

The **Natural Capital** User Guide for Greater Manchester

This guide will help you understand and use the award-winning Natural Capital tools that have been specially developed for Greater Manchester. We know there are lots of tools and resources out there that can sometimes be overwhelming and confusing. This guide helps you to understand and use the tools and provides further reading materials as well as case studies of how the tools are being used by partners, land managers and community groups.

Natural Capital is about how we can have a better natural environment for people and wildlife, ensuring it is accessible for everyone to connect with and benefit from. Natural Capital is a way of describing the natural world as assets that provide us with benefits, such as clean air, water and food – all of which underpin our life, our health and our society. These natural assets provide a flow of services that sustain the economy, referred to as Ecosystem Services.

Why Use the Tools?

- Deepen your knowledge about the value of Greater Manchester's Natural Capital;
- Understand and explain the wide range of Ecosystem Services that the natural environment provides;
- Develop environmental programmes, projects and policies;
- Examine how developments can deliver biodiversity and environmental "net gain";
- Provide evidence for your Council's Local Planning process.

“ This user guide demonstrates that providing a better understanding of the significant monetary value of Ecosystem Services can help direct investment to areas that need it the most. The innovative methodology is wholly replicable and could be used across different landscapes and varying scales. The project sets a precedent whereby stakeholders in Greater Manchester have a robust evidence base which can be interrogated on the MappingGM website so that the legacy of the project continues. ”

Landscape Institute Award Judging Panel 2019

All the tools and guidance material are “open source” and Greater Manchester's work has received industry recognition, winning the 2019 Landscape Institute award for Transformation through Management and Science.

The **Value** of Greater Manchester's Natural Capital



GREATER MANCHESTER

5 YEAR ENVIRONMENT PLAN

Greater Manchester is an “Urban Pioneer”, tasked with trialling new tools and methods for investing in and managing the environment to inform the delivery of the Government’s 25-Year Environment Plan.

Greater Manchester’s Natural Capital Accounts and Ecosystem Services Opportunity Maps were developed by the Natural Course Project. Natural Course is an EU funded LIFE Integrated Project, which aims to improve and protect the North West’s water environment.

NATURAL
OUR WATER. OUR FUTURE
COURSE



Valuing Greater Manchester’s Natural Capital

The Greater Manchester Natural Capital Accounts measure the benefits provided by the city region’s natural assets to its businesses, public services and residents. A small selection of the valuations from 2019 are listed here:



Air Quality Regulation

Vegetation improves air quality which prevents **370** hospital admissions each year and helps avoid **1,200** life years lost.



Carbon Sequestration

50,000 tonnes of CO_{2e} taken out of the atmosphere each year by Greater Manchester’s woodlands and peat



Physical Activity

135,000 people use green spaces to meet their physical activity guidelines, giving **4,600** Quality-adjusted life-years (QALY)



Mental Health

1 million people receive mental health benefits by accessing green spaces, giving a **120,000** point reduction on the General Health Questionnaire Index (GHQ)

The Covid-19 pandemic has made us all realise the full value of green spaces to physical and mental health.

Natural Capital Accounts



Greater Manchester's Natural Capital Account

An easy to read and engaging document, which provides valuations for the natural assets for Greater Manchester and each local authority. It helps the user to understand and explain the wide range of benefits flowing from the natural world. Greater Manchester's ecosystems provide at least £1bn value each year.

[!\[\]\(a03a7eb2f4046e1d3c76772003e549ea_img.jpg\) **Read More**](#)



Irwell Catchment Natural Capital Account

This document provides Natural Capital valuations for each of the 26 waterbodies in the Irwell catchment in Greater Manchester and Lancashire. It emphasises the current economic value of ecosystems in our river valleys, and the opportunities that can come from ecosystem restoration. For example, the Irwell's rivers and associated greenspaces bring health benefits valued at least at £105 per head. [!\[\]\(3e2231b1ad3ca8da8658228c00dd08e0_img.jpg\) **Read More**](#)

Ecosystem Services Opportunity Maps



Greater Manchester's Ecosystem Services Opportunity Map

This open-source map shows the range of opportunity for improving Ecosystem Services. Each land parcel has its own specific opportunities for improvement. Displayed in "heat-map" style, the hotter the colour, the greater the scope for improvement. The maps can help target investment in nature-based solutions and ecosystem resilience. [!\[\]\(0d5ec72f61334709c3fc9450209b754f_img.jpg\) **Access the Map**](#)

A [!\[\]\(b792654f2cef9719eabeb6c5be00811e_img.jpg\) **user guide**](#) will help you explore the Greater Manchester map in depth and a [!\[\]\(7da9a585536d56657fa124d7eaae44e7_img.jpg\) **video tutorial**](#) will get you started.



Irwell Catchment Ecosystem Services Opportunity Map

These are the pioneering maps from 2018 which first showed how ecosystem opportunities can be mapped in detail. This map focuses on the Irwell's 26 waterbodies and also uses a heat-map style. The Irwell Catchment Ecosystem Services Opportunity Map focuses on a 250m corridor surrounding the river valleys and main tributaries. [!\[\]\(b64b40baaee5acddc1eab8538ba84754_img.jpg\) **Access the map**](#) and [!\[\]\(f1009ec4c244bb185d08b1dfae838c51_img.jpg\) **user guide**](#).

Other Resources



Bringing Natural Capital & Ecosystem Services Mapping Together

This Natural Course [!\[\]\(aff7c69c44a5e015f18c35867ef3f5c3_img.jpg\) **publication**](#) shows, for the Irwell catchment, how to develop Natural Capital Accounts and map Ecosystem Services in order to target investment and policy to areas of need.



Real Life Application

Four projects in Greater Manchester and Lancashire used the Natural Capital Accounts and the Ecosystem Service Opportunity Maps to help refine their masterplans and funding bids. Further details on these pilot projects can be found [!\[\]\(4c9516d2c24d0d513bc9f84c2e013d65_img.jpg\) **here**](#).

Inside the Tools

The following section of the user guide explains how the Natural Capital Account and Ecosystem Services Maps can be used, providing step by step instructions and case studies demonstrating how these ground-breaking tools can be utilised in project development.



Natural Capital Accounting

Natural Capital value arises from Ecosystem Services which flow to society. The Natural Capital Account displays monetary estimates of value from the Ecosystem Services. Valuation proceeds in two steps.

Firstly, the physical quantity of the Ecosystem Services provided is estimated.

Secondly, each Ecosystem Service is translated into monetary terms according to its contribution to the economy.

The total value of Ecosystem Services in the area, and the contribution of each Ecosystem Service individually, are summarised in a Natural Capital Account. This is used to show the annual value of services as well as the capitalised value of Ecosystem Services over the long term.



Ecosystem Service Maps

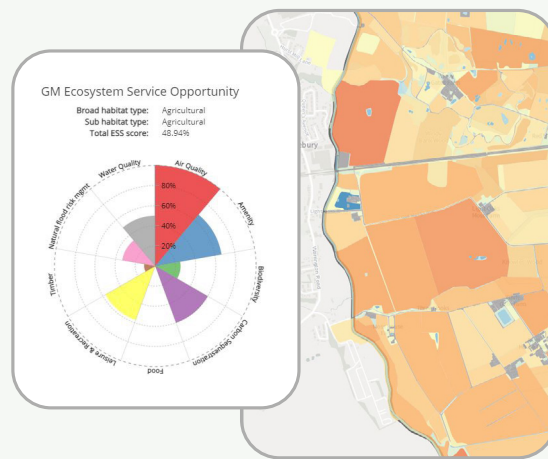
The Ecosystem Services Mapping identifies, for each land parcel in the study area, the opportunities that changes in land use or management could bring in terms of improved Ecosystem Services. Opportunity arises on land which, given its physical, social, economic, geographical and cultural characteristics, offers potential to intervene and improve Ecosystem Services functioning and thus uplift Natural Capital value.

Opportunity arises where there is a combination of feasibility and need. Over 30 individual aspects of the environment have been assessed using spatial analysis to identify Ecosystem Service opportunities. Geo spatial analysis, informed by current best practice has identified multiple opportunities across every district and waterbody within the study area.

How do I use the tools?

1 - Where is the site or project?

Natural Capital Accounts provide baseline valuations for each ecosystem service, presenting monetary values received by society on a local authority and river valley scale. These provide you with the economic context for your site or project. The valuations allow you to identify the financial contributions being provided by the site or area currently, and enable financial comparisons with other areas within the study. **The Ecosystem Services Map** allows you to zoom in and out of any land parcel in GM so you can investigate the opportunities on individual sites.



Map and graph showing **Ecosystem Services Opportunities** on selected land parcel.

2 - Understanding the baseline

The **Ecosystem Services Map** shows the habitats on your site. It also has a heat map showing how many different Ecosystem Services can be uplifted on your site if you want to improve its Natural Capital value. Use the **Ecosystem Services Map** in conjunction with local knowledge and other data on MappingGM to understand the current environmental condition of your site.

3 - Are you interested in a particular Ecosystem Service?

The **Natural Capital Accounts** include valuations for each Ecosystem Service per local authority or per waterbody. The **Ecosystem Services Map** and supporting evidence base allows you to study the specific Ecosystem Services you are interested in, and whether there are opportunities to improve them on your site.

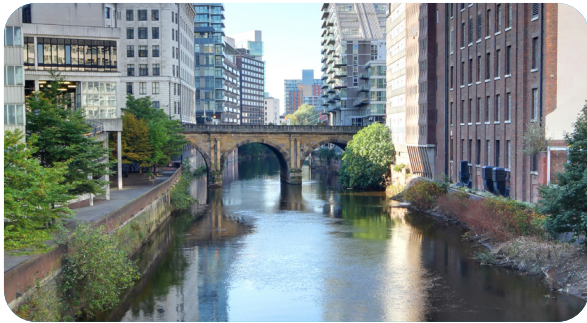
4 - What projects are you hoping to do?

The **Ecosystem Services Map** provides a list of practical actions that can be taken to improve environmental conditions and hence uplift Natural Capital. You can use these suggestions to help you design your development or your environmental improvement project. The list of actions may also stimulate ideas about who you can work in partnership with; for example an access improvement project on one land parcel may unlock a food-growing opportunity on nearby land.

5 - Presenting the findings to build support

Valuation figures in the **Natural Capital Accounts** are useful when providing headline figures for presentations to decision-makers. The data tables for the [Natural Capital valuations](#) for Greater Manchester and [Irwell Management Catchment](#) can be downloaded. The **Ecosystem Services Heatmaps** and example actions can be used to illustrate why your project is beneficial. The full Ecosystem Services data layer can be made available via license by agreement with GMCA.

How are people using the tools?



Our Rivers Our City & Sponge City Thinking

Manchester City Council is developing a river valley strategy to guide development and investment in the Mersey, Medlock and Irk valleys to 2030, and recognise the high value of the Natural Capital that flows from the city's rivers.

Manchester is experiencing rapid population growth with a great need to tackle climate change and public health inequalities. The Our Rivers Our City Strategy is using Ecosystem Services Opportunity Mapping to direct investment in delivering opportunities in river valleys and greenspaces. The MP for Wythenshawe East and Sale, Mike Kane, has [!\[\]\(c3d993ca47bfe2a953c700506ce31fa0_img.jpg\) **blogged**](#) about how river access helps in the fight against climate change.

Across the whole city the philosophy of Ecosystem Services uplift is helping planners to explore policies for urban greening. The city's Grow Green project has developed sponge city thinking through [!\[\]\(d66ff64371a51729ac8c1cdaa685ba6f_img.jpg\) **West Gorton Park**](#) – the “park that drinks water”.



Oldham Development Frameworks & Local Plan

Broadbent Moss is a proposed Strategic Allocation offering the opportunity for 1,450 new homes and 21,000m² employment space.

The Ecosystem Services Maps helped formulate the site-specific allocation policy; requiring the developer to assess and uplift Ecosystem Services, and helped the Council to develop a concept masterplan. The Ecosystem Services Maps proved useful as they demonstrate types of activities and interventions which will be most beneficial, making it easier for the Council to focus its environmental investment requirements.

The Council intends to use the Ecosystem Services Maps to inform other development frameworks, open space contribution policy and the emerging Green Infrastructure Strategy. For example, when development generates financial contributions for open space, Biodiversity Net Gain, Green Infrastructure, or carbon offsetting, the maps will help direct the contributions to important greenspace near the development or to strategic Green Infrastructure improvement areas like Moston Brook and Oldham's [!\[\]\(cf531ed27e91483460120fcc057b3901_img.jpg\) **Northern Roots**](#) project.



Irk Vision

This is a restoration project seeking to transform the Irk into a vibrant river corridor and mitigate the legacy of poor water quality resulting from the industrial revolution.

The Natural Capital Accounts were used in the early stages of project development to produce headlines figures and to assist in developing business cases for project funding.

The Ecosystem Services Opportunity Mapping was used as part of the Natural Course catchment approach, combining the results with additional datasets to better understand the complexities of the river valley.

Both tools have been used by partners and consultants to assist the [!\[\]\(3342c215b2a8b663596a81468d5dc314_img.jpg\) **Bringing the River Irk to Life \(BRIL\)**](#) Project which is currently developing Action Plans for improvements within the Irk Valley in Rochdale and North Manchester.

Who can use the tools?



Strategic Planner

Identify baseline Natural Capital values. Identify opportunities for environmental improvements that could deliver multiple benefits and can draw in new funding streams.



Local Authority Planner

Produce evidence about which features of a site to protect and enhance in allocations, development frameworks, planning policy and decisions.



Land Manager

Use the habitat mapping and the list of practical actions when preparing management plans and biodiversity net gain schemes.



Friends Group

Use the Ecosystem Service Mapping Tool to identify multiple small scale opportunities and help to engage other third parties who would benefit from improving a specific Ecosystem Services.



Fundraiser

Use the Natural Capital Accounts to produce headline figures on how environmental investments can boost Natural Capital and thus influence decision-makers.



Developer

Use the Ecosystem Services Mapping Tool to identify opportunities for delivering biodiversity and environmental net gain on site. Use both tools to consider how the development site's Natural Capital can be uplifted to advocate for the benefits of the scheme to the neighbourhood and to incoming residents.



Frequently Asked Questions

To evaluate the uptake in the use of these tools and identify any barriers preventing uptake, an online survey and series of face-to-face interviews were conducted over summer 2020. Responses to the Frequently Asked Questions are provided here.

- **How do you keep the tools accurate and up-to-date with changing land use?**

The Ecosystem Services Mapping Tool was calculated and presented using the Ordnance Survey Master Map product from 2018. Maps should remain relevant for the foreseeable future but we would advise groundtruthing if there have been recent developments in the area.

- **How is it best to communicate the complex economics of it all?**

[5 Steps to Natural Capital](#), published by the Natural Capital Committee, provides a workable template that can be used to help organisations adopt a Natural Capital approach to their policies and assets. The Greater Manchester Natural Capital Account has user-friendly [summaries](#) for each local authority, and the detailed methodologies can be explored via the links earlier in this guide.

- **Are Natural Capital Accounts unfairly weighted towards human populations?**

Natural Capital valuations include a dependence on population density for many of the methodologies, because of the high value of natural greenspaces in respect of health, wellbeing and recreation. This will produce higher values in more populated locations. Nature has its own intrinsic value which goes beyond the benefits that flow to society.

- **Can the maps be filtered?**

All data layers included on MappingGM can be filtered using the map functions available. Individual Ecosystem Services can be displayed through the drop down selection.

- **Can I use the maps for Biodiversity Net Gain?**

The Ecosystem Services Mapping and Natural Capital valuations are utilised best in collaboration with other tools and data layers. They can help identify areas where financial contributions are most likely to achieve uplifts in biodiversity, carbon storage, health and wellbeing etc. Local knowledge and ground-truthing is necessary to develop detailed Biodiversity Net Gain action plans.

- **Why have you used opportunity mapping, rather than direct Natural Capital values?**

The scope of the project was to identify opportunities to improve Ecosystem Services functions and therefore uplift Natural Capital Value. Ecosystem Services Maps are presented for each land parcel, whereas Natural Capital values are calculated for Super Output Areas and are amalgamated to Local Authority or River Valley Boundaries.

- **Can I combine the layers with my own mapping layers?**

The Ecosystem Services Opportunity Mapping Data Layer can be obtained from GMCA under a mapping licence agreement. For further information please contact GMCA (see [Glossary](#) page).

- **Is land ownership on a mapping layer somewhere?**

No landownership data is displayed on MappingGM due to GDPR restrictions.



What other tools are out there?

Below are some other tools that assist in the understanding, valuation and promotion of Natural Capital.



Enabling a Natural Capital Approach (ENCA)

ENCA has resources, data, guidance and tools to help you understand Natural Capital and know how to take it into account. Promoted by Defra, it is particularly helpful for analysts and economists seeking source data, consistent with HM Treasury Green Book guidance, about valuing the natural environment.

 [Read More](#)



Natural Capital Tool Kit

This Defra toolkit is an online resource for measuring Natural Capital, with evidence to support ENCA, described above. It is a comprehensive and integrated set of evidence and guidance about UK Natural Capital. It is intended to help policy makers, businesses, landowners and public sector organisations make better planning decisions in order to protect and to boost Natural Capital.


 [Read More](#)



Environment Agency's Natural Capital Register & Account Tool

The Environment Agency has developed a Natural Capital register and account tool. It is free to use. It records the quantity and quality of assets in a place (a Natural Capital register) and then estimates the flow of services from the assets, and applies monetary values to some of those provided (a Natural Capital Account).

Released at the beginning of 2021, the tool is intended as a beta-product, rather than a finished product. Until now, a Natural Capital register and account took months to produce and thousands of pounds in specialists' fees. Now, the Environment Agency hopes that environmentalists can create an account within weeks and for free, the first of its kind. The Environment Agency Natural Capital Team wants to empower staff and partners to take a Natural Capital approach in a robust, transparent and consistent way.

 To obtain the tool and a user guide, email: naturalcapital@environment-agency.gov.uk



Natural England – Natural Capital Atlas

These local Natural Capital Atlases follow on from the popular National Natural Capital Atlas. The best available and nationally consistent evidence is used to map out indicators showing asset quality, quantity and location. Indicators for some flows of Ecosystem Services are also mapped.

These atlases provide an “off the shelf” Natural Capital evidence base for each county or city region (Greater Manchester has its own atlas). They can be added to and built on. They have a wide variety of uses with more information in the “How to Start Using Your Natural Capital Atlas” annex. GIS data and shapefiles are available.

 [Read More](#)

There are currently many different ground-breaking and thought-provoking assessment and analysis tools being developed in Greater Manchester. Although all tools have a slightly different focus, they all help to strengthen the evidence base for decision making regardless of the project or use case.

Glossary

Broad and Sub Habitat Types

Broad habitat types and sub-types are provided by Ordnance Survey. These enable the identification of Natural Capital assets. Each habitat type or sub-type can deliver or support one or more Ecosystem Services.

Natural Capital

Natural Capital refers to the physical stock of natural assets, such as water and woodland, in a given area. These natural assets consequently provide a flow of services that underpin many aspects of the economy, referred to as Ecosystem Services.

Natural Capital Account

The Natural Capital Account displays monetary estimates of value from the Ecosystem Services.

Ecosystem Services Opportunities

Opportunity arises on land which, given its physical, social, economic, geographical and cultural characteristics, offers potential to intervene and improve Ecosystem Services functioning and thus uplift Natural Capital value.

Natural Course

Natural Course is an EU LIFE Integrated Project (Project number: LIFE14IPE/UK/027) aimed at accelerating progress towards the objectives of the EU Water Framework Directive and developing an integrated and sustainable approach to water management. The project covers the North West England River Basin District.



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