

Appendix 3 – Environmental Baseline & Data

Environmental Report

Renewable & Low Carbon Energy Supplementary Guidance

July 2017

Acknowledgements

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List of Maps and Charts by Theme

Provisioning

Nutrition

- Prime Agricultural Land and Water Abstraction for Agriculture
- Land Cover Map - Broad Habitat Types 2007 (CEH)
- Drinking Water Service Areas and Protected Areas (SEPA)
- Surface Water Quality 2013 (SEPA)
- Ground Water Quality and Protected Areas (SEPA)

Materials

- Native and Nearly Native Woodlands and Potential Native Woodland Networks (FC Scotland)
- Ancient and Semi Natural Woodland (SNH)
- Forest Plans, Forestry Grant Schemes and Land Capability for Forestry (JHI, FC Scotland)

Energy

- Existing (Approved) Renewable and Low Carbon Technologies and Schemes
- Total Domestic Energy Consumption
- Natural Gas Heat Demand (DECC)
- Domestic Electricity Demand (DECC)

Cultural

Landscape

- Landscape Character Assessment 1996-2001
- Landscape Sensitivity to Windfarm Development 2010
- Local Landscape Designation Review - Cultural Qualities
- Gardens and Designed Landscapes, Special Landscape Areas and National Scenic Areas
- Wild Land Areas 2014

Historic Environment

- Historic Landscape Character Assessment 2014
- Historic Environment 2015

Recreation and Green Infrastructure

- Strategic Green networks, Cycleways, Paths and Recreation Areas

Protected Sites

- Area and Condition of Protected Areas (SNH)

- Biological SSSI's, RSPB IBA's and Farmland Waders Habitat
- Geological SSSI's and Tayside Geodiversity Sites
- RSPB Bird Sensitivity Map

Regulating

Water and Air

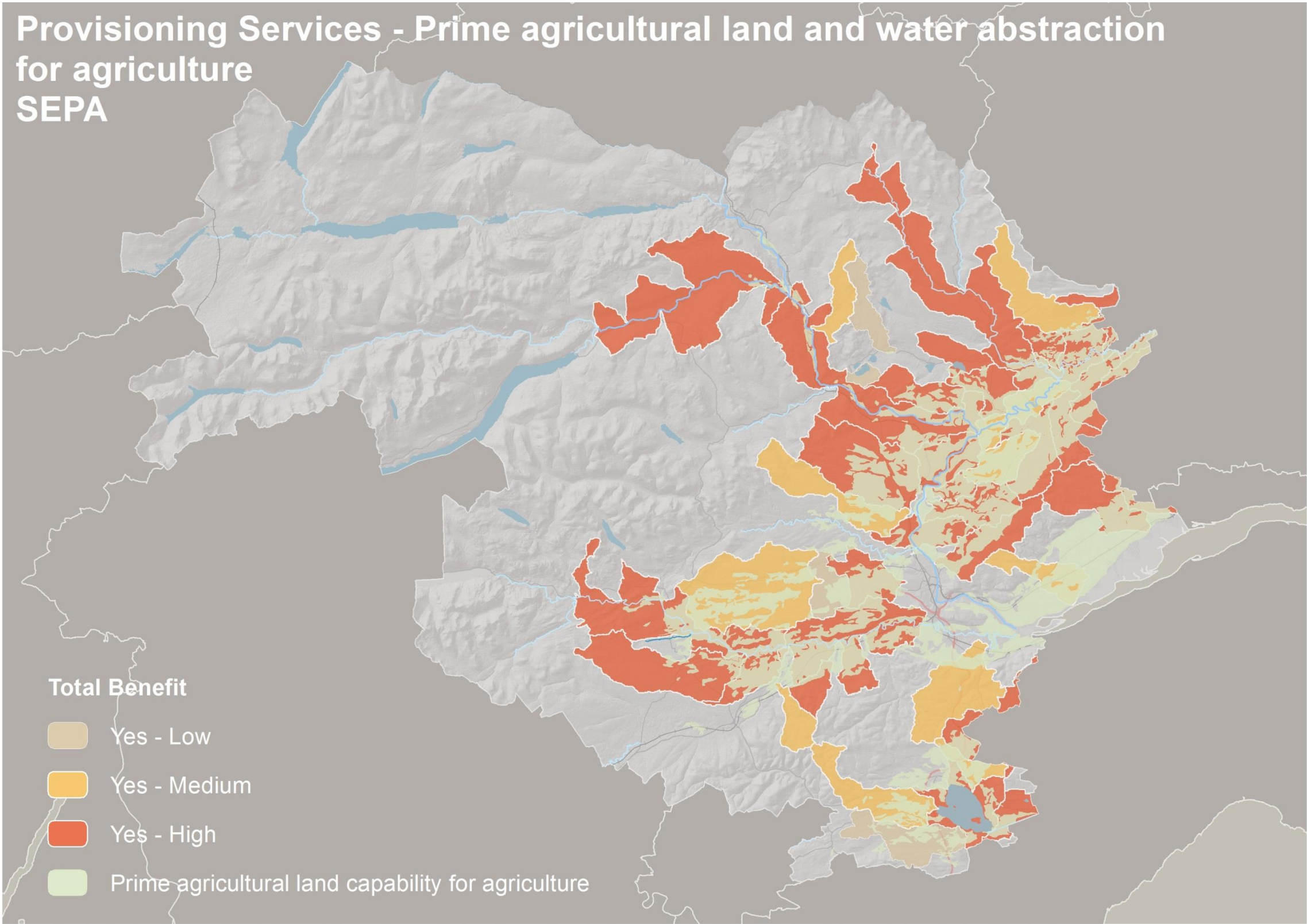
- Mean Daily Flow at Gauging Stations 1975-2014
- Flood Risk 2015 (SEPA)
- Total CO₂ Emissions Estimates 2012
- Air Quality Management Areas Perth and Kinross

Soils

- Major Soil Types (250k)
- SNH Carbon Rich, Deep Peat and Priority Peatland Habitat
- Land Capability for Agriculture (JHI)

NUTRITION

Provisioning Services - Prime agricultural land and water abstraction for agriculture SEPA



Current position

The data shows that approximately 11% or 57 000 ha of prime agricultural land are located in the south and eastern areas of Perth and Kinross. Most (~25%) of large abstractions for agriculture are also in these areas.

Service provided

The map shows the size of abstractions for agriculture from the water environment that SEPA has licensed and the Land Capability for Agriculture (LCA) classification, widely used as a basis of land valuation on the basis of its potential productivity and cropping flexibility. This is determined by the extent to which the physical characteristics of the land (soil, climate and relief) impose long term restrictions on its agricultural use.

Benefits provided

Total income from farming in Scotland amounts to approximately [£600m/year](#). The relative value of agricultural output is indicated by average Gross Margin for the main farming enterprises (SAC, The Farm Management Handbook, 2011/12, 32nd Edition) for each surface inland water body catchment. The highest value farming takes place in the water body catchments on the east and north east coast which is also where the largest abstractions for agriculture are licensed. Farming also provides employment for people in many remote areas where there is no alternative employment.

Impacts caused by use of the water for agricultural production

Abstracting water for agriculture can impact on both the availability and flow characteristics of water in rivers and lochs. Removal of water can also affect the ability of a water body to dilute other discharges and therefore impact water quality.

Impacts affecting use of the water environment for agricultural

Other activities that affect the flows and levels of water in a water body have potential to impact upon its use for agricultural irrigation. In addition, if water quality is reduced this could affect its suitability for use in irrigation.

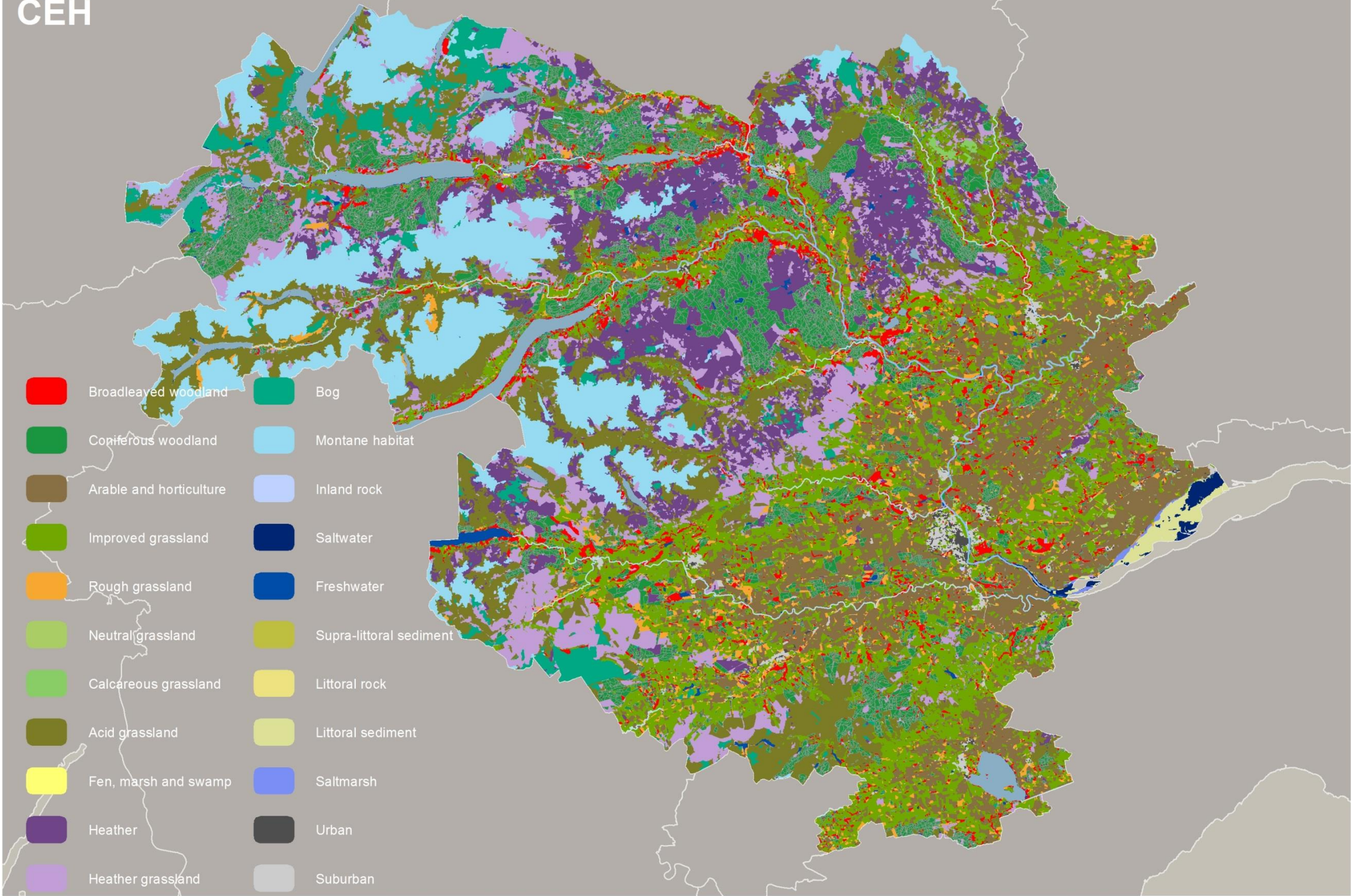
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Data availability: unknown

Data provider: SEPA, JHI

Provisioning Services - Land Cover Map - Broad Habitat Types 2007

CEH



Current position

There is a clear distinction between scrub, heath and moorland in the upland area in the north west and agriculture in the lowland areas of the south east and river valleys. The main land cover categories are montane and heath scrub (36%), grassland (28%) agriculture (10%) and forestry / woodland (17%). Predominantly residential areas account for less than 1% of the total Perth and Kinross area.

Relevance of this indicator

Land cover as assessed by the Centre for Ecology and Hydrology (CEH) is a parcel-based classification of UK land cover. It uses 23 classes to map the UK, which are based on the UK Biodiversity Action Plan (BAP).

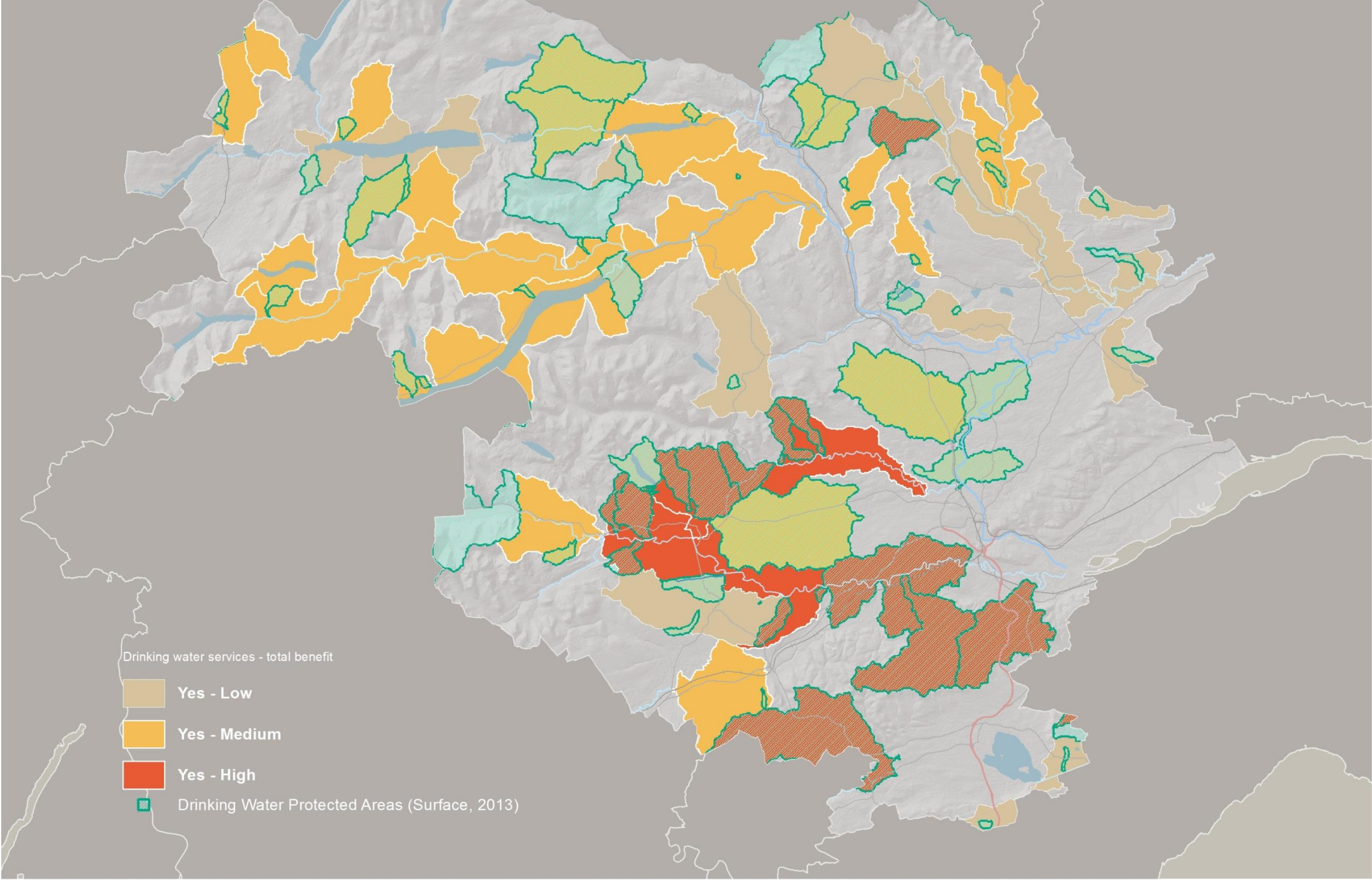
The natural physical influences which originally shaped the landscape of Perth and Kinross and continue to cause it to change are solid and drift geology, hydrology and climate.

Data source: Centre for Ecology and Hydrology

Data availability: No Planned Update

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Provisioning Services - Drinking water service areas and protected areas SEPA



Current position

Currently approximately 160,000 ha or 36% of sub catchments intersecting the Perth and Kinross Planning Authority area provide drinking water services.

Brief overview

Drinking water is essential for our survival. 97% of drinking water is supplied by Scottish Water with the remaining 3% coming from private supplies.

Service provided

The service that the water environment provides is volumes of water for abstraction and use in drinking water. This service is provided by lochs, rivers and groundwaters.

Benefits provided

The data we have shows the relative number of people served drinking water. It has been calculated from the abstraction size by assuming that each person requires 300 litres/day.

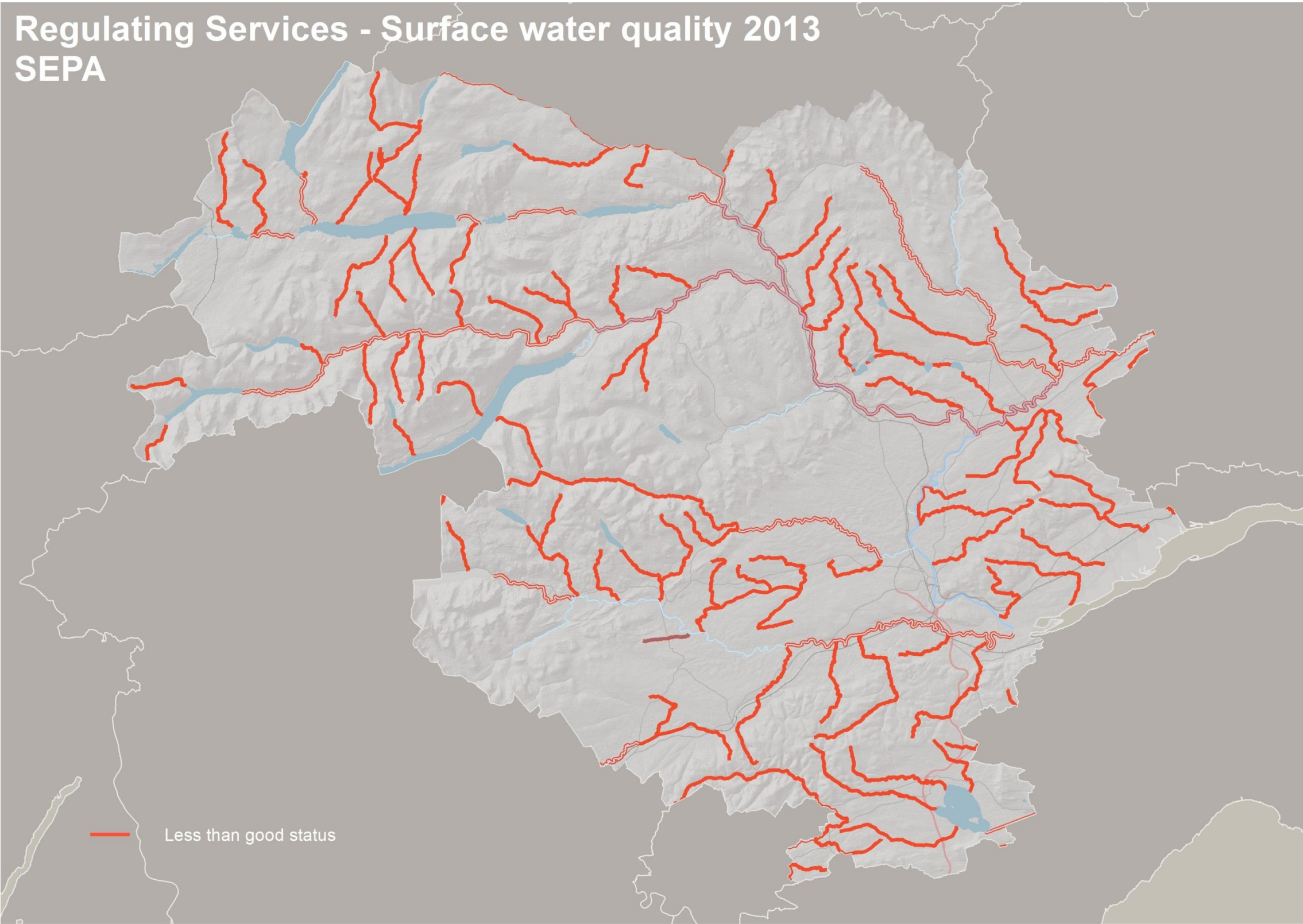
Impacts caused by use of water environment for drinking water. Abstracting water for drinking can impact on river water flows and levels, and therefore on other activities that rely on river water flows, and the habitat that rivers provide. Removal of water could also impact on a water body's ability to dilute other discharges and therefore affect water quality.

Impacts affecting use of water environment for drinking water. Drinking water needs to come from relatively clean supplies. This is particularly the case where private supplies of drinking water are used because they cannot be treated to the same standards as public supplies. If drinking water supplies are not clean and free of pollutants, then costs of treatment for Scottish Water and/or the health of consumers could be affected.

Data availability: Annual

Data provider: SEPA, Scottish Government Drinking Water Quality Dept.

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Current position

According to the draft Scottish River Basin Management Plan, river quality was of a good standard in 2007, with 53% achieving an overall status of good or high quality. In the Perth and Kinross area in 2013 a slightly lower percentage, 45%, of the total number of rivers were classified as being of good status or better, with areas in the East and South containing rivers of bad or poor status.

Benefits delivered

Improving and maintaining the ability of the water environment to support life is a fundamental purpose of the Water Framework Directive (WFD). While our scientific understanding of the ways that ecosystem processes work together to deliver supporting services is still not complete, the standards that have been set for maintaining the ecological status of the water environment in the WFD are based on the need to support its underlying health. If the ecological status of the water environment is deteriorating it is reasonable to assume that its provision of supporting benefits will also be undermined.

Impacts caused by use of the water environment to deliver supporting services

Use of the water environment to deliver basic supporting services for life may have an adverse impact on its use to deliver benefits that require major changes to the water environment.

Impacts affecting use of the water environment to deliver supporting services

Any factors that adversely impact upon the ecological status of the water environment have potential to impact upon its ability to deliver supporting (SEPA, 2014)

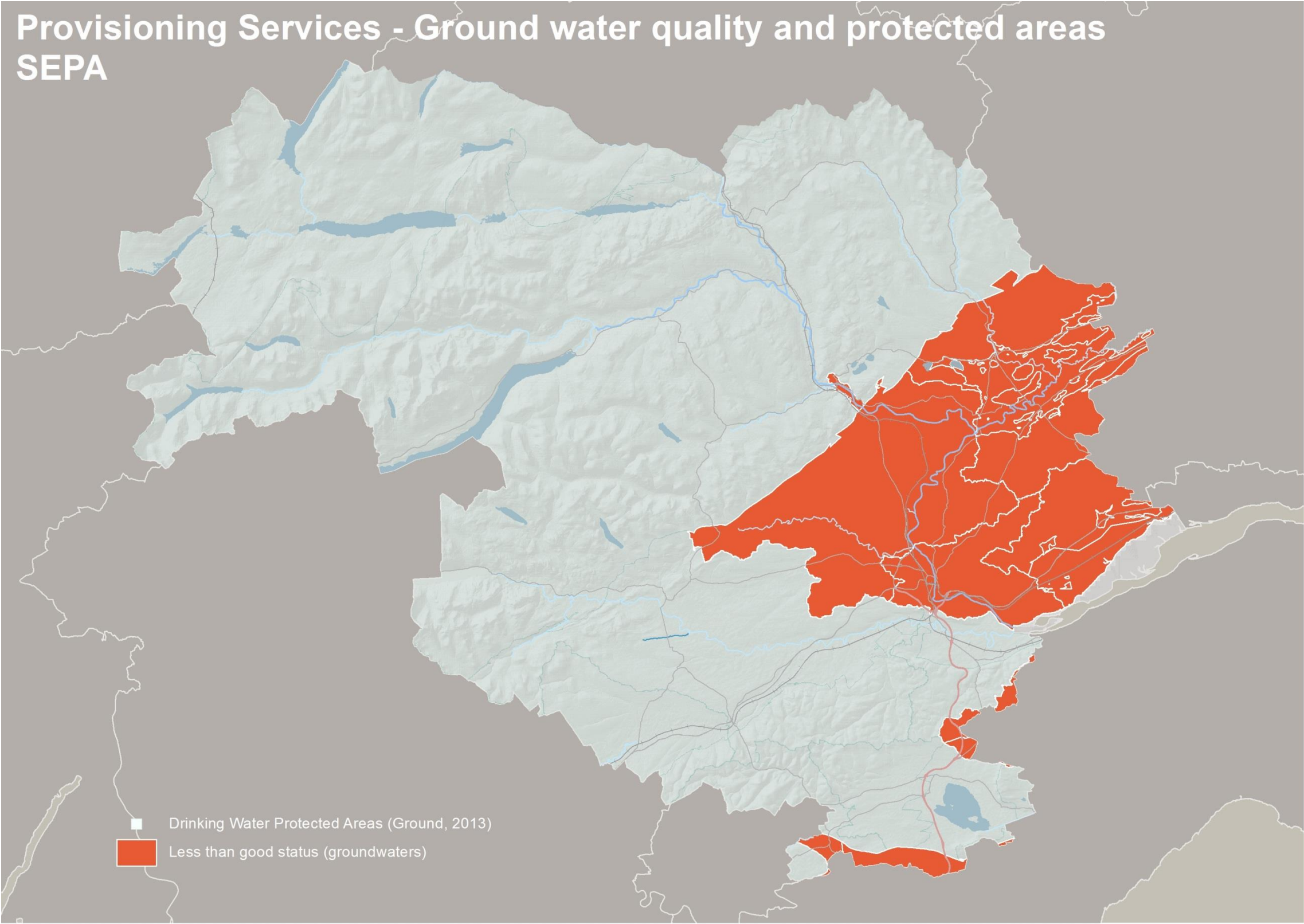
Data source: SEPA

Data availability: Annual

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Provisioning Services - Ground water quality and protected areas

SEPA



Current position

In the Perth and Kinross area in 2013 82%, of the total number of groundwater bodies were classified as being of good status or better, with areas in the East and South containing groundwater bodies of bad or poor status. The entirety of the Council area is a ground water drinking protected area (SEPA 2014)

Benefits delivered

Improving and maintaining the ability of the water environment to support life is a fundamental purpose of the Water Framework Directive (WFD). While our scientific understanding of the ways that ecosystem processes work together to deliver supporting services is still not complete, the standards that have been set for maintaining the ecological status of the water environment in the WFD are based on the need to support its underlying health. If the ecological status of the water environment is deteriorating it is reasonable to assume that its provision of supporting benefits will also be undermined.

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Data source: SEPA

Data availability: Annual

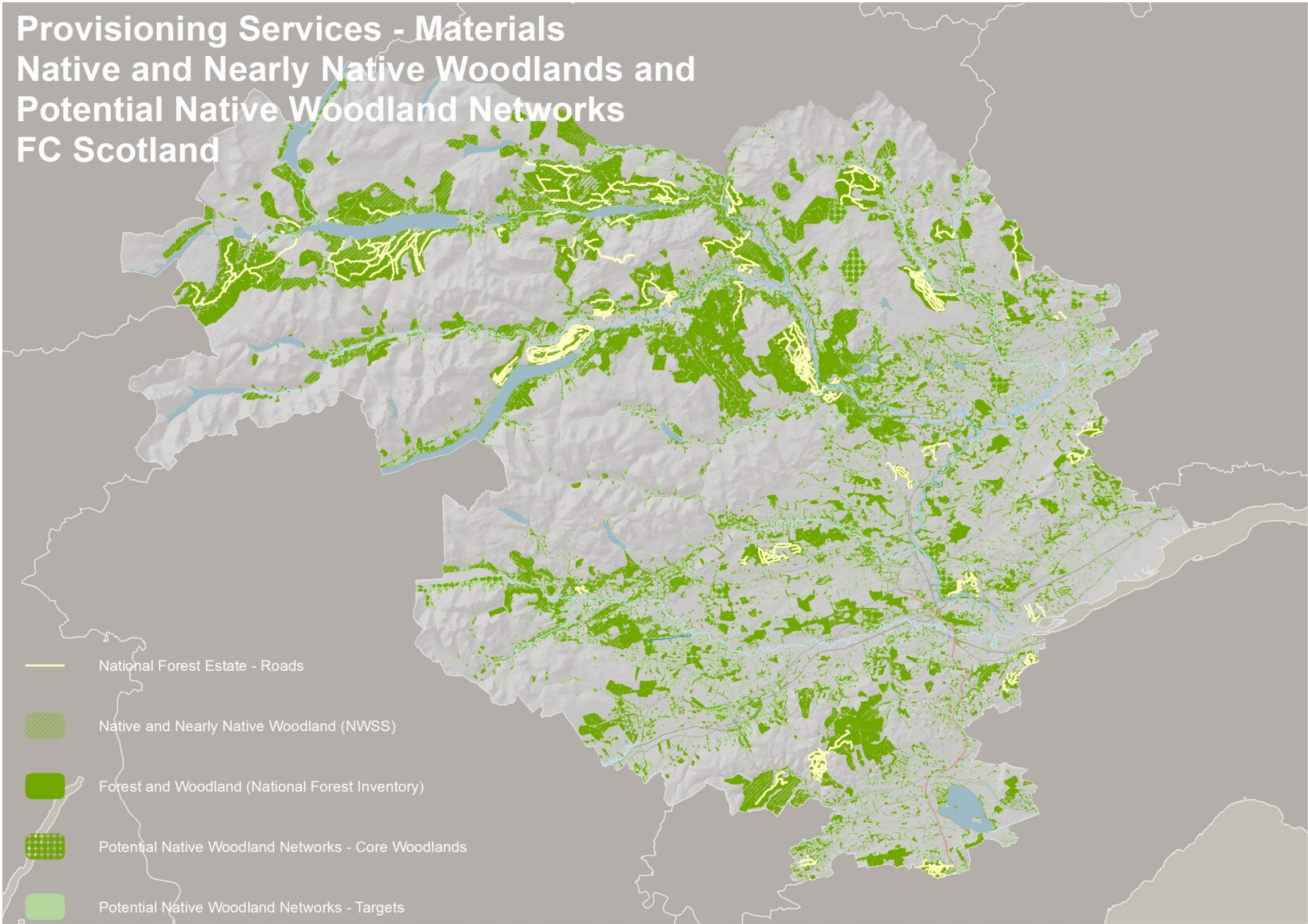
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MATERIALS

Provisioning Services - Materials

Native and Nearly Native Woodlands and Potential Native Woodland Networks

FC Scotland



Current position

There has been a clear upward trend in woodland cover in Perth and Kinross since 1905. The Scottish Forestry Strategy sets an aspirational target of 25% woodland cover in Scotland by 2025.

In 2010, the Forestry Commission completed the National Woodland Inventory (NFI) which shows the extent of all woodland of 0.5 ha or over. The objective is to identify; real woodland gains and real woodland losses. According the NFI 17% of Perth and Kinross is forested, an increase of 1% or over 6500 ha since 2002. (Forestry Commission, 2011)

Approximately 6% of this area is native or nearly native woodland according to the Native Woodland Survey of Scotland (Forestry Commission, 2013)

Potential Native Woodland Networks have been identified to help focus native woodland expansion, improvement and restoration. This map highlights core areas of woodland for native woodland expansion and potential expansion zones to core woodlands and shows the location where new native woods would best develop a successful ecological connection to an adjoining core woodland area.

Relevance of this indicator

Preservation and enhancement of the distinctive landscape of the Perth and Kinross area is important to maintain community wellbeing, biodiversity and to support the local economy. Woodlands support the region's economy through timber production, and play a key role in the tourist industry, providing recreational opportunities and contributing to the region's unique landscape and ecology.

Data source: Forestry Commission

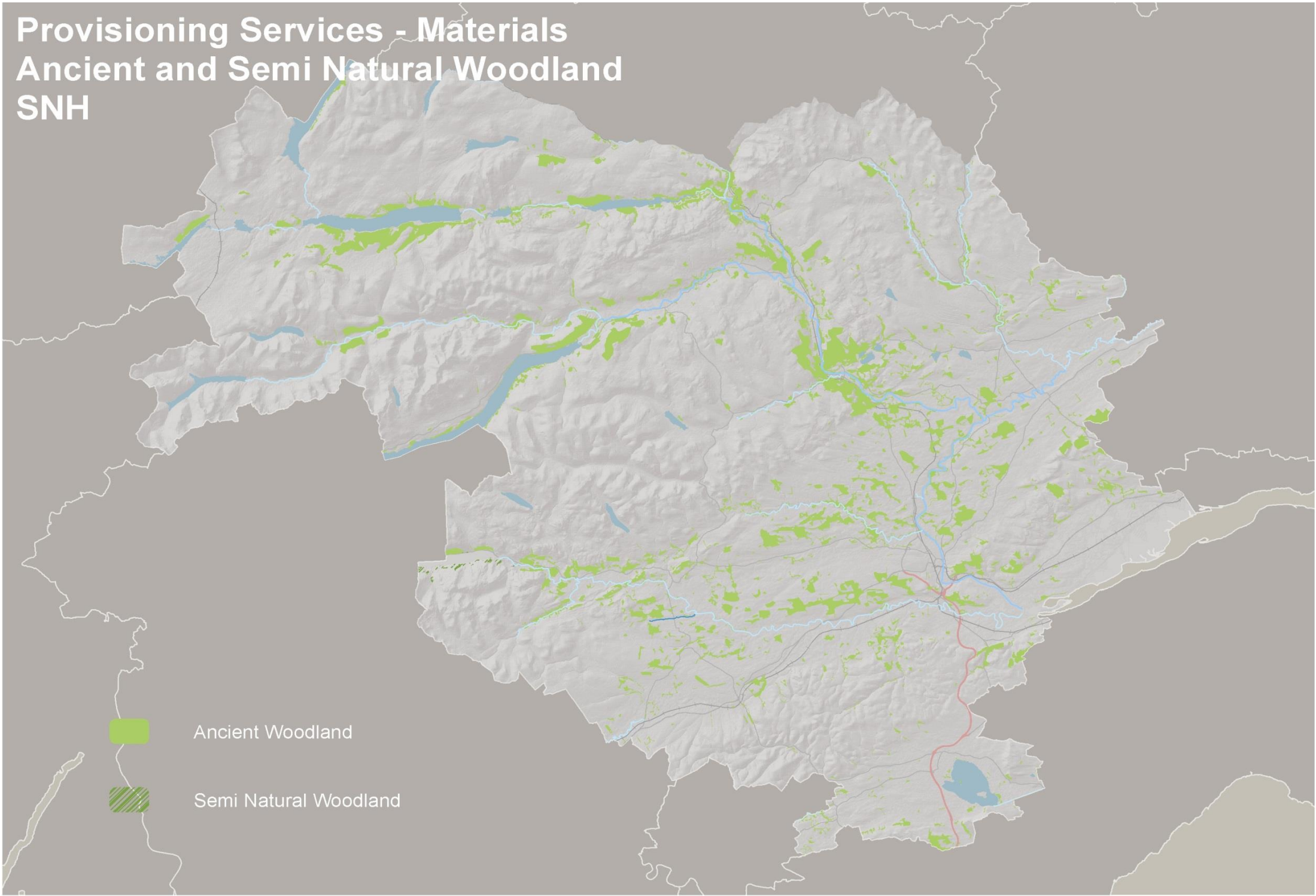
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Provisioning Services - Materials

Ancient and Semi Natural Woodland

SNH



Current position

The Forestry Commission identified approximately 57142 ha of ancient and semi-natural woodland in Perth and Kinross (2006).

Relevance of this indicator

This dataset contains information gathered by remote means using 1970s sources (maps, aerial photos) about the woodland cover present on Ancient & Long-Established Woodland Inventory sites. It does not contain information about woods not on the Inventory.

The historic character of the environment is important to quality of life and sense of identity, and it is a vital contributor to the economy through the attraction of visitors. Constant change in the historic environment is a result of natural processes, such as climate change and erosion, and human interventions, such as land management, urban and rural development, transportation and pollution.

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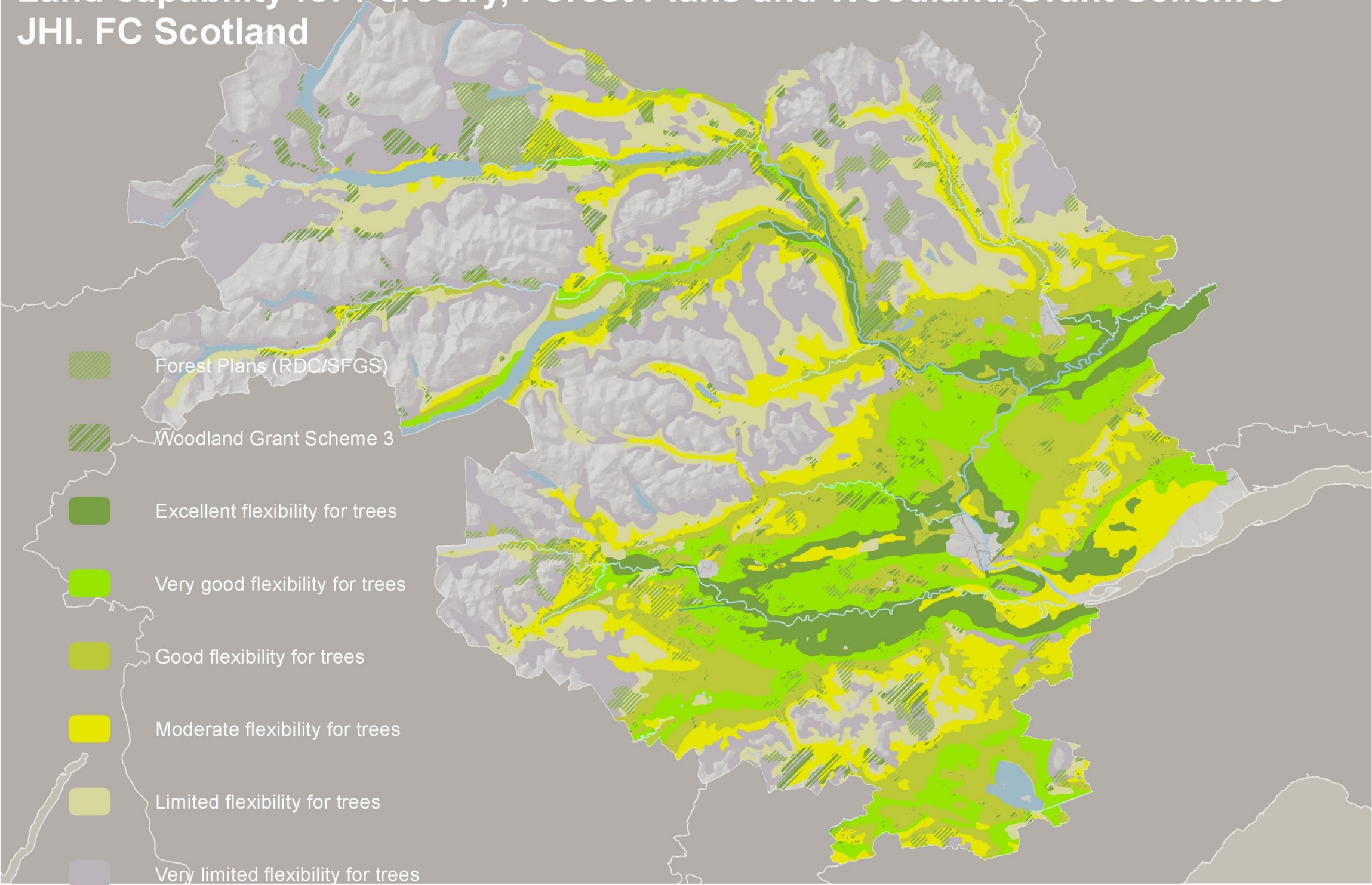
Data source: SNH

Data availability: Annual

Provisioning Services - Materials

Land capability for Forestry, Forest Plans and Woodland Grant Schemes

JHI. FC Scotland



Current position

Approximately 33% of the land area in Perth and Kinross has potential for woodland expansion out with biophysical and critical constraints¹; only 2% of this area is estimated to be suitable for woodland expansion within likely constraints (Forest Research, 2006).

Relevance of this indicator

Areas with good soils and favourable climate can support a greater variety of tree species and are therefore offer more “flexibility” in terms of the range of types of woodland that can be grown. This in turn generally translates to a greater variety of woodland types and forestry related activities that can potentially be supported. The Area was subdivided into 7 categories (excellent flexibility to land unsuitable for woodland) which were derived from the Macaulay Land Use Research Institute Land Capability for Forestry Maps using seven land use classifications F1-F7. Each class is based on the degree of limitation imposed by physical factors of soil, topography and climate on the growth of trees and on soil silvicultural practices.

The Woodland Grant Scheme provided incentives for people to create and manage woodlands across Great Britain. This WGS3 dataset provides grant, contract and management information for all Woodland Grant Scheme contracts approved in Scotland between September 1994 and February 2003.

Approved Forest Plans eligible for grant support through SFGS (Scottish Forestry Grant Scheme) and RDC (Rural Development Contracts) provides felling and restocking approval for a 10 year period.

Data source: JHI, FC Scotland

Data availability: Unknown

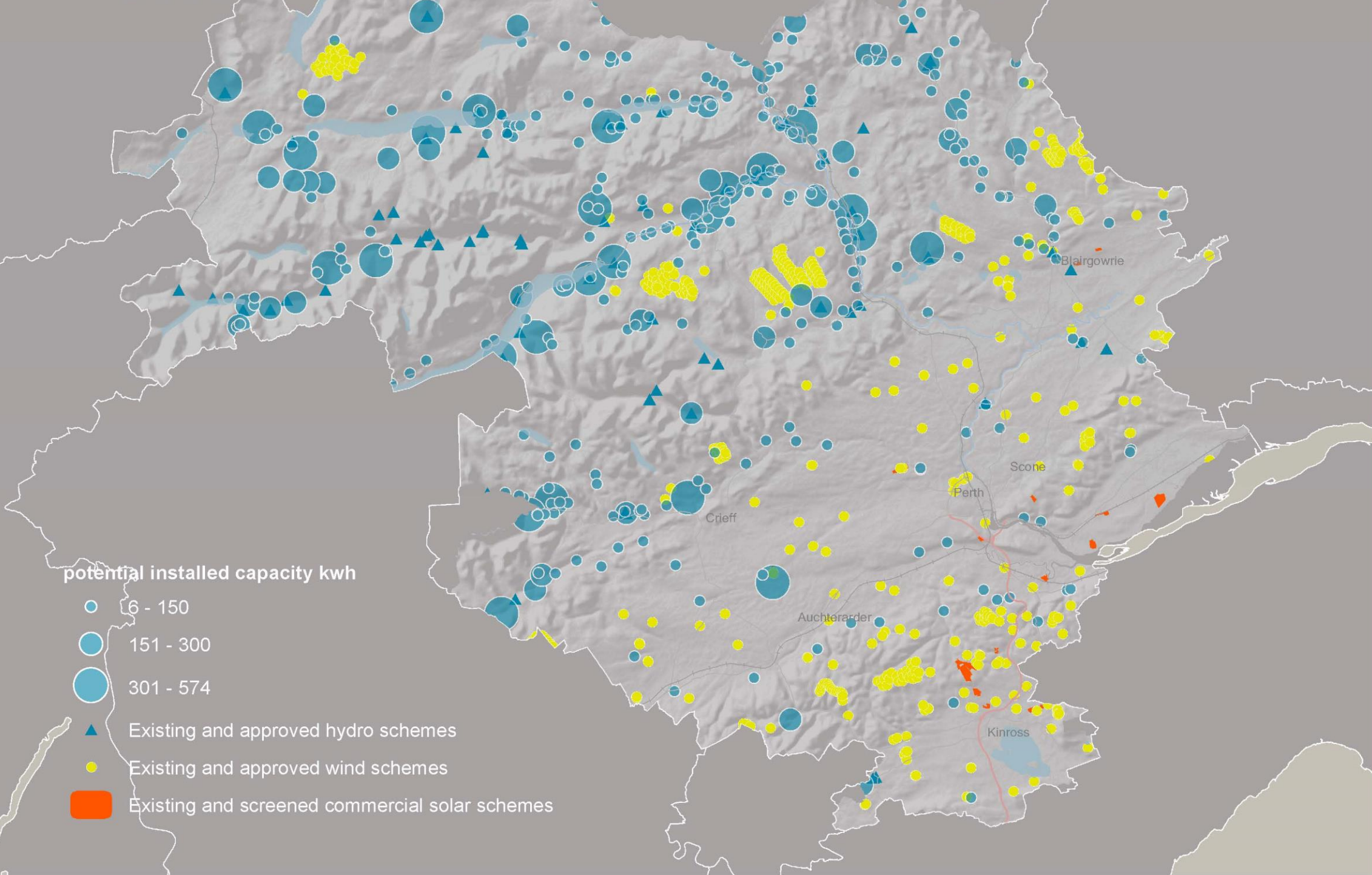
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¹ Designated Sites (non-woodland), Blanket Peat (>1m deep), SAC's SPA's, Prime Agricultural Land, River Basin Management, Landscape (AGLV, NSA, LCA), priority areas for heathland, important hill grazing land, archeologically sensitive areas and wild and remote bare land.

ENERGY

Provisioning Services - Energy

Existing (approved) renewable and low carbon technologies and schemes



Current position

A 2011 study identified 659 hydro opportunity sites across the area that should pay back within 10 years; over half of which appear technically feasible and would provide an installed capacity of 33.50 MW.

Existing approved and installed hydro schemes are shown. Perth and Kinross has approximately 300 MW of the installed capacity,.

Existing approved and installed windfarms are shown. Perth and Kinross has 3.15% of the nations installed microgeneration capacity, the second highest in Scotland and the UK. There are currently 75 onshore wind schemes in Perth and Kinross with an installed capacity of 264MW (an increase of 37MW since 2011), with a further 55% potential increase from 301 turbines in approved or consented schemes.

The main planning considerations for wind applications are likely to be their fit with the scale and character of the landscape and whether a proposal is likely to have any detrimental impacts on ecological interests (particularly birds), community, historic and cultural environment considerations, and aviation and defence interests. The potential for cumulative effects will also be an important consideration in determining planning applications.

Existing approved and installed commercial solar schemes are shown. Perth and Kinross has 159 MW of installed capacity..

Relevance of this indicator

The Scottish Government has a target of generating 100% of Scotland's gross annual electricity consumption from renewable sources by 2020.

Wind and hydro power provide clean and renewable sources of electricity which help reduce greenhouse gas emissions.

Data Source:, PKC

Availability: Unknown

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Total domestic energy consumption

Relevance of this indicator

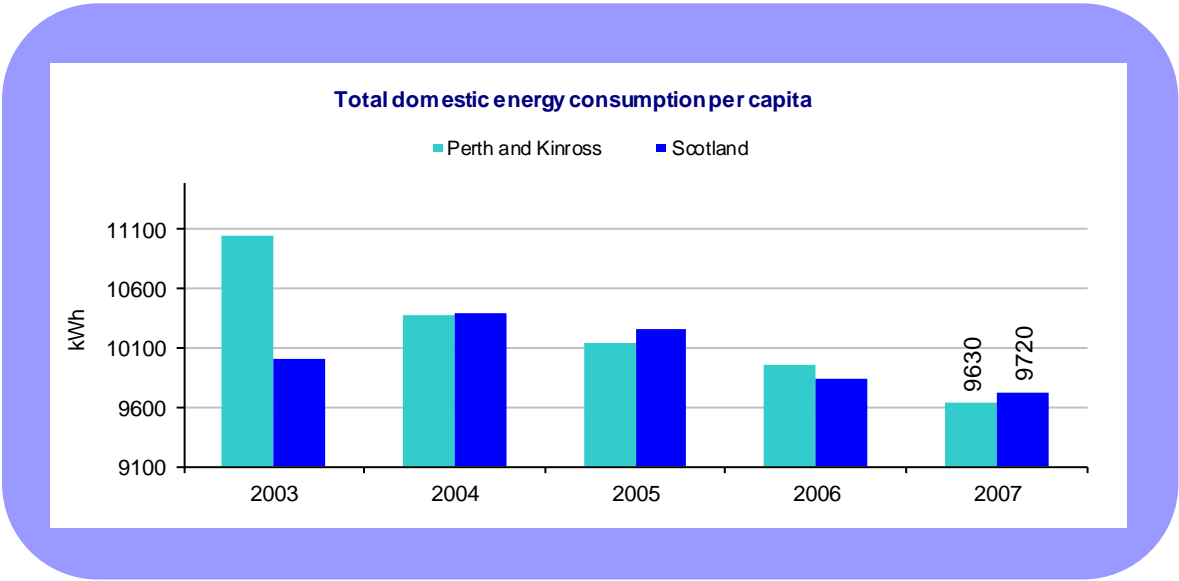
Energy use, conservation and supply are essential for the long term future of Perth and Kinross.

Present levels of energy consumption and the increasing trend in consumption are unsustainable and negatively impact on the environment, through associated carbon dioxide emissions. Reducing carbon dioxide emissions is key in tackling climate change and reducing total domestic energy consumption in the Perth and Kinross area will mitigate towards this.

Current position

The total domestic energy consumption per capita (kWh) is reported annually by the Department of Energy and Climate Change.

Data was first recorded in 2003 and since then the total domestic energy consumption per capita (kWh) for the Perth & Kinross area has steadily decreased year on year. The latest available data for the Perth and Kinross area (in 2007) recorded total domestic energy consumption per capita of 9630 kWh.



LINKS:

PKC Sustainable Development Principles

- SDP2 Efficient use of resources now and in the future in the built environment and service provision (e.g. energy efficiency, land, water resources, flood defence, waste minimisation)
- SDP3 Mitigation and adaptation to manage the impact of climate change & reduce the production of greenhouse gases
- SDP4 Living in a way that minimises the negative environmental impact and enhances the positive impact (e.g. recycling, walking and cycling)

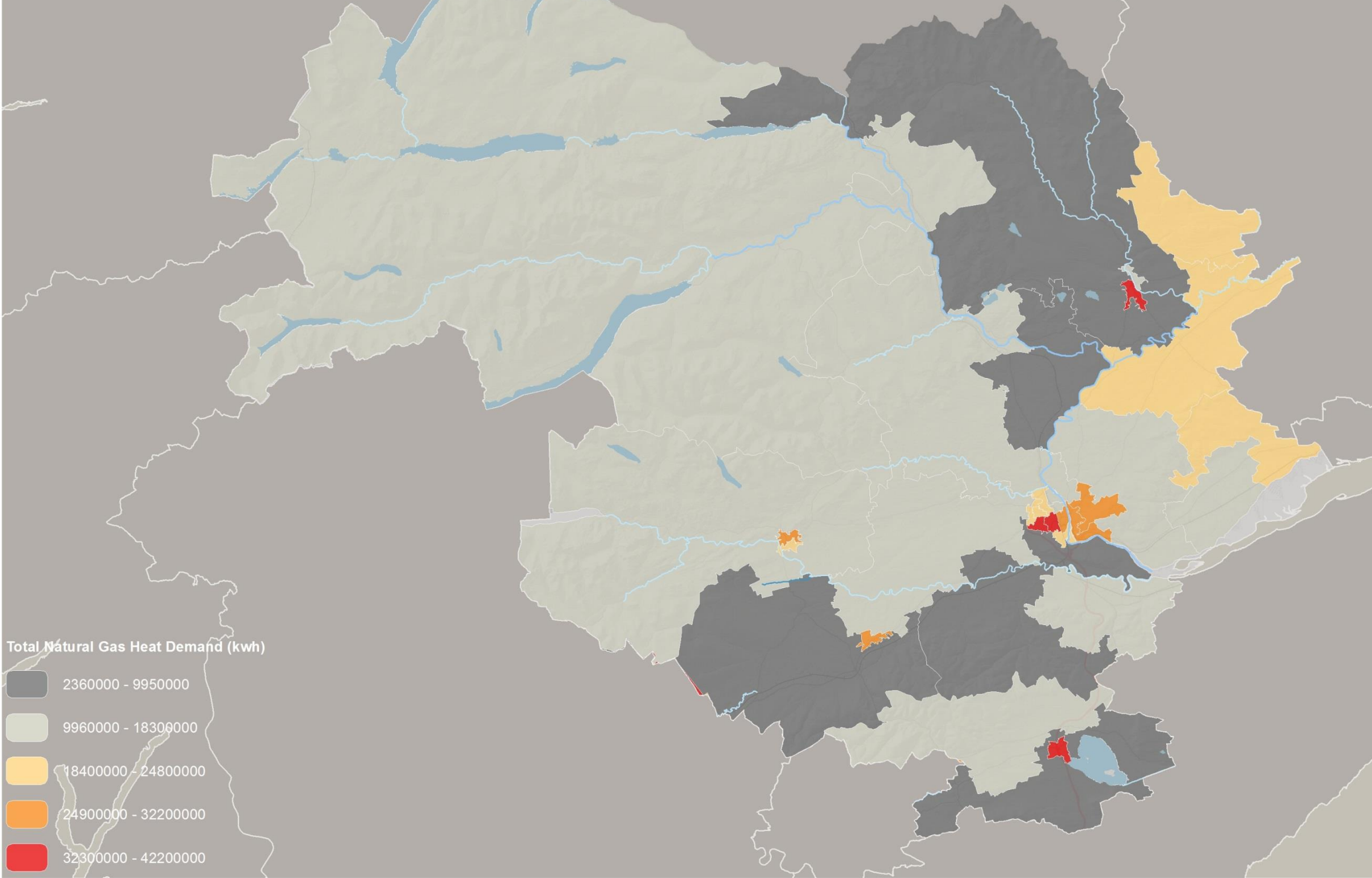
Corporate Plan Objective

A Safe, Secure and Welcoming Environment

Local Outcome

Provisioning Services - Energy

Natural Gas Heat Demand (DECC)



Current position

This indicator shows DECC's sub-national estimates of electricity and gas consumption for Great Britain. Estimates are based on the aggregation of Meter Point Reference Number (MPRN) readings throughout Great Britain obtained as part of DECC's annual meter point gas data exercise.

The estimates for 2013 cover the gas year between 1 October 2012 and 30 September 2013 and are supplied to DECC as weather corrected data. Estimates presented for 2013 are provisional.

Scotland had the highest mean domestic consumption of natural gas with 14,300 kWh per meter (median consumption of 12,700 kWh). In Perth and Kinross in 2013 mean domestic consumption was significantly higher with a mean domestic consumption of 15, 822 kwh.

In the domestic sector, gas consumption is predominately used for heating purposes and as a result usage is driven by external temperatures and weather conditions. A change in survey methods prevents comment on this trend.

Relevance of this indicator

Carbon dioxide from transport, industry and domestic sources (such as heating, lighting and cooking) is the main greenhouse gas emitted in Scotland. Reducing carbon dioxide emissions is key to tackling climate change. Energy use, conservation and supply are essential for the long term future of the region.

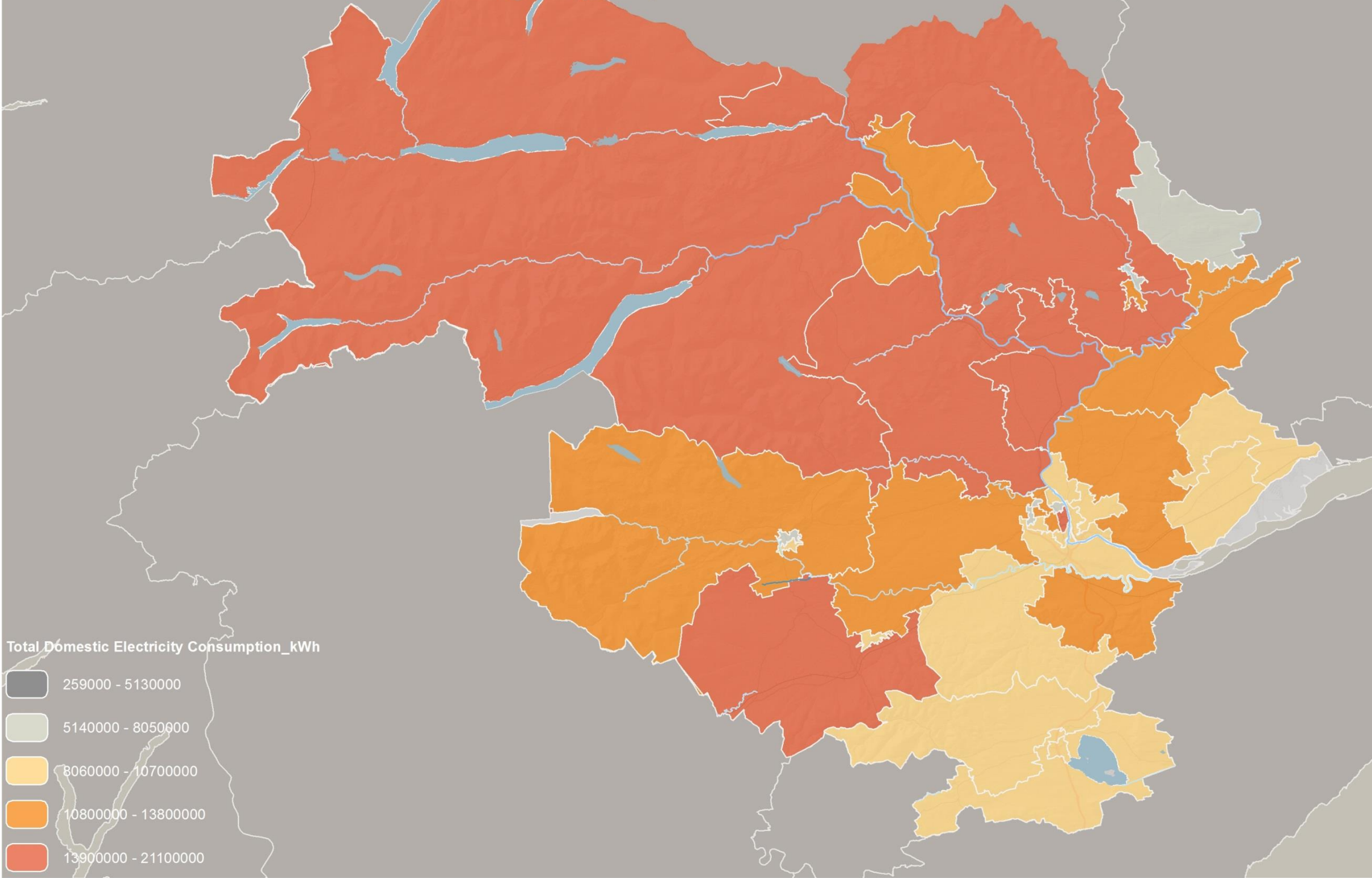
Data source: DECC

Data availability: Annual

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Provisioning Services - Energy

Domestic Electricity Demand (DECC)



Current position

This indicator shows DECC's sub-national estimates of electricity and gas consumption for Great Britain. Estimates are based on the aggregation of Meter Point Reference Number (MPRN) readings throughout Great Britain obtained as part of DECC's annual meter point gas data exercise. Estimates presented for 2013 are provisional.

Mean annual domestic electricity consumption per meter in Scotland 3,900 kWh. In Perth and Kinross in 2013 mean domestic was significantly higher 5577 kwh per household.

Relevance of this indicator

Carbon dioxide from transport, industry and domestic sources (such as heating, lighting and cooking) is the main greenhouse gas emitted in Scotland. Reducing carbon dioxide emissions is key to tackling climate change. Energy use, conservation and supply are essential for the long term future of the region.

Data source: DECC

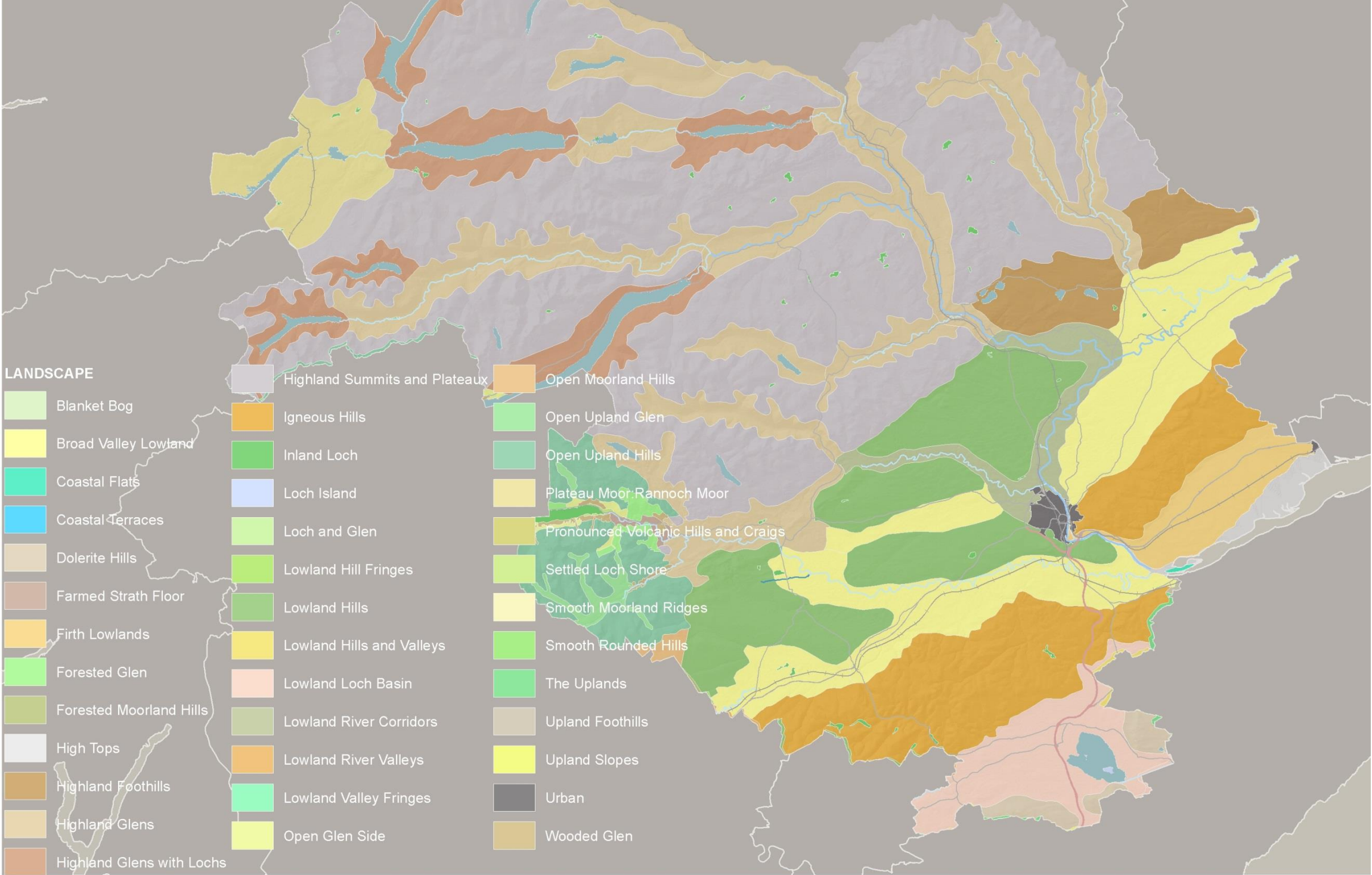
Data availability: Annual

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LANDSCAPE

Cultural Services - Landscape

Landscape Character Assessment (1996 - 2001)



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Current position

The landscape within the Perth and Kinross is divided into two main units: highlands and lowlands, reflecting geology, topography, vegetation and land use. Key landscape character areas are mountains of the highlands and islands (30%), highland and island glens (13%) broad valley lowlands (10%), lowland hills (5%) and upland igneous and volcanic hills (6%). The remaining areas are comprised of a mix of lowland basins and valley, peatlands and inland lochs (The Macaulay Institute, 2001)

Relevance of this indicator

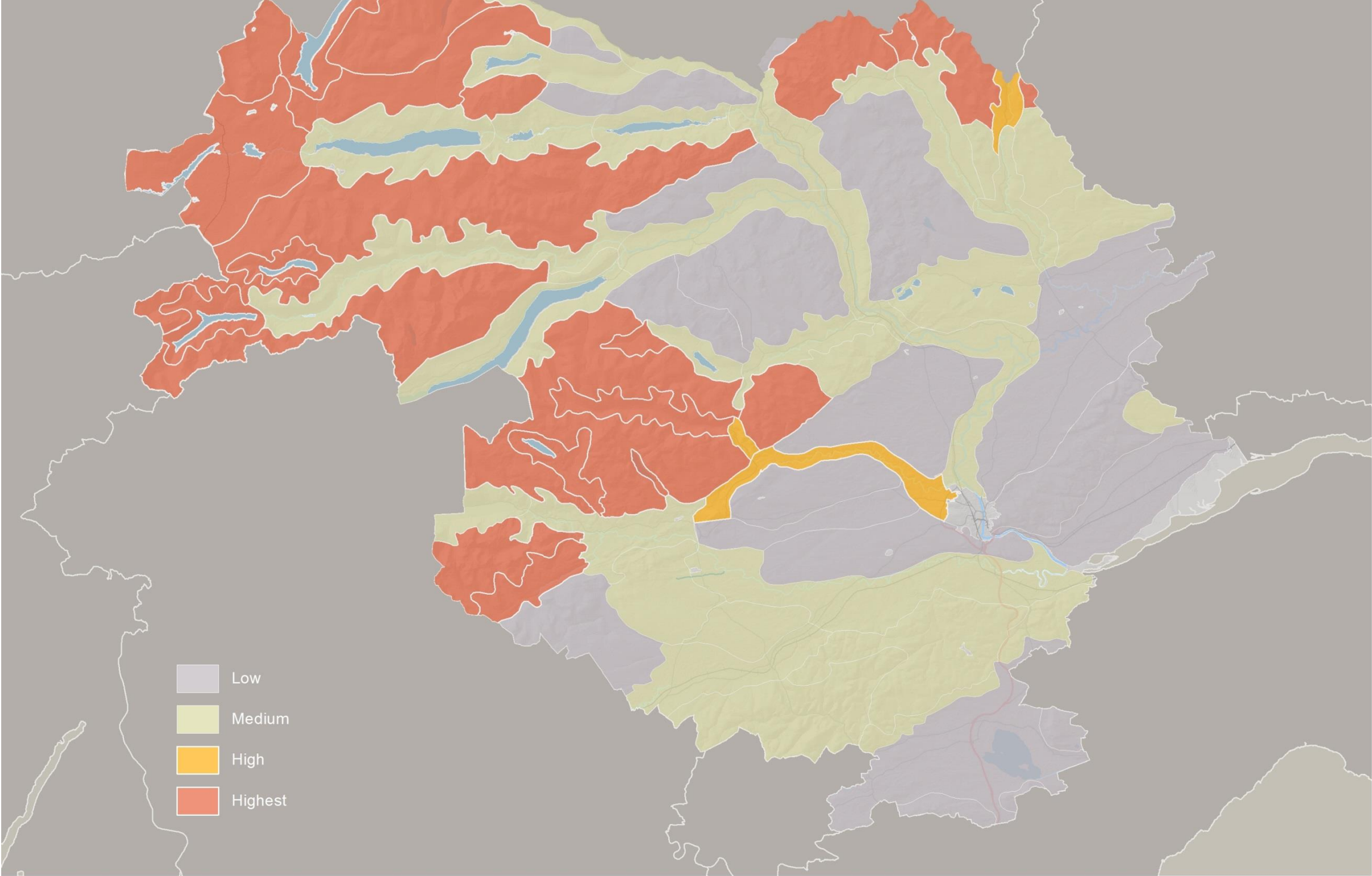
Landscape incorporates the environmental and cultural features present in an area. Preservation and enhancement of the distinctive landscape of the Perth and Kinross area is important to maintain community wellbeing, biodiversity and to support the local economy, which is dependent on tourism and maintenance of a healthy environment.

Data source: JHI

Data availability: No Planned Update

Cultural Services - Landscape

Landscape Sensitivity to Windfarm Development (2010)



Current position

Assessing how and where the landscape could best accommodate wind farms required the definition of any landscape character units which are of the highest sensitivity, where wind energy development, and indeed any other large scale, uncharacteristic form of built development, would be inappropriate. Three criteria were developed to apply this test L1) : Landscape Experience; L2: Land use and change: Landscapes with no obvious or extremely limited evidence of modern settlement, buildings, infrastructure or main roads, no or only very localised forestry plantations or intensive agriculture, obviously unspoilt, historic landscapes and inventory Designed Landscapes; L3: Rarity Landscapes which are rare or unusual landscape character types which retain their distinctiveness and merit protection in the interests of sustaining good representative examples of each landscape character type

The areas which were assessed as Areas of the Highest Sensitivity (AHS) where wind energy development would be inappropriate, are colour coded red on the map.

The second step in the process was to apply further agreed criteria to the remaining landscape character units. This enabled the definition of areas of higher, medium and lower sensitivity for all wind farms above 20MW. These further criteria were: a) the scale of the landscape; b) the openness of the landscape; c) topography; and d) land cover.

Relevance of this indicator

Landscape incorporates the environmental and cultural features present in an area. Preservation and enhancement of the distinctive landscape of Perth and Kinross is important in maintaining community wellbeing, biodiversity and supporting the local economy (tourism in particular).

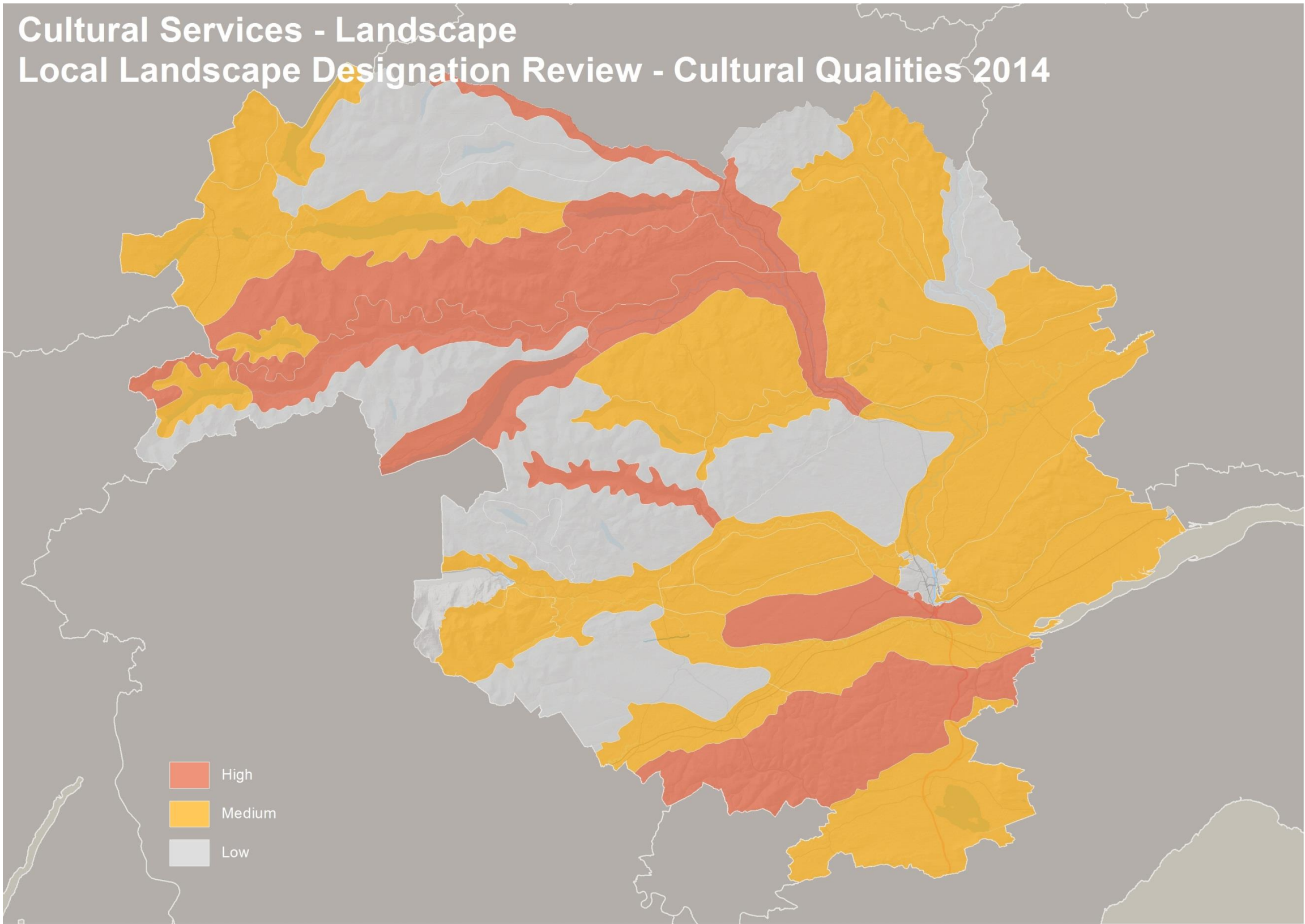
Data source: Scottish Natural Heritage, Historic Environment Scotland, PKC, David Tyldesley Associates.

Data availability: Ad hoc

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Cultural Services - Landscape

Local Landscape Designation Review - Cultural Qualities 2014



Current position

The LLDR has drawn upon the landscape character assessment (LCA) presented in the Landscape Study to Inform Planning for Wind Energy Final Report (David Tyldesley and Associates, 2010), referred to in this report as the Tyldesley Landscape Study. This refined and sub-divided some of the landscape character types and units identified in the earlier Tayside Landscape Character Assessment (TLCA) (LUC, 1999), and is therefore the most recent and detailed available characterisation of the whole of the Perth and Kinross landscape. On reviewing these character areas, it was decided to merge some adjacent areas to form a smaller number of larger character units.

The adjacent maps displays the results of the landscape evaluation, which examined each of the 47 landscape units in terms of the character and quality criteria including cultural qualities (i.e. landscapes which provide cultural associations such as with literature, music, art or local history or which have spiritual associations).

The areas scoring highly on this criterion included the Ochil Hills, which have strong literary connections and historic drove roads; the Gask Ridge, being the earliest Roman land frontier in Britain; and Pitlochry, which was a historically important tourist resort and now hosts numerous festivals and events. Fewer cultural qualities were identified in the areas scoring low.

Relevance of this indicator

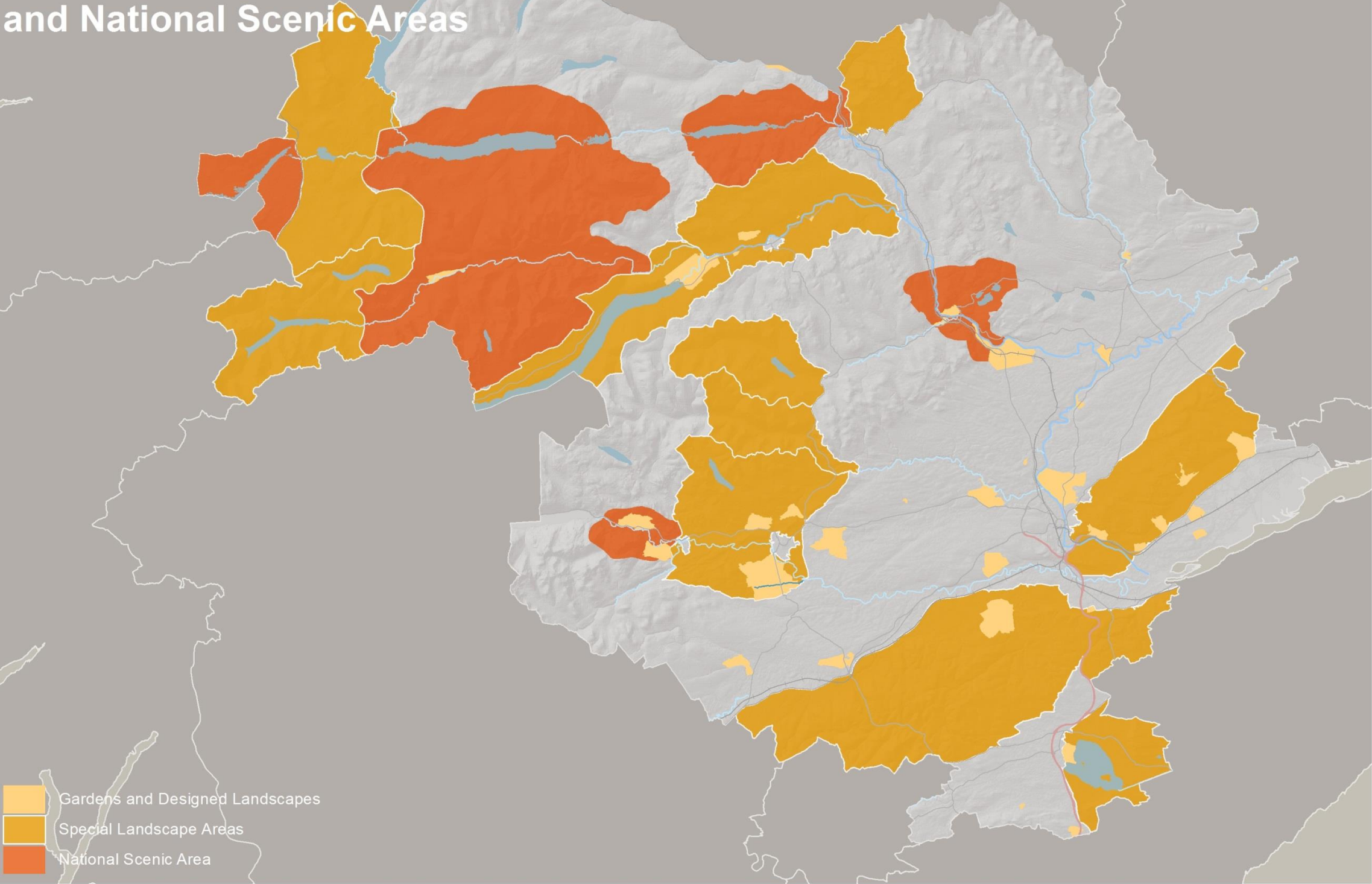
Landscape incorporates the environmental and cultural features present in an area. Preservation and enhancement of the distinctive landscape of Perth and Kinross is important in maintaining community well being, biodiversity and supporting the local economy (tourism in particular).

Data source: Scottish Natural Heritage, Historic Environment Scotland, PKC

Data availability: Ad hoc

Cultural Services - Landscape

Gardens and designed landscapes, Special Landscape Areas and National Scenic Areas



Current position

The only national landscape designation in Scotland is National Scenic Area (NSA). These areas are considered to be of national importance due to their outstanding scenic interest which must be conserved as part of the country's natural heritage.

In 2015 there were 42 gardens and designed landscapes covering 11123 ha representing an increase in area of 68 ha over the previous year.

There are 11 Special Landscape Areas (SLAs) spread across Perth and Kinross, and consist of a range of highland and lowland areas covering 144 400 ha or around 27% of Perth and Kinross. SLAs are landscapes within Perth and Kinross which merit special attention, either because they are of particular value and warrant protection or because they are degraded and require active management or positive restoration, or are under threat from inappropriate development.

Relevance of this indicator

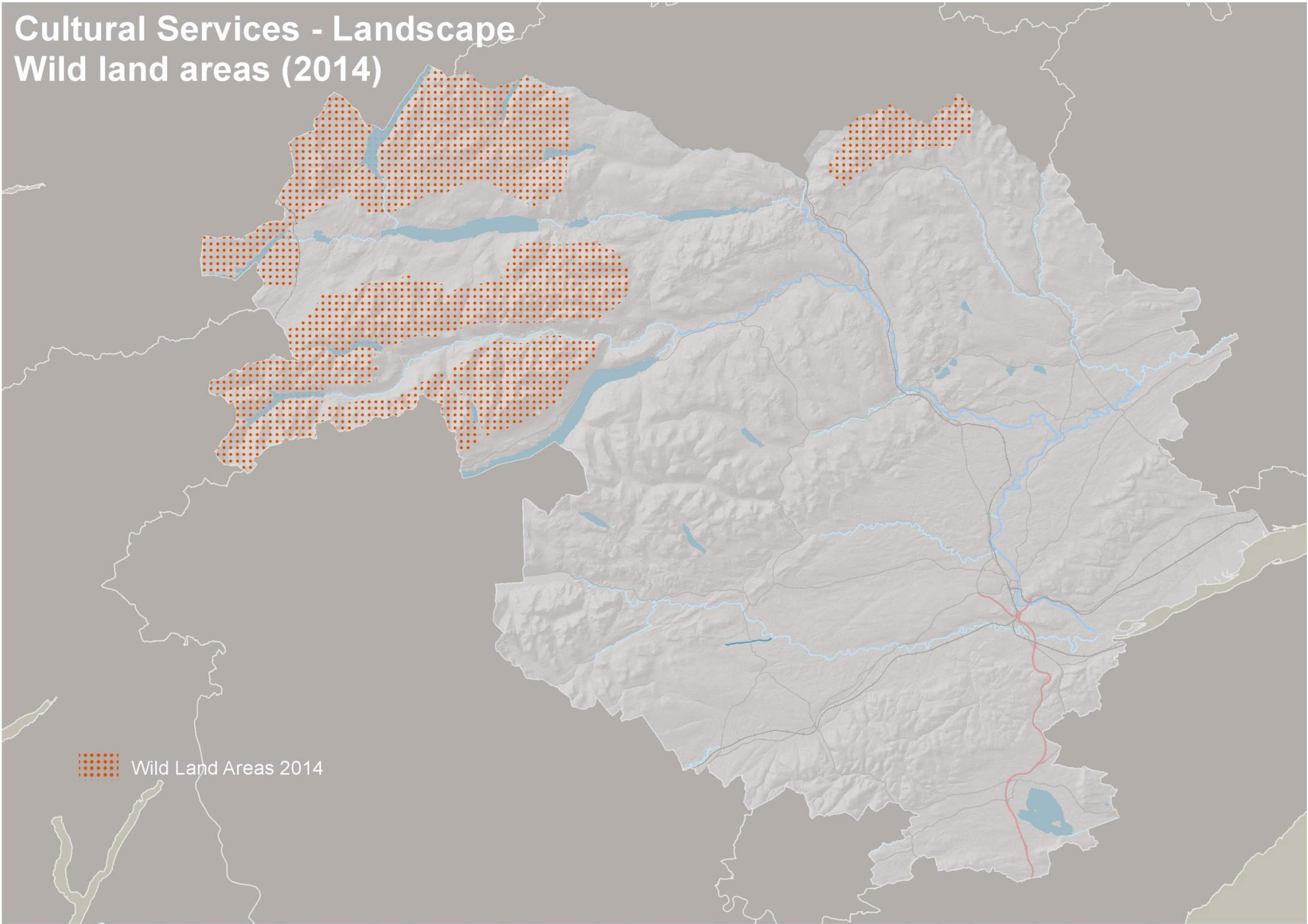
Landscape incorporates the environmental and cultural features present in an area. Preservation and enhancement of the distinctive landscape of Perth and Kinross is important in maintaining community well being, biodiversity and supporting the local economy (tourism in particular). This indicator identifies those areas within Perth and Kinross highlighted for their contribution to the landscape and identified for specific protection. (It should be noted that designation of an area does not guarantee its quality).

Data source: Scottish Natural Heritage, Historic Environment Scotland, PKC

Data availability: Ad hoc

Cultural Services - Landscape

Wild land areas (2014)



Current position

Wilderness is defined, by SNH, as ‘a quality experienced by people when visiting places of a certain character.’ Relative wildness is mapped by determining the level to which 4 physical attributes are present. These are: the perceived naturalness of the land cover, the ruggedness of the terrain, remoteness from public roads or ferries, and the visible lack of buildings, roads, pylons and other modern artefacts. The results of these analyses are combined to produce a map of relative wildness of Scotland.

There are 5 Wildland areas within or intersecting the area. A large proportion of Perth and Kinross (19%) is within the top fifth of overall relative wilderness values. Comparatively, just 5% of Scotland falls within this quintile.

Relevance of this indicator

Preservation and enhancement of the distinctive landscape of Perth and Kinross is important to maintain community well being, biodiversity and to support the local economy, which are dependent on tourism and maintenance of a healthy environment. The required development of roads associated with forestry, rural development, windfarms and other development pressures can detract from an area’s sense of wildness.

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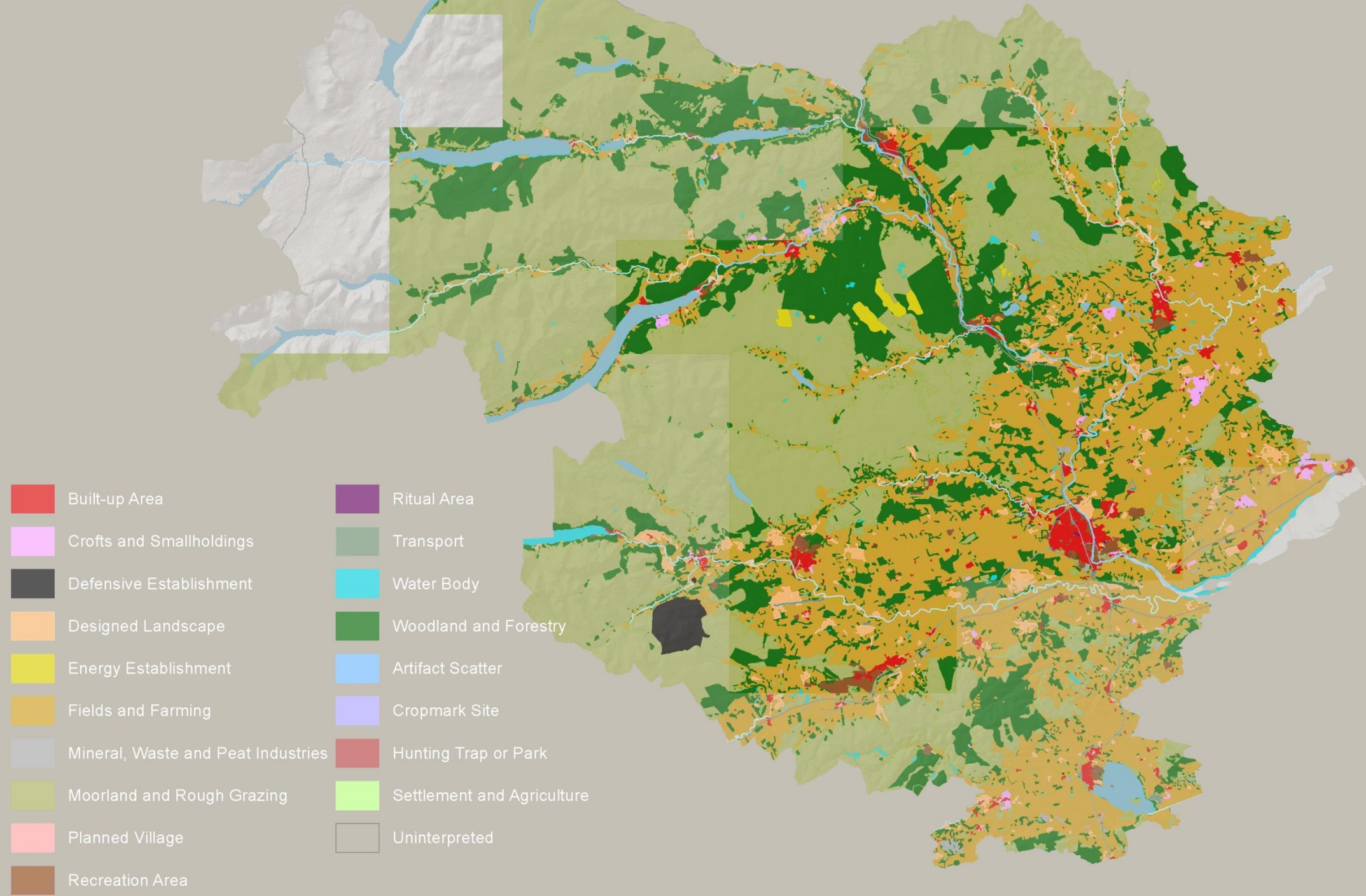
Data source: PKC, Scottish Natural Heritage

Data availability: Annual

HISTORIC ENVIRONMENT

Cultural Services - Historic Environment

Historic Landscape Character Assessment 2014



Current position

The HLA is a GIS-based mapping project that shows the historic origin of land-use patterns, describing them by period, form and function. It is compiled at a scale of 1:25000, and is based on the analysis of key data sources, such as early maps, aerial photography and survey results (Historic Scotland 2013).

The HLA has identified some 55 individual historic land-use types. The majority of the region has been identified as rough grazing and rectilinear fields. The second largest areas consist of coniferous and woodland plantation and managed woodland (nearly 100, 000 ha).

Relevance of this indicator

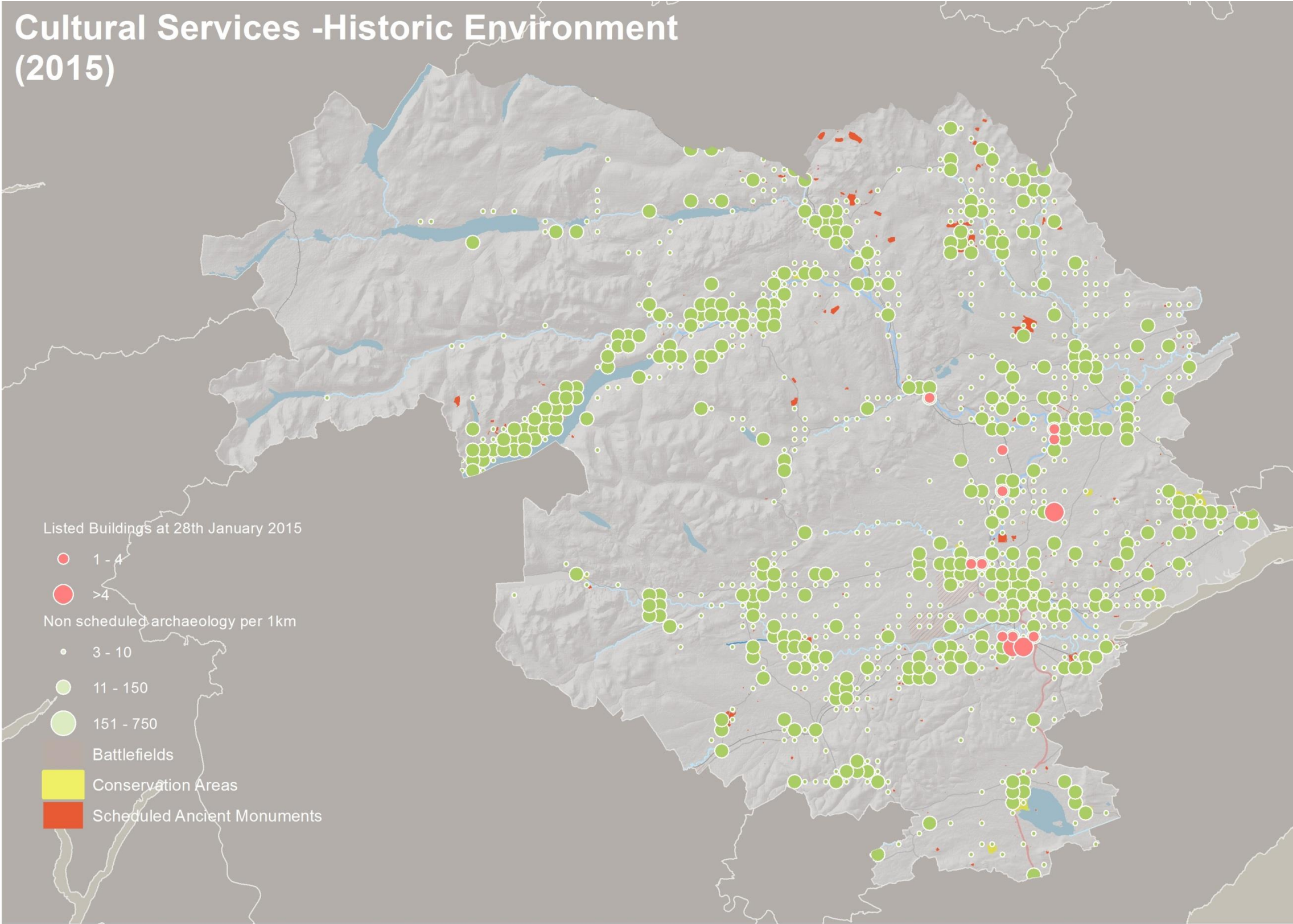
The historic character of the environment is important to quality of life and sense of identity, and it is a vital contributor to the economy through the attraction of visitors. Constant change in the historic environment is a result of natural processes, such as climate change and erosion, and human interventions, such as land management, urban and rural development, transportation and pollution.

Data source: Historic Environment Scotland

Data availability: Annual

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Cultural Services -Historic Environment (2015)



Current position

Perth and Kinross contains 744 Scheduled Ancient Monuments and 3113 listed buildings. 96 listed buildings are on the buildings at risk register - a decrease of 27% since 2014. There are 42 historic gardens and designed landscapes covering 11123 ha.

There are 36 conservation areas throughout Perth and Kinross.

Relevance of this indicator

The historic character of the environment is important to quality of life and sense of identity, and it is a vital contributor to the economy through the attraction of visitors. Constant change in the historic environment is a result of natural processes, such as climate change and erosion, and human interventions, such as land management, urban and rural development, transportation and pollution.

Data source: Historic Environment Scotland

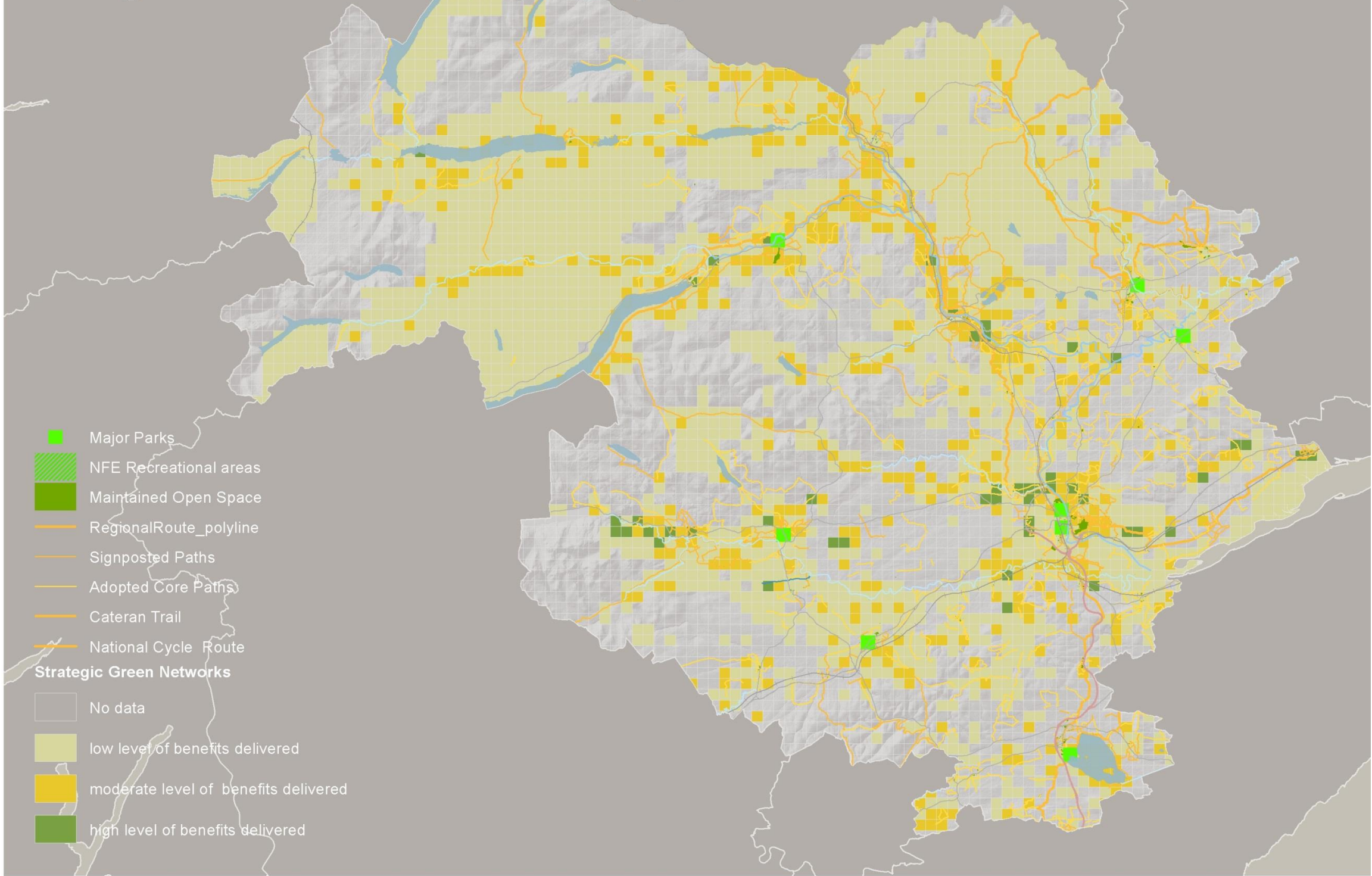
Data availability: Annually

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RECREATION AND GREEN INFRASTRUCTURE

Cultural Services - Recreation and Green Infrastructure

Strategic Green Networks, Cycleways, Paths and Recreation Areas



Current position

Development should not only contribute towards new green infrastructure as the need arises as a result of individual developments, a contribution should also be made towards existing green infrastructure, by improvement or enhancement and / or by ensuring that there is no adverse impact or fragmentation of existing green infrastructure as a result of development.

These are requirements placed on developers by Local Development Plan policy. However there is also a growing demand from the public for developers to create places which are healthier, more attractive and pleasant, more sustainable and better able to withstand the effects of climate change, and which work with nature and the environment rather than against it.

Relevance of this indicator

Open space and woodland are valued elements of the landscape. Access to these areas contributes to long term human health and wellbeing.

Planning authorities should consider the need to strengthen and develop existing access and greenspace networks, and the contribution that these areas might make to improving quality of life and providing opportunities for informal recreation as part of their open space audits and strategies and core path planning.

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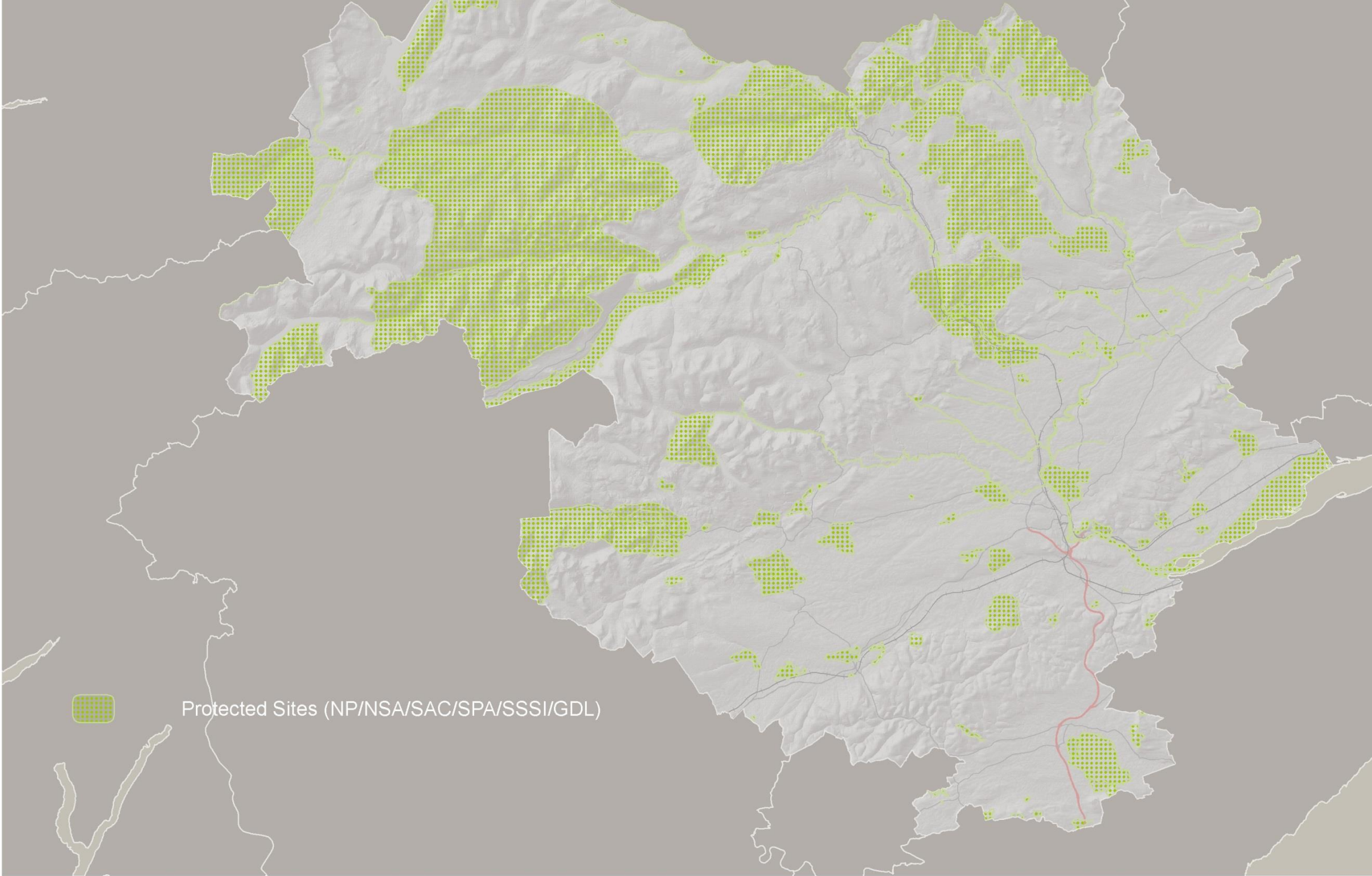
Data source: FC, TACTRAN, PKC, EKOS

Data availability: Annual

PROTECTED SITES

Cultural Services - Protected areas

Area and condition of protected areas (SNH)



Current position

Approximately 36% of Perth and Kinross is designated under national or international legislation to protect the landscape habitats and species (this includes NSA, HGDL, NP, SAC, SPA, SSSI).

In 2014/15 78.2 percent of Biological protected sites and 96 percent of Geological protected sites were considered to be in favorable condition. This represents an improvement in condition of 1.6 percent for biological notified features and a decline of 4 percent in geological notified features.

Relevance of this indicator

The diverse wildlife and habitats of the area are highly valued locally, nationally and internationally and are resources that need to be protected. Biodiversity benefits communities and human health through the provision of a high quality environment in which to live. This indicator identifies those areas within the Strategic Development Plan Area highlighted for their contribution to the landscape and identified for specific and habitats protection. (It should be noted that designation of an area does not guarantee its quality).

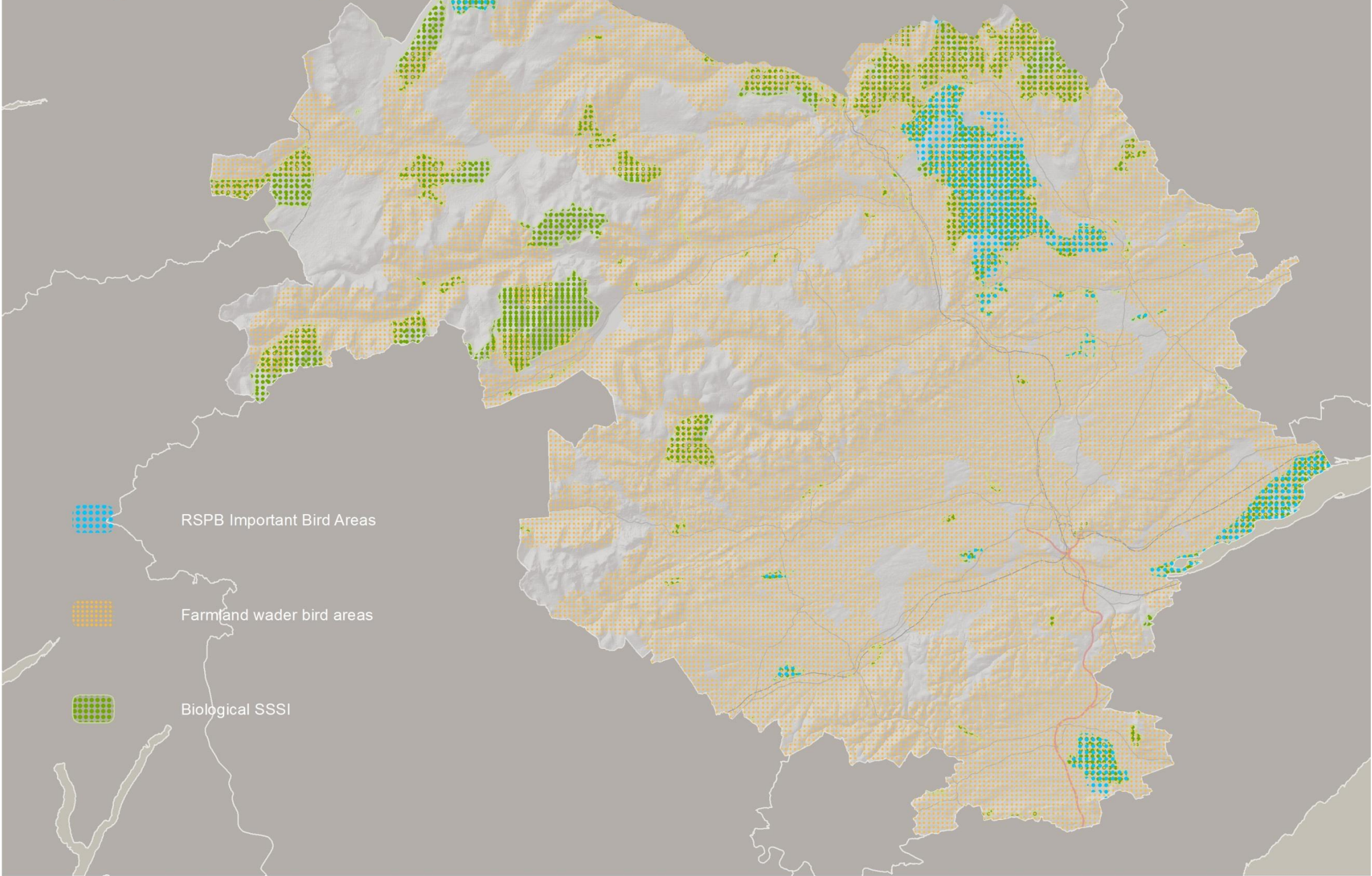
Data source: Scottish Natural Heritage

Data availability: Annual

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Cultural Services - Protected areas

Biological SSSI's, RSPB IBA's and Farmland wader areas



Current position

Approximately 36% of Perth and Kinross is designated under national or international legislation to protect the landscape habitats and species (this includes NSA, HGDL, NP, SAC, SPA, SSSI).

In 2014/15 78.2 percent of Biological protected sites and 96 percent of Geological protected sites were considered to be in favorable condition. This represents an improvement in condition of 1.6 percent for biological notified features and a decline of 4 percent in geological notified features.

Surveys of the number of breeding waders at several key wader breeding sites in Perth and Kinross have been undertaken by RSPB in 2012. This is of particular relevance to floodplain and other wetland habitats and in-bye farmland, where inappropriate development can have a significant adverse impact on priority bird populations such as breeding waders. .

The Perth and Kinross Council area contains or adjoins 8 IBA's covering nearly 44, 000 ha.

Relevance of this indicator

The diverse wildlife and habitats of the Tayside area are highly valued locally, nationally and internationally and are resources that need to be protected. Biodiversity benefits communities and human health through the provision of a high quality environment in which to live. Biodiversity is integral to the productivity and beauty of the countryside, contributing significantly to the local economy by attracting many tourists to the area.

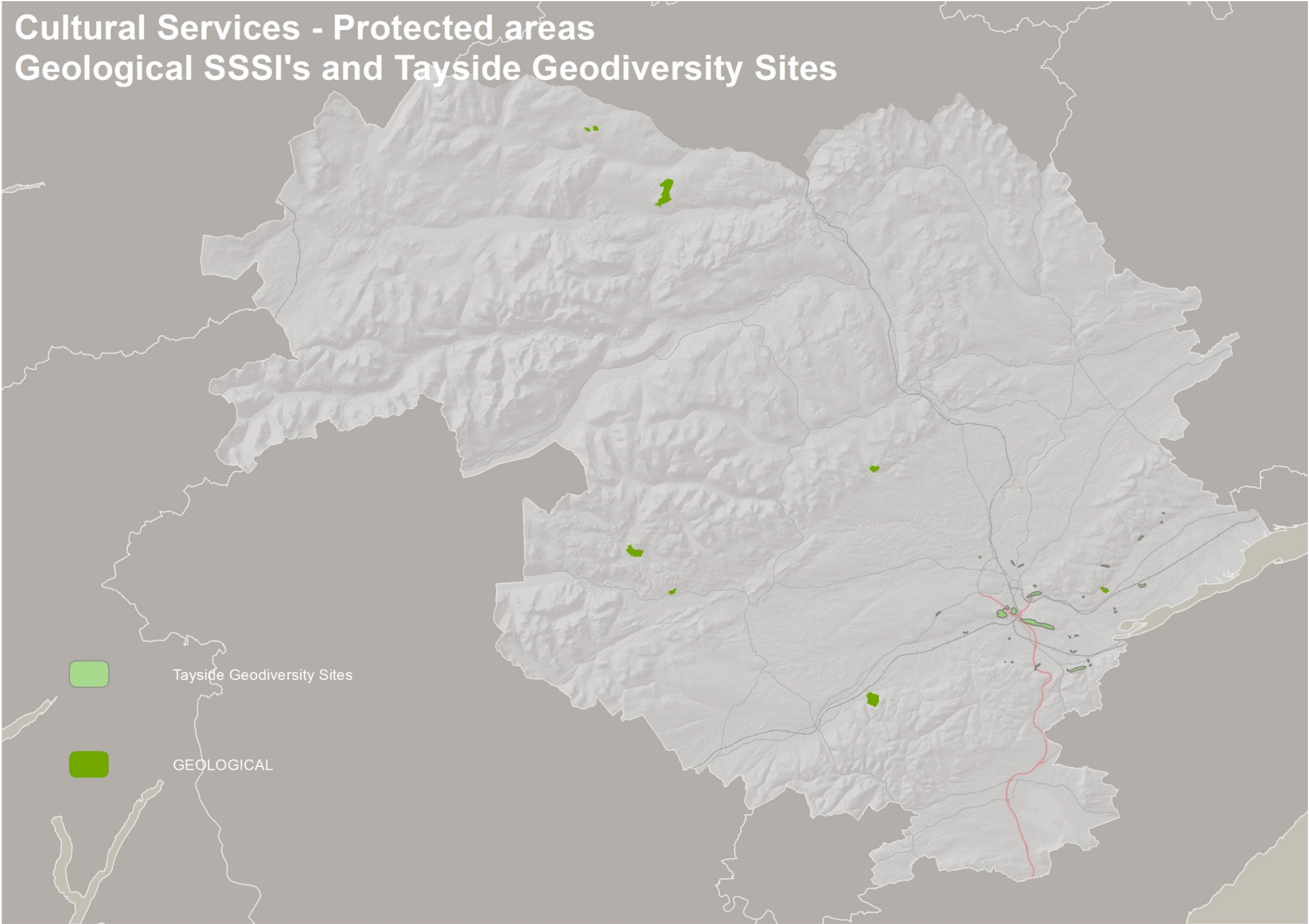
Data source: National Biodiversity Network, RSPB, SNH

Data availability: ad hoc

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Cultural Services - Protected areas

Geological SSSI's and Tayside Geodiversity Sites



Current position

Approximately 36% of Perth and Kinross is designated under national or international legislation to protect the landscape habitats and species (this includes NSA, HGDL, NP, SAC, SPA, and SSSI).

In 2014/15 96 percent of Geological protected sites were considered to be in favorable condition. This represents a decline of 4 percent in the condition of geological notified features.

The Perth and Kinross Council area contains or adjoins 30 Geodiversity sites.

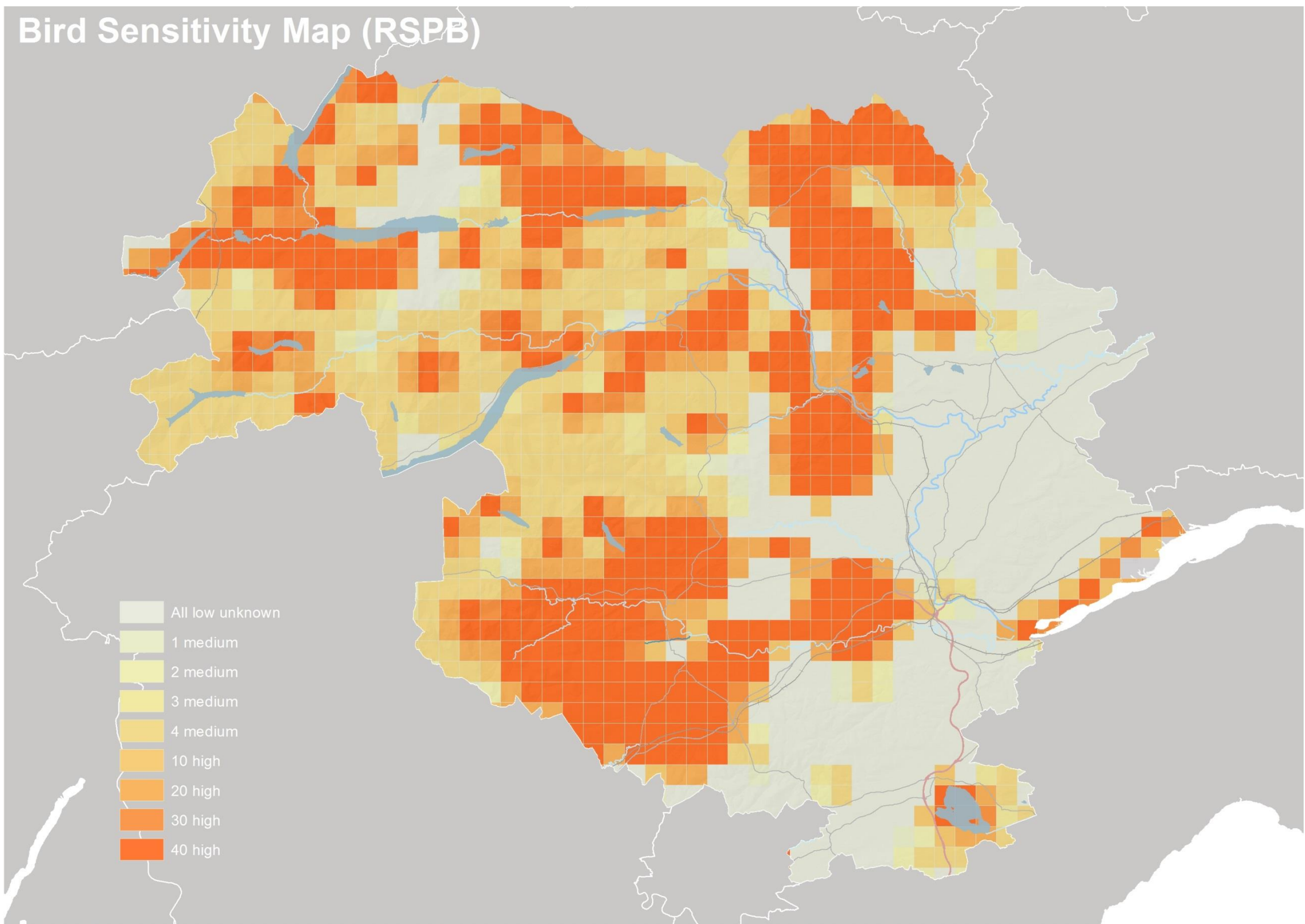
Relevance of this indicator

The diverse wildlife and habitats of the Tayside area are highly valued locally, nationally and internationally and are resources that need to be protected. Biodiversity benefits communities and human health through the provision of a high quality environment in which to live. Biodiversity is integral to the productivity and beauty of the countryside, contributing significantly to the local economy by attracting many tourists to the area.

Data source: National Biodiversity Network, RSPB, SNH

Data availability: ad hoc

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Current position

Maps indicating the most sensitive areas in England and Scotland for building wind farms have been produced by the RSPB. The maps identify those areas where wind farms are more likely to pose medium to high risks for important bird populations (RSPB, 2012). Across the England and Scotland 37% of tetrads are in the high sensitivity category in Perth and Kinross this figure climbs to 45%.

In 2008 Perth & Kinross Council commissioned a project to obtain sufficient survey coverage to determine local trends in breeding bird populations. Presently, the Council does not hold sufficient information to comment on trends in this indicator.

Relevance of this indicator

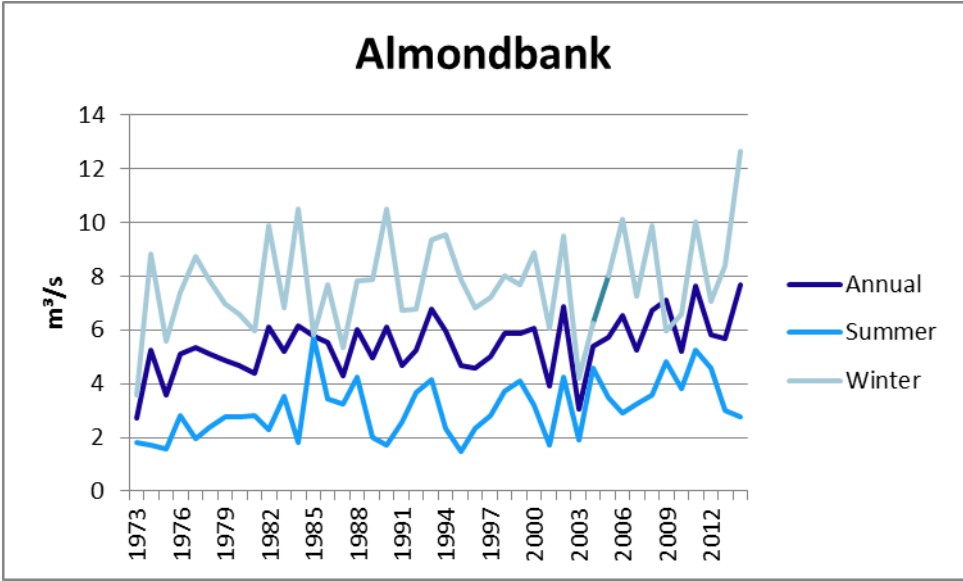
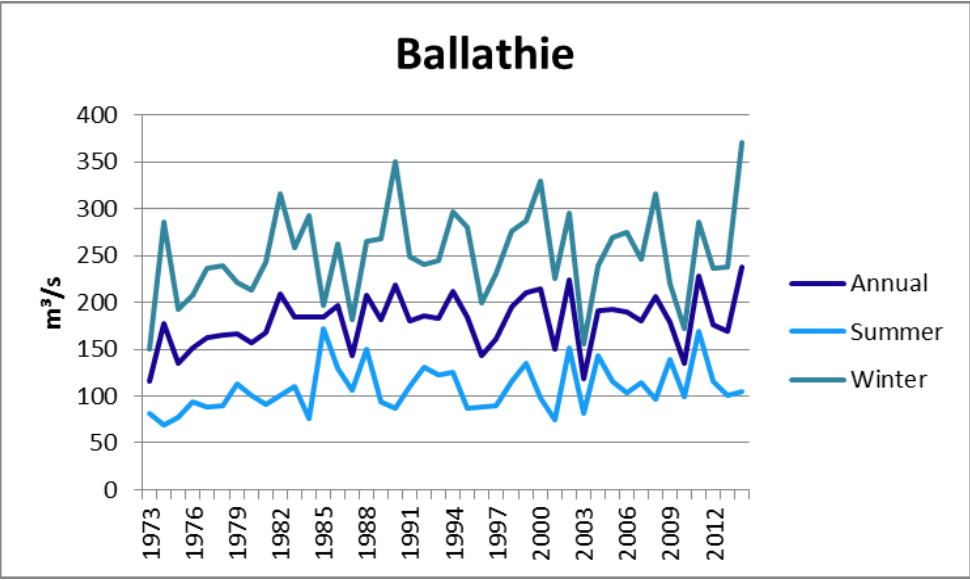
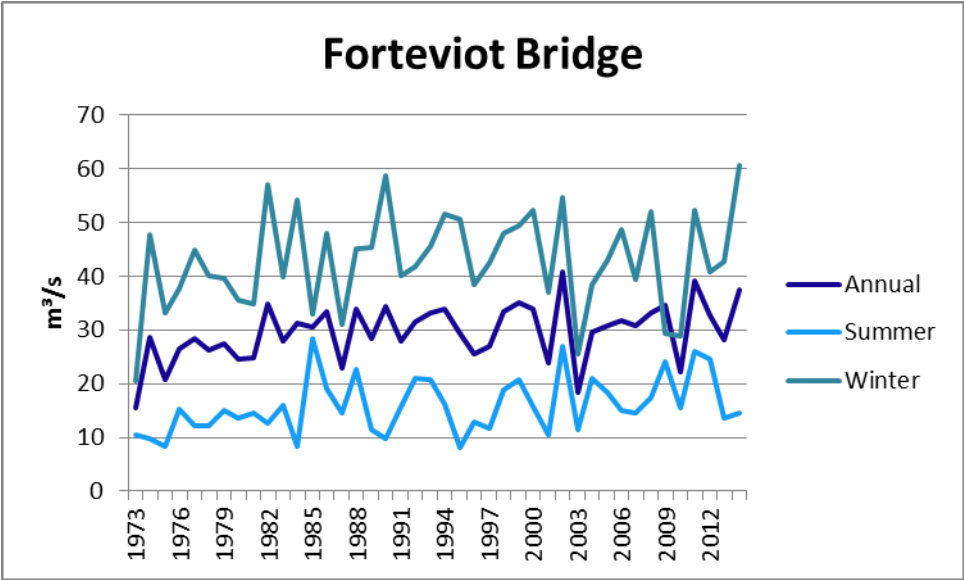
Wind farms can have negative effects on birds through collision, disturbance displacement, habitat loss and barrier effects (Langston & Pullan, 2003; Drewitt & Langston, 2006). The purpose of this map is to provide locational guidance for steer renewable energy developments towards areas which are least likely to impact on sensitive species, protect species of conservation concern and improve resource efficiency.

Data source: RSPB

Data availability: Unknown

WATER AND AIR

Regulating Services – Mean Daily Flow at Key Gauging Stations (1975-2014)



Current position

Scotland's 2014 State of the Environment Report (managed by Scotland's Environment Web Partnership) predicts less overall summer rainfall, and higher autumn/winter rainfall which will lead to higher annual river flows. This along with an increased frequency of extreme precipitation events, a higher temperature in all seasons and sea-level rise is predicted to have an adverse impact on the environment through loss of habitat, increased pollution and increased flooding.

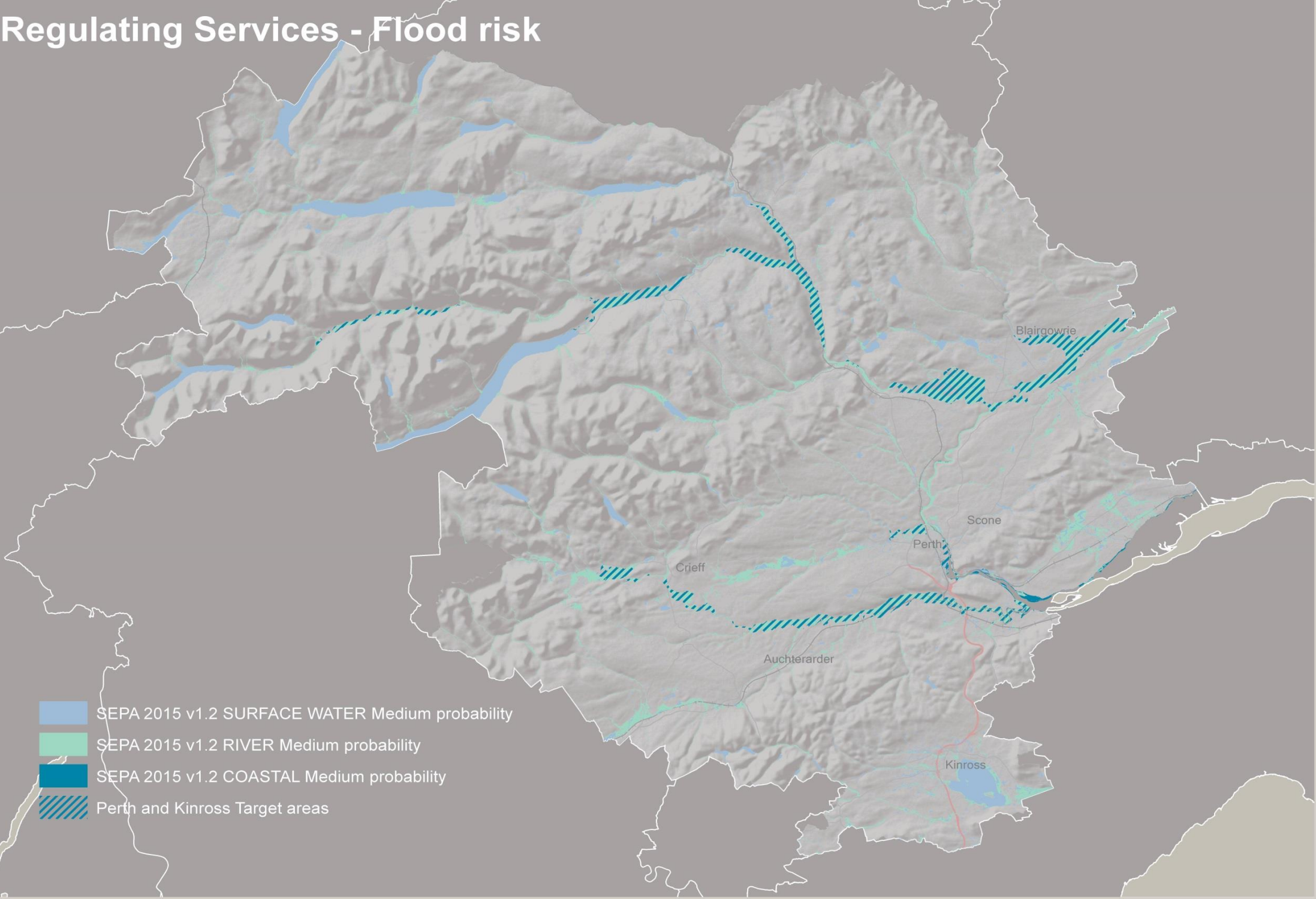
This indicator shows trends in mean annual, winter and summer daily flows at key gauges in Perth and Kinross.

Relevance of this indicator

Water quality has significant implications for human health and for fauna coming into contact with or living within the water environment. A high level driver putting pressure on the inland water environment, primarily through alteration of rainfall and snow cover patterns, is climate change. Local pressures on inland waters include; abstraction and flow regulation including major hydropower and water supply schemes, the building of dams and weirs and the drilling of boreholes to extract groundwater ;and morphological pressures including engineering works to channels

Data source: SEPA

Data availability: Annual



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Current position

The [National Flood Risk Assessment](#) is the first step of the new risk-based approach to managing the impacts of flooding, introduced by the Flood Risk Management (Scotland) Act 2009.

The National Flood Risk Assessment has found that one in 22 of all residential properties and one in 13 of all non-residential properties are at risk of flooding from rivers, the sea or heavy rainfall in urban areas.

The medium probability layers (1:200yrs) for fluvial and coastal extents are the key datasets for screening new developments for flood risk and providing the first indication of flood risk in a proposed development location.

The medium probability fluvial layer includes hydraulic structures and defences and, thus, is referred to as a defended flood extent.

Two mitigation strategies can be implemented: (1) flood control measures and (2) avoidance of the affected area. Further analysis is required to indicate areas at risk within the TAYplan region.

Relevance of this indicator

Flooding is a complex problem affecting many people in Scotland. Approximately one in 22 homes and one in 13 businesses are at risk of flooding. Climate change is likely to make the situation more challenging with heavier rainfall and increases in the frequency of extreme weather events expected. An important part of managing flood risk sustainably is to consider where features of the natural environment can be used to slow the flow of water, store water, or contribute to the transport and deposition of sediment that might otherwise contribute to flooding. Some features of the water environment contribute to natural flood management (NFM) for example, naturally functioning rivers (with meanders and flood plains) or coastal wetlands can help to enhance the storage capacity of floodplains and regulate tidal exchange (SEPA)

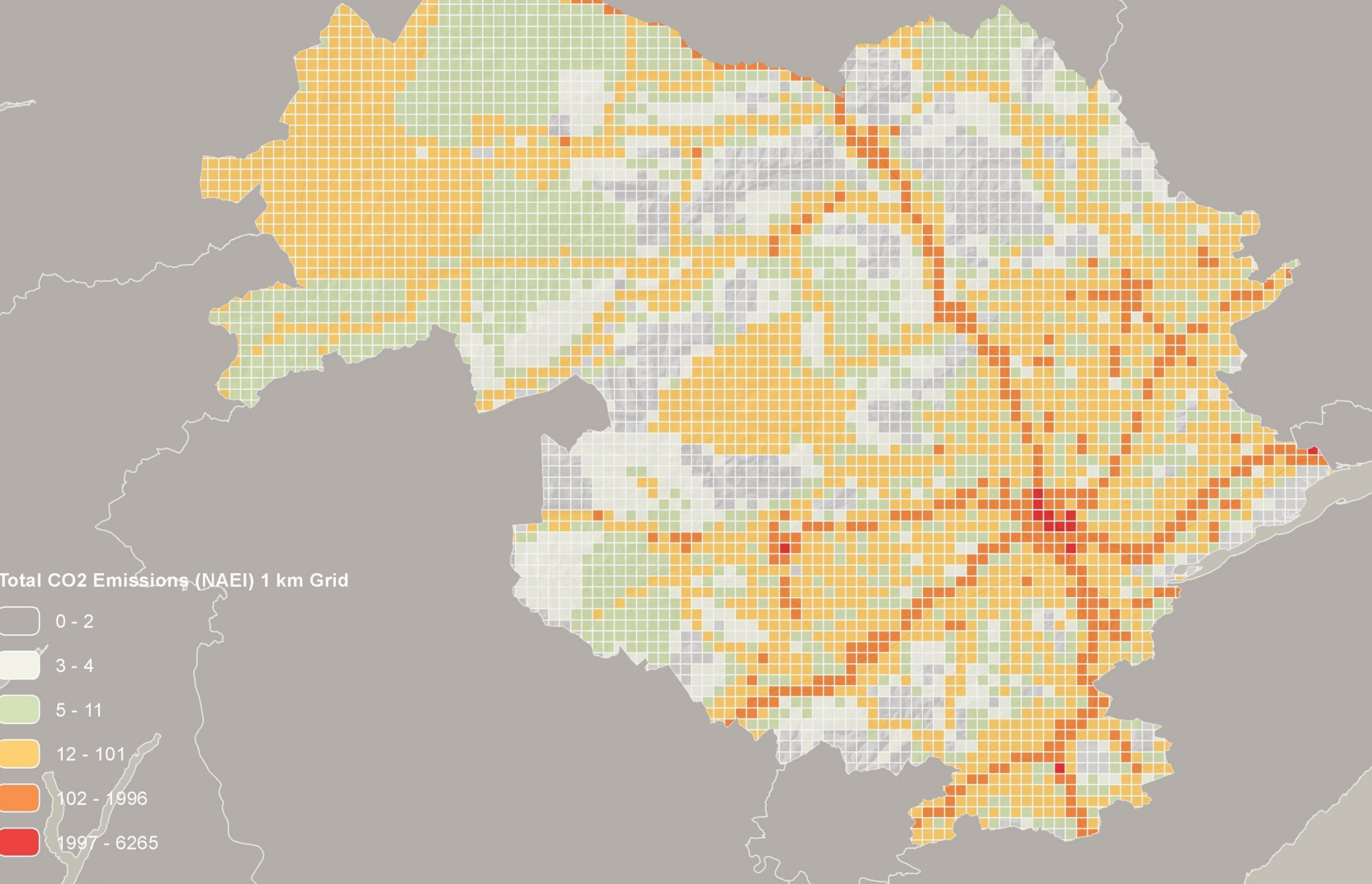
Presently the primary force driving the maintenance and improvement of inland water environments is the Water Framework. A significant pressure on inland waters is development of the floodplain.

Data Source: SEPA

Data availability: Annual, SEPA

Regulating - Air

Total CO2 Emissions Estimates 2012



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Current position

Carbon dioxide emission estimates per capita in Perth and Kinross have decreased slightly since 2007. In 2012, 8.1 tonnes of CO₂, a rise of 0.6 over previous year, were emitted per capita, compared with 6.7 tonnes per capita as an average across Scotland. Of this, 27% were from the Industry and Commercial sector, 31 % were from domestic and 42 % were from road transport.

A relatively larger proportion of carbon emitted in Perth and Kinross is taken up by land use, land use change and forestry than at the Scottish level.

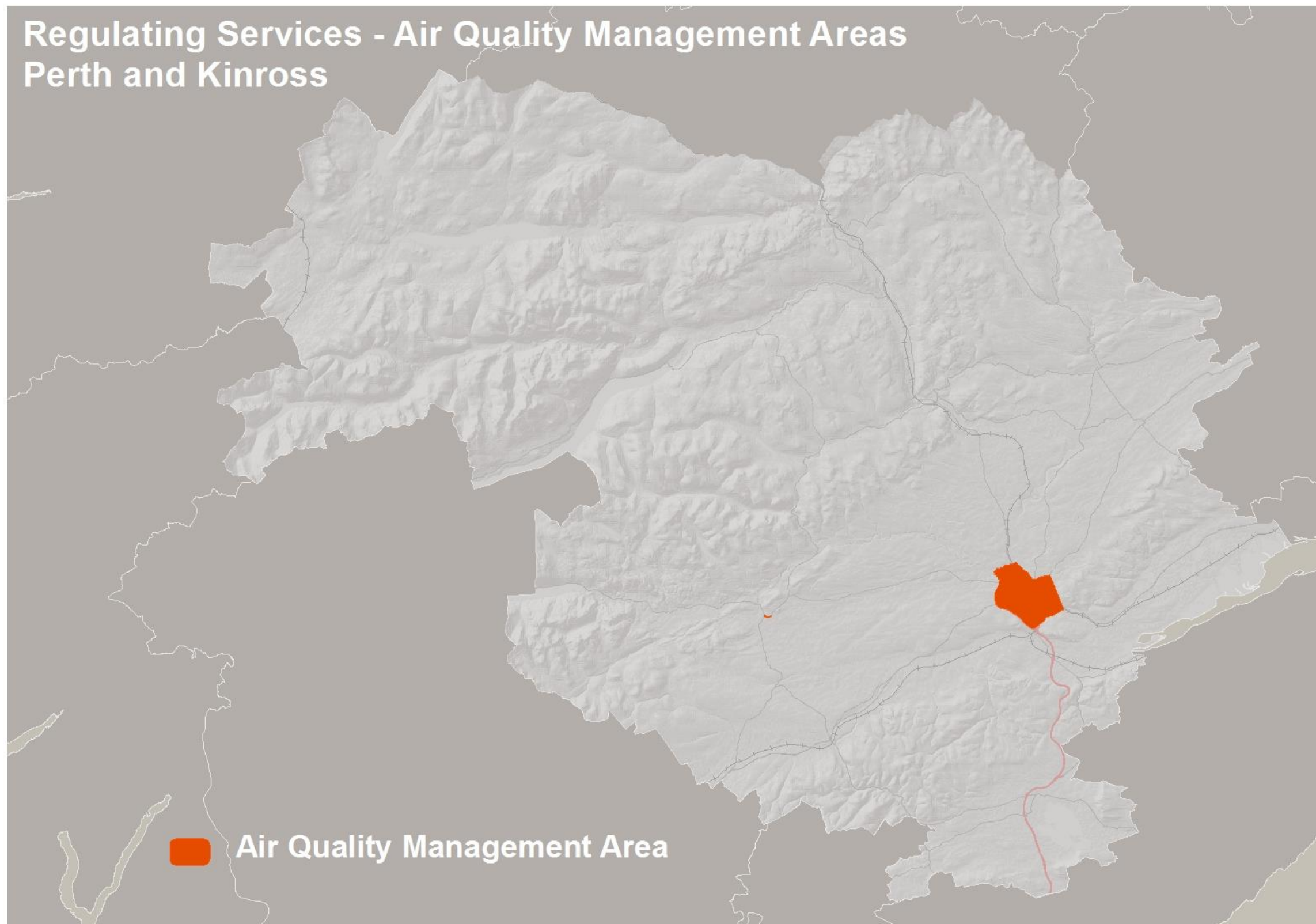
Relevance of this indicator

The gases that contribute most to the greenhouse effect are carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), and fluorine compounds. Carbon dioxide from transport, industry and domestic sources (such as heating, lighting and cooking) is the main greenhouse gas emitted in Scotland and Perth and Kinross.

Data source: DEFRA, NAEI

Data availability: Annual (2yr lag)

Regulating Services - Air Quality Management Areas Perth and Kinross



Current position

There are currently two Air Quality Management Areas in Perth and Kinross, One in Perth and one in Crieff.

Relevance of this indicator

Clean air is essential for a good quality of life. Exposure to air pollution can have a long-term effect on health. The increase in development that will be suggested through the LDP could result in an increase in air pollution which could have an impact on human health and climate change.

Data source: Perth and Kinross Council

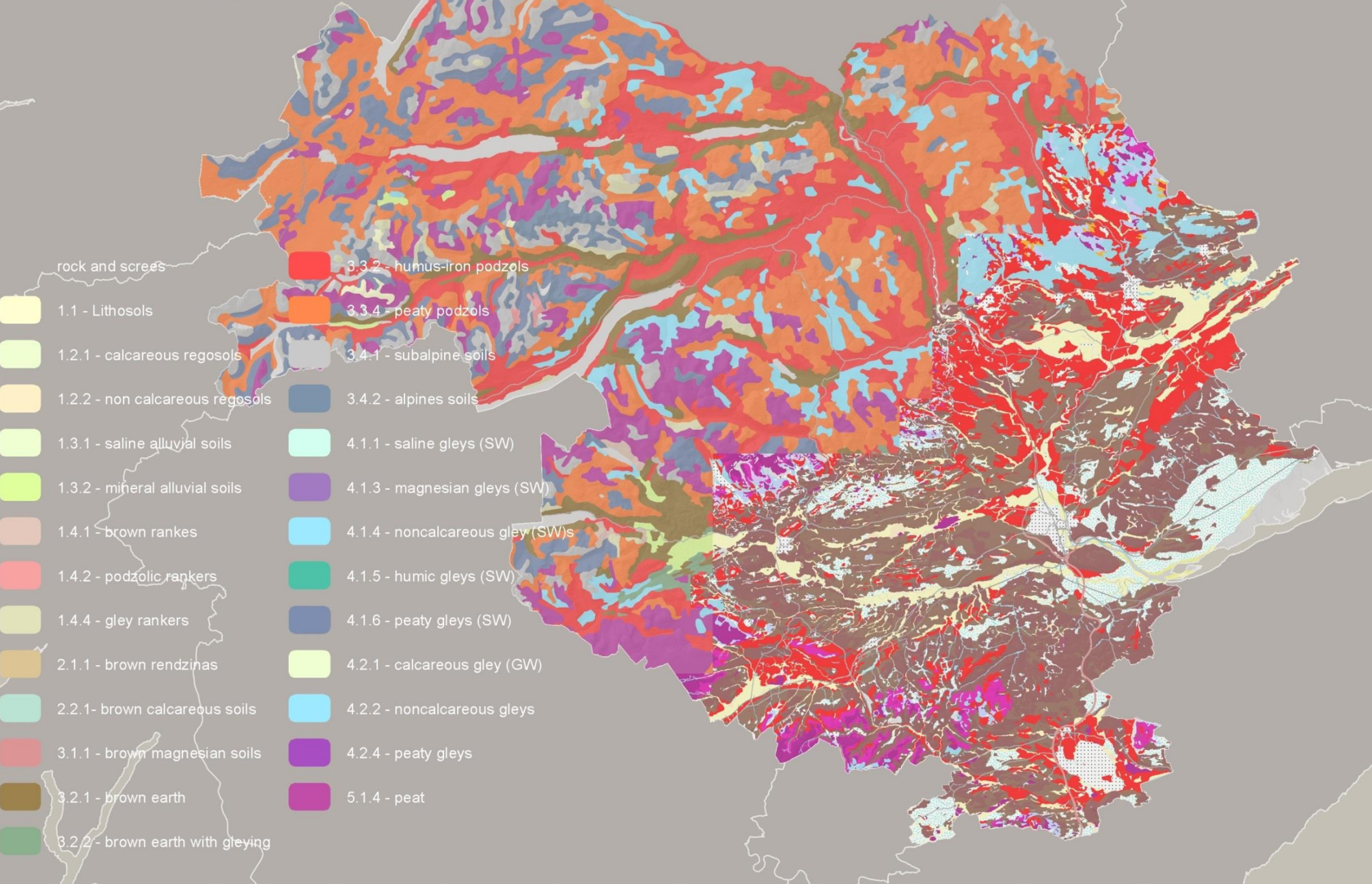
Data availability: ad hoc

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SOILS

Regulating - Soil

Major Soil Types (250K)



Current position

The 1:250,000 soil dataset is used to identify potential soil with natural heritage issues of national interest. This included; *a) Soils with high organic content* (peat and peaty soil types), *b) Soils directly associated with a habitat of conservation or a key geodiversity feature* and *c) Prime agricultural land*

Soil Major sub groups considered to be of national interest occurring in the area include:

- Humus – iron podzols in semi natural settings (associated with native pinewood forests)
- Peat – peatland habitats
- Alluvial soils – associated with river geomorphology (<5%)
- Alpine and subalpine soils – sensitive to degradation (<5%) (SNH, 2013)

Relevance of this indicator

Healthy soils provide a range of environmental, economic and social benefits, which include providing the basis of the agricultural and forestry industries.

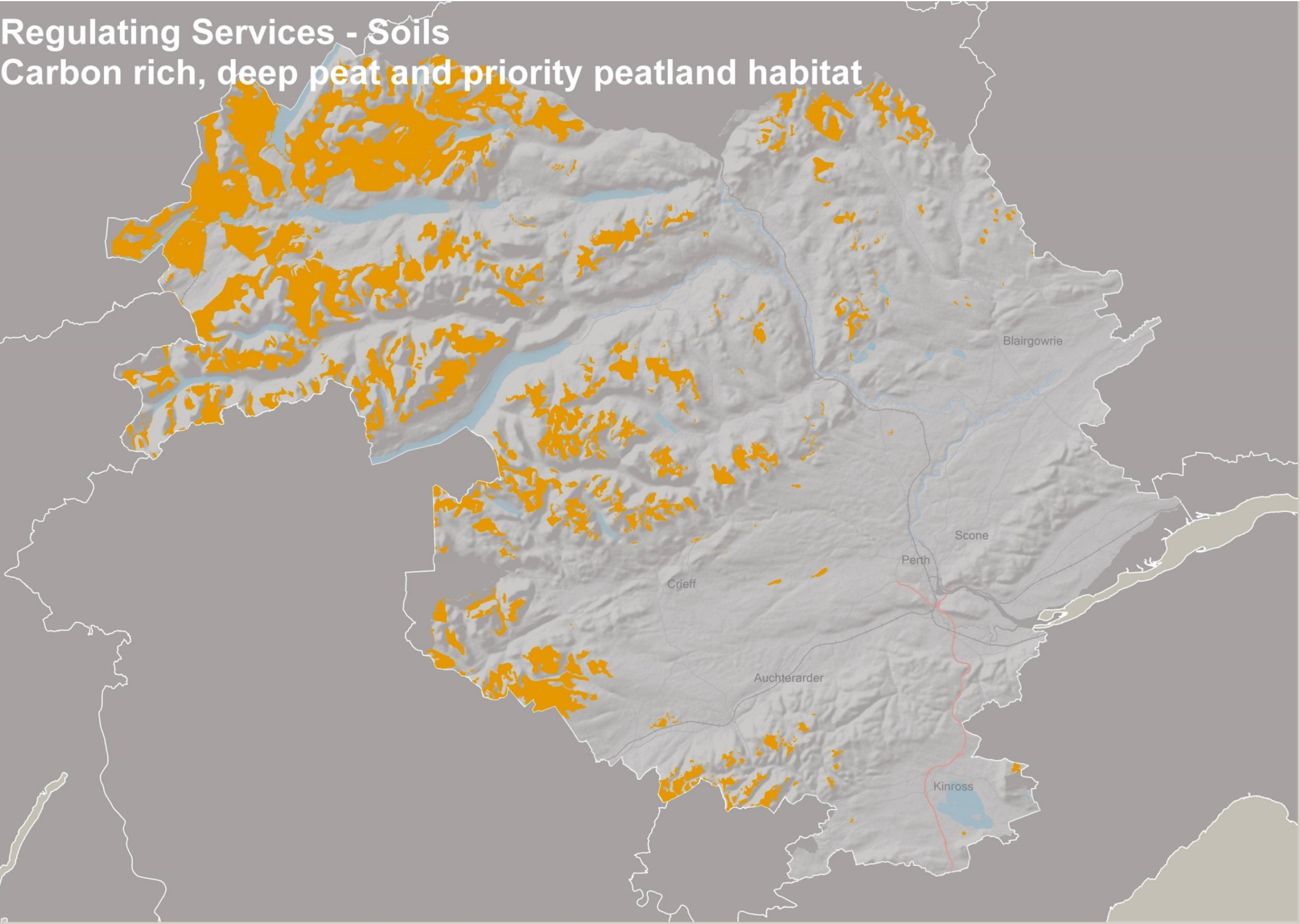
Threats to soil functions are erosion and compaction related to land management, contamination, sealing, loss of biodiversity, acidification from acid rain, climate change, and loss of organic matter.

Data Source: The James Hutton Institute, Scottish Government

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Regulating Services - Soils

Carbon rich, deep peat and priority peatland habitat



Current position

Scottish Natural Heritage (SNH) has prepared a consolidated spatial dataset of ‘carbon rich soil, deep peat and priority peatland habitats’ in Scotland derived from existing soil and vegetation data. The derived ‘Carbon and Peatland’ (2014) map updated earlier work undertaken by SNH for the identification of natural heritage features of national importance. The intention behind developing and publishing this map is to give greater understanding to a wide range of audiences, as to where Scotland’s peatlands are to be found. The new map and associated information may be used to:

- Provide greater appreciation and transparency around where Scotland’s peatland are
- Support strategies and projects related to the management and restoration of Scotland’s peatland habitats
- Support the implementation of the forthcoming Scotland’s National Peatland Plan
- Assist in identifying peat and other carbon rich soils for development plans
- Facilitate mapping of wind farm spatial frameworks in line with the new Scottish Planning Policy (SPP) (2014)
- Support the siting of proposals that could impact on the soil resource and design of mitigation to avoid or reduce such impacts

Perth and Kinross planning area contains over 55 000 ha of Class 1 and over 54,000 of Class 2 ((Nationally important carbon rich soils, deep peat and priority peatland habitat) which represent areas likely to be of high conservation value and areas of potentially high conservation value and restoration potential respectively. (SNH, 2015)

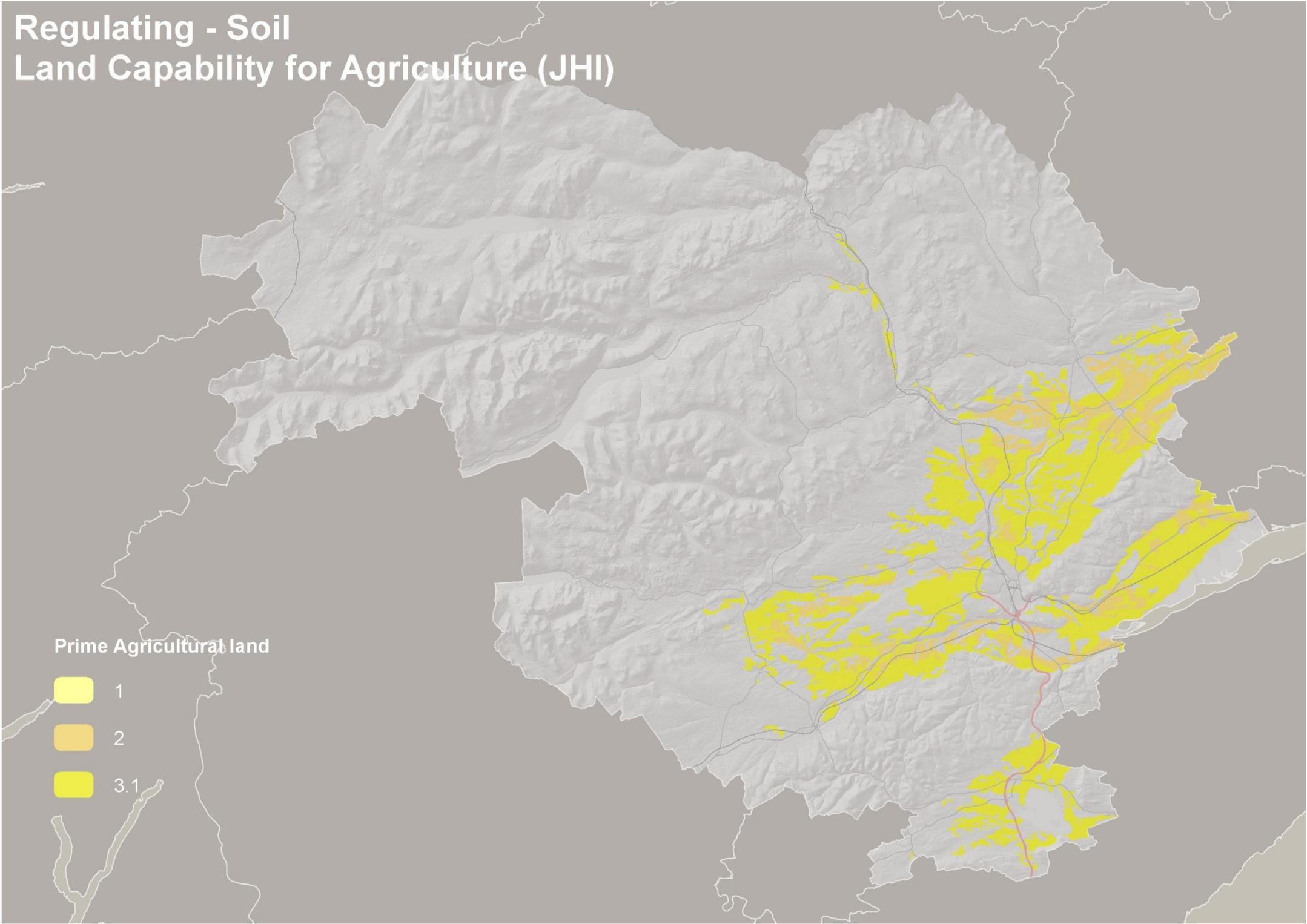
Relevance of this indicator

Healthy soils provide a range of environmental, economic and social benefits, which include providing the basis of the agricultural and forestry industries. Threats to soil functions are erosion and compaction related to land management, contamination, sealing, loss of biodiversity, acidification from acid rain, climate change and loss of organic matter.

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Data Sources The James Hutton Institute, Scottish Government

Regulating - Soil Land Capability for Agriculture (JHI)



Current position

Land capability for agriculture is classified using factors such as climate, soil properties (texture, depth, stoniness etc.) and slope. Classes 1, 2 and 3.1 are defined as ‘prime agricultural land’ with a semi-protected status in the planning system.

At 1:250 000 scale, 11.6% (62000 ha) of the area is occupied by prime agricultural land (class 2 and 3.1).

The 50K soil map surveys mapped in more detailed the most productive south east fringe. The area of prime agricultural land (class 2 to 3.1) occupied 57,000 ha. Land capable of average production but high yield of barley, oat and grass (LCA class 3.2) cover another 45, 250 ha on the 50K map and 4500 ha 57900ha on the 250K map.

Over 50% of the area is occupied by soil class 6 and 7 (rough grassing and soil of limited agricultural values).

Relevance of this indicator

Preservation and enhancement of the distinctive landscape of the Perth and Kinross area is important to maintain community well being, biodiversity and to support the local economy. Woodlands support the region’s economy through timber production, and play a key role in the tourist industry, providing recreational opportunities and contributing to the region’s unique landscape and ecology. Pressures from increased development activity have the potential to impact the prime agricultural land resource. Relevant planning policies addressing landscape and environmental issues need to be taken into account when considering development of prime quality agricultural land

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