilitate training and support for managers to support additional needs of apprentices (e.g. time management of apprentices, training).
- Cultivate a progression route for apprentices, including participation in the recruitment and onboarding of future cohorts and working with other land managers in the city to promote opportunities beyond the Council.
- Establish a method of evaluation to demonstrate the value of alternative ways of working.

7 Relevance to urban placemaking

Establishing a conduct of best practice for nature connection and wildlife friendly practices is essential for cultivating a land management workforce with the green skills necessary to put nature at the heart of decision making.

As Plymouth strives to be an outstanding place to live and work and the UK's first National Marine Park city, it is important to ensure that the workforce driving Plymouth place-making embodies a deep connection to the natural environment.

Not only is this vital for Plymouth and the Green Minds partners, but also for cities around the world, helping them to deliver a systems approach to nature-based solutions, starting with their current apprentices and future land managers.

‘Before I was very much into nature and I always was thinking thoughts such as “how pretty is that tree” and “oh it’s nice that there’s this park here”, but I would never really think about it that deeply. Maybe actually it’s the connection between the things that is more prominent to me now, whereas before it was very separate...that’s been a big change for me’

APPRENTICE





greenminds

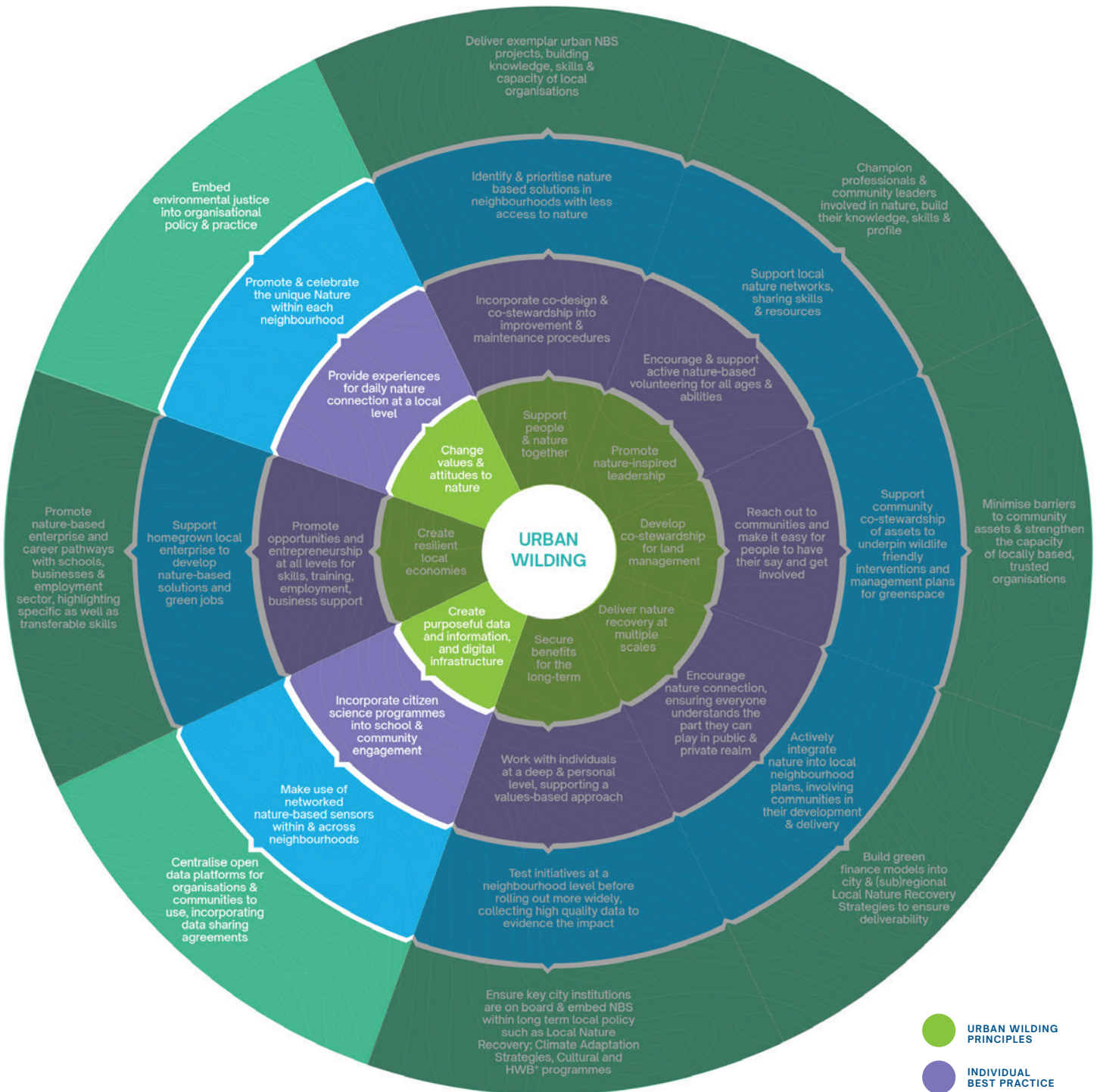
greenminds insight paper

**Insights from an Analysis
of Social Media in
Three Urban Parks**

greenmindsmodel

The model illustrates the three system levels at which the Urban Wilding principles are applied to drive action: the individual, with neighbourhoods, and within organisations.

Permeability, both within and between segments, reflects the need for adaptability through local learning gained through an action learning approach, in which lessons learned influence the next cycle of implementation.



Introduction

Plymouth aspires to be a ‘green city’¹ and hosts the UK’s first National Marine Park in Plymouth Sound. In the city landscape of Plymouth, blue (the sea and rivers), and green (the parks) spaces intersect to form a network of nature.

Within a city, urban parks are an essential aspect of local infrastructure and are often a large source of natural space allocation. Whilst providing residents with improved access to green and blue spaces, urban parks also contribute additional benefits associated with spending time in nature, such as promoting social interaction², improving physical health^{3,4}, and enhancing wellbeing⁵. Therefore, it is crucial to ensure that urban parks are adequately provisioned, connected, managed, and promoted for city residents and visitors.

Cohesive management of these spaces can be informed by understanding how people value natural landscapes, such as urban parks. Assessing the value that people attribute to an urban park, as well as the varied motivations of those seeking these spaces, provides an opportunity to integrate this information into traditional management approaches to better serve the city of Plymouth and those that visit its urban parks.

This research was undertaken during Covid lockdowns. Traditional means of surveying, such as interviewing people in person, were not possible. Therefore, we developed a novel methodology to review social media posts from three urban parks throughout Plymouth where the landscape provides access to both blue and green spaces.

This analysis of photographs posted on social media allowed us to gain a new perspective on how people value and interact with the natural landscapes in Plymouth.



‘Some people may not like Plymouth but I for one love it here, especially when you get views like this.’

INCEN659

1. Plymouth and South West Devon Joint Local Plan 2014-2034 In. 2017. 1-316. Produced by West Devon Borough Council, South Hams District Council and Plymouth City Council.

2. De Bell, Sian, Hilary Graham, Stuart Jarvis and Piran White. 2017. ‘The importance of nature in mediating social and psychological benefits associated with visits to freshwater blue space’, *Landscape and Urban Planning*, 167: 118-127.

3. Coombes, Emma, Andrew P. Johnes, and Melvyn Hilldon. 2020. ‘The relationship of physical activity and overweight to objectively measured

green space accessibility and use’, *Social Science and Medicine*, 70: 816-822.

4. White, Mathew P., Benedict W. Wheeler, Stephen Herbert, Ian Alcock, and Michael H. Depledge. 2014. ‘Coastal proximity and physical activity: Is the coast an under-appreciated public health resource?’ *Preventive Medicine*, 69: 135-40.

5. Mackerron, George and Susana Mourato. 2013. ‘Happiness is greater in natural environments’, *Global Environmental Change*, 23: 992-1000.

Photograph: Asa K from Pixabay

What we did

This research focused on three urban parks within Plymouth – Central Park, Saltram Park, and Hoe Park – each comprising urban green spaces with views of and/or access to the sea. We used a social media approach in which all Instagram posts geotagged to any of these parks during a period of nine months were reviewed.

Landscape gaze & user activity

These posts were used to determine and quantify the specific views that people captured through their photographs, essentially their ‘landscape gaze’. Landscape gaze was used to represent ‘value’ by the belief that what people take photographs of, and later post to social media sites such as Instagram, reflects the views and aspects of urban parks that they value. The landscape gazes at each site were displayed on a map to identify the predominant views from each park.

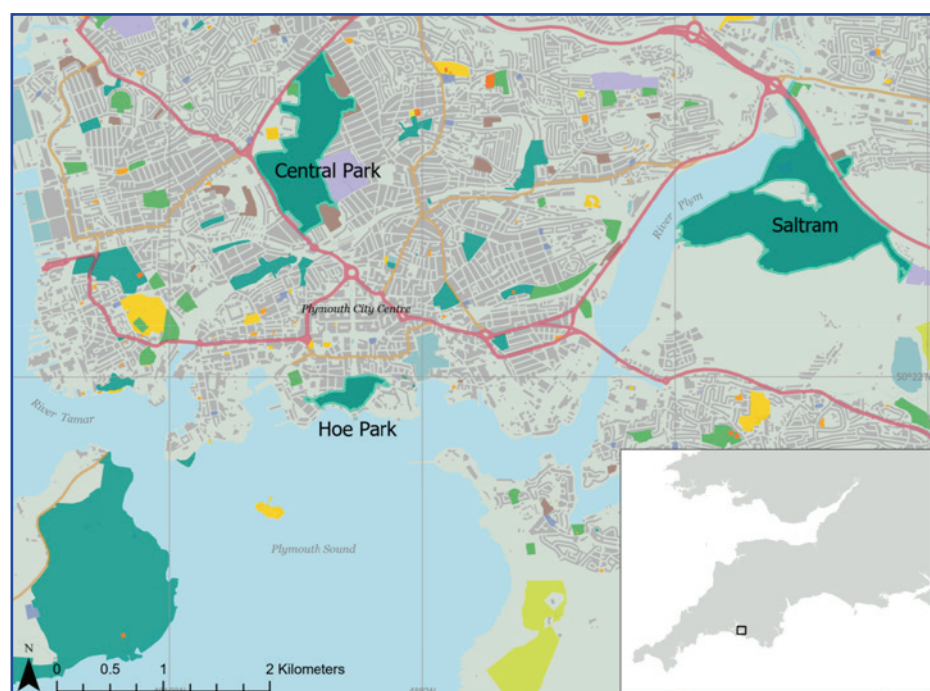
Through review of these posts, it was also possible in some cases to determine the user’s activity and therefore this categorisation was also included in the analysis.

Hot spot & discourse analysis

In addition to visualising landscape gaze and categorising user activity, we also conducted a hot spot analysis of the geotagged posts to determine the specific areas of high use and pathways through the parks. Lastly, we analysed the discourse accompanying the posts to understand what was said about the parks and better explain the content of the photographs.

‘Low winter sun as it catches its own reflection in the estuary. With midsummer’s day half a year away the warm bright days seem like a distant memory. But even now the tide has turned and the North is, day by day, making its way back towards Spring’ – [SAL104](#)

Study Sites



What we found

We reviewed 3,897 Instagram posts from Central Park (n=822), Saltram (n=333), and the Hoe (n=2742) and gleaned the following insights.

Most popular views

Hoe Park was the most popular park with nearly three times the number of photographs posted. The predominant landscape gaze at Hoe Park was overwhelmingly towards the blue space, **Plymouth Sound** (72%, shown in Figure 1 below). At Saltram Park the predominant feature in the photographs was **trees** (23%) while at Central Park it was a combination of **flowers and blossoms** (21%).

Nature

Nature was shown to be valued by those visiting urban parks. **Green gazes, such as trees, woods, grass, or flowers**, were visible in 65% of Central Park posts, 73% of Saltram Park posts, and 17% of Hoe Park posts. Alternatively, **blue gazes such as rivers, the sea, or a pond** were visible in 1% of Central Park posts, 25% of Saltram Park posts, and 72% of Hoe Park posts. Posts showing specific biodiversity, such as flowers or wildlife, comprised 23% of the posts at Central Park, 20% at Saltram Park, and 3% at Hoe Park.

Spatial analysis

Results from the hot spot analysis indicate that **most of the activity, in terms of taking photographs, at Hoe Park was found along the foreshore**. At Saltram Park, 90% of the activity was along a walking path known locally as **'Riverside Walk'**. Lastly at Central Park, the predominant footfall was along the **eastern side of the park, across meadows, and at the skate park**.

Activities

The most popular activity at both Central and Saltram parks was **dog walking** (21% and 20% respectively) followed by **socialising with friends and family** (12% and 19% respectively). Conversely, at Hoe Park the most popular activity was socialising with friends and family (23%) followed by dog walking (6%).

Sentiments and wellbeing

Positive words were featured in the discourse of the social media posts at each site (Central Park 35%, Saltram 33%, Hoe 52%). Negative words were featured notably less (Central Park 2%, Saltram 2%, Hoe 13%), and were often associated with Covid fears and lockdown. Positive impacts on physical health was explicitly mentioned at each of the sites (Central Park 2%, Saltram 1%, Hoe 2%), as was mental health (Central Park 2%, Saltram 2%, Hoe 6%).

'Take a moment to take in the sights and sounds of your surroundings. In nature, you will find beauty everywhere'
- HOE1635

Figure 1: Estimated directional gazes from Hoe Park. Arrow size correlates to clusters of directional gazes.

Conclusion

These parks are important for both recreation and appreciation of nature.

Results

Whilst social media has been used in other research areas, this study contributes to an emerging subset of research using social media to understand the sentiment of those visiting urban parks.

The results demonstrate that these parks are important for both recreation and appreciation of nature. In addition, this research provides evidence of the key spaces where people interact with the urban park, the activities they participate in, and the aspects of nature that they enjoy and therefore value. Importantly, the results demonstrate that the value of the park extends to the view and the surrounding landscape. Also, that people link their mental health status to spending time in nature and this is most reported from social media posts from the Hoe.

For Green Minds, this research provided useful additional information (alongside more traditional consultation and engagement methods), to support design and maintenance of natural spaces for relevant land managers, that promotes health, happiness and wellbeing.

The results have helped Green Minds justify and shape interventions that support more wildlife friendly management, design spaces for 'vistas', and develop areas within greenspaces with physical and mental health in mind.

The delivery team also recognised the potential to repeat the analysis over time to see how sentiment changes. This could act as a form of evaluation post intervention.

'I can't believe that full summer is here yet again. Saltram House park land next to the river Plym estuary. A National Trust gem.' – SAL316



Photograph: Saltram House (Green Minds)

**“We decided to venture onto
Plymouth Hoe this morning for
an early morning walk.**

**We couldn’t get over how
blue the sky and water was”**

**PLYMOUTH RESIDENT
ON SOCIAL MEDIA**





greenminds

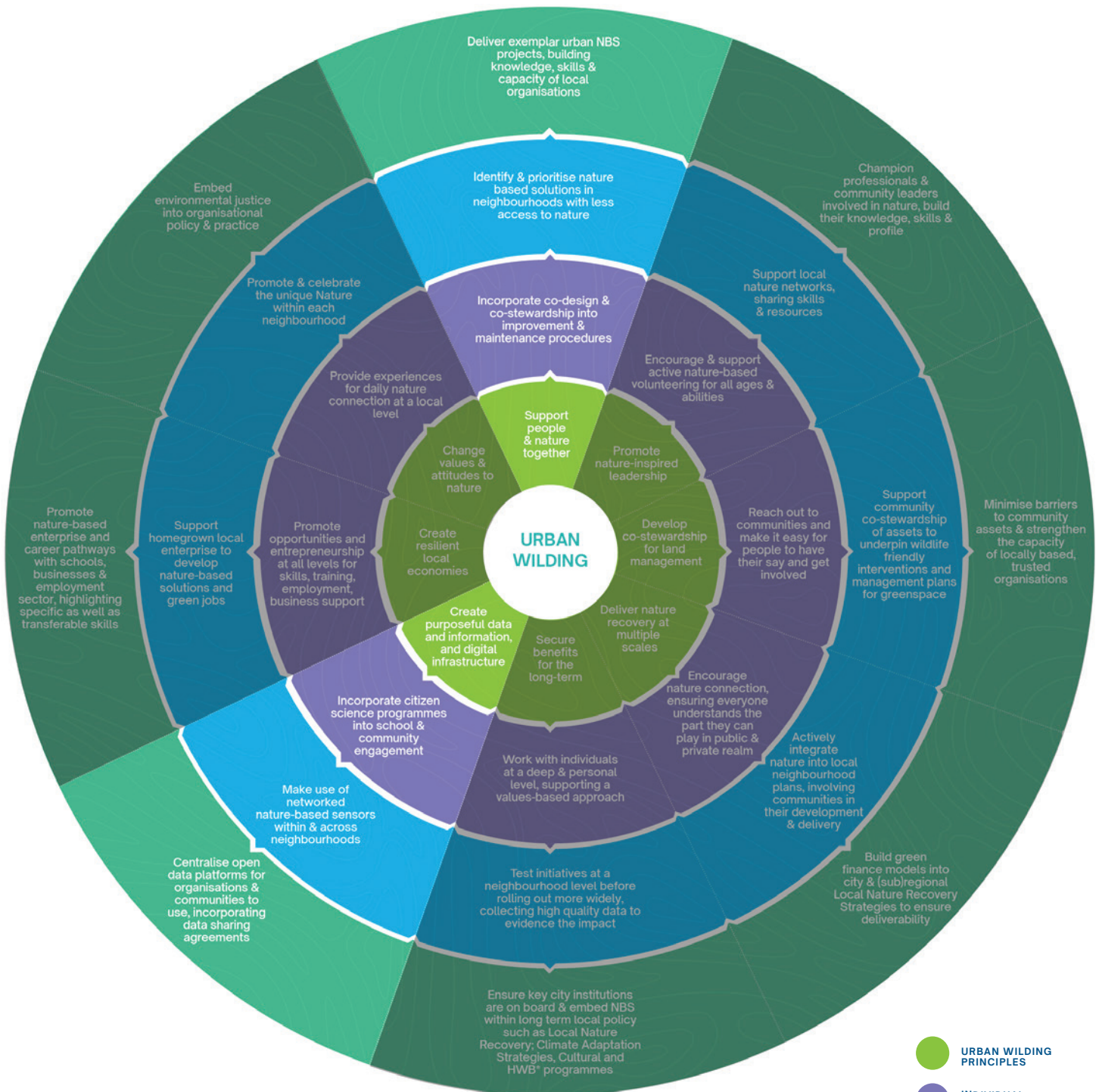
greenminds insight paper

**A Living Lab Approach to
Facilitate Nature Connection
in Green Spaces**

greenmindsmodel

The model illustrates the three system levels at which the Urban Wilding principles are applied to drive action: the individual, with neighbourhoods, and within organisations.

Permeability, both within and between segments, reflects the need for adaptability through local learning gained through an action learning approach, in which lessons learned influence the next cycle of implementation.



Introduction

Green Minds Living Lab tested a series of site-specific digital experiments across the city which aimed to support Nature Connectedness and yielded valuable insights regarding environmental stewardship within urban green space.

Living Lab approach to Nature Connection

Urban parks and green infrastructure have been shown to have a wide range of social and environmental benefits. However, realising these benefits can be made difficult as a result of a variety of challenges that limit people's engagement with parks.

We explored the role of **citizen science** to help overcome some of these barriers, in the context of a **Living Lab**¹.

Citizen science, (the collection and analysis of data relating to the natural world by members of the general public), 'has the potential to deepen Nature Connectedness and foster environmentally responsible behaviours, such as voluntary stewardship and involvement in national/local environmental policy concerns'².

Our work was based on the premise that a Living Lab, with its characteristic multi-stakeholder participation, co-creation,

and a multi-method approach, combined with a citizen science approach to Nature Connection, can result in more informed and engaged participation in urban greenspace governance³.

Nature Data Probe Toolkit

Our Living Lab involved the co-design of creative digital tools to make nature in the city much more visible and exciting to people, supporting Nature Connection and empowering citizens to act as stewards of their local green spaces.

We trialled this approach in several urban parks in Plymouth over 2 years. Through engaging in simple nature-based activities we used the community's local intelligence to develop digital experiments in local green spaces.

This resulted in a Nature Data Probe Toolkit – an intervention with the objective of creating empathy for the natural environment.



1. A Living Lab is "a user-centred, open innovation ecosystem based on a systematic user co-creation approach integrating research and innovation processes in real life communities and settings". Robles et al., 2015.

2. Haklay, 2013; Toomey et al., 2020; Overdevest, Orr & Stepenuck, 2004)

3. (Costa et al., 2020)

The Living Lab approach

We aim to understand and adapt the way we care for, use and manage our urban natural spaces in ways that benefit people and wildlife by presenting the data and engaging with communities in a creative and accessible way.

Open source park data

We installed an open source IoT LoraWAN⁴ infrastructure in Central Park, and used this as the focus of a series of engagement activities with the stakeholders. We used digital technologies such as low cost and low power live sensors that monitor wildlife activity, air quality, temperature, humidity, and the number of visitors in the park using the LoraWAN technology to build narratives using nature data.

Nature Data Probe Toolkit

The Nature Data Probe toolkit was a way for people to engage with data about the park. The design and its components (see images) were structured around simple nature-based activities to reveal hidden nature, create intentional greenspace engagement and, in-turn, create empathy for nature.

Nature Data logbook for 'reflective journaling' enables participants to intentionally engage with nature, responding to self-directed simple activities and prompts.



*Gupta, A., Willis, K. (2023 in press). Place-Keeping in the Park: Testing a Living Lab Approach to Facilitate Nature Connectedness in Urban Green spaces. Sustainability, 15. For more information on this approach. 4. LoraWAN - Long Range Wide Area Network.

Co-designing for Nature Connection

The Nature Data Probe Toolkit aims to develop Nature Connectedness and empower citizens to act as stewards of their local green spaces and, in turn, become generators of social change.

Using nature-based data to give nature a voice, it treats non-human, natural inhabitants as equal participants and stakeholders in the project.

Collaborative prototyping

To develop the technology, we conducted a series of prototyping co-design workshops to test ideas about how to build a narrative using nature data. Working in close collaboration with the local community and stakeholders, we designed innovative and effective ideas to encourage better green space engagement.

This included an initial stage of stakeholder conversations to co-produce the briefs for managing differently, and testing in pilot sites across Plymouth. A second stage involved a series of prototyping workshops in various pilot sites across the city that represent a range of green spaces. Sessions were delivered in natural areas in ways to encourage Nature Connection.



ABOVE: low-fidelity prototyping



Engaging with the Nature Data Probe Toolkit

In order to test the Nature Connectedness framework,⁵ we worked with a local school in a series of co-design and participatory activities.

Engaging with Nature Data



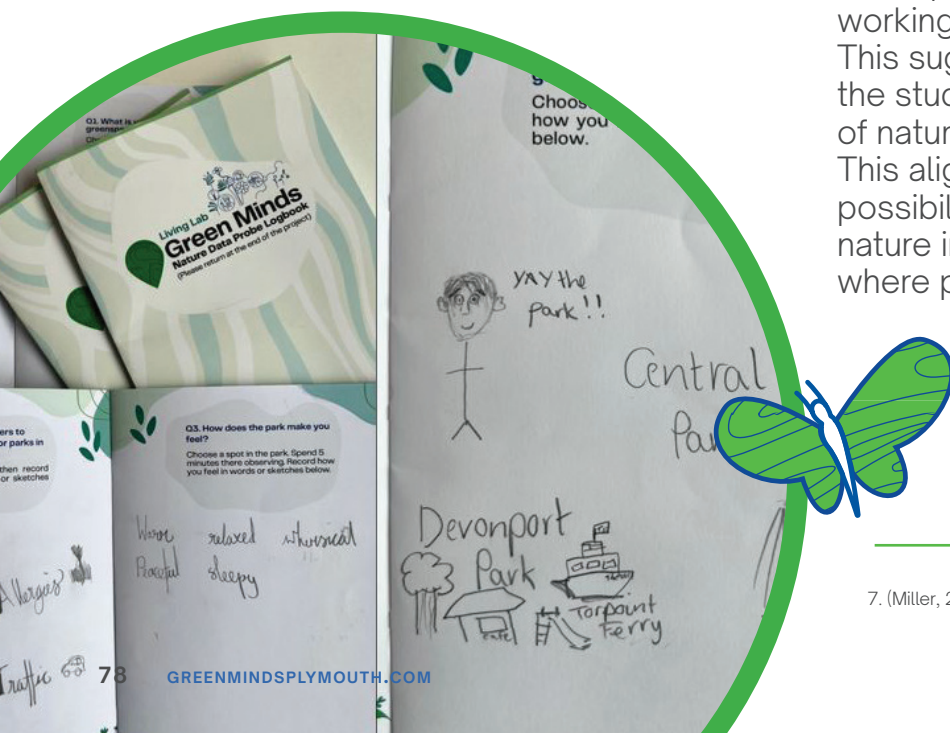
The main workshop involved 126 students, aged 12-13, from a local girl's secondary school and was conducted using the Nature Data Probe Toolkit. Engaging this group was critical for understanding challenges around the park's accessibility and barriers to participation in its governance as teenage children, particularly girls, are increasingly identified as one of the most excluded groups in the urban design and planning processes⁶.

Nature-Connection and engagement with the park

The workshop involved an initial briefing session, a baseline survey, and mapping activity in the classroom. This was followed by a session in the park where the participants used the Nature Data Probe Toolkit and logbook to record live environmental data using sensors, and developed paper-based prototypes for further intervention.

Using the Nature Data Probe logbook, participants were asked to spend 5 minutes observing nature and reflect on "what nature do you see?"; recording their responses in the form of text and sketches. 411 different references identifying nature were recorded in 126 logbooks.

A comparative analysis of the text revealed the use of more nuanced and variegated descriptions of nature in the park after working with the Nature Data Probe Toolkit. This suggests that using the Toolkit helped the students to discover hidden aspects of nature, creating a deeper awareness. This aligns with research by 'affording the possibility of meaningful interaction with nature in close proximity to the places where people live and work'⁷.



5. (Richardson et. al, 2020) 6. (Holland, 2021) 7. (Miller, 2005), p.434). Nature Data Probe Logbook – Journaling Responses.

Pathways to environmental stewardship

We developed a framework that maps the pathway to environmental stewardship using the Living Lab approach. The framework draws on Richardson et al's⁸ work on Nature Connectedness from the Green Care Code.

Nature Connection and environmental stewardship

The factors influencing pro-nature conservation behaviours include 'behavioural intentionality' where engagement with green spaces in everyday life through simple nature-based activities is the most influential in embedding pro-nature conservation behaviours in individuals⁹. Similarly, feeling connected to nature is a prerequisite to motivating engagement in sustainable behaviours directed at nature conservation and restoration.

Citizen science and place-keeping – the Living Lab approach

A 'Living Lab' can refer to a diverse range of local experimental projects given such a project is participatory in nature and aims to trial and test innovative solutions in a real-

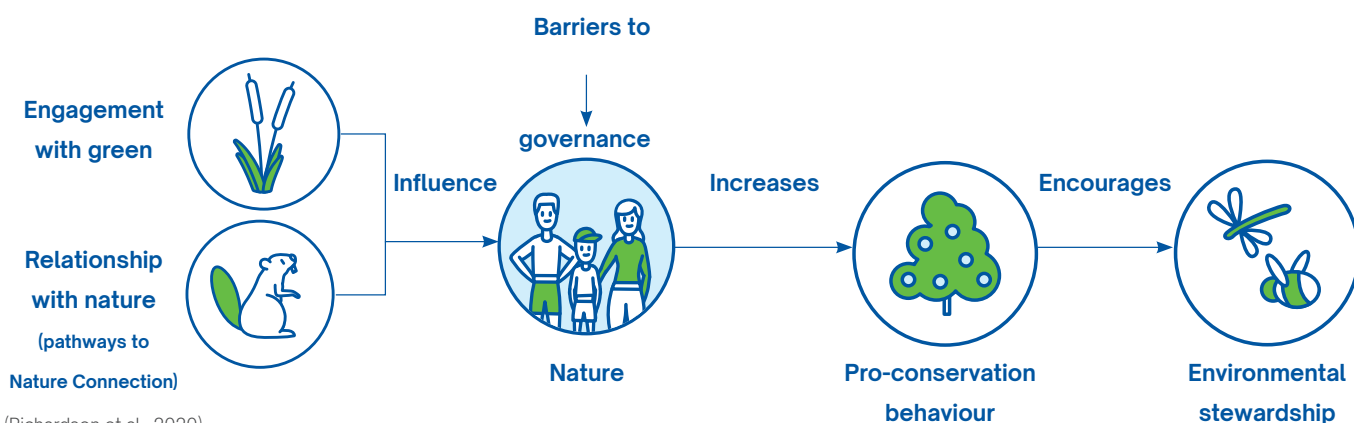
life setting. This explores the placemaking potential of citizen science for nature-based solutions, particularly in the context of Living Labs for improving human – nature connections and, in turn, local participation in greenspace governance¹⁰.

A Nature Connectedness framework

Simple engagement activities centred around the restoration and conservation of the natural environment, are an effective way of fostering Nature Connection (see figure below).

Similarly, the type of relationship with nature or pathways to Nature Connection further influence the impact created by these activities such that higher levels of Nature Connectedness is associated with engagement in pathway-informed nature-based activities.

Barriers to participation



8. (Richardson et al., 2020)

9. (Miller, 2005; Richardson et al., 2020)

10. (Lupp et al., 2020; Sorensen et al., 2019)

Digital place-keeping insights

Key findings

- Participants were more observant of hidden nature following the workshop. An increase in the number of participants and of the specific and descriptive responses identifying nature was observed. This demonstrated that engaging with place-based data can provide new ways of interacting with nature by enabling us to see how wildlife uses our green spaces.
- These findings indicate that a deeper awareness of the natural environment was created which is a pathway to increased participation in greenspace governance.
- Engaging a younger audience can be particularly effective in establishing a long-term and sustained stewardship of natural environment by giving them the tools and know how to care for their local green spaces.
- Living Labs is an innovative pathway towards creating a more participatory and inclusive green space and can have positive spillover effects in engaging and connecting people with their local parks and green spaces.

Digital place-keeping: Implications for stakeholders

A Living Lab approach for community engagement in the ‘place-keeping’ of urban green spaces is one example of ways in which digital tools and technology can democratise the state-civil society relationship by enabling new ways of participation and can, therefore, be a pathway to co-stewardship-based greenspace governance.

A place-focused approach to citizen science not only develops literacy around digital sensing tools and making data accessible, but also empowers citizens by creating a deeper awareness of nature in urban green spaces.

The community can make well-informed decisions using the evidence-base generated during iterative cycles of data collection. Participation in such projects can thus enable the citizenry to identify and drive intervention and, therefore, empower them to better look after these green spaces. This is a shift from the traditional top-down micro-management to a flexible and locally responsive approach.

RIGHT: Installation of sensors at Central Park





greenminds

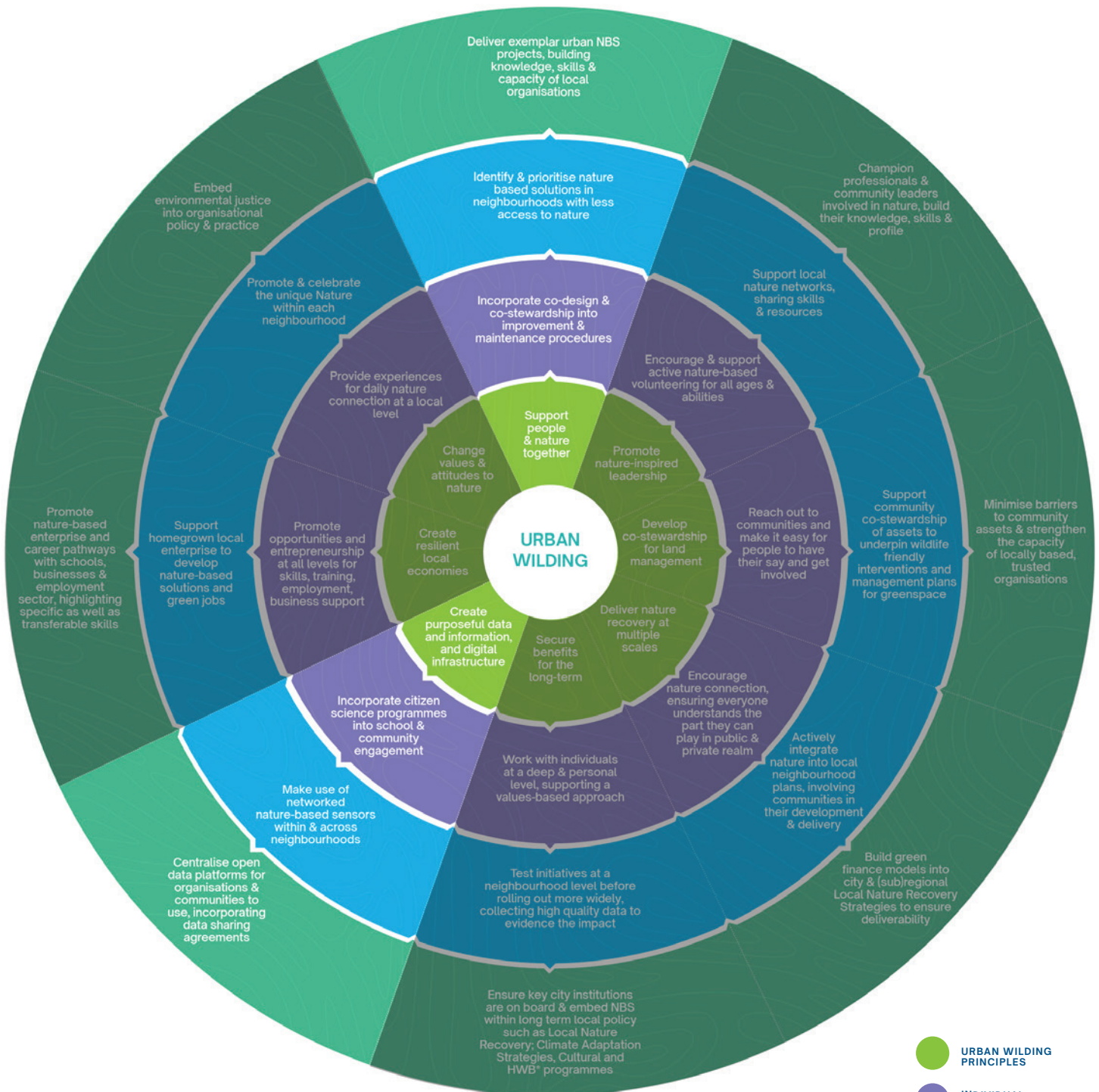
greenminds insight paper

**How Children Engage with
Nature: A Model for Monitoring
the Nature Connectedness
of School Children on
a Citywide Scale**

greenmindsmodel

The model illustrates the three system levels at which the Urban Wilding principles are applied to drive action: the individual, with neighbourhoods, and within organisations.

Permeability, both within and between segments, reflects the need for adaptability through local learning gained through an action learning approach, in which lessons learned influence the next cycle of implementation.



Introduction

There has been a growing interest in ongoing monitoring of how people, specifically children, engage with outdoor spaces^{1,2}. Understanding how people use and experience the environment around them is crucial to connecting people with nature, improving health and wellbeing, and delivering placemaking that reflects local communities.

Green Minds, therefore, facilitated the inclusion of four nature-related questions in citywide surveys. These questions are in line with national surveys, such as the People and Nature Survey, allowing for direct comparisons to be made between Plymouth responses and national datasets.

This insight paper offers a case study of the four nature-related questions introduced to an annual Student Health-Related Behaviour Survey (SHRBS) given annually to Plymouth school students to identify how young people in Plymouth engage with outdoor spaces.

Interestingly, time spent in nature has been shown to provide additional benefits for children and young people. Research efforts have focused on identifying pathways to Nature Connection specifically for young people, and though there are variations, access to nature and increased Nature Connection for children overall:

- Act as a contributing protective factor for emotional wellbeing for young people^{3,4}
- ‘Promotes their physical and mental health and cognitive performance’⁵
- Correlates with less peer and emotional problems, as well as less hyperactivity and inattention⁶
- Correlates with higher self-reported competence, confidence, connection with others, caring, and character, as well as belief in a hopeful future⁷
- Is more likely to lead to pro-environmental behaviours and environmental knowledge^{8,9,10}
- Provides a greater connection to nature continuing to adulthood⁵

With these findings in mind, as well as the global concerns of climate change and nature depletion, it is increasingly important that as both the children of today, and the adults of tomorrow, local governing bodies understand the ways that their young people are spending time in and connecting with nature.

1 “MENE” Monitor of Engagement with the Natural Environment – The national survey on people and the natural environment: Headline report 2019. In. 2019. Natural England

2 “The Children’s People and Nature Survey for England: 2022 update” In. 2022. Natural England.

3 Huynh, Quynh, Wendy Craig, Ian Jansson, and William Pickett. 2013. ‘Exposure to public natural space as a protective factor for emotional well-being among young people in Canada’, BMC Public Health, 13:407

4 Jackson, S. Brent, Kathryn T Stevenson, Lincoln R Larson, M Nils Peterson, and Erin Seekamp. 2021. ‘Connection to Nature Boosts Adolescents’ Well-Being during the COVID-19 Pandemic’, Sustainability, 13: 12297.

5 Chawla, Louise. 2020. ‘Childhood Nature Connection and constructive hope: A review of research on connecting with nature and coping with environmental loss’, People and Nature, 2: 619-642.

6 Sobko, Tanja, Zhenzhen Jia, and Gavin Brown. 2018. ‘Measuring the

connectedness to nature in preschool children in an urban setting and its relation to psychological functioning’, PLoS ONE, 13: e0207057.

7 Larson, L, E Bowers, and L Stephens. 2017. Connection to nature and positive youth development. Presented at Pathways 2017: Integrating Human Dimensions into Fisheries and Wildlife Management

8 Otto, Siegmund, and Pamela Pensini. 2017. ‘Nature-based environmental education of children: Environmental knowledge and connectedness to nature, together, are related to ecological behaviour’, Global Environmental Change, 47: 88-94.

9 Cheng, Judith Chen-Hsuan and Marth C Monroe. 2010. ‘Connection to Nature: Children’s Affective Attitude Toward Nature’, Environment and Behavior, 44: 31-49.

10 Berrera-Hernández, Laura Fernanda, Mirsha Alicia Sotelo-Castillo, Sonia Beatriz Echeverría-Castro, and César Octavio Tapia-Fonlle. 2020. ‘Connectedness to Nature: Its Impact on Sustainable Behaviors and Happiness in Children’, Frontiers in Psychology, 11.

Nature Connectedness in Plymouth school surveys

Green Minds and its partners facilitated the inclusion of four nature-related questions in an annual Student Health-Related Behaviour Survey given to Plymouth school students.

These questions were adapted from national surveys including the People and Nature Survey and the Children's People and Nature Survey. There were 3720 responses collected from November 2021 to October 2022.

How long did you spend in the following places in the last week?

Students were given the option to select from the following statements for how much time they spent in nature, categorised into a variety of green, blue, and urban spaces:

3 hours or more

1-3 hours

Up to 1 hour

No time at all

Why do you spend time outdoors?

Students were given the option to select all reasons why they choose to spend time outdoors from a range of options including both motivations for spending time in nature and activities undertaken.

Nature Connectedness

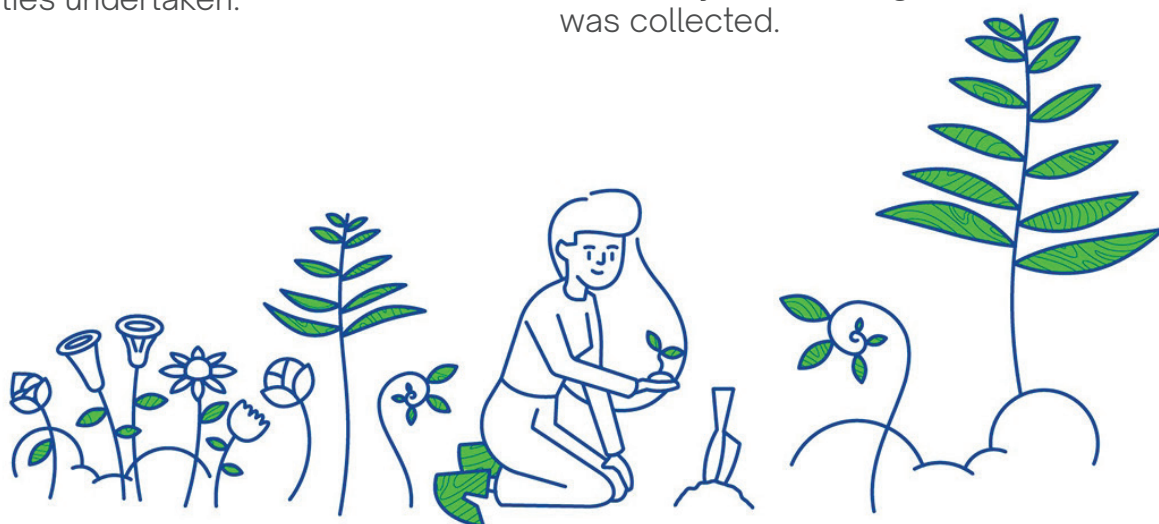
Students were asked to indicate the extent to which they agreed with various statements about their connection to nature.

What are the reasons why you don't spend more time outdoors?

Students were given the option to select all reasons why they do not spend more time outdoors from a range of options.

Comparisons to national datasets

Where relevant, the Green Minds team used this information to make comparisons to the findings from the Children's People and Nature Survey (C-PANS). These comparisons were used to contextualise how Plymouth students engage with their natural environment compared to students across the country. It should be noted though, that whilst similar in theme, there are inherent differences amongst these datasets and regarding how the surveys were designed and how data was collected.



Where do Plymouth school students spend their time outdoors?

25,567 visits were reported to outdoor locations, with 9,068 visits to green spaces and 5,110 visits to blue spaces, within the last week by Plymouth school students.

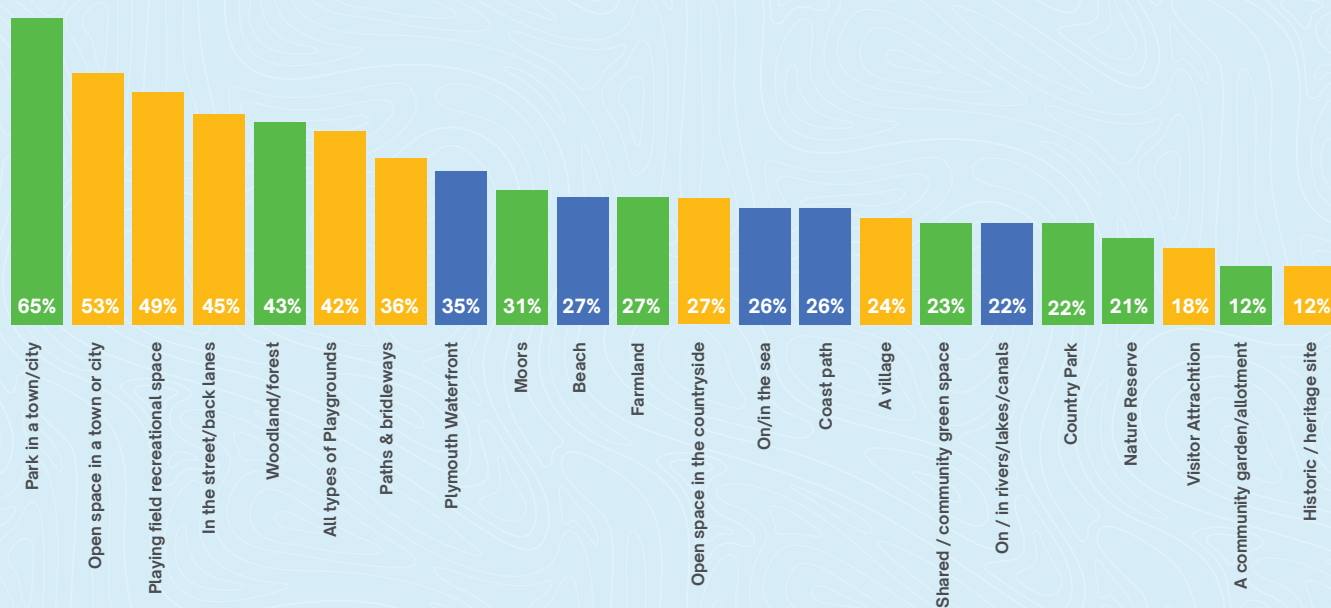
How does this compare nationally?

Similar percentages of students both nationally and from Plymouth reported visiting a park, playing field, or playground.

Plymouth students reported higher rates of visits to woodland or forests, moors, and farmland or other open spaces in the countryside than the national averages.

Plymouth students reported spending a comparable amount of time at the beach, but visited rivers, lakes, or canals more frequently than students nationally.

Breakdown of Plymouth school students reported visits to various outdoor spaces (N=3720).



Graph depicting the percentage of Plymouth school students reported visits to various outdoor spaces (N=3720). Green columns indicate locations classed as 'green' spaces, blue columns indicate locations classed as 'blue' spaces, and yellow columns indicate locations classes as 'urban' or 'other' spaces. Students could provide a response to each statement.

Why do Plymouth school students spend time outdoors?

How does this compare nationally?

The top two reasons why children chose to spend time outdoors (to get fresh air; to play) are the same provided by children in the national survey.

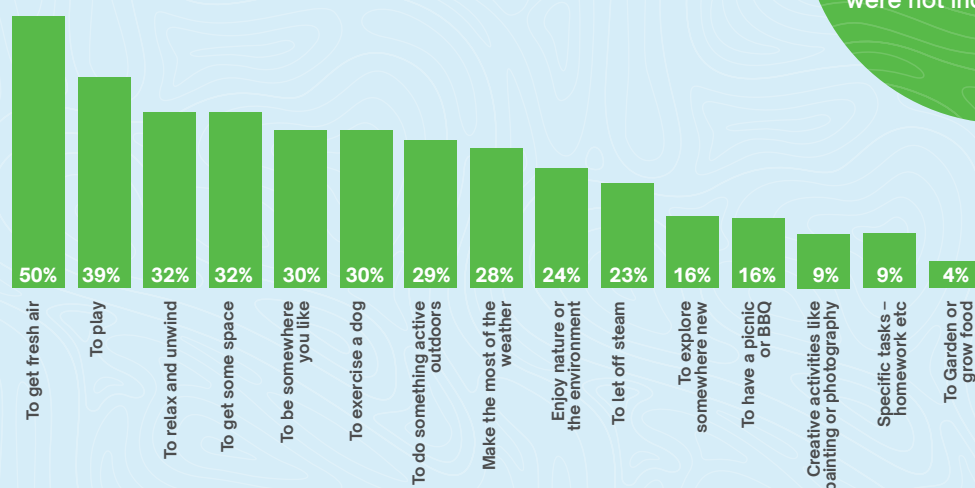
The next two most common responses for both surveys involve relaxing and 'getting some space'.

Nationally, children ranked getting exercise or doing sports higher than those from Plymouth ranked doing something physically active outdoors.

24% of students in Plymouth reported spending time outside to enjoy nature or the environment, compared to 27% of children nationally.

Almost twice as many students nationally reported spending time outside to explore somewhere new or have an adventure.

Plymouth school students (N=3720) reporting why they spend time outdoors.



It should be noted that the two most popular responses from C-PANS, 'to spend time with friends' (55%) and 'to spend time with family' (54%) were not included in SHRBS.

Graph depicting the percentage of Plymouth school students (N=3720) reporting why they spend time outdoors. Students could provide a response for each statement.

Why don't Plymouth school students spend more time outdoors?

How does this compare nationally?

More children nationally reported that they 'just didn't want to' spend more time outdoors. This percentage, which is less than the national average, suggests that a lack of interest is less of a barrier to spending more time outdoors for Plymouth students than it is for those in other areas of the country.

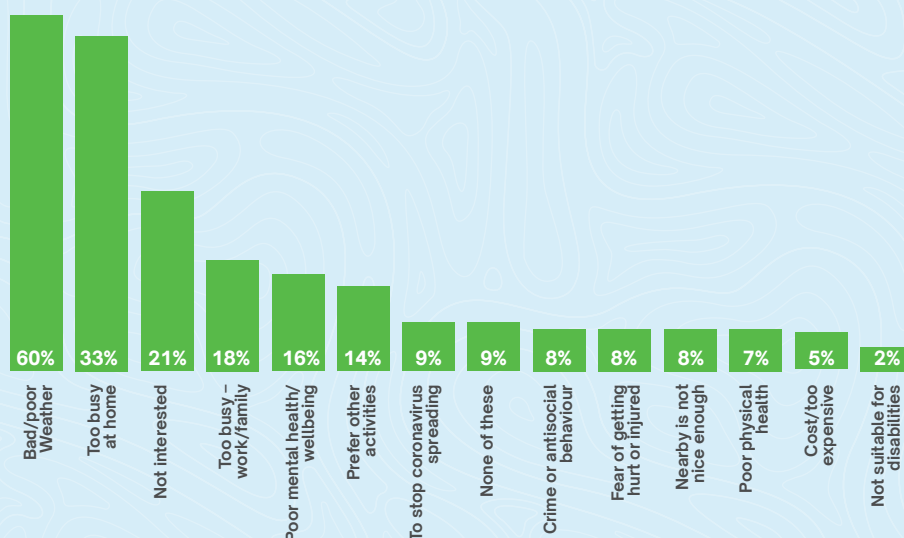
40% more children from Plymouth reported bad weather as a reason for not spending more time outdoors. Being too busy was a common theme both nationally and in Plymouth, either with homework (20%

nationally), at home (33% Plymouth), or with work or family commitments (18% Plymouth).

Similar percentages of children both nationally and from Plymouth reported not spending more time outdoors due to a lack of access to nice locations nearby, a worry about feeling uncomfortable because of other people or antisocial behaviour, or due to poor physical health such as illness or allergies.

Fewer children from Plymouth reported cost or concerns around coronavirus as a barrier to spending more time outdoors than children nationally.

Reasons why Plymouth school students (N=3720) do not spend more time outdoors

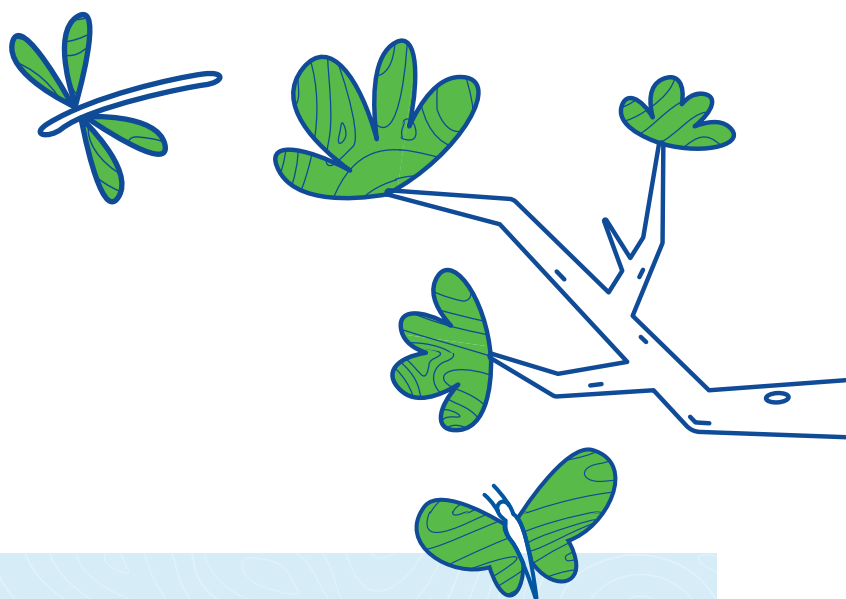


Graph depicting the percentage of reasons why Plymouth school students (N=3720) do not spend more time outdoors. Students could provide an answer for each statement.

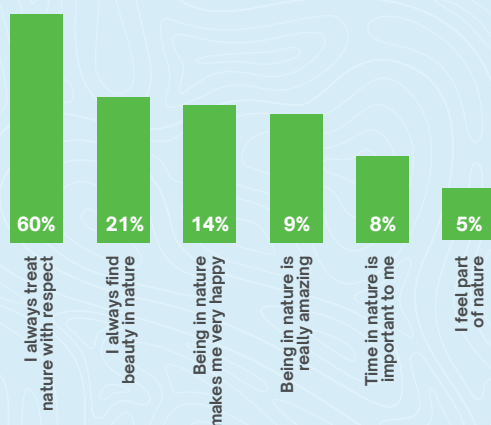
How do Plymouth school students connect with nature?

How does this compare nationally?

38% of Plymouth students agreed that being in nature makes them happy compared to **87% of students nationally**.¹



The percentage of 'Yes' responses to Nature Connectedness questions by Plymouth school students (N=3720)



It should be noted that the assessment of Nature Connection was an area in which SHRBS and C-PANS vastly differed. Therefore, the overall differing themes of the surveys and methods of assessment should be taken into account when viewing these comparisons.

Graph depicting the percentage of 'Yes' responses to Nature Connectedness questions by Plymouth school students (N=3720). Students could provide an answer for each statement.

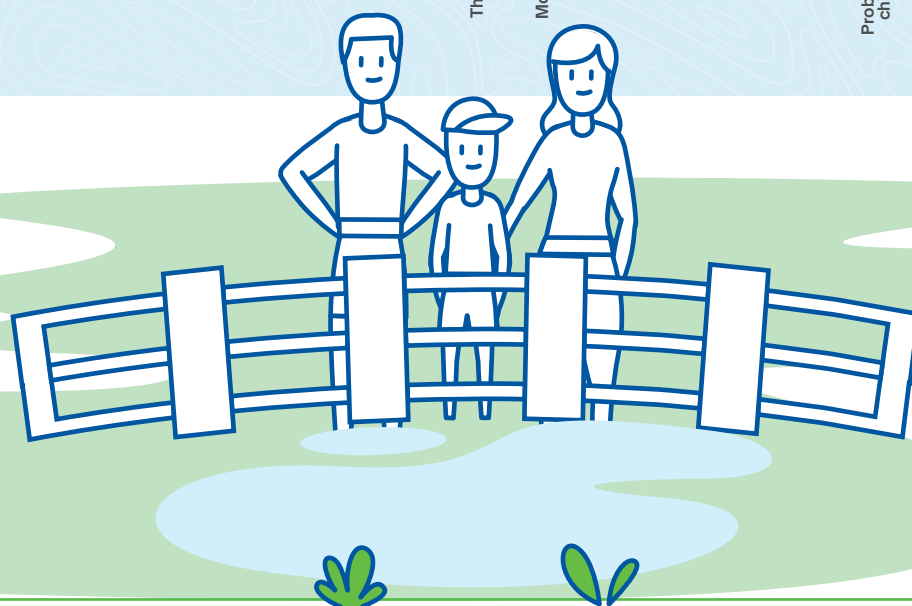
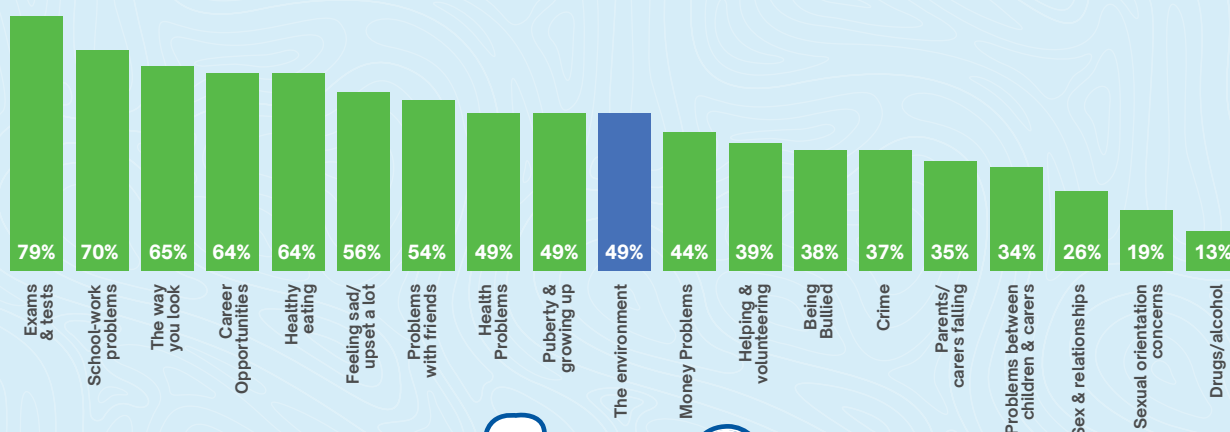
¹ "The Children's People and Nature Survey for England: 2022 update" In. 2022. Natural England.

How much do Plymouth school students worry about the environment?

49% of Plymouth students indicated they worry about the environment either a little, quite a lot, or a lot.

This assessment was not included in C-PANS and therefore there is not an opportunity to compare to national averages.

Plymouth school students (N=3720) indicating degree of worry about various issues



Graph depicting the percentage of Plymouth school students (N=3720) indicating any degree of worry about various issues, including all responses of 'worry a lot', 'worry quite a lot', and 'worry a little'. Students could provide an answer for each statement*. 'Parents/carers not getting on with each other/divorce', ***Problems between children and parents/carers in your family', and ****Thinking you are gay, lesbian, bisexual, or transgender (LGBT)'.

How do students from different neighbourhoods visit outdoor spaces?

Each neighbourhood reported the most visits to urban or other spaces, followed by green spaces, and lastly blue spaces.

Neighbourhood deprivation is likely a contributing factor in students visiting green and urban or other spaces, with more deprived neighbourhoods visiting these spaces less, though no similar trends appear present for visiting blue spaces.

Top & Bottom 5 neighbourhoods visiting outdoor spaces

Green	1. Woodford 2. Somewhere else outside Plymouth 3. Peverell & Hartley 4. Widewell	37. Turnchapel, Hooe & Oreston 38. City Centre* 39. Ernesettle** 40. Barne Barton
Blue	1. Woodford 2. Leigham & Mainstone 3. Morice Town** 4. Devonport**	37. Ernesettle** 38. Goosewell 39. Tamerton Foliot 40. Barne Barton
Urban or other spaces	1. Woodford 2. Tamerton Foliot 3. Somewhere else outside Plymouth 4. Peverell & Hartley	37. Greenbank & University 38. Ernesettle** 39. Ham & Pennycross* 40. Barne Barton**

A collation of the 5 highest and lowest percentage of students from each neighbourhood reporting visits to green, blue, or urban or other spaces. Following each neighbourhood, ** denotes those within Plymouth's 'most deprived' group, while * denotes those within the 'upper middle' deprivation group according to Plymouth's 2019 Index of Multiple Deprivation.

Establishing city-wide Nature Connectedness in school students

How is this information useful for Green Minds?

Gathering local baseline data

The Student Health-Related Behaviour Survey (SHRBS) is repeated annually, therefore enabling Green Minds to continue collecting data over time to monitor changes in how school students interact with the environment. Surveys of this nature are often conducted at a national scale, whereas this survey provides data local to Plymouth and will enable more nuanced policy and practice responses. It will also allow for continued comparisons to the national dataset of the Children's People and Nature Survey to determine if school students in Plymouth have differing connections to nature as a result of various factors such as Plymouth's geography or the influence of organisations and initiatives such as Green Minds.

Delivering future interventions

The responses were also analysed alongside demographic data, therefore identifying leverage points for Green Minds interventions such as neighbourhoods or age groups to target for Green Minds outreach initiatives.

More information on the Children's People and Nature Survey can be found using the following link: <https://www.gov.uk/government/statistics/the-childrens-people-and-nature-survey-for-england-2022-update/the-childrens-people-and-nature-survey-for-england-2022-update>

Moving forward

There were several identified differences amongst SHRBS and the Children's People and Nature Survey. Aligning SHRBS with the Children's People and Nature Survey will allow for more accurate future comparisons. Notably, the Children's People and Nature Survey assessed Nature Connection through a series of pictures in which two circles – one depicting nature and the other a person – overlapped to varying degrees. Children used this visualisation to indicate the level of connection they felt with nature. Where there appears to be a large difference in the level of Nature Connection reported by Plymouth students and national reports, adopting this manner of questioning in future iterations of SHRBS may provide more accurate results.

BELOW: Beyond Face Theatre Company performance in Devonport Park, supported by Green Minds

43% of Plymouth students reported visiting a woodland or forest in the last week compared to 27% of students nationally¹

¹ "The Children's People and Nature Survey for England: 2022 update" In. 2022. Natural England.





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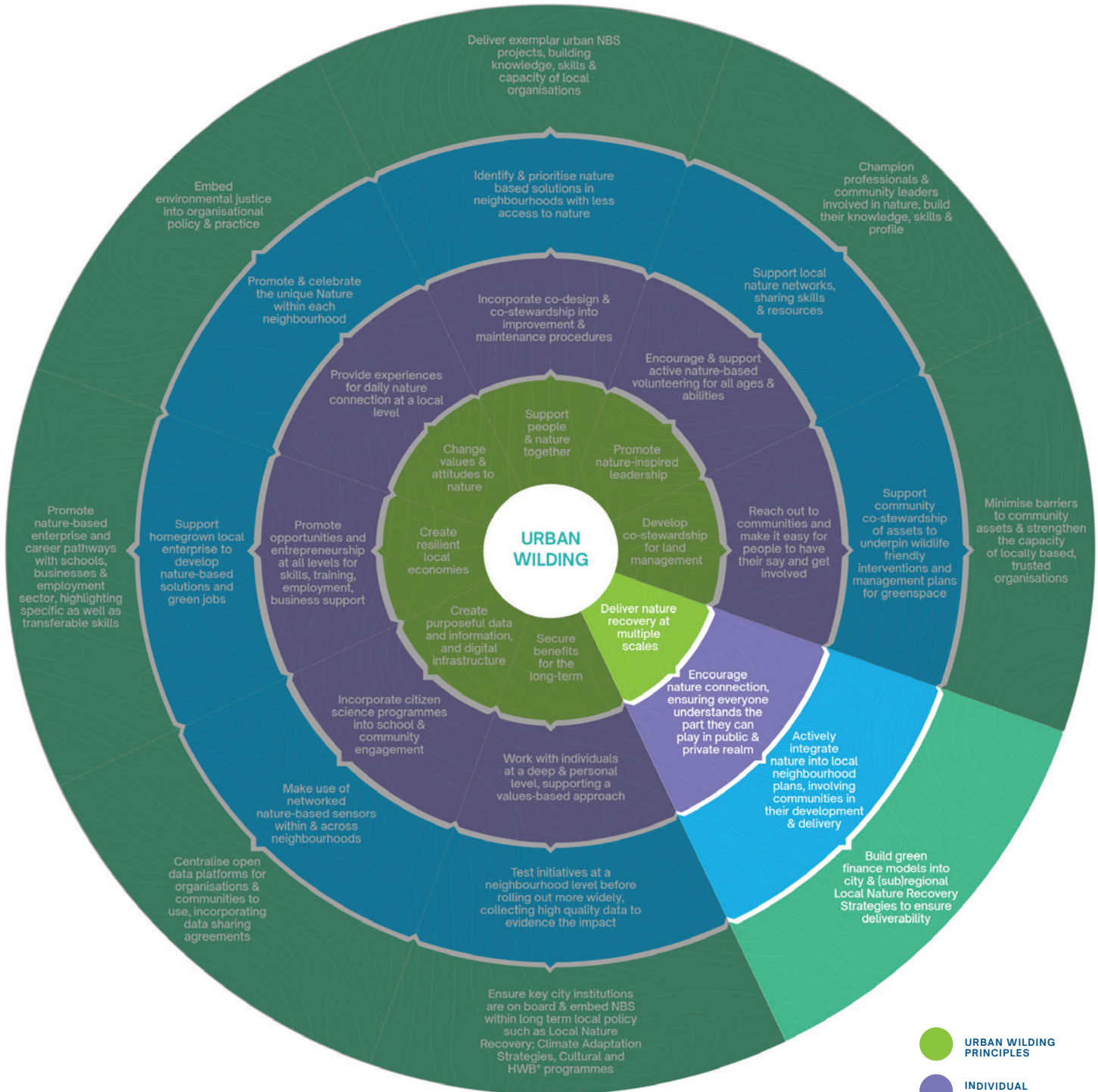
greenminds insight paper

**Developing a Blue Carbon
Methodology to Support
Seagrass Restoration
and Protection:
Plymouth Insights**

greenmindsmodel

The model illustrates the three system levels at which the Urban Wilding principles are applied to drive action: the individual, with neighbourhoods, and within organisations.

Permeability, both within and between segments, reflects the need for adaptability through local learning gained through an action learning approach, in which lessons learned influence the next cycle of implementation.



Introduction

Globally, seagrass ecosystems are known for generating a wide range of ecosystem services including: the provision of food through fisheries,¹ improvement of water quality,^{2,3} and carbon sequestration and storage.^{4,5}

The Plymouth Sound National Marine Park is home to two species of seagrass. In 2005, Plymouth Sound and Tamar Estuaries Special Area of Conservation (SAC), was designated to protect a number of conservation features including subtidal and intertidal seagrass features *Zostera marina* and *Zostera noltei*. Management of the MPAs in Plymouth is coordinated by the Tamar Estuaries Management Plan (TEMP) developed by the Tamar Estuaries Consultative Forum (TECF), hosted by Plymouth City Council (PCC), and chaired by the Kings Harbour Master (KHM) for the Dockyard of Plymouth.

Currently, most projects seeking to achieve the creation, restoration or recovery of seagrass habitat rely on grant funding and donations. Through the Green Minds project we began the process of exploring the potential to sustainably finance seagrass habitat enhancement projects through the sale of a seagrass product or service linked to carbon sequestration and storage.

Very few studies have investigated carbon storage of seagrass beds in temperate regions and only one has been carried out in the UK⁶. **Therefore, Green Minds funding facilitated the sampling and analysis of sediment cores required to quantify carbon values linked to seagrass in Plymouth Sound.**

1 Bertelli, C. M. & Unsworth, R. K. F. (2014) 'Protecting the hand that feeds us: Seagrass (*Zostera marina*) serves as commercial juvenile fish habitat'. *Marine Pollution Bulletin*, 83 (2), pp. 425-429.

2 de los Santos, C. B., Olivé, I., Moreira, M., Silva, A., Freitas, C., Araújo Luna, R., Quental-Ferreira, H., Martins, M., Costa, M. M., Silva, J., Cunha, M. E., Soares, F., Pousão-Ferreira, P. & Santos, R. (2020) 'Seagrass meadows improve inflowing water quality in aquaculture ponds'. *Aquaculture*, 528 pp. 735502.

3 Moore, K. A. (2004) 'Influence of seagrasses on water quality in shallow regions of the lower Chesapeake Bay'. *Journal of Coastal Research*, (10045), pp. 162-178.

4 van Katwijk, M. M., van Tussenbroek, B. I., Hanssen, S. V., Hendriks, A. J. & Hanssen, L. (2021) 'Rewilding the Sea with Domesticated Seagrass'. *Bioscience*, 71 (11), pp. 1171-1178.

5 Sousa, A. I., da Silva, J. F., Azevedo, A. & Lillebo, A. I. (2019) 'Blue Carbon stock in *Zostera noltei* meadows at Ria de Aveiro coastal lagoon (Portugal) over a decade'. *Scientific Reports*, 9

6 Green, A., Chadwick, M. A. & Jones, P. J. S. (2018) 'Variability of UK seagrass sediment carbon: Implications for blue carbon estimates and marine conservation management'. *Plos One*, 13 (9), pp. 18



LEFT: Spider Crabs amongst Seagrass in Cawsand Bay. Image credit, Paul Naylor marinephoto

Developing a blue carbon methodology

Sediment cores were analysed at high resolution to gain a better understanding of the variability of carbon stock and accumulation rates with depth, providing insight into the carbon storage capabilities of Plymouth's seagrass beds over time.

Sampling method and location

9 sediment cores were collected from 3 seagrass sites across Plymouth Sound (Drakes Island, Cawsand and Jennycliff), each using a vibracorer that penetrated 3m deep.

Sampling processing¹

Cores were prepared and analysed every 1cm for the top 50cm.

1. Cores were logged for grain size, colour, biota, patterns etc.
2. Sliced at 1cm intervals
3. Freeze-dried
4. Observed under the microscope
5. Sieved (Jennycliff cores only)
6. Ground and homogenised
7. Weighed (wet, dry)

1. Howard, J., Hoyt, S., Isensee, K., Pidgeon, E. & Telszewski, M. (2014) 'Coastal Blue Carbon: Methods for Assessing Carbon Stocks and Emissions Factors in Mangroves, Tidal Salt Marshes, and Seagrass Meadows'. Conserv Int Intergov Oceanogr Comm UNESCO, Int Union Conserv Nature Arlington, Virginia, USA. Available from: thebluecarboninitiative.org.

2. Appleby, P. G., (2001): 'Chronostratigraphic Techniques in Recent Sediments, in: Tracking Environmental Change Using Lake Sediments'. Springer, the Netherlands, 1, pp. 171–203.

RIGHT: Sediment core sampling

Analyses

% Organic Carbon:

Analysed using an Elemental Analyser (EA) to directly measure Carbon, Hydrogen and Nitrogen content. Prior to analysis, all inorganic carbon in the form of Calcium Carbonate (CaCO_3) was removed from samples. A subset of samples from Drakes Island were also analysed using the method of Loss on Ignition to test the feasibility of this method compared to an EA.

Lead-210 (210Pb) Dating:

This is one of the only feasible methods that can be used to age sediments and calculate sediment accumulation rates.²



What we have found so far

Results from Drakes Island (top 50cm)

Organic Carbon (OC) content at Drakes Island appears to be relatively high compared to other seagrass beds in the UK and observed peaks in OC content have been attributed to a large presence of coal, as a result of intense industrial activity around the period of WW1. OC content is highly variable among the cores and with depth, with the Core 3 showing much higher OC content and highest variability with depth.

210Pb dating results indicate that the top ~25cm of sediment is equivalent to the last ~100yrs. These initial results suggest that cores required to assess carbon stock and accumulation rates likely do not need to exceed the top 50cm, even 30cm of sediment.

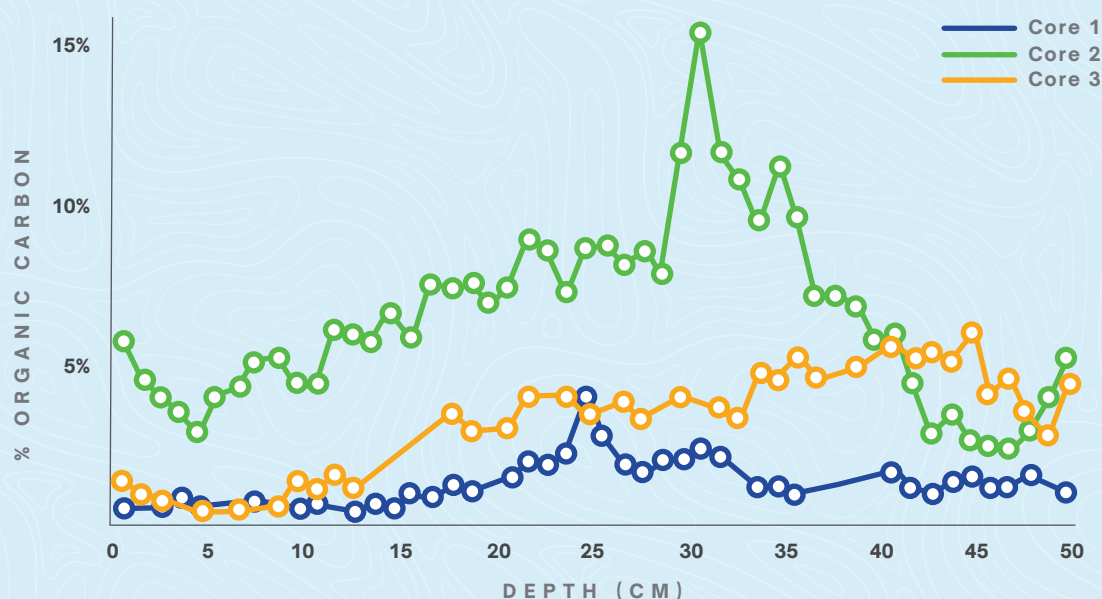
Developing investment models

Our results so far show how variable carbon storage can be among seagrass sediments, both spatially across the seagrass bed and with depth. This is very important to consider when developing investment models for sustainable seagrass conservation.

Results have also highlighted the importance of determining sources of carbon within seagrass sediments and how this influences carbon stocks. It is difficult to determine how much coal contributes to the whole carbon stock of this seagrass bed at Drakes Island, however, it does reveal the anthropogenic influence in these types of coastal habitats and that this needs to be considered when evaluating carbon storage of seagrass sediments.

Our results so far show how variable carbon storage can be among seagrass sediments, both spatially across the seagrass bed and with depth. This is very important to consider when developing investment models for sustainable seagrass conservation.

Organic carbon content percentages at Drakes Island



Graph showing % Organic Carbon content with depth, from 3 cores sampled at Drakes Island.

Moving forward

Next steps

We have demonstrated that the seagrass beds in Plymouth Sound hold stocks of carbon which could potentially financially support wilding through the generation and sale of carbon credits. This would enable both protection and restoration actions.

For wilding to be successful under a sustainable finance model, there is a need for Plymouth City Council and TECF to implement governance that limits or removes certain activities and operations that could impact seagrass beds. This type of governance provides an increased opportunity for Plymouth City Council to foster an ecosystem management approach that blends blue and green spaces, as well as incorporates nature based solutions.

Further research is required to fully understand how the 'condition' (or health) of the habitat influences the amount of carbon stored; where the carbon originates from (from the seagrass or other sources), and the optimum environmental and physical requirements for rewilding at scale.

Protection and active restoration of seagrass beds will provide so many more benefits than carbon sequestration. It may then be possible to develop a blended sustainable finance tool that combines both the biodiversity and carbon benefits.





greenminds

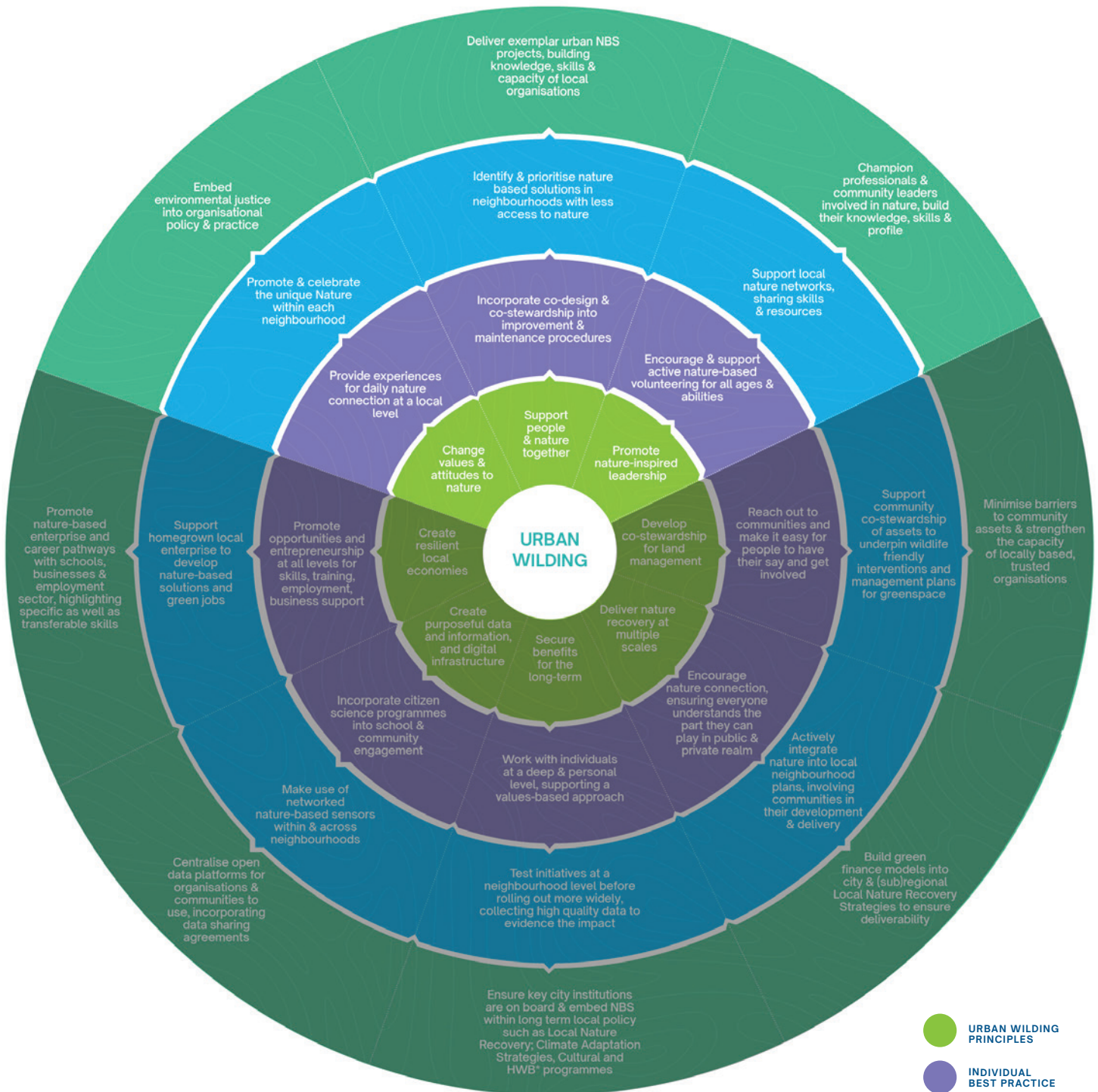
greenminds insight paper

**Monitoring Participation
and Intervention Impact
Through Green Minds**

greenmindsmodel

The model illustrates the three system levels at which the Urban Wilding principles are applied to drive action: the individual, with neighbourhoods, and within organisations.

Permeability, both within and between segments, reflects the need for adaptability through local learning gained through an action learning approach, in which lessons learned influence the next cycle of implementation.



Introduction

Engagement was central to the Green Minds project – without it, the task of changing mindsets regarding urban nature would be impossible.

Monitoring and evaluation of participation and project impact took place through a variety of methods during Green Minds.

Also important was to know how much change we were able to make, so measuring impact was also a central task of the project team.

Monitoring and evaluation of participation and project impact took place through a variety of methods during Green Minds. This insight paper focuses on the methods used to monitor engagement, Green Minds specific deliverables, and the following results indicators:

- Increased sense of wellbeing through connection to nature
- Increased use and user diversity at Green Minds sites
- Improved quality of user experience at Green Minds sites

Methods

Due to the extensive and diverse targets of Green Minds, two key methods were created to monitor and evaluate the project impact:

- 1) Participation monitoring, along with specific targets relating to activity types and changed attitudes to urban nature, was achieved through the use of an online 'Event Evaluation Form' completed by project partners.
- 2) Intervention impact, specifically relating to increased use, user diversity, and improved user experience at project sites, was evaluated through trialling 'site assessments', which incorporated collation of observational data and questionnaire responses of site users.

These methods were complemented with other activities, including Appreciative Inquiry, activity specific surveys (such as consultation and co-design questionnaires), and trials of a commercial online place monitoring platform (Huq).



Participation monitoring

Methodology

In order to monitor project participation, event data and activity related project targets, the 'Event Evaluation Form' was created. This was an online form accessed by project staff to record information required by project funders, including:

- Event details
- Demographics of participants (age; gender; ethnicity; disability; plus attendees who were new to Green Minds and local to project sites).
- Social value impact (knowledge; attitude change; health & wellbeing; connection to nature).

The methods to collate data via the Event Evaluation Form were based on:

- Questions in line with national monitoring schemes like the People and Nature (MENE) survey¹, as well as the local Plymouth City Survey², and subsequent research that has emerged on the positive correlation between time in nature, health, wellbeing and environmental behaviours.
- Specific Green Minds targets and funder requirements: for example, keeping a record of the number of volunteers and demographic data of project participants.
- Evaluation and experience of previous project monitoring: for example, the use of an accessible, online form by staff worked well on previous Plymouth City Council led projects such as the Active Neighbourhoods Project³.

Project staff were given a variety of guidance and resources to collect the required data when possible; for example, the use of event registration forms to collect demographic data ahead of events, and online post-event surveys that could be shared with participants if data wasn't collected during the event.



1 www.gov.uk/government/collections/people-and-nature-survey-for-england
2 www.plymouth.gov.uk/plymouth-city-survey
3 www.plymouth.gov.uk/active-neighbourhoods

Participation monitoring

Measuring social value

Where feasible, staff were asked to incorporate fun activities into events to gather responses to the following questions, as well as collect quotes from participants:

Knowledge: what have you learnt from this event?

Adapted from research in behavioural perception methods⁴, which demonstrated that awareness and knowledge positively influenced intended behaviour in relation to the natural environment.

Changed attitudes: what action are you going to take as a result of participating today?

Research⁵ has shown that people involved in events where attentiveness to biodiversity is explicit (such as citizen science) are likely to make positive behaviour changes to improve biodiversity.

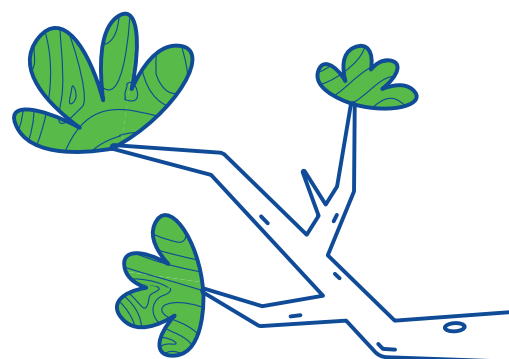
Sense of wellbeing through connection to nature

Research⁶ has shown that although general gains have been linked between nature and health, researchers have to ask more explicit questions that make the connection between spending time outside and a positive uplift in mental/physical health.

In the case of Green Minds, participants were asked whether they fell into the following categories: 'Strongly agree; Agree; Neither agree or disagree; Disagree; Strongly disagree; Don't know', in relation to these statements:

- 'Spending time in nature was good for my physical health'.
- 'Spending time in nature was good for my mental health'.
- 'It was a good opportunity to socialise or spend time with friends or family'.
- 'I felt closer to nature'.

A variety of activities could be used to collect this data during events, from group discussions and individual surveys, to the use of a feedback tree (where people could write a message on paper leaves and stick on the tree), drawing on whiteboards, and coin-drop style activities. As well as contributing towards project targets, this event feedback also informed future activities and target audiences.



⁴ Ashley, Pahl et al (2019): A Change of Mind: Applying Social and Behavioural Research Methods to the Assessment of the Effectiveness of Ocean Literacy Initiatives.

⁵ Prevot et al (2018): Routine experiences of nature in cities can increase personal commitment toward biodiversity conservation.

⁶ Lovell et al (2018): Health and the natural environment: A review of evidence, policy, practice and opportunities for the future.

Participation monitoring

Results

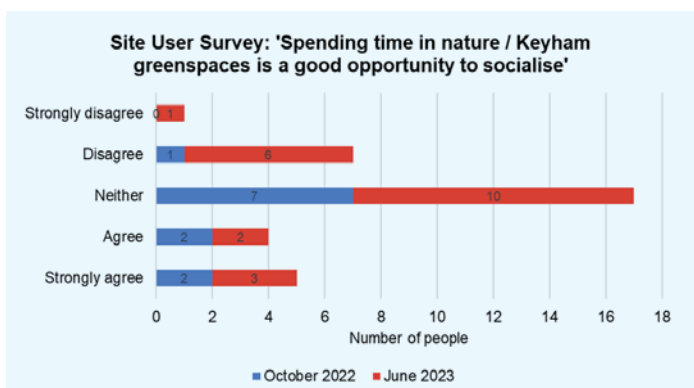
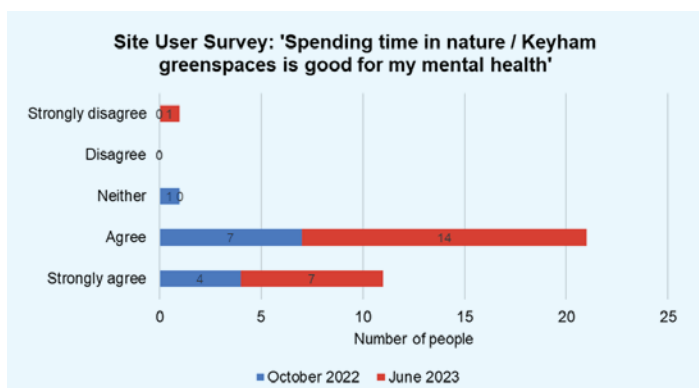
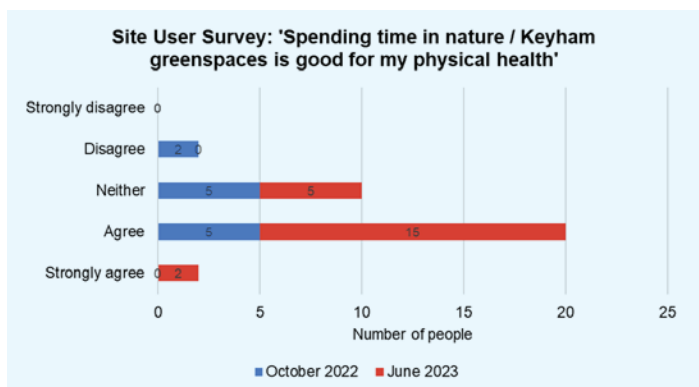
Over 48,000 people engaged with Green Minds throughout the project, including 22,000 people who attended Real Ideas' Illuminate Festival where a 'Wilding Wall' was funded through Green Minds. Demographic information collected (from approximately 10,000 people) showed that 51% of attendees were from one of Green Minds target audiences of young people (aged 0 – 24). Gender and ethnicity data was reflective of the Plymouth City Survey⁷ (PCS), with the majority of people identifying their ethnicity as White (92% Green Minds, 95% PCS) and gender as female (56% Green Minds, 51% PCS).

Many people engaged with Green Minds through regular volunteering events, educational sessions and online events, as well as larger drop-in events such as Plymouth City Council's Fit and Fed on Tour, Poole Farm's Festival of Nature, conferences and networking events, and community-run fun days.

Key learning themes for participants included how to identify flora and fauna, taking action for wildlife through wilding approaches from individual to city scale, as well as learning more about the green spaces and environmental initiatives in Plymouth. People were inspired through Green Minds to attend more environmental events, volunteer (particularly around tree planting), share their experiences with friends and family, and look at how they can promote wilding at home.

What worked well?

By combining expertise across project partners involved in research and the practicalities of collecting data on the ground, the Event Evaluation Form provided the most practical and cohesive way to collate a variety of data to sufficiently demonstrate evaluation of the project. Furthermore, by collating the majority of data in one place, analysis of quantitative results was easier and ensured data collected was consistent throughout the project timeframe and across partners. This format of data collection and activity ideas are easily replicable, and by using questions in line with national and local monitoring schemes, comparisons can continue to be made over time and across multiple projects.



⁷ Plymouth City Survey 2023: www.plymouth.gov.uk/sites/default/files/2023-10/Plymouth-Report-Oct-2023.pdf

Participation monitoring

In terms of analysis, the majority of data collected was used internally as per funding stipulations, with only a few figures shared publicly.

Recommendations

Green Minds had a large and diverse range of target groups, which evolved over the project timeframe. While the Event Evaluation Form was appropriate in the majority of cases, the sheer amount of data required from a practical perspective was sometimes challenging to collect at every event. For example, at external events or drop-in events, it was not always possible to collect demographic information of participants or cover all social value questions in event activities (and analyse the more qualitative data easily). In terms of analysis, the majority of data collected was used internally as per funding stipulations, with only a few figures shared publicly. Therefore going forward, project targets could be simplified and prioritised to collect and analyse data more efficiently. Key recommendations to apply to future projects (depending on funding stipulations) include:

- Continue to use an accessible online form format and questions based on national and local surveys.
- Have more focused demographic data collection – for example, throughout the project the main demographic information requested was ages, so it was not always necessary to collect other data such as ethnicity and gender. As demographic data collection is not always possible, considerations could also be made as to whether this information can be attained from another source (for example, where data collected through Green Minds was reflective of the Plymouth City Survey).
- Consider the use of case studies to compliment the higher-level Event Evaluation Form data, to capture detail, specific targets, or qualitative data (such as working with priority audiences).
- In terms of social value, asking one or two key questions, ideally with fewer multiple choice answers, as opposed to multiple open-ended questions which were more challenging and time consuming to collect at events and analyse.

Intervention impact monitoring

Methodology

Site assessments were used to establish whether the following Green Minds results indicators had been achieved:

- Increased use and user diversity of green blue infrastructure (GBI) at pilot sites
- Improved quality of green blue infrastructure (GBI) at pilot sites: user experience

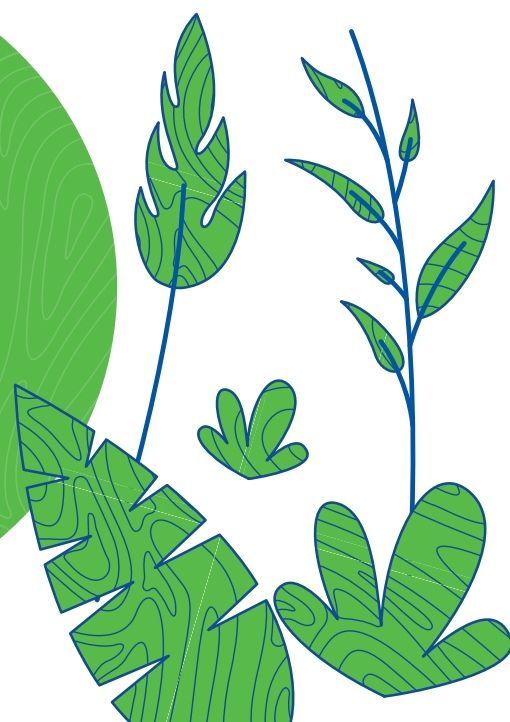
Three of the green spaces in the Keyham neighbourhood were most suitable for site assessments, being completely accessible to the public with simple short-term interventions planned during the Green Minds timeframe.

The site assessment was comprised of two methods: SOPARC (System for Observing Play and Recreation in Communities) observations and Site User Survey questionnaires. These were completed pre-improvements and repeated post-improvements, and data was compared to establish whether the target values for improved quality and use of sites had been achieved.

SOPARC

The System for Observing Play and Recreation in Communities (SOPARC) is a well-known tool used to provide direct observational data on how an area is used by the community in a specified timeframe. Typically data is collected on site user demographics and site user activities, with the amount of time making observations dependent on the size of a site survey area. External factors such as weather and organised activity are also recorded. Green Minds amended this methodology to create simpler and more relevant SOPARC categories.

SOPARC is a simple tool for collecting data, giving an overview and snapshot of site use for evaluative purposes; therefore data is not necessarily completely accurate or reliable. However, to overcome some of these limitations and provide further information on site user experience, Site User Surveys were also completed with a small representative sample of site users.



Intervention impact monitoring

Site User Survey

The Site User Survey (post-improvements) was a questionnaire created by Green Minds to gather information related to site user demographics and their experience of using sites. Similar to the Event Evaluation Form, the majority of questions were based on existing national and local surveys, with multiple choice (generally with five answer categories from strongly agree – strongly disagree) relating to the following:

- Time and motivations for visiting their local green space.
- How they feel about their local green space (such as if it feels safe and accessible), and if they feel they have a say about what happens on site.
- In the case of the post-improvement survey, specific questions on changes noticed and their impact on site users.

Questions were also asked relating to the demographics (age, gender, ethnicity, ability / disability) of the site user, health, wellbeing and nature connection, as well as whether they were aware of Green Minds and opportunities to comment further (to provide qualitative data).

Results

Through SOPARC and Site User Surveys, a 21% increase in site visitor numbers was seen as well as an increase in user diversity, with more demographic categories represented post-improvements. Improvement to user experience was also seen with increases in positive responses relating to health and wellbeing and site quality, with 43% of people feeling that the

green space improvements had a positive impact on them (and 52% answering ‘about the same’).

The majority of people surveyed on site had noticed more wildlife meadow improvements and tree planting, new play equipment and the green spaces generally looking wilder. When asked about their experience, themes included more opportunities to explore, feeling more relaxed and the parks ‘look beautiful’. The majority of people surveyed (95%) said they’d spent about the same amount of time in the greenspace since the improvements, with the most common theme being that it was already part of their routine (such as dog walking or spending time with family).

In addition to the Green Minds site assessment, in March 2023, University of Plymouth School of Society & Culture released an independent academic evaluation⁸ relating to the Keyham Recovery programme following a critical incident in August 2021. While this research was done independently to Green Minds, questions relating to the public spaces formed part of their evaluation due to these areas being identified as a priority for improvements by the community. This provided useful feedback to inform Green Minds approaches. The Safer Keyham Report analysed secondary data via a community survey completed by 240 residents in the area, and further demonstrated the positive impact of the green space improvements and helped identify future priorities (such as engaging more young people with public spaces).

8 A Safer Keyham: Independent Academic Evaluation: pearl.plymouth.ac.uk/bitstream/handle/10026.1/20932/Safer%20Keyham%20evaluation%20FINAL%20REPORT.pdf?sequence=3&isAllowed=y%20

Intervention impact monitoring

SOPARC observational data provides a good snapshot of site use

What worked well?

- Use of external contractor (unbiased / removed from project) completing site assessments, particularly on behalf of Plymouth City Council. The contractor also reported positive feedback from site users about 'feeling heard' through using this personable approach compared to higher level surveys.
- SOPARC observational data provides a good snapshot of site use, and combined with the Site User Survey, gives a comparable insight into user experience and whether the results indicators were achieved.
- SOPARC and Site User Surveys adapted for Green Minds provided a more efficient and relevant way to collect required data, particularly through amending activity categories to pick up on smaller scale interventions (such a bench installation).
- Allows for detail of intervention impact to be captured, particularly with smaller sites and smaller scale interventions. Where there is capacity to spend time on site making observations and talking to site users, the site assessment method could be used and updated based on learning from Green Minds.
- The mix of multiple choice and open-ended questions used in the Site User Survey, to provide quantitative evidence of impact as well as hear more anecdotal and qualitative feedback.



Intervention impact monitoring

Recommendations

- Similar to the Event Evaluation Form, consider collecting demographic data via other methods such as the Plymouth City Survey where this is reflective of people engaging with the project.
- Consider further use of complementary qualitative approaches such as Appreciative Inquiry and case studies to capture impact of interventions in more detail, as well as attending community groups / local events to gather more Site User Survey responses.
- Reduce the number of questions asked in the Site User Survey, with one or two multiple choice questions per evaluation theme. For example, as Green Minds progressed and developed relationships with University of Derby on nature connection research, the question ‘I am taking more time to notice and engage with everyday nature (eg. listening to birdsong, noticing butterflies)’ became preferable to use as opposed to other nature connection questions. Research⁹ has also shown that noticing nature is more important than the time spent in green spaces; therefore questions on time spent in green spaces is not necessarily needed in future surveys.
- As mentioned in the Safer Keyham Report, it should be noted that green space design alone cannot ameliorate extraneous or personal matters faced in urban communities (such as austerity), resulting in some people not feeling impacted by green space improvements. Therefore, questions and analysis of Site User Survey responses should consider how best to show genuine project impact as opposed to results being affected by personal opinions of local authority involvement. Green Minds overcame some of these challenges through the use of partners and external contractors, who anecdotally were able to have more constructive and more focused conversations on green spaces.
- The main challenge of monitoring intervention impact through Green Minds was a lack of staff capacity, resulting in less time to complete site assessments. The SOPARC methodology gives a snapshot of site use; therefore, where there is capacity, regular surveys should be completed to gather more reliable data, less affected by extraneous variables such as weather and school holidays.
- In terms of the Site User Survey, Green Minds found that the pre-improvement survey was not necessarily required, as data was not directly comparable post-improvements where different individuals completed the survey. More specific questions related to improvements were also asked in the post-improvements survey, which sufficiently provided the data required on project impact.

⁹ Richardson, M., & Butler, C.W. (2022). The nature connection handbook: A guide for increasing people's connection with nature. United Kingdom.



Complementary methods

Online place monitoring platform

Huq¹⁰ is an example of a commercial online place monitoring platform that provides data on site footfall, dwell time, visit density mapping, granular catchment (locality of visitors), and visit frequency. Green Minds trialled using this platform to receive data on Central Park. While Huq was useful for higher level figures looking at Central Park as a whole, and was time efficient to use (as opposed to collecting observational data through project staff), data was heavily influenced by visitors to Plymouth Life Centre and Plymouth Argyle Football Club, located on the outskirts of the park. As a result, impact of Green Minds smaller scale interventions or activity around specific locations within the park could not be monitored easily through this platform.

Activity specific surveys

Throughout Green Minds, activity specific surveys were created where appropriate to gather further information, particularly in relation to co-designing improvements with communities. Examples of this was the use of surveys (completed online and on site) as part of the Keyham Greenspace Improvements¹¹ and Central Park Treescapes Project¹². Similarly to the Event Evaluation Form and site assessments, questions were asked in relation to how residents used their local green space and impact on health, wellbeing and nature connection. Additional multiple choice questions were added (such as 'how do you rate this design?' with 'excellent; good; average; poor' answer categories), as well as an open ended question (such as 'please tell us why you rated the design like this' or 'is there anything else you would like to tell us?').

Green Minds found this mix of quantitative and qualitative data useful, providing quantitative figures for evidencing community priorities, as well as opportunities to hear further ideas or feedback. The use of these surveys with options for individuals to complete independently or at events / on site with staff, provided a more personable approach, with residents reporting they felt heard. For example, several unprompted comments from Keyham consultation survey respondents were themed on thanking Green Minds for working in the green spaces and liking the mix of areas for wildlife and people.



¹⁰ huq.io/platform ¹¹ greenmindsplymouth.com/keyham-greenspace-improvements

¹² greenmindsplymouth.com/news/central-park-designs-revealed-for-zoo-field-and-pounds-park

Complementary methods

Appreciative Inquiry

Appreciative Inquiry (AI) is a technique to help understand and facilitate change in complex systems, drawing together research from positive psychology, sociology, medical research and behaviour change research. Green Minds used this approach with green space users and non-users, and Plymouth City Council Street Services staff, following its initial trail through the Future Parks Accelerator Project¹³. The approach involves asking open-ended questions, such as ‘tell me about your favourite outdoor space’.

Plymouth’s AI approach is a cycle of constant learning, with the following principles:

- Recognising that everyone within the system is fully human with motivations, dreams, and aspirations.
- Believing that people attend events and engage in their community because they have good intentions. Most people want to do their best.

- Giving up control to the lowest possible part of the individual/community/city hierarchy has immense power – because these are the people who know ‘what needs to be done’ in the moment and can actually do it.
- Outcomes are emergent and cannot be predicted at the beginning of a process.

Green Minds collected stories from people using green spaces across Plymouth; and through events, groups and organisations not based in green spaces (non-users). These interviews were analysed to identify key themes to inform activities, improvements, decision-making and management of green spaces for people and wildlife.

While time consuming to collect and analyse AI responses, this approach allowed a deeper understanding of how Plymouth residents feel and allowed a more personable approach to Green Minds activities and how best to implement interventions alongside communities.

Green Minds
collected stories
from people
using green
spaces across
Plymouth



13 www.plymouth.gov.uk/future-parks-accelerator-project

Conclusions

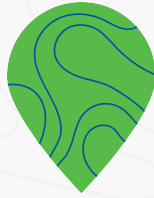
The mix of methods used by Green Minds to monitor participation and impact of interventions has shown the following:

- The use of an online Event Evaluation Form was efficient and easy to collect data across the Green Minds project partners in a uniform way and analyse in relation to Green Minds targets, particularly quantitative data. This form template could be easily replicated and simplified across other projects.
- Where there is staff capacity, carrying out observational surveys and having conversations on site while completing Site User Surveys provides detail required to demonstrate intervention impact, as well as deliver a more personable approach working within communities.
- Where surveys need to take place, have a standard set of closed and open questions to gather both qualitative and quantitative data that can be applied to multiple projects and sites.
- Keep surveys simple, for example, if nature connection is the priority, ask one or two questions on this subject rather than several related questions, and where possible, have fewer answer categories, so data is easier to collect and more efficient to analyse.
- Consider the use of other methods to simplify data collection of demographics where engagement is reflective of the community, such as using the Plymouth City Survey to gather this information as opposed to collecting it through events.
- Consider complementary methods such as Appreciative Inquiry and the use of case studies to demonstrate and understand project impact in more detail.



2.0 | case studies

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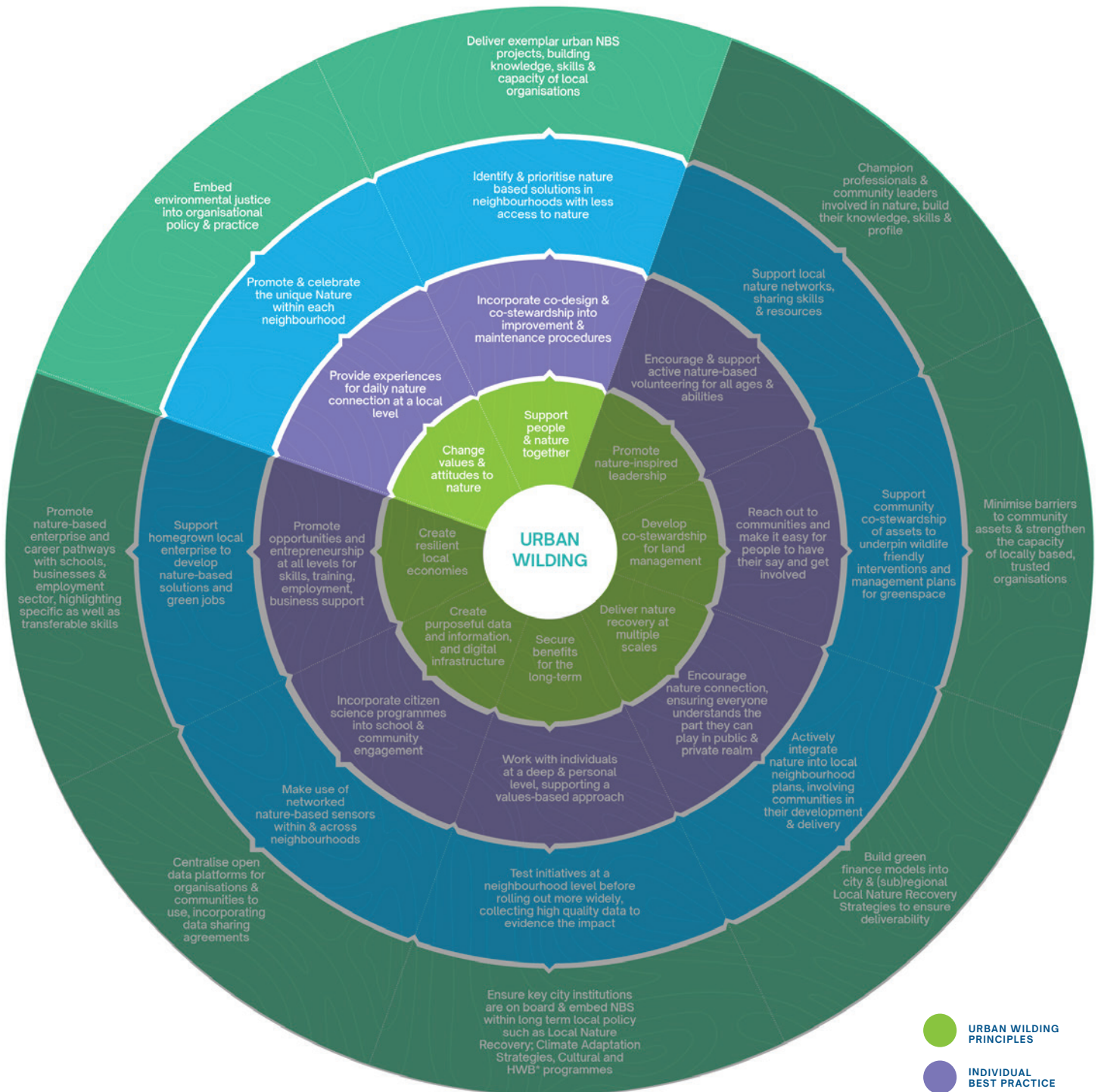
greenminds
case study

The Urban Beaver Story

greenmindsmodel

The model illustrates the three system levels at which the Urban Wilding principles are applied to drive action: the individual, with neighbourhoods, and within organisations.

Permeability, both within and between segments, reflects the need for adaptability through local learning gained through an action learning approach, in which lessons learned influence the next cycle of implementation.



What we set out to do

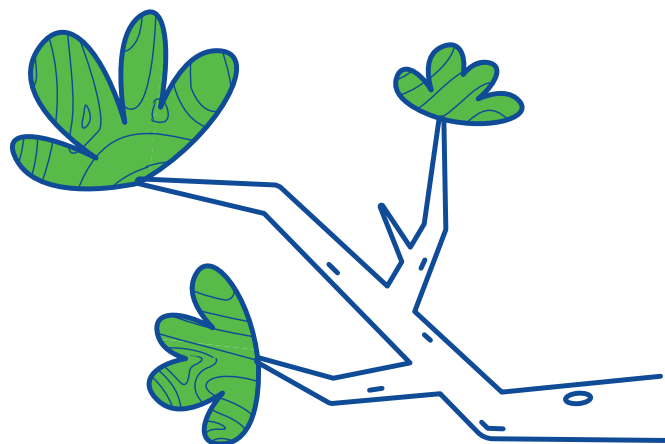
This case study describes the experiences of Britain's first urban European Beaver re-introduction as a natural flood management trial, part of the Green Minds project's urban wilding initiative.



Derriford Community Park is surrounded by housing and industry and forms an important open space within the city of Plymouth. It extends across two Valleys, Seaton and Bircham, each having a stream that together drain a catchment of about 4.5km². The catchments comprise hard surfaces, fields and steep valley woodland.

As in many parts of Plymouth, localised flooding often occurs during heavy rain storms, closing roads, and threatening property. New urban developments leading to even more sealed surfaces and surface water run-off have led to the creation of large engineered solutions, attenuation basins. They are costly and demand a lot of space. An alternative is needed. After much research, beavers were settled upon as a natural flood management measure.

Beavers are fascinating creatures with an important job to do. They are natural engineers who change their surroundings by felling trees, damming sections of river, slowing the flow of water during and after rainfall, helping to reduce flooding downstream. They also create wetland spaces, great for birds, fish, amphibians, and bugs to live and feed in.



LEFT: Beaver in Derriford Community Park.
Photo credit Chris Parkes Photographer Ltd.

Bringing beavers to Derriford

Plymouth City Council, which owns and runs Derriford Community Park, established a Project Board to oversee the beaver re-introduction. This comprised experts in beaver ecology, river ecology, hydrology, and beaver re-location.

This group advised on the needs of the beavers, the nature of possible interactions with the surrounding community and infrastructure, and how to mitigate potential problems, and the design of the beaver enclosure. They proved to be an invaluable sounding board, providing expert advice that enabled project managers to take some difficult decisions as the project unfolded.

The arrival

The first to arrive, in November 2020, was a male beaver closely followed by a female the following January – both from wild populations in Scotland.

A 3.5 ha enclosure, which covers 600m of river in a wooded valley, had been prepared for them.

While setting this up, Plymouth City Council kept the welfare of the animals of paramount importance by working with partners including leading beaver experts at Devon Wildlife Trust, rewilding specialist Derek Gow, and Roisin Campbell-Palmer, the UK's top beaver ecologist, to ensure the beavers remained healthy and happy.

RIGHT: beaver being released in Derriford Community Park.
Photo credit, Chris Parkes Photography Ltd



New engagement opportunities

The arrival of the beavers created many new opportunities for Plymouth City Council and its partners to engage with their communities about nature and nature based solutions for flood management and nature recovery.

New engagement

- **Wildlife tour:** The beavers give the wildlife tours new momentum. Open to the public, tours last about 1.5hrs and are an opportunity to communicate about urban nature, wilding, natural flood management etc.
- **BBC Winter Watch TV** magazine item, broadcast nationally, featured the beaver introduction in an urban environment. Engagement was online as it occurred during Covid lockdowns. Nicknamed 'the people's beaver' it generated a real buzz online, and expressions of pride from the residents of Plymouth.
- **Online engagement** was high, with the video of the beaver being released gaining over 126,000 views – the largest engagement of the year for Plymouth City Council communications.
- **A beaver naming competition** proved extremely popular. Targeting primary schools, an information pack and teacher lesson plan – featuring the beaver release video, and information on wilding and urban ecology – invited children to suggest names as the final part of the lesson. 50 schools submitted entries, the winners being selected by Street Services staff.
- **Farm visits for schools** benefited from the addition of beaver watching, which led into teaching on flood management, ecosystem functions etc.
- **Beaver volunteering:** A volunteer team was set up to monitor the beavers daily, noting their behaviour, checking the enclosure boundaries etc. offering more specialist volunteering opportunities.



Beaver cabin and eco-therapy

Green Minds provided funding for a ‘wildlife hide’ to observe the more reclusive birds and mammals in the park.

However, with the arrival of the beavers the park staff decided something more ambitious was needed to capitalise on the high level of interest in the beavers.

An eco-cabin was designed with glass walls overlooking the beaver pond to provide a sheltered and versatile viewing area and classroom for school group visits. This has proven immensely popular as an outside inside space – that is, a sheltered all weather activity space that feels part of the outside environment that surrounds it. This is achieved by its glass walls and log frame construction.

It has given rise to a whole new range of services which make use of the natural environment of the park and the opportunities it provides to connect people to nature.

For example, the experience of traumatic events in childhood can affect mental health and the ability to engage with education in

early life. Child and Adolescent Mental Health Services (CAMHS) in Plymouth have seen an increase in referrals, which has resulted in a long wait for children from the time of referral to the point at which services are delivered. A new programme was needed to work with children and young people in group settings.

The beaver cabin provides a safe and tranquil space for the delivery of therapeutic, nature-based activities that engage young people with nature in order to build good self-care practices that will foster healthy coping mechanisms for the rest of their lives.

‘Outside Within’ eco-therapy activities

A wide range of nature-based activities were run on a weekly basis for 6 sessions. The intervention was organised around a half term giving pupils the opportunity to apply what they have learnt in the first three sessions in an informal green space near their home.



A favourite moment on the Outside Within Programme was spending time around the campfire. ‘When he comes home he talks about lighting fires and sitting and having hot chocolate and marshmallows’.

ECO-THERAPY PARENT

LEFT: Inside the beaver cabin

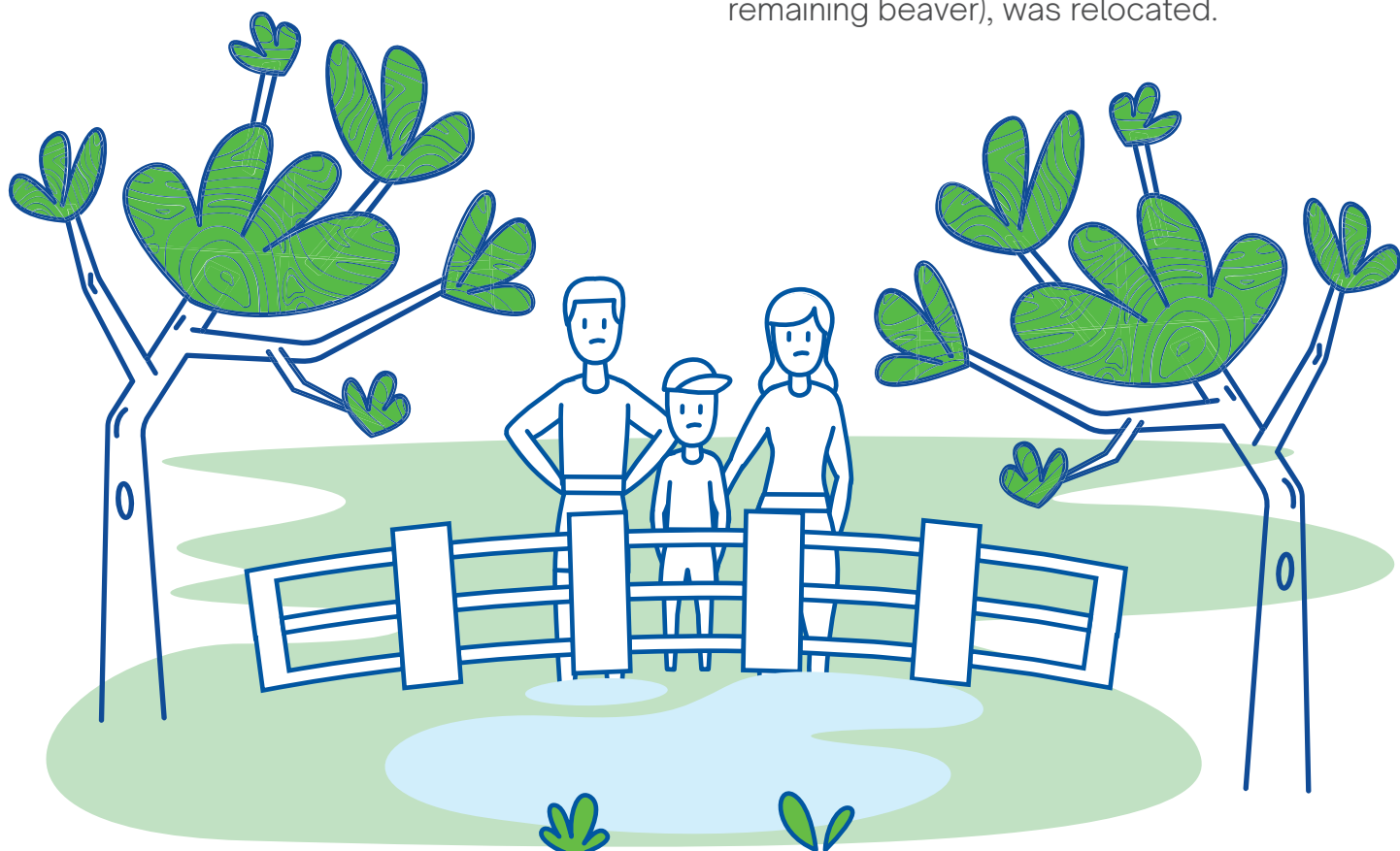
The escape

Extreme weather, of the type the beavers were brought in to help cope with, damaged the enclosure fencing in July 2021, and the beavers escaped.

Sadly, the female beaver, Beryl, was killed by a car. The public reaction was one of great sadness at the loss of an animal that the city had taken its heart.

Project Manager Jerry Griffiths recalled “It was at this time that the Project Board really proved its worth. We consulted the board over the possible motivations for the beaver escape – was it disturbance caused by nearby construction works, of nearby housing, or the pressure on food resources caused by the presence of deer in the enclosure, or just the opportunity presented by the damaged fence?”

A key question was “what do we do now?”. The board encouraged the continuation of the trial once design flaws in the enclosure were resolved. In the meantime, Brian (the remaining beaver), was relocated.



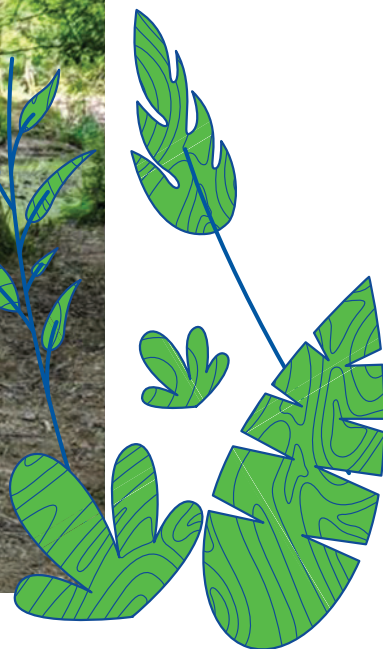
Natural flood management

Beavers help to provide natural flood management (NFM) by building dams that slow the flow of water downstream during heavy rainfall. It is stored temporarily in ponds behind the dams. This helps to prevent flooding further down the valley.

One beaver dam isn't enough and so a series of small-scale 'leaky dams' were constructed by the Farm team to perform the same task – about 120 are planned all together! They mimic the natural effects of fallen trees blocking streams, facilitating the natural build-up of debris between obstacles which slows water flow.

Hydrological monitoring by the University of Exeter has allowed the individual and collective impact of the dams to be evaluated by the University of Exeter using hydrological monitoring. This is important if NFM is to provide a credible alternative to more conventional engineered structures.

BELOW: leaky woody dams slowing the flow at Derriford Community Park



Monitoring impact

The water level at each of the 3 monitoring points was recorded continuously on a 15-minute timestep for over 300 storm events and converted to discharge volume data. "This was combined with the rainfall radar data and analysed to extract rainstorm events and their related flow response events.

Analysis showed that each dam had a measurable effect in its immediate vicinity, but many small leaky dams are needed to have a measurable impact at flood risk areas further down the Forder Valley. In promising results on Bircham Stream, we've seen statistically significant reductions in peak stormflow following the leaky dam installation that has occurred so far.

Key insights

1. Beavers are a charismatic species and have immense potential to enhance community engagement, and to stimulate development of new nature-based services and community pride
2. They offer a unique opportunity to generate engaging education materials and lessons regarding ecology, urban wilding, natural flood management etc. and a study site on their doorstep in the city
3. To fully capture this benefit, investment is needed in appropriate infrastructure – principally the beaver enclosure and the observation cabin
4. Monitoring is essential to be able to demonstrate the positive impact of natural flood management to decision makers
5. The huge public interest in the beavers brought a higher level of scrutiny than usual, so being able to call upon experts to advise and to defend decisions is invaluable
6. The urban context created unique problems – concern regarding beaver welfare, disturbance from dogs, construction and traffic noise, and more. This necessitated expert advice, and stronger fences needed to keep beavers in and people out recognising the higher risk of escape in urban areas.





greenminds

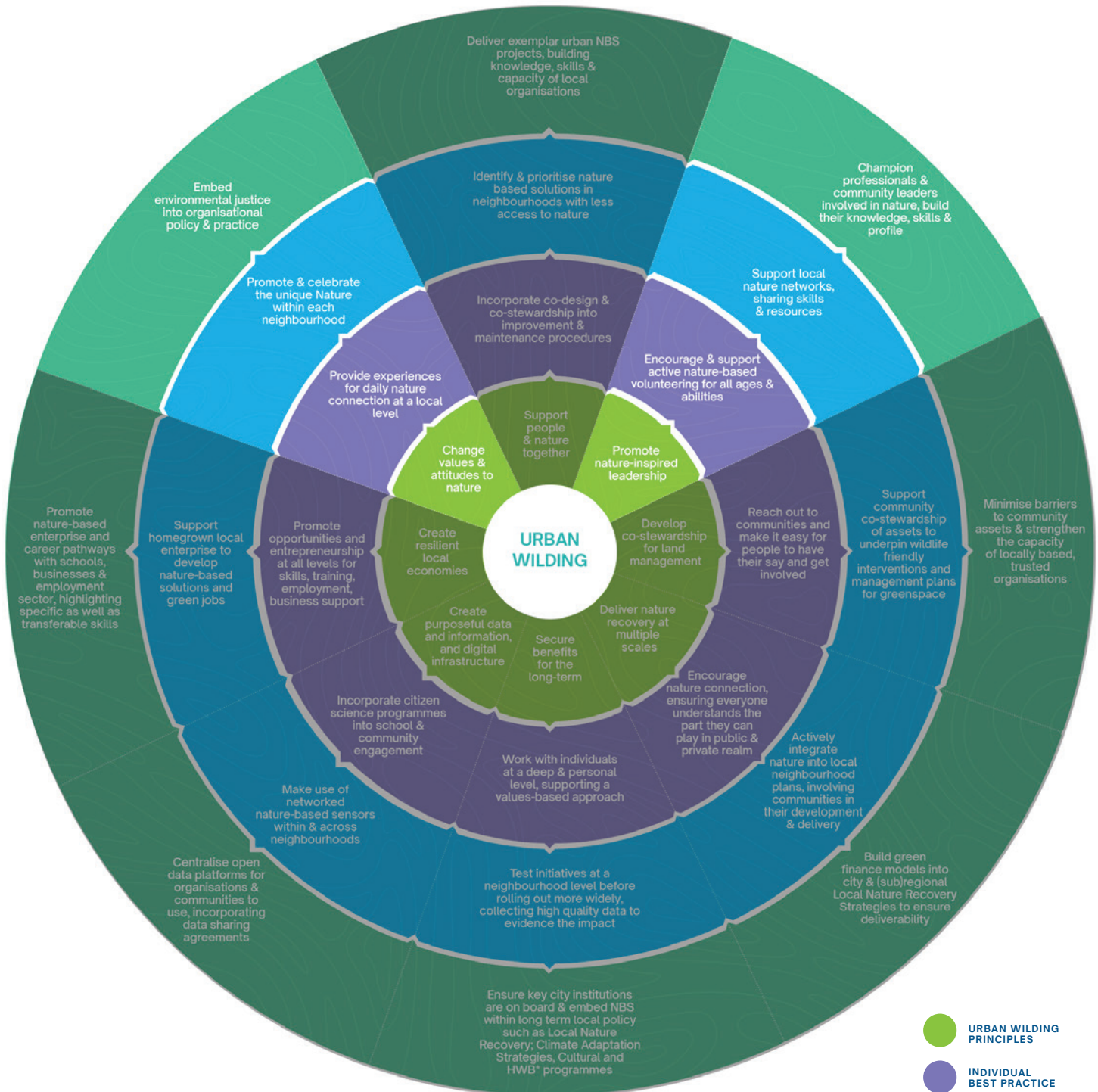
greenminds case study

**Urban Wilding in Action:
A Citywide Approach
to Public Grassland
Management**

greenmindsmodel

The model illustrates the three system levels at which the Urban Wilding principles are applied to drive action: the individual, with neighbourhoods, and within organisations.

Permeability, both within and between segments, reflects the need for adaptability through local learning gained through an action learning approach, in which lessons learned influence the next cycle of implementation.



Introduction

Green Minds is an ambitious, pioneering, 4 year programme (2019–2023) which aims to test new ways of thinking and acting for nature within the city of Plymouth by focusing on 3 themes – **urban rewilding, a systems approach to land management**, and creating ‘Green Mindsets’.

In this case study we take a look at how Green Minds changed the way grassland is managed throughout the city

‘We made a decision very quickly to say, ‘let’s turn the challenges into an opportunity and scale up what we’re going to do.’

– PCC GREEN ESTATE MANAGER

Prior to 2020, 85% of the 700 hectares of grassland managed by Plymouth City Council was managed as amenity grassland, mown every four weeks. The remaining 15% was managed for wildlife as wildflower meadows and cut once a year. In 2020, a new approach to grassland management, reducing grass cutting in a small number of pilot sites across Plymouth, was tested. However, the 2020 growing season coincided with the start of the Covid-19 pandemic. Whilst this presented numerous and significant operational challenges, the project team turned these challenges into an opportunity to accelerate the pilot, resulting in grass cutting in 1310 sites across Plymouth being reduced to just one cut at the end of the summer by 2022, and managed as meadow habitat.

PLYMOUTH GRASSLAND – OVERVIEW 2023

- over 700 hectares of grass
- 60 Per cent managed for people
- 40 Per cent managed for nature
- 76 sports pitches
- 120 wildlife meadow sites
- 22 formal parks
- 127 play areas
- over 2,000 roadside verges and other amenity space.

www.plymouth.gov.uk/how-we-manage-our-grass

The need for change

Before 2020, 85% of the 700 hectares of PCC grassland was managed as amenity grassland, mown every four weeks.

The traditional approach of cutting grass every four weeks had changed little in several decades. This approach needed to be brought up to date to align with regional, national and global priorities of today, regarding climate change (cutting fuel use), improving biodiversity, and managing costs and operational capacity.

Reducing grass cutting has brought about a number of key benefits for the council, the people of Plymouth, and wildlife.

- **Biodiversity gains:** Increasing the area of meadow habitat in the city from 15% to 40% of all grassland created more areas for plant and animal species to thrive. Surveys in Plymouth showed that, as a result, there were twice the number of pollinating insects and species in meadow areas compared with amenity grassland, as well as twice as many plant species¹.
- **Fuel and carbon savings:** Fuel use during the growing season in 2020 was 33% lower than the previous year, providing cost savings for the Council and reducing the carbon footprint of the grounds service.
- **Staff empowerment:** Operational green space staff are thinking differently about their roles, having a greater awareness of wildlife and a desire to manage areas most effectively to benefit wildlife. “They’re much more aware of wildlife... and are proactively asking ‘How can we do this better?’ That wouldn’t have happened two years ago.” **Green Estates Manager.**
- **Public perception:** The campaign is felt to have helped improve public perception of the service. In 2020, the team reached 67,000 people on social

media, with over 7,500 people engaging with the campaign in a five month period. Comments received on social media were overwhelmingly positive (79%), and fewer complaints were received.

- **Changing mind-sets:** The new approach has resulted in the team and other stakeholders “thinking differently” about grassland management, asking questions, and seeking to understand the best approach to cutting different sites, to ensure they are managed optimally based on their use by communities and other user groups. “We’re talking more about how spaces are used by communities and users, and that’s not just operationally but with decision makers and communities as well.” **Green Minds Project Manager.**
- **Strengthened partner relationships:** The project team worked with partner organisations and strategic stakeholders including Devon Wildlife Trust, National Trust, Buglife and Plantlife, helping to strengthen partner relationships and the Council’s reputation amongst environmental campaign groups.



¹ Plymouth Meadow Campaign Evaluation by SERIO, UoP (2022)

Wildflower meadows campaign

The wildflower meadows campaign

Given that we wanted to engage with a broad range of people: from decision makers to school children, businesses to the general public, our approach needed to consider how people engage with us, and if they don't, how can we reach them.

Here are some of the initiatives we have implemented:

- **Easier, clearer access to information:**

Changing the Plymouth City Council website to support public understanding of our changed approach, incorporating a Google Map to show grass cutting schedules. This was featured in The Guardian as an example of best practice. This has changed from a 'report an issue/complaint' approach to proactively providing information on grass cutting schedules and how we are supporting urban wildlife. This work was carried out in partnership with the Future Parks Accelerator Team:

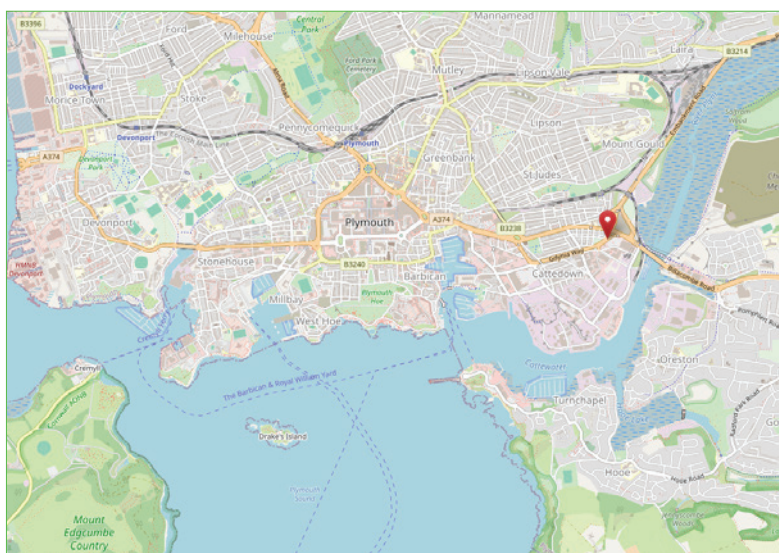
www.plymouth.gov.uk/how-we-manage-our-grass

- **Knowledge sharing workshops** for Green Estate operations teams, led by Devon Wildlife Trust, to show how important the work on the ground is from a biodiversity perspective, to explain the changes in approach to grassland management, and to equip them with answers if and when members of the public ask them about the changes.
- **Social media campaigns**, including getting involved in The Wildlife Trusts' 30 Days Wild (June 2022), and our 'Wildflowers in Plymouth' films, where the Grass Cutting Team Leader in our Street Services team explains the value of wildflowers people may see every day in their local areas: <https://youtu.be/nL6ZpSFr1u4>
- **Seeds for Schools**, working with a local social enterprise, Pollenize, to provide each of the 36,000 school children in Plymouth with a packet of wildflower seeds. Followed by the opportunity to get involved with an interactive digital pollinator experience at Plymouth's brand new, immersive dome, led by Real Ideas Organisation: bit.ly/SeedsForSchools

Gydia Way wildflower meadow

Following road widening in 2012, the former railway embankment has been sown with wildflower seeds.

Ox-eye daisys are the most notable along this section and welcome you to the heart of the city.



Wildflower seed harvesting

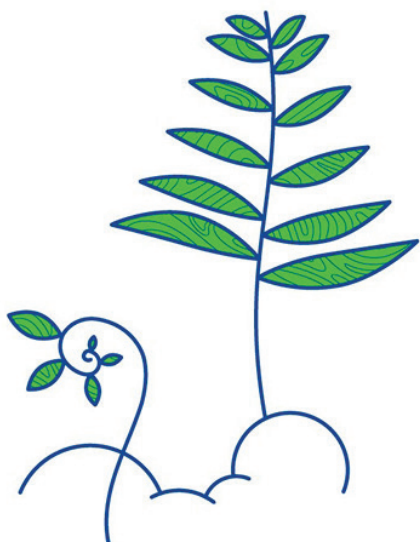
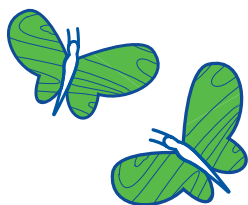
With large areas of the city planted with wildflower meadows – over 120 – the cost of seed is high. And seeds sourced from national suppliers lack the local genetic mix that helps it to adapt to the local climate.

Working with Devon Wildlife Trust (DWT) the Council trialled seed collection from one of its larger meadows, to understand what was involved and what it cost compared to buying in wildflower meadow seed mixes.

The seed collected contained a large amount of yellow rattle a plant which is really important in meadow making and which is also expensive at £400/kg. About £2000 of seed was harvested in the trial at a cost of £700.

The Council and National Trust have now jointly purchased a seed harvester (and with DWT a seed spreader), and trained staff in their use. Seed has been harvested from a variety of sites around the city, for sowing on sites prioritised for biodiversity improvement.

BELOW: Biodiversity training with Plymouth City Council's Street Services team



The enablers of success

A partnership approach

The team utilised expert advice and guidance from wildlife charities, including Devon Wildlife Trust, Plantlife and Buglife, which focussed on landowners making simple changes to management regimes to get more wildlife value out of those spaces. As a result, instead of investing in enhancing meadows, the approach saw the Council adapt its maintenance regimes to allow meadow areas to develop and evolve naturally. Involving wildlife partners in the communications campaign also supported its success, providing additional public credibility to the new approach as something that is both needed and effective.

BOTTOM: Training session delivered by Devon Wildlife Trust

- A PARTNERSHIP APPROACH
- STAFF ENGAGEMENT AND TRAINING
- A PROACTIVE COMMUNICATIONS CAMPAIGN
- INFORMATION MANAGEMENT
- ENGAGING COUNCILLORS
- GAINING FEEDBACK AND ADAPTING

Staff engagement and training

To help with this change from being 'grass cutters' to 'habitat managers' grass-cutting staff were given training on the new approach, with specialist support from Devon Wildlife Trust, and some attended accredited training in Wildflower Meadow Management and Enhancement. This helped to ensure they understood the value of the new approach and possessed the skills and knowledge to effectively implement it, and communicate it to communities in the city. In addition, Senior Operatives were given the responsibility to inform the improvement of operations practices, including which sites could be left uncut. This was beneficial for engaging them in the new approach, but also enabled the project team to utilise Senior Operatives' expertise and knowledge of sites and their usage.



'This has represented a really big change in how we in the council manage our land and also how the staff actually go out and do their jobs... they are now thinking more as managers of habitat as opposed to people who just cut the grass.'

PCC TEAM MANAGER

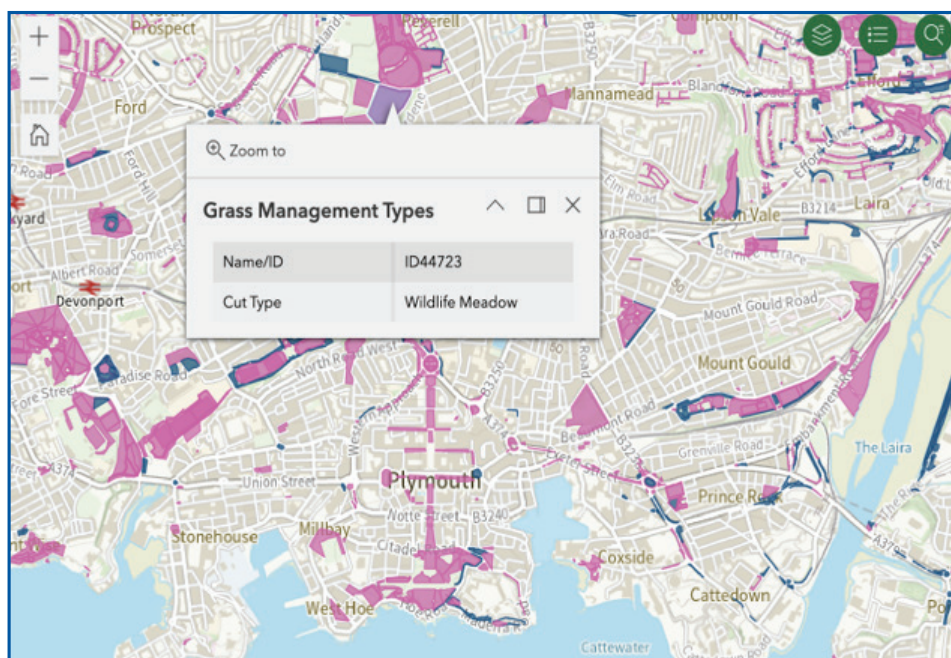
A proactive communications campaign

Each year, the project team ran a public awareness campaign to communicate to local residents what was being done and the importance of doing it, and to encourage them to engage with the campaign. Changing the Council website from a ‘report an issue/complaint’ approach to proactively providing information on grass cutting schedules and how the Council is supporting urban wildlife has proved successful.

The project team also commissioned short films across the city, explaining the new policy and its benefits. In June 2022, three of these short films **had over 25,000 views** and **466 reactions**. The team installed 60 signs around the city, including community co-designed/sustainability signs and seven ‘urban meadows’ road signs placed at prominent entrance and exit points around the city, to highlight how the Council is leaving ‘space for nature’.

Information management

All grassland areas managed by the Council across the city were mapped digitally on to a new asset management system. The information generated enabled digitisation of workflows, providing a stronger and more efficient tool for operatives to see their work list, and for Team Leaders to be able to identify progress and allocate resources, ensuring standards are met. The grassland map was also published online to enable residents to understand the new and different cutting regimes at each site, to ensure accountability, and to further support engagement with elected Councillors and Senior Managers. The mapping process was led by the grass cutting Team Leader, working with each of the grass cutting teams. This was a time consuming but essential process which ensured accuracy, and provided centralisation of information around grass cutting which was previously only “**stored in people’s heads.**”



ABOVE: grassland area mapping

“It’s a mind-set change and, because of the political implications, and the direct relationship with people’s doorsteps and their local green spaces, it’s felt really hard, because it is hard... It’s a really important piece of work, and I feel really proud that we’ve pushed the boundaries to do it as we have done.” – PCC GREEN ESTATE MANAGER

In September 2023, the innovative approach to managing 40 per cent of the city's grassland for nature, earned the Council's Grounds team the Best Parks, Grounds Maintenance and Horticulture Service award at the Association for Public Service Excellence (APSE) national awards.

Engaging Councillors

The project team also communicated the changes to Councillors via a briefing note, and subsequently held workshops with them to explain the new approach and the principles behind it. This included talking through the map of green spaces and discussing individual sites relevant to each Councillor.

Gaining feedback and adapting

As well as communicating the changes being implemented to stakeholders, of vital importance was being open to receiving information from members of the public and Councillors about how different grassland areas are used by individuals and communities, and the value they have for them. This enabled the team to adapt their plans throughout the campaign to ensure a better balance between creating space for wildlife and protecting space for community use.

'With the workshops we've been running with local Councillors, 100% of them are wholly supportive of the principle and the approach we're taking... It's taken quite a lot of effort and time for the team to do that, but it's paying back now with the rewards we're seeing from that.'

PCC GREEN ESTATE
MANAGER



greenminds

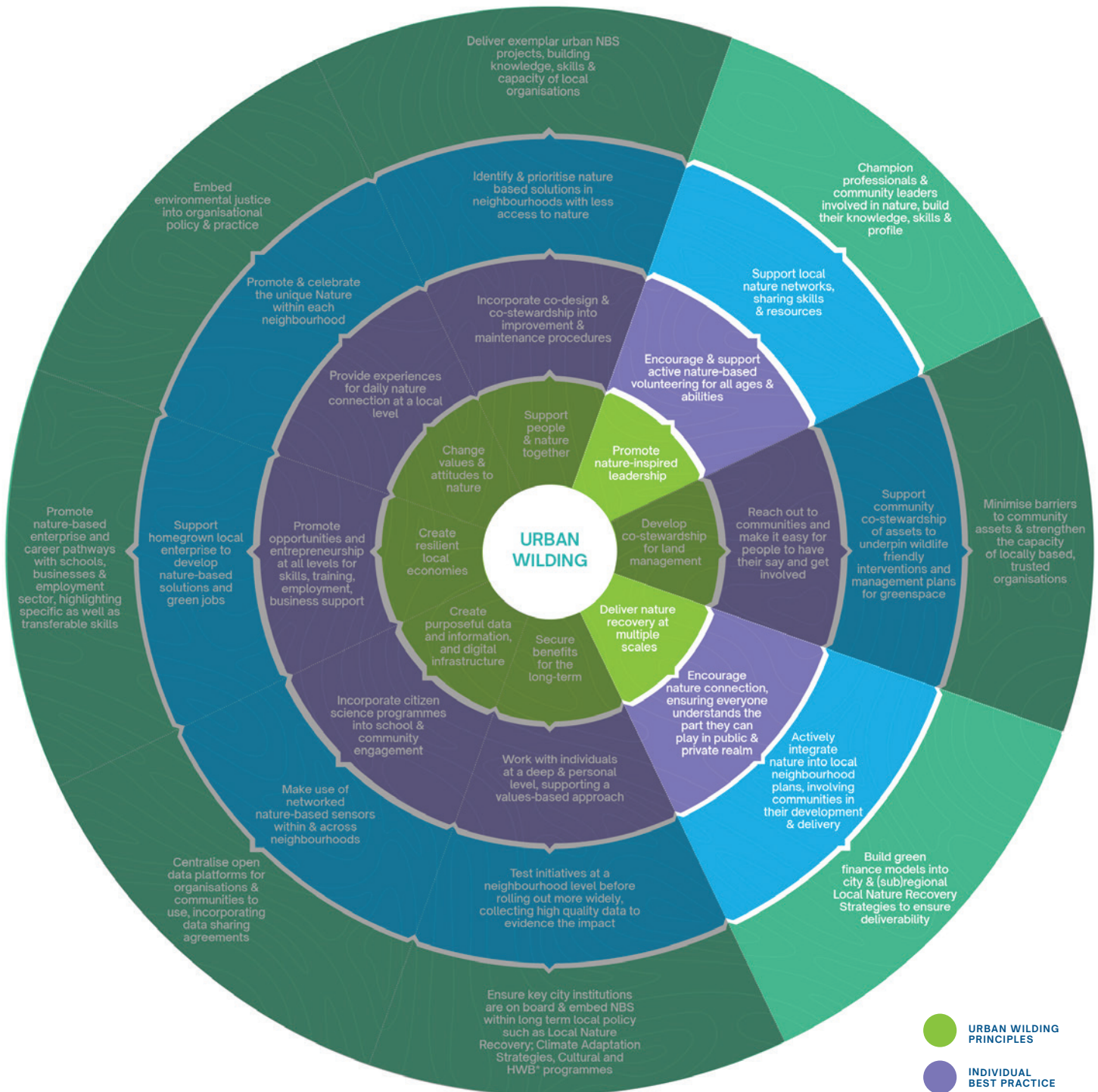
greenminds case study

**Improving Biodiversity
and Supporting Nature
Connectedness Through
Taking Action
for Insects**

greenmindsmodel

The model illustrates the three system levels at which the Urban Wilding principles are applied to drive action: the individual, with neighbourhoods, and within organisations.

Permeability, both within and between segments, reflects the need for adaptability through local learning gained through an action learning approach, in which lessons learned influence the next cycle of implementation.



Overview

The Green Minds project provided a unique opportunity for Devon Wildlife Trust (DWT) to work in partnership to trial new and exciting ways of taking action for wildlife in an urban setting like Plymouth.

Using the messages from DWT's Action for Insects campaign, we promoted urban wilding; empowered people to take action, and changed values and attitudes to nature. Developing co-stewardship for land management through partnership working has been key throughout the project.

This paper looks at what we have done and learnt, with some case studies and outcomes highlighting the learning and legacy of the work of Green Minds.

BELOW: White letter hairstreak butterfly.
Image credit, Ian Teague.



The context

The UK is the 29th most nature-depleted country of the 218 countries in the world¹. Since the 1970s, 41% of species monitored have declined, with 15% facing extinction².

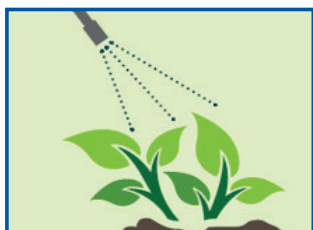
In Devon, we have lost almost half our hedgerows³. Two-thirds of our Sites of Special Scientific Interest representing Devon's best habitat are in 'unfavourable condition'⁴. Three species have gone extinct since 1998 with a further 10 species in danger of going extinct.

The biggest reasons for species loss are large scale habitat loss due to changes in land use and the use of chemicals such as insecticides, herbicides, and fertilisers.

What is causing insect decline



Loss and fragmentation of habitat



Routine and unnecessary use of pesticides



Climate change

Action needed to reverse declines



The government must set **ambitious pesticide reduction targets**



Stop routine and unnecessary use of **harmful chemicals** in our communities and daily lives



Government communities and individuals working together to create a **Nature Recovery Network**

¹ Biodiversity Intactness Index (www.nhm.ac.uk/our-science/our-work/biodiversity/predicts)

² <https://nbn.org.uk/stateofnature2019/>

³ Devon Hedge Group and Devon County Council (2014) Devon Hedges

⁴ Devon Local Nature Partnership State of Environment Report - Wildlife



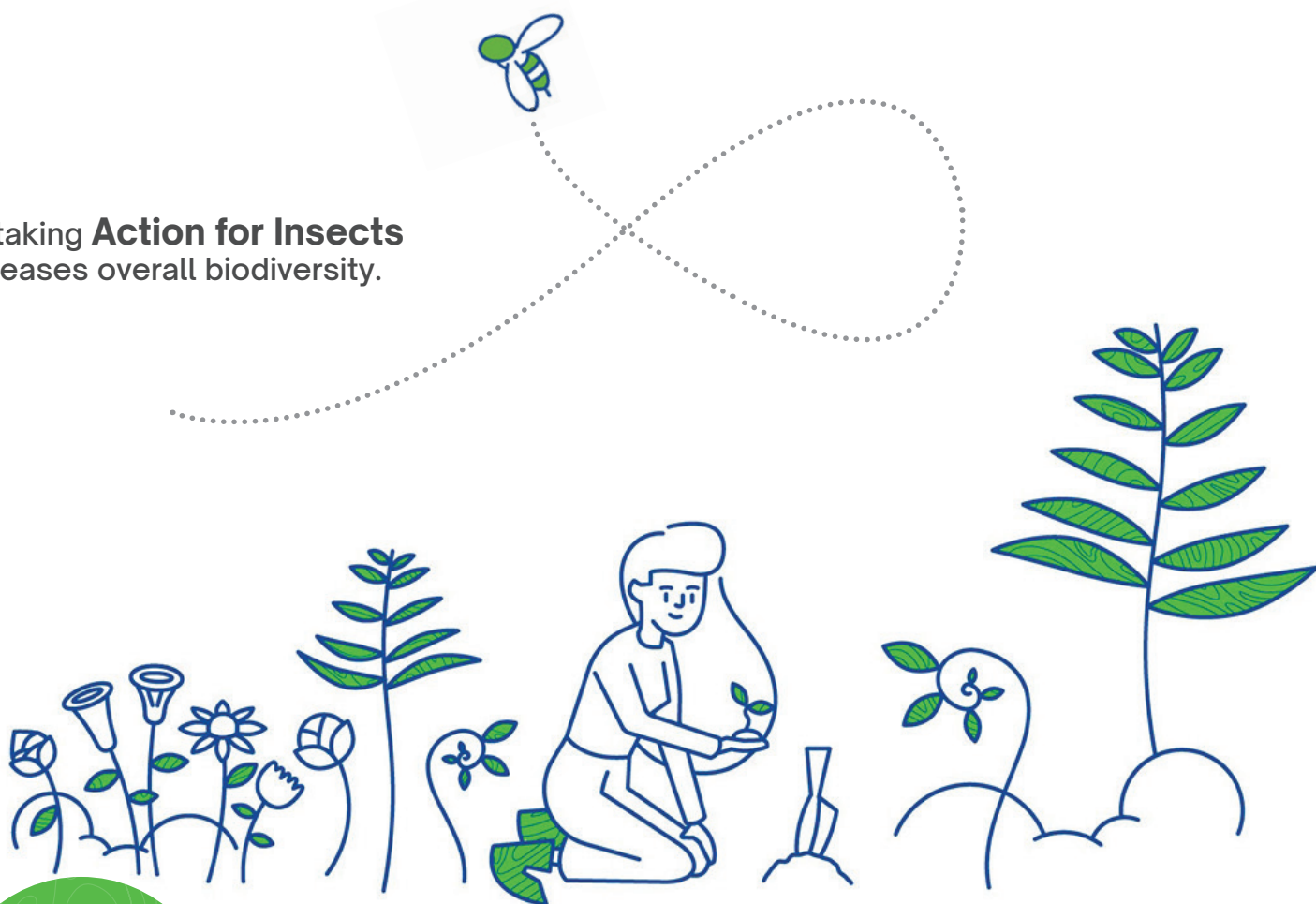
A focus on Action for Insects

Devon Wildlife Trust's Action for Insects campaign formed a core approach to the **Rewilding People and Places** aim of Green Minds. Creating habitats where insects can thrive will provide many benefits for other wildlife. More insects equals more food for bird and bats, and longer grass is ideal for small mammals to use for shelter and as green corridors to move around the city.

An engaging topic!

Evidence shows that 'Children seem to be particularly open to the wonders of six- or eight-legged creatures'. We have all experienced insects, and it is true that they can elicit delight, awe, excitement or exaggerated expressions of fear. The topic is certainly engaging and accessible and allows us to have personal connection to nature.

So taking **Action for Insects** increases overall biodiversity.



FIND OUT
MORE AND
VIEW OUR
ANIMATED
FILMS HERE:

www.devonwildlifetrust.org/take-action/action-insects

Provides opportunities for everyone to get involved

Supporting people to take simple, affordable steps is more likely to support behaviour change.

Action for Insects is a call to action that everyone can get involved in. Examples of small steps that support insects include mowing less often, removing the grass when you do; planting trees and hedges and creating ponds to create havens for insects to feed and breed. Avoiding the use of pesticides and other chemicals also gives nature the best chance to flourish.

We have trained communities, project partners and staff - helping everyone gain skills in plant and insect identification and basic botanical survey knowledge. We have provided equipment such as sweep nets and identification guides.

Ensuring connection between places, people and policy

Small steps, taken across a large area, allow wildlife to travel freely across the city. These steps can be in the private and public realm at different scales, from window boxes, to green roofs, as well as creating wild spaces in schools or parks. When these changes are combined across our local neighbourhoods and beyond, they connect to become a huge network of green corridors.

Joining up the work between communities, local government and organisations at neighbourhood and city scale has enabled participants to see the wider impact of our actions, and put in place new training, policies, and land management practices to ensure sustainability of our initiatives.



Helping insects move around the city

A city's urban green spaces can often end up being 'islands' for insects and other wildlife. However, by expanding and connecting them to similar areas as part of a network, we can help wildlife move around the city to find shelter and food.

Local authority, community, and individual action can create wildlife corridors. We call this joined-up system a '**Nature Recovery Network**'⁷. This allows plants, animals, seeds, nutrients and water to easily move around and adapt more easily to change.

To be effective the network needs to be treated as a joined-up whole. Everyone can be part of creating this.

BELOW: Still from Action For Insects animation



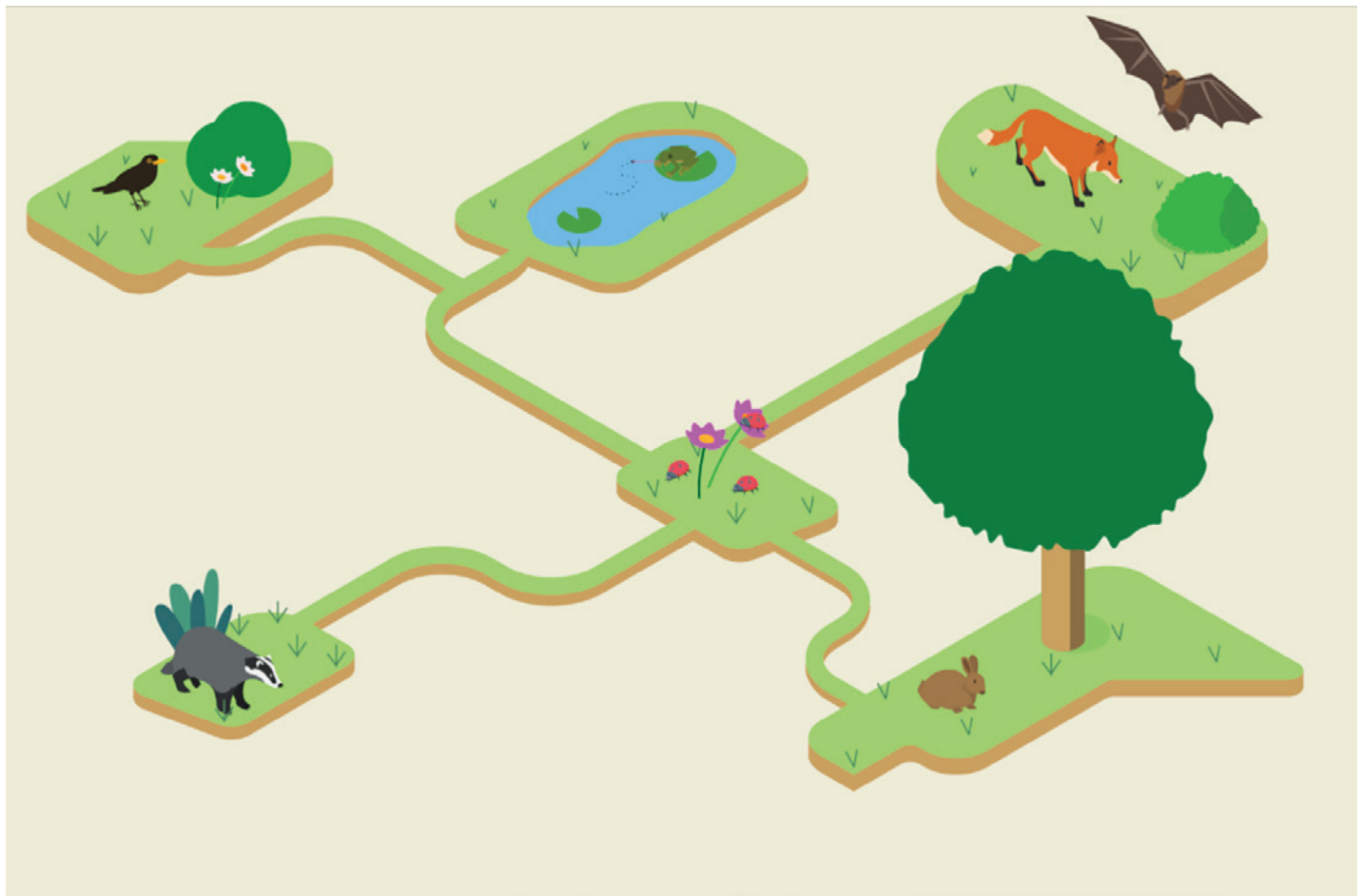
⁷ www.wildlifetrusts.org/nature-recovery-network

The Lawton Review published in 2010 set out how England's wildlife and ecological network could be improved to help nature thrive. This set out 4 principles that we can follow to develop green spaces where nature can thrive:

1. **Bigger habitat patches** – when restoring/creating new habitats make them as big as possible
2. **Better management of existing habitats** – understand your site, work towards increased biodiversity
3. **More habitats** – create new high-quality, wildlife-rich spaces wherever you can
4. **Joined up** – create a 'corridor' for wildlife to travel through

Taking a citywide approach to working with groups and communities, enabled us to ensure we could apply these 4 principles in our project.

BELOW: Still from Action For Insects animation



Case studies

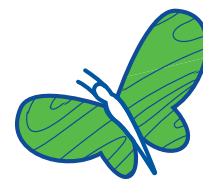
Improving habitats for insects brings wider biodiversity benefits. Using the Green Minds Model, we have encouraged and supported communities to 'Take Action for Insects'⁸.



The following case studies give an overview of various Devon Wildlife Trust projects within Green Minds. Working with different groups, using a variety of activities, they all contribute to biodiversity improvements for insects and other wildlife.



Changing values & attitudes to nature in a local authority



The Green Minds programme of community, volunteer, apprentices and project partner training has promoted Action for Insects along with an understanding of why urban rewilding is so vital.

A key step in changing attitudes is a transition of Plymouth City Council's workforce to move away from being 'grass cutters' to having a greater understanding of what they are doing.

Creating Habitat Managers

During training sessions for Plymouth City Council's grass cutting operatives and other teams within Street Services, the key message was to understand that the new grass cutting regime has benefits for nature and they should feel pride in their work for wildlife.

The sessions promoted leadership and will empower staff in their day-to-day work.

At training sessions, staff compared wildlife meadows and amenity grass within Central Park by counting the number of different plant species. Using sweep nets, they counted insects in each area. Staff were surprised at the variety and number of insects and commented on how much better the long meadow grass was for wildlife.

Image: Biodiversity training with Plymouth City Council's Street Services team



I have gone home and shared what I have learnt with my children, and they are now interested in looking at all the plant species around the city.

**ASSISTANT TEAM LEADER,
GRASS CUTTING**

A citywide training offer

Alongside the Local Authority training sessions, we set up and delivered a free training programme with the Action for Insects theme at its heart. The sessions were held both in person and online, for project partners, apprentices, and volunteers.

The aim was to improve knowledge, skills, and confidence on the theme of nature in the city, action for insects, and urban wilding. This enabled people to connect with one another and local organisations to help encourage and sustain actions.

Green Minds apprentices

Biodiversity (land and marine) training events were arranged specifically for the Green Mind Apprentices. This helped to equip them with the skills for their future green careers, as well as promoting confidence and leadership qualities. Most of the apprentices have now gone on to other jobs, either within the council or with other organisations.

BELOW: tree care workshop with apprentices



Webinars

During the autumn and winter, (when it was not so easy to arrange outdoor events), a series of webinars were broadcast covering many topics including nature recovery, birds/wetlands/meadows etc. The webinars were free to attend and proved popular, with over 100 people from across the UK and internationally attending some sessions.

This showed that online events can be accessible to a wider audience. Not only that we were able to record them and make them available to watch on the Green Minds YouTube channel.



The Ecological Awareness course at Devonport Park has given me a chance to consider how we, as an organisation, can implement more sustainable, ecologically-friendly practices. **Arboriculturalist, Plymouth Community Homes**



Creating a community tree nursery

Devon Wildlife Trust supported the creation of a Community Tree Nursery at Poole Farm (part of Derriford Community Park), by providing expertise and equipment. The nursery provides opportunities for volunteers to learn new skills and will eventually supply Plymouth

City Council with trees for planting out around the city. As the seeds are all collected locally, these trees are ideal in terms of their provenance and will add to insect biodiversity (as well as other wildlife), in Plymouth's parks and green spaces.

Thanks to support from Devon Wildlife Trust, the nursery has evolved from a handful of seed trays tucked behind the dairy, to a fully-fledged, fully deer proof series of growing tables, stratification beds, poly tunnel, and 10,000 litre water tank. We and our volunteers are super excited for the first season of large-scale seed collection.
STEPHEN HILL, POOLE FARM TEAM

Learning from others

Meeth Nursery – this flagship DWT Tree Nursery was set up as part of the Saving Devon's Treescapes Project. Knowledge sharing and visits help to inform the planning of the new nursery at Poole Farm.

Moor Trees – the Director of Moor Trees was commissioned to write a report to guide the creation of the new tree nursery.

Building the new tree nursery

The team and volunteers at Poole Farm built the new polytunnel and tree nursery, which takes pride of place at the main entrance to the farm. Dedicated volunteers will be responsible for caring for the new trees. Water will be collected from the barn roof to provide a renewable supply for watering, even in dry weather.



ABOVE: creation of the tree nursery at Derriford Community Park

A city seed hub

An area comprising eight fields, to the east of Plymouth, are owned by Plymouth City Council. The Meadow Restoration/Seed Hub Project is focused on field of high wildlife value (a Site of Special Scientific Interest) which will act as a seed source to improve the surrounding fields over several years.

Techniques known as green haying and seed harvesting will spread seed to these fields, provide a rich source of meadow seed as the fields improve. The harvested seed will provide a local and varied seed source for greenspaces across the City of Plymouth.

Creating a plan

DWT created a management plan to deliver this species-rich grassland habitat improvement/creation project. Plymouth City Council can now use this plan when looking at the longer-term management of this area by its Street Services team.

Baseline surveys of species and soil types helped to guide the writing of the management plan.

A new County Wildlife Site

In 2023, DWT facilitated the designation of the three fields adjoining the SSSI as County Wildlife Sites.

Training

The Billacombe fields provide a wonderful place to show people how diverse a traditional meadow can be, and to inspire them to recognise the potential of other greenspaces around Plymouth



An insect's eye view of the Billacombe meadow (DWT/Green Minds)



Six spot burnet moth



Field Eyringo
(Mike Symes)



Marbled White Butterfly,
(Mike Symes)

Can't speak highly enough of the [bat walk] experience, Helen and Jane provided so much useful information and I learnt more than I expected!

**LOCAL WALKER
ATTENDING
BILLACOMBE BAT WALK**

Pesticide Free Trials

In March 2022 Pesticide Action Network (PAN) delivered a DWT professional training session for Green Minds partners. Following this Plymouth City Council (PCC) and Devon Wildlife Trust (DWT) agreed to set up a Pesticides Action Working Group.

The aim of the group was to set up some Pesticide Free Trials in Plymouth during the 2023 growing season.

The trials will form part of a wider, long-term strategy for Plymouth, and the trial results will feed into this strategy. PAN will advise and guide trials from start to finish.

The thorny issue of ‘weeds’

‘Weeds’ are an emotive topic! Pressure on local government to ‘keep the public realm tidy’ can drive expectations to remove all weeds. Therefore, sites for the trial had to be chosen sensitively, ensuring they didn’t have a negative impact on public perception of local neighbourhoods.

Planning sites involved bringing together different teams within the Council, with the support from DWT/PAN on the topic of pesticides. It was a process of learning, supporting Council staff to understand the benefits of reduced chemical use and changing the perception of ‘weeds’.

Small scale trials, led by Council Cleansing staff have now enabled us to identify what type of pesticide free methods work best in what areas. This is allowing the Council to take forward a more progressive reduction plan.

In addition, following advice from other pilot projects in the UK, conversations have started with local communities who have expressed an interest in hand weeding their local street. Monitoring public perceptions and community feedback will determine if it can be rolled out across the city.

Work on the ground has been combined with wider awareness raising and communications for Council staff and the public about the value of ‘pavement plants’. This has also been helped by working in partnership with local ecology activists ‘The Rebel Botanists’.

For more information on the value of Pavement Plants

www.pan-uk.org/pavement-plants/

‘The support, both moral and practical, given to the Council by DWT has helped progress plans. In the experience of PAN UK, it is always a huge bonus for a Council to work with partners, so they are not working in isolation and can experience positive feedback alongside constructive criticism. The ability to tap into the expertise of external organisations who can provide advice, encouragement, and publicity is a key benefit.’

**NICK MOLE,
PESTICIDE ACTION
NETWORK**



Images: surveying sites for potential pesticide free trials

Community action at a neighbourhood scale

The local community and Green Minds co-designed improvement plans for five greenspaces in the Keyham neighbourhood. This included working with schools, residents and community organisations to create wildlife meadows.

Meadow improvements – Alexandra Park

In early 2023, over 60 children with the ‘mini police’ programme from three local schools sowed meadow seed to help pollinating insects as part of their chosen social action day. This session was followed by a drop-in community sowing event, with over 50 people helping to improve the wildlife meadows of Alexandra Park.

Later that year, there was a community meadow survey session where people spotted lots of insects using the meadow areas. Each group was given a set of survey equipment from Green Minds to help them carry out future activities.

This was part of the Keyham greenspace improvements which increased biodiversity through tree planting and meadow improvements.

BELOW: surveying a wildlife meadow



www.greenmindsplymouth.com/keyham-greenspace-improvements

Community action at a neighbourhood scale

‘I’m thinking about the children that i know who would be absolutely fascinated by the different types of grass there is...having somebody who can actually relate things and put it into context and tell the story makes a big difference’.
—SNAPDRAGONS CIC



An Urban Rewilding Network

Bringing people together to share experiences, resources and develop connections is an important part of our journey to **Rewild People and Places**.

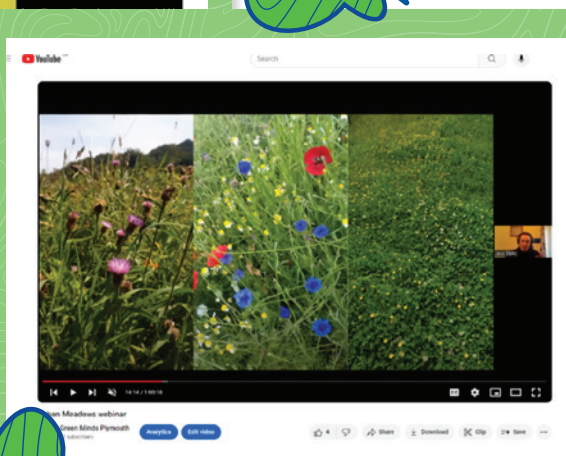
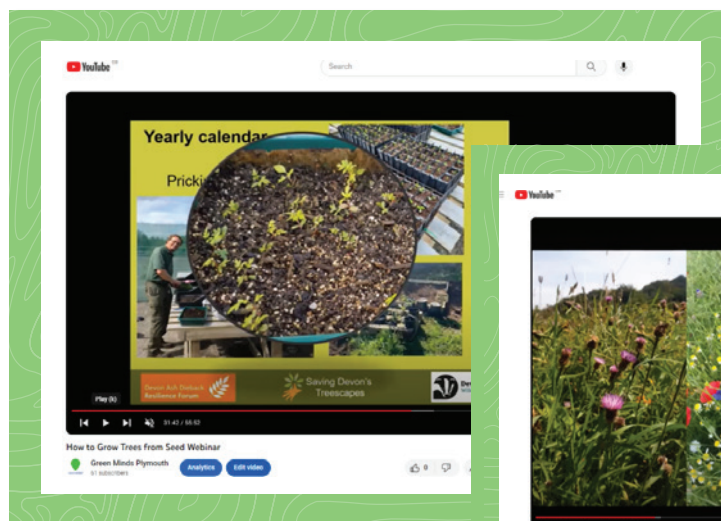
This new network welcomes individuals, community groups, and organisations interested in wilding, to support them to take action for wildlife and biodiversity.

As part of this, there were events, webinars, workshops, and site sessions on practical conservation and ecological monitoring, accompanied by online resources (available on the Green Minds Knowledge Hub⁹).

The rewilding network evolved into a 'Growing with Nature' network in June 2022. The change in name reflected a desire to engage a wider audience. Involving Food Plymouth and Plymouth Octopus Project, the network will continue to develop after the end of Green Minds.

⁹ <https://greenmindsplymouth.com/knowledge-hub>

¹⁰ <https://greenmindsplymouth.com/rewilding-network>



ABOVE: Still from the Green Minds 'Urban Meadows' webinar
RIGHT: Growing With Nature Network event



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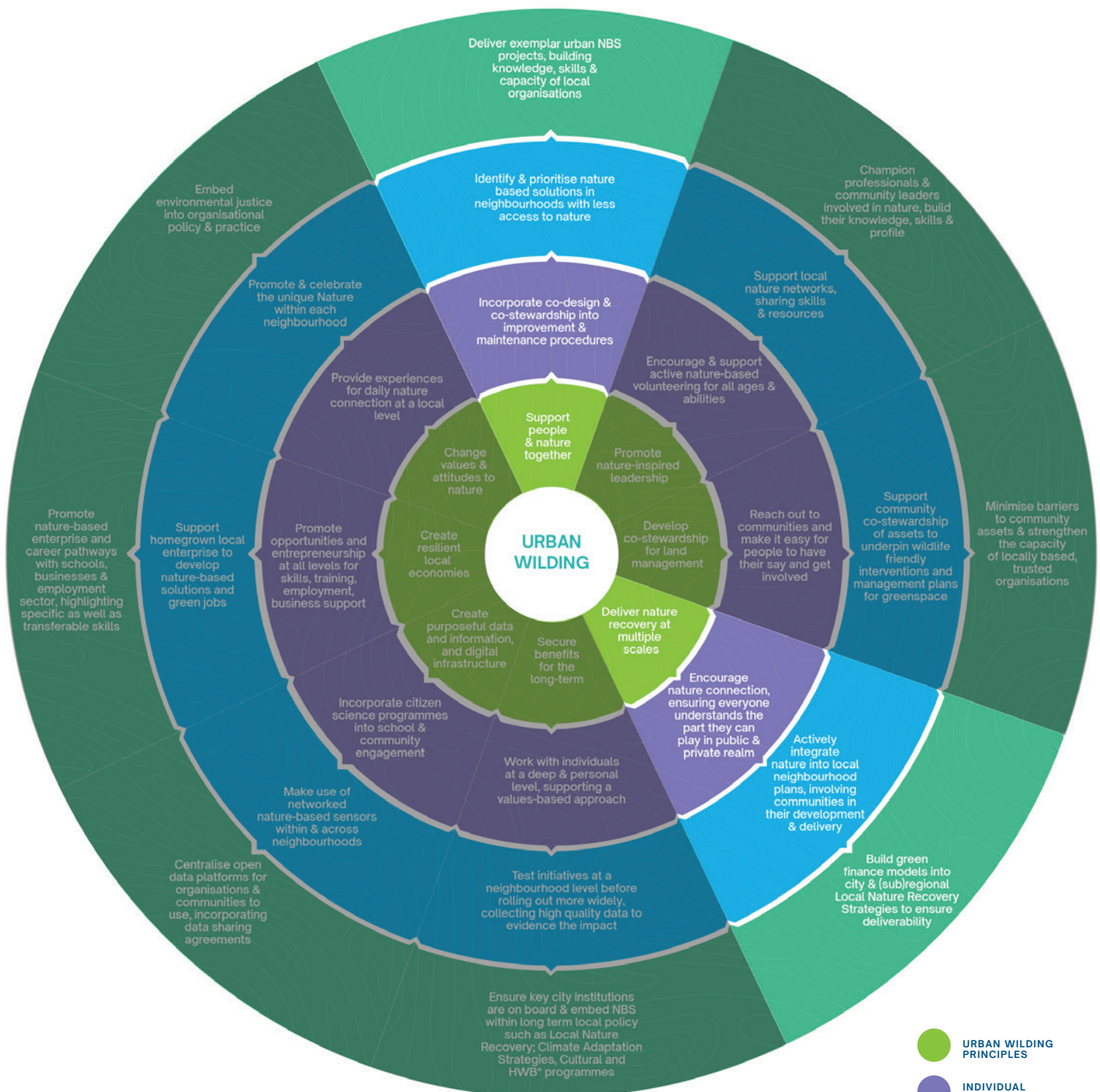
greenminds case study

**Central Park
Sustainable
Drainage System**

greenmindsmodel

The model illustrates the three system levels at which the Urban Wilding principles are applied to drive action: the individual, with neighbourhoods, and within organisations.

Permeability, both within and between segments, reflects the need for adaptability through local learning gained through an action learning approach, in which lessons learned influence the next cycle of implementation.



Sustainable drainage in Central Park

A central aim of Green Minds is to test and demonstrate how urban green spaces can be wilded. This case study represents a demonstration of urban wilding principles in action.

Central Park is Plymouth's largest park. It sits in the upper reaches of one of the city's water catchments. Rainwater draining from the park during rain storms can cause flooding, both in the park and downstream.

This project will transform rainwater from a problem into a resource for wildlife and the community, by using a Sustainable

Drainage System (SuDS) that harnesses the power of nature to control the flow of rainwater and reduce flooding in a changing climate, in a way that complements the natural environment. The project will improve access, conserve heritage features and trees, create a destination space, make homes for wildlife and provide a place to learn about water and nature.



Addressing existing drainage issues...

Currently, the pond and park drainage near the Barn Park entrance do not work meaning heavy rainfall can flood the area and cause drains to overflow making it hard for people to travel through the park. Additionally, runoff from the park contributes to flooding downstream.

At present, defunct drainage and a small pond provide little means of retaining or managing water in the park. This causes localised flooding that affects access during times of heavy rainfall, which is compounded by steep banks and poor ground conditions.

BELOW: Previous flooding in Central Park



...through enhancing wildlife and amenity value

Our solution will collect rainwater into a series of ponds – the existing pond and two new larger ponds – that will hold water all year and will journey here through redesigned granite drainage channels and a new swale.

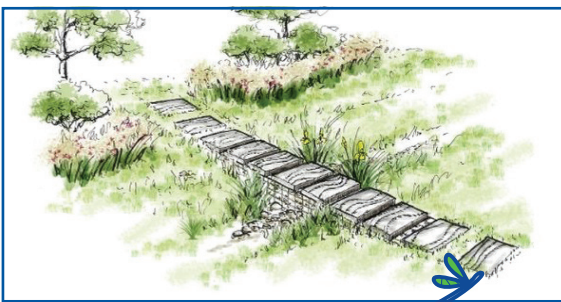
Central Park Ponds Project



Ponds during dry weather



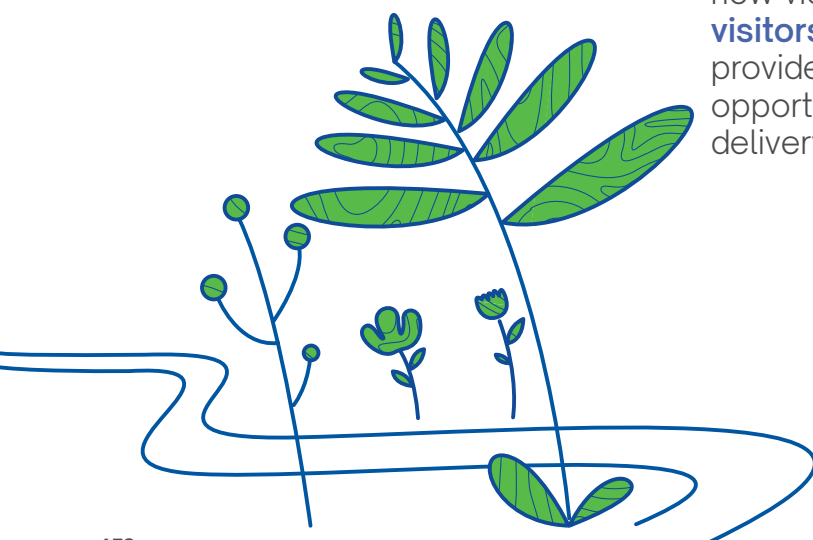
North pond and landscaping during dry weather



Stepping stone crossing over swale

A **shallow area** of wet grassland with small dams and weirs **will slow the flow** of water and help it enter the ground. Whilst these changes involve reshaping areas of the park and removing a small number of trees, a **large amount** of new planting will help to **capture** rainwater and create a better place for wildlife like bees, birds, bats and frogs.

Raising existing walkways, stepping stones and new viewing platforms with seating will **allow visitors to connect** with these wild areas, and provide space for outdoor learning. There will be opportunities for the community to be involved in delivery of the project.



Design and implementation challenges

SuDS can be challenging to design and install. Not only is it an engineering challenge, in this case it involves change to a cherished park, heavily used by the public. Consents are required and the design must consider wildlife as well as the engineering details of water flows.

Briefly, some of the key challenges were:

Community engagement

Central Park has thousands of users, so multiple approaches were employed to reach the community and wider Plymouth. Due to the technical nature of the project it was important to ensure that messages about the project and its purpose could be easily understood. Consultation incorporated approaches such as community meetings, site assessments, appreciative inquiry and the planning consultation. The community took part in delivery of the project through events like tree planting. Digital tools were employed, explained in the next slide.

Planning consent

Achieving planning consent, while ensuring the project delivered benefits for people and wildlife required balancing competing demands: planning requirements such as biodiversity net gain requirements and improvements to management of surface water (supported by data modelling); consideration of consultee feedback, both statutory and non-statutory (e.g. local community), including retaining features of high ecological value and repurposing elements of the parks heritage within the design; providing protected areas for wildlife to thrive while allowing access for people to experience connection with nature. The success of the design approach has been demonstrated by the project achieving a Building with Nature award.

Engineering a hybrid solution

To achieve the above, this project required a hybrid solution, both inspired by nature and incorporating hard engineered elements (e.g. pipes, concrete outlets). Significant planning and design was needed working with a range of disciplines, from engineers to conservation groups, to find the right balance. To address this particular wilding challenge, a nature-based solution was needed and has been designed so that over time, natural vegetation will mask engineered elements and blend into the park landscape. It was important to explain this process of change when engaging with the community, being clear that while the site might look bare after construction, it will gradually become greener (and wilder) as planting establishes and wildlife inhabits the area.



An opportunity to educate

The SuDS project is very visible in the park, both as a construction project and, once complete, as a new feature in the park. It's a great opportunity to educate the public about nature based solutions and about nature and wilding.

Information

We placed information at the site to explain what was happening and why. We use signs with QR codes that link to websites explaining live data from sensors around the new ponds and its connection to wildlife that can be found. An animated short film (explainer video) was released.

Access

Accessible viewpoints for those with reduced mobility are provided, and there is open access to the water's edge in one area.

Visual interpretation

Students at Arts University Plymouth helped to design interpretation panels to encourage interaction with wildlife and explain the benefits of SuDS and wetland areas.

Monitoring

There are sensors around the pond to measure changes before and after the project, measuring and collecting data such as air particulates and temperature. This will help to evidence the wider benefits of this nature based solution.

Frogs and Dragonflies

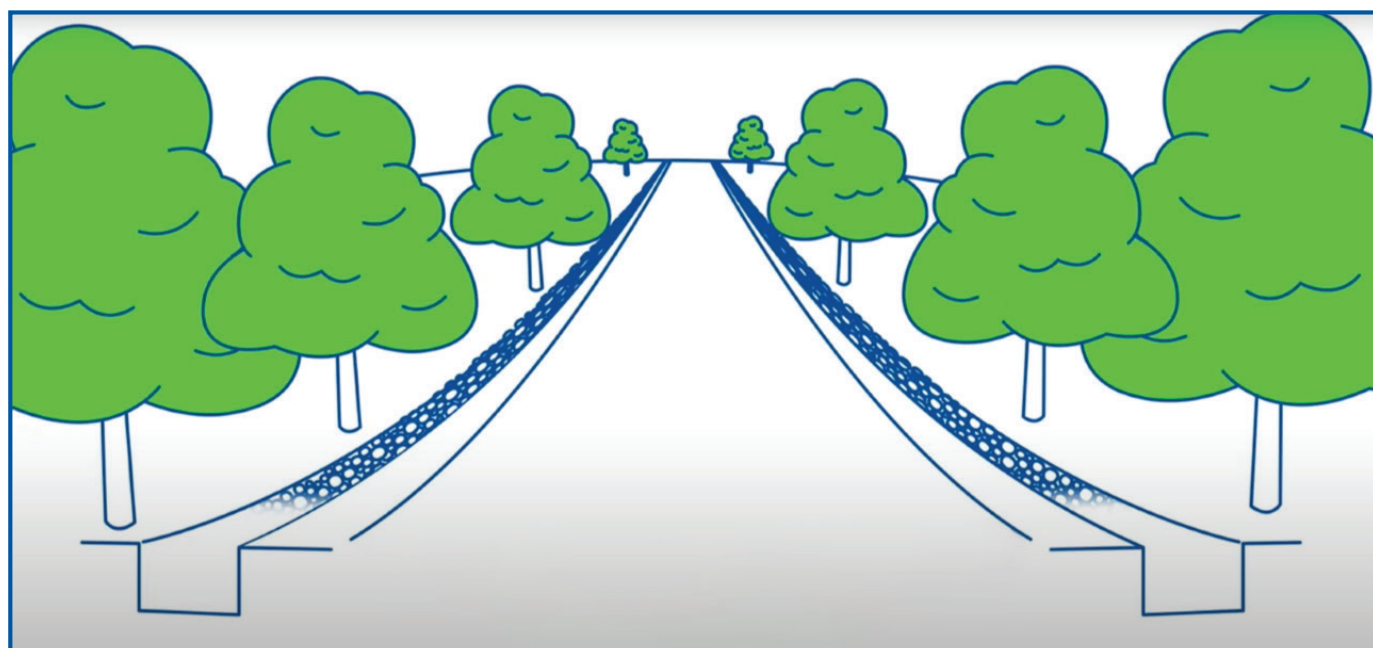


An integrated programme of urban rewilding

The Central Park SuDS project is one of many underway to improve the wildlife and amenity value of the park.

- 1 **Pounds Park** – celebrate and enhance the features that make Pounds Park special: peace and space, formal gardens, mature specimen trees, networks for nature, heritage.
- 2 **The woodland** – secure the future of the woods, make improvements for wildlife, update management practices.
- 3 **Conservation project for elm trees & White-letter hairstreak butterflies (which rely on elm trees)** – planting trees, nature surveys, habitat creation and management for wildlife, action plan for elm trees and WLH butterflies in Central Park.
- 4 **The old Zoo Field** – designing and delivering a new landscape design to benefit people and nature.
- 5 **Southern slopes area (fields south of the baseball pitch)** – tree planting.

BELOW: animation still of the new drainage system





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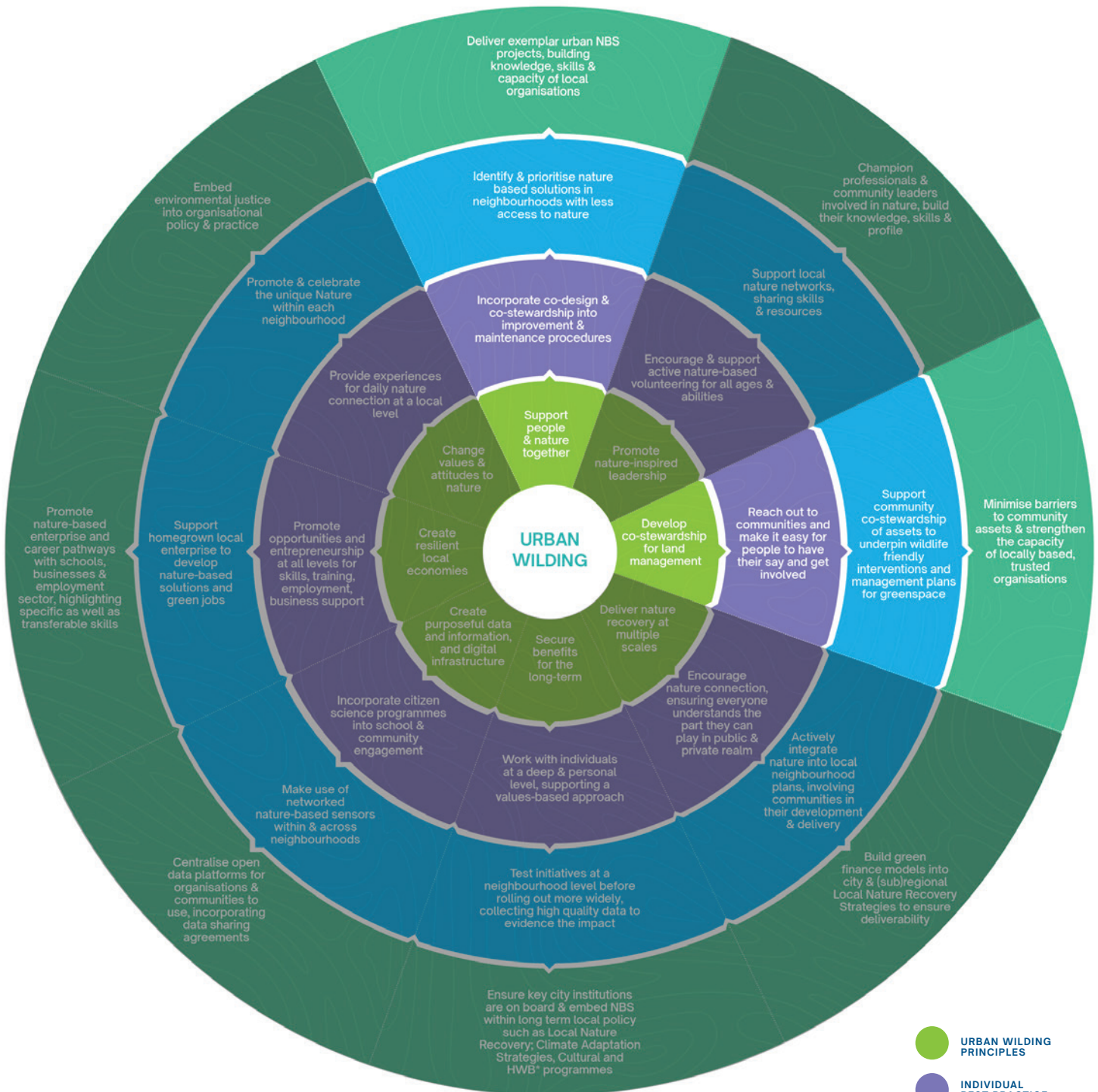
greenminds case study

**Urban Wilding: Community
Co-stewardship**

greenmindsmodel

The model illustrates the three system levels at which the Urban Wilding principles are applied to drive action: the individual, with neighbourhoods, and within organisations.

Permeability, both within and between segments, reflects the need for adaptability through local learning gained through an action learning approach, in which lessons learned influence the next cycle of implementation.



Co-stewardship of green spaces

Green Minds set out to find new ways of managing parks, to bring them closer to the communities that use them.

We chose to adopt the term ‘**co-stewardship**’ for our approach. We feel that this phrase better represents the **collective** role we have to **responsibly** care for and value nature.

Green Minds piloted co-stewardship around three key themes:

- **Social enterprise** – green assets used as the basis of a non-profit enterprise bringing benefit to the community
- **Community management and asset transfers** – green spaces managed by the community, permitted through a contractual arrangement (optionally, with a transfer of assets from public to community control)
- **Community empowerment** – deepening nature connection and enabling community leadership on urban wilding and the improvement of urban green spaces through a Growing with Nature Network.

In this case study we feature Blockhouse Park and Keyham Green Spaces as practical examples that embodied all three themes.

RIGHT: a flyer for a foraging event at the park for local people

“Lockdown showed us how necessary our connection to the natural world is, and we are determined to open up the gift of this to all the residents of the local community by enticing them to come and have a look, dig a bit of earth and allow the space to do its magic!”

CO-ORDINATOR AT THE VILLAGE HUB



1 Blockhouse Park community management

An existing community association, Stoke Traders and Residents (STARS), had worked at the onset of the pandemic to coordinate mutual aid.

As this developed, and an empty premises became available in the local high street this initiative became The Village Hub Community, a Co-operative Community Benefit Society, which is a non-profit enterprise. This CCBS, has an explicit interest in supporting the local community to take pride in its spaces, including the local underused park, **The Blockhouse Park**.

Establishing a mechanism

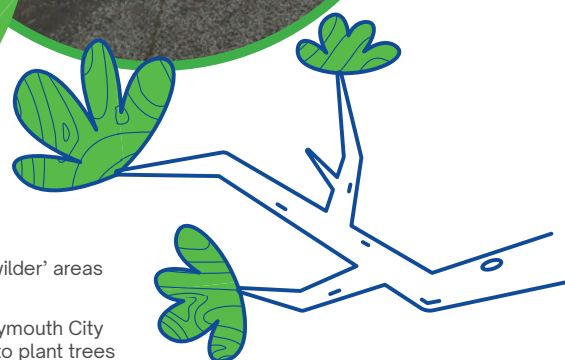
The Village Hub approached the Green Minds team at the Council for permission to rewild part of the park. The Council proposed an 'Indefinite Lease' as a form of contract that would give the group control over a defined area and allow specified activities.

After some negotiation these activities were defined as "rewilding planting, groundworks, and events" and a subsequent delivery plan was supported by Green Minds resources and staff.

Village Hub holds the lease with the Council but the aim is that the Blockhouse park group should become self-sustaining and take on the lease themselves when ready to do so.



An 'Indefinite Lease' created a long term contract with the Council to allow rewilding planting, groundworks, and events.



LEFT: local residents survey 'wilder' areas of Blockhouse Park

RIGHT: The local group and Plymouth City Council teams work together to plant trees at Blockhouse Park

Benefits and learning



This transfer of the management of this asset has given residents of the area a new sense of collaborative responsibility to care for the park. This, in turn, has created new feelings of civic pride for many as they work together to rewild and improve the park.

The Village Hub recognise that they can't do everything themselves and prefer to collaborate with other organisations rather than see planned improvements as exclusively theirs.

The lease has been useful for the Village Hub to secure funds and to create partnerships, enabling them to demonstrate consent for their activities and providing a credible case to funders.

The Hub's co-founder participated in both the Green Minds Nature-Inspired Leadership programme and Permaculture training and has built nature connection as a key element into the way they deliver activities.

Village Hub volunteers have planted over 3000 bulbs and 5 new large specimen trees in their rewilding area. They are also working with Pollenize (a Green Minds funded nature-based enterprise) to sow wildflower seed around the park.

The partnership with Green Minds also allowed the group to work with the Local Authority to transform an area where the toilet blocks were due to be demolished into a sustainably planted area at the entrance of the park that the group now stewards as part of their contract.

“We take on a lot...but we can't do everything, so good collaboration is needed” **KAREN PILKINGTON**



Residents' enthusiasm is augmented with council expertise as they work together to improve blockhouse park.



2 Keyham Green Spaces

Keyham is a community in the west of the city, characterised by dense victorian housing with little private outside space, and little greenery on most streets.

Following a serious incident in the area, the community asked for improvements to the neighbourhood's green spaces to make these areas safer, more welcoming and accessible, and better for wildlife.

The spaces were: Knowle Avenue, North Down Crescent Park, Alexandra Park and Marley Park

Green Minds provided resources and facilitated an open co-design process, engaging people in a variety of ways to understand community needs and desires and support nature connection.



LEFT: Tree planting in Keyham



Co-design process



Building on feedback led by the Green Minds facilitators from an Environmental Visual Audit, Community Voices events, ward councillors and local community groups, landscape design consultants were appointed to generate an initial design proposal for each the five parks.

Working with local community-based organisations, Green Minds then coordinated drop-in co-design workshops for each site, where possible, outside in the spaces that they were referring to.

This enabled residents to comment on each draft design.

Having something tangible to discuss, to represent a vision for the parks helped to frame the conversations and elicited detailed responses from the public.

Co-design also involved meeting groups on site, to look in detail at how designs would be implemented. This gave people the chance to discuss details such as where trees will be planted, where to locate a wildflower meadow etc., as well as talk about what they loved about the sites as they were. This enabled the importance of local views, dog exercise areas etc to be taken into account.



Putting it into practice... with the community

The next steps aimed to involve **community groups and schools** in the implementation of the designs to support ongoing co-stewardship.

This included

- the planting of a community orchard
- sowing wildflower meadows in various sites
- planning and delivering tree planting

The Community Orchard is a legacy for the community around Knowle Barton, who will be able to watch the trees blossom, grow, and forage from, as well as support more wildlife around the area.

‘It’s the perfect day for this...looking forward to seeing the trees grow and picking fruit in future’.

TREE PLANTER



Image: Knowle Avenue Community Orchard



Working with Plymouth's 'mini police' – the links between feeling safe and nature connection

Ensuring public spaces felt safe and welcoming was a key aim for the local community. Working with the local Police helped us to integrate feelings of safety with nature connection.

The aim of Plymouth's award-winning **Mini Police** Programme is to increase trust and confidence of young people and their communities. Mini Police focus on crime prevention including internet safety, anti-social behaviour, road safety and environmental activities.

In line with community aspirations to increase feelings of safety, Green Minds worked with this existing initiative to involve young people in the design and creation of new wildlife areas in Keyham's green spaces.

In one event, 75 children from the mini-police at Keyham Barton, Drake Primary, and Ford Primary schools, spent their social action session in North Down Crescent Park creating a small wildflower meadow and litter picking.

Nature connection was an important element of the sessions, and we supported this by including fun, sensory activities such as wildlife-themed games, poetry and film, capturing participants' feelings and aspirations for nature locally and globally.

Results

Monitoring has found that site usage went **up by 21%** compared to before the improvements, and user diversity was **up by 71%**.

An overwhelming **91% of local residents** surveyed at the end of the project agreed that the sites were accessible and well-maintained, and **77% that they were welcoming and safe**.



RIGHT: Children creating a wildflower meadow. Photo credit Pollenize and Chris Parkes Photography Ltd





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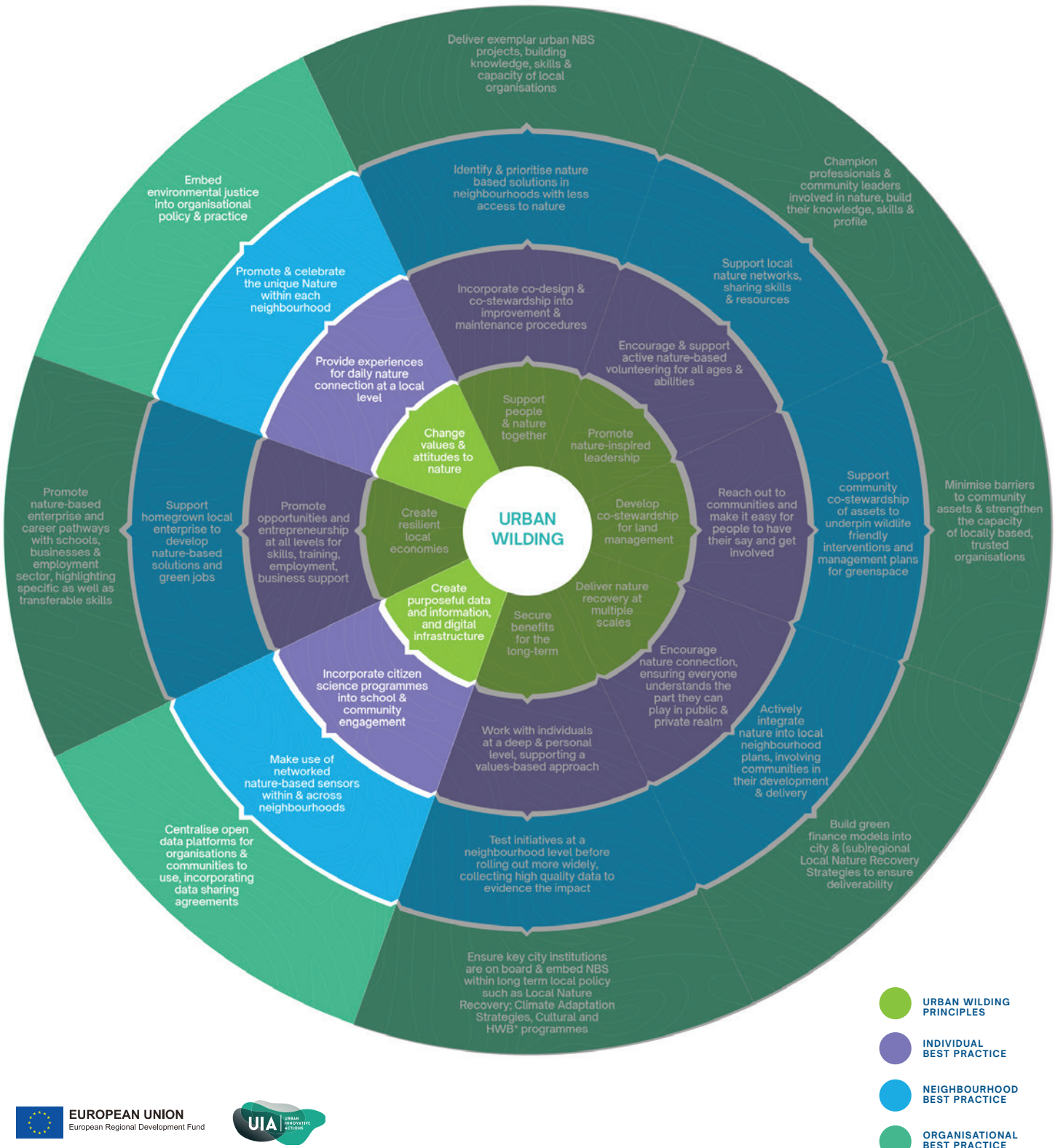
greenminds case study

Living Lab Nature Data
Probe Toolkit

greenmindsmodel

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Permeability, both within and between segments, reflects the need for adaptability through local learning gained through an action learning approach, in which lessons learned influence the next cycle of implementation.



Introduction

The Green Minds Living Lab aims to redefine the future of green space in Plymouth by developing a series of site-specific digital experiments across the city that create a better model of civic engagement and governance within the urban green space.

In the Green Minds project, we used scientific and creative digital tools to make nature in the city much more visible and exciting to people and foster engagement with green space.

Technology in the wild

Data can be an important tool to help us understand what is happening in our natural environment and the impact of human activity.

Citizen science, as a participatory approach to gathering and understanding nature data, has the potential to deepen connections between people and nature, and increase local participation in greenspace governance. But there are many challenges with accessing and installing technology in the wild, such as lack of internet connection and lack of ways for non-experts to meaningfully interpret data.

In this Case Study we describe how we tested and implemented a series of digital infrastructure and practical tools in a specific park, which we used as a pilot to test out the best way to engage people and stakeholders.

Place-based citizen science in Living Labs* can support co-creation of nature-based solutions and foster environmentally responsible behaviours, resulting in more informed and engaged participation in urban governance. The benefits include strong engagement and empowerment of end-users by creating scientific literacy around the usage of digital tools, accessing data and in turn, creating environmental awareness which can lead to more informed decision making in implementing change.

BELOW: sensor in Central Park



By bringing the data alive to people in creative ways the project aims to understand and adapt the way we care for, use, and manage our urban natural spaces in ways that benefit people and wildlife while also engaging the community to help share the data in meaningful and accessible ways.
– KATHARINE WILLIS, UNIVERSITY OF PLYMOUTH

*A 'Living Lab' can refer to a diverse range of local experimental projects, given such a project is participatory in nature and aims to trial and test innovative solutions in a real-life setting.' Gupta, A., Willis, K. (2023 in press). Place-Keeping in the Park: Testing a Living Lab Approach to Facilitate Nature Connectedness in Urban Greenspaces. Sustainability, 15

Overview

Digital technologies and place-based data can provide new ways of interacting with nature by enabling us to see how wildlife uses our green spaces, and so help us to value and manage those spaces differently.

Digital infrastructure

We installed in the park a series of digital technologies: low-cost, low-power live sensors, and interactive signage with e-ink displays and chatbot interfaces for accessing live nature data to monitor wildlife, general environmental conditions (such as air quality, temperature and humidity) and the impact of human activity in the park using the LoRa WAN¹ technology (see page 7).

The Nature Data Probe Toolkit

We implemented the Living Lab approach using a 'Nature Data Probe toolkit'. The toolkit was developed as a way for people to engage with data about the park. The design and its components were structured around simple nature-based activities to reveal hidden nature and create intentional engagement with nature in the park.

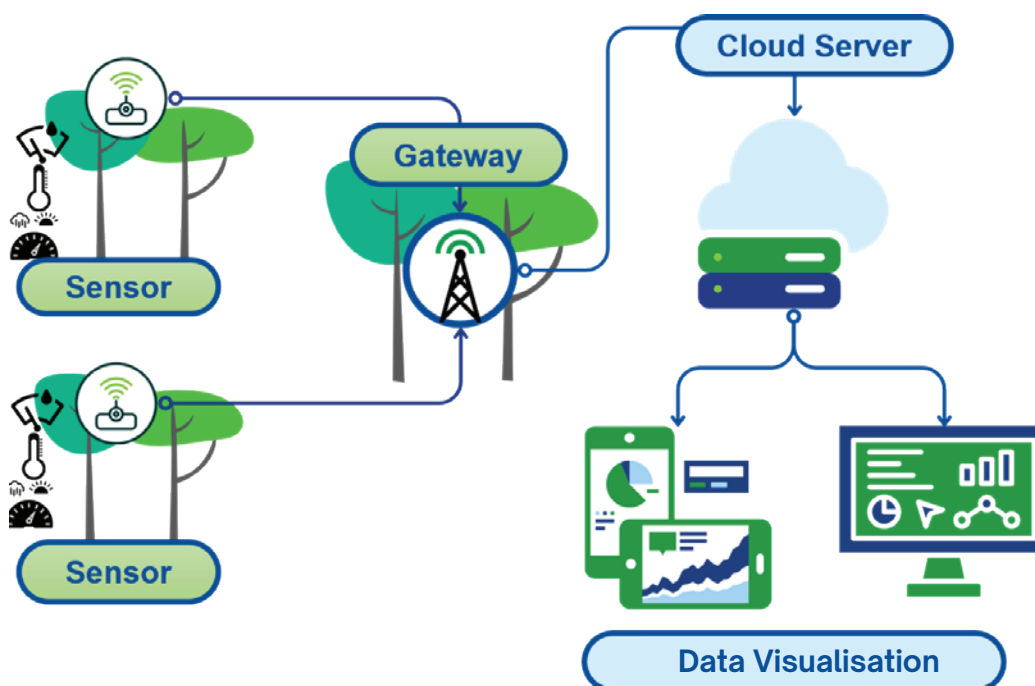
Treating non-human, natural inhabitants as **equal participants and stakeholders** in the project, the toolkit components use nature-based data for narrative building with digital technologies for green space engagement. By giving nature a voice this can help create active participation by building empathy for nature in the end-users. A combination of physical and digital interfaces which can be particularly effective for engaging users with nature in green spaces was also incorporated.



1. LoRa WAN - Long Range Wide Area Network

Digital infrastructure

Data is an important tool to help us understand what is happening in our natural environment and the impact of human activity. We have used digital technologies such as live sensors in the park that monitor wildlife activity, air quality, temperature, humidity and the number of visitors.



LoRa WAN infrastructure

We installed a series of low cost and low power sensors using a technology platform called LoRa WAN. LoRa is the abbreviation of “Long Range Wide Area” and is an open source, low-power and low-cost wireless network platform. It enables sensors to send and receive data without an internet connection and with very little power (the sensors use batteries). This means we can gather nature data without power or an internet connection which enables the sensors to be placed in remote locations. Live nature data can be accessed using interactive QR signage across the park. We incorporated a chat-bot interface and mini QR signs within the Nature Data Probe toolkit.

Living Lab Infrastructure in the Park

We deployed a combination of different sensors in the site using LoRa WAN technology.

- Environmental Sensors² in various habitats for ambient temperature, relative humidity and air pressure
- Soil Moisture sensors³ to monitor orchard and garden conditions
- Air quality sensors⁴ for CO₂, CO₂e, Bvoc, PM₁, PM_{2.5}, PM₄, PM₁₀, ambient temperature, relative humidity to monitor air quality around beehives for effective pollination & general differences air quality in site locations.

In absence of a wired internet connection, wireless internet connectivity was established using a 4G sim card.

Case Study: Saltram, National Trust

We implemented the **Living Lab at Saltram**, a National Trust site in Plymouth. Using the Nature Data Probe toolkits to run community workshops, we shared live nature-data with park visitors to increase engagement with nature, and enabled monitoring of different parts of the site for better management.

LoRa WAN gateways were first set-up on site at high altitude, obstacle free spots with access to a power source. Potential locations for sensor installation were identified with National Trust considering gateway signal strength, obstruction-free transmission pathways, even distribution across the site, varied habitats, and access to a power source.

RIGHT: Students holding Living Lab Nature Data Probe Toolkits



2. Senszemo Sensstick SMC20 – Environmental Sensor
3. Tektelic KIWI Agriculture – Soil Moisture Sensor
4. ynetica enLink OAQ-C – Air Quality Sensor
5. Senszemo Sensstick SMC20 (environmental sensor)

Digital Toolkit: The Nature Data Probe

The Nature Data Probe toolkit is a tool we developed for people to engage with data around the Living Lab sites.

The design and its components are structured around simple nature-based activities to reveal hidden nature, create intentional green space engagement and in-turn create empathy for nature. The toolkit sensors and data feeds are provided through the LoRa data infrastructure.

The toolkit consists of:

1. A combination of LoRa WAN enabled sensors:

- a soil moisture sensor⁶
- light detection and measurement
- a leaf moisture sensor⁷ for leaf surface moisture
- leaf temperature

- ambient temperature and humidity
- enabling monitoring of plant/tree health

2. Wooden QR codes signs to access live data dashboards for each sensor

3. Nature data probe logbooks with prompts to engage with Living Lab sensors and nature data, and to record reflections.

The toolkit can be modified by selecting different components depending on the nature of the project. For example, sensors to monitor elements like air quality, carbon dioxide, ultrasonic distance or people counters, can be added.

Examples of activities using the toolkit:

Components of the Nature Data Probe Toolkit



The combination of digital and paper components within the toolkit can be used to deliver a wide range of activities around engagement with nature and nature data such as mapping activities, paper-prototyping, nature discovery and citizen science.

Outcomes:

Evaluations around nature connectedness revealed that simple nature-based activities using digital tools are effective in creating better engagement with nature in green spaces. We found that **nature connectedness was created** where participants were able to identify nature using more descriptive and specific vocabulary after the Living Lab intervention.

PHOTOS: engagement sessions with local secondary school students in Central Park



Engaging with the data

Narrative approaches are central to behaviour change practice and have been evidenced to aid active participation in place-based citizen science interventions. This storytelling using digital technologies can thus contribute to building better connections with nature in urban green spaces.

Narratives of data and place-based technology

Informed by stakeholder consultations and research around designing digital interfaces for parks, we developed our digital prototypes using this narrative approach. The outcomes highlighted the following key characteristics:

1. an engaging, immersive experience
2. in a form of storytelling
3. share knowledge about the park's wildlife
4. accessed via a mobile device
5. text-based, including visuals.

We developed chatbot interfaces to bring live data from the park to its users and gather feedback from them.

RIGHT: interactive interpretation in Central Park



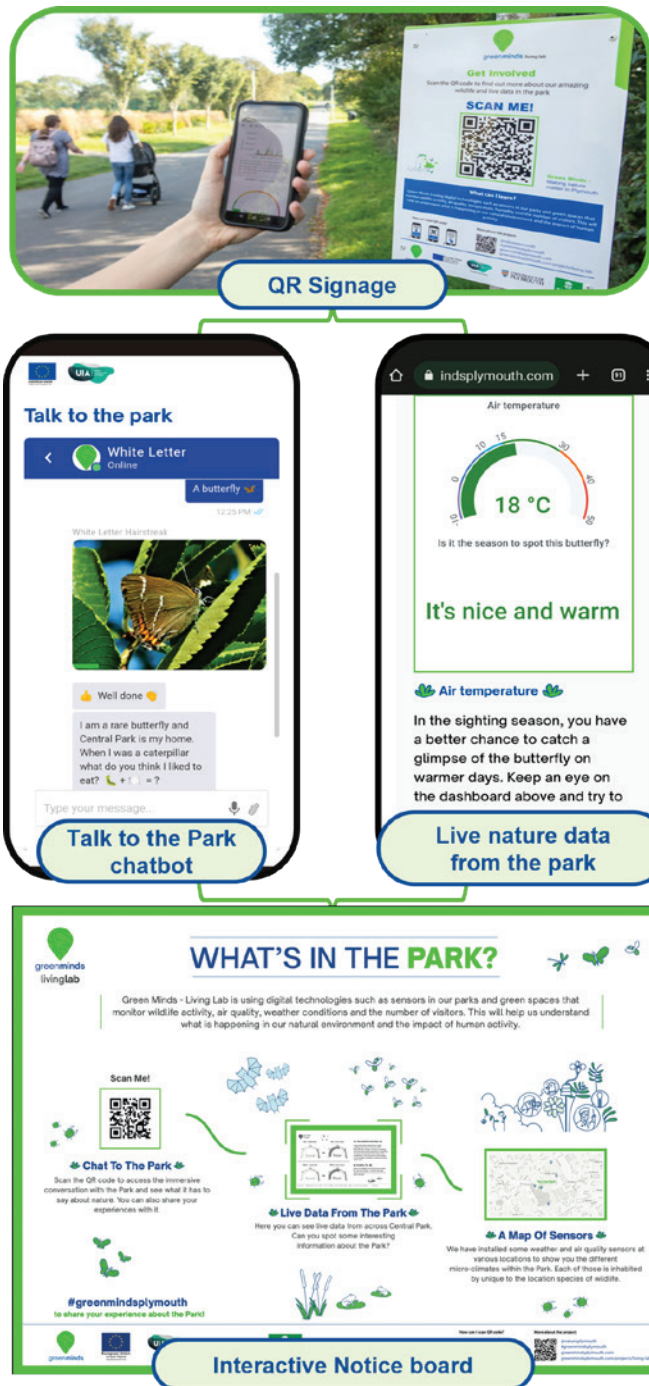
'Talk to the Park' chatbot interface

The flexibility of the chatbot tool enables ongoing co-design of the dialog between the park and users, how the space can be used, and for what purpose.

By facilitating two-way communication between park users and the chatbot, we aimed to provide up-to-date and accurate information about parks based on individual preferences. This information can be used to inform park managers' day-to-day activities, as well as longer-term investment decisions like the provision of new infrastructure or adapting management regimes.

The prototypes were developed using common digital tools – QR codes and chatbot interfaces.

Accessing Live Nature Data from the Park



ABOVE: Example of Living Lab in Central Park: Scanning QR codes on park signage to access the 'Talk to the park' chatbot and view live nature data.

Digital infrastructure for nature connectedness

The Living Lab approach with an open source IoT LoRa WAN infrastructure installed in a park together with a series of engagement activities with local stakeholders provides a digital infrastructure to support active green space engagement and in-turn create nature connectedness.

Technology in the wild

Against the limitations of conventional methods for participation, technology has emerged as a promising tool for better engaging with green spaces in a more participatory and engaging manner; encouraging more people to explore and engage with nature and take advantage of its benefits.

LEFT: Local school students using the data toolkits

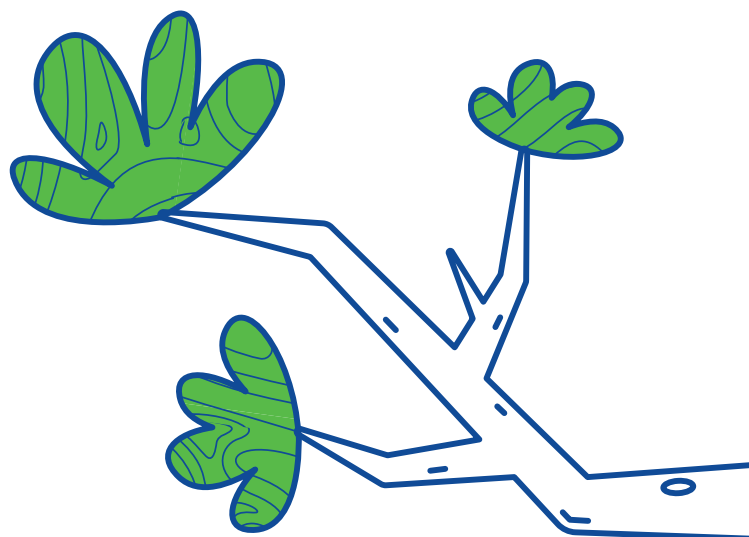


Engaging with nature data

A place-focused approach to citizen science in this regard can not only create literacy around digital sensing tools and making data accessible but also empower citizens by creating a deeper awareness of nature in urban green spaces, leading to well-informed decisions using the evidence-base generated during iterative cycles of data collection.

Young people and digital

We found that engaging a younger audience can be particularly effective in establishing a long-term and sustained stewardship of natural environment by giving them the tools and know how to care for their local green spaces. In this context, Living Labs can be an innovative pathway towards creating a more participatory and inclusive green space and may have positive spillover effects towards community cohesion.



RIGHT: engagement event in the west of the city



Appendix:

Digital infrastructure installation guide

Selecting location for infrastructure

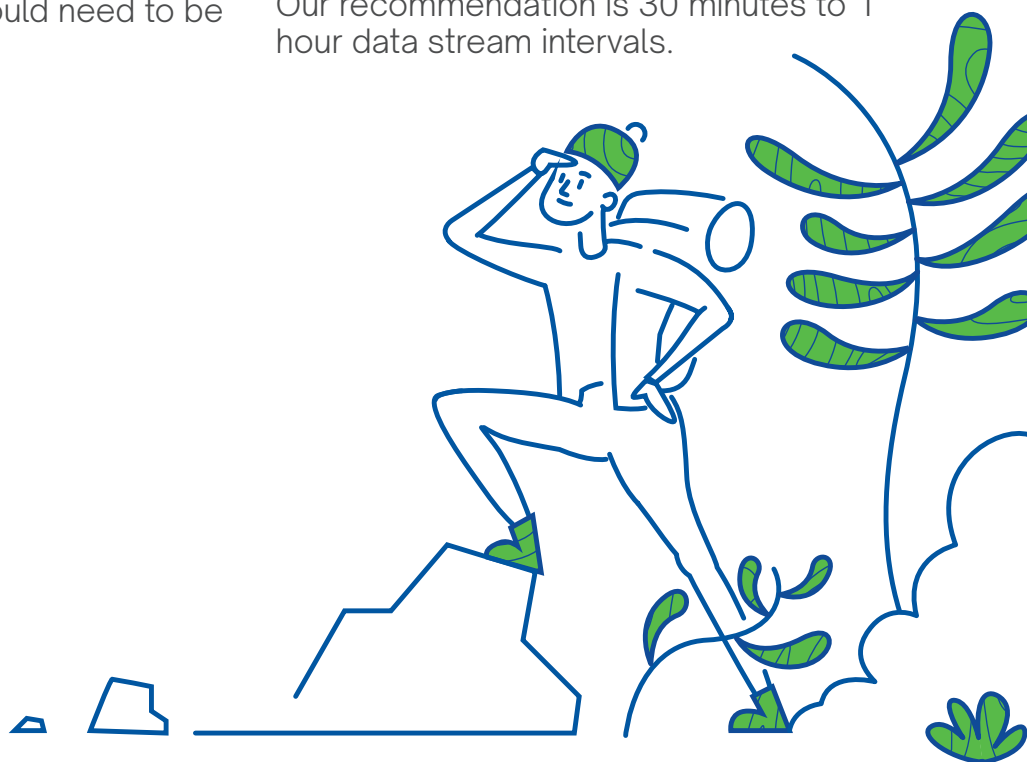
An onsite habitat mapping prior to sensor installation is recommended to identify locations with a mixture of habitats i.e., meadows vs woodlands vs wetlands – hosting a diverse range of species. This ensures generation of rich data sets enabling effective narrative building around nature in the park and, in turn, compelling stories about these habitats and their inhabitants.

Gateway catchment

Installing locations at higher altitudes on site with minimum obstruction (such as hills or tall buildings) are recommended to ensure all sensors have good connectivity to the gateways. A power source and internet connectivity at the installation site are required. Internet connectivity via ethernet cable is preferable for undisrupted operation but mobile connectivity using a 4G SIM card is also reliable. These SIM cards are the most affordable option but would need to be replaced every 24 months.

Installation considerations

- Fixing sensors to trees: we opted for plastic cable ties, which although are not made from sustainable materials, could be reused if untied with a thin screwdriver. These ties can also be easily replaced if damaged by weather or wildlife. While stainless steel screw ties can be considered as an alternative, these were not trialled as they can damage tree bark, subsequently putting the tree at risk from infection.
- Consider finding installation locations that are sheltered from the elements to minimise the chances of damage to the sensor and lower maintenance costs
- Consider reducing data streams to minimum to prolongue battery life. Most sensors are set by manufacturers to send out readings every 15 minutes but in many cases this granularity of data is not needed. Our recommendation is 30 minutes to 1 hour data stream intervals.



Choosing toolkit components

While choosing toolkit components it's important to note the following:

- Portability, reliability, and robustness to withstand the transportation and deployment by individuals without much experience.
- Components that can be used on the go but also deployed in location for longer periods of time.
- Long battery life.
- Capacity to send data to the cloud without the need of LTE or Wi-Fi connectivity to work in remote locations.
- Toolkits can be expanded by incorporating additional Lora WAN sensors according to the purpose of the study.

SIGNAL STRENGTH

Gateway coverage for sensors to connect depends on multiple factors such as weather conditions, material, and obstructions in the pathway. On a clear day a gateway may be able to receive data from sensors 10+km away. The signal strength is low in valleys and doesn't travel well through solid structures.

RIGHT: installation of a sensor at Central Park





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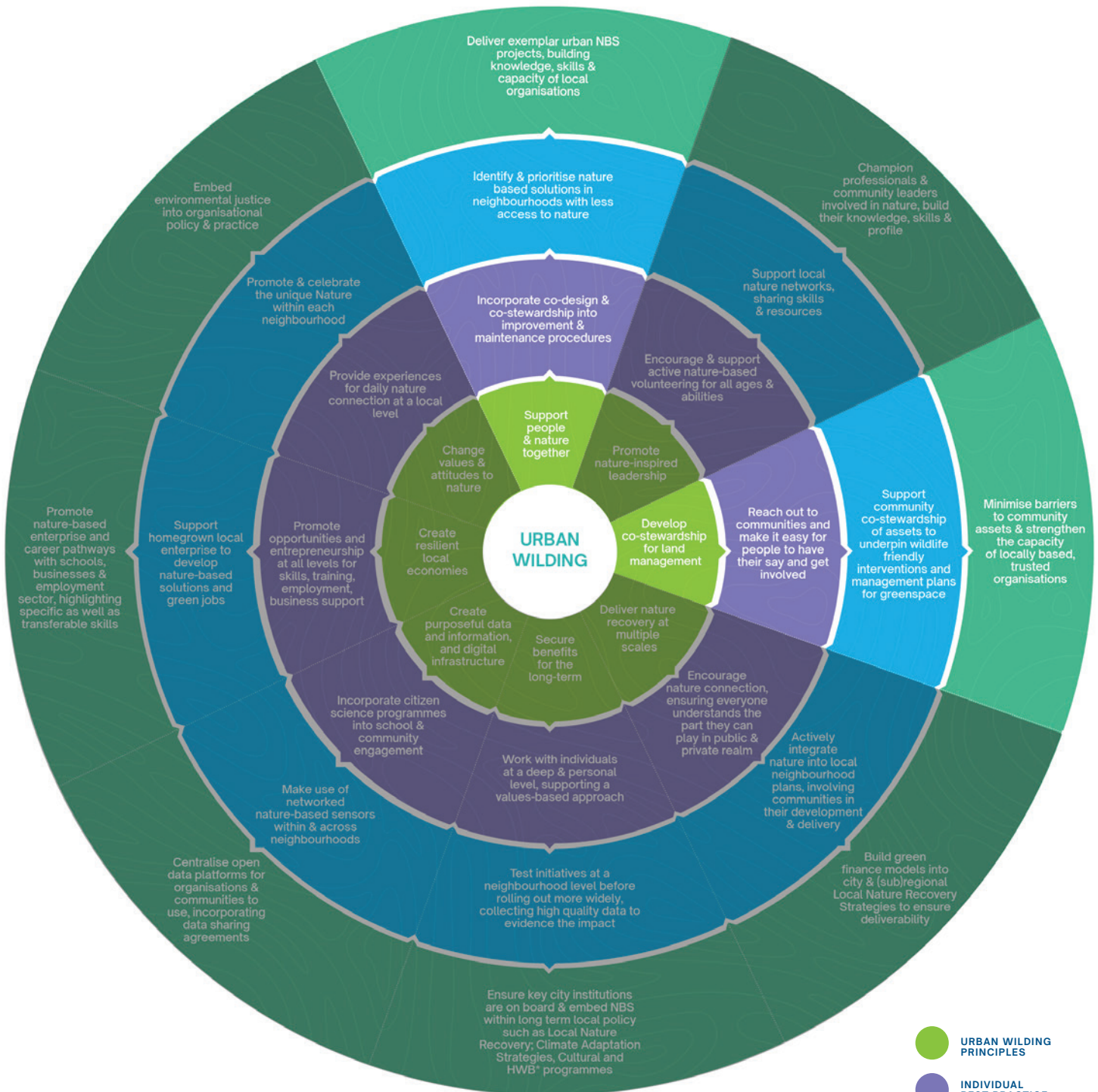
greenminds case study

**Growing With
Nature Network**

greenmindsmodel

The model illustrates the three system levels at which the Urban Wilding principles are applied to drive action: the individual, with neighbourhoods, and within organisations.

Permeability, both within and between segments, reflects the need for adaptability through local learning gained through an action learning approach, in which lessons learned influence the next cycle of implementation.



What is Growing with Nature?

As the Green Minds project moved online during the pandemic, stakeholders called for opportunities to connect with like-minded people on the issue of urban nature, which had become suddenly so much more important to people as work places were closed and normal social interactions curtailed.

A 'Plymouth Rewilding Network' was established to support people who wanted to take wilding action and provide guidance on how to complete wilding projects.

Throughout 2020 - 2021, Green Minds ran a series of networking events and produced online resources to support wilding action, before commissioning Food Plymouth to lead these activities in 2022. The Plymouth Rewilding Network became known as 'Growing with Nature', to create a more inclusive network (overcoming different perceptions of 'rewilding'), encouraging more gardening and growing groups to get involved.

The name Growing with Nature came about partly due to different perceptions within communities to the word 'rewilding', with some people considering this to mean

untamed, neglected and untidy, or unrelated to gardening or growing. We wanted to be inclusive, bring people with us and support a wider range of participants, helping them on a journey towards more nature friendly approaches and practices. Our rationale was to educate and persuade, helping people to incrementally see the advantages and accept more 'wildness', thereby creating the conditions to introduce more wildlife friendly spaces and methods within their projects.

This brought together three initiatives: Growing with Nature Network, All Ways Apples project, and a Permaculture training and development programme.

RIGHT: A Growing With Nature Network event in Devonport

A 'Plymouth Rewilding Network' was established to support people who wanted to take wilding action.



The initiatives

Growing with Nature networking events

The Growing with Nature Network events had seasonal themes, which included guided tours of growing projects led by community members, sharing project updates, advice on wilding and wildlife-friendly practices, as well as time to network and take part in activities offered by attendees (such as seed / plant swaps). **Networking events rotated around Plymouth to be more inclusive and provide an opportunity for people to attend from across the city.**

Feedback from participants has shown the network has been of huge benefit in relation to knowledge and skill sharing, as well as allowing groups across Plymouth to make connections and support each other outside of Growing with Nature events.

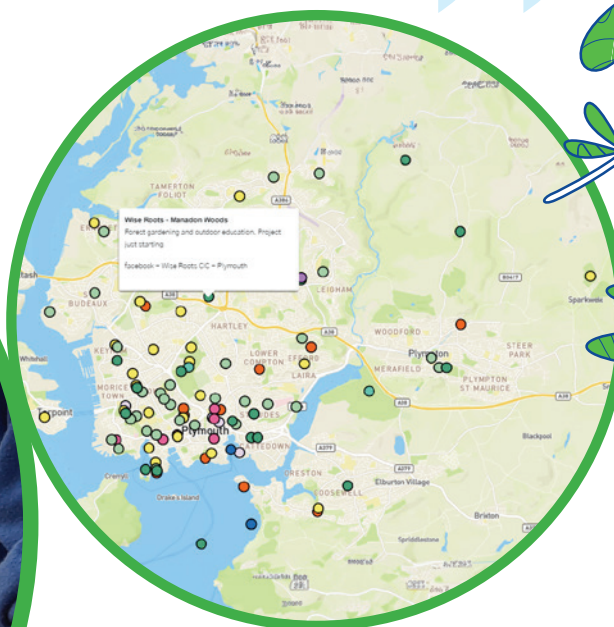
BELOW: Five 'All Ways Apples on Tour' events happened at Green Minds sites (primarily Central Park, Poole Farm and Keyham neighbourhoods), attended by over 400 people.

All Ways Apples activities

Orchards and apples have proven to be a popular focus for community activity in many villages, towns and cities. In Plymouth an events-based programme brought people together to press apples for juice and to learn about tree care and other orchard-related nature-based projects and environmentally friendly practices.

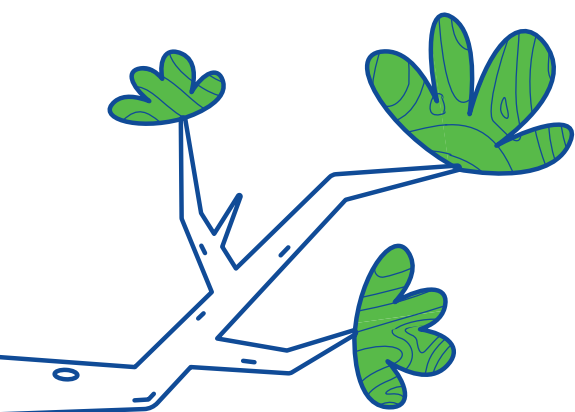
The All Ways Apples events that took place in Keyham neighbourhood proved to be a valuable opportunity for engagement and community conversations regarding the ongoing Keyham Green space Improvements¹. The Green Minds team and partners were able to talk about the fruit trees planned for new community orchards there and how people could get involved with tree planting and tree care. There was also an opportunity for local schools to get involved, with children visiting their local community orchard and taking part in nature-based activities.

“There’s such a buzz around these events, it’s something about connecting with each other over really positive projects... it’s like mycorrhiza connecting plants, we’re all connected.”
– PARTICIPANT



ABOVE: To complement the networking events, Green Minds partners at The Data Place created an online mapping platform as a way for people to find information and get involved with wilding and growing projects citywide.

The initiatives



BELOW: A Growing With Nature Network event



Permaculture design training

Whilst Permaculture originated in agricultural systems, its ethos of connecting with nature and learning from working within natural systems provides an approach to urban green space design, allowing wild spaces to thrive in smaller urban spaces.

Green Minds funded places for participants on two permaculture courses delivered by Tess Wilmot (Food Plymouth) and international permaculture specialist Klaudia van Gool. One of these was a 12-day Permaculture Design course for community growers and green space guardians, while the other was a bespoke five-day Introduction to Permaculture course for professionals working on environmental and community focused projects.

Holding the permaculture training courses at Green Minds project sites (Poole Farm, and Snapdragons CIC in Victoria Park) allowed participants to immerse themselves with nature in the city and 'see with new eyes'. Using permaculture design skills, people were empowered to observe, analyse, research and find solutions in a wide range of settings and scales for their design exercises. Every permaculture design is different, designed to be appropriate for the people involved and also taking into account that 'earth repair' is needed for the site and the wildlife.



It has been a truly profound experience for me to begin to understand the importance of Permaculture Design and its principles and ethics.

Lessons learned

Growing with Nature – finding common ground and creating a Movement

- Engagement with nature during the pandemic awakened a passion for nature in many people and the GWN network opened a way of connecting with like-minded people during a time of heightened individual isolation and anxiety
- Mapping activities using interactive online tools helps people to find out what is going on in their immediate and wider community, and helps to provide a sense of shared purpose
- Growing food and tending community green spaces can bring together many community- and nature-focussed organisations and provide common ground to enable effective collaborations in support of multiple community objectives such as Nature Connection and improved mental health

Permaculture – a community centred approach to wilding green spaces

- Permaculture design principles help people to understand the systemic character of urban nature, and to create more durable designs delivering multiple benefits
- Its approach, which places natural systems at the centre of the process, is well suited to design for urban wilding - an understanding of nature through permaculture principles can aid an active transition to wilder green spaces in cities giving parks operatives new insights into urban nature

Community Orchards

- People love orchards! They provide blossom and fruit and are a great focus for community and school events.
- Picking and pressing apples for juice provides a fun activity with a tangible product that people can enjoy and associate with care for orchards and their biodiversity, enhancing connection to nature.

“I have been in parks for 33 years keeping things tidy, pruning and cutting. Now I understand. Taken my head space out of the formal Victorian park. Never thought I would feel this way. Huge change. Amazing.”

– PARTICIPANT



3.0 | evaluations



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**Central Park
Neighbourhood Management
Trial Evaluation**

Methodology

Evaluations were carried out by an independent contractor through interviews with key staff involved in project delivery during August/September 2023, site visits, and review of project monitoring information.

The neighbourhood management trials took place in four contrasting areas:

Central Park

Central Park was created in 1928 as a park for the whole city. It is highly valued by the people of Plymouth, holding a treasured place in many family memories. It is large and complex, comprising many spaces of different character attracting a diversity of users.

Derriford Community Park

Derriford Community Park is a new green space, wilder than Central Park. It lacks a longstanding community of users, and its value to the community is still being tested and developed.

Devonport and Stonehouse

Social Enterprise trails in Stonehouse/Devonport communities focused on the wilding and development of under-used spaces. Their aim was to develop alternative approaches to management and financing that added value for the local community in a sustainable way.

Trees and Rewilding Corridors

Keyham Green Spaces were selected for evaluation as components of the Urban Trees and Wilding Corridors management trial. Keyham suffered a traumatic shooting incident in 2021 which led to calls for improved safety and to make green spaces more welcoming to overcome the fear of going out. Five spaces were reimagined by their users, mostly living in the immediate vicinity. A strategic plan brought a coherence to this work within the context of nature recovery.

Central Park neighbourhood management trial

What was proposed?

“Central Park is the city’s largest formal park at 94 hectares with hundreds of visitors per day. On a high plateau, the park suffers from drainage problems, hindering public access and contributing to downstream flooding. A Sustainable Urban Drainage System (SUDS) of swales and ponds sensitive to the historic context of the park will transform drainage problems into an asset that improves biodiversity and supports sensitive interaction with wildlife and water. It converts a traditional drain into a sustainable gravel drain, filtering water and carrying it towards a new swale into ponds, enhanced by native planting. The existing dysfunctional pond is replaced by a network of three linked ponds retaining mature trees and delivering necessary attenuation volume. The northern pond creates the missing end point for views along a key route through the park and delivers a grand entrance to the park enlivening the historic layout. The southern ponds are natural in appearance. Upstream, the Arboretum for the Future will provide a new focus to a quiet area of the park. Historically a formal pleasure garden, this area has a range of mature specimen trees, some coming to end of life. We will design and deliver a community tree planting scheme to create a city showpiece for climate resilient tree species which thrive in the local landscape, and help improve drainage. Design features such as viewing platforms, seating and physical /virtual interpretation and meaningful engagement will encourage use and understanding of both investments.

Assessment against Urban Wilding Principles

Support people & nature together	The Central Park investments have been designed to both support biodiversity and enhance climate resilience, but also to enhance amenity values for users of the park. Huq place monitoring data showed a 15% increase in footfall from 2022 to 2023, with approximately 2500 unique visitors per day. In relation to Green Minds events, 86% of 339 people asked strongly agreed or agreed that spending time in nature at Central Park was good for their health and wellbeing.
Promoting nature-inspired leadership	Land Management Apprentices were assigned the task of designing the Treescape for the Future project, as a way to help them develop their skills for working with nature. The three Green Minds Landscape Technician Apprentices created the design for Pounds Park, and were also involved with the design for Zoo Field which was created as part of a permaculture course alongside five Arts University Plymouth students, two local community members, and individuals from Snapdragons community group and National Trust. The SUDS scheme is designed with reference to nature-led principles, in effect mimicking and enhancing natural ecosystem services. The three Landscape Technician apprentices, with support from colleagues at Devon Wildlife Trust and Plymouth City Council, updated the Central Park woodland management plan taking into account changes to the landscape with the SUDs project, and also supported updating the wider park management plan.
Changing values & attitudes to nature	Interpretation for the Treescape and SUDs projects are designed to explain why changes are needed in the light of climate change. Arts University Plymouth students have created ponds and treescapes interpretation signage to demonstrate the importance of these habitats for local wildlife. Plymouth City Council also worked closely with Earthjump and the Montpelier Eco-Warrior group from the local primary school to create a tree trail in the Pounds Park area, encouraging site users to explore the wider area away from the paths and connect with nature through the children's stories written on storydoors beside a series of trees. In relation to Green Minds events, the following strongly agreed or agreed that spending time in nature at Central Park was good for their: • Physical health – 87% • Socialising – 84% • Mental health – 89% • Feeling closer to nature – 86% 488 people were engaged with Central Park through volunteering during Green Minds, contributing over 1380 hours. Of the 2950 people who attended events in Central Park, 68% were new to Green Minds.
Developing co-stewardship for land management	The investments were co-designed with the community, through thematic working groups, meeting the diverse interests of the stakeholders involved in the park.
Secure benefits for the long-term	The treescape project is designed for resilience to climate change, with future-adapted trees included in the planting scheme. The SUDs project will lessen the impact of future climate change on flooding in the park, and contribute to urban cooling through the enlarged water bodies and their beneficial cooling effect during heatwaves.
Create purposeful data & information supported by digital infrastructure	The network of sensors installed in the park will gather data on micro-climate and help to monitor the benefits of the interventions for climate resilience and related health and wellbeing benefits. These will continue to be maintained and monitored beyond the life of the project.
Create resilient local economies	Flooding has economic impacts through damage to property and disruption to travel. The new stormwater attenuation capacity will contribute to a wider network of interventions designed to make the city more resilient to heavy rainfall.
Deliver nature recovery at multiple scales	The Central Park SUDs scheme nests within a city-wide plan for storm water management, across 14 catchments.

What was achieved?

The Central Park investment, and the stakeholder forum supporting it, were inevitably affected by the impacts of covid, which greatly limited public engagement and engineering works for long periods. This necessitated much adaptation of the project workplan, but with some resulting benefits.

A functioning SUDs system has been constructed, planned for completion at the end of January 2024. The design provides renewed and remodelled ponds which deliver stormwater attenuation, biodiversity and amenity benefits. A newly planted 'Arboretum for the Future' features tree species adapted to the likely impacts of climate change, and helps improve drainage. Rewilded areas feature local biodiversity. Their design has involved local schools and has been a learning experience for Land Management Apprentices.

A strategy for park governance and stakeholder engagement in decision making was proposed in 2021. However, changes in the political administration and feedback from local partners and stakeholders showed:

- **a lack of capacity for volunteer groups and organisational staff to attend meetings**
- **a strong preference for operational groups to focus their time on particular themes or areas of the park according to their interests or needs**
- **a continued need for Council coordination and support to bridge the gaps between user groups and different departments within the Council**

As a result, the approach to support communication, shared decision-making and stewardship has moved away from one joint multi-stakeholder operational forum into the coordination of several strategic themed groups, which inform and are informed by wider stakeholder engagement. Key groups are focused on **Sport & Recreation; Enterprises & Events; Wildlife; Health and Wellbeing; and Broader Community Engagement.**

As delivery has progressed, and trust between stakeholders improved. In its final year Green Minds managed to bring the various interest groups together twice to share achievements and challenges. This has been welcomed and going forward the Council has secured funding with PP2 to have two members of staff based on the park with a particular focus on community and volunteer engagement and nature recovery. This includes a commitment to coordinating quarterly joint forums, in the park's Community Hub building.

What was successful?

Central Park is large and complex, with many interrelated but separate elements. As the project progressed it became apparent that the complexity was creating excessive demands on the stakeholder forum. A decision was taken to instead establish delivery-focused working groups for each element of park development. This approach boosted stakeholder motivation by better connecting them with their specific interests.

Involvement of the Land Management Apprentices in designing the wilding planting scheme was a great success, in that they brought new ideas and benefited from the responsibility. Being a smaller part of the Central Park works it was more appropriate in scale for schools engagement. In particular, this work uncovered the issue of safety for girls in the park which was identified as a key barrier to its use, and its role as a barrier to their use of it. A connection was forged with the charity Make Space for Girls, a charity, resulting in the involvement of girls from a school neighbouring the park in the design of spaces which better met their needs.



RIGHT: Pond Project landscaping site

The SUDs scheme, whilst not complete, has provided new knowledge, improved confidence to deliver such schemes, and partnerships such as the Local Lead Flood Authority, Environment Agency and South West Water. This has led to the development of **2 further SUDs initiatives in other city greenspaces** and a successful bid to DEFRA for a Natural Environment Readiness Grant to explore new Green Finance mechanisms for SUDs more widely.

What could be improved/what challenges were encountered?

The design of the SUDs scheme has itself been a complex project. Whilst the principles of sustainable drainage are simple, turning these into engineered solutions that work demands extensive and expensive studies. Further, knowledge of the practicalities of design is still at an early stage. Consequently, some of the proposed solutions have needed some modification after installation.

Changes in political administration caused some delays, due to new political leaders taking time to fully understand the project. Members of the community also took time to understand the project and considerable effort was made to communicate its aims and benefits, using accessible animated video etc. Considerable effort was made to accommodate community concerns, and costs have risen significantly compared to original budgets. The lengthy closure of parts of the park was unpopular.

What lessons have been learned?

Knowledge and expertise in SUDs design is still at an early stage, with lessons being learned during the practical operation of schemes. Novel SUDs designs should be adopted with caution. Adapting designs tested elsewhere is likely to be a less risky strategy. Learning from the Central Park scheme is being transferred to planned SUDs schemes in Trefusis Park and St Levan Park.

Engagement of the public in management of complex public areas can be more successful if broken down into delivery-focussed groups. Stakeholders engage more readily with concerns of practice, than with policy and strategy.

Community co-stewardship represents a new model for running green spaces – one that is intended to give the community a greater say in decisions. However, this takes time and careful consideration should be given to the level at which stakeholders are involved, ensuring it meets their needs and interests. The trial highlighted a continued need for Council coordination and with recognition of this, partners secured additional funding to support ongoing community stewardship through their Green Community Hubs approach, with teams skilled in nature recovery and community engagement based at the park.

This will be delivered in partnership with PP1, PP5, PP4 and PP3 from September 2023 to March 2025 and support the legacy development of the management trial.

NATURE BASED SOLUTION TYPE

Sustainable urban drainage scheme, featuring swales and attenuation ponds to reduce flooding during heavy rainfall.

RIGHT: sustainable urban drainage in construction



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**Devonport/Stonehouse
Neighbourhood Management
Trial Evaluation**

Methodology

Evaluations were carried out by an independent contractor through interviews with key staff involved in project delivery during August/September 2023, site visits, and review of project monitoring information.

The neighbourhood management trials took place in four contrasting areas:

Central Park

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Derriford Community Park

Derriford Community Park is a new green space, wilder than Central Park. It lacks a longstanding community of users, and its value to the community is still being tested and developed.

Devonport and Stonehouse

Social Enterprise trails in Stonehouse/Devonport communities focused on the wilding and development of under-used spaces. Their aim was to develop alternative approaches to management and financing that added value for the local community in a sustainable way.

Trees and Rewilding Corridors

Keyham Green Spaces were selected for evaluation as components of the Urban Trees and Wilding Corridors management trial. Keyham suffered a traumatic shooting incident in 2021 which led to calls for improved safety and to make green spaces more welcoming to overcome the fear of going out. Five spaces were reimagined by their users, mostly living in the immediate vicinity. A strategic plan brought a coherence to this work within the context of nature recovery.

LEFT: Tree planting at Snapdragons, Victoria Park



What was proposed?

The investment will create greater community ownership, improved management and social enterprise activity across public green space and public sites in Devonport and Stonehouse, two of England's most deprived neighbourhood. As the UK's first Social Enterprise City, there is strong culture of social enterprise, where many buildings, streets and heritage assets have been subject of successful community-lead development. Combining this challenge/opportunity of socio-economic need and a successful track record of community led regeneration, Teal Futures will deliver an action research process to develop and implement a set of new, redeveloped community led green spaces across the neighbourhoods.

The activities will deliver a three-stage process:

- 1 **Mapping engagement** - mapping public spaces, ecological data, local assets/builds, community groups/businesses and key data around health and economics. It will take co-construction approach engaging local communities.
- 2 **Feasibility co-design** - based on the mapping a cohort of community members and sector experts will undertake a co-design programme. Supported by inspirational and taught content they will co-design new approaches to the development and management of these spaces.
- 3 **Development delivery** - based on the co-design of a set of sustainable capital interventions, new social enterprise activities and ways of work will be put in place.

Learning and evaluations will be captured and shared

NBS type: Tree planting, wildflower meadows and habitat improvements in parks for cultural ecosystem services (nature-based education and training, and social enterprise).



Assessment against Urban Wilding Principles

Support people and nature together	In these social enterprise investments, nature is developed as the basis for enterprises that will sustain both people and nature. Excluding the Illuminate Festival (which engaged with 22,000 people), 5,423 people from Devonport/Stonehouse communities participated in Green Minds events with 43% being new participants. 44% of participants were volunteers, primarily through the social enterprises who received grants from Green Minds. In relation to Green Minds events, the following of 113 people asked strongly agreed or agreed that spending time in nature in Devonport / Stonehouse was good for their: • Physical health – 98% • Mental health – 100% • Socialising – 98% • Feeling closer to nature – 98%
Promoting nature-inspired leadership	The investments were developed with support from Green Minds (Partner Real Ideas Organisation) to demonstrate how nature can be developed sustainably to enable and support social enterprise.
Changing values and attitudes to nature	The investments showed how nature can be an asset for the community, in a very tangible way – supporting jobs and delivery of services.
Developing co-stewardship for land management	Making land in parks available for social enterprise use has enabled new forms of community-led management to be developed. Crucially, nature is fundamental to the business models, ensuring its sustainable management. 2,479 people were involved in volunteering, contributing over 4000 hours.
Secure benefits for the long-term	Leases/licences and asset transfers give social enterprises the security to develop and grow over the years.
Create purposeful data and information supported by digital infrastructure	Some activity is digitally recorded and mapped. For example, Pollenize encourage people to map wildflower meadow seedings, on a dedicated map linked with a programme of community-run beehives for plant pollination.
Create resilient local economies	These investments demonstrate how urban nature can provide the foundation for social enterprise, supporting new jobs and acquisition of new skills
Deliver nature recovery at multiple scales.	Investments in nature by social enterprises should be consistent with the local nature recovery strategy.



What was achieved?

10 community businesses were supported, including more established and larger scale enterprises.

- 7 new enterprise projects seeded or started during Green Minds, including Stiltskin Soapbox Theatre, who expanded their outdoor theatre offer, and Hamoaze House, who introduced an ice cream truck serving Mount Wise Park.
- Development pipeline of community enterprises and projects: Plymouth Pie Club, Yoga Loft, Food Plymouth, and Be:Unique Wellbeing and Fitness are all hoping to add community offers within the next six months in Devonport and Stonehouse parks.
- These businesses are growing the local economy, trading with one another, and creating jobs, with 5 additional FTEs introduced.
- They are taking on and transforming land and buildings in partnership with PCC. There have been 5 asset transfers (lease and licences), with another in development.
- This work provided a platform to bring in additional funding for wider economic impact: £322,000 was secured from other funding sources equating to £7 for every £1 spent through Green Minds grants
- Enterprises are embedded within and working for their communities, with over 200 active volunteers from some of the most deprived neighbourhoods, and 500 people engaged through free events and activities.
- 10 businesses are introducing natural improvements, increasing biodiversity, and reducing impacts. This includes wildlife ponds, native hedge and tree planting, wildflower meadows, community composting, solar energy production, and compost toilets.



What was a success?

The projects showed how Nature can be a core element of the business model, an integrated model, that helps to sustain and develop nature as an integral part of business development. For example, the Soapbox's Art Garden is the setting for events and courses. Expanding and improving the garden drives up sales.

The availability of flexible, start-up grant funding was crucial to a successful enterprise creation. It enabled individual needs to be met, such as for equipment, professional services, capital works etc. before revenues were being generated. It helped social innovators to make decisions to invest their own time and energy into these enterprises.

What could be improved/what challenges were encountered?

The process of gaining consent and securing access to land is complex. Local authorities are complex organisations and securing a lease in public parks at the same time as securing planning consent for enterprise activities requires considerable time and effort on the part of the applicants, at a time when they are not generating any revenue. The support of Real Ideas Organisation during this period was crucial to enable the social enterprises to complete this phase.

Small or start-up social enterprises have little capacity to respond to procedures involved in asset transfer, planning consent, etc. More support or simplified procedures would help to lessen this significant barrier to social enterprise.

What lessons have been learned?

Start-up grants should be seen as investment delivering intangible returns. More conventional investment (loans) are not viable for many of these social enterprises as their risk return profile is poor. Nevertheless, they deliver important social benefits which are not normally part of the investment calculus.

Plymouth City Council have improved procedures as a result of this experience, opening better communication channels between the respective departments.

Following learning from the management trial the need for continued coordination their emerging nature-based enterprise model and further expanding their nature/neighbourhoods approach was identified. As a result PP1, PP5, PP4 and PP3 have secured additional funding to create a People's Plan for Nature in this neighbourhood – one of 18 UK Neighbourhoods (See <https://peoplesplanfornature.org/nature-neighbourhoods>) and the development of our Community Cultivators approach into a Green Community Hubs programme, with the aim to support a community-led approach to nature recovery. These initiatives will be delivered in partnership with PP1, PP5 and PP3 from September 2023 to March 2025 and support the legacy development of the management trial.



(Pollenize apiary, photo credit Dom Moore)





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**Urban Trees and
Rewilding Corridors
Neighbourhood Management
Trial Evaluation**

Methodology

Evaluations were carried out by an independent contractor through interviews with key staff involved in project delivery during August/September 2023, site visits, and review of project monitoring information.

The neighbourhood management trials took place in four contrasting areas:

Central Park

Central Park was created in 1928 as a park for the city as a whole. It is highly valued by the people of Plymouth, holding a treasured place in many family memories. It is large and complex, comprising many spaces of different character attracting a diversity of users.

Derriford Community Park

Derriford Community Park is a new green space, wilder than Central Park. Due to the site being closed to the public until recently, it lacks a longstanding community of users, and its value to the community is still being tested and developed.

Devonport and Stonehouse

Social enterprise trials in Stonehouse/Devonport communities focused on the wilding and development of under-used spaces. Their aim was to develop alternative approaches to management and financing that added value for the local community in a sustainable way.

Urban trees and rewilding corridors

Keyham Green Spaces were selected for evaluation as components of the Urban Trees and Wilding Corridors management trial. Keyham suffered a critical incident in 2021 which led to calls for the green spaces feel safer and more welcoming. Five spaces were reimagined by their users, mostly living in the immediate vicinity. A strategic plan brought a coherence to this work within the context of nature recovery.



LEFT: The Green Minds team at a community tree planting event in Keyham

Methodology

What was proposed?

Across the city there are over 30,000 street trees, hundreds of hectares of woodland including ancient woodlands and many veteran trees. Plymouth's recent Tree Canopy Cover Study revealed that although the city has an average of 17% tree cover, this amount varies across different areas: Budshead has 25.3% tree cover but Devonport has only 5.8%. This urban forest suffered from poor maintenance and underinvestment, and uneven distributions. Some neighbourhoods benefit far more than others. Trees play an important role in wildlife connectivity and strategic plantings have significant biodiversity benefits. Plymouth's Plan for Trees was collaboratively developed with Plymouth City Council, Woodland Trust, Plymouth Community Homes, Plymouth Tree Partnership, Plymouth Open Space Network and the Tree Council.

Using guidance from Plymouth's Plan for Trees, Green Minds enabled targeted interventions to demonstrate the value of trees for society and wildlife their role in renaturing the city, and in climate resilience:

- Invest to promote, protect, repair and enhance the tree resource in select neighbourhoods to complement other investments
- Strategically enhance wildlife corridors in the city
- Improve the setting of select trees in the public realm, to enhance the social benefits (such as urban cooling)

Delivery of investment reflect Green Minds philosophy: collaborative approach with a co-stewardship ethos, working to change mindsets to see the true value of trees.

What was achieved?

Wilding projects were prioritised for Green Minds action in five Keyham green spaces, in the context of a Keyham Green space Plan. The objective of these investments was to make Alexandra Park, North Down Crescent Park, Marley Park, Knowle Avenue, and Linear Park feel safer, more welcoming and accessible, and better for wildlife.

Following initial requests from the community via the Keyham Recovery programme, the Green Minds co-design process included on-site meetings and workshops with community stakeholders, engagement with local schools, and conversations with Plymouth City Council land management staff. Feedback from this process was used to create landscape designs for the five green spaces, which were redefined and updated over several co-design stages. Residents advised on where to locate wildlife meadow areas, tree locations and species, community gardens and natural play areas. This work was complimented by path repairs and the installation of bespoke wildlife-themed benches co-designed with a local youth group.

NATURE BASED SOLUTION TYPE

Tree planting, wildlife meadows and habitat improvements in parks for cultural ecosystem services (nature-based education and training, and social enterprise).

Assessment against Urban Wilding Principles

Support people & nature together

The co-design process ensured that residents needs and aspirations were met at the same time as the sites being wilded. Over 2363 people attended Green Minds events related to Urban Trees and Rewilding Corridors, 73% of which were new attendees. Out of 192 people asked, the following strongly agreed or agreed that spending time in nature was good for their:

- Physical health – 89%
- Mental health – 94%
- Socialising – 79%
- Feeling closer to nature – 81%

Promoting nature-inspired leadership

The focus on each park individually, allowed frequent users to come together to contribute their views to its redesign, taking more ownership for its future.

Over 580 people aged 0 - 10 and over 190 people aged 11 - 17 took part in events or observed using green spaces in the west of the city. Over 130 children from three Keyham primary schools completed their social action days creating wildlife meadows with Green Minds through the mini-police scheme, while several groups from the 1st Keyham Scout Group have been involved with wildlife meadow and hedgerow creation, and contributed towards the Green Minds immersive 360 film. Green Minds also reached out local youth group (Keyham Young Voices Participation Group), involving them in the design of bespoke nature themed benches and for many, engaging them with their local green spaces for the first time.

Changing values & attitudes to nature

Wilding of parks represents a significant departure from the past model of parks as highly manicured public spaces. Involving the community in co-design enabled new conversations about what to value in parks.

In the initial consultation survey of 43 residents in Keyham, 16 additional comments were made by survey respondents relating to liking the mix of areas for wildlife and people, with several more comments relating positively to more tree planting in the area. This theme continued with the co-design workshops, with many residents recognising the value of wildlife habitats within green spaces: the most popular themes from the co-design workshops were liking the tree / plants species suggested and having homes for wildlife.

Developing co-stewardship for land management

Many local groups were already associated with the green spaces, but did not necessarily engage with nature. Green Minds facilitated 474 people in volunteering, contributing over 960 hours, primarily through the Keyham Green space Improvements (tree planting and wildlife meadow creation). Through Green Minds events, such as a bespoke plant / insect identification session with free meadow surveying kits for Keyham community groups, the project is providing resources and skills to local residents to promote nature connection in their area. As a result, each site now has a lead community group, supporting ongoing stewardship and engagement.

Secure benefits for the long-term

Two community groups recently completed Community Asset Transfers for buildings based in two of the Keyham green spaces.. As these groups become further established in their green spaces, there will be further opportunities to promote nature connection. Similarly, the project has been developing relationships with community hub, Keyham Green Places, located adjacent to Alexandra Park to promote the Keyham green spaces as assets that can be actively used by communities as well as building grounds.

Create purposeful data & information supported by digital infrastructure

The Keyham Green space Improvements demonstrated how grass cutting regimes can be amended successfully, by closely working with community stakeholders, as well as Plymouth City Council Street Services teams, to ensure proposals were in line with community wishes while being realistic for grass cutting teams to manage.

Green Minds also enabled baseline ecological data to be collected in west of city sites, with Devon Biodiversity Records Centre surveys showing an improvement in site condition and biodiversity scores from 6.7 to 7.3 out of 10. This data, along with methodology in line with Local Nature Recovery strategies as well as ongoing ecological monitoring of sites, will help contribute to biodiversity datasets, identify priorities for habitat management and connectivity, and promote the importance of city parks and verges in nature recovery.

Create resilient local economies

Within Keyham, three local community groups / organisations are based in buildings within / adjacent to green spaces (following Community Asset Transfers). As their activities develop, there are further opportunities going forward to actively embed Green space activities in their work, promote active citizenship and volunteering opportunities to manage green spaces alongside Plymouth City Council, and promote green spaces as an asset that can be used by all members of the community in addition to the buildings themselves.

Deliver nature recovery at multiple scales

The five parks represent a collective wilding of the Keyham neighbourhood, improving on-site biodiversity as well as enhancing habitat connectivity across the Keyham sites. The Keyham Green space Improvements, as well as Green Minds' projects in the wider Urban Trees and Rewilding Corridors area, has started to address Plymouth's disparity in tree cover by increasing tree canopy cover in the west of the city.

Under the Keyham Green space Improvements, over 150 trees were planted in three Keyham sites: Alexandra Park, North Down Crescent Park and Knowle Avenue..

At these three sites, site assessment data (through the use of adapted SOPARC* methodology and on-site questionnaires) showed:

- **21% increase in the total number of visitors.**
- **71% increase in user diversity: the average percentage difference across all demographic categories (age, gender, ethnicity and ability / disability, excluding prefer not to say).**
- **16% increase in reported health and wellbeing (physical health, mental health, socialising).**

What was a success?

Engagement of school children through initiatives, such as Mini Police, by providing an environmental activity – for example, wildlife meadow creation (in North Down Crescent Park , Alexandra Park). The aim of Plymouth's award-winning Mini Police Programme is to increase trust and confidence of young people and their communities. Mini Police focus on crime prevention including internet safety, anti-social behaviour, road safety and environmental activities. Ensuring public spaces felt safe and welcoming was a key aim for the local community. Working with the local Police helped us to integrate feelings of safety with nature connection.

A co-design process with the community, involving a diversity of mechanisms for engagement, helped create an inclusive way for community stakeholders to contribute to the Keyham Green Space Plan.

Working with local community-based organisations, **Green Minds** coordinated drop-in co-design workshops for each site, often in the green spaces, enabling residents to comment on each of the designs and visualise changes in the surrounding space. Having something tangible to discuss, to represent a vision for the parks, helped to frame the conversations and elicited detailed responses from the local stakeholders.

This gave people the chance to discuss details such as where trees will be planted, where to locate a wildlife meadows. as well as talk about what they loved about the sites as they were. This enabled the importance of local views to be implemented in the Keyham Green space Plan. Designs were finalised through meeting the community groups based within the green spaces on-site, to confirm final details such as checking the feasibility of bench and tree locations, before the final designs were shared publicly.

What could be improved / what challenges were encountered?

Constraints due to staff capacity limited project presence in the Keyham neighbourhood. This impacted the efficacy of information sharing with local residents, and highlighted the limited reach of some of the traditional communications channels.

While working alongside the Safer Keyham / Plymouth Together teams created a positive impact and reached a wider audience than Green Minds could have done alone, there was some learning for internal Plymouth City Council teams (who were not involved in green space management) in terms of processes for green space improvements – specifically regarding communication, liaison and procedures within green space management.

*SOPARC: System for Observing Play and Recreation in Communities



What lessons have been learned?

The co-design / asset based community co-stewardship approach works well with the right coordination resource. This means staff with capacity to spend time embedding in communities so there are more opportunities for conversations on-site, rather than through reading material online or on site signage, or hearing second hand. Green Minds site assessment data as well as an independent Safer Keyham Report* reflects the positive impact of Green space improvements and community involvement.

However, we learned that the involvement of local politicians through the process was vital to ensure joined up communications, so that any changes implemented weren't a result of a few 'loud voices' but something the community in general want to see. Whilst the trial encouraged interest and mobilisation of groups, there is a need for ongoing support and coordination, building networks and skills across the Keyham community.

*Find the Safer Keyham report at <https://pearl.plymouth.ac.uk/bitstream/handle/10026.1/20932/Safer%20Keyham%20evaluation%20FINAL%20REPORT.pdf?sequence=3>

Following learning from this management trial, additional funding has been secured to create a People's Plan for Nature in Keyham, alongside the legacy project of Green Minds, Green Communities. This pilot project running from September 2023 to March 2025, embeds a Plymouth City Council Officer and National Trust Ranger within the Keyham neighbourhood. This will enable the continuation of the Keyham Green Space Improvements, provide regular on-site presence, and improve community cohesion, connecting people and biodiversity across Keyham.

BELOW: Bespoke meadow and insect identification session for Keyham community groups

BELOW LEFT: The Mini Police in Keyham at a bulb planting and litter picking event





“Green Minds is a great example of taking and adapting research-based approaches to fit the needs and circumstances of a particular situation. Then communicating the new approaches to a diverse audience.”



greenminds

greenminds evaluation

**Communities and Artists:
Co-Creating New Pathways to
Nature Connectedness in Plymouth.**

**Evaluation of the
Green Minds Creative
Commissions**

Preface

In August 2021, Green Minds in partnership with Arts University Plymouth and Low Carbon Devon, University of Plymouth, launched a series of five creative commissions to support communities and artists in Plymouth to work together to explore new ways of engaging in local sustainability and ecological issues.

Core to the creative commissions' approach was the Pathways to Nature Connectedness framework¹ with each of the five tenders being designed to support at least one of the five 'pathways'.

SENSES

tuning in to nature through the senses

EMOTION

feeling alive through the emotions and feelings nature brings

BEAUTY

noticing nature's beauty

MEANING

nature bringing meaning to our lives

COMPASSION

caring and taking action for nature



“The pathways to nature connectedness provide a route for people to develop a new relationship with the natural world. This new relationship with nature can move beyond utility and control, beyond knowledge and identification.”³

**UNIVERSITY OF DERBY
– NATURE CONNECTEDNESS
RESEARCH GROUP.**



LEFT: Participants in a creative commissions nature connection session

The commissions

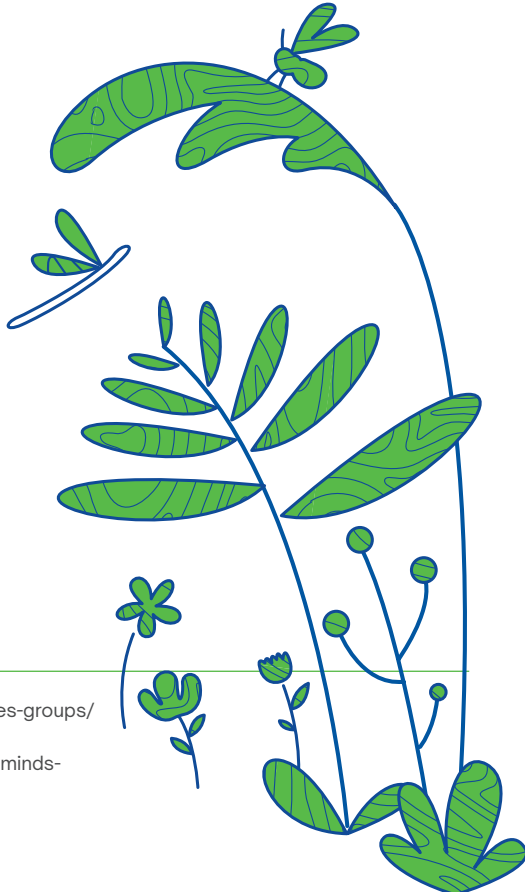
Delivered over Spring and Summer of 2022, these public facing commissions comprised diverse creative practices and media; storytelling, drama, craft, a forest school, regenerative growing and digital technology, including animation and augmented reality digital technology.

The interface and engagement between geographic communities, artists and specific urban settings was supported by an exploratory workshop model and partnerships with local organisations and community hubs.

All of the commissions shared a co-production ethos and methodology, aimed to support participants and artists to develop the creative work in collaboration. The artists were experienced facilitators who supported participants to engage in creative processes; to communicate personal responses to the topic of nature and the impact of the climate crisis; and to prioritise participants' local knowledge and experiences within this process.

Commissioning partners Plymouth City Council, Low Carbon Devon (University of Plymouth), and Arts University Plymouth, wanted to test:

- How creative interventions in urban settings in Plymouth could support new ways of connecting Plymouth communities to their local natural environment.
- Benefits of a multi-partner approach for sharing resources and learning across existing networks in the city and the South West.



“It’s different to going on a hike or to the beach, it’s (the workshops) intriguing. It’s more than saying it’s broken or it’s polluted, it gives you a deeper understanding and awareness.”

**YOUNG PERSON; STORYTELLING
WORKSHOP PARTICIPANT**

¹ A methodological approach for improving human – nature relationships and evaluating pro-environmental behaviours. <https://www.tandfonline.com/doi/full/10.1080/26395916.2020.1844296>

² <https://www.derby.ac.uk/research/centres-groups/nature-connectedness-research-group/>

³ <https://greenmindsplymouth.com/green-minds-creative-commissions>

Introduction to the evaluation report

The evaluation assessed the potential of art making and creative activity for acting as ‘leverage’ for some of the five pathways to nature connectedness; to what extent and in what ways various creative activities provided ‘leverage’.

The report focuses on:

- Individual and group experiences of collective art making processes.
- Evidence of change in perception or attitudes, both personal and collective to nature.
- Identifying key aspects of the commissions model that supports such change.
- Potential of embedding this model over the longer term.
- How this could be achieved with the next steps.

This written evaluation report is based on a series of semi structured, qualitative audio and film interviews with participants, artists and project partners. There is a **short film** that accompanies the report youtu.be/xd-BuGnvpsE

RIGHT: Beyond Face Theatre Group performing their creative commission piece in Devonport Park



Summary of findings

The site specific nature of each creative intervention within a local setting or geographic community provided scope to bring participants, artists and wider audiences into dialogue with local features, contexts and issues; threats to the urban ecology – ash dieback, the biodiversity of a local park and community priorities in Stoke and Devonport.

The role of the facilitator in many cases was key in creating a space that participants felt not just ‘allowed’ in but gradually gained ‘ownership’ of. The time and space offered within the workshops to form new social connections was highlighted by many participants as supporting open communication and collaborative art making.

Existing communities and infrastructure have a significant role for supporting the commissions and ensuring the work is relevant and meaningful to participants and local audiences. Identifying the reciprocal benefits of sharing resources and knowledge in a local context through creative interventions will help build a sustainable framework for the next steps.

“It was very nice to see the development and how we really needed time, and you need to know the people. You can’t just bring a random bunch of people together and say ‘make!’.”

**CHRISTINA –
PARENT AND PARTICIPANT
WILD WATER STORIES**



New perceptions and narratives of nature

New narratives about nature are seen to have emerged as a result of the different workshop processes and models of co-production.

Technology is for a great many people, the main window on the world, so to tilt that window in the direction of nature and the climate crisis makes perfect sense.

PCC TEAM MANAGER

Some creative practices used in the workshops, such as storytelling, writing and drama clearly outline for participants how to develop a narrative. This was through the use of with the use of devices such as characterisation or metaphor to imagine and articulate different 'voices' and viewpoints.

Some participants observed how the activity of mark making and craft processes enhanced their observation and enabled retention of new knowledge about plants found in Blockhouse Park in Stoke, for example.

The potential of digital and augmented reality technology to reach and engage wider audiences using both imaginative and cognitive means is also clear.

While it is apparent that the medium of a given creative activity, story telling or mark making for example, is a key factor in generating new perspectives, it is not the only one. One participant on the Flax Project, was able to re-evaluate and shift learned understanding of materials by referencing experiences of his former workplace of Devonport Dockyard to gain a new conceptual understanding of natural and regenerative processes.

"I used to work at the Dockyard making steel at the foundry, and you bring stuff in to make steel. I understand that, but what I didn't understand was taking flowers and this little weak stem, which turned out to be a very strong stem. And you can make ropes that can take tonnes, literally tonnes. And I didn't understand how that was possible."

**RON, WORKSHOP PARTICIPANT,
THE FLAX PROJECT.**

LEFT: Participant in Tom Milnes's 'Ashnihilation' immersive, augmented reality rewilding experience



What do participants value about the Creative Commissions series?

Other factors which contributed to participants' confidence to engage in what may have been an unfamiliar activity within a new group of people were mentioned; the input and experience of the facilitator, developing social relationships and building a new 'community' over the course of the workshops and opportunities to talk openly and be listened to.

Participants took pride in contributing something tangible and visible to the local environment through making something or sharing a story, thereby adding something personal to a bigger conversation in the public domain.

"What is made here today will add to the history of the park. It is here and available for people to see. You get a little proud kind of, yeah, a happy little dance inside thinking, oh, I was part of that."

JO, WORKSHOP PARTICIPANT AND LOCAL RESIDENT, SAPLINGS MICRO-COMMISSIONS

RIGHT: Performers from the 'Wild Stories' creative commissions

Having time and space to consider as a group the urgency of the climate crisis was seen as a vital step in formulating and taking action and steps to address this.

"Something that was definitely spoken about in the sessions was how the idea of climate change is very overwhelming. Like if you really think about it, that can cause like eco anxiety which causes you to have these responses like... oh, I just don't have the time! And really, you know, you have the time, there has to be a point where we say, okay, this is important."

SHADAY, WORKSHOP PARTICIPANT, ROOTS IN NATURE

"It's always a lot easier to have something that you can talk about rather than just talking about yourself so that it will be interesting to see nature from a different point of view."

PARENT AND WORKSHOP PARTICIPANT.



What supports new connections to nature?

Evidence points to three factors which can support creation of new connections to nature and local spaces on an ongoing basis.

- ① Creating spaces for collaborative and group working; creative and imaginative spaces, social spaces, community and geographical spaces.
- ③ The skills and experience of artist facilitators to support creative processes and the formation of new narratives about nature, personal, collective and public.
- ③ Cross sector partnerships, local infrastructure and shared resources can ensure sustainability of changes and embed new practices.

3.4 How could longer term impacts be sustained?

Invest in local community and natural infrastructure: it has a key role in providing spaces and framework for creative activity and meaningful community engagement to take place.

Invest in training and opportunities for artists: artists and creatives have vital skills to offer, supporting people to imagine a different future for the environment and generate creative shared solutions.

Identify the reciprocal benefits at a local and partnership level: so all voices are included and have a stake in future action.

Continue to share knowledge and experiment across sectors and disciplines: this can help create better models for engaging and supporting communities to generate solutions to the climate crisis.



Conclusions

Creativity and imagination can help to envisage a brighter future for the environment and creative approaches to complex problems and can help overcome the challenges our planet faces.

The role of the facilitator in many cases was key in creating a space that participants felt not just ‘allowed’ in but gradually gained ‘ownership’ of. The time and space offered within the workshops to form new social connections was highlighted by many participants as supporting open communication and collaborative art making.

Existing communities and infrastructure have a significant role for supporting the commissions and ensuring the work is relevant and meaningful to participants and local audiences. Identifying the reciprocal benefits of sharing resources and knowledge in a local context through creative interventions will help build a sustainable framework for the next steps.

The report can identify three spheres or levels of intervention required for changes in attitudes and perception to take place and to be galvanised into actions.

Personal and collective: The Five Pathways to nature connectedness, as mediated by creative activities are a powerful tool for supporting individuals and groups to develop new responses and behaviour and are a framework for understanding and replicating this model.

Public: Creative activities and outputs can bring individuals and communities into debates and conversations about the climate crisis, supporting and empowering new voices to be heard in this space.

Structural: Stronger links between sectors and disciplines along with investment in artists, local communities will all support shared learning and solutions.

“Having the energy of young people and ideas of young people, it is one of the most exciting things we can have to work with. We need to create more pathways into leadership roles, so we can hang on to their coat tails and see where it all goes.”

**KAREN PILKINGTON, COMMISSION LEAD,
SAPLINGS MICRO-COMMISSIONS**



Photo: Participant in Tom Milnes's 'Ashnihilation' immersive, augmented reality rewilding experience



greenminds

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insight paper
Green Minds Legacy

Introduction

Green Minds set out to change how nature is valued in the city, which meant changing people's attitudes and behaviours towards urban nature, innovating to integrate nature into the built environment, and making decisions differently.

Urban nature plays an important role in making cities more resilient – not just to climate change but to a multitude of forces for environmental, social and economic change – if it's given the space and time to do so.

By raising the value of green and blue infrastructure in people's minds and providing exemplars of best practice for urban wilding and financing, we aimed to develop new systems of land management which attract sustainable investment and address social and ecological inequalities.

Context

Green Minds was conceived at a time of change, with new forces demanding new approaches to the management of green infrastructure in cities.

- Internally, the costs of managing green space in the city were becoming unsustainable as local government budgets came under increasing pressure from competing priorities and central government funding cuts. Staffing the service had also become a challenge, with an ageing workforce, high rates of long-term sickness, and difficulties recruiting new workers.
- Externally, English government policy was changing radically. New mechanisms were being introduced to boost nature recovery and enable alternative financing strategies, providing opportunities to engage decision-makers and the public in new thinking.



Green Minds was conceived at a time of change, with new forces demanding new approaches to the management of green infrastructure in cities.

The Green Minds programme

Our starting point was to recognise that cities are, or can be, regenerative systems where people, infrastructure and wildlife dynamically and positively interact as part of a single ecosystem.

To achieve our goals we needed to test new ways of thinking, using a systems approach to plan, implement and evaluate our urban wilding trials. We engaged communities in new ways, making imaginative use of the arts and digital technologies. We developed new partnerships between organisations involved in managing nature in the city, to create a more flexible and effective team. We developed and tested new forms of co-stewardship, to bring green space management closer to communities. We trialled a new concept for describing people's interaction with nature and its effect on their wellbeing, 'nature connection'. We used the lessons learned from all these actions to elevate the role of nature in city-wide policy, embedding nature-based solutions across multiple city strategies.

What is the Green Minds legacy?

In a nutshell, a new way of working and new organisational structures to enable it, called the Green Communities Model.

We are creating new neighbourhood based multiskilled, multi-functional teams to deliver services in a more integrated and therefore effective way through 'hyper-local' community engagement. This is based on evaluation and engagement from Green Minds, from which we learnt that people want to be able to be active in their own local spaces.

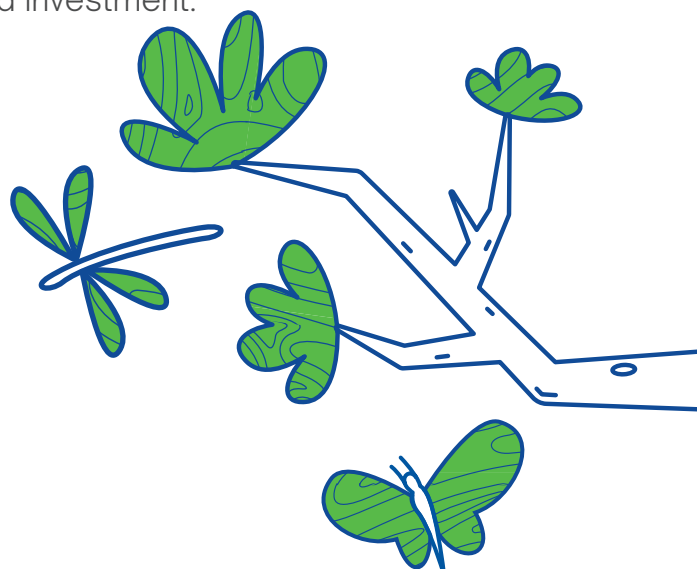
We now have 3 Green Communities teams based in neighbourhoods in the city, greenmindsplymouth.com/greenhubs focused on priorities such as tackling food

poverty, climate action, improving green spaces, health and wellbeing activities (in support of social prescribing) and more, reflecting neighbourhood needs. Nature connection has been embedded as a key indicator in recognition of its relationship to all of these priorities.

The Green Communities model moves away from the siloed approach helping to deliver integrated policy across spatial planning, Public Health, and Street Services (operational) divisions.

Teams are led by Plymouth City Council with support from staff from strategic partners Devon Wildlife Trust and National Trust, providing expertise and opportunities for shared learning that enhances the Council's offer. This expertise is shared across the different neighbourhood teams, as needed. Community development support is provided by Zebra Collective and Real Ideas as local partners. Through the Green Minds project these partners have adapted their services to support the strategic and neighbourhood needs of the city.

The teams work with communities to understand the local context for Local Nature Recovery (LNR) plans and to integrate this with strategic planning. Rangers are initially project funded but the long term aim is to sustain these posts through Ocean City Fund investment.



Green Communities approach

The Green Communities Model is based around 4 key themes:

- Co-creating and co-designing nature-based activities to connect with more diverse and harder to reach communities
- Improving health and wellbeing through being more connected to nature
- Changing behaviours and attitudes to nature
- Building an evidence base for hyper-local contributions to strategic plans e.g. Local Nature Recovery Plan, Joint Local Plan and citywide plans for nature.

Embedded in each of the 3 neighbourhoods is a locally based Plymouth City Council Natural Infrastructure Officer and a National Trust Urban Ranger. Working together they:

- bring bespoke nature themed activities and conversations to non-nature focused community events
- co-host practical nature recovery and citizen science activities in urban landscapes
- engage local stakeholders in conversations about caring for nature in their neighbourhoods
- work with local enterprise groups, promoting green skills and digital badges (recognition for specific skills and achievements).

By being on the ground, joining in with local activities and by having lots of conversations, the teams have been able to reach out to new people, and hear different opinions.



Green Communities approach

Green Communities are delivering:

- More diverse community engagement and stewardship at a local level
- Improving connectedness to nature for health and wellbeing and pro-environmental behaviours
- Utilising effective co-design frameworks and engagement tools
- Creating stronger, broader partnerships and networks
- Building a strong evidence base (social, environmental, economic) for ongoing funding to inform our Joint Local Plan Review and Local Nature Recovery Plans
- Integrating opportunities for new Green Skills and Green Finance models as well as new ways to encourage environmental and social enterprise ensuring sustainability.

In the first 9 months of delivery the Green Communities pilot project has:

- Engaged 3,312 people, 49% of which were new attendees
- Joined or hosted 189 events, 54% of which were community led
- 45% of people engaged at events were young people
- Engaged with 115 organisations and teams, of which 68 were local community groups in Green Communities neighbourhoods

Green Communities' work is still ongoing to secure support, finance and time to continue to deliver.

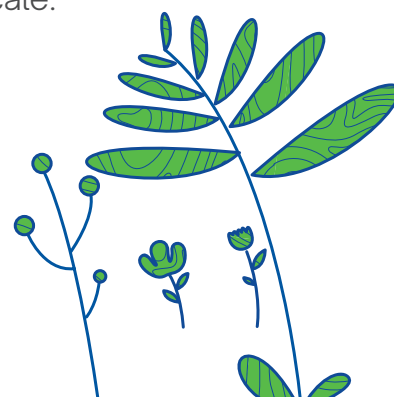
In the first 9 months the Green Communities pilot project has engaged with over 68 community organisations in Green Communities neighbourhoods.



Improved green spaces

Green Minds supported pilot investments in the city to demonstrate how wilding principles could be put into practice. These included:

- Central Park Sustainable Urban Drainage System (SUDS) – a flood management scheme designed to deliver multiple benefits in a heavily used public park
- Beaver introduction for natural flood management – as well as improving water management the beavers proved hugely popular with the public and led to the creation of new health and wellbeing services, and drew in more committed volunteers. A beaver kit (baby beaver) was born recently and this promises to keep public interest at a high level!
- A community tree nursery, currently growing over 6000 locally adapted trees for planting in the city
- Growing with Nature Network and map established to promote knowledge transfer on a community level: greenmindsplymouth.com/growing-with-nature
- Co-creation of safe and welcoming urban spaces – following a serious incident, Green Minds supported a healing process of co-design in the community, helping them to reclaim open spaces to support wellbeing and nature connection
- Heritage park development for nature connection – Saltram is one of the National Trust's most heavily used sites. Improving this protected park to enhance its capacity for daily use by residents, including schools, helped to understand what can be achieved in a heritage setting
- Feasibility for seagrass carbon credits. Plymouth's blue natural infrastructure is not as visible as its parks and gardens but nevertheless has a vital role to play. This feasibility work lays a foundation for future investment in seagrass recovery in Plymouth Sound, in part in the form of a novel financial instrument – a 'seagrass token'
- Developing nature for social enterprise. Our social enterprise trials demonstrated how asset transfers can facilitate the creation of jobs and services that support community wellbeing at the same time as enhancing nature – often on a small but nonetheless important scale.



Wider legacy

From a Plymouth City Council perspective, Green Minds has had an important legacy for how strategic planning is undertaken in the city of Plymouth. The learning from Green Minds is informing the new 'Plan for Nature and People', which will form part of Plymouth's contribution to the Devon Local Nature Recovery Strategy.

As a result:

- co-stewardship lies at the heart of the plan
- communities are embedded in the process, with information gathered during Green Minds and surveys using nature connection questions informing options
- the resulting 'hyper-local' approach brings a focus to neighbourhood level opportunities, as well as more strategic ones
- nature-based solutions are prominent and more integrated than in previous plans

For three Green Minds partners who are not involved in Green Communities, there have nevertheless been significant organisational legacies from participation in Green Minds which strengthen the institutional infrastructure for a greener city:

For Arts University Plymouth, Green Minds stimulated the development of new environmental policies across the university. In addition, it brought about a new model for engaging strategically with stakeholders to both enable students to apply their creative practice to real challenges, and for stakeholders to understand what creative practitioners can bring to a co-design process.

With national recognition for excellence in knowledge exchange, this approach challenges other organisations to review their own practice drawing upon the Green Minds example.

This has provided a catalyst for institutional advances within our own practices, our teaching, research and knowledge exchange; the potential for this to be amplified through our public and community engagement work and as our staff and students pursue their professional practice is substantial."

**ARTS UNIVERSITY
PLYMOUTH**



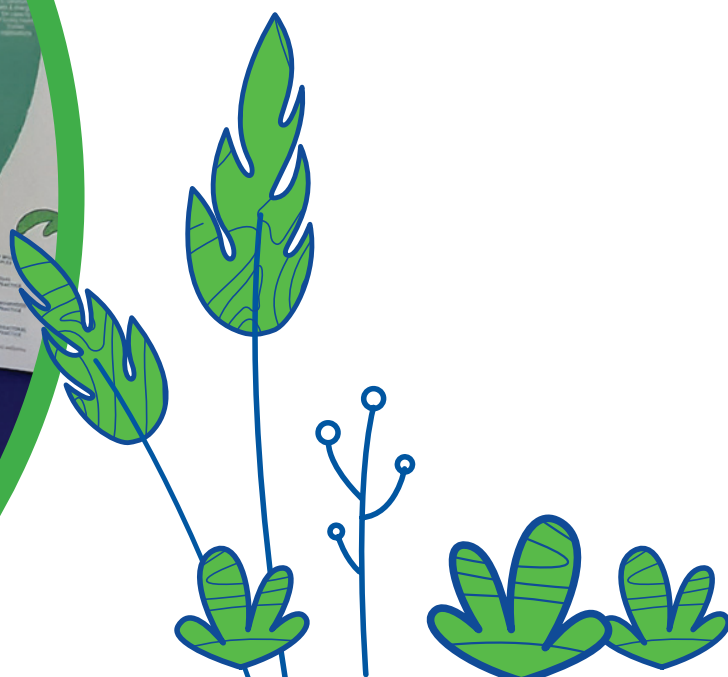
Wider legacy

For University of Plymouth's Smart Cities group, the Green Minds experience has led to the creation of a toolkit and process which can be deployed in their work with other cities in support of nature connection.

The Data Place are an ongoing part of the citywide Growing with Nature Network established through Green Minds. The Growing with Nature Map is live and used by communities across the city.

Beyond the city of Plymouth and the Green Minds partners, a year of dissemination is yielding results:

- Plymouth is recognised nationally as a pioneer and exemplar in the use of nature connection, demonstrating how to turn the concept into practice and incorporate the results into policy, as shown through the Green Minds Model. Some members of the Plymouth City Council Environment Planning team have joined the UK-wide Nature Connection Network
- Plymouth's Green Minds-connected work on financing nature recovery has been given prominence within UK networks (Future Parks, APSE Parks group) for urban nature recovery and parks management
- Cities, regions, and other local partnerships in the UK and elsewhere are taking an interest in the Green Minds approach. Other local authorities and partnerships are reviewing the Green Minds toolkit in support of its ongoing work. International recognition has come from a team working in the city of Rome. They are keen to connect and find out more about how they can incorporate Green Minds approaches into their work going forward.





greenminds

Website www.greenmindsplymouth.com
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#GreenMindsPlymouth

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**REAL
IDEAS**



**ARTS
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