gcv green network
connecting our quality spaces

Green Network Opportunities Mapping

Glasgow City

A Report for

Glasgow City Council

February 2014

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1 Summary

The Central Scotland Green Network is a National Development as identified in National Planning Framework 2 and as such its delivery must be considered and planned for at regional and local authority levels when producing planning policy and in development management decision making.

The GCV Green Network Partnership developed a GIS based approach to identifying strategic regional opportunities for delivery of the Green Network in the Glasgow and Clyde Valley (GCV) Strategic Development Plan. The analysis uses a range of Green Network, development and social datasets to identify strategic locations, or "hotspots" where the planning process and the targeting of resources can deliver multiple Green Network benefits.

The approach was recognised by Glasgow City Council as having the potential to identify Green Network Opportunities at a local authority scale. The methodology, and the datasets used, were refined and adapted to reflect Glasgow's particular circumstances.

The "hotspots" indentified through this first phase of the analysis across the city are **(Appendix 1):**

1. **Yoker/Dumbarton Road Corridor**
2. **Dawsholm/River Kelvin Corridor**
3. **Lower River Kelvin Corridor**
4. **Ruchill/Firhill**
5. **Barmulloch**
    a. **Broomfield Road**
    b. **Barmulloch Park**
6. **Gartloch Road, Easterhouse**
7. **Bailleston/Broomhouse**
8. **Auchenshuggle/London Road Corridor**
9. **Dalmarnock, Clyde Gateway**
10. **Machrie Road/Barlia Terrace/Ardencraig Road, Castlemilk**
11. **Langside/Battlefield/Newlands**

This report describes the approach and interprets the outputs generated through the analysis. It also recommends that the outputs should be used to:

- Develop robust and defensible Green Network policies for the Local Development Plan
- Target limited resources and planning gain effectively
- Inform masterplanning and development management
- Develop Green Network Strategies for opportunity areas identified through analysis
- Inform Strategies which support the Local Development Plan e.g. Open Space, Biodiversity and Access Strategies
- Set Single Outcome Agreement Targets and measures

2 Introduction

2.1 What is the Green Network?

The Green Network is a large scale and ambitious initiative that will, through planned and co-ordinated local action which delivers a strategic vision, transform Central Scotland by improving local communities, promoting healthier lifestyles, connecting and enhancing natural habitats, transforming perceptions and by attracting and retaining investment in the area.

The Green Network will deliver a range of outcomes including:

- **Enterprise Development**
  The economy will benefit from the Green Network because it provides:
  - attractive locations in which existing businesses will wish to remain as they develop and grow
  - vibrant communities that will attract new business investment, and encourage staff recruitment and retention
  - new opportunities for innovative enterprises to help manage the Green Network

- **Health Improvement**
  People will benefit from the Green Network because it will provide:
  - attractive locations in which to exercise or relax
  - safe spaces that encourage well-being and community spirit
  - cleaner living environments of which local people can be proud

- **Stronger Communities**
  Communities will benefit from the Green Network because it will:
  - provide well-designed, sustainable places in which to live
  - empower local communities to take ownership and help create the safe, attractive places that they want
  - provide spaces that people can be proud of and which will help develop a community spirit

- **Biodiversity and the Environment**
  People, wildlife and environment will benefit from the Green Network because it:
  - provides robust diverse habitats, linking across the city region
  - reduces human impact on the environment
  - reduces the impact of climate change on the urban population

2.2 What Comprises the Green Network?

The Green Network is a network of connected green and open space which delivers a range of multiple benefits as described and is designed and maintained to deliver these benefits now and into the future.

The form, size and function of its individual elements will vary significantly however, the linking of these individual elements to people and to each other is what will create the Network.

In thinking about the development of the Green Network, it is helpful to distinguish between:

- **Green Network Cores/Hubs** – large areas of existing or new greenspace which already deliver a wide range of Green Network benefits. The aim should be to protect and expand these areas, to create new cores/hubs, create visual connections and, critically, to develop corridors to link them;
- **Green Network Corridors and links** – continuous corridors of greenspace along rivers, disused railways, paths and cycleways and existing railways and roads which serve to connect Green Network Cores/Hubs. Many of these corridors are incomplete, or provide a limited number of functions, so a key aim is to increase the number, continuity, visual interaction and functionality of these corridors;
- **Green Network stepping stones** – it may not always be necessary or appropriate to create a continuous corridor of greenspace. Many plant and animal species, for example, are able to move short distances between areas of habitat. Historically suburbs had regular public and private squares set amongst densely developed terraces. The development of Green Network Stepping Stones can provide incomplete corridors linking larger areas of greenspace. This could include the planting of street trees, improved roadside verges or garden improvement.
- It is likely that there will always be some **isolated greenspaces** which are difficult to connect to the wider Green Network. While these spaces function in a different manner, they still provide considerable benefits to local communities. The role of isolated spaces in meeting a localised need within communities should not be underestimated or ignored.

Green Network Cores/Hubs, Corridors and links, and stepping stones may be comprised of any number of types of greenspace as defined in PAN 65 ‘Planning and Open Space’.

2.3 Policy Context and Rationale

Often the difficulty for practioners, whether planners, land managers or developers, is to interpret the wealth of national policy and guidance into locally relevant policy and guidance, but more importantly, into delivery on the ground in the form of quality places in which people will want to live, work and spend their leisure time.

This "golden thread" of national policy into local delivery is what this document seeks to help deliver by assisting local authorities to set locally derived and sensitive Green Network priorities which help to deliver the GCV Green Network - a regional component of the Central Scotland Green Network CSGN (a National Development) as set out in National Planning Framework 2.

The hierarchy of policy context within which the Green Network should be delivered is outlined below.

2.3.1 Scottish Policy Framework

Scottish Planning Policy (SPP)

Scottish Planning Policy (SPP) is the statement of the Scottish Government's policy on nationally important land use planning matters and supersedes the previous individual documents.

Of particular relevance to the delivery of the Green Network are the sections relating to the preparation of Development Plans, Development Management and a number of the individual subject policies including:

Open Space and Physical Activity

"Green networks which provide opportunities for physical activity and access to the outdoors, and increase accessibility within settlements and to the surrounding countryside, should be promoted and safeguarded through the development plan"

Landscape and Natural Heritage

"A strategic approach to natural heritage...linked together in integrated habitat networks can make an important contribution to...biodiversity"

"Planning Authorities should seek to prevent further fragmentation and isolation... and identify opportunities to restore links"

Flooding and Drainage

"Water courses should not be culverted as part of a new development…and exiting culverts should be opened where possible. In all cases opportunities for habitat restoration or enhancement should be sought."

National Planning Framework (NPF2)

National Planning Framework 2 lays out the spatial development of Scotland to 2030. It recognises that Strategic Planning for the city regions:

*"provides the opportunity to develop extensive **green networks** connecting our inner urban areas with their surrounding rural environments, providing a wide range of social, health and environmental benefits".*

It identifies the Central Scotland Green Network as one of fourteen "National Developments" in recognition that its delivery "offers the opportunity to effect a step change in environmental quality, woodland cover and recreational opportunities. It will make Central Scotland a more attractive place to live and do business, help to absorb CO2 and promote healthier, more active lifestyles"

NPF2 recognises that the Glasgow and Clyde Valley Green Network Partnership is delivering this National Development in the west Central Belt by "taking forward a programme of greenspace enhancement designed to promote healthier lifestyles, better environments, greater biodiversity, stronger communities and economic opportunity."

The value of the work to date on delivery of the Central Scotland Green Network has been recognised by its continued inclusion in NPF 3.

Other National Policy and Strategy and Documents

Other national policy and strategic documents of particular relevance to the GN Programme include:

- Designing Places (Scottish Government 2008)
- Designing Streets (Scottish Government 2010)
- People and Places : Regeneration Policy; (Scottish Government 2006)
- Closing the Opportunity Gaps; (Scottish Government 2007)
- Scottish Forestry Strategy; (Forestry Commission Scotland 2006)
- Scottish Biodiversity Strategy; (Scottish Government 2004)
- Smart, Successful Scotland; (Scottish Government 2001)
- Green Jobs Strategy. (Scottish Government 2005)
- Equally Well (Scottish Government 2008)
- Good Places, Better Health (Scottish Government 2008)

2.3.2 Regional Policy Framework

Strategic Development Plan

Supporting the Strategic Community Plan, the GCV Strategic Development Plan (SDP) provides an overarching planning framework for the development of infrastructure across the region. The SDP supersedes the 2006 Joint Structure Plan and is a much more focussed document representing priorities and opportunities spatially. As with the earlier Joint Structure Plan delivery of the GCV Green Network remains a cornerstone of the SDP.

The SDP proposed, based on GIS analysis, 14 geographical areas across the GCV where strategic opportunities exist to deliver the Green Network. These 14 "hotspots" will in due course require to be reflected in the eight respective GCV Local Development Plans.

The development of this report with Glasgow City Council will apply the SDP methodology to the local authority scale in order to identify local Green Network Opportunities.

2.3.3 Local Policy Framework

In line with new planning policy, Glasgow City Council (GCC) has to prepare a Local Development Plan (LDP) which reflects the priorities identified in the SDP. The starting point for this process is the gathering of evidence, preparation of the Monitoring Statement and the identification of the key issues, priorities and opportunities in a Main Issues Report.

The new style LDP will therefore require to incorporate policies which seek to ensure a robust and defensible Green Network and, in Glasgow's case, supported by Green Network Supplementary Guidance. This document will help inform the development of those policies and guidance.

2.4 The Role of Planning in Delivery

The planning system is one of the most important means of realising the Green Network vision. It can ensure that development respects and enhances the Green Network. It can provide the broader spatial perspective to co-ordinate individual actions in order to create quality places in which to live and work.

It can help ensure that the right Green Network components, of the right quality, are created in the right place, and that the widest possible range of benefits result.

The following principles should be considered by planners to help ensure that development of the Green Network is embedded within the planning system.

Local Development Plans should, based on spatial and qualitative analysis, guide local delivery of the Green Network

The GCV Strategic Development Plan, based on detailed spatial analysis, sets out Green Network opportunities for the city region. The output is based on the analysis of four datasets: habitat network opportunities; access network opportunities; greenspace and core path improvement opportunities and strategic development areas.

Using Glasgow City specific datasets, such as open space audits, a similar analytical process has been used to inform local priorities and Local Development Plan policies and associated Supplementary Guidance.

Developments should contribute to delivery of the Green Network

The greatest Green Network benefits are likely to be achieved when it is considered as an integral part of the development process, rather than dealt with as an afterthought once other elements of the scheme have become 'fixed'. Additionally, it is likely to be more efficient use of resources to 'build in' Green Network components rather than 'retrofit' them once the built environment has been completed.

Carefully designed development which considers Green Infrastructure: water management; habitat networks; access networks; green and open space and stewardship over time, at the outset and as equal considerations to other development requirements such as road layouts, have an important role to play in delivery of the Green Network.

Planning should promote the Green Network as a key contributor to place-making

Place-making is central to the environmental, social and economic transformation of Glasgow and the Clyde Valley with planning being the key mechanism through which the agenda can be realised.

The integration of the Green Network into the fabric of new development, and retrospectively into the existing urban environment, reflecting local distinctiveness and the needs and aspirations of local people, will be a key contributor to the delivery of the place-making agenda.

Planning should promote the development of multi-functional Green Networks

The clustering of uses and activities within Green Network nodes creates vibrant, diverse and exciting spaces. The planning system should promote the use of the Green Network for: naturalised water management (SUDS); habitat creation and enhancement; safe off-road access around and between communities; formal and informal recreation; environmental education; art and cultural heritage.

Creating multi-functional spaces which people want to visit and use can deliver multiple health and social benefits.

Consider long term stewardship of the Green Network from the outset

"Delivering better places takes time and demands long-term commitment to place quality"
(*Delivering better places in Scotland, Scottish Government 2011*)

Many of the problems associated with poor quality of Green Network components stems from lack of consideration and investment in revenue funding leading to an unsustainable investment/decline cycle. The planning process can encourage, and if need be enforce, solutions which take future management and maintenance mechanisms and financing into account at the outset by using planning conditions, framework agreements and design codes.

3 Methodology

The methodology which has been applied to the identification of Green Network Opportunities Mapping in Glasgow City was originally developed in response to guidance from planners for the need to represent strategic Green Network opportunities spatially and graphically within the GCV Strategic Development Plan (SDP) Main Issues Report (MIR).

Although originally conceived to identify strategic opportunities across the Glasgow City Region it was recognised from the outset that the resultant data could also be interrogated at a finer resolution for more localised opportunities.

Additionally, by replacing regionally based datasets with Glasgow City specific datasets, outputs which were more relevant and useful to the local authority context could be produced. The resultant outputs will be used by Glasgow City Council in two ways:

a. **To identify local priorities for action and what that action might be to deliver maximum and multiple benefit**

b. **To inform the development of LDP Green Network policies, Green Network Supplementary Guidance and Glasgow's Open Space Strategy**

3.1 Approach

The development of the methodology began by seeking to address the following questions:

1. What Green Network resource currently exists and where are the opportunities to improve it?

2. Where are the priority areas to expand the Green Network for?

    a. Biodiversity habitat networks?
    b. Public access to greenspace?

3. Where are the major areas of land use change and social need?

A series of datasets were identified which could provide answers to these questions both at the regional scale for the SDP and at a local scale for Glasgow City.

3.1.1 Datasets

The GIS based analysis considered four data layers which collectively spatially represent the GCV Green Network, key strategic locations where future land use change present opportunities for delivery and where opportunities exist for the expansion of connectivity for people and wildlife. The data layers were:

1. Existing Greenspace Provision, Path Network and Potential for Enhancement

SDP	Glasgow
GCV wide greenspace dataset based on PAN 65 typologies produced in 2006	GCC quantitative and qualitative open space audit
Core Path Plans from each of the eight GCV local authorities. Datasets weighted to reflect potential for improvement.	GCC Core Path Plan

2. Strategic Biodiversity and Access Priorities

SDP	Glasgow
GCV wide Integrated Habitat Network priorities modelling	GCC wide Integrated Habitat Network priorities modelling
Strategic Outdoor Recreation & Active Travel Opportunities dataset produced by Central Scotland Green Network showing supply mapped against demand and need.	GCC wide access to open space priorities modelling

3. Strategic Development Opportunities, Land Use Change Opportunities & Areas of Social Need

SDP	Glasgow
Flagship Regeneration Areas and Community Growth Areas across the GCV	GCC Development and Regeneration Sites
Social Indices of Multiple Deprivation (SIMD)	Not used in the GCC analysis

3.1.2 Weighting of Datasets

In order to rank and prioritise the GN opportunities identified by each of the datasets, and to aid the GIS analysis, a system of weighting was applied. The weightings, and the rationale for them, as applied to the Glasgow City datasets are detailed below:

Existing Greenspace and Core Paths

The Green Network is in essence a range of types of green and open space and the paths and links which connect them. In 2013 Glasgow City Council undertook an audit of its accessible, multifunctional open spaces which detailed the quantity and quality of those spaces according to their PAN 65 typology. When combined with the local authority's Core Path Plans, these two datasets can be taken as a good representation of the current useable, multifunctional Green Network.

However, not all greenspace presents the same opportunity for enhancement or increased functionality and therefore delivery of the Green Network. Weighting was therefore applied to the Open Space Audit qualitative scores to reflect the differing potentials as follows:

Sites scoring: 65-74% were weighted as 1, 50-64% were weighted as 2, 49-34% were weighted as 3

Core paths were taken as having limited ability to deliver more to the GN and therefore weighted as 1 (although it is recognised that some paths may fall short of a desirable quality).

Strategic Biodiversity Opportunities

The Integrated Habitat Network (IHN) Model uses GIS to spatially represent grassland, wetland and woodland habitats and the ability of species to move between those habitats through the adjacent landscape.

The IHN Model represents the current status of habitats and how they are 'functionally connected'. However, it doesn't show where best effort and resources should be targeted to increase the size and number of habitat networks.

New software, employing a series of assessment criteria, was applied to a 100m grid of cells covering Glasgow City and used to identify locations where intervention would yield the greatest benefit in terms of improving habitat connectivity.

The top scoring 35% of assessment cells were weighted as 3 i.e. a high opportunity, in the final analysis.

Strategic Access Opportunities

The Partnership has recently developed the in-house capability to undertake detailed Network Analysis based on the Ordinance Survey Integrated Transport Network dataset. The analysis uses a distance threshold of 400m from the access points to open space. 400m, or a 5 minute walk for the average person, is generally accepted as a distance which most people are will to walk to reach a destination such as an open space. Willingness to walk drops off after this distance.

Running the analysis shows those streets and areas which are "connected" to the Glasgow's multifunctional open spaces. However, for the purpose of this exercise we want to know those streets and area which are "disconnected". To achieve this the output showing areas within the

400m waking network was in effect subtracted from a dataset showing Glasgow's urban area to give the inverse of the connected areas i.e. those areas out with the 400m network.

What's required for the access layer of the Opportunities Mapping exercise is a dataset showing which residential areas don't have good access to open space. To achieve this a further step was included to remove all business, retail and industrial areas. The resultant dataset can be taken as a fair representation of those residential areas within Glasgow which are more than 400m from a multifunctional open space.

All residential areas identified as being out with the 400m network were weighted as 3 in the final analysis.

Strategic Development Opportunities & Areas of Need

In consultation with Glasgow City Council Officers, a series of development and regeneration sites were identified as having the potential to deliver the Green Network.

These sites were weighted as 3 in the final analysis i.e. they taken to offer a high potential for delivery.

The SDP analysis used the Social Indices of Multiple Deprivation (SIMD) as a proxy for social need. However, in discussion with GCC Officers it was decide to restrict the analysis to the purely physical, land use based aspects of the Green Network. Therefore SIMD was not used in the Glasgow analysis.

3.2 Analysis and Outputs

GIS analysis was employed to overlay the weighted datasets detailed above and to identify geographical locations across the city where a strong correlation exists between them. These areas of correlation were taken as locations where opportunities exist to deliver multiple Green Network benefits through the targeting of effort and resources.

The outputs from the analysis were map based spatial representations of the highest scoring clusters of 100m cells across Glasgow City. The individual outputs from the GIS analysis are GIS layers showing:

a. Combined analysis of the land use layers outlined above identifying areas of greatest opportunity to augment and enhance Green Network (Appendix 1)

b. The top priorities for access to open space enhancement (Appendix 2)

4 Interpretation of Analysis

4.1 Overview

Although the images below and in the appendices show the analysis outputs at a local authority wide scale it should be noted that the underlying data can be viewed at any resolution and different thresholds may be set for viewing the data if a more detailed breakdown is required for a particular area.

Areas where there are clusterings of cells, particularly the high scoring cells shown in red, can be taken as geographical locations where the opportunity exists to deliver multiple Green Network benefits. The outputs are interpreted in more detail below.

4.2 Green Network Land Use Analysis

Figure 1 below (also included as Appendix 1) shows the strategic Green Network Opportunities output, based on the land use datasets, identifying those areas across Glasgow City which have the potential to deliver multiple benefits in return for investment of effort and resources.

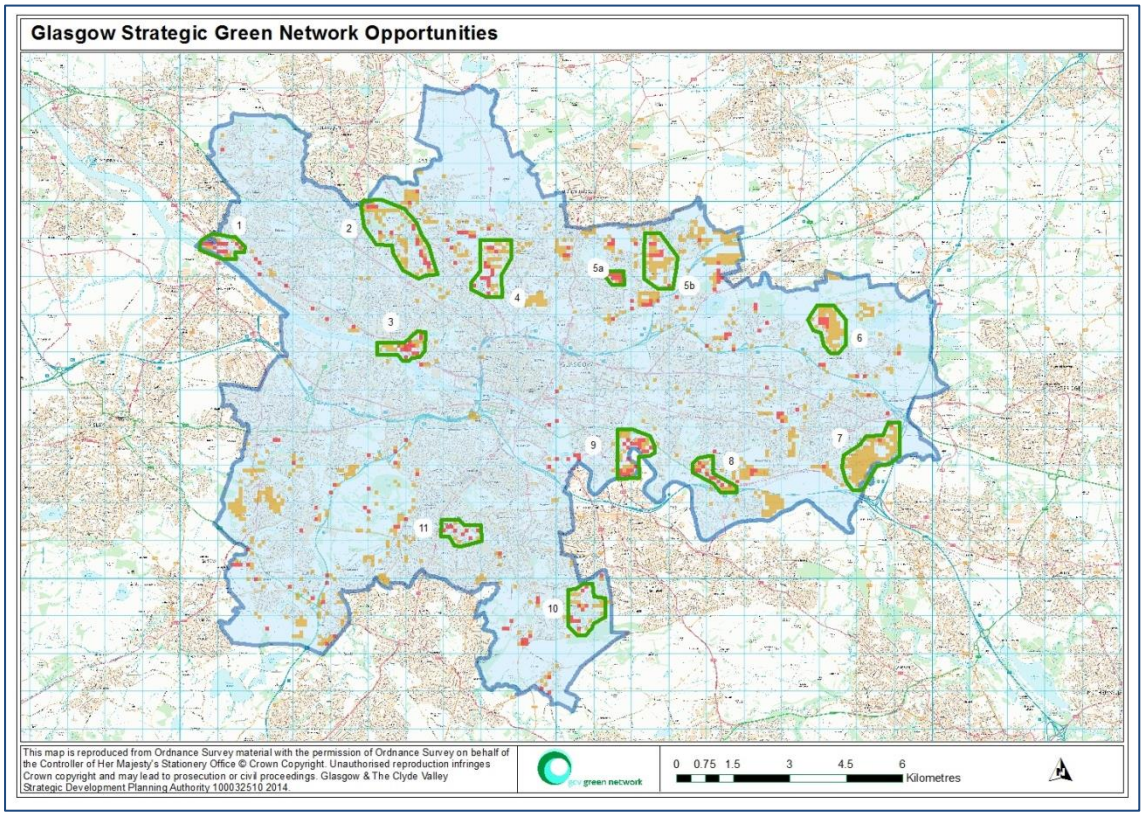

Figure 1-City-wide Strategic Green Network Opportunities

Note: For the 100m x 100m cells upon which the analysis is based to score in the **very high opportunity** band (shown in red), they must have at least maximum scoring correlation between two of the datasets plus some correlation with a third dataset. These will be referred to as very high opportunities. For the cells to score in the **high opportunity** band (shown in orange) they must have a maximum scoring in at least two datasets.

260 cells score in the **very high opportunity band** and **950** cells score in the **high opportunity band** with significant clustering of activity around:

1. **Yoker/Dumbarton Road Corridor**
2. **Dawsholm/River Kelvin Corridor**
3. **Lower River Kelvin Corridor**
4. **Ruchill/Firhill**
5. **Barmulloch**
    a. **Broomfield Road**
    b. **Barmulloch Park**
6. **Gartloch Road, Easterhouse**
7. **Bailleston/Broomhouse**
8. **Auchenshuggle/London Road Corridor**
9. **Dalmarnock, Clyde Gateway**
10. **Machrie Road/Barlia Terrace/Ardencraig Road, Castlemilk**
11. **Langside/Battlefield/Newlands**

4.3 Specific Green Network Opportunities

The specific Green Network Opportunities which relate to each of the eight identified clusters are:

1. **Yoker/Dumbarton Road Corridor**

    - The area is identified as being deficient in access to useable, multifunctional open space. The potential exists to address the deficit through local developmental opportunity.

    - The area is also highlighted for potential enhancements to neutral grassland and woodland habitat networks which could be delivered through new or existing open space improvements or through development. The location falls within a woodland creation priority hotspot identified by SNH based on the Integrated Habitat Network (IHN) Model.

2. **Dawsholm/River Kelvin Corridor**

- Much of the area around Cleveden Road is identified as being deficient in access to useable, multifunctional open space. Limited potential exists to address the deficit through local developmental opportunity adjacent to the location.

- Several open spaces to the north of the River Kelvin, including Dawsholm Park, are identified as having the potential to deliver more and planning gain from local development may present the opportunity to address this.

- The area is also highlighted for potential enhancements to neutral grassland and woodland habitat networks which could be delivered through new or existing open space improvements or through development.

3. **Lower River Kelvin Corridor**

- Much of the area is identified as being deficient in access to useable, multifunctional open space. The potential exists to address the deficit through local developmental opportunity.

- Existing open space is identified as having the potential to deliver more and planning gain from local development may present the opportunity to address this.

- The area is also highlighted for potential enhancements to neutral grassland and woodland habitat networks which could be delivered through new or existing open space improvements or through development.

4. **Ruchill/Firhill**

- The area to the north of Bilsland Drive is identified as being deficient in access to useable, multifunctional open space. Limited potential exists to address the deficit through local developmental opportunity adjacent to the location.

- The area is also highlighted for potential enhancements to neutral grassland (either side of the rail line), wetland (around the firhill basin) and woodland (across the location) habitat networks which could be delivered through new or existing open space improvements or through development.

5. **Barmulloch**

   a. **Broomfield Road**

- Cluster is focussed on a low scoring open space which has the potential to deliver more to local people. The potential exists to use planning gain from local development to enhance the space.

- The area is also highlighted for potential enhancements to woodland habitat networks which could be delivered open space improvements.

b. Barmulloch Park

- Much of the area to the north of the location is identified as being deficient in access to useable, multifunctional open space. The potential exists to address the deficit through local developmental opportunity.

- Barmulloch Park is identified as having the potential to deliver more to local people. The potential exists to use planning gain from local development to enhance the park.

- Barmulloch Park is also highlighted for potential enhancements to neutral grassland, acid grassland, wetland and woodland habitat networks which could be delivered through new or existing open space improvements or through development. The park falls within woodland and neutral grassland creation priority hotspot identified by SNH based on the IHN Model.

6. Gartloch Road, Easterhouse

- This cluster is identified largely on the basis of the opportunity the planned development represents for delivery of the Green Network in the area through open space provision, access links and habitat creation.

- In particular the area is highlighted for potential enhancements to neutral grassland, acid grassland, wetland and woodland habitat networks which can be delivered through the planned development. The area falls within woodland, acid grassland and neutral grassland creation priority hotspot identified by SNH based on the IHN Model.

7. Bailleston/Broomhouse

- This cluster is identified largely on the basis of the opportunity the planned development represents for delivery of the Green Network in the area through open space provision, access links and habitat creation.

- In particular the area is highlighted for potential enhancements to neutral grassland, acid grassland, and woodland habitat networks which can be delivered through the planned development. The area falls within woodland, acid grassland and neutral grassland creation priority hotspot identified by SNH based on the IHN Model.

8. Auchenshuggle/London Road Corridor

- Much of the area is identified as being deficient in access to useable, multifunctional open space. Limited potential exists to address the deficit through local developmental opportunity.

- The area is also highlighted for potential enhancements to neutral grassland and woodland habitat networks which could be delivered through new or existing open space improvements or through development. The location falls within neutral grassland and woodland creation priority hotspot identified by SNH based on the IHN Model.

9. Dalmarnock, Clyde Gateway

- This cluster is identified largely on the basis of the opportunity the planned development represents for delivery of the Green Network in the area through open space provision, access links and habitat creation.
  Note: The development dataset used in the analysis showed the Athlete's Village as an opportunity however, it is recognised that this is now developed out and therefore the opportunity may no longer exist and/or has already been realised through the development.

- The area is also highlighted for potential enhancements to neutral grassland and woodland habitat networks which could be delivered through new or existing open space improvements or through development. The location falls within a woodland creation priority hotspot identified by SNH based on the IHN Model.

10. Machrie Road/Barlia Terrace/Ardencraig Road, Castlemilk

- This cluster is based largely on open space which has the potential to deliver more correlating with development sites which may provide the mechanism and/or funding to enhance the spaces.

- The area is also highlighted for potential enhancements to neutral grassland and woodland habitat networks which could be delivered through new or existing open space improvements or through development. The location falls within the woodland creation priority hotspot identified by SNH based on the IHN Model.

11. Langside/Battlefield/Newlands

- The majority of the area is identified as being deficient in access to useable, multifunctional open space. Given the nature of the area, however, it is difficult to see how new space could be provided to meet the deficit. The solution may therefore include ensuring that walking routes to the nearest spaces are attractive, useable and "permeable" encouraging residents to walk further to access open space.

- The area is also highlighted for potential enhancements to neutral grassland and woodland habitat networks largely based around the White Cart corridore

Note: Opportunities may exist to enhance the quality of core paths throughout the strategic locations dependent on current condition of paths for which no qualitative data currently exists.

5 Analysis of Individual Datasets

The analysis above describes the outputs as an aggregation of the 4 baseline datasets however, the individual datasets when viewed and manipulated singly provide extremely valuable information.

The individual datasets outputs should be used to guide decisions on habitat creation and access enhancement at a strategic local authority scale, at a neighbourhood scale and at a site scale.

The habitat dataset including woodland, grassland and wetland, is too complex to describe fully in this report. Partnership officers however are available to work with partners to apply the outputs to specific projects and sites at a range of scales.

The Access to Open Space dataset identifies communities which are currently at a deficit in terms of access to multifunctional open space and is an extremely useful tool in targeting effort and resources. It is described in more detail below.

5.1 Access Priorities

Figure 2 below shows those residential areas of the city which are more than 400m from a multifunctional open space (also included as **Appendix 2**)

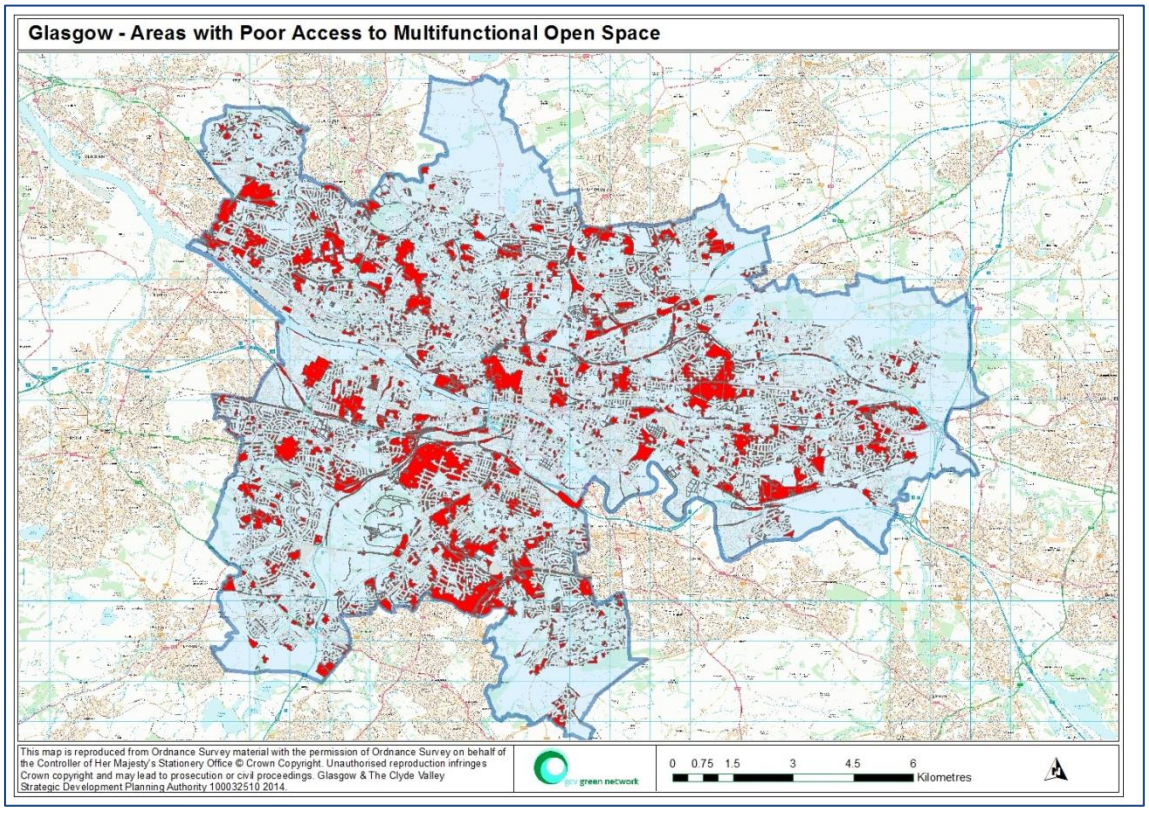

Figure 2-Areas with Poor Access to Multifunctional Open Space

This output should be used to guide the targeting of development opportunity, planning gain or resources towards these areas to, wherever possible, connect them to the Green Network.

It is recognised that in some areas the opportunity won't exist to create new greenspace or path networks to connect communities. In such circumstances it is important to ensure that the spaces which are closest to those communities are of a sufficient quality that people would be willing to walk or cycle further to reach them. Consideration could also be given to "greening" the on-road journey to the spaces by adopting a Designing Streets (Scottish Government 2010) approach using measures such as street trees, cycle lanes and signage and prioritising pedestrian movement. These measures would make the local environment more permeable for non-vehicular movement.

The breadth of the access enhancement opportunities identified through analysis is too extensive to be fully detailed in this report. The Green Network Partnership Executive Team would be happy to work with Glasgow City Council Officers to develop a more detailed analysis of the opportunities.

6 Conclusions

6.1 Glasgow City Strategic Green Network Opportunities

The GIS based analysis used to identify Strategic Green Network Opportunities was originally developed for, and applied to, the Glasgow and Clyde Valley Strategic Development Plan. Subsequent modification for application to Local Development Plans has resulted in a robust and powerful decision support tool.

The Glasgow City outputs demonstrate extensive scope for delivery of strategic Green Network priorities through the planning process and the targeting of resources. The first phase of the analysis identified eight locations across Glasgow City where intervention has a high potential to deliver multiple Green Network benefits through improved infrastructure. These strategic opportunity areas are:

1. **Yoker/Dumbarton Road Corridor**
2. **Dawsholm/River Kelvin Corridor**
3. **Lower River Kelvin Corridor**
4. **Ruchill/Firhill**
5. **Barmulloch**
    a. **Broomfield Road**
    b. **Barmulloch Park**
6. **Gartloch Road, Easterhouse**
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The specific opportunities for each of the areas are detailed in the Section 4 of the report. A strong underlying theme across the areas is relatively poor access to open space compounded by many amenity open spaces underperforming in terms of quality and functionality. Much of this is undoubtedly due to the topography of Glasgow City's urban areas which are often on fairly steep north facing ground with gullies and river courses creating east/west barriers to movement.

Glasgow City has been and continues to be the focus of significant regeneration and the planning system should play a key role in ensuring that development and redevelopment are used as a vehicle to address the issues and realise the opportunities outlined on this report.

Recommendation 1. **Use outputs from Green Network Opportunities Mapping to inform the delivery of Green Network benefits through the planning process in Strategic Opportunity Areas across Glasgow City.**

6.2 Glasgow City Green Network Expansion Priorities

Sections 5 of the Report discusses the value of using the individual datasets to inform expansion of the Green Network in terms of habitat and access.

The Integrated Habitat Network Priorities and Access Priorities outputs can be interrogated at a range of scales: local authority wide, settlement wide or on a site by site basis and should be used to inform the work of Biodiversity, Access and Greenspace Officers as well as Policy and Development Management Planners.

More detailed analysis of the datasets and application of the findings would help ensure delivery of the Green Network is integrated into:

1. Complimentary strategies e.g. Open Space, Access and Biodiversity Strategies,
2. Land management decisions e.g. the design and maintenance of open space,
3. Funding applications e.g. Scottish Rural Development Programme, Central Scotland Green Network Development Fund.

The GIS analysis has provided extremely detailed outputs which are too complex to fully elaborate within this Report. The Green Network Partnership Executive Team will continue to work with Glasgow City Officers to interpret and apply the outputs.

Recommendation 2 **Further analysis and application of the Integrated Habitat Network and Networks for People Priorities Outputs to inform delivery of the Green Network in Glasgow City.**

6.3 Future Applications of Outputs

6.3.1 Local Development Plan

The Central Scotland Green Network is a National Development identified in National Planning Framework 2 and as such its delivery has to be addressed in Local Development Plans.

Glasgow City's Main Issues Report (MIR) sets out a vision for future development across the local authority area. This document recognised the importance of the Green Network and area renewal in Glasgow City, as well as the protection of locally important areas of open space.

The Green Network Opportunities Mapping outputs should now be used to inform the writing of Local Development Plan policies which define, protect, expand and enhance Glasgow City's Green Network, both as a valuable local resource and as part of the Central Scotland Green Network.

Recommendation 3 **Use outputs From Green Network Opportunities Mapping and supporting datasets to develop robust and defensible Local Development Plan Green Network Policies**

6.3.2 Masterplanning and Development Proposals

The integration of Green Infrastructure into masterplans and development proposals should be considered at the outset of the development process. The Green Network Opportunities Mapping and the Expansion Priorities outputs should used in the early stages to ensure delivery of the Green Network is put on an equitable footing with other developmental considerations.

It is important to emphasise that the outputs should not be viewed as constraints to the development planning process but rather decision support tools which can assist in finding an optimal solution for built and green infrastructure.

Recommendation 4 **Use outputs from IHN and Access Priorities Mapping to inform the early stages of masterplanning and development proposals**

6.3.3 Development Management

When considering planning applications Development Management planners have a range of issues to consider and ensure are reflected in site proposals. GIS datasets play an important supporting role in the process often in the form of "constraints" maps. The Central Scotland Green Network is a National Development identified in National Planning Framework 2, and therefore its delivery must also be considered when appraising planning applications.

The outputs from the Green Network Opportunities Mapping, and the individual datasets which underlie the analysis, should be used in to inform Development Management decision making and the targeting of planning gain. However, unlike other planning considerations, their use should highlight opportunities for delivery of the Green Network through development and not be viewed as a constraint to development.

To facilitate use in Development Management decisions, the output layers should be accessible to planners Glasgow City's GIS system.

Recommendation 5 **Mainstream the use of Green Network Opportunities Mapping and supporting dataset outputs in Development Management to identify Green Network opportunities and the targeting of planning gain**

6.3.4 Green Network Strategy Development

The Green Network Partnership has produced Green Network Strategies for a range of locations across the Glasgow and Clyde Valley. The purpose of the Strategies is to develop a detailed understanding of spatial, social and economic interactions of a given area and to produce a strategic Green Network response which seeks to address those factors.

The Glasgow City analysis identified eleven strategic locations across the local authority area for delivery of the Green Network. The production of Green Network Strategies for these locations would ensure that the full range of potential benefits would be delivered by any interventions. As well as addressing the delivery of Green Network infrastructure, Strategies would integrate the health, social and economic agendas into proposals.

Recommendation 6 **Develop Green Network Strategies for the Strategic Opportunities Areas identified through the Green Network Opportunities Mapping**

6.3.5 Targeting of Resources

Public bodies have an obligation to deliver value for money and are increasingly expected to deliver an improving service with decreasing budgets. The effective targeting of resources therefore is more important than ever.

The Green Network Opportunities Mapping outputs provide a tool to target those limited resources effectively and for maximum return on investment. The outputs should be used to inform prioritised action planning and budget allocation for delivery of Green Network priorities.

Recommendation 7 **Use Green Network Opportunities Mapping and Habitat and Access Expansion Priorities outputs to inform the targeting of budgets and action on the ground**

6.3.6 Single Outcome Agreements

Single Outcome Agreements (SOA) set out the key outcomes and targets that local authorities and their partners commit to achieving in agreement with The Scottish Government. It can be difficult to identify appropriate targets in moving towards Outcomes and ways to measure whether the targets have been achieved.

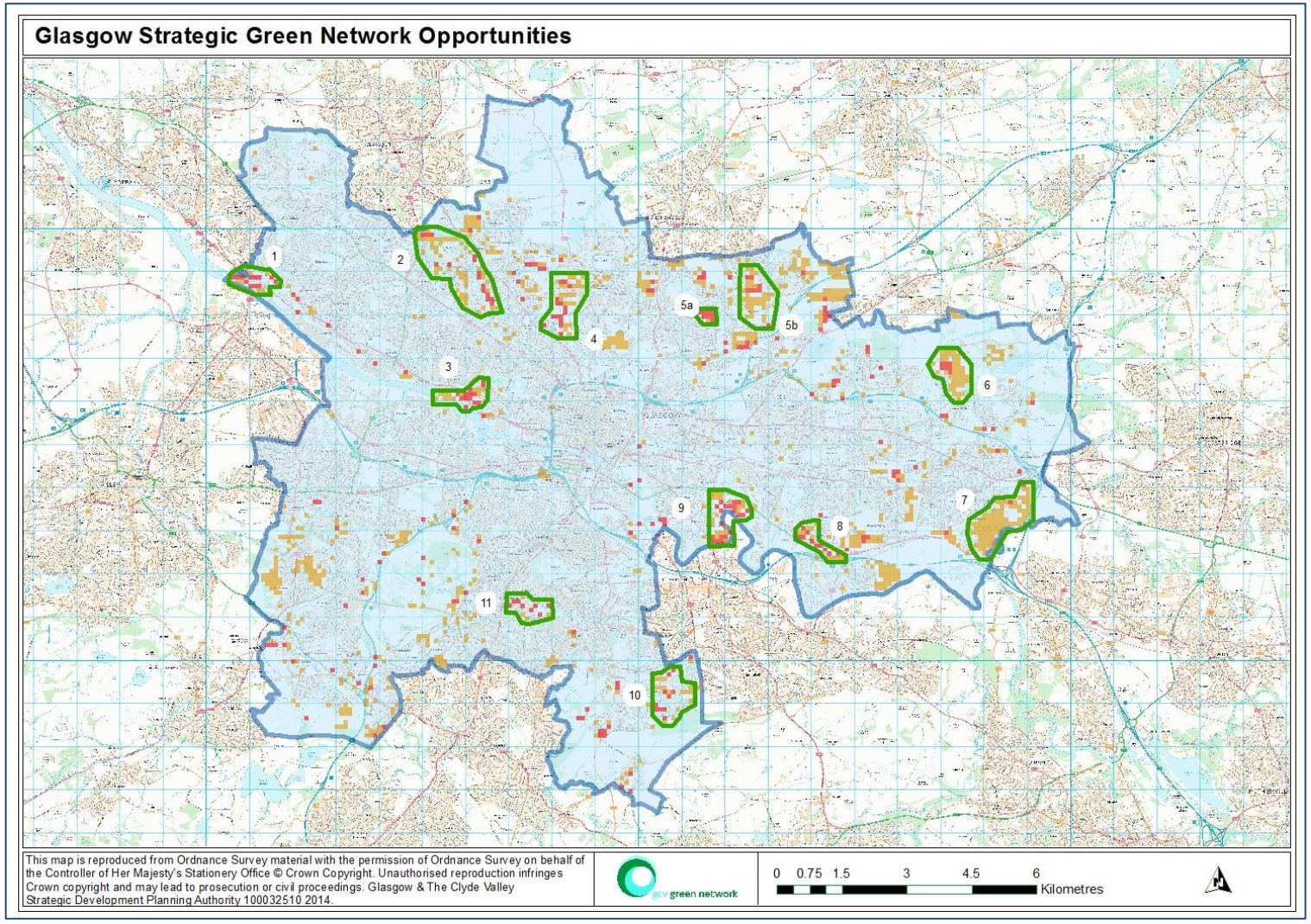
The Integrated Habitat Network (IHN) Model provided detailed and measurable data on ecological connectivity, a cornerstone of sustainable management of the natural environment and mitigation against species ability to adapt to the effects of climate change. The model should be utilised to set and measure the success of meeting SOA targets on management of the natural environment.

The Access Model also has the potential to be used in setting accessibility targets for access to open space and natural environments and should be investigated more fully.

Recommendation 8 **Use IHN Model to set and monitor SOA targets and investigate use of N4P model to set accessibility targets**

The GCV Green Network Partnership Executive Team would welcome the opportunity to work with Glasgow City Council in the future to offer advice and technical support for all of the above.

Appendix 1 – Glasgow City Strategic Green Network Opportunities



Appendix 2 – Glasgow City Access to Multifunctional Open Space - Communities in Deficit