Appendix 2: Environmental Baseline

Topic 1: Climatic Factors

> "*In recent decades, changes in climate have caused impacts on natural and human systems on all continents and across the oceans.*"
>
> Intergovernmental Panel on Climate Change (2014).

Considering the effects of climate change requires a broader outlook than the area covered by the Strategy. Therefore, this section considers Climate change across the National Park as a whole.

Scotland has a temperate climate with cool summers and mild winters. As a whole it is influenced by predominantly westerly depressions alternating with less frequent settled periods. A range of factors, including topography, latitude and altitude, affect these weather systems at a more local level.

Rainfall is spread throughout the year but there are regional differences. For example, the easterly position of the Cairngorms massif results in a climate that is less oceanic, and therefore drier, than the west of Scotland. The mountains exert a noticeable rain shadow effect that reduced the amount of rainfall on the eastern side of the country.

Scotland is currently experiencing climate change, which owing to the global emission of greenhouse gasses, is likely to continue into the future. The effects of this are likely to include:

- hotter, drier summers;
- milder, wetter autumns and winters.
- increased frequency and intensity of extreme rainfall; and
- reduced snowfall.

The 20th and 21st centuries have already seen a rise in average maximum and minimum temperatures throughout Scotland. This trend is reflected in the Cairngorms National Park, as demonstrated by historical data provided by the Braemar weather station (**Figure 4**). Records from the weather station also indicate that the National Park is experiencing a decrease in the number of days of air frost and an increase in annual rainfall (**Figure 5** and **Figure 6**). This is consistent with broader trends across Scotland.

Climate Change projections are available from The UK Climate Projections (UKCP09) website, which is the leading source of climate information for the UK and its regions. Probabilistic projections are available for high, medium and low emission scenarios at resolutions as fine as 25km^2. It is possible therefore to analyse data for the area in which Braemar sits (Grid Box No. 612) (see **Figure 7** and **Figure 8**). It is recognised that this is a blunt proxy for the National Park as a whole, however it is useful in when taken together with the historic climate data taken from the Braemar Weather Station. How this change relates to the UK as a whole is presented in **Figure 9**, **Figure 10** and **Figure 11**.

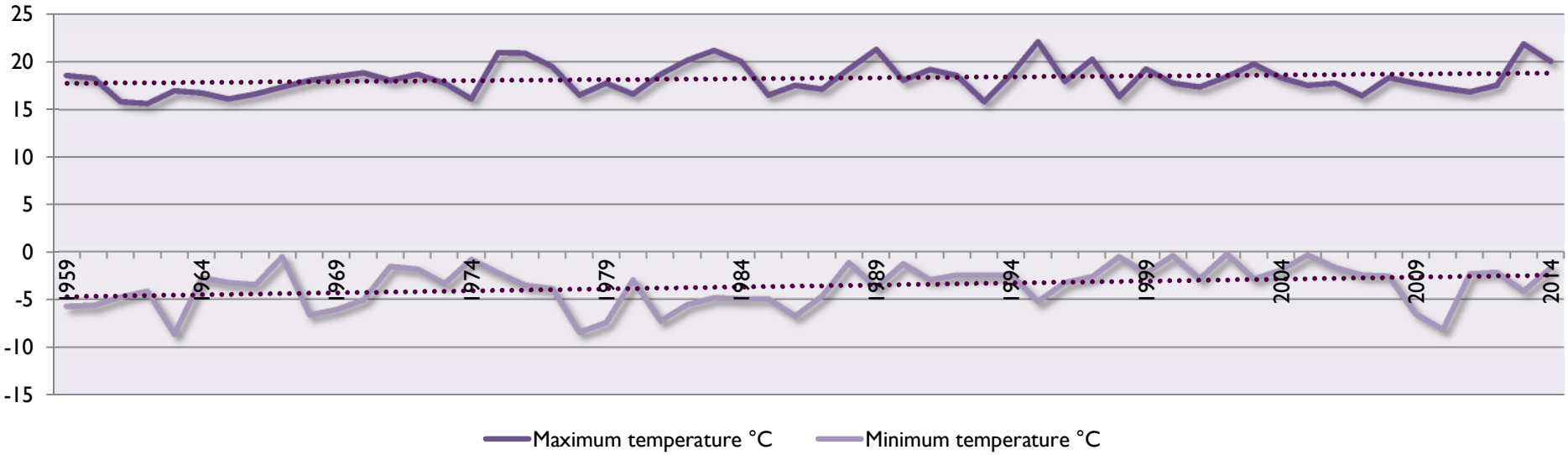


Figure 4 Maximum and minimum annual temperatures at Braemar Weather Station (Met Office, 2015).

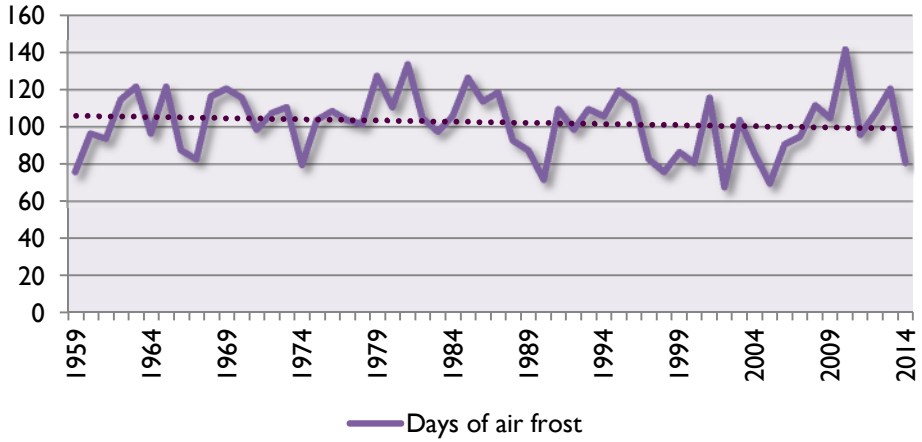


Figure 5 Days of frost at Braemar Weather Station (Met Office, 2015).

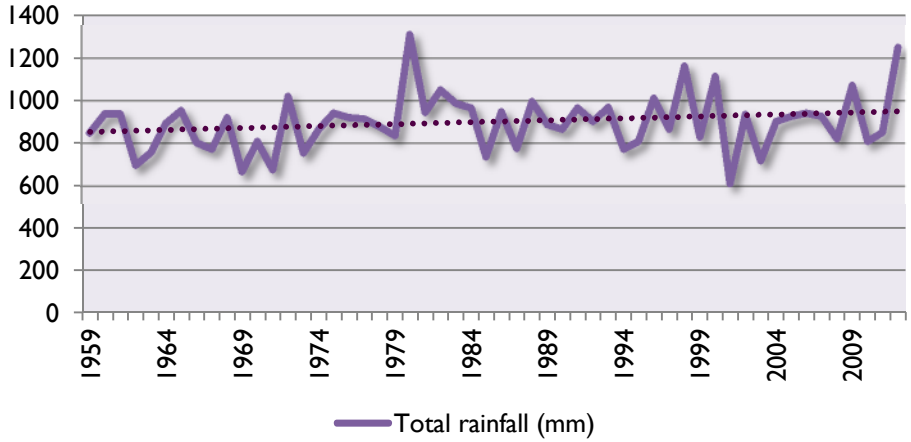


Figure 6 Total Rainfall at Braemar Weather Station (Met Office, 2015).

In summary from the benchmark of 2009, by 2050, under the medium emissions scenario, the central estimate (50% probability level) for Braemar is for a:

- 2.4°C increase in mean annual temperature,
- 2.7°C increase in mean summer temperature,
- 2.1°C increase in mean winter temperature,
- 0.07% increase in mean annual precipitation, but with a
- 13.5% decrease in mean summer precipitation, and a
- 2% decrease in mean winter precipitation.

Although precipitation rates only show a relatively small net annual increase, as well as summer and winter decreases by 2050, it should be noted that this is but a snapshot. Annual precipitation between 2030 and 2059 is projected to be higher, at around 0.3% greater than in 2009.

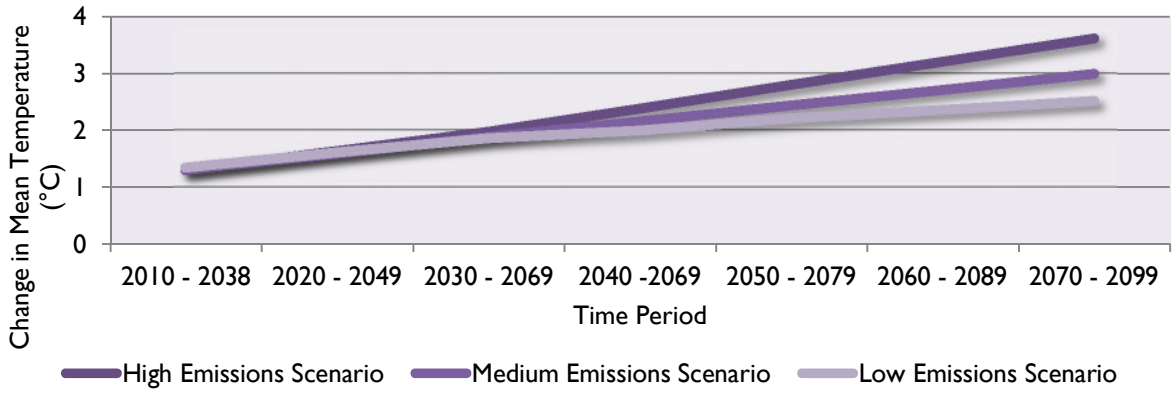


Figure 7 Central estimate for mean change in annual temperature for Grid Box No. 612 (Braemar area).

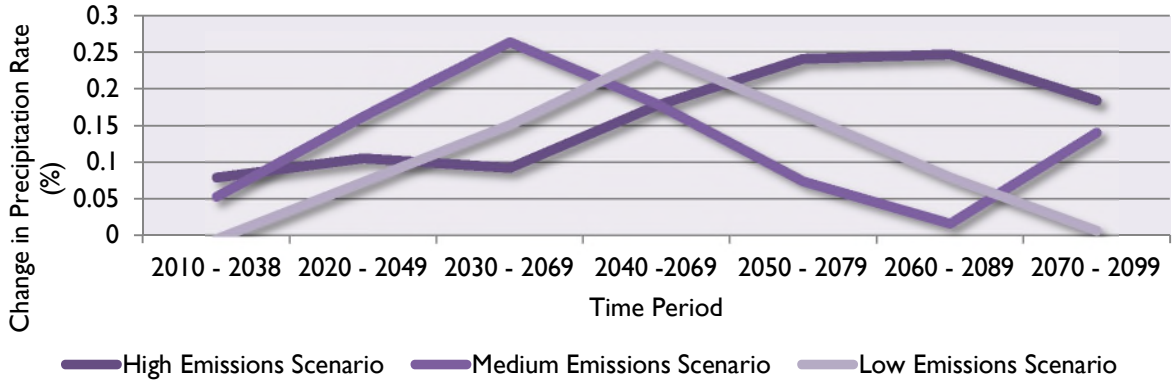


Figure 8 Central estimate for mean change in precipitation for Grid Box No. 612 (Braemar area).

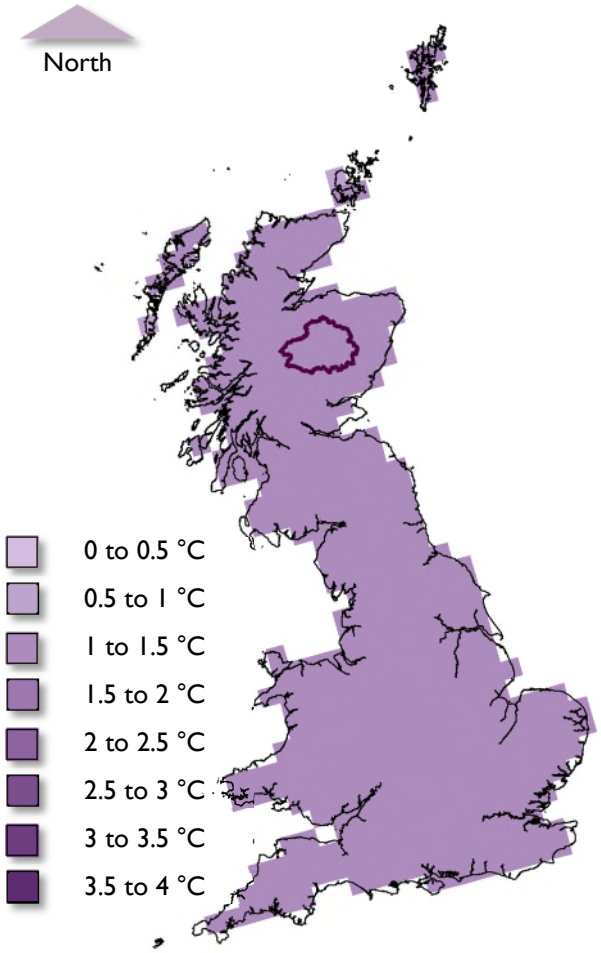


Figure 9 Mean annual temperature increase 2020s. Medium emissions scenario, central estimate.

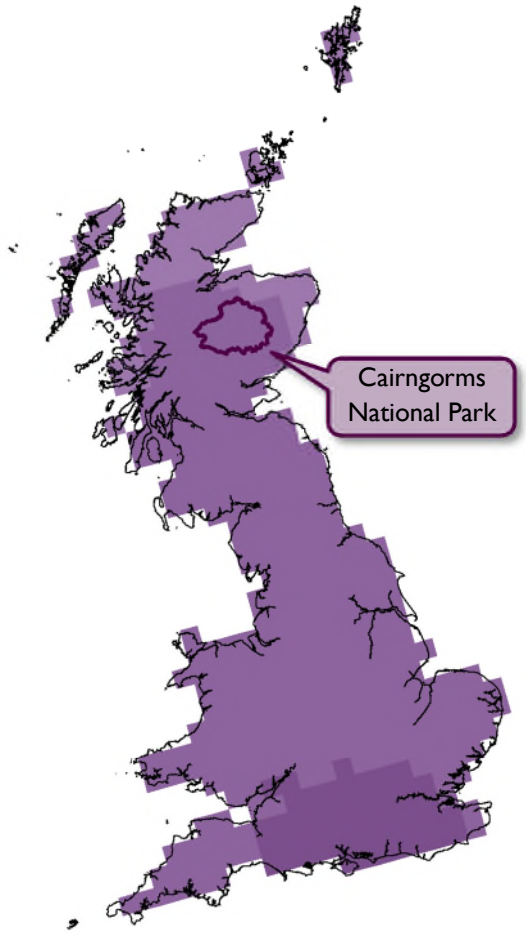


Figure 10 Mean annual temperature increase 2040s. Medium emissions scenario, central estimate.

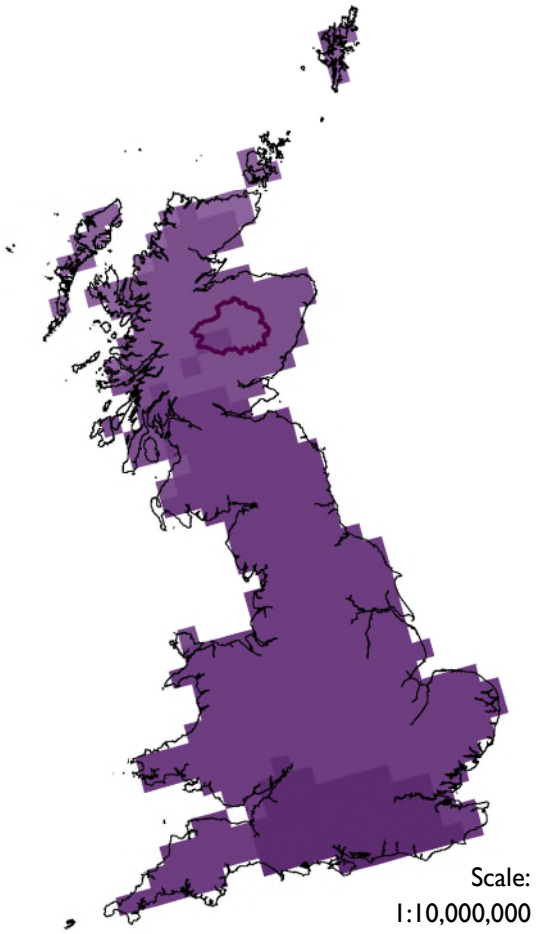


Figure 11 Mean annual temperature increase 2080s. Medium emissions scenario, central estimate.

It should also be noted that the use of the medium emissions scenario combined with the central probability projection represents a relatively conservative picture of the area's possible future climate. Adjusting these variables, particularly the emissions scenario, can lead to more serious projections, which at the time of writing cannot be discounted. Even with the conservative estimates provided in this summary an annual increase in mean temperature of 2.4°C would leave the National Park with some serious challenges to face.

The causes of climate change are clearly greater than local in scale and there is a strong global consensus that a reduction in greenhouse gas emissions is needed to avoid some significantly adverse effects. The Climate Change (Scotland) Act 2009 has introduced legislation to reduce Scotland's greenhouse gas emissions by at least 80% by 2050 against a 1990 baseline. In recent years, increasing emphasis has been placed on the role of regional bodies and local government in contributing to energy

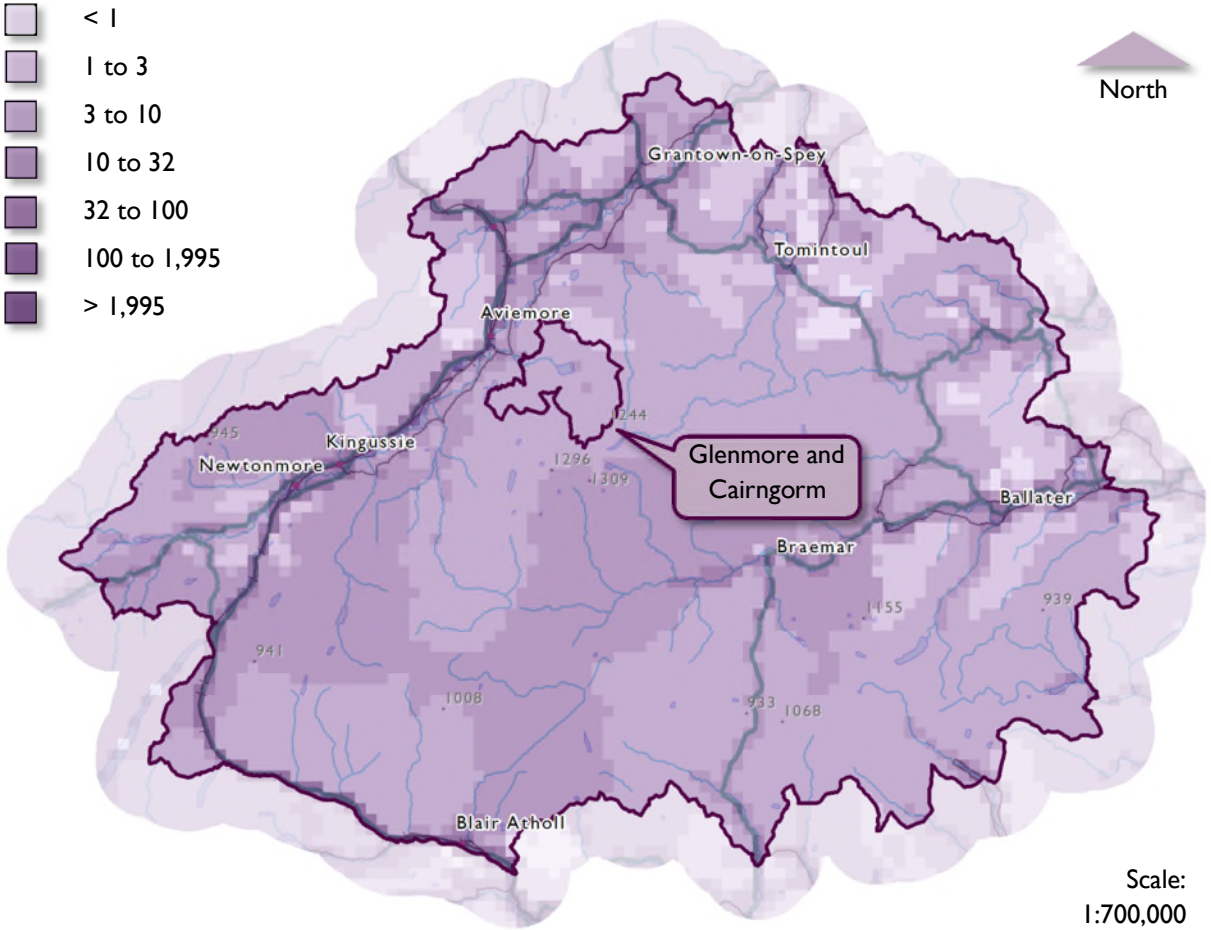


Figure 12 Carbon Dioxide (as Carbon) Emissions in tonnes for the Cairngorms National Park in 2012.

efficiency improvements, and hence reductions in carbon dioxide emissions. It is clear therefore that the Strategy has a role in meeting this target.

Estimates of carbon dioxide emissions for Local Authority (LA) areas for 2005-2012 are available from The Department for Energy and Climate Change (DECC). Carbon dioxide emissions contribute the greatest proportion of total greenhouse gas emissions in the UK, accounting for around 82% in 2012 (Department of Energy and Climate Change, 2014). Annualised data for the UK's national parks is not available and therefore to get an approximation of the Cairngorms National Park's contribution (**Figure 12**) further assumptions need to be made.

Mid-year population estimates have been used as a proxy for proportionally attributing the emissions of the LAs that cover the National Park's area to the National Park itself. It is recognised that this is a blunt means of estimation, particularly in terms of commercial and transport data; indeed estimates based on estimates should always be treated with caution. However, in the absence of a detailed carbon-audit, the figures presented in **Table 7** offers a 'best-guess' and a generalised baseline for measurement over the plan period.

Table 7 Estimated CO_2 Emissions for the Cairngorms National Park. Based on Department of Energy and Climate Change (2014).

Year	Industry and Commercial (kt CO_2)	Domestic (kt CO_2)	Road Transport (kt CO_2)	Total (kt CO_2)[2]	Population (mid-year estimate)	Per Capita Emissions (t)
2005	66.9	58.9	48.8	174.0	17,264	10.7
2006	67.6	60.4	49.5	177.5	17,590	10.8
2007	66.9	59.6	50.8	177.2	17,835	10.6
2008	67.6	59.6	48.0	175.2	18,024	10.3
2009	59.1	55.3	47.3	161.7	18,061	9.4
2010	66.0	59.8	47.3	173.0	18,366	9.8
2011	60.8	52.0	46.5	159.4	18,461	8.9
2012	60.0	55.6	45.6	161.1	18,583	8.9

[2] Figures may not sum due to rounding.

Emissions from motorways, diesel railways, land use, land use change and forestry and EU ETS industrial installations are absent from the national dataset, while for the purpose of the estimates in this document, emissions for 'Large Industrial Installations' have been removed while emissions from gas, a fuel source that is only available via private supply the National Park, have been subsumed as a generalised source of emissions into the overall 'Industry and Commercial' and 'Domestic' categories of the table. The energy consumed by the comparatively high number tourists and visitors to the National Park have not been adjusted for. It should also be noted that estimating the population of the National Park is not a simple task either as data-zone[3] boundaries do not exactly match the National Park's boundary. Further information on the methodology used to identify boundaries and statistical areas used in the analysis of the Cairngorms National Park can be found in **Appendix 3.**

The most recently available data relates to 2012, and estimates that per capita emissions in the National Park are 8.9 tonnes of CO_2, which is above the Scottish average of 6.8 tonnes of CO_2 per capita. This may be attributed to the deeply rural nature of the National Park and the consequent reliance on private motor vehicles as a mode of transport (**Figure 32**, **Figure 33** and **Figure 77**). Nevertheless, there is an indication that per capita emissions are on a downward trend, which is consistent with the national situation.

[3] The data zone is the key small-area statistical geography in Scotland.

Key Messages

Climate change is set to affect the Cairngorms National Park with the UK's climate projections offering a central estimate of a 2.4°C increase in mean annual temperature.

The drivers of climate change are greater than the National Park, however it is estimated that the Park is contributing towards a nationwide reduction in GHG emissions with per capita emissions falling to 8.9 tonnes in 2011.

In order to deliver a long term sustainable vision for Glenmore and Cairngorm, the Strategy will need take the potential effects of climate change into account in its proposals.

Inter-relationships with other topics

Topic 2: Air

> "*In order to protect human health and the environment as a whole, it is particularly important to combat emissions of pollutants at source...*"
>
> Ambient air quality and cleaner air for Europe Directive (2008/50/EC).

Air pollution results from the introduction of a range of substances into the atmosphere from a wide variety of sources, including industry, transport and power generation. Even domestic activities such as driving, heating and cooking contribute, as do natural sources like sea salt, wildfires, volcanic activity, soil erosion and farming (Scottish Government, 2015).

Poor air quality can have both short term and long term effects on health. In general, healthy people may not suffer from any serious ill effects; however people with pre-existing health conditions (e.g. heart disease, lung conditions and asthma) may be affected by day to day changes in air pollution levels. It is estimated that in 2010, particulate matter in the air (PM_{10} and $PM_{2.5}$) could have caused the deaths of 2,094 people in Scotland.

Air pollution can also damage the wider environment, causing the acidification of soils and water, damaging plant and animal life in forests, lakes and rivers. It can also add nutrients to soil, which can affect biodiversity. Air pollution can also damage the fabric of buildings and historic monuments (Scottish Government, 2014).

The air quality objectives for Scotland are set out in the Air Quality (Scotland) Regulations 2000 and its 2002 Amendment. The main pollutants of concern are:

- Nitrogen oxides (NO_x);
- Particulate matter (PM_{10} and $PM_{2.5}$);
- Sulphur dioxide (SO_2);
- Non-methane volatile organic compounds (NMVOCs);
- Ground-level ozone (O_3) and
- Ammonia (NH_3)

Scotland's air quality is generally better now than it has been at any time since before the Industrial Revolution, with increasingly strict controls over industrial emissions, tighter fuel and emission standards for road vehicles and the control of smoke from domestic premises yielding positive results. Between 1990 and 2012 significant reductions were seen in the emissions of particulates (-59%), nitrogen oxides (-65%) and sulphur dioxide (-79%) (Sailsbury *et al.* 2014).

Human exposure to air pollution is now largely associated with transport emissions. The effects of this pollution are not confined to Scotland's cities but occur in many of the country's built areas. Where air quality objectives are not being met, Local Authorities have a duty under section 83(10 of the Environment Act 1995 to designate Air Quality Management Areas (AQMAs), where plans must be implemented to improve air quality. All air quality objectives are currently being met within the Cairngorms National Park and therefore no AQMAs exist within its boundary (the

nearest AQMAs are located in Aberdeen and Inverness). It is therefore unlikely that the Strategy will cause air quality objectives to be exceeded.

Nevertheless, as a Strategy designed to attract a greater number of visits to Glenmore and Cairngorm, and indeed the National Park as a whole, it is clear that the Strategy could have an impact on traffic levels. Therefore, the Strategy's potential for increasing pollutants associated with traffic emissions such as PM_{10} (**Figure 13**) and Nitrogen dioxide (NO_2) (**Figure 14**) needs to be given consideration. Spatial data on the emission of both is available from the UK National Atmospheric Emissions Inventory for 2012. As might be expected, the highest emissions for both are located along the A9 and within National Park's main settlements of Aviemore, Grantown-on-Spey and Ballater, where traffic volumes are greatest.

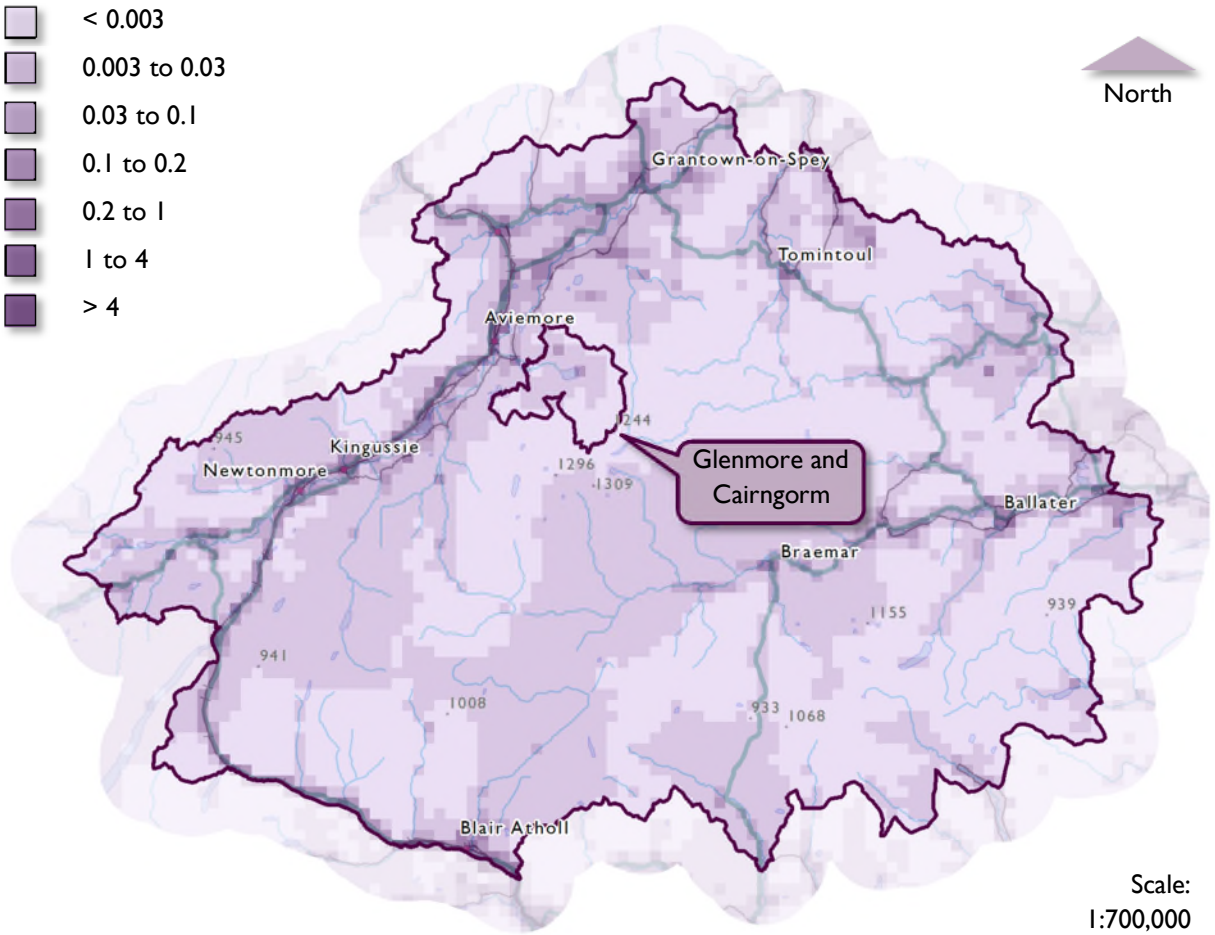


Figure 13 Emissions of PM_{10} in tonnes in the Cairngorms National Park in 2012.

Scottish Household Survey data for 2012 / 2013 (Scottish Government, 2014) indicates that private motorised vehicle use is the main mode of transport for the LAs that cover the National Park's area, ranging from around 77% in Aberdeenshire to around 65% in Highland. While specific data for the National Park is unavailable, it is assumed that due to the area's rurality, a similar level of use exists within its boundary. Indeed, Census information collected on household access to cars or vans supports this assumption (see **Topic 5: Material Asset**, p. 90) Road traffic is on the increase across Scotland (Transport Scotland, 2014) and owing to population growth and increasing visitor numbers, is also likely to rise within the National Park over the Plan period. It is estimated that the A9 alone will see a growth in traffic in the region of 10 to 15%, even without the effects of the planned duelling (Transport Scotland, 2013).

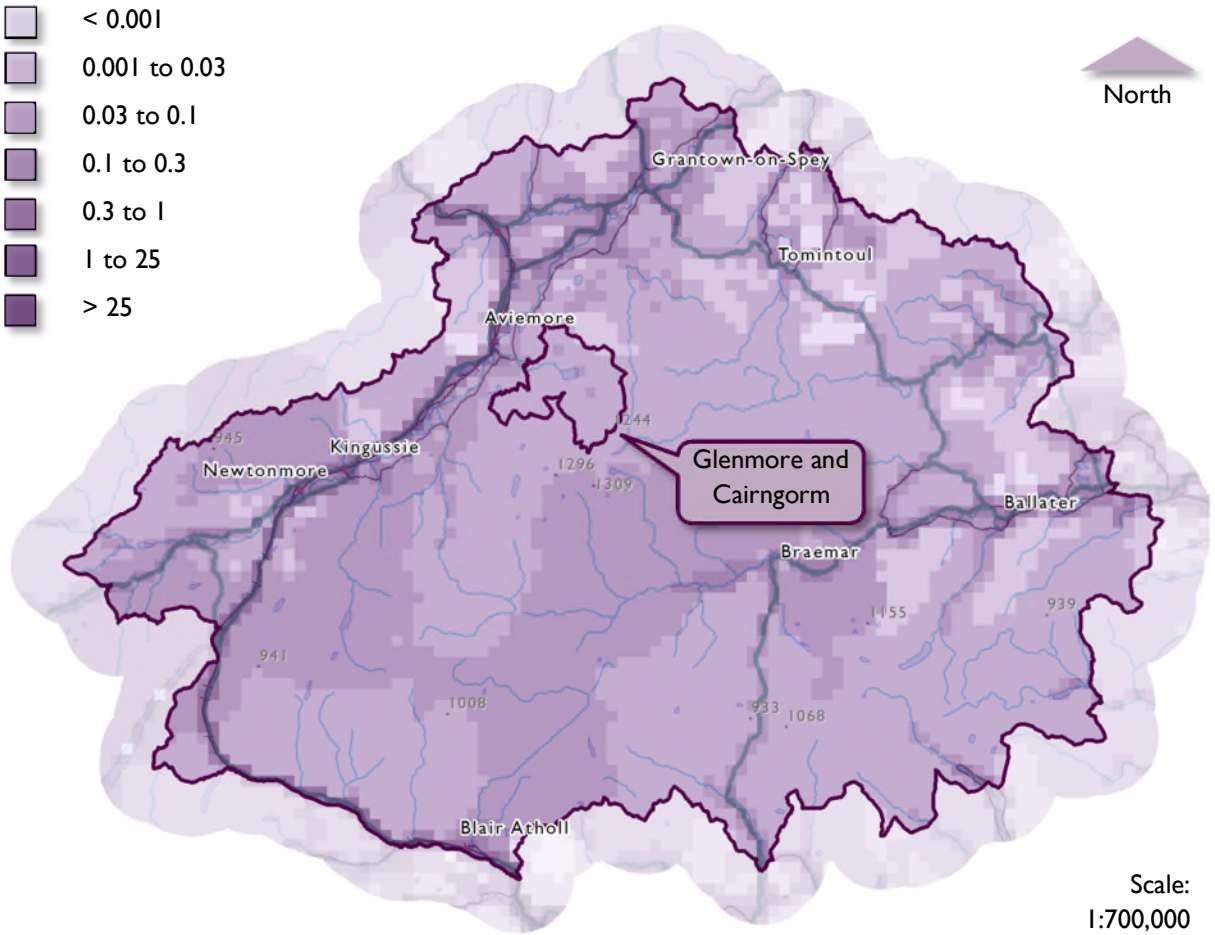


Figure 14 Emissions of Nitrogen Oxides (NO_x) as NO_2 in tonnes in the Cairngorms National Park in 2012.

The Strategy will therefore need to carefully consider its impact on traffic levels and seek to avoid adverse effects on air quality. It will also need to consider its relationship with the A9 Dualling Strategy (Transport Scotland, 2015), which is predicted to result in a reduction in ambient roadside carbon, NO_x and particulate levels through resultant improved traffic flows (Transport Scotland, 2013).

Key Messages

Air pollution is relatively low within the Cairngorms National Park, with no AQMAs within its boundary. However, there are localised areas along the main transport corridors where pollutants related to vehicle use are high enough to generate concern should they not be managed appropriately.

The Strategy may have an influence over air quality both on its own and in combination with other PPS, such as the A9 Dualling Strategy. Therefore, consideration needs to be given to the Strategy's potential to increase the ambient levels of traffic related such as NO_x and PM_{10}.

Inter-relationships with other topics

- Topic 3: Water 71
- Topic 4: Soil 80
- Topic 6: Biodiversity, Fauna and Flora 99
- Topic 8: Population and Human Health 157

Topic 3: Water

> "*Water is a heritage which must be protected and defended.*"
>
> The European Union Water Framework Directive (2000/60/EC).

The Cairngorms National Park encompasses the headwaters of three of Scotland's major rivers as well as many smaller ones. Many of the rivers and their tributaries as well as lochs and wetlands are designated as Natura sites and Sites of Special Scientific Interest (SSSIs). The rivers in particular provide water for society in the National Park, and for people outside the Park as they flow downstream towards the sea.

Glenmore and Cairngorm sit within the River Spey Catchment Area (**Figure 15**), which is subject to a management plan. The plan aims to protect water quality, direct the use of the rivers as resources, protect against flooding, enhance biodiversity, and promote access and economic development.

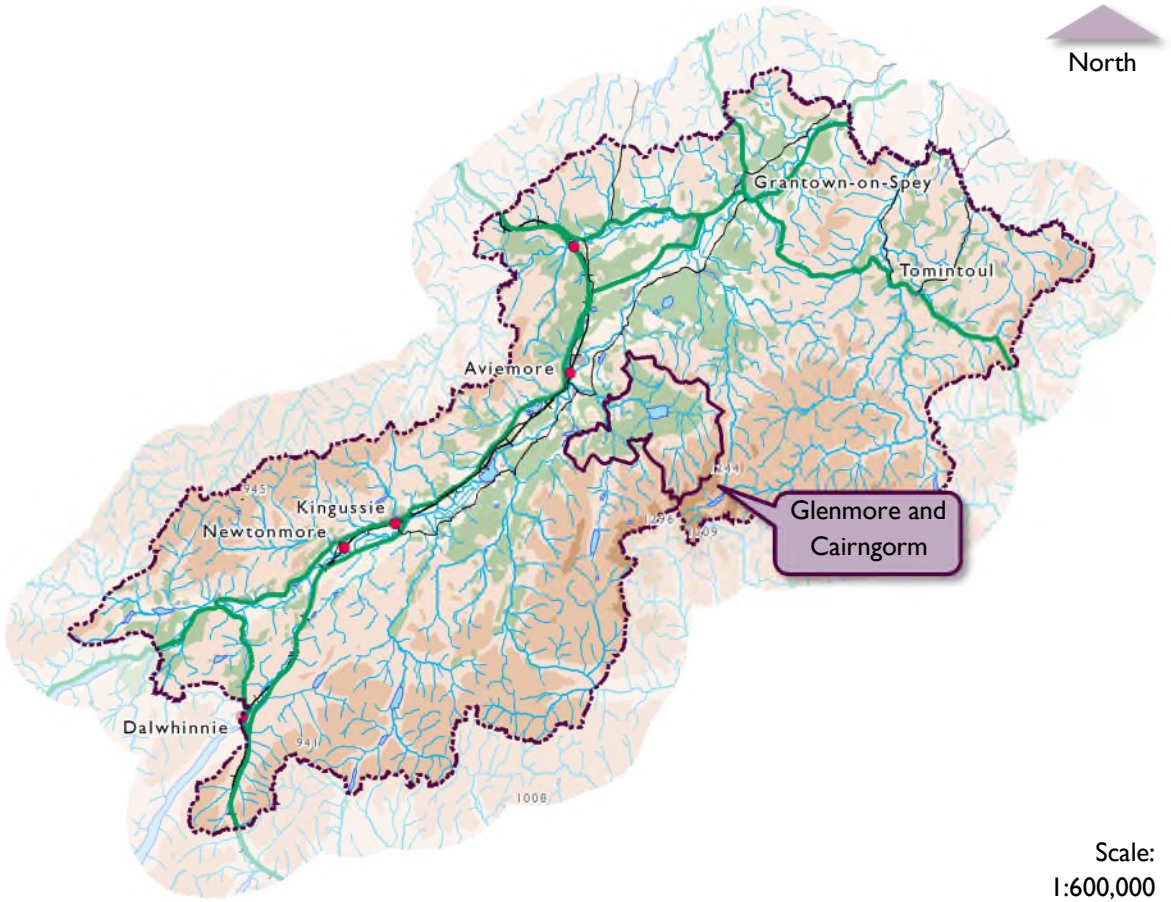


Figure 15 River Spey Catchment Area within the Cairngorms National Park.

Water Quality

Pollution leading to the deterioration of water quality can originate from one of two sources, point and diffuse.

Point source discharge means a release of effluent or other matter to the water environment or land, via a pipe or outlet. For example, this includes sewage and trade effluent; surface water discharges from urban areas; and abandoned mine discharges.

Diffuse pollution is the release of potential pollutants from a range of activities that, individually, may have no effect on the water environment, but, at the scale of a catchment, can have a significant effect. Activities associated with diffuse pollution are varied and include run-off from roads, houses, commercial areas, farmland, forestry activities and community and amenity green spaces; seepage into groundwater from developed landscapes of all kinds; and yard run-off from industrial activities.

Government regulation has been extremely successful in reducing instances of point source pollution and therefore diffuse pollution is now of greatest concern. Diffuse sources of water pollution can have a significant effect of biodiversity and human health. The effects include:

- Groundwater and surface water contamination and the subsequent loss, or need for treatment of drinking water resources;
- Nutrient enrichment and eutrophication of water bodies;
- Oxygen depletion of water bodies;
- Toxicity to plant and animal life, including endocrine disruption in fish; and
- Smothering of freshwater pearl mussel beds and fish spawning gravels (Dee Catchment Partnership, 2007).

Of particular significance is the effect of water pollution on freshwater pearl mussel populations, as good water quality is essential for the completion of their life cycle (Young, 2005). Freshwater pearl mussel is one of the species on the Nature Action Plan List (Cairngorms National Park Authority, 2013) and is one of the qualifying features for a number of the National Park's SACs, including the River Spey SAC. Further information may be found under **Topic 6: Biodiversity, Fauna and Flora** (p. 99).

The European Union Water Framework Directive (2000/60/EC) (WFD), adopted in 2000, is the operational tool that sets out the objectives for water protection in Scotland. The WFD sets out a number of objectives in respect of which the quality of water is protected. The key ones at European level are:

- General protection of the aquatic ecology;
- Specific protection of unique and valuable habitats;
- Protection of drinking water resources; and
- Protection of bathing water.

All these objectives must be integrated for each river basin. It is clear that the last three - special habitats, drinking water areas and bathing water - apply only to specific bodies of water (those supporting special

wetlands; those identified for drinking water abstraction; those generally used as bathing areas). In contrast, ecological protection should apply to all waters: the central requirement of the WFD is that the environment be protected to a high level in its entirety (European Commission, 2014).

SEPA are the responsible authority for monitoring water quality in Scotland to the requirements set out by the WFD. The Directive requires all water features in a category (i.e. rivers, lochs, transitional waters, coastal waters and groundwater) above a certain size threshold to be defined as water bodies.

Surface water bodies are classified using a system of five quality classes – high, good, moderate, poor and bad, with groundwater classified as good or poor. In general, the classification of water bodies describes by how much their condition or status differs from near natural conditions. Water bodies in a near natural condition are at high status, while those whose quality has been severely damaged are at bad status

The ultimate overall aim of the WFD is therefore to ensure that these water bodies don't deteriorate in status and that all water bodies achieve at least 'good' status by 2015, unless it is demonstrated that less stringent objectives should apply (Scottish Environment Protection Agency, 2007).

The overall status and water quality classification of Spey Catchment Area waterbodies within the Cairngorms National Park for years 2010- 2013 is presented in **Figure 16**, **Figure 17**, **Figure 18** and **Figure 19**. The main reasons for waterbodies not achieving overall good status is the presence of a large number of barriers to fish and poor morphology (this covers catchment/landuse matters such inputs of fine sediments or impacts to hydrology and direct impacts such as through engineering or condition of riparian corridor).

The status of waterbodies for 2014 was not available at the time of writing. The definition of what constitutes a Spey Catchment Area waterbody in the National Park is set out in **Appendix 3**.

As can be seen, the current situation is mixed, and only a minority of waterbodies are in bad or poor condition, there has been an increase in the number of waterbodies changing to a worse status or classification.

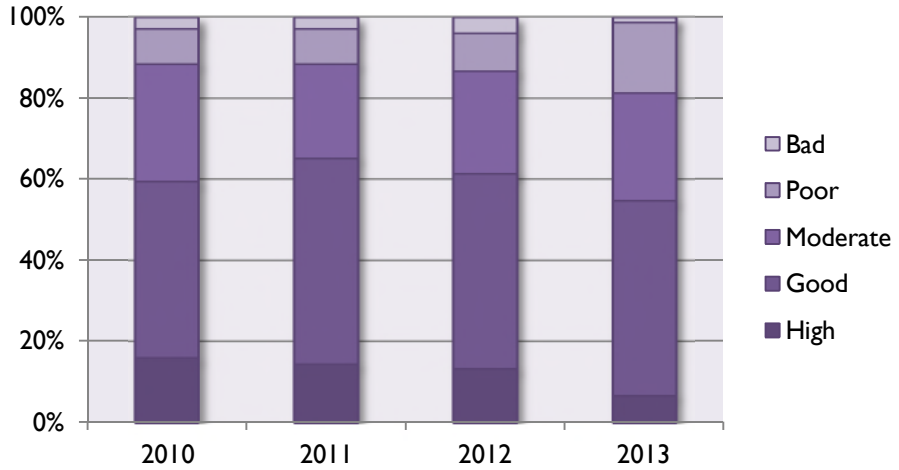


Figure 16 Overall status of Spey Catchment Area waterbodies within and overlapping the Cairngorms National Park.

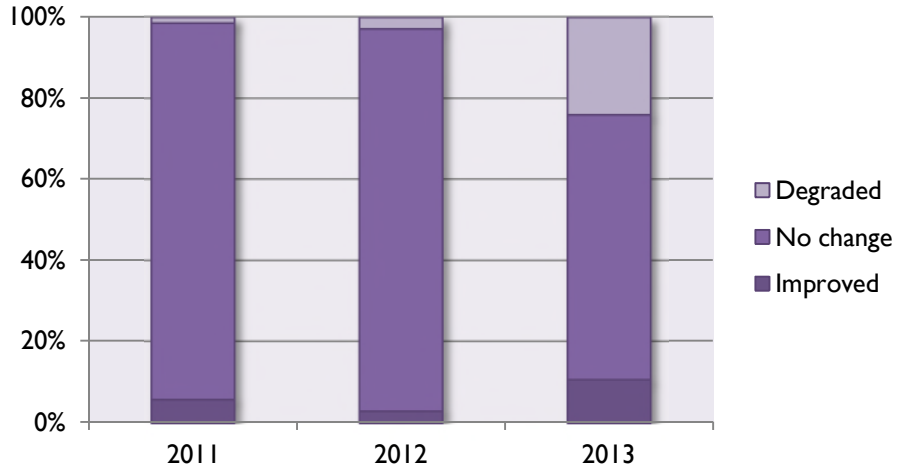


Figure 17 Change from previous year in the overall status of Spey Catchment Area waterbodies within or overlapping the Cairngorms National Park

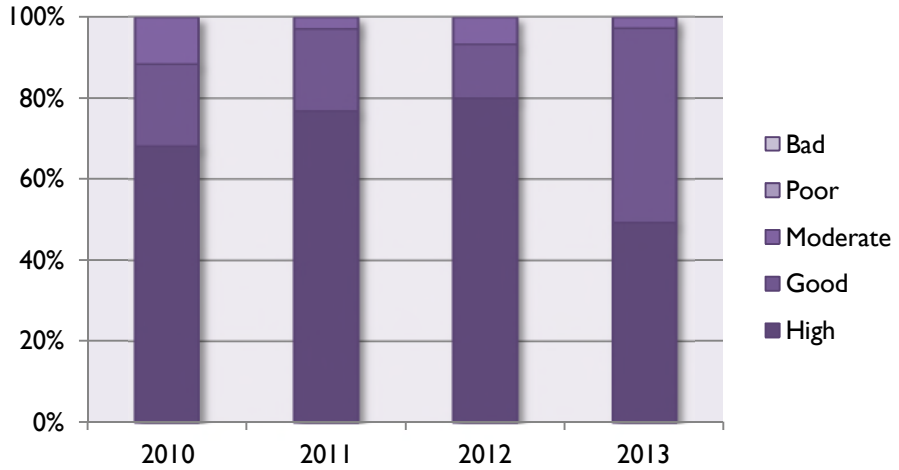


Figure 18 Water quality classification of Spey Catchment Area waterbodies within and overlapping the Cairngorms National Park.

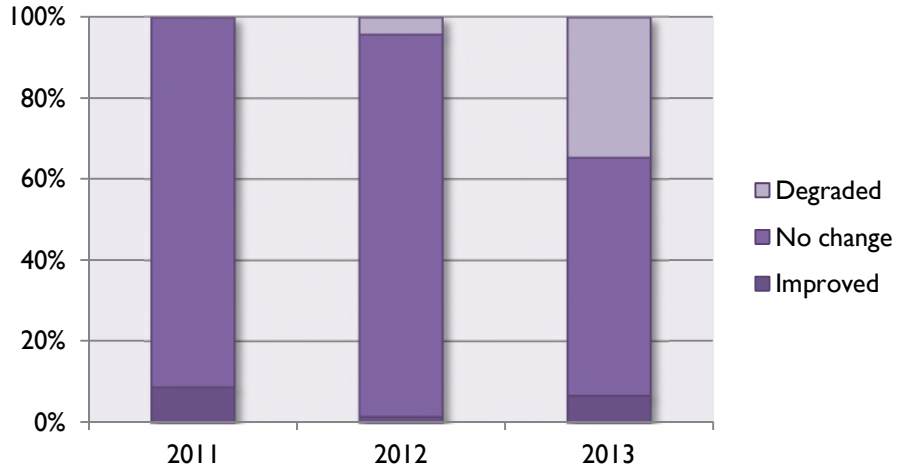


Figure 19 Change from previous year in the water quality of Spey Catchment Area waterbodies within or overlapping the Cairngorms National Park

Source: www.environment.scotland.gov.uk/get-interactive/data/water-body-classification/

Water Quantity

In order to provide information for the management of water resources, SEPA monitor water levels at 20 sites within the Cairngorms National Park, as well as at a number of locations just outside the Park's boundary. Water levels are converted to flow at most river gauging stations. The information gathered may inform the SEA, since trends may be used as an indicator of climate change or as an identifier of potential risks, such as flooding.

Figure 20 represents the series of maximum instantaneous peak flows within a given water year (October to September) for monitoring stations on the River Spey.

The data from the station shows a general trend for higher annual maximums over the time they were monitored. The causes of this are uncertain; however, it highlights the importance of taking into account the potential for an increase in the number and severity of flood events over the lifetime of the Strategy and beyond.

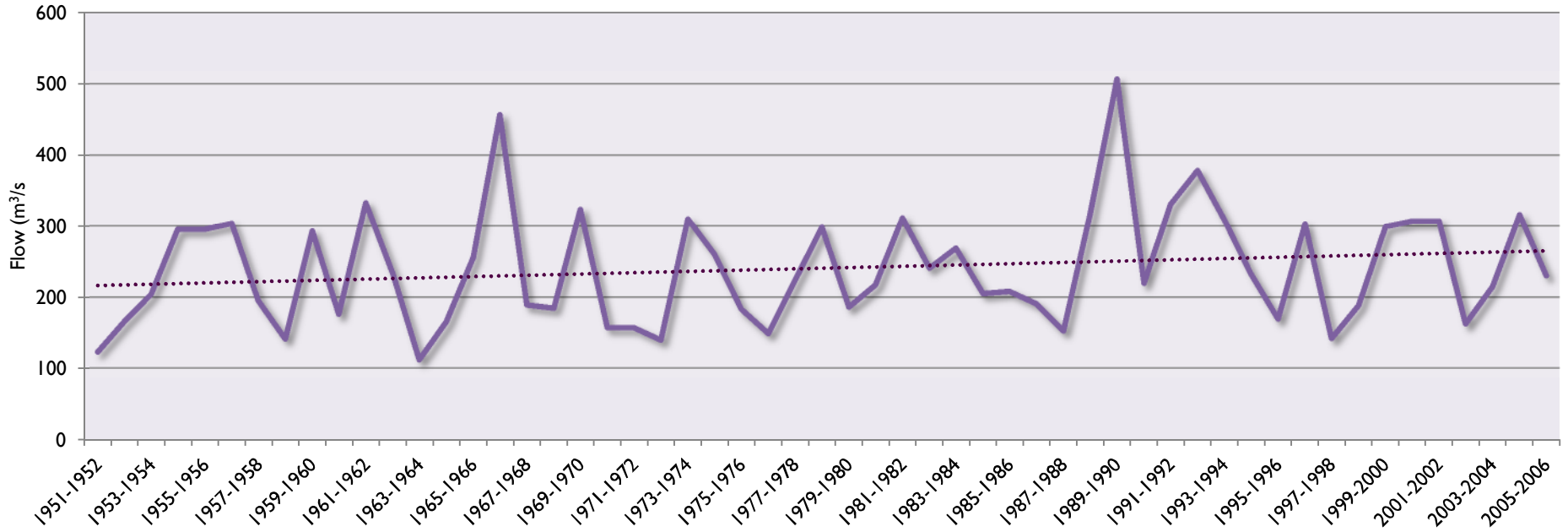


Figure 20 Annual maximum (AMAX) data for the River Spey at Grantown-on Spey (Station 8010). Contains SEPA data © Scottish Environment Protection Agency and database right 2015. All rights reserved.

Water Resources

Whilst Scottish Water (SW) is funded to provide any strategic capacity that may be required for water supply / waste water treatment ('part 4' assets) to facilitate development, it is necessary to consider the timescale to deliver new strategic capacity to ensure that the provision of it is timed to enable development in the right place at the right time. The implications of this on any programme of development must therefore be considered. The current capacity status of the water and waste treatment works that serve Badenoch and Strathspey, in which Glenmore and Cairngorm sit, is shown in **Table 8**.

Development in the Glenmore area is limited by its reliance on its private water works. There are also constraints within the wider area that may have an implication on the Strategy. For example, there is currently not enough capacity to serve the 1,500 units permitted at An Camas Mòr.

Table 8 Capacity of water and waste treatment works serving the Cainrorms National Park, July 2015 (Source: Scottish Water).

Settlement	Water Treatment Works	Capacity (housing units)	Waste treatment Works	Capacity (housing units)
An Camas Mòr	Aviemore	966	Aviemore	60
Aviemore	Aviemore	966	Aviemore	60
Boat of Garten	Aviemore	966	Boat of Garten	96
Carr Bridge	Aviemore	966	Carr Bridge	87
Cromdale & Advie	Aviemore	966	Cromdale	105
Dalwhinnie	Dalwhinnie	20	Dalwhinnie	<10
Dulnain Bridge	Aviemore	966	Dulnain Bridge	24
Glenmore	Private	N/A	Glenmore	<10
Grantown of Spey	Aviemore	966	Grantown	197
Insh	Aviemore	966	Insh	<10
Inverdruie & Coylum Bridge	Aviemore	966	Aviemore	60
Kincraig	Aviemore	966	Kincraig	52
Kingussie	Aviemore	966	Kingussie	327
Laggan	Laggan Bridge	<10	Laggan Bridge ST	<10
Nethy Bridge	Aviemore	966	Nethy Bridge	70
Newtonmore	Aviemore	966	Newtonmore	208

Flooding

While all of the National Park's rivers and watercourses have the potential to flood to some degree, most do not cause great concern, as they are in areas or of a magnitude that is unlikely to cause significant damage to property or risk to life. However, the pattern of settlement in the National Park is now along the main straths and glens and so when the rivers and tributaries that flow along these break their banks, they often result in economic, and occasionally human, cost. Furthermore, in some areas surface water flooding, which can arise for a number of reasons, is a significant risk.

The River Spey (**Figure 21**) is one of the National Park's rivers that floods on a regular basis and while flooding is not an issue in the Glenmore or Cairngorm areas, activities, for example deforestation, at these locations can have an effect downstream. Of concern therefore is the area around Aviemore, where large areas of land have been developed in locations that are at risk of flooding.

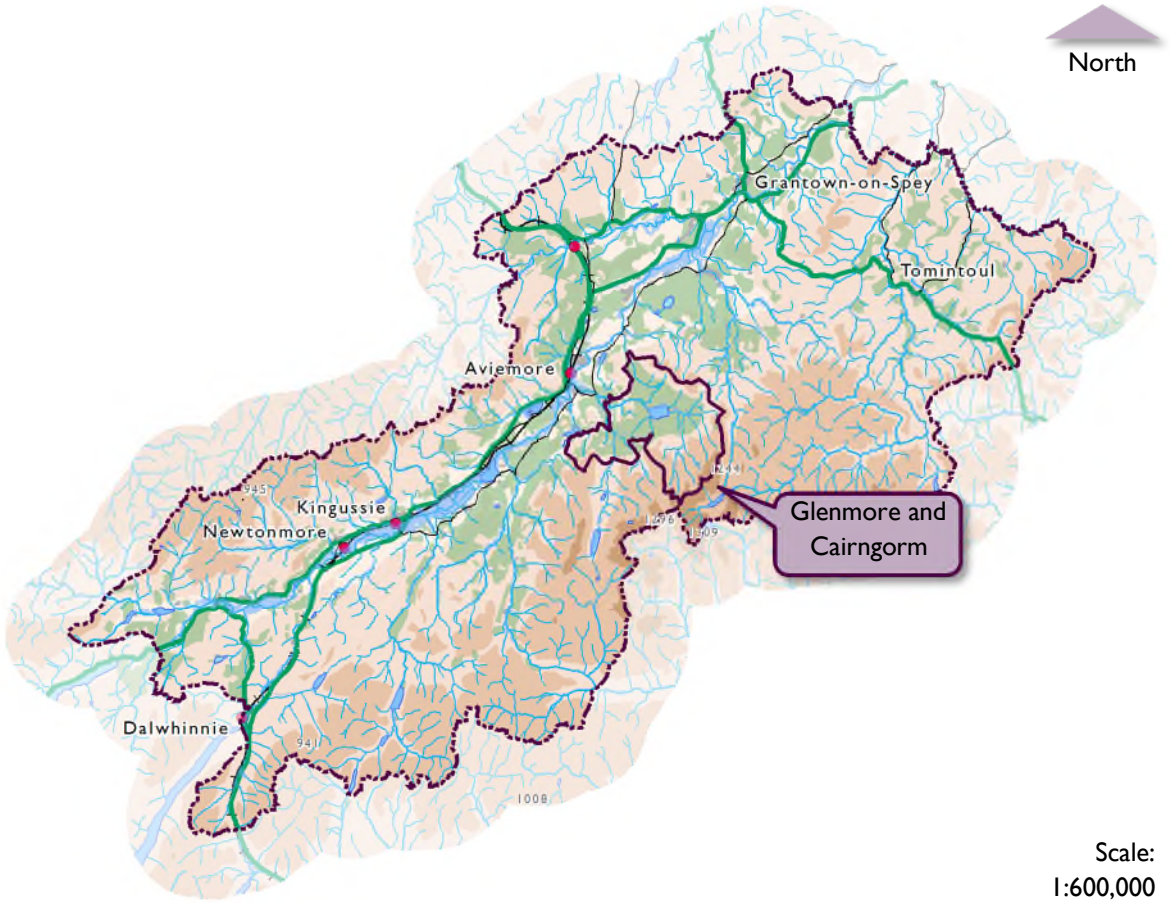


Figure 21 Indicative river flooding extent (medium probability 1 in 200 years) for the River Spey Catchment Area in the Cairngorms National Park.

The River Spey rises in the high ground of the Monadhliath and Cairngorm Mountain ranges and flows in a northeasterly direction through narrow straths and scenic river valleys before discharging into the Moray Firth beyond the fertile farmlands of Morayshire. The upper part of the catchment is characterised by its mountainous areas, the highest point being the summit of Ben Macdui at 1,309 metres above sea level.

The River Spey is the seventh largest river in Britain, with a catchment area of over 3,000 km^2, and a stream network length of about 36,500 km, of which the main river comprises 157 km (Spey Catchment Steering Group, 2003).

There is a long history of flooding within the Spey catchment area, with a notable event, known as the Great Muckle Spate, destroying several bridges in 1829. The River Spey and its tributaries continue to flood regularly, with heavy rains and melting snows increasing the volumes of water in the catchment. These floods have damaged properties in Newtonmore, Aviemore and Carrbridge on a number of occasions. Most recently in 2014, Gynack Burn broke its banks in Kingussie, damaging local buildings and infrastructure (Scottish Environment Protection Agency, 2015).

Flood management practices are being undertaken at a number of locations. The Spey Catchment Initiative has carried out natural flood management / river restoration works on a tributary upstream of the River Dulnain (Spey Catchment Initiative, 2013). There are also agricultural embankments along the River Spey between Aviemore and Boat of Garten and further embankments at Dalwhinnie. The standard of protection (and condition) provided by these embankments is however unknown (Scottish Environment Protection Agency, 2015).

Due to the potential risk caused by flooding within the catchment area, five proposed Potentially Vulnerable Areas (PVAs) have been identified within the National Park, at:

- Carrbridge (PVA 05/10);
- Aviemore and Boat of Garten (PVA 05/11);
- Kingussie (PVA 05/12);
- Newtonmore (PVA 05/13); and
- Dalwhinnie (PVA 05/14).

The estimated total average annual cost of damage in these areas is £490,000. Around 68% of this damage is caused by river flooding, although it should be noted that this figure is heavily influenced by the £172,000 average annual cost of river flooding at Dalwhinnie. If this PVA were removed, then the cost of river and surface water damage is roughly equal (Scottish Environment Protection Agency, 2015).

SEPA have identified a number of actions for managing flood risk in these areas, which were consulted on in 2015.

Key Messages

Water quality within the Spey catchment is relatively high, however, monitoring indicates that recent years have seen an increase in the proportion of water bodies falling out of the high classification for overall status and water quality. The situation was particularly poor in 2013, which saw a large increase in the number of waterbodies falling into lower classifications.

AMAX data indicates a general trend for higher annual maximum instantaneous peak flows over the time they were monitored, indicating an increase in flood risk in the Spey catchment.

There is not enough capacity in the water and sewage treatment works that serve the area to meet the projected level of housing growth.

There are five proposed Potentially Vulnerable Areas (PVAs) within the Spey Catchment. The estimated total average annual cost of damage in these areas is £490,000.

Inter-relationships with other topics

- Topic 1: Climatic Factors 59
- Topic 2: Air 67
- Topic 4: Soil 90
- Topic 6: Biodiversity, Fauna and Flora 99
- Topic 7: Landscape and Cultural Heritage 144
- Topic 8: Population and Human Health 157

Topic 4: Soil

> "*Soil is a resource of common interest… and failure to protect it will undermine sustainability and long term competitiveness in Europe.*"
>
> Commission of the European Communities (2006).

Soils cover most of the natural world, forming the foundation of all terrestrial ecosystems and services. They support key processes in biomass production and mass exchange with atmospheric and hydrological systems. Nearly all of the food, fuel and fibres used by humans are produced in soil. Soil is also essential for water and ecosystem health. It is second only to the oceans as a carbon sink, with an important role in the potential slowing of carbon change. Soil functions depend on a multitude of soil organisms, which makes soil an important part of our biodiversity (Joint Research Centre, 2012).

Although soils are a continually evolving, living and dynamic medium responding to external pressures and management, some activities such as development or pollution can mean their recovery or reformation cannot take place within human timescales. This means soils are a finite and essentially non-renewable resource (Scottish Government, 2009).

Land Capability for Agriculture

Although it is estimated that Agriculture contributed about £688 million to the Scottish economy in 2014 (Scottish Government, 2015), it is difficult to value the direct financial contribution that healthy soils make to our economy. But it is now widely acknowledged that the sustainable management of soils, and the protection of soils' ability to deliver a wide range of environmental and ecological services, is essential to achieving sustainable economic growth.

Land Capability Classification for Agriculture mapping provides detailed information on soil, climate and relief for those involved in the management of land use and resources. The classification ranks land from 1 to 7 on the basis of its potential productivity and cropping flexibility determined by the extent to which its physical characteristics (soil, climate and relief) impose long term restrictions on its agricultural use. Land classified from 1 to 3.1 is considered to be prime agricultural land, while land classified as 3.2 to 7 is considered to be non-prime (Soil Survey of Scotland Staff, 1981).

There are no areas of prime agricultural land within the Glenmore and Cairngorm area, nor indeed is there any in the Cairngorms National Park. Around half the land within the area is classified as 6 or 7, which denote areas of 'rough grazing only' and 'very limited agricultural value' respectively.

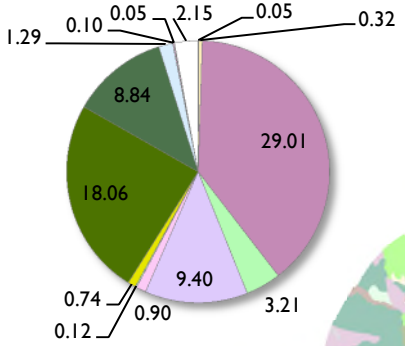
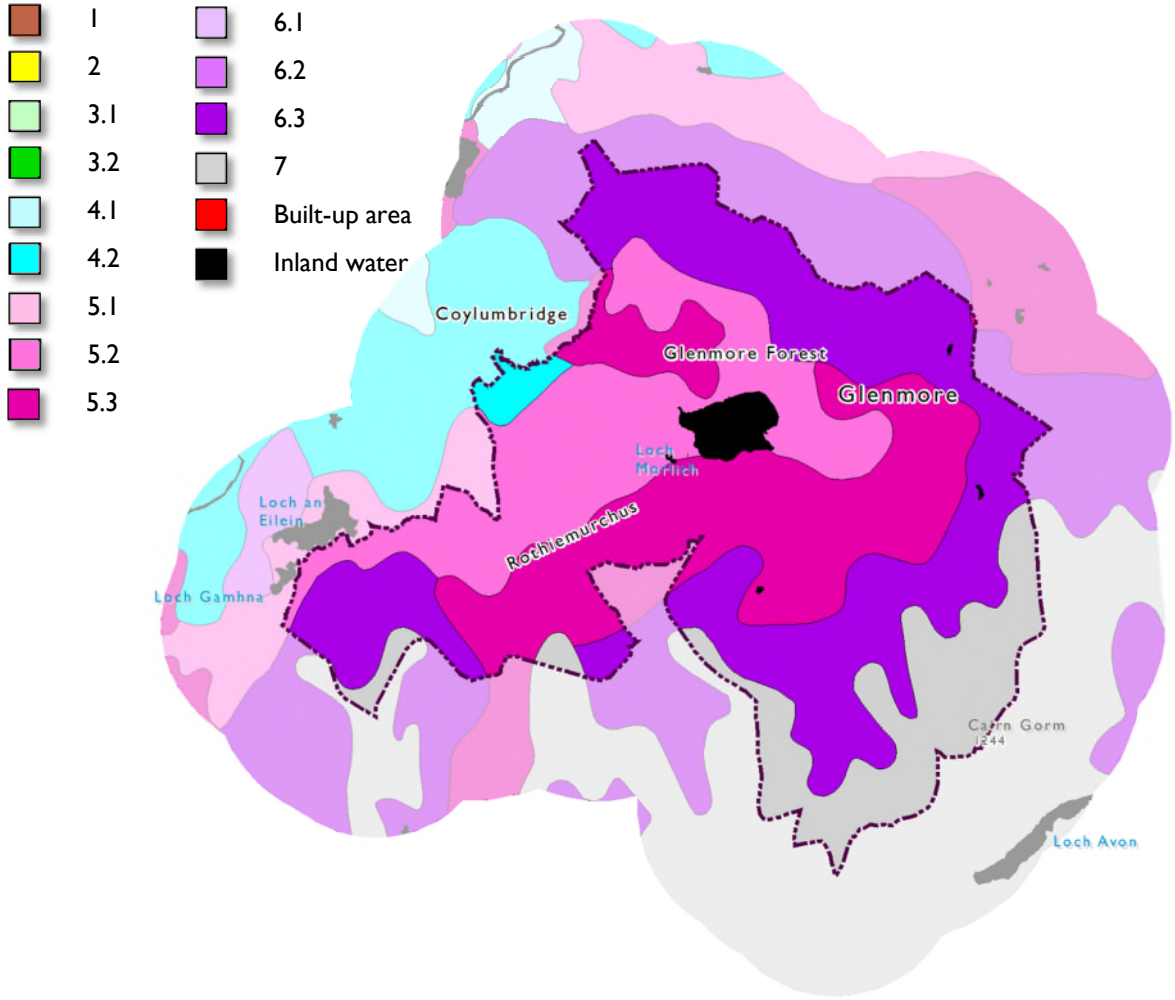


Figure 22 Landuse classification by km^2

Figure 23 Landuse Classifications in the Glenmore and Cairngorm area.



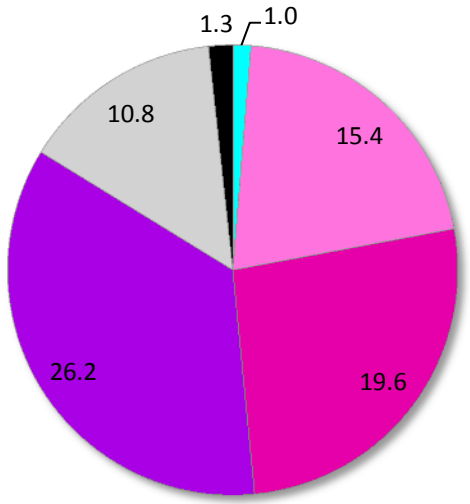


Figure 24 Agricultural land classification by area (km^2) (Soil Survey of Scotland Staff, 1981).

Figure 25 Agricultural land classification in the Glenmore and Cairngorm area.

Organic Matter

Soil organic matter is a universal constituent of soils and plays a vital role in contributing to a range of soil functions. Organic carbon is the dominant component of soil organic matter (around 50%), so management of soil has important wider consequences in the context of greenhouse gas emissions and climate change. Soil organic matter also contains a wide range of nutrients (e.g. nitrogen, phosphorus) and trace elements that are essential for plant growth and health. The presence of soil organic matter is a critical indicator of soil quality and is required to deliver many of the vital functions of soil including its ability to provide nutrients, ameliorate the inputs of wastes and pollutants, contribute to the formation of good physical conditions, improve water storage and provide a habitat for microbial populations (Rees *et al.* 2011).

The Glenmore and Cairngorm areas are home to areas of soil that particularly rich in soil organic matter. These areas are a result of the Cairngorms' cool, moist climate encourages the retention of decomposed organic materials, with peatlands containing the largest quantities of soil organic matter (**Figure 26** and **Figure 27**). These soils are important global reserves of soil carbon.

The organic matter content of soils is at risk from a range of pressures, with land use change and climate change being of particular importance. The pressures affect the incorporation, cycling and breakdown of organic matter in the soil through alteration of soil conditions populations (Rees *et al.* 2011). The major pathway of loss of organic matter from soils is by carbon dioxide (CO_2) emission to the atmosphere via soil respiration, but other greenhouse gases can also be emitted as a result of soil organic matter decomposition, for example methane (CH_4) and nitrous oxide (N_2O) (Scottish Executive, 2007). In addition, carbon compounds can be released from soil into water, for example dissolved organic carbon and particulate organic carbon (Buckingham *et al.* 2008; Dinsmore *et al.* 2010). Other processes can also influence the amount of organic matter loss, such as soil erosion (Bilotta et al. 2007). Although most CO_2 is returned to soils as a consequence of the photosynthetic activity of plants, the net exchange (the difference between gains and losses) of carbon from land surfaces may still be large (*Rees et al.* 2011).

Climate is important in determining the equilibrium soil organic matter content. Temperature and rainfall influence both the input of organic matter via photosynthesis (e.g. litter and root inputs), and its subsequent decomposition through microbial activity, with resultant release of greenhouse gases and dissolved organic carbon, along with nutrients and trace elements. Thus any change in climate, for example increased rainfall and/ or increased temperature, is likely to change the rate at which organic matter is lost or accumulated in Scottish soils (Rees *et al.* 2011).

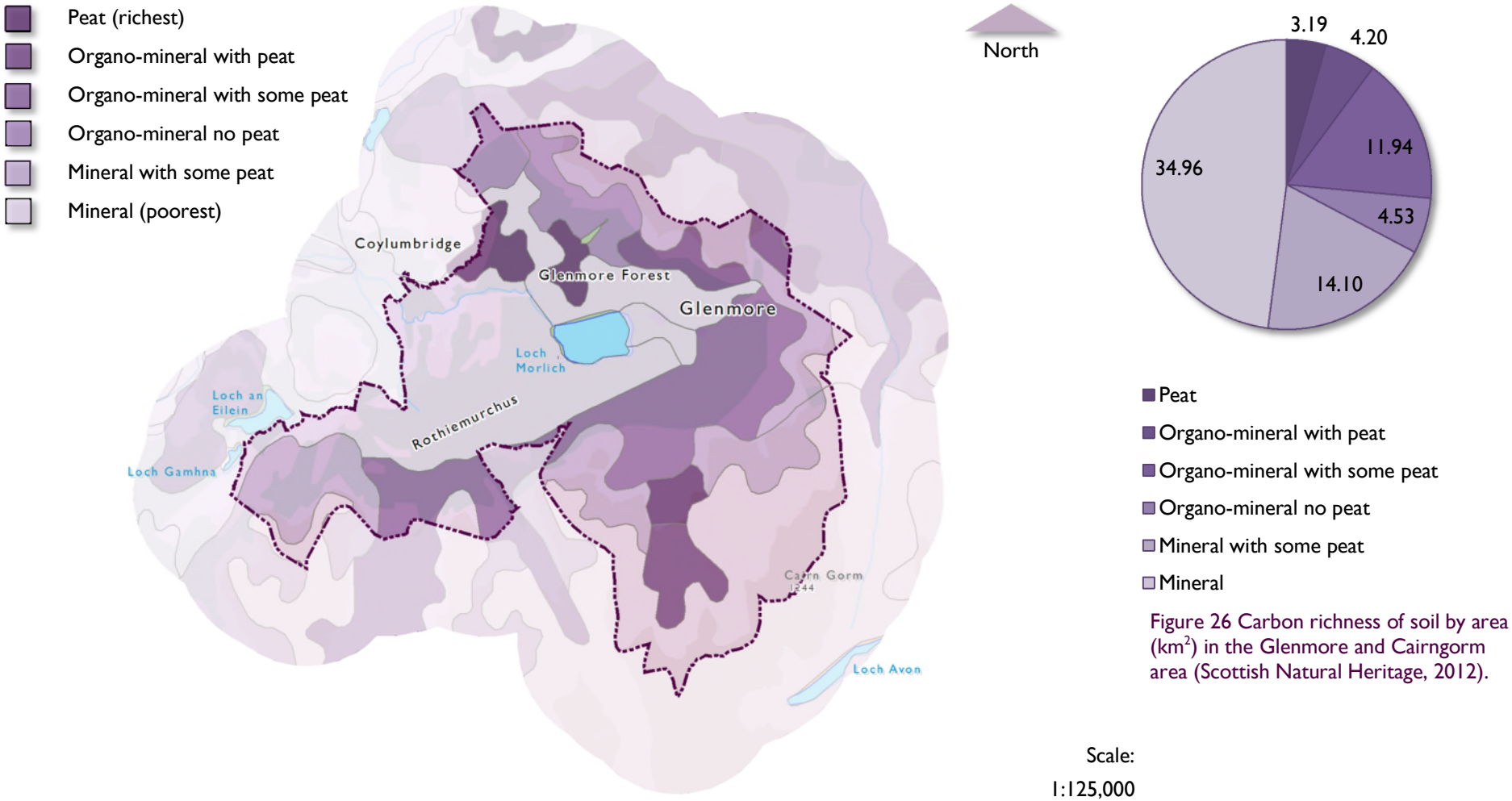


Figure 26 Carbon richness of soil by area (km^2) in the Glenmore and Cairngorm area (Scottish Natural Heritage, 2012).

Figure 27 Carbon Richness of Soil (Scottish Natural Heritage, 2012).

There is a particular concern regarding the sensitivity of soil organic matter to changes in climate. Projected climate change in the Cairngorms National Park, with warmer and drier summers and wetter winters, threatens to increase losses of soil organic matter (see **Topic 1: Climatic Factors**, p. 59). Another concern is that extreme weather events such as heavy rainfall could contribute to significant losses of organic matter through soil erosion (Rees *et al.* 2011).

Issues caused by climate change may be compounded by unsustainable land use activities such as those related to agriculture, forestry practices, recreation / game management, peat exploitation and development. Many of the Cairngorms National Park's most organic rich soils are located on its moorlands, large areas of which are managed for game. Deer can cause compaction and erosion and it is necessary to maintain the deer population at a sustainable level. Grouse shooting requires management of the moorland habitat such that a good balance of young heather is available for forage. This is normally done by burning (muirburn), typically in patches which are burnt every 10–20 years. Carefully managed heather moorland should aim to retain soil organic matter and the soil carbon balance over time but poorly managed burning can result in losses. There is evidence of soil organic matter loss following burning though the evidence base is scant (Rees *et al.* 2011).

The consequences of organic soil loss are potentially serious since it provides a number of important ecosystem services, such as:

- Providing the basis for food and biomass production
- Controlling and regulating environmental interactions
- Storing carbon and maintaining the balance of gases in the air
- Providing valued habitats and sustaining biodiversity
- Preserving cultural and archaeological heritage; and
- Providing raw materials.

Contamination

Soil contamination can come in many forms and from many sources. However, not all are of concern within the Glenmore and Cairngorm areas. While contamination from metals, organic chemicals, radioactive substances and pathogens may exist within area, they are not of an order that is likely to cause significant harm to the environment and can therefore be scoped out of the assessment.

Because of its potential effects on habitat and biodiversity, soil acidification is however of significance. Typically, this pollution originates from gaseous emissions of sulphur dioxide and oxides of nitrogen, which are dissolved in rainwater to form sulphuric and nitric acids which subsequently are deposited on soil, causing soil acidification. Excess nitrogen deposition can also lead to soil eutrophication.

Acidification and eutrophication impacts are often greatest in upland areas as a result of high rainfall and are exacerbated by predominantly poorly-buffered and nutrient-poor soils and the greater sensitivity of locally adapted biodiversity to

a change in soil conditions. However, lowland soils, especially those associated with ecosystems of high conservation value, may also be affected by acidification and eutrophication. In addition, fertiliser application in excess of crop nutrient requirements can result in acidification and eutrophication of agricultural and forestry soils (Cundill *et al.* 2011).

Acidification can impact on soil nutrient cycling, causing critical load exceedance and a reduction in the ability of soils to filter contaminants. Further nitrogen additions are also less readily retained in ecosystems where the critical load for nitrogen is exceeded, resulting in 'nitrogen' saturation' (Aber *et al.* 1989; Agren & Bosatta, 1988).

Contaminates may therefore more readily enter water bodies, the acidification of which has been linked with soil acidification in Scotland (Helliwell *et al.* 2001). The impacts of soil acidification on both the biological and chemical quality of water has been observed in the Cairngorms (Soulsby *et al.* 1997). See **Topic 3: Water** (p. 71) for further details.

Soil Erosion

Soil erosion by water or wind is a natural process where soil particles become detached and are transported within the landscape. Features of soil erosion may be found throughout the Cairngorms National Park (**Figure 28**). For example, landslides and debris flows are a relatively common occurrence on many of the National Park's hill slopes, which have been over-steepened by glaciation (Ballantyne, 1986, 2004). The rate of soil loss via erosion and the incidence of landslides can be increased by removing the vegetation cover that protects the soil (e.g. ploughing to grow crops, deforestation) or by engineering works. Tillage erosion also leads to the redistribution of soil downslope (Lilly *et al.* 2011).

The erosion of upland organic (peat) soils is also prevalent in some parts of the National Park, and in particular the Monadhliath Mountains, the southern part of which fall within its boundary. The mechanisms that lead to erosion in these soils are not fully understood although historic overgrazing by sheep and deer may be a contributory factor. There is also evidence that changes in climate over many years may be partly responsible for the development of gully systems in these areas (Lilly *et al.* 2009).

Landslides (in the form of debris flows) have occurred in clusters over the last 7,000 years which may be related to climatic factors such as the frequency of extreme rainfall events, for example, although deforestation is also likely to be an important factor. Debris flows in the Lairig Ghru appear to occur with a return period of around 20 years, with each episode of debris flow activity thought to be linked to intense rain storms (Baird & Lewis, 1957; Innes, 1982; Luckman, 1992). Landslide and debris flow activity is reported to have increased over the last 200–500 years (Innes, 1985; Ballantyne, 2004) and it is thought that localised extreme rainfall was the major contributing factor to the

Scottish landslides in 2004 (Winter *et al.* 2005). Triggering of peat slides is also commonly attributed to intense rainfall events (Dykes & Warburton, 2008).

Climate change (see **Topic 1: Climatic Factors**, p. 59) is therefore likely to lead to an increase in the frequency of landslides and in the intensity of soil erosion (Ballantyne, 2004; Winter *et al.* 2005).

One of the most important factors in the protection of soils from erosion is vegetation cover, as roots bind soil particles together and plants protect soil from direct raindrop impact, as well as disrupting overland flow. Where vegetation cover is sparse, or soils are bare, the incidence of landslides and soil erosion (by wind and water) is greater.

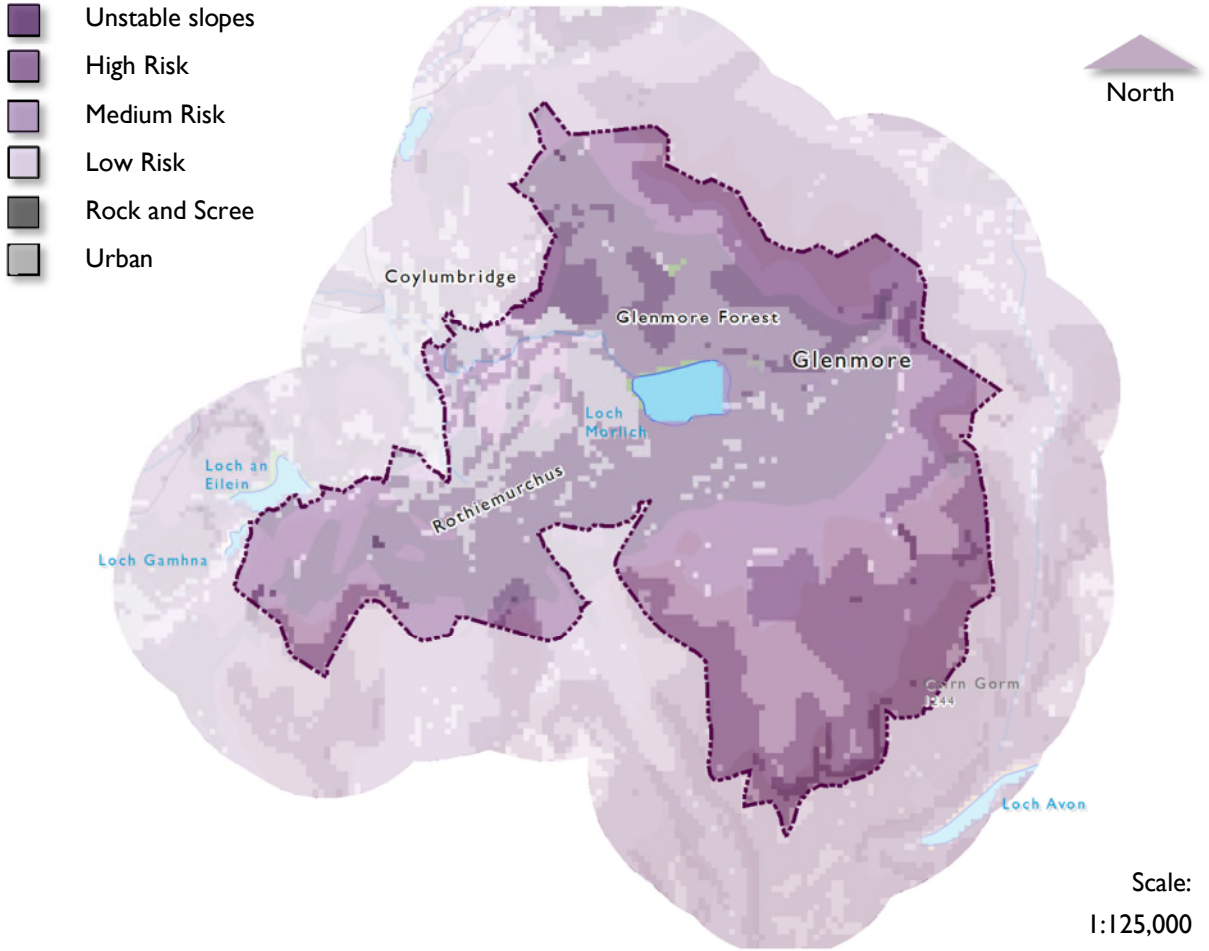


Figure 28 Soil erosion risk within the Glenmore and Cairngorm Area.

In some upland areas of the Cairngorms National Park, heavy grazing by sheep and deer has caused a decline in heather cover which has then been replaced by tussock forming grasses with poorer soil binding abilities. However, one difficulty in establishing links between soil erosion (in particular, the erosion of peat) and grazing is that historic stocking densities, which are generally unknown, may have had more influence on the risk of erosion than current stocking densities. Also, both sheep and deer will preferentially graze specific areas, resulting in localised areas experiencing greater grazing pressures and an increased risk of erosion (Lilly *et al.* 2011).

Estates and upland farms have commonly used burning as a means of controlling vegetation structure and improved heathland productivity. This can cause issues when too much vegetation is removed. Severe burning may even make the surface organic layer of the soil water restent, resulting in greater run-off and greater potential for soil erosion and landslides (Lilly *et al.* 2011).

Given its heavily wooded nature, soil erosion originating from forestry activities is also a significant consideration for the Glenmore area. While in most instances, tree cover has a positive effect on soil erosion, providing vegetation cover and binding soils, certain activities may cause issues. For example, the bed of new drainage ditches can be scoured and run-off during harvesting can remove the loosened soil (Lilly *et al.* 2011).

Due to the area's popularity as a visitor and tourist destination, the effects of recreation must also be given consideration. Hill walking and mountain biking on some hill and upland areas can cause erosion and lead to the extension of paths across sensitive environments where natural regeneration of the vegetation is slow. These areas then become vulnerable to continued erosion (Lilly *et al.* 2011).

Key Messages

The Glenmore and Cairngorm area does not contain any mapped areas of Prime Agricultural Land; it does however have large areas of Carbon Rich soils, which perform important ecosystem services, particularly as a carbon sink. Soil erosion, both natural and through inappropriate land management techniques place many of these soils at risk.

There is little evidence of soil contamination within the area, however inappropriate development may lead to instances, which in turn may have a negative effect on water quality.

The Strategy may have an effect on soil quality, particularly through its influence on the distribution of development within the area.

Inter-relationships with other topics

- Topic 1: Climatic Factors 59
- Topic 3: Water 71
- Topic 5: Material Assets 90
- Topic 6: Biodiversity, Fauna and Flora 99
- Topic 7: Landscape and Cultural Heritage 144
- Topic 8: Population and Human Health 157

Topic 5: Material Assets

In SEA terms Material Assets may cover a range of apparently disparate environmental concerns, including natural resources, geodiversity, waste, infrastructure and property. Many can be scoped out of the SEA for the Glenmore and Cairngorm Strategy, while others may be dealt with under other topics. For example, soil and water are covered by their own topics. The issues covered within this section therefore, are:

- Geoconservation; and
- Transport infrastructure.

Geoconservation

> "…*geological heritage constitutes a natural heritage of scientific, cultural, aesthetic, landscape, economic and intrinsic values, which needs to be preserved and handed down to future generations.*"
>
> Council of Europe (2004).

Geoconservation involves recognising, protecting and managing sites and landscapes identified as important for their rocks, fossils, minerals, or other geological or geomorphological features of interest. Some of the concepts of geoconservation are still being developed; however, in some areas a good deal has been achieved, particularly in the creation of the UK Geodiversity Action Plan (UK GAP) and Scotland's Geodiversity Charter.

There are many definitions of 'geodiversity', but the majority are variations on similar wording (see Gray, 2008, 2013; Sharples, 1993). Broadly, it may be defined as:

"*The variety of rocks, minerals, fossils, landforms, sediments and soils, together with the natural processes which form and alter them*" (Bruneau *et al.* 2011, p. 3).

As well as being of scientific and cultural importance, geodiversity makes an immense contribution to Scotland's economy, as a source of energy and materials, and as a visitor attraction through its contribution to our unique landscape. Crucially, geodiversity underpins biodiversity through providing mosaics of landforms, soils, water, nutrients and natural processes to support our nationally and internationally important habitats, species and ecosystems (Scottish Geodiversity Forum, 2013; Bruneau *et al.* 2011; Gordon *et al.* 1998, 2001; Haynes, *et al.* 1998; Jonasson *et al.* 2005).

Protecting Geodiversity

There are a range of designations that help to safeguard geodiversity within the Cairngorms National Park, including Sites of Special Scientific Interest (SSSI) and Geological Conservation Review (GCR) Sites. Indeed, geodiversity is part of the special qualities of the National Park.

The landscapes of the Cairngorms National Park have a remarkable history stretching back to some 700 million years. The processes that have led to these old landscapes can be traced today in the rocks, landforms and soils beneath our feet and in the shapes of the straths and mountains around us (Gordon *et al.* 2006; Thomas *et al.* 2004). These landscapes incorporate a wealth of information about past environmental change and in particular, the Cairngorm Mountains are considered to be one of the finest examples in the world of glaciated granite mountains, notable for their distinctive plateau surfaces, tors and glacially sculptured features. These mountains therefore represent a precious scientific, educational, environmental and Earth heritage asset (Kirkbride *et al.* 2010).

There are 6 Mixed SSSI (sites with both biological and geological notifiable features) within the close proximity of, covering an area of some 553 km^2 (see **Figure 37**, p. 103).

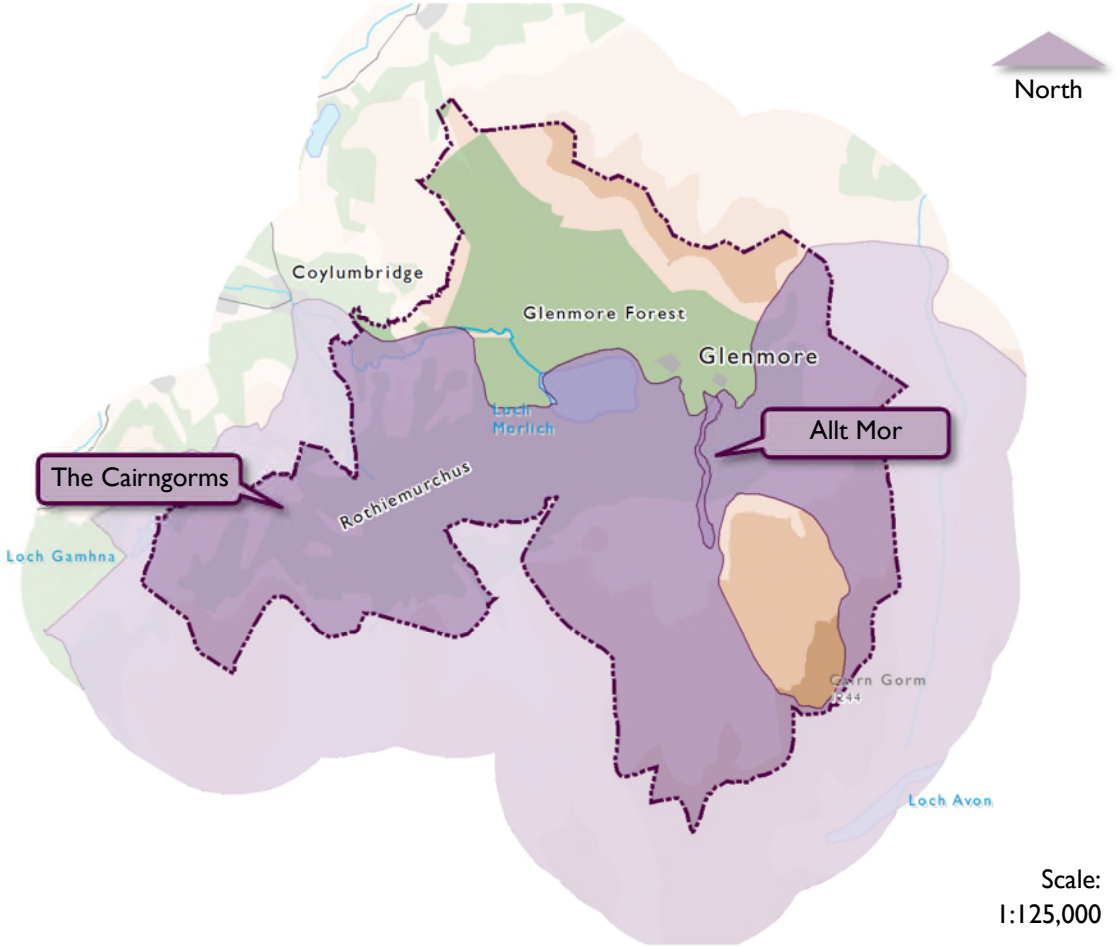


Figure 29 Geological Conservation Review Sites within the Glenmore and Cairngorm area.

Further protection is given to The Cairngorms and Allt Mor Geological Conservation Review sites (**Figure 29**).

The The Cairngorms GCR site covers most of the Cairngorm Plateau and overlaps a large part of the Glenmore and Cairngorm Strategy area. The site covers an area of approximately 526 km^2 and is listed for its exceptional assemblage of pre-glacial, glacial, glaciofluvial and periglacial features. Together these features provide a great wealth of information for interpreting landscape evolution and environmental change in the uplands during the Quaternary.

Allt Mor covers an area of 34.43ha and is entiarly located within the Glenmore and Cainrgorm area. The site represents an excellent example of a steep mountain torrent whose flood history and planform adjustment (channel position) has been reconstructed over the last 40 years.

SNH along with the BGS have also compiled a detailed spatial inventory of the geomorphology of the Cairngorm Mountains core area, which also includes around two thirds of the area covered by the Glenmore and Cairngorms Strategy (Kirkbride & Gordon, 2010) (**Figure 30**).

The inventory identifies the location and extent of the main landform assemblages: landforms of glacial erosion; landforms of glacial and glaciofluvial deposition; relict periglacial landforms; and postglacial and contemporary landforms and processes. The spatial data is complemented by descriptions of the landforms and additional information on larger landscape features, the survival of relict non-glacial features and details of Lateglacial and Holocene palaeoenvironmental records. Together, they provide a basic source of information for the development of conservation management and interpretation of the Cairngorm Mountains.

The inventory highlights that understanding the links between geodiversity and biodiversity is particularly crucial for conservation management in dynamic environments such as the Cairngorm Mountains, where natural processes (e.g. floods, sediment transport and flow regimes) maintain habitat diversity and ecological functions. It also highlights that consideration of geomorphological sensitivity is a vital part of working in sympathy with natural processes, in assessing natural hazards and implementing sustainable management of ecosystems, particularly under future climate change scenarios.

The inventory recommends that geomorphology is integrated in current monitoring programmes in the Cairngorm Mountains and that much more could be done to raise wider awareness of geodiversity interests within the overall framework for interpretation within the

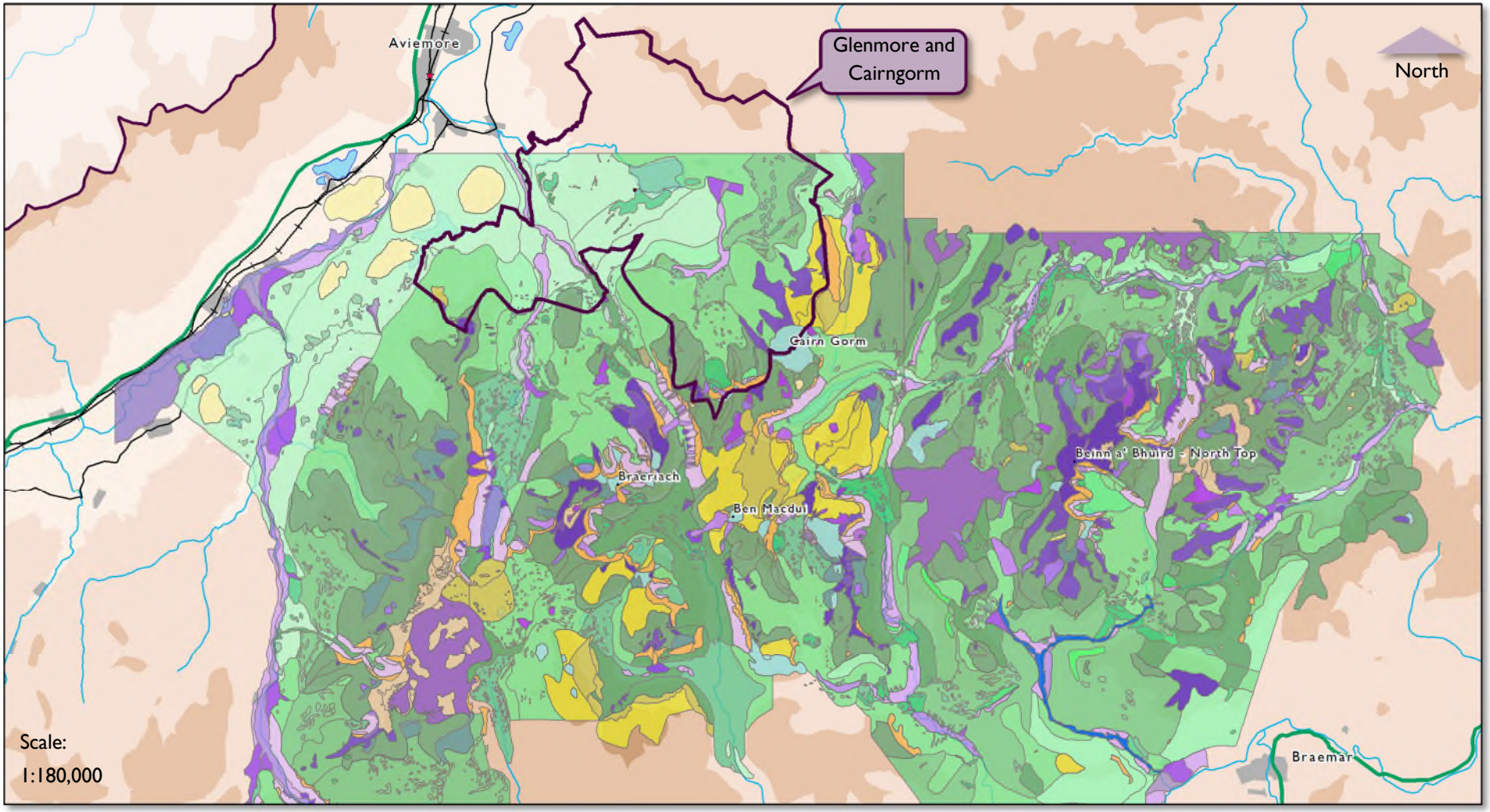


Figure 30 Geomorphological heritage of the Cairngorm Mountains (legend on p. 98).

Postglacial and contemporary landforms and processes

- Active river corridor
- Debris cone
- Debris slope
- Large scale rockfall deposits
- Partially vegetated wind stressed surface
- Peat
- Postglacial active alluvial fan surface
- Postglacial relict alluvial fan surface
- Postglacial river terraces and alluvium
- Semi-permanent snow patch and melt-out deposits
- Snow avalanche modified debris slope
- Sparse vegetation
- Wet flushes and snowmelt drainage
- Wetland

Relict periglacial landforms

- Blockfield
- Boulder lobes
- Patterned ground
- Rock glacier deposits
- Solifluction sheets and lobes

Landforms of glacial erosion

- Corrie headwall
- Ice-scoured bedrock
- Roche moutonnée
- Thin regolith covered rock

Landforms of glacial and glaciofluvial deposition

- Boulder and drift limit
- Delta deposit
- Dissected drift
- Eskers
- Former lake shoreline
- Ice-contact slope
- Ice-marginal kame
- Kames and kettled kame
- Kettle hole
- Meltwater channel (bedrock)
- Meltwater channel (drift)
- Moraine
- Moraine limit
- Undifferentiated drift
- Undifferentiated glaciofluvial deposits
- Undifferentiated ice-marginal deposits

Other landform types

- Rock outcrop
- Stable vegetated surface
- Tor

Cairngorms National Park. Issues include raising awareness of geodiversity *per se*, as well as the links between geodiversity and other elements of the landscape and land use (Kirkbride & Gordon, 2010).

Within the context of the National Park, the diversity of Earth heritage interests also offers potential opportunities for local involvement in income-generating tourism.

Transport Network

Road

The National Park benefits from relatively good transport infrastructure and services compared to many other rural areas in Scotland. Four A Class roads, namely the A9, A93, A95 and A86 connect the area with Inverness, Moray, Aberdeenshire, Perth and Kinross and the West Coast.

The A9 (**Figure 31**) is currently the subject of the A9 Dualling Strategy, which aims to link up the road's existing sections of dual carriageway to create a continuous Category 7 All Purpose Dual Carriageway between Inverness and Perth.

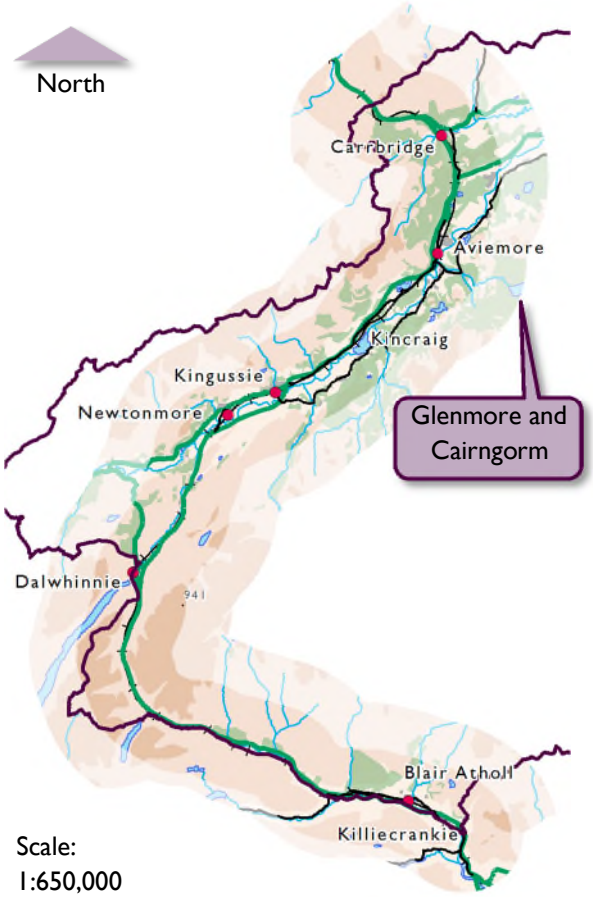


Figure 31 The A9 in the Cairngorms National Park.

It's one of the biggest infrastructure projects in Scotland's history and will involve the:

- Full grade separation of junctions to remove at-grade junctions;
- Grade separated junctions to provide direct links, over and under, the A9 for non-motorised user crossing / access;
- No gaps in the central reserve, to prevent right-turns across carriageways;
- Hard shoulder strips at least 1m width;
- Route, signage and lighting design to minimise overall visual impact (Transport Scotland, 2013, p. 1).

Once complete, the project is anticipated to provide the following benefits:

- Improved road safety and reduction in accident severity;
- Improved journey times and reliability;
- Safe crossing points to link non-motorised user touts and public transport facilities;
- Improved access to tourist and recreation sites;

- Improved trunk road transport infrastructure supporting sustainable economic growth, and resilience to climate change (Transport Scotland, 2013, pp. 1-2).

It is therefore anticipated that the programme could have implications for the Glenmore and Cairngorm area, which may result in cumulative or in-combination effects that demand consideration.

The reliance on the National Park's road infrastructure is demonstrated through the relatively high instances of car ownership within the National Park (**Figure 32** and **Figure 33**). According to the 2011 Census around 85% of households had access to a car or van, which is higher than the Scottish level of around 70%. Consequently, Glenmore and Cairngorm are easily accessible to a large proportion of the area's population and any improvements could lead in an increase in car journeys to the area.

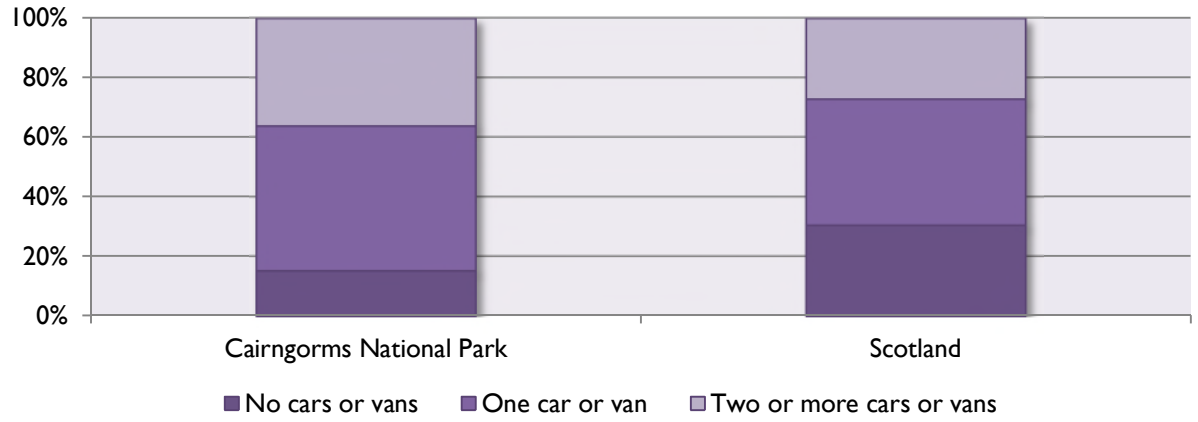


Figure 32 Proportion of households with access to a car or van (Census table LC1401SC).

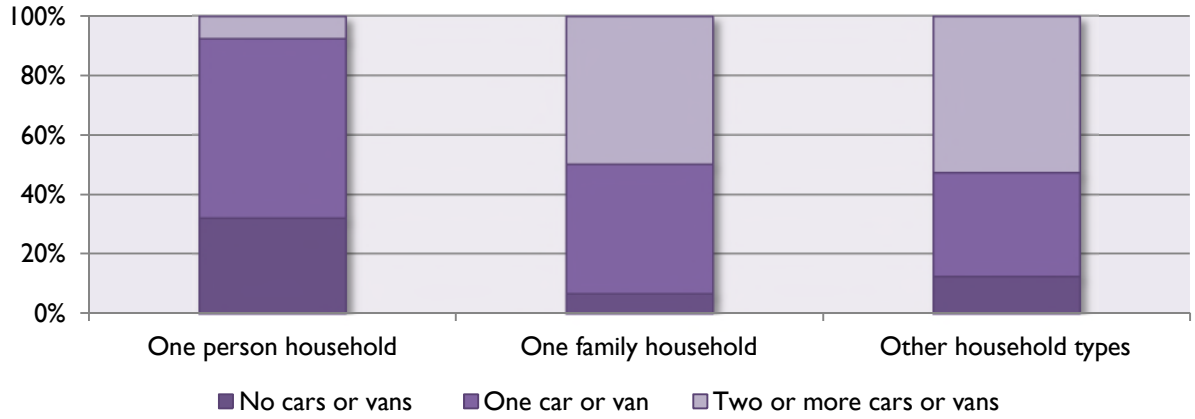


Figure 33 Household composition by car or van availability in the Cairngorms National Park (Census table LC1401SC).

For further information on variables, see www.scotlandscensus.gov.uk/variables.

Rail

The Highland Main Railway Line which runs between Inverness and Perth runs through the National Park, with stations at Carrbridge, Aviemore, Kingussie, Newtonmore, Dalwhinnie and Blari Atholl. Much of the line is single track, and trains coming in opposite directions are often timed to arrive at stations at the same time, where crossing loops permit them to pass.

If the annual passenger usage at stations, which is based on sales of tickets, is taken as an indicator of the overall use of the line, then there is an indication that its popularity has increased significantly within the National Park over the last 10 years (**Figure 34** and **Table 9**).

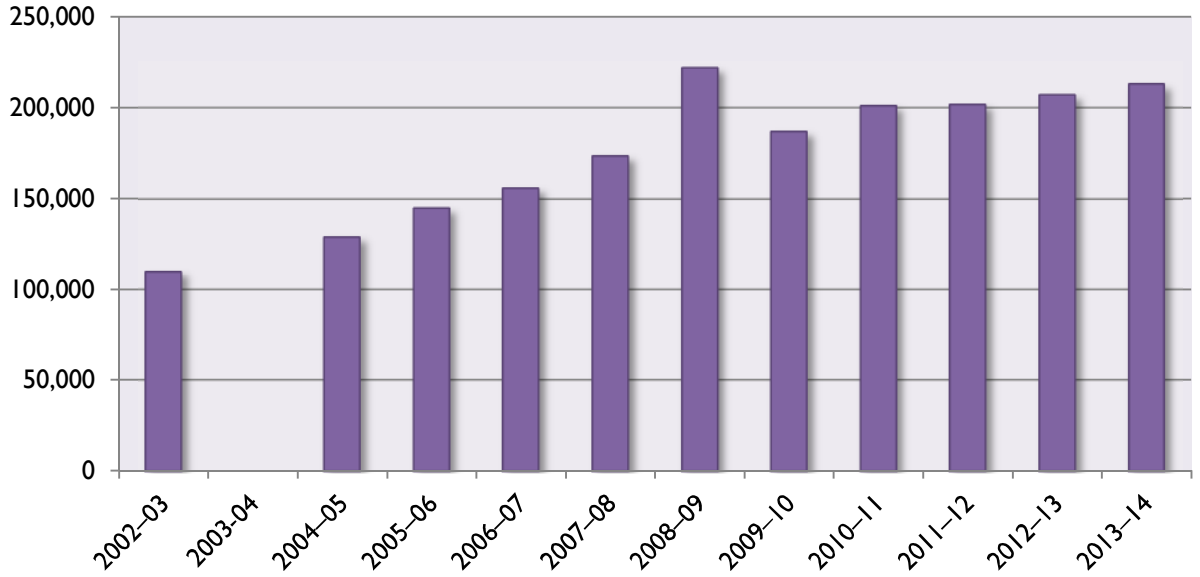


Figure 34 Total annual passenger usage within the Cairngorms National Park (Office of Rail and Road, 2014). No data is available for 2003-04.

Table 9 Annual passenger usage at stations within the Cairngorms National Park (Office of Rail and Road, 2014).

Name	2002–03	2004–05	2005–06	2006–07	2007–08	2008–09	2009–10	2010–11	2011–12	2012–13	2013–14
Carrbridge	1,531	1,910	2,987	3,954	5,438	4,232	4,500	5,118	5,636	4,454	5,540
Aviemore	70,272	80,977	91,456	101,294	115,431	152,528	124,972	132,336	132,052	136,456	141,311
Kingussie	23,815	27,725	30,045	32,135	33,416	42,618	35,838	38,544	40,298	40,954	41,400
Newtonmore	4,184	5,396	6,815	6,631	7,060	8,358	7,972	9,484	9,406	8,958	8,326
Dalwhinnie	2,066	1,619	2,013	1,774	1,975	2,644	2,208	1,894	1,984	2,172	2,472
Blair Atholl	8,313	11,708	11,896	10,491	10,443	11,716	11,572	13,948	12,608	14,280	14,084
Total	110,181	129,335	145,212	156,279	173,763	222,096	187,062	201,324	201,984	207,274	213,133

Key Messages

Material assets cover a wide range of environmental concerns.

The Strategy's area falls within the Cairngorms GCR site which is listed for its exceptional assemblage of pre-glacial, glacial, glaciofluvial and periglacial features. Furthermore, detailed mapping of much of the area's geomorphology is available.

Transport infrastructure, while good along the National Park's main corridors, is poor elsewhere in the National Park. The development of new infrastructure, in particular the dualling of the A9, may result in cumulative effects when implemented alongside the Strategy.

Rail use is on the increase, although the reliance on private transport remains high.

Inter-relationships with other topics

- Topic 1: Climatic Factors 59
- Topic 2: Air 67
- Topic 3: Water 71
- Topic 4: Soil 80
- Topic 6: Biodiversity, Fauna and Flora 99
- Topic 7: Landscape and Cultural Heritage 144
- Topic 8: Population and Human Health 157

Topic 6: Biodiversity, Fauna and Flora

> "*Biodiversity – the variety of Life on Earth – makes our planet habitable and beautiful. We depend on it for food, energy, raw materials, air and water that make life possible and drive our economy. We look to the natural environment for equally important things like aesthetic pleasure, artistic inspiration and recreation.*"
>
> European Commission Natura 2000.

The Cairngorms National Park is a haven for nature and wildlife and is of great significance for Scotland and the UK. The National Park covers less than two per cent of the UK landmass but is home to 25% of its rare animal, insect, lichen, fungi and insect species. The habitats around Glenmore and Cairngorm are rich and varied and include the montane alpine plants high on the Cairngorms plateaux, the sources of tributaries to the renowned salmon river of the Spey and ancient Caledonian forest, which support rare insects and fungi.

Protected Areas

Protected areas represent the very best of Scotland's landscapes, plants and animals, rocks, fossils and landforms. Their protection and management will help to ensure that they remain in good health for all to enjoy, both now and for future generations.

The Glenmore and Cairngorm area is home to a number of areas designated to meet the needs of international directives and treaties, national legislation and policies as well as more local needs and interests.

National Designations

National designations cover a range of different types of protected area, including Natural Nature Reserves (NNR) and Sites of Special Scientific Interest (SSSI), both of which are located within the Cairngorms National Park. The National Park is also home to a number of non-statutory protected sites, such as the RSPB reserve at Loch Garten.

National Nature Reserves

NNRs are statutory nature reserves designed under Part III of the National Parks and Access to the Countryside Act 1949. Most reserves have habitats and species that are nationally or internationally important so the wildlife is managed very carefully. However, people are also encouraged to enjoy NNRs too and so most have some form of visitor facilities that are designed to ensure recreational activities are not pursued without heed for the wildlife and habitat that exists there.

There are 4 NNRs (**Table 10** and **Figure 35**) in close proximity to the Glenmore and Cairngorm Area, which cover a combined area of around 448 km^2. Individually, they vary considerably in size and at around 25,964 ha, Cairngorms NNR is currently the largest NNR in the UK and one of the largest nature reserves in Western Europe.

The NNRs are run by a range of organisations. For example, most of the Abernethy are managed as part of RSPB reserves, while the Cairngorms NNR is owned by 5 separate landowners, including the RSPB, National Trust and SNH.

Table 10 National Nature Reserves in the Cairngorms National Park.

Site Code	Name	Year Est.	Area (ha)
5013	Cairngorms	1954	25,963.63
5020	Craigellachie	1960	257.46
10097	Invereshie and Inshriach	2007	3,730.86
10098	Glenmore	2007	2,119.49
10099	Abernethy	2007	12,753.81

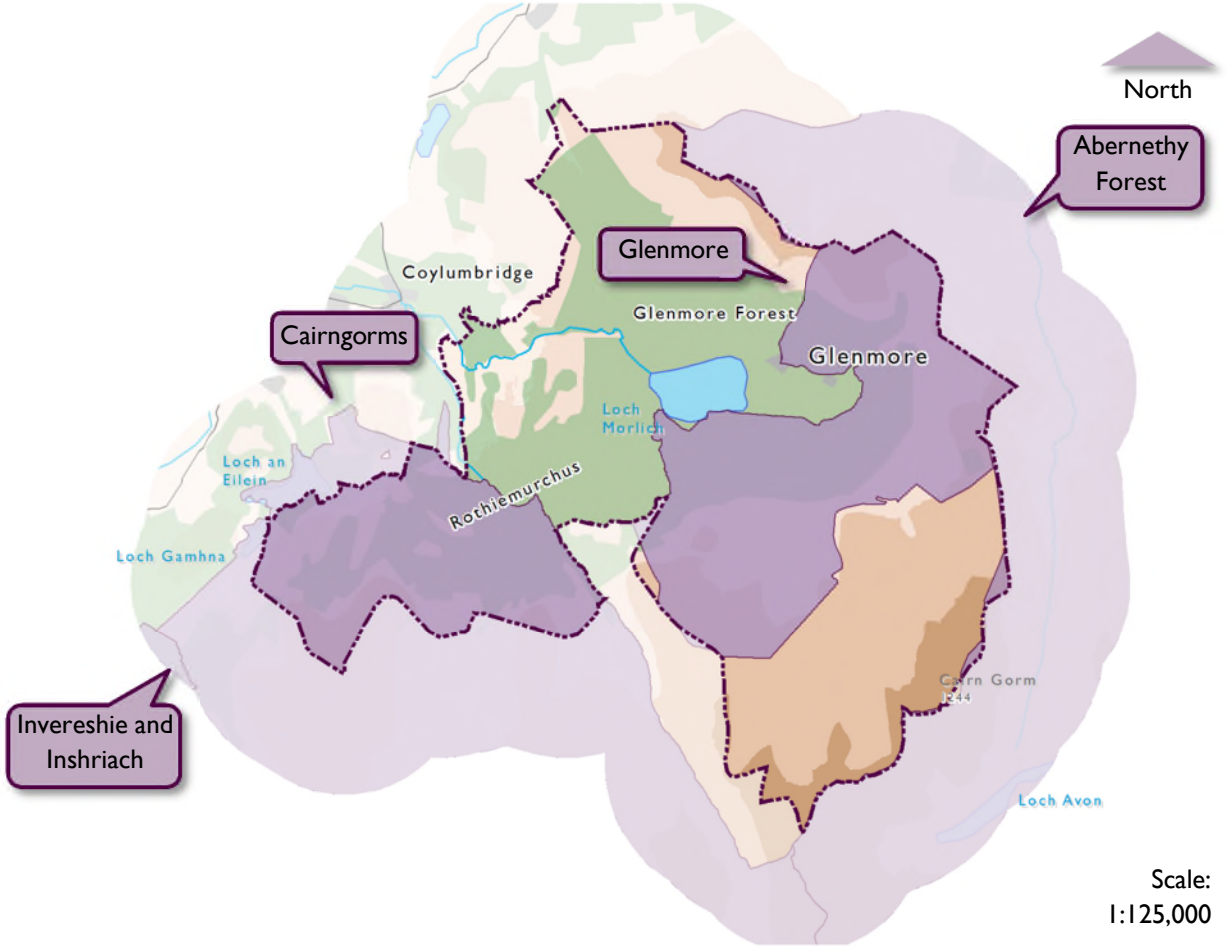


Figure 35 National Nature Reserves in the Cairngorms National Park.

Sites of Special Scientific Interest

Designated under the Nature Conservation (Scotland) Act 2004, SSSIs are those areas of land and water that SNH considers to best represent Scotland's natural heritage - its diversity of plants, animals and habitats, rocks and landforms, or a combinations of such natural features (see **Figure 36** and **Figure 37**).

They are the essential building blocks of Scotland's protected areas for nature conservation and therefore many are also designated as Natura 2000 sites.

Only SSSIs designated with biological (i.e. flora and fauna) notifiable features are considered under this sections (**Table 11**). SSSIs designated solely for geological or physiographical features are therefore not covered and **Topic 4: Soil** (p. 80) and **Topic 5: Material Assets** (p. 90) should be consulted for further information.

Table 11 Condition of Biological and Mixed SSSIs located within the Glenmore and Cairngorm area.

Site Code	Name	Type	Total Area (ha)	Area in CNP (ha)	Biological Features in Favourable Condition	Biological Features in Unfavourable Condition
9	Abernethy Forest	Mixed	5793.46	5793.46	Native pinewood; Basin fen; Raised bog; Crested tit; Capercaillie; Osprey; Breeding bird assemblage; Vascular plant assemblage; Fungi assemblage; Lichen assemblage; Invertebrate assemblage; Beetle assemblage; Dragonfly assemblage.	Subalpine dry heath.
53	Alvie	Biological	339.01	339.01	Invertebrate assemblage; Goldeneye.	Upland oak woodland.
288	Cairngorms	Mixed	29226.7	29226.70	Breeding bird assemblage; Bryophyte assemblage; Dotterel; breeding, Fungi assemblage; Golden eagle, breeding, Invertebrate assemblage, Native pinewood, Dystrophic and oligotrophic lochs, Ptarmigan. Breeding; Snow bunting, breeding; Vascular plant assemblage.	

Site Code	Name	Type	Total Area (ha)	Area in CNP (ha)	Biological Features in Favourable Condition	Biological Features in Unfavourable Condition
428	Craigellachie	Biological	379.85	379.85	Upland birch woodland; Moth assemblage.	
593	Eastern Cairngorms	Mixed	16503.42	16503.42	Dystrophic and oligotrophic lochs, Breeding bird assemblage; Bryophyte assemblage, Vascular plant assemblage; Arctic charr.	Native pinewood; Invertebrate assemblage.
864	Kinveachy Forest	Biological	5325.7	3728.87	Breeding bird assemblage.	Native pinewood.
1241	North Rothiemurchus Pinewood	Mixed	1509.75	1509.75	Breeding bird assemblage; Crested tit; Osprey; Fungi assemblage; Lichen assemblage; Invertebrate assemblage.	Native pinewood.
1243	Northern Corries, Cairngorms	Mixed	1966.37	1966.37	Breeding bird assemblage; Vascular plant assemblage;, Scrub; Upland assemblage.	
1665	Glenmore Forest	Biological	1440.38	1237.26	Capercaillie; Narrow-headed ant; Vascular plant assemblage; Native pinewood.	
1699	River Spey	Mixed	1958.79	346.30	Sea lamprey; Otter	Atlantic salmon; Freshwater pearl mussel.

There are 10 SSSIs within close proximity to Glenmore and Cairngorm. All have biological notifiable features, covering an area of around 610 km^2. Of these, 6 have at least one notifiable feature that is in unfavourable condition.

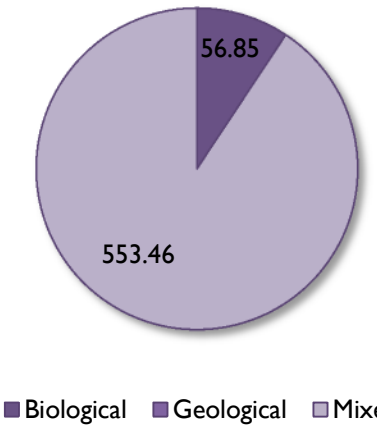


Figure 36 Area (km^2) covered by the three types of SSSI considered within this SEA.

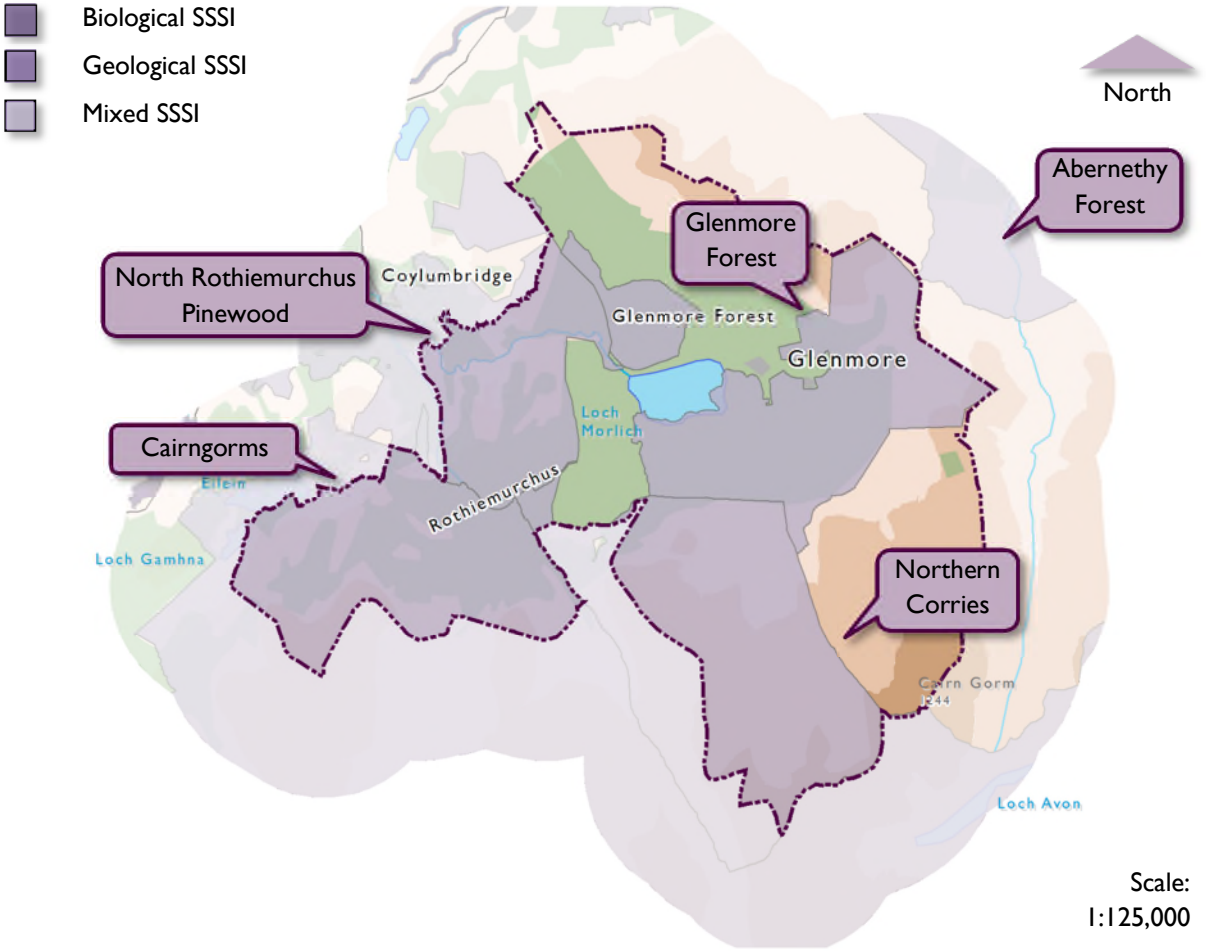


Figure 37 Sites of Special Scientific Interest by type within and overlapping the Glenmore and Cairngorm Area.

Scale:
1:700,000

International Designations

Natura 2000 Network

Nearly half of the Cairngorms National Park is designated within the Natura 2000 network, sites which are considered the best sites for wildlife in Europe.

There are two types of Natura 2000 site within the National Park, namely Special Areas of Conservation (SAC) and Special Protection Areas (SPA).

The following sites have been identified as being potentially at risk from the implementation of the Strategy:

- Abernethy Forest SPA,
- Anagach Woods SPA,
- Cairngorms SAC,
- Cairngorms SPA,
- Cairngorms Massif SPA,
- Craigmore Wood SPA,
- Kinveachy Forest SAC,
- Kinveachy Forest SPA,
- River Spey SAC.

Other sites were considered but rejected at as it is considered that there can be no possible effect upon them. These include, for example, Insh Marshes SAC and the River Spey – Insh Marshes SPA / Ramsar site, because they are deemed to be too far away for there to be any impacts upon the qualifying species and the habitats. Information on each identified site and its qualifying features is outlined in this report.

A simple colour scheme has been used to highlight the condition of qualifying features, the key to which is provided below:

Features in 'Favourable Maintained' or 'Favourable Recovered' condition.
Features that are either in 'Favourable Declining' or 'Unfavourable Recovering' condition.
Features that are in 'Unfavourable Maintained' or 'Unfavourable Declining' condition.
Features that have not been monitored to date.

Special Areas of Conservation

SACs are strictly protected sites designated under the EC Habitats Directive. Article 3 of the Directive requires the establishment of a European network of important high-quality conservation sites that will make a significant contribution to conserving the 189 habitat types and 788 species identified in Annexes I and II of the Directive (as amended). The listed habitat types and species are those considered to be most in need of conservation at a European level (excluding birds). Of the UK's 78 Annex I habitat types (of which 26 are marine and coastal and therefore not relevant to the National Park), 33 occur in the National Park. Of the UK's 33 Annex II species (of which 4 are marine and coastal and therefore not relevant to the National Park), 10 are native to, and normally resident in, the National Park.

There are 3 SACs within close proximity of the Glenmore and Cairngorm area (**Figure 38**), covering an area of around 641 km^2. Of these, 2 have at least one notifiable feature that is in unfavourable condition, while one, namely Kinveachy Forest, has no features in favourable condition.

The relationship of these sites can make it hard to distinguish between them on **Figure 38**. However, only Cairngorms and River Spey SACs overlap the Glenmore and Cairngorms area, with the River Spey SAC's boundary hugging the banks and wetlands of its constituent waterbodies.

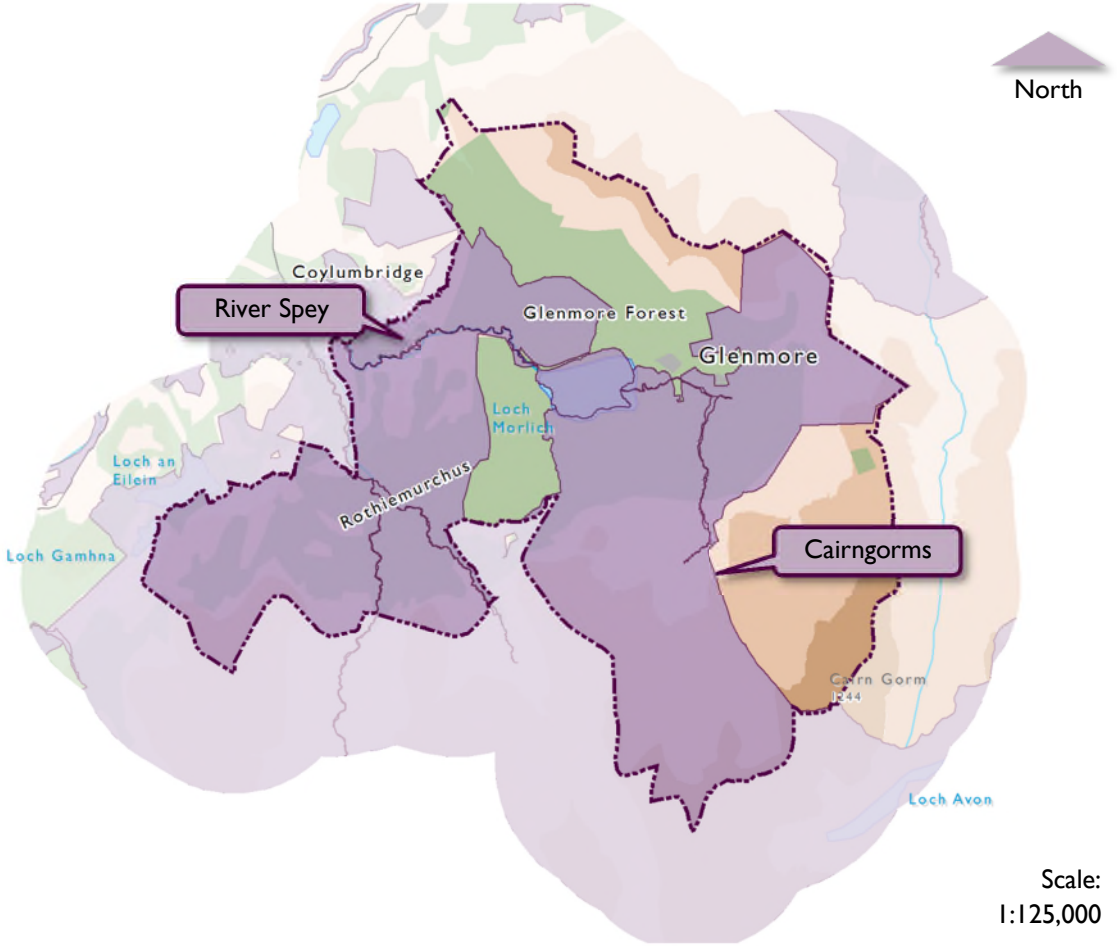


Figure 38 Special Areas of Conservation within the Glenmore and Cairngorm area.

Cairngroms SAC

Local Authority	Aberdeenshire; Highland; Moray
SAC status	Designated 17/03/2005
Latitude	57 04 36 N
Longitude	03 39 15 W
SAC EU code	UK0016412
Area (ha)	57685.02
Area (ha) in CNP	57685.02 (100%)

General site character

Inland water bodies (Standing water, Running water)	2.1%
Bogs, Marshes, Water fringed vegetation, Fens	10%
Heath, Scrub, Maquis and Garrigue, Phygrana	42.7%
Dry grassland, Steppes	2.2%
Humid grassland, Mesophile grassland	1%
Alpine and sub-Alpine grassland	16%
Improved grassland	1%
Other arable land	1%
Broad-leaved deciduous woodland	1%
Coniferous woodland	13%
Mixed woodland	1%
Inland rocks, Screes, Sands, Permanent Snow and ice	8%
Other land	1%

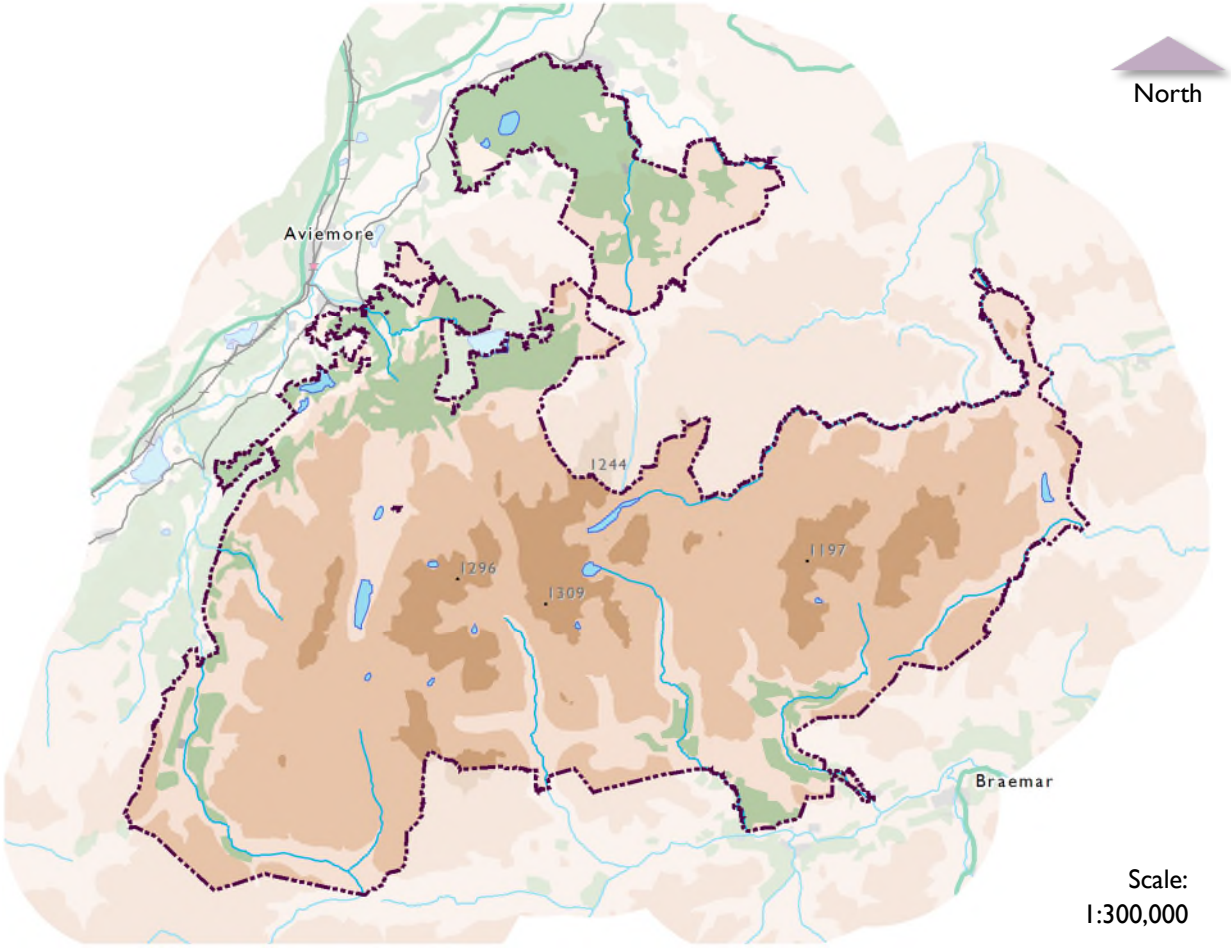


Figure 39 Cairngorms SAC.

Conservation Objectives

Habitats

To avoid deterioration of the qualifying habitats thus ensuring that the integrity of the site is maintained and the site makes an appropriate contribution to achieving favourable conservation status for each of the qualifying features; and

To ensure for the qualifying habitats that the following are maintained in the long term:

- Extent of the habitat on site
- Distribution of the habitat within site
- Structure and function of the habitat
- Processes supporting the habitat
- Distribution of typical species of the habitat
- Viability of typical species as components of the habitat
- No significant disturbance of typical species of the habitat

Status of Qualifying Habitat

Qualifying Habitat	Current Condition	Visit Date
Clear-water lakes or lochs with aquatic vegetation and poor to moderate nutrient levels	Favourable Maintained	23/06/2010
Acid peat-stained lakes and ponds	Favourable Maintained	24/06/2010
Caledonian forest	Unfavourable Declining	27/01/2009
Dry grasslands and scrublands on chalk or limestone	Unfavourable No change	03/04/2007
Blanket bog	Unfavourable No change	03/04/2007
Tall herb communities	Favourable Maintained	03/04/2007
Hard-water springs depositing lime	Favourable Maintained	03/04/2007
Alpine and subalpine heaths	Unfavourable No change	03/04/2007
Dry heaths	Unfavourable No change	03/04/2007
Plants in crevices on acid rocks	Favourable Maintained	03/04/2007
Acidic scree	Favourable Maintained	03/04/2007
Mountain willow scrub	Unfavourable No change	03/04/2007

Species
To avoid deterioration of the habitats of the qualifying species or significant disturbance to the qualifying species, thus ensuring that the integrity of the site is maintained and the site makes an appropriate contribution to achieving favourable conservation status for each of the qualifying features; and

To ensure for the qualifying species that the following are maintained in the long term:

- Population of the species as a viable component of the site
- Distribution of the species within site
- Distribution and extent of habitats supporting the species
- Structure, function and supporting processes of habitats supporting the species
- No significant disturbance of the species

Qualifying Habitat	Current Condition	Visit Date
Wet heathland with cross-leaved heath	Unfavourable No change	03/04/2007
Species-rich grassland with mat-grass in upland areas	Unfavourable No change	03/04/2007
Plants in crevices on base-rich rocks	Unfavourable No change	03/04/2007
Juniper on heaths or calcareous grasslands	Favourable Maintained	03/04/2007
Very wet mires often identified by an unstable 'quaking' surface	Favourable Maintained	08/04/2007
Montane acid grasslands	Unfavourable Recovering	14/07/2006
High-altitude plant communities associated with areas of water seepage	Unfavourable No change	15/10/2006
Bog woodland	Favourable Maintained	05/09/2002

Status of Qualifying Species

Qualifying Species	Current Condition	Visit Date
Green shield-moss (*Buxbaumia viridis*)	Favourable Maintained	02/05/2006
Otter (*Lutra lutra*)	Favourable Maintained	08/09/2004

Kinveachy Forest SAC

Local Authority	Highland
SAC status	Designated 17/03/2005
Latitude	57 14 15 N
Longitude	03 54 00 W
SPA EU code	UK0012759
Area (ha)	2849.36
Area (ha) in CNP	2232.59 (78.4%)

General site character

Inland water bodies (standing water, running water)	0.5%
Bogs. Marshes. Water fringed vegetation. Fens	0.5%
Heath. Scrub. Maquis and garrigue. Phygrana	40%
Humid grassland. Mesophile grassland	1%
Broad-leaved deciduous woodland	9%
Coniferous woodland	49%

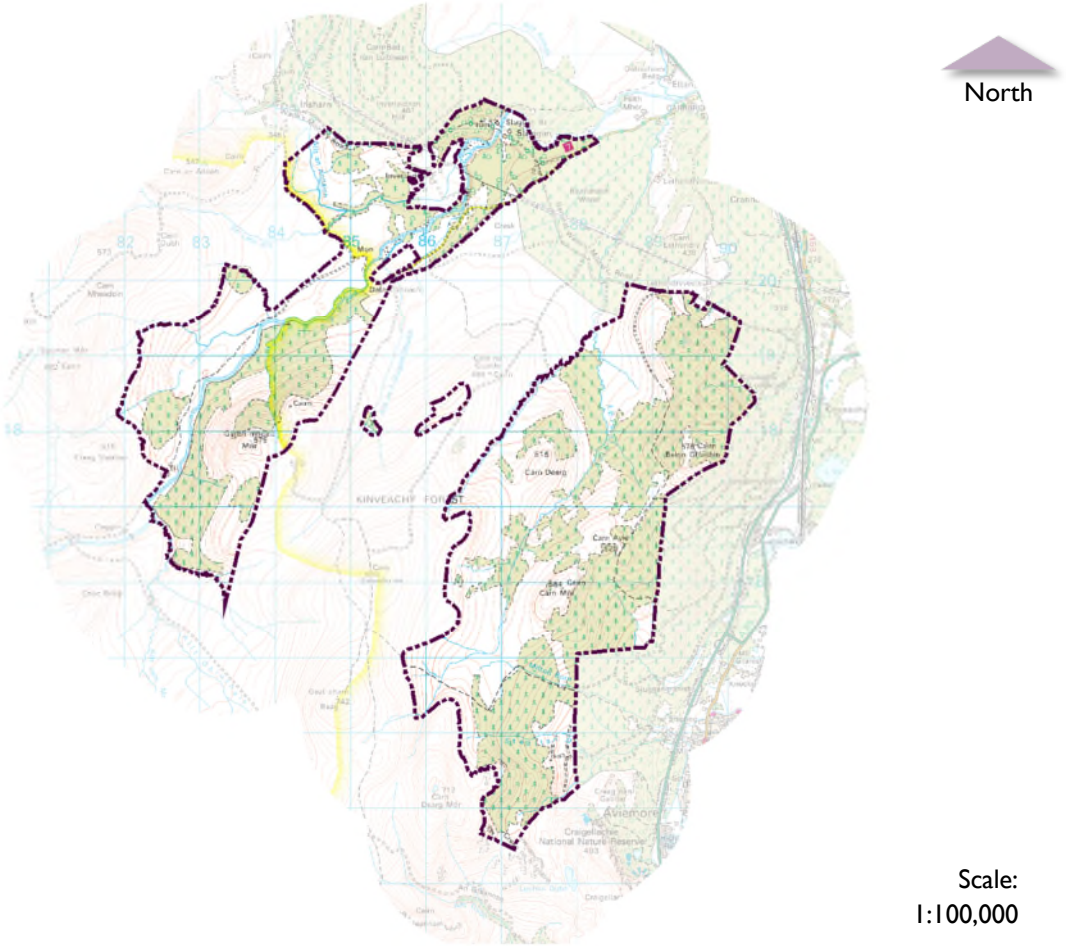


Figure 40 Kinveachy Forest SAC.

Conservation Objectives

To avoid deterioration of the qualifying habitats thus ensuring that the integrity of the site is maintained and the site makes an appropriate contribution to achieving favourable conservation status for each of the qualifying features; and

To ensure for the qualifying habitats that the following are maintained in the long term:

- Extent of the habitat on site
- Distribution of the habitat within site
- Structure and function of the habitat
- Processes supporting the habitat
- Distribution of typical species of the habitat
- Viability of typical species as components of the habitat
- No significant disturbance of typical species of the habitat.

Status of Qualifying Habitat

Qualifying Habitat	Current Condition	Visit Date
Bog woodland	Unfavourable Recovering	24/06/2008
Caledonian forest	Unfavourable Recovering	24/06/2008

River Spey SAC

Local Authority	Highland; Moray; Perth & Kinross
SAC status	Designated 17/03/2005
Latitude	57 22 15 N
Longitude	03 30 00 W
SAC EU code	UK0019811
Area (ha)	5729.48
Area (ha) in CNP	4181.76 (73%)

General site character

Inland water bodies (standing water, running water)	60%
Bogs. Marshes. Water fringed vegetation. Fens	11%
Heath. Scrub. Maquis and garrigue. Phygrana	1%
Humid grassland. Mesophile grassland	15%
Improved grassland	4%
Other arable land	1%
Broad-leaved deciduous woodland	5%
Coniferous woodland	1%
Mixed woodland	1%
Other land	1%

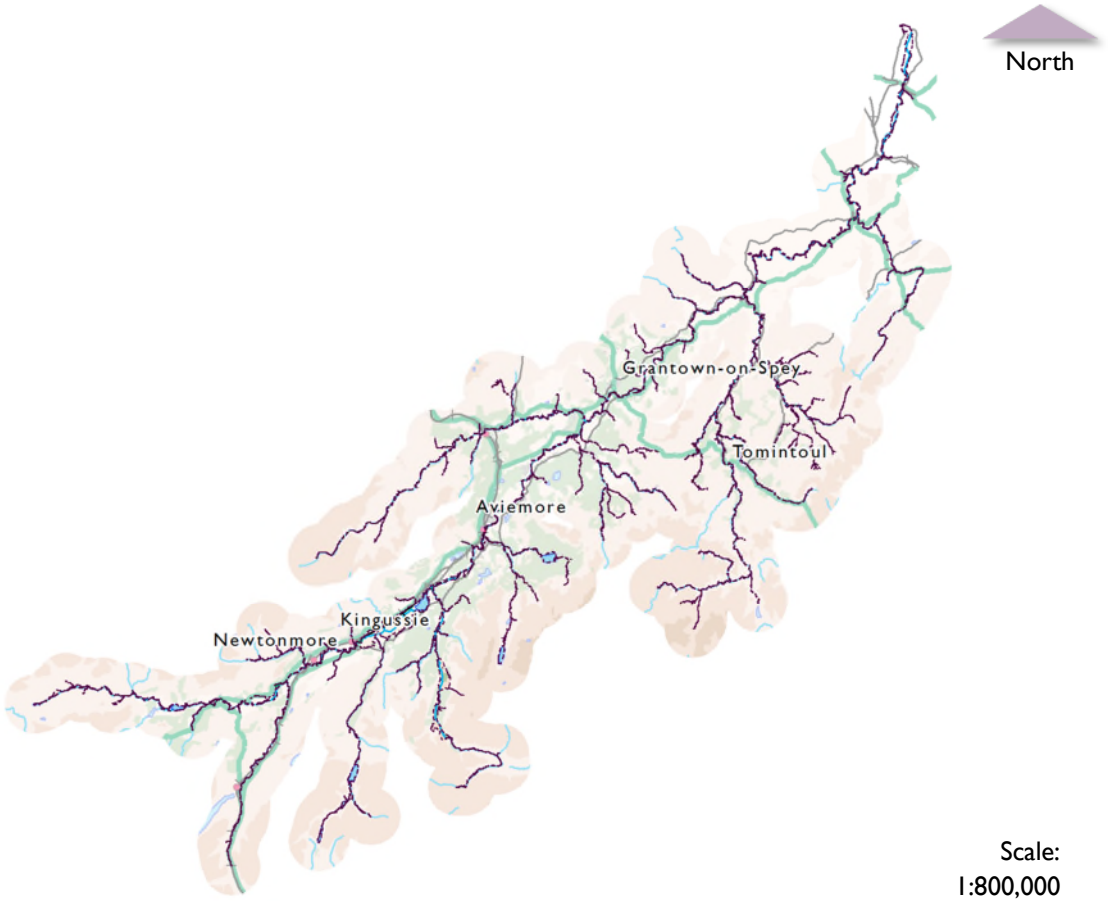


Figure 41 River Spey SAC.

Conservation Objectives

To avoid deterioration of the habitats of the qualifying species or significant disturbance to the qualifying species, thus ensuring that the integrity of the site is maintained and the site makes an appropriate contribution to achieving favourable conservation status for each of the qualifying features; and

To ensure for the qualifying species that the following are maintained in the long term:

- Population of the species, including range of genetic types for salmon, as a viable component of the site
- Distribution of the species within site
- Distribution and extent of habitats supporting the species
- Structure, function and supporting processes of habitats supporting the species
- No significant disturbance of the species
- Distribution and viability of freshwater pearl mussel host species

Status of Qualifying Species

Qualifying Species	Current Condition	Visit Date
Sea lamprey (*Petromyzon marinus*)	Favourable Maintained	07/09/2011
Otter (*Lutra lutra*)	Favourable Maintained	08/09/2004
Atlantic salmon (*Salmo salar*)	Unfavourable Recovering	20/10/2004
Freshwater pearl mussel (*Margaritifera margaritifera*)	Unfavourable Recovering	01/10/2000

- Structure, function and supporting processes of habitats supporting freshwater pearl mussel host species

Special Protection Areas

SPAs are strictly protected sites classified in accordance with Article 4 of the EC Birds Directive. They are classified for rare and vulnerable birds (as listed on Annex I of the Directive), and for regularly occurring migratory species. 35 of these Annex I species can be found within the Cairngorms National Park, with SPAs designated to protect populations of 15 of them.

There are 6 SPAs within close proximity of Glenmore and Cairngorm (**Figure 42**), covering an area of around 1,917 km^2. Of these, 2 have at least one notifiable feature that is in unfavourable condition and of these one, namely Craigmore Wood, has no features in favourable condition.

With around 1,733 km^2 of its 1,875 km^2 within the National Park, The Cairngorms Massif SPA is the largest single area of protected land within the National Park. There are currently no public records on the condition of the breeding population of Golden eagle (*Aquila chrysaetos*) in the SPA, which is its only qualifying feature.

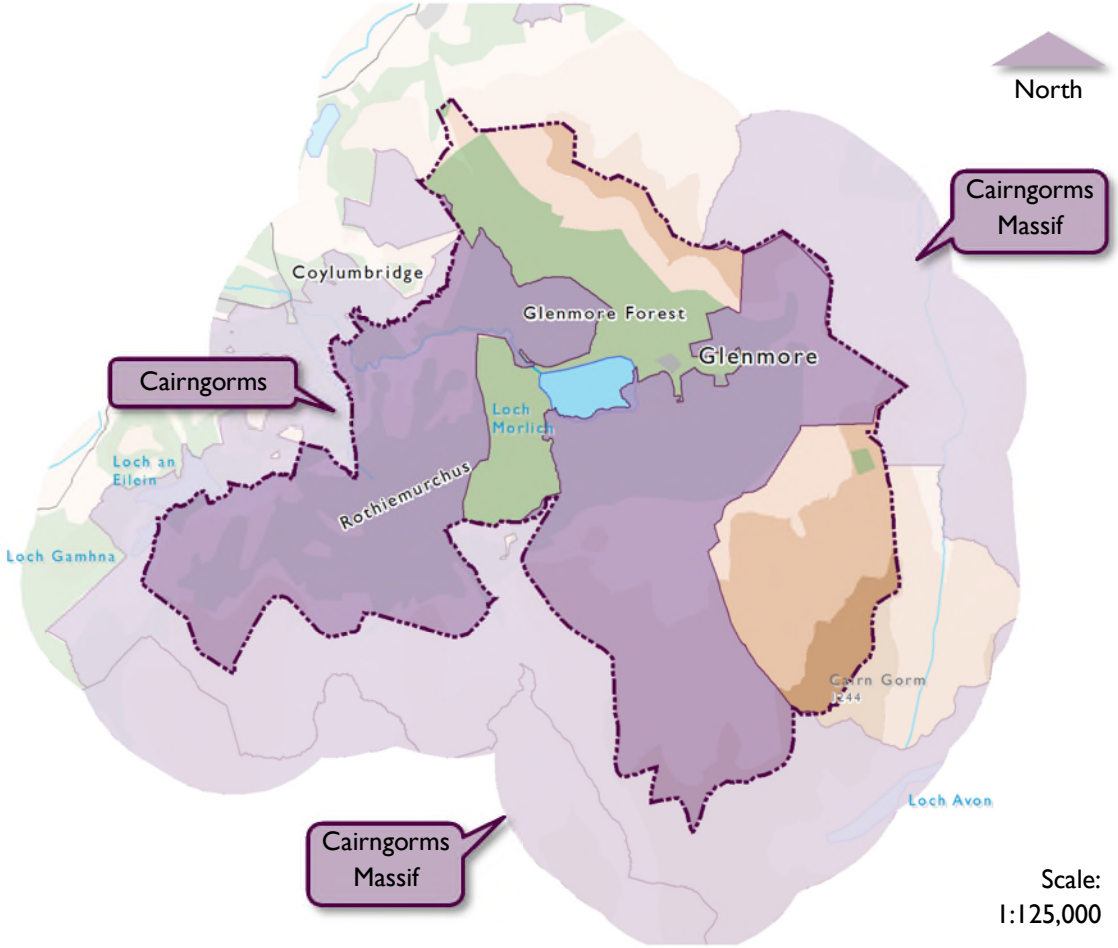


Figure 42 Special Protection Areas within the Glenmore and Cairngorm Area.

Abernethy Forest SPA

Local Authority	Highland
SPA status	Classified 25/04/1990
Latitude	57 13 22 N
Longitude	03 18 10 W
SPA EU code	UK9002561
Area (ha)	5793.46
Area (ha) in CNP	5793.46 (100%)

General site character

Inland water bodies (standing water, running water)	1%
Bogs. Marshes. Water fringed vegetation. Fens	11.2%
Heath. Scrub. Maquis and garrigue. Phygrana	27.6%
Broad-leaved deciduous woodland	0.8%
Coniferous woodland	59.3%

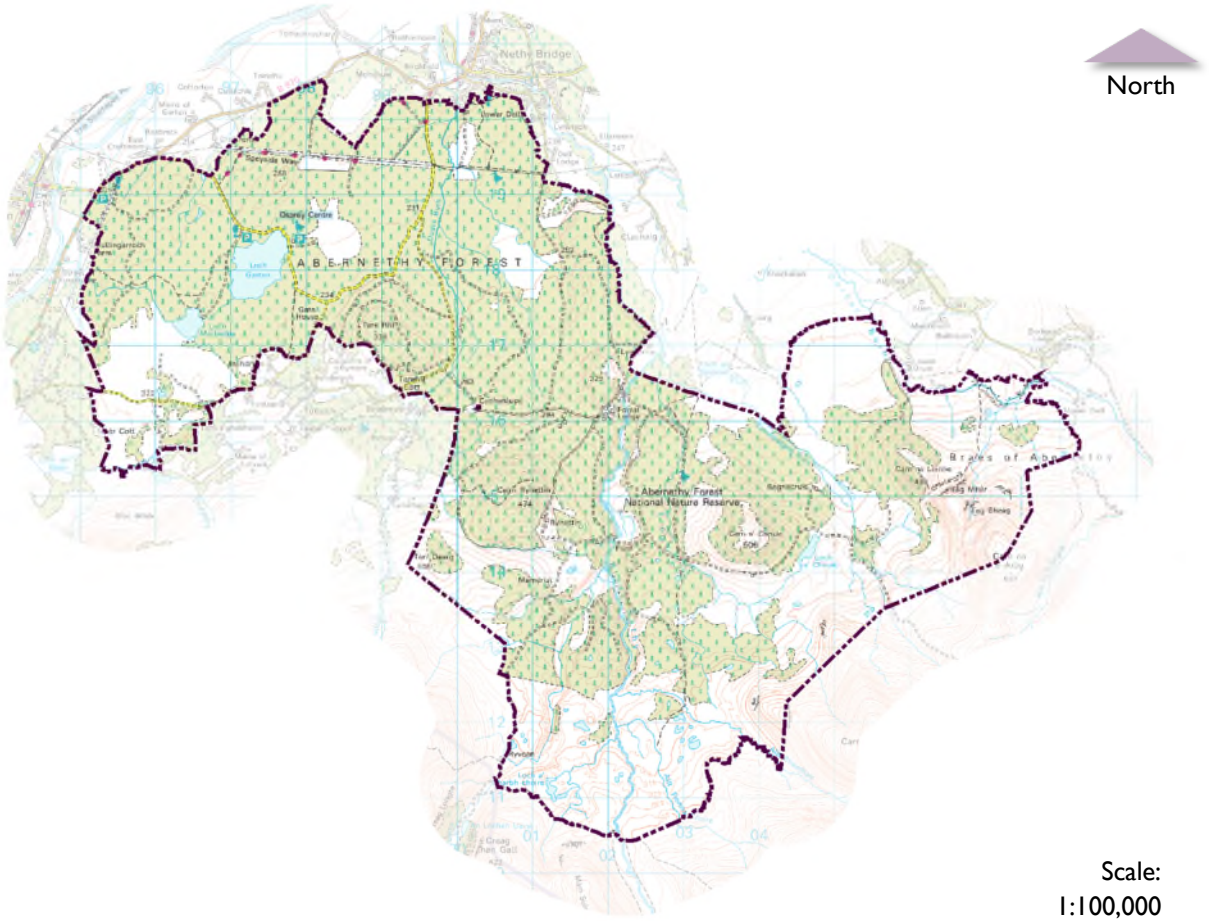


Figure 43 Abernethy Forest SPA.

Conservation Objectives

To avoid deterioration of the habitats of the qualifying species or significant disturbance to the qualifying species, thus ensuring that the integrity of the site is maintained; and

To ensure for the qualifying species that the following are maintained in the long term:

- Population of the species as a viable component of the site.
- Distribution of the species within site.
- Distribution and extent of habitats supporting the species.
- Structure, function and supporting processes of habitats supporting the species.
- No significant disturbance of the species.

Status of Qualifying Species

Qualifying Species	Current Condition	Visit Date
Capercaillie (*Tetrao urogallus*), breeding	Favourable Maintained	28/04/2009
Osprey (*Pandion haliaetus*), breeding	Favourable Maintained	31/05/2007
Scottish crossbill (*Loxia scotica*), breeding	Not monitored to date	N/A

Anagach Woods SPA

Local Authority	Highland
SPA status	Classified 16/03/2006
Latitude	57 19 45 N
Longitude	03 34 30 W
SPA EU code	UK9020297
Area (ha)	392.78
Area (ha) in CNP	392.78 (100%)

General site character

Dry grassland. Steppes	0.8%
Coniferous woodland	95%
Mixed woodland	4%
Other land	0.2%

Conservation Objectives

To avoid deterioration of the habitats of the qualifying species or significant disturbance to the qualifying species, thus ensuring that the integrity of the site is maintained; and

To ensure for the qualifying species that the following are maintained in the long term:

- Population of the species as a viable component of the site.

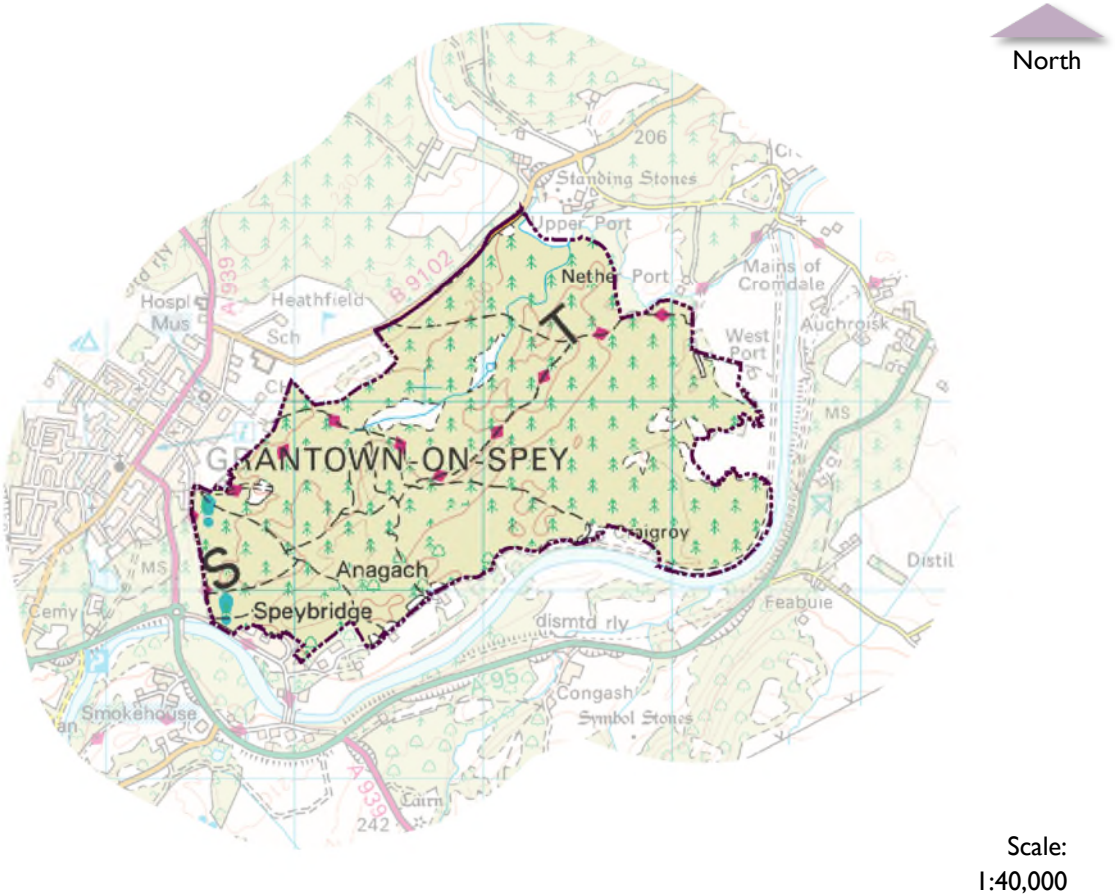


Figure 44 Anagach Woods SPA.

- Distribution of the species within site.
- Distribution and extent of habitats supporting the species.
- Structure, function and supporting processes of habitats supporting the species.
- No significant disturbance of the species.

Status of Qualifying Species

Qualifying Species	Current Condition	Visit Date
Capercaillie (*Tetrao urogallus*), breeding	Favourable Maintained	25/04/2010

Cairngorms SPA

Local Authority	Highland, Aberdeenshire
SPA status	Classified 25/09/1997
Latitude	57 04 30 N
Longitude	03 38 30 W
SPA EU code	UK9002241
Area (ha)	50586.64
Area (ha) in CNP	50586.64 (100%)

General site character

Inland water bodies (standing water, running water)	2%
Bogs. Marshes. Water fringed vegetation. Fens	16%
Heath. Scrub. Maquis and garrigue. Phygrana	44%
Dry grassland. Steppes	2%
Humid grassland. Mesophile grassland	1%
Alpine and sub-alpine grassland	14%
Improved grassland	1%
Other arable land	1%
Broad-leaved deciduous woodland	1%
Coniferous woodland	6%
Mixed woodland	1 %
Inland rocks. Screes. Sands. Permanent snow and ice	5.3%
Other land	1%

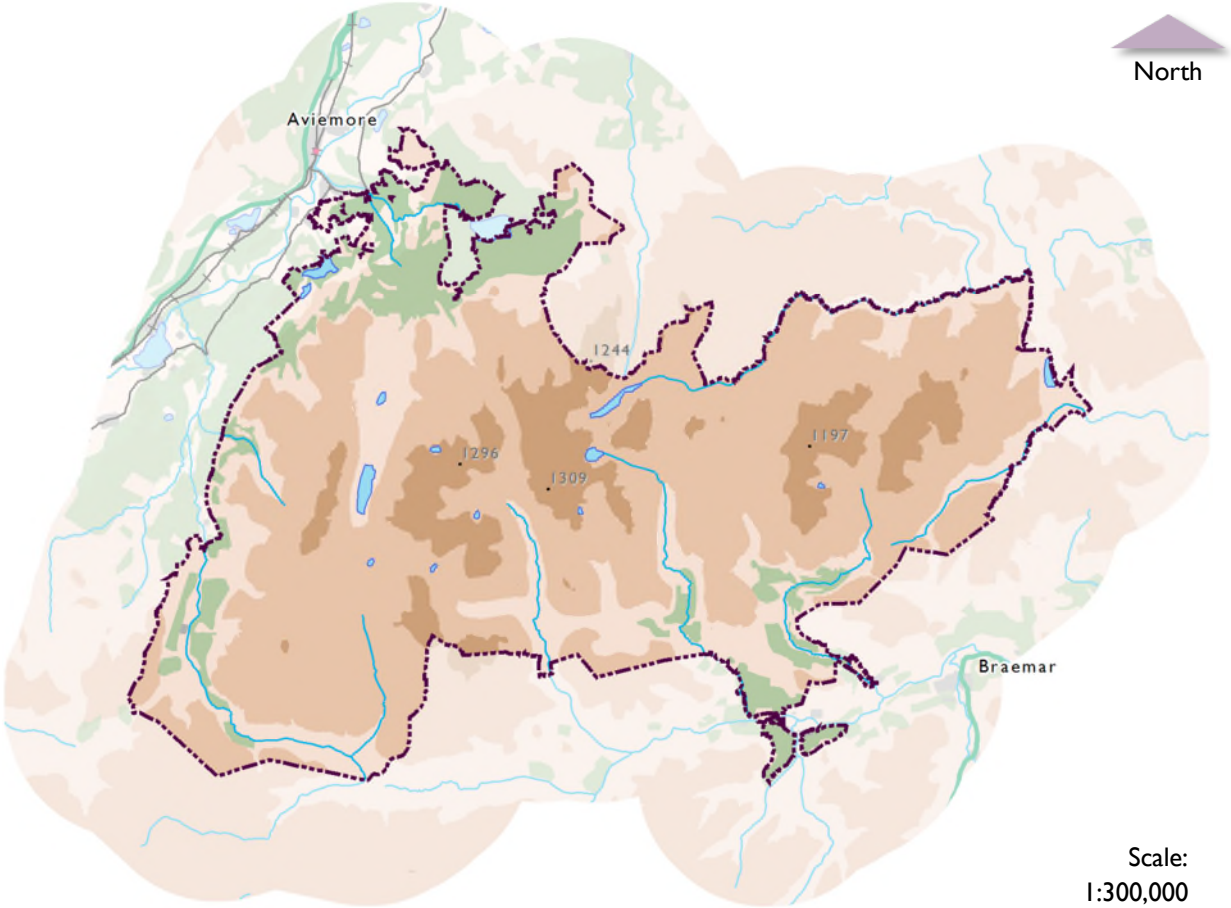


Figure 45 Cairngorms SPA.

Conservation Objectives

To avoid deterioration of the habitats of the qualifying species or significant disturbance to the qualifying species, thus ensuring that the integrity of the site is maintained; and

To ensure for the qualifying species that the following are maintained in the long term:

- Population of the species as a viable component of the site
- Distribution of the species within site
- Distribution and extent of habitats supporting the species
- Structure, function and supporting processes of habitats supporting the species
- No significant disturbance of the species

Status of Qualifying Species

Qualifying Species	Current Condition	Visit Date
Capercaillie (*Tetrao urogallus*), breeding	Favourable Maintained	25/04/2011
Merlin (*Falco columbarius*), breeding	Not monitored to date	N/A
Osprey (*Pandion haliaetus*), breeding	Favourable Maintained	01/06/2006
Golden eagle (*Aquila chrysaetos*), breeding	Favourable Maintained	31/07/2009
Dotterel (*Charadrius morinellus*), breeding	Unfavourable Declining	01/07/2011
Scottish crossbill (*Loxia scotica*), breeding	Not monitored to date	N/A
Peregrine (*Falco peregrinus*), breeding	Favourable Maintained	30/06/2002

Cairngorms Massif SPA

Local Authority	Aberdeenshire, Angus, Highland, Moray, Perth and Kinross
SPA status	Classified 28/10/2010
Latitude	56 58 08 N
Longitude	03 29 29 W
SPA EU code	UK9020308
Area (ha)	187504.06
Area (ha) in CNP	173254.64 (92.4%)

General site character

Inland water bodies (standing water, running water)	0.2%
Bogs. Marshes. Water fringed vegetation. Fens	27.6%
Heath. Scrub. Maquis and garrigue. Phygrana	45.3%
Humid grassland. Mesophile grassland	5.9%
Alpine and sub-alpine grassland	17.8%
Improved grassland	0.1%
Broad-leaved deciduous woodland	0.1%
Coniferous woodland	0.8%
Mixed woodland	1.5%
Inland rocks. Screes. Sands. Permanent snow and ice	0.7%

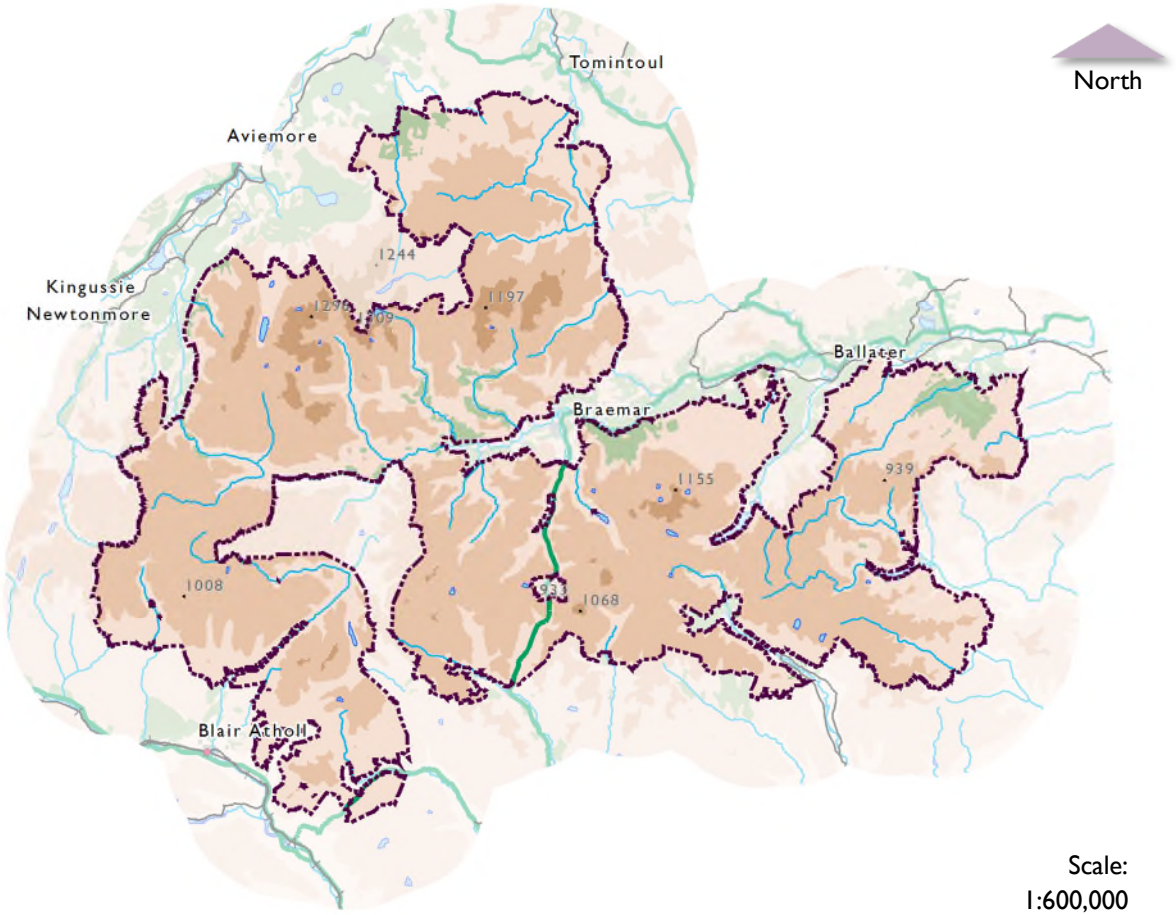


Figure 46 Cairngorms Massif SPA.

Conservation Objectives

To avoid deterioration of the habitats of the qualifying species or significant disturbance to the qualifying species, thus ensuring that the integrity of the site is maintained; and

To ensure for the qualifying species that the following are maintained in the long term:

- Population of the species as a viable component of the site
- Distribution of the species within site
- Distribution and extent of habitats supporting the species
- Structure, function and supporting processes of habitats supporting the species
- No significant disturbance of the species

Status of Qualifying Species

Qualifying Species	Current Condition	Visit Date
Golden eagle (*Aquila chrysaetos*), breeding	Not monitored to date	N/A

Craigmore Wood SPA

Local Authority	Highland
SPA status	Classified 30/10/2001
Latitude	57 17 00 N
Longitude	03 37 00 W
SPA EU code	UK9001801
Area (ha)	654.09
Area (ha) in CNP	654.09 (100%)

General site character

Bogs. Marshes. Water fringed vegetation. Fens	0.5%
Heath. Scrub. Maquis and garrigue. Phygrana	3%
Humid grassland. Mesophile grassland	0.5%
Broad-leaved deciduous woodland	10%
Coniferous woodland	85%
Other land	1%

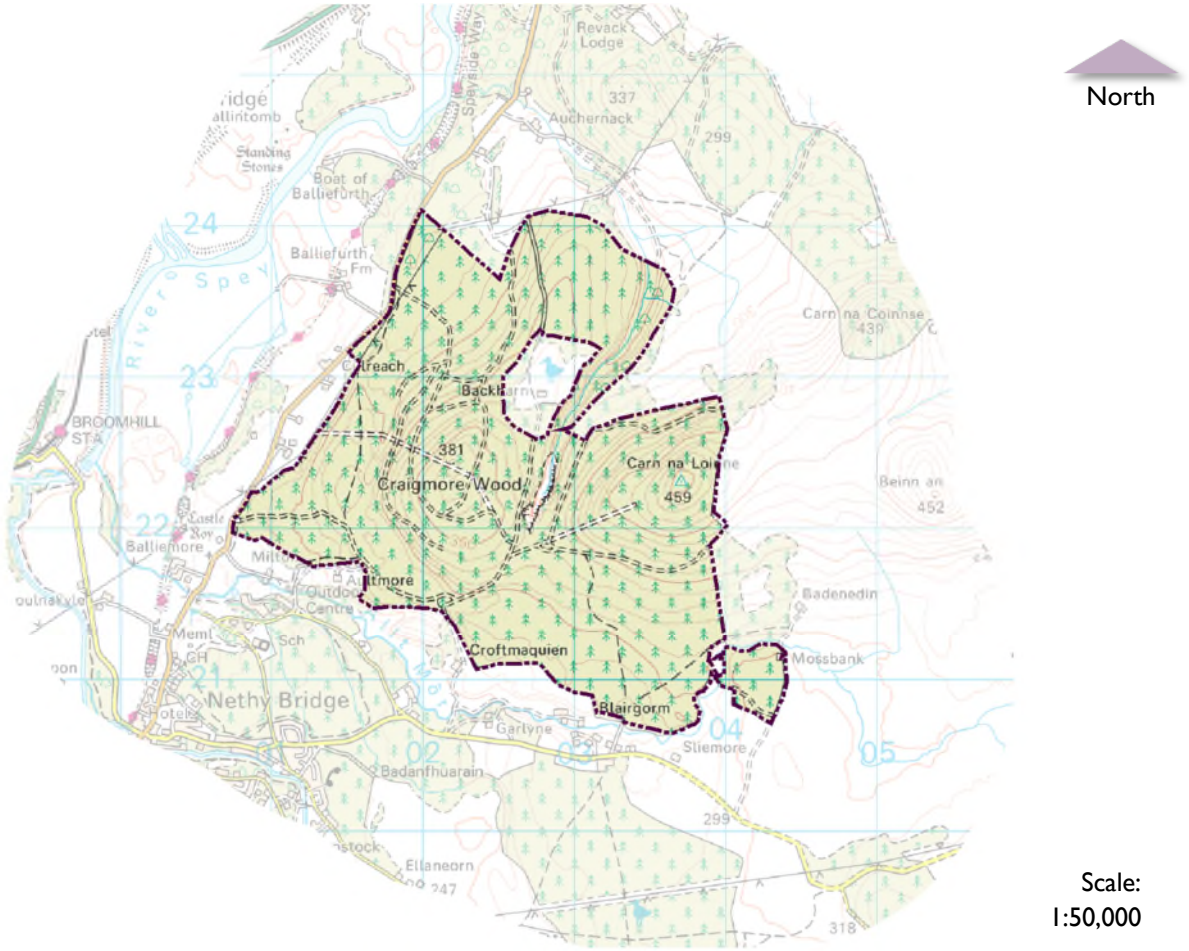


Figure 47 Craigmore Woods SPA.

Conservation Objectives

To avoid deterioration of the habitats of the qualifying species or significant disturbance to the qualifying species, thus ensuring that the integrity of the site is maintained; and

To ensure for the qualifying species that the following are maintained in the long term:

- Population of the species as a viable component of the site
- Distribution of the species within site
- Distribution and extent of habitats supporting the species
- Structure, function and supporting processes of habitats supporting the species
- No significant disturbance of the species

Status of Qualifying Species

Qualifying Species	Current Condition	Visit Date
Capercaillie (*Tetrao urogallus*), breeding	Unfavourable No change	28/04/2009

Kinveachy Forest SPA

Local Authority	Highland
SPA status	Classified 02/02/2000
Latitude	57 14 15 N
Longitude	03 54 00 W
SPA EU code	UK9002581
Area (ha)	2849.36
Area (ha) in CNP	2232.59 (78.4%)

General site character

Inland water bodies (standing water, running water)	1%
Bogs. Marshes. Water fringed vegetation. Fens	10%
Heath. Scrub. Maquis and garrigue. Phygrana	40%
Humid grassland. Mesophile grassland	10%
Broad-leaved deciduous woodland	5%
Coniferous woodland	25%
Mixed woodland	9%

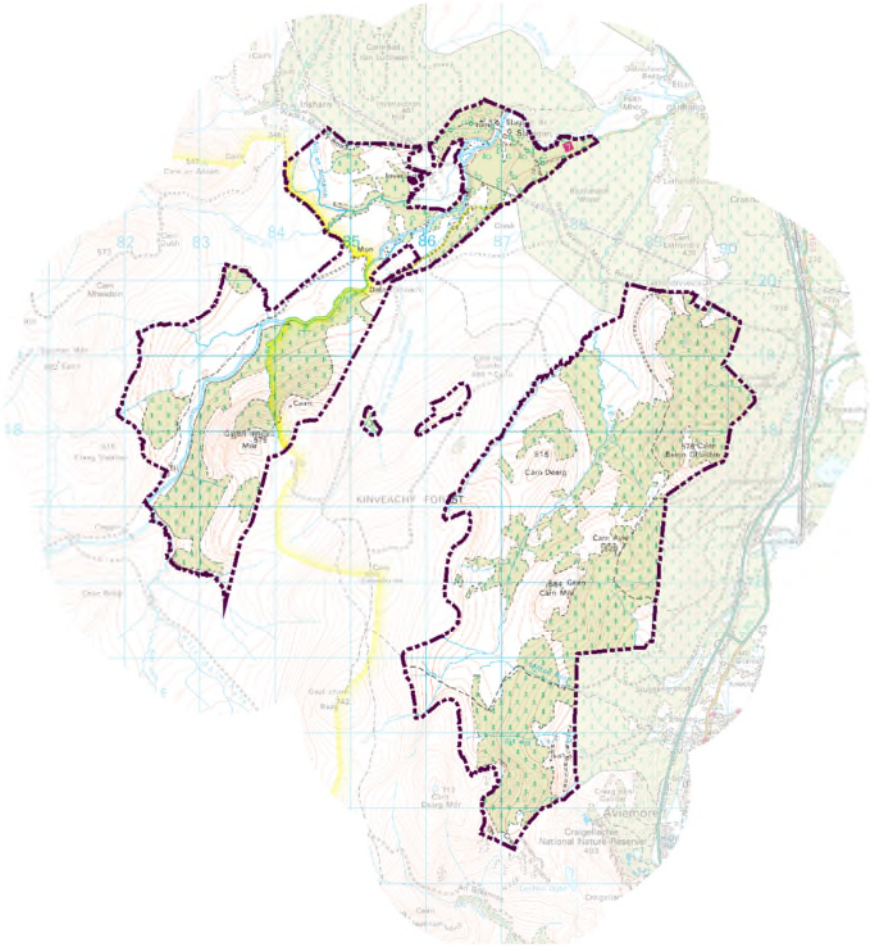


Figure 48 Kinveachy Forest SPA.

Conservation Objectives

To avoid deterioration of the habitats of the qualifying species or significant disturbance to the qualifying species, thus ensuring that the integrity of the site is maintained; and

To ensure for the qualifying species that the following are maintained in the long term:

- Population of the species as a viable component of the site
- Distribution of the species within site
- Distribution and extent of habitats supporting the species
- Structure, function and supporting processes of habitats supporting the species
- No significant disturbance of the species

Status of Qualifying Species

Qualifying Species	Current Condition	Visit Date
Capercaillie (*Tetrao urogallus*), breeding	Favourable Maintained	15/05/2008
Scottish crossbill (*Loxia scotica*), breeding	Not monitored to date	N/A

Ramsar Convention

The National Park is also home to three wetlands of international importance that have been designated under the Ramsar Convention, namely, Cainrgorm Lochs, Muir of Dinnet and River Spey – Insh Marshes. The designation recognises the fundamental ecological functions of these areas as well as their economic, cultural, scientific, and recreational value. None are likely to be effected by the Glenmore and Cairngorm Strategy.

Non-Statutory Designations

The Loch Garten RSPB Reserve (**Figure 49**) is the only non-statutory designation in close proximity to Glenmore and Cairngorm. The reserve encompasses a number of statutory designations and is best known for its osprey, but is also an important site for capercaillie, crested tit, goldeneye and Scottish crossbill.

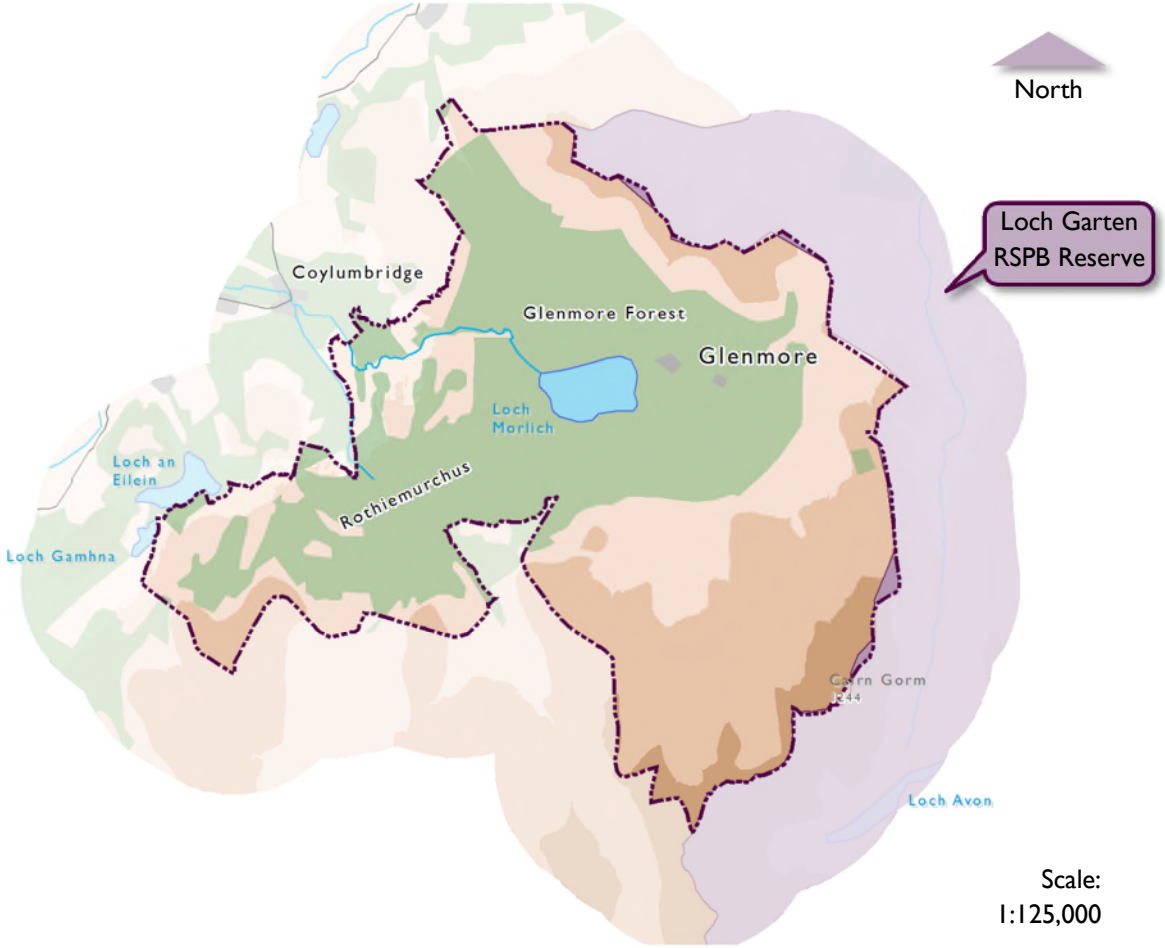


Figure 49 Relationship of Glenmore and Cairngorm Area with RSBP the Loch Garten RSPB Reserve.

Important Species and Habitats

There are around 1,200 species considered to be important for nature conservation within the National Park. Of these, 26 have been identified for priority action within the Cairngorms Nature Action Plan (CNAP) 2013-2018.

The CNAP also identifies the National Park's threatened habitats, which are broader than those afforded special protection as designated sites. Despite covering a relatively small area, Glenmore and Cairngorm are home to a number of these habitats. For the purpose of discussing them and the priority species that depend on them, they are described here under three headings, namely:

- Woodlands (p. 127),
- Freshwater, Wetlands & Wet Grassland (p.134), and
- Uplands (p. 138).

Woodlands

The Cairngorms National Park contains the most extensive tracts of Caledonian forest in Britain, comprising pine, juniper and broadleaved species (**Figure 50**). It alsocontains the best examples in Scotland of bog woodland, montane willow scrub and stands of aspen. Native tree species comprise around 79% of these woodlands, representing a quarter of the entire Scottish native woodland resource.

Glenmore Forest lies on the north-west slopes of Cairn Gorm and is predominantly a Caledonian pine forest growing over a variety of glacial and fluvial-glacial deposits and landforms.

It has been notified as an SSSI for its geomorphological features, native pine woodland which includes bog woodland habitats, its associated assemblage of flowering plants and its populations of Capercaillie, Scottish crossbill and narrow-headed ant. The forest is an important and linking component of the chain of native pinewoods stretching from Glenfeshie to Abernethy which together form the largest expanse of native pinewood remaining in the UK. Combined, these pinewoods are thus of considerable national and European importance.

Much of the woods are self-sown native pinewood together with a similar area of planted Scots pine of local origin which is now being managed for conservation. The pinewoods are mainly of the more eastern type of Caledonian pine woodland, which is characterised by a well-developed moss layer of 'feather' mosses, and few if any Atlantic bryophytes. In damp microclimates, especially along the upper margins of the pinewoods, for example in Rothiemurchus Forest, sphagnum mosses become abundant in the moss layer.

The woods contain a complete range of variation in age class and individual growth form of trees, and in forest structure and density. Birch (*Betula pendula*) and juniper (*Juniperus communis*) are widespread and locally abundant, and there is also a good deal of rowan (*Sorbus aucuparia*), some aspen (*Populus tremula*), and, on damp, richer soils, especially alluvium, an abundance of alder (*Alnus glutinosa*), and a little holly (*Ilex aquifolium*).

The Cairngorm pinewoods' field layers are not floristically rich but they have a very characteristic flora, comprising widespread woodland species such as wavy hair-grass (*Deschampsia flexuosa*) and common cow-wheat (*Melampyrum pratense*) combined with a more distinctive northern element represented by species such as lesser twayblade (*Neottia cordata*), and ostrich feather-moss (*Ptilium crista-castrensis*), and more locally by twinflower (*Linnaea borealis*), Small cranberry (*Vaccinium microcarpum*) , One-flowered wintergreen (*Moneses uniflora*; Red Data book), Intermediate wintergreen (*Pyrola media*) and serrated wintergreen (*Orthilia secunda*). The pine woodland flora is diversified by the addition in the more open pine stands at higher altitudes of arctic-alpine species such as mountain crowberry and interrupted clubmoss.

The pine woodland shows interesting transitions to a wide range of peatland and heathland vegetation types, including bog woodland, which is home to willow (*Salix*)

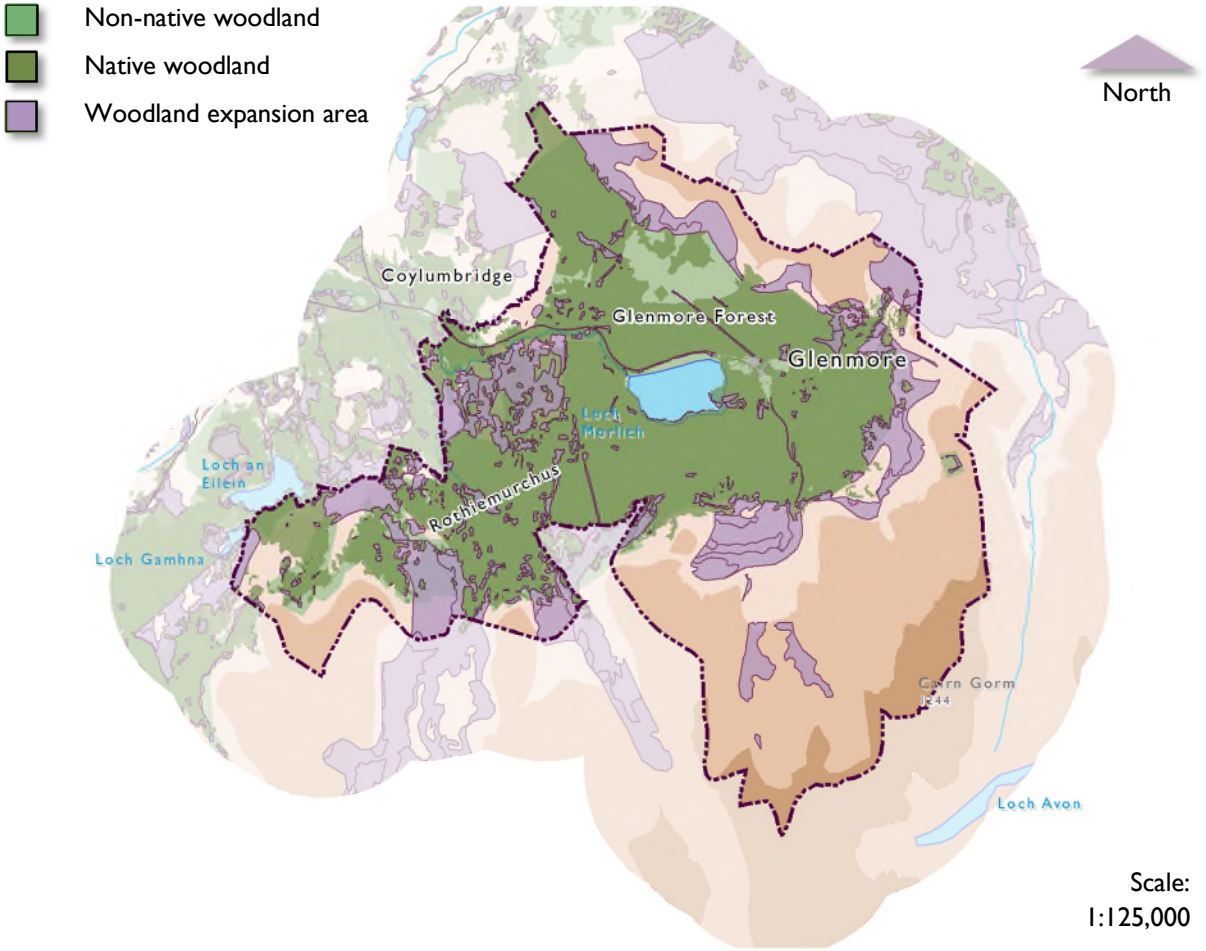


Figure 50 Areas of woodland and woodland expansion in the Glenmore and Cairngorm area.

species and Scots pine (*Pinus sylvestris*) , and subalpine scrub.

At lower altitudes scattered tree regeneration of birch, willow, rowan and Scots pine is expanding on to areas of open heath whilst at higher elevations a natural tree line is developing.

Juniper scrub is a feature of the Cairngorm pinewoods and some areas of grassland and moorland beyond the present extent of woodland, for example near Loch Avon. At higher altitudes, the juniper is progressively stunted, becoming transitional to the dwarfed subspecies (*nana*). The Cairngorms are of European importance for its juniper formations.

The forest is home to populations of Scottish crossbill (*Loxia scotica*), Capercaillie (*Tetrao urogallus*), and narrow-headed ant (*Formica exsecta*). Raptors such as Osprey (*Pandion haliaetus*) regularly hunt over Loch Morlich, while Peregrine falcon (*Falco peregrinus*) and Merlin (*Falco columbarius*) are intermittent breeders and regular hunters over the site. On rare occasions,

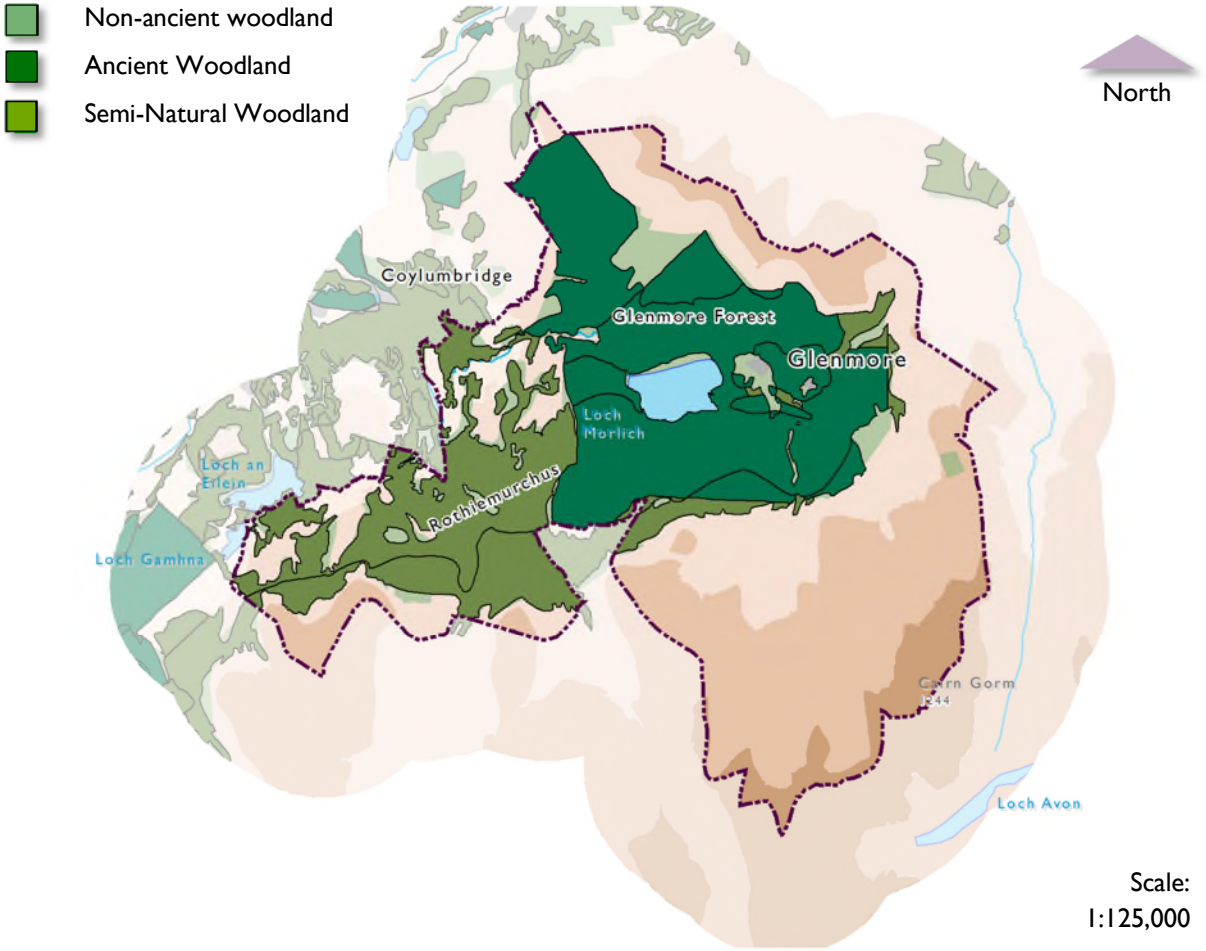


Figure 51 Areas of ancient woodland in the Glenmore and Cairngorm area.

Dotterel (*Charadrius morinellus*) use the upper parts of the forest, usually when snow forces them to lower levels in spring.

Around 32 km^2 of the woodland within the Glenmore and Cairngorm area has been identified on SNH's Ancient Woodland Inventory (**Figure 51**). Of this, around 12km^2 has been identified as being semi-natural. Ancient woodland is defined as land that is currently wooded and has been continually wooded, at least since 1750. This type of woodland has important biodiversity and cultural values by virtue of its antiquity.

Improved connectivity through woodland expansion combined with good management is crucial to enhance habitat that supports species of high conservation value. The CNPA Woodlands Expansion programme (Cairngorms National Park Authority, 2008) actively promotes this and in combination with the Cairngorms Deer Management Framework (Cairngorms National Park Authority, 2011) aims to ensure greater connectivity and management.

Table 12 Woodland species selected for targeted action in CNAP (Cairngorms National Park Authority, 2013).

Species	Status in the CNP
Capercaillie *Tetrao urogallus*	Capercaillie are found almost exclusively in Caledonian Pine Forest. Including Anagach, Rothiemurchas and Abernethy woods. Capercaillie chicks feed on moth caterpillars feeding on blueberry plants, adults and older chicks feed on leaves and berries, during winter they feed on pine needles.
Scottish Wildcat *Felix sylvestris*	The Scottish wildcat is a rare, elusive and largely nocturnal species confined to the most thinly populated parts of the UK. main threats to the survival of the species in Scotland were: hybridisation with feral or domestic cats, being inadvertently killed during feral cat control operation and disease
One-flowered Wintergreen *Moneses uniflora*	This plant used to be called St Olaf's Candlestick. It has a single nodding white flower at the top of a stem, and a rosette of leaves at the base. Key threats are the loss of the old Caledonian Forest and the harvesting of commercial forests.
Twinflower *Linnea borealis*	Twinflower is an Artic-alpine flower which is a relic of the ice age it has a stronghold in Strathspey. It is dependent on the open canopy of Caledonian Pinewoods.
Green Shield-moss *Buxbaumia viridis*	The Green Shield-moss is a rare and endangered species which grows on decaying wood. The loss of woodland cover over the centuries and, more recently, the intense management of woodland areas has led to a significant loss of habitat for this bryophyte species.
Pine hoverfly *Blera fallax*	The Pine Hoverfly is found in only two locations in the UK in Strathspey. It needs rotten tree stumps that are more than 40 cm in diameter to breed. The lack of these large stumps in pinewoods – especially stumps with the necessary rot conditions – has been the cause of the decline.

Key Woodland Species

The CNAP species which have been selected for targeted action and are dependent on woodland habitat are listed in **Table 12**. Glenmore Forest is a key site in supporting these species.

Working in partnership, the CNPA is involved in projects aimed directly at improving the status of woodland habitats and associated species, some of which were listed in **Table 12**, within the Cairngorms National Park, these include:

Capercaillie Framework

Capercaillie populations in Scotland have declined significantly from an estimated 20,000 birds in 1970 to around 1,285 at the most recent national winter survey in 2009/10 (Ewing *et al.* 2012).

The Cairngorms National Park holds a significant proportion of the national population – at least 75% of the national number of lekking males, with the majority in Strathspey (Eaton *et al.* 2007; Poole, 2010) (**Figure 52**).

Species	Status in the CNP
Pearl-bordered fritillary *Boloria euphrosyne*	Changes in woodland management over recent years have led to the decline of the species. Woodland practices such as coppicing and thinning are in decline, and many areas have been planted with conifers. Woodland rides and clearings have become increasingly shady and overgrown. Bracken habitats are no longer managed through grazing
Dark bordered beauty *Epione vespertaria*	A small yellow- orange moth with brown bordered wings. The caterpillar feeds on young suckering aspen, which requires particular levels of grazing. Only found in a handful of locations in the CNP.
Scarlet splash fungus *Cytidia salicina*	This fungus appears as a bright red splash on the underside of dead willow branches, especially those lying close to the ground. It has only been recorded 14 times in Scotland most of these records are in the CNP,
Kentish Glory *Endronis versicolora*	Kentish Glory, a large day flying moth is found in open birch woodlands. Both sexes are brown with white markings on the forewings.
Wood Ants	There are four species considered for action: *Formica aquilonia*, *F. lugubis, F. exsecta* and *Formicoxensus nitidulus.* They perform a number of important roles in the forest ecosystem, earning them the status of "keystone" species, these are species which play critical roles in the structure of their ecological community. Changes in woodland management, deforestation, inappropriate afforestation, urban expansion, human disturbance and agriculture are all linked to the loss of suitable habitat for woodland ant species.

Although capercaillie numbers have held up in Strathspey in recent years, the population is now extremely vulnerable elsewhere. Capercaillie persist in other areas (Deeside, Donside, Easter Ross, Moray and Perthshire) but these populations are smaller and more fragmented.

The Strathspey capercaillie population is crucial to the long-term survival of the species in the UK. The Capercaillie Framework (Cairngorms National Park Authority, 2015) aims to improve conservation for Capercaillie by the introduction of landscape scale measures to target the main threats of disturbance, predation, collision with deer fences, unsympathetic woodland management, habitat loss and fragmentation.

Increased disturbance resulting from development and recreation can have a significant effect on Capercaillie usage of habitat for example Capercaillie have been shown to avoid habitat close to tracks,

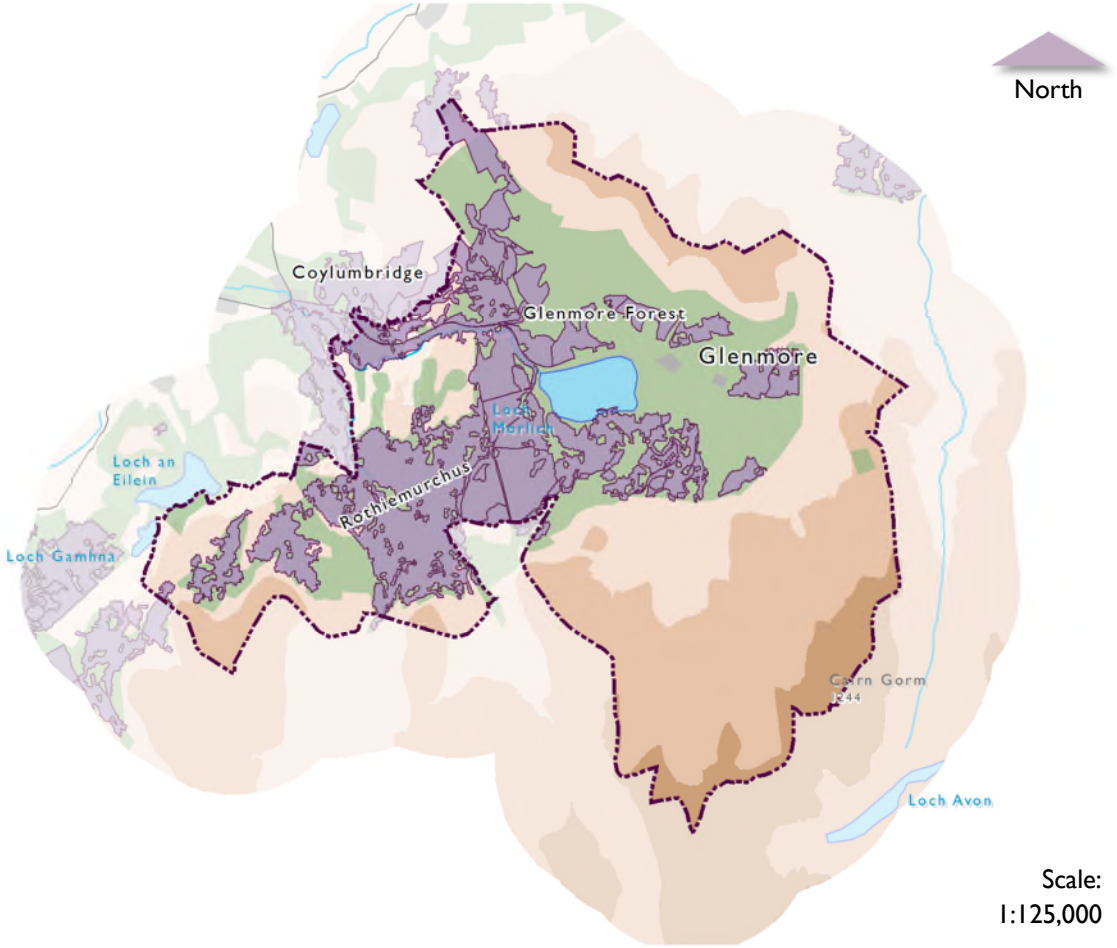


Figure 52 Areas where Capercaillie have been sighted in the Glenmore and Cairngorm area since 2007.

which may reduce overall carrying capacity in forests with a high density of tracks (Rosner *et al.* 2013). A study at Abernethy forest estimated that 21-41% of suitable woodland habitat could be lost due to avoidance of tracks (Summers *et* al. 2007). To ensure these factors are considered the framework integrates habitat management, recreation and development plans as outlined in the Cairngorms Nature Strategy (2012-2018), Active Cairngorms (2015) and the Local Development Plan (2015) and suggests mitigation packages be developed to ensure no impact on Capercaillie.

Red Squirrel of the Highlands

The Cairngorms National Park is one of the last strongholds for Red Squirrel in the UK. Grey Squirrels are larger than the native reds and were introduced to the UK from America and Canada in the early 1900's. They pose a serious threat to the survival of the red squirrel population through transmission of the deadly squirrel pox virus that the grey squirrel carries. Grey squirrels are occasionally seen moving up the River Dee from Aboyne or moving up the River Garry from Pitlochry. The Red Squirrels of the Highlands Project is working to monitor and conserve Red Squirrels in the National Park.

Wildcat - Tiger of the Highlands

The project raised awareness of the wildcat's plight using a campaign branded '*Highland Tiger*'. It worked with a range of partners and interest groups to safeguard surviving Scottish wildcat populations and create favourable conditions for the species to thrive in the future. Part of the project was aimed at assisting gamekeepers to confidently identify wildcats to ensure they are not inadvertently culled through otherwise legal predator control activities. The project also worked with vets and cat welfare charities to encourage responsible cat ownership and the expansion of feral cat trapping and neutering. SNH have produced the Scottish Wildcat Conservation Action Plan 2013-2018, which details three wildcat conservation areas within the National Park.

Deer

There are four species of deer found within the Cairngorms National Park, all contributing to different extents to the biodiversity and economy of the area. The UK's largest wild land mammal, Red deer are common in most areas of the National Park and have long been central to the cultural and natural heritage of the Highlands. Their economic importance and significant positive and negative impacts on the land means that their careful management is critical, and at times causes controversy.

Roe Deer are also numerous in the National Park and are a common sight on lower ground in and around woodlands. Although less high profile, they are popular with wildlife spotters and are valued for venison, but can cause damage to young trees and crops.

Non-native Sika Deer are present in much smaller numbers and are of concern because of their potential to interbreed with Red Deer.

The unique herd of semi-domestic Reindeer in the National Park are important mainly as a tourist attraction. The Cairngorms Deer Advisory Group is a forum to promote and advise on best practice deer management within the Cairngorms and is formed from local deer group members. In partnership with the CNPA they have produced The Cairngorms Deer Management Framework (Cairngorms National Park Authority, 2011).

Freshwater, Wetlands & Wet Grassland

A mosaic of wetland habitats with fens, bogs, woods, wet grassland and open water provides a home to a rich array of wildlife. The National Park is one of the most important sites for breeding waders due to the combination of wetlands, wet grassland and low-intensity mixed farming. Even so, birds such as lapwing and redshank have seen dramatic declines in numbers in recent years.

The Cairngorms has the largest extent of wet-heath in north-east Scotland, mainly of the more heathy eastern type characterised by *Sphagnum compactum*, with the more herbaceous western type on some of the more strongly flushed soils. The occurrence of undisturbed lichen-rich wet-heath alongside sub-alpine and alpine heath on high altitude, windswept slopes is of particular importance. Wet-heath is also present alongside bog and dry heath in open areas within the upper parts of the pine forest, giving a variety of ecological transitions.

There are a wide range of bog types from basin, valley and terrace mires to high level watershed mires, and the full range of bog vegetation types characteristic of the Eastern Highlands, and also small areas of mire very closely resembling Western blanket bog. The bogs at lower altitudes, in basins and valleys and on terraces within the forest, are mainly dominated by or rich in sphagnum species. Above the forest, in the glens, on some of the valley sides, and on the watersheds, the blanket bog is generally dominated by various dwarf shrubs and cotton grasses with a lower diversity of sphagnum mosses. Ling heather and to a lesser degree cross-leaved heath are the most abundant dwarf-shrubs in the glens and on the lower watersheds, with blaeberry and common cowberry becoming abundant in some areas, particularly on the valley sides. On the highest watersheds which have any significant development of peat, these latter species become dominant as ling heather fades, forming another distinctive sub-type, often referred to as high-level blanket mire.

Notable species on the blanket bogs include dwarf birch and small cranberry, which are both scattered above 450m, and northern bilberry, which is frequent on many of the high-level bogs.

The Cairngorms supports a wide range of soft-water spring vegetation types. At moderate to high altitudes these springs are generally dominated by either the moss *Philontis fontana*, or, more locally, especially at higher altitudes in the western corries, by dense cushions of the liverwort *Anthelia julacea*. At high altitudes, where the snow-lie is longest, and the irrigating waters from

the snow beds are the coldest, the spring-heads are dominated by spongy carpets of the moss *Pohlia wahlenbergii* var. *glacialis*. Arctic-alpines herbs associated with these springs include chickweed willow herb, alpine foxtail and alpine timothy grass. Rare bryophytes include the mosses *Pohlia ludwigii*, *Haplomitrium hookeri* and *Hygrohypnum molle*.

The area also supports the full range of mires associated with base-poor flushes at medium and high altitudes and rare species such as rare-flowering sedge and the moss *Sphagnum lindbergii*.

Due to the local occurrence of suitable rocks, base-rich flushes are not widespread in the Cairngorms. Despite their restricted distribution, these base-rich flushes are well developed, supporting vegetation types and species associated with both low to moderate and particularly high altitudes. These communities support arctic-alpine species such as Scottish asphodel, three-flowered and alpine rushes and are of national and European importance.

The waterbodies of area form part of the Spey River Catchment Area, which supports regular use by otters (*Lutra lutra*) and is an important spawning river for Atlantic salmon (*Salmo salar*). The River Spey also represents the northern part of the Sea lamprey's (*Petromyzon marinus*) range in the UK. Perhaps the most important feature of the Spey and its tributaries however is its outstanding freshwater pearl mussel population (*Margaritifera margaritifera*), which is considered to be of great international significance.

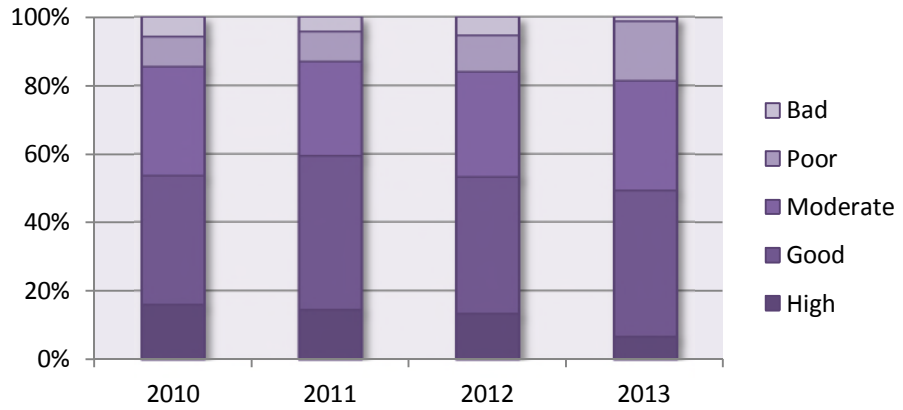


Figure 53 Ecological status of Spey Catchment Area waterbodies within and overlapping the Cairngorms National Park.
Source: http://www.sepa.org.uk/data-visualisation/rbmp-interim-planning-tool/

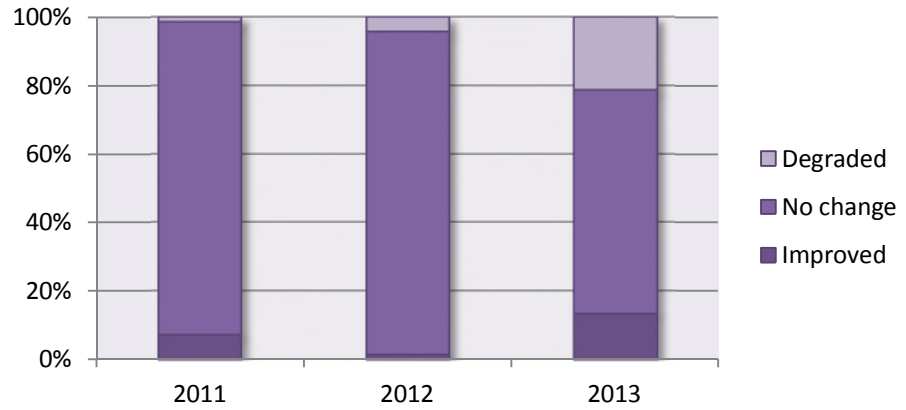


Figure 54 Change from previous year in the ecological status of Spey Catchment Area waterbodies within or overlapping the Cairngorms National Park

Within the forest, Allt Coire Chondiaich forms an interesting feature with native ferns and deciduous trees (birch, aspen and rowan) lining the incised banks. The rocky bed is a good habitat for aquatic invertebrates and this stream discharges into Loch Morlich.

The WFD Classification places a requirement on SEPA to monitor the ecological status of waterbodies and its ability to continue to function as such. Within the National Park around 50% of waterbodies are classified as being at good or better ecological status (**Figure 53Error! Reference source not found.**), however, recently the ecological status of many waterbodies within the National Park has been on the wane (**Figure 54**). See **Topic 3: Water** (p. 71) for further information on the quality of waterbodies in the National Park.

Key species for focused action

The CNAP species which have been selected for targeted action and are dependent on Freshwater, Wetlands & Wet Grassland habitat are listed in **Table 13**. The Glenmore and Cairngorm area has a role to play in supporting these species.

Table 13 Freshwater, Wetlands & Wet Grassland species selected for targeted action in CNAP (Cairngorms National Park Authority, 2013).

Species	Status in the CNP
Lapwing *Vanellus vanellus*	Breeding lapwings are in decline in Strathspey, the Waders and Wetlands Project aims to research reasons for the decline and work with landowners to encourage sympathetic land management.
Northern damselfly *Coenagrion hastulatum*	This a very rare and localised species with almost all known lochan locations within the CNP, it is very similar to Common blue damselfly but has a distinctive 'ace of spades' marking.
Northern silver-stiletto fly *Spiriverpa lunulata*	Stiletto larvae are long, thin, white and worm-like. They are ferocious predators with a glossy hard skin that lets them slither through dry sand as they chase their insect prey. Habitat needs – exposed sand and shingle on river banks
Freshwater pearl mussel *Margaritifera margaritifera*	The freshwater pearl mussel *Margaritifera margaritifera* grows to 140 mm in length, and burrows into sandy substrates, often between boulders and pebbles, in fast-flowing rivers and streams. It is sensitive to heavy siltation and requires high water quality.
Northern February red stonefly *Brachyptera putata*	The Northern February red is a freshwater species endemic to Britain, found mainly in Scottish upland streams. Due to its rarity and decline in numbers this insect has been made a Priority Species on the UK Biodiversity Action Plan (BAP).

Working in partnership, the CNPA is involved in projects aimed directly at improving the status of wetland habitats and their associated species within the Cairngorms National Park, these include:

River Spey Catchment Initiative

The River Spey Catchment Initiative aims to co-ordinate partnerships to deliver

integrated catchment management. The main objective of the Initiative is to meet WFD good status within the catchment and to address barriers to fish, tackle diffuse pollution and improve river morphology.

Strathspey Wetland and Waders Initiative

The Strathspey Wetlands and Waders Initiative (SWWI) was set up to work with farmers and other landowners to safeguard wetland habitats and the future of the nationally important wader population in Badenoch and Strathspey - the largest of its kind in mainland Britain.

Pearls in Peril

'Pearls in Peril' (PIP) is a UK wide LIFE funded nature project with 22 partners working together to restore river habitats benefiting freshwater pearl mussel and salmonids. A total of 48 actions will be delivered across 21 rivers designated as SACs for freshwater pearl mussel. The freshwater pearl mussel (M*argaritifera margaritifera*) is declining dramatically throughout its range. Mussel populations have been affected by multiple issues, including wildlife crime – pearl fishing was legal until 1992, habitat degradation and declining water quality. This project will help to safeguard the future of the most important pearl mussel populations in the UK by tackling these threats and implementing best practice conservation methods.

A recent survey of FWPM sites in the River Spey highlighted a 50% decline in the population (Sime, 2014) reasons for this are still under investigation but are attributed to water quality, especially nutrient levels; an increase in the abundance of water crowfoot (*Ranunculus* spp.) in the middle and lower Spey; low river levels in the middle and lower reaches which have killed established mussel beds; illegal fishing and no recruitment of juveniles in the middle to upper reaches which means the distribution will gradually contract as older mussels die.

The status of FWPM in the Spey is currently classified as unfavourable and declining, the status will not be improved unless there is less abstraction and nutrient input from sewage and agriculture.

Uplands

The Cairngorms are considered to be one of the most spectacular mountain areas in Britain and support a rich arctic montane flora. Upland heath is the most extensive habitat due mainly to human activities such as felling, burning and grazing which prevents natural tree regeneration and drainage to allow grouse and red deer hunting. Blanket bog is the second most extensive habitat and is mainly *Calluna-Eriophorum* dominated blanket mire (**Figure 55**).

Montante scrub is where dwarf trees and shrubs grow above the natural tree line. Dwarf willows, birches and juniper grow in a low twisted, wind-pruned form together with a variety of flowering plants, fungi, lichen and insects. The best example of a continuous treeline in Britain is at Creag Fhialach above Inshriach where a complex of Juniper and birch scrub grows at 550-650m.

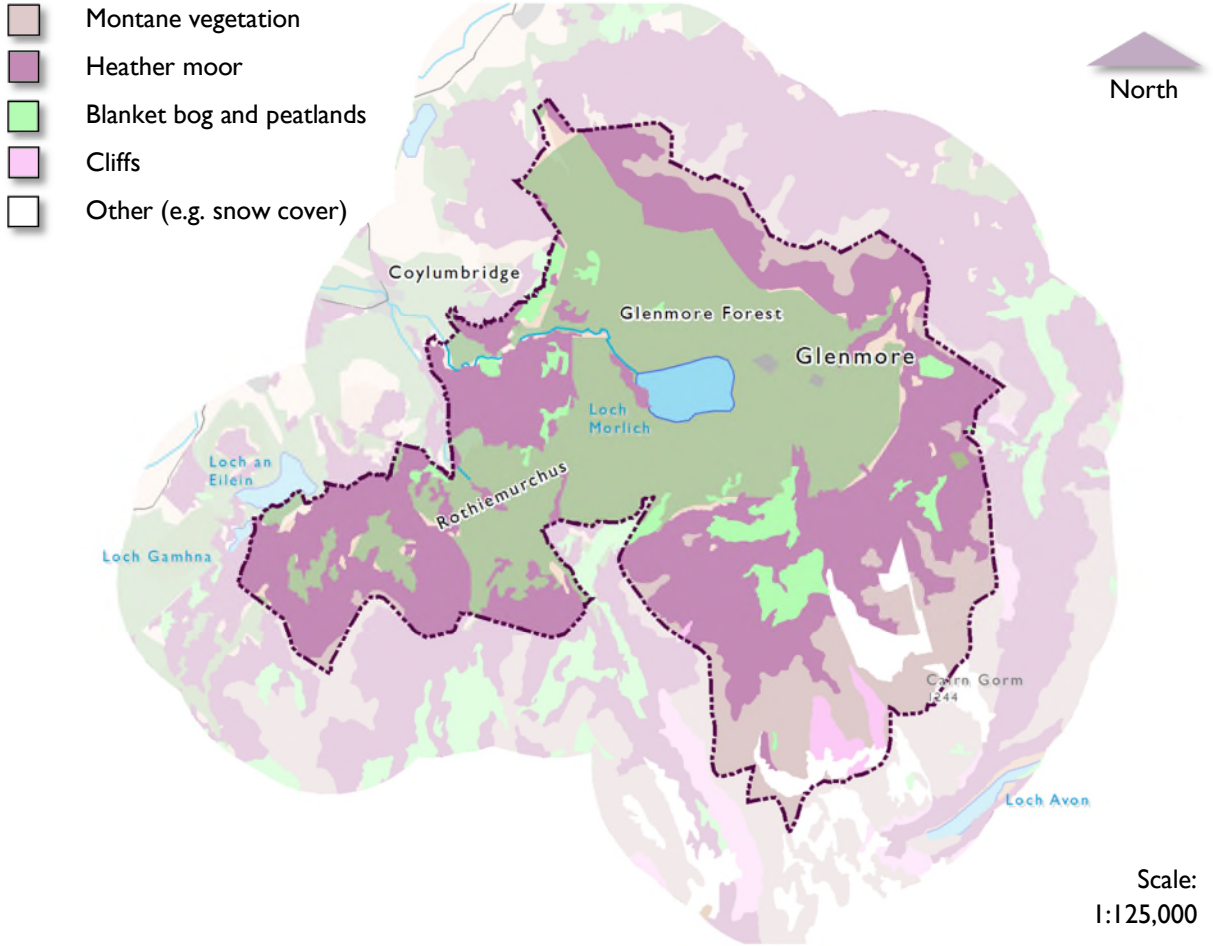


Figure 55 Upland land cover types within the Glenmore and Cairngorm area.

The Cairngorms are the most important mountain area in Britain for biological and geological/geomorphological conservation.

The Cairngorms include the greatest area of high land in Britain, and this, combined with their relatively continental position, make low winter temperatures, cool summers and a short growing season notable features of the environment. As such the Cairngorms may be regarded, climatically, geomorphologically and biologically, as the most extensively 'arctic' area in Britain. A wide range of habitats and animal and plant species are found here, including many which are rare or scarce in Britain or Europe as a whole.

Ranging from 260 – 1,309 metres above sea level, the mountains are home to a full range of submontane and montane habitats characteristic of the eastern Highlands, from native Scots pine woodland to subalpine and alpine heathland and grassland habitats. In addition, the massive summit plateaux and broad watersheds, with a considerable land mass above 1,100 metres, allow prolonged snow cover in a variety of situations and in turn give rise to a greater range and extent of late snow-influenced vegetation than in any other mountain system in Britain. Examples of some of the most natural plant habitats in Britain are found on the mountains. Individual habitats and species are of national and/or European importance in their own right, but the value of the Cairngorms is accentuated by the range of habitats associated with the range of altitude, aspect, soils etc.

As the bedrock is primarily acidic granite, and as the glacial drift which covers many of the lower hillsides is derived from such, the Cairngorms' vegetation is dominated mainly by acid-tolerant plant species.

Montane habitats

The Cairngorms has the most extensive tracts of sub-alpine and alpine heath in Britain and the full range of sub-alpine and alpine heaths characteristic of the Eastern Highlands. Snow-bed heaths are better developed than on any other site and there is superlative development of wind-pruned and patterned lichen-rich heath, including fine examples of "wave vegetation". An unusual feature of the lichen-rich heath is the large area in which bearberry is co dominant with ling heather. Lichen-rich heather-dominated heath is more extensively developed on the Cairngorms than anywhere else in Britain.

Heaths dominated by blaeberry and/or cowberry and rich in lichens and/or woolly hair-moss are also extensive, reaching the highest altitude of heathland in Britain. The lichen-rich heaths dominated by blaeberry and cowberry feature unusually abundant trailing azalea. Damp heath associated with snow beds or other damp micro-climates, such as the upper margins of pinewoods, and dominated by either heather or blaeberry, is more extensive than on any other site in Britain. Other snow-bed types of blaeberry heath are also well developed. There is an extensive development of heath on solifluction terracing. In addition, there are extensive transitions to lichen-poor heather-dominated heath types, and to wet-heath, blanket bog, montane acid grassland,

late snow-bed vegetation and, more locally, to juniper scrub.

The heath of windswept slopes and summits above 750 m supports the majority of the British population of the lichen *Alectoria ochroleuca* (alpine sulphur tresses), a characteristic species of Scandinavian lichen heaths, which is rare and declining in Britain, possibly as a result of climate change.

The Cairngorms has the largest tracts of alpine communities dominated by combinations of grasses, sedges, rushes and mosses in Britain. These alpine communities, developed largely on granite, and to a lesser extent, on base-poor schists, comprise the full range of montane acid grassland communities, their combined extent being greater than that of any other site in Britain.

The three-leaved rush community is particularly well developed, with the full range of subtypes varying from co-dominant woolly fringe-moss to open tussocky, lichen-rich areas. The extent of this community on the Cairngorm mountains far exceeds that any other area in Britain.

Extensive areas of the plateau are dominated by stiff sedge and woolly fringe-moss, particularly on the western spurs and ridges. Due to the predominance of base-poor granites and schists, this community is largely species poor and overwhelmingly dominated by woolly hair-moss, but locally, on more base-rich outcrops, as at the head of the Slochd Mor and at Glean Einich, there are also small areas of moss-heath which are rich in dwarf herbs, principally alpine lady's mantle and dwarf campion. The rare lichen *Cladonia pleurota* is found in moss-heath.

In areas of the plateau where snow lies a little deeper there are beds of dense, short matt-grass. These support two very rare lichen species, *Cladonia maxima* and *C. sticta*, the latter of which is restricted to the Cairngorms in Britain. The rare lichen *Cetraria delisei* is also present in these snow-bed grasslands, particularly in areas of sedge-heath dominated by stiff sedge, where the snow lies later into the summer.

Dwarf-willow and moss-dominated communities of late snow-beds are the most extensive and well-developed in Britain. Rare arctic-alpine herbs found here include starwort mouse-ear and drooping woodrush. The areas of late snow-lie also support rare bryophytes such as the mosses *Polytrichum sexangulare* (*norvegicum*) and *Andreaea nivalis*, and the liverworts *Moerckia blyttii* and *Pleuroclada albescens* and the very rare *Marsupella arctica* and *Gymnomitrion apiculatum*. Some northern Atlantic bryophytes are also found in this habitat, including rare species such as the liverworts *Scapania umbrosa* and *Anastrophyllum donnianum*.

Wet ground and melt-water streams associated with areas of late snow lie support a number of very rare bryophytes and lichens, including the moss *Hygrohypnum molle*, the liverwort *Marsupella sparsifolia*, and the lichens *Staurothele areolata* and *Bellemerea alpina*, the latter in its only British station.

Herb-dominated vegetation of slopes irrigated by melt waters, characterised by

alpine lady's-mantle and least cinquefoil, is also finely developed.

Dwarf-shrub heath and grassland

The Cairngorms has the largest extent of dry heathland in Britain and the full range of sub-montane heaths characteristic of the Eastern Highlands, characterised by ling heather, blaeberry and bearberry, including some of the largest areas of bearberry-rich sub-montane heath in Britain, and the most extensive snow-bed forms of blaeberry heath in the Eastern Highlands.

The calcareous schists in Glen Feshie support species-rich calcareous grassland. Both of the two main types of this habitat, characterised by wild thyme and alpine ladies'-mantle, are present, and there are interesting transitions to alpine calcareous grassland at high altitudes.

Species which thrive on lime-rich soils (calcicoles) include a number of arctic-alpines such as alpine cinquefoil, yellow mountain saxifrage, hair sedge and alpine meadow rue.

Areas of alpine calcareous grassland characterised by mountain avens are found locally along Glen Feshie including on the steep crags and ledges of Coire Garbhlach, with very small areas are also present at the head of Glen Einich. Glen Feshie supports a number of rare arctic-alpine herbs, including rock whitlow grass, alpine saxifrage, alpine mouse-ear, rock speedwell, rock sedge and black alpine sedge. A number of montane willow species are also found here, including whortle-leaved, downy and the rare woolly willow. The calcicolous bryophyte flora of Coire Garbhlach is very rich with several very rare species are present, including the mosses *Saelania glaucescens*, *Ctenidium procerrimum*, *Schistidium artofuscum* and *Weissia controversa* var. *wimmerana*. *S. glaucescens* is an especially protected species, as listed on Schedule 8 of the Wildlife and Countryside Act 1981 (as amended).

Scree and rocks

There are extensive areas of scree on granite at a range of altitudes in the Cairngorms and these support diverse and representative examples of high-altitude acidic scree communities which are characteristic of the Eastern Highlands of Scotland. Of particular interest is the flora of high-altitude screes in the snowy corries, with parsley fern, alpine lady-fern and wavy meadow-grass.

Rare bryophyte species, on rocks and in and around snow-beds, are well represented and include the moss *Dicranum glaciale* and the liverworts *Tetralophozia setiformis* and *Marsupella adusta*.

High-altitude crevice habitats occur widely on the acidic granites of the Cairngorms and support an abundance of characteristic species. Rare species found here include Highland cudweed, spiked wood-rush and hare's-foot sedge.

Key species for focused action

Those Cairngorms Nature Action Plan species dependent upon upland habitat are listed in **Table 14**. Working in partnership, the CNPA is involved in projects aimed directly at improving the status of upland

habitats and their associated species within the Cairngorms National Park, these include: The Glenmore and Cairngorm area has a role to play in supporting these species.

Table 14 Upland species selected for targeted action in CNAP (Cairngorms National Park Authority, 2013).

Species	Status in the CNP
Golden eagle *Aquila chrysaetos*	Breeds in high altitude areas of the CNP. At threat from persecution and disturbance.
Alpine blue sow thistle *Cicerbita alpina*	Alpine blue-sow-thistle is a very rare plant in the UK; it grows on only four rocky ledges sites on the Cairngorm Massif. It was once part of a more widely distributed mountain flora that is today restricted by changing land management practices and increased levels of grazing.
Tufted saxifrage *Saxifraga cespitosa*	A cushion-forming, perennial herb of well-drained base-rich rocks. It is found on mossy ledges, in crevices and on boulder-scree slopes, it is in decline in the Cairngorms.
Powdered sunshine lichen *Vulpicida pinastri*	Records exist for the Eastern and Southern Cairngorms.

Golden Eagle

North East Scotland Raptor Watch began in 2006. It's a partnership project that aims to address the problem of declining populations of rare or endangered species of birds of prey that breed in the uplands of North East Scotland. The Raptortrack project is into its fifth year of satellite tracking specific raptors in the Cairngorms National Park. Three golden eagles are presently being followed.

Montane Scrub Expansion

High altitude birches, willows and junipers would have been much more prevalent in the Cairngorms in the past. Centuries of burning and heavy grazing by livestock and deer have taken their toll on trees and shrubs which grow only slowly amid the poor soils and exposed conditions found high in the Cairngorms. Cairngorms Nature is bringing landowners in the core of the national park together to help identify where all the remnants are and the condition they're in, and explore ways of enhancing and expanding them.

The Cairngorms SAC/SPA is a key site in the effort to expand mountain scrub. Some of the best cliff and scree flora in the Cairngorms is found high up in the cliff buttresses, ridges and deeply indented gullies of the Northern Corries. A number of rare species grow here including alpine saxifrage, Highland saxifrage, hare's-foot sedge, curved wood-rush and green shield-moss above the treeline in Creag Fhiaclach is one of the best areas for montane scrub in Britain.

Key Messages

The Cairngorms National Park is considered to be one of the richest and biodiverse places in the UK, being home to 25% of the UK's rare animal, insect, lichen, fungi and insect species. Consequently, large areas have are protected by various types of national and international nature designation.

Glenmore and Cairngorm are home to some of the National Park's richest habitats and consequently most of the area is protected by some form of designation, including NNR, SSSI, SAC and SPA. Many of the habitats are of broader importance owing to their connectivity with other areas.

The area is home to a number of important species that are currently at risk. Significantly, the woodlands around Glenmore are home to Capercaillie, a species that is particularly sensitive to disturbance from recreational activity.

The area falls within the River Spey Catchment Area, a river that provides habitat for an internationally important population of Freshwater Pearl Mussel. This species has been under particular pressure in recent years so careful consideration will need to be given to the potential off-site effects of the Strategy.

Inter-relationships with other topics

- Topic 1: Climatic Factors 59
- Topic 2: Air 67
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- Topic 5: Material Assets 90
- Topic 7: Landscape and Cultural Heritage 144
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Topic 7: Landscape and Cultural Heritage

Landscape

> "*Landscapes* [are]… *an essential component of people's surroundings, an expression of the diversity of their shared cultural and natural heritage, and a foundation of their identity.*"
>
> European Landscape Convention (2000).

Landscape is the physical manifestation of space, the tangible elements that give shape and diversity to our surroundings. It is the product of thousands of years of interaction between man and nature, encompassing the environmental and cultural, physical and symbolic. It is also the environment perceived, predominantly visually but additionally through our senses of smell, touch and hearing. Our appreciation of landscape is also affected, by our cultural backgrounds, and by personal and professional interests.

Landscape is important, not just as scenery but because it links culture with nature, and the past with the present. Well-looked after and highly valued landscapes are essential to social well-being and an economically healthy society. Landscapes are valued because of their inherent interest, their contribution to both national identity and local distinctiveness. The protection of high quality and highly valued landscapes therefore is important both for its own sake and for the health, social and economic wellbeing of individuals and communities.

At 4,528 square kilometres, and comprising 6% of Scotland's land area, the Cairngorms National Park is the UK's largest protected landscape.

The Cairngorms are best known as an upland massif of expansive proportions and a sub-arctic environment. There are no other mountains like them in Britain. Massive granite domes with corries and passes scooped out; broad rolling plateau more like Scandinavia than the UK. Nowhere else is consistently higher, colder or wilder. The mountains domination the National Park and have an effect on the way people live and the landscapes they live in.

But the landscape of the Cairngorms National Park is far more than that. It encompasses strath and glen, village and farm, woodland, moorland, river and loch. Landscapes that provide a home and a livelihood, engage the imagination, excite the mind, challenge our endurance and strength and give us a sense of the past and memories for the future.

Landscapes change daily, seasonally and year by year as the light changes, as crops are harvested, as trees grow, as houses are built and others fall into ruin and as rocks weather and erode. In the coming years and decades, the landscapes of the National Park will change as we address issues such as climate change, the decline of fossil fuels and changing population dynamics.

Landscape Character

Glenmore and Cairngorm occupy one of the National Park's best known landscapes, being the gateway for many into the area's forests and mountains. It is a large scale landscape defined by its native pine forest and open granite mountains. It is a landscape admired for its scenic grandeur and beauty, containing an essentially wild character despite the attentions of human management.

The area mostly sits within the Glenmore Landscape Character Area (LCA) (**Figure 56**), which defines landscapes by the consistency of character formed by the topography, land use, history, settlement and development and the way the landscape is experienced. (Grant *et al.* 2009). A description of their landscape characteristics, experience and sensitivity of each area, along with a succinct summary of what makes the areas distinctive from elsewhere in the national Park, is provided on the CNPA's website:

www.cairngorms.co.uk/landscape-toolkit

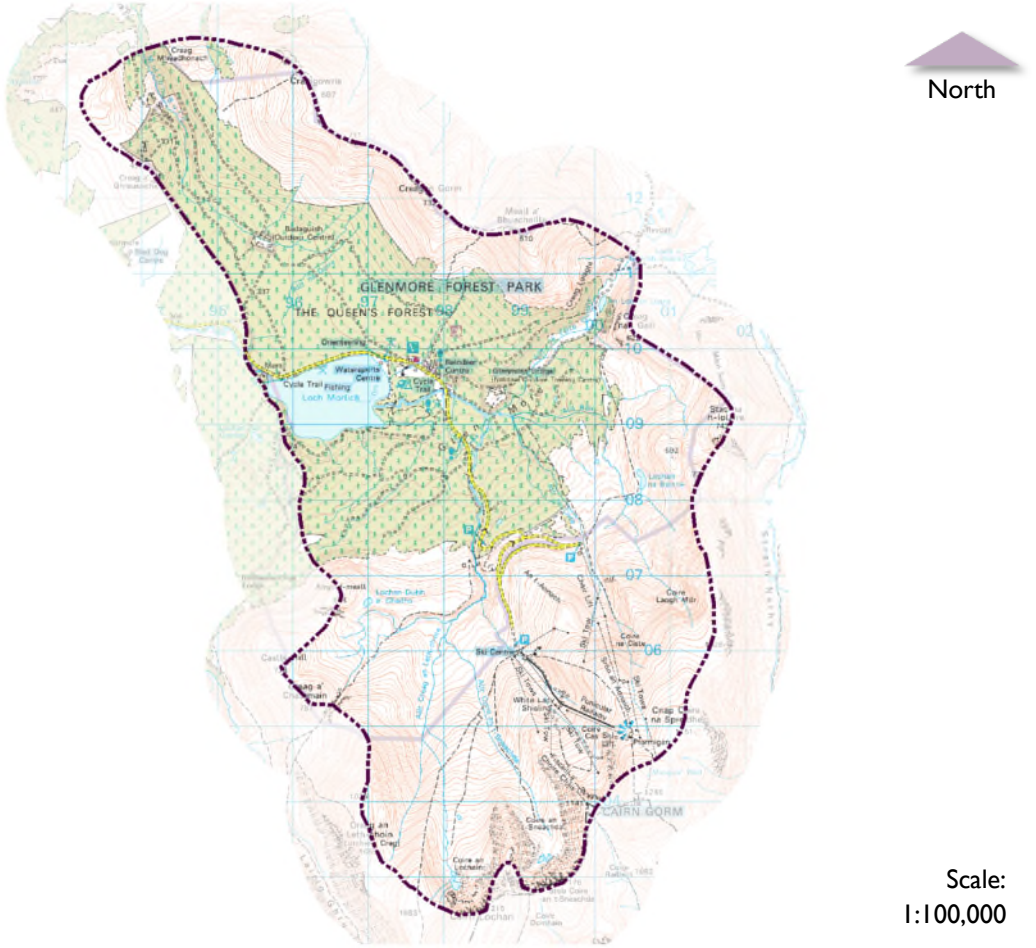

Figure 56 Glenmore Landscape Character Area.

The area offers a strong sense of being surrounded by the massive bulk of the Cairngorm mountains, and the sense of enclosure is reinforced by the woodland of Glenmore and Rothiemurchus. While the dramatic landform of the Northern Corries looms dramatically into views, often quite suddenly, Loch Morlich also forms a visual focus within the dense cover of darker woodland.

The qualities that make up this landscape's character and experience are outlined in **Table 15**.

Special Qualities of the Cairngorms National Park

In 2010 work was conducted to identify the 'Special Qualities' of the Cairngorms National Park's landscape (Scottish Natural Heritage & Cairngorms National Park Authority, 2010).

Table 15 Landscape characteristics and experience of Glenmore LCA.

Landscape Character
➢ This is the upper part of a bowl-shaped landform, extending east from the Rothiemurchus character area, contained by the arc of the high granite "pluton" of the Cairngorms massif to the south and the Kincardine Hills to the north-east. ➢ On the slopes that rise around Glenmore there are some very large moraines and melt water channels, which are often hidden in the woodland, but where they appear above the forest, for example at Ryvoan, they appear as dramatic, large steps on the hillside. ➢ When exposed by rivers or manmade excavations, the gravelly deposits are revealed. ➢ The huge scale and bold form of amphitheatre-like corries, deeply cut valleys and ridges of the bulk Cairngorms create a dramatic skyline. ➢ Glenmore Forest covers much of the gently dished lower ground of this character area. It is predominantly composed of pine and is largely commercially managed. ➢ Larger 'specimen' native pine fringe Loch Morlich and young native pine regeneration is evident on the upper slopes of the Kincardine Hills, increasingly creating a more naturalistic, fragmented upper margin to the forest. ➢ Occasional mature 'granny' pine can be found as small stands or individual trees within the forest. ➢ Loch Morlich forms a focus within the forest, its simple, rounded form, sandy beach and light-reflective surface standing out amidst the extensive dark green coniferous cover. ➢ This character area is sparsely settled, with a single focus of settlement at Glenmore, where development is often related to recreational use of the forest an surrounding mountains. ➢ Summer shielings can be found on the east slopes of Airgiod-meall ridge. There are likely to be others hidden in the forest, along the main rivers and burns. ➢ Loch Morlich is a focus for recreation with a large camp site and water sports facility abutting the sandy beach on its eastern shore. Glenmore Forest accommodates a network of well-used tracks and footpaths popular with cyclists and walkers. A plethora of signs marks a range of other recreational and commercial facilities accessed from the public road to the Cairn Gorm ski centre, which passes through the forest.

This work identified the qualities that make the landscape and scenery of the area special and hence underpins the reason for the designation of both the National Park and the National Scenic Areas within it. The work should make it easier to direct future landscape change so that the appeal and value of the National Park can be passed on to future generations. The work also provides a solid basis for any activity designed to promote the area, whether to residents, businesses or visitors**. Table 16** provides a summary of the National Park's special qualities; full details may be found in *The Special Landscape Qualities of the Cairngorms National Park* (Scottish Natural Heritage & Cairngorms National Park Authority, 2010):

www.snh.gov.uk/publications-data-and-research/publications/search-the-catalogue/publication-detail/?id=1520

- The 'ski road' climbs upwards from Loch Morlich on the steep lower slopes of Cairn Gorm in a series of looping, switch-back bends which offer glimpse views of gravel banks where the river is eroding old glacial deposits.
- A large car park is sited at the foot of the funicular railway and the ski slopes which are marked by snow fences, metal gantries and ski lifts. It offers expansive views across the basin of Glenmore Forest and Strathspey.

Landscape Experience

- Glenmore Forest, Loch Morlich and the Cairngorm mountains are a focus for recreation and as such it is difficult to experience a strong sense of seclusion within this character area, particularly in the more popular areas, and with skiing infrastructure extending onto the mountain slopes.
- While the presence of the ski road, which provides access high up onto the slopes of the northern Cairngorm Massif, reduces the degree of remoteness experienced it does allow spectacular views into the deep valleys and corries of the mountains and enables an accessible appreciation of their huge scale and dramatic form.
- The northern corries offer an accessible but alpine experience of corrie, lochan and crag, dominated by the dramatic vertical scale of the corrie faces.
- Adverse weather conditions at any time of the year can emphasise the scale and elemental qualities of the mountains, even from the exposed car park at the head of the ski road.
- The Cairngorm massif, its skyline, corries and major glens, forms a dramatic backdrop seen from Loch Morlich and from footpaths within the Kincardine Hills

Table 16 Summary of the special landscape qualities of the Cairngorms National Park (Scottish Natural Heritage & Cairngorms National Park Authority, 2010).

General Qualities
➢ Magnificent mountains towering over moorland, forest and strath. ➢ Vastness of space, scale and height. ➢ Strong juxtaposition of contrasting landscapes. ➢ A landscape of layers, from inhabited strath to remote, uninhabited upland. ➢ 'The harmony of complicated curves'. ➢ Landscapes both cultural and natural.
The Mountains and Plateaux
➢ The unifying presence of the central mountains. ➢ An imposing massif of strong dramatic character. ➢ The unique plateaux of vast scale, distinctive landforms and exposed, boulderstrewn high ground. ➢ The surrounding hills. ➢ The drama of deep corries. ➢ Exceptional glacial landforms. ➢ Snowscapes.
Moorlands
➢ Extensive moorland, linking the farmland, woodland and the high tops. ➢ A patchwork of muirburn.
Glens and Straths
➢ Steep glens and high passes. ➢ Broad, farmed straths. ➢ Renowned rivers. ➢ Beautiful lochs.

Trees, Woods and Forests
➢ Dark and venerable pine forest. ➢ Light and airy birch woods. ➢ Parkland and policy woodlands. ➢ Long association with forestry.
Wildlife and Nature
➢ Dominance of natural landforms. ➢ Extensive tracts of natural vegetation. ➢ Association with iconic animals. ➢ Wild land. ➢ Wildness.
Visual and Sensory Qualities
➢ Layers of receding ridge lines. ➢ Grand panoramas and framed views. ➢ A landscape of many colours. ➢ Dark skies. ➢ Attractive and contrasting textures. ➢ The dominance of natural sounds.
Culture and History
➢ Distinctive planned towns. ➢ Vernacular stone buildings. ➢ Dramatic, historical routes. ➢ The wistfulness of abandoned settlements. ➢ Focal cultural landmarks of castles, distilleries and bridges. ➢ The Royal connection.
Recreation
➢ A landscape of opportunities. ➢ Spirituality.

National Scenic Areas

Glenmore and Cairngorm fall within the Cairngorms Mountains National Scenic Area (NSA) (**Figure 57**), which covers a total area of 672 square kilometres.

NSAs are designated under Section 263A of the Town and Country Planning (Scotland) Act 1997, and are defined as "*of outstanding scenic value in a national context*". The legislation also states that within an NSA "*special attention is to be paid to the desirability of safeguarding or enhancing its character or appearance*" (Scottish Natural Heritage, 2010). This is given a policy basis through paragraph 212 of Scottish Planning Policy (SPP) (Scottish Government, 2014, p. 48). Most new developments within NSAs need to be accompanied by a design statement, and there are restrictions on certain permitted development rights.

The original description given in the 1978 report *Scotland's Scenic Heritage* (Countryside Commission for Scotland, 1978), which lead to the designation of NSA, may be found in the appendices of

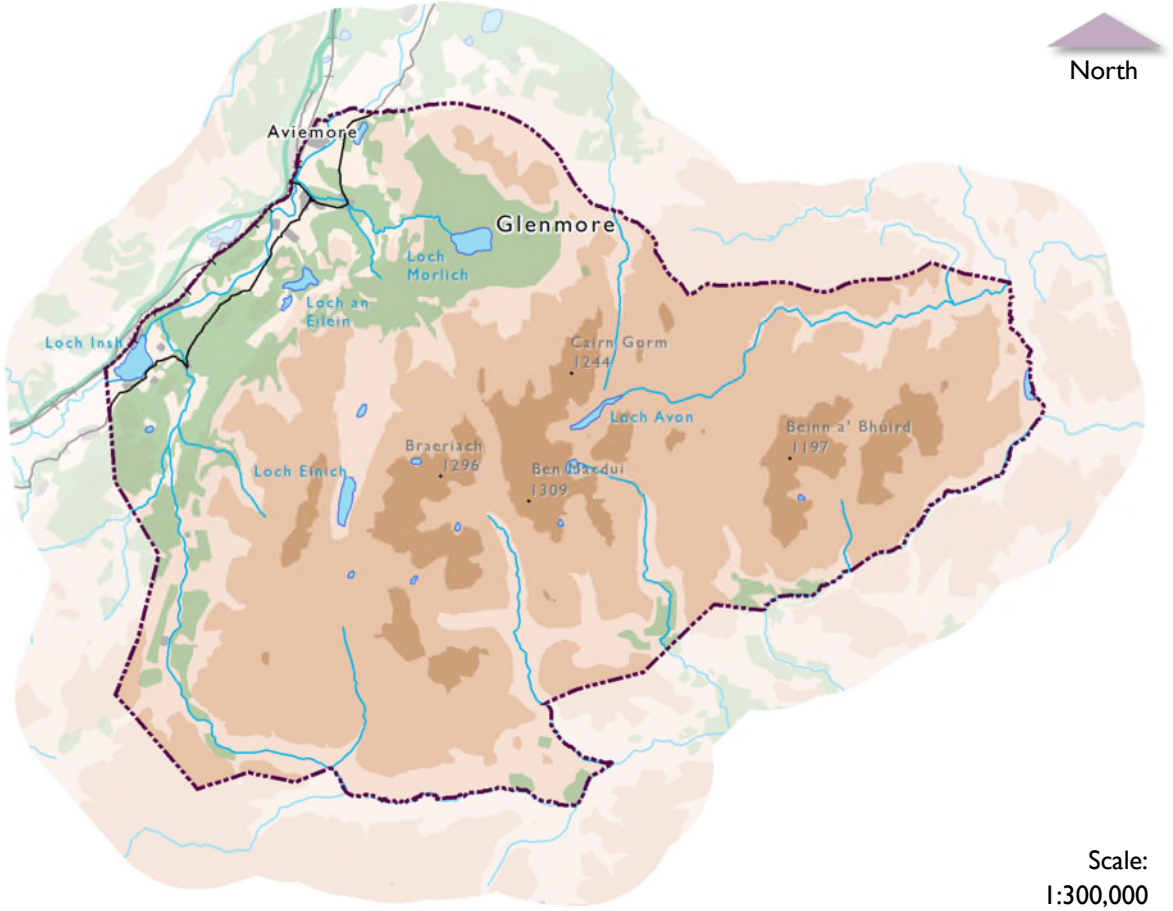

Figure 57 Cairngorm Mountains National Scenic Area.

The Special Landscape Qualities of the Cairngorms National Park (Scottish Natural Heritage & Cairngorms National Park Authority, 2010):

www.snh.gov.uk/publications-data-and-research/publications/search-the-catalogue/publication-detail/?id=1520

Wild Land

'Wild land' is land defined by its perceived naturalness, rugged or challenging terrain, remoteness from public mechanised access and lack of built modern artefacts (Scottish Natural Heritage, 2014). Five areas have been identified within the National Park with one area, namely Cairngorms (**Figure 58**) overlapping around 21km^2 of the Glenmore and Cairngorm area.

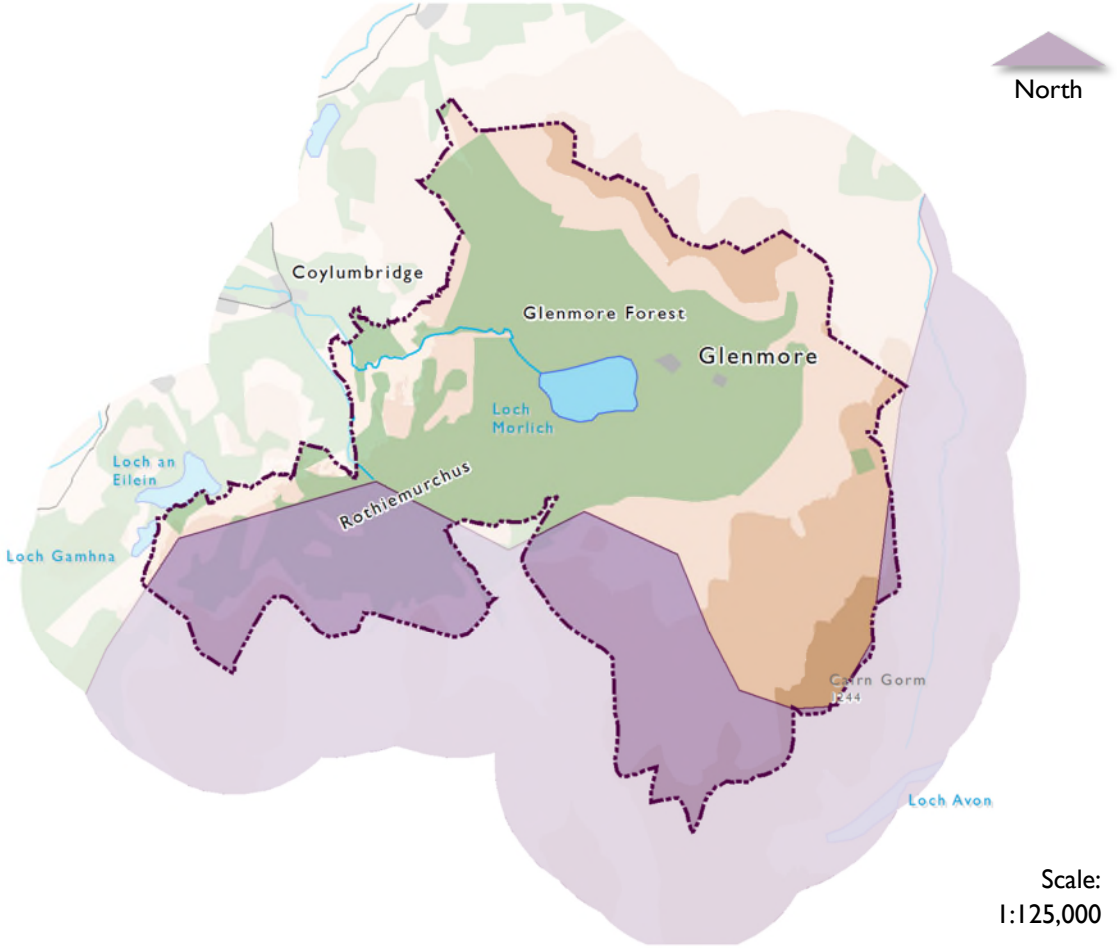

Figure 58 Wild land areas in the Glenmore and Cairngorm area.

These wild and remote areas have a distinct and special character, which is increasingly rare to find. A key component of Scotland's identity, they bring significant economic benefits, attracting visitors and tourists. Many people derive psychological and spiritual benefit from their existence, and they provide increasingly important havens for Scotland's wildlife (Scottish Natural Heritage, 2014).

Wild land is described in the National Planning Framework (NPF) (Scottish Government, 2014) as a "*…nationally important asset*" (p. 42) and according to SPP (Scottish Government, 2014), "*plans should identify and safeguard the character of areas of wild land…*". The Strategy will therefore need to take account of these areas.

Cultural Heritage

Historic Landscape

> "*The context or setting in which specific historic features sit and the patterns of past use are part of our historic environment. The historical, artistic, literary, linguistic, and scenic associations of places and landscapes are some of the less tangible elements of the historic environment. These elements make a fundamental contribution to our sense of place and cultural identity.*"
>
> Historic Scotland (2011).

The landscape we see today is the endpoint of a long period of evolution, involving a complex interplay of the natural elements of climate, geology, geomorphology, soil development, vegetation succession and herbivore impact – and with a rich overlay of human elements linked to settlement, transport, farming and forestry. Similarly, it should be expected that the landscape will continue to evolve in future in response to on-going social, economic and environmental change (Scottish Natural Heritage & Cairngorms National Park Authority, 2010).

Cairngorm Lodge youth hostel originated as a hunting lodge, which was named Glenmore Lodge. It is seen on the 1867 OS map, occupying a position above open land, prior to construction of the ski road. At that time the shape of the building was different to that seen today, and the old photograph displayed in the hostel shows a building with extended wings and only 2 gabled projections to the front (rather than the 3 now present) (**Figure 59**). By 1902 the collection of service buildings that now make up the main part of the visitor centre were present, alongside the road that continued on towards Ryvoan. The open character of the immediate landscape seen in the photograph reflects more intensive agricultural use and greater control over the natural vegetation generally than currently is the case.

Figure 59 Photograph of the Lodge from around the turn of the 19th/20th centuries (from Scottish Youth Hostel Association).

The lodge was requisitioned during the war by the Special Operations Executive as a Special Training School SPS26 for the Norwegian commando unit Kompani Linge. After the war it was taken over by the Central Council for Physical Education and then became the Loch Morlich youth hostel in 1966 when the National Outdoor Training Centre was opened at the new Glenmore Lodge.

The Kompani Linge memorial was dedicated by the King of Norway in 1973, in memory of those who trained in the area and lost their lives in the war.

The visitor centre was developed using the old out-buildings of the lodge. A purpose-built extension was added in recent years.

The forest at Glenmore was host to a different wartime occupier during the First World War, when the Canadian Forestry Corps worked the forest for timber, much of it used as pit-props for trench construction on the western front. There is no memorial signifying this interesting period in the history of the forest.

Information about the area's historic environment is available from the Royal Commission on the Ancient and Historical Monuments of Scotland's (RCAHMS) Historic Land Use Map:

www.hla.rcahms.gov.uk

The map uses simple annotations to show how the landscape has changed over time, giving the user a tool to decipher the broad elements of the historic environment.

RCAHMS in partnership with HS also offer an interactive map of archaeological and architectural sites in Scotland, which acts as a portal to more detailed information held by various partners:

www.pastmap.org.uk

Historic Designations

Within the area to be covered by the Strategy, there are no:

- Scheduled Monuments,
- Inventory Gardens and Designed Landscapes,
- Inventory Battlefield Sites,
- Conservation Areas,
- Listed Buildings or structures, or
- Buildings at Risk.

These features of the historic environment can therefore be scoped out of the assessment.

Linguistic Heritage

Cultural heritage does not simply manifest itself in the physical remains of past actions or in the evolving morphology of the built form. It also exists as a shared consciousness, which is consumed and reproduced in the mundane interactions of everyday life. Language, be it spoken, or as an elemental feature of the cultural landscape, is a potent vessel in which this heritage is maintained and reproduced. Ultimately, it is a driving force in shaping the way we see the world and the way the world sees us.

Over the past few decades, concern about the global scale and speed of language loss has emerged as a strong theme in the work of a growing number of socio-linguists (Crystal, 2000; Romaine & Nettle, 2000; Skutnubb-Kangas, 2000). UNESCO estimates that there are currently around 3,000 endangered languages in the world (Moseley, 2010). Many of these are undergoing '*language shift*', as speakers cease using a minority language and choose to use a majority language in its place (Fishman, 1991). While intergenerational transmission is typically seen as the most significant means of language transmission, there are many other factors that may play a part, including economic benefit, perceived status, educational provision and so on (Clyne, 2004; Grin, 2007). As such, the matter of language change has found its way into the policy streams of many tiers of many governments (Ager, 2001; Wright, 2004). Biological and ecological metaphors abound within the field of socio-linguistics, so to say that the emphasis has moved from the *lassaiz-faire* stance of 'survival of the fittest' to the more interventionist stance position of 'preservation of the species' (Edwards & Newcombe, 2005) describes the evolving state of Scottish language policy and legislation well.

Scotland's linguistic history is complex (MacKinnon, 2000) with the current situation resulting from hundreds of years of population movement and cultural interaction. Located near the centre of the country, and owing to the restrictive nature of its mountainous terrain, the Cairngorms National Park occupies a position where many of these linguistic and cultural differences intersect.

Within the National Park two minority languages, both of which have undergone significant language shift towards English, are still spoken, namely Scottish Gaelic and Scots (MacKinnon, 1991; Withers, 1984; Smith, 2000). The languages belong to contrasting linguistic families, the former being a member of the Goidelic branch of the Insular Celtic family (Price, 2000), the latter being a part of the same dialect continuum as English (Smith, 2000).

Due to the small number of speakers across the Cairngorms, statistical analysis at a data zone level becomes meaningless. Therefore, the languages are considered across the National Park. When considering minority languages, such an approach is usually the most robust, as people rarely confine their lives to the boundaries of statically defined small area geographies.

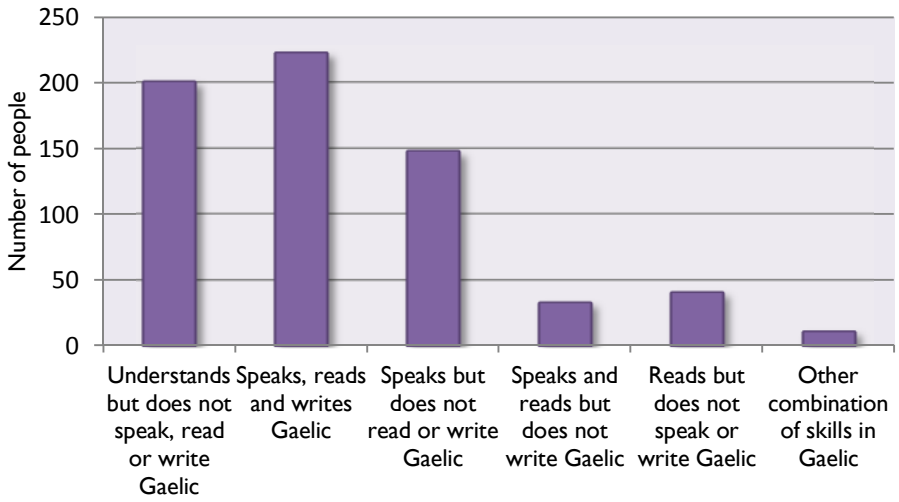

Figure 60 Gaelic language skills for all people aged 3 and over in the Cairngorms National Park (Census table QS211SC).

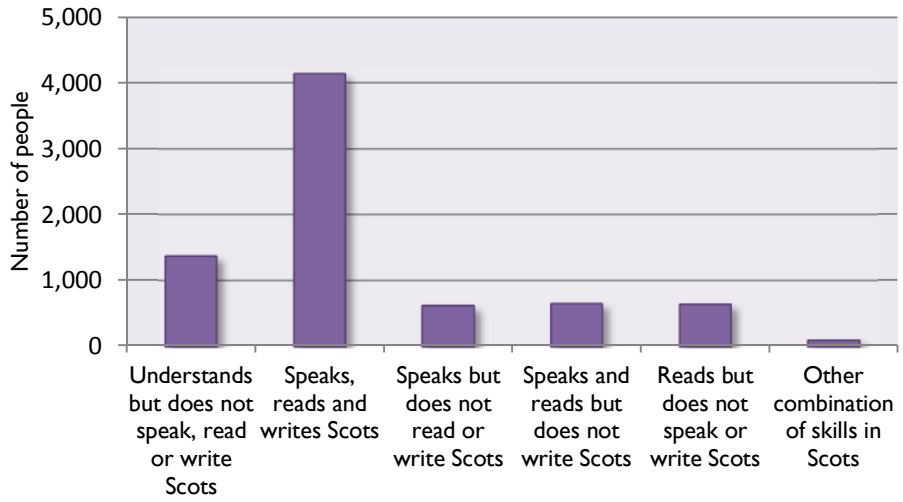

Figure 61 Scots language skills for all people aged 3 and over in the Cairngorms National Park (Census table QS212SC).

Gaelic, which was bought to Scotland from Ireland in around AD 500, was once spoken throughout the area. Though the language is now spoken by but a minority (around 370 or 2.2%; down from around 3.1% in 2001[4]) (see **Figure 60** for an overview of Gaelic language skills) in the National Park, it is a visible and inseparable part of the area's identity, as it continues to dominate the names of places, both built and natural. Nevertheless, it is classified by UNESCO as being 'Definitely endangered'[5] (Moseley, 2010). Currently, the CNPA seeks to support the Gaelic language through its

[4] The samples that these statistics are drawn from are too small to allow any robust analysis of the Gaelic speaking population.

[5] UNESCO has established six degrees of endangerment that 'may be distinguished with regard to intergenerational transmission', namely, 'Safe', 'Stable yet threatened', 'Vulnerable', 'Definitely endangered', 'Severely endangered', 'Critically endangered' and 'Extinct'. In the case of Gaelic's status as a 'Definitely endangered' language, this means it is predominantly no longer being learned as a mother tongue by children in the home. The youngest speakers are thus of the parental generation. At this stage, parents may still speak their language to their children, but children do not typically respond to the language. In the case of Scots as a 'Vulnerable' language, this means that most, but not all children of families of a particular community speak their parental language as a first language, but this may be restricted to specific social domains (UNESCO, 2003).

Gaelic Language Plan (Cairngorms National Park Authority, 2013).

Scots, which takes the form of its Northern / North-eastern dialect, Doric (McColl Millar, 2007), is also spoken throughout the National Park, but is stronger in the east where the influence of the lowlands is greatest. The language has also seen a fall in use since its apex in the Medieval period (Smith, 2000), with around 5,400 (29.3%) of the National Park's population claiming to be able to speak it in 2011 (see **Figure 61** for an overview of Scots language skills). It is classified by UNESCO as being 'Vulnerable'.

The number and proportion of both Gaelic and Scots speakers is therefore low within the Cairngorms National Park and it should be recognised that the CNPA is extremely limited in its ability to influence language use and acquisition. However, the Strategy may play an indirect role in language maintenance through its ability to shape the National Park's sense of place.

A sense of place may be defined at its simplest as the human interpretation of space (Tewdwr-Jones, 2002) and therefore the linguistic landscape, be it in the form of visible displays on advertisements or signage, or interpreted through the names written on maps or in literature, may form a strong part of this interpretation (Coupland, 2012). Place-names, for example, can offer a strong insight into the culture, history, environment and wildlife of an area. Public displays of language, which may be framed within the context of bilingualism, and which may form part of the broader cultural landscape, can play an important role in generating cultural norms such as the use of a minority language, effectively creating an environment in which the language is a prominent day to day feature of the environment (Adam, 1998; Urban, 2001; Shein, 1997; Kirshenblatt-Gimblett, 2004; Coupland & Garrett, 2010; Bauman & Briggs, 1990).

In turn, there is a perception that in the case of Gaelic at least, there is an economic benefit in the public use and display of the language. It is estimated that the potential economic value of Gaelic to the Scottish economy is in the region of between £82 million and £149 million (DC Research, 2014).

Key Messages

Glenmore and Cairngorm occupy one of the National Park's best known landscapes, being the gateway for many into the area's forests and mountains. It is a large scale landscape defined by its native pine forest and open granite mountains. It is a landscape admired for its scenic grandeur and beauty, containing an essentially wild character despite the attentions of human management. The value of this landscape is recognised by its designation within the Cairngorm Mountains NSA.

The area does not possess any statutory historic designations. However, this does not mean that the area's historic environment is without value. Glenmore has a rich history, which is well represented in its buildings and landscapes.

Inter-relationships with other topics

- Topic 1: Climatic Factors 59
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Topic 8: Population and Human Health

Population statistics within the Cairngorms National Park are calculated using an aggregate of data zones that roughly correspond with its boundary. For full details on how these data zones are collected, see **Appendix 3** (p. 177).

Population and Households

Before delving into the social and economic characteristics of Glenmore itself, it is first necessary to consider the broader picture within the National Park. As an area that attracts a significant number of visitors, the nature of the National Park's overall population is likely to result more local effects on the area.

In 2013[6] the estimated population of the National Park was 18,420, with 9,113 males and 9,307 females.

The National Park has a distinctly different population profile to the national (**Figure 62** and **Figure 63**), with a higher

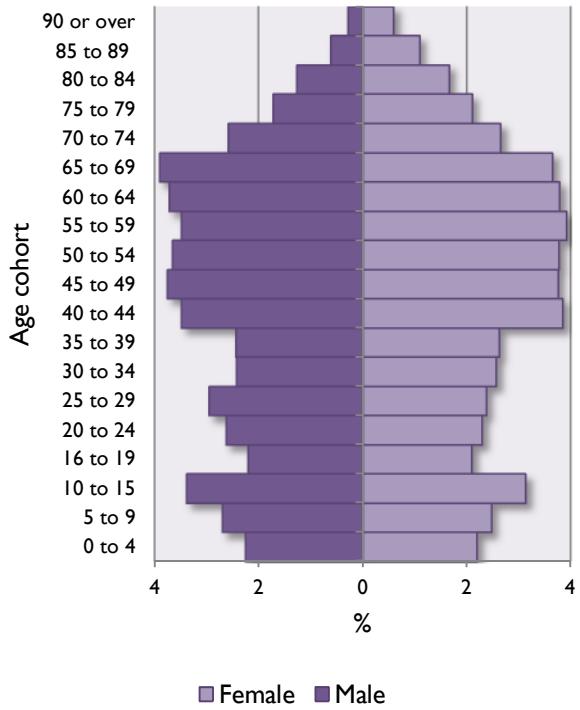

Figure 62 Estimated population profile by age and sex in the Cairngorms National Park in 2013.

Source: www.sns.gov.uk

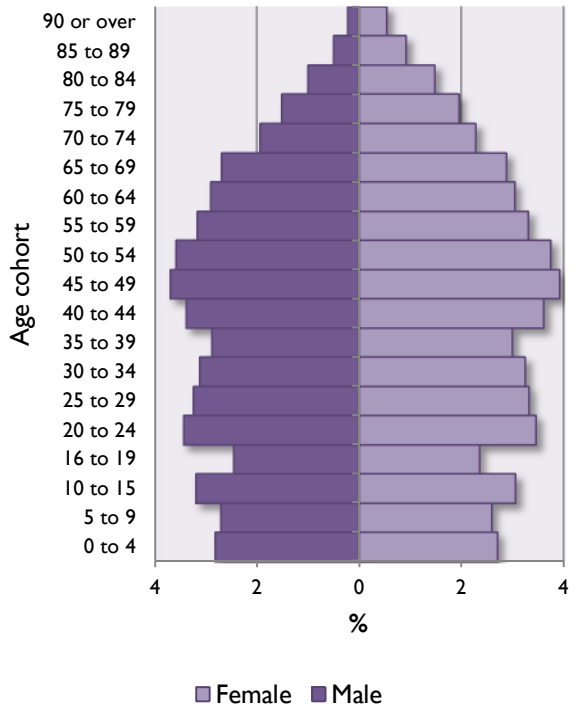

Figure 63 Estimated population profile by age and sex in Scotland in 2013.

[6] 2013 Mid-year estimates represent the most recent set of population statistics at a data zone level at time of writing.

proportion of people falling within the 55 to 74 age cohorts. When compared to other rural parts of Scotland, the Cairngorms National Park also has a relatively high proportion of residents within the 10 to 29 age cohorts (see NRS (2014). This is thought to be due to the relatively high number of opportunities for employment in the outdoor and tourism sectors. There is also a spike in the 10 to 15 year cohort, which is replicated across Scotland as a whole.

Although mid-year estimates for 2013 suggest a small decrease from the previous year (about -0.2%), during the 21st century[7], the National Park has experienced a significant net increase in its resident population, rising by approximately 2,087 persons (a growth of 12.8%) (**Figure 64**). This growth is well above the overall Scottish rate, which saw a net increase of around 5.2% over the same period.

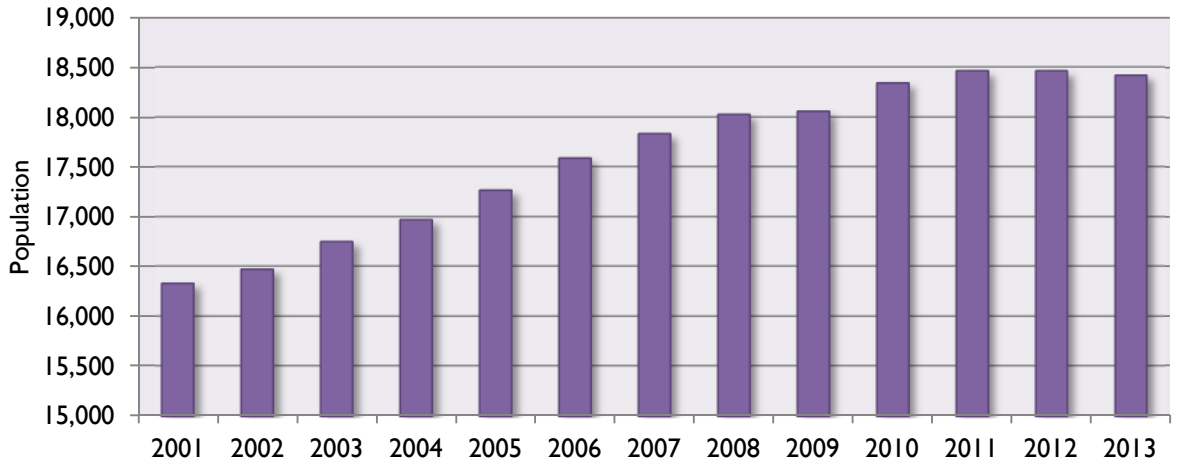

Figure 64 Mid-year estimates of total population for the Cairngorms National Park. Source: www.sns.gov.uk

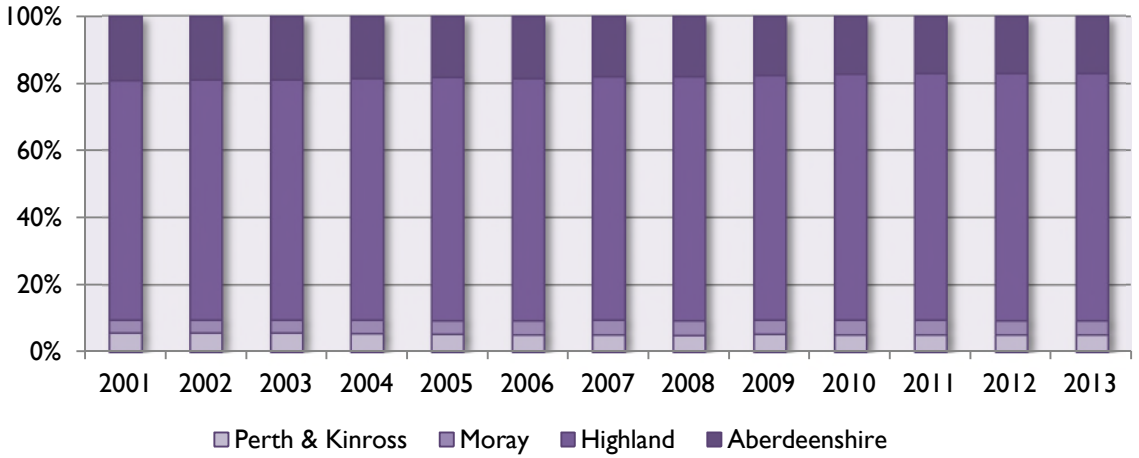

Figure 65 Mid-year estimates of total population for the Cairngorms National Park distributed by Local Authority Area. Source: www.sns.gov.uk

[7] Figures between 2001 and 2009 include people living in the area of Perth and Kinross which did not become part of the National Park until 2010.

This growth has not been evenly distributed throughout the National Park (**Figure 65** and **Figure 66**). Indeed, the overall population in data zones within Aberdeenshire and Perth and Kinross has remained relatively stable.

The greatest increase occurred within Aviemore, which is estimated to have grown by around 972 people. Proportionally this represents a growth of around 136%. Most of Badenoch and Strathspey also experienced growth, gaining an estimated 940 people. Taken together, this addition of 1,912 persons resulted in the Highland area of the National Park growing by 16.4%.

Although net population change within the National Park has been positive, certain areas experienced a reduction in the population. For example, the population of datazone S01000312, which represents part of Ballter, lost around 113 persons (-17.6%). It is unclear if this represents a genuine trend or is a result of methodical or sampling changes to the mid-year estimate methodology.

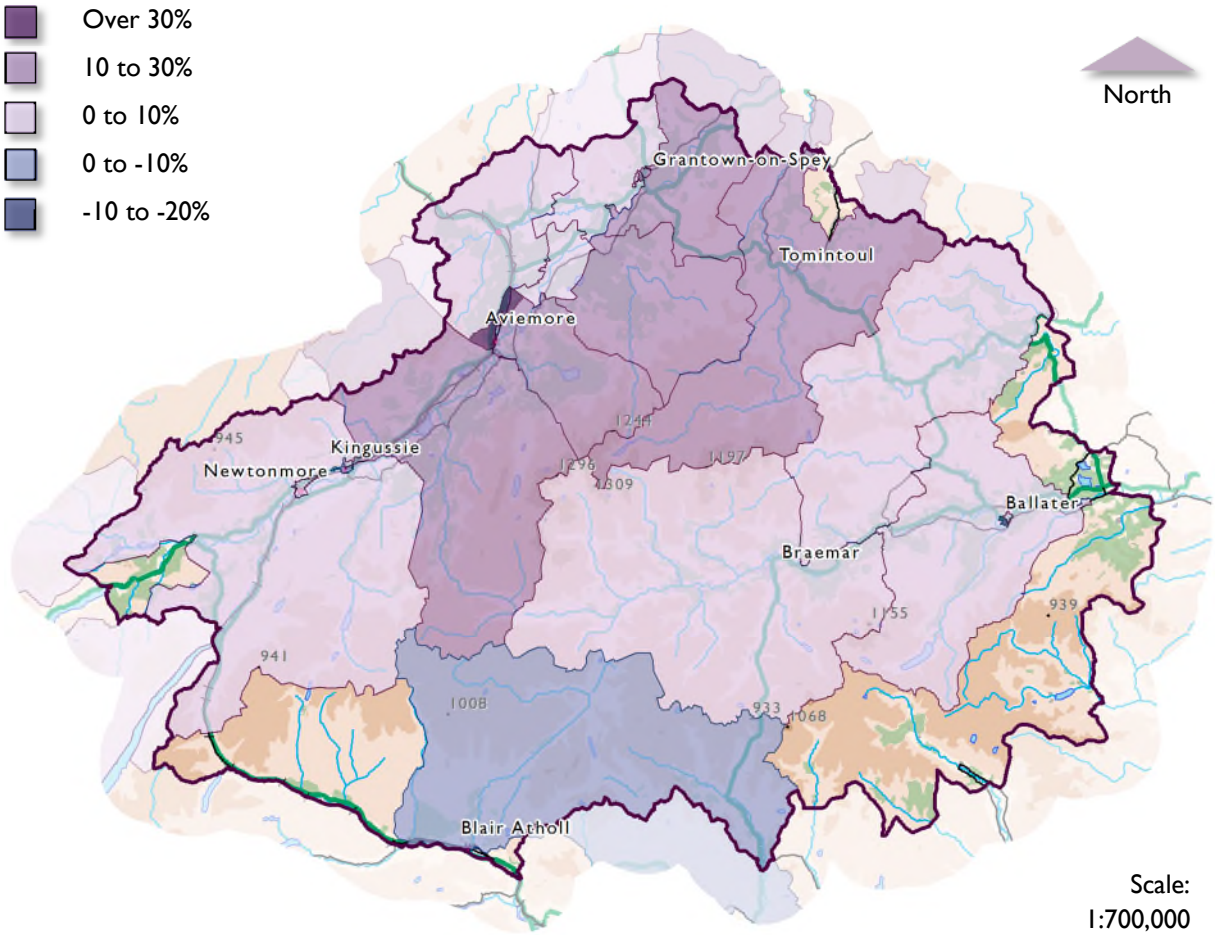

Figure 66 Population change within the Cairngorms National Park between 2001 and 2013 (based on mid-year estimates).

Population projections for the National Park are produced by National Records of Scotland (NRS), with the most recent being 2012 based projections being published in August 2014 (**Figure 67**).

It should be noted that in estimating the population of the National Park and calculating its projected growth, NRS does not include data zone S01005147 / S01011981, which is in Perth and Kinross. Population estimates presented in NRS documents therefore differ from those of the CNPA, since the CNPA does include the data zone within its analyses of the National Park's demographic and socio-economic character.

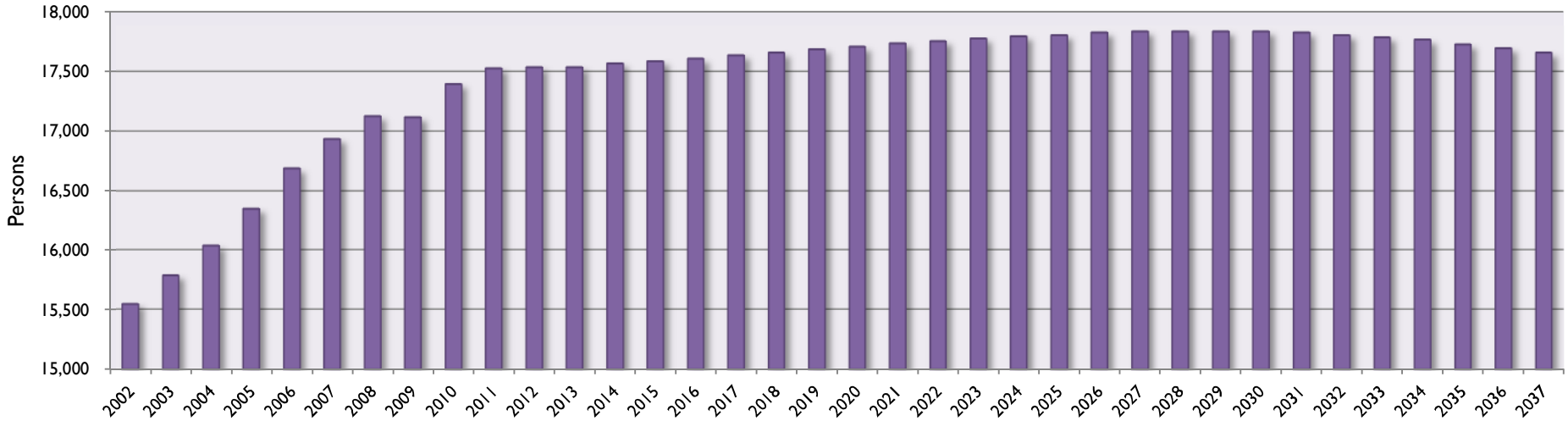

Figure 67 Estimated and projected total population of the National Parks, 2002-2037 (NRS, 2014).

This difference does not however result in a significant problem since it is not the headline population that generates a policy response, but the rate and scale at which change occurs. Since data zone S01005147 / S01011981's population was only estimated to be 923 in 2013 and the fact that it saw no statistically significant change over the period of 2001-2013 (an estimated net decrease of 2 persons), there is little to suggest that its absence within NRS' calculations would have had a significant impact on the robustness of their projections.

NRS (2014) estimate that between 2012 and 2037, the population of Cairngorms National Park is projected to rise from 17,540 to 17,660 (an increase of around 1%). This is a lower level of growth than experienced previously, however since 2010 a reduction in the rate of growth has

occurred and should this represent a future trend then the projection is not unreasonable. There is projected to be more deaths than births across the 25 year projection period. Therefore the population increase is due to net immigration to the area, which is assumed to be 50 migrants per year.

NRS (2014) also give an indication of how the age structure of the population might change (**Figure 68** and **Figure 69**). The number of children aged under 16 is projected to decrease by 15% over the projection period from 2,890 in 2012 to 2,460 in 2037. The number of people of working age is projected to decrease from 10,350 in 2012 to 9,910 in 2037, a decrease of 4%.The population of pensionable age is projected to rise by 23% from 4,300 in 2012 to 5,290 in 2037.

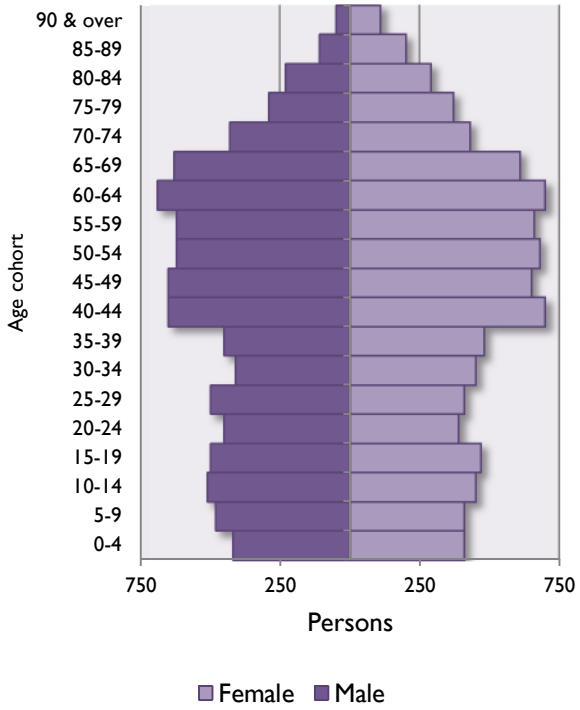

Figure 68 Estimated population profile by age and sex in the Cairngorms National Park in 2012 (NRS, 2014).

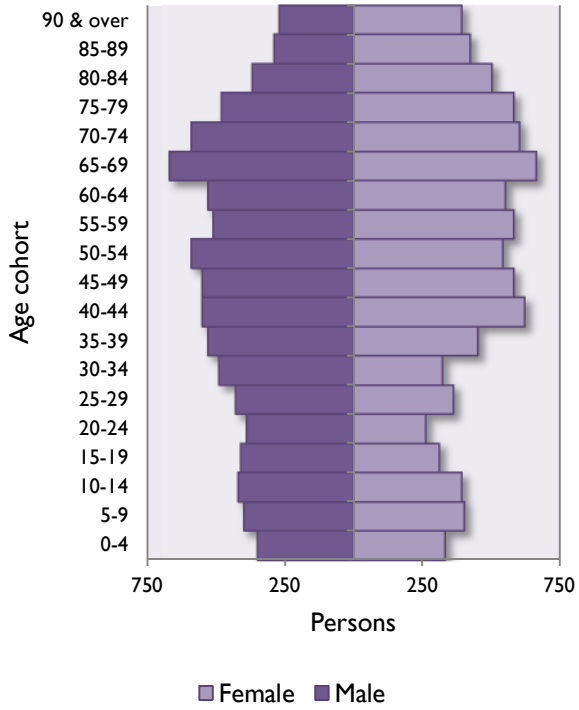

Figure 69 Projected population profile by age and sex in the Cairngorms National Park in 2037 (NRS, 2014).

It's clear that this projected change in population and demographic character will result in an increase in the number of households within the National Park. NRS (2014) projections suggest that households are set to increase from 7,870 in 2012 to 8,780 in 2037, an increase of 12% (**Figure 70**).

Given the limited nature of the projected population growth, it is clear that it does not entirely explain the projected change in the number of households. Indeed, the difference between the household and population projections is due to the trend in more people living alone or in smaller households. In the Cairngorms National Park, the average household size is projected to drop from 2.15 people in 2012 to 1.93 people in 2037 (**Figure 71**).

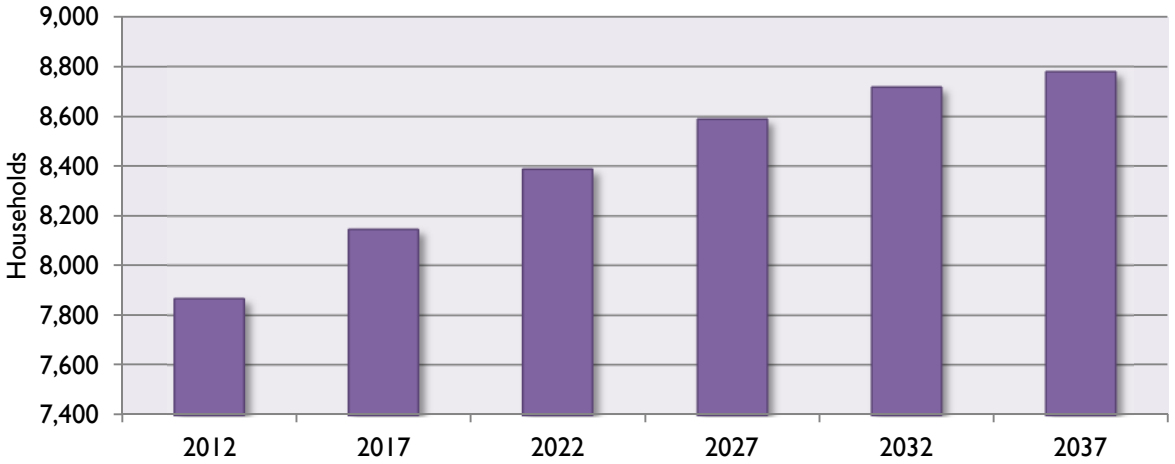

Figure 70 Overall household projections for the Cairngorms National Parks, 2012 to 2037 (NRS, 2014).

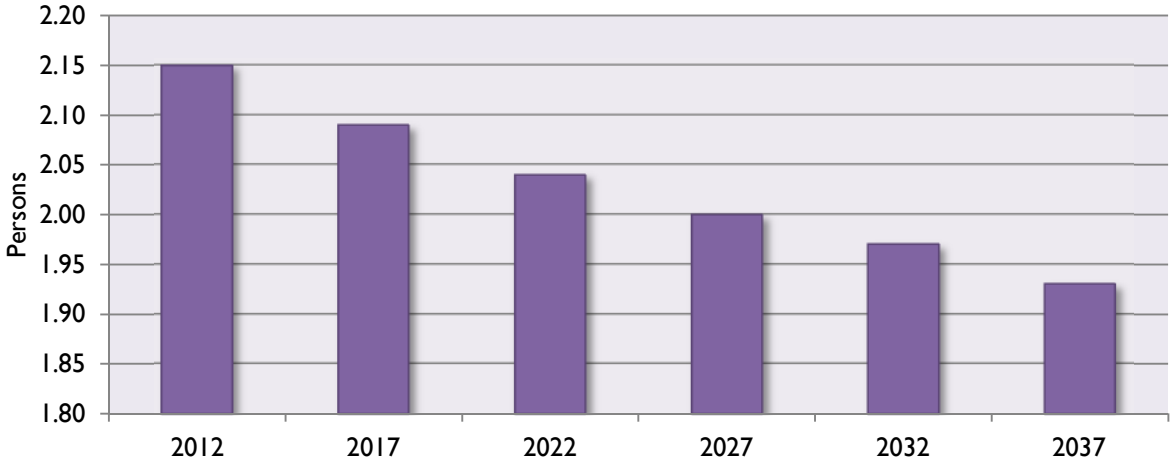

Figure 71 Projected household size for the Cairngorms National Park, 2012 to 2037 (NRS, 2014)

The Local Development Plan 2015

The Cairngorms Local Development Plan (LDP) was adopted on March 27th 2015. The LDP sets out policies and proposals for the development and use of land for the next 5-10 years, and provides the basis for the assessment of all planning applications made within the Cairngorms National Park.

Of significance to the Glenmore and Cairngorms Strategy is the close proximity of Aviemore and the new planned town of An Camas Mòr. Aviemore has an identified allowance of 406 new dwellings, although this figure will be higher when taking into account the delivery of windfall development. An Camas Mòr, which already benefits from planning consent, has an allowance of up to 1,500 new dwellings. Combined therefore, land has been identified for around 2,000 new dwellings within 10 km of Glenmore and Cairngorm. It is anticipated that these will be delivered over the next 20 to 30 years. Based on the projected household size of 1.93 for 2037 (see Figure **71**), it is not unreasonable to assume that the potential additional population of An Camas Mòr alone, will be in the region of 2,900 by the time it is completed. This is likely to result in a significant increase in use of the facilities at Glenmore and Cainrgorm, which should be taken into account by the Strategy.

Glenmore and Cairngorm

The population of Glenmore and Cairngorm is mostly located within a single 2001 data zone, S01003751 (**Figure 72**). In 2011 the data zone was expanded and re-numbered (S01010539), although statistics for this area are not yet available. It should also be noted that the data zone includes part of Aviemore and that proposed new settlement of An Camas Mòr is located within this data zone. The development of the latter is likely to result in future changes to the data zone boundary.

It should be noted that there are many risks in analysing small area geographies such as this in isolation, largely because sample sizes are often too small to show recognisable trends and therefore draw firm conclusions from. Disclosure control methods can also complicate analysis of change because the suppression of cell values can lead to data zones having empty cells in certain years. Bearing in mind these cautions, data may be gathered to offer a limited analysis of an area's characteristics.

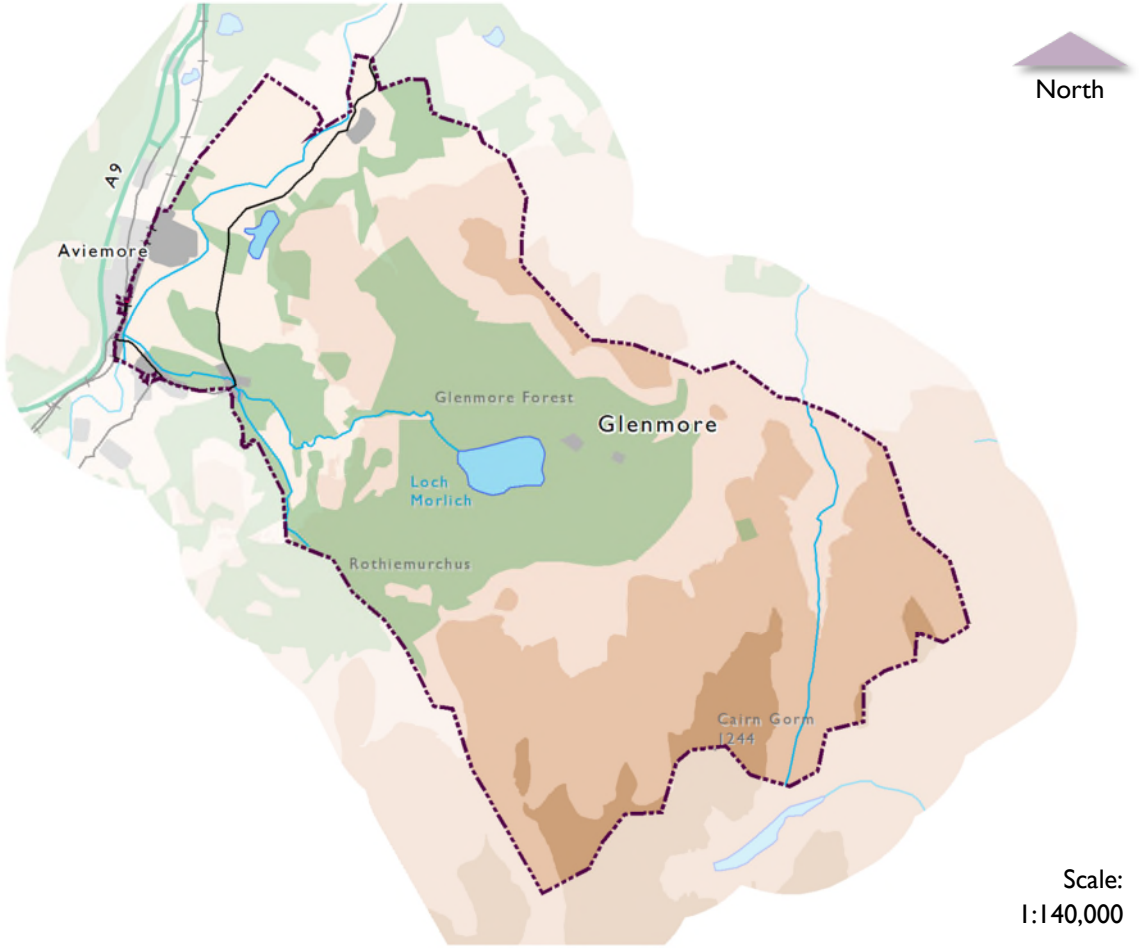

Figure 72 Data Zone S01003751.

Population

In 2013 the estimated population of the Glenmore area was 1,089, with 575 males and 514 females.

The area has a distinctly different population profile to the rest of the National Park and indeed the rest of Scotland, with a significantly higher proportion of people falling within the 20 to 34 age cohorts, notably among males (Figure 73). This is likely to be representative of the dominance of jobs within the outdoor and tourism sectors in this area, many of which offer onsite worker accommodation. Given the area's relatively small overall population, it is unsurprising to find such a situation occurring.

Mid-Year estimates suggest that between 2001 and 2013, the population of data zone S01003751 saw a net grown of around 140 individuals (around 13%) (**Figure 74**). There is however significant variation from year to year. This will partly reflect the small size of the population, with small changes appearing more pronounced than they should be.

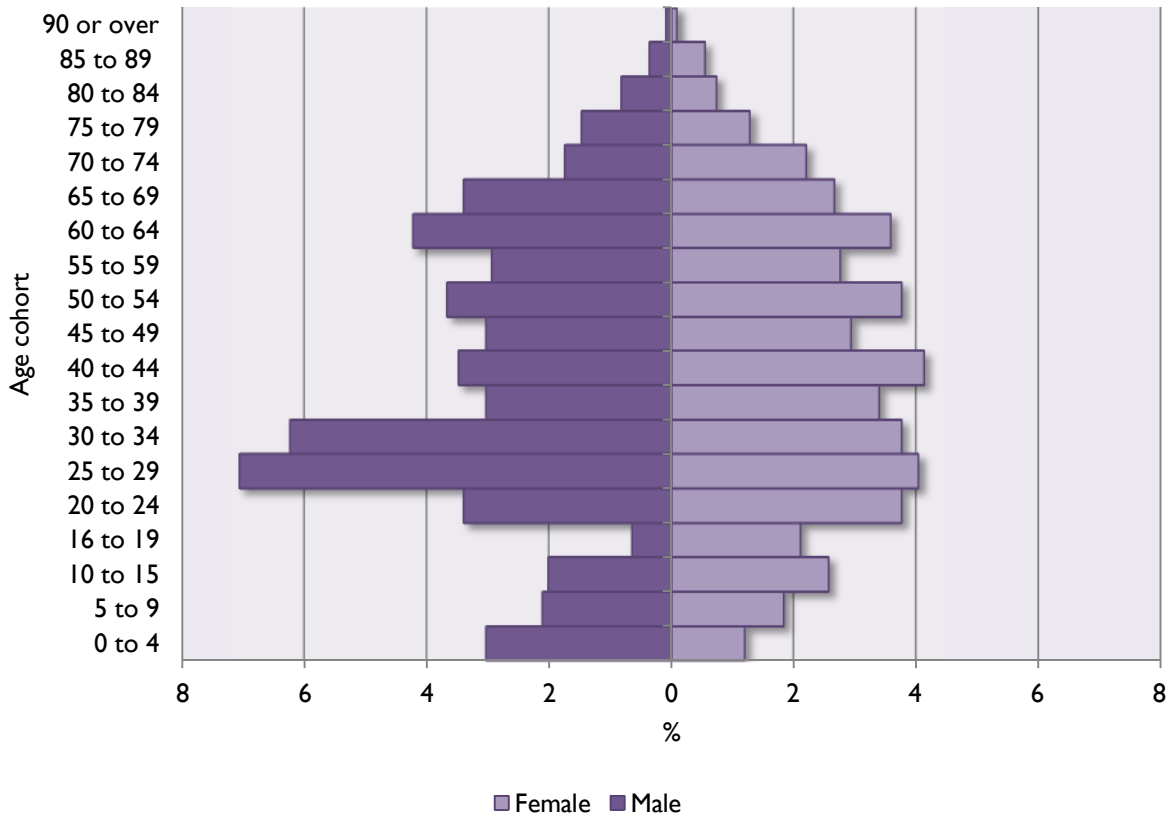

Figure 73 Estimated population profile by age and sex in Data Zone S01003751 in 2013.

Source: www.sns.gov.uk

However, it may also reflect the fact that nature of the work in the area is highly seasonal and that poor years may result in fewer jobs being available in the area.

Economic Activity

2013 mid-year estimates indicates that Data Zone S01003751 had a working age population of 759 people (69.7% of total population), with 411 males and 348 females. This proportion is significantly higher than the National Park as a whole (51.9%), reflecting the high proportion of 20 to 35 year olds living within the area. Those of pensionable age numbered 191 (17.5% of total population) with 86 males and 105 females. This is slightly lower than the National Park's level of 24.6%.

Educational achievement within Data Zone S01003751 is a little higher than the National Park and Scottish averages. In terms of qualifications, the 2011 Census (Table LC5102SC) suggests that around 84.3% of the 16+ Census population had NVQ1 level and above (CNP 76.8%; Scotland 73.2%), and around 36.6% had

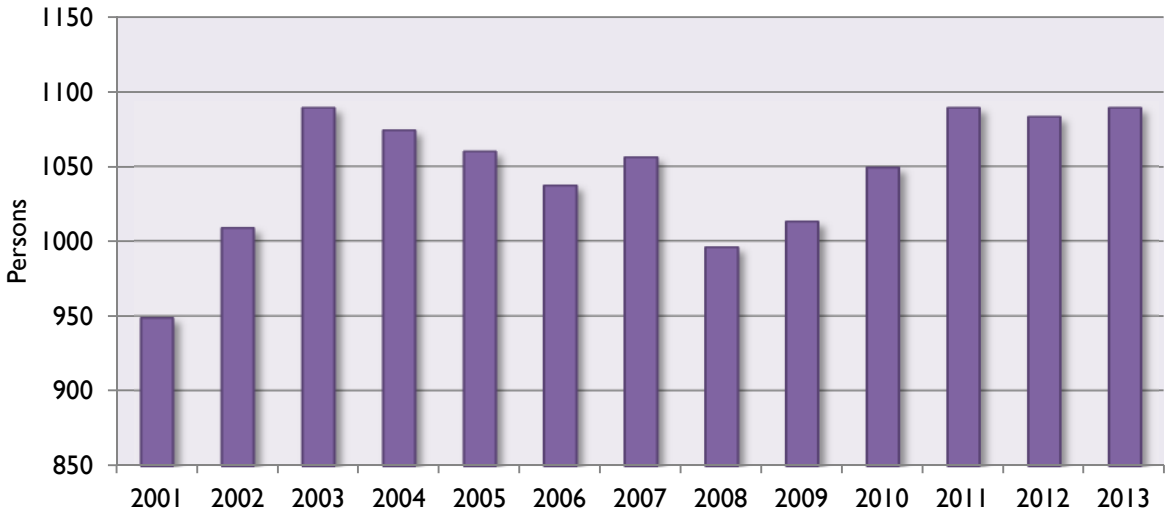

Figure 74 Mid-year estimates of total population for Data Zone S01003751. Source: www.sns.gov.uk

NVQ4 and above (CNP 30.8%; Scotland 26.1%).

According to the Census (Table LC6107SC) of the economically active in 2011 (around 750 individuals, or 78% of the 16+ population), around 96% were classed as being in employment, which is close to the National Park level of around 95% and slightly higher than the Scottish level of 91.9%. Of the inactive, who numbered 212 (around 22% of the 16+ population), 66% were inactive due to retirement. This is lower than the National Park's level of 75.1% but higher than the Scottish level of 59.9%. There are two possible reasons for this. Firstly, as shown by **Figure 68** the National Park as whole has a higher proportion of those over the age of 55 than the national average, which is only partly suppressed by the high numbers of 20-35 year olds living in S01003751 and secondly, owing to the absence of a higher education facility within the National Park, there are relatively few full time students residing in the area.

The Census profile of full time (77.3%) and part time (22.7%) employee jobs (excludes self-employed, government, trainees and HM Forces) (Table LC6109SC) indicates a slightly higher level of full time employment than the National Park (72.8% and 27.2% respectively), and indeed Scotland (72% and 28% respectively), as a whole. This difference is not however large enough to draw any conclusions about this aspect of the local economy and may vary greatly from year to year, particularly given the relative dominance of the Accommodation and food service sector (**Figure 75**).

According to SIMD 2012 data, the National Park has relatively low levels of employment related deprivation, which it rates using indicators such as Working Age Unemployment Claimant Count, Working Age Incapacity Benefit recipients and Working Age Severe Disablement Allowance recipients. As one of the National Park's 23 Data Zones that fall within the 20% least deprived, this is the case for S01003751.

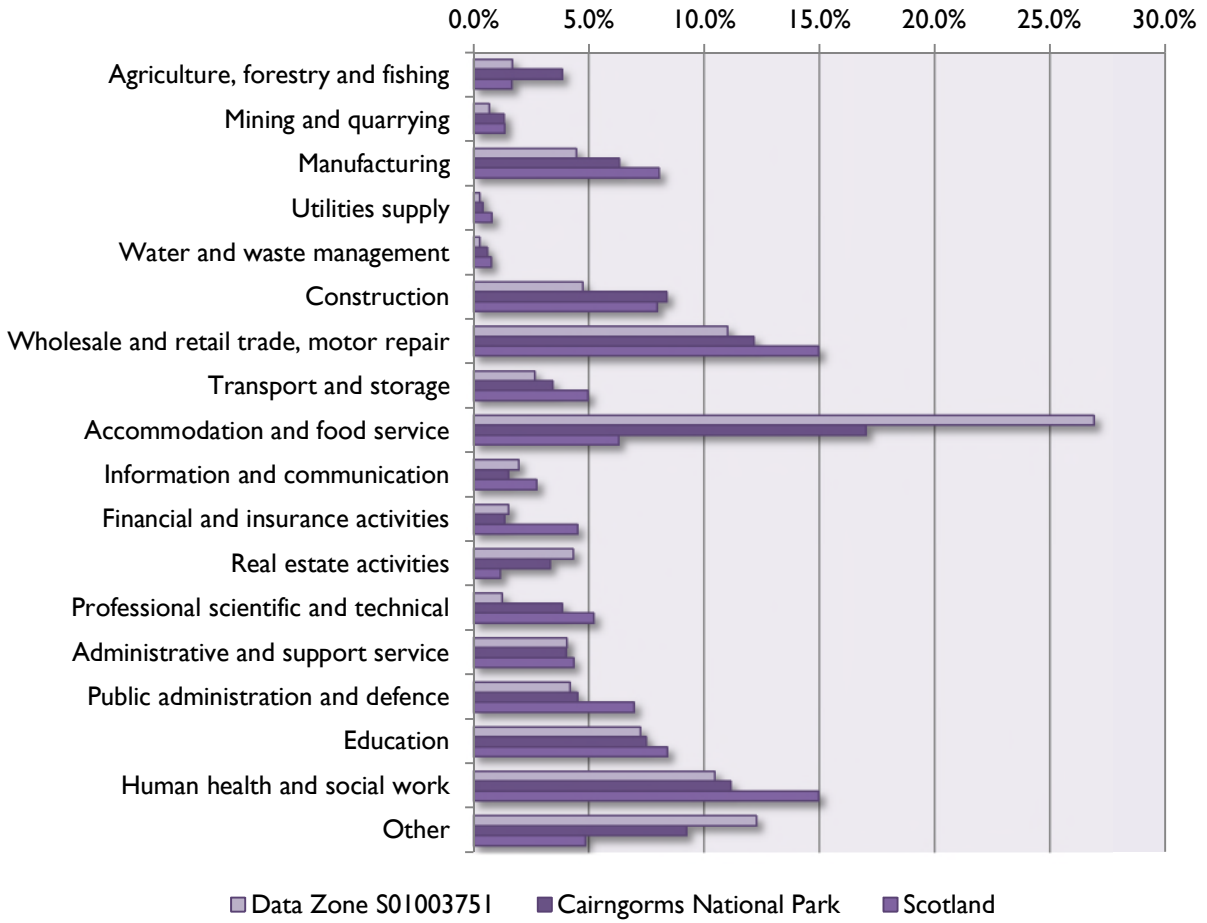

Figure 75 Proportion of all people aged 16 to 74 in employment the week before the census by industry (Census table KS605SC). Crown copyright 2013.

For further information on variables, see www.scotlandscensus.gov.uk/variables

In order to protect against disclosure of personal information, some records have been swapped between different geographic areas. Some cell values will be affected, particularly small values at the most detailed geographies.

Indeed, unemployment levels within the S01003751 are relatively low. Out of work benefits issued to those of working age in the area (JSA) in quarter 4 of 2012 stood at 15 (1.9%), which is similar to the National Park level of 1.7% and below the Scottish figure of 4%. Indeed, trends in JSA claimants closely mirror those of the National Park as a whole.

The nature of employment within both Data Zone S01003751 and the National Park is extremely seasonal, with JSA claimants peaking in the winter months (**Figure 76**). Unemployment is at its lowest in July, which coincides with Scottish school and public holidays.

In employment terms, claimant data suggests that the recession began in the area in March 2008. It continued to get worse at the rate of about two jobs per week until July 2009 when the position began to improve, with a stabilisation in the level of those claiming JSA. Most recent data suggests that claimant numbers are beginning to fall, though it is still too soon say whether this represents the beginnings of a durable recovery (CogentSi, 2010; CogentSi, 2013).

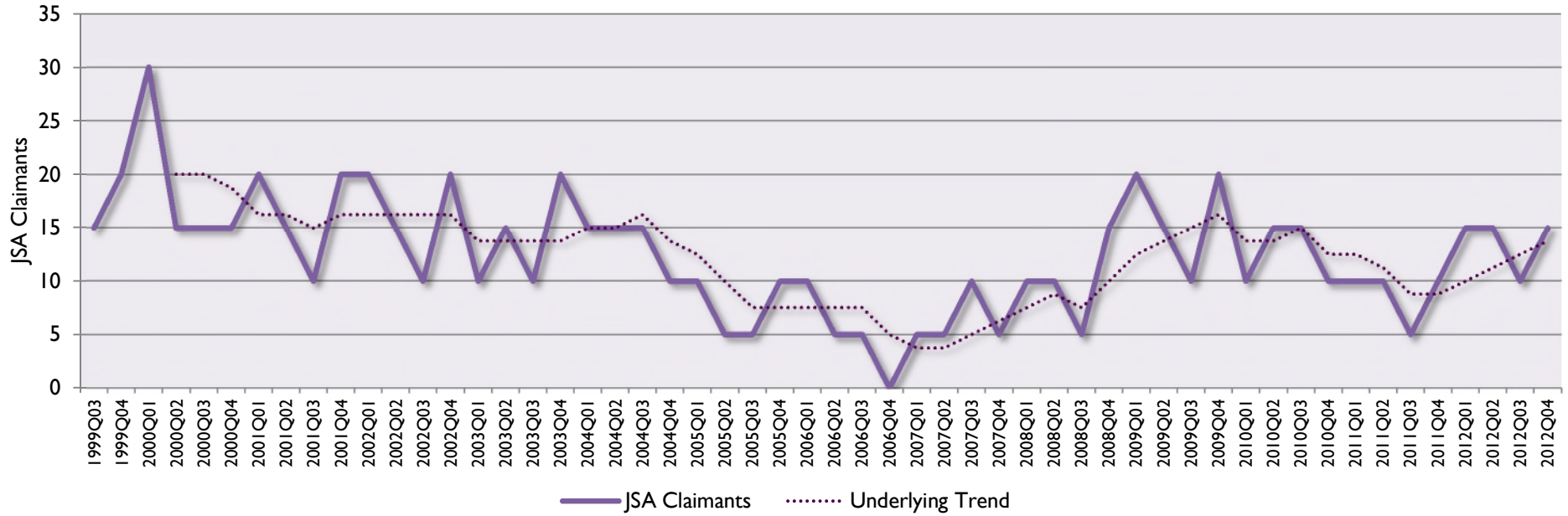

Figure 76 Job Seekers Allowance (JSA) claimants within Data Zone 01003751 (Source: http://www.sns.gov.uk/default.aspx).

Due to the low level of unemployment within both Data Zone S01003751 and the National Park, levels of income deprivation are relatively low according to the SIMD 2012. According to the SIMD, Data Zone S01003751 is in the 20% least deprived. However, this masks the fact that there is strong evidence to suggest that average earnings in the area are well below the Scottish and British averages.

There is no official up-to-date data available for earnings specifically within Data Zone S01003751, although median gross weekly wages for the Highland area as a whole are £487.90. This is less than the Scottish median of £519.40 and the British £520.20 (Office for National Statistics, 2015).

Another indicator of the income of area's residents may be found in research carried out by Herriot-Watt University on developing local and small area estimates of income distribution, poverty and deprivation (Bramley & Watkins, 2013). This study offers a snap shot of household incomes at a data zone level in 2008 / 2009. It should be noted that the figures presented in this study are not directly comparable to those Office of National Statistics, since the Herriot-Watt figures represent household income rather than individual worker pay. The Herriot-Watt figures also include welfare payments (e.g. pensions, tax credits, JSA etc.) within their figures, which are also not present within the Office of National Statistics figures.

The Herriot-Watt data indicates that in 2008 / 2009 (**Table 17**) weekly median gross household income was just £473.

Table 17 Estimated household income for data zones within the Data Zone S01003751 2008 / 2009 (Bramley & Watkins, 2013).

Weekly median net[8] household income	£401
Weekly median gross[9] household income	£473
Households with a gross income of less than £300 per week	25%
Households with a gross income of less than £400 per week	37%
Households with a gross income of less than £500 per week	49%
Households with a gross income of less than £600 per week	57%
Households with a gross income of less than £800 per week	77%

[8] Net income covers income from all sources (as in Gross Income) but after the deduction of income taxes and national insurance contributions.

[9] Gross income is income from all sources (wages, salaries, pensions, benefits, rent, interest, maintenance) before the deduction of tax and national insurance contributions.

The 2011 Census indicated that of the 701 people aged 16 -74 in employment around 318 (45.4%) of them commuted to work via car, van or motor cycle (Census table LC7101SC) (**Figure 77**). This is lower than the Scottish level of 56%, a reflection of the fact that S01003751 and the National Park have a relatively high level of home working (19% and 22.9% respectively). The use of public transport is particularly low within both Data Zone S01003751 and the National Park, a reflection of the difficulties of providing good service in such a rural area.

Most commuting occurs within the local area, with over half of S01003751's workers travelling less than 10km to their place of work (**Figure 78**).

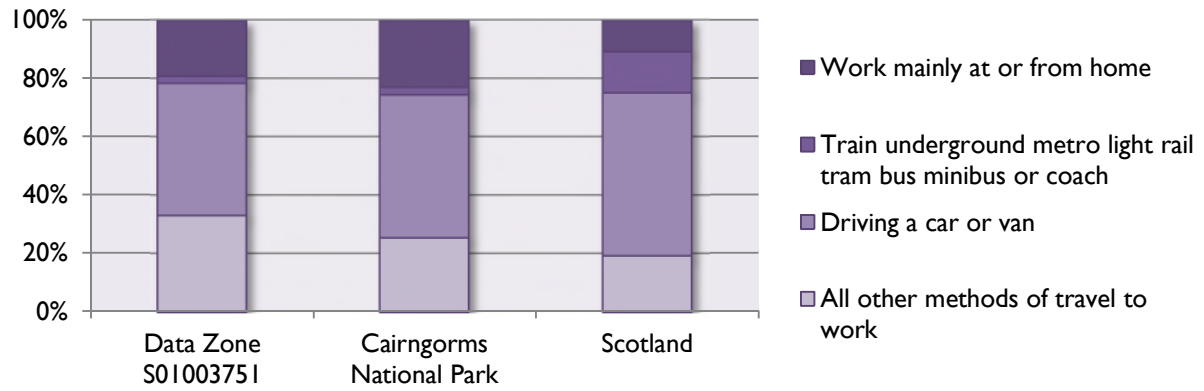

Figure 77 Method of travel to work, 2011 (Census table LC7101SC).

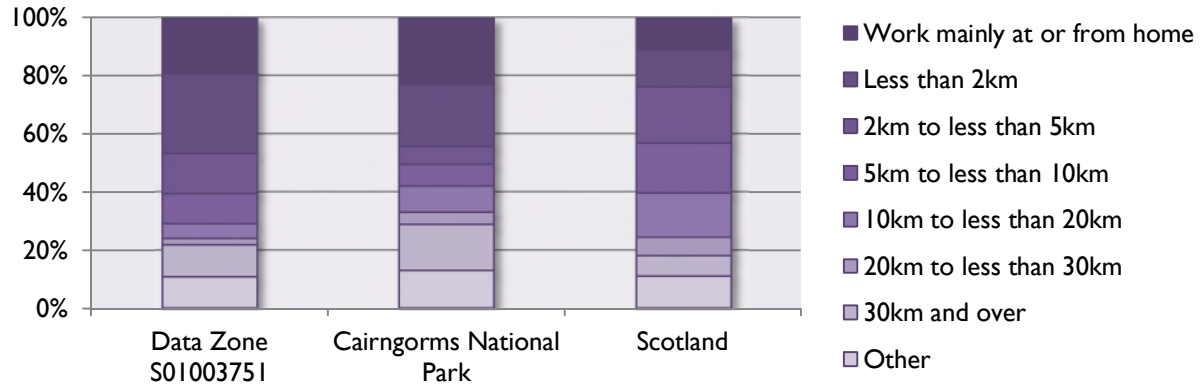

Figure 78 Distance travelled to work, 2011 (Census table LC7102SC)[10][11]. Crown copyright 2014.
For further information on variables, see www.scotlandscensus.gov.uk/variables
In order to protect against disclosure of personal information, some records have been swapped between different geographic areas. Some cell values will be affected, particularly small values at the most detailed geographies.

[10] The distance travelled is a calculation of the straight line between the postcode of place of residence and postcode of workplace.
[11] 'Other' Includes no fixed place of work, working on an offshore installation and working outside the UK

Human Health

Human Health covers a wide range of issues, many of which have strong relationships with other topic areas. Life expectancy is a good indicator of the overall health of a population. While there is no official data available for life expectancy specifically within the Data Zone S01003751, the level of deprivation according to SIMD 2012 decile and may be used to gain a reasonable estimate.

Estimates may also be derived from the SIMD 2012; according to NRS (2014), male and female life expectancy increases and the gap between male and female life expectancy decreases as the level of deprivation decreases. Consequently, NRS have estimated life expectancy according to SIMD decile. Based on the position of S01003751 within the SIMD therefore, an estimate of its life expectancy may be derived.

It should be noted that the SIMD measures deprivation and not affluence, therefore estimates should not be translated as 'life expectancy of the rich versus that of the poor'. It should also be noted that NRS estimates are generalised and the criteria that result in an overall SIMD rank may vary greatly between data zones. The life expectancies presented therefore should not be viewed as geography specific absolutes, but as rough approximations based on national data.

Estimating life expectancy via this means offers a range of 79.2 for males and 82.4 for females living within the Data Zone S01003751. This estimate is not unreasonable as it falls within 1% of figures for the Scottish Government's Urban Rural Classification areas, which estimates life expectancy for males to be 79.2 and females to be 82.6 in remote rural areas[12] (National Records of Scotland, 2014), which the whole of the Cairngorms National Park is identified as.

Irrespective of the exact figures, it is possible to say that the residents of Data Zone S01003751 are likely to have a greater life expectancy than the Scottish average and live around 6 to 9 years longer than people living in the most deprived parts of Scotland.

[12] Defined as "areas with a population of less than 3,000 people, and with a drive time of over 30 minutes to a settlement of 10,000 or more."

Indeed, evidence suggests that the population in the area is healthier than the Scottish average. According to the 2011 Census, the proportion of people with long term health problems whereby their day-to-day activities are limited a lot was only 5.2% (Scotland 9.6%) while the proportion of people claiming very good to fair health was higher (97% compared to Scotland's 94.4%) and the proportion claiming bad to very bad health lower (2.9% compared to Scotland's 6.1%) (**Table 18**). This is supported by evidence from the proportion of Incapacity Benefit and Severe Disability Allowance claimants within the National Park, which in 2012 ranged between 1.2% and 1.8% of the 16+ population, compared to Scotland's 2.7 to 4.1%

The Health Domain of the SIMD 2012 also provides an indication of the relative healthiness of the National Park, with Data Zone S01003751 falling within the 20% least deprived.

Table 18 Census health indices, 2011.

Indicator	Data Zone S01003751	CNP	Scot.
Long-term health problem or disability (Table LC3101SC)			
Day-to-day activities limited a lot	5.2%	6.8%	9.6%
Day-to-day activities limited a little	7.7%	10.2%	10.1%
Day-to-day activities not limited	87.1%	83.0%	80.4%
General health (Table LC3102SC)			
Very good health	57.3%	55.6%	52.5%
Good health	30.3%	30.7%	29.7%
Fair health	9.4%	10.3%	12.2%
Bad health	2.3%	2.7%	4.3%
Very bad health	0.6%	0.7%	1.3%
Provision of unpaid care (Table LC3301SC)			
Provides no unpaid care	90.8%	90.9%	90.6%
Provides 1 to 19 hours unpaid care a week	6%	5.7%	5.2%
Provides 20 to 34 hours unpaid care a week	0.2%	0.8%	0.9%
Provides 35 to 49 hours unpaid care a week	0.8	0.6%	0.8%
Provides 50 or more hours unpaid care a week	2.2%	2.0%	2.5%

Standardised measures of health aside, there are many factors that can have an influence on a population's health and it is probable that the high quality environment described in this report is a contributory factors. Another factor is likely to be the ability of the population to easily access this environment for leisure and recreational purposes.

Significantly, the Cairngorms National Park is a world renowned area where both residents and visitors can enjoy an unparalleled range of outdoor recreation opportunities. People are able to explore the area on foot, in a wheelchair, on horse-back, on a bicycle or even in a boat or canoe, as long as they do so in a responsible manner, with respect for other people and for the environment, and in accordance with the Scottish Outdoor Access Code.

One important means of access is via the National Park's public footpath network, of which the Core Paths network plays a significant role (see **Figure 79**). The CNPA has a duty under the

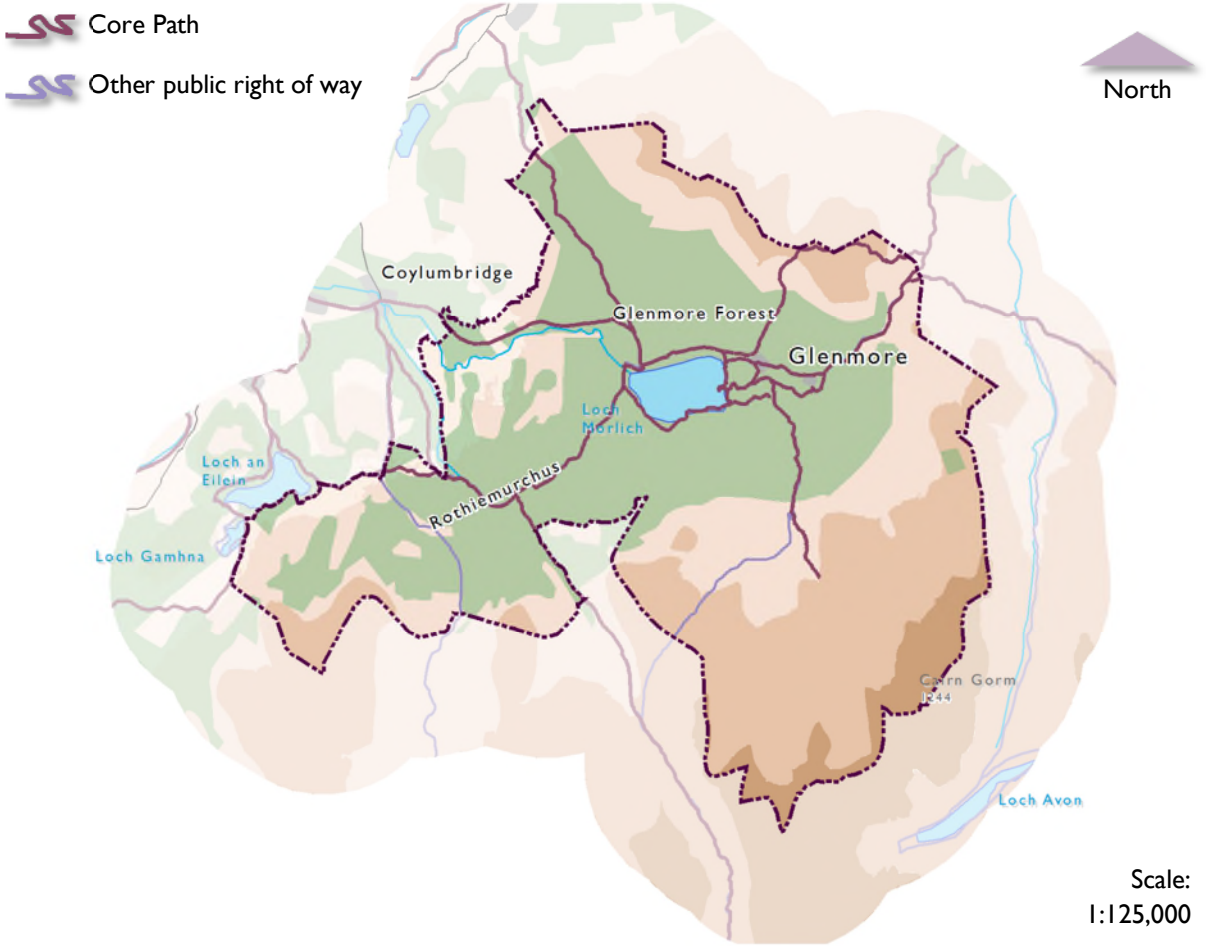

Figure 79 Public footpath network and 'listed' mountains of the Cairngorms National Park.

Land Reform (Scotland) Act 2003 to prepare a Core Paths Plan. Section 17 (1) Act states that the core paths network should be: '*… sufficient for the purpose of giving the public reasonable access throughout the area*'.

The CNPA has recently published its Core Paths Plan (2015), which was developed in Partnership with the Local Outdoor Access Forum and Inclusive Cairngorms. The aim of the Plan is to help people enjoy and understand the special qualities of the National Park through the identification of outdoor access opportunities. The path network should satisfy the needs of visitors and local people to get around, and link to the wider path network and beyond.

The network is made up of a mixture of existing and new paths, which together provide a cohesive system. The National Park now has a network that totals 1,073km of core path, 88km of which is on water (River Spey). Furthermore, over 300km of the network has been signed and promoted with a further 100 or so km to be developed and improved.

Glenmore and Cairngorm are one of the National Park's most popular destinations for undertaking outdoor activities, attracting an estimated 1,000,000 visitors per year. Of these 400,000 visit the Coire Ca Car Park, 240,000 Cairn Gorm, 150,000 Glenmore and 350,000 Rothiemurchus.

Data collected with the Glenmore, Cairngorm and Rothiemurchus are indicates that the area appears to be successful attracting UK and overseas visitors, repeat visitors and predominantly ABC1[13] visitors in socio-economic terms. An idea of the nature of visit to the area is provided by the 2015 Cairngorms National park visitor survey (**Table 19**).

It is expected that visitor numbers will gradually increase in the future, as access and transport connections improve, as businesses in the area continue to build their reputation and as promotion encourages more people to discover Glenmore and cairngorms. Furthermore, the anticipated growth of Aviemore and the development of An Camas Mòr is likely to result in a greater number of people using the area.

[13] Upper middle class, middle class and lower middle class. For further details see http://www.abc1demographic.co.uk/

Table 19 Extract from the results of the 2015 Cairngorms National Park Visitor Survey (visitors surveyed at 6 visitor destination locations within the National Park).

Visitors to Cairngorm and Glenmore are:	**Cairngorm, Glenmore & Rothiemurchus***	**Cairngorms National Park**
more likely to be staying in the National Park	76%	52%
.... and staying longer	4.9 nights	3.8 nights
more likely to be staying in a large hotel	22%	7%
.... or self catering	33%	25%
more likely to get information from a visitor centre	48%	13%
.... or a visitor attraction	17%	5%
Undertaking the following activities: ➢ Low level walking ➢ High level walking ➢ Cycling ➢ Winter sports ➢ Water sports ➢ Taking Photographs ➢ Watching wildlife ➢ Visiting attractions ➢ Eating out	 49% 10% 16% 26% 5% 8% 18% 35% 19%	 52% 18% 14% 11% 2% 12% 10% 32% 28%
more likely to be aware they are in a National Park	98%	92%
less likely to visit the National Park again (will you visit again?)	93%	97%
more likely to be from England	31%	21%
less likely to be from the Highlands	22%	30%
more likely to be younger ....16-34 years old	24%	18%
marginally less satisfied with their overall visit (rate out of 10)	8.76	8.88

Key Messages

The Cairngorms National Park has seen significant population growth over its lifetime, although this is now projected to slow down significantly over the next 25 years. However, the growth in households is still projected to rise by around 12%. The Cairngorms National Park LDP (2015) directs that the housing needs arising from a significant proportion this growth be met in the Aviemore area, with allocations and commitments currently equating to around 2,000 new dwellings over this period.

The population of the Glenmore and Cairngorm area has a very high proportion of young people living there, representing the strength of the tourism, hospitality and outdoor sectors.

Unemployment is low in the Glenmore and Cairngorm area, although the median wage is likely to be below that of the both National Park and Scotland. Gross household incomes, are however slightly higher. The area retains a high proportion of its workforce with the most commuting via private motor vehicle.

The Glenmore and Cainrgorm area has an extensive and well maintained public footpath network and many man-made and natural features that provide attractive objectives and encourage healthy recreational activities. Consequently, the area receives around 1,000,000 visitors per year, a number that is predicted to grow.

Inter-relationships with other topics

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