



## *Nature-based Solutions: A New Urban Planning Process for Implementation*

### *The Glasgow Experience*



## 1 Introduction

### What are nature-based solutions?

The European Commission defines nature-based solutions as solutions to societal change that are *“inspired and supported by nature, which are cost-effective, simultaneously provide environmental, social and economic benefits and help build resilience. Such solutions bring more, and more diverse, nature and natural features and processes into cities, landscapes and seascapes, through locally adapted, resource-efficient and systemic interventions. Hence, nature-based solutions must benefit biodiversity and support the delivery of a range of ecosystem services.”*

### What is the Connecting Nature Framework?

Designing and implementing nature-based solutions on a scale that delivers economic, environmental and social co-benefits, while also building resilience and benefiting biodiversity, is complex, with many different issues to consider. Many questions arise and need answers.

What is the best solution for the area?

Who will manage it?

How will it be financed?

Who needs to be involved in the design, implementation and maintenance?

How to measure the economic, environmental and social impact?

Will it support innovation and generate jobs?

How can we manage change?

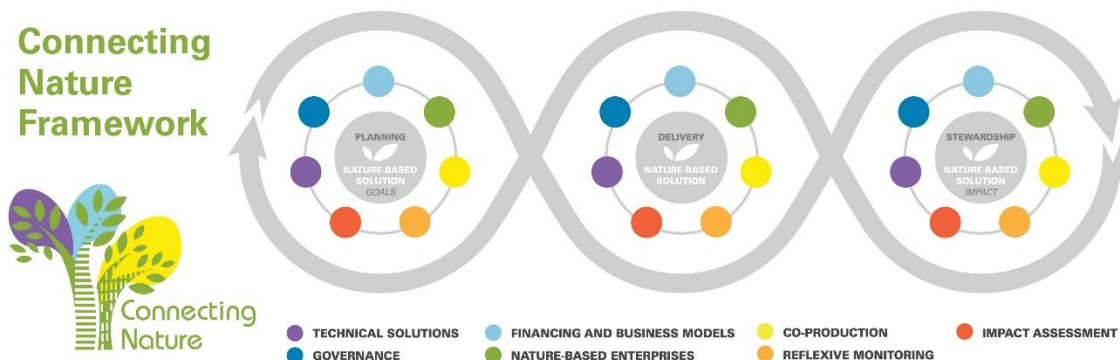
Even identifying where to start can often be a challenge!

In response to this uncertainty, Connecting Nature has developed a process tool to help cities and other organisations navigate the path towards implementation of nature-based solutions on a large scale: the **Connecting Nature Framework**.

The Framework identifies **three distinct phases of development** for a nature-based solution: **planning, delivery and stewardship**.

Throughout each phase there are **seven separate elements** that cities and other entities need to consider when shaping their individual nature-based solution: **technical solutions, governance, impact assessment, finance, entrepreneurship, co-production and reflexive monitoring**.

Cities may choose to start with any element of the Framework process and consider the others in the order that suits their context. What emerges from the Framework process is a comprehensive 360° overview of each stage of development of the nature-based solution.



## Guidebooks

To assist you in developing your nature-based solution, Connecting Nature has produced a series of mini guidebooks. The overall Connecting Nature Framework Guidebook is a good starting point. There is also a guidebook for each element of the framework process describing the implementation steps and providing case studies to show how it works in practice. A step-by-step how-to manual on the Connecting Nature Framework process is also available.

All the Connecting Nature guidebooks and the manual may be downloaded from [www.connectingnature.eu](http://www.connectingnature.eu).

## 2. Glasgow: A city-wide perspective on open space to guide small-scale interventions

The Scottish city of Glasgow in the United Kingdom (population around 625,000) is a vibrant, exciting city with a unique character. Its grand historic areas and buildings and growing collection of striking contemporary architecture make a substantial contribution to the city's sense of place. The city's current identity is shaped by the way physical regeneration has sought to respond to periods of industrial and urban growth and decline.

The challenge remains to ensure everybody in Glasgow has access to and connects with high-quality open space so as to ensure that Glasgow is well-equipped to deal with the challenges of the 21<sup>st</sup> century. Having high-quality open space at the disposal of its citizens would of course enhance the city's attractiveness as a place in which to live and invest.

### Why are nature-based solutions beneficial to Glasgow?

Delivering nature-based solutions to enhance and increase open space in Glasgow can deliver multiple benefits for society, the economy and the environment.

50% of the population of Glasgow lives within 500 metres of vacant, derelict land. Living close to dereliction leads to feelings of poor health and sadness and can add to depression and isolation. Nature-based solutions offer opportunities for strong community cohesion and the provision of ecosystem services (that is the services that the natural environment provides for humans). They can facilitate healthy lives and access to jobs, education and culture. They can also respond to the symptoms of climate change including heavy rainfall, heat waves and floods. For example, the Clyde is a tidal river; any open spaces around it would need to be designed in a multifunctional way – a

football pitch that captures flood run-off during periods of intense rainfall would be a nature-based solution with multifunctional benefits in this case.

### 3. Project Goals

#### **What are the aims and benefits of open space in Glasgow?**

Experience has shown that efforts to address the city's physical legacy and improve the environment have been successful where they have sought not only to address appearance and context but have also anticipated the full range of advantages and opportunities that new development can generate in terms of how people interact with and benefit from their environment. This is therefore the aim of open-space policy in Glasgow.

Good quality, well-linked open spaces can help provide a range of benefits;

- They allow individuals to interact with the natural environment
- They provide habitats for wildlife
- They can also be important in defining the character and identity of neighbourhoods and indeed the city as a whole

What's more, connecting open spaces by way of a green network can provide enhanced benefits for people, the environment and biodiversity.

#### **Planning nature-based solutions at city scale: the Open Space Strategy**

Glasgow's approach to developing scaled-up nature-based solutions is underpinned by its Open Space Strategy. Based on a wealth of data and spatial analysis, the Open Space Strategy sets out an approach to coordinate the various open-space responsibilities to ensure well-managed, well-located and well-connected open spaces that operate as part of a wider green network, helping to deliver:

- Greater awareness of the value of open space and of individual open spaces throughout Glasgow, informing their protection and management
- A strategic rationale for the future use of the city's open spaces and how they are managed, providing guidance on priorities for investment in open space, opportunities for using other open spaces less intensively; and an informed basis on which to make decisions about 'disposing' of open space, where an open space may be of little value
- A basis for closer partnerships with other organisations that have an interest – for example with the National Health Service in how open spaces improve health
- A framework for cross-departmental engagement and the co-ordination of spending plans to help secure best value
- A stronger basis for securing additional funding to help maximise open space benefits by promoting the value of open space and its benefits



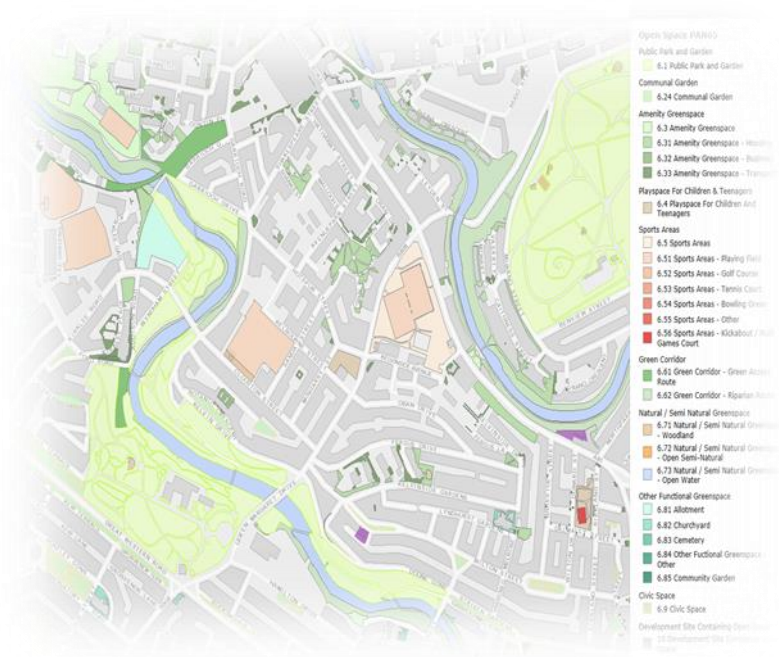


Figure 1: The Open Space Strategy Map to identify opportunities for improvements across the city.

## 4 The Nature-Based Solutions Framework Building Blocks: how Glasgow realised its solution step by step

### 4.1 Indicators

#### Establishing the baseline and measuring the transformation achieved

While we can say that nature-based solutions have the potential to simultaneously provide social, environmental, health and economic benefits, the evidence for their multiple benefits is rather scarce and highly fragmented. More robust frameworks for the monitoring and assessment of their impacts are needed in order to provide such evidence.

The key to a robust impact assessment framework is the choice of appropriate indicators by which to capture impacts across multiple categories, along with flexible and cost-effective methods for the monitoring and evaluation of those indicators.

Choosing and/or developing the **right indicators** by which to assess the impacts of nature-based solutions is important for several reasons:

- It allows cities to assess the effectiveness of the nature-based solutions in achieving strategic city goals.
- It provides a basis for the making of adaptations in real time, improving the performance of the nature-based solution in terms of the benefits it brings.
- It can inform the decision-making process when designing and implementing interventions for urban regeneration and resilience.
- It supports cities in building the case for investments in nature-based solutions by providing evidence that they can deliver on the multiple objectives and interests their stakeholders have.

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–It encourages planning for urban resilience and regeneration by integrating ecological, social and economic objectives and linking them to the different city council services that can benefit from the nature-based solution(s).

–It encourages the transformation from traditional planning practices – still dominated by silo-thinking and a lack of joint consideration for ecological, social and economic objectives – to planning practices that ensure urban resilience and regeneration.

### Why use indicators to monitor the impact of open space?

The use of indicators helps measure the effectiveness of the nature-based solutions against Glasgow's strategic city goals and provides the means to adapt design and implementation features in real time, thus improving their performance. In addition, the gathering of evidence over time can inform the decision-making process when designing and implementing interventions for urban regeneration and resilience, as well as building the case for investments in nature-based solutions; it helps to convince investors that nature-based solutions can deliver on the multiple objectives and interests their stakeholders have. Finally, the evaluation process helps to innovate how to plan for urban resilience and regeneration by presenting ecological, social and economic objectives in an integrative way and linking them to the different services that can benefit from the intervention(s) in Glasgow.

### How will the indicators be used?

At the start of the Connecting Nature project, the academic project partners worked with the Front-runner Cities to establish a list of indicators that are relevant to each city and on which data should be collected in order to measure the effect of any nature-based solutions work in the future. These indicators span the subjects of socio-economics, the environment, and health and wellbeing. Research on establishing the relevant data sources for these indicators has taken place ever since.

The data collected around the indicators will be used to build a baseline of Glasgow's social, health, environmental and economic characteristics. Future monitoring and evaluation plans will be designed to measure the impact of the Open Space Strategy and the specific demonstrator projects on these same characteristics.

In addition, the data gathered will allow the city to work collaboratively with its partners and communities to co-create nature-based solutions to the challenges that we face as citizens of Glasgow.

### Specifying indicators and impacts across scales and for different target groups

As the Open Space Strategy aims to improve open space across the city, there is no specific social group that will exclusively benefit from its implementation; the strategy aims to improve the health, well-being and social cohesion of communities in all areas of the city. Therefore all indicators must be taken into account when planning the city's open space. The impact of implementing the Open Space Strategy should be felt at all city levels – macro, meso and micro. This means that the indicators need to allow measurement of the impact of the enhancements at each open space site at neighbourhood and street level as well as at a whole city level.

Overall, the list of indicators has been useful in producing a template-like list of topics that may be relevant to nature-based solutions projects, and therefore allows for more organised data gathering.

### How will the data be collected to monitor and evaluate the indicators?

Collaboration with colleagues within Glasgow City Council and other organisations has been essential in identifying the right data sources; The Scottish Public Health Observatory has been a

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critical source of social and health data at an intermediate-zone level across Glasgow. Internal Services within Glasgow City Council have been instrumental in helping build a good working relationship with other organisations such as the Biological Records Centre from which we were able to extract ecological data. The Scottish Government has supplied data on the number of businesses and the industries represented across Glasgow.

For some indicators, however, it has been difficult to find relevant data sources across organisations; This challenge refers mainly to qualitative topics such as ‘Community Empowerment’, ‘Environmental Education Opportunities’ and ‘Social Desirability’, which are usually available at a very local scale. A further difficulty arises where different terminology to that used by Glasgow City Council is used to describe an indicator; in such cases, it has become evident that continuous contact with the academics is essential to cross-reference terminology and reach a consensus.

Finding data sources has also been complicated by the fact that it has not always been clear which organisations would be collecting the relevant data; however it has now been agreed that partner academic institutions will provide support in identifying the most appropriate organisations to carry out data collection. These academic partners have also offered to provide templates for data sharing agreements to be sent along with data requests in order to avoid confidentiality concerns. In this way, it is expected that the data collection process will be ongoing and that the indicators and the associated data will be continuously reviewed.

Data is often either available at a city-wide scale or for specific geographical communities in Glasgow, so, depending on the location of the specific nature-based solution, some of the gathered data may be irrelevant due to scale.

### How can the impacts of open spaces be monitored?

As nature-based solution projects emerge, the project-specific data requirements will be reviewed and data collection processes will be put in place to monitor the progress of these projects in delivering socio-economic, health-related and environmental benefits to the community. This is only possible if baseline data is available for the specific area; if that is not the case, the requirement for baseline data will be reviewed and any required data collection campaigns will be undertaken prior to starting work on the project.

## 4.2 Technical Solutions

### *Designing a nature-based solution*

*The technical design of a nature-based solution needs to ensure that the desired outcomes are achieved and sustained in the long term, and that trade-offs are avoided where possible. This includes both the practical construction aspects in relation to questions such as: What kind? Where? How big? What plants? What additional infrastructure is needed? and the broader contextualisation in relation to the character and needs of the locality, region, and landscape into which it is being introduced.*

### **How does the Open Space Strategy relate to open space development at the city scale in Glasgow?**

The Open Space Strategy is a strategic approach at a city scale. The main aim of the strategy is to define how much open space citizens living within the inner urban area or the outer core should have, and to identify and assess the opportunities and qualities of existing open spaces. To guide

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development of open spaces, open space standards were formulated. These standards are underpinned by three elements:

- (1) A Quality Standard – a benchmark against which quality can be measured in terms of usability and multi-functionality
- (2) A Quantity Standard – an amount of space per house unit or head of population
- (3) An Accessibility Standard – distance thresholds for particular types of open space

In this way, the Open Space Strategy aims to support the development of high quality, accessible and multi-functional open spaces. Furthermore, by identifying open space priorities and opportunities, the strategy will inform future strategic land use decisions in the next City Development Plan.

### **What are the multiple benefits of open space in Glasgow that are delivered through the Open Space Strategy?**

*Open spaces can deliver environmental, economic, social and health benefits. This means that when developing or regenerating open spaces, it is important to keep different priorities in mind. The quality of Glasgow's open spaces, and their ability to deliver a range of benefits for the city's people, is a key determinant of Glaswegians' quality of life. Good quality open spaces, as part of a wider, integrated green network, can help deliver:*

A **HEALTHIER** Glasgow by providing opportunities to play, engage in formal sports, walk, cycle and grow food, meet and engage with others in the local community, tackle air and water quality issues and engage with the natural world.

A more **LIVEABLE** Glasgow by increasing its attractiveness as a place in which to live, work, study and invest.

A more **RESILIENT** Glasgow in relation to the threats, and potential opportunities, arising from climate change and other external factors such as diminishing budgets.



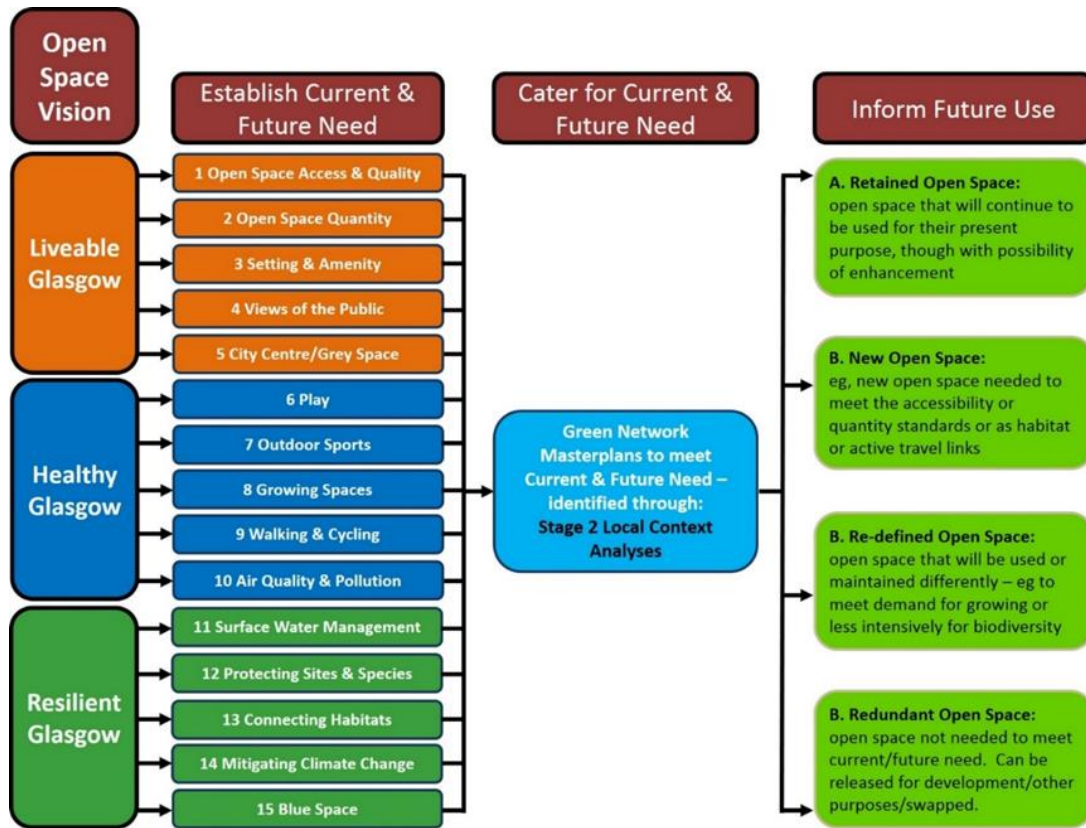


Figure 3: Open Space Strategy vision and aims.

**How was the data generated to underpin the Open Space Strategy and its translation into nature-based solutions?**

The Open Space Strategy builds on a wealth of data and spatial analysis to identify opportunities for open space and assess the quality of open space in Glasgow. A Geographic Information System (GIS) database allowed the city to quantify how much open space there is in Glasgow and its quality. A novel methodology, ‘Local Context Area Analysis’, was used to divide the city into 15 areas. In each area,

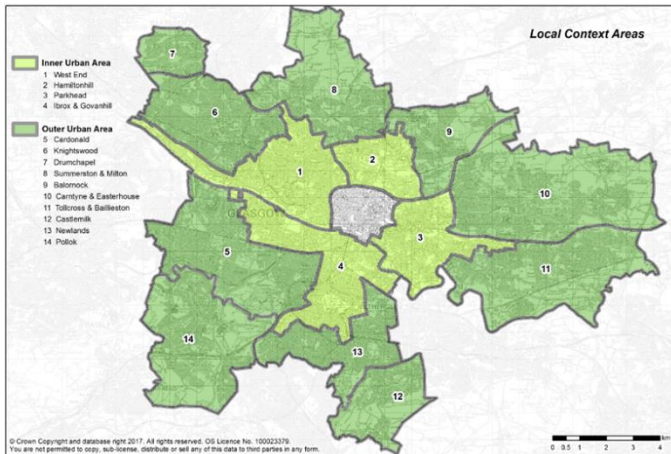


Figure 4: Identification of key open spaces in 15 local areas in Glasgow

strategic goals were assessed and translated into operational projects. The aim was to embed local communities in developing projects at this scale. In this analysis, the open space mapping – in terms of quality, quantity and accessibility – was complemented with information and data on flooding, housing and economic land. This served to show whether a given open space is in the right place, whether it needs to be improved if it is in the right place, or whether something else can be done when it is in the wrong place. It also addressed

questions such as whether open space can be used for flood alleviation, heat reduction in the inner city, air quality management or other issues. This shows how the strategy and data can be used to develop nature-based solutions to improve open space in Glasgow.

**How to ensure that local needs are accounted for when assessing and planning for open space across the city**

A one-size-fits-all approach cannot be applied to all sizes of open space. Each case requires an in-depth look at the specific space and its local context. It also requires collaboration with local communities through co-production and by using the Place Standards as an additional tool to add information about the parts of the city lacking access to good quality open space. Overall, assessing open space is about asking questions such as: Is it in the right place? If so, can it be made multifunctional? If it's in the wrong place, can it be swapped with some of the vacant derelict land that might be more accessible to those communities that are deficient in open space? Or can we look at doing different things that will make it more accessible?

4.3 Governance

*Creating conditions for collaboration and coordination for multifunctional nature-based solutions*

*Because of the multifunctional benefits that can be achieved from nature-based solutions, their delivery is often aligned with broader social, political and business priorities and the goals of a city and of city regions. Such alignment requires cross-sectoral, multi-scale and inclusive approaches in terms of who is best placed to ensure development, delivery and the ongoing sustainability of the nature-based solution. New conditions will need to be created in order to foster effective coordination and collaboration.*

**Defining responsibilities for delivering the Open Space Strategy**

Glasgow's Open Space Strategy is a city-wide policy-based approach that will assist with upscaling nature-based solutions. It therefore involves a broad range of partners, stakeholders and beneficiaries. The Council is one of the biggest landowners and land managers in the city. However, the management of this land, the development of policy and the operational action are divided across a number of services within the Council. Open space can be found within the assets that most of the Council services manage such as public parks, sports pitches, cycle routes and school grounds. The development of an open space strategy provides the opportunity to embed nature-based solutions and sustainable open-space management as a key asset management tool for the managed public land and to provide a direction of travel for the land in private ownership.

The main responsibility for the delivery of the Open Space Strategy sits with the Development and Regeneration Service of Glasgow City Council. This service works closely with other services and other parts of the Glasgow family, like Glasgow Life which has responsibility for formal sports and cultural life, to ensure that the guidance is implemented when spatial planning decisions are made. Creating a wider interconnected network has helped raise the profile of this emerging policy concept to audiences who may have previously been unaware of the benefits of nature-based solutions. Therefore, collaborative working practices are helping to localise, scale up and embed nature-based solution concepts within the city.

**Which strategic city goals does the nature-based solution help to deliver?**

The Open Space Strategy has been drafted to reflect a wider context including the Scottish Government's planning policies and local policy documents such as the City Development Plan and Local Biodiversity Action Plan. The Open Space Strategy sits above a suite of documents all of which aim to contribute to improving Glasgow's open space offer. Recognising the wider ambitions set out

in national, regional and local policies and strategies helps to address shrinking public finances. By aligning the aspiration of these various strategies with the Open Space Strategy, it is anticipated that the strategy will play a key role in helping to deliver aspects of all of them. Whilst this can have a direct impact on the Council’s ability to fund the upkeep and delivery of open space, it shouldn’t limit the city’s ambitions for securing as wide a range of public benefits as possible from our open spaces.

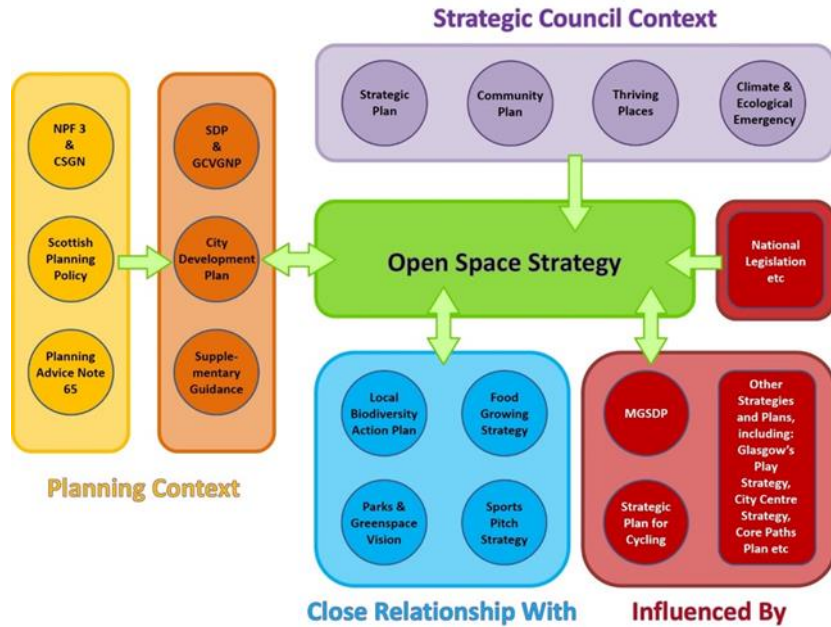


Figure 5: The relationship between the Open Space Strategy and other strategic documents developed by the Council

**Formulating a step-by-step action programme with clear goals, responsibilities, funding sources and time frames**

The Action Programme establishes the implementation plan for the next five years. It is intended to monitor the progress of the plan annually though more in-depth and frequent monitoring will be developed during the lifetime of the strategy. The Action Programme touches on different dimensions of the implementation and the goals of the Open Space Strategy, including engagement with local communities, identifying opportunities for improving community spaces, reviewing existing landscape designation boundaries and working with children when considering the future distribution of formal play spaces across the city. As a first step the city is developing an Open Space Strategy Delivery Plan so that it can identify clearly the actions it is responsible for; what it can collaborate on and which actions it is relying on others to deliver.

**Embedding collaborative governance structures for the long-term implementation of the Open Space Strategy**

Historic nature-based solution projects in Glasgow have been largely guided by and implemented with a firm top-down governance approach set within an established strategic and local policy environment. Governance structures have not always been consistent, partly because projects have been planned and implemented by different actors (organisations, groups or individuals), often working in silos. An aspiration is to tailor governance structures to the local conditions to ensure a positive long-term legacy. This should build on a shared responsibility approach which involves working with formal and informal partners to ensure there is coordination and that suitable structures can be set up at the local level. The aim would be for community-led projects to put in place their own governance structures to be monitored by those responsible community groups, social enterprises or

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other actors. This could be the case for either individual nature-based solutions such as a community garden or those organised within a strategy or network (biodiversity corridor, rain gardens, food growing etc.); however, larger scale nature-based solutions will still require some formal institutional governance and facilitation from the Council and strategic partners.

Further to the above, the Connecting Nature team has become aware of a number of tools being developed by colleagues in the Neighbourhoods and Sustainability Service and various third-sector organisations. These tools include community guidance on governance and horticultural training workshops. The team is currently working on capturing these tools in a central location in order to keep track, input on or influence the tools and ensure they will be maintained into the longer term.

### **Ensuring support through clear communication**

One of the main barriers to implementing nature-based solutions in Glasgow is a lack of understanding of what the concept actually means. Many terms have been used in recent decades such as ‘green infrastructure’ or ‘green development’ and because nature-based solutions are broader, less engineered and include capturing the wider benefits, stakeholders often get confused.

To add to this, there is a challenging culture at Glasgow City Council and other public or third-sector institutions that might be involved in the delivery of nature-based solutions across the city. Following a decade of cuts to public expenditure and particularly the disproportionate cuts to planning services, a lack of resources has contributed to a negative culture and an unwillingness to learn amongst some actors. It is one reason why it is challenging to overcome silo working practices.

For these reasons, it is important to extend awareness to a much wider audience by communicating the right message to the right audiences. For these purposes, a communications plan is being prepared that identifies a large number of audiences, both official and more informal, inside and outside Glasgow City Council. The plan is currently setting out a schedule of engagement activities that will aim to be innovative and tailored to specific audiences. For example, the plan already highlights opportunities to engage with various practitioners across the Council by using existing professional development programmes at a series of lunchtime learning events. The aim of this would be to increase the knowledge base and to encourage the upscaling of nature-based solutions.

Presenting the objectives of the Open Space Strategy to relevant Council public committees allows Officers to formally and more directly communicate the merits of nature-based solutions at a high level, particularly to those who have greater democratic power at the local level. This is especially important given the climate emergency declared at both city and national level. A change in culture with regards to working practices and the culture at Glasgow City Council is already becoming visible; as more people become aware of the objectives, the more curious they seem to become.

### **“Guerrilla-techniques” to facilitate collaboration across services**

The engagement of colleagues from within the city government has been critical in underpinning an ongoing peer-education process with planners, consultants, architects etc., to influence how people within the government look for opportunities for open space. This is achieved via regular lunchtime slots that include interactive workshops during which the strategy is presented. The workshops open up discussion about such matters as where to add nature-based solutions, how to reach uninterested colleagues and how to create a shared narrative. The strategy, used to generate actionable knowledge, takes a “guerrilla” approach, involving actions such as placing posters at natural convergence points, such as near coffee machines.

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#### 4.4 Financing and business models

##### *Mobilising resources for implementation and long-term sustainability*

*Planning for up-front financing of nature-based solutions and long-term sustainability are a critical element of nature-based solution implementation. To ensure that they do not rely on public sector funding alone, there are several support tools to help cities put together a long-term business model for their nature-based solution, which includes assessing the potential of alternative sources of financing such as philanthropic or crowd-funding.*

#### **The Nature-based Solutions Business Model Canvas: stimulating innovative financing and business models**

There is an awareness that applying a nature-based solutions lens to current budgets could help to offset the budget pressure, may help to sweat the assets and even make some of our public open spaces cost-neutral or cost-positive. Working through the business model canvas tool<sup>1</sup> has allowed Glasgow to elaborate the wider value proposition of the Open Space Strategy and to clarify how this will be delivered through key activities and key partners. Each individual project or pilot will also be required to follow a nature-based solutions business model canvas.

The Glasgow Connecting Nature team has applied the business model canvas tool at a local level to a specific project. The project, which was on the cusp of implementation, has some initial capital funding and the beginnings of a governance structure with the establishment of a steering group composed of a number of associated groups and key stakeholders. The team worked with the existing group to organise the event, generate interest and find a local venue. Initial feedback from the event was very positive. Many relevant aspects were discussed in relation to the key issues of governance and operational finance. New funding methods were highlighted as well as potential innovative business models. The team is currently collating the information and will agree the main actions and steps forward with the steering group in the coming weeks.

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<sup>1</sup> <https://connectingnature.eu/financing-and-business-models>





Glasgow, Pollak Park: Nature-based Solutions Business Model Canvas

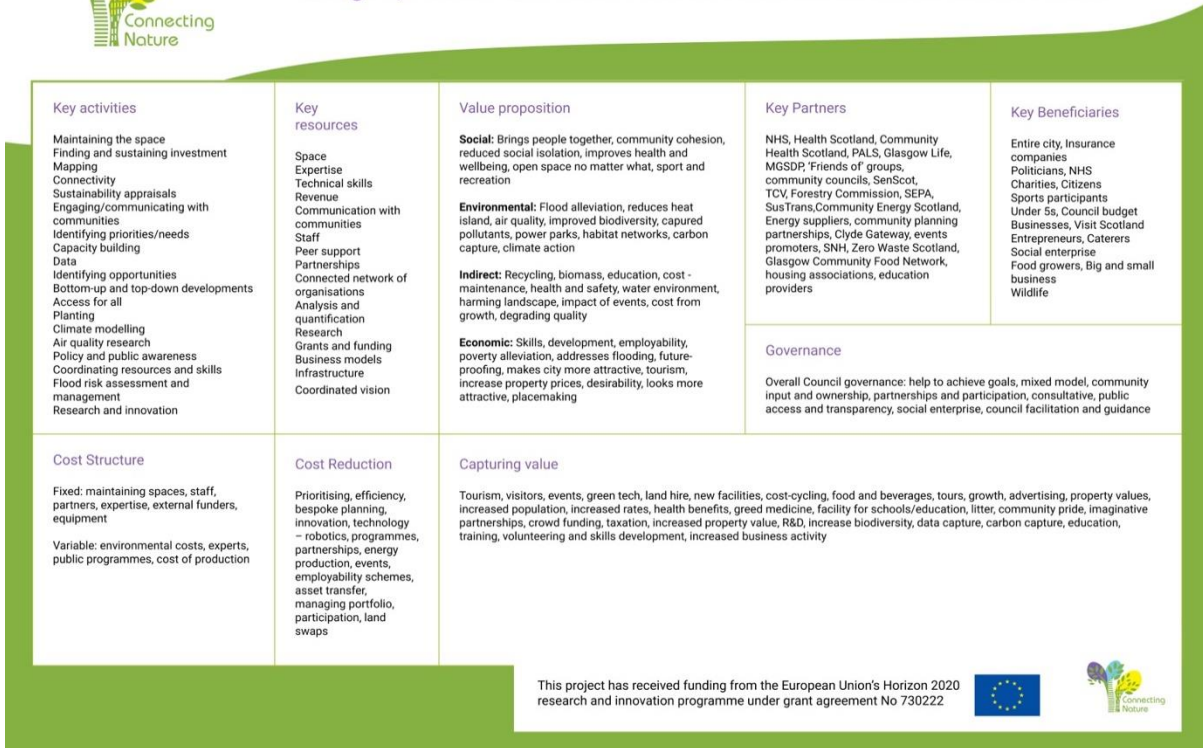


Figure 6: The Business Model Canvas for the Open Space Strategy

**A coordinated approach to finance the nature-based solutions in Glasgow**

In Glasgow, the budget for the management and maintenance of the publicly owned open-space sites is managed by the Neighbourhoods and Sustainability Service which deals with the operational day-to-day management of these spaces. Glasgow Life has a budget to manage demand-led sports facilities and Development & Regeneration Services delivers new open spaces, both public and private, via planning policy. There is an acknowledgement that whilst policy seeks to provide equity of access to high-quality open space, budget constraints, citizen knowledge and political decisions can all lead to inequality of access and pressure on budgets.

4.5 Nature-based Entrepreneurship (NBE)

*Engaging community and commercial enterprises in the design, implementation and long-term delivery of nature-based solutions*

*Nature-based solutions can provide opportunities to support nature-based enterprises. Nature-based enterprises are enterprises which can leverage nature-based solutions directly in their product/service offering e.g. green wall/roof providers, allotment garden food producer/markets, eco-tourism providers. Those who indirectly contribute to the planning, design, financing and sustainability of nature-based solutions are also considered nature-based enterprises e.g. landscape architects, specialist nature-based solutions equipment manufacturers, Community Interest Companies (CICs) managing nature-based solutions, and crowdfunding platforms for nature-based solutions.*

**How can nature-based solutions contribute to the economic and innovation priorities of Glasgow?**

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It is important to identify how nature-based solutions can contribute to the existing economic priorities of a city – in so doing, potential partners and opportunities to develop nature-based enterprises may be identified. Urban agriculture and allotment gardens, for example, can provide locally grown foods to farmers markets. Tourism was clearly identified as a sector presenting lots of potential synergies with nature-based solutions. Related to the city strategy to support urban agriculture, micro-breweries and distilleries were identified as potential nature-based enterprises.

Overall, nature-based solutions contribute to increasing the attractiveness of an area to both businesses and residents.

Wider city programmes such as Stalled Spaces, which aims to make better use of the large number of derelict and vacant lands in Glasgow, can feed into the city's economic priorities. In the case of Stalled Spaces, the programme could help attract tourists e.g. to pop-up art installations.

### **Linking to innovation ecosystem actors to create opportunities for nature-based entrepreneurship**

The existing innovation ecosystem in a city can help to support nature-based enterprises. In Glasgow, existing innovation support services were grouped under five main areas of expertise: financing, education, business advisory services, incubation and innovations. From the perspective of innovation partners, a strong linkage in Glasgow was identified with the higher education sector – opportunities to collaborate with universities on innovations were identified and opportunities to co-develop nature-based solution prototypes with the university sector were mentioned.

The benefits identified for innovation ecosystem actors in collaborating with Glasgow City Council on NBE strategies are varied: the collaboration could help to meet charitable or CSR objectives, provide opportunities for learning (Living Lab approach) and knowledge transfer, the opportunity to access open source data, to increase their deal flow, etc.

### **How can opportunities for NBE be identified and mobilised?**

Several barriers and enablers relate to the start-up and growth of nature-based enterprises and they should be taken into account for developing a strategy to support NBE. Costs were a key issue – affordable space for creatives was mentioned in particular. Rates were also an issue. At the moment, the UK government charges non-domestic rates for pipework needed for new technology. Therefore, if you connect to existing gas or electric system you only pay for installation and then pay the supplier for the energy consumed. However, when putting in district heating, for example, or other new technologies, non-domestic rates are applied to the pipework from the buildings to the energy plant

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or store and non-domestic rates are charged on the energy plant. This makes new energy-generating technology unviable compared to existing technologies.

Principal enablers include access to space, funding, support, expert knowledge and inspiration.

### Example: Studio Pop



Studio Pop is an award-winning social enterprise which has emerged from Glasgow's Stalled Spaces Programme. Stalled Spaces is a programme introduced by Glasgow City Council to support community groups and local organisations across the city to develop temporary projects on stalled sites or under-utilised open spaces. Studio Pop works collaboratively with communities to use stalled spaces to design, play and make ecological structures, community gardens and DIY workshops. For example in the deprived area of Maryhill, Studio Pop set up a 'Remake Station' – an eco-factory made of mobile shipping

containers where local citizens are upskilled in designing, testing, producing, exhibiting, and selling or bartering innovative products made from waste. On-site and digital workshops are offered, start-up projects are incubated, and new minimum viable products are co-produced.

#### 4.6 Co-production

*Engaging and mobilising diverse actors in searching for and implementing joint solutions*

*Co-production facilitates collaborative knowledge sharing between diverse actors in cities such as local policymakers, researchers, citizens, entrepreneurs. In this way, co-production generates shared problem definitions, and visions or solutions fit for local needs. It fosters new relationships and mobilises and empowers actors to actively engage in creating better and greener cities.*

#### **What are opportunities for co-producing the Open Space Strategy and open spaces in Glasgow?**

Co-production is a way of engaging with the various stakeholders at multiple levels of our process to develop and implement the Open Space Strategy. By looking at open space holistically and co-producing the strategy with multiple partners, internal silos and organisational barriers can be broken down, nature-based solutions may be connected to multiple city agendas, new knowledge may be generated which can feed into both local and national agendas and diverse actors may be involved while addressing the needs of all citizens across the city. Examples of potential co-production partners in the Glasgow context are: other Services within the city Council, the Glasgow and Clyde Valley Green Network, Greenspace Scotland, Central Scotland Green Network, as well of course as local communities and the wider public.

#### **Employing multiple engagement formats for co-production**

The Open Space Strategy is developed and implemented by way of a multi-layered co-production approach that involves different types of actors. The Strategy is developed with strategic partners and engages the wider public through consultation processes. Together with partners and local

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communities it is possible to identify open spaces and the opportunities for nature-based solutions. This approach builds on participatory data collection methods and citizen science approaches to develop an interactive map that helps to inform about as well as keep track of open space development.

On an operational level, local communities are engaged in the development of nature-based solutions in specific areas. For example, in the Pollok area of Glasgow the approach involves working with local communities to find out what their needs and aims are regarding open space and nature-based solutions. Multi-functional nature-based solutions are encouraged. To this end, a number of different engagement events tailored to different audiences will be organised to redevelop the whole Pollok area and in two other areas.

### **Knowing the actors for inclusive co-production: stakeholder mapping workshops**

Stakeholder mapping workshops are designed to identify which actors are operating where and to locate any relevant potential nature-based solution or existing projects where value can be added. Such workshops will take place within three identified geographical areas in Glasgow – Pollok, Easterhouse and Glasgow North. These areas were chosen because of the level of activity already taking place and partly because of the socio-demographic groups who live there. In addition, the workshops seek to initiate local and community-led entrepreneurship behaviour and collaborative governance models.

### **Employing community engagement officers and professional facilitators**

The co-production work in local communities will be supported by a community engagement officer who links the local communities, supports them, helps them have their voices heard and offers opportunities to consider community engagement. In addition, Glasgow City Council established a formal partnership with Greenspace Scotland to improve stakeholder mapping and facilitating community engagement events. Setting up this formal partnership with an established organisation helps to share the responsibility for delivering on project objectives. It also provides local contacts, expertise (especially on facilitation techniques) and more manpower on the ground.

### **Expectation management is crucial to avoid ‘participation fatigue’ and position the Council as facilitator**

Previous experience has shown that in order to motivate citizens to participate, clear goals and benefits need to be communicated. It is therefore important to be honest, to be aspirational but realistic. Otherwise there is a risk of participation fatigue, with citizens coming to the conclusion that “This is just another project by the Council; nothing will happen”.

A main aim of Glasgow City Council is to become a facilitator – to guide local community-led action on nature-based solutions by coordinating diverse activities and ideas and supplying knowledge on nature-based solutions thinking. This will lead to a more informed and empowered public for self-organised action.

#### 4.7 Reflexive Monitoring

##### *Systematic and real-time learning for the effective implementation of nature-based solutions*

Reflexive monitoring is way of monitoring and evaluating that gives an insight into the progress of the project or programme. A key part of it is translating the findings back into the design of the project or

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programme or any follow-up activities in order to make the project better. An advantage of the approach is that the improvements may be made in real time rather than having to wait until the end of the process.

Reflexive monitoring activities stimulate learning, allow barriers and opportunities to be identified as they emerge and enable flexible responses to changing circumstances and objectives. Reflexive monitoring therefore enables recognising and influencing the context in which nature-based solutions are implemented. As the context changes, it allows the emergence of innovations that might steer away from previous goals and plans that are no longer appropriate.

### How does reflexive monitoring contribute to the implementation of the Open Space Strategy?

Reflexive monitoring has been challenging for the Glasgow team due to a lack of resources and the effect of some team members changing positions during the first year.

### How Glasgow set up and carried out reflexive monitoring

The Glasgow team is multifaceted and works collaboratively with its partners, other teams and community organisations across the city. The benefit of using reflexive monitoring to capture the key turning points in the project's development is understood, however its deployment was not without challenges. The team's main priority has been to use the reflexive monitoring process as a tool to ensure the impacts of the project are being recorded and analysed. The Glasgow team's experience of reflexive monitoring is presented in the table below

Tools within Reflexive Monitoring	How tools were used and experienced
Timeline of events - <i>A monthly overview of main events that influenced the nature-based solution (e.g. via bullet journaling).</i>	The Glasgow team used an Excel tracker to monitor relevant events and actions on a monthly basis. This allowed the team to keep track of events, identify a lead and ensure that lead is supported in their effort to resolve any issues that might occur in relation to the Open Space Strategy.
Critical turning points - <i>Important moments in time (e.g. challenges, positive outcomes, negative experiences) for the FRC-team because at these moments something changed in the process that helped or hindered the achievement of the nature-based solution goals.</i>	<p>Critical turning points were initially difficult for the team to define. This was because we did not have a full understanding of what these were in the context of reflexive monitoring. The team now understands that these are significant events that alter the direction of a project in some way and that may require further action by relevant team members.</p> <p>At the moment, we seem to only record potentially problematic events. Further investigation is required to ensure that we are also capturing the positive critical turning points because we recognise that positive influences are equally important to record and analyse.</p>
Timeline workshop - <i>A tool to facilitate the monthly meetings of the FRC-teams to analyse the timeline of events and abstract challenges, successes and learning</i>	The team uses our monthly meeting to invite along all relevant actors in relation to the identified critical turning points to discuss updates or ongoing actions. We have recently changed the format of this meeting from a

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<p><i>experiences and agree on critical turning points.</i></p>	<p>workshop to a conventional meeting with an agenda. We have found that it allows for a more meaningful discussion amongst the key players. Those who could be considered ‘satellite’ team members (those from different Services/teams who may be involved with particular Connecting Nature projects or strategies) are not required to attend. This streamlines these workshops/meetings and allows the Connecting Nature team to more closely analyse progress in relation to the tracker actions. We have only had the opportunity to conduct the meeting in this way on one occasion. Although feedback was good, we will continue to monitor going forward.</p>
<p><i>Dynamic learning agenda (DLA) - A brief document to encourage participants to continue working on change. It contains the challenges that the project is facing at that moment summarised in learning questions. It is used as a tool for commencing and supporting the dialogue about the challenges faced by the project. The agenda is dynamic because it is modified over the course of the project.</i></p>	<p>Our dynamic learning agenda is captured within our analysis Excel document. This has been co-produced by the team and the academic leads.</p>
<p><i>Eye-opener workshop - The eye-opener workshop is an additional tool for turning outsiders into project insiders. The experiences and results of the project are shared and participants then reflect on the events, each from their own perspective, to extract the lessons from the project experiences that are significant for their own situations.</i></p>	<p>An eye-opener workshop has not yet been required.</p>
<p><i>Learning History Narratives - Narratives written by the FRC-team members that summarise the learning journeys in a short story. This captures the ‘personal’ history of the project which most of the time is lost, because it is not captured in scientific publications or management reports.</i></p>	<p>Glasgow’s Connecting Nature team has not yet had an opportunity to complete a learning history narrative.</p>

*Table 1: Description of the tools of reflexive monitoring and how these were used and experienced by the Glasgow Connecting Nature team.*

### Regular feedback loop to reflect and overcome barriers

The reflexive monitoring process functions as a regular forum for Glasgow in which all those involved can contribute, add updates and set actions on how to overcome a particular issue or barrier. It serves

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to keep a record of critical turning points and who is leading attempts to resolve them. This process encourages internal co-production at different levels and challenges the team to involve different stakeholders. The process can highlight areas where there are skills gaps; for example the Glasgow team lacked some knowledge on the business and financial aspects of nature-based solutions and this has led to one team member attending a workshop on this subject.

#### **Challenges to translate the academic approach to the context of the urban practitioner**

Glasgow often found the reflexive monitoring process to be conceptual or 'academic'. It was sometimes difficult to explain the concept to those not directly involved, or those not equipped with research and analysis skills. The team has found that the language used (such as 'learning outcome') is not user-friendly and can sometimes be ambiguous. Some inconsistencies in the guidance created barriers for the team at first; for example, the terms 'social practices' or just 'practices' have different meanings in English and so we needed to seek clarification from academic partners.

#### **Adapting the tools to the local context**

The team is now learning to engage in a more meaningful way and has adapted the reflexive monitoring format to suit local conditions in Glasgow (as explained in Table 1 above). It is difficult to identify how the learnings resulting from the reflexive monitoring process in the first year have directly impacted on the development of the Open Space Strategy, because the team has only recently gained a workable understanding. This lack of understanding may have resulted in a slight delay to some development aspects of the Open Space Strategy, although the impact was negligible compared to other issues.

Reflexive monitoring has supported and benefited the team by identifying critical turning points related to raising awareness of the Open Space Strategy and in involving actors who may not have been involved before. For example, a critical turning point was the realisation that open space and nature-based solution ambitions were not considered enough by the development team in the city council. Through better communication with development manager officers this is now done ad hoc, but in the future, it is expected this will be formalised.

Moreover, the process has led to identifying new data sources for the indicators and the GIS mapping. As a critical turning point, the team identified that there are siloes in terms of communication between different teams within the city council. By developing better relationships with different teams, these teams have become more willing to share their data.

Furthermore, the team has recently found that it is possible to use the process to record positive turning points too. 'Critical' often has negative connotations and can therefore be a misleading term, however, going forward, the team will aim to fully capture positive events.

## **5 Impact**

The city's population has started to rise again and is expected to grow to 640,000 by 2039. In addition to catering for a growing population, new demands are being made of the city's open spaces. These include the role of open space in:

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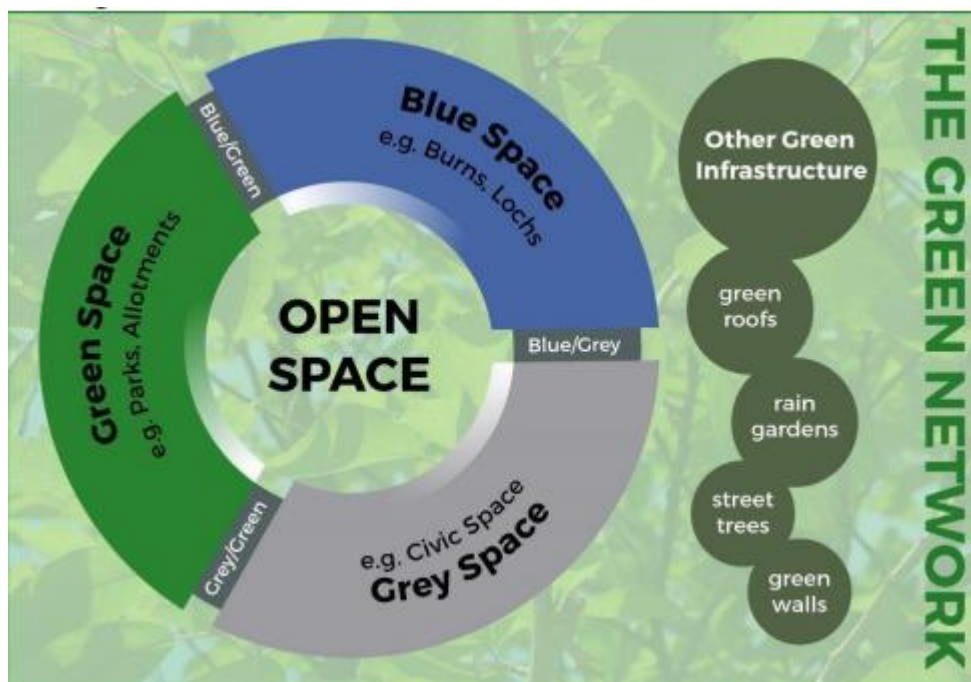
- Helping the city adapt to climate change, e.g. by dealing with surface water flooding, especially during and immediately after heavy rainfall events
- Providing habitats for nature, helping enhance biodiversity
- Providing opportunities for delivering better, more coherent and connected walking and cycling networks
- Providing convenient opportunities for outdoor recreation, sport, food growing and general relaxation, helping promote health and well-being and social cohesion
- Mitigating climate change, the urban heat island effect and poor air quality; and
- Contributing to a sense of place and a more attractive urban environment.

Meeting these demands is going to be important in ensuring that Glasgow is well equipped to deal with the challenges of the 21st century and in enhancing the attractiveness of the city as a place in which to live and invest.

The city's Open Space Strategy (OSS) will help address this changing context and the changing role of open space. This strategy sets out an approach for considering the different ways in which the people, flora and fauna of Glasgow will need to make use of open space, now and in the future, if the city is to successfully meet the demands set out above. It marks the start of a process for establishing and meeting the city's open space needs which will have to be sustained for many years to come. Those needs will be taken forward in the evolution of this OSS through future updates, which will inform future corporate strategies. This process is being facilitated by the EU's Horizon 2020 Connecting Nature programme. The Connecting Nature programme will help identify nature-based solutions to some of the challenges facing Glasgow whilst delivering associated benefits for the city.

There is also a recognition that the strategy will have to be delivered in a challenging financial climate that is providing fewer resources to create new open spaces or to enhance and maintain existing ones. The strategy sets out an overarching approach to the city's open spaces, providing strategic direction that will guide the work, policy-making and investment decisions of all council services and other members of the council family, to deliver an effective and fully-functioning network of green, blue and grey open spaces that will continue to allow Glasgow to flourish in the future.

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## 7 Resources

The Open Space Strategy has been prepared in response to the requirements set out in Scottish Planning Policy (SPP) (2014), the National Planning Framework (NPF) 3 (2014) and the guidance set out in Planning Advice Note 65 (PAN 65): Planning and Open Space (2008). NPF3 identifies the Central Scotland Green Network (CSGN) as a national priority, aimed at transforming Central Scotland into a place where the environment adds value to the economy and where people's lives are enriched by its quality. This OSS can play a significant role in delivering the aims of the CSGN in Glasgow.

In responding to these requirements, this strategy reflects the specific circumstances of Glasgow. Documents such as the council's Strategic Plan 2018-2022 and the Glasgow Community Plan set out the key aspirations of the council and its partners in relation to a wide variety of matters that the Open Space Strategy can help to address, including enhancing health and wellbeing. The declaration of a Climate/Ecological Emergency places further emphasis on using our open spaces effectively to reduce emissions and adapt to the impacts of a changing climate. Other influences have been taken into account, including legislation such as the Community Empowerment (Scotland) Act 2015.

[www.glasgow.gov.uk/developmentplan](http://www.glasgow.gov.uk/developmentplan)

[Open Space Strategy](#)

[Open Space Map](#)