

ALIVE WITH NATURE:

A Natural Capital Development Plan
for Stirling



EXPLORING THE ECONOMIC AND SOCIAL BENEFITS OF INVESTING IN THE NATURAL ENVIRONMENT IN STIRLING



A City Region Deal for Stirling and Clackmannanshire is a unique opportunity to unlock investment, secure and grow the local economy, and demonstrate international leadership in developing natural assets across the urban area of Stirling City and beyond.

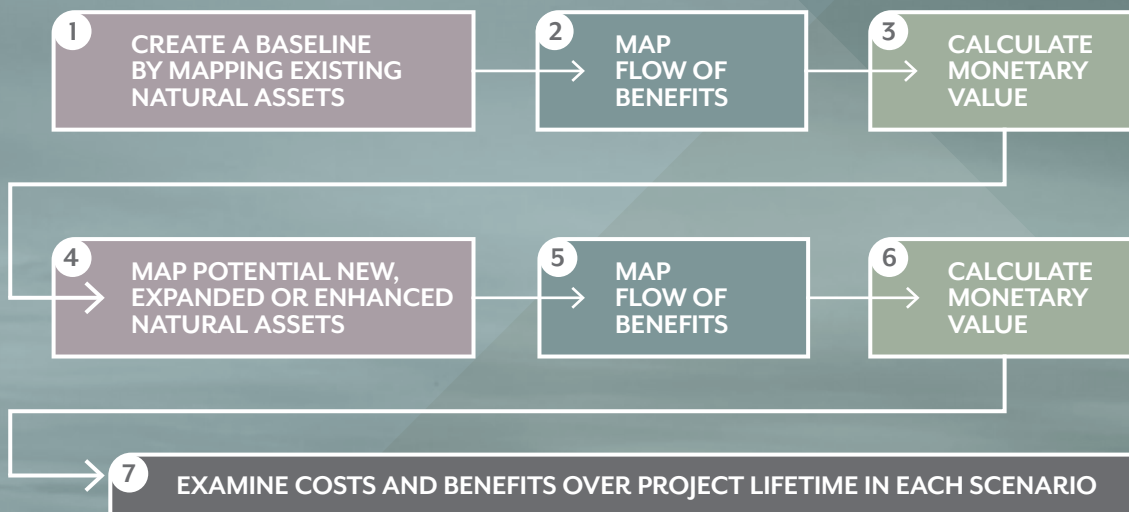
This short document for decision-makers explores the economic and social benefits of investing in a healthy natural environment in Stirling. A full report is also available.

The investment in natural capital considered in this assessment could bring net economic benefits worth £218m.

“ The Scottish Government sees the concept of natural capital as an important tool for making better decisions... That's why natural capital is embedded in our performance framework, and also in our national economic strategy.

NICOLA STURGEON, *First Minister of Scotland, November 2017*

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“Natural capital can be defined as the world’s stocks of natural assets which include geology, soil, air, water and all living things. It is from this natural capital that humans derive a wide range of services, often called ecosystem services, which make human life possible.”

World Forum on Natural Capital, Edinburgh

The natural environment underpins our well-being and economic prosperity, yet is consistently undervalued in traditional decision-making.

City Deals and City Region Deals are a major opportunity to look at investment decisions through a new lens, bringing greater social, environmental and economic benefits over the longer term. This document summarises an analysis of two proposals: a River Project aiming to put the river back at the heart of Stirling life, and a new City Park. We hope it will be valuable for other cities too.

To carry out the analysis, a baseline was first created by mapping current natural capital assets across the city. The capacity of the natural environment to deliver a number of different services was then modelled and mapped at high resolution. Finally, a monetary value was estimated for each of these services.

The analysis was repeated to show how these values would change after the proposed investments. The values were then incorporated into a full economic appraisal, as outlined in this document.

A large increase in accessible greenspace close to people's homes could bring **annual health benefits to the local community** worth at least



CITY PARK £16k

RIVER £280k

Vegetation **reducing the effects of air pollution** could provide annual benefits worth



CITY PARK £11k

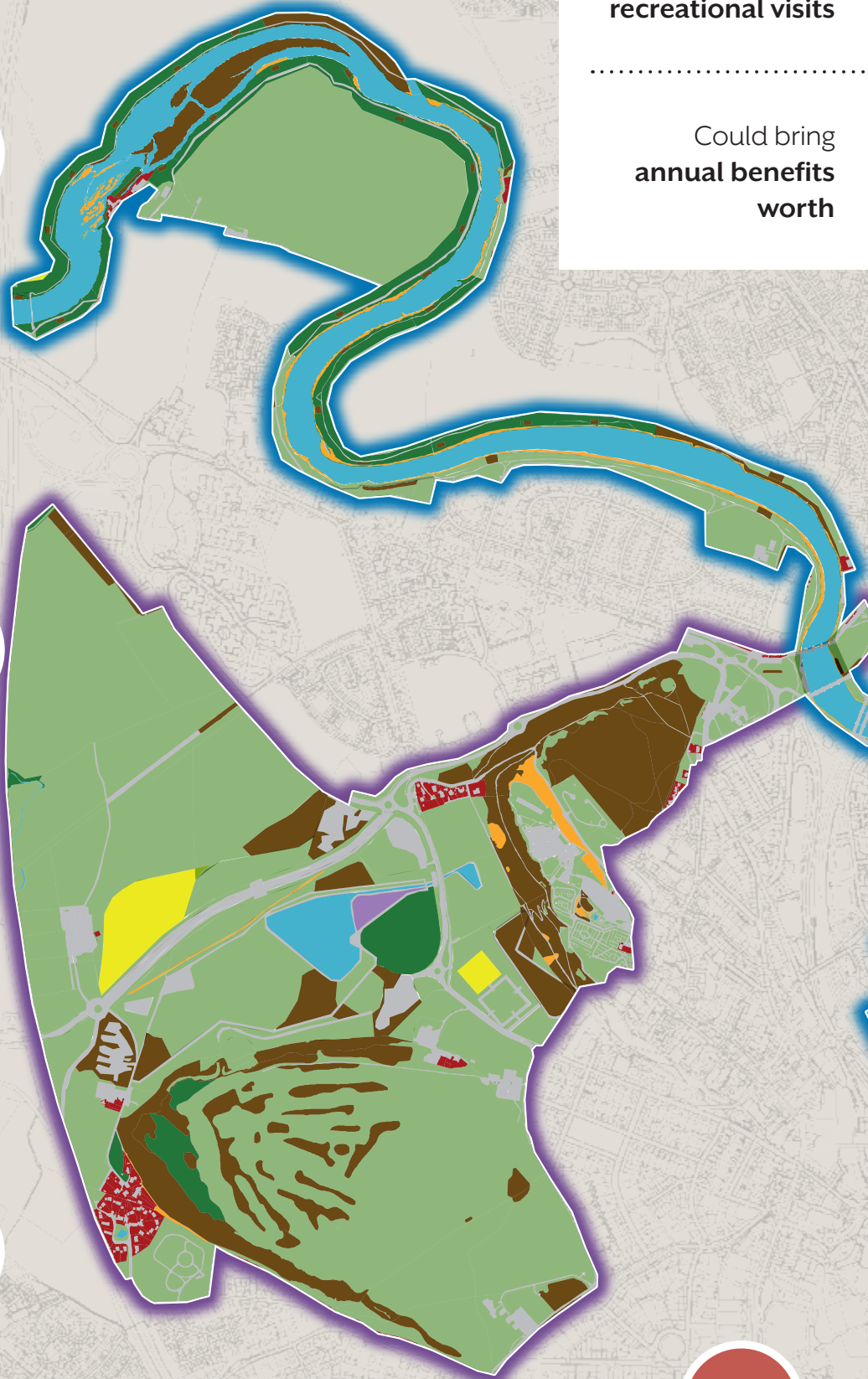
RIVER £5.7k

The investment could also give added value of **timber production, water quality enhancement, reduction in surface water flooding, noise reduction, and urban cooling.**



Estimated **additional recreational visits**

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Could bring **annual benefits worth**



The investments will also bring benefits for biodiversity through creation of publicly accessible wildlife areas. Access needs to be carefully managed to increase public engagement with nature whilst minimising the disturbance to wildlife in sensitive areas.



CITY PARK
560K

RIVER
580K

CITY PARK
£2.3M

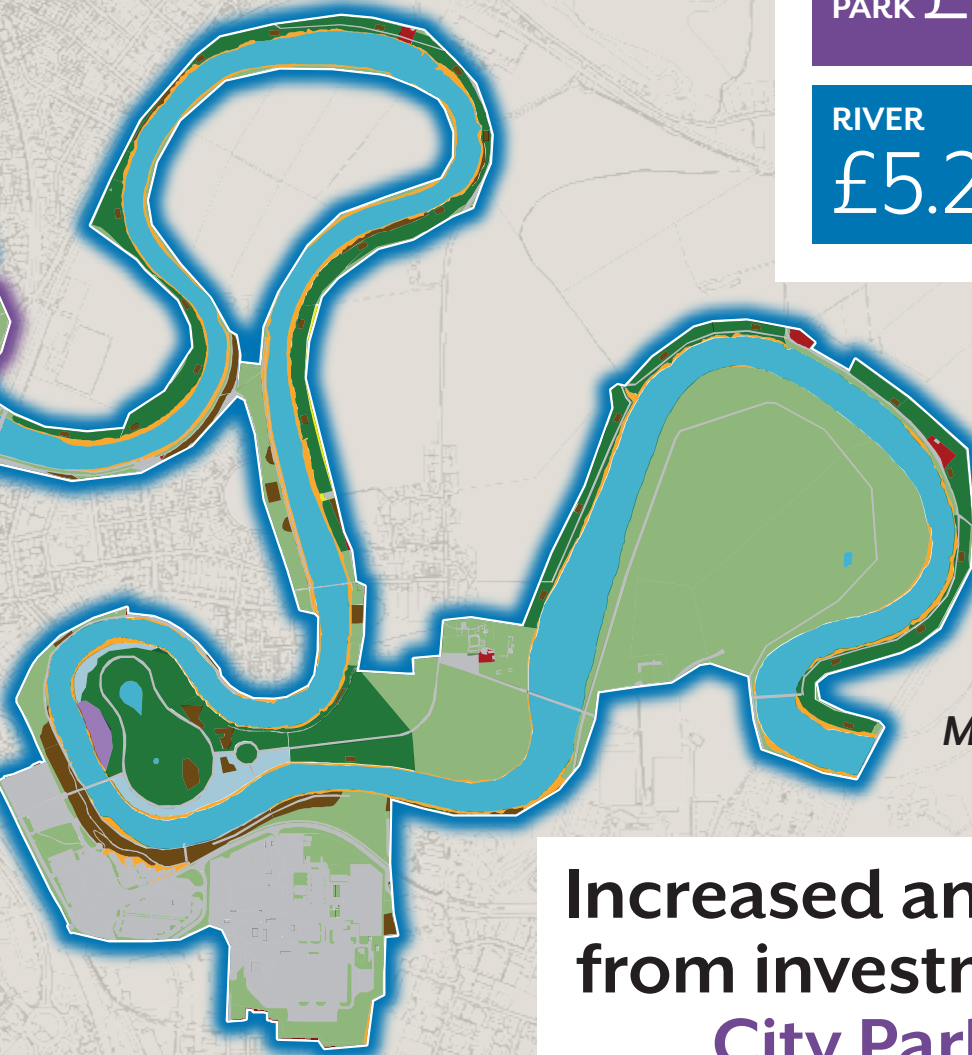
RIVER
£2.4M

New **tree planting** could take up **carbon dioxide (CO₂)** and changing land-use could **reduce agricultural CO₂ emissions**, providing a combined annual benefit worth

CO₂

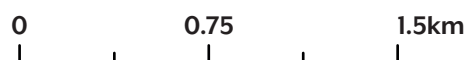
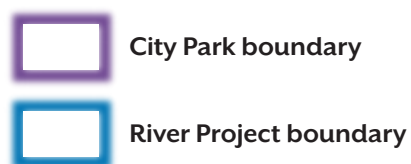
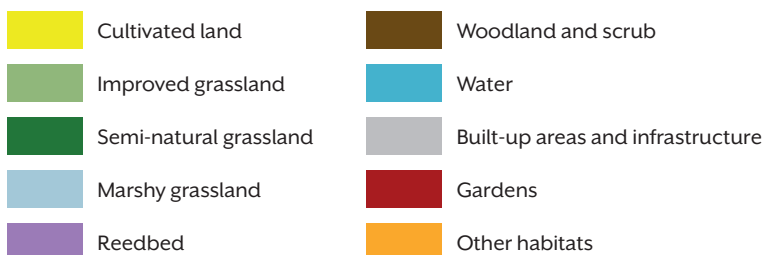
CITY PARK
£11K

RIVER
£5.2K



Map shows habitats after investment

Increased annual value from investment in the City Park and River



ECONOMIC APPRAISAL

Estimated annual benefits were combined with capital investment and incremental annual operating costs, phased in accordance with implementation schedules, to assess the economic performance of the investments over a 50-year period.

Natural capital balance sheet

The net value of natural capital assets for the City Park area was estimated to **increase from £73M to £161M** due to the proposed investments, an increase of 220%. The River Project showed an **increase in net natural capital value from £74M to £204M**, an increase of 275%.



Benefits and costs*	City Park	River Project
2017 prices (£), central estimate		

BENEFITS		
Ecosystem services	£41M	£47M
Property enhancement	£12M	£13M
Tourism	£96M	£144M
Gross Value Added from expenditure	£33M	£39M
Total benefits	£182M	£242M

COSTS		
Capital costs	£44M	£53M
Operational and maintenance costs	£50M	£59M
Total costs	£94M	£112M

Net Present Value over 50 years	£88M	£130M
Internal Rate of Return	12.5%	13.7%

*Present Value estimates rounded to the nearest million

WHAT THIS MEANS FOR DECISIONS IN STIRLING

- ▶ If the right balance can be struck in key decisions, the Stirling City Region Deal is a significant opportunity for Stirling to show leadership in implementing the Scottish Government's commitment to increasing natural capital, improving health and well-being, and strengthening social inclusion.
- ▶ There will be significant benefits in terms of recreation, health, improving air quality, and reducing atmospheric carbon, along with numerous others.
- ▶ Some of the most deprived communities in Scotland are likely to gain major benefits from the investments.
- ▶ The river in Stirling is a significant natural capital asset which for a long period has been undervalued. The City Region Deal proposals include ambitious plans to reconnect the city with its river and it will therefore be important to protect this key natural asset.

UNLOCKING ADDITIONAL VALUE FROM CITY DEAL INVESTMENTS

Across the UK, City Deals and City Region Deals are agreements between central and local government which are designed to bring about long-term strategic approaches to improving regional economies.

USE THESE 10 STEPS TO HELP INCREASE YOUR RETURN ON INVESTMENT:

- 1 Create a baseline by mapping the location of current natural capital assets such as wooded areas, greenspace and watercourses.
- 2 Quantify the benefits from these assets, such as recreational opportunities, air purification and flood protection.
- 3 Where possible, calculate a monetary value for these benefits, for example through increased tourism, reduced pollution and reduced costs of flooding.
- 4 Repeat steps 1–3 with any proposed land use change from investment to identify the potential impacts.
- 5 Feed the monetary value of natural capital costs and benefits into standard economic appraisals to calculate gross value added, return on investment and internal rates of return (IRR). This will provide a fuller picture than traditional economic analysis and support more joined up decision-making, although other relevant factors will still need to be considered alongside the financial figures.
- 6 Consider ways to increase the benefits from natural capital by relating location and type of green infrastructure to demand, for example planting trees or woodland close to pollution sources, such as along main roads, and creating greenspace close to where people live.
- 7 Invest in green infrastructure within or close to deprived communities to help address issues of social inequality. Access to greenspace can be highly beneficial for physical and mental health and the economic value of these benefits can be particularly high.
- 8 Seek value for money through investment in multi-functional green infrastructure to help air quality regulation, climate change mitigation, natural flood risk management, water quality enhancements, local climate regulation, and noise screening.
- 9 Look for opportunities to create additional benefits from green infrastructure in connection with the historic and built environment.
- 10 Create important additional non-monetary value by adding natural features to support biodiversity.



ABOUT THE REPORT

Bringing natural capital assessment into the planning and development process is an area being actively developed at present and best practice is yet to be agreed. However, it is clear that the Scottish and UK governments are moving to embrace these approaches and they will become standard practice over the next few years.

This report is offered as a contribution towards this important debate and we hope it will help inform decisions in Stirling and in other cities.

Assessments have been made by Natural Capital Solutions Ltd and Morris Resource Economics, drawing on their experience and expertise. Annual monetary flows of ecosystem services were calculated based on the latest valuation techniques available in the scientific literature and those approaches adopted by the Office for National Statistics (ONS) and Defra. The report was project managed by the Scottish Wildlife Trust with funding from Stirling Council. The report and comments are intended to contribute to the discussion relating to the Stirling City Deal. They have been discussed in the Steering Group of the Scottish Forum on Natural Capital but should not be taken as representing the views of, or any endorsement by, individual Scottish Forum members.

We hope others will learn from this piece of work, actively build on it and use it to help inform decision-making. The full report is available on the Scottish Forum on Natural Capital's website, where the discussion will continue.

naturalcapitalscotland.com

Design by Countryside

The report:

- ▶ Analyses the 'City Park' and 'River Project' components of the City Deal that were described in the 2016 Stirling City Deal Masterplan (excluding the mooted barrage, the renewable energy projects and a potential flood alleviation scheme). Only the elements of the river project which are in Stirling have been considered.
- ▶ Examines the green infrastructure and natural elements of the plan, revealing benefits and costs that could otherwise be overlooked.
- ▶ Considers the distribution of benefits in relation to demand, which can be used to suggest changes to design that enhance benefits.
- ▶ Helps provide a more complete and inclusive picture of return on investment to aid decision makers.
- ▶ Covers selected benefits for which information is available, and is not a complete assessment of all possible natural capital benefits and costs.
- ▶ Is not an ecological impact assessment or an assessment of the impact on designated features.
- ▶ Does not assess the impact of the built, transport, energy or lifecycle components of a development.
- ▶ Does not consider any river impoundment options, which are the subject of a separate options appraisal and Strategic Environmental Assessment. It will be important to avoid loss of natural capital as a result of any development on the river.

