Implementing the Central Scotland Green Network: Developing best practice within the Edinburgh City Region

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Zusammenfassung

Dieser Aufsatz untersucht die frühe Umsetzung des Central Scotland Green Networks (CSGN) in der Edinburgh City Region und stützt sich weitgehend auf die Arbeiten der Lothians und Fife Green Network Partnership (LFGNP), eine regionale Dachorganisation von fünf lokalen Behörden im Osten des CSGN Bereichs. Der Schwerpunkt des Artikels liegt auf der Edinburgh City Region. Zudem werden aber auch in einem weiteren Kontext grüne Netzwerke innerhalb Europas betrachtet. Ziel ist, breit anwendbare Prinzipien grüner Netzwerke zu identifizieren, die auf schottischen bewährten Praktiken basieren und von der strategischen und politischen Ebene bis hin zur erfolgreichen Etablierung von Netzwerken vor Ort reichen.

Abstract

This paper evaluates the early implementation of the Central Scotland Green Network (CSGN) within the Edinburgh City Region and draws extensively on the work of the Lothians and Fife Green Network Partnership (LFGNP), a regional umbrella body representing five local authorities in the East of the CSGN area. Whilst the primarily focus of the paper is on the Edinburgh City Region, it will also consider the wider context of green networks within Europe. It will aim to identify broadly applicable principles for delivery of green networks based on Scottish best practice, from strategic and policy level through to successful establishment of networks on the ground. The significance of partnership structures and framework development, with regard to their composition, function and relationship to wider strategic and policy structures will be considered. These structures include the CSGN itself, development planning policies and specific planning guidance including regional Indicative Forestry Strategies. The role of toolkits and habitat data will be considered, particularly Integrated Habitat Network (IHN) modeling using Forest Research's BEETLE mode (WATTS et al. 2005).

The paper will evaluate how projects have been identified and prioritised using strategic processes and toolkits. Specific examples of green network projects in the LFGNP area will then be highlighted including

   i)   River corridor management plans
   ii)   Integration of protected landscapes within wider networks
   iii)   Habitat creation within urban greenspaces
   iv)   Green infrastructure within Core Development areas
   v)   Greening of vacant and derelict land

Through these examples, the necessary steps and processes will be teased out from survey, evaluation, resource acquisition, stakeholder consultation, management planning and finally moving through to implementation. Conclusions will stress the requirement for a single partnership led vision and the need for top down strategy to be balanced with bottom up action. This action needs to be backed up with quality data and robust tool kits. To secure quick wins, the importance of a "hands on" incentive driven approach will be emphasized.

1. Introduction and context to Green Networks

1.1 Definition of Green Network

The term "green network" is a broad one which is extensively used within Scotland to define "a set of connected areas of green space and habitats such as parks, paths and woodlands within an urban or suburban region which provide a range of social, ecological and economic benefits such as increasing the quality of life within an area, and creating sustainable communities." (SCOTTISH NATURAL HERITAGE 2011). For practical purposes here, the terms "green network" and "green infrastructure" are considered interchangeable; however, the term "green network" is considered to be more easily understandable to non specialists as it emphasises the significance of connections between adjoining greenspaces within a wider continuum.

Scottish Natural Heritage also clarify differences between green networks and habitat (ecological networks) noting that, "Habitat and green networks have some features and objectives in common, but they have different primary aims. A green network has multiple objectives, often with a primary aim of improving the environment for people, and usually to help to improve the economic status of an area, by making it a more attractive place to live and work. However, a habitat network or an integrated habitat network may be a key component of a green network." (SCOTTISH NATURAL HERITAGE 2011).

Natural England observes that 'Green Infrastructure is a strategically planned and delivered network comprising the broadest range of high quality green spaces and other environmental features. It should be designed and managed as a multifunctional resource capable of delivering those ecological services and quality of life benefits required by the communities it serves and needed to underpin sustainability." (NATURAL ENGLAND 2009)

1.2 European examples and comparisons

Initial scoping work carried out to evaluate potential for developing the Central Scotland Green Network considered a range of existing European examples of green networks at varying spatial scale. A report entitled "Central Scotland Green Network; Defining the Concept" (LAND USE CONSULTANTS 2008) proposed three broad models for green network development. These were:

i) "Scandinavian" model: This draws upon an intrinsic attachment to natural heritage in Scandinavian (and Dutch culture) based around using green corridors and spaces to shape patterns of development. Examples included the Copenhagen "Finger" Plan, The Stockholm Green Structure Plan and the Netherlands Randstat Urban Area.

ii) Post industrial model: This model utilises the creation of "green structure" as a framework for large-scale regeneration through mixed use development, leisure, culture and recreation provisions and comprehensive environmental improvement. The best known, and arguably most successful, example of this type is the Emscher Park in the Ruhr area of Germany.

iii) Environmentally led model: The final model emphasises protection of green structure through the establishment of a robust regulatory framework. This advocates protection of greenspace and habitats with compensatory provision where damage is likely to occur and utilizes developer contributions to assemble land for environmental improvement. Munich's "Grünplanung' (Green Structure Planning) is a good example of this type of model.

Although the approaches taken were different in each incidence, all succeeded in achieving a high level of integration of greenspace creation and management within the wider context of spatial planning. Key lessons for the CSGN learned from the European examples included (LAND USE CONSULTANTS 2008);

• The importance of local context for developing green networks which build upon existing structures and assets.

• The benefit of a strong overall concept which can be easily communicated and understood by a disparate range of audiences.

• The potential for policy instruments particularly with regard to the spatial planning system to embed green networks at their core and to secure additional benefits through maximising developer contribution.

• The importance of incorporating locally led projects within the network to promote stakeholder buy-in and tailored solutions.

• The potential of green networks to address multiple benefits which may evolve through time.

Another key aspect of green infrastructure is that it can be applied at all spatial scales. The European Commission held a workshop in March 2009 entitled "Towards a Green Infrastructure for Europe" which evaluated the priorities for building a green infrastructure at European level. This considered the various initiatives being taken forward by member states, the integration of these with spatial planning and existing networks of core habitat such as the Natura 2000 Network (SUNDSETH & SYLWESTER 2009). In addition many individual states have produced their own green infrastructure guidelines and have been taking forward action on the ground. The need to link policy and initiatives at the various spatial scales is seen as paramount for successful green network delivery, both locally and across the European Union.

2. Background to CSGN within Edinburgh City Region

2.1 The Central Scotland Green Network (CSGN)

The Central Scotland Green Network (CSGN) was launched in 2010 with the aim of changing the face of Central Scotland, through restoring and transforming the landscape. The CSGN covers nearly 10,000 km² (CSGN PARTNERSHIP BOARD 2011), and includes

19 local authorities, stretching from Ayrshire in the West to Lothians and Fife in the East (fig. 1). The area is home to 3.5 million people and includes the City Regions of Glasgow and Edinburgh, Scotland's two major urban areas. The CSGN was one of 14 National developments in the Scottish National Planning Framework 2 (SCOTTISH Government 2009).

The environment of the CSGN area shares many common characteristics. Landscape character has been determined largely by the underlying geology of the Midland Valley of Scotland. The Midland Valley provided extensive coal measures and oil shale deposits, the extraction of which fuelled Scotland's industrial revolution in the 19th Century. The subsequent decline of these heavy industries, including mining, iron and steel production has left a rich heritage within the area. However, significant negative impacts, including the scarring of the landscape and widespread industrial dereliction, have resulted.

The socio-economic profile of the area reflects this. There are high concentrations of multiple deprivation, particularly in West Central Scotland and associated with communities where traditional heavy industries have declined. Effected communities are characterised by high unemployment rates, low levels of educational attainment and poor access to public services. This also includes access to quality built and green environments.

Conversely within the CSGN area, there are significant growth areas including the major urban centres of Edinburgh and Glasgow and their associated satellite communities. These centres provide much of the region's employment, educational and economic potential. Growth targets within these areas have been revised significantly downward in the light of recent global economic recession.

The CSGN aspiration is to change the face of Central Scotland by restoring and improving the rural and urban landscape of the area. The Vision for Central Scotland is that:

"By 2050, Central Scotland has been transformed into a place where the environment adds value to the economy and where people's lives are enriched by it's quality" (CSGN PARTNERSHIP BOARD 2011).

With this in mind the CSGN aims to incorporate a varied range of habitats, green spaces, urban environments and natural capital assets. These include;

• Networks of natural and semi natural habitats, such as woodlands, hedgerows and peatland.

• Blue spaces including rivers, streams, ponds, wetlands, canals and sustainable urban drainage schemes (SUDs).

• Coastal habitats including rocky shores, cliffs, beaches and salt marshes.

• Greenspaces such as parks, public spaces, gardens and street trees.

• Path and cycle networks and green transport corridors.

• Green roofs and green walls in urban areas.

There is a strong presumption within CSGN that these elements need to be better integrated within grey infrastructure development through the creation of holistic approaches to planning at regional, local and master-planning stages. In this respect the aspirations of the CSGN are closely aligned with the Scottish Government's sustainable economic growth agenda; the aim being to better guide and integrate infrastructure development within wider environmental and sustainability parameters.
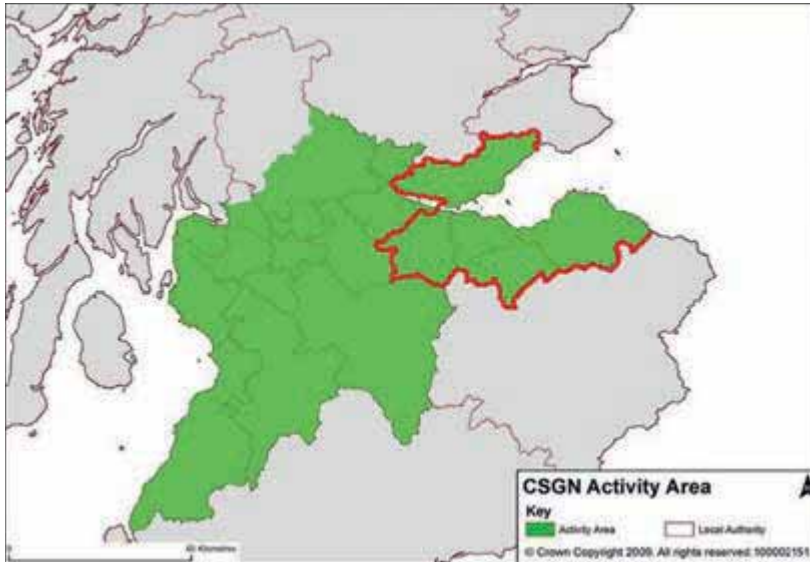
Fig. 1: The CSGN Area (green) indicating the extent of the Lothians and Fife Regional Partnership (red)

A partnership ethos is very much at the heart of LFGNP with co-ordinated action by communities, agencies and business being seen as the key to success. LFGNP functions aim to add value rather than duplicate the work of existing stakeholders through providing enhanced co-ordination of green network activity, particularly in the three areas of strategy, partnership and project delivery. In this respect LFGNP provides a bridge between the strategic policy context and delivery on the ground through facilitating and canvassing a "broad church" of partnership "buy in". This reduces conflicts and emphasises synergy and action on the ground.

The focus of LFGNP activity is very much on end point of delivery through translating policy into action on the ground. This aims to create quality greenspace close to where people live and work and also to develop green and blue networks in the wider countryside.

3. Strategic partnership roles within Edinburgh City Region

LFGNP is developing its co-ordinated vision through promoting policy and translating this into action on the ground. The development of robust planning guidelines which stress synergy and integration at all levels are seen as imperative to guide the green network agenda. The Partnership in particular is contributing to the following policies at a strategic level;

3.1 Development of forest and woodland strategies (FWS)

Forest and Woodland Strategies (FWS) provide the spatial context for new woodland creation. Current Scottish Government targets aim for 25% woodland cover nationally by 2050 against a present coverage of 17.1% (FORESTRY COMMISSION SCOTLAND 2006). Currently in the Lothians woodland cover is only 13.5%, far below the national target.
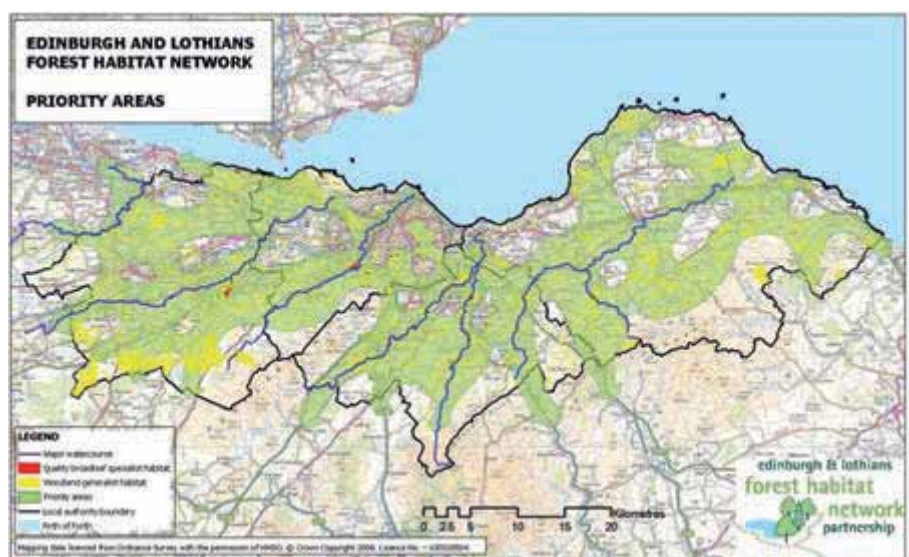
2.2 CSGN Partnership structures within the Edinburgh City Region

The Lothians and Fife Green Network partnership (LFGNP) is a regional body covering 5 Local authorities within the East of the CSGN area (fig. 1). LFGNP is one of a number of developing regional structures within the CSGN. The Partnership is a recent evolution of the Edinburgh and Lothians Forest Habitat Partnership (ELFHNP) which was launched in 2008. LFGNP acts as a mentor and facilitator for green network projects within Lothians and Fife. The Partnership works across 15 lead partner organisations with the following aims (WHITEHEAD 2010);

• To create an attractive environment across Lothians and Fife.

• To provide biodiversity and green infrastructure benefits, particularly with relation to new developments.

• To improve health, active travel and well-being benefits.

• To promote empowered communities.

• To assist education and lifelong learning using the outdoor environment.

Partners within LFGNP include representatives of the five local authorities, local implementation bodies (NGOs) and key government agencies; particularly Forestry Commission Scotland (FCS) and Scottish Natural Heritage (SNH) who collectively lead and finance core functions of LFGNP. For practical purposes the Partnership is housed within the offices of the Edinburgh and Lothians Greenspace Trust (ELGT), an environmental NGO. However, the Partnership must be perceived as non partisan to receive the full backing of the range of stakeholders.

Fig. 2: Opportunities (Priority Areas) for enhancing woodland habitat connectivity within the Lothians (WHITEHEAD 2008)

Separate Forest and Woodland Strategies (FWS) are being developed for both the Lothians and for Fife, reflecting regional variations, political administration and local priorities in each area. Work in the Lothians builds on the earlier "Forestry Framework for Edinburgh and the Lothians" (WHITEHEAD 2008) which incorporates a strong landscape ecology component; aiming to consolidate functional connectivity of woodland habitats with proposed grey infrastructure creation, particularly within Core Development Areas (fig. 2).

The draft Forest and Woodland Strategy for Edinburgh and the Lothians (LANDUSE CONSULTANTS 2011) builds on the connectivity concepts developed in the Forestry Framework. The emerging FWS also now incorporates a spatial framework based on detailed constraint mapping and analysis of new woodland creation opportunities according to identified landscape character zones (fig. 3).

Notional woodland creation targets are proposed for each zone based on a number of potential scenarios and targets (fig. 4). This has been complicated by the fact that existing targets at national, regional and CSGN levels do not synergise fully, requiring additional analysis to be undertaken.

These now take into account a variety of parameters including local landscape character analysis, competing land use functions, economic value of forest products, ecosystem services and potential social benefits of forestry to communities, particularly within urban areas. Benefits for local people include heath, recreation, community cohesion and education. Social and ecological benefits of forestry are accorded high priority as are the economic returns from commercial timber production.
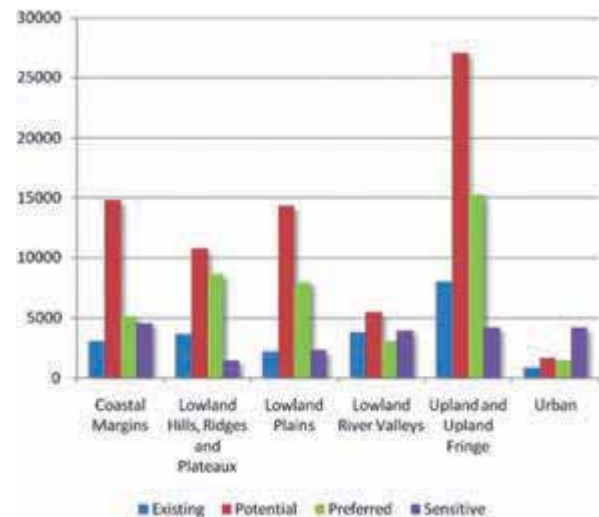

Fig. 4: Potential woodland expansion opportunities (ha) according to identified landscape character areas (LANDUSE CONSULTANTS 2011)

3.2 Development of strategic planning guidance

The full integration of green networks within planning policy is seen as one of the key drivers for guiding and facilitating future green infrastructure programmes. This needs to be done all levels within the planning system hierarchy; at national, regional, local and masterplan levels.
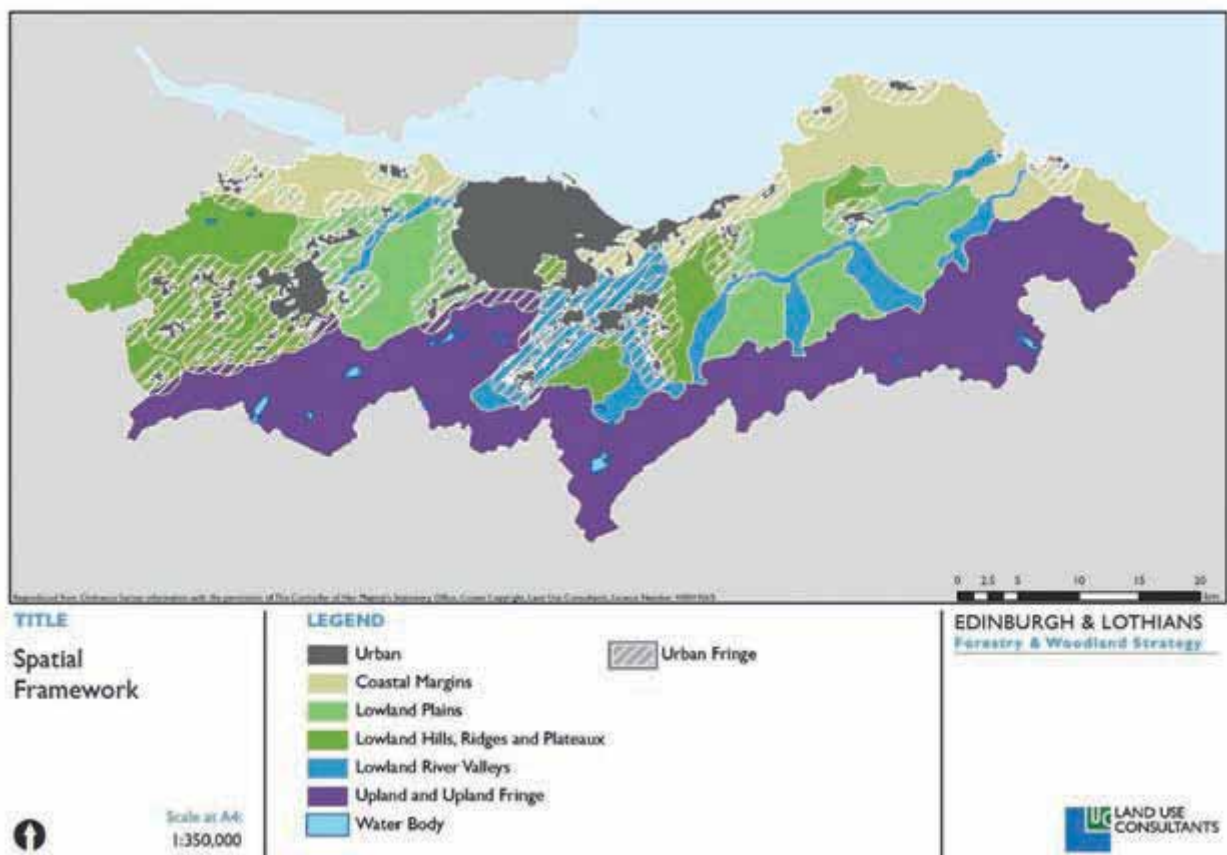

Fig. 3: Spatial Framework identifying landscape character zones with regard to new woodland planting opportunities (LANDUSE CONSULTANTS 2011)

Green networks form a component within SESPlan, the Strategic Development Plan for Edinburgh and South East Scotland. The SESPlan Main Issues Report (SESPLAN 2010) references recommendations for the incorporation of Green networks into Development Planning; in particular with regard to proposed Core Development Areas (CDAs). Individual Local Authorities are also charged with producing Local Development Plans (LDPs).

Local Development Plans in particular are seen as a key vehicle to drive the creation of the green network. A major role of LFGNP has been to integrate the concept of green networks within the development planning process. At a practical level this involves consensus building with local authority planning departments and elected members. SESPlan Policy 11 "Delivering the Green network" provides a context for this;

"The Strategic Development Plan supports the creation of a strategic Green Network including the Central Scotland Green Network and the Scottish Borders Green Network. Local Development Plans will identify opportunities to contribute to the development and extension of the Green Network and mechanisms through which they can be delivered." (SESPLAN 2010).

An important role of LFGNP is to undertake advocacy work with local authorities to raise awareness of the role of green networks, methodologies and practical tools which are available including Integrated Habitat Network (IHN) modelling. The aim is to build capacity within each local authority through providing hands-on support and mentoring. With this in mind, a number of workshops and events have been organised targeting the planners from the various authorities.

3.3 Integrated habitat network (IHN) dissemination

LFGNP has been working closely with the UK Forest Research Agency and the CSGN Support Unit to provide Integrated Habitat Network (IHN) modeling to local authorities, agencies, NGOs and commercial consultancies across Lothians and Fife. The IHN datasets are based on the BEETLE methodology (WATTS et al. 2005) and provide high resolution GIS mapping of habitats and associated dispersal networks.

The IHN methodology has developed significantly since inception. Initially modeling within the Lothians area focused on forest habitats with the production of "A Forest Habitat Network for Edinburgh and the Lothians" (RAY & MOSELEY 2006). However an integrated approach incorporating a range of indicator habitats is now favoured with species rich grasslands, wetlands and heathlands now all being added. Updates to Phase 1 habitat survey data have also taken place in conjunction with the production of new datasets.

A challenge has been the inconsistency of IHN datasets across the CSGN area with gaps in the data coverage or different evolutions of the model operating within the various local authority areas. An early priority has been to homogenise the IHN datasets across the whole CSGN area to provide overall consistency of approach. This is particularly important with regard to cross boundary projects.

An important role for LFGNP and the CSGN Support Unit has been to undertake mentoring work with the various local authorities, private consultants, land managers and developers to illustrate how IHN data can best be used effectively. Particular applications include the development master-planning process and land management operations such as forestry. Simple web based versions are also currently in the process of development for easy access by non specialist GIS users.

4. Developing best practice pilot projects on the ground

Delivery on the ground is the imperative with the CSGN to build the reputation of the initiative and to secure future project funding. In this respect the securing of quick wins has proved vital to win political support and to prove the effectiveness of the developing structures. Best practice projects have been identified and prioritised through the strategic planning processes and toolkits including IHN modeling.

Many of these projects have been taken forward by LFGNP and local partners working collaboratively. Work to date has focused on feasibility studies, consultation and developing detailed specifications to take through to successive implementation phases.

Whilst there is widespread political support, the launch of the CSGN has co-incided with a period of intense economic instability and recession. Certain projects, particularly those which were due to financed through private sector developer contributions, have not taken place or have been postponed. This is particularly true of projects relating to Core Development Areas such as the proposed Shawfair (South East Wedge) development in South East Edinburgh where proposals have been effectively put on hold following the withdrawal of developer finance. However, stalled developments have also created opportunities for new greenspaces, notably the chance for temporary greening of vacant and derelict land; an approach which has formerly been resisted by developers and land use planners.

To secure quick wins, seed-corn funding in the form of the Central Scotland Green Network Development fund has been made available by government agencies, Forestry Commission Scotland and Scottish Natural Heritage. This has equated to £2.4 million during the first two years and has allowed a diverse range of work to take place across the CSGN area through a competitive bidding process. The aim is that seed-corn funding should compliment existing funding streams including the Scottish Rural Development Programme (SRDP). This should further encourage uptake of these grant schemes. There has previously been a low uptake for SRDP funding, particularly for woodland creation within East Central Scotland.

Specific examples of green network projects in the LFGNP area include;

4.1 River corridor management planning – North Esk Valley

IHN mapping has been used to identify a section of the North Esk River Corridor as a high priority for action. The emphasis is on improving condition of existing core habitats comprising of ash/oak gorge woodland and mosaic riparian habitats. In particular the biodiversity value of remnant ancient woodlands is under threat from regenerating beech and sycamore, despite the fact that core areas are officially designated as Sites of Special Scientific Interest (SSSIs). Regeneration of native woodland and under-storey species are currently being affected.

A detailed management plan has been developed across 191 ha and involving 11 different land ownerships. The aim is to bring about a co-ordinated approach to management across the whole area whilst recognising the aspirations of the individual landowners. The project also aims to provide social outcomes in the form of improved access to woodlands from surrounding communities and local participation in woodland management. Implementation work is being taken forward with the respective owners through a series of targeted funding bids.

4.2 Connectivity in protected landscapes – Pentland Hills Regional Park

A strategic approach has been adopted within the Pentland Hills protected landscape area through the development of a Woodland Action Plan. This indentifies five core areas where new native woodland creation can help to restore habitat connectivity lost through fragmentation.

The areas selected include key river catchments such as the headwaters of the Water of Lieth and the River North Esk. Within these catchments riparian woodlands have been lost through grazing pressure and through an emphasis on land management for sporting purposes. The North Eastern slopes of the Pentland Hills have also been selected as providing habitat connectivity close to the route of the Edinburgh City Bypass.

The project has adopted an enabling approach which has aimed to respond to the aspirations of land managers whilst attempting to identify opportunities and potential sources of funding. Detailed management planning work has been undertaken with a view to taking forward a number of projects to implementation stage.

4.3 Urban habitat enhancements – Edinburgh Millennium Woodlands

A co-ordinated approach is being applied across 70 small urban woodlands within the City of Edinburgh. These woodlands were originally established as part of the Millennium Forest for Scotland with the aim of increasing overall woodland cover within the City. However, since the woods were established there has been little management intervention to improve the potential of the sites for biodiversity, landscape or local amenity and to realise their full value as part of a wider functioning forest habitat network.

The aim of this project has been to deliver improvements to woodland structure, understorey vegetation and tree regeneration as assessed through a detailed audit of the sites. This has included a significant amount of canopy thinning to allow more light to permeate the forest floor.

Given the urban nature of the sites, community participation has been considered to be paramount. A secondary aim has been to involve local communities directly in woodland management activities through volunteering programmes and skills training for young people, particularly from socially excluded backgrounds. These social outcomes are considered also to be of high priority in terms of project evaluation. Local communities have also been consulted extensively on the project and their views balanced with conservation objects in the planning process.

4.4 Core development areas; green infrastructure – West Edinburgh framework

Integrating green infrastructure into development master-planning is a key objective of LFGNP and the wider Central Scotland Green Network. During the past two years, however, projected growth has not occurred due to the impacts of global recession on the housing market and on local levels of investment.

Despite the low levels of activity, LFGNP has been assisting in the creation of a Landscape Master-plan for the West Edinburgh Framework, a growth hub which includes Edinburgh Airport and proposed International Business Gateway. IHN modeling has been used to inform the master-plan. The plan incorporates developer contribution as a mechanism for delivery. The following outputs will result form the adoption of the final plan:

• Core area for development expansion including airport and international business gateway

• Creation of a setting for development

• Provision of recreation and active travel opportunities.

• Creation of wildlife habitats, enhancement of biodiversity and development of connectivity

• Contribution to improvement in air quality, water quality and noise attenuation

The aim is to integrate proposed green infrastructure within the Core Development Area into the wider concept for a forest habitat network within Edinburgh and the Lothians as a whole. Increasing functional connectivity of woodlands to adjoining areas is therefore a priority.

4.5 Temporary greening of vacant and derelict land – City of Edinburgh

Economic recession in the Edinburgh City Region has resulted in a slowdown in the development of vacant and derelict sites. LFGNP is seeking innovative solutions to provide temporary greening of Vacant and Derelict sites to improve the visual amenity and contribute to the wider green network. Previously there has been resistance to short term greening solutions.

A strategic audit of sites has taken place with the aim that this will be followed up with enhancements on the ground. Twenty sites have been investigated in detail with a view to undertaking pilot projects. Detailed discussions with site owners, residents and local businesses have taken place.

It is likely that temporary greening options will include establishment of formal greenspaces as well as biodiversity driven approaches including extensive wildflower meadow creation.

5. Discussion and future priorities

Much has already been achieved through the CSGN in the Edinburgh City Region and within a comparatively short timeframe. However the CSGN is a relatively new initiative within and is at an early stage in its development. It is planned that it will operate until 2050, leaving considerable opportunity for ironing out inconsistencies, refining working practices and consolidating partnership structures. However at this stage certain strengths and weaknesses have become apparent; these have been identified by the author as follows:
Strengths:

• The potential delivery of green networks on the ground has been greatly facilitated through the integration of green networks within planning policy at National, Strategic Development Plan (SDP), Local Development Plan (LDP) and Master-planning levels. Topic specific regional indicative strategies (such as for forestry and woodlands) have also been accorded greater priority resulting in more clearly defined and broadly supported policy objectives.

• New toolkits including Integrated Habitat Networks (IHN) models provide a clearly defined rational for managing habitats and for better integration with built infrastructure development. There is greater synergy of data across the CSGN which allows detailed analysis and comparisons to be drawn.

• Better communication between professionals and organisations should assist project implementation, particularly with regard to cross boundary projects and co-operation across the sectors.

• There are increased levels of understanding of the value of green networks with the wider community and the political leadership.

• The varied nature of the CSGN Partnership has allowed a cross-fertilisation of ideas and methodologies between the various organisations involved. The dynamism of the third sector (NGOs and social enterprises) in particular has helped to stimulate a climate of innovation which is in turn influencing the work of statutory agencies and local authorities.

Weaknesses:

• The CSGN has largely been built upon existing structures involving Government Agencies, Local Authorities and NGOs. The overall linkages and relationships between partner organisations have not been clearly defined early on enough in the planning process. This has, on occasions, created tensions between partners and resulted in speculation about hidden agendas.

• The CSGN was envisaged during a period of economic growth. This has however not been the case and the economy has undergone a period of recession since the inception of the initiative. Spending cutbacks and a lack of finance from private developers have limited the amount of resources available for green network development.

• The distribution of State funding to organisations providing a support role within the CSGN structure is perceived by some to be inequitable. Political positioning between the various partners has had some negative, though not significantly damaging, impact.

• The CSGN has not as yet been able to win widespread support from the business community and private developers. To be completely successful it will be necessary to broaden participation beyond what might be perceived as the "usual suspects".

It is clear that for partnerships to be effective there is a need to work at strategic, policy and implementation levels. Partnerships should act as honest brokers and catalysts for action. The aim should be to translate policy into action through facilitating best practice on the ground. A number of key issues which the process has highlighted include;

• The need for ongoing synergy and active participation of key players

• The need for a co-ordinating body to lead the process with clarity of vision

• The importance of ensuring the full integration of green network principles into planning policy at national, regional, local and masterplanning stages

• Robust GIS toolkits which can be used effectively by non specialist practitioners including planners, land agents and developers for defining and integrating habitat networks into programme management. This needs to be backed up with adequate training to ensure the toolkits can be simply and effectively used by practitioners.

• Adequate incentives to ensure project implementation on the ground and participation of land managers.

• Provision of hands on assistance to land managers with applications and administrative hurdles.

• Further engagement with the private sector to deal with resourcing issues and mainstreaming of green networks within development master-planning.

6. Conclusions

The experience of LFGNP has illustrated the requirement for a single partnership led vision and the need for top down strategy to be balanced with bottom up action. This action needs to be informed through provision of quality data and robust tool kits. To secure quick wins, the importance of a "hands on" incentive driven approach has proven essential with support being provided to local stakeholders by enabling bodies such as LFGNP.

The approach has also highlighted the fact that a considerable investment of resources and time needs to be made to initially secure partnership agreements between stakeholders and to develop a robust, mutually agreed vision. This may require overcoming political and institutional barriers but is an essential prerequisite of green network development. Once established, dialogue needs to be ongoing with effective communication structures in place and clearly defined roles and responsibilities of the various partners involved.

Despite the relatively short history of implementing the CSGN within the Edinburgh City Region, experience so far does indicate that this might provide a viable template which could be tailored successfully to other locations; however differing local priorities, geographical factors and cultural variables must be considered and the methodology adapted as required to suit the local circumstances.

In general, however, the Scottish concept of integrating habitat networks with a range of social and economic outcomes is a strong one which might provide an attractive methodology for securing political support and overcoming institutional and funding barriers which can characterise green infrastructure development. The Scottish approach of emphasising action on the ground and linking this upward to the policy agenda is also an admirable one. However the true success of the CSGN within the Edinburgh City Region will only become apparent in the medium to longer term.

References

CSGN PARTNERSHIP BOARD (2011):
Central Scotland Green Network – the Vision. URL: http://www.centralscotlandgreennetwork.org/images/stories/CSGN/vision_text-only_30march2011.pdf (22.10.2011).

FORESTRY COMMISSION SCOTLAND (2006):
Scottish Forestry Strategy. Forestry Commission. Scotland: 8-11. URL:
http://www.forestry.gov.uk/pdf/SFS2006fcfc101.pdf/$FILE/SFS2006fcfc101.pdf (15.10.2011).

LANDUSE CONSULTANTS (2008):
Central Scotland Green Network: Defining the Concept. Land Use Consultants. Forestry Commission. Edinburgh: Forestry Commission: 13-37.

LANDUSE CONSULTANTS (2011):
Draft Forestry and Woodland Strategy for Edinburgh and the Lothians. URL: http://elfhnp.org.uk/publications/el_forestry_and_woodland_strategy.pdf (12.10.2011).

NATURAL ENGLAND (2009) :
Green Infrastructure Guidelines. Natural England (Catalogue Code: NE176). URL: http://naturalengland.etraderstores.com/NaturalEnglandShop/NE176 (20.10.2011).

RAY, D. & MOSELEY, D. (2006):
A Forest Habitat Network for Edinburgh & the Lothians. Forest Research. URL: http://www.forestresearch.gov.uk/pdf/FHN_for_Edinburgh_and_Lothians.pdf/$FILE/FHN_for_Edinburgh_and_Lothians.pdf (03.10.2011).

SCOTTISH GOVERNMENT (2009):
National Planning Framework for Scotland 2. Scottish Government: 126-127. URL: http://www.scotland.gov.uk/Resource/Doc/278232/0083591.pdf (16.10.2011).

SCOTTISH NATURAL HERITAGE (2011):
Habitat Networks and Spatial Ecology – Glossary. URL: http://www.snh.gov.uk/land-and-sea/managing-the-land/spatial-ecology/glossary/ (22.10.2011).

SESPLAN (2010):
SESPlan Main Issues Report. SESPlan: 35-40. URL: http://www.sesplan.gov.uk/consultation/docs/mir.pdf (25.10.2011).

SUNDSETH, K.; SYLWESTER, A. (2009):
Towards a Green Infrastructure for Europe: Proceedings of the European Commission Workshop, Ecosystems Ltd. URL: http://green-infrastructure-europe.org/download/EC%20Workshop%20proceedings%20Green%20Infrastructure%20final (18.10.2011).

WATTS, K.; HUMPHREY J. W.; GRIFFITHS, M. W.; QUINE, C. P. & RAY, D. (2005):
Evaluating biodiversity in fragmented forest landscapes: principles. Information Note 73. Forestry Commission. Edinburgh. URL: http://www.forestresearch.gov.uk/pdf/fcin073.pdf/$FILE/fcin073.pdf (24.09.2011).

WHITEHEAD, I. (2008):
A Forestry Framework for Edinburgh and the Lothians. URL: http://elfhnp.org.uk/publications/forestryframeworkfeb09_draft.pdf (16.10.2011).

WHITEHEAD, I. (2010):
Developing the Lothians and Fife Green Network, Draft remit, structures and operation. URL: http://www.elfhnp.org.uk/publications/developing_the_lothians_and_fife_green_network_may10.pdf (16.10.2011).

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