



# Green and Blue Infrastructure Supplementary Guidance

August 2019

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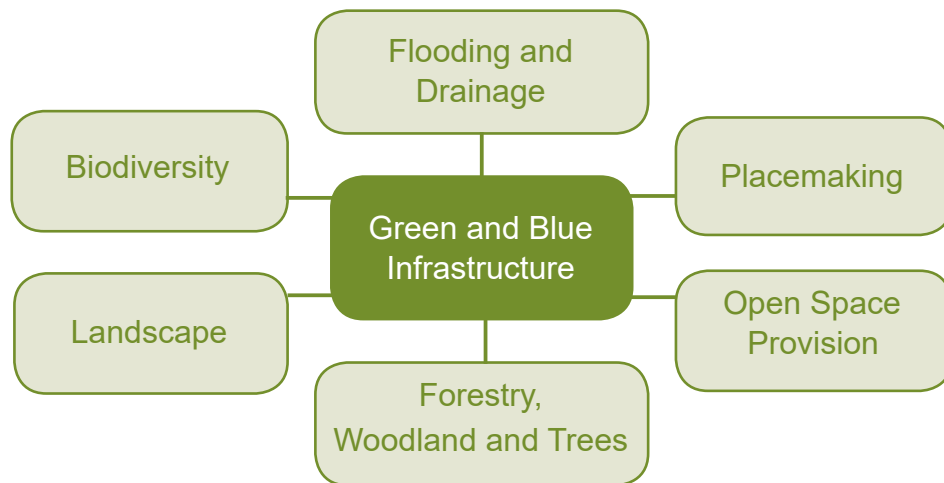
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# 1. Introduction

Local Development Plan Policy 40: Green Infrastructure requires all development proposals to contribute towards green infrastructure. This guidance explains what green infrastructure is and where and how it should be taken into account in the development process. The guidance is aimed primarily at developers, agents and others involved in the preparation and consideration of planning applications. Community groups and Council services are also encouraged to use the guidance to help direct actions that enhance our natural resources.

This guidance will become statutory supplementary guidance and form part of the Local Development Plan. It will be used alongside the policies of the Local Development Plan and the Strategic Development Plan (TAYplan) to assess development proposals.



*Proposals should take into account other policies and guidance relevant to the delivery of green infrastructure.*

# 2. The Vision

Green infrastructure across Perth and Kinross will be high quality and multifunctional, allowing the free and easy movement of people and wildlife, and delivering a wide range of ecosystem services.

Policy 40: Green Infrastructure sets out how development can contribute to this vision:

The Council will require all new development to contribute to green infrastructure by:

- (a) creating new multifunctional green infrastructure, particularly where it can be used to mitigate any negative environmental impacts of the development, or create linkages to wider green and blue networks;
- (b) incorporating high standards of environmental design;
- (c) ensuring that development does not lead to the fragmentation of existing green and blue networks;
- (d) the protection, enhancement and management of existing green infrastructure within and linked to the site and the incorporation of these into development proposals:
  - (i) open spaces and linkages for active travel or recreation, including links between open spaces and the wider countryside and the provision of new connections where required;
  - (ii) existing species and habitats and the creation of new habitats and wildlife corridors, including trees, hedgerows and woodlands where appropriate;
  - (iii) the water environment which is an important contributor to the network of blue and green corridors for the alleviation of flood risk, wildlife, recreation and the amenity needs of the community.

The temporary use of unused or underused land as green infrastructure will be encouraged. The use of a site for temporary green infrastructure will not prevent it from being developed in the longer term.

### 3. How to Use This Guidance

- Read this guidance to learn about the Council's approach to identifying and improving green and blue infrastructure. Find out how new development can enhance the existing network.
- Check the [online map<sup>1</sup>](#) to view the natural assets identified within Perth and Kinross. Look for existing green and blue infrastructure and identify opportunities for delivering a range of benefits.
- Did we miss something? During the consultation period you can make comments on the guidance and let us know what you think.

Once adopted, the guidance becomes a statutory document and a material consideration in the decision making process. Proposals should take into account the generic principles promoted in this guidance as well as the settlement scale opportunities which have been identified through data analysis and stakeholder input. The development checklist on page 10 lists the types of information which applicants may need to provide in order to demonstrate that they comply with the requirements of the supplementary guidance.



*The chart shows that green and blue infrastructure should be considered throughout the design process, from site appraisal stage to the submission of planning applications.*

<sup>1</sup> New release ArcGIS Storymaps support the most recent version of the major modern browsers including Chrome, Firefox, Safari, Microsoft Edge.

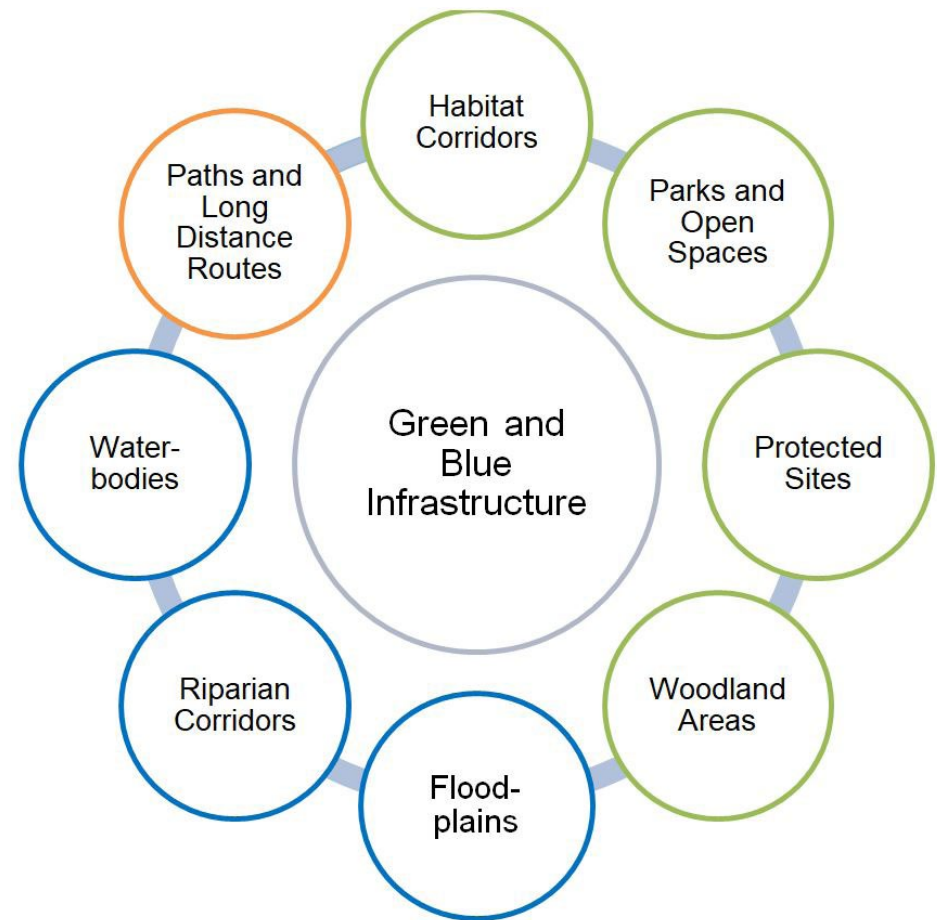
## 4. What is Green and Blue Infrastructure?

For the purposes of this supplementary guidance green and blue infrastructure is defined as the network of natural and semi-natural areas, features and spaces that lie within and between our towns and cities and which provide multiple social, economic and environmental benefits. Included are 'green' features such as parks, woodlands, street trees, wildlife habitats, and allotments along with 'blue' features such as rivers, wetlands, ponds and SuDS features. These are best connected by habitat corridors, and active access routes such as core paths, rights of way and long distance routes.

Green/Blue infrastructure allows the essential benefits of nature to be provided to people. These essential benefits are known as ecosystem services and include the provision of food, clean air and water, regulating the effects of climate change, and cultural benefits such as providing opportunities for recreation and exercise.

Ecosystem services of green infrastructure can provide the following functions:

- active travel and recreation
- access to nature for health
- eco-tourism and education
- pollination
- food growing
- wildlife habitat and movement
- carbon capture
- shelter, shade and cooling
- water and air purification
- water management and flood protection
- soil protection



*Green & Blue Infrastructure and Access Network Components*

## 4.1 Green and Blue Infrastructure Principles

**Multifunctionality** is the integration of different land uses and activities within the same site in order to maximise the benefits to people and nature, and make the most efficient use of land.

An urban park inside a city can be an integral part of green infrastructure if it acts as a cool air corridor, absorbs excess water run-off and offers an attractive outdoor area for recreation and wildlife. On the other hand, a patch of uniform grass that contains no other environmental features is unlikely to qualify as green/blue infrastructure.



*North Inch in Perth provides recreational facilities and wildlife habitats, but also acts as flood defense for the city.*

**Connectivity** is the linking together of green areas, features and spaces to enable people, animals and plants to move between them.

It is sometimes easier for the planning process to deliver particular types of green areas, features, or spaces for example, a sports field or a play area. However to function as green infrastructure such spaces need to be high quality, deliver a range of functions, and form part of a network. Connecting green and blue features facilitates the movement of wildlife and by incorporating paths also provides opportunities for active travel.



*Paths and green corridors along the River Tay provide connectivity between neighborhoods and encourage active travel.*

## 5. Delivery of Green and Blue Infrastructure at Different Scales

Green/Blue infrastructure should be considered right at the start of the planning of a new development site alongside other 'grey' infrastructure requirements such as roads, drainage and power supplies. Thought must be given as to how existing resources will be protected and new green/blue infrastructure will connect and extend to other habitats and green/blue features beyond the 'red line' boundary of the development site.

By using the Strategy (chapter 6) and carrying out an analysis of the site and surrounding area, applicants can identify existing resources to be maintained or enhanced, alongside opportunities for new green and blue infrastructure. The **Local Development Plan** also includes site specific developer requirements.

As well as protecting and enhancing existing resources, opportunities to connect to the wider area include:

- connecting fragmented woodland through new planting or regeneration
- connecting, enhancing and integrating core paths, existing informal routes (e.g. desire lines) and recreational areas
- providing connectivity between protected sites such as SSSIs, SACs and SPAs
- linking green corridors and SUDS to existing ponds, waterways and wetlands outside the site to improve natural flood protection.

The quantity and type of public open space required should be agreed based on the **Open Space Provision in New Developments Supplementary Guidance** that sets out the Council's standards.

All proposals should comply with the **Council's Placemaking Guide** which outlines the design process and gives detailed advice on masterplanning.

Further advice on planning for wildlife can be found in Tayside Biodiversity Guidance at [www.taysidebiodiversity.co.uk](http://www.taysidebiodiversity.co.uk)

### 5. 1 Incorporating Green and Blue Infrastructure in New Developments

All development should avoid fragmentation or loss of existing green/blue resources and look to enhance these. Where adverse effects are unavoidable they must be identified at an early stage and full mitigation and compensation implemented through design.

#### Individual buildings or small groups

Small scale green/blue infrastructure can be incorporated into the building or plot design. For example rain gardens, ponds, wildlife friendly trees and planting in gardens, hedges rather than fences, green roofs and walls. Such elements help retain surface water, look good, and provide habitat and green corridors for the benefit of wildlife.



*Outbuilding with green roof in a back garden*



*Boundary hedges and avenue trees at Gannochy*

## Streets

Introducing green/blue infrastructure enables streets to provide pleasant walking and cycling links and wildlife corridors between larger scale green spaces such as parks or amenity green spaces. Existing trees and hedges should be retained, while new features can be introduced such as boundary hedges appropriate to local habitats and species, or new street trees and urban tree planting. Multifunctional verges and swales can help absorb runoff while adding green value.

## Blue Infrastructure

Where there are natural ponds, burns or rivers adjoining or within the development site, retain these and link existing natural habitat such as rough riparian grassland, sandy banks and trees. Provide paths on one side of burns and ponds; while using additional planting to provide shade, create wildlife habitat and protect water quality.

Where bridges over burns are necessary they should ensure passage for aquatic mammals and birds along the banks underneath. The restoration of watercourses which are not in a natural state and the daylighting of culverts is encouraged. Daylighted culverts, linked SUDS ponds or existing ponds and burns can provide a valuable basis for multifunctional green corridors.



## Neighbourhoods

Developments should create networks within and extending beyond the site boundary to take people and wildlife from where they are to where they want to get. Open spaces, community facilities and areas of housing can be linked with trees, shrubs or grass verges. These links can be used for recreation and active travel, and serve as safe routes to schools. Incorporating open spaces into a green corridor can maximise multifunctionality.

New open spaces should be multi-functional but not an expensive burden to maintain. The **Open Space Supplementary Guidance** details standards for landscaping.



*Illustration of Bertha Park pond and cycle path on the edge of housing development*

Existing important green/blue infrastructure such as hedgerows, ponds and burns, ancient woodland, semi-natural grasslands, mature trees and riparian vegetation, can all have high biodiversity value and should always be incorporated in the design of new development. Incorporate buffer strips and where possible keep public access to one side of the habitat to reduce disturbance.

## Strategic Scale Developments

Strategic developments provide opportunity to deliver large scale green/blue infrastructure including:

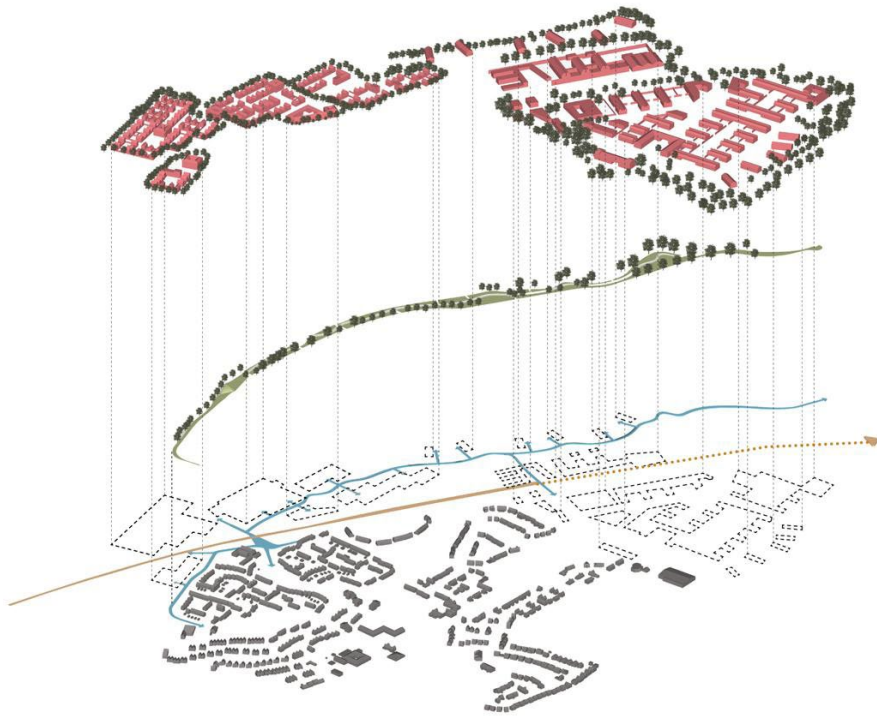
- town parks with a variety of facilities for people and habitats for wildlife
- areas of woodland, wetland and grassland protected, enhanced or introduced to form new biodiversity areas and wildlife corridors
- enhancing existing ponds and incorporating natural SUDS ponds in green corridors and deculverting streams
- new active travel routes through and linking green spaces

Green bridges, underpasses and squirrel bridges should be used to re-connect natural areas which have been unavoidably artificially divided, for example, by new roads. Where appropriate, green bridges could include pedestrian or equestrian access on one side to allow movement for both people and wildlife.

## 5.2 Submission Checklist

Depending on the scale and nature of the proposed development, the Planning Authority may request the provision of one or more of the following alongside the submission of a planning application:

- A site plan which details existing green/blue infrastructure on the site including connections beyond the site boundary
- A layout plan indicating proposed green areas, green/blue features and spaces and how these will connect to wider networks beyond the site boundary
- A landscape plan detailing the proposed planting
- Proposals for mitigating adverse impacts on existing green infrastructure
- Arrangements for the ongoing long term maintenance and management of new green areas, features and spaces



*Plans, including those at the concept stage, should identify existing green and blue infrastructure and opportunities for new connections (Proctor & Matthews Architects)*

# 6. Perth and Kinross Green & Blue Infrastructure Strategy

## 6.1 The Strategy

To identify existing and potential Green and Blue Infrastructure, a strategy was developed to provide a spatial perspective. The resulting spatial strategy will help co-ordinate individual actions that can improve the network of green and blue infrastructure within Perth and Kinross and maximise the benefits it delivers. The strategy aims to deliver on the planning outcomes highlighted in the National Planning Framework:

- a natural, resilient place: by creating new open spaces, providing connectivity between habitats including woodlands, wetlands, grasslands and other natural areas, improving water quality and mitigating against flooding
- a connected and low carbon place, providing opportunities for exercise, including active travel by linking our paths and recreation areas and protecting our valued landscapes

On a settlement scale, the emphasis is on maintaining and enhancing green and blue networks within urban areas and establishing connections for the benefit of both people and wildlife.

On a strategic scale, opportunities exist to deliver benefits beyond settlements by connecting to the wider surrounding landscape.

## 6.2 The Approach

The spatial strategy involved using the Integrated Green Infrastructure (IGI) Approach<sup>1</sup> to develop Opportunity mapping and identify:

- **the extent and composition of the existing green and blue network and**
- **those areas which provide potential opportunities for protecting, enhancing and connecting the network to promote habitats, access and health, landscape and water management.**

The Opportunity mapping includes:

- Strategic habitat and biodiversity opportunities such as protected sites, habitat corridors and woodland areas, using integrated habitat models;
- Active travel opportunities focused on access to and through greenspace including parks, open spaces and path networks (e.g. long distance, core and signposted paths);
- Water environment opportunities including water quality, flood plains and riparian corridors
- Cultural heritage and landscape assets (gardens and designed landscapes)
- Council owned and/or maintained assets, growth opportunities and development sites identified in Local Development Plan 2

<sup>1</sup>Appendix 1 includes more information on the IGI approach and explains how the Council has adapted this for the study.

The table in Appendix 1 outlines the underlying evidence, linked data and the role of this evidence in shaping Green (blue) infrastructure planning. The information identifies areas of **opportunities** (e.g. for flood risk mitigation, water quality protection etc), **enhancement** (e.g. recreational access, habitat network, Council assets and development proposals) and **protection** (e.g. woodland, protected areas etc.) . See table for full details.

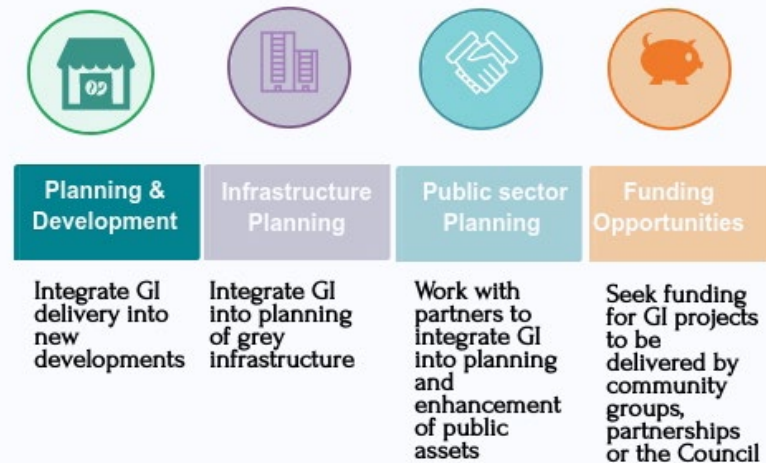
The results of the data analysis have been combined with input from stakeholders who helped identify potential green and blue infrastructure opportunities. Prior to the public consultation, two internal workshops were held where staff from various backgrounds including transport, greenspace, planning and biodiversity provided feedback on the draft. The current public consultation also provides opportunity to further develop the guidance and ensure that it reflects both strategic and local priorities.

### 6.3 Focus on Delivery

The land use planning system can be one of the most important ways to protect and deliver green infrastructure by integrating green infrastructure opportunities into planning proposals for development sites that enhance the existing network of green and blue spaces.

As well as delivery through development, opportunities may be realised through other means such as public sector programmes and infrastructure investment. The guidance may also help public bodies and community groups access funding programmes by identifying priorities in the Perth and Kinross area.

## How to deliver Green Infrastructure



**Perth and Kinross Development Sites** are those areas where green and blue infrastructure can be protected, planned and implemented through the masterplanning process and the delivery of new development. The analysis includes those areas which will see the greatest change and therefore have the potential to make an important contribution to the expansion of strategic green infrastructure.

The Local Development Plan identifies the site specific developer requirements for each of these sites and these requirements will be further detailed through the masterplanning process.

The guidance concentrates on allocated sites within larger (“tiered”) settlements and strategic development areas, but all development proposals provide an opportunity to contribute towards maintaining, enhancing and preventing fragmentation of green infrastructure.

Future opportunities for Green and Blue Infrastructure improvements were identified in the following areas	
Tiered Settlements	Strategic Development Areas
<ul style="list-style-type: none"> <li>• Perth City</li> <li>• Dunkeld &amp; Birnam</li> <li>• Aberfeldy</li> <li>• Pitlochry</li> <li>• Auchterarder</li> <li>• Crieff</li> <li>• Kinross &amp; Milnathort</li> <li>• Blairgowrie &amp; Rattray</li> <li>• Alyth</li> <li>• Coupar Angus</li> </ul>	<ul style="list-style-type: none"> <li>• Perth Core Villages</li> <li>• Carse of Gowrie</li> </ul>

Besides development sites, the opportunity mapping also associates higher deliverability potential with green spaces which are owned and/or maintained by the Council.

<sup>1</sup> New release ArcGIS Storymaps support the most recent version of the major modern browsers including Chrome, Firefox, Safari, Microsoft Edge.

## 6.4 The Output

The spatial strategy combines the outcomes of the Opportunity mapping and stakeholder input. It is shown on the interactive online maps and is summarised in the table below (p. 15-21). The table explains the priorities and potential opportunities at a local level for each tiered settlement and for the strategic development areas. The table should be read in conjunction with the online map which provides an extended overview of existing green (blue) infrastructure and opportunities at both settlement and strategic scale.

The interactive [online map](#)<sup>1</sup> explains the spatial strategy and shows:

- the existing network of green and blue infrastructure at settlement scale alongside potential improvements
- the output of the opportunity mapping, highlighting the areas where green and blue infrastructure has the most potential to deliver habitats, access and health, landscape, and water management benefits
- the strategic scale network, where opportunities exist to deliver benefits beyond settlements.

The following **case study** demonstrates what can be learnt from the guidance in relation to specific sites and what requires further investigation (e.g. site visits, detailed assessments).

## 6.5 Case study

### Robertson Crescent H39 Pitlochry

- The table summarises opportunities to improve GI in Pitlochry. It refers to the enhancement of the habitat and core paths networks and flood water storage opportunities.

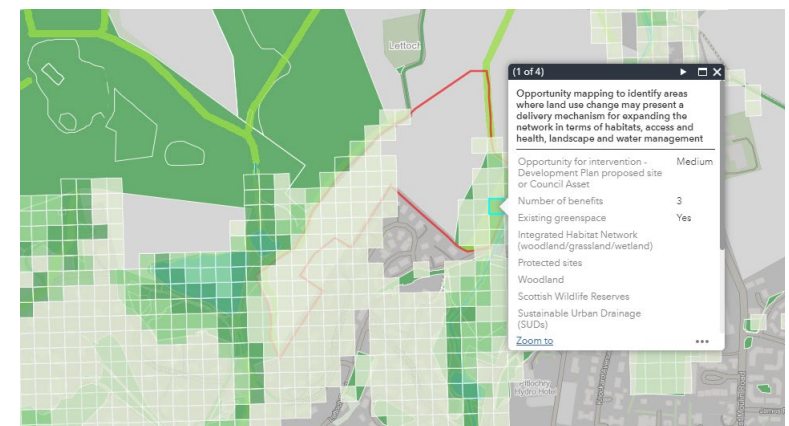
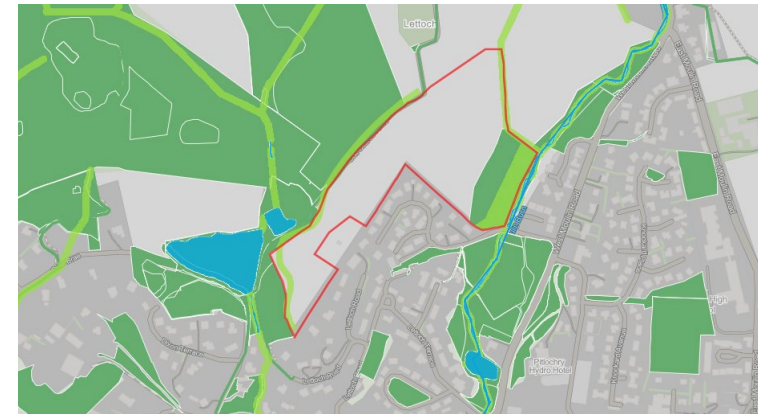
-The maps shows existing green and blue infrastructure in the wider context. The light green colour indicates that GI improvements could be delivered along the boundaries of the site.

-The opportunity mapping shows that some areas around the site can deliver multiple GI benefits. Along the NE boundary for instance, the analysis indicates opportunities to retain an existing greenspace area, enhance a riparian corridor and improve natural flood management.

-Site visits, stakeholder consultation and detailed studies should further inform the design of proposals regarding:

- the types of habitats and presence of protected species
- any existing vegetation on site that should be retained
- requirements for public open spaces
- local needs & aspirations

<p><b>Pitlochry</b></p>	<p>There are opportunities for the enhancement of green and blue infrastructure in conjunction with the development of site H39 ( Robertson Crescent) and new linkages should be made were possible. Developer requirements include paths within the site to link to the existing core path network, and green infrastructure on the site to link to the wider network, particularly to the south west. Flood water storage opportunities to the south of the site and potential improvements to the nearby riparian corridors should also be considered.</p> <p>Connectivity between ancient woodland sites forming part of the woodland network and recreational access back to the town centre could be improved through the development of site H38 (Middleton of Fonab). There is a developer requirement for paths within the site to link to the core paths network to the west, and green infrastructure on the site to link to the wider network along the northern boundary.</p>
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## 6.6 Opportunities Table

Opportunity Areas	Opportunities
<p><b>Perth City</b></p>	<p>Within the areas of expansion to the west and north of Perth, there are opportunities to create new habitat corridors, enhance the existing network and integrate natural surface water and drainage solutions. Opportunities for east-west and north-south green linkages should be reflected in the proposals for strategic development sites. Where sites contain ancient and/or mature woodland, wetland and are traversed by the River Almond, the Lade, and the Newton Burn, it could be ensured through appropriate site design, enhancement and mitigation that they do not lead to the fragmentation of these assets.</p> <p>There are significant opportunities particularly: at Bertha Park along the perimeter of the major development area; at MU73 Almond Valley along the River Almond, and alongside the Lade; at E38 and H319 along their southern boundaries ; and at MU70 Perth West for the creation of a new outer wester woodland edge, blue/green network opportunities along the burn, a new landscaping corridor along the A9 and potentially a landscape corridor along the A85. Perth West also provides an opportunity for an integrated surface water and drainage strategy and aligning SUDS locations with the green network across the site.</p> <p>To the south of the settlement, Perth Quarry is surrounded by existing green infrastructure and its development requires a robust landscape framework. OP8 on Friarton Road can also contribute to landscape improvements, especially along the edges of the site. At Broxden, E340 there is a requirement for an extensive landscape framework including green corridors along the northern and southern boundary of the site and a neighbourhood park.</p> <p>At the MU336 Murray Royal Hospital site, an appropriate landscape plan will be important to ensuring any development sympathetically integrates into its parkland setting and provides sufficient pathway permeability throughout the site and towards Gannochy Road. Green and blue infrastructure improvements should also be considered for smaller sites within Perth City, alongside the requirements of Local Development Plan 2.</p> <p>In terms of the access network, the Cross Tay Link Road will provide opportunity for active travel provision alongside the route and connectivity with existing core paths, national cycle routes and public rights of way within the area. The scheme could provide potential green Highfield plantation Non Motorised User Bridge.</p>

Opportunity Areas	Opportunities
<p><b>Perth City</b></p>	<p>Active travel links can provide connection between expansion areas and existing settlements as well as the countryside. At Bertha Park, linkages should be made to the National Cycle Route 77 (NCR77). At MU70 Perth West, connection and enhancement of the Gallow Road route, a new pedestrian/cycleway bridge at Newhouse Farm, and a new underpass at Broxden should be achieved. Providing new recreational routes through the Lamberkine Woodland will also be required.</p> <p>At Almond Valley, direct links at frequent locations to the National Cycle Route 77 (NCR77) running parallel with the River Almond and a connection to Bertha Park at the Western edge will be crucial. There are opportunities to create linkages along the dismantled railway line (connecting with the future potential core path route through H319 and E38), and provide appropriate connections with the existing Lade and River Almond routes. This presents a significant opportunity with the recent pedestrian/cycleway bridge connection over the A9 at the north end of E38 connecting up with the core path associated to the Lade.</p>
<p><b>Perth Core Villages</b></p>	<p>Green Belt extension around eastern section of Scone could provide opportunities for a stronger landscape framework and connections into the wider landscape, particularly between Scone and Perth Airport. H29 Masterplan proposes creating linkages through development with existing woodland and core paths. Connections for recreation path network between Stanley, Luncarty and northern edge of Perth could also support habitat connections. MU27 particularly will require good habitat connections adjacent to the TAY SAC with planting and SUDS. Ancient woodland surrounding both Scone and Stanley must be protected and connections created into them for recreational activities.</p> <p>Development should extend and enhance existing green and access network including proposed core path routes in conjunction with new development particularly at Bridge of Earn / Oudenarde (H14, H15) and Abernethy. Proposals for new development sites ( H14; H72; H319) should include a robust landscape framework to create village edge, enhance biodiversity, connect to existing Core Paths and create new habitats. Opportunities for flood water storage and water quality improvements should be considered particularly on the northern border of the site H15.</p> <p>There is an opportunity to link up Bridge of Earn and Abernethy in order to provide a strong strategic green corridor from Perth to the existing Green Infrastructure to the south (including the Ochil hill ridge). The delivery of this strategic linkage however may be limited through land use planning as planning permission has been granted for development sites within the Perth South area.</p>



Opportunity Areas	Opportunities
<b>Dunkeld &amp; Birnam</b>	<p>The existing network is strong but there is still potential to expand and improve linkages between Dunkeld and Birnam and key landscapes for example Dunkeld House and Murthly Castle Gardens and Designed Landscapes. There is a developer requirement for green infrastructure on sites E12 &amp; E13 Tullymillly to link to the existing network to North and South.</p> <p>Opportunities include the protection and expansion of green infrastructure along the River Tay corridor to target flooding issues, Dunkeld and Burnmouth road Potentially Vulnerable Areas (PVA), National Flood Risk Assessment (NFRA) medium probability flood extent and protect previously flooded areas in the settlement. There is also an opportunity to improve water quality in the surrounding River Tay (River Tummel to River Isla Confluences) intercatchments.</p> <p>Access to green infrastructure could be enhanced through existing national cycle routes and core path network along the river corridor. Expansion of the core path network on proposed routes to the west and east of the settlement could be beneficial.</p>
<b>Aberfeldy</b>	<p>Opportunities exist to enhance and extend green infrastructure linkages and provide greater access to open space particularly to the east of the settlement in conjunction with development sites E10 &amp; H36. These sites border existing and proposed recreational paths which represent opportunities and limitations for proposed development.</p> <p>Protection of riparian corridors to the east and west (River Tay) would enhance wider connectivity with surrounding sites (e.g. Loch Rannoch and Glen Lyon National Scenic Area (NSA) and Forest of Clunie Special Protection Area (SPA) and mitigate flood risk associated with Taymouth Castle to Boat of Cluny PVA.</p>
<b>Pitlochry</b>	<p>There are opportunities for the enhancement of green and blue infrastructure in conjunction with the development of site H39 (Robertson Crescent) and new linkages should be made were possible. Developer requirements include paths within the site to link to the existing core path network, and green infrastructure on the site to link to the wider network, particularly to the south west. Flood water storage opportunities to the south of the site and potential improvements to the nearby riparian corridors should also be considered.</p> <p>Connectivity between ancient woodland sites forming part of the woodland network and recreational access back to the town centre could be improved through the development of site H38 (Middleton of Fonab). There is a developer requirement for paths within the site to link to the core paths network to the west, and green infrastructure on the site to link to the wider network along the northern boundary.</p>

## Opportunity Areas

## Opportunities

### Kinross & Milnathort

There are opportunities to enhance habitat and access networks in and around Kinross / Milnathort through new development, particularly to the north and east and at all of the allocated sites.

Loch Leven and the Heritage Trail around Loch Leven at Kinross and Milnathort is supported by a strong habitat network and wildlife resource to support the qualifying features of the Loch, including areas of ancient woodland, all of which enhances the recreational experience. Any development here will need to protect and enhance these features. Connectivity between Milnathort and Loch Leven could be improved, with enhanced riparian buffers such as along the Back Burn. There is potential for a link with the heritage trail from north of Kinross town centre.

Development should contribute to providing greater access to open space for leisure and recreation activities. Sites to the north of Milnathort (H48 to H50) border existing and proposed open space and as such represent specific opportunities for green infrastructure improvement. They provide opportunities through landscape buffers against motorway noise and for enhancing the existing core path network while providing wildlife benefits and connectivity. This is already being taken forward at PaceHill through a community woodland. All sites here bordering burns should apply riparian buffers with appropriate planting to help safeguard Loch Leven and reduce flooding. Linkages with the proposed woodland at Lathro Farm development (15/01512/FLM) are encouraged. Developer requirements for H48, H49, H50 include woodland planting and incorporating a multiuser core path with site sketches provided for H48 and H49.

Op11 to the west of Kinross provides an opportunity for safe active travel links between Kinross and the wider countryside and recreational networks. Restoration of the culverted watercourse with buffer and enhanced landscaping will support wildlife, landscape and flood prevention.

Maintaining existing greenspace and enhancing riparian corridors along the North and South Quiech Burn will improve connectivity between Loch Leven and woodland areas to the west of Kinross. Riparian buffers are required in LDP2 for sites E19, E20 and E21. E19 also requires deculverting the watercourses. Core paths along the Back burn and Burleigh burn would also support enhancements if any development were to take place here. Most of this area is outwith the settlement boundary and has been identified as a potential cemetery – any planting would need to be cognisant of the setting of Burleigh castle. The potential new cemetery could be developed as a `parkland cemetery` with a strong landscape framework, connecting to existing areas of green infrastructure.

Any development to the East of Kinross border wetland habitat networks and offer flood water storage and water quality improvement opportunities along the riparian corridors.

Opportunity Areas	Opportunities
<p><b>Crieff</b></p>	<p>There are opportunities for improved access and green corridors with proposed core paths, cycle routes and open space along riparian corridors (e.g. River Earn).</p> <p>Access enhancements could be achieved along the Broich Road corridor with off-road alignment for a walking route to school, potentially located behind the field boundary wall or boundary planting (MU7 and MU344). This would connect Strathearn Community Campus and St Dominic's RC Primary School to the existing school transport hub at Crieff Primary School. Opportunities for access improvements however may be limited as transport measures for Broich Road and junction improvements at King Street have already been agreed.</p> <p>Off road path for walkers and cyclists has also been suggested between Crieff and Muthill. The alignment is not yet known but could be provided in conjunction with development of site MU7.</p> <p>Sites to the south west (E26) are located within Drummond Castle Garden and Designed landscape and as such represent opportunities and limitations for proposed development. Green and blue infrastructure and the access networks should be enhanced to the south particularly in conjunction with the development of sites (E26 and MU7) where linkages are possible. These sites border PVA Dallerie to Innerpefferay Castle and medium flood risk areas, offering flood water storage improvement opportunities along the riparian corridor.</p> <p>Site H57 at Wester Tomaknock could include wetland improvements along the western boundary. Opportunities for improvements however may be limited as planning permission has already been granted for the site (18/01890/FLM, 16/02217/FLM).</p>
<p><b>Auchterarder</b></p>	<p>Opportunities exist for enhancement along the buffer corridor, north of the A9 dual carriageway. There is already a core path in the vicinity which intersects with site H342. Two new trunk road junctions offer opportunities for cross-trunk road pathways at Loaninghead (already completed) and at Shinafoot or in the Aberuthven area (proposed). However, there is uncertainty over the location of the new trunk road junction and opportunities for improvements may be limited.</p> <p>There may be an opportunity for enhancement along the alignment of the former Auchterarder to Muthill railway. Part of the route of the former railway crosses a golf course which may limit possibilities.</p>

## Opportunity Areas

## Opportunities

### Blairgowrie & Rattray

There are opportunities to enhance the habitat and access networks in and around Blairgowrie & Rattray through new development, particularly to the east and west of the settlement.

Development to the east of the Blairgowrie (MU330 & E31) provides opportunity to safeguard and improve links between the ancient woodland and existing tree belts. It should be ensured that the development of the new link road within sites MU330 and E31 does not lead to the fragmentation of these assets. New public open spaces (play areas & pocket parks) could improve access to outdoor recreation. The Local Development Plan requires some areas to be landscaped within the Eastern Expansion to safeguard the settings of scheduled ancient monuments. Integration with public open space functions should be considered for these areas. Mitigation measures should be considered at the outset and these features should be incorporated with the design of development.

Development to the west of the settlement provides opportunity to create a new north - south landscape corridor and a series of public open spaces proposed under the approved masterplan (17/00939/IPM).

The potential new cemetery within Blairgowrie could be developed as a `parkland cemetery` with a strong landscape framework, connecting to existing areas of green infrastructure. Developments in Rattray provide opportunity to link with existing green spaces and strengthen the settlement edge.

There is an extensive path network within and around the settlements. All development sites provide opportunities to improve existing Core Paths (retain off road connections and provide additional planting along the sides) and strengthen linkages with the countryside. The disused railway line on the eastern side of Blairgowrie could provide opportunity for green infrastructure improvement and/or a north to south off road active travel link.

Opportunities have been identified to enhance riparian corridors along the River Ericht. Some of these may be realised through repurposing vacant & derelict land to the north of the river.

Opportunity Areas	Opportunities
<p><b>Alyth</b></p>	<p>The existing green network around the north-west of the settlement is robust. Development here (H59 ) can further enhance connectivity and create a new settlement edge through additional planting. Sites to the south of the settlement provide opportunity for strengthening linkages with the wider countryside.</p> <p>The land along the Den of Alyth is at risk of river flooding while some other areas within the settlement are at risk of surface water flooding. Improving riparian corridors and creating well-designed SuDS schemes within future development (e.g. H252) can mitigate the impact of flood risk as well as crate new habitats for wildlife.</p>
<p><b>Coupar Angus</b></p>	<p>The majority of the existing green infrastructure is made up of public open spaces and Core Paths around the settlement. Development sites present an opportunity for connecting with existing assets and creating new landscape corridors for wildlife. Several opportunities have been identified for the improvement of riparian corridors in the area, mainly along the watercourses to the south of the settlement.</p> <p>On a strategic scale, active travel and green linkages could be improved between Blairgowrie, Alyth and Coupar Angus.</p>
<p><b>Carse of Gowrie</b></p>	<p>The <b>Inner Tay Masterplan 2012-22</b> covers this key area with the aim of providing a framework for sustainable development along the inner Tay and its environs. The core thread running through the Masterplan framework is improving access and connections along, within and to areas beyond the Carse corridor. Identifying and supporting networks which add value to the protection, enhancement and connectivity of habitats and landscapes is a key principle of the Masterplan alongside tackling climate change and establishing quality spaces. A significant number of key projects are either underway or planned and there may be the opportunity to integrate other proposals for development in this area to deliver further green infrastructure improvements along this important corridor between the two cities.</p> <p>Sites to the east of Inchturre (H24) border Rossie Priory Garden and Designed Landscape and contain existing recreational pathways representing both opportunities and limitations to development.</p> <p>There are opportunities for flood storage and greater access to existing and proposed recreational pathways, active travel routes and open space through development of the Strategic Development Area at Invergowrie.</p>

## 7. Moving Forward

We intend to keep this guidance a live document and continue improving our understanding of green and blue infrastructure in Perth and Kinross. Building on the revised guidance, the following future priorities have been identified which could help improve and manage existing green and blue infrastructure assets:

- **Continue to work with stakeholders including Council staff and communities to build a more detailed picture of Local Habitat Networks.** Prior to the public consultation, two internal workshops were held where staff from various backgrounds provided feedback on the draft. Most changes have been implemented pre-consultation while other suggestions are still being explored. The followings have been highlighted as potential additions to the online map and data analysis:

- Tree Protection Order buffers
- Perth City Cycle Network project routes
- Prospective Woodland Cemeteries

In term of functionality, continued user feedback and software improvements will help us further improve the online map.

- **Assessing the accessibility and quality of open spaces,** especially those which are used by local communities for outdoor recreation. An Open Space Audit would be a useful addition to this document as well as the Supplementary Guidance on Open Space Provision for New Residential Developments.

- **Getting involved with Greenspace Scotland's ParkPower initiative** which explores the potential of incorporating renewable energy generation measures into existing greenspaces. The aim of the initiative is to make parks more self-sustaining and further reduce Scotland's carbon footprint. Read more about the project [here](#).

- **Data on settlement boundaries and development sites will be updated** prior to adopting the guidance to reflect post-examination changes to Local Development Plan 2. For more information see <https://www.pkc.gov.uk/ldp2examination>

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(PKC Design Team - 2018619)

# Appendix 1

## The IGI Approach

Perth and Kinross has adapted a GIS approach first developed by the GCV Green Network Partnership to identify strategic opportunities for delivery of green infrastructure. The analysis uses a wide range of spatial datasets to identify locations where the planning process and targeted resources can deliver multiple benefits<sup>2</sup>. This helps us clearly target and communicate green infrastructure areas with the highest strategic and local opportunity.

In order to identify the opportunities for action which will deliver maximum and multiple benefits it was necessary to be able to have spatial data which could answer the following questions:

1. What Green Network resource currently exists and where are the opportunities improve the resource?
3. Where are the priority areas to improve?
  - Biodiversity networks
  - Recreational access and experiences
  - Cultural and landscape experiences
  - Water environment quality
  - Climate change resilience including flood regulation
3. Where are the major areas of land use change and growth?

<sup>2</sup>Glasgow and the Clyde Valley Strategic Development Plan, Background Report 08, Glasgow and Clyde Valley Green Network Prioritising Delivery, September 2010

The table outlines the underlying evidence, linked data and the role of this evidence in shaping Green (blue) infrastructure planning. The information identifies areas of **opportunities** (e.g. for flood risk mitigation, water quality protection etc), **enhancement** (e.g. recreational access, habitat network, Council assets and development proposals) and **protection** (e.g. woodland, protected areas etc.).

Scale	Category	Data source	Opportunity for action	Reason for inclusion
Strategic	Woodland	Ancient woodland Inventory	Protect & enhance existing assets	Trees absorb pollution and noise, improve urban areas and mitigate against the effects of climate change, including flood risk. Woodlands can also contribute to habitat protection and resilience, species diversity and provide spaces and movement corridors for people and wildlife.
		National Forest Inventory (Woodland)		
		Native Woodland Survey of Scotland		
Strategic	Less than good water quality (Water Framework Directive)	SEPA River Waterbody Classification	Deliver improvement through green infrastructure	Poor water quality can be caused by sewer overflows and uncontrolled runoff from urban areas which delivers pollutants to natural water bodies. Green and Blue infrastructure can help treat and control this runoff by slowing down and reducing the quantity of discharge. The datasets used for the study were created for the Water Framework Directive (2000/60/EC).
		SEPA Loch Waterbody Classification		
Strategic	Flood risk (Medium probability)	Flood Risk - River (Medium probability)	Deliver improvement through green infrastructure	Green and Blue infrastructure can make a valuable contribution to reducing the risk of flooding by managing surface water runoff and storing water. Existing and new greenspaces, SuDS and appropriate planting along watercourses all contribute to flood water management.
		Flood Risk - Surface Waterbodies (Medium probability)		
Strategic	Scottish Wildlife Reserves	Scottish Wildlife Reserve Boundaries	Protect & enhance existing assets	Scottish Wildlife Reserves and protected sites provide key core areas for strategic green infrastructure. They have different qualifying features (e.g. types of habitats, wildlife) which make them unique and especially important to enhance and protect.
	Protected sites	Cairngorms National Park		
		Loch Lomond and the Trossachs National Park		



Scale	Category	Data source	Opportunity for action	Reason for inclusion
Strategic	Protected sites	National Nature Reserve	Protect & enhance existing assets	Scottish Wildlife Reserves and protected sites provide key core areas for strategic green infrastructure. They have different qualifying features (e.g. types of habitats, wildlife) which make them unique and especially important to enhance and protect.
		National Scenic Area		
		RAMSAR Sites		
		Special Areas Of Conservation		
		Special Protection Area		
		SSSI		
Strategic	Integrated Habitat Network (woodland/grassland/wetland)	Grassland Habitat Network	Protect & enhance existing assets	The approach employs a detailed desk study using digital data within a geographic information system (GIS) to identify Integrates Habitat Networks (IHNs). The spatial position and extent of functional integrated habitat networks were determined through a landscape ecology model from the BEETLE (Biological and Environmental Evaluation Tools for Landscape Ecology) suite of tools. The BEETLE least-cost focal species approach negates the need to carry out a vast number of individual species analyses. The selection of the habitats to be modelled, and the species used to inform the analysis, were identified through a series of expert stakeholder workshops. The outputs can support the planning process, help prioritise conservation effort, prevent further fragmentation of biodiversity and aid connectivity of semi natural habitats. BEETLE model analysis has been well referenced (Watts et al., 2005) and used in a variety of projects such as developing forest habitat networks across Scotland. The application of IHNs is the first time that the multiple habitat network approach has been used to solicit planning and development programmes in key areas.
		Wetland Habitat Network		
		Woodland Habitat Network		

Scale	Category	Data source	Opportunity for action	Reason for inclusion
Settlement	Existing Green(-Blue) space	OS Greenspace Inland water	Protect & enhance existing assets	Data on existing areas which make up the green (blue) network within key settlement are derived from the OS (Detailed) Master Map data and the OS MasterMap Greenspace layer. This includes inland water such as lochs, pond, watercourses; network components such as adopted paths and long distance routes and a variety of landscaped and natural greenspaces. Data from the OS MasterMap Greenspace Layer was used to enhance the OS Open Greenspace layer. Extracted data includes polygons where OS MM Greenspace Layer is equal to Woodland /Open Semi Natural, Inland Water or Allotments. Extracted data is integrated with locally held data (maintained open space, LDP 2 proposed open space, Parks and Countryside sites etc) for the purpose of creating a locally enhanced version of the OS Open Greenspace layer. This layer will be used to represent Existing Greenspace areas in PKC urban areas (as defined within the OSMM Greenspace Layer technical specifications) to highlight possible opportunities for greenspace network expansion through planning, development and investment.
		BlueInfrastructure OS Open Rivers		
		Existing Greenspace Areas		
		Existing Greenspace Linkages		
Settlement	Garden and Designed Landscapes (GDL)	Gardens and Designed Landscapes (HES)	Protect & enhance existing assets	Gardens and designed landscapes - grounds consciously laid out for artistic effect – are an important element of Scotland’s historic environment and landscape and represent greenspaces that support natural heritage, cultural identity and contribute to well-being (HES) .
Settlement	Riparian buffer (6m)	Riparian buffer (6m)	Protect & enhance existing assets	Riparian buffers are vegetated areas around watercourses which help protect the stream or river from the impact of surrounding land uses. They contribute to habitat creation, flood risk mitigation and protecting water quality. The 6m buffer used in the guidance is in line with standard developer requirements set out in the Local Development Plan.

Scale	Category	Data source	Opportunity for action	Reason for inclusion
Settlement	Sustainable Urban Drainage (SUDs)	Existing Sustainable Urban Drainage Systems	Protect & enhance existing assets	SUDS include green roofs, infiltration trenches and filter drains, swales and basins, ponds and wetlands. Their primary function is controlling runoff and improving drainage and water quality. Well designed SUDS which are integrated with other green spaces can provide habitats for wildlife and an attractive amenity resource for people.
Settlement	Opportunity for intervention - Development Plan proposed site or Council Asset	LDP2 Proposals	Protect and enhance existing assets and create new green and blue spaces	Major areas of land use change and growth provide opportunity for green and blue infrastructure delivery. Perth and Kinross Development Sites are those areas where green and blue infrastructure can be protected, planned and implemented through the masterplanning process and the delivery of new development. The layer includes development sites from the Proposed Local Development Plan 2.
		Greenspace maintained or owned by the Council		Existing greenspace areas maintained or owned by the Council mainly include public open spaces (e.g. amenity areas, parks, sport facilities) and some natural/semi-natural spaces. These are important elements of green infrastructure in and around settlements, providing access to outdoor recreation and shelter for wildlife. Due to their ownership, opportunities on these areas are considered to have higher deliverability as enhancements are more likely to be supported.
Settlement	Potential Greenspace Linkages	Potential Greenspace Linkages	Enhance existing assets and create new green and blue spaces	Opportunities for enhancement and new GI delivery have been identified through stakeholder consultation and using datasets on Future Potential Routes/ Indicative Cycle Path (e.g. Perth to Dundee), Indicative Landscaping Areas from the Local Development Plan and identifying Riparian Corridors (6m buffer around watercourses). The online mapping is a live document which should be used as a tool in planning potential areas and linkages to protect and enhance Green (Blue) infrastructure
Settlement	Potential Greenspace Areas	Potential Greenspace Areas		