Cairngorms NATIONAL PARK
Pàirc Nàiseanta a' Mhonaidh Ruaidh

STRATEGY

Cairngorm and Glenmore

Strategy

Strategic Environmental Assessment Environmental Report

December 2015

Appendix 2: Environmental Baseline

Topic 3: Water

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.

Cairngorm and Glenmore sit within the River Spey Catchment Area (**Figure 23**), 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.

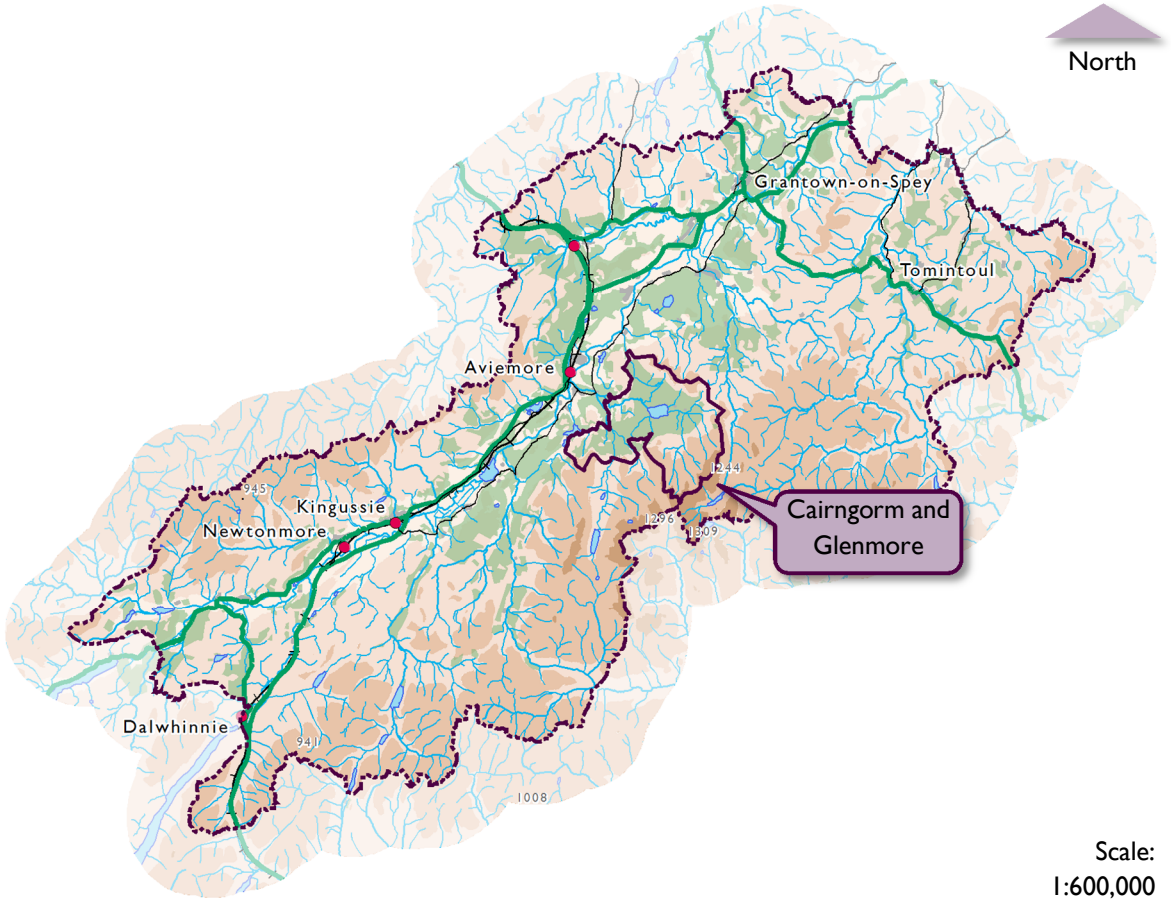

Figure 23 River Spey Catchment Area within the Cairngorms National Park.

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. 113).

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 24**, **Figure 25**, **Figure 26** and **Figure 27**. 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 while 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.

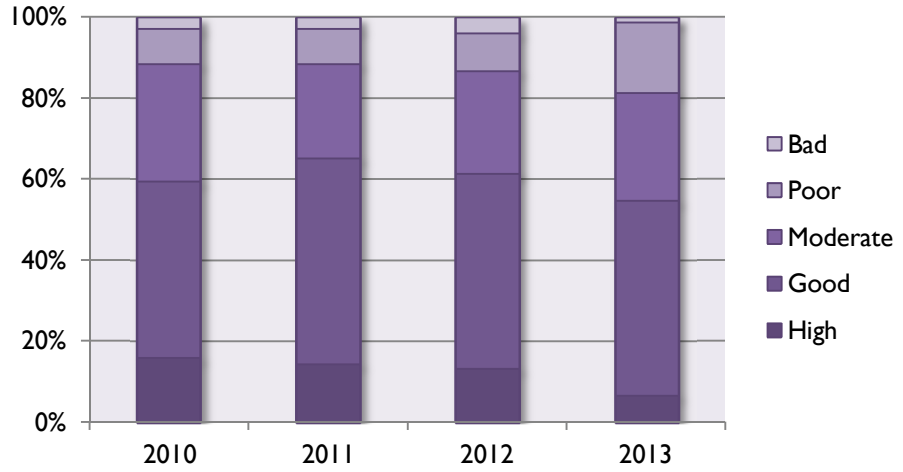

Figure 1 Overall status of Spey Catchment Area waterbodies within and overlapping the Cairngorms National Park.

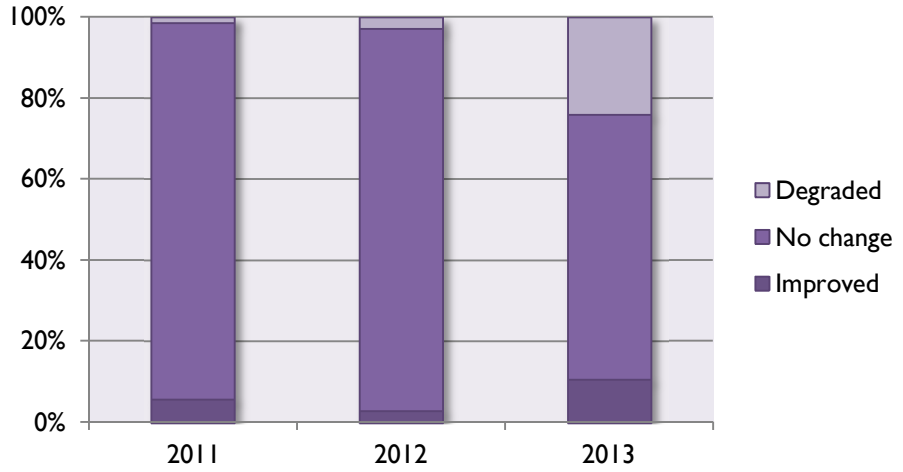

Figure 2 Change from previous year in the overall status of Spey Catchment Area waterbodies within or overlapping the Cairngorms National Park

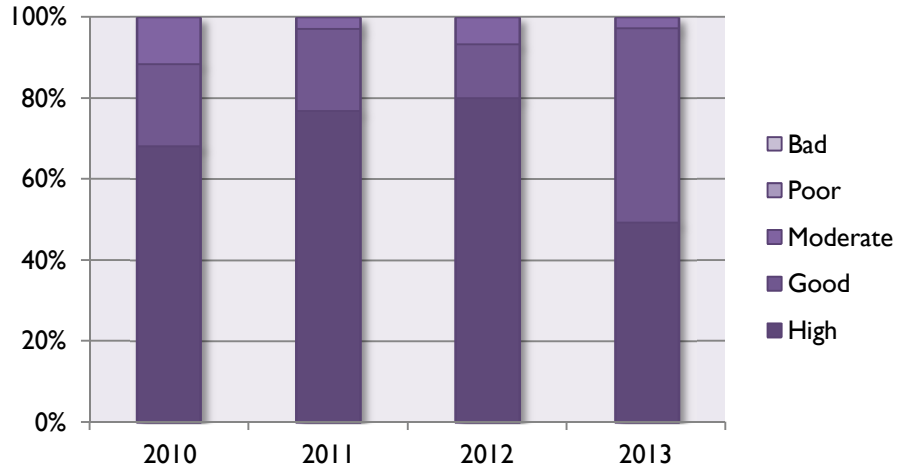

Figure 26 Water quality classification of Spey Catchment Area waterbodies within and overlapping the Cairngorms National Park.

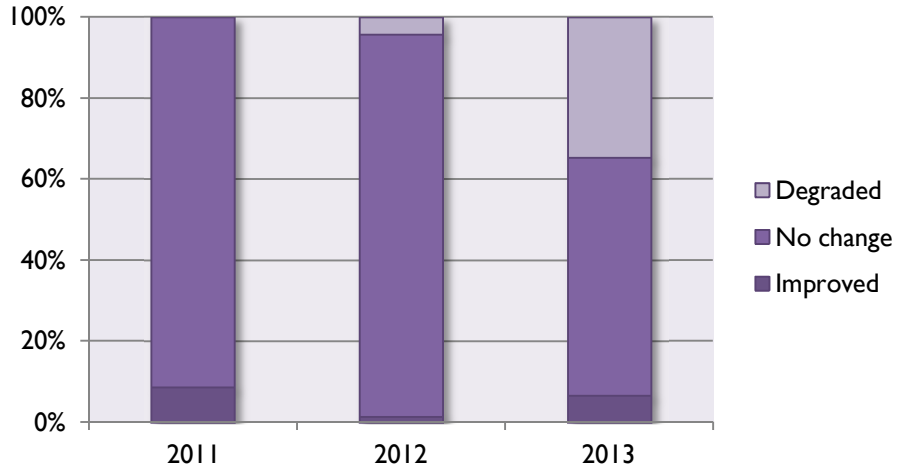

Figure 27 Change from previous year in the water quality of Spey Catchment Area waterbodies within or overlapping the Cairngorms National Park

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 28 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.

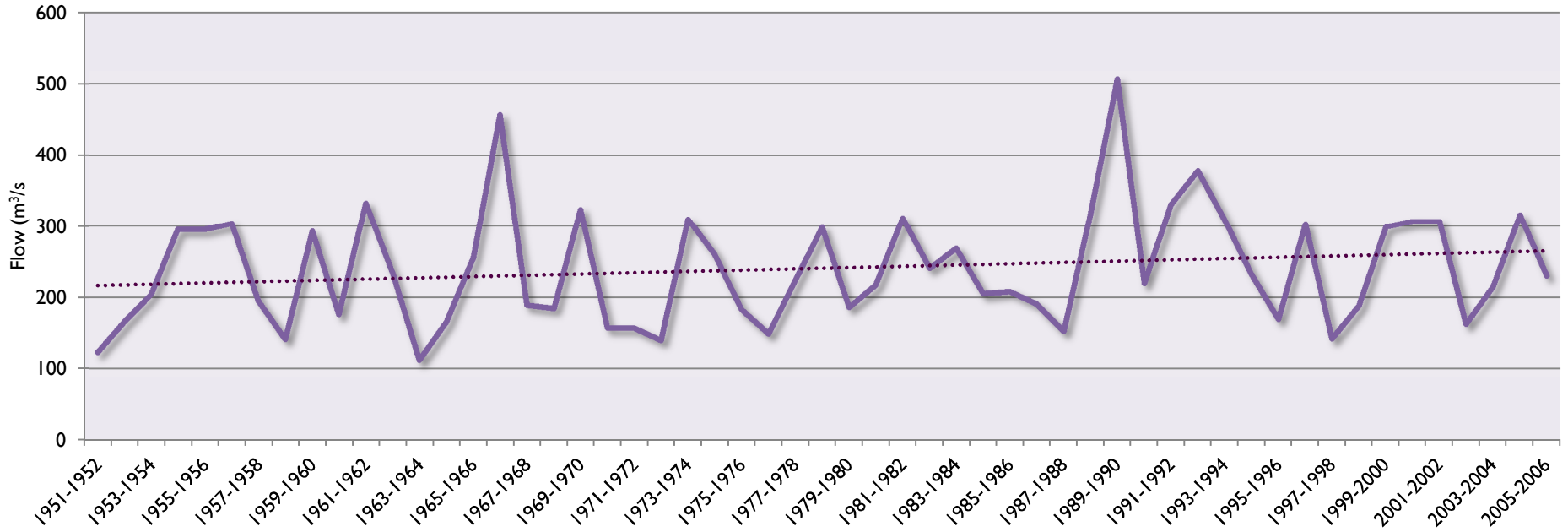

Figure 28 Annual maximum (AMAX) data for the River Spey at Grantown-on Spey (Station 8010). Contains SEPA data © Scottish Environment Protection Agency and database right 2015. All rights reserved.

Water Infrastructure

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 Cairngorm and Glenmore sit, is shown in **Table 10**.

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 10 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 29**) 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.

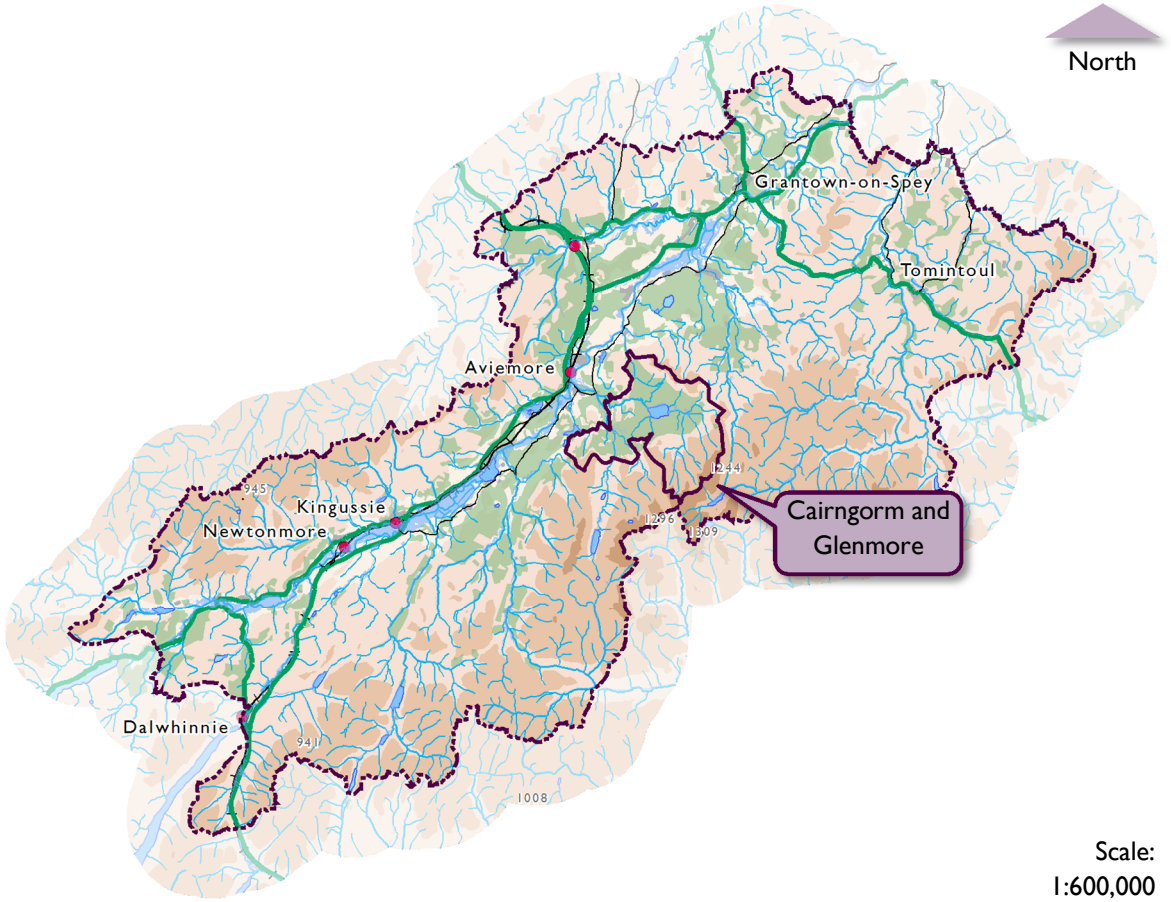

Figure 29 Indicative river flooding extent (medium probability 1 in 200 years) for the River Spey Catchment Area in the Cairngorms National Park.

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

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