



# Cairngorms National Park Partnership Plan 2017 – 2022

## ISSUES REPORT



June 2016

## **FLOOD MANAGEMENT ISSUES REPORT**

### **I. POLICY CONTEXT**

#### **I.01 Water Framework Directive (2000/60/EC)**

The *Water Framework Directive* is the operational tool for delivering the European Water policy, setting the objectives for achieving good ecological status, including water quality and river morphology, and for management by river basin. The WFD requires a River Basin Management Plan to be established and updated every 6 years. The Water Environment Fund aims to restore rivers, lochs and their catchments which have been damaged by historical activities.

#### **I.02 Floods Directive (2007/60/EC)**

Requires member states to assess if all water courses and coast lines are at risk from flooding, to map the flood extent and assets and humans at risk in these areas and to take adequate and coordinated measures to reduce this flood risk.

#### **I.03 Natura 2000 Network**

The National Park is of extremely high importance for nature conservation. Almost half of the Park is designated under Europe's nature conservation legislation: the *Habitats Directive* and the *Birds Directive*; which together form the *Natura 2000* network of Special Areas of Conservation (SAC) and Special Protection Areas (SPA). The National target is to bring 80% of designated sites into favourable condition by 2016. The rivers Spey, Dee and Tay, and their tributaries are protected by Natura legislation.

#### **I.04 Ramsar Convention**

The Convention on Wetlands of International Importance, called the Ramsar Convention, is the intergovernmental treaty that provides the framework for the conservation and wise use of wetlands and their resources.

The Convention's mission is "the conservation and wise use of all wetlands through local and national actions and international cooperation, as a contribution towards achieving sustainable development throughout the world". Under the "three pillars" of the Convention, the Contracting Parties commit to:

- work towards the wise use of all their wetlands;
- designate suitable wetlands for the list of Wetlands of International Importance (the "Ramsar List") and ensure their effective management;
- cooperate internationally on transboundary wetlands, shared wetland systems and shared species.

#### **I.05 Water Environment and Water Services (Scotland) Act 2003**

Transposes the Water Framework Directive into Scots law.

### **I.06 Flood Risk Management (Scotland) Act 2009**

Establishes roles, responsibilities and requirements for sustainable flood management. Specific measures within the Act include:

- A framework for coordination and cooperation between all organisations involved in flood risk management;
- Assessment of flood risk and preparation of flood risk management plans;
- New responsibilities for SEPA, Scottish Water and local authorities in relation to flood risk management;
- A revised, streamlined process for flood protection schemes;
- New methods to enable stakeholders and the public to contribute to managing flood risk; and
- A single enforcement authority for the safe operation of Scotland's reservoirs.

### **I.07 The river basin management plan for the Scotland river basin district: 2015–2027**

River basin management planning is about protecting and improving Scotland's water environment in a way that balances costs and benefits to the environment, society and economy.

Much of the water environment in Scotland is already in good condition. The water bodies and protected areas that are not in good condition are affected by impacts on their water quality, physical condition, water flows and levels, and accessibility for fish migration, or by the impact of invasive non-native species on their aquatic plant and animal communities.

The river basin management plan sets out the measures required to address these impacts and meet the requirements of the European Water Framework Directive.

### **I.08 Flood Risk Management Strategies**

Flood Risk Management Strategies have been developed to reduce the devastating and costly impact of flooding in Scotland. They coordinate the efforts of all organisations that tackle flooding, be it in our cities or rural areas and be it from rivers, the sea or from surface water. The strategies concentrate the work of these organisations to where the risk of flooding and benefits of investment are greatest. Three strategies cover the National Park, namely:

- Findhorn, Nairn and Speyside Local Plan District
- North East Local Plan District
- Tay Local Plan District

Each strategy should be read alongside its Local Flood Risk Management Plan. The Local Flood Risk Management Plans have been developed by local authorities and provide additional local detail on the funding and delivery timetable for actions between 2016 and 2021. The publication date of the Local Flood Risk Management Plans is June 2016. Both the

Flood Risk Management Strategy and Local Flood Risk Management Plan will be updated every six years.

### **I.09 Scotland’s Climate Change Adaptation Framework (2009)**

The framework plays a central role in building Scotland's resilience to the changing climate, by setting the strategic direction for Scottish Government actions and providing specific actions for different sectors. The Framework sets out:

- The overarching model for adapting to climate change in Scotland; and
- Summaries of climate change adaptation in key sectors.

The aim of the Framework is to lead planned adaptation across all sectors to increase the resilience of Scotland's communities, and the natural and economic systems on which they depend, to the impacts of climate change. It will achieve this through the following 3 Pillars:

- The Framework will improve the understanding of the consequences of a changing climate and both the challenges and opportunities it presents;
- The Framework will equip stakeholders with the skills and tools needed to adapt to changing climate; and
- The Framework will integrate adaptation into wider regulation and public policy so that it is a help, not a hindrance, to addressing climate change issues.

### **I.10 Scottish Biodiversity Strategy**

*The 2020 Challenge for Scotland’s Biodiversity* updates and complements the *Scottish Biodiversity Strategy 2004*. Together they set out Scotland’s response to the Aichi Targets set by the UN Convention on Biological Diversity. Public agencies, Local Authorities and NGO’s have each set out their commitments in *Scottish Biodiversity Strategy 2020 Challenge Delivery Agreements*.

*Scotland’s Biodiversity a route map to 2020* identifies six ‘Big Steps for Nature’ and a number of priority projects through which outcomes and key steps in *The 2020 Challenge* will be met. Those most relevant to CNP are:

<b>SBS 2020 Challenge Outcome</b>	<ol style="list-style-type: none"> <li>1. Scotland’s ecosystems are restored to good ecological health so that they provide robust ecosystem services and build our natural capital</li> <li>2. Natural resources contribute to stronger sustainable economic growth in Scotland and we increase our natural capital to pass onto the next generation.</li> </ol>
<b>Big Steps for Nature</b>	<ol style="list-style-type: none"> <li>1. Ecosystem restoration – to reverse historical losses of habitats and ecosystems, to meet the Aichi target of restoring 15% of degraded ecosystems</li> <li>2. Investment in Natural Capital – to ensure the benefits which nature provides are better understood and appreciated, leading to better management of our renewable and non-renewable natural assets.</li> </ol>

	5. Sustainable management of land and freshwater – to ensure that environmental, social and economic elements are well balanced
<b>Priority Projects</b>	<ol style="list-style-type: none"> <li>1. Restoration of peatlands</li> <li>2. Restoration of native woodland</li> <li>3. Restoration of freshwaters</li> <li>4. Securing economic benefits from, and investments in, natural capital</li> <li>10. Improving ecological connection</li> <li>11. Support sustainable land management via CAP</li> </ol>

### **1.11 Scottish Land Use Strategy**

The *Scottish Land Use Strategy* is a strategic framework bringing together proposals for getting the best from Scotland’s land resources. Public sector bodies are expected to take a leading role by utilising its principles for sustainable land use. Those most relevant to landscape scale habitat restoration in CNP are:

- a) Where land is highly suitable for a primary use (for example food production, flood management, water catchment management and carbon storage) this value should be recognised in decision-making
- b) Land use decisions should be informed by an understanding of the functioning of the ecosystems which they affect in order to maintain the benefits of the ecosystem services which they provide.

### **1.12 Scottish Forestry Strategy**

The vision of the *Scottish Forestry Strategy* is that, by the second half of the 21st century, woodlands will have expanded to around 25% of Scotland's land area. This will mean the creation between 10,000 and 15,000ha of new woodland per year including 2,000ha on the national forest estate. It is also intended that at least 4,500ha of native woodland will be created - or restored from woodland planted with non-native species - per year, to help develop habitat networks.

### **1.13 Scotland’s Wild Deer: a National Approach (WDNA)**

The impacts of deer can have a major influence on habitat restoration: trampling and grazing are two of the biggest pressures on the condition of uplands and the successful establishment and regeneration of woodlands. Developed by land managers and public bodies, WDNA guides action on the ground and informs strategic thinking to manage deer as an integral and essential part of biodiversity. Deer Management Plans must now ensure that deer management delivers public benefit, as set out in 14 prescribed actions.

### **1.14 Cairngorms Nature Action Plan (CNAP)**

Cairngorms Nature is a wide and open partnership of agencies, individuals and organisations with an interest in conservation in the National Park. *The Cairngorms Nature Action Plan 2013*

– 2018 describes the priorities for action over the next five years and is the primary mechanism for focussing and coordinating partners' activities.

Delivery of the CNAP and development of the partnership is overseen by a Strategy Group comprising representatives from: CNPA, a community development officer, Dee Fisheries Trust, Forestry Commission Scotland, National Farmers Union Scotland, Royal Society for the Protection of Birds, Scottish Land & Estates, Scottish Gamekeepers' Association, Scottish Natural Heritage and Wildland Ltd.

The four aims of the Cairngorms Nature Action Plan are to:

- 1) Improve the quality and connectivity of woodlands and wetlands for biodiversity
- 2) Implement priority actions for other habitats (e.g. peatlands restoration)
- 3) Conserve and enhance key species through focused conservation action
- 4) Encourage, support and provide opportunities for people to realise the benefits from and help to look after nature

The Cairngorms Nature Action Plan includes targets for:

- 5,000ha new native woodland
- 2,000ha peatland restoration
- 100km river restoration
- 25ha new wetland and natural flood management
- 300ha developing mountain woodland

## **2. OTHER DRIVERS OF CHANGE**

### **2.01 Protected areas review**

In May 2014 SNH convened a panel to investigate how the role and purpose of protected areas might be developed to better secure public benefits within the context of wider thinking on land use and ecosystem services. The panel concluded that protected areas have become increasingly isolated from each other and from wider land use, focussing more on rarity and perpetuating the *status quo* than responding to dynamic natural systems. The panel recommended protected areas should have a new purpose which is more forward looking and adaptive: “to maintain good examples of habitat types as core components of a wider pattern of healthy functioning landscapes that are resilient to change, and meet the needs of people now and in the future.”

### **2.02 Climate change adaptation**

Healthy, functioning ecosystems and landscapes can build resilience to the impacts of a changing climate, for example through carbon sequestration and providing habitat networks that will aid lateral and altitudinal species migration. Climate change models suggest that rainfall in the autumn months will increase. This may lead to an increase in flash flooding. Natural flood management using natural river processes to slow the flow of water upstream and increase water storage in the whole catchment could provide wide-ranging benefits for nature and people.

### **2.03 Natural Capital**

There is widespread and building interest in recognising the value of nature and the public benefits that landscapes and ecosystems provide.

### **2.04 Land Reform (Scotland) Act 2016**

The Act aims to demonstrate commitment to effectively manage land and rights in land for the common good, ensuring land in Scotland delivers public benefit.

### **2.05 Capercaillie Framework**

The capercaillie framework brings together existing knowledge on the state of capercaillie of the various pressures they face across the Cairngorms National Park; and will inform future decisions about deployment of management measures. The framework necessarily guides management at a landscape scale and encompasses the issues surrounding recreation, habitat management, development and designation.

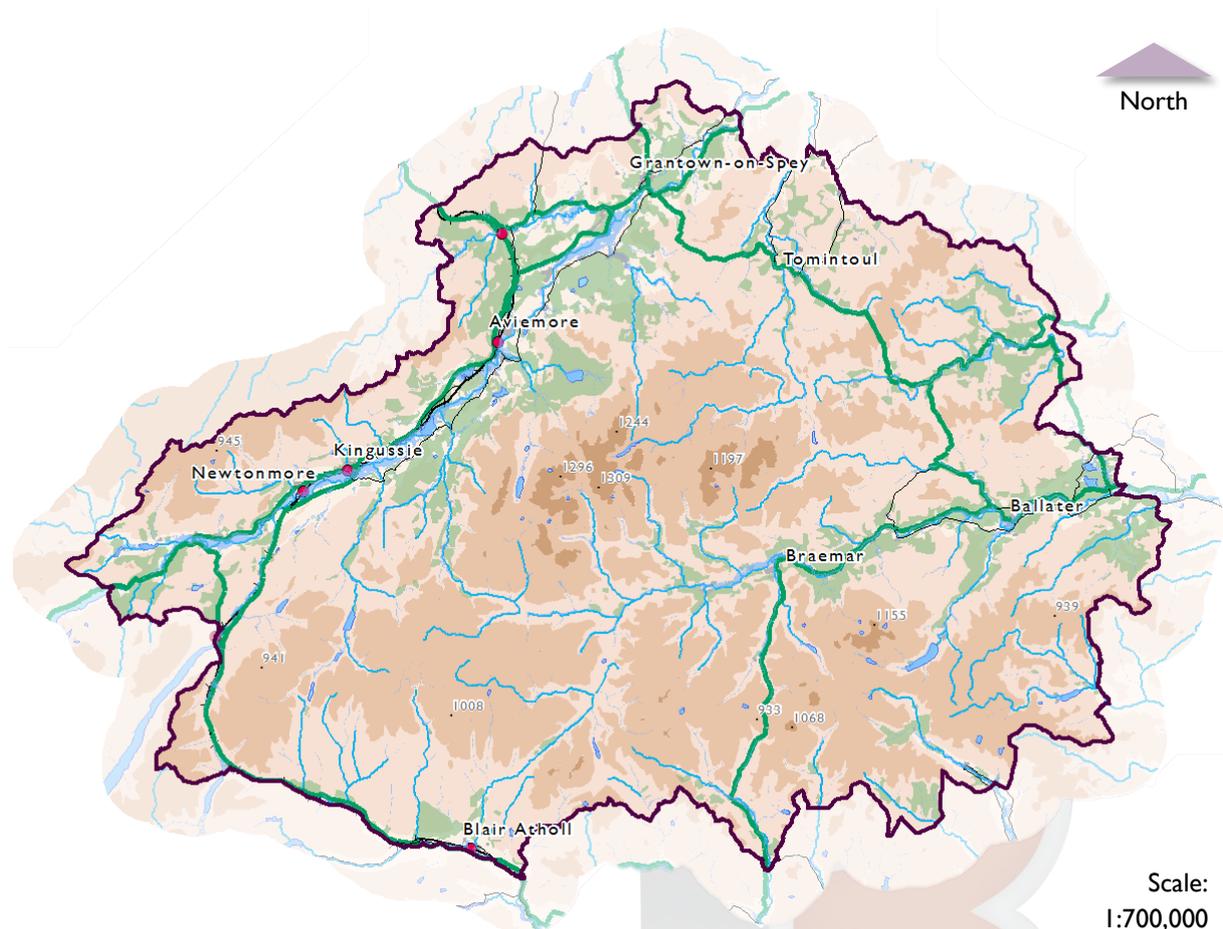


### 3. TRENDS & DATA

#### 3.01 Flooding in the Cairngorms National Park

It is now becoming widely accepted that in recent years there has been a worldwide increase in the frequency of major flood events. It is predicted that this trend will continue, with forecasts estimating that by 2100, climate change could increase river flows by 20%.

All of the National Park's rivers and watercourses have the potential to flood to some degree (Figure 1). Most concern is generated along the National Park's main straths and glens, as when the rivers and tributaries that flow along these, namely the Spey, Dee and Don, break their banks, they often result in economic, and occasionally human, cost. Small watercourses also represent a risk but are often poorly understood with respect to the severity of the flood hazard that can be generated on a catchment scale. Furthermore, in some areas surface water flooding, which can arise for a number of reasons, is a significant risk.



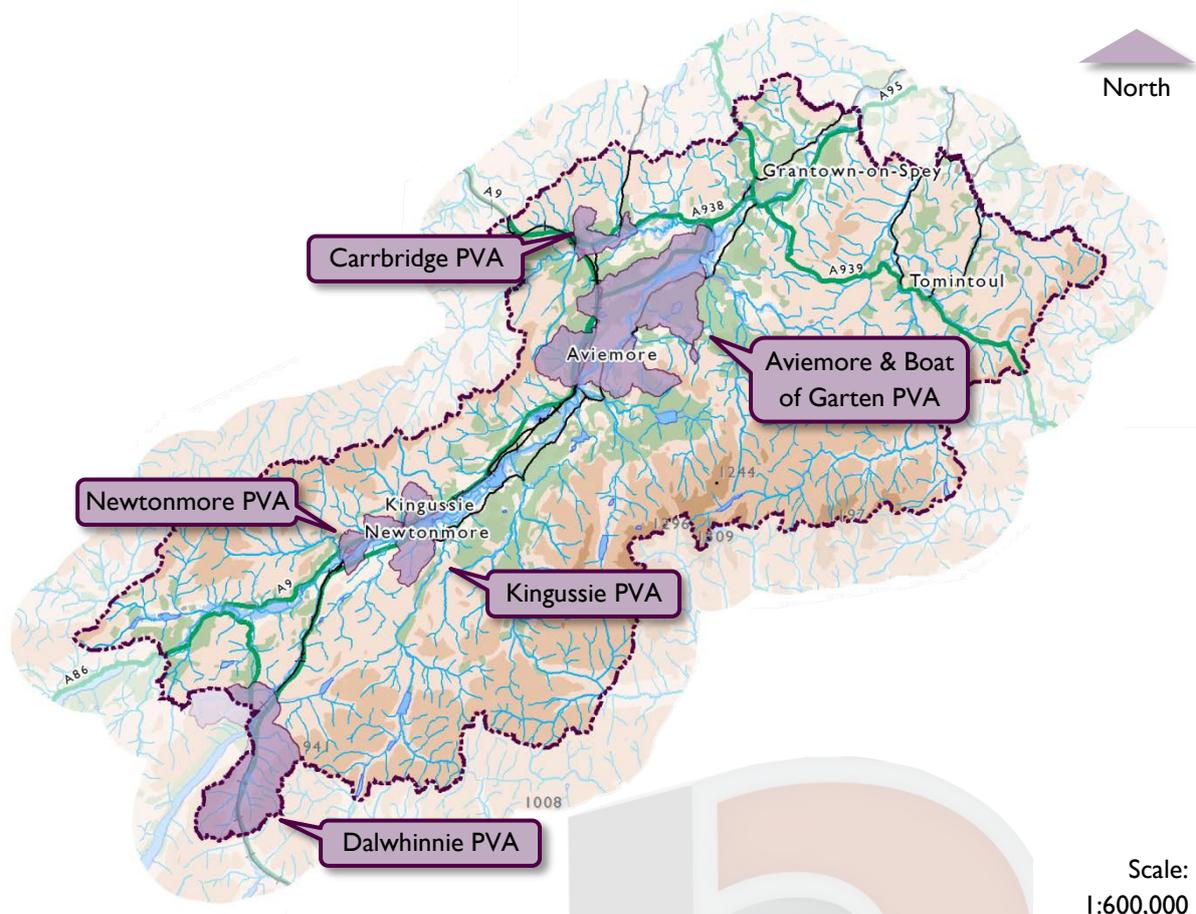
**Figure 1** Indicative river flooding extent (medium probability 1 in 200 years) in Cairngorms National Park.

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## River Spey

The River Spey (Figure 2) 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<sup>2</sup>, and a stream network length of about 36,500 km, of which the main river comprises 157 km (Spey Catchment Steering Group, 2003).



**Figure 2** River Spey PVAs in the River Spey catchment area within the Cairngorms National Park and indicative river flooding extent (medium probability 1 in 200 years).

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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. More recently in 2014, Gynack Burn

broke its banks in Kingussie damaging local buildings and infrastructure (Scottish Environment Protection Agency, 2015).

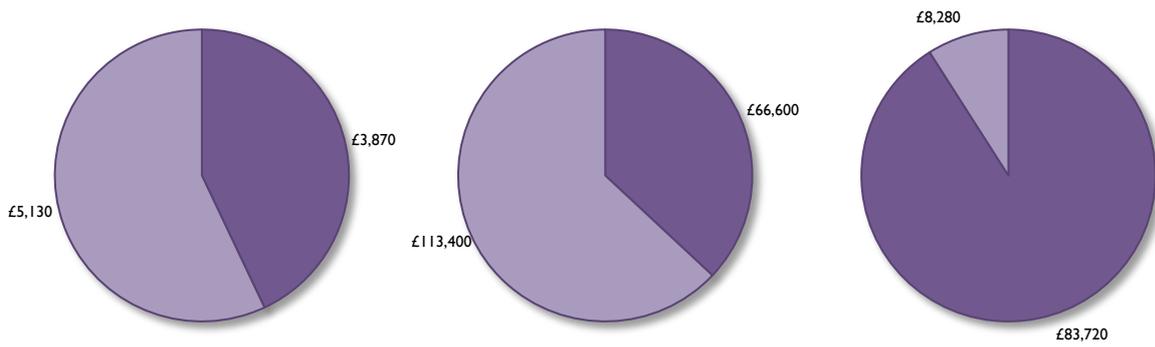
Flood management practices are being undertaken at a number of locations. The Spey Catchment Initiative has carried out natural flood management / river restoration works on a tributary upstream of the River Dulnain (Spey Catchment Initiative, 2013). There are also agricultural embankments along the 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 Potentially Vulnerable Areas (PVAs) have been identified within the National Park (Figure 2), 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 £492,000 (Figures 3 to 8). Around £335,000 (68%) of this damage is caused by river flooding (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.





**Figure 3** Annual average damages in Carrbridge PVA (PVA 05/10). **Figure 4** Annual average damages in Aviemore and Boat of Garten PVA (PVA 05/11). **Figure 5** Annual average damages in Kingussie PVA (PVA 05/12).



**Figure 6** Annual average damages in Newtonmore PVA (PVA 05/13). **Figure 7** Annual average damages in Dalwhinnie PVA (PVA 05/14). **Figure 8** Annual average damages of all National Park PVAs in Spey Catchment area.

River flooding
  Surface water flooding

(Source: Scottish Environment Protection Agency, 2015).



## River Dee

The River Dee (Figure 9) rises in the Cairngorm Mountains east of Braemar on the semi-arctic Braeriach-Cairn Toul plateau. For the majority of its course the river flows eastwards through a broadening valley, which becomes much gentler in relief as it leaves the National Park. Within the National Park, the river is fed by a number of important tributaries, namely the Lui, Clunie, Gairn, Muick and Tanar, the latter's confluence located just outwith the National Park Boundary (Dee Catchment Partnership, 2007).

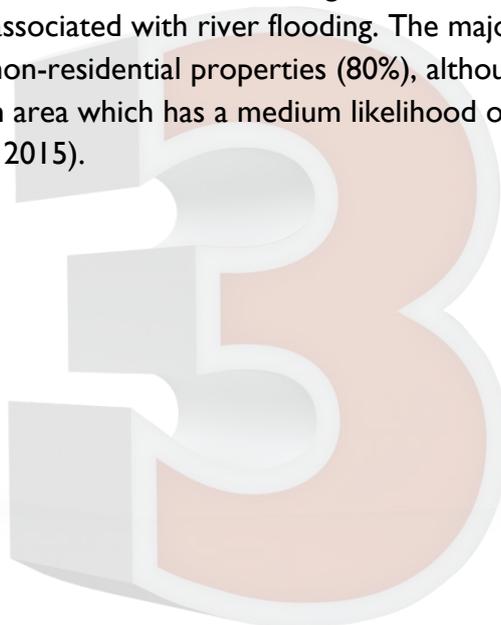
The Dee is considered to be the best example of a natural highland river in Scotland (Maitland, 1985). The notable characteristics of the river include its great altitudinal range, its unique succession of plant communities, and its seep profile compared to other large British rivers (Dee Catchment Partnership, 2007).

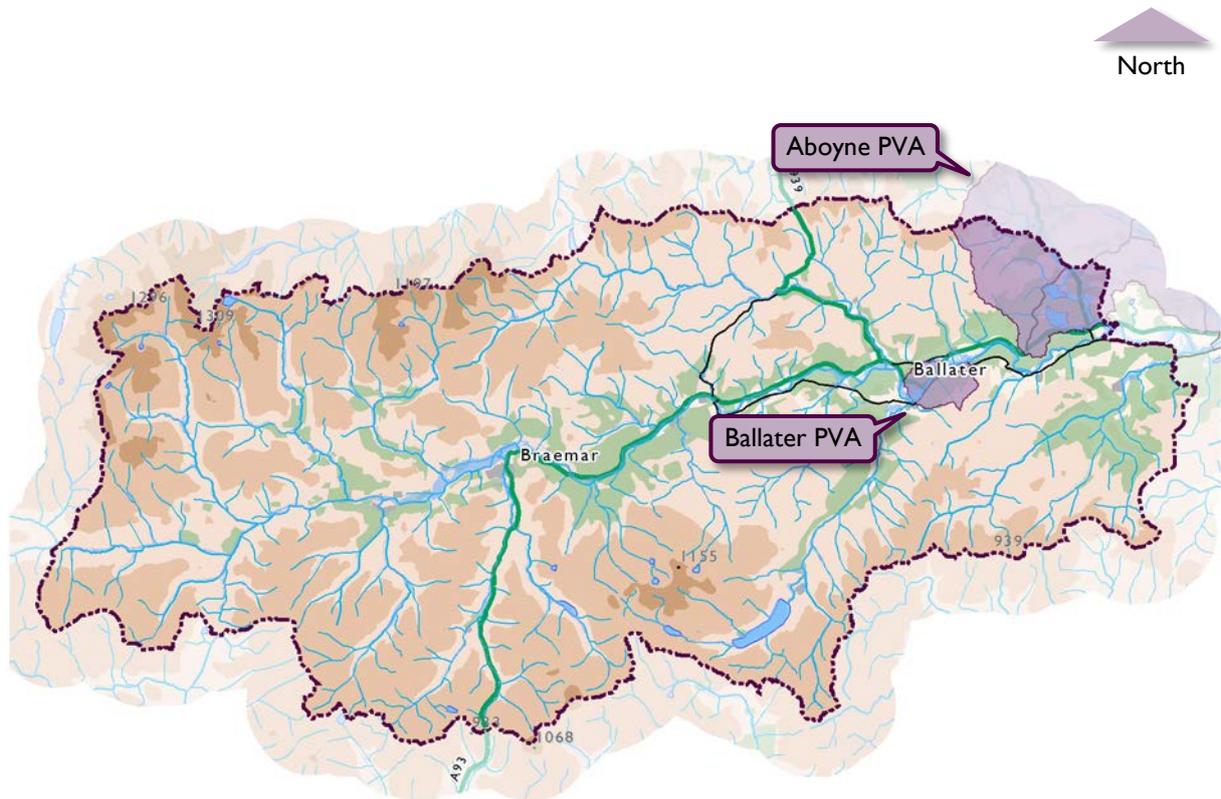
Like the Spey, the Dee suffers from flooding related to heavy rain and melting snows. Major floods have been recorded in 1769, 1829 (the Great Muckle Spate), 1920 and 1956 (the Cairngorm Flood) (Dee Catchment Partnership, 2007). In 2008, surface run-off entered the Netherly Guesthouse in Ballater and in 2014 the town's caravan park and a number of roads were closed due to flooding (Scottish Environment Protection Agency, 2015). More recently, in December 2015 / January 2016, the Dee experienced widespread flooding, which caused significant damage to property and transport infrastructure.

The Dee catchment contains two PVAs that fall within or across the National Park boundary (Figures 10 to 12), namely:

- Aboyne (PVA 06/20); and
- Ballater (PVA 06/22).

The former is only partly within the boundary, with the majority of the population and the associated risk located outwith. As one of the National Park's main settlements, the PVA around Ballater therefore offers most concern. The estimated average annual cost of damage here is £230,000, 99% of which is associated with river flooding. The majority of estimated damages are due to flooding to non-residential properties (80%), although more significantly, the fire station is located in an area which has a medium likelihood of flooding (Scottish Environment Protection Agency, 2015).

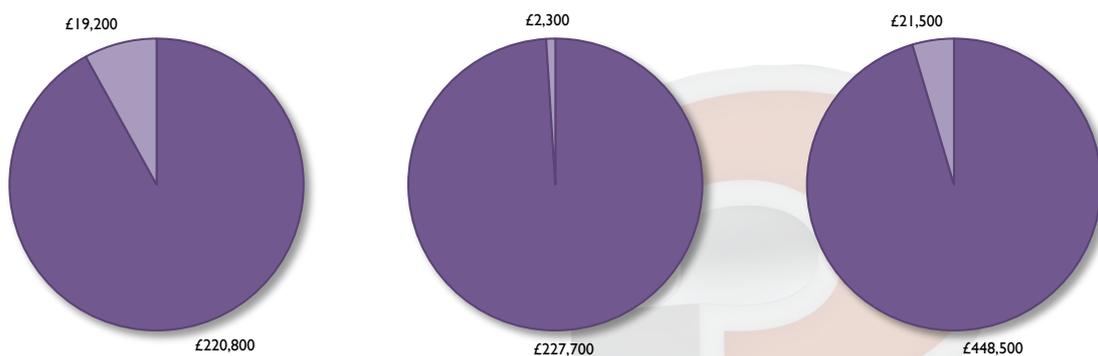




Scale:  
 1:400,000

**Figure 9** River Dee PVAs in the River Dee catchment area within the Cairngorms National Park and indicative river flooding extent (medium probability 1 in 200 years).

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**Figure 10** Annual average damages in Aboyne PVA (PVA 06/20).

**Figure 11** Annual average damages in Ballater PVA (PVA 06/22).

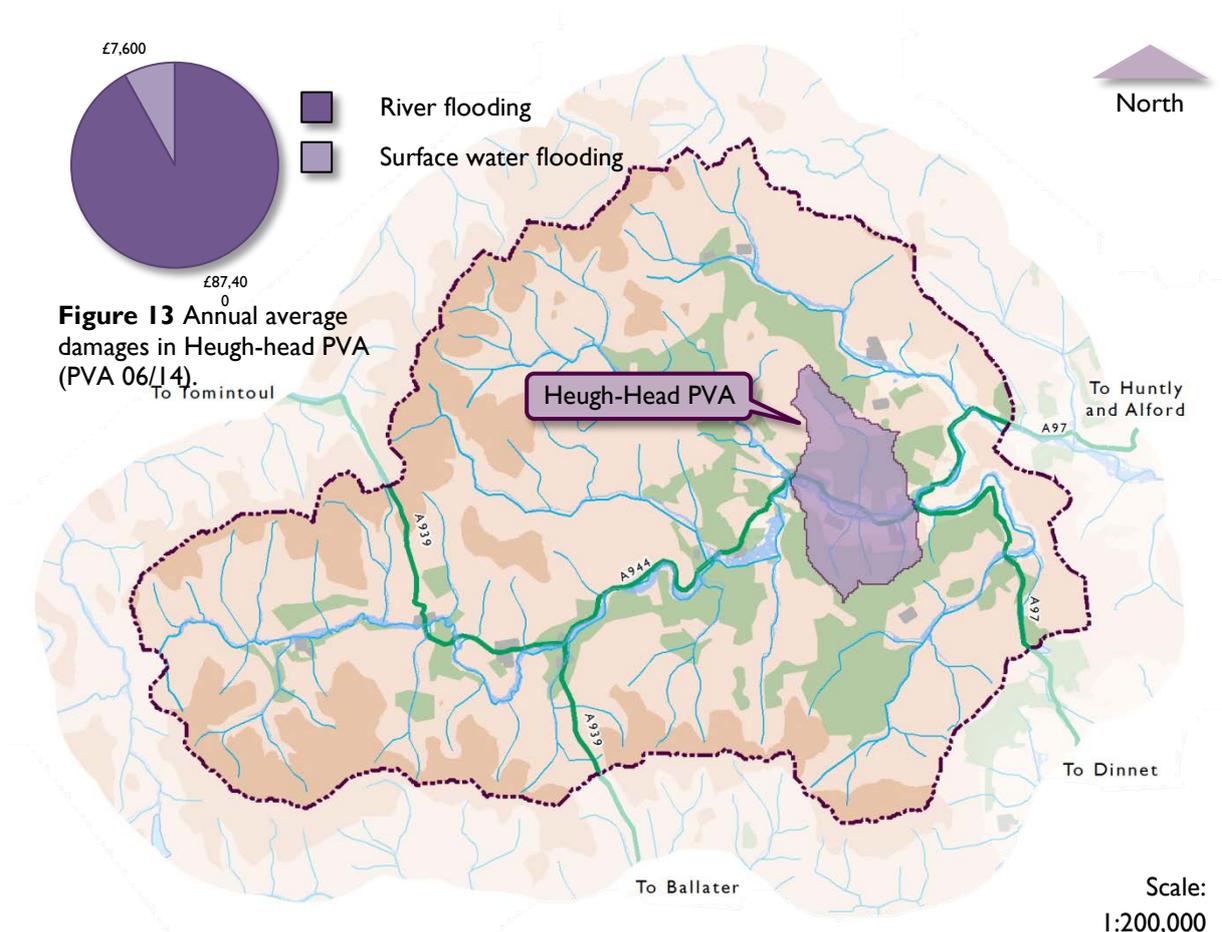
**Figure 12** Annual average damages of all National Park PVAs in Dee Catchment area.

River flooding
  Surface water flooding

(Source: Scottish Environment Protection Agency, 2015).

## River Don

Rising in the peat flat beneath Druim na Feithe, and in the shadow of Glen Avon, the River Don flows 135km east to the sea in Aberdeen. It's Scotland's 6th largest river, draining a catchment of around 1,300km<sup>2</sup>.



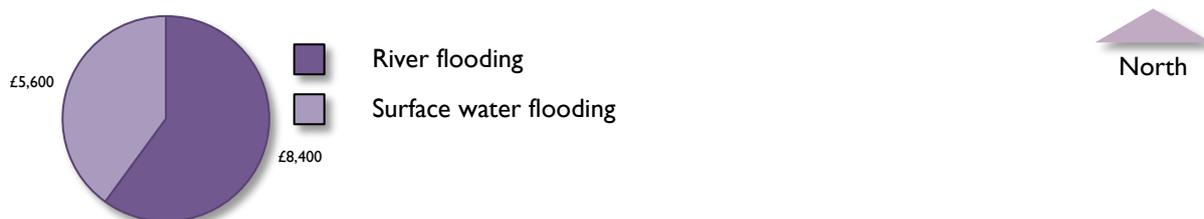
**Figure 14** Heugh-Head PVA (PVA 06/14) and indicative river flooding extent (medium probability 1 in 200 years) in the River Don catchment area within the Cairngorms National Park.

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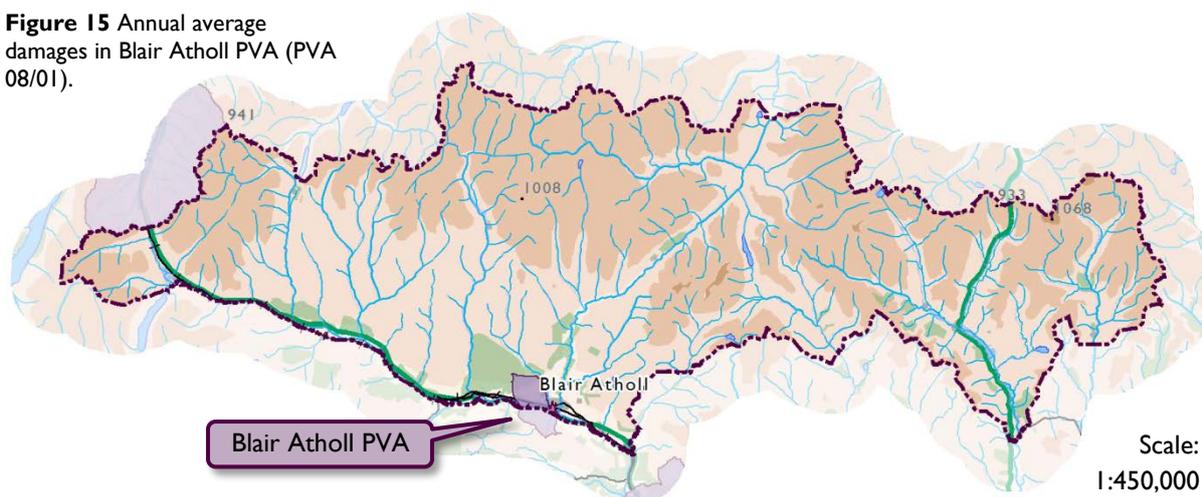
The Don catchment contains one proposed PVA that falls across the National Park boundary, namely Heugh-Head (PVA 06/14) (Figure 14). There was a surface water flood in August 2006 affecting Strathdon, Waterside and Bellabeg when water ponded in low points of the road, with heavy rainfall and steep sloping fields to the south resulting in significant amounts of flood water. Most of the PVA's estimated annual average damages, which equate to £95,000, are associated with river flooding (92%) (Figure 13). These damages mostly affect residential properties (60%) (Scottish Environment Protection Agency, 2015).

## River Tay

The River Tay has the largest catchment area and is the longest river in Scotland, with many of its headwaters lying within the Cairngorms National Park (Figure 16). It covers an area of 5,088km<sup>2</sup> and is around 190km in length. More water flows through the River Tay than any other river in the United Kingdom. The main tributaries include the River Garry, River Tummel, River Lyon, River Braan, River Isla and River Almond. The largest lochs in the River Tay catchment include Loch Ericht, Loch Rannoch and Loch Tay (Scottish Environmental Protection Agency, 2015).



**Figure 15** Annual average damages in Blair Atholl PVA (PVA 08/01).



**Figure 16** River Tay PVAs in the River Tay catchment area within the Cairngorms National Park and indicative river flooding extent (medium probability 1 in 200 years).

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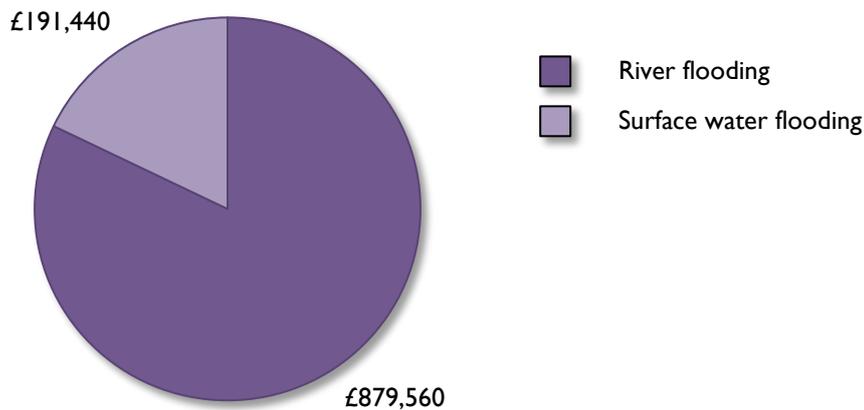
The Tay catchment contains one PVA that falls across the National Park boundary, namely Blair Atholl (PVA 08/01). A number of river floods have been recorded in this area. These include:

- 13 June 1931: Evacuation was required as River Garry flooded near Blair Atholl, the railway was also affected.
- July 1916: Evacuation was required as River Garry flooded near Blair Atholl, the railway was also flooded.

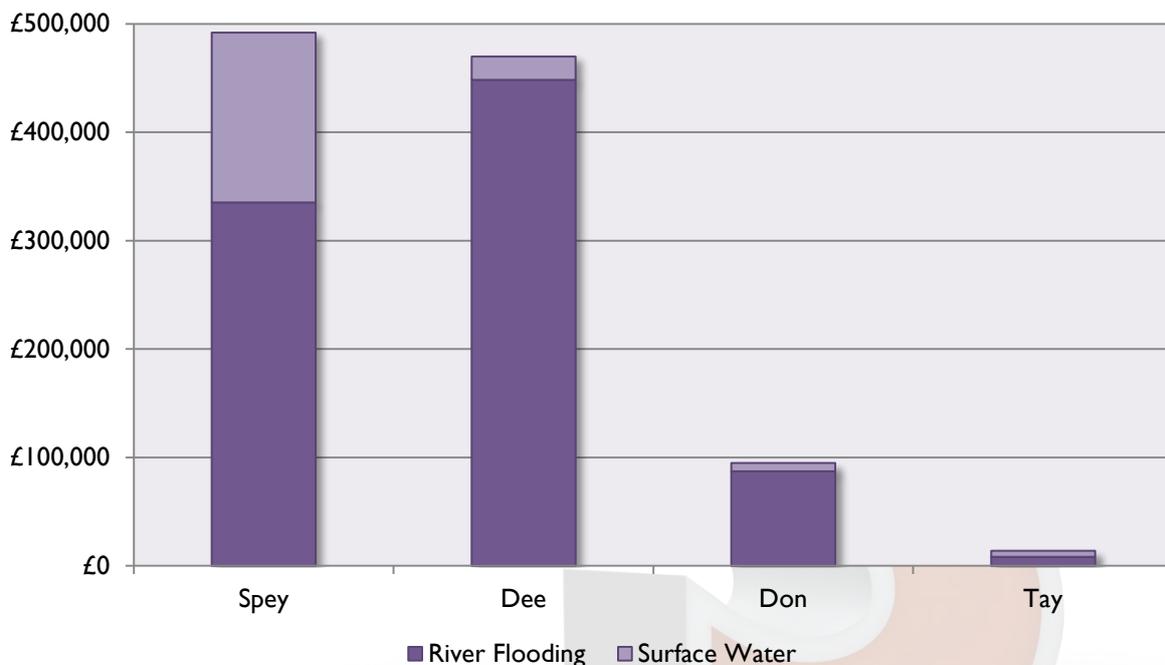
Blair Atholl continues to be at risk of flooding from the Garry Burn and from surface water. The risk of flooding to people, property, as well as to community facilities, utilities, the transport network, designated sites and agricultural land is presented in Figure 15.

Currently there is relatively low confidence in SEPA’s river flood hazard maps due to limitations arising from the data used and techniques applied in the national modelling. The number of properties at risk of flooding in the Blair Atholl area is likely to be underestimated (Scottish Environmental Protection Agency, 2015).

**Summary of National Park Annual Average Flood Damage**



**Figure 17** Annual average damages of all PVAs within or overlapping the Cairngorms National Park (Scottish Environment Protection Agency, 2015).

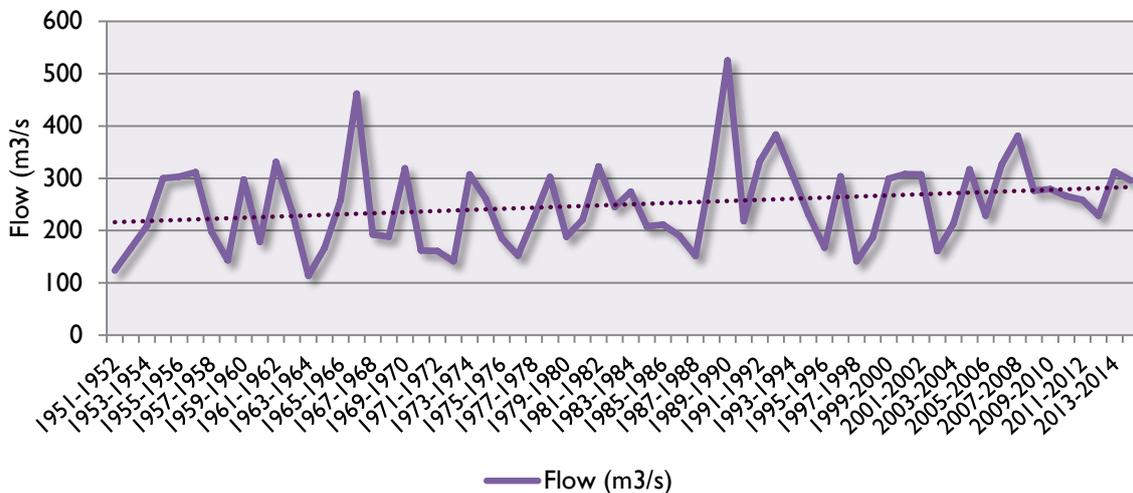


**Figure 18** Annual average damages of all PVAs within or overlapping the Cairngorms National Park by catchment area (Scottish Environment Protection Agency, 2015).

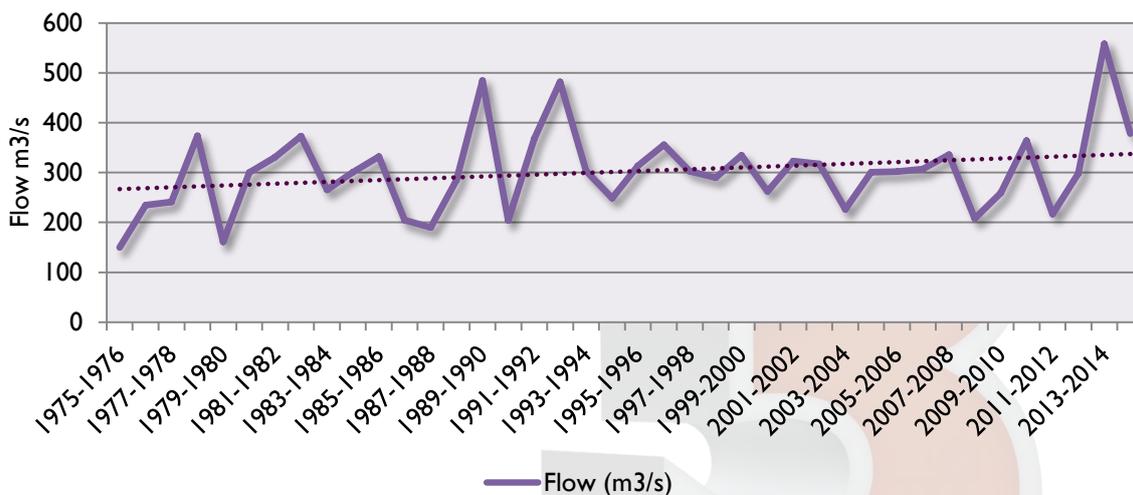
### 3.02 Peak Flows

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. Trends identified in this data may be used as an indicator of climate change or as an identifier of potential risks, such as flooding.

Figure 19 and Figure 20 represent the series of maximum instantaneous peak flows within a given water year (October to September) for monitoring stations on the River Spey and River Dee. The data from both stations 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 NPPP and beyond.



**Figure 19** Annual maximum (AMAX) data for the River Spey at Granttown-on Spey (Station 8010). Contains SEPA data © Scottish Environment Protection Agency and database right 2016. All rights reserved.



**Figure 20** Annual maximum (AMAX) data for the River Dee at Polhollick, near Ballater (Station 12003). Contains SEPA data © Scottish Environment Protection Agency and database right 2016. All rights reserved.

### **3.03 Natural Flood Management**

Natural Flood Management (NFM) means working with natural processes with the aim of restoring a catchment's natural capacity to deal with floods, thereby reducing flood risk and delivering other important social and environmental benefits. Wetlands, floodplains and woodland can act to slow the flow of water and store water in the catchment and reduce the risk of flooding to settlements downstream.

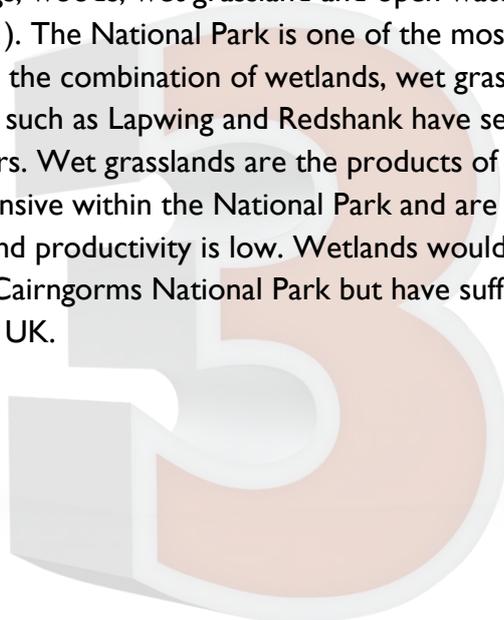
Measures that utilise natural habitats and restore natural processes can be used in combination with more traditional flood risk management measures such as concrete flood walls. An advantage of working with nature to manage flood risk is that these measures can deliver multiple benefits for people and the environment such as:

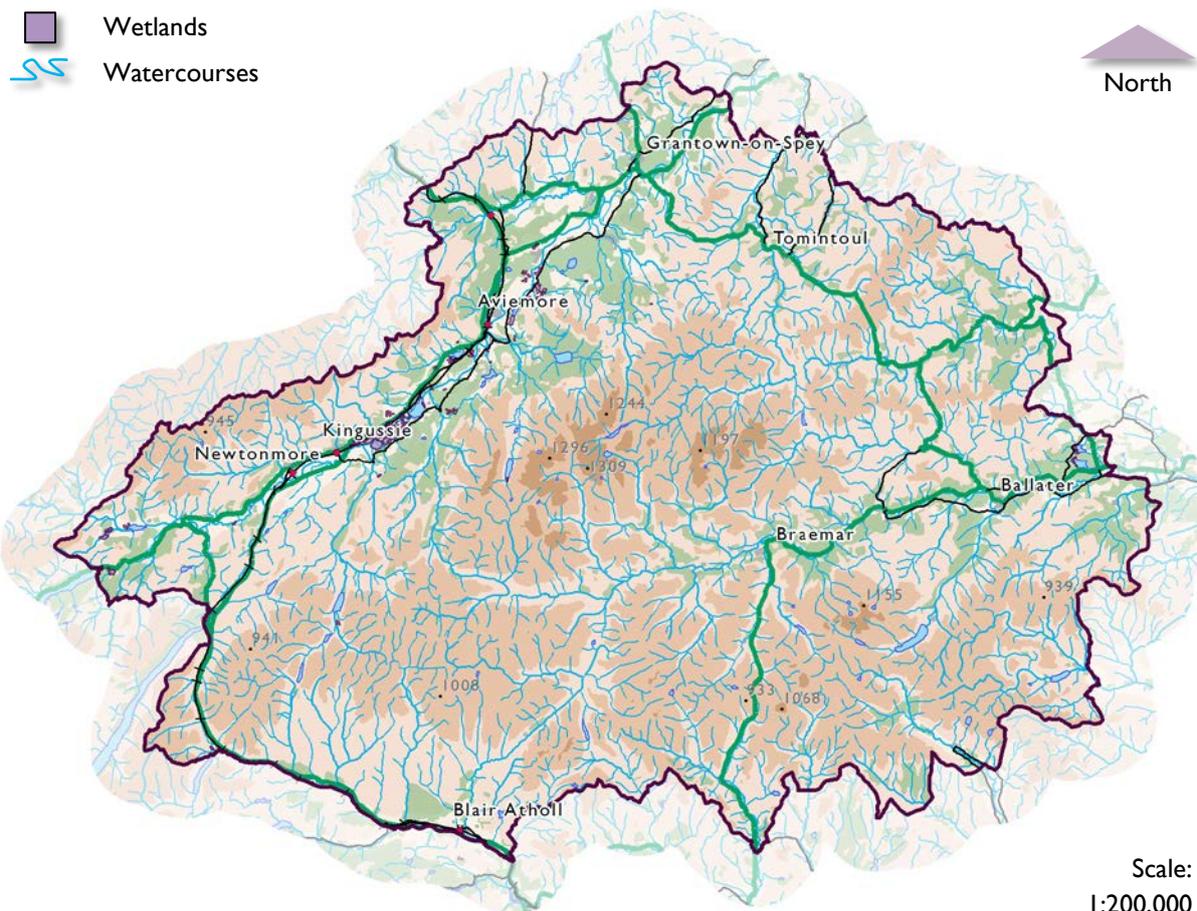
- tackling diffuse pollution - for example buffer strips can reduce excess nutrients and sediment run-off entering watercourses and can also contribute to slowing and storing flood water;
- restoring natural processes and habitats in a catchment and so improving biodiversity and geodiversity - for example removing flood embankments and reconnecting a river with its floodplain;
- improvements in amenity and landscape.

NFM is a catchment-based approach, selecting the functional flood control areas within the catchment to modify or restoring land uses that together reduce downstream flooding. The key components of NFM comprise the suite of techniques that are used, their spatial distribution around the catchment and the quantification of how effective they will be in the short and long terms. Flood risk and conservation objectives may therefore be pursued in tandem and in therefore, it is useful to view NFM as part of a broader remit of the landscape scale habitat management of the environment.

### **3.04 Wetland Habitats**

A mosaic of wetland habitats with fens, bogs, woods, wet grassland and open water provides a home to a rich array of wildlife (Figure 21). 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. Wet grasslands are the products of agricultural management, they are not extensive within the National Park and are often in low-lying areas of fields where crop yield and productivity is low. Wetlands would have once been an extensive habitat within the Cairngorms National Park but have suffered dramatic declines here as in the rest of the UK.





**Figure 21** Wetlands within the Cairngorms National Park (Soil Survey of Scotland Staff, 1981).

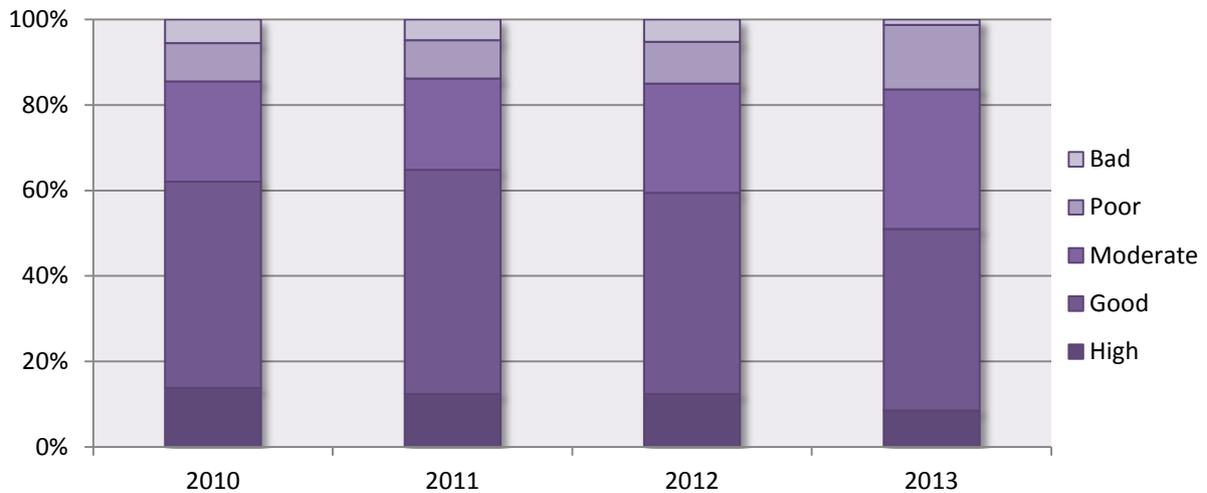
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The Cairngorms are the source of the internationally designated rivers Spey, Dee, Tay and South Esk, which support Atlantic Salmon (*Salmo salar*), Freshwater Pearl Mussel (*Margaritifera margaritifera*), Otter (*Lutra lutra*) and Lamprey (*Petromyzontiformes*). The lochs support fish including Arctic Charr (*Salvelinus alpinus*).

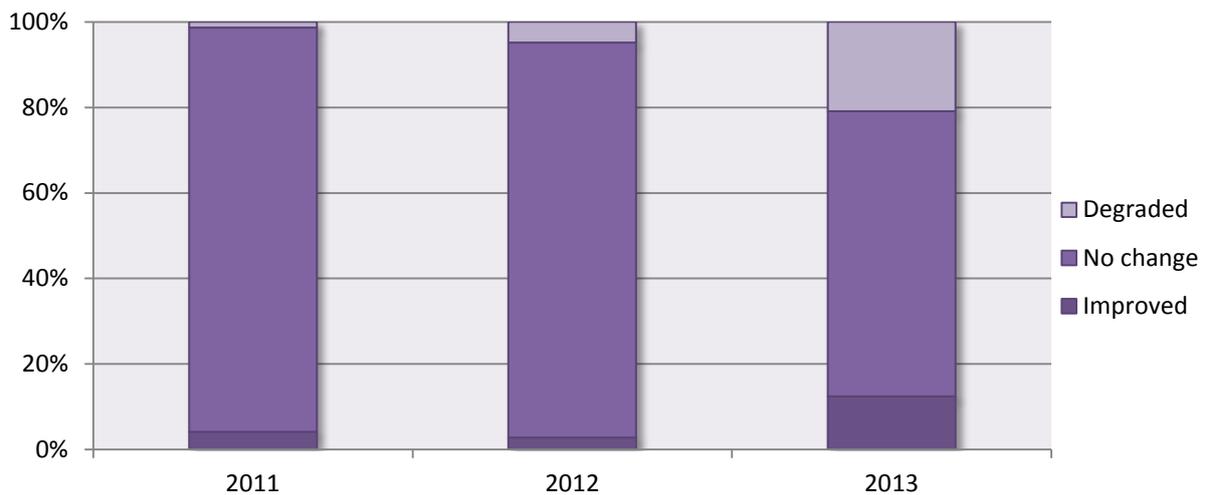
Wetlands have historically been drained for agriculture, suffered water shortages as a result of over abstraction and impoundment and been subject to pollution pressure from diffuse and point sources. The remaining wetlands are now often small and fragmented. 862ha are currently managed as wetland and floodplain under SRDP schemes. River re-naturalisation, connecting rivers with their floodplains and creating more natural flood management systems is encouraged and supported by the Water Environment Fund.

The Water Framework Directive 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 22), which is relatively high in comparison to the rest of Scotland. However, recently the ecological status of many waterbodies within the National Park has been on the wane

(Figure 23). In some ways this makes it more challenging to access the Water Environment Fund for restoration.



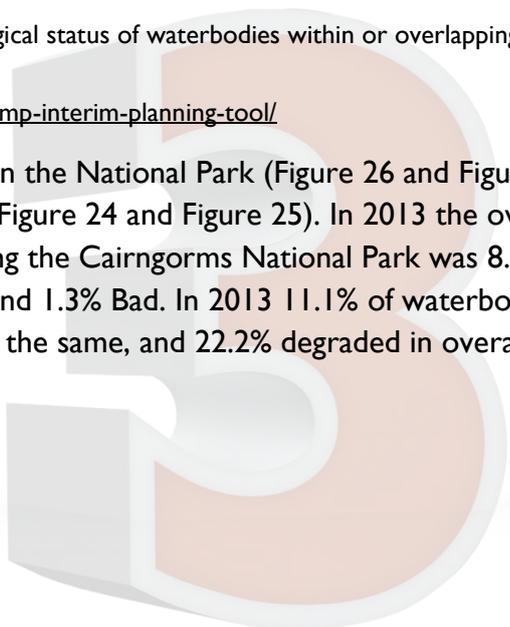
**Figure 22** Ecological status of waterbodies within and overlapping the Cairngorms National Park.

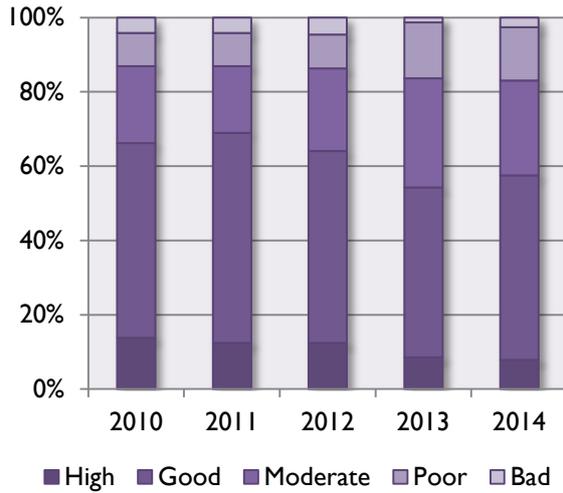


**Figure 23** Change from previous year in the ecological status of waterbodies within or overlapping the Cairngorms National Park

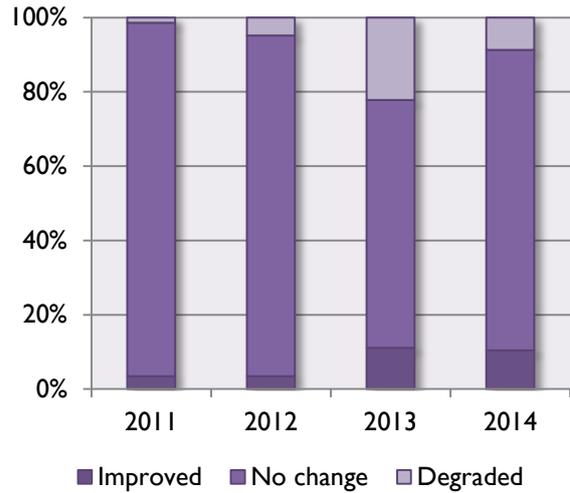
Source: <http://www.sepa.org.uk/data-visualisation/rbmp-interim-planning-tool/>

Overall water quality is relatively high within the National Park (Figure 26 and Figure 27), as is the overall classification of waterbodies (Figure 24 and Figure 25). In 2013 the overall status of waterbodies within and overlapping the Cairngorms National Park was 8.5% High, 45.8% Good, 29.4% Moderate, 15% Poor, and 1.3% Bad. In 2013 11.1% of waterbodies improved in overall status, 66.7% remained the same, and 22.2% degraded in overall status.

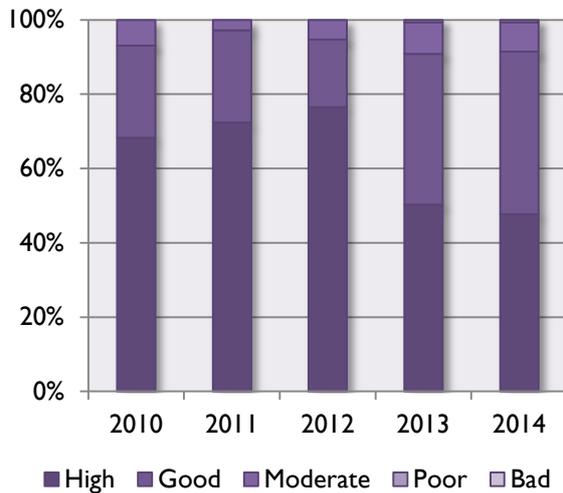




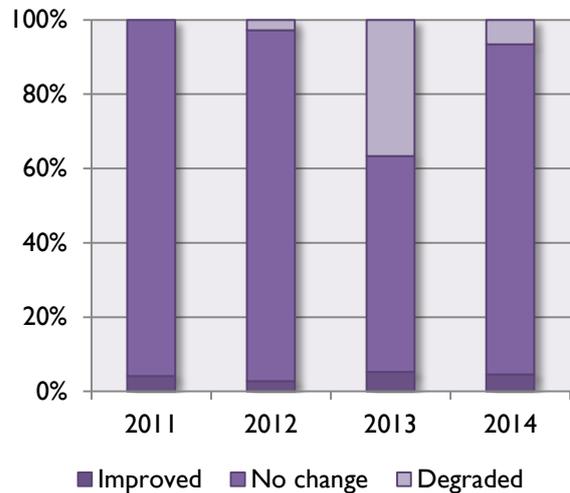
**Figure 24** Overall status of waterbodies within and overlapping the Cairngorms National Park.



**Figure 25** Change from previous year in the overall status of waterbodies within or overlapping the Cairngorms National Park



**Figure 26** Water quality classification of waterbodies within and overlapping the Cairngorms National Park.



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

**Source:** [www.environment.scotland.gov.uk/get-interactive/data/water-body-classification/](http://www.environment.scotland.gov.uk/get-interactive/data/water-body-classification/)



Table I provides the main issues affecting wetlands within the National Park together with actions required to address them.

**Table I** Issues affecting Freshwater, Wetlands and Wet Grassland in the Cairngorms National Park.

Habitat	Issue	Action Required
<b>Wet Grassland</b>	Over-grazing and poaching by livestock, cutting for hay at critical wader breeding times and drainage to produce productive agricultural land.	Support land managers and farmers to conserve populations of breeding waders. Improve and restore wet grassland.
<b>Wetlands</b>	Wetlands have historically been drained for agriculture, suffered water shortages as a result of over abstraction and impoundment and been subject to pollution pressure from diffuse and point sources. The remaining wetlands are now often small and fragmented.	Create new wetland habitats.
<b>Freshwater</b>	Rivers and lochs and the species they support have been affected by large scale impoundments which have a hydrological impact but also affect sediment dynamics, barriers to fish passage, diffuse and point source pollution and invasive species such as <i>Ranunculus</i> .	Continue to support river management to improve and maintain good ecological status of waterbodies, create new freshwater targets.

A recent survey by SNH (Sime, 2014) recorded 50% fewer fresh water pearl mussels in the River Spey than a previous survey in 2000. Water quality and low river levels in the middle and lower Spey are key factors in the decline, abstraction from the Spey catchment is often cited as playing a key role.

### 3.05 Natura 2000

#### Natura 2000 Network

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

NFM offers the opportunities to enhance the habitats that either constitute or support the qualifying features of these sites, although caution should also be exercised in ensuring that measures do not result in adverse effects.

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).

Many of the National Park's SACs are designated on the basis of the quality of their wetland habitats. Figure 28 and Table 2 provide information for all those within and overlapping the National Park that have freshwater habitat features.

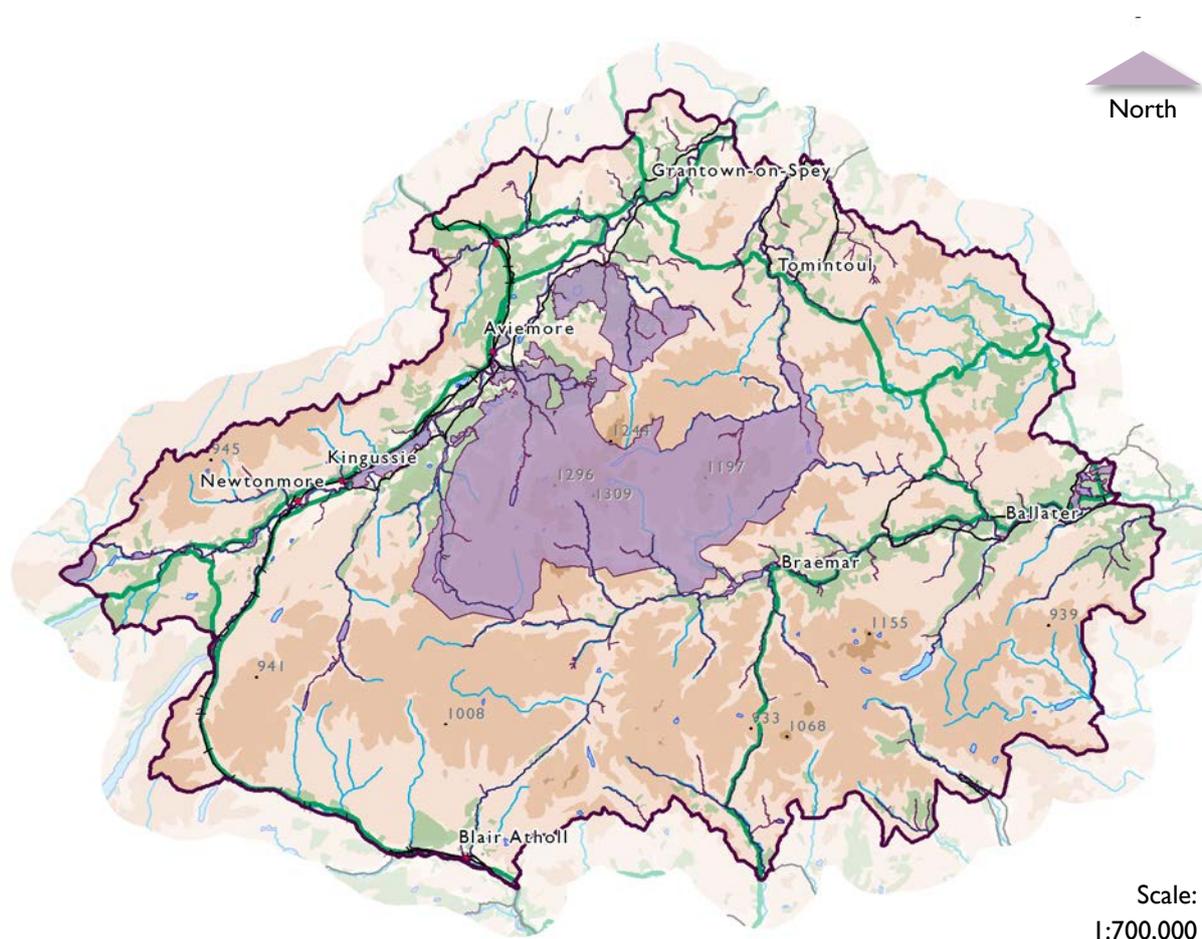


Figure 28 and Table 2 SACs within and overlapping the Cairngorms National Park that have freshwater habitat features.

Site Code	Name	Total Area (ha)	Are in CNP (ha)	Qualifying Feature	Latest Assessed Condition	Pressures	Visit Date
UK0016412	Cairngorms SAC	50903.74	50903.74	Clear-water lakes or lochs with aquatic vegetation and poor to moderate nutrient levels	Favourable Maintained	No negative pressures identified	23/06 /10
				Acid peat-stained lakes and ponds	Favourable Maintained	No negative pressures identified	24/06 /10
				Hard-water springs depositing lime	Favourable Maintained	Over-grazing	03/04 /07
				Wet heathland with cross-leaved heath	Unfavourable No change	Over-grazing	03/04 /07

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**FLOOD MANAGEMENT ISSUES REPORT**

Site Code	Name	Total Area (ha)	Are in CNP (ha)	Qualifying Feature	Latest Assessed Condition	Pressures	Visit Date
				Very wet mires often identified by an unstable 'quaking' surface	Favourable Maintained	No negative pressures identified	08/04 /07
				High-altitude plant communities associated with areas of water seepage	Unfavourable No change	Over-grazing	15/10 /06
				Otter ( <i>Lutra lutra</i> )	Favourable Maintained	Recreation / disturbance	08/09 /2004
UK0012955	Creag Meagaidh SAC	6144.58	507.19	Clear-water lakes or lochs with aquatic vegetation and poor to moderate nutrient levels	Favourable Maintained	No negative pressures identified	10/06 /10
				Wet heathland with cross-leaved heath	Unfavourable No change	Burning, game / fisheries management, over-grazing	30/09 /05
UK0019812	Insh Marshes SAC	1158.78	1158.78	Clear-water lakes or lochs with aquatic vegetation and poor to moderate nutrient levels	Favourable Maintained	Invasive species, recreation / disturbance	30/07 /10
				Alder woodland on floodplains	Unfavourable Recovering	Flood defence works, invasive species, no proactive management, over-grazing, water management	19/05 /09
				Very wet mires often identified by an unstable 'quaking' surface	Favourable Maintained	No negative pressures identified	04/10 /02
				Otter ( <i>Lutra lutra</i> )	Favourable Maintained	Over-grazing, other	08/09 /04
UK0019959	Muir of Dinnet SAC	415.76	415.76	Very wet mires often identified by an unstable 'quaking' surface	Unfavourable Declining	Invasive species	30/08 /08
				Clear-water lakes or lochs with aquatic vegetation and poor to moderate nutrient levels	Favourable Maintained	Invasive species, water quality	25/06 /04
				Otter ( <i>Lutra lutra</i> )	Favourable Maintained	Natural event, water quality	04/10 /12
UK0030251	River Dee SAC	2446.82	1368.59	Otter ( <i>Lutra lutra</i> )	Favourable Declining	No negative pressures identified	06/10 /12
				Atlantic salmon ( <i>Salmo salar</i> )	Favourable Maintained	Agricultural operations, invasive species,	21/07 /11

National Park Partnership Plan 2017 - 2022  
**FLOOD MANAGEMENT ISSUES REPORT**

Site Code	Name	Total Area (ha)	Are in CNP (ha)	Qualifying Feature	Latest Assessed Condition	Pressures	Visit Date
						water management, water quality	
				Freshwater pearl mussel ( <i>Margaritifera margaritifera</i> )	Unfavourable No change	Development, invasive species, water management. To be identified, other	07/08 /03
UK0030262	River South Esk SAC	478.62	103.48	Atlantic salmon ( <i>Salmo salar</i> )	Unfavourable Recovering	Agricultural operations, climate change, forestry operations, invasive species, over-grazing, water management, water quality	22/09 /04
				Freshwater pearl mussel ( <i>Margaritifera margaritifera</i> )	Unfavourable Declining	Invasive species, water management, wildlife crime	19/09 /02
UK0019811	River Spey SAC	5729.48	4181.76	Sea lamprey ( <i>Petromyzon marinus</i> )	Favourable Maintained	No negative pressures identified	07/09 /11
				Otter ( <i>Lutra lutra</i> )	Favourable Maintained	Over-grazing; other	08/09 /04
				Atlantic salmon ( <i>Salmo salar</i> )	Unfavourable Recovering	Agricultural operations; invasive species; water management	20/10 /04
				Freshwater pearl mussel ( <i>Margaritifera margaritifera</i> )	Unfavourable Recovering	Extraction; invasive species; water quality; wildlife crime	01/10 /00
UK0030312	River Tay SAC	9497.72	233.94	Clear-water lakes or lochs with aquatic vegetation and poor to moderate nutrient levels	Favourable Maintained	Water management	09/09 /04
				Atlantic salmon ( <i>Salmo salar</i> )	Favourable Maintained	Game/ fisheries management, invasive species, water management, water quality	19/09 /11
				Sea lamprey ( <i>Petromyzon marinus</i> )	Favourable Maintained	Development, water management, water quality	30/11 /07
				River lamprey ( <i>Lampetra fluviatilis</i> )	Favourable Maintained	Development, water management,	30/11 /07

Site Code	Name	Total Area (ha)	Are in CNP (ha)	Qualifying Feature	Latest Assessed Condition	Pressures	Visit Date
						water quality	
				Brook lamprey ( <i>Lampetra planeri</i> )	Favourable Maintained	Development, water management, water quality	30/11/07
				Otter ( <i>Lutra lutra</i> )	Favourable Maintained	Agricultural operations, invasive species, recreation / disturbance, water management	03/04/04

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. Many of these species are classified as being water dependant and rely on the National Park’s wetland habitats for their survival. These wetlands may be designated as part of the sites themselves, or may be located elsewhere within the territory of the qualifying species.

Figure 29 and Table 3 provide information for all those within and overlapping the National Park that have water dependent features.



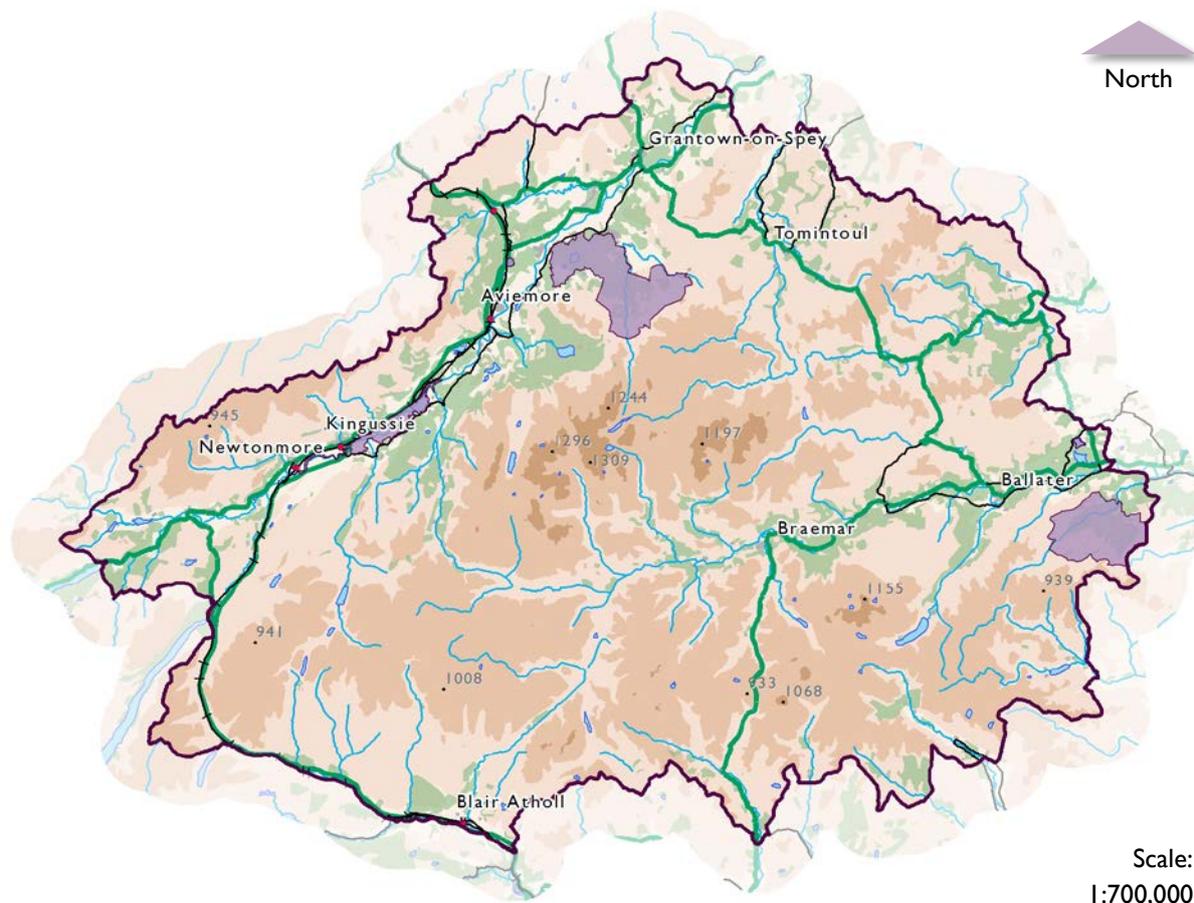


Figure 29 and Table 3 SPAs within and overlapping the Cairngorms National Park that have water dependent features.

Site Code	Name	Total Area (ha)	Are in CNP (ha)	Qualifying Feature	Latest Assessed Condition	Pressures	Visit Date
UK9002561	Abernethy Forest SPA	5793.46	5793.46	Osprey ( <i>Pandion haliaetus</i> ), breeding	Favourable Maintained	No negative pressures identified	31/05/07
UK902771	Glen Tanar SPA	4180.09	4142.25	Osprey ( <i>Pandion haliaetus</i> ), breeding	Favourable Maintained	Forestry operations, recreation / disturbance	13/10/2010
UK9002751	Loch Vaa SPA	44.6	44.6	Slavonian grebe ( <i>Podiceps auritus</i> ), breeding	Unfavourable No change	Natural event, recreation / disturbance	30/06/07
UK9002791	Muir of Dinnet SPA	157.6	157.6	Waterfowl assemblage, non-breeding	Unfavourable Declining	No negative pressures identified	01/12/12
				Greylag goose ( <i>Anser anser</i> ), non-breeding	Unfavourable Declining	No negative pressures identified	05/11/10

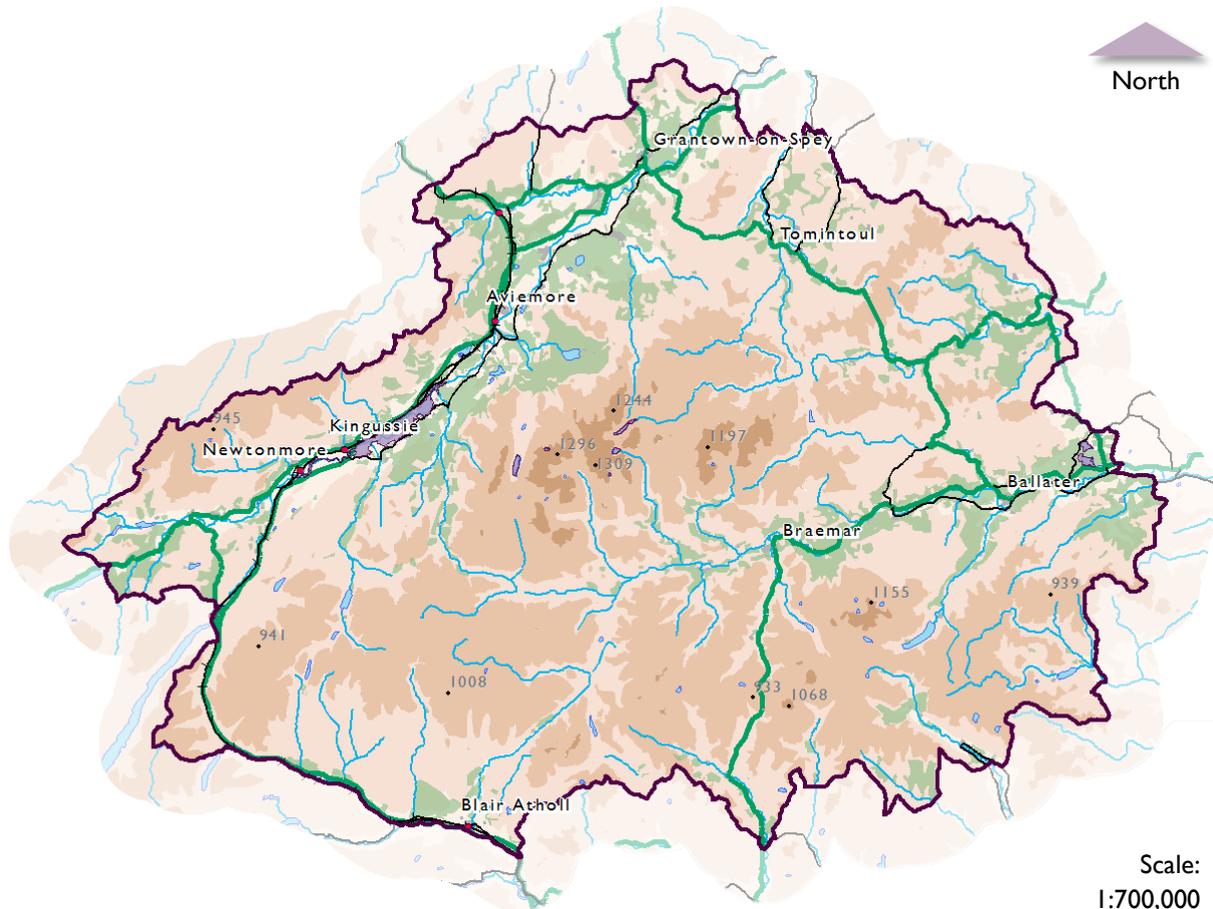
Site Code	Name	Total Area (ha)	Are in CNP (ha)	Qualifying Feature	Latest Assessed Condition	Pressures	Visit Date
UK9002231	River Spey – Insh Marshes SPA	1158.87	1158.87	Osprey ( <i>Pandion haliaetus</i> ), breeding	Favourable Maintained	Recreation / disturbance	07/09 /09
				Whooper swan ( <i>Cygnus cygnus</i> ), non-breeding	Favourable Maintained	No negative pressures identified	31/12 /00
				Spotted crake ( <i>Porzana porzana</i> ), breeding	Favourable Maintained	No negative pressures identified	31/12 /00
				Wood sandpiper ( <i>Tringa glareola</i> ), breeding	Unfavourable Declining	Forestry operations	31/12 /00

### Ramsar Convention

The National Park is also home to three wetlands of international importance that have been designated under the Ramsar Convention (Table 4 and Figure 30). All are wholly located within the Cairngorms National Park. The designation recognises the fundamental ecological functions of these areas as well as their economic, cultural, scientific, and recreational value.

**Table 4** Ramsar Convention Sites within the Cairngorms National Park.

Site Code	Name	Total Area (ha)	Qualifying Feature	Latest Assessed Condition	Pressures	Visit Date
UKI 3002	Cairngorm Lochs	172.99	Oligotrophic loch	Favourable Maintained	Water management, other	23/06/10
UKI 3049	Muir of Dinnet	157.60	Greylag goose ( <i>Anser anser</i> ), non-breeding	Unfavourable No change	No negative pressures identified	10/12/12
UKI 3053	River Spey - Insh Marshes	1158.77	Mesotrophic loch	Favourable Maintained	Invasive species, recreation / disturbance	30/07/2010
			Trophic range river/stream	Favourable Maintained	No negative pressures identified	07/07/2003
			Flood-plain fen	Favourable Maintained	No negative pressures identified	04/10/2002
			Whooper swan ( <i>Cygnus cygnus</i> ), non-breeding	Favourable Maintained	Recreation / disturbance	28/03/2010
			Breeding bird assemblage	Favourable Maintained	No negative pressures identified	31/07/2001



**Figure 30** Ramsar Sites within the Cairngorms National Park.

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### 3.05 River Catchment Initiatives

Four of the National Park’s rivers are have associated initiatives Several of the rivers within the National Park have associated initiatives who co-ordinate partnerships to deliver integrated catchment management they are (Figure 31):

- Spey Catchment Initiative,
- Dee Catchment Partnership,
- River South Esk Catchment Partnership, and
- River Don Catchment Partnership.

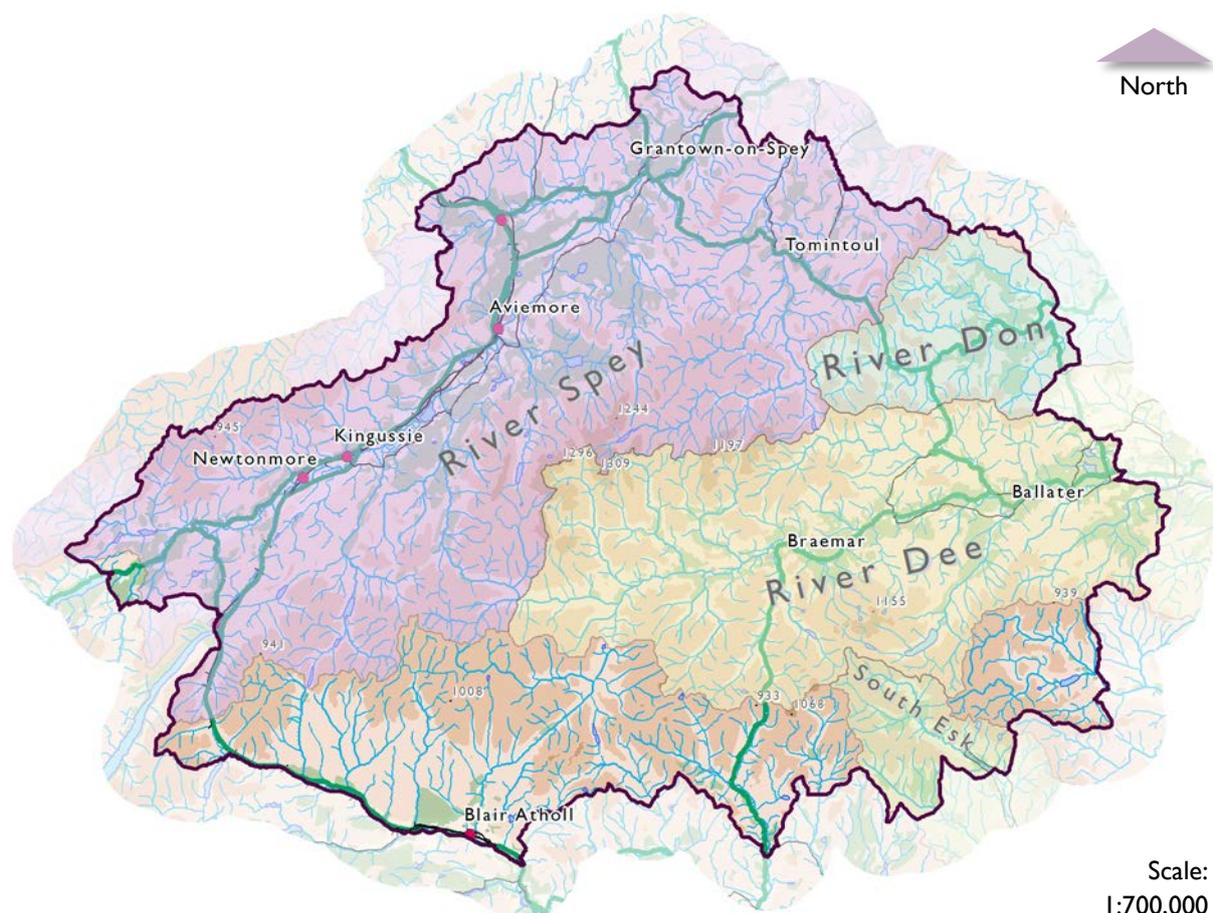
These initiatives aim to protect water quality, direct the use of the rivers as resources, protect against flooding, enhance biodiversity, and promote access and economic development.

The initiatives take a catchment wide approach to river management and have been involved in carrying out NFM projects. For example, starting in 2012 the Spey Catchment Initiative

has been carrying out a project to restore the morphology and habitats of a section of the Allt Lorgy, a moderately high energy tributary of the River Dulnain.

The aim was to restore the morphology and habitats of a burn and its adjoining floodplain by removing significant artificial constraints that have, over the years, canalised the watercourse from a multi braided to a single channel. The intention was that by kick starting the process, the watercourse would over time and through natural events, do its own work to re-establish its natural equilibrium, both in stream and with its floodplain. In time this should improve both the in water and surrounding habitat and create a more diverse ecological environment. It should also enable the burn and its floodplain to contribute better to upland water flow management in times of prolonged rainfall or high spate.

Since the project's inception significant changes have taken place at the site. In stream features such as pools and riffles have been created and a more variable substrate now exists. Following several spates and a significant flood event, the processes of erosion and deposition are now well underway.



**Figure 31** Areas of the Cairngorms National Park covered by River Catchment Initiatives.

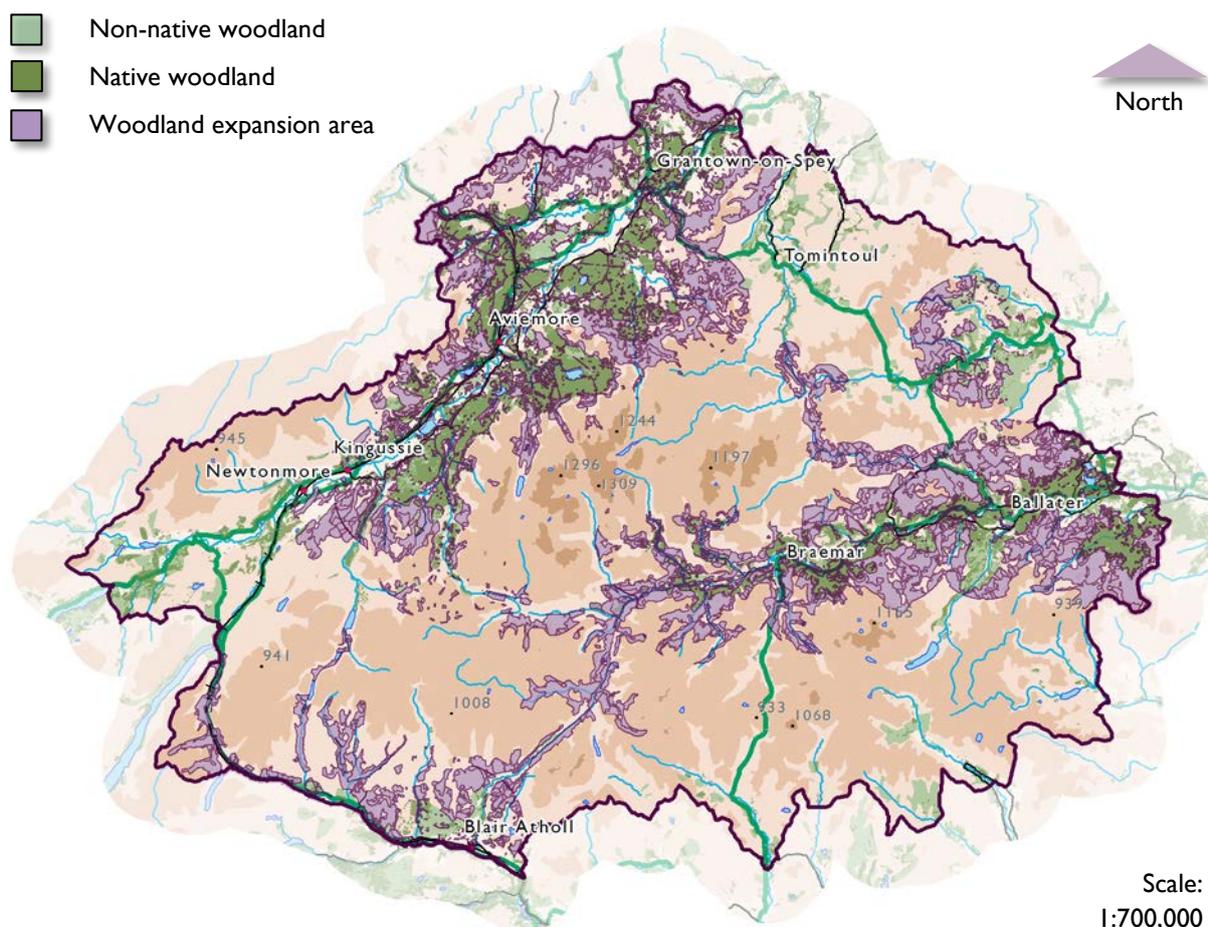
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### 3.05 Landscape Scale Habitat Management

Legislation and guidance in recent years has emphasised the need for land to deliver public benefit. The advantages of, and need for, a landscape scale approach are well recognised and gaining higher profile. With respect to NFM, the landscape scale management of habitat such as woodland and uplands can significantly reduce flood risk by storing water and reducing through flow and surface water run-off.

#### Woodlands

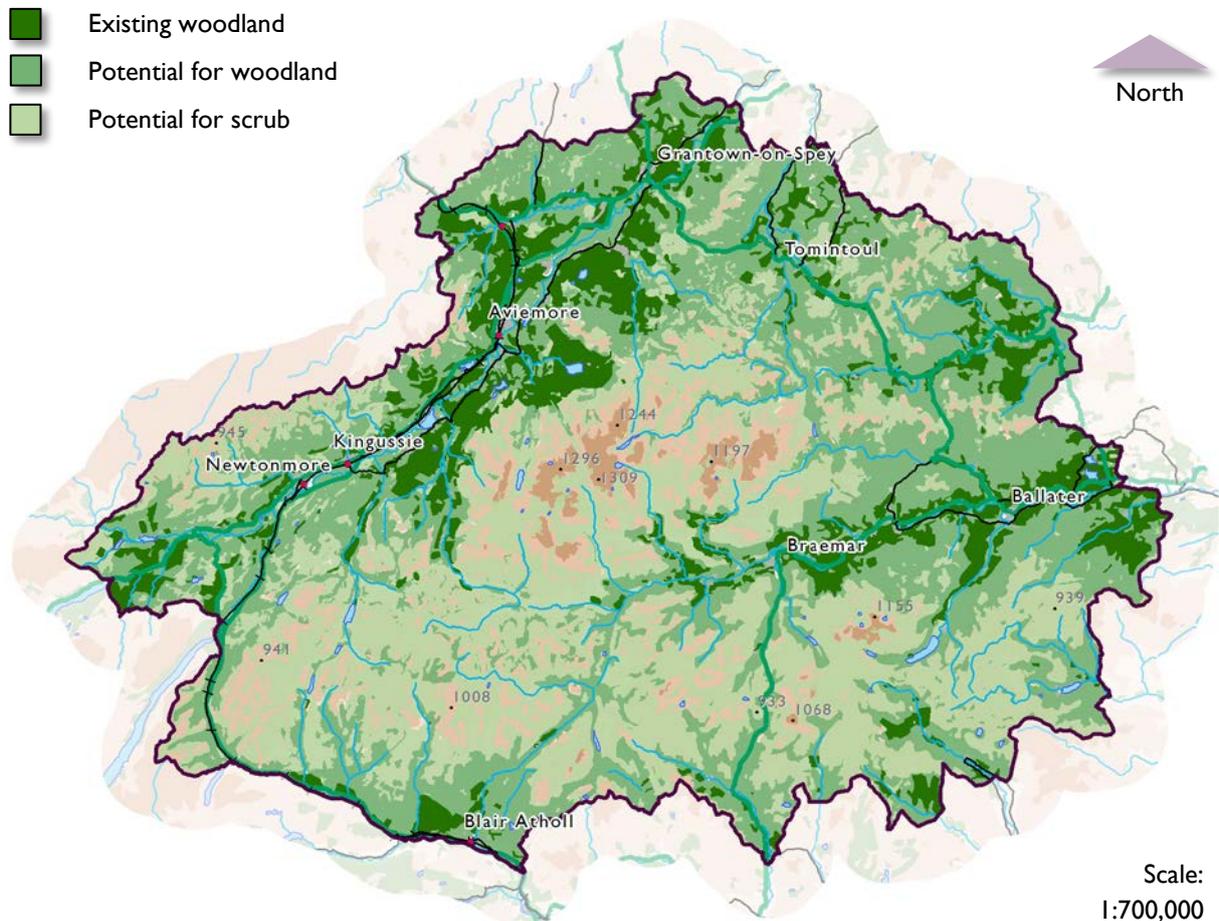
Scotland has a very low percentage of woodland cover compared with other countries in Europe, although it has increased over the last century. In 1900 only 5% of Scotland was covered in forest, but by 2007 this had increased to 17%. Over the last 25 years there has been an increased awareness of the multiple benefits that native woodland can deliver and an upsurge in action to restore and expand native woods. The most widespread single factor inhibiting native woodland recovery is high levels of browsing and grazing impacts. Between 2013 and 2015 890ha of new native woodland has been created in the National Park, 704ha of which is adjacent to the existing resource (Figure 32). There remain further significant areas of land that have potential for woodland and scrub expansion (Figure 33)



**Figure 32** Areas of woodland and woodland expansion in the Cairngorms National Park.

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Recent changes in the administration of SRDP and the CAP have directly influenced the level of grazing by livestock. In particular, sheep grazing has reduced in a number of areas with a marked increase in scrub and woodland regeneration.



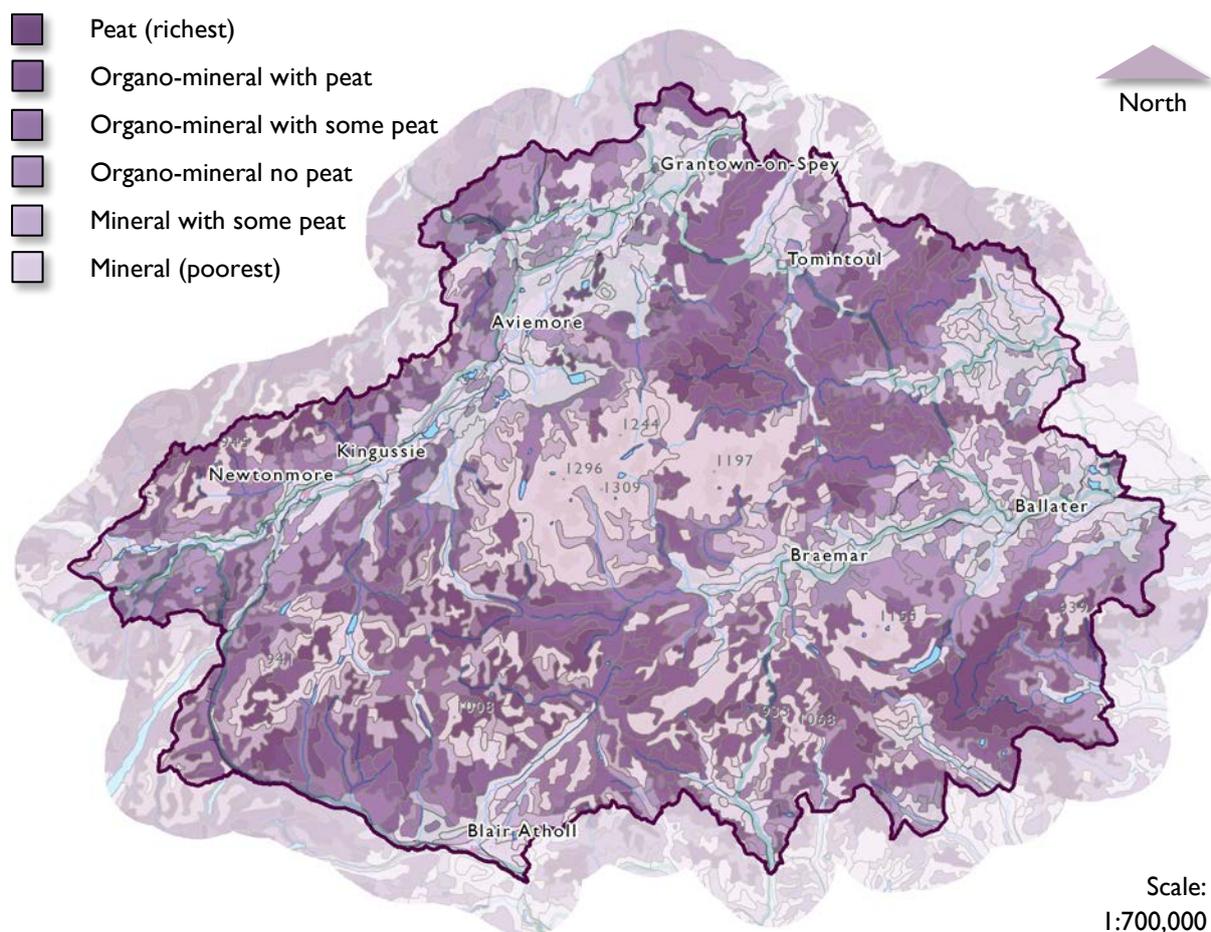
**Figure 33** Existing woodland and land with potential for woodland and scrub in the Cairngorms National Park.

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## 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 / peatland (Figure 34 and Figure 35) is the second most extensive habitat in the National Park and is mainly *Calluna-Eriophorum* dominated blanket mire.

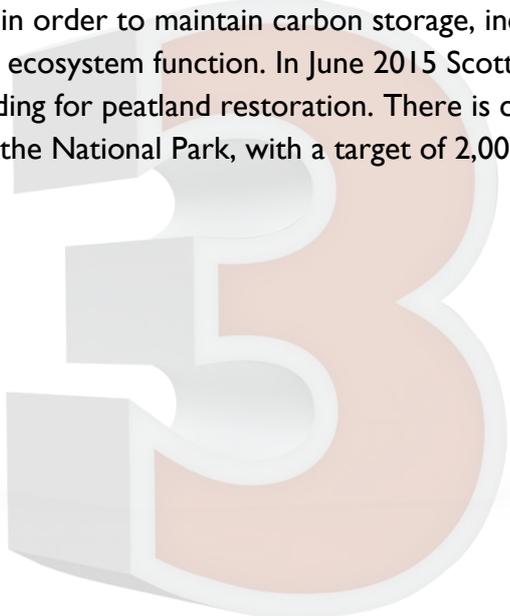
The last few years have seen significant improvement in the economic viability of driven grouse shooting. Land use intensification and modification has altered the ecology and landscapes and could result in a reduction of diversity, quality and connectivity of habitats.

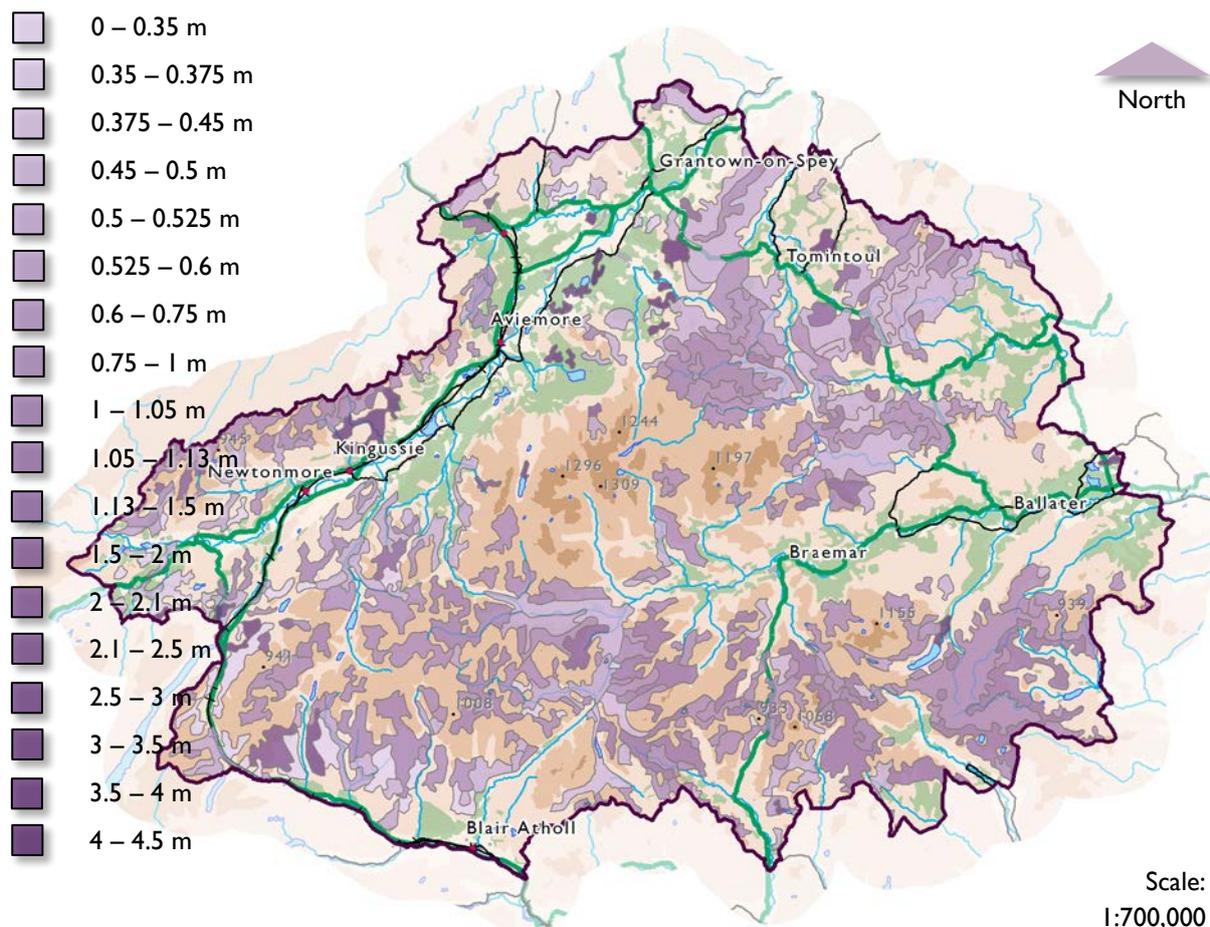


**Figure 34** Carbon Richness of Soil (Scottish Natural Heritage, 2012).

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Much of Scotland’s 2 million ha of peatland resource is in poor condition. It is estimated that 70% of blanket bog and 90% of raised bog has been damaged to some degree. In November 2012 the Scottish Government allocated Scottish Natural Heritage a peatland restoration fund of £1.7 million for spend 2013 – 2015 in order to maintain carbon storage, increase sequestration and improve biodiversity and ecosystem function. In June 2015 Scottish Government announced a further £3m funding for peatland restoration. There is currently 350ha of peatland restoration underway in the National Park, with a target of 2,000ha by 2018.





**Figure 35** Depth of peat (m) in the Cairngorms National Park (Soil Survey of Scotland Staff, 1981).

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One of the most important factors with respect to managing flood risk is the maintenance and enhancement of vegetation cover, which may disrupt overland flow and reduce through flow. In the Cairngorms National Park, 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 make the surface organic layer of the soil water resistant, resulting in greater run-off and greater potential for soil erosion and landslides.

#### 4. WHAT WE WANT TO ACHIEVE

- A wide range of agencies and organisations working together within a common vision, joined-up policy context and a collaborative and coordinated approach to natural flood management, land use and ecosystem management;
- More robust, resilient and better connected natural systems providing ecosystems services and delivering public benefit; and
- Resources directed where they are needed most and / or deliver most to ensure healthy, functioning river catchments, landscapes and ecosystems.

## 5. MECHANISMS

**Flood Risk Management Strategies** have been developed to reduce the impact of flooding in Scotland. They coordinate the efforts of all organisations that tackle flooding, be it in our cities or rural areas and be it from rivers, the sea or from surface water. The strategies concentrate the work of these organisations to where the risk of flooding and benefits of investment are greatest.

**River Basin Management Plans** drawn up and overseen by **Fisheries Boards and Trusts**. RBMPs summarise the state of the water environment; pressures affecting the water environment where it is in less than good condition; objectives for protection and enhancement and actions to implement them. **Catchment Initiatives** have been very successful as a delivery mechanism, engaging with stakeholders and communities.

**Spatial planning** can greatly assist in identifying where maximum benefit can be derived from targeted input. The *'Indicative priority areas for Pinewood expansion in the Park' map* highlights areas where woodland expansion would have greatest benefits in creating a more robust habitat network and support delivery of landscape-scale projects and initiatives such as the *Capercaillie Framework*, strongly supported by a 12.5% increased **funding incentive** under SRDP woodland planting options.

**Cairngorms Nature** is now well established as a partnership delivering an ambitious agenda for nature conservation in the Cairngorms. It brings together organisations and individuals delivering conservation on the ground through delivery of the *Cairngorms Nature Action Plan 2013-2018* is the partnership document

Run by representatives of the landholdings in each group's area, **Deer Management Groups** produce *Deer Management Plans* that ensure there is a population of deer suitable for the landscape in terms of the environment and compatible with land uses such as sporting interest, farming, forestry, tourism and recreation and which makes a contribution to the local economy.

Research into the value of natural flood management and ecosystem services can be coordinated through the **Cairngorms Research Strategy**, established to promote and coordinate opportunities for collaborative research across disciplines that directly influence management in the National Park and wider agendas in Scotland and internationally. Natural capital and the need for a partnership between business and nature is an identified theme in the **Cairngorms Economic Strategy**.

A key aim of the 2014 – 20 SRDP (**Scottish Rural Development Programme**) is to help fund the delivery of natural heritage benefits including biodiversity, landscape, climate change, water and soil quality, and public access. The SRDP is delivered by the Scottish Government in partnership with other public bodies including SNH and Forestry Commission Scotland.

## **6. SUMMARY**

### **6.1 Issues**

- Expected increase in the severity and frequency of flooding through climate change;
- Costs of the impacts of flooding on infrastructure, property and land use;
- Costs and potential downstream implications of hard engineering flood protection schemes;
- Increased international recognition of the benefits of a catchment wide approach to flood risk management but lack of consensus on measures;
- Wider, multiple benefits of natural flood management measures;
- Broad opportunity areas for natural flood management identified at national level; and
- Opportunity to trial and demonstrate the benefits of natural flood management on an international basis.

### **6.2 Targets**

Reduce flood risk and increase the resilience of communities to the effects of climate change by:

- Reduced speed of water run-off from uplands;
- Creation of more diverse ecological environments;
- Integration of natural flood management techniques into other land management objectives;
- Safeguard functional flood plain and avoid inappropriate development in areas of high flood risk; and
- Effective flood defences where appropriate.

### **6.3 Mechanisms**

- Catchment partnerships and plans
- River basin planning
- Cairngorms Nature
- Flood Risk Management Strategies and Plans
- Development Plan
- Scottish Rural Development Programme funding
- Water Environment Fund

### **6.4 Key Questions**

- What land use changes are needed to deliver more effective natural flood management and how can they be supported/funded?
- How can catchment management partnerships be better used to help deliver natural flood management as part of flood risk management?

