

# Glasgow and the Clyde Valley Strategic Development Plan

Strategic Environmental Assessment

**Environmental Report** (Revised)

**Appendices**

November 2010

The image shows the letters 'SEA' in a large, bold, white sans-serif font. The text is centered within a large rectangular area that has a magenta background. This area is framed by a darker magenta border at the top and bottom. The overall design is minimalist and modern.



## Appendix A Summary of Relevant Environmental Problems arising from the baseline analysis

<b>Table 1 Summary of environmental issues relevant to GCV SDPA</b>				
<b>Regionally Identified Issues</b>	<b>Regionally relevant to GCV?</b>	<b>Key Elements</b>	<b>Data Source</b>	<b>Relevant to and significance for the SDP and its SEA?</b>
<i>Sustainable Development</i>				
Need to promote development patterns that fit the needs of this generation without compromising those of future generations.	Yes	There are a number of shared themes relating to sustainable development, key elements of which are listed in this table. Those of specific mention at this stage relate to sustainable settlement patterns and specific planning aims set out in NPF2 and SPP.	Scottish Government  GCV monitoring returns	This is a key driver for the GCV place-setting and economic competitiveness agendas with the Green Network thinking at its heart.
<i>Biodiversity</i>				
Condition of designated sites or significant gaps in strategic habitat	Yes	This is the responsibility of the European Union and the Scottish	UK Biodiversity Strategy and Local Biodiversity Action Plans	The planning process can have a significant impact on biodiversity. The protection of biodiversity is dealt with at a more site

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<p>networks</p> <p>Continuing need to protect designated biodiversity sites, and enhance them (to ensure that 95% reach favourable condition by 2010).</p>	Yes	Government but will not be directly addressed in the SDP.	SNH site condition monitoring	specific/species specific level. This is dealt with in LBAPs and LDPs must respect this aim through development proposals and development management.
<i>Climatic Factors</i>				
Increasing energy demand	Yes	<p>Increasing demand on fossil fuels for transport.</p> <p>Increasing levels of car ownership and usage</p> <p>Improve access to public transport and active travel</p>	<p>Strategic Transport models</p> <p>Transport Scotland; DVLC</p> <p>SPT</p>	Modal shift and increased public transport usage are essential to a sustainable low-carbon future and thus will underpin the spatial strategy of the SDP.

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		opportunities.  Increasing demand for low-carbon fuels for energy.	Forestry Commission Scotland	Alternative energy sources to carbon fuels are key to low carbon futures
Continuing reliance on the car to travel to work and growing travel distance overall.	Yes	Continuing carbon dioxide emissions from the transport sector.  Good access to public transportation in GCV but more can be done.	SPT  Link to AQMAs and CNMAs	Recognise how the SDP strategy can influence sustainable travel patterns, through land-use and transport integration.
Climate change impacts on the environment, including landscape, the water environment, soils and biodiversity.	Yes	Increasing energy demand.  Increasing renewable energy generation.  Continuing reliance on the car.	SNIFFER and UKCIP09  Greenhouse gas emissions inventory	The SDP can continue its support for: <ul style="list-style-type: none"> <li>• renewable development in appropriate locations;</li> <li>• increased usage of public transport;</li> <li>• increased usage of active transport and green network;</li> <li>• demand management to</li> </ul>

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				mitigate GHG emissions urban forestry in appropriate locations to help mitigate GHG emissions.
<i>Population and Health</i>				
Population	Yes	<p>Ageing population</p> <p>Number of households in GCV predicted to increase above Scottish average (development pressure on land for new developments)</p> <p>Potential for restricted access to natural resources and community facilities is an issue in some areas.</p>	<p>Census</p> <p>GROS; Regional demographic projections</p> <p>Scottish Index of Multiple</p>	

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			Deprivation (SIMD)	Links into Green Network thinking and in particular to the GCV Green Network Partnership action programme; however, the detail of achieving this is dealt with at a site specific level which is more appropriate to the remit of LDPs.
Continuing high levels of preventable disease arising from low levels of physical activity.	Yes		Scottish Government Health Statistics  Glasgow Centre for Population and Health	Links into Green Network thinking and a sense of place. In particular relates to the establishment of a quality environment through the delivery of a Green Network. . However, the detail of achieving this is dealt with at a site specific level which is more appropriate to the remit of LDPs
Continuing health inequalities.	Yes	Participation rates in exercise and active recreation in the GCV area are highly variable with	Scottish Government Health Statistics	Links into Green Network thinking and a sense of place. In particular, relates to the establishment of a quality environment through the delivery

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		correlations to level of opportunity	SIMD	<p>of a Green Network. . However, the detail of achieving this is dealt with at a site specific level which is more appropriate to the remit of LDPs</p> <p>Links also to regeneration, health and education which the SDP can influence but the detail is dealt with at site specific, local level.</p>
Concentrations of social exclusion linked to environmental factors (e.g. proximity to derelict land).	Yes	Link to VDL and SIMD lower quartile.	SNIFFER Environment Justice Research	Links to education and regeneration which the SDP can influence but the detail is dealt with at site specific, local level.
<i>Soil and Land Quality</i>				
Continuing levels of vacant and derelict land as a brownfield resource to the deliver the SDP	Yes	Quantity and long-term nature of some areas. Constant churn of uptake and	Report GCV monitoring returns for Vacant & Derelict Land.	The SDPA monitors changes in the scale and nature of vacant and derelict land in the SDP area.



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strategy.		fall out.	Vacant & Derelict Land Survey	The SDP's influence in improving levels of remediation of Vacant and Derelict Land.
Changing soil quality functionality and stability, with issues arising from climate change, loss of organic matter, soil sealing and cultivation.	Yes	<p>Prevent further degradation and preserve function and restore degraded soils to a level of functionality.</p> <p>Land management practices e.g. agriculture and forestry.</p> <p>Land stability.</p> <p>Vacant and Derelict Land.</p> <p>Mineral workings and landfill sites require completion and</p>	<p>SEPA/Scottish Government</p> <p>Forestry Commission</p> <p>Environmental Monitoring (Minerals)</p>	<p>Consider how the SDP can influence and improve</p> <ul style="list-style-type: none"> <li>• impact on soil as a result of mineral extraction;</li> <li>• impact from waste management activities particularly landfill;</li> <li>• issues relating to River Basin Management (increased siltation and water contamination);</li> <li>• influence designated and protected sites such as peatbogs;</li> <li>• the impact of sewage sludge; the impact on agricultural soils</li> <li>• impact on soil quality from flooding</li> </ul>

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		restoration.  The Scottish Soil Framework 2009  Flooding		
<i>Water</i>				
Number of water bodies which may not reach good ecological status by 2015.	Yes	Poor water quality in some stretches of watercourses.  Urban drainage and diffuse pollution from rural sources and impact of industrial past, point source pollution, abstraction and flow regulation and changes to morphology (Draft Clyde Area Management Plan 2008).  Rising mine waters	SEPA River Basin Management Planning Data: Clyde Area	Consideration should be given to how the SDP can: <ul style="list-style-type: none"> <li>• minimise water pollution;</li> <li>• affect water quality, quantity or cause changes in hydromorphology; control discharges to inland surface waters, territorial waters, inland coastal waters and groundwater.</li> </ul> <p>The SDPA would have a limited role as the site selection and management of the waste facilities is a matter for local</p>

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		may cause pollution.		authorities and SEPA.
Flood risk, exacerbated by climate change in the long term.	Yes	Flood plain development pressure (add flooding element to environment monitoring).  Localised flooding exacerbated by urban drainage	SEPA River and Coastal Flood Maps.  GRIP Model  Metropolitan Glasgow Strategic Drainage Plan (MGSDP)	Consideration should be given to how the SDP could impact on and mitigate against flood risk.
<i>Air</i>				
Poor air quality within urban areas resulting largely from concentrations of transport emissions.	Yes	2008 (CAFÉ) Directive on Ambient Air Quality and cleaner Air for Europe, 2004	GRIP model  Strategic Land-use Transport Model (SITLUM)  Air Quality Management	Consideration could be given to any significant changes to emissions of the pollutants covered by the Directives. This is relevant to regional level plans

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		<p>Directive relating to arsenic, cadmium, mercury, nickel and polycyclic aromatic hydrocarbons in ambient air (to be merged with the CAFÉ Directive at a later date), 2001 Directive on National Emissions Ceilings (on 4 key air pollutants; sulphur dioxide, oxides of nitrogen, volatile organic compounds, and ammonia).</p> <p>Report on level and key issues of Air Quality Management Areas.</p>	Plans	<p>associated with activities potentially causing exceedances or emissions of the pollutants e.g. transport, energy, industry etc.</p> <p>The SDP would have limited role in controlling these emissions, however, the GRIP and SITLUM models may assist in assessing projected impact.</p> <p>Number and location of AQMAs in the GCV area including why and how they are designated and how further development could add or reduce pressure.</p>
<i>Material Assets</i>				

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Ongoing requirement for minerals extraction, alongside the need to protect the environment.	Yes	SDPA area forms the principal distribution area for the GCV and Ayrshire region for aggregate provision. It is required to provide at least a ten year landbank.	Report GCV monitoring returns for mineral applications.  Scottish Aggregates Survey 2005  British Geological Survey	Continuing demand for mineral extraction to meet the development demand of the SDP strategy.
Continuing growth in waste arising including from the construction sector, offset to an extent by an increase in recycling and composting.	Yes	Levels increasing and diversion from landfill.	SEPA (although there is limited data across all waste streams in licensed sites.	SDP's ability to address strategic waste management issues given data issues and  the management and licensing of waste facilities being a matter for local authorities and SEPA.
Ongoing need to reduce reliance on landfill sites and in particular levels of biodegradable waste going to landfill.	Yes	Increasing diversion from landfill.	National and GCV monitoring returns on progress made and continuing targets.  SEPA.	SDP ability to address strategic measures on waste disposal/landfilling throughout the community.

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<i>Cultural Heritage</i>				
Vulnerability of protected and non-protected historic and cultural buildings, sites, areas and landscapes to insensitive developments.	Yes  Report on what is known. No GCV-level monitoring.  How vulnerable are our valued historic and cultural heritage assets to insensitive developments?	Nationally important sites could become focus for 'destination' development.  Level of loss of heritage resources of regional and national significance  Respect for urban form, settlement pattern and identity?	Historic Scotland Historic Land Use Assessment  Local authorities	An aspect of the place-setting agenda of the metropolitan development strategy, however, the solution is essentially a design element which requires a local approach and only in exceptional circumstances would there be a key role for the SDP.
<i>Place-setting and the Built Environment</i>				
Poor settings of urban and peri-urban communities, impinging on well-being and quality of life.	Yes	Locating Community Growth Areas  Design issues  GN issues but there are difficulties in monitoring this.	Environment Monitoring returns.  AQMA's  CNMA's  SNH Natural Heritage Futures	An aspect of the place-setting agenda of the metropolitan development strategy; however, the solution is essentially a design element which requires a local approach and only in exceptional circumstances would there be a key role for the SDP.

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		<p>Coalescence of communities through urban expansion/ribbon development.</p> <p>Air Quality and Noise Management issues.</p> <p>Environmental vandalism – strategic matter?</p>		
<p>Loss of diversity in the landscape and dilution or erosion of distinctive character. Attrition of undeveloped, remote and wild countryside, and coasts.</p>	<p>Yes. This is reported as an issue in most local plan environment reports.</p>	<p>Cross-boundary issues including loss of diversity in the landscape issues?</p> <p>Vulnerability of key areas to inappropriate development?</p> <p>Poor quality urban fringes.</p> <p>Coalescence of</p>	<p>SNH</p> <p>Candidate Noise Management Areas (CNMAs)</p>	<p>An aspect of the place-setting agenda of the Metropolitan Development Strategy; however, the solution is essentially a design element which requires a local approach and only in exceptional circumstances would there be a key role for the SDP.</p>

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		<p>communities through urban expansion/ribbon development.</p> <p>Capacity of landscapes to absorb development and change.</p> <p>Impacts on undeveloped, remote and wild countryside, and coasts.</p>		
Generally poor standards of design.	Yes. Many LAs report this as an issue in their Environment Reports.	<p>This is a detailed design issue.</p> <p>Specific design issues for particular sites are the responsibility of the LAs.</p>		An aspect of the place-setting agenda of the Metropolitan Development Strategy; however, the solution is essentially a design element which requires a local approach and only in exceptional circumstances would there be a role for the SDP.
Erosion of rural character of Lowland Scotland - loss of	Yes	Pressures on land to accommodate the increasing number of	SNH	An aspect of the place-setting agenda of the Metropolitan Development Strategy; however,



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features, intrusion of noise and artificial light reducing tranquillity, suburbanisation.		<p>households.</p> <p>Green Belt development pressure/quality of greenspace.</p> <p>Need to identify, protect and enhance the greenspace network and important areas of forestry/woodland.</p> <p>Some elements such as artificial light are local issues.</p>	Local Authorities	the solution is essentially a design element which requires a local approach and only in exceptional circumstances would there be a role for the SDP..

## Environmental Baseline

This section follows the structure identified SEA Objectives.

### Biodiversity

#### Trends in Biodiversity and Land cover in the GCV Area<sup>1</sup>

1. GCV contains a wide variety of habitats from the shoreline of the Clyde to the highest points in the Campsie Fells and the Southern Uplands. The area is ringed by a Regional Park (Clyde Muirshiel), National Park (Loch Lomond and Trossachs) a proposed Regional Park (the Campsies) and an extensive Regional Scenic Area (Southern Uplands), all of which provide important wildlife habitats. The Clyde Valley Woodlands are part of an EU LIFE project to maintain their value for biodiversity. The mudflats in the Clyde are an internationally important site for migratory birds and the Slamannan Plateau is one of only two wintering grounds for Bean Geese in the UK. There are several Sites of Special Scientific Interest in the GCV area, as well as other local nature reserves, wildlife sites, and sites designated as Sites of Importance for Nature Conservation.
2. Land cover change continues to have a major impact on the biodiversity of the area. From the 50's to the late 90's the GCV area lost between 5 and 10% of its semi natural habitats. Parts of the Southern Uplands, the Campsies and the Kilpatrick Hills fared slightly worst by losing up to 25%. This is in comparison to a national average of 17%. This pattern is also reflected in a reduction in hedgerows, broadleaf woodland, heather moorland, blanket mire, lowland mire and rough grassland (Natural Heritage Trends Scotland 2001).
3. The main causes of this change were urban expansion, the use of uplands areas for water catchment, managed grassland and grazing, forestry and the intensification of farming in lowland areas.
4. Throughout the 1990s, the trend showed evidence of shift and some habitats showed signs of expansion.
5. Across Scotland the acreage of coniferous woodland remained static whilst there was an increase in the extent of broadleaf woodland, marshland, and horticulture and arable land. Decline continued at a slower rate in areas of heathland and natural grassland. These changes in these trends can be put down to the introduction of a more sensitive forestry policy and will probably be aided further by changes to agricultural policy and less intensive farming techniques.
6. Pressure will continue from development of all kinds even though there is greater protection given to habitats through national and international designations and the need for EIA's on applications.
7. One particular threat is from windfarm development which is located in upland areas that often display semi natural characteristics. Overall the loss of habitats will continue but with greater protection and sensitivity in planning and more emphasis on restoration and creation these trends should continue to improve over the Plan period.

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<sup>1</sup> [http://www.gcvcore.gov.uk/DOCS/structure\\_plan/SEA\\_Part\\_2.pdf](http://www.gcvcore.gov.uk/DOCS/structure_plan/SEA_Part_2.pdf)

8. The reduction in semi natural habitats has meant that there has been an associated decline in a number of the species that rely on these areas. The remnants of these species have retreated to those areas of their habitats that remain. Across Scotland and the GCV area there has been reductions in the number of butterflies, fresh water fish and rare plants. One third of the species that are given protection in Scotland have declined over the past ten years. Also a third of native mammals have declined in number over the same period. (Natural Heritage Trends Scotland 2001).
9. There have been some successes with an increase in fresh water birds, wintering waders, a reasonably static level of native plant species and the reintroduction of some species that had previously become extinct through hunting or persecution.
10. The trends mentioned above are expected to continue over the SDP period with improvements in the numbers of species under threat.
11. This will be especially evident in the lowland areas where a shift of the focus of farming practice to one more focused on land management will lead to an increase and improvement of habitats.
12. Urban expansion and other types of development will continue to have an effect on the location and diversity of species and with urban areas expected to continue to increase over the next 20 years this could be one of the greater threats to flora and fauna unless guided through planning policy to least sensitive locations.
13. The GCV area includes several landscapes that are recognised as being of national and regional importance. The north of the GCV area includes parts of the Loch Lomond National Park and the Campsie Fells proposed Regional Park. The West of the area is the Clyde Muirshiel Regional Park and to the South are the Southern Uplands, which are designated as areas of Regional Scenic Importance.
14. There are also numerous country parks, often based around the remnants of old country estates. The Clyde Valley is also of landscape importance as it represents one of the few remaining large areas of riparian native woodland in West Central Scotland.

#### Natural Heritage Features

15. Glasgow and the Clyde Valley encompasses coastal, lowland, mid-altitude and upland landscapes which are predominately cultivated or affected by human activities and contain significant urban developments. The area supports a broad range of natural heritage interests, fundamentally reflecting climatic, topographical, geological and altitudinal variations, but variously altered by past land-use.
16. The nature conservation interest of the area is widespread and a number of general habitat or more specialist surveys have identified a whole range of habitats, vegetation communities or species of interest. This wide range covers remnant semi-natural habitats to more recently formed habitats, and occur on the upland, lowland and even densely populated urban areas. Habitats of particular nature conservation interest and importance in the Clyde Valley area are the valley or gorge woodlands, a number of bog and mire communities, the upland fringe habitats, the Clyde estuary and the various lochs and floodplain haughs.

## Upland Habitats

17. Upland habitats are well represented throughout the Clyde Valley catchment area, ranging from the basaltic rocks of the Kilsyth Hills in the north and much of the west, from Renfrewshire to East Kilbride, to the highest ground in the southern uplands, with the coal measures and gritstones of the high ground of the Slamannan plateau occurring to the eastern fringes.
18. The high ground typically supports three main habitats: upland pasture, heather moorland or coniferous forestry. These habitats can occur in complex mosaics but frequently they are represented in discrete units, reflecting the local estate management regimes. The combinations of these habitats over the seasons can impart characteristic ranges of colours and textures to the landscape with shades of greens, browns, ochres and straw, and at flowering periods, the vivid purple of the extensive heather dominated areas and the white heads of cotton-grasses in blanket bog.
19. The pasture grasslands, maintained by sheep grazing, are dominated by fine-leaved fescue, mat and wavy-hair grasses and broader-leaved bent grasses, usually with a limited range of associate herbs and mosses. The acidic grasslands can occur in complex mosaics with dry and wet heaths, in part reflecting soils and drainage, but mostly the localized influence of stock grazing; such mosaics can be of high value to wildlife and species diversity and have visual landscape appeal.
20. The species diversity can be locally high, often associated with bent-fescue type grasslands on shallower soils or those with a more basic underlying geology such as in the Renfrewshire Hills can have locally high species diversity. Locally, bracken can form extensive stands, sometimes indicating former woodland areas, and generally impacting both on the ecology and landscape.
21. At many of the more accessible hillsides and lower slopes, agricultural improvement such as drainage and fertiliser applications, can increase the frequency of broader-leaved pasture grasses, reducing the ecological interest and creating a brighter, green sward, contrasting with the paler hues of the unimproved grasslands.
22. The moorlands are characterised by the abundance of heather but range from dry heaths with other ericoids such as blaeberry, bell heather, crowberry, and, on higher ground, cowberry, to wet heaths or blanket bogs, on shallow slopes, depressions or plateaux. In these areas graminoid elements such as purple moor-grass, deer-grass and cotton-grasses can be more extensive. The ecological interest and species diversity of relatively less disturbed areas can be high, supporting various herbs, and notably lower plants such as mosses, liverworts and lichens. The heather moorlands are often maintained by muirburn, and the patchwork result can be seen over much of the Southern Uplands, although inappropriate burning practices can have an adverse effect on upland habitats and species.
23. In general, the less intensively used upland areas provide a valuable resource for wildlife with a wide range of invertebrates, birds and mammals supported, including, for example, emperor moth, mountain hare, skylark, curlew, golden plover and lapwing, red and black grouse and hen harrier. These species are threatened by agricultural intensification and afforestation.

## Bogs and Mires

24. Habitats associated with impeded drainage and in particular deep peat formation are of special note within the Clyde Valley area, and extend into the adjacent ground of Ayrshire, Falkirk and West Lothian. The peatlands of the local area are recognised at a national and European level, and both raised and blanket bogs are identified as priority habitats by the EC Habitats Directive, and a number of sites are designated as SSSIs or as pSACs (proposed sites). The bog and mire habitats, as previously noted, can occur in mosaics with wet and dry heaths and, where degraded by draining, burning or grazing, with acid grasslands.
25. The bog and mire habitats are all threatened by land-use pressures such as drainage for agriculture, but also afforestation, open-cast mining and peat extraction. Significant areas of the former peat resource have been lost over the last century to these activities and to urban spread.
26. Blanket bogs are a feature of the poorly draining ground of slopes, shoulders and plateau of the uplands. Heather with cotton grass are the main dominants, although cross-leaved heath, deer-grass and purple moor-grass can also be common; cloudberry is also a feature of the upland blanket mires above 400m. However a significant feature of bogs is the usually abundant growth of mosses, notably the main peat forming bog-mosses (*Sphagnum* spp.). Where degraded the graminoid elements can become more prevalent, with cotton grass and purple moor-grass locally dominant. Extensive areas of blanket bog occur at Clyde Muirshiel in Renfrewshire, the summit plateaux of the Kilpatrick and Kilsyth Hills to the north of Glasgow, the moors above Eaglesham and in the southern uplands.
27. Raised bogs, although superficially similar to blanket bogs, are more discrete units, typically developing in the lowlands, in shallow basins or on broad, river flood-plains, and may have been growing for several thousands of years. When in a relatively pristine condition they support a luxurious growth of bog-mosses with associate liverworts, other mosses and lichens, in addition to previously mentioned bog species. Raised bogs are well represented in the area with notable examples being Cranley and Carnwath mosses to the east of Lanark and Red and Coalburn mosses, north of Abington. Other sites occur on the urban fringe such as Blantyre Muir by Hamilton, Commonhead Moss, east Glasgow and Branchal Moss by Newmains. The western margins of the Slamannan plateau support a number of raised or intermediate bogs of note such as, Black Loch and Lady Bell's Mosses.
28. Other mires, including, basin or valley mires and rush-dominated pastures usually occur in association with bog habitats but can occur as distinct units, and as noted with other wetlands, can significantly add to the species diversity and interest, when present as part of site habitat mosaics. Rush-dominated pastures are a very common landscape feature, often marking out drained hill slopes and rig and furrow drainage patterns in pasture grasslands, but are also important habitats at a range of sites, including marginal farmland and at urban areas.

### Lowland Habitats (Agriculture)

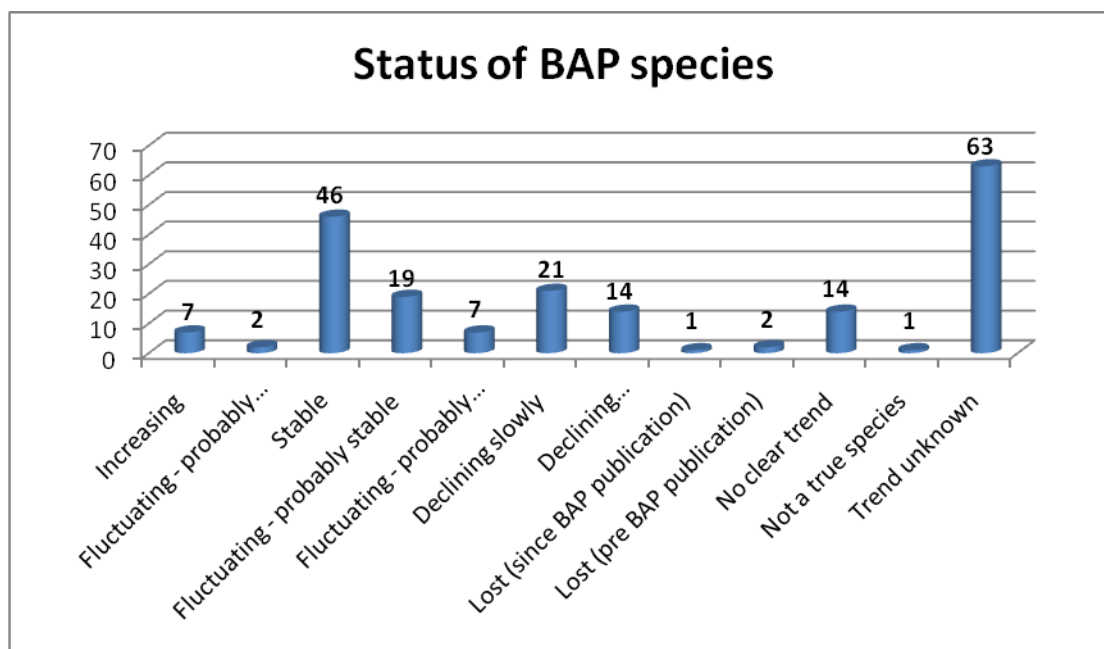
29. Throughout the more accessible, low altitude areas, where not developed for urban uses, the land is mainly agricultural, mostly under pasture, including silage, grassland, but there are areas of arable land growing in particular barley, wheat, oats and oil-seed rape. The vast majority of the grasslands have been dramatically altered by improvement treatments such as draining, fertilising and seeding, and areas of unimproved, or even semi-improved, pasture or traditional meadow grasslands are becoming an increasingly rare resource. Even though large areas of the urban fringe still retain a rural atmosphere, the ecological interest of this improved farmland landscape, is in general fairly low and it could arguably represent the most serious current threat to the natural heritage resource of the area.
30. Local areas of less-improved grassland, and other habitats such as heaths, mires, wetlands and woodlands occur scattered throughout the lowlands, usually on marginal farmland such as along the sides of water courses, poorly draining depressions or haughs, local rocky ridges, upland transition slopes and on the urban fringes (several of these are noted further in other sections). These areas can be of high diversity and interest and many are noted as being Sites of Nature Conservation Interest (SINCs) within their respective local authority areas.
31. The SDP is an important vehicle in ensuring that development is guided to areas that will result minimising impact on the landscape and protecting those parts that have the highest value. Without strategic level assessments, development cannot be guided to the most sustainable locations that will have the best possible effect on a range of issues including landscape.
32. The SDP includes a commitment to protect the metropolitan area's most valuable areas of the landscape. It also aims to ensure that new development is both located and designed in a way that complements the landform of an area. Without these controls, development could take place in a sporadic nature and most landscapes would experience some degree of damage and unwelcome change.
33. However, it is important to note that, in the absence of an SDP, there is already strong landscape protection and enhancement policies in place and these would be at the appropriate local levels and suitable vehicles for protecting and enhancing our natural environment.

### Biodiversity, Flora and Fauna

34. International biodiversity designations in GCV include 5 Special Protection Areas (SPAs) and 9 Special Areas of Conservation (SACs). There is 1 Ramsar sites, reflecting important wetlands with biodiversity value. The GCV area has 87 Sites of Special Scientific Interest.

35. The status of 197 BAP species occurring in Scotland in the 2008 assessment is as follows<sup>2</sup>:

**Figure 1: Status of BAP species in Scotland**



36. Of the 197 BAP species in Scotland:

- 9(5%) were increasing / fluctuating probably increasing
- 65 (32%) were stable / fluctuating probably stable;
- 43 (22%) were declining or lost since the commencement of BAP in 1994;
- 14 (7%) showed no clear trend and for 63 (32%) was unknown;
- 3 (1%) were thought to be no longer present in Scotland and 1 (<1%) was no longer considered to be a true species.

37. SEPA provides further information on the current state of biodiversity. It notes that climate change is already having an impact, and that other processes including urbanisation, land use change and the spread of non-native species will make it difficult to reach stated biodiversity targets.<sup>3</sup> Although agriculture is noted by SEPA to be a key cause of habitat loss and degradation, SEERAD figures show that there has been a steady increase in the overall area of land which is managed under agri-environment schemes.<sup>4</sup> SEPA also refer to SNH's natural heritage trends reports, which identified loss of neutral grassland, particularly in the uplands and islands, dwarf shrub heath, acid grassland and bog as key problems. This is confirmed by the broader Countryside Survey 2003, which monitored change in broad groups of habitats between 1990 and 1998, and showed that there was a substantial decrease in semi natural habitats in this period (-88,000 hectares).

<sup>2</sup> Scotland's Biodiversity Indicators - S1 Status of UK BAP priority species

<sup>3</sup> Scottish Environment Protection Agency, (2006) State of Scotland's Environment 2006, SEPA: Stirling.

<sup>4</sup> Scottish Executive, (2006) Key Scottish Environment Statistics, Scottish Executive: Edinburgh.

38. Climate change is likely to exacerbate established pressures on biodiversity resources, and therefore has the potential increasingly to compromise site based conservation measures. As a result, there has been a growing emphasis on the development of broader measures for protection and conservation including the commitment in the Scottish Biodiversity Strategy to removing barriers to species movement and dispersal and improving connections between habitats. The MONARCH<sup>5</sup> (Modelling Natural Resource Responses to Climate Change) research assessed the impacts of projected climate change on wildlife in Britain and Ireland. This included modelling the potential for changes in the ranges of a number of species. Overall, there is a northward shift in suitable climate space for many species. The main adaptation measures identified in the report include:
- Conserving and restoring the existing biodiversity resource;
  - Reducing other sources of harm such as pollution and inappropriate habitat management;
  - Developing ecologically resilient landscapes through reducing habitat fragmentation.
  -
39. Settlement growth through infill and expansion can have a negative impact on biodiversity through reducing, fragmenting and isolating the extent of semi-natural habitat found in settlements. Most Local Biodiversity Action Plans outline opportunities for safeguarding biodiversity in settlements, but do not comprehensively or systematically address opportunities achieving this.<sup>6</sup> Land on the urban fringe is sometimes blighted and poorly managed, providing a key opportunity for biodiversity enhancement and recreational use.
40. The value of the environment and the biodiversity which it supports is difficult to measure, however work by SEPA suggested that the ecosystem services provided by the natural environment are annually worth some £17 billion.<sup>7</sup> High levels of economic development are likely to impact on biodiversity through land take, pollution and habitat fragmentation. However, businesses can make a positive contribution to biodiversity through developing on-site projects which support habitats and species.
41. In 2006, the SEA for the National Transport Strategy noted that transport infrastructure can have a detrimental impact upon biodiversity in terms of loss and fragmentation of habitat caused by the creation of barriers to movement. Mitigation of these impacts should be undertaken through environmental appraisal at the regional and local level to determine how major schemes impact on biodiversity and propose measures to optimise benefits from new infrastructure, for example by planting new hedges and trees, and creating wildlife corridors and new habitats.
42. Forestry Commission Scotland is seeking to develop forest habitat networks and open habitat networks. This involves mapping for woodland species and open ground species contiguous areas containing functionally connected habitat patches in a matrix. The networks identified are the landscape structure through which focal species can disperse freely between numerous habitat patches.

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<sup>5</sup> Walmsley, C.A., Smithers, R.J., Berry, P.M., Harley, M., Stevenson, M.J., Catchpole, R. (Eds.) (2007). MONARCH – Modelling Natural Resource Responses to Climate Change – a synthesis for biodiversity conservation. UKCIP, Oxford

<sup>6</sup> Scottish Natural Heritage (2002) Natural Heritage Futures Settlements Prospectus, Scottish Natural Heritage, Battleby

<sup>7</sup> Scottish Environment Protection Agency (2006) State of Scotland's Environment 2006



## Landscape

43. The European Landscape Convention states that landscapes across Europe are being transformed as a result of a number of factors, including settlement expansion, transport and infrastructure and the economy.<sup>8</sup>
44. Collectively, the series of landscape character assessments prepared by SNH provides a useful 'snapshot' of the characteristics of Scotland's landscapes and this is translated to a strategic level in SNH's Natural Heritage Futures Statements. As part of this, SNH prepared a broad assessment of Scotland's landscapes which identifies nationally significant resources, pressures and opportunities.<sup>9</sup> The report notes that landscapes are constantly evolving, but that forces for change vary between gradual natural processes and human activity which results in more pronounced and often negative change. Key challenges include land use change, incremental change arising from development and changes in perceptions. The different qualities of regional landscapes are set out, and it is emphasised that some areas are much more vulnerable to specific types of change than others (e.g. transitional landscapes, strategic transport corridors etc). SNH has committed to adding to this dataset, including by undertaking more landscape capacity work and other analysis in the future. The establishment of SNH's Landscape Policy Framework (2005) and the Scottish Landscape Forum in 2006 aims to raise awareness of the special qualities and vulnerabilities of Scottish landscapes.
45. Scotland's landscape provides many different benefits, and these are highlighted by the Scottish Landscape Forum<sup>10</sup>. Accessible attractive landscapes support health and well-being through encouraging physical activity, and landscapes provide a huge range of opportunities for enjoyment and recreation. The restoration of degraded landscapes is an important aspect of community regeneration and they also provide a resource for learning about the natural and cultural heritage. Tourism is vital to the economy, contributing around £4.2 billion and employing nearly 9% of the workforce. The economic benefits of tourism are important for rural areas, and high quality landscapes also attract economic development and investment.
46. The value of the environment in economic terms is illustrated by the income generated from wildlife tourism, as set out in SEPA's State of the Environment Report 2006. The 5 viewing sites for ospreys alone attract 125,000 visitors who spend an additional £2.2 million each year (RSPB), whale and dolphin watching generates some £3.4 million and fishing for salmon on the Tweed is estimated to bring £12.5 million into the Borders each year<sup>11</sup>.

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<sup>8</sup> Council of Europe, European Landscape Convention, [http://www.coe.int/t/e/Cultural\\_Co-operation/Environment/Landscape/](http://www.coe.int/t/e/Cultural_Co-operation/Environment/Landscape/)

<sup>9</sup> SNH (2002) Natural Heritage Zones

<sup>10</sup> Scottish Landscape Forum (2007) Scotland's Living Landscapes Places for People The Scottish Landscape Forum's Report to Scottish Ministers

<sup>11</sup> Scottish Environment Protection Agency (2006) State of Scotland's Environment 2006

47. Landscapes are constantly changing as a result of human activity, and SNH has identified key drivers of change<sup>12</sup>. Climate change may add to these changes through the adaptation of habitats and agricultural systems and the development of renewable energy projects. Wider aspects of change include a loss of diversity and distinctiveness and a decline of natural features within the landscape. There has been continued loss of remote and wild countryside. Poor standards of design, the loss of cultural features, and reduced management of landscape features results in changes in the condition of elements of the landscape. There are threats to the rural character of lowland Scotland through continued development, infrastructure, noise and lighting.

## **Population**

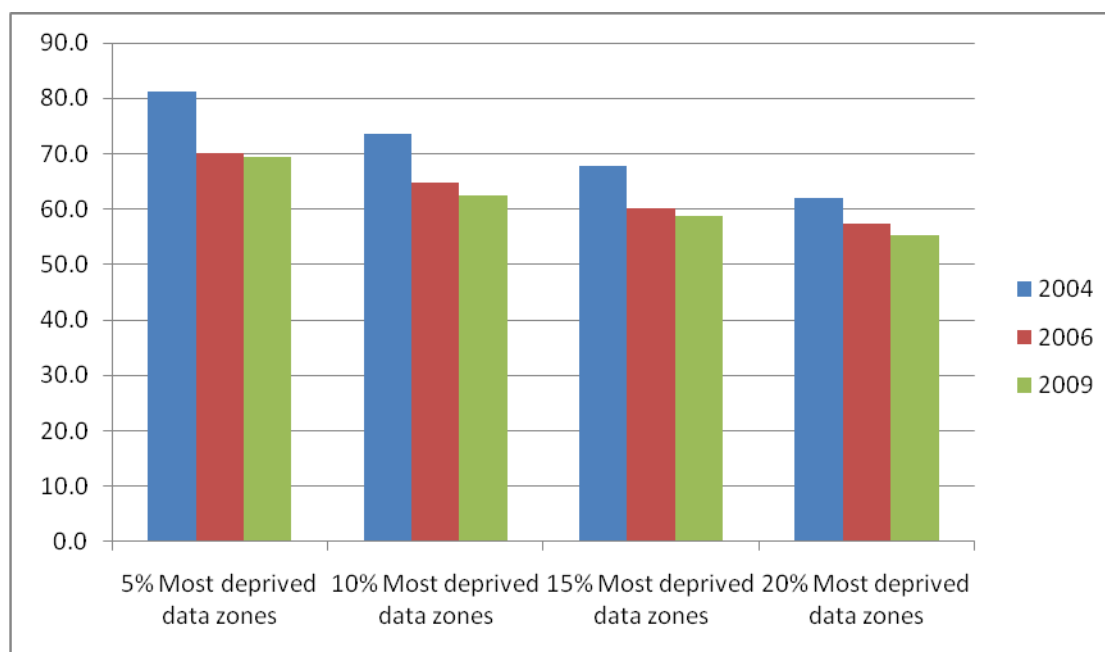
48. The GCV area has a well documented concentration of health inequalities. Poor health service provision can significantly affect a person's quality of life. The level of medical care in the more rural locations of the GCV region is understandably limited. There are urban locations which suffer from high levels of deprivation and subsequently have a greater propensity of poorer general health creating a greater need for medical attention. In terms of the SDP, the Plan does not deal with health service provision directly so therefore the likelihood is that these inequalities will continue and current health provision will not address the present and future health problems.
49. The GCV region will experience, along with the rest of Scotland, an aging population and its associated implications of that. The need for additional and adapted services will place an increasing burden on public service providers. Again, the majority of these pressures will fall outside the remit of the SDP. Therefore public services will continue to be increasingly stretched and this will have implications for the standard of service that people will receive in the coming years. This will have huge implications on the citizen's quality of life and health. Realistically the GCV political vision aims to create a high quality city region environment where people wish to migrate to live and work. Therefore it is the role of the SDP to make sure that there is the co-ordination of the appropriate strategic infrastructure in order that this happens. But if the SDP is not in place then this may make this objective more difficult to achieve in the face of incoherent and disjointed approach to development and infrastructure provision.
50. Traditionally areas of the GCV area contain concentrations of economic deprivation. Deprivation is intrinsically linked to low incomes, low educational attainment and unemployment. These also have a huge impact on lifestyle choices and a person's quality of life. These areas frequently suffer from social problems and poor environmental amenity and limited green space provision which can lead to health implications of its inhabitants. This limits people's ability to enjoy and lead more active lifestyles. Without an SDP these areas of are likely to remain in their current state unless appropriately addressed.

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<sup>12</sup> SNH (2003) Scotland's Future Landscapes? Encouraging a wide debate A discussion paper from Scottish Natural Heritage

51. Scotland's health record is poor, with the population having the highest rate of coronary heart disease in Europe. Poor health is particularly concentrated in households with lower incomes. Although levels of physical activity and consequently health have been improving, 44% of men and 33% of women currently meet the recommended levels of physical activity, indicating a need for further changes to lifestyles to overcome health problems in the long term. Asthma and wheezing problems also persist and are more prevalent in deprived households.<sup>13</sup> Environmental pollution has a number of impacts on human health. The Royal Commission on Environmental Pollution (RCEP) report on the Urban Environment<sup>14</sup> identifies a number of impacts associated with the urban environment. This includes air pollution which causes premature death and reduces average life expectancy. Climate also causes extra deaths in summer through heatwaves and in winter by cold. There is an association between urban residence and the prevalence of psychiatric disorders.
52. Some 61% of people in high income areas considered themselves to be in good health, compared with only 45% of those living in disadvantaged council estates<sup>15</sup>. The importance of environmental justice is highlighted through the mortality rates for cancer, coronary heart disease and child health issues all show variations by deprivation category, where generally people in more deprived areas have poorer health. It also identifies the important role which local environment plays in the quality of life.

**Figure 2: Scottish Index of Multiple Deprivation - % change in national share since 2004 across the top 5%, 10% , 15% and 20% datazones in the GCV area<sup>16</sup>**



<sup>13</sup> Scottish Executive Health Department, (2005) Health Survey Results 2003, Scottish Executive: Edinburgh.

<sup>14</sup> Royal Commission on Environmental Pollution (2007) The Urban Environment

<sup>15</sup> Communities Scotland (2006) Strategic Environmental Assessment (SEA): Environmental Report for Communities Scotland Sustainable Development Policy & Scottish Social Statistics, Scottish Executive National Statistics Publication 2001

<sup>16</sup> <http://www.scotland.gov.uk/Topics/Statistics/SIMD>

53. These geographic concentrations of deprivation are largely within Glasgow, North Lanarkshire and South Lanarkshire. Deprivation is also a significant rural issue as a result of specific determining factors.

## **Human Health**

54. In addition, a lack of appropriate housing could also subsequently lead to people living in sub-standard or crowded accommodation which will significantly reduce their quality of life and could lead to human health problems.
55. Car use and traffic levels are a contributor to both climate change and air pollution. Within Across the GCV region, traffic pressures are most prominent in Glasgow city centre and the other major conurbations. In these locations levels of nitrogen dioxide and particulates are highest in the region. Under current development plans, pollution from traffic 'hotspots' will continue to not only affect the air quality of these locations with associated impact on health, as well as the local environmental quality and biodiversity.
56. Research undertaken for Scotland and Northern Ireland Forum for Environmental Research<sup>17</sup> examined the relationship between poor environmental quality and deprived communities in Scotland. There is a strong relationship with deprivation and industrial pollution, derelict land and river water quality, with people in deprived areas far more likely to be living near these sources of potential negative environmental impact than people in less deprived areas. People living in deprived areas are less likely to live near to areas of woodland, however there has been a recent focus in planting close to deprived populations. There is a correlation between deprivation and poor air quality for nitrogen dioxide, PM 10, benzene and carbon monoxide. Environmental improvements can make an important contribution to environmental justice as the most deprived communities often live in the worst environments. People living in the most deprived areas have particular concerns about their local environment and quality of life issues such as vandalism, crime, safety, the behaviour of young people, litter and dereliction.

## **Soil**

57. The industrial legacy of the GCV area has meant that there are significant locations that contain potential or definite contamination. This has meant pollution of soil on many of these sites, resulting loss of ground water resources with associated potential impacts on public health. This blight will continue under the current development plans where no form of remediation strategy is implemented. In cases where contamination is evident or confirmed, it is likely that future development could be avoided on these sites due to the additional practical and financial implications of treating contamination in the absence of a co-ordinated and appropriately funded remediation strategy.
58. With its inability to utilize this asset there is the likelihood that land provision under existing development plans would lead to uncoordinated land release to meet development demands, creating additional pressures on prime agriculture/Greenfield/green space land resources in the region.

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<sup>17</sup> Scotland and Northern Ireland Forum for Environmental Research (2005) Investigating environmental justice in Scotland: Links between measures of environmental quality and social deprivation

59. Soil is essentially a non-renewable resource and provides an important asset that supports a wide range of functions. A review of the key issues affecting Scotland's soils identified key issues to be addressed<sup>18</sup>. Soils suitable for arable cropping are largely found in eastern Scotland, and are relatively limited in extent, whilst lowland soils in the west of Scotland support productive pastures and dairy farming. Although soils throughout the country are generally of good quality, there are a number of recognised threats to soil. Loss of organic matter in soils could result in release of carbon. The impacts of climate change on soil are uncertain, but may include an increase in carbon released, and may require a shift in soil management. Although soil biodiversity is largely un-explored, there is evidence that contamination by heavy metals may affect the microbial community. Issues of structural degradation and compaction are relatively localised and generally reversible. Although erosion of mineral soils is limited, this could increase under future climate change scenarios. Soil sealing as a result of development can have a profound effect on the ability of soils to perform other functions and is effectively irreversible. There is evidence that agricultural land is being developed at twice the rate as in the mid 1990s, and this is likely to be affecting some of the most versatile and productive soils. Erosion and soil sealing also result in loss of soils which form cultural heritage resources in their own right, as found around many of Scotland's settlements. The overall amount of land lost to development is also a key concern, although evidence on this requires further consideration as part of the SEA of the Soil Strategy.
60. Soil erosion is a continuing problem and this could be exacerbated by climate change<sup>19</sup>. Levels of industrial and chemical soil pollution and contaminated land have generally declined as a result of reclamation and decontamination and regulation of activities. Targeted regeneration in areas with the greatest levels of derelict and vacant land (Glasgow and North Lanarkshire) has accelerated this process further.<sup>20</sup>
61. Nutrient enrichment as a result of agricultural activity is a continuing, but similarly declining problem for soil and water bodies.<sup>21</sup> It is expected that a combination of agricultural incentives (e.g. delivered through Land Management Contracts) and environmental regulation should help to reduce this problem further.
62. Scottish soils are characteristically high in carbon content, accounting for over 50% of total UK carbon soil content<sup>22</sup> (do we have anything on soil at a GCV level?). As such, they offer a valuable function as a carbon sink, and this should be weighed against any perceived carbon benefits from biomass growth and extraction. The removal of forestry on peatlands as part of a habitat restoration programme to restore peatland or scrub habitats could be encouraged as the long-term carbon storage benefits would outweigh any short term losses. The removal of forests from peaty soils is currently constrained by economic and technical factors, but a strong biomass sector may result in extraction becoming more economically viable. It is estimated that there is 1096,000ha of deep peat soil in Scotland<sup>23</sup>. Deep peats form a major part of Britain's terrestrial carbon sink. Changes in land management have an

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<sup>18</sup> Scottish Executive Environment and Rural Affairs Department (2006) Environmental Research Report 2006/01 Scotland's Soil Resource – Current State and Threats

A 52% in SO deposition was recorded between 1986 and 1997, but NOx deposition has declined only slightly. Scottish Environment Protection Agency, (2006) State of Scotland's Environment 2006, SEPA: Stirling.

<sup>19</sup> Scottish Environment Protection Agency, (2006) State of Scotland's Environment 2006, SEPA: Stirling.

<sup>20</sup> Scottish Environment Protection Agency, (2006) State of Scotland's Environment 2006, SEPA: Stirling

<sup>21</sup> Scottish Environment Protection Agency, (2006) State of Scotland's Environment 2006, SEPA: Stirling.

<sup>22</sup> SNH (2007) Biomass Energy and the National Heritage Strategic Environmental Assessment Environmental Report

<sup>23</sup> Forestry Commission (2000) Forests and Peatland Habitats Guideline Note

influence on dissolved organic carbon (DOC) which is the carbon contained within organic matter in solution, and represents a potentially important pathway for carbon loss from organic soils<sup>24</sup>. Land management activities such as drainage, burning, afforestation, grazing and liming might also influence DOC losses, and climate induced changes in hydrology and plant productivity could increase carbon losses in the short term.

## Water

63. The EU Water Framework Directive (WFD) aims for all surface water bodies to be of 'good' ecological and chemical status by 2015. River Basin Management Plans are required under the WFD; however development can place pressure on the water resources and without strategic action across the region, and it is likely that poor standards would not be significantly raised. The GCV area is covered by the Scotland river basin district. At present there are 2,013 rivers, 309 lochs, 284 groundwater, 40 estuary and 449 coastal water bodies in the Scotland RBD<sup>25</sup>. The SDP has a key role in helping to protect water quality. Contamination from development and run off from hard surfaces can both result in pollution. The structure plan can help reduce this risk by directing development to areas where there is less risk of contamination and away from the most sensitive locations such as aquifers. Development can increase pressures on water bodies resulting from physical development (e.g. Culverting, canalisation, river bank/flood defence works etc) which may result in a significant environmental effect (e.g. reduction in waterbody status) and risking objectives of WFD. The Plan will take such issues into accounting any decisions taken. It is however considered that because of the statutory powers of SEPA and the duties on the Water Authority in having to meet for example the water directives then no development would be allowed to proceed without their approval in these matters.
64. Rising sea-levels could see a further loss of land to the sea as well as decreasing functionality of existing drainage systems. The relative differential levels between on land sewage drainage systems and the sea level are reduced as the sea level rises, and this can therefore lead to greater complications and a much poorer or non-functioning drainage system. Under the current development plans, this problem will continue to aggravate an increasing number of buildings and larger areas of land as a result of sea level changes and increasingly frequent flooding, devoid of further mitigation measures. The SDP is a key tool in helping to tackle flood risk and its policies. However, it will take a wider acceptance in the enterprise and development communities to make a substantive change. Work is underway on several river catchments, including the Carron and the Clyde, to develop solutions to increasing flood incidence and the effects of climate change. In the absence of an SDP, both flooding and sea level rises will continue to be dealt with on a development-by-development basis, without considering the wider environmental implications. It will be very important that the issue of flooding and flood alleviation is incorporated into development proposals at an early stage and that as well as directing development away from the floodplain, flood alleviation measures are introduced to contain increased run off from new development. The use of alternative more porous material should also be considered. All of these will be Local Development Plan issues.

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<sup>24</sup> Scottish Executive Environment and Rural Affairs Department (2007) ECOSSE: Estimating Carbon in Organic Soils – Sequestration and Emissions: Final Report

<sup>25</sup> <http://www.sepa.org.uk/water/idoc.ashx?docid=c2e7861e-4414-4ebd-9867-cfdf8d09d392&version=-1>

65. The implications of climate changes create pressures to change the physical environment to create preventative flooding measures, such as engineering works and river bank management. Under current local development plans, this is addressed on a development by development basis. Although these measures do aim to protect people, property and infrastructure from they can have indirect consequences such as detrimental impacts on, hydrological habitats and river bank habitats. These are issues that will be dealt with at a local level rather than the SDP.
66. Statistics compiled by Scottish Water<sup>26</sup> show that there has been a growth in un-metered demand for water, and that 48% of daily demand for water is lost in leakage from the system. Continuing growth in demand, combined with climate change, could put significant additional pressure on water supplies in the future. Water is abstracted from the environment to provide public water supplies and serve industry and agriculture. SEPA<sup>27</sup> considers that the main challenge for the water environment is to balance levels of abstraction with meeting the needs of users, whilst at the same time leaving enough water in the environment to conserve river, loch and wetland habitats and species.
67. Water quality is also an important measure of environmental health and it is generally accepted that this has been improving over the last two decades and is good overall. SEPA has recently completed the first comprehensive assessment of the condition of our water bodies, for which it established new, risk-based monitoring programmes in 2006. The assessment methods used were developed jointly with the rest of the UK. A number of the methods have also been compared with those being used by other European Union countries, and all are based on criteria set out in the Water Framework Directive. As a result, for the first time Scotland's water environment has been classified on the same basis as that of rest of the UK and the European Union. SEPA continues to work towards specific targets such as levels of compliance for licences issued under the Control of Pollution Act, and diffuse pollution remains a problem. The main cause of diffuse pollution is agriculture. The next most important causes are urban development, forestry, production of power and transport resulting in acidification, and sea and coastal water transport.<sup>28</sup>
68. For the Scotland RBD, it is predicted that almost one third of water bodies will not reach the required 'good ecological status' by 2015. SEPA's assessment maps the sources of pressure in relation to water bodies at risk and shows the effects of urban development in generating diffuse source pollution that impacts on water bodies in and around most of Scotland's most urban areas, primarily in the Central Belt but also extending southwards into Ayrshire. It also notes that the firths of Forth and Clyde are being adversely affected by sea and coastal water transport. Climate change adds a further dimension to the challenge of improving water quality, with potentially substantial reductions in ground water flows in the east of the country and increased water temperatures putting further pressure on their ecological status and increasing their susceptibility to pollution.

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<sup>26</sup> Scottish Water (2006) Public Water Supplies in Scotland: Water Resources Survey 2004-2005.

<sup>27</sup> SEPA (2005) Scotland River Basin District: Characterisation and impacts analyses required by Article 5 of the Water Framework Directive

<sup>28</sup> SEPA (2005) Scotland River Basin District: Characterisation and impacts analyses required by Article 5 of the Water Framework Directive

69. SEPA has also produced flood maps<sup>29</sup> which show areas with a 0.5% (1:200) or greater probability of being flooded in any given year. This shows areas at risk of flooding by rivers and the sea and will help decision makers to understand flood risk when considering new development. The flood map is based on modelling to best present the data at a national level and is intended as an indicative tool which will be reviewed as and when further, more detailed data becomes available.
70. Drainage is a key issue in urban areas because development reduces surface permeability and increases levels of run-off which can lead to issues with water quality and quantity. The sustainable management of drainage and flood management issues is undertaken through the use of Sustainable Urban Drainage Systems (SUDS) which reduce the rate of surface run-off and improve water quality and amenity. At the end of 2001 there were in total 3913 SUDS and 767 sites around GCV area. The growth in the number of SUDS has been rapid since 1996.<sup>30</sup>
71. Research undertaken for SEPA and SNH in 2004<sup>31</sup> explored the links between strategic development proposals and the water environment. It identified a total of 691 strategic development sites at the time of the study, and showed that these were concentrated largely within the central belt and south and low lying areas of the North East. Of these sites, 39% were for housing, 22% were industrial and 15% comprised mixed use. 61% of the sites were in greenfield locations, with this share being highest within the Highland Council area. The study estimated that between 24% and 38% of strategic development sites were within 1km of water dependent wildlife receptors. Of these 152 sites were considered to be high risk as a result of their relationship with biodiversity features or due to their susceptibility to flooding.
72. National planning advice sets out the impacts of climate change on flood events and sea level rise. The UKCIP09 low emissions scenario predicts that Scotland will experience net sea-level rise of around 1 cm to 18.6 cm by the 2080s, depending on the emissions scenario. Extreme winds and storminess, influencing tidal surges and waves, may be modestly affected; very severe winter gales are predicted to become a little more frequent. However there are significant uncertainties around these three factors, especially the future surge and wave conditions. Research on future coastal flood risk based on the UKCIP09 scenarios suggests that:

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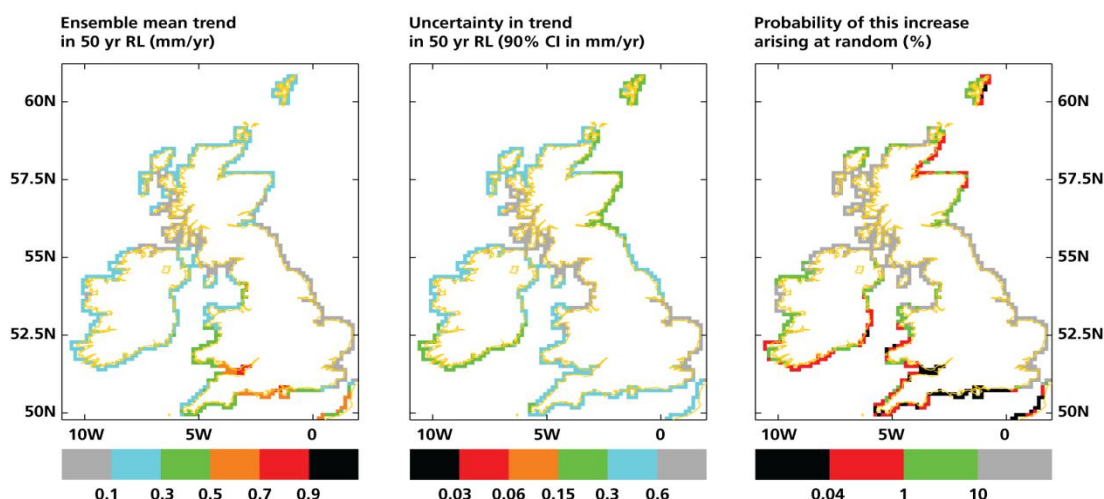
<sup>29</sup> <http://www.sepa.org.uk/flooding/mapping/>

<sup>30</sup> SNIFFER, SEPA and the University of Abertay Dundee (2002) 'SUDS in Scotland – the Scottish SUDS database' (SNIFFER Final Report number SR(02)09).

<sup>31</sup> ENEC (2004) Identification of Pressure and Impacts Arising from Strategic Developments Proposed in National Planning Policy and Development Plans, research undertaken on behalf of SEPA and SNH.



**Figure 3: Future Coastal Flood Risk**



The ensemble mean trends in 50 year skew surge return level from the storminess component only. Negative trends are included in the grey shading.

73. UKCIP09 find that the physical significance of the trends in the storminess-driven component of extreme sea level is small. (It must be noted that at this stage we have not combined these with mean sea level change.) For example the maximum fitted trend in the PPE ensemble mean for any of the four return periods considered (2,10, 20 and 50 year), at any location around the UK coastline, represents an increase of less than 0.9 mm yr. This can be compared with observed global mean sea level rise during the period 1961-2003 of around 1.8 mm year (IPCC, 2007) or the top-end absolute sea level rise projected for the UK for the 21st century of around 75 cm in 100 yr.
74. The environmental impacts of the development of marine based energy generation have been assessed through the Scottish Marine Renewables Strategic Environmental Assessment<sup>32</sup>. This examined whether wave and tidal stream energy could contribute to achieving the earlier target for producing 40% of electricity from renewable sources by 2020 without significant effects on the environment, and if so, how best it could be achieved. This identified a number of limitations to assessing the environmental impacts, particularly gaps in current knowledge on the marine environment, variations in the types of marine energy device, the unknown locations of the devices and gaps in the knowledge of the impacts on the marine environment. The results of the SEA show that it may be possible to meet MEG's estimate of 1,300MW of marine renewable energy generating capacity with, generally, minor effects on the environment. This is however dependent on site-specific location and device type. Impacts on the marine environment can generally be mitigated through avoidance of sensitive sites and sites of importance for shipping and navigation. Residual effects of developing marine energy are identified as impacts on benthic ecology, commercial fisheries, seascape, shipping and navigation, and marine noise. Effects on marine birds, fish and mammals are unknown.

<sup>32</sup> Scottish Executive (2007) Scottish Marine Renewables: Strategic Environmental Assessment

## Air

75. Air pollution can affect many aspects of quality of life, including human health and biodiversity. Targets set by the UK Air Quality Strategy have generally been met, including in relation to PM10, NO2 and SO2. However, there continue to be problems with reducing CO2 emissions (as noted in relation to climatic factors, energy and transport sectors). Record levels of ozone depletion were recorded over Scotland in 2005, with a 5% decline in stratospheric ozone recorded over the last 20 years.
76. Ground level ozone levels are a growing problem and ozone has impacts on human health, irritating the lungs and increasing the symptoms of those suffering from asthma and lung diseases. It also affects plants. Annual mean trends for ground level ozone<sup>33</sup> indicate that, on average, the concentrations of ozone in rural areas appear to be gradually increasing, perhaps related to the recent warm summers.
77. As noted previously, key sources of air pollution include the energy sector, and transport. Whilst many pollutants have decreased as a result of a shift to unleaded fuel and the installation of catalytic converters in vehicles since 1990 (e.g. 75% decrease in CO2 as a result of the latter, between 1990 and 2004), SEPA contend that an increase in vehicle use will offset any further gains achieved through reductions in emissions. Overall, although air quality is improving, further measures will be required to avoid secondary impacts from air pollution on health, ecosystems and water quality<sup>34</sup>.
78. Air pollutant concentrations vary due to climate and geography<sup>35</sup>. In general the north west is remote from this problem, but the more densely populated Central Belt has the highest concentrations of poor air quality. Air Quality Management Areas (AQMA) have been declared in Aberdeen City, East Dunbartonshire, Glasgow, North Lanarkshire and Renfrewshire. A large proportion of these were designated in 2005/2006 partly reflecting better monitoring and tighter standards. The sources<sup>36</sup> and distribution of emissions levels for particulates, nitrogen oxides, carbon monoxide and sulphur dioxide across the UK in 2005<sup>37</sup> are as follows:
- PM10 particles (the fraction of particulates in air of very small size (<10 µm) are of major current concern, as they are small enough to penetrate deep into the lungs and so potentially pose significant health risks. The principal source of airborne PM10 matter in European cities is road traffic emissions, particularly from diesel vehicles. For PM10s the emissions data for 2003 shows higher concentrations across the major urban areas, with highest concentrations in the larger towns and cities and along major roads such as the A9.
  - Nitrogen oxides are formed during high temperature combustion processes from the oxidation of nitrogen in the air or fuel. The principal source of nitrogen oxides is road traffic, which is responsible for approximately half the emissions in Europe. Other important sources are power stations, heating plants and industrial processes. The distribution of nitrogen oxides as NO2 is concentrated in the urban areas, with highest levels in the Central Belt, but the

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<sup>33</sup> <http://www.scottishairquality.co.uk/trends.php>

<sup>34</sup> Scottish Environment Protection Agency, (2006) State of Scotland's Environment 2006, SEPA: Stirling.

<sup>35</sup> SNH 2004 Natural Heritage Trends – Air Pollution

<sup>36</sup> [http://www.airquality.co.uk/archive/what\\_causes.php](http://www.airquality.co.uk/archive/what_causes.php)

<sup>37</sup> <http://www.naei.org.uk/mapping/mapping>

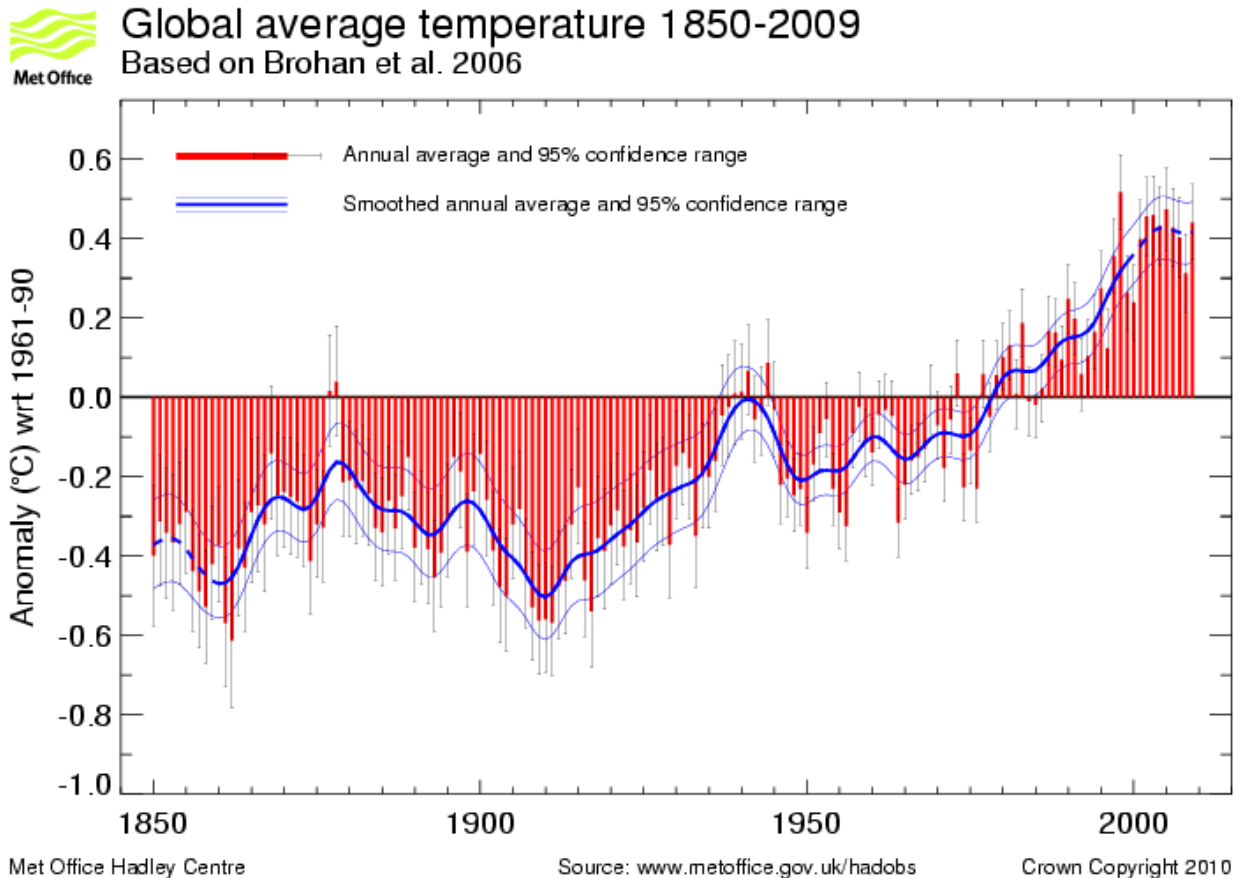
data also shows slightly higher levels across some upland areas including the north west and Cairngorms plateau.

- Carbon monoxide (CO) is a toxic gas which is emitted into the atmosphere as a result of combustion processes, and is also formed by the oxidation of hydrocarbons and other organic compounds. In European urban areas, CO is produced almost entirely (90%) from road traffic emissions. It survives in the atmosphere for a period of approximately one month but is eventually oxidised to carbon dioxide (CO<sub>2</sub>). Emissions of carbon monoxide are localised in their extent to the immediate urban areas and major roads with highest concentrations in the major cities and the widest extent of higher levels of pollution in the Central Belt.
- Sulphur dioxide (SO<sub>2</sub>) is an acidic gas which combines with water vapour in the atmosphere to produce acid rain. Both wet and dry deposition have been implicated in the damage and destruction of vegetation and in the degradation of soils, building materials and watercourses. SO<sub>2</sub> in ambient air can also affect human health, particularly in those suffering from asthma and chronic lung diseases. The principal source of this gas is power stations burning fossil fuels which contain sulphur. SO<sub>2</sub> emissions are again localised in the urban areas with higher concentrations across the Central Belt.

## Climatic Factors

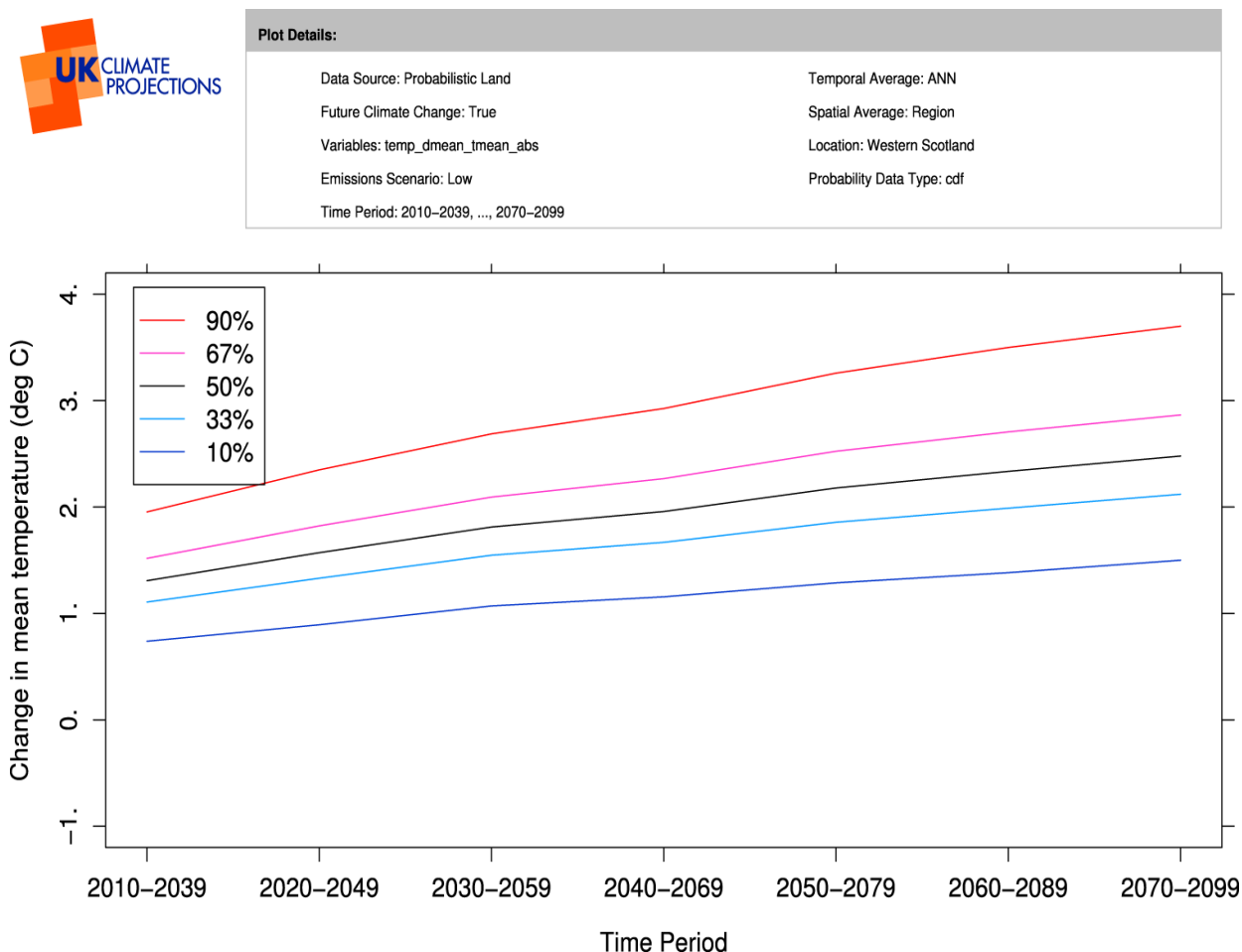
79. Figure 4 shows the overall rise in global temperatures since 1850. The recent IPCC report states that man made GHG emission have played a significant role in that.

**Figure 4 Global Average Temperatures Between 1850-2009**



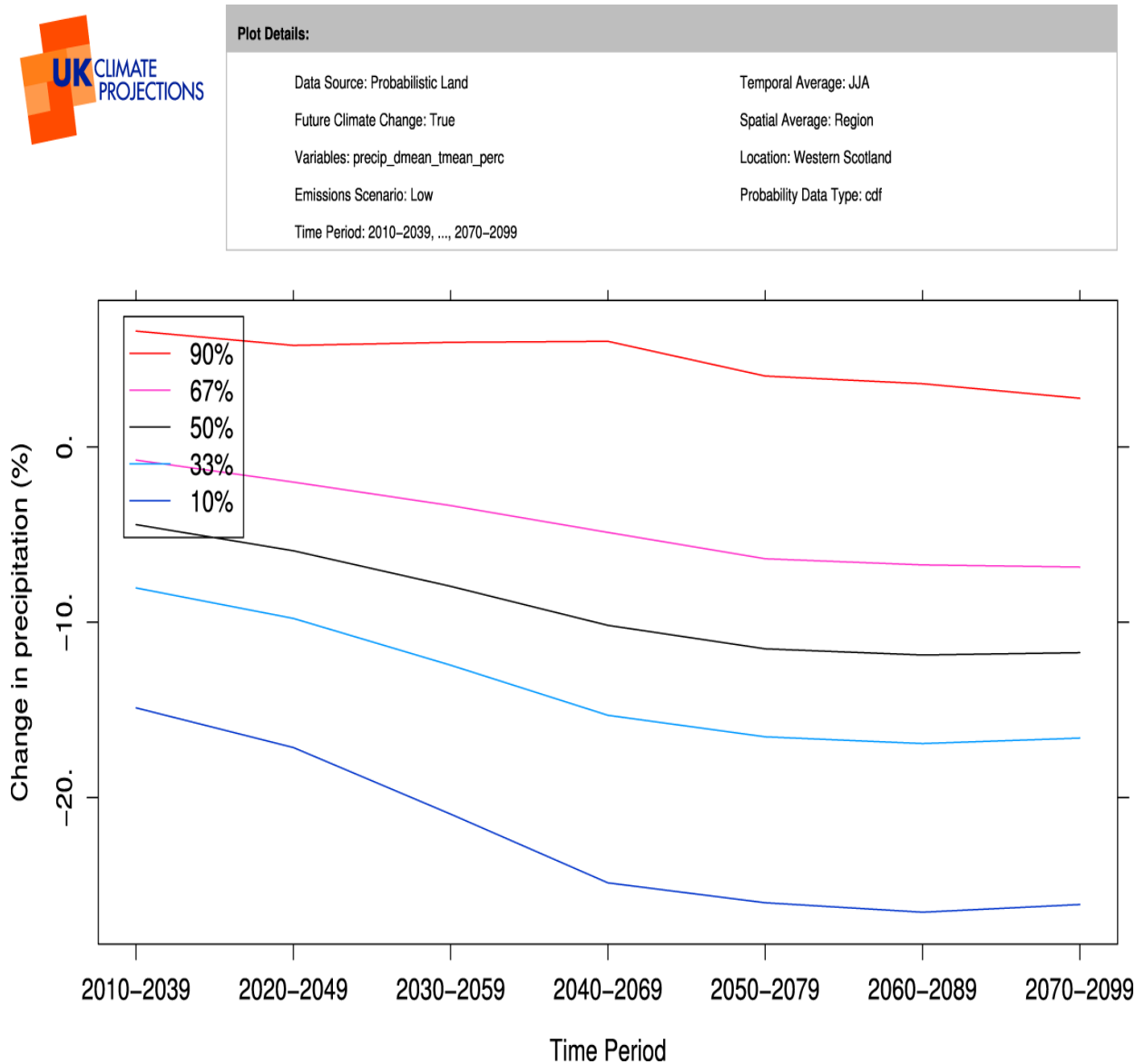
80. All climate change projections build into them a range of potential forecasts based on average temperature rise. For this Environment report I have chosen the the UKCP09 low emissions scenario for West of Scotland. For example, if a projected temperature change of +4.5°C is associated with the 10% at a particular location in the 2080s for the UKCP09 medium emission scenario, this should be interpreted as it is projected that there is a 10% likelihood that temperatures at that location will be equal to or less than 4.5°C warmer than temperatures in the 1961-1990 baseline period. It should be stated that this is a relatively cautious emissions scenario

**Figure 5 Scotland West: Annual Mean Temperature at 10% Emission Scenario**



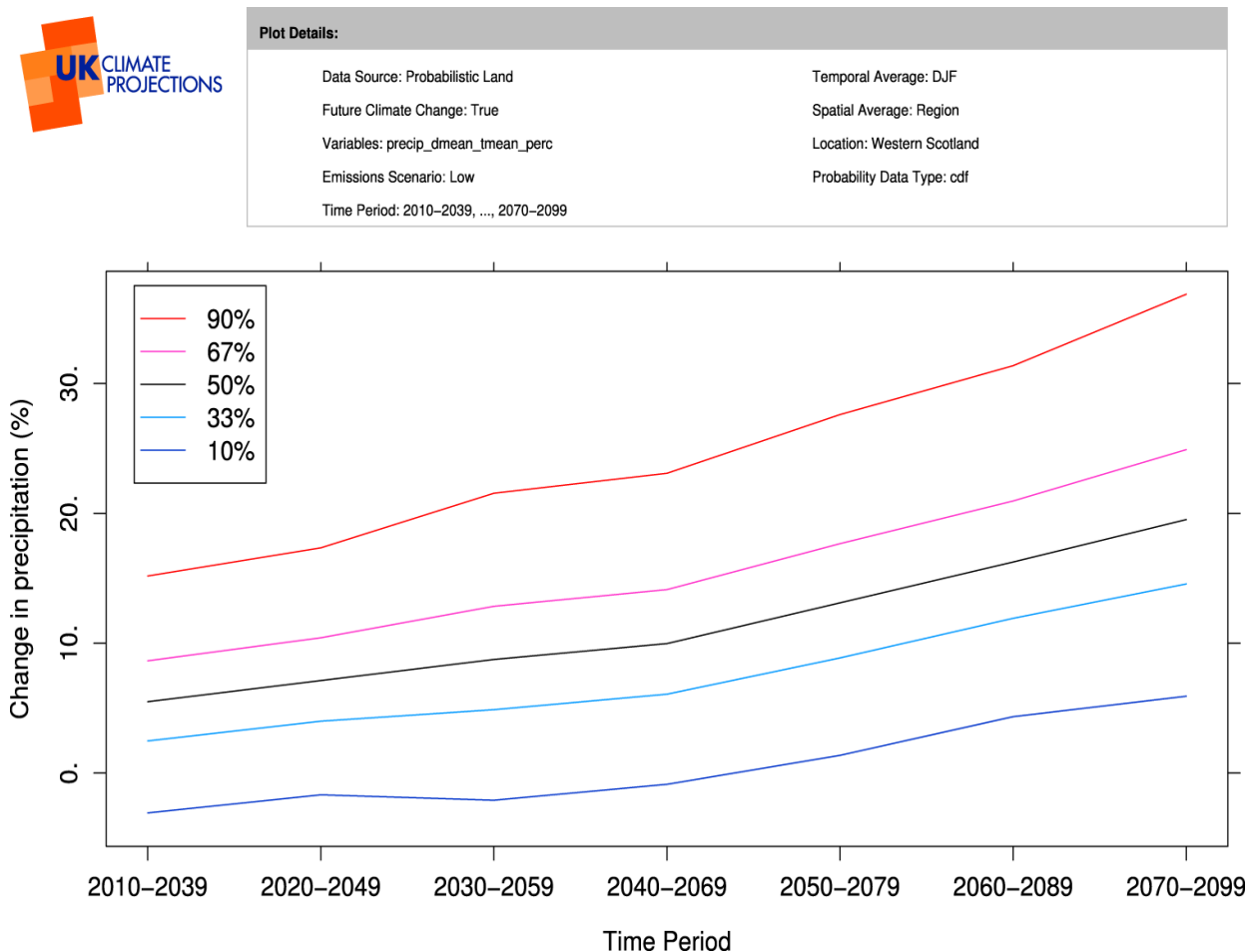
- Under low emissions, the central estimate of increase in winter mean temperature is 1.8°C; it is very unlikely to be less than 0.8°C and is very unlikely to be more than 2.8°C. A wider range of uncertainty is from 0.8°C to 3.3°C.
- Under low emissions, the central estimate of increase in summer mean temperature is 2.2°C; it is very unlikely to be less than 1°C and is very unlikely to be more than 3.6°C. A wider range of uncertainty is from 1°C to 4.4°C.
- Under low emissions, the central estimate of increase in summer mean daily maximum temperature is 2.8°C; it is very unlikely to be less than 0.9°C and is very unlikely to be more than 4.9°C. A wider range of uncertainty is from 0.9°C to 5.9°C.
- Under low emissions, the central estimate of increase in summer mean daily minimum temperature is 2.2°C; it is very unlikely to be less than 0.9°C and is very unlikely to be more than 3.8°C. A wider range of uncertainty is from 0.9°C to 4.7°C.
- Under low emissions, the central estimate of change in annual mean precipitation is -2%; it is very unlikely to be less than -8% and is very unlikely to be more than 5%. A wider range of uncertainty is from -8% to 6%.

**Figure 6 Scotland West: Change in summer mean precipitation (%)**



- Under low emissions, the central estimate of change in summer mean precipitation is -10%; it is very unlikely to be less than -25% and is very unlikely to be more than 6%. A wider range of uncertainty is from -28% to 6%.

**Figure 7 Scotland West: Change In Winter Mean Precipitation (%)**



- Under low emissions, the central estimate of change in winter mean precipitation is 10%; it is very unlikely to be less than -1% and is very unlikely to be more than 23%. A wider range of uncertainty is from -1% to 31%.
81. Overall these trends suggest a warmer wetter winter and an accompanying same time hotter, drier summer for the GCV area.
  82. The GCV region is expected to experience the potential impacts of climate change as the decades go on. This could potentially include greater levels of rainfall and increased incidences of flooding, rising sea levels affecting coastal areas/river basins and an accentuation of a range of potential natural hazards i.e. landslides etc. Flooding is expected to be more frequent, particularly within existing flood plains, river basins and on coastal areas. In current development plans, flooding is likely to increasingly impact on land for development opportunities unless we do not adapt to the changing circumstances.
  83. In current development plans, efforts are being focused on reducing the areas GHG emissions in line with the Scottish Government targets. At present it has proved difficult to take forward coordinated approach to tackling GHG emissions at a city region level. So far there has been little co-ordination with other public and private bodies to address the issue. Any moves forward are on a more ad hoc basis rather than a coordinated strategic approach. In the SDP without this joined up strategic

approach there will be limited GHG reduction leading to a minimal reduction in the regions GHG emissions

84. The Climate Change Act 2009 establishes a legal framework for emissions reductions by 2050. The SDP can only have a limited direct impact on emissions reductions but it can seek a capacity-building role with stakeholders. The SDPA has adopted the Tyndall Institute for Climate Change Research's GRIP methodology ([www.grip.org.uk](http://www.grip.org.uk)). The SDP will be accompanied by an Action Plan setting out how the SDP is to be delivered and the GRIP process will help evaluate how the SDPA might meet the requirements of the Climate Change (Scotland) Act 2009.

**Table 8 Summary Of The Emissions For Each Of The Four Sectors Across The GCV Area - Total Emissions (x1,000 tonnes)**

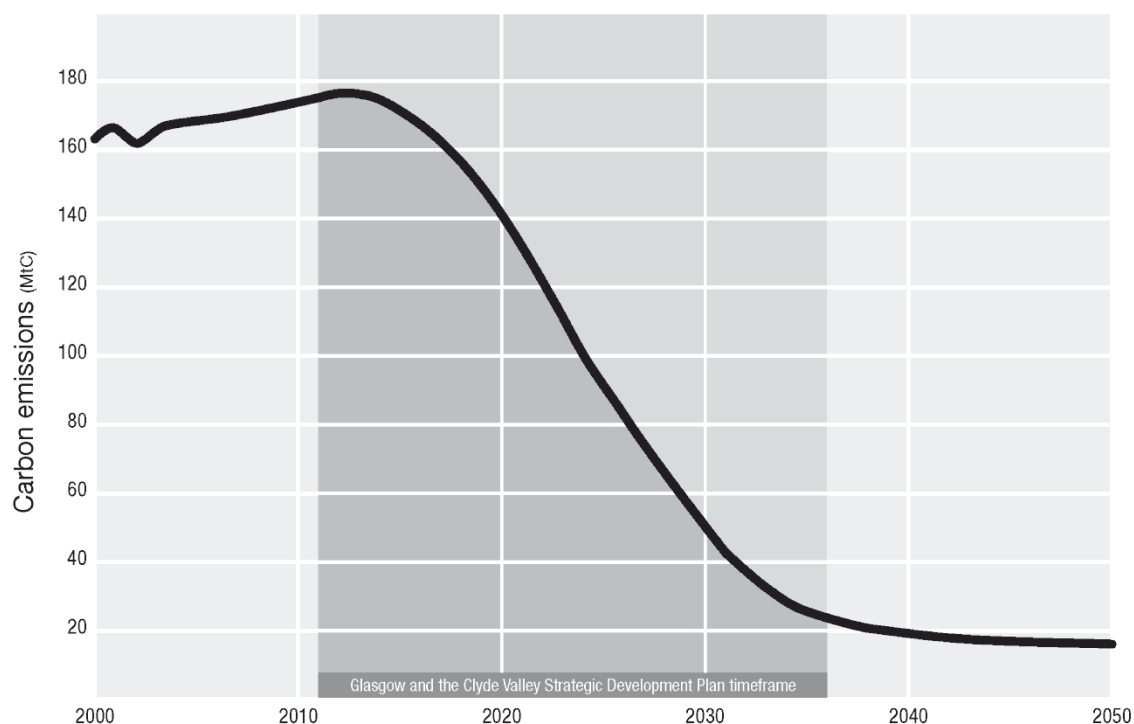
		CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O	HFC	PFC	SF <sub>6</sub>	CO <sub>2</sub> e
<b>Energy sector</b>	Total	12,199	40.44	0.25	0	0	0	13,126
Domestic		4,666	1.53	0.10	0	0	0	4,729
Industry		2,247	0.25	0.08	0	0	0	2,277
Services		1,479	0.18	0.04	0	0	0	1,495
Fugitive Emissions / Energy Transformation		412	38.40	0.00	0	0	0	1,218
Transport		3,395	0.07	0.03	0	0	0	3,406
<b>Industrial sector</b>	Total	0	0	0	242.86 <sup>2</sup>	2.65 <sup>2</sup>	0	322
<b>Waste sector</b>	Total	12.50	23.20	0.4	0	0	0	750
<b>Agriculture sector</b>	Total	0	14.24	1.37	0	0	0	606
<b>Total (all sectors)</b>		12,211 <sup>3</sup>	77.88 <sup>3</sup>	2.02 <sup>3</sup>	242.86 <sup>2</sup>	2.65 <sup>2</sup>	0	14,719
GCV Population: 1,747,080								
Per capita (tonnes)		6.99	0.04	0	0.14	0	0	8.42
GVA €42,954.2m								
Per unit GVA		0.28	0	0	0.01	0	0	0.36
<sup>1</sup> These figures have been estimated using a combination of national, regional and local data and although they are deemed to be the most accurate data available currently, the results carry a degree of uncertainty.								
<sup>2</sup> Figures for HFC and PFC relate to GWPI00 rather than kilo tonnes.								
<sup>3</sup> Figures require to be multiplied by their global warming potential (GWPI00) to derive the CO <sub>2</sub> e equivalent value total.								

85. Domestic emissions in the GCV area are higher relative to the rest of the UK, the GCV area is responsible for a low level of industrial process emissions, emissions from waste are on a per capita basis in line with the national average and agricultural emissions are higher than average due to a proportionally larger dairy farming sector in the GCV area. Overall emissions from the region work out at 8.4 tonnes per person; this is below the national average and reflects the region's economic profile. The GCV area greenhouse gas emissions equate to 0.3 tonnes per unit of GVA.
86. The SDP carried out work with the Tyndall Centre on the Greenhouse Gas Regional Inventory Project or GRIP model<sup>38</sup>. This work is supporting discussions on a longer-term strategic response to climate change mitigation within the Glasgow and the Clyde Valley (GCV) metropolitan area, and the meeting of the 80% by 2050 Contraction & Convergence target for the six main greenhouse gas emissions (GHGs). The concepts of contraction and convergence relate to reducing the overall emissions of GHGs to a scientifically agreed safe level (contraction) and to an equitable process where all countries end up emitting the same effective quantity of GHGs per capita (convergence).

<sup>38</sup> <http://www.rtpi.org.uk/download/5329/Issue-126-081218-ScotPlanner-Dec08-final-electronic-version.pdf>



87. In order to give an idea of the scale of the challenge, by 2010 the UK will have emitted since 1990 the equivalent of 1.8 Gt of carbon, so that if we are going to achieve the 80% reduction by 2050 only a further 2.8 Gt can be emitted. This equates to the start of a continuing decline in emissions post-2015. The first GCV Strategic Development Plan (SDP) will include the period when the downward emissions trajectory needs to begin - see the graph below - and so policies to achieve such a trajectory will have to be successfully implemented.
88. The inventory project has provided a context for the development of this first SDP. It sets a strategic baseline for future policy and project development to achieve, both, the Climate Change (Scotland) Bill target and sustainable economic growth. It also goes some way to identifying which partner agencies need to develop policy and projects in each emissions sector. This type of governance approach to the development and implementation of spatial strategies is in line with the Scottish Government's recent announcements on streamlining the planning system and involving agencies directly in plan development. The inventory has shown that transportation is responsible for 24% of all emissions. Land-use distribution and development density impact on the origins and destinations associated with the need to travel, and so can contribute much to the reduction of emissions; along with the planning and provision of new transport infrastructure. The existing built environment has been calculated to be responsible for around 50% of all GCV emissions. Planners can seek to achieve energy efficiency in new development through the principles of zero carbon or even negative carbon. However, planners have less direct influence in adapting the existing built environment. A conservative estimate for the renewal of the GCV housing stock might be 130 years; three times the time period to 2050. This puts the emphasis on the need for joint-working, and the project has been useful in providing a context for engaging with non-spatial planning departments and authorities.





## Appendix B Relationships with other Plans, Programmes, Strategies (PPS)

The table below sets out relevant environmental objectives as set out in wider plans, programmes and strategies of relevance to the SDP

Biodiversity, flora and fauna		
Name of PPS Objective	Environmental requirements of PPS	How it affects, or is affected by the Strategic Development Plan
<b>Biodiversity, Flora and Fauna</b>  <b>Nature Conservation (Scotland ) Act (2004)</b>	Introduced a 'duty to further the conservation of biodiversity' for all public bodies, and sets out more specific provisions within this (e.g. for SSSIs). Also states a requirement for the preparation of a Scottish Biodiversity Strategy, to which all public bodies should pay regard.	<b>Biodiversity:</b> SDP should aim to conserve Scotland's biodiversity for future generations by conserving habitats and species and raising public awareness on the importance of biodiversity.
<b>Scottish Planning Policy (2010)</b>	Protection of international and national environmental designations complemented by local designations. Woodland protection and enhancement.	<b>Biodiversity:</b> SDP should aim to conserve Scotland's biodiversity for future generations by conserving habitats and species and raising public awareness on the importance of biodiversity.  Trees and Woodland: SDP should aim to conserve the ancient and semi natural woodland of the city region whilst recognising the potential of forestry for bio-mass.
<b>The Scottish Forestry Strategy (2006) (and associated SEA).</b>  <b>Planning for Forestry and Woodland (May 2010)</b>	Key themes include to: <ul style="list-style-type: none"> <li>• reduce the impact of climate change;</li> <li>• get the most from Scotland's increasing and sustainable timber resource;</li> <li>• make access to and enjoyment of woodlands easier for all to improve health;</li> <li>• protect the environmental quality of our natural resources; and</li> <li>• help to maintain, restore and enhance Scotland's biodiversity</li> </ul>	<b>Biodiversity:</b> aims to conserve and enhance biodiversity which needs to be taken on board by SDP. <b>Population and Human Health:</b> aims to improve health and well being by providing biodiversity and green infrastructure benefits, the SDP should enhance this. <b>Climatic Change:</b> aims to reduce impact on and adapt to climate change.
<b>Local Biodiversity Action Plans of the GCV Local Authorities</b>	The LBAPs translate national targets for species and habitats into effective local action, stimulates local working partnerships into tackling biodiversity conservation, raises awareness, identifies local resources, identifies local targets for species and habitats ensures delivery and monitors progress.	<b>Biodiversity:</b> SDP should support the aims of the LBAPs and avoid adversely affecting key habitats and species as identified therein.

<b>Climatic Factors</b>		
<b>Name of PPS Objective</b>	<b>Environmental requirements of PPS</b>	<b>How it affects, or is affected by the Strategic Development Plan</b>
<b>Scottish Planning Policy - Renewable Energy, PAN 45 and 84</b>	<p>The Scottish Ministers have set a target of generating 40% (since quantified as 6GW) of Scotland's electricity from renewable sources by 2020 and confirmed that this target should not be regarded as a cap.</p> <p>The importance of using clean and sustainable energy from renewable sources will continue to increase as a result of global imperatives to tackle climate change and the need to ensure secure and diverse energy supplies.</p> <p>PAN 45 complements SPP and highlights examples of good practice across Scotland.</p> <p>A key role of the planning system is to support a move towards low and zero carbon development through the use of energy efficient, micro-generating and decentralised renewable energy systems.</p> <p>PAN 84 provides information and guidance on implementing the targets set in the SPP.</p>	<p><b>Climatic Change and Air Quality:</b> SDP should safeguard sites suitable for renewable energy developments and support Scotland's commitment to renewable energy developments and movement towards low and zero carbon developments</p>
<b>Climate Change (Scotland) Act 2009</b>	<p>The Act creates the statutory framework for greenhouse gas emissions reductions in Scotland by setting an interim 42 per cent reduction target for 2020 and an 80 per cent reduction target for 2050.</p>	<p><b>Climatic Change and Air Quality:</b> reduction in greenhouse gas emissions through target setting and implementation of measures to improve energy efficiency and make provision for reduction and recycling of waste. SDP should promote and contribute towards the targets set by the bill through the promotion a sustainable development strategy.</p>

<p><b>Biomass Action Plan for Scotland (2007)</b></p>	<p>The Biomass Action Plan sets out a coordinated programme for the development of the biomass sector in Scotland and aims to:</p> <ul style="list-style-type: none"> <li>• to provide a summary of the wide range of existing activities, actions and initiatives;</li> <li>• to provide a focus for a strategic coordinated approach to developing biomass for energy production across the heat, electricity and transport sectors;</li> <li>• to identify roles and responsibilities for government, industry and public stakeholders to develop a vibrant bio-energy industry in Scotland; and</li> <li>• to identify future actions and gaps.</li> </ul>	<p><b>Climatic Change and Air Quality:</b> SDP should aim to make an appropriate contribution to this programme to help meet biomass plan aims for Scotland.</p>
<p><b>Supplementary Guidance for Renewables</b></p> <p><b>GCV Joint Structure Plan Technical Report 8/06</b></p> <p><b>North Lanarkshire, South Lanarkshire and Inverclyde Wind Farms Supplementary Planning Guidance</b></p>	<p>These supplementary guides for renewables support the SPP and set out policies and other advice to assist in positively planning for wind powered renewable energy developments in the GCV city region.</p>	<p><b>Climatic Change and Air Quality:</b> SDP should support and plan for renewable energy and wind energy developments in the GCV area.</p>

POPULATION AND HEALTH		
Name of PPS Objective	Environmental requirements of PPS	How it affects, or is affected by the Strategic Development Plan
Scottish Planning Policy (2010)	Access to good quality open spaces and opportunities for sport and recreation make important contributions to a healthier Scotland. The planning system has a role in helping to create an environment where physical wellbeing is improved and activity made easier.	<b>Population and Human Health:</b> sport and recreation are an important part of a healthy life and therefore areas for these activities should be protected and enhanced within the SDP.
Making the Links: Greenspace and the Partnership Agreement, Greenspace Scotland	Green spaces contribute to quality of life, access, health, education, community cohesion, biodiversity and enterprise. They have a significant role to play in relation to housing and the environmental and community services that they offer.	<b>Population and Human Health:</b> SDP should seek to protect, enhance and promote green spaces.
Health Action Plans	Health and wellbeing are fundamental to quality of life. Improving health and addressing health inequality involves wide-ranging action across not just health and care services but also public services including education, employment, housing, community safety and environment.	<b>Population and Human Health:</b> SDP should contribute towards improving the health and well being of the GCV area population through the promotion of active travel and healthy urban planning
<ul style="list-style-type: none"> <li>Core Paths and Access Strategies of the GCV Local Authorities</li> </ul>	<p>Core Paths Plans and Access strategies look to promote themes of:</p> <ul style="list-style-type: none"> <li>green spaces</li> <li>human health and well being;</li> <li>accessibility;</li> <li>inclusion; and,</li> <li>biodiversity.</li> </ul>	<b>Population and Human Health:</b> SDP should contribute towards improving the health and well being of the GCV area by promoting core paths and accessibility to the countryside and green spaces (GN concept).
Community Planning Partnerships Community Plans of the CGV Local Authorities	Community Plans focus on achieving measurable improvements to the quality of life for all in the local authority area and provides a framework for delivering long term visions for the area. The Community Plan sets the context for continued joint working between the Local Authority Area and the local community and its partner agencies.	<b>Population and Human Health:</b> SDP should seek to support the Community Plans on engagement with the local community.

<b>Strategic Housing Investment Plans (SHIP) of the GCV Local Authorities</b>	SHIPs set out how investment in affordable housing will be directed over the next 5 years to achieve the outcomes set out in there associated Local Housing Strategy.	<b>Population and Human Health:</b> SDP should integrate with the SHIPs and plan to achieve the outcomes set out in each local authority areas Local Housing Strategy.
<b>EU Environmental Noise Directive 2002/49/EC</b>	To provide a strategic approach to controlling environmental noise including drawing up strategic noise maps and action plans.	<b>Population and Health:</b> The SDP will take account of policies on noise levels.
<b>Strategic Noise Action Plan for the Glasgow Agglomeration (Draft 2008)</b>	The three main objectives of the Directive are as follows: <ul style="list-style-type: none"> <li>• To determine the noise exposure of the population through noise mapping</li> <li>• To make information available on environmental noise to the public</li> <li>• To establish Action Plans based on the mapping results, to reduce noise levels where necessary, and to preserve environmental noise quality where it is good.</li> </ul>	<b>Population and Human Health:</b> SDP should not add to noise levels and seek to preserve noise quality where it is good.
<b>Better Health, Better Care (Scottish Government 2007)</b>	It aims to deliver a healthier Scotland by helping people to sustain and improve their health, especially in disadvantaged communities, ensuring better, local and faster access to health care. It endeavors to shift care into communities, raise quality and reduce inequality.	The SDP to support the work of the Health Boards and The Glasgow Centre for Population and Health in promoting health equality.

<b>SOIL</b>		
<b>Name of PPS Objective</b>	<b>Environmental requirements of PPS</b>	<b>How it affects, or is affected by the Strategic Development Plan</b>
<b>EU Soil Thematic Strategy 2006</b>	Aims to protect the role of soil in storing CO <sub>2</sub> , avoiding water pollution and preserving biodiversity.	The SDPA recognizes the contribution land use planning has with regard to soil protection.
<b>PAN 33 Development of Contaminated Land (2000)</b>	Document provides advice with regards to the development of contaminated land, which any developments will need to adhere to.	<b>The</b> SDP should recognise the potential for remediating contaminated land for future development can make in supporting a sustainable development strategy and should therefore support this guidance on development in

		areas of contaminated land.
<b>The Contaminated Land (Scotland) Regulations (2005)</b>	Details activities that are prohibited to prevent the contamination of land and watercourses.	<b>The SDP</b> should not conflict with these regulations.
<b>The Scottish Soil Framework ( 2009)</b>	The Framework aims to raise awareness of the services soils provide to society and the pressures they face. Scotland's soils are generally in good health but the most significant pressures are climate change and loss of soil organic matter. Both affect most soil functions with national impacts which are difficult to reverse. In the case of greenhouse gas emissions, the impacts are global. The Framework identifies a wide range of activities that will contribute to thirteen soil outcomes.	The SDPA will contribute to the outcomes and related actions where appropriate and continue to liaise with the Government and SEPA over strategic planning matter that can inform this issue.

<b>WATER</b>		
<b>Name of PPS Objective</b>	<b>Environmental requirements of PPS</b>	<b>How it affects, or is affected by the Strategic Development Plan</b>
<b>The Water Environment and Water Services (Scotland) Act 2003 (Designation of Scotland River Basin District) Order 2003</b>	Ensures that all human activity that can have a harmful impact on water is controlled.	<b>Water Quality:</b> SDP should follow all appropriate guidance and legislation.
<b>River Basin Management Plans: Scotland River Basin District and Clyde Area Management Plan</b>	<ul style="list-style-type: none"> <li>identifying areas of the water environment for protection and improvement;</li> <li>identifying where current or historic activities are constraining the quality of the water environment and the biodiversity it supports;</li> <li>details the actions required to ensure waters of special value (eg drinking, biodiversity, shellfish, bathing) are up to standard and maintain the quality where they already meet those standards;</li> <li>set out actions needed to deliver environmental improvements to 2015 and longer to 2027.</li> </ul>	<b>Water Quality:</b> SDP should support the river basin management plans and seek to enhance the environmental quality of water in the Clyde area.



<p><b>Scottish Planning Policy (2010) - Flooding and Drainage</b></p> <p><b>Flood Risk Management (Scotland) Act (2009)</b></p>	<p>Statutory and planning policy framework for delivering a sustainable and risk based approach to managing flooding based upon a catchment focus plans</p>	<p><b>The</b> SDP will support the work in developing the Metropolitan Glasgow Strategic Drainage Plan (a NPF National Development) as the sustainable approach to flooding and drainage within the city region.</p>
<p><b>Marine (Scotland) Bill 2009</b> (as introduced)</p>	<p>Key measures include:</p> <ul style="list-style-type: none"> <li>• A new marine planning framework so that increasing use of the seas for energy, fishing, aquaculture, recreation and other purposes is well managed</li> <li>• The new planning system will create a more stable environment for investment</li> <li>• New Marine Planning Partnerships will involve local agencies, communities and stakeholders to ensure a strong local voice</li> <li>• A simpler licensing system will reduce the administrative burden and cut bureaucracy reducing business costs in key growth areas such as renewable energy</li> <li>• Improved marine nature and historic conservation to safeguard and protect Scotland's unique habitats, wildlife and marine archaeology and wrecks</li> <li>• Full regulation of seal management giving much improved protection for seals and a new comprehensive licence system</li> </ul>	<p>The potential for secondary effects on the marine environment will be considered as part of the SEA process. Links between marine spatial planning and land use plans are likely to become increasingly important as a result of the Bill.</p> <p><b>Water Quality:</b> SDP should take account of the Marine Bill when planning anything that could impact on coastal waters and/ or the sea.</p>
<p><b>Firth of Clyde Marine Spatial Plan Draft (2009)</b></p>	<p>Aims to improve the sustainable development of activities within the Firth of Clyde by providing a plan-led approach to the management and enabling long-term protection and use of the marine environment.</p>	<p>The SDP will encourage a more integrated policy approach between terrestrial and marine planning.</p>
<p><b>Scottish Planning Policy (2010) Coastal Planning</b></p>	<p>Development plans should identify coastal areas likely to be suitable for development, areas subject to significant constraints and areas which are considered unsuitable for development such as the isolated coast. The identification of coastal locations</p>	<p><b>The</b> SDP should only designate coastal areas for developments requiring a coastal location.</p>

	<p>which are suitable for development should be based on a clear understanding of the physical, environmental, economic and social characteristics of the coastal area and the likely effects of climate change.</p>	
<p><b>SEPA Statement on the Culverting of Watercourses (1998)</b></p>	<p>SEPA's policy sets out the environmental issues associated with culverting and presents a consistent and pragmatic approach to this aspect of river engineering.</p>	<p><b>Water Quality:</b> SDP should take account of the environmental issues associated with culverting.</p>
<p><b>Scottish Water Strategic Asset Capacity and Development Plan</b></p>	<p>Outlines the current capacity at water and wastewater treatment works across Scotland to let local authorities and developers see "at a glance" what capacity currently exists at a particular location in Scotland. It is intended to use this information to decide whether work will have to be carried out by Scottish Water to increase capacity at treatment works to enable a particular development to go ahead.</p>	<p><b>Water Quality:</b> SDP should check current capacity before planning any major developments in the city region</p>
<p><b>Scottish Water, Water Resource Plan (2008)</b></p>	<p>In this draft Water Resources Plan we set out our strategy to ensure that all our customers, the length and breadth of Scotland, have a secure supply of clear, fresh, safe drinking water to 2031/32 and beyond. The key environment challenges for Scottish water is to: □ to adapt to pressures on water resources due to climate change and environmental constraints.</p>	<p><b>Water Quality:</b> SDP should not add any additional pressure to Scottish water resources.</p>

<b>AIR</b>		
<b>Name of PPS Objective</b>	<b>Environmental requirements of PPS</b>	<b>How it affects, or is affected by the Strategic Development Plan</b>
<b>The Air Quality Strategy for England, Scotland, Wales and Northern Ireland. Working Together for Clean Air (2000)</b>	Sets out the air quality strategy for the UK with objectives and targets, referring to the Environment Act 1995 legislation. It seeks a reduction in the levels of 8 harmful pollutants present in the air, which in turn promote: <ul style="list-style-type: none"> <li>the protection of human health; and</li> <li>the protection of vegetation and ecosystems</li> </ul>	<b>Air Quality:</b> SDP should contribute to reduction in air pollution. <b>Human Health and Safety:</b> SDP should contribute to reduction in air pollution for the benefit of human health. <b>Biodiversity:</b> SDP should contribute to reduction in air pollution for the benefit of human health for the benefit of biodiversity.
<b>Local Air Quality Management Act (Part of the Environmental Act 1995)</b>	Sets out duties requiring local authorities to review and assess air quality in their area from time to time, the reviews forming the cornerstone of the system of local air quality management.	<b>Air Quality:</b> sets out requirements to reduce air pollution which SDP should contribute to. <b>Human Health and Safety:</b> looks to maintain and improve air quality for the benefit of human health to which SDP should make a contribution.
<b>Glasgow Agglomeration Air Quality Action Plan (2008-2010)</b>	Sets out declared Air Quality Management Areas (AQMA) and details the initiatives required to meet targets to improve air quality.	<b>Air Quality:</b> sets out initiatives to reduce air pollution which SDP should seek to contribute to. <b>Human Health and Safety:</b> looks to improve air quality for the benefit of human health to which SDP should make a contribution.

<b>CLIMATE</b>		
<b>Name of PPS Objective</b>	<b>Environmental requirements of PPS</b>	<b>How it affects, or is affected by the Strategic Development Plan</b>
<b>Climate Change (Scotland) Act 2009</b>		
<b>Scottish Natural Heritage (SNH) Climate Change Policy Statement and associated Action Plan (Draft) 2009</b>	The Policy Statement sets out four key policies for SNH, namely, <ul style="list-style-type: none"> <li>helping to understand and publicise the effects and consequences of climate change for the natural environment;</li> <li>advising on infrastructure</li> </ul>	<b>Climate:</b> The SDP should adopt an approach which favours joint corporate action with SNH, Local Authorities and other stakeholders to deliver proactive solutions to climate change mitigation and adaptation.

	<p>and land management practices which help to mitigate climate change;</p> <ul style="list-style-type: none"> <li>• guiding adaptation so that nature can as far as possible, adapt to a changing climate and so that people can make best use of natural processes in preparing for climate change; and</li> <li>• promoting action by organisations and individuals by setting an example in the management of SNH's own operations, and through our wider environmental education work.</li> </ul>	
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<b>MATERIAL ASSETS</b>		
<b>Name of PPS Objective</b>	<b>Environmental requirements of PPS</b>	<b>How it affects, or is affected by the Strategic Development Plan</b>
<b>Scotland's National Transport Strategy (2006)</b>	<ul style="list-style-type: none"> <li>• Promote social inclusion by connecting remote and disadvantaged communities and increasing the accessibility of the transport network;</li> <li>• Protect our environment and improve health by building and investing in public transport and other types of efficient and sustainable transport which minimise emissions and consumption of resources and energy;</li> <li>• Improve safety of journeys by reducing accidents and enhancing the personal safety of pedestrians, cyclists, drivers, passengers and staff.</li> </ul>	<b>Material Assets:</b> SDP should seek to integrate with the aims of the National Transport Strategy
<b>Strategic Transport Projects Review (STPR) (2008)</b>	<p>STPR complements the National Transport Review and seeks to:</p> <ul style="list-style-type: none"> <li>• improve journey times and connections – to tackle congestion and the lack of integration and connections in transport which impact on our high level objectives for economic growth, social inclusion, integration and safety</li> <li>• reducing emissions – to</li> </ul>	<p><b>Material Assets:</b> SDP should seek to integrate with the aims of the STPR. <b>Population and Human Health:</b> SDP should support the STPR interventions aimed at reducing congestion, emissions etc and improving human health.</p> <p><b>Climatic Factors and Air Quality:</b> SDP should support the STPR interventions aimed at reducing congestion, emissions</p>

	<p>tackle the issues of climate change, air quality and health improvement which impact on our high level objective for protecting the environment and improving health, and improving quality, accessibility and affordability – to give people a choice of public transport, where availability means better quality transport services and value for money or an alternative to the car</p>	<p>etc such as tackling issues of climate change and the availability of better forms of public transport to reduce dependency on cars.</p>
<p><b>SPT Regional Transport Strategy (2008-2021)</b></p>	<ul style="list-style-type: none"> <li>• to develop the economy through improving connectivity for business and freight making transport more effective and efficient, providing access to employment, education, shopping and leisure, by improving transport integration;</li> <li>• promote social inclusion and equality by providing a transport system that is safe, accessible, and affordable to all sections of the community; and,</li> <li>• improve health and protect the environment by minimizing emissions and consumption of resources and energy, by promoting active travel, quality public transport and modal shift.</li> </ul>	<p><b>Material Assets:</b> SDP should seek to integrate with the aims of the transport strategy.</p> <p><b>Climatic Factors and Air Quality:</b> SDP should contribute to ensuring that development is achieved in an environmentally sustainable manner, reducing air pollutants and thus improving air quality.</p> <p><b>Human Health:</b> SDP should promote a healthier and more active population.</p>
<p><b>Scottish Planning Policy (2010) - Transport</b></p>	<p>The SPP supports the reduction of emissions from transport sources as a contribution to achieving Scottish Government greenhouses gas emission targets requires a shift to more sustainable modes of transport.</p>	<p><b>Material Assets:</b> the SDP should plan land use in a manner which assists in reducing the need to travel and contributes to sustainable transport nodes.</p>
<p><b>Rural Development Programme for Scotland, The Strategic Plan, 2007-2013 (2006)</b></p>	<ul style="list-style-type: none"> <li>• promote an environmentally sustainable industry by targeting capital investment to mitigate farm pollution and secure environmental improvement;</li> <li>• developing products that reflect the high quality of the natural and cultural heritage; and</li> <li>• supporting the production of feedstock for renewable</li> </ul>	<p><b>Material Assets:</b> SDP should support the rural development programme's strategic plan.</p> <p><b>Climatic Factors:</b> the SDP should support the production of feedstock for renewable energy production.</p>

	energy production.	
<b>Scottish Planning Policy (2010) - Surface Coal</b>	This Scottish Planning Policy (SPP) sets out the national planning policy framework for the working of opencast coal	<b>Material Assets:</b> SDP should support the planning policy framework.
<b>Waste Management Zero Waste Plan for Scotland (2010)</b>	<p>The Zero Waste Plan will provide direction and guidance on key waste management issues including:</p> <ul style="list-style-type: none"> <li>• setting and meeting targets on prevention, reuse, recycling and composting, and setting caps on energy from waste and landfill;</li> <li>• waste management and Climate Change;</li> <li>• complying with the revised EU Waste Framework Directive and the Landfill Directive;</li> <li>• delivery options;</li> <li>• improving waste data, to track progress and stimulate investment;</li> <li>• better waste regulation;</li> <li>• land-use planning for waste management; and,</li> <li>• possible implementation of further Landfill Bans</li> </ul> <p>The Scottish Government has targets for municipal waste including:</p> <ul style="list-style-type: none"> <li>• increasing the proportion recycled or composted to 40% by 2010, 50% by 2020 and 70% by 2025,</li> <li>• a 5% limit on landfill of municipal waste by 2025,</li> <li>• to stop the growth in municipal waste by 2010, and</li> <li>• 25% limit on energy from mixed municipal waste.</li> </ul>	<b>SDP to support the provision for new waste management facilities based upon the need and capacity established in the Zero Waste Plan</b>
	Waste has increased in volume and complexity over the last five decades and the guidance sets out options to follow to:	<b>Material Assets:</b> SDP should support measures to manage waste in the GCVDSPA area.

	<ul style="list-style-type: none"> <li>• reduce waste;</li> <li>• re-use;</li> <li>• recovery by recycling;</li> <li>• waste as a source of energy; and</li> <li>• treatment and disposal of the remaining waste in a sustainable and environmentally friendly manner.</li> </ul>	
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CULTURAL HERITAGE (INCLUDING ARCHITECTURAL AND ARCHAEOLOGICAL HERITAGE)		
Name of PPS Objective	Environmental requirements of PPS	How it affects, or is affected by the Strategic Development Plan
<b>Scottish Historic Environment Policy (SHEP) (October 2008)</b>	SHEP is the overarching policy statement for the historic environment. It provides a framework for more detailed strategic policies and operational policies that inform the day-to-day work of a range of organisations that have a role and interest in managing the historic environment.	<b>Cultural Heritage:</b> SDP should impact as little as possible on the historic environment.
<b>Scottish Planning Policy (2010) - Historic Environment</b>	The historic environment is a vital contribution to Scotland's cultural heritage and contributes to our understanding of the past and present. The Development Plan should set the framework for the protection, conservation and enhancement of all elements of the historic environment to allow the assessment of the impact of proposed development on the historic environment and its setting. This recognises that setting is more than the immediate surroundings of a site or building, and may be related to the function or use of a place, or how it was intended to fit into the landscape or townscape, the view from it or how it is seen from around, or areas that are important to the protection of the place, site or building.	<b>Cultural Heritage:</b> SDP should impact as little as possible on the historic environment. The SDP should outline the strategic importance of the historic environment as a resource in its own right and as a driver for sustainable economic development and regeneration. The spatial strategy of the plan should be informed by considerations including the capacity of settlements and areas of countryside to accommodate development without damage to their historic value.

## LANDSCAPE AND TOWNSCAPE

Name of PPS Objective	Environmental requirements of PPS	How it affects, or is affected by the Strategic Development Plan
<b>Designing Streets: A Policy Statement for Scotland (2010)</b>	Policy statement on street design changing the emphasis of guidance on street design towards place-making and away from a system focused upon the dominance of motor vehicles.	<b>SDP should recognise the role of design in place making is supporting its contribution to economic competitiveness, healthy urban planning and climate change.</b> make a successful place should be outlined in the SDP.
<b>Pan 44 Fitting New Housing Development into the Landscape</b>	<ul style="list-style-type: none"> <li>strategically, establishing landscape capacity and the relationship of new to existing urban forms as primary factors in determining the desirability of settlement expansion; and</li> <li>promoting higher design standards relative to form layout and relation with existing urban areas.</li> </ul>	<b>Landscape and Townscape:</b> SDP should promote development which fits into the existing landscape and townscape
<b>Pan 52 Planning and Small Towns</b>	<ul style="list-style-type: none"> <li>Identifying factors which threaten the important legacy of small towns.</li> <li>Providing for regeneration and expansion</li> <li>Enabling lively, active and vibrant town centres within small towns</li> <li>Enabling efficient and effective transport to support economic growth and accessibility</li> <li>Promoting high quality design that promotes townscape quality.</li> </ul>	<b>Landscape and Townscape:</b> SDP should promote quality development
<b>PAN 65 Planning and Open Space (2003)</b>	Provides advice on the role of the planning system in protecting and enhancing existing open spaces and providing high quality new spaces.	<b>Landscape and Townscape:</b> SDP should enhance existing open space and provide high quality new spaces.
<b>PAN 71 Conservation Area Management</b>	This provides further advice on the management of conservation areas. It identifies good practice for managing change, sets out a checklist for appraising conservation areas and provides advice on funding and implementation.	<b>Landscape and Townscape:</b> SDP should not have a negative impact on any conservation areas in the GCV area.
<b>PAN 72: Housing in the Countryside</b>	Advice on design of houses in the countryside with a purpose to create more opportunities for	<b>Landscape and Townscape:</b> SDP should seek to create opportunities for good quality



	good quality rural housing which respects Scottish landscapes and building tradition.	rural housing in the GCV area.
<b>Pan 74 Affordable Housing</b>	Advice setting out how the planning system can support the Scottish Government's commitment to increase the supply of affordable housing.	<b>Landscape and Townscape:</b> SDP should seek to provide affordable housing in line with the Scottish Government's recommendations.
<b>Scottish Planning Policy (2010) - Rural Developments</b>	Support and promote opportunities for environmental enhancement and regeneration in rural areas to maintain and improve the viability of communities and to support rural businesses.	<b>Landscape and Townscape:</b> SDP should seek to create opportunities for good quality housing and support sustainable economic development in the rural areas city region
<b>Scottish Planning Policy (2010) - Green Belts</b>	<p>The purpose of green belt designation in the development plan as part of the settlement strategy for an area is to:</p> <ul style="list-style-type: none"> <li>• direct planned growth to the most appropriate locations and support regeneration,</li> <li>• protect and enhance the quality, character, landscape setting and identity of towns and cities, and</li> <li>• protect and give access to open space within and around towns and cities.</li> </ul>	<b>Landscape and Townscape:</b> SDP should promote and safeguard designated green belts within the city region.







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