Cairngorms National Park Local Development Plan 3: Strategic Flood Risk Assessment

Dan Harris (11 April 2024)

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Introduction

Local development planning guidance requires that local development plans are informed by a strategic flood risk assessment, which should be prepared at the evidenced report stage.

A strategic flood risk assessment is a simple, high-level, primarily map-based overview of the scope and nature of all sources of existing and future flood risk within the local development plan area. The assessment will primarily help to inform the preparation of the next local development plan by delivering the intention of National Planning Framework 4 Policy 22 to strengthen resilience to flood risk by promoting avoidance as a first principle and reducing the vulnerability of existing and future development to flooding.

This strategic flood risk assessment has been prepared in accordance with Scottish Environment Protection Agency guidance (2023) and in consultation with Scottish Environment Protection Agency and flood risk specialists within the five local authorities that cover the Cairngorms National Park.

Aims and objectives

The primary aims of the strategic flood risk assessment are to ensure that future development is directed wherever possible towards areas of little or no flood risk and to ensure that new development does not increase flood risk elsewhere (for example by affecting the storage or conveyance capacity of flood plains).

Its main objectives are to:

- Identify where flood risk exists in the plan area at the Evidence Report stage, and therefore areas where new development should be located or avoided at the Proposed Plan stage[1], in accordance with Policy 22 of National Planning Framework 4.
- Identify areas where climate change is resulting in unmanageable flood exposure, and so where alternative land use is needed, in accordance with National Planning Framework 4.
- Identify where and how actions contained in the local flood risk management plan (including future flood protection schemes) affect the location of new development.

[1] Unless it meets with Policy 22 - for such areas the strategic flood risk assessment will identify where more detailed analysis of flood risk will be needed.

- Inform blue and green infrastructure audits and / or strategies in support of Policy 20 of National Planning Framework 4.
- Inform the strategic environmental assessment of the Local Development Plan.
- Provide evidence to support the Local Development Plan in taking into account other relevant National Planning Framework 4 policies, to help take an integrated place-based approach to tackling the climate emergency and nature crisis.

As well as informing the Local Development Plan, the Strategic Flood Risk Assessment outputs can also be used to support a place-based approach to development and service delivery. For example, the Strategic Flood Risk Assessment could be used:

- by developers, communities (including for their Local Place Plans), individual applicants, and the local authorities that cover the National Park area to better understand flood risk in the area.
- to support wider infrastructure planning and delivery.
- to support the local authorities that cover the National Park area provide services such as emergency planning and resilience.

Legislative and policy context

National context

National Planning Framework 4

The planning system in Scotland is 'plan led' and the statutory Development Plan for any place in Scotland consists of National Planning Framework 4, which covers all of the country, and the Local Development Plan for the planning authority area where the place is (Figure 1).

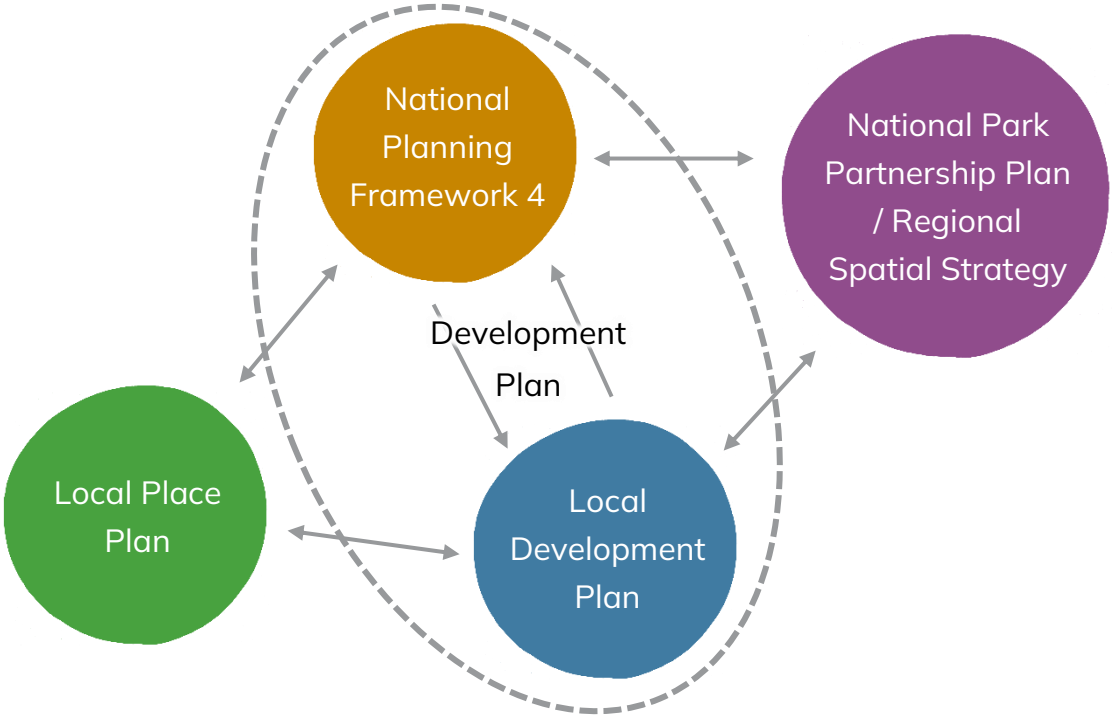


Figure 1 The Scottish Statutory Development Plan as it applies to the Cairngorms National Park Authority.

National Planning Framework 4's Policy 22: Flood risk and water management aims to strengthen resilience to flood risk by promoting avoidance as a first principle and reducing the vulnerability of existing and future development to flooding. The policy states that Local Development Plans should strengthen community resilience to the current and future impacts of climate change, by avoiding development in areas at flood risk as a first principle. Resilience should also be supported by managing the need to bring previously used sites in built up areas into positive use; planning for adaptation measures; and identifying opportunities to implement improvements to the water environment through natural flood risk management and blue green infrastructure.

Local Development Plans should also take into account the probability of flooding from all sources and make use of relevant flood risk and river basin management plans for the area. A precautionary approach should be taken, regarding the calculated probability of flooding as a best estimate, not a precise forecast. For areas where climate change is likely to result in increased flood exposure that becomes unmanageable, consideration should be given to alternative sustainable land use.

The Strategic Flood Risk Assessment will primarily support the Local Development Plan in responding to the spatial implications of Policy 22 by promoting avoidance as a first principle and reducing the vulnerability of existing and future development to flooding. In doing so the Strategic Flood Risk Assessment will also provide evidence to help take other National Planning Framework 4 policies into account, including:

- Policy 1 Tackling the climate and nature crises
- Policy 2 Climate mitigation and adaptation
- Policy 3 Biodiversity
- Policy 4 Natural places
- Policy 6 Forestry, woodland and trees
- Policy 13 Sustainable transport
- Policy 18 Infrastructure first
- Policy 20 Blue and green infrastructure
- Policy 21 Play, recreation and sport

Flood risk management

The Flood Risk Management (Scotland) Act 2009 promotes a risk-based, plan-led approach to managing flood risk. It requires Scottish Environment Protection Agency and other designated responsible authorities to develop and implement Flood Risk Management Plans and Local Flood Risk Management Plans. These contain a significant amount of information on potential flood hazards and risks which can be drawn upon to inform the Strategic Flood Consequences Assessment.

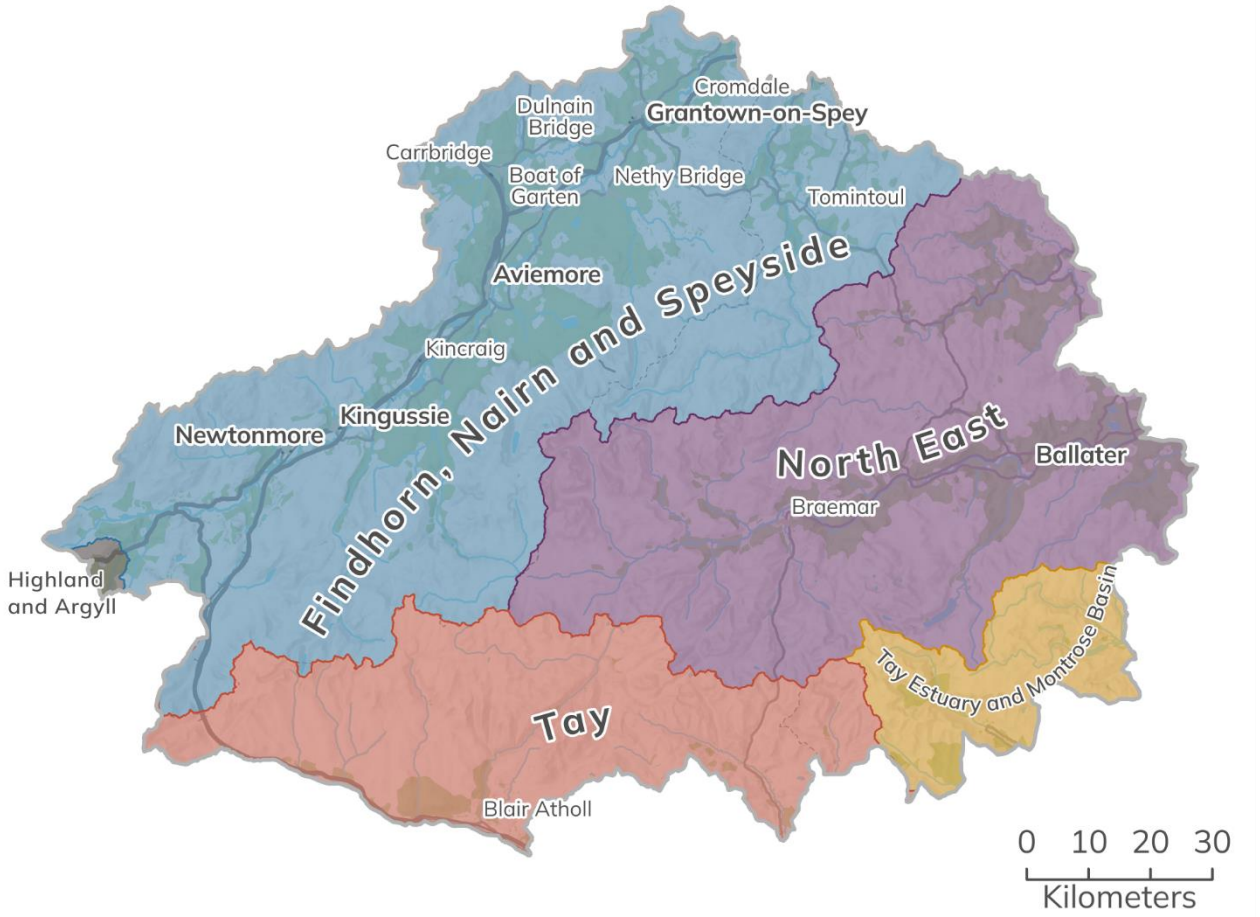


Figure 2 Local Plan Districts covering the Cairngorms National Park.

The Flood Risk Management Plans and Local Flood Risk Management Plans are prepared for geographical areas known as Local Plan Districts (Figure 2), which are based on whole river catchments. The following five Local Plan Districts intersect the Park Authority's administrative area:

- LPD1 Highland & Argyll
- LPD5 Findhorn, Nairn and Speyside,
- LPD6 North East
- LPD7 Tay Estuary and Montrose Basin
- LPD8 Tay

Of these, only three Local Plan Districts intersect the National Park to any significant degree. These are the Findhorn, Nairn & Speyside District, which includes the River Spey

and its tributaries, the North East District, which incorporates the catchments of the River Dee and the River Don and the Tay District, which contains the River Tay and its tributaries.

The Flood Risk Management Plans and Local Flood Risk Management Plans outline objectives and actions for tackling flood risk at a Local Plan District wide level and within Potentially Vulnerable Areas. These are specifically defined areas where the risks to property from flooding, and the estimated average annual damages occurring as a result of flooding, are greatest.

A summary of the most significant flooding risks and hazards within the Cairngorms National Park is provided in this report. This includes information obtained from the relevant Flood Risk Management Plans and Local Flood Risk Management Plans.

Local context

Although not part of the statutory development plan (Figure 1), strategic direction within the National Park is provided by the Cairngorms National Park Partnership Plan 2022. The Partnership Plan is the overarching management plan for the Cairngorms National Park which has been approved by Scottish Ministers. It sets out the vision and over-arching strategy for managing the National Park, as well as identifying priorities for action and an overall strategic policy framework. The Partnership Plan acts as the Regional Spatial Strategy for the National Park, which is intended to address strategic development and issues. This includes a strategic diagram which provides a framework for the next Local Development Plan's spatial strategy (Figure 3).

Scottish Government guidance states that Local Development Plans for National Parks should be consistent with the Partnership Plan and Regional Spatial Strategy. The Partnership Plan therefore provides the strategic context for the Local Development Plan, and the Local Development Plan will help to deliver a number of the Partnership Plan's policies and priorities.

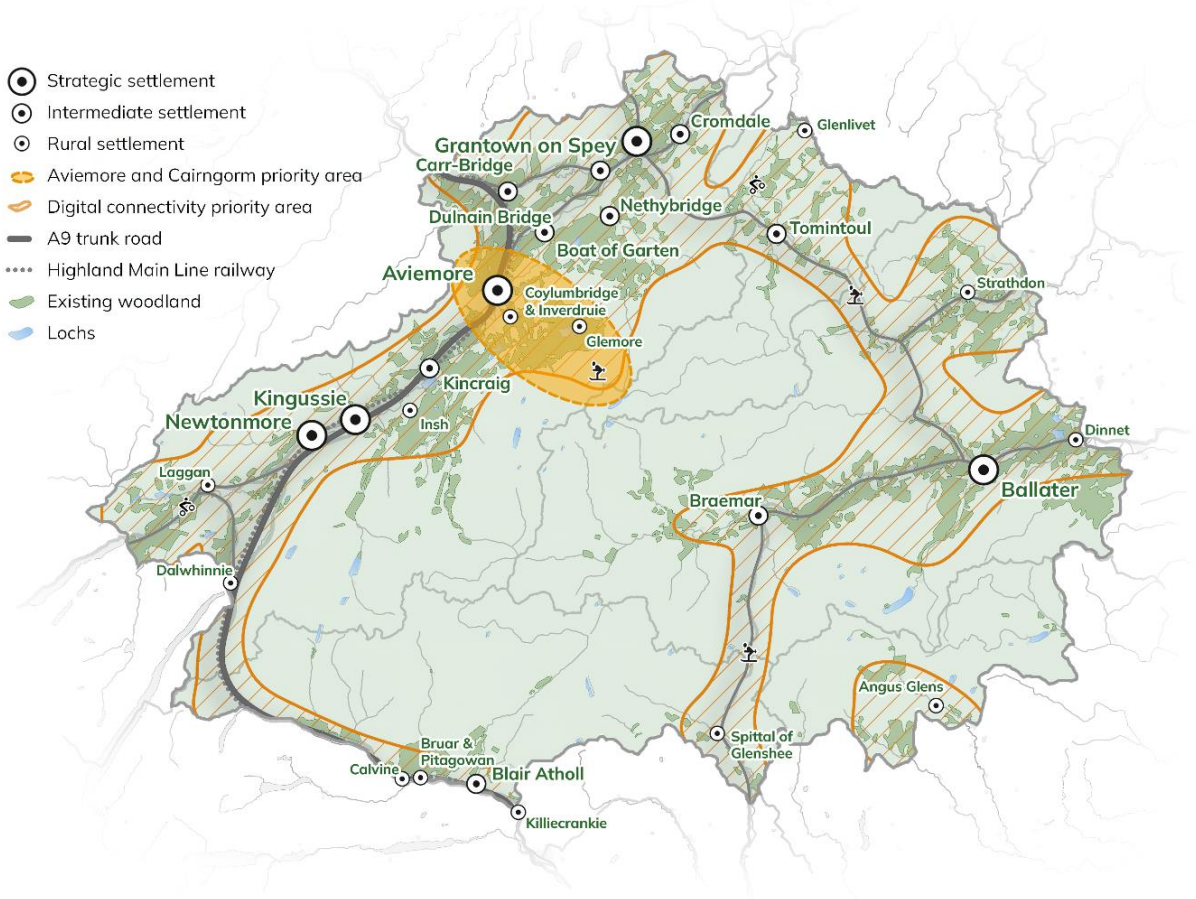


Figure 3 Strategic diagram from the National Park Partnership Plan 2022.

The Partnership Plan therefore provides direction for the strategic flood risk assessment by setting out a settlement hierarchy where development is likely to be focused, namely the strategic settlements of:

- Aviemore
- Ballater
- Grantown-on-Spey
- Kingussie
- Newtonmore

And the intermediate settlements of:

- Boat of Garten
- Blair Atholl
- Braemar
- Carr-Bridge
- Cromdale
- Dulnain Bridge

- Kincraig
- Tomintoul

Rural settlements may accommodate small scale development, but this does not necessarily mean allocating land or identifying a settlement boundary. These are also identified in the Partnership Plan, namely:

- Bruar
- Calvine
- Coylumbridge
- Dinnet
- Glenlivet
- Glenmore
- Insh
- Inverdruie
- Killiecrankie
- Laggan
- Pitagowan
- Spittal of Glenshee
- Strathdon

At a local level the development plan may be influenced by Local Place Plans. These are community-led plans that focus on places within local authorities' areas, which may include particular neighbourhoods. The strategic flood risk assessment may also help the development of these.

The Partnership Plan is also the regional land use framework for the National Park and is aligned with Scottish Government's commitment to trialling the regional land use partnership and framework approach as a route to achieving land use change that contributes to Scotland and the United Kingdom's climate change targets. It contains a number of objectives that support flood management activities, particularly in relation to natural flood management. These are:

- Objective A2 Woodland expansion: Increase the amount of woodland in the National Park to support larger, more natural woodlands, expanding in places up to a natural treeline, providing connections across river catchments and around the central core of the mountains.
- Objective A3 Peatland restoration: Restore and manage peatland within the National Park to reduce carbon emissions and improve biodiversity.
- Objective A4 Deer and herbivore impacts: Reduce the negative impacts of red deer and other herbivores across the National Park to enable woodlands to expand,

heather loss to be reversed, peatlands to recover and wider biodiversity and landscape enhancements to take place.
Increase the sustainability of moorland management in the National Park to ensure greater species and structural diversity in moorland areas.

- Objective A8 Farming: Work with farms in the National Park to reduce their carbon footprint, conserve soil carbon, encourage sustainable production and deliver increased biodiversity on in-bye land.
- Objective A9: Freshwater systems: Restore and connect rivers to thriving wetlands and floodplains as part of a wider restoration of the National Park's freshwater systems, helping mitigate the impacts of climate change.
- Objective A10 Ecological network: Connect habitats and ecosystems across all different types of land use in the National Park to create an ecological network, which will bring wider landscape, biodiversity and people benefits.
- Objective A11 Ecological restoration: Improve ecosystem functionality and resilience across the National Park by increasing the area of land managed principally for ecological restoration.
- Objective A13 Species recovery: The Cairngorms National Park attracts an increasing amount of green finance per annum for projects that deliver multiple benefits (carbon, biodiversity, flood mitigation, community).

The outcomes and objectives of the Partnership Plan are to be delivered through a collective effort. All public bodies must 'have regard to' the National Park Partnership Plan in taking forward work in the Cairngorms National Park; however, the plan cannot be delivered by the public sector alone. It needs businesses, landowners and third sector organisations within the National Park to play their part, helping tackle the climate emergency and nature crisis and delivering on the priorities that matter for the area. There are a number of different ways that the plan will be implemented:

- Partnership: Working with organisations and people across the National Park to deliver the plan.
- Incentives: Providing help to secure public benefits through payments and other incentives.
- Regulation: Ensuring that legislation is adhered to within the National Park.

On the whole, work will be delivered through partnership working, with joint approaches to funding and delivery. However, where there are issues that are not being addressed, consideration will be given to regulatory approaches within the National Park. The Strategic Flood Risk Assessment may therefore also be of use for activities that are outwith the scope of the Development Plan.

Geographical context

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 European sites and Sites of Special Scientific Interest. The rivers are also important, providing water for business and people within and outwith the National Park, as they flow downstream towards the sea.

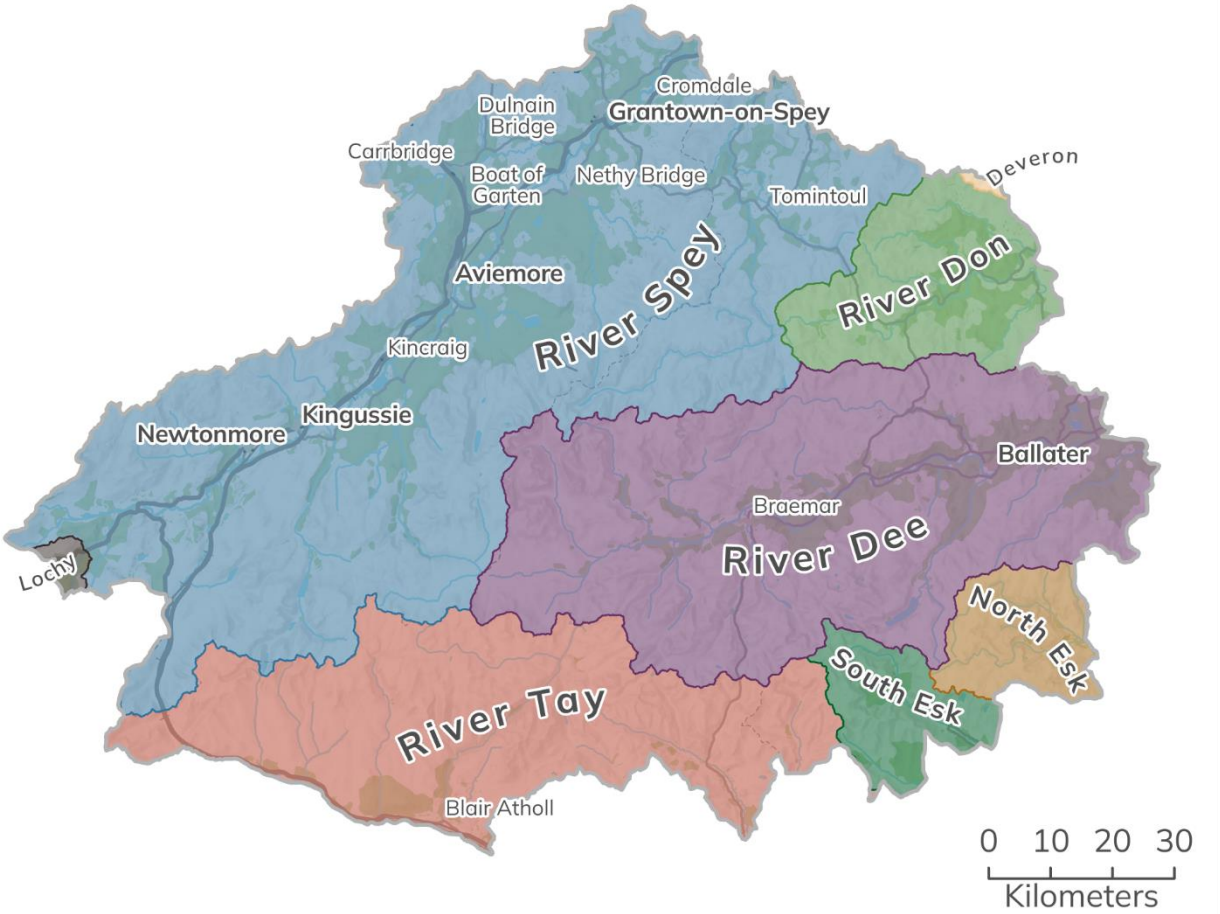


Figure 4 River catchments within the Cairngorms National Park.

All of the rivers and watercourses within the Cairngorms National Park have the potential to flood to some degree. 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, Don and Tay, 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 (Figure 4). Furthermore, in some areas surface water flooding, which can arise for a number of reasons, is a significant risk.

Assessment methodology

This assessment follows the methodology set out in Scottish Environment Protection Agency's 'Guidance for planning authorities on Strategic Flood Risk Assessment' (2023). The methodology contains four key steps:

- Step 1: Gathering available information.
- Step 2: Gap analysis, in which gaps in the evidence are identified.
- Step 3: Prepare the outputs, in which all the collated information is presented and a report drafted.
- Step 4: Discuss with Scottish Environment Protection Agency, in which the assessment material is reviewed prior to publishing the final draft of the report.

Step 1: Gathering available information

Scottish Environment Protection Agency's guidance sets out the relevant data sources required to inform the assessment. For the Cairngorms National Park, which lacks a coastline, these sources are:

- Scottish Environment Protection Agency flood hazard maps
- Scottish Environment Protection Agency climate change allowances
- Scottish Environment Protection Agency natural flood management maps
- The Scottish Flood Defence Asset Database
- Scottish Environment Protection Agency and / or local authority information on past flood events
- Flood risk management plans
- Local flood risk management plans
- Surface water management plans
- Scottish Environment Protection Agency reservoir inundation maps
- Section 16 Assessment of risk from the sewer network maps

Within the Cairngorms National Park, consideration should also be given to:

- The spatial strategy as set out in the Cairngorms National Park Partnership Plan 2022.
- The programme to translocate of beavers to locations within the River Spey catchment area.
- Information held by the Spey Catchment Initiative and Dee Catchment Partnership.

Step 2: Relevant information and gap analysis

A summary of the data used in this assessment alongside known gaps in the evidence is provided in this section.

Flood hazard maps and climate change allowances

The river and surface water extent data used in this report comes from Version 2.1 of Scottish Environment Protection Agency's flood hazard maps. National Planning Framework 4 states that:

'*For planning purposes, at risk of flooding or in a flood risk area means land or built form with an annual probability of being flooded of greater than 0.5% which must include an appropriate allowance for future climate change*' (page 149).

Therefore, within this assessment Scottish Environment Protection Agency's Future Flood Maps have been used to inform the assessment. Currently, this data is only available for river flooding. Given the strategic scale of the assessment it is not necessary at this stage to apply Scottish Environment Protection Agency's climate change allowances. However, it is acknowledged that should the Proposed Plan promote sites where a potential flood risk is identified, then it may be necessary to assess them using the allowances to calculate the area "at risk of flooding or in a flood risk area".

Table 1 provides a definition of terms used in this report to describe flood hazards.

Table 1 Information for the different likelihoods of flooding according to Scottish Environment Protection Agency's flood hazard maps.

Time horizon	Likelihood of flooding	Annual probability of flooding	Return period
Present day	High	> 10%	10 year
Present day	Medium	> 0.5%	200 year
Present day	Low	> 0.1%	1,000 year
Future - climate change 2080s – high emissions	Medium	> 0.5% by 2080	200 year

This report presents flood hazard data at Potentially Vulnerable Area and settlement scales.

Natural flood management

Natural flood management involves techniques that aim to work with natural hydrological and morphological processes, features and characteristics to manage the sources and pathways of flood waters. These techniques include the restoration, enhancement and alteration of natural features and characteristics, but exclude traditional flood defence engineering that works against or disrupts these natural processes.

Scottish Environment Protection Agency's natural flood management data indicates areas where land use change to restore nature could reduce flood risk. As the Cairngorms National Park lacks a coastline it has not been necessary to consider estuarine surge attenuation or wave energy dissipation opportunities. Further information on potential natural flood management opportunities is available from the Ballater Flood Protection Study, while records of past and current interventions have been provided by the Spey Catchment Initiative, Dee District Salmon Fishery Board / River Dee Trust and Dee Catchment Partnership.

This report presents natural flood management data at catchment and Potentially Vulnerable Area scales.

Past flood events

The data used in this assessment is derived from local authority datasets and information provided in Local Flood Risk Management Plans and local flood protection studies. Scottish Environment Protection Agency were unable to provide access to their recorded flood incidents database due to the cyber arrack in 2020.

Appendix 1 provides details for each incident considered in this assessment.

Flood defences

Data held by the Scottish Flood Defence Asset Database and the local authorities that cover the National Park confirms that there are no formal flood defences within the Cairngorms National Park. There are locations where informal defences exist, which are considered where they are known and relevant to the assessment; sources for this information include local authority flood management teams, the Ballater Flood Protection Study and Spey Catchment Initiative.

Flood risk management plans and local flood risk management plans

Information has been drawn from all relevant flood risk management plans and local flood risk management plans, which identify ongoing and future actions that are needed to manage flood risk, and which communities those actions planned for.

The management plans identify Potentially Vulnerable Areas, which are areas where significant flood risk exists now or is likely to occur in the future and they help those involved in flood risk management to understand and prioritise where work could benefit the most. The Potentially Vulnerable Areas are updated and published every six years as part of the flood risk management planning cycle. They were first identified in 2011 and were updated in 2018. In December 2024 they are due to be updated again for use in Cycle 3 of the flood risk management cycle, with a Scottish Environment Protection Agency led public consultation planned earlier in the year.

Appendix 2 provides links to all current management plans.

Surface water management plans

There are currently no surface water management plans covering the National Park. The Local Flood Risk Management for Findhorn, Nairn and Speyside contains an action for the Highland Council to produce a Highland wide surface water management plan. This plan is currently being development and has been narrowed down from the whole Highland area to focus on a number of hot spots where a short list of potential interventions will be identified. The plan may inform the Proposed Plan if completed prior to the site assessment process.

Reservoir inundation

Due to licensing limits, Scottish Environment Protection Agency's data is not available to directly analyse against National Park Authority data using the Park Authority's Geographical Information Systems. However, it is available via Scottish Environment Protection Agency's online portal and is a useful source of information to consider should the Proposed Local Development Plan identify significant new development sites or new settlements. Therefore, it is not considered in detail at this stage of the assessment process and, if necessary, will be reviewed more thoroughly at the Proposed Plan preparation stage.

The data is currently accessible via Scottish Environment Protection Agency's Controlled Reservoirs Register: https://map.sepa.org.uk/reservoirsfloodmap/Map.htm

Risk from the sewer network

Section 16 of the Flood Risk Management (Scotland) Act 2009[2] places a duty on Scottish Water to assess flood risk from sewerage systems. Mapping of this risk exists for two settlements within the National Park – Ballater and Newtonmore. The data largely mirrors Scottish Environment Protection Agency's pluvial flood hazard maps (particularly for bigger return periods), so this data can only be used by authorities for an internal sense check to identify areas of misalignment, which could be worthy of further investigation. This data cannot be published externally, due to the data sharing agreements in place, and therefore, while it has been considered as part of the assessment, is not featured in in this report.

Geography

The geographical context for this assessment is taken from the settlement strategy as set out in the Park Partnership Plan. Therefore, a summary of information for each Strategic, Intermediate and Rural settlement is provided in this report (see page 10 and Figure 3).

Where these settlements have settlement boundaries identified in the currently adopted Local Development Plan (2021), they have been used in this assessment to help delineate what is considered within or outwith the settlement for planning purposes. It should be noted however, that many of these are likely to undergo revision in the Proposed Plan.

Locations within the Esk, Lochy and Deveron catchments are scoped out of the assessment due to their small and sparsely distributed population. Development in these areas of the National Park has always been solely determined on a policy basis. It is however acknowledged that this may change during the plan preparation process and if this occurs flood risk in the area may need to be considered in more detail at the Proposed Plan stage.

Beaver translocation

On 5 December 2023 NatureScot approved the Park Authority's licence application to translocate Eurasian beavers to the upper Spey catchment in the National Park. The first beavers were translocated a few weeks later, with plans to translocate a maximum of 50 individuals over the next five years. The translocation of beavers to locations within

[2] https://www.legislation.gov.uk/asp/2009/6/section/16

the catchment, and the projected growth and expansion of their population, presents a number of opportunities and risks for wetlands and their environment, some of which may impact on flood risk and land use planning.

Step 3: Outputs

All collated information is hosted on the Park Authority's internal Geographical Information System.

This report sets out the approach taken to the assessment and provides a summary of its findings. It is acknowledged that flood risk information is ever evolving, and therefore this assessment represents a snapshot in time that will in time become out of date. A review of information will therefore be required in advance of carrying out site assessments for the Proposed Plan.

Step 4: Stakeholder engagement

Prior to publishing the strategic flood risk assessment in support of the Evidence Report, the following stakeholders have been asked to review this report:

- Scottish Environment Protection Agency
- Scottish Water
- Aberdeenshire Council flood risk management team
- Angus Council flood risk management team
- Highland Council flood risk management team
- Moray Council flood risk management team
- Perth and Kinross Council flood risk management team
- Dee Catchment Partnership
- Dee District Salmon Fishery Board / River Dee Trust
- Spey Catchment Initiative

In the case of Scottish Environment Protection Agency they have been specifically asked, in line with statutory role in the development plan preparation process, to advise whether they consider the strategic flood risk assessment to be sufficient or not.

The contents of this report, as published, reflect this stakeholder engagement and confirms that the assessment is a sufficiently high-level overview of the scope and nature of all sources of existing and future flood risk within the local development plan area at this point in time, and therefore can be used to inform the Evidence Report.

Further engagement on flood risk will take place as part of broader public and stakeholder engagement on the Evidence Report itself.

Summary of findings

The following sections provide the basis for Step 3 of the strategic flood methodology, providing a by catchment area (see Figure 4) summary of the flood hazards within the National Park, namely:[3]

- River Spey catchment area (page 21)
- River Dee catchment area (page 69)
- River Don catchment area (page 86)
- River Tay catchment area (page 90)

River Spey catchment area

The River Spey (Figure 5, Figure 6, Figure 8 and Figure 10) rises in the high ground of the Monadhliath and Cairngorm Mountain ranges and flows in a north-easterly 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.

The flood risk management plans and local flood risk management plans for Findhorn, Nairn and Speyside Local Plan District set out a number of actions for the District which, which includes the area within the National Park. In summary, these fall under the following themes:

- Awareness raising
- Data to support climate resilience
- Emergency plans
- Flood forecasting
- Flood warning development framework
- Future flood risk management plans
- Guidance development

[3] Note the Esk, Lochy and Deveron catchments have been scoped out of the assessment.

- Hazard mapping updates
- Land use planning
- Maintenance
- Natural flood management mapping
- National flood risk assessment
- National Surface water mapping
- Reservoirs
- Scottish flood defence asset database
- Self help

More specific local actions to manage flood risk in target areas are detailed in the potentially vulnerable area sections of this report.

The catchment area is also covered by the River Spey Catchment Management Plan (2023), which was produced by members of the Spey Catchment Initiative, and brings together the activities of many organisations involved in river management or related activities and sets out priorities for 2023 to 2030. The management plan sets out a number of objectives for the catchment area, which extend beyond the National Park boundary. In relation to flooding and development, these are:

- Implement sustainable flood management via restoration of a more natural flooding regime and delivery of the Findhorn, Nairn and Speyside Local Flood Risk Management Plan.
- Promote the use of natural flood management techniques at appropriate locations to contribute to flood management.
- Explore appropriately funded Nature-based Solutions to manage water flows on land.
- Improve natural functioning of watercourses through farmland to benefit ecosystems, restore natural processes and contribute to natural flood management.
- Retain, expand and enhance wetlands and natural ponds for their natural flood management and biodiversity benefits.
- Promote peatland restoration as a crucial component of catchment management.
- Deliver appropriate expansion of riparian and catchment woodland whilst contributing towards the objectives of integrated catchment management.
- Improve and expand riparian habitat and biodiversity through appropriate woodland design and management, and improve woodland habitat connectivity.
- Expand and enhance riparian, floodplain and wider catchment woodland to reduce run off rates and sediment input and aid bank stabilisation.
  Balance economic growth with appropriate environmental protection and mitigation measures.

- Realise the tourism potential of the River Spey whilst protecting the natural environment on which it depends.
- Support and facilitate use of emerging carbon and natural capital finance where it can provide opportunities for catchment management interventions with multiple benefits.
- Increase community resilience to the effects of flood and drought conditions.

Flood history

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 several occasions. Figure 5 provides an overview of flood incidents recorded by Highland Council. No records of incidents are held by Moray Council. Further information is provided at a settlement level and in Appendix 1.

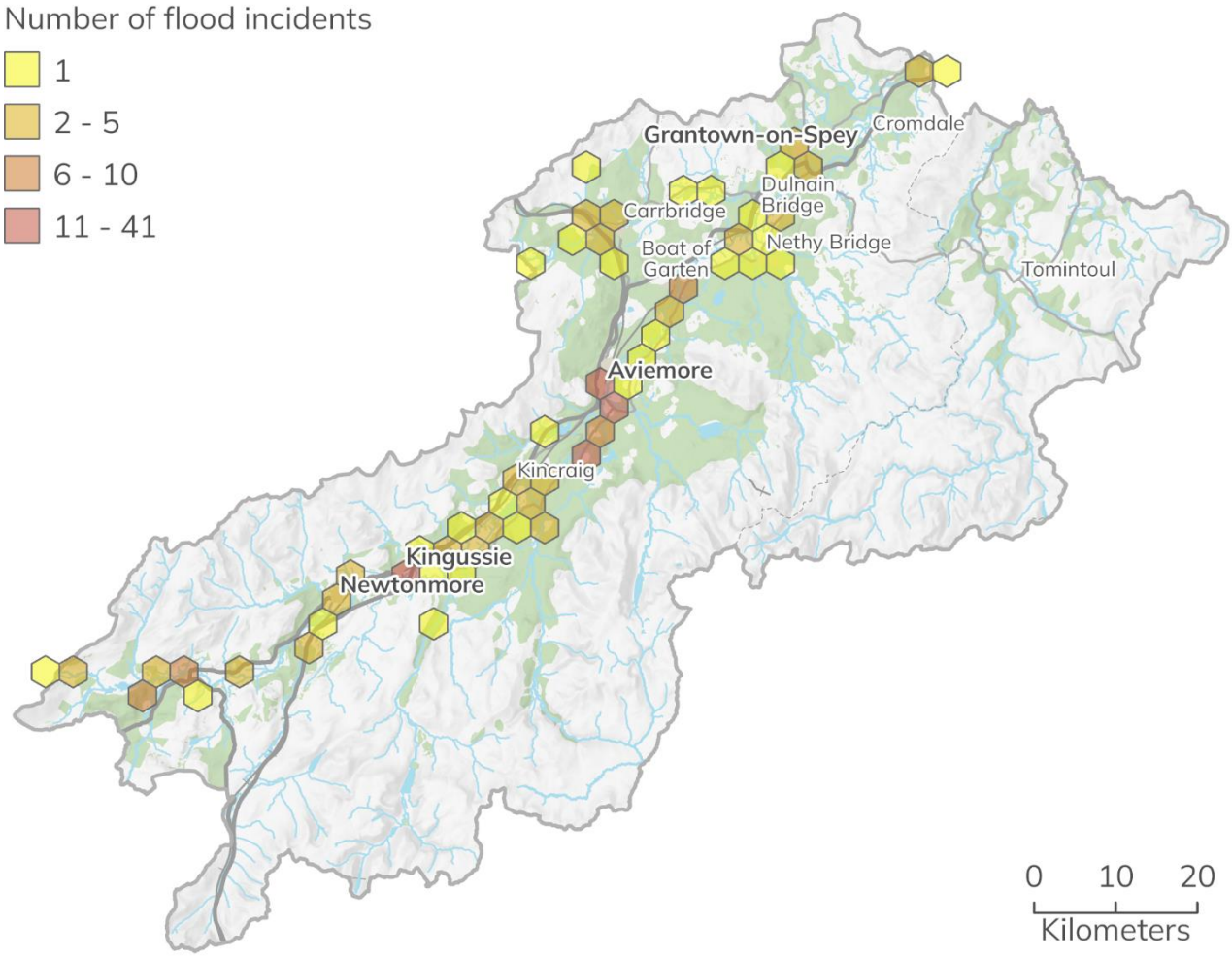


Figure 5 Records of flood incidents in the River Spey catchment area within the Cairngorms National Park.

Natural flood management

Natural flood management 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. This assessment identifies a number of broad opportunity areas for natural flood management within the River Spey catchment (Figure 6).

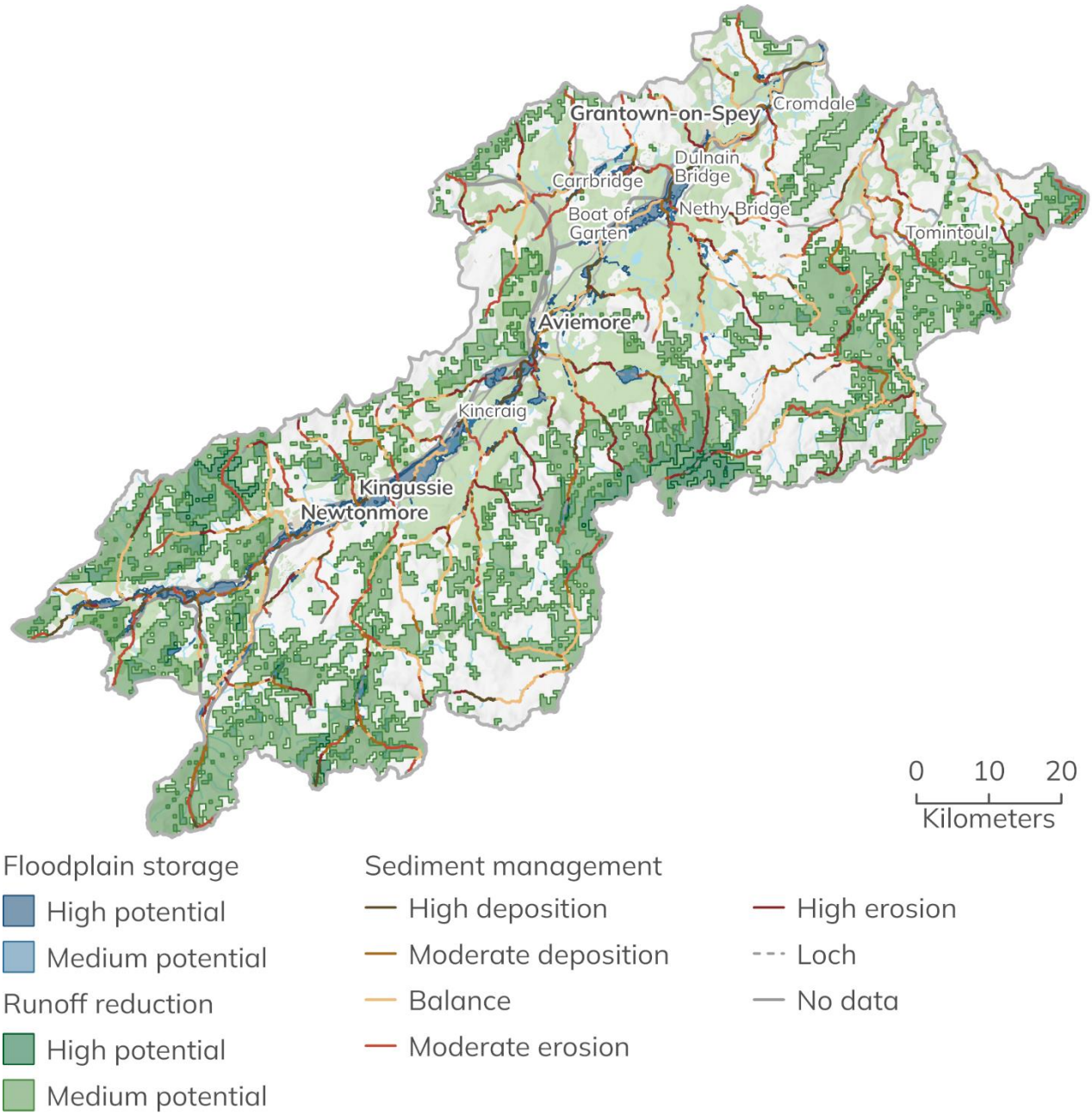


Figure 6 Opportunity areas for natural flood management within the River Spey catchment area within the Cairngorms National Park.

Spey Catchment Initiative have carried out a number of projects within the catchment that align with their objective to promote the use of natural flood management techniques at appropriate locations (Figure 7). These schemes include measures such as wetland creation, river channel restoration and riparian woodland creation.

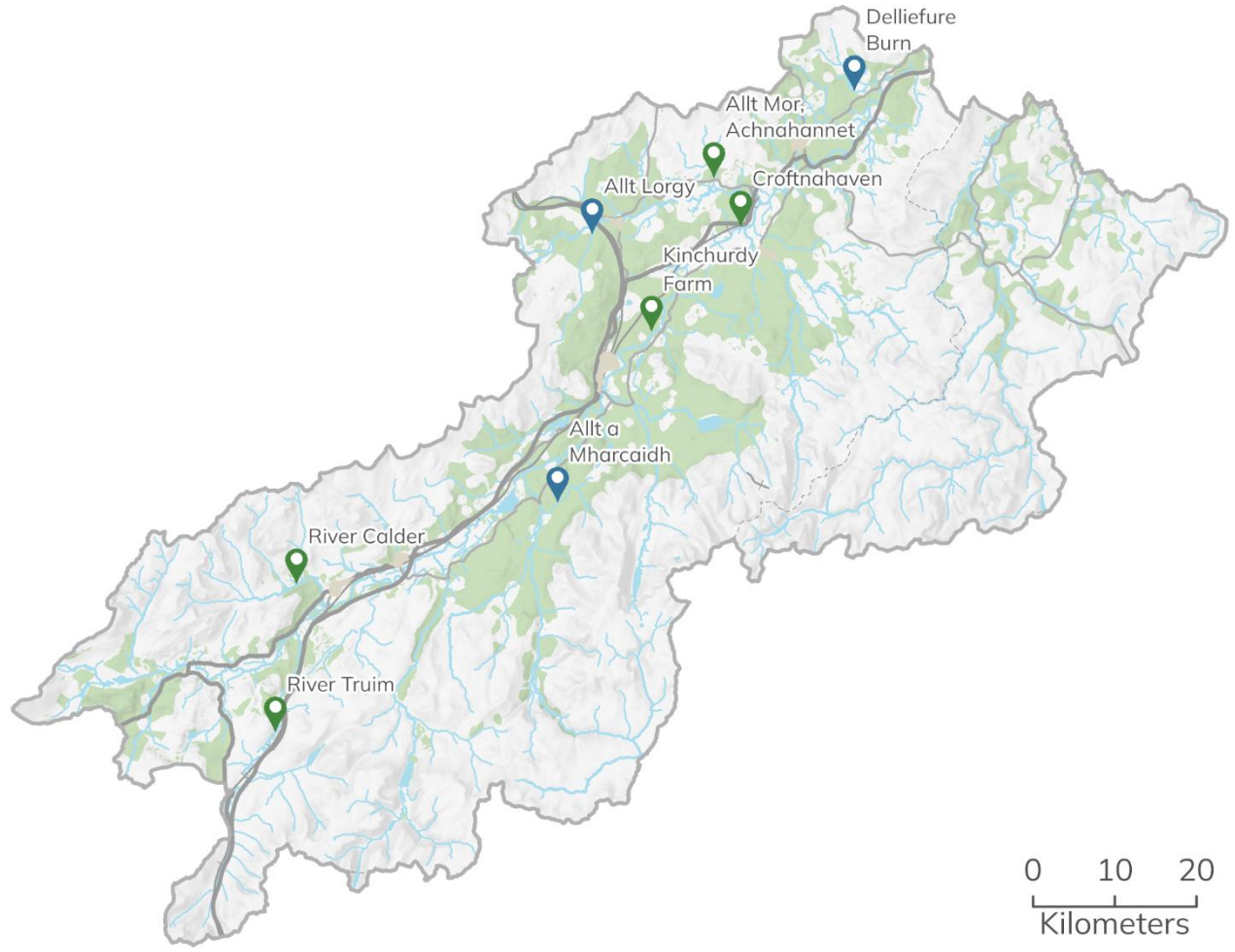


Figure 7 Projects which include natural flood management measures undertaken by the Spey Catchment Initiative within the Cairngorms National Park.

Further work will be required to examine in greater detail the case for natural flood management measures within the area, with the Partnership Plan supporting such measures through its objectives to expand woodland, restore peatland, restore freshwater systems, establish ecological networks and improve ecosystem functionality and resilience.

Reservoir inundation

Table 2 provides a summary of reservoirs on the Controlled Reservoirs Register that have the potential to inundate parts of the Spey catchment in the event of a dam

breach. A detailed spatial analysis has not however been carried out at this stage and the purpose of the information is simply to help identify what considerations might need to be taken into account at the Proposed Plan stage.

Table 2 Reservoirs on the Controlled Reservoirs Register that have the potential to inundate parts of the Spey catchment within the National Park in the event of a dam breach. Information taken from the Controlled Reservoirs Register, January 2024.

Reservoir name	National grid reference	Risk designation	Maximum cubic capacity of reservoir at top water level (m^3)
Loch An-t Seilich	NN 75745 86352	High	4,500,000
Loch Cuaich	NN 69478 87840	High	1,680,000
Loch Ericht	NN 54209 72241	High	230,000,000
Loch Phoneis	NN 70912 94751	High	200,000
Pattack Hydro Reservoir	NN 54870 82960	High	195,916
Spey Reservoir	NN 57050 93345	High	5,100,000

Beaver translocation

Recent changes by the Scottish Government offering protection and encouraging the expansion of beavers has allowed beaver to be identified within the Cairngorms Nature Action Plan as a priority species.

Extensive work on mapping the suitability of habitats within the upper reaches of the River Spey has been conducted to assess the best possible locations for the future translocation efforts (Figure 8). Currently, three proposed release sites for beavers have been identified; Rothiemurchus Estate, Wildland Ltd and the Royal Society for the Protection of Birds Insh Marshes Reserve. The release sites have been carefully chosen to minimise any potential negative impacts such as flooding from dams affecting transport routes, beavers foraging and damaging habitats within protected sites or damaging important riparian habitats (e.g. trees).

On 5 December 2023 NatureScot approved the Park Authority's licence application to translocate Eurasian beavers to the Upper Spey catchment in the National Park. The first beavers were translocated a few weeks later with plans to translocate a maximum of 50 individuals over the next five years.

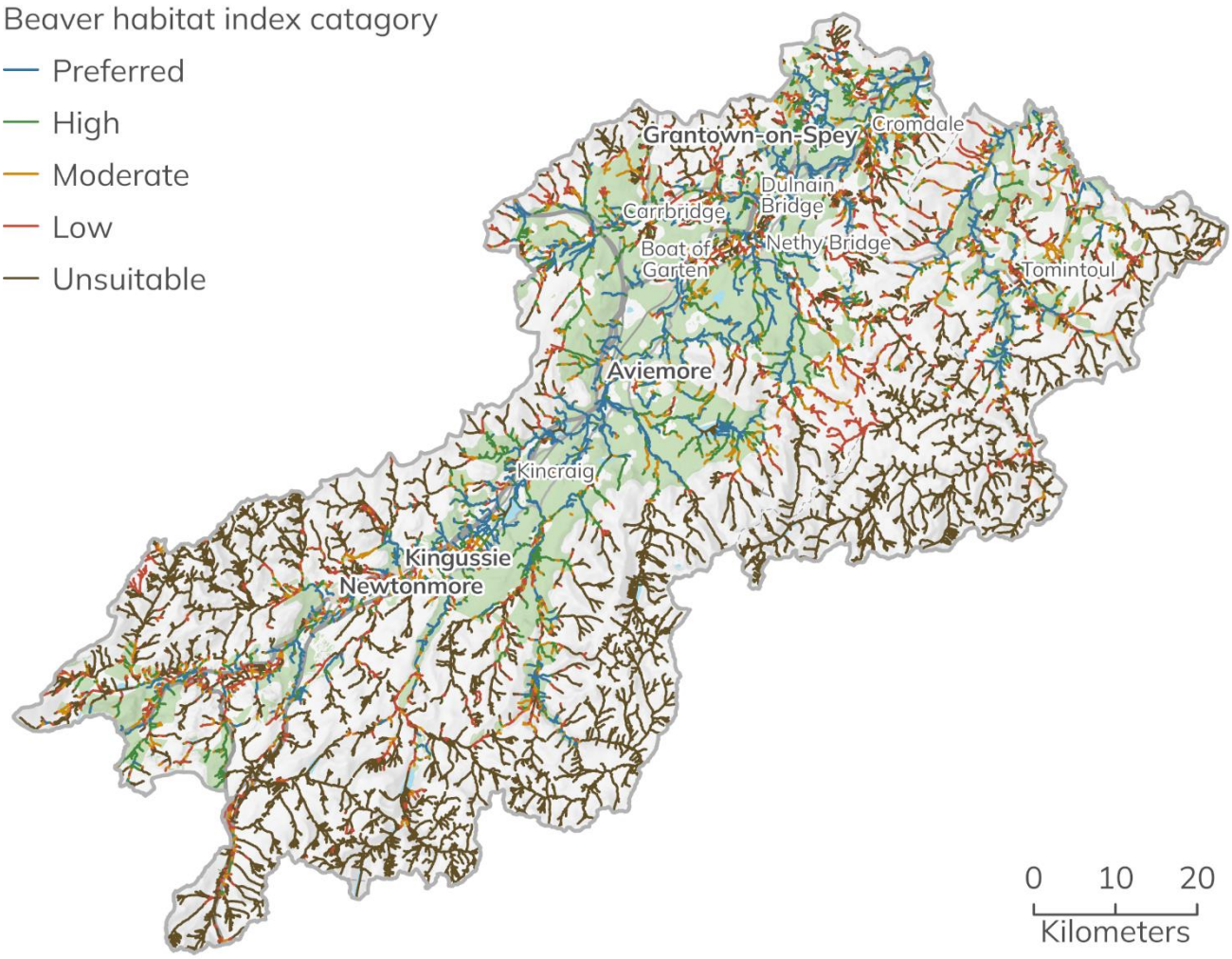


Figure 8 Suitability of habitat for supporting beavers within River Spey catchment.

The translocation of beavers to locations within the catchment, and the projected growth and expansion of their population, presents a number of opportunities and risks for wetlands and their environment, some of which may impact on flood risk and land use planning. The habitat mapping shown in Figure 8 gives an indication of the areas beavers might move to occupy as their population grows. The main benefit of beavers comes from their dam building. Beaver dams impede the water flow (quantity and velocity) of water in a channel, which has multiple benefits, including increasing water storage and increasing the length of time taken for a flood to reach its peak and reduce the height of the peak and increasing water storage. According to Nature Scot, beavers have a potentially significant role in flood management and are advocating to Scottish Environment Protection Agency the opportunity for beavers to be part of natural flood management where appropriate.

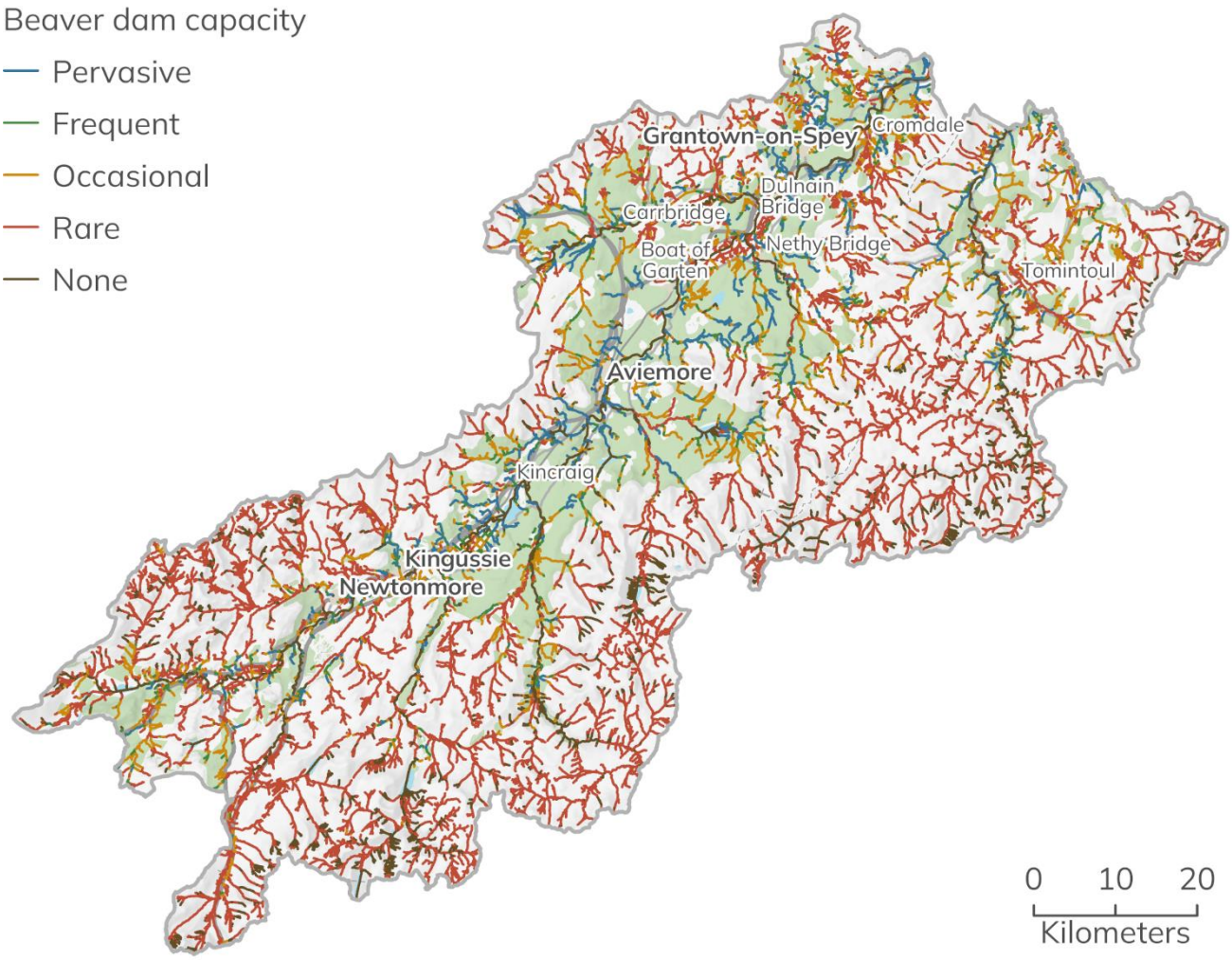


Figure 9 Capacity of waterbodies within the River Spey catchment for beaver dams.

It is acknowledged that beaver activity may also present risk, including:

- Increased erosion of bare banks through burrowing and lack of structural support of riparian vegetation, along with the undermining of mature tree species which may fall into river pulling root bulb and bank.
- The undermining of riverbanks may damage buildings and / or infrastructure.
- Increased water levels from damming or blocking watercourses (Figure 9) or manmade structures such as culverts or bridges, may result in in damage to buildings and / or infrastructure.

The Park Authority has published a monitoring and mitigation plan, which includes a range of mitigation scenarios relating to matters including flood risk. These are set out in detail in Table 1 (page 17) of the plan:

- https://cairngorms.co.uk/wp-content/uploads/2023/12/Redacted-Appendix-14-Monitoring-and-Mitigation-Plan-2023.pdf

Potentially vulnerable areas

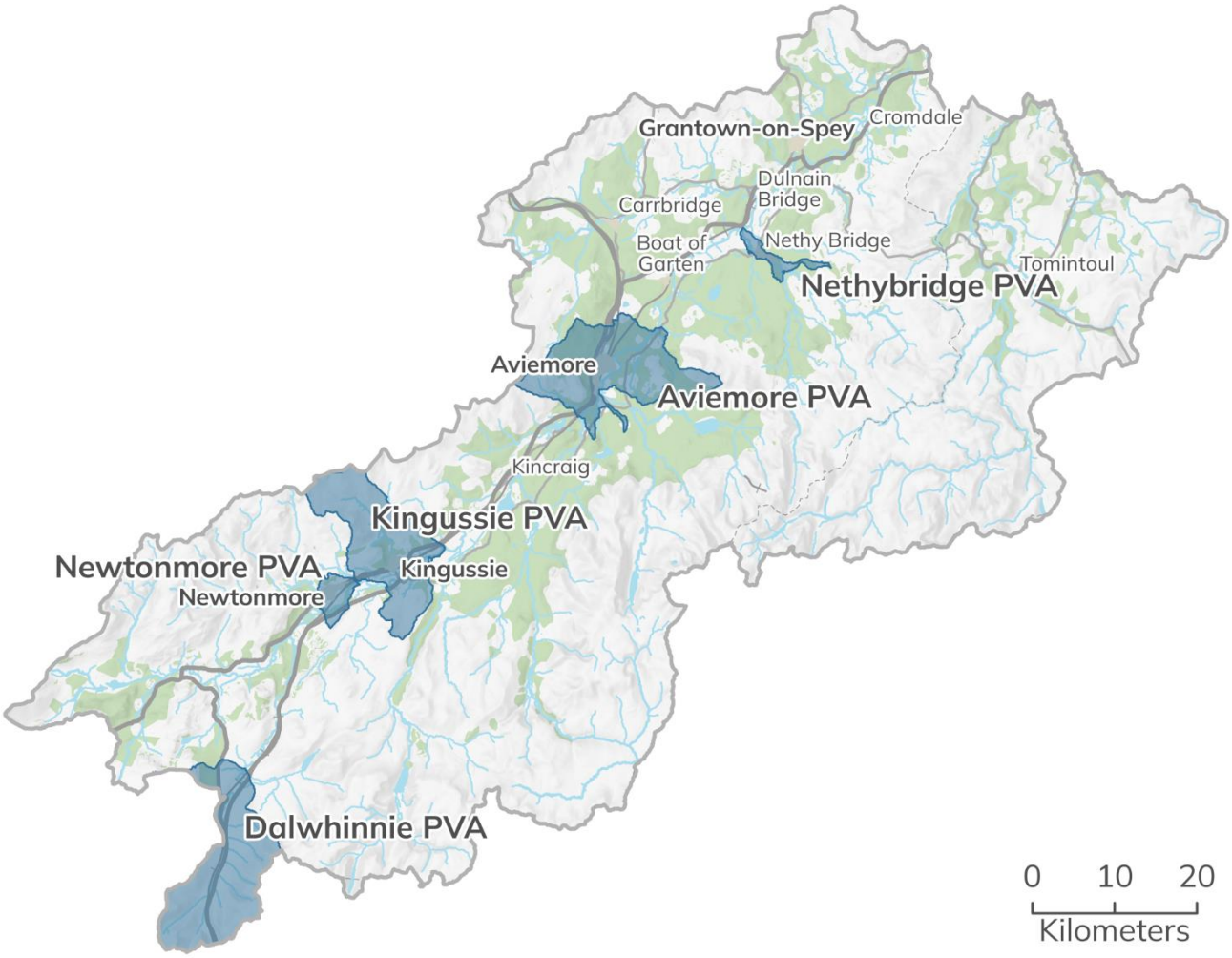


Figure 10 River Spey catchment area within the Cairngorms National Park and the Potentially Vulnerable Areas (PVAs) within it.

Due to the potential risk caused by flooding within the catchment area, five Potentially Vulnerable Areas (PVAs) have been identified within the Cairngorms National Park (Figure 10), at:

- Aviemore (PVA 02/05/10)
- Dalwhinnie (PVA 02/05/13)
- Kingussie (PVA 02/05/11)
- Nethybridge (PVA 02/05/15)
- Newtonmore (PVA 05/05/12)

Aviemore Potentially Vulnerable Area

Aviemore is the largest settlement in Badenoch and Strathspey and has grown significantly in recent years. It is a thriving destination for visitors due to its proximity to the Cairngorm mountains and reputation for adventure sports. However, while the local economy is thriving there is a need for affordable housing for people who live and work in the area. There is therefore pressure for development in a number of locations. It's identified as a Strategic Settlement in the Partnership Plan.

Aviemore is designated as a potentially vulnerable area due to the risk of flooding from the River Spey (Figure 11), Aviemore / Milton Burn and from surface water (Figure 12). There is a long history of flooding in Aviemore from the River Spey including a notable flood in December 2015 when the River Spey overflowed its banks during Storm Desmond. There are also records of flooding from the Aviemore / Milton Burn.

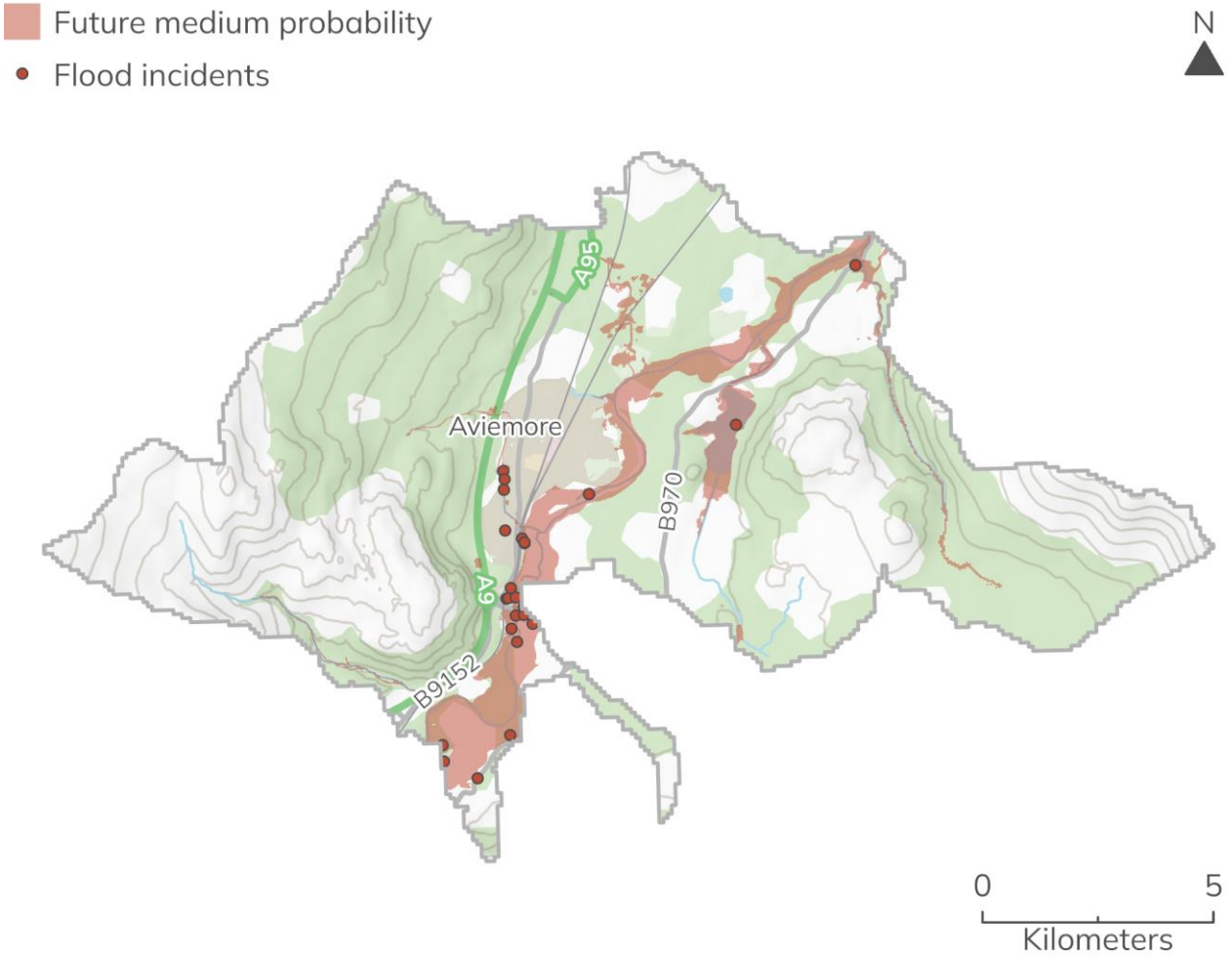


Figure 11 Future river flood extent[4] and historic flood incidents within Aviemore Potentially Vulnerable Area.

There are approximately 430 people and 240 homes and businesses currently at risk from flooding within the Potentially Vulnerable Aera. This is likely to increase to 490 people and 270 homes and businesses by the 2080s due to climate change.

[4] Each year, by the 2080s this area may have a 0.5% chance of flooding. See Table 1 for further information.

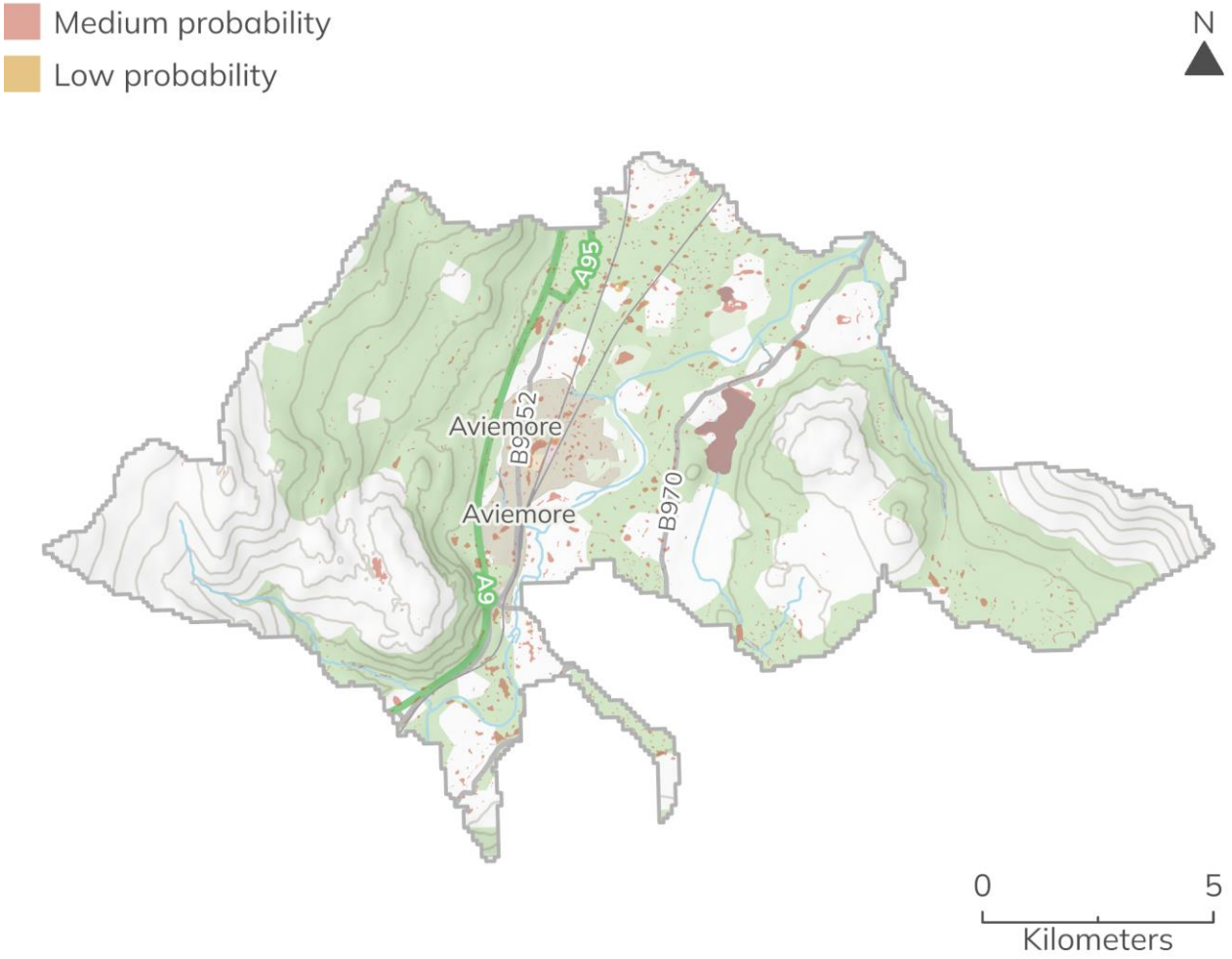


Figure 12 Surface water flood extents[5] within Aviemore Potentially Vulnerable Area.

As set out within the Flood Risk Management Plan for the Findhorn, Nairn and Speyside Local Plan District, the objectives for the Potentially Vulnerable Area are:

- Avoid inappropriate development that increases flood risk in Aviemore.
- Prepare for current flood risk and future flooding as a result of climate change in Aviemore.
- Reduce the risk of flooding from the River Spey and Aviemore / Milton Burn in Aviemore.

The management plan contains an action for The Highland Council to develop a flood model of the Aviemore Burn. This has not been progressed to date.

[5] Medium probability means that each year this area may have a 0.5% chance of flooding. Low probability means that each year this area may have a 0.1% chance of flooding. See Table 1 for further information.

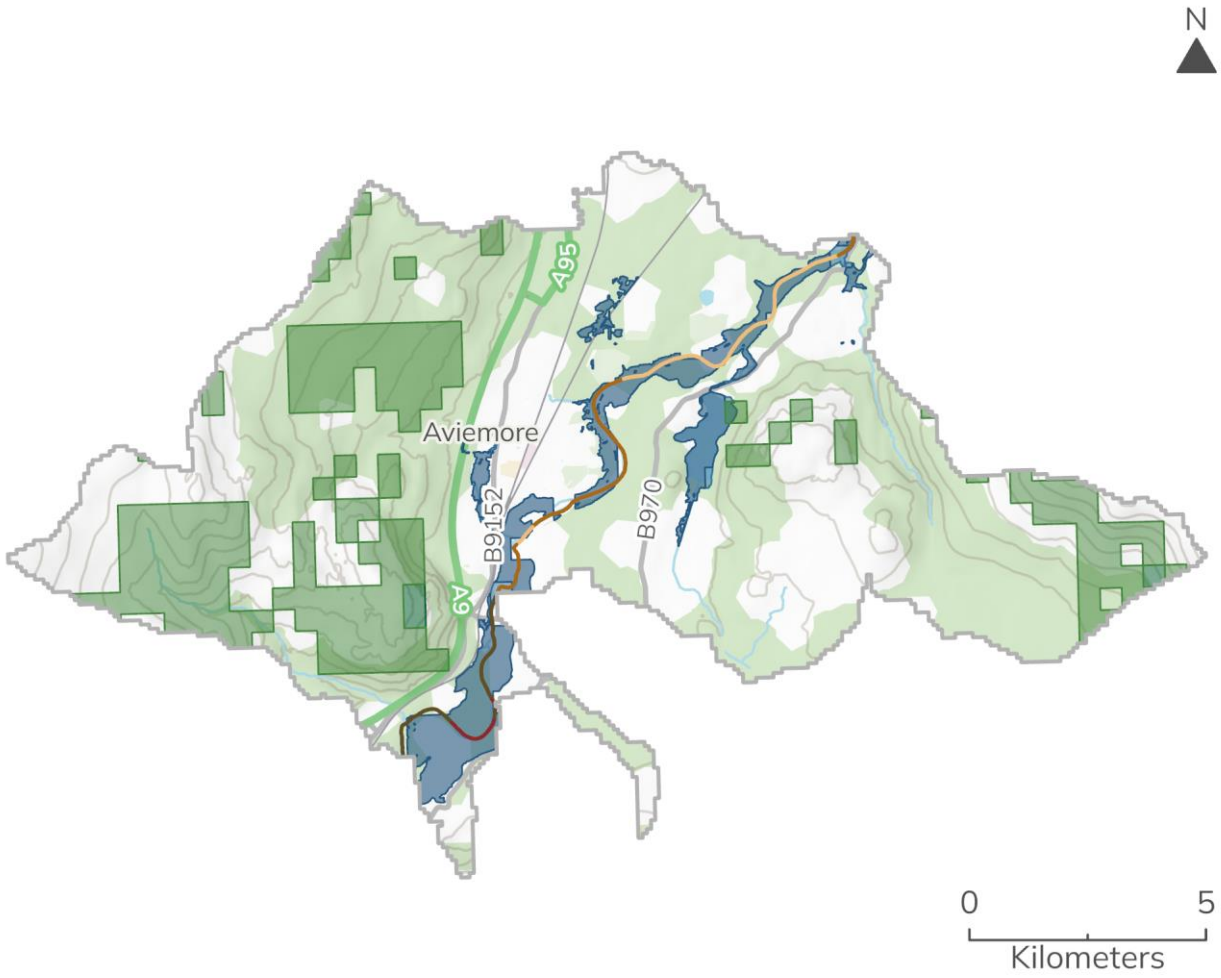


Figure 13 Opportunity areas for natural flood management within Aviemore Potentially Vulnerable Area.

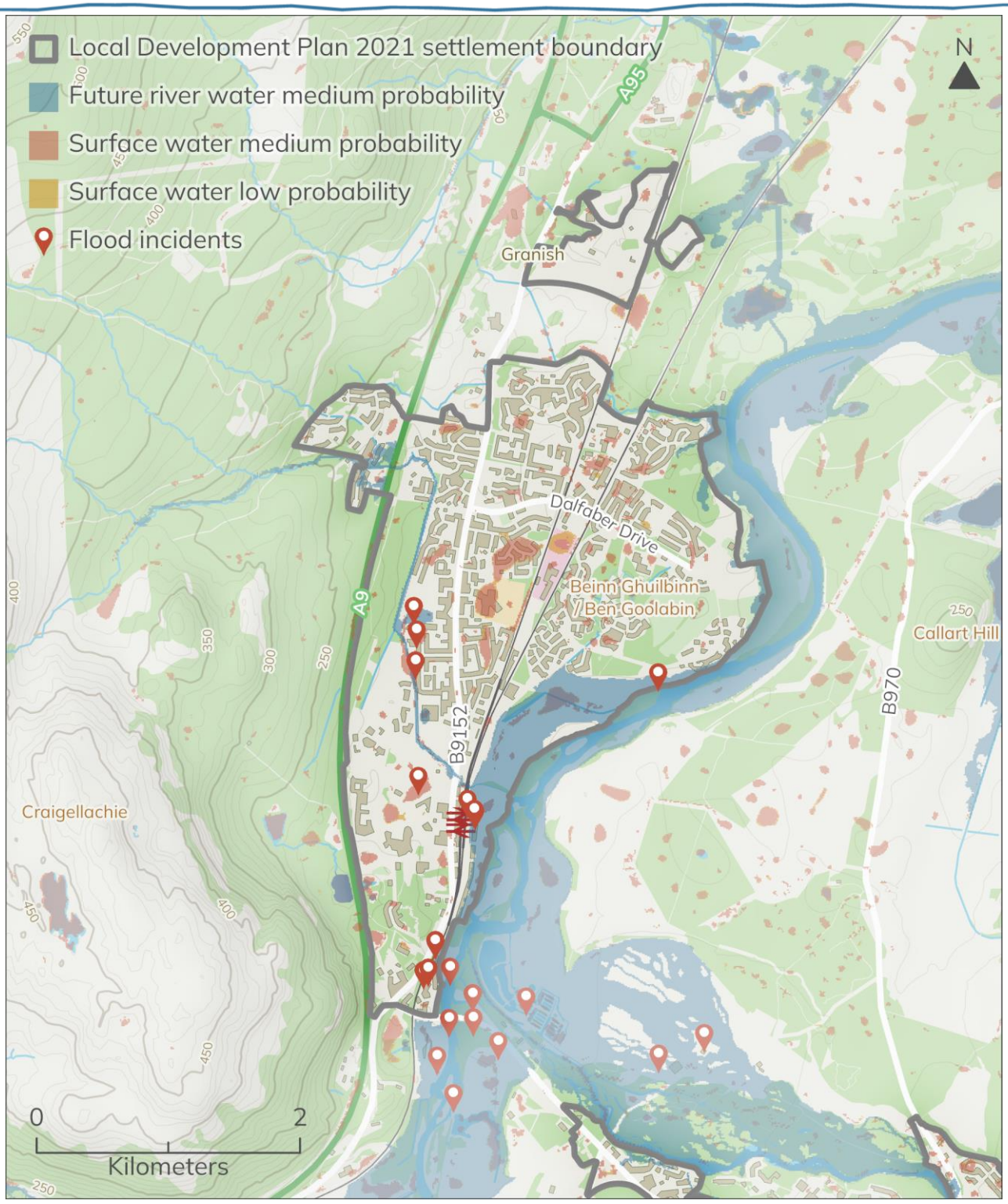


Figure 14 Future river and current surface water flood extents and historic flood incidents in and around Aviemore.

Dalwhinnie Potentially Vulnerable Area

Dalwhinnie is a small settlement at the southern end of Badenoch. The village has a well-known distillery which is an important tourist attraction and local employer. The local economy is land-based and there are opportunities for new tourism and economic development. Dalwhinnie has fragile facilities and future housing is needed to support these and to sustain a stable population. It's identified as a Rural Settlement in the Partnership Plan.

The area designated as a potentially vulnerable area as Dalwhinnie is at risk of river flooding from the River Truim (Figure 15). Recent flooding was caused by both river and surface water (Figure 16).

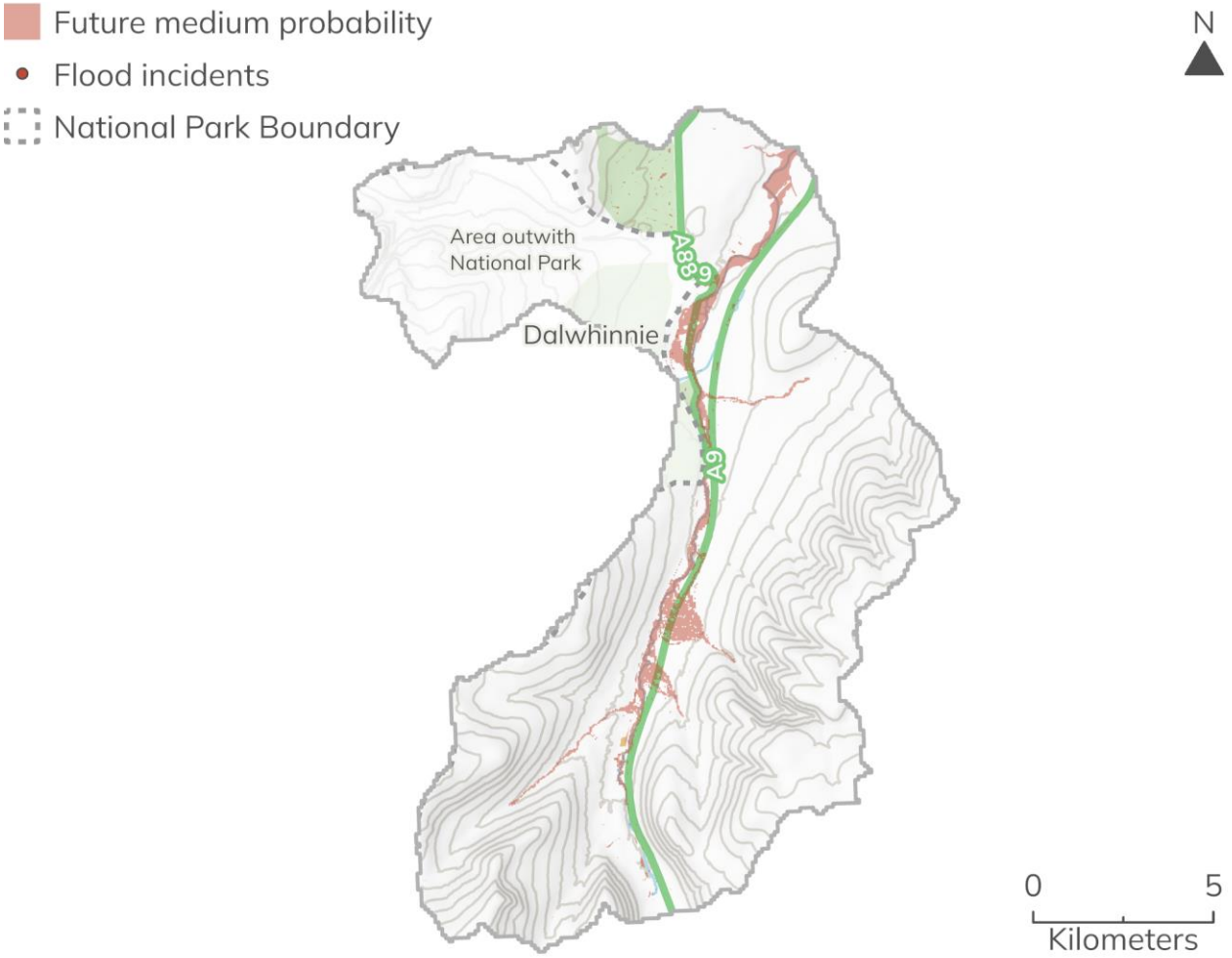


Figure 15 Future river flood extent and historic flood incidents within Dalwhinnie Potentially Vulnerable Area.

There are approximately 30 people and 30 homes and businesses currently at risk from flooding, which is a significant proportion of the community. This is not expected to change significantly by the 2080s due to climate change.

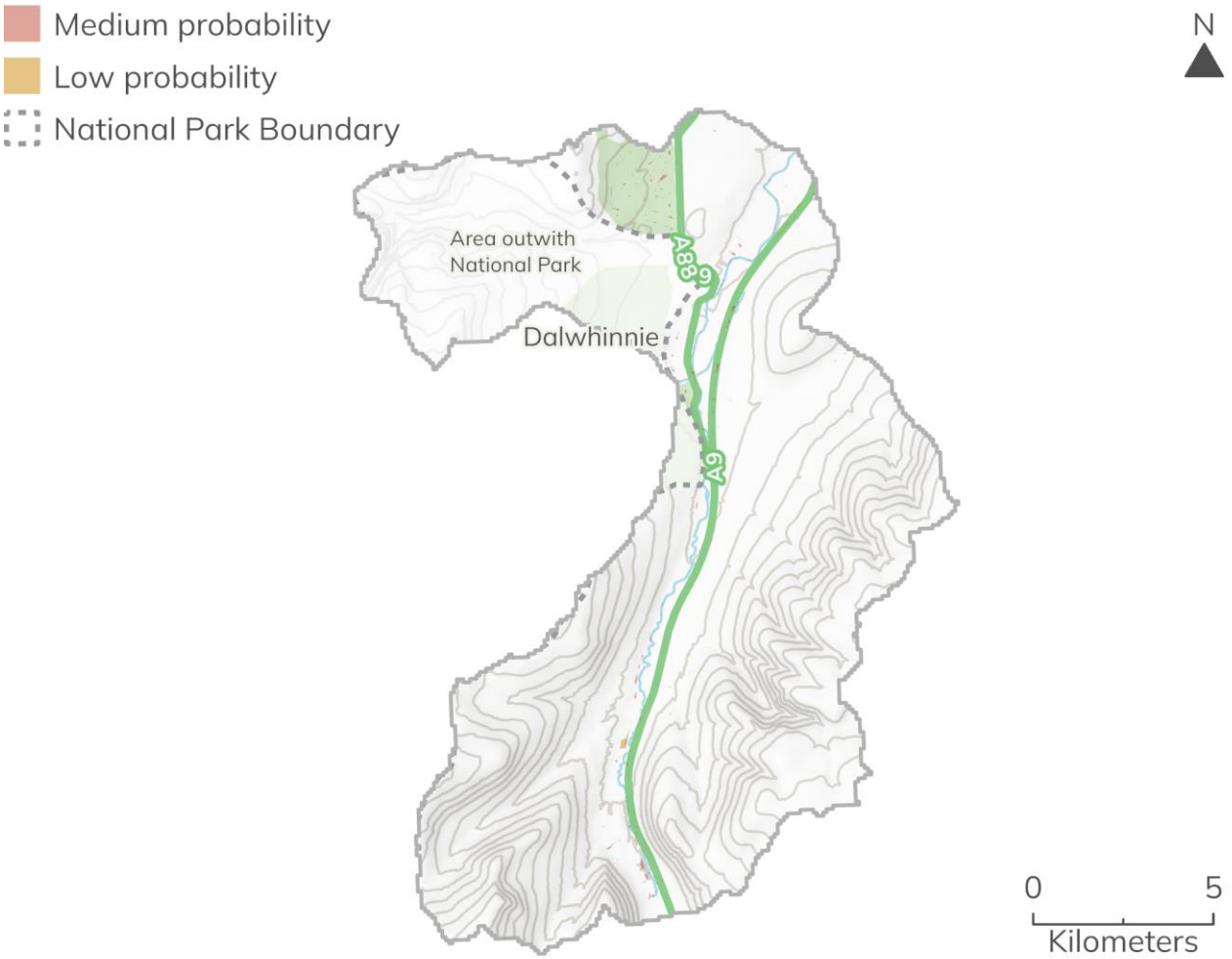


Figure 16 Surface water flood extents within Dalwhinnie Potentially Vulnerable Area.

As set out within the Flood Risk Management Plan for the Findhorn, Nairn and Speyside Local Plan District, the objectives for the Potentially Vulnerable Area are:

- Avoid inappropriate development that increases flood risk in Dalwhinnie.
- Improve data and understanding of the risk of river flooding in Dalwhinnie.
- Prepare for current flood risk and future flooding as a result of climate change in Dalwhinnie.

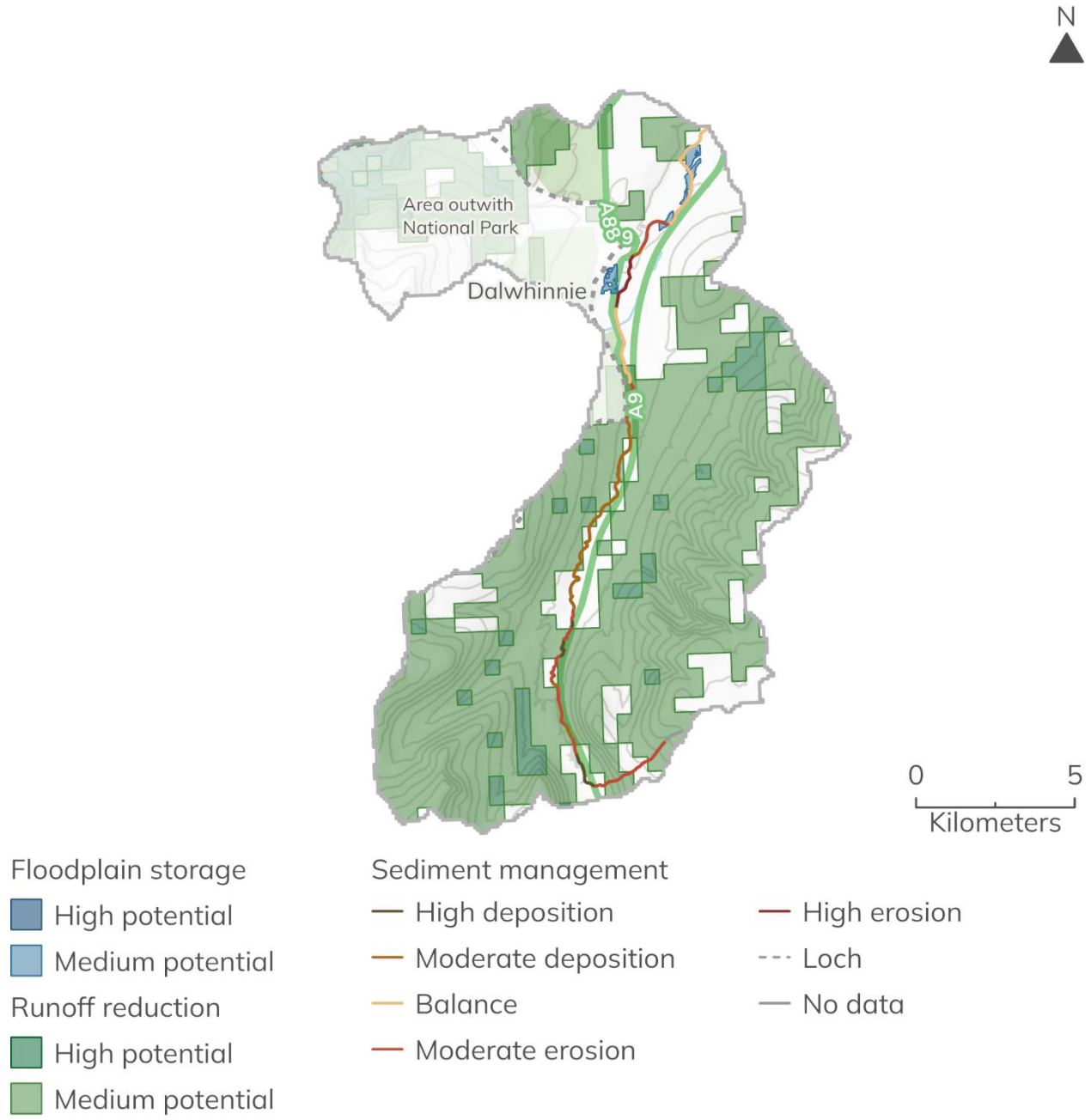


Figure 17 Opportunity areas for natural flood management within Dalwhinnie Potentially Vulnerable Area.

Dalwhinnie Community Action Plan: Looking to 2030 (2023) contains a priority to address planning issues for the village to help proposed business and residential development in and around A889. These issues relate to flooding from the River Truim.

In 2023 the Dalwhinnie Flood Resilience Group was established by members of the Dalwhinnie community to:

- Investigate ways of protecting the houses and businesses directly along the river Truim within Dalwhinnie from flooding,
- Locate funding for investigations to enable the group to establish the need for mitigation works to prevent flooding as we have been identified by Scottish Environment Protection Agency as a high-risk flood area,
- To address conservation of the river Truim floodplain within the village, to protect vulnerable species such as water rats, wading birds and rare plants, and
- To ultimately, secure the future security from severe flooding and protect the delicate riverbank area.

The group have been granted funds by the Cairngorm Trust to commission a flood survey. It is intended that the survey will inform future decisions and the preparation of flood and community resilience plans. An application for funding to the National Centre for Resilience's Third Sector, Community and Practice Project Fund has been made which will, if successful, will enable this work to be completed.

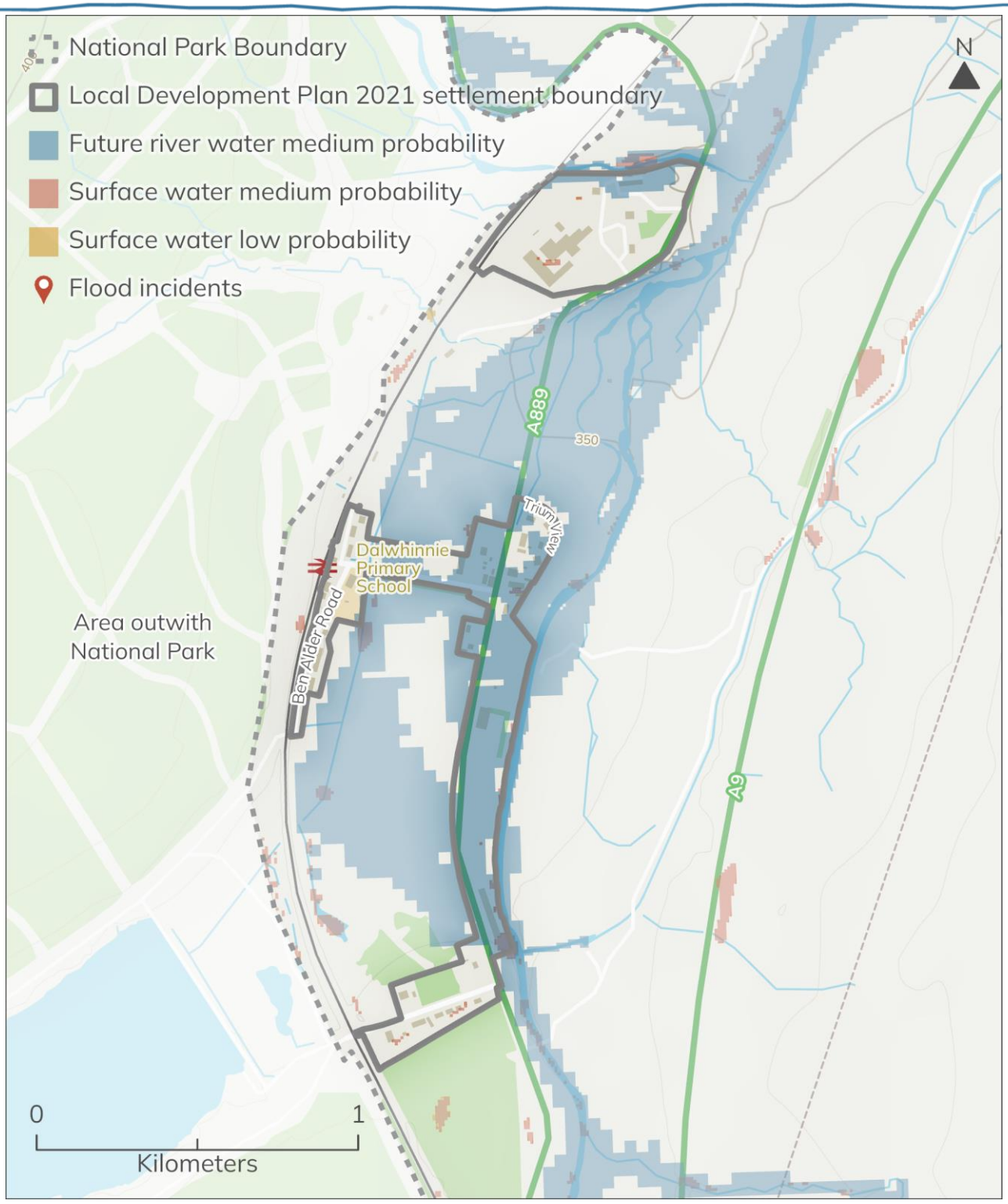


Figure 18 Future river and current surface water flood extents and historic flood incidents in and around Dalwhinnie.

Kingussie Potentially Vulnerable Area

Kingussie is the historic capital of Badenoch and a traditional Highland town with a long central High Street. The town has a thriving community and is a focus for local services and facilities. Future development should complement the historic character of the town and enhance economic development and tourism. It's identified as a Strategic Settlement in the Partnership Plan.

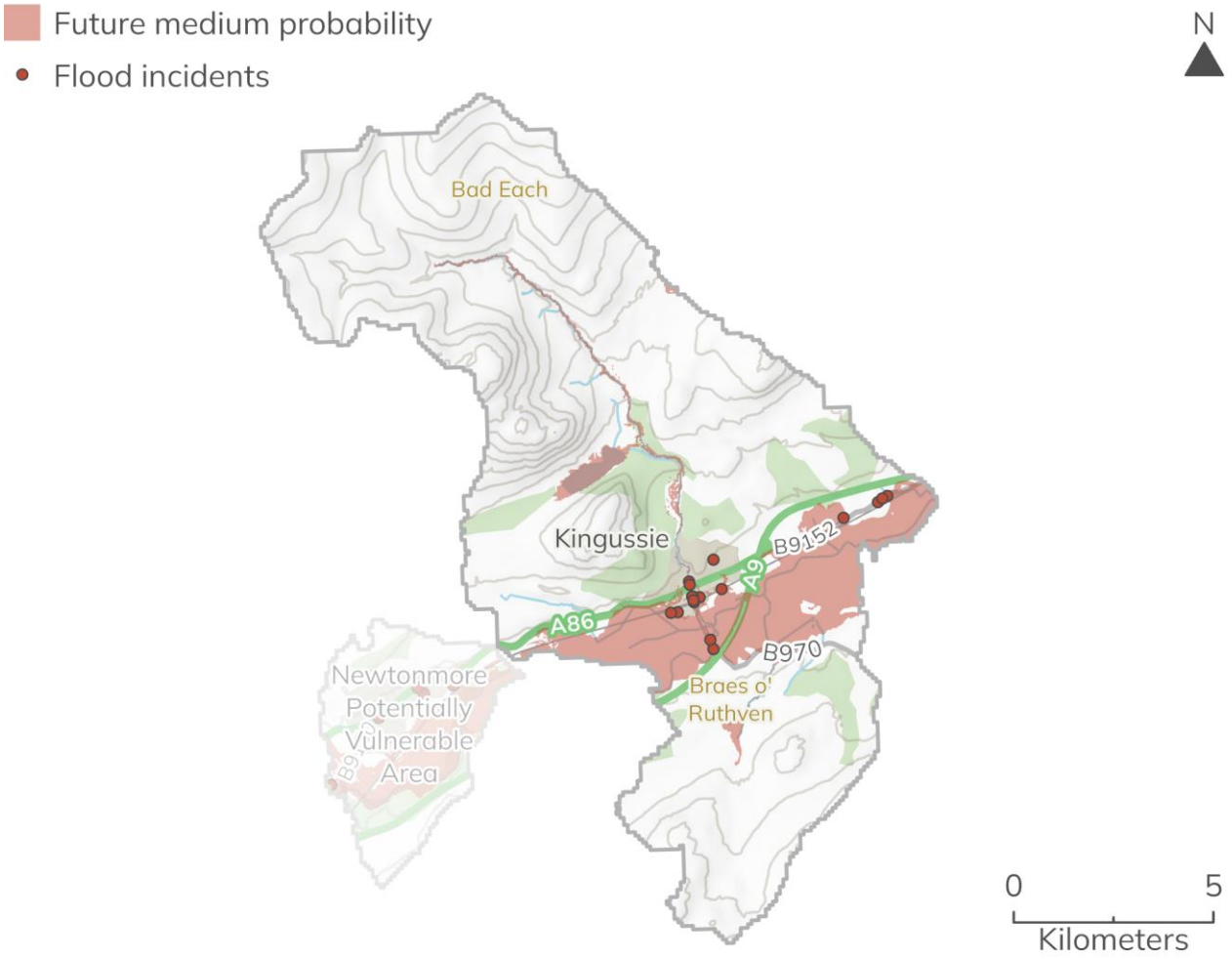


Figure 19 Future river flood extent and historic flood incidents within Kingussie Potentially Vulnerable Area.

The settlement and the area around it is designated as a potentially vulnerable area due to river flood risk to Kingussie (Figure 19). The area includes a significant portion of Insh Marshes National Nature Reserve. The main source of flooding is the Gynack Burn.

There are records of regular flooding from the Gynack, including a notable flood in August 2014 due to ex-Hurricane Bertha.

There are approximately 270 people and 180 homes and businesses currently at risk from flooding. This is likely to increase to 330 people and 220 homes and businesses by the 2080s due to climate change.

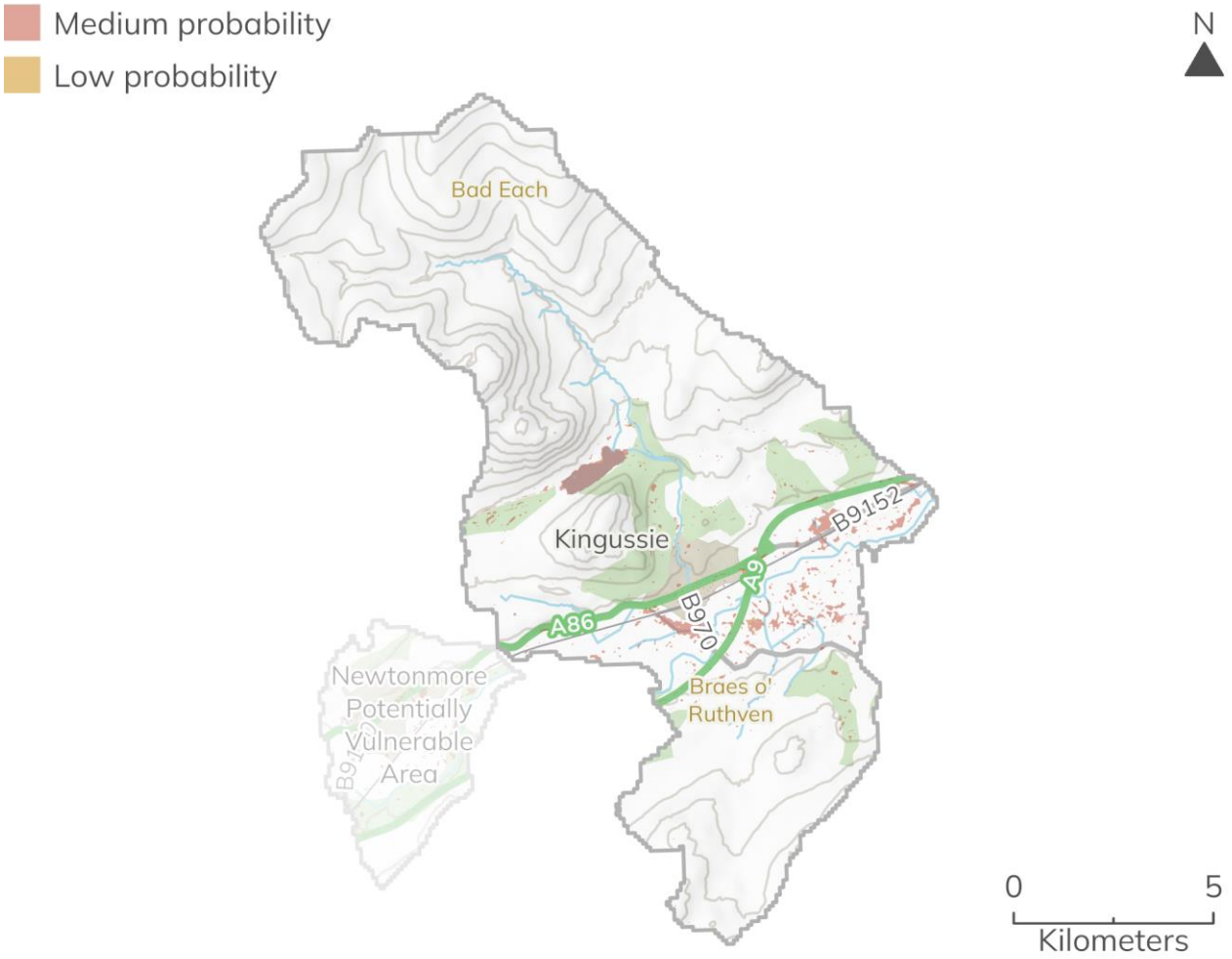


Figure 20 Surface water flood extents within Kingussie Potentially Vulnerable Area.

As set out within the Flood Risk Management Plan for the Findhorn, Nairn and Speyside Local Plan District, the objectives for the Potentially Vulnerable Area are:

- Avoid inappropriate development that increases flood risk in Kingussie.
- Prepare for current flood risk and future flooding as a result of climate change in Kingussie.

- Reduce the risk of flooding from the Gynack Burn in Kingussie.

The management plan contains an action for The Highland Council to develop a flood model of the Gynack Burn. A hydraulic model has been developed and a baseline modelling report produced. A fluvial audit study currently underway.

Pitmain Estates have installed a hydropower scheme in the upstream reach of the Gynack Burn, part of which includes a diversion channel which was installed in conjunction with The Highland Council. This scheme diverts water from the main channel by means of a lateral weir arrangement. Flow then travels down the diversion channel to Loch Gynack where it is attenuated by an outfall weir before being used for energy generation. Levels in excess of the outfall weir are discharged back into the Gynack Burn via a small channel.

This scheme was primarily implemented for energy generation but a secondary benefit of flood peak attenuation is also realised through the diversion of flows into Loch Gynack. This diversion may be able to impact both peak flow as well as peak timing.

Due to bank erosion on the diversion channel, the hydropower scheme is currently not operational and is therefore also not attenuating peak flows. Bank erosion protection is currently being designed and for the purposes of this study, the hydropower scheme is assumed to be operational. A sensitivity test will be undertaken to assess the impact should the scheme not be operational.

A river restoration feasibility study has been undertaken for Insh Marshes National Nature Reserve on behalf of the Royal Society for the Protection of Birds / Cairngorms Connect. The study identified a long list of potential options aimed at restoring a more naturally functioning river and floodplain system. These included 'Doing Nothing', maintaining according to the existing obligations, various embankment removal scenarios, options for morphological restoration of the tributaries and options to reduce the internal drainage of the floodplain. On this basis outline designs for two pilot schemes were developed:

- Pilot 1 consists of embankment removal at Lynchat.
- Pilot 2 comprises embankment removal in proximity to the Tromie-Spey confluence, removal of short lengths of bank protection and placement of large woody material in the Tromie to encourage more dynamic channel processes.

In 2020, Cairngorms Connect put forward a range of options for public consultation. Subsequently, they have been working to develop these proposals, including the identification of specific sites where they will be delivered. These proposals are:

- Restore the Raitts Burn to a more natural form by diverting it from its current artificial channel to the floodplain at Balavil, where it can form multiple new channels and associated habitats. This will allow the floodplain to store river sediment and therefore will reduce the need for ongoing maintenance.
- Improve floodplain connectivity with the River Spey at Lynchat with increasing flow during drier periods.
- Encourage the River Tromie to overspill its floodplain more frequently to enhance wetland areas and form multiple new channels. This will provide additional flow to the Fens in drier periods.
- Block ditches at Invertromie Compartment to help maintain wetland species and habitats. This will also protect the underlying peat which, in turn, can more effectively soak up carbon from the atmosphere.
- Remove bank protection that currently constricts the river channels of the River Spey and the Tromie, thereby allowing the water carried by these rivers to move more freely.

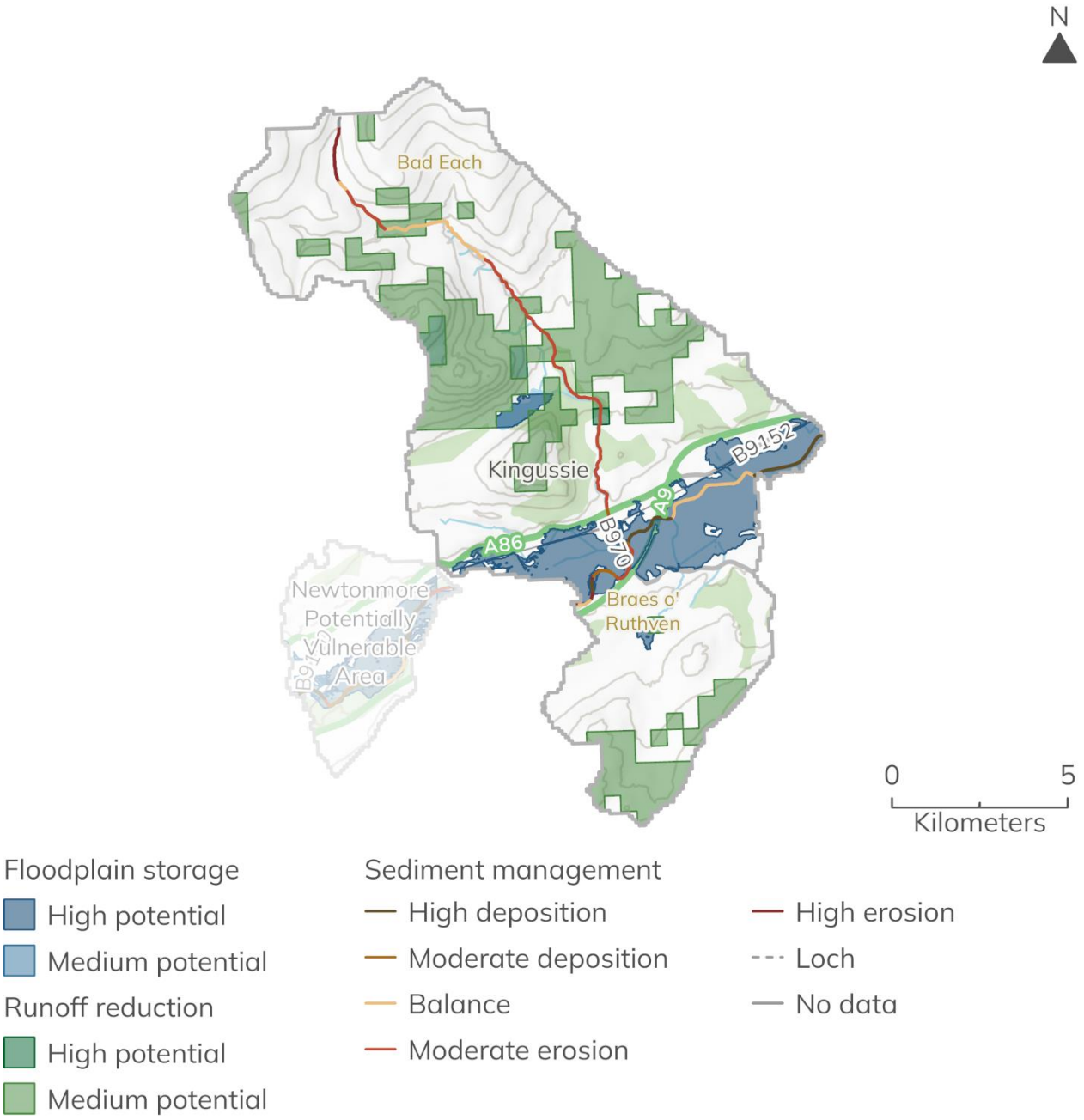


Figure 21 Opportunity areas for natural flood management within Kingussie Potentially Vulnerable Area.

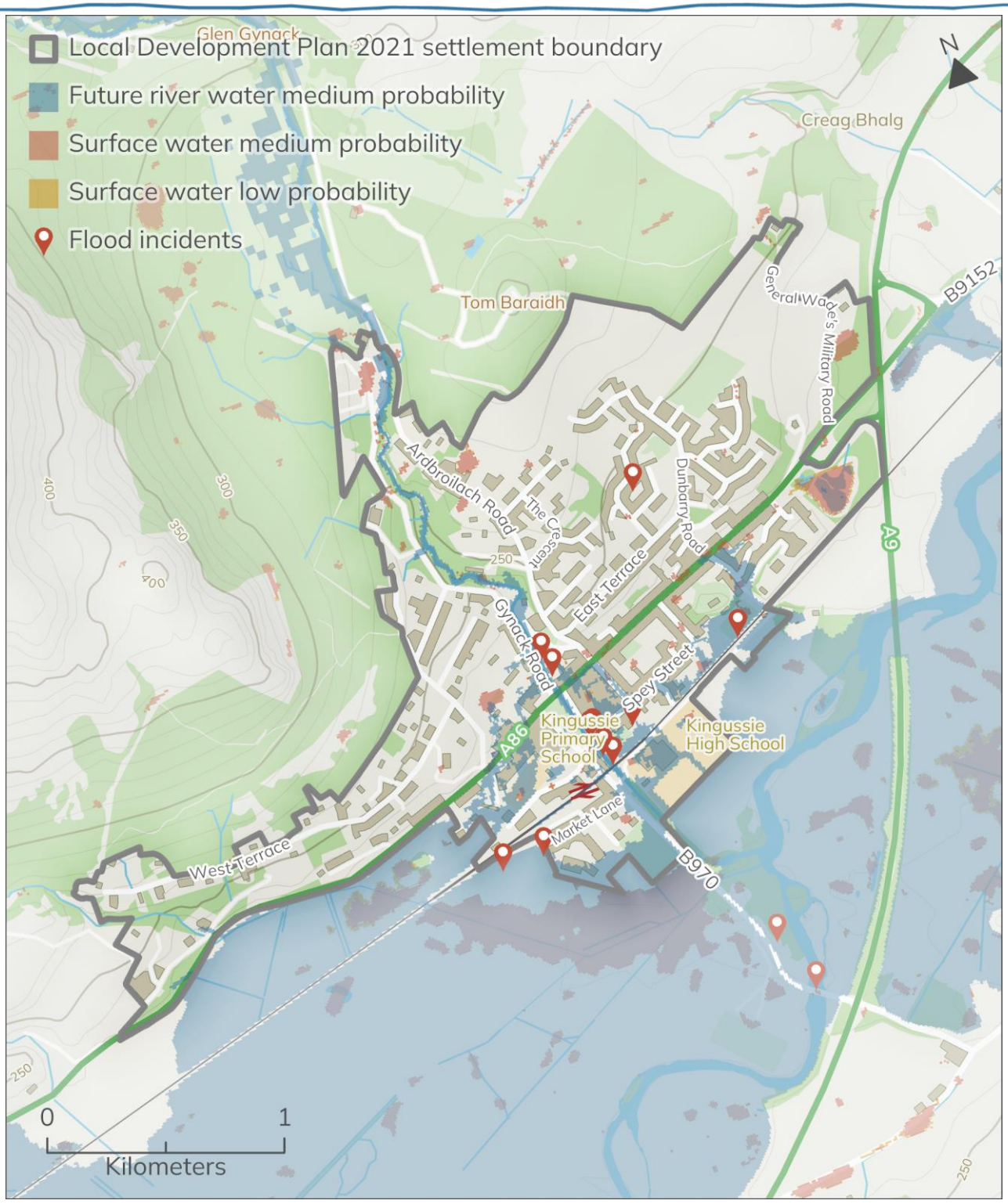


Figure 22 Future river and current surface water flood extents and historic flood incidents in and around Kingussie.

Nethy Bridge Potentially Vulnerable Area

Nethy Bridge is a small woodland village and is an attractive destination for visitors. The village has a good range of community facilities and an extensive local path network. It's identified as an Intermediate Settlement in the Partnership Plan.

The area is designated as a potentially vulnerable area due to a risk of river flooding to Nethy Bridge (Figure 23). There are no records of recent flooding in Nethy Bridge, however the Nethy and Duack watercourses overflowed particularly badly during the 1829 flood event.

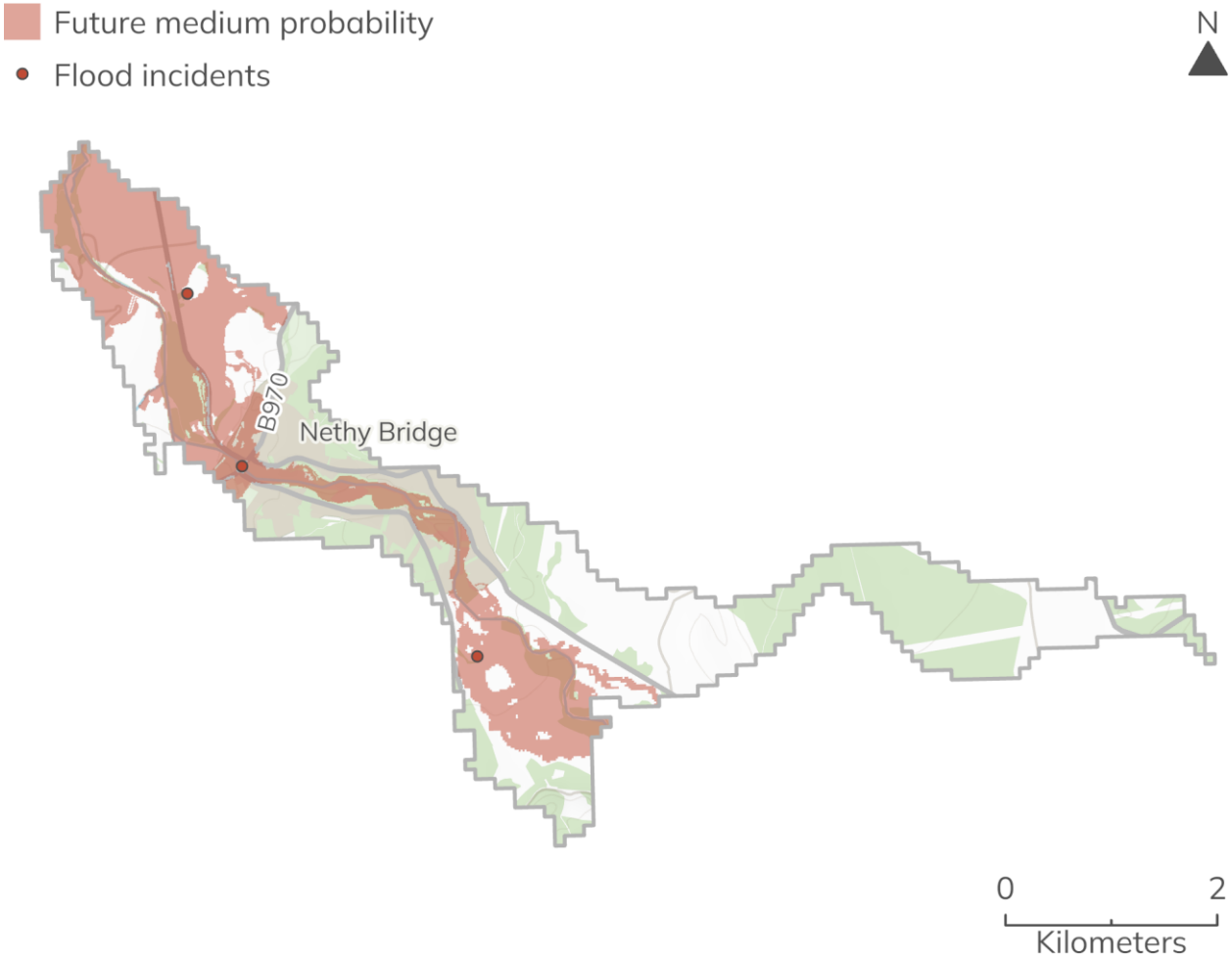


Figure 23 Future river flood extent and historic flood incidents within Nethy Bridge Potentially Vulnerable Area.

There are approximately 180 people and 120 homes and businesses at risk from flooding. This is likely to increase to 200 people and 130 homes and businesses by the 2080s due to climate change.

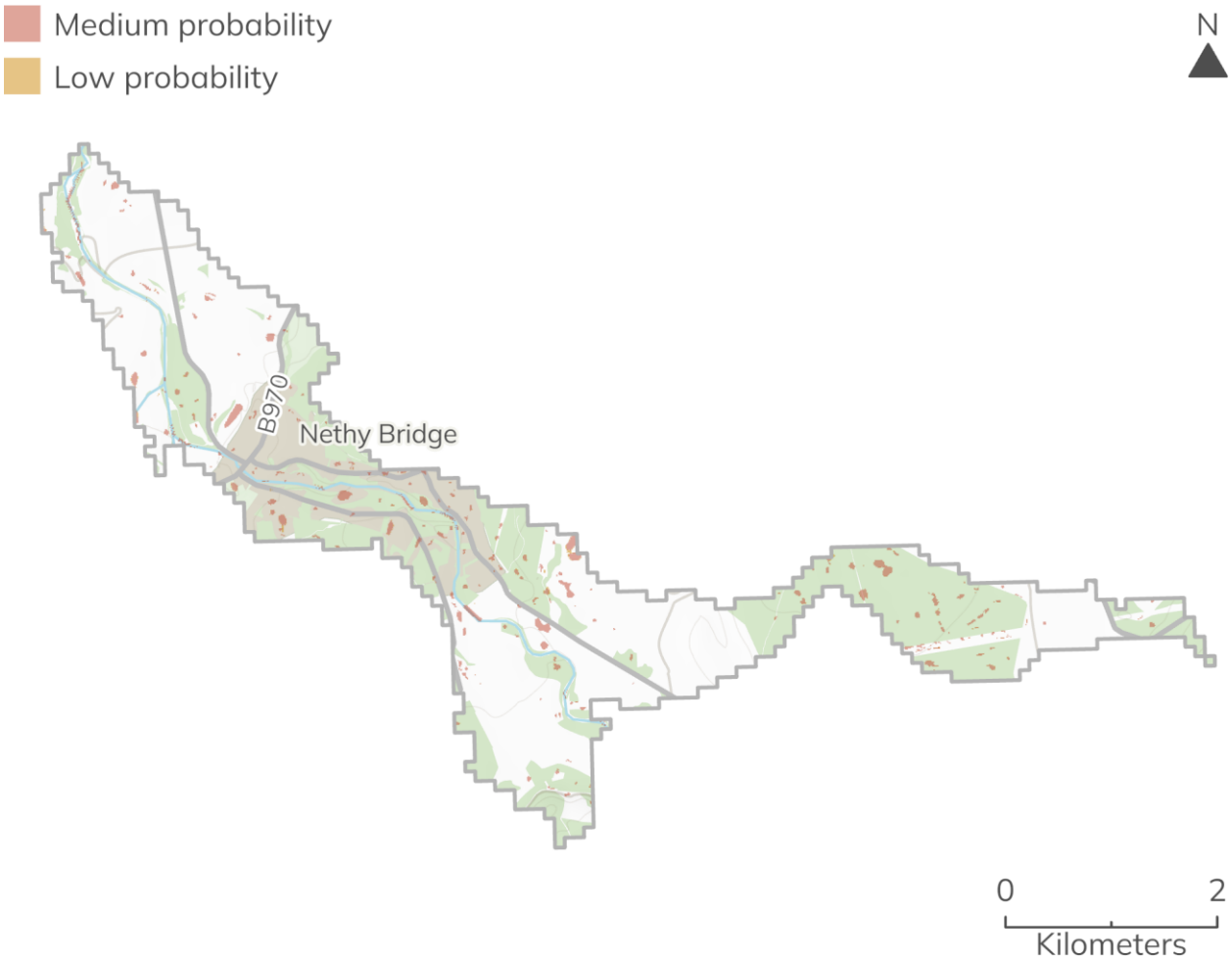


Figure 24 Surface water flood extents within Nethy Bridge Potentially Vulnerable Area.

As set out within the Flood Risk Management Plan for the Findhorn, Nairn and Speyside Local Plan District, the objectives for the Potentially Vulnerable Area are:

- Avoid inappropriate development that increases flood risk in Nethy Bridge.
- Improve data and understanding of the risk of flooding from the River Nethy in Nethy Bridge.
- Prepare for current flood risk and future flooding as a result of climate change in Nethy Bridge.

The management plan contains an action for The Highland Council to develop a flood model for the River Nethy and Duack Burn. This has not been progressed to date.

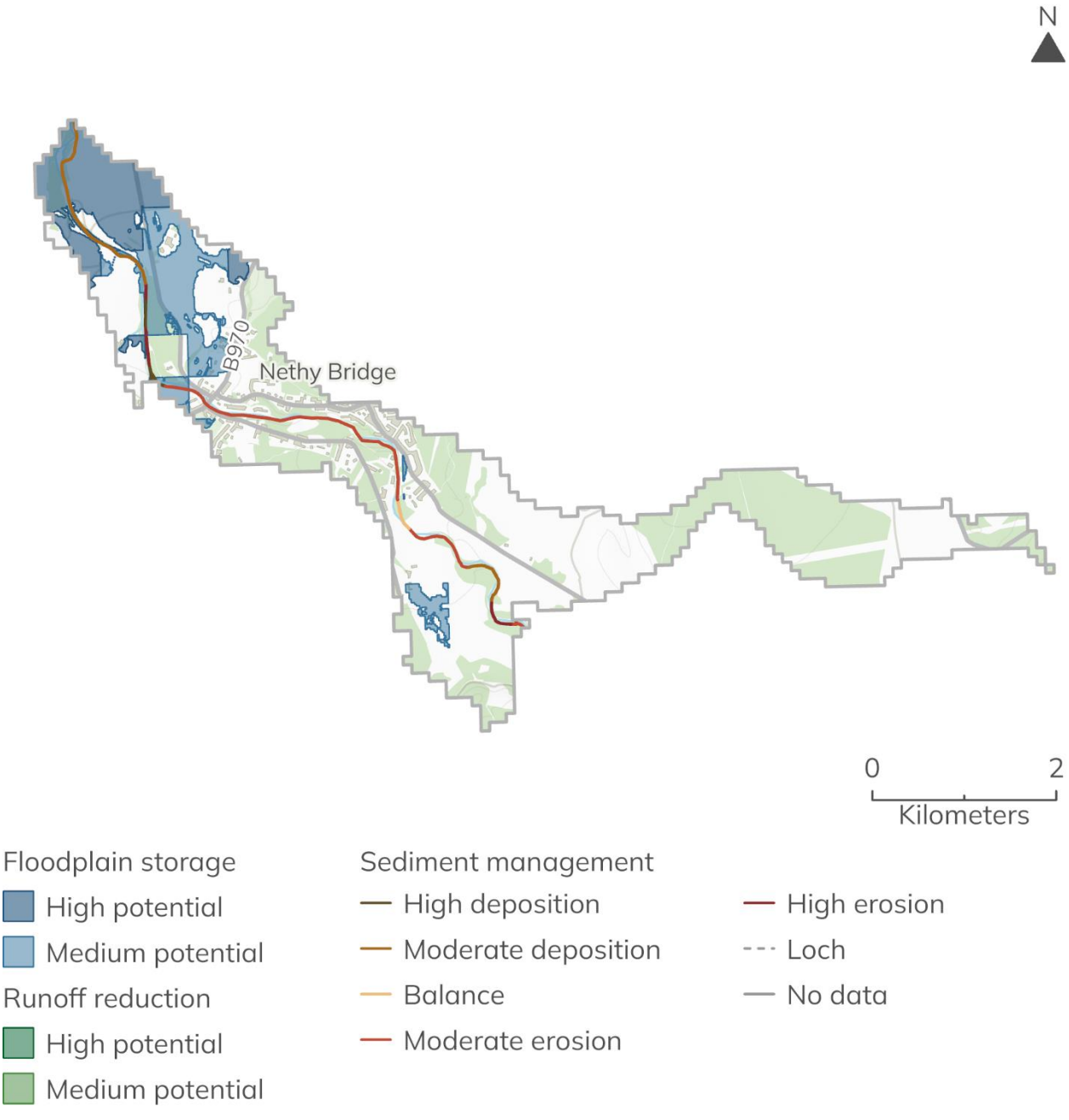


Figure 25 Opportunity areas for natural flood management within Nethy Bridge Potentially Vulnerable Area.

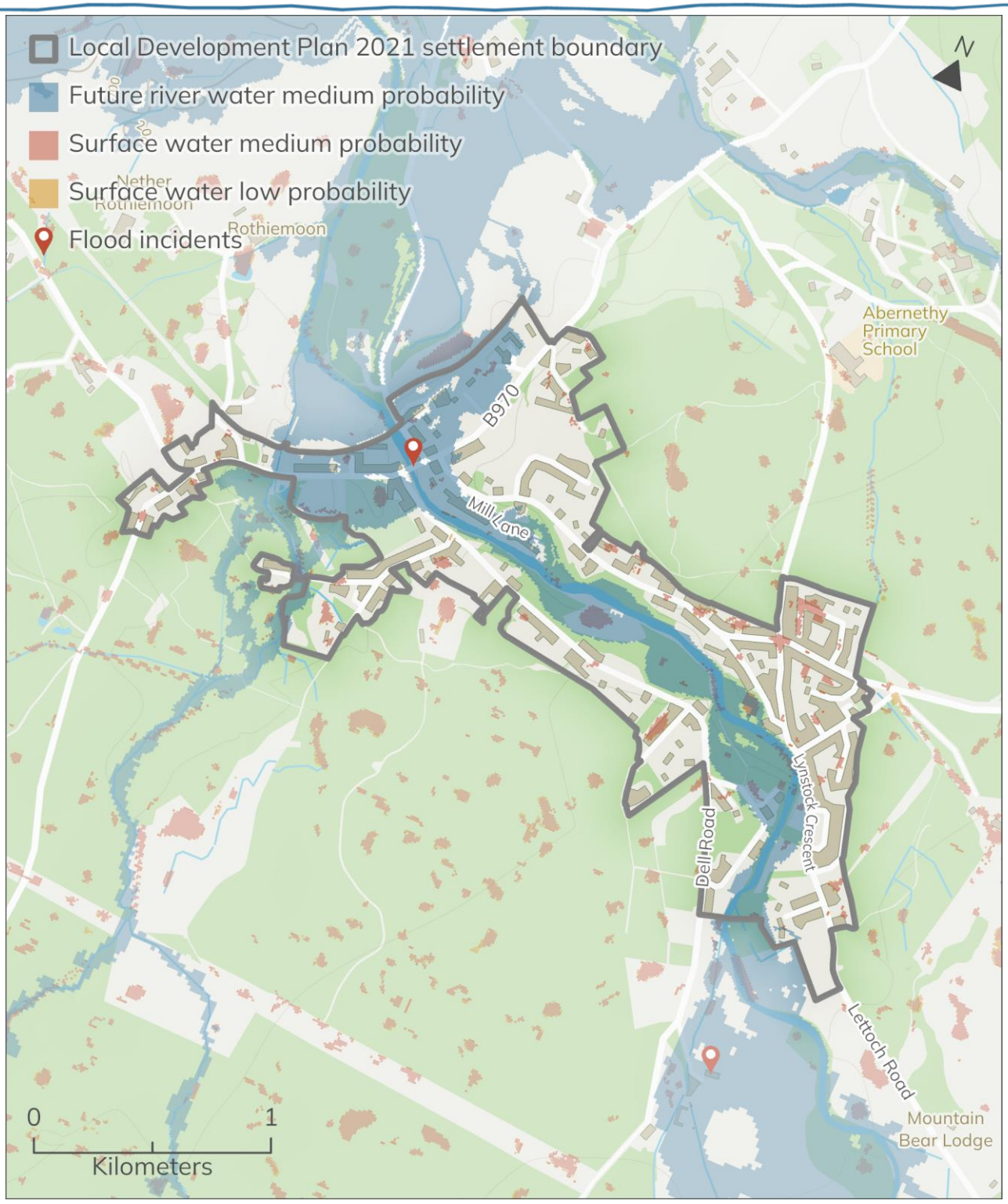


Figure 26 Future river and current surface water flood extents and historic flood incidents in and around Nethy Bridge.

Newtonmore Potentially Vulnerable Area

Newtonmore is a traditional highland village located in south Badenoch. The village contains a number of local services and is also home to the Highland Folk Museum which attracts many visitors to the village. It's identified as a Strategic Settlement in the Partnership Plan.

The settlement is designated as a potentially vulnerable area as Newtonmore is at risk of flooding from surface water (Figure 28). Past flooding in the area was caused by surface water.

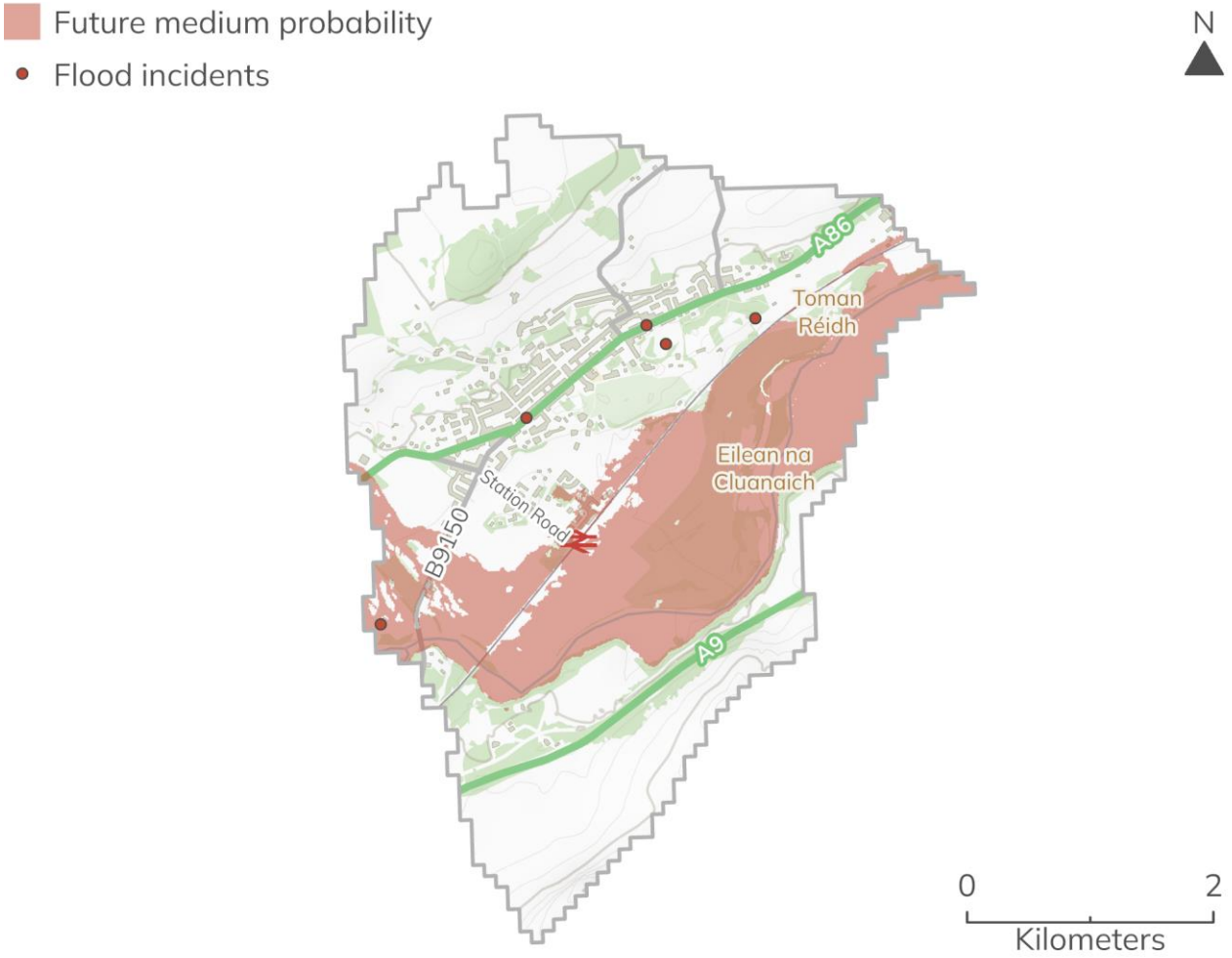


Figure 27 Future river flood extent and historic flood incidents within Newtonmore Potentially Vulnerable Area.

There are approximately 130 people and 100 homes and businesses currently at risk from flooding. This is likely to increase to 140 people and 110 homes and businesses by the 2080s due to climate change.

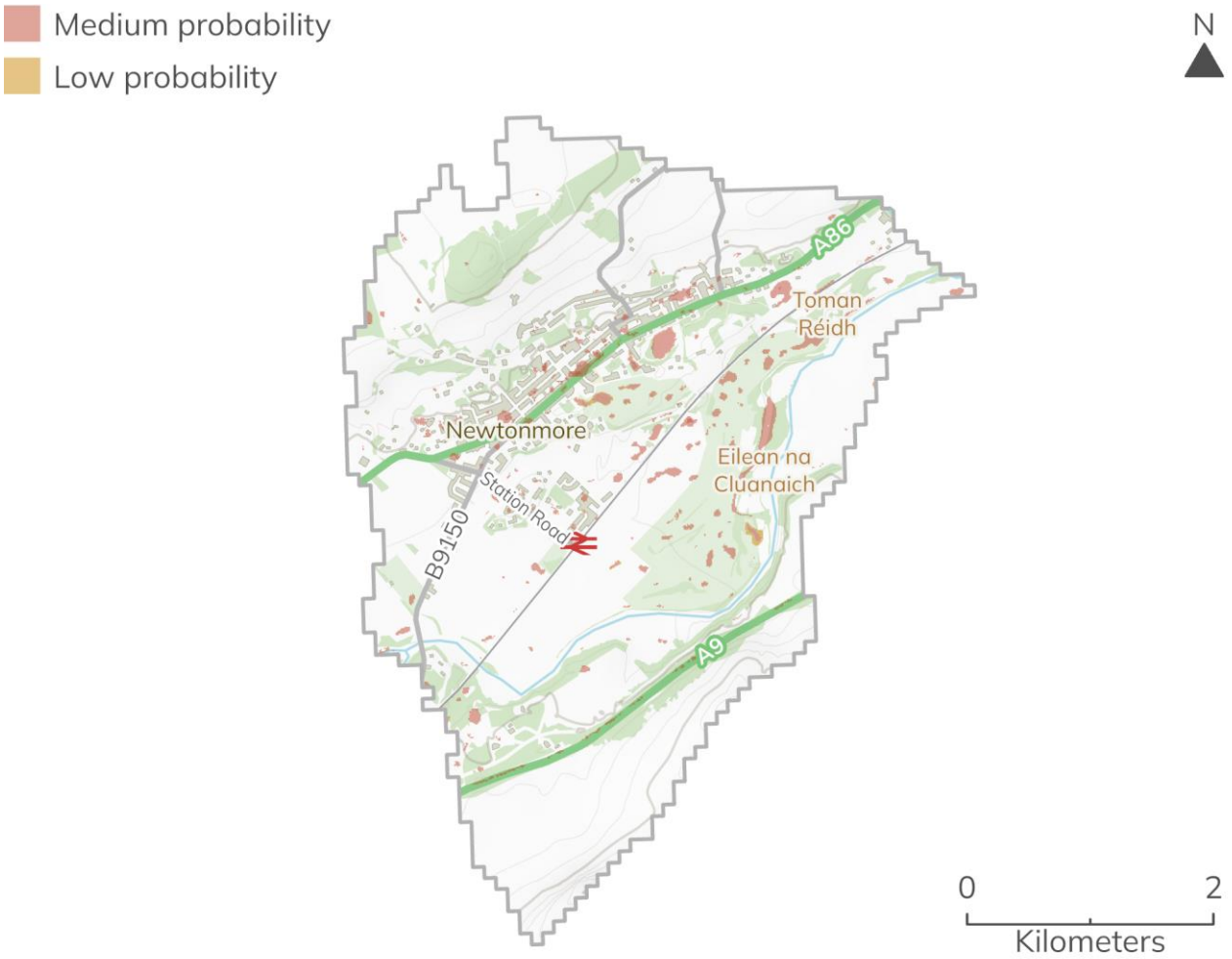


Figure 28 Surface water flood extents within Newtonmore Potentially Vulnerable Area.

As set out within the Flood Risk Management Plan for the Findhorn, Nairn and Speyside Local Plan District, the objectives for the Potentially Vulnerable Area are:

- Avoid inappropriate development that increases flood risk in Newtonmore.
- Prepare for current flood risk and future flooding as a result of climate change in Newtonmore.
- Reduce the risk of surface water flooding in Newtonmore.

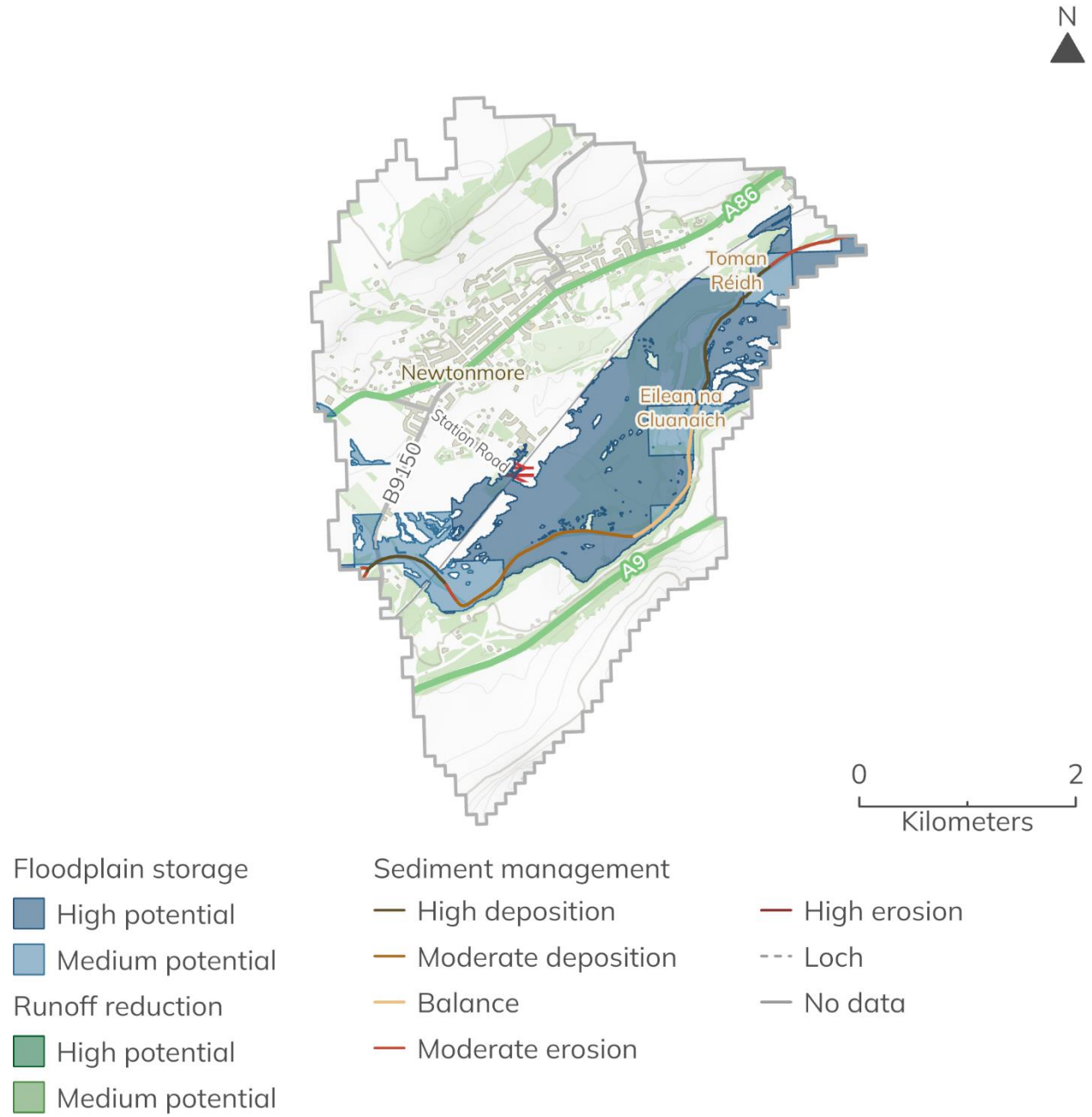


Figure 29 Opportunity areas for natural flood management within Newtonmore Potentially Vulnerable Area.

A sewer flood risk assessment and Section 16 mapping have also been carried out by Scottish Water and while they cannot be shared publicly, may be used by the Park Authority to help inform the strategic flood risk assessment.

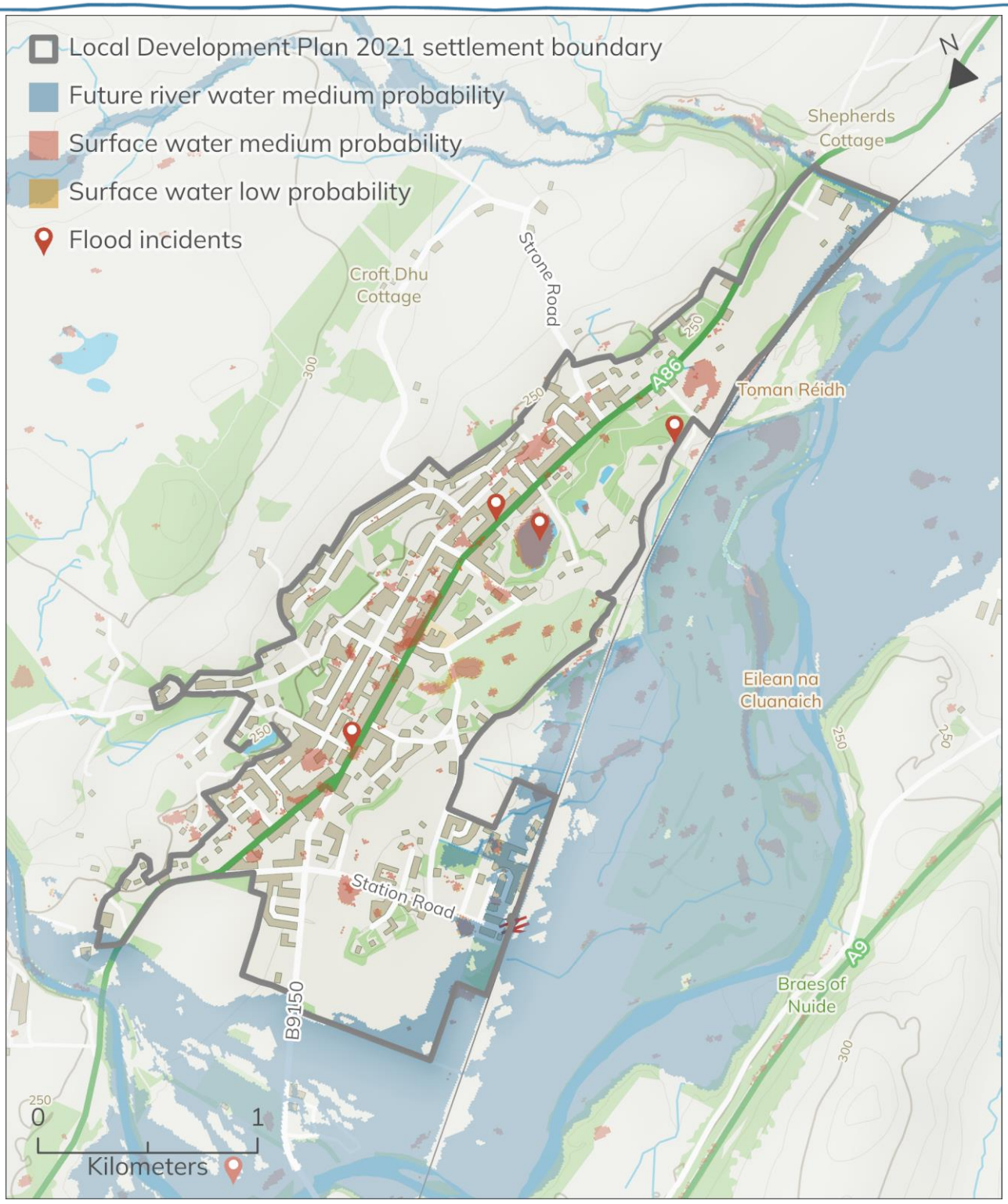


Figure 30 Future river and current surface water flood extents and historic flood incidents in and around Newtonmore.

Other settlements

Other settlements within the Spey catchment area are not located within potentially Vulnerable Areas and therefore have no specific actions within the Findhorn, Nairn and Speyside Local Flood Risk Management Plan 2022 – 2028. However, a spatial analysis of the flood risk within these settlements can still be carried out, the information for which is presented in a map of each settlement.

Strategic Settlements

Grantown on Spey

Grantown on Spey (Figure 31) lies in the north of the National Park. It was designed as a planned town and is the historic capital of Strathspey. The town itself has a wide range of businesses and facilities, many of which are located along the town's High Street and main square. It's identified as a Strategic Settlement in the Partnership Plan.

The earliest record of flooding in the locality is from the Glenbeg Burn, just outwith the current settlement boundary, which burst its banks during the Muckle Spate in August 1829. Within the village itself, the main source of flooding is the Kilyntra Burn, with recorded flood incidents in 1997, when flash flooding caused the sewer to discharge at several properties on Kylintra Crescent and in 2001, when water flowed from a field at rear of a property on Rhuarden Crescent into its garden and threatened to enter a conservatory.

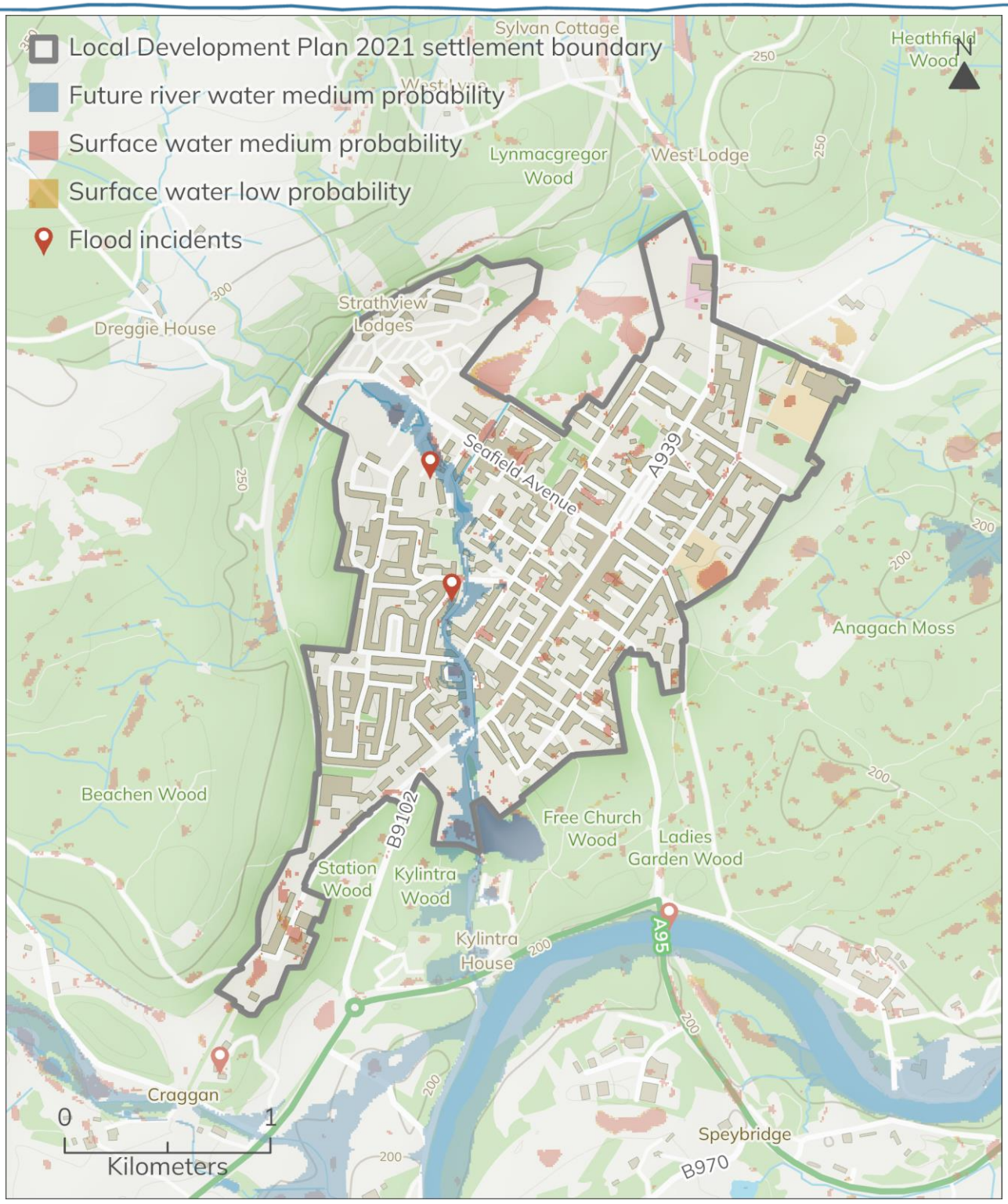


Figure 31 Future river and current surface water flood extents and historic flood incidents in and around Grantown on Spey.

Intermediate Settlements

Boat of Garten

Boat of Garten (Figure 32) is a thriving community and the village has a number of services that support the local community and visitors. The Strathspey Railway also stops in Boat of Garten and is a key visitor attraction in the village. Environmental constraints mean that only small-scale housing proposals, particularly for affordable housing, may still be supported under the next Local Development Plan. It's identified as an Intermediate Settlement in the Partnership Plan. Historic flood events from the River Spey are recorded in February 1990 and December 2006.

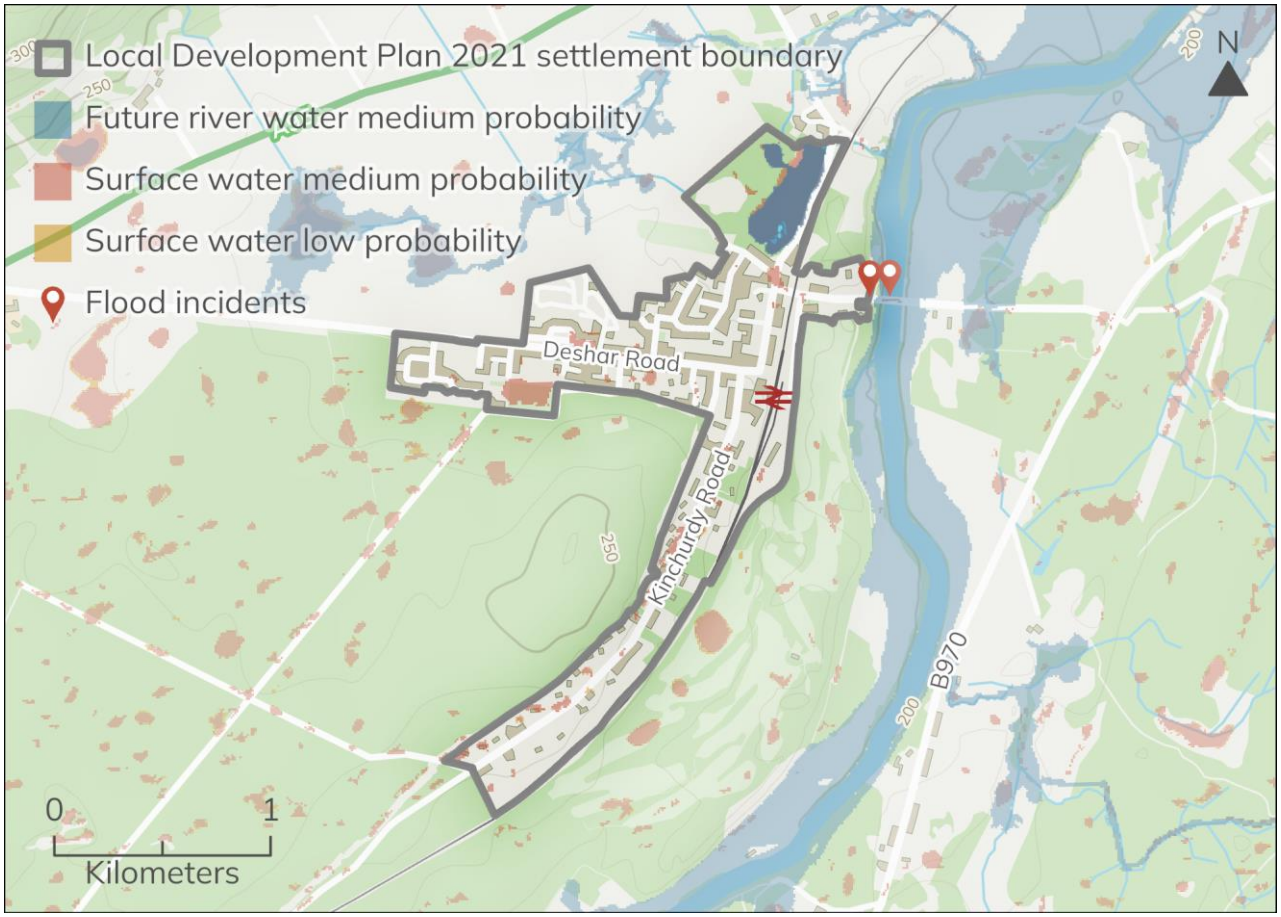


Figure 32 Future river and current surface water flood extents and historic flood incidents in and around Boat of Garten.

Carrbridge

Carrbridge (Figure 33) is a village in the north of the National Park located close to the A9 with good rail links. The village is home to one of the National Park's biggest attractions – Landmark Forest Adventure Park – which attracts many visitors to the area. The village also contains a range of other facilities including hotels, shops and a garage. It's identified as an Intermediate Settlement in the Partnership Plan.

The main source of flooding is from the River Dulnain. During the Muckle Spate of 1829 the old bridge, built in 1717, from which the village is named, was severely damaged and left in the condition we see today. More recent events include a flood in January 2004 that affected the Ellan footbridge.

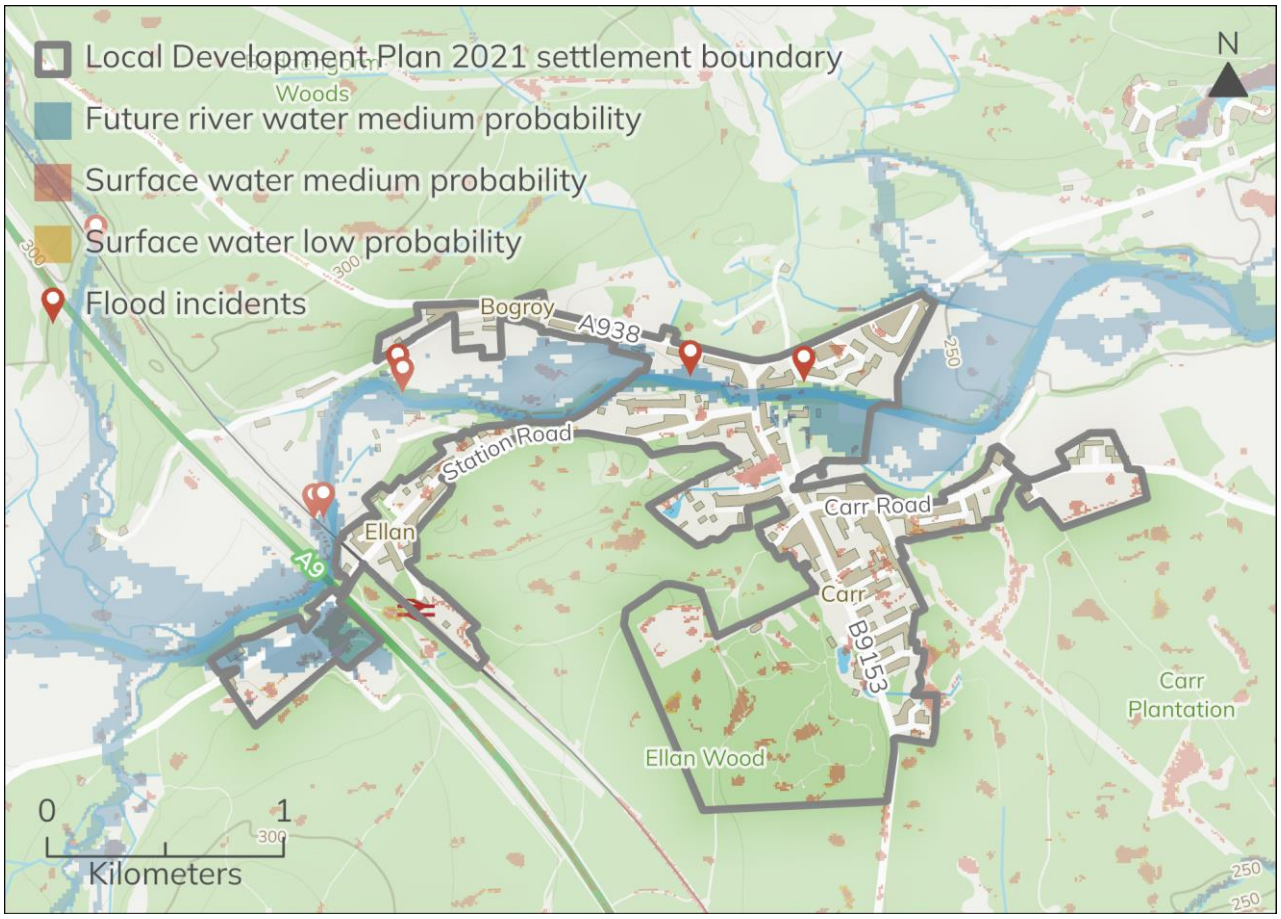


Figure 33 Future river and current surface water flood extents and historic flood incidents in and around Carrbridge.

Cromdale

Cromdale (Figure 34) is a small village that sits in the north of the National Park on the A95. It has a dispersed nature and is a largely residential village. It's identified as an Intermediate Settlement in the Partnership Plan.

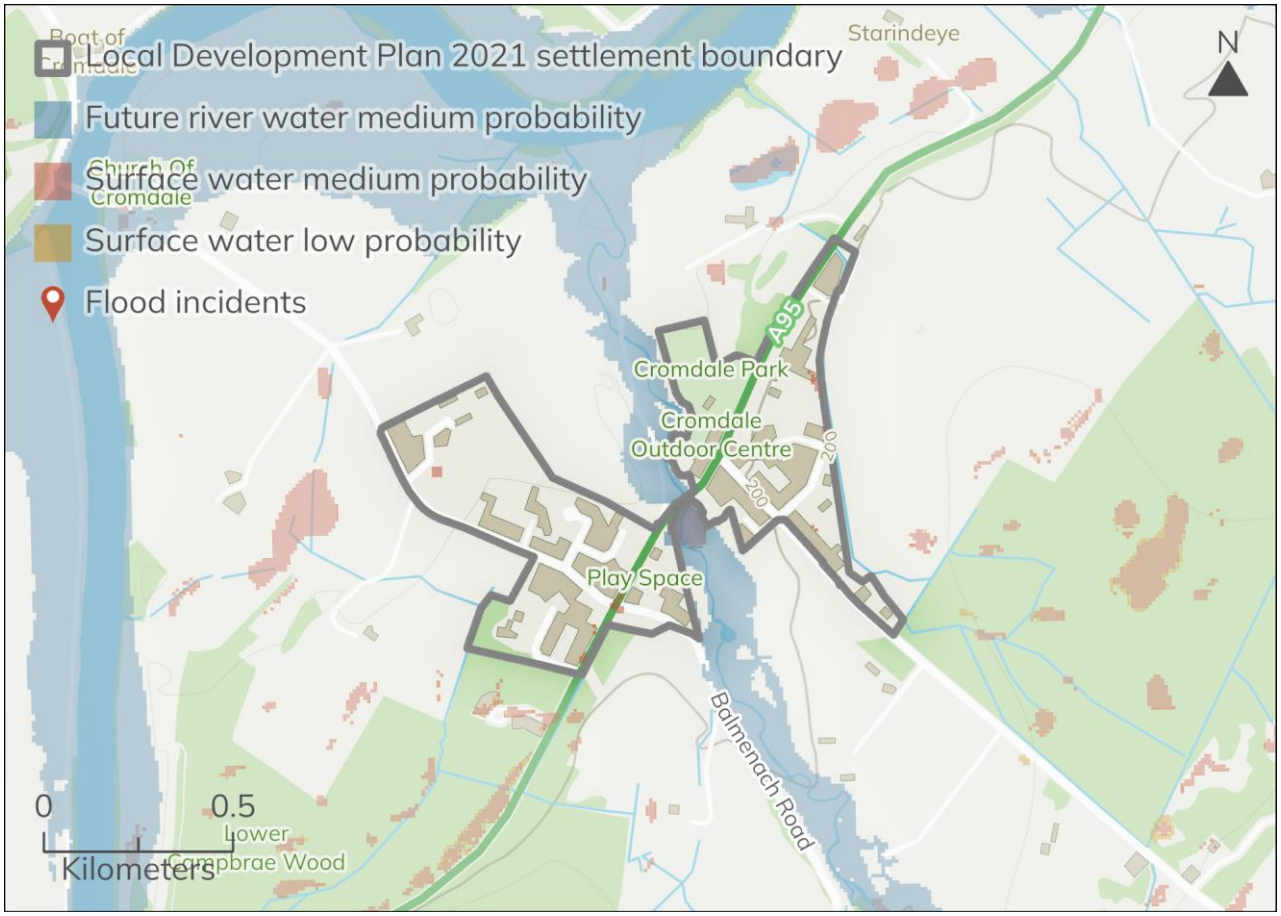


Figure 34 Future river and current surface water flood extents and historic flood incidents in and around Cromdale.

Dulnain Bridge

Dulnain Bridge (Figure 35) is a small village situated to the west of Grantown-on-Spey. The village has a garage, post office and community hall and is well served for its size. Some growth is necessary to sustain the village and future development should complement the sensitive woodland setting of the village, enhance its character and support tourism. It's identified as an Intermediate Settlement in the Partnership Plan.

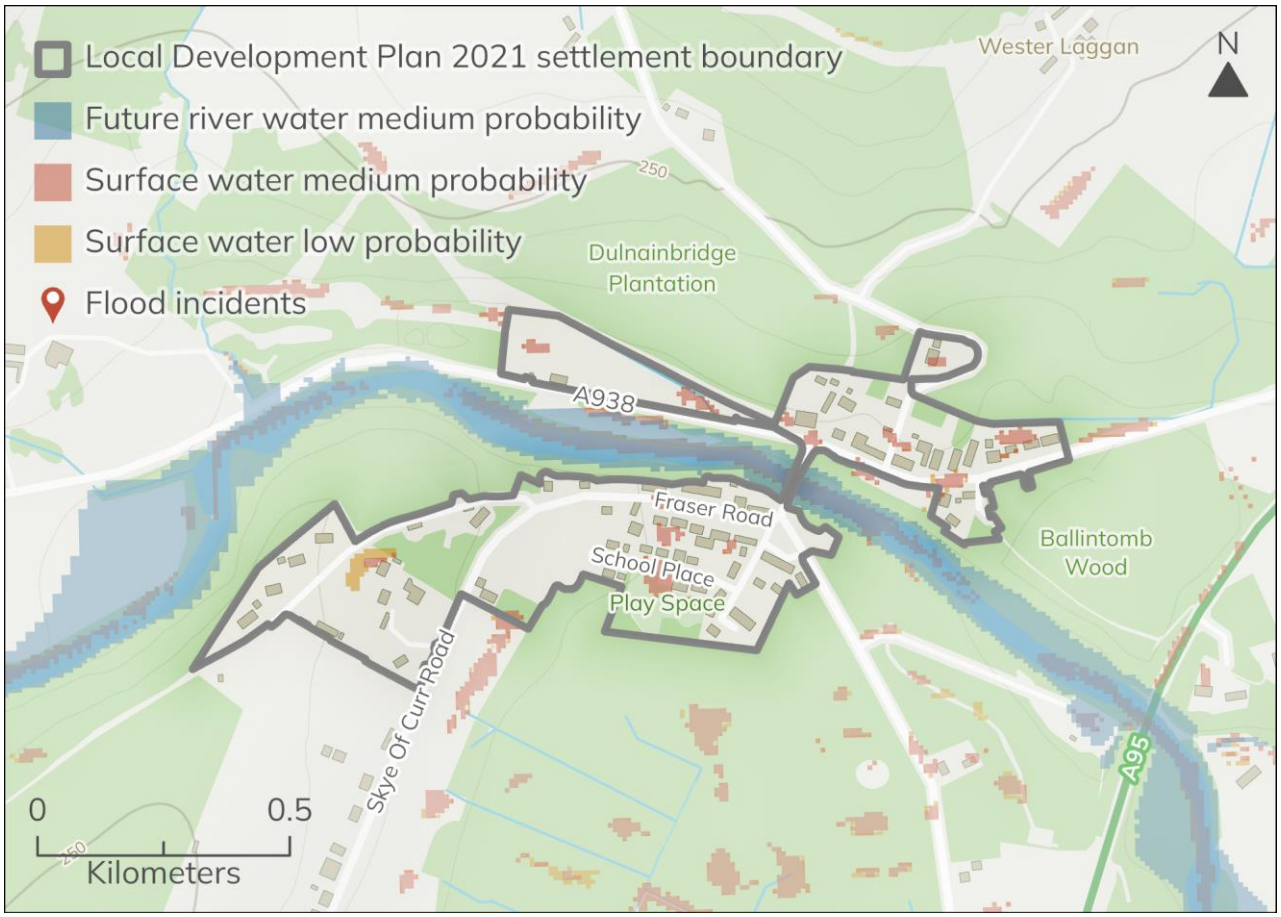


Figure 35 Future river and current surface water flood extents and historic flood incidents in and around Dulnain Bridge.

Kincraig

Kincraig (Figure 36) is a small community located between Aviemore and Kingussie. There are a number of surrounding visitor attractions and employers which support the village. It's identified as an Intermediate Settlement in the Partnership Plan. In 1869 flooding from the River Spey threatened to damage the railway line while events in 1989 and 1990 affected residential properties at Tomdhu and Braeriach Road.

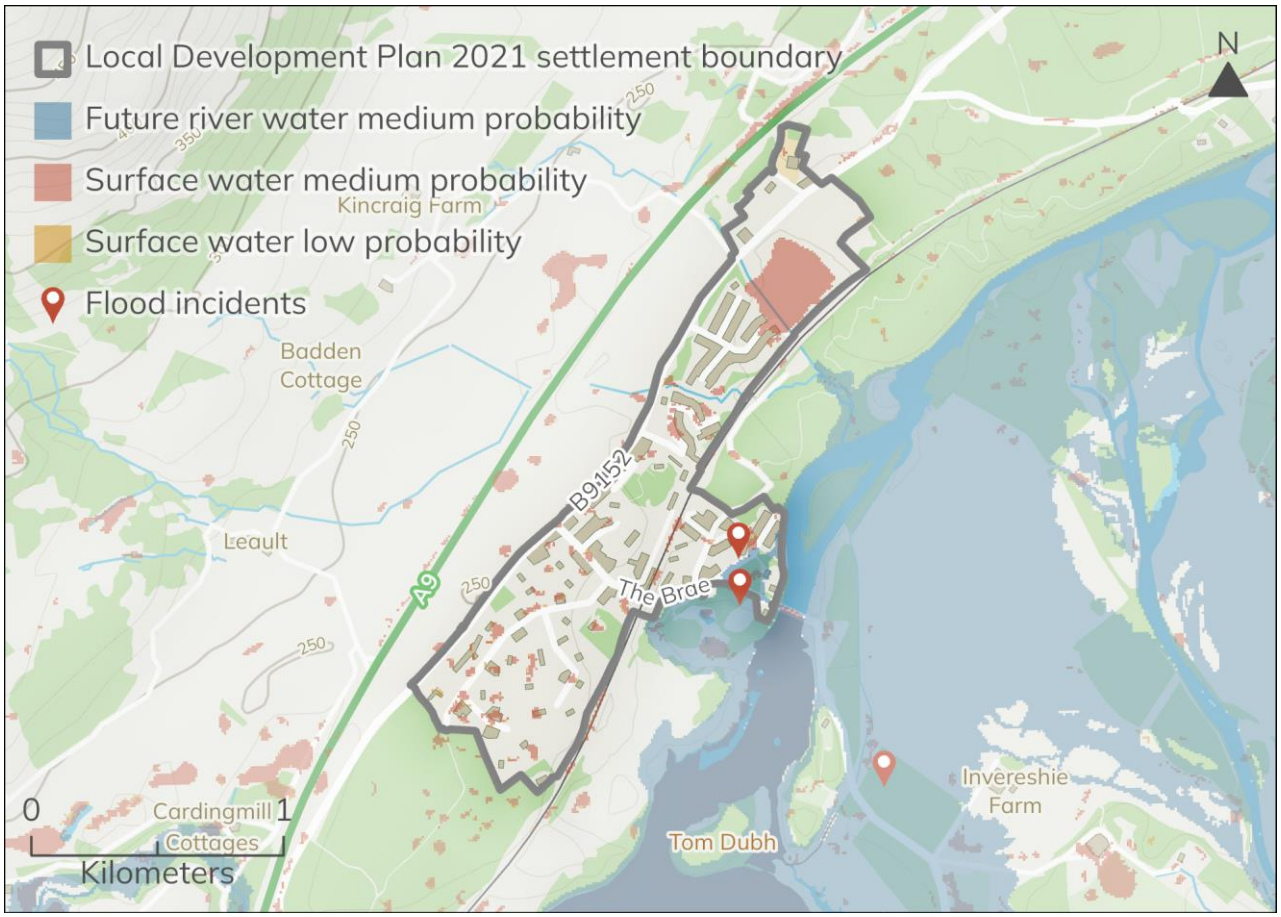


Figure 36 Future river and current surface water flood extents and historic flood incidents in and around Kincraig.

Tomintoul

Tomintoul is a planned village and is located in a remote part of Moray. It has a number of small businesses and is an important service centre for a number of outlying settlements. The community has an active Development Trust, and the Tomintoul and Glenlivet Landscape Partnership have also recently undertaken a number of projects to support and enhance aspects of the natural and cultural heritage of the area. It's identified as an Intermediate Settlement in the Partnership Plan.

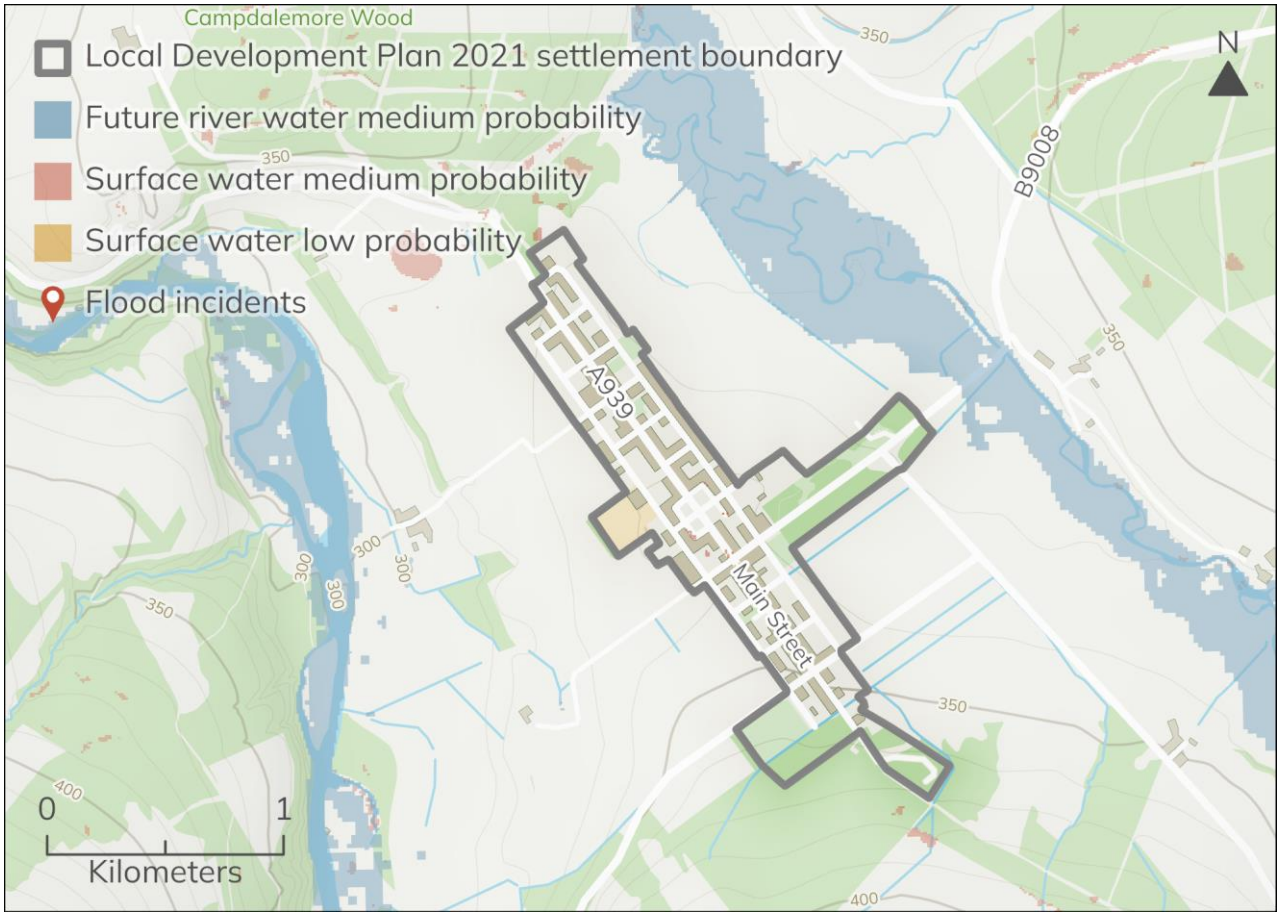


Figure 37 Future river and current surface water flood extents and historic flood incidents in and around Tomintoul.

Rural Settlements

Glenlivet

Glenlivet is a small, dispersed community located within the north of the National Park. It has an economy based on tourism and the whisky industry. There are no defined settlement boundaries or development allocations in the current Local Development Plan, development and therefore future development is likely to be of a small-scale, organic nature designed to meet local need. It's identified as a Rural Settlement in the Partnership Plan.

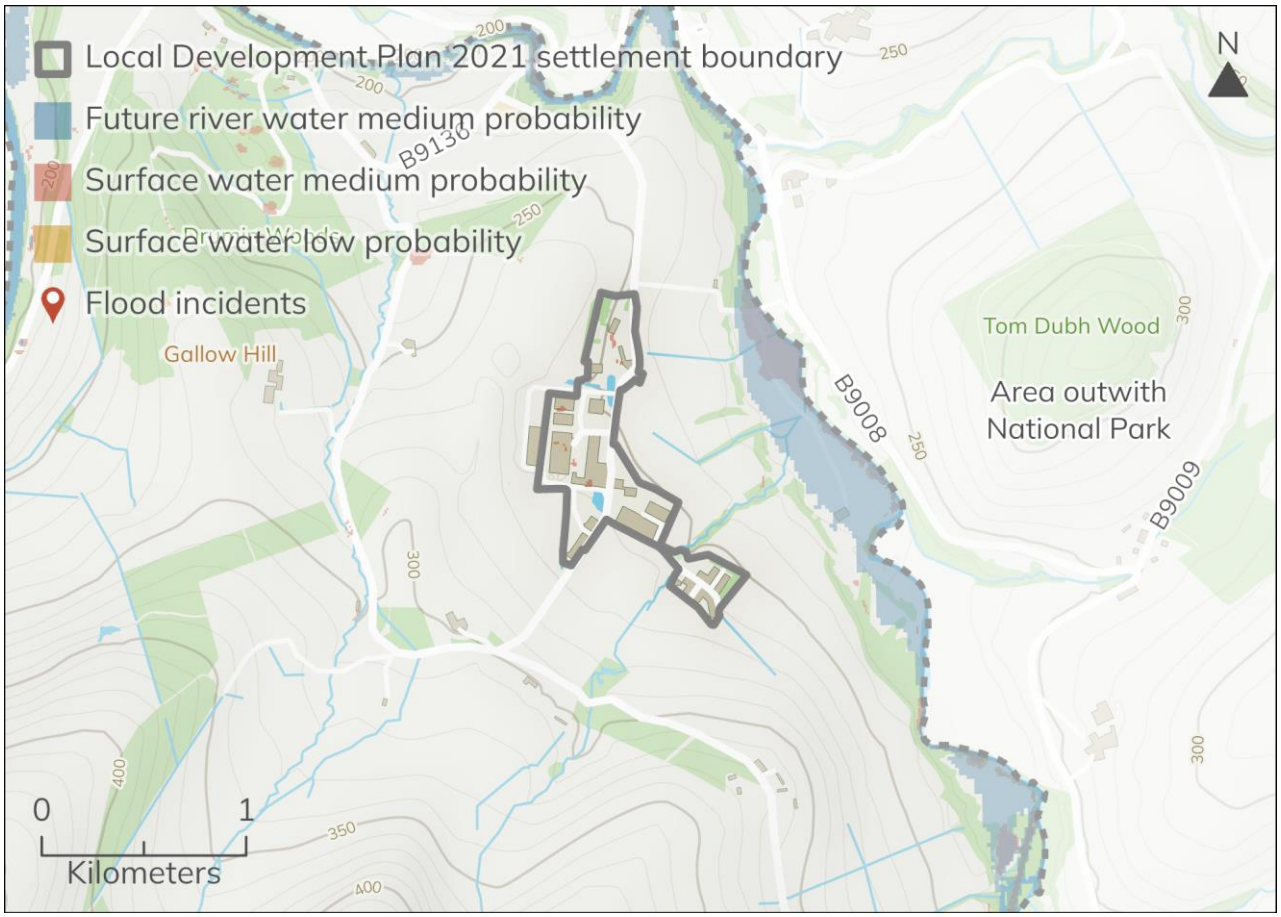


Figure 38 Future river and current surface water flood extents and historic flood incidents in and around Glenlivet.

Glenmore

Glenmore (Figure 39) is a popular tourist destination within the National Park, on the edge of Loch Morlich. It is a focus for outdoor activities in the surrounding woodlands and mountains. It's identified as a Rural Settlement in the Partnership Plan.

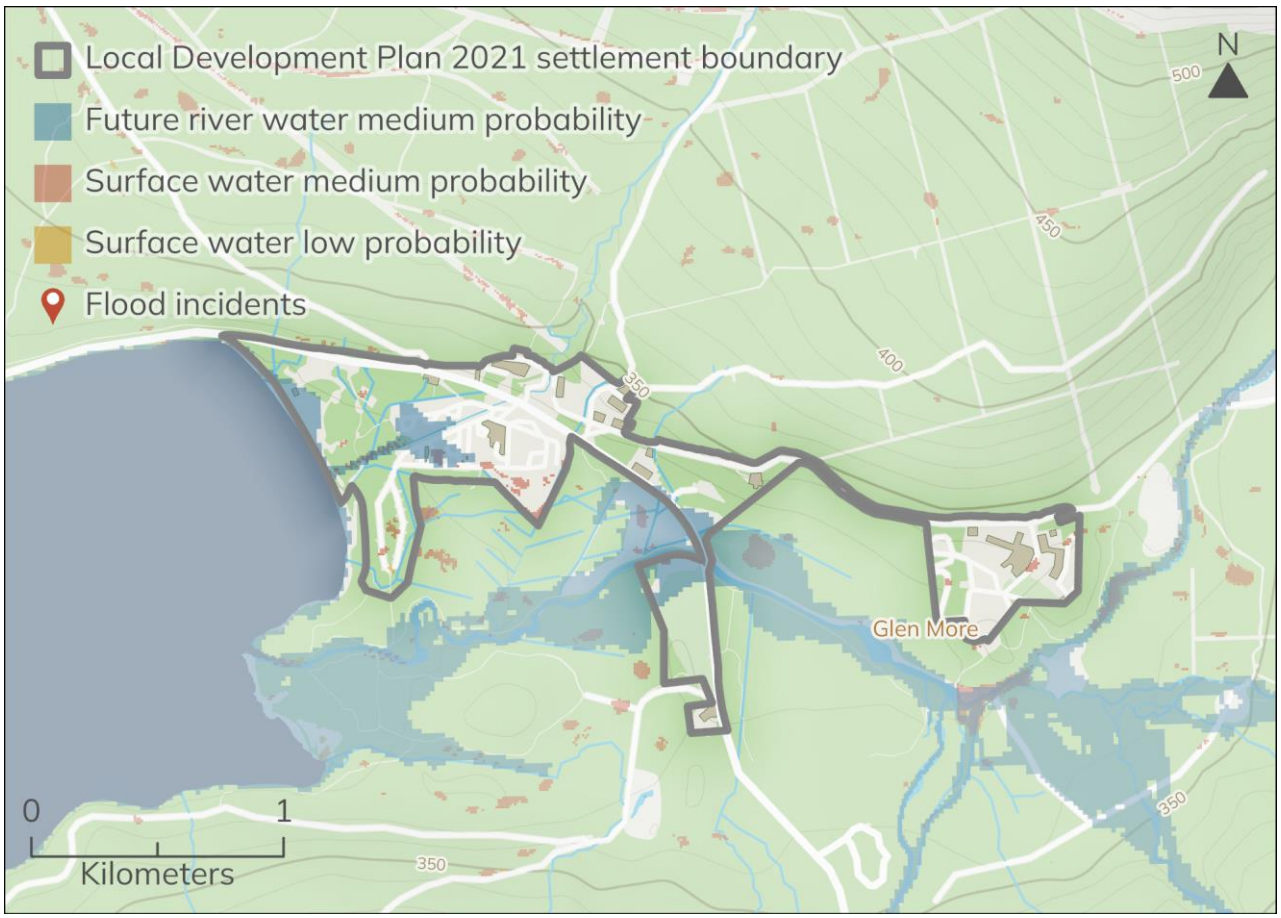


Figure 39 Future river and current surface water flood extents and historic flood incidents in and around Glenmore.

Insh

Insh (Figure 40) lies on the east of the Insh Marshes – a National Nature Reserve and one of the most important wetlands in Europe. The village is a small community with a small but diverse economy. It's identified as a Rural Settlement in the Partnership Plan. An incident of flooding is recorded at the Schoolhouse in January 1989. Details on flooding on Insh Marshes is covered by the Kingussie section of this report (see page 41).

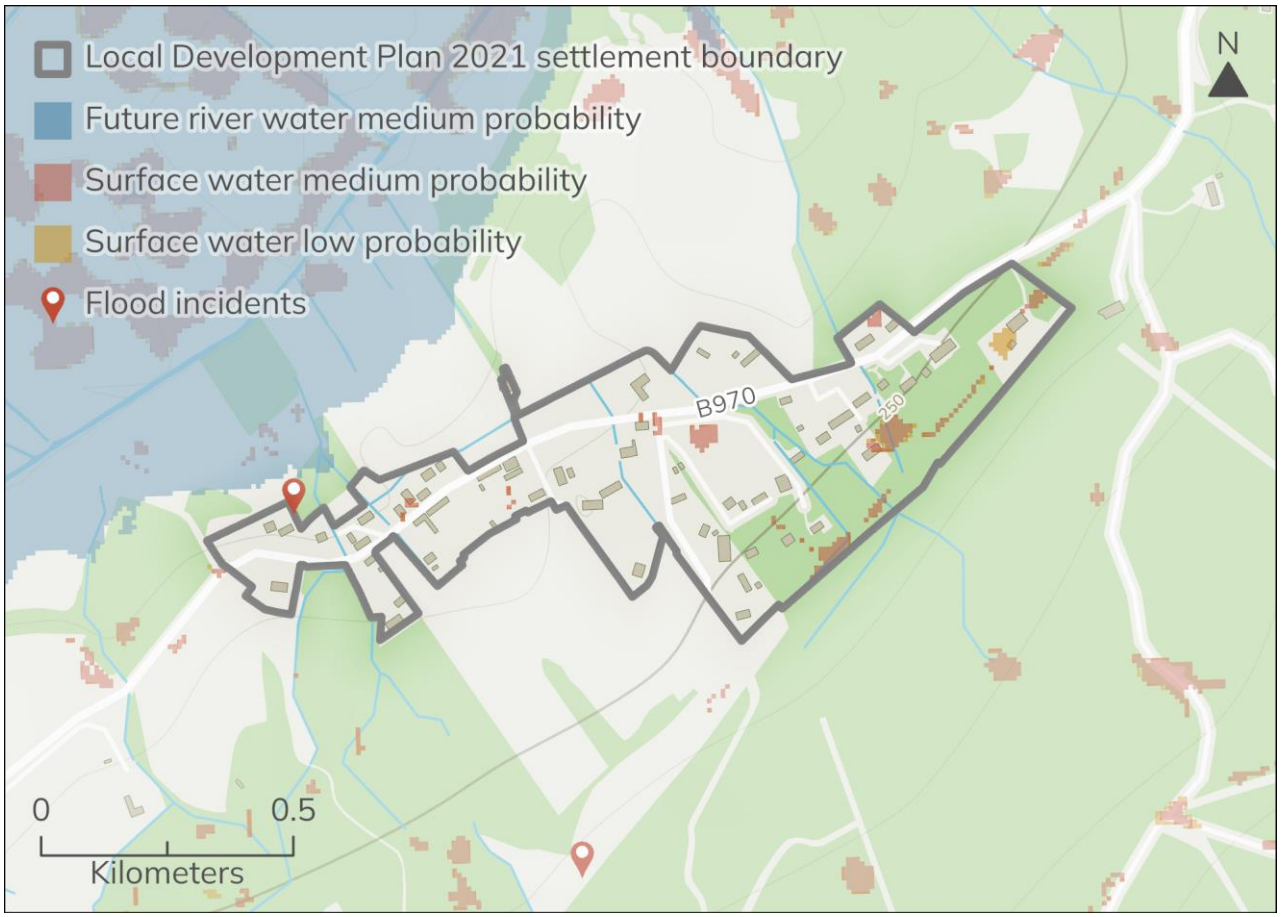


Figure 40 Future river and current surface water flood extents and historic flood incidents in and around Insh.

Inverdruie and Coylumbridge

Inverdruie and Coylumbridge (Figure 41) lie on the edge of Aviemore leading to the popular tourist attractions at Glenmore and Cairngorm Mountain. Inverdruie has a number of visitor attractions and services. They are jointly identified as Rural Settlements in the Partnership Plan. There are historic records of flooding from the River Druie, including the 1829 flood event when buildings were swept away by flood waters.

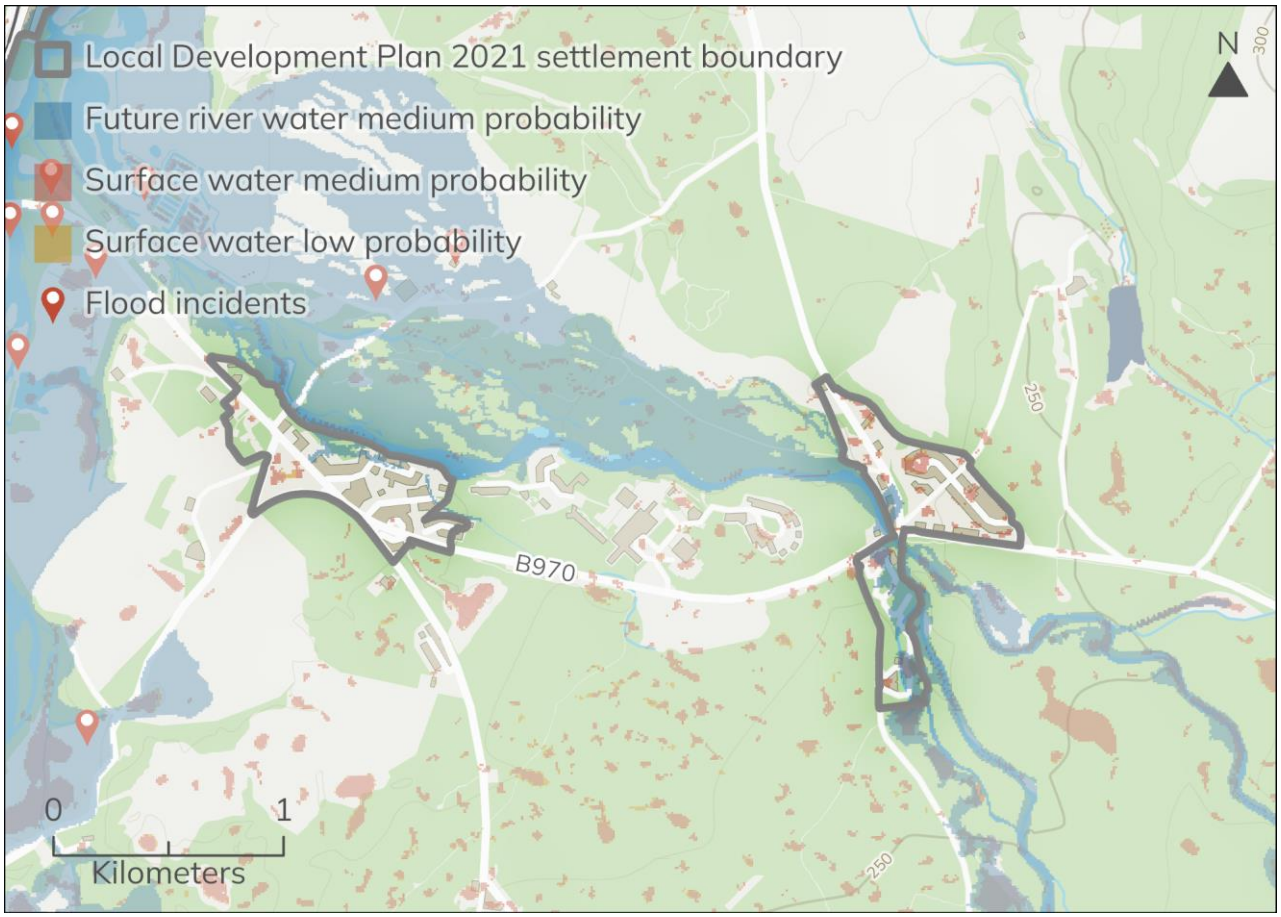


Figure 41 Future river and current surface water flood extents and historic flood incidents in and around Inverdruie and Coylumbridge.

Laggan

Laggan (Figure 42) is a small, dispersed community in the west of the National Park. It is a popular area for visitors, particularly for mountain biking and enjoying the surrounding countryside. There are no defined settlement boundaries or development allocations in the current Local Development Plan, development and therefore future development is likely to be of a small-scale, organic nature designed to meet local need. It's identified as a Rural Settlement in the Partnership Plan.

Recent historic flooding includes incidents at Coul and Blargie Farms when on 19 September 2018 the Spey Dam overtopped, with similar events at the same locations in December 2019 and March 2021.

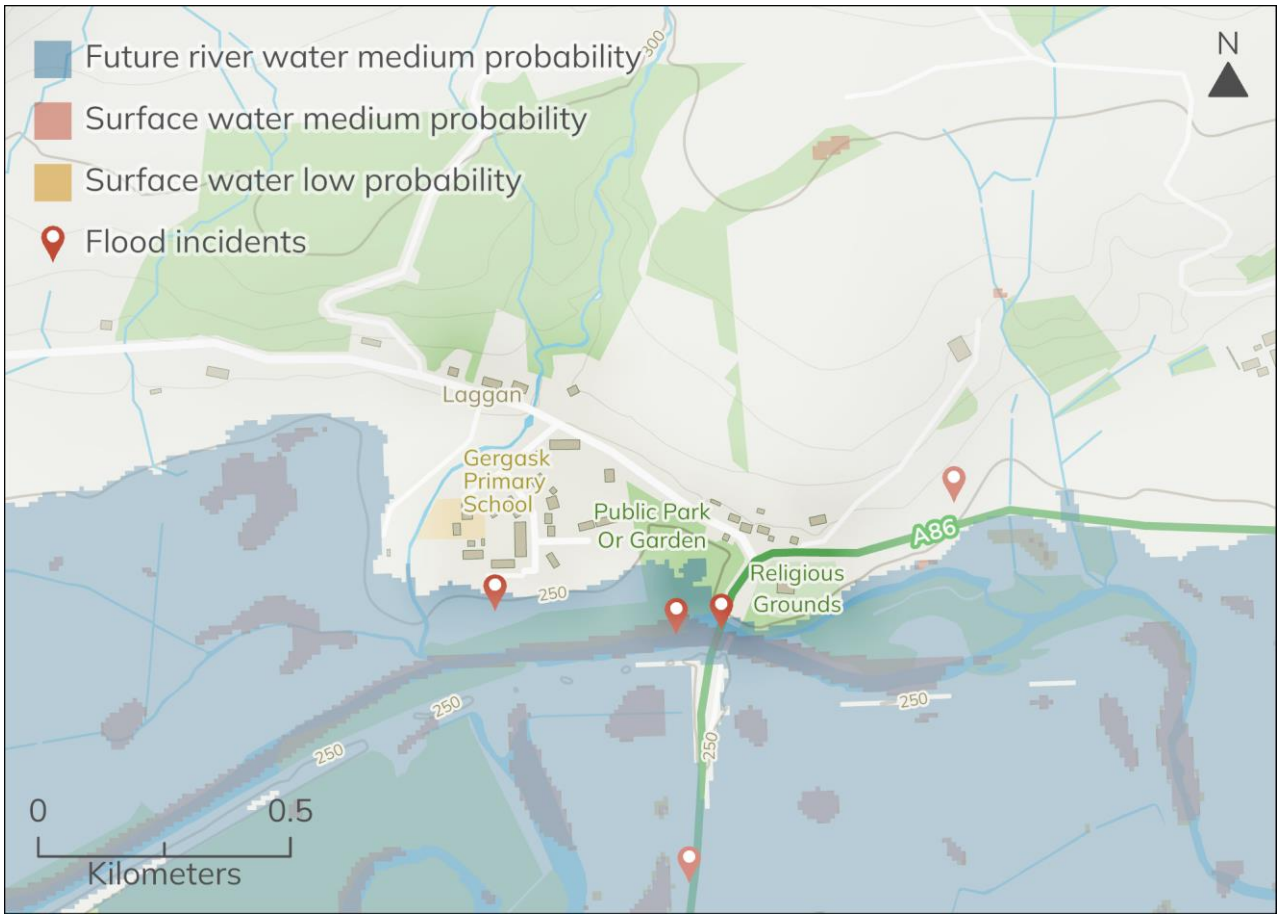


Figure 42 Future river and current surface water flood extents and historic flood incidents in and around Laggan.

A detailed hydrological and modelling study of the ~15km reach of the River Spey between Spey Dam and the River Truim has been carried out on behalf of the Spey Catchment Initiative. The study identified five key restoration options / interventions. A simple options appraisal was also undertaken to identify if certain options provided more benefits than others. These are:

- Option 1 – Floodplain Scrape at Eilean Dubh
- Option 2 – Reconnection of Former Meander at Sean Amar
- Option 3 – Reconnection with Floodplain to West of Gergask
- Option 4 – Reconnection with Floodplain south of Balgowan War Memorial
- Option 5 – Large-scale Restoration at Cluny Estate

The results suggested that Options 2 and 5 would provide the most benefit considering the work entailed.

River Dee catchment area

The River Dee 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 (Figure 43). 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.

Figure 43 River Dee catchment area within the Cairngorms National Park and the Potentially Vulnerable Areas (PVAs) within it.

The river 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.

The Flood risk management plans and Local flood risk management plans for the North East Local Plan District set out a number actions for the District which, which includes the area within the National Park. In summary, these fall under the following themes:

- Awareness raising

- Data to support climate resilience
- Emergency plans
- Flood forecasting
- Flood warning development framework
- Future flood risk management planning
- Guidance development
- Hazard mapping updates
- Land use planning
- Maintenance
- Natural flood management mapping
- National flood risk assessment
- National Surface water mapping
- Reservoirs
- Scottish flood defence asset database
- Self help

More specific local actions to manage flood risk in target areas are detailed in the potentially vulnerable areas section of this report.

The River Dee Catchment Management Plan, which was produced by members of the Dee Catchment Partnership, was published in 2007. The management plan sets out a number of objectives for the catchment area, which extend beyond the National Park boundary. In relation to flooding and development, these are:

- Encourage and promote good environmental practice for woodland expansion and management in order to protect and enhance water quality and biodiversity.
- Manage surface water drainage sustainability, taking account of water quality, habitat and flood risk.
- Ensure existing foul and surface water drainage infrastructures are satisfactory and those serving new developments are planned sustainably.
- Manage the land so as to attenuate rates of runoff (thereby reducing the severity of floods and droughts).
- Coordinate flood alleviation schemes in the catchment. Seek to prevent new flooding problems.
- Promote environmentally sustainable engineering works to the river channel and banks in order to maintain Special Area of Conservation interests and the biodiversity of the river.
- Encourage re-creation of lost lowland wetland habitats.
- Encourage re-creation of lost upland wetland habitats.
- Reinstate the functionality of active floodplains.

- Support the restoration of degraded areas of wet and riparian woodland and encourage their expansion through planting or regeneration on appropriate sites.

The Dee Catchment Partnership's Delivery Plan 2022 – 2027 sets out the Partnership's priorities for achieving restoration in the river Dee catchment over the current 5-year period. The Delivery Plan sets out nine objectives under three themes, with associated actions:

- A. Outreach: Increase support for restoration projects.
  - A.1 Strengthen understanding of the river system, the pressures on it, and the need for projects to restore its natural processes.
  - A.2 Raise awareness among land managers of the importance of river restoration and opportunities.
  - A.3 Create opportunities for people to contribute to our knowledge of the river and get involved in project delivery.
- B. Restoration: Develop and deliver restoration projects.
  - B.1 Strengthen Partner understanding, support and involvement.
  - B.2 Target and design projects for maximum multiple benefits.
  - B.3 Deliver restoration projects and support others in doing so.
- C. Evidence: Evaluate and promote benefits of restoration projects.
  - C.1 Share knowledge with others undertaking river restoration.
  - C.2 Develop Restoration techniques.
  - C.3 Evaluate effectiveness of restoration projects.

Flood history

There is a long history of flooding within the Dee catchment area, with a notable event, known as the Great Muckle Spate, destroying several bridges in 1829. The River Dee 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 Ballater and Braemar on several occasions. Figure 44 provides an overview of flood incidents recorded by Aberdeenshire Council. Further information is provided at a settlement level, including more detailed information derived from the Ballater flood protection study.

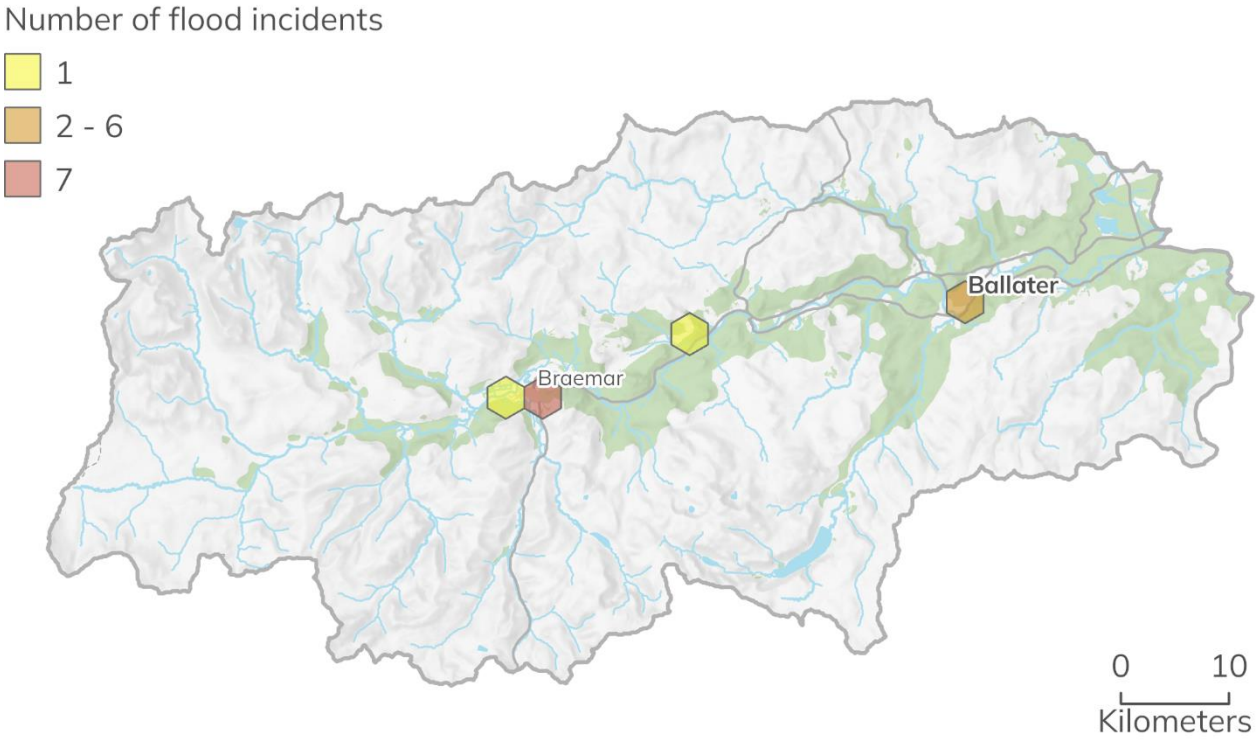


Figure 44 Records of flood incidents in the River Dee catchment area within the Cairngorms National Park.

Natural flood management

Natural flood management 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.

A baseline natural flood management assessment was undertaken as part of the Ballater Flood Protection Study to identify opportunities for the restoration or enhancement of natural processes that might benefit flood risk. It identified a number of measures as potentially being suitable for the catchments influencing Ballater, and consequently other settlements within the locality, which are:

- Non-floodplain wetland enhancement
- Drainage modification
- Land use management techniques
- Catchment woodlands
- Instream structures
- Floodplain woodlands

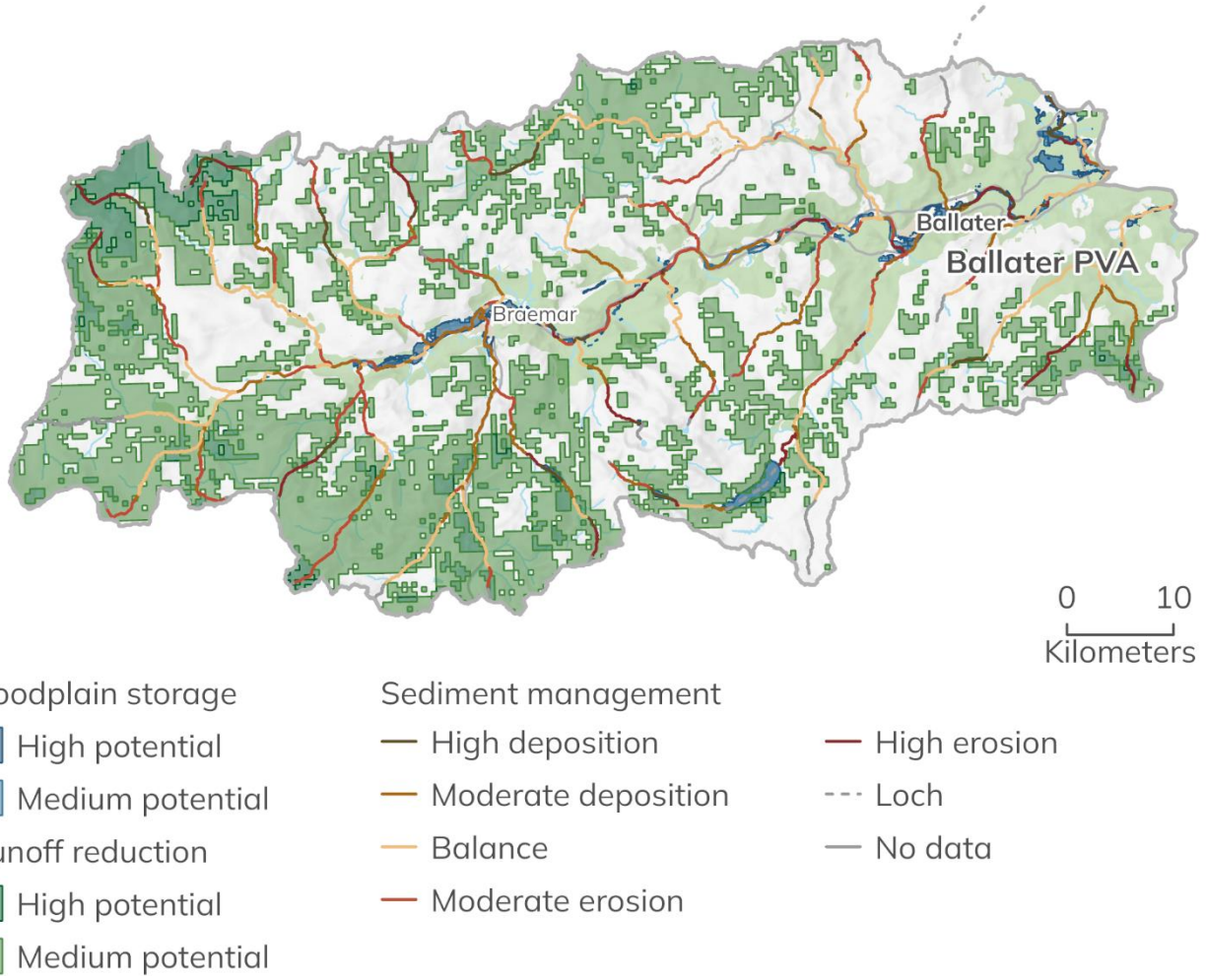


Figure 45 Opportunity areas for natural flood management within the River Dee catchment area within the Cairngorms National Park.

These options are explored in detail in the Ballater Flood Protection Study: Feasibility Report, see pages 71 – 86:

- http://ballater-fps.com/wp-content/uploads/2019/03/IBE1358-Ballater-Feasibility-Report-D03.pdf

The main output of this section of the feasibility study is a map of potential natural flood management opportunities identified within the catchment:

- http://ballater-fps.com/wp-content/uploads/2019/03/IBE1358-Ballater-Feasibility-Report_AppendixH.pdf

The Dee District Salmon Fishery Board and River Dee Trust have carried out a number of projects within the catchment that align with their objective to promote the use of natural flood management techniques at appropriate locations (Figure 46). These schemes include measures such as river channel restoration and riparian woodland creation.

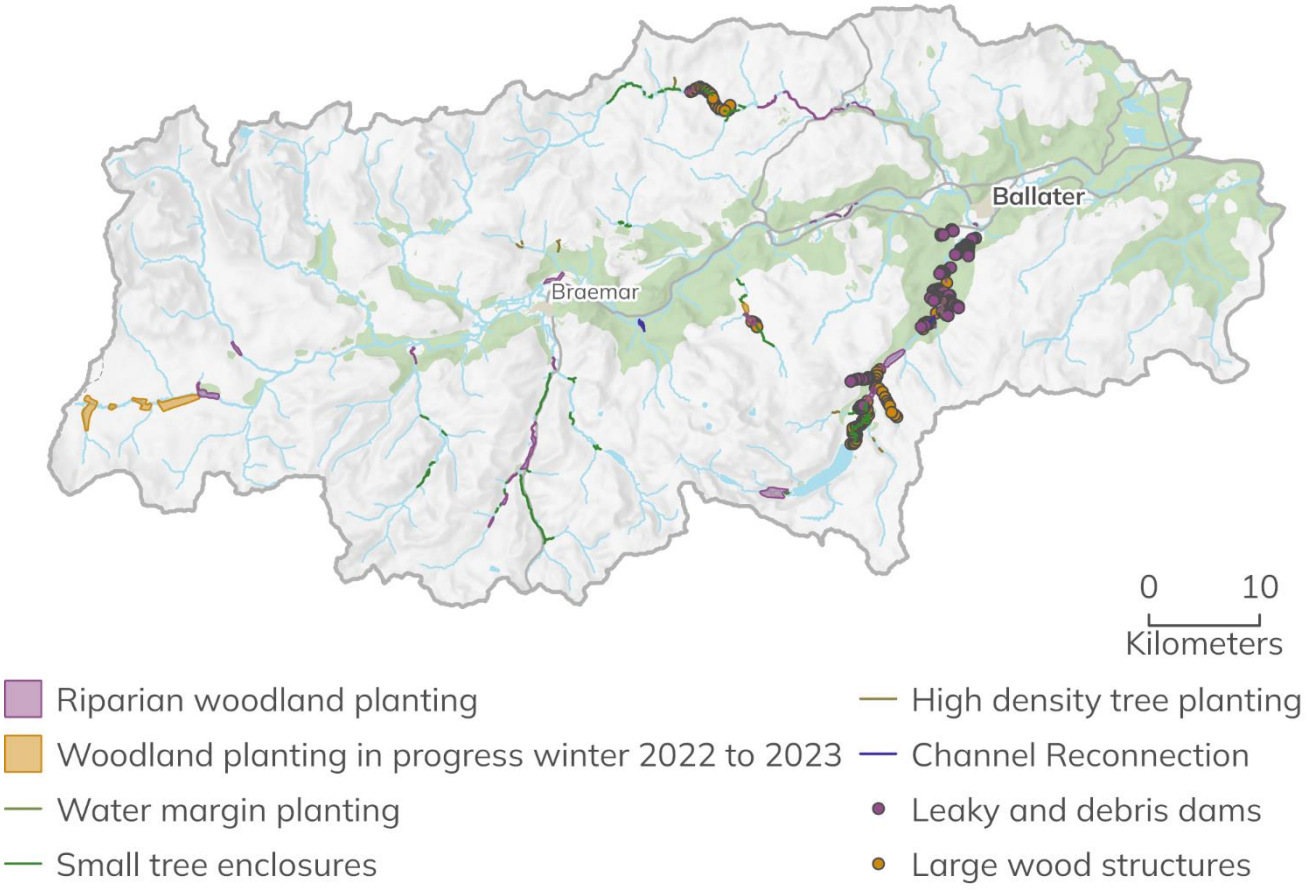


Figure 46 Projects which include natural flood management measures undertaken by the Dee District Salmon Fishery Board and River Dee Trust within the Cairngorms National Park.

It can therefore be concluded that there are broad opportunity areas for natural flood management within the River Dee catchment. Further work will be required to examine in greater detail the deliverability of these natural flood management measures, with the Partnership Plan supporting such measures through its objectives to expand woodland,

restore peatland, restore freshwater systems, establish ecological networks and improve ecosystem functionality and resilience.

Reservoir inundation

There are no reservoirs listed on the Controlled Reservoirs Register within the Dee catchment area and there is therefore no inundation mapping covering the area.

Ballater Potentially Vulnerable Area

Ballater is the largest settlement in the Aberdeenshire area of the National Park, playing a strategic role in this part of Upper Deeside. The town is characterised by its built heritage and strong royal connections. It is also a key service centre providing for the surrounding rural communities and visitors to the area. It's identified as a Strategic Settlement in the Partnership Plan.

Ballater is located within the only potentially vulnerable area within the River Dee catchment area that falls within the Cairngorms National Park boundary namely, namely Ballater (PVA 02/06/20). This area is designated as a potentially vulnerable area due to flood risk from the River Dee (Figure 47) and surface water flooding (Figure 48) to the village.

There are approximately 670 people and 370 homes and businesses currently at risk from flooding within the Potentially Vulnerable Area. This is estimated to increase to 1,300 people and 720 homes and businesses by the 2080s due to climate change.

As set out within the Flood Risk Management Plan for the North East Local Plan District, the objectives for the Potentially Vulnerable Area are:

- Avoid inappropriate development that increases flood risk in Ballater.
- Prepare for current flood risk and/or future flooding in Ballater as a result of climate change.
- Reduce the risk of flooding from the River Dee in Ballater.

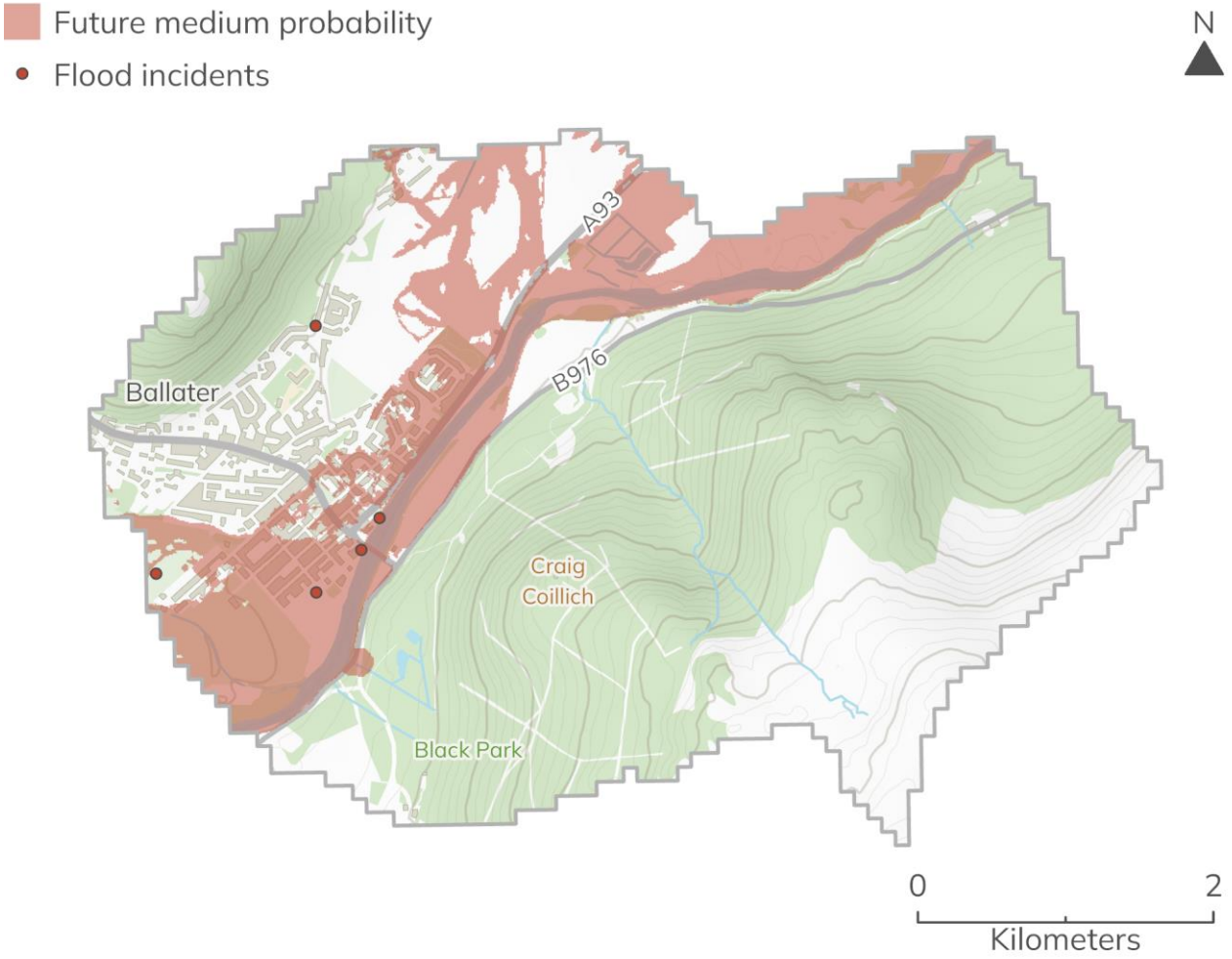


Figure 47 Future river flood extent and historic flood incidents within Ballater Potentially Vulnerable Area.

There is a long history of occasional flooding recorded in the Ballater area. As part of the Ballater flood protection study, a review of historic flood records related to fluvial flooding in the Ballater area was carried out. Sources of information on events include internet searches, community magazines, consideration of the hydrometric data and a review of the Chronology of British Hydrological Events. Aberdeenshire Council have provided further information for this assessment. Details of these recorded flood incidents are presented in Appendix 1.

The most recent significant flood event for which records can be found in relation to the Ballater area occurred in December 2015 (Storm Frank) when the River Dee was reported as having burst its banks causing damages to Ballater Caravan Park and local businesses. This event is the largest on record at the Dee gauging station just upstream

of Ballater at Polhollick. There is evidence that this area was also affected in August 2014 as the River Dee achieved the second highest level on record at the Polholick gauge on the Dee and the highest on record at the upper catchment gauging station at Mar Lodge and also at the Invergairn station on the Gairn, just upstream of Ballater. During this event the caravan park was evacuated and road closures put in place.

There are currently two existing informal flood defences known to exist within Ballater:

- Wall upstream of Royal Bridge
- Embankment at Ballater Golf Course

The wall is located on the left bank of the River Dee immediately upstream of the Royal Bridge. The Ballater flood protection study does not consider that it provides a standard of protection as the peak water level remains in-channel at this location during a 20% annual exceedance probability event, with the properties behind the wall flooding during a 10% annual exceedance probability event (due to the wall being bypassed by an upstream flooding mechanism).

The embankment at Ballater Golf Course was constructed in the 1990's to protect the golf course from flooding from the River Dee. It was breached during the 2015 flood event and in 2016 sections of the flood bank were reconstructed using material bulldozed from the golf course to create a non-engineered flood defence bank. Aberdeenshire Council have also completed the reinstatement of a 40m long section of the flood bank. The Ballater flood protection study predicts that the embankment will be overtopped from approximately a 10% annual exceedance probability event.

Following the 2015 flood event, Ballater and Crathie Community Council have established a sub-committee to consider flooding issues, known as the Flooding Issues Group. The objectives and functions of the group are to assist the Community Council to:

- Proactively identify and assess issues regarding flooding of the local community.
- Assist the community council in obtaining the broadest possible consensus in the local community as to the level of protection from flooding that is realistic, obtainable and desirable.
- Taking into account views expressed by the public and any other relevant evidence, co-ordinate and communicate such actions as it considers to be suitable and supported by the local community and to convey its finding and conclusions to the relevant authority for consideration.
- Promote the well-being and safety of the community resident within the Community Council boundaries ("the Community Council Area").

The Flooding Issues Group have compiled detailed information within two reports on causes, mechanisms, uncertainties and social and economic damage of the 2015 flooding. Further work is programmed to produce a third report on flood protection actions taken in the locality and future proposals for management. It's planned that flood protection recommendations be developed after finalising all three reports.

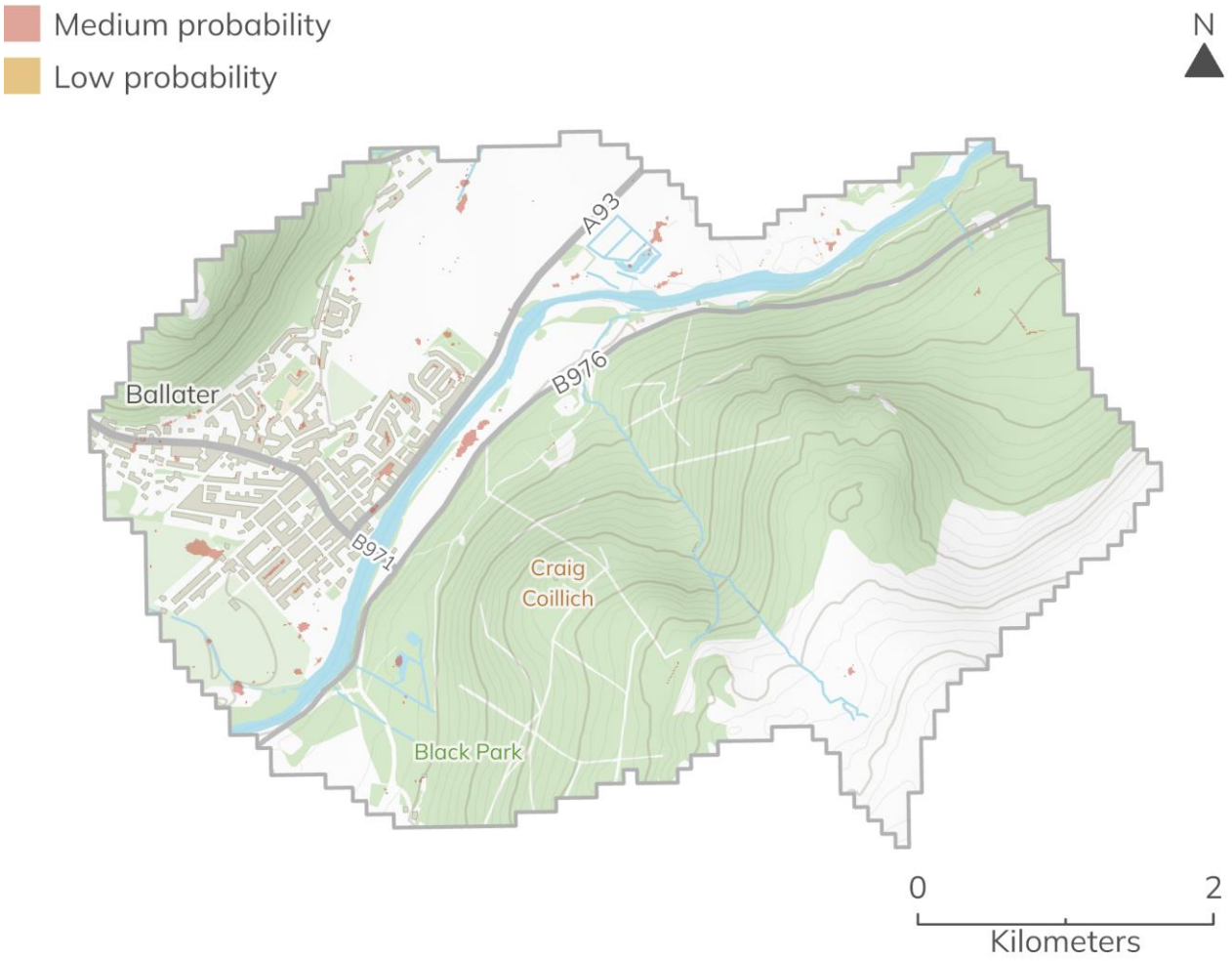


Figure 48 Surface water flood extents within Ballater Potentially Vulnerable Area.

In December 2022 Aberdeenshire Council published its Local Flood Risk Management Plan 2022 – 2028 for the North East Local Plan District on behalf of a partnership comprising three local authorities: Aberdeenshire Council, Aberdeen City Council and The Moray Council, together with the following Responsible Authorities: Scottish Water; Scottish Environment Protection Agency; Forestry Scotland; and the Cairngorms

National Park Authority. This plan replaces the flood risk management plan for Cycle 1, published in 2016.

The Local Plan contains actions to design and deliver a flood protection scheme for Ballater, based on the preferred option identified in the Ballater Flood Protection Study. The study's feasibility report identifies a number of viable options for managing flood risk. These are:

- Do Minimum - Baseline assessment (maintain existing regime)
- Option 1 - Direct defences (traditional only), relocation.
- Option 2 - Direct defences (traditional & self-closing flood barriers), relocation.
- Option 3 - Direct defences (traditional & glass walls), relocation.
- Option 1A - Direct defences (traditional only), Relocation, property level protection, resilience.
- Option 2A- Direct defences (traditional & self-closing flood barriers), relocation, property level protection, resilience.
- Option 3A- Direct defences (traditional & glass walls), relocation, property level protection, resilience.
- Option 1B- Direct defences (traditional only), storage, relocation, property level protection, resilience.

The study recommends Option 3A as the preferred option as it protects properties in Ballater to a 0.5% annual exceedance probability standard of protection and delivers other benefits other than reduced flood risk to receptors such as retained amenity value. It should be noted that further development of the preferred option will be required prior to commencing with the detailed design.

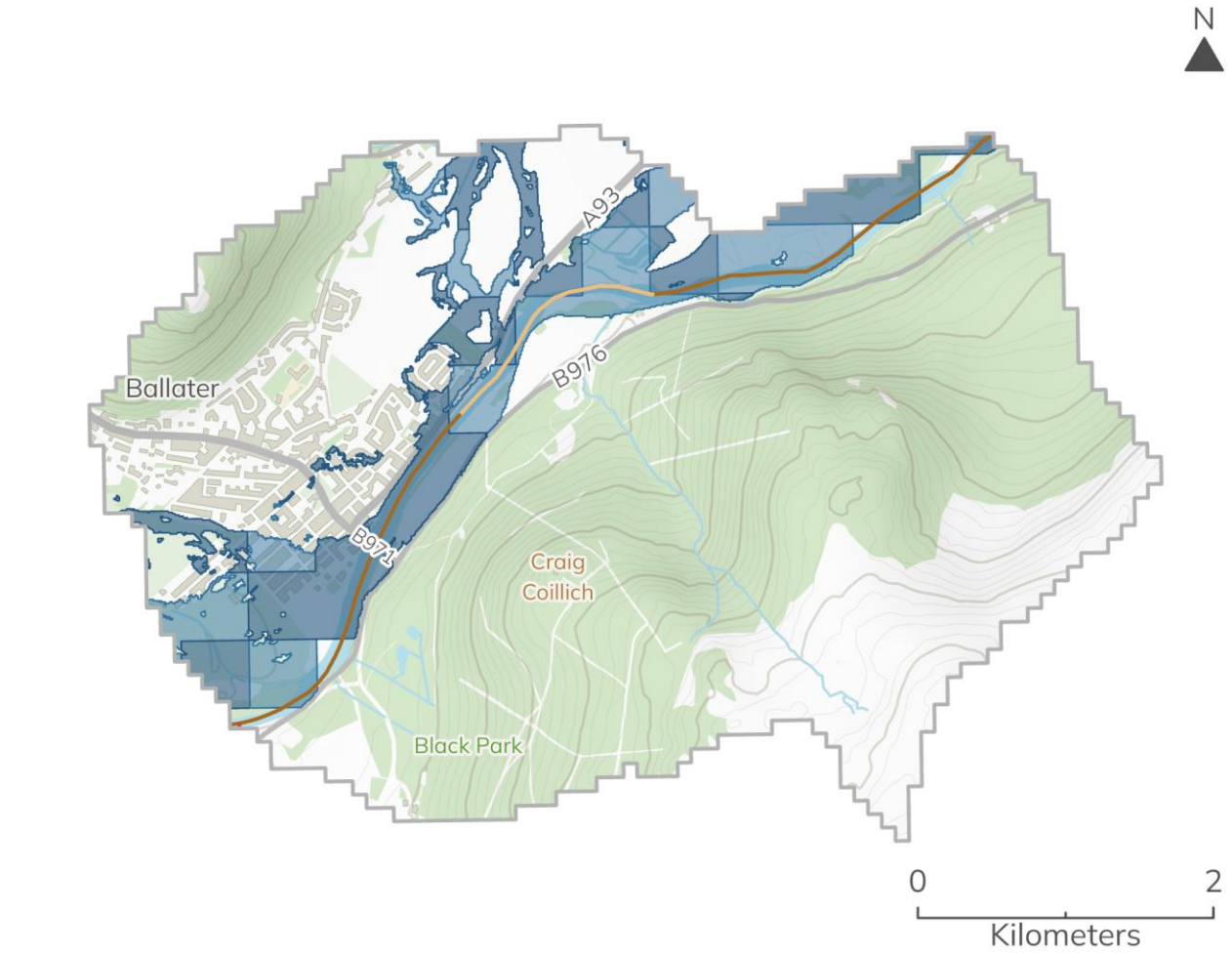
The Local Plan directs Aberdeenshire Council to work closely with Cairngorms National Park Authority to identify any planning constraints and opportunities associated with the options. Engagement will continue with the local community (including the Community Council's Flood Issues Group), with particular focus on the detailed design of the flood scheme in order to balance the requirements for flood management with wider social, economic and environmental considerations. Following the recommendation of the flood protection study, Option 3A is the Council's preferred option. The Community Council currently opposes this option and is seeking alternatives.

Work has also been carried out to assess the feasibility of several minor works options suggested by members of the local community:

- Option 1 - Removal of dead trees from river channel and reuse in bank reinforcement.
- Option 2 - Clearance of deposited gravel from main river channel on Glenmuick side.
- Option 3 - Clearance of outlet channel for watercourse across Golf Course.
- Option 4 - Build new bund across rough ground at southern end of Golf Course.
- Option 5 - Combined options 1, 3 and 4.
- Option 6 - Reinstatement of a bund on the left bank of the River Dee to the north of the Golf Course (north bund).
- Option 7 - Deepening of the Golf Course outlet channel in conjunction with the construction of a bund on the left bank of the same channel (south bund).

Based on hydraulic modelling it was determined that only options 3 and 7 would provide a positive option for managing flood risk to Ballater at this time, with option 7 potentially able to reduce the number of flooded properties from 399 to 249 in a 3.33% annual exceedance probability event. Further engagement is required before the implementation of any minor works take place.

Further Local Plan actions are for Aberdeenshire Council to support the Community Council's Flood Issues Group in promoting actions in their Community Resilience Plan and for Scottish Environment Protection Agency to maintain the River Dee flood warning scheme. To this end, the Council along with the Flooding Issues Group have done various local improvements and events on property level protection and in 2023 installed a small ‘temporary flood barrier’. The Council have also offered residents their Hesco Boxes (which are already stored in Ballater) and can be installed under permitted development rights.



Floodplain storage
- High potential
- Medium potential

Runoff reduction
- High potential
- Medium potential

Sediment management
- High deposition
- Moderate deposition
- Balance
- Moderate erosion
- High erosion
- Loch
- No data

Figure 49 Opportunity areas for natural flood management within Ballater Potentially Vulnerable Area.

Figure 50 Future river and current surface water flood extents and historic flood incidents in and around Ballater.

The Community Council's Flooding Issues Group's work has fed into the preparation of the Ballater and Crathie Community Action Plan (2023), which contains a number of goals relating to flooding:

- Medium-term higher-level flood prevention works - consult with stakeholders on all practical alternatives and develop a plan for funding and implementation,
- Long-term higher-level flood prevention works - promote upstream initiatives for water management in the Dee catchment area,
- Improve property level protection - promote property level protection enhance actions and processes relating to Scottish Environment Protection Agency flood warnings, including the use of a watch list,
- Oppose Option 3A - press Aberdeenshire Council's Marr Area Committee to actively withdraw Option 3A,
- Short-term low-level flood prevention works - use the final Ballater additional flood study report to deliver practical actions,
- Preservation of life - develop existing response plan and develop links with Scottish Environment Protection Agency.

A sewer flood risk assessment and Section 16 mapping have also been carried out by Scottish Water and while they cannot be shared publicly, may be used by the Park Authority to help inform the strategic flood risk assessment.

Other settlements

Other settlements within the Dee catchment area are not located within potentially Vulnerable Areas and therefore have no specific actions within the North East Local Flood Risk Management Plan 2022 – 2028. However, a spatial analysis of the flood risk within these settlements can still be carried out, the information for which is presented in a map of each settlement.

Braemar

Braemar (Figure 51) is a small village located at the western end of Upper Deeside. The village itself is characterised by its historic architecture and strong royal connections, making it an attractive destination for visitors. The village is also benefiting from significant investment as a result of the new Heritage Centre and the extensive redevelopment of the Fife Arms Hotel. It's identified as an Intermediate Settlement in the Partnership Plan.

There is a history of occasional flooding recorded in the Braemar area, including severe flooding from the River Dee in December 2015, when the service station and several buildings were inundated. Residential properties have also been affected by flooding, including 14 private and council owned properties in January 2016.

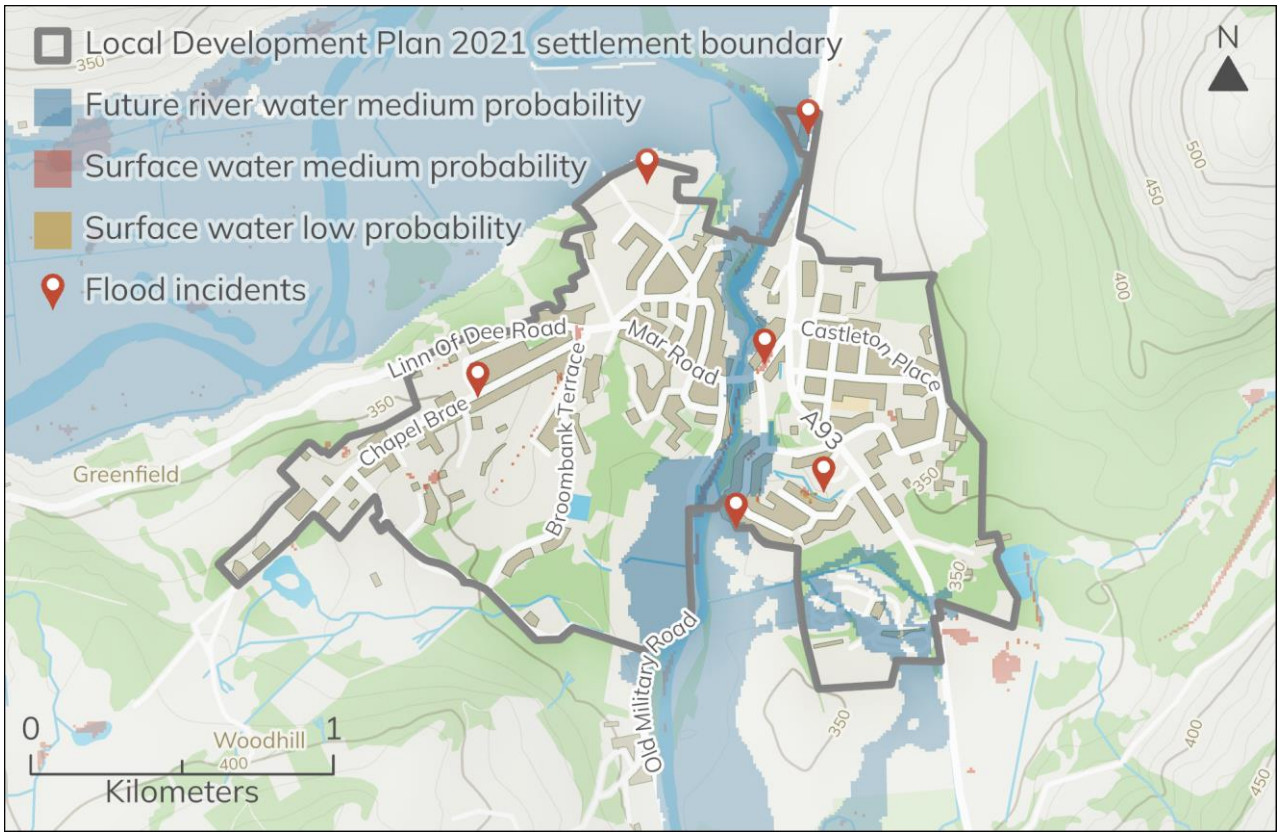


Figure 51 Future river and current surface water flood extents and historic flood incidents in and around Braemar.

Dinnet

Dinnet (Figure 52) is a small historic settlement in Deeside which forms an eastern gateway to the National Park. The village has a hotel and garage. It's identified as a Rural Settlement in the Partnership Plan.

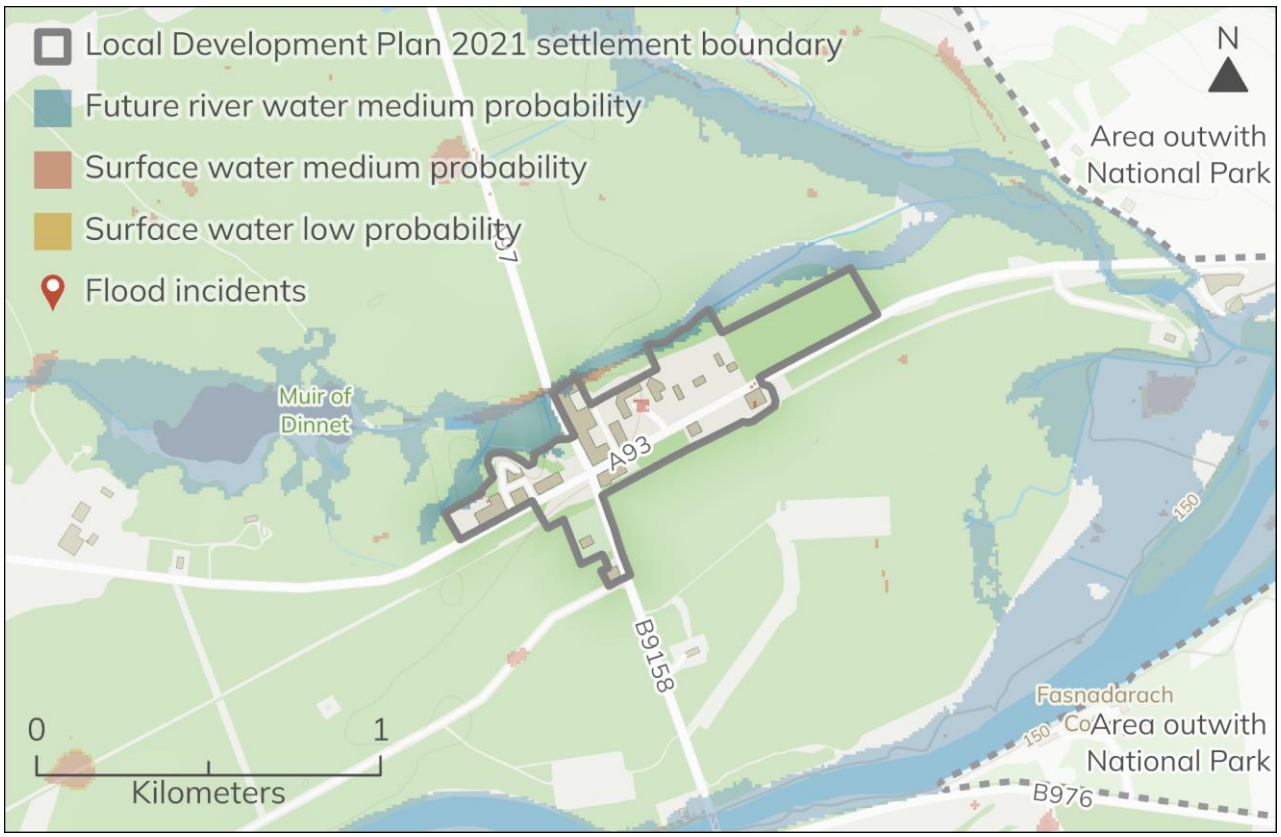


Figure 52 Future river and current surface water flood extents and historic flood incidents in and around Dinnet.

River Don catchment area

Rising in the 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^2 (Figure 53).

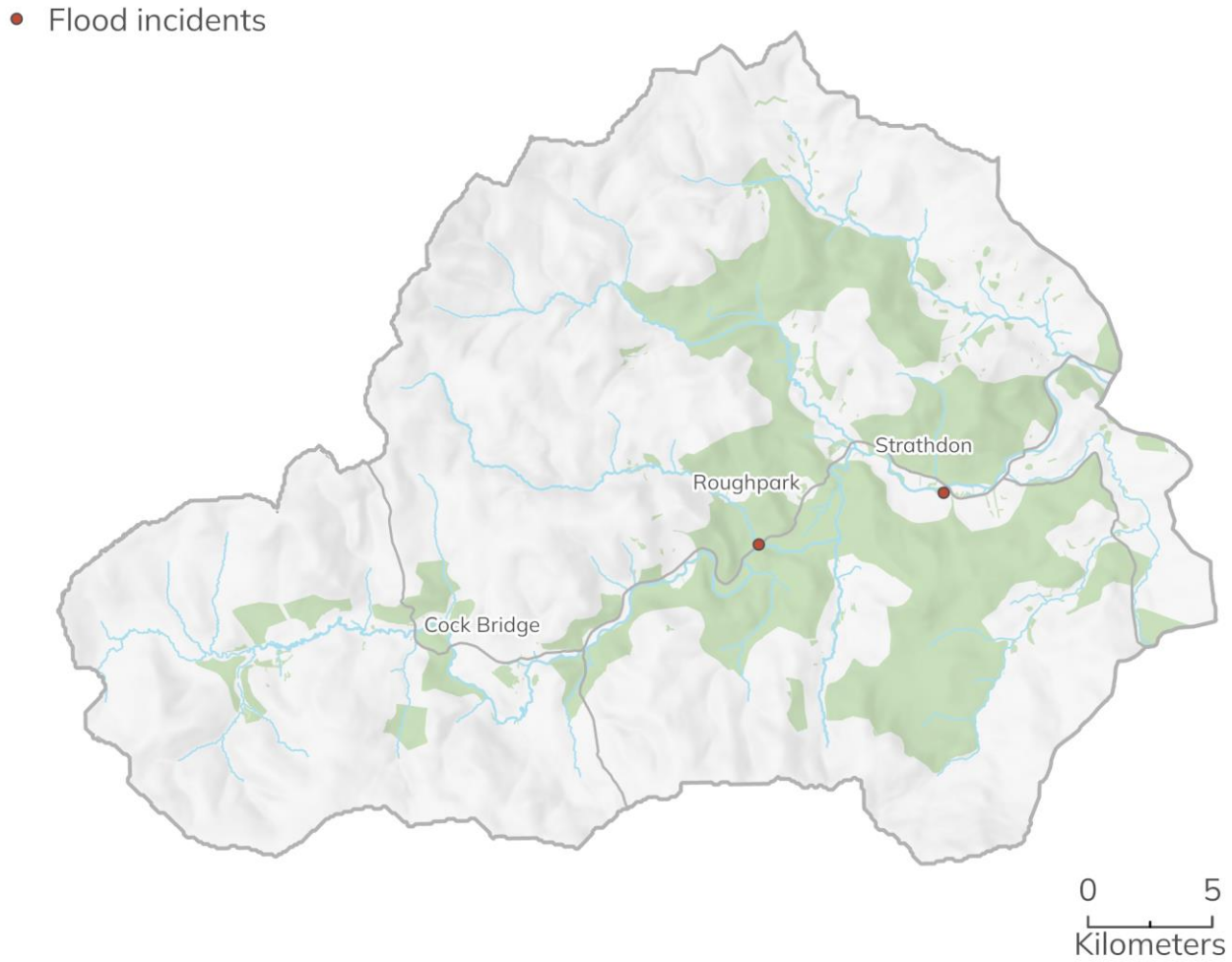


Figure 53 River Don catchment area within the Cairngorms National Park displaying flood incidents recorded by Aberdeenshire Council.

The Flood risk management plans and Local flood risk management plans for the North East Local Plan District set out a number actions for the District which, which includes the area within the National Park. These have been set out under the section on the section on the River Dee catchment area (see page 71).

Flood history

Scottish Environment Protection Agency record that 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. Recent river flood events recorded by Aberdeenshire Council include flooding around buildings at Waterside from seepage through a raised bank along the River Don (Figure 53).

Natural flood management

Natural flood management 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. This assessment identifies a number of broad opportunity areas for natural flood management within the River Don catchment (Figure 54). Further work will be required to examine in greater detail the case for natural flood management measures within the area, with the Park Partnership Plan supporting such measures through its objectives to expand woodland, restore peatland, restore freshwater systems, establish ecological networks and improve ecosystem functionality and resilience.

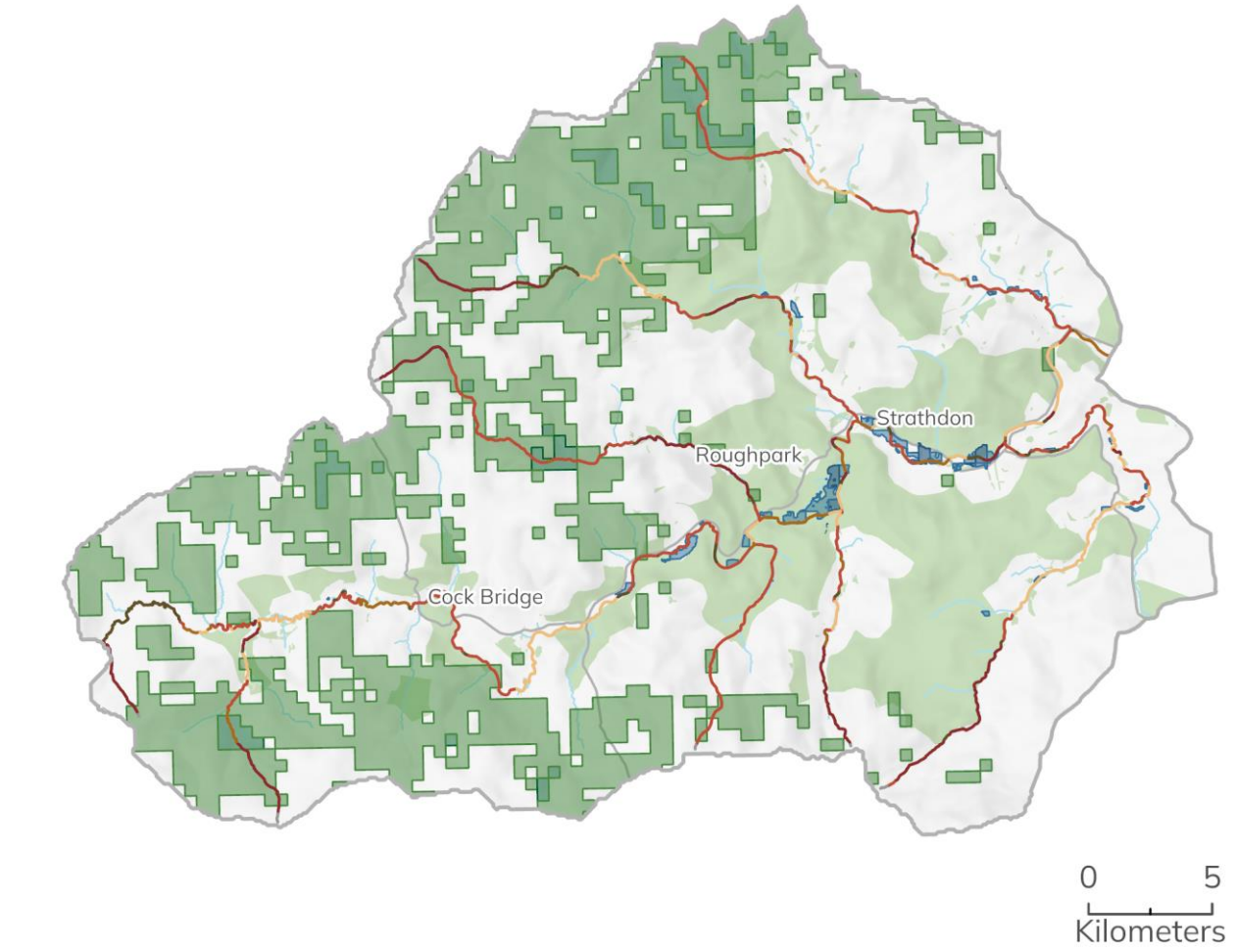


Figure 54 Opportunity areas for natural flood management within the River Don catchment area within the Cairngorms National Park.

Reservoir inundation

There is only one reservoir on the Controlled Reservoirs Register within the Don catchment in the National Park. Pronie Loch (National grid reference NJ 41998 08461) has a maximum cubic capacity at top water level of 75,000 m^3 and has a high risk

designation. A detailed spatial analysis of this risk has not however been carried out at this stage and the purpose of the information is simply to help identify what considerations might need to be taken into account at the Proposed Plan stage.

Strathdon

Strathdon (Figure 55) is the only settlement in the area identified in the current Local Development Plan. The village lies in upper Donside in the east of the National Park. The economy is largely based on agriculture and land management with a growing tourism sector.

There are no defined settlement boundaries or development allocations in the current Local Development Plan, development and therefore future development is likely to be of a small-scale, organic nature designed to meet local need. It's identified as a Rural Settlement in the Partnership Plan.

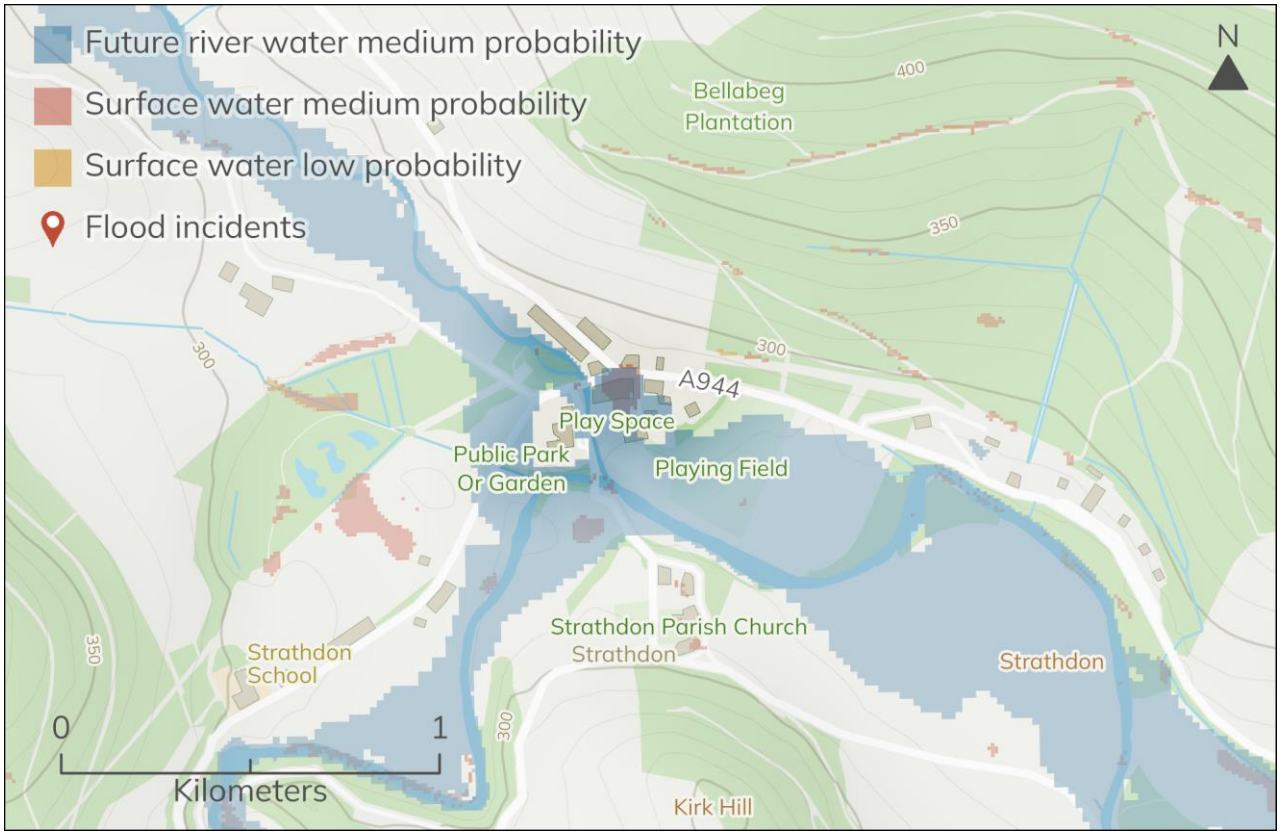


Figure 55 Future river and current surface water flood extents and historic flood incidents in and around Strathdon.

River Tay catchment area

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 56). More water flows through the River Tay than any other river in the United Kingdom.

The River Tay catchment contains one Potentially Vulnerable Area that falls within or across the Cairngorms National Park boundary, namely Blair Atholl (PVA 02/08/01).

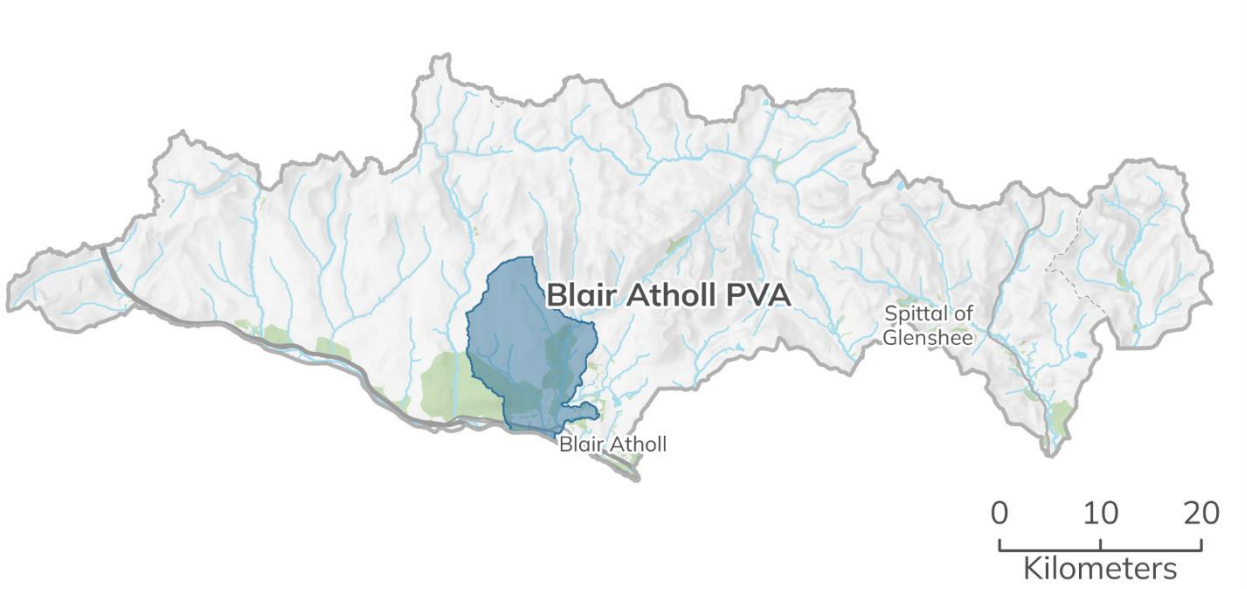


Figure 56 River Tay catchment area within the Cairngorms National Park and the Potentially Vulnerable Areas (PVAs) within it.

The Flood risk management plans and Local flood risk management plans for the North East Local Plan District set out a number actions for the District which, which includes the area within the National Park. In summary, these fall under the following themes:

- Awareness raising
- Data to support climate resilience
- Emergency plans
- Flood forecasting
- Flood warning development framework
- Future flood risk management planning
- Guidance development
- Hazard mapping updates
- Land use planning

- Maintenance
- Natural flood management mapping
- National flood risk assessment
- National Surface water mapping
- Reservoirs
- Scottish flood defence asset database
- Self help

More specific local actions to manage flood risk in target areas are detailed in the potentially vulnerable areas section of this report.

Flood history

Several historical river floods have been recorded in this area, including July 1916 and June 1931 when the railway was affected, and evacuation was required as River Garry flooded near Blair Atholl. There continues to be a risk of flooding at Blair Atholl from the Garry Burn and from surface water. Further information is contained within Appendix 1.

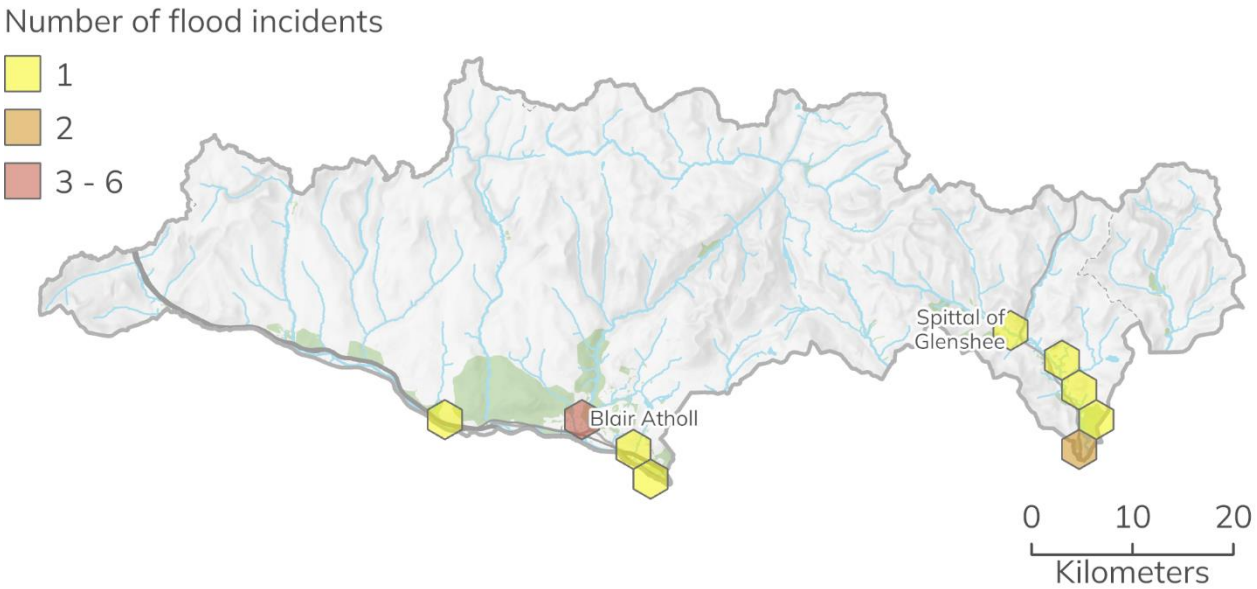


Figure 57 Records of flood incidents in the River Tay catchment area within the Cairngorms National Park.

Natural flood management

Natural flood management 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. This assessment identifies a number of broad opportunity areas for natural flood management within the River Tay catchment (Figure 58). Further work will be required to examine in greater detail the case for natural flood management measures within the area, with the Park Partnership Plan supporting such measures through its objectives to expand woodland, restore peatland, restore freshwater systems, establish ecological networks and improve ecosystem functionality and resilience.

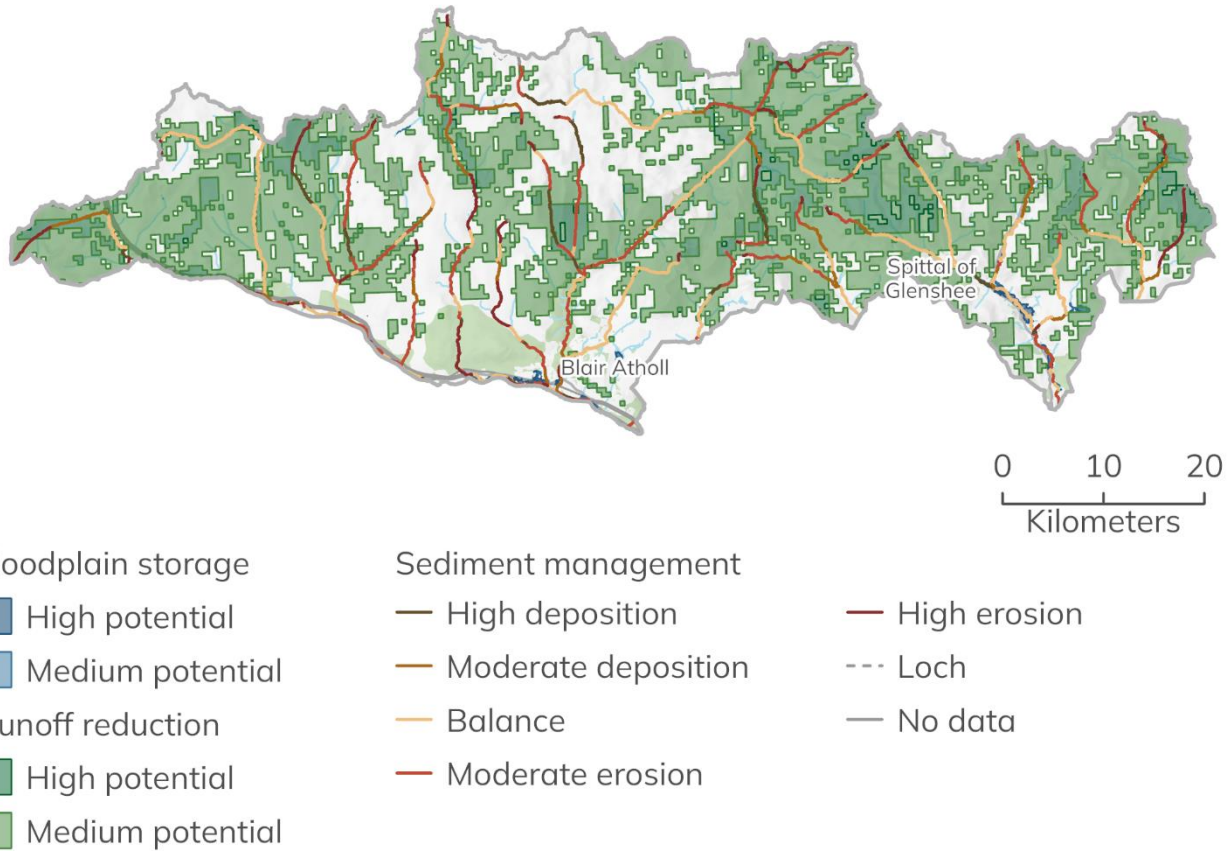


Figure 58 Opportunity areas for natural flood management within the River Tay catchment area within the Cairngorms National Park.

Reservoir inundation

Table 3 provides a summary of reservoirs on the Controlled Reservoirs Register that have the potential to inundate parts of the Tay catchment in the event of a dam breach. has not however been carried out at this stage and the purpose of the information is simply to help identify what considerations might need to be taken into account at the Proposed Plan stage.

Table 3 Reservoirs on the Controlled Reservoirs Register that have the potential to inundate parts of the Tay catchment within the National Park in the event of a dam breach. Information taken from the Controlled Reservoirs Register, January 2024.

Reservoir name	National grid reference	Risk designation	Maximum cubic capacity of reservoir at top water level (m^3)
Lochan on Bruar Water	NN 82600 76900	Medium	40,000
Loch Garry Reservoir	NN 63006 70276	High	1,880,000
Errochty Reservoir	NN 68506 65312	High	32,500,000
Loch Tummel	NN 82012 59335	High	36,400,000
Lochan on Bruar Water	NN 82600 76900	Medium	40,000
Loch Garry Reservoir	NN 63006 70276	High	1,880,000

Blair Atholl Potentially Vulnerable Area

Blair Atholl is a small village located in the south of the Cairngorms National Park. It is an attractive and historic village, home to Blair Castle and gardens, making it popular for visitors. The local economy is focused on tourism and land-based employment. It's identified as an Intermediate Settlement in the Partnership Plan.

The area is designated as a potentially vulnerable area due to flood risk to Blair Atholl. The main source of flooding is River Garry and small watercourses. There is a history of flooding in this area. Most recently, in December 2015, Storm Desmond caused the River Garry to flood, inundating 17 homes and businesses. More recently, in February 2020 the drain system at the bus shelter became blocked with dead leaves and debris, leading to back flooding into the shelter. Further surface water flooding occurred flooding between the castle entrance and the Church and on the south side of the road between the Church and Bank House

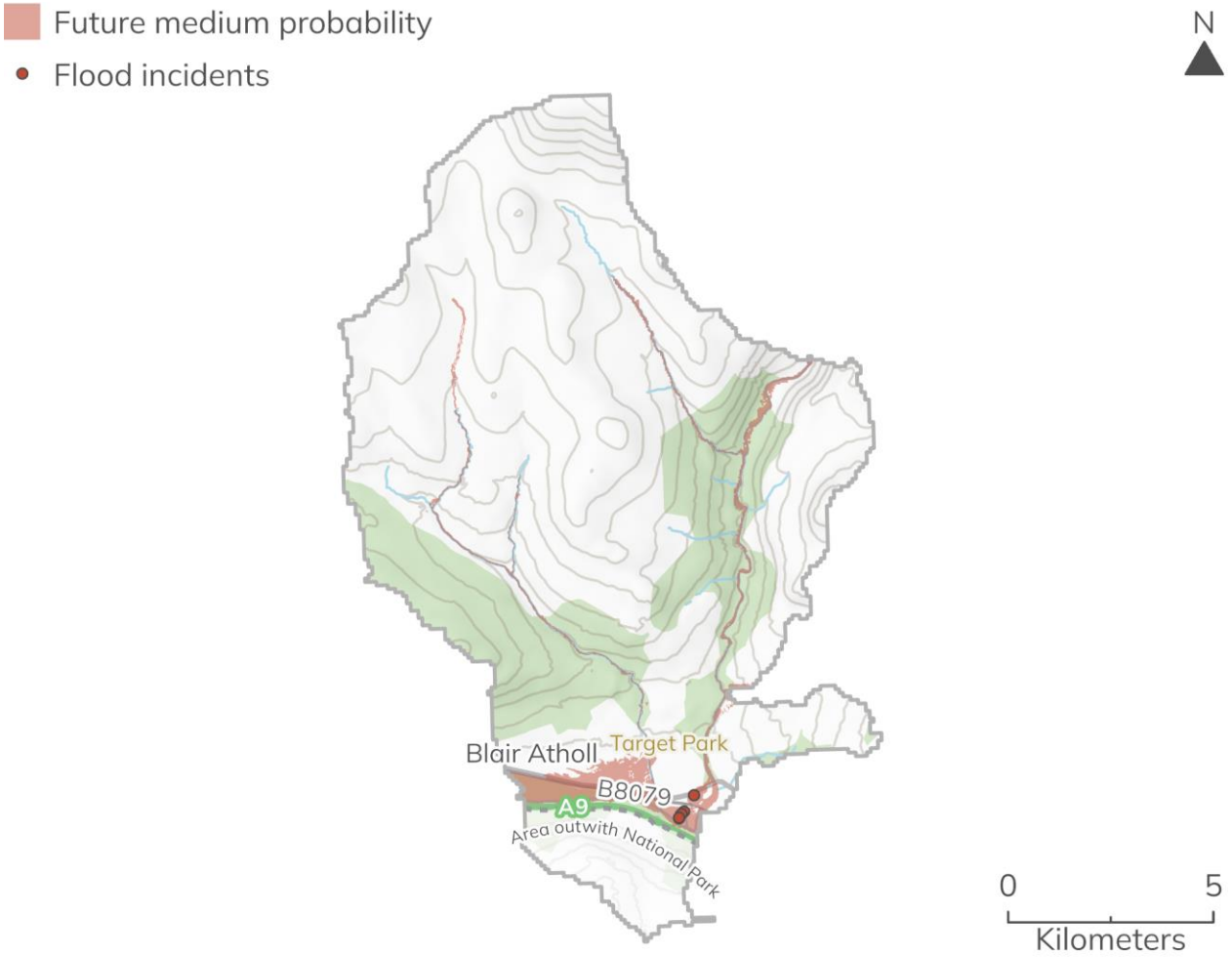


Figure 59 Future river flood extent and historic flood incidents within Blair Atholl Potentially Vulnerable Area.

There are approximately 50 people and 70 homes and businesses currently at risk from flooding. This is likely to increase to 80 people and 100 homes and businesses by the 2080s due to climate change. There are roads and railways at risk of flooding, which may cause travel disruption.

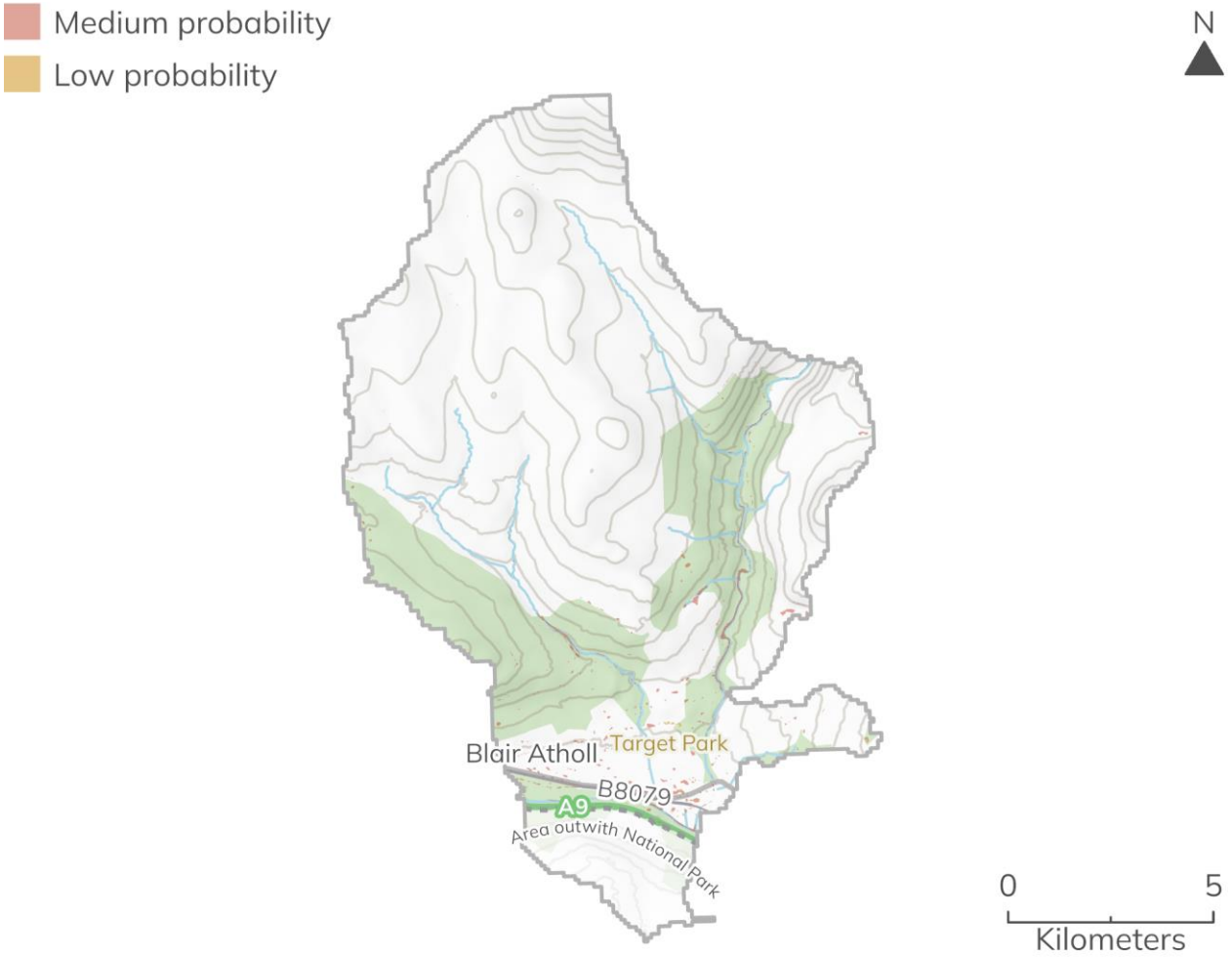
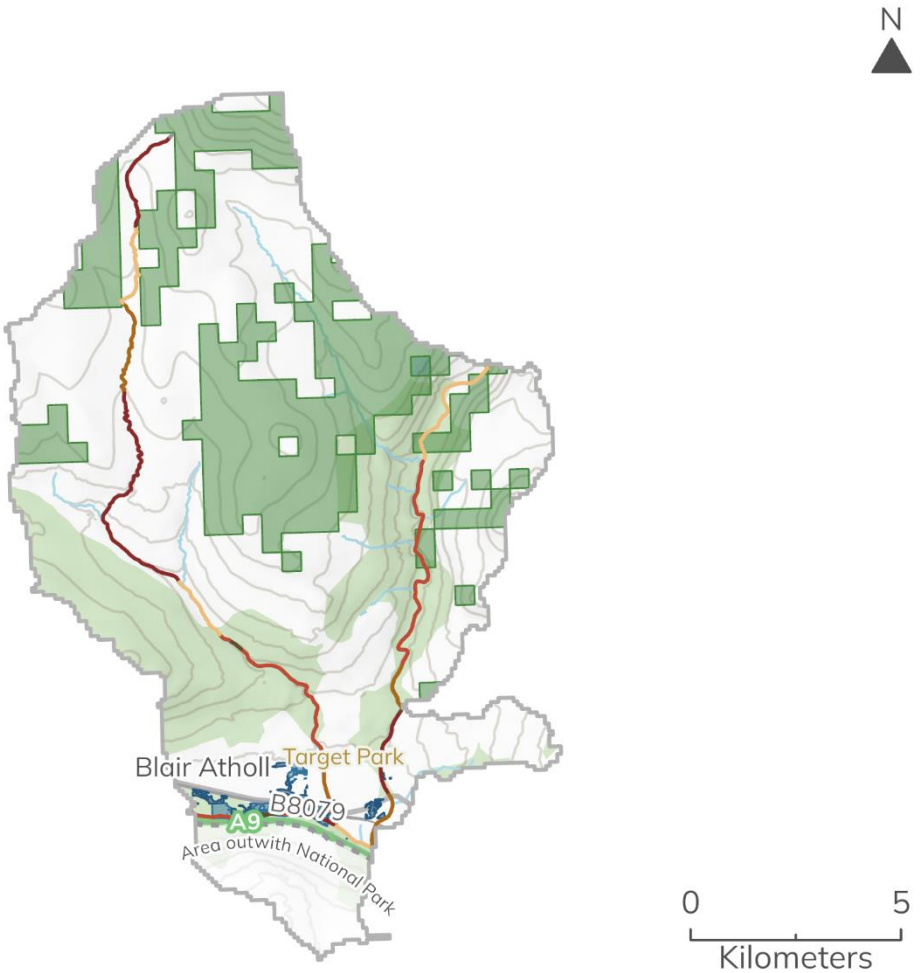


Figure 60 Surface water flood extents within Blair Atholl Potentially Vulnerable Area.

As set out within the Flood Risk Management Plan for the Tay Local Plan District, the objectives for the Potentially Vulnerable Area are:

- Avoid development that increases flood risk in Blair Atholl.
- Prepare for current flood risk and future flooding as a result of climate change in Blair Atholl.
- Reduce the risk of river flooding in Blair Atholl.



Floodplain storage
- High potential
- Medium potential

Runoff reduction
- High potential
- Medium potential

Sediment management
- High deposition
- Moderate deposition
- Balance
- Moderate erosion
- High erosion
- Loch
- No data

Figure 61 Opportunity areas for natural flood management within Blair Atholl Potentially Vulnerable Area.

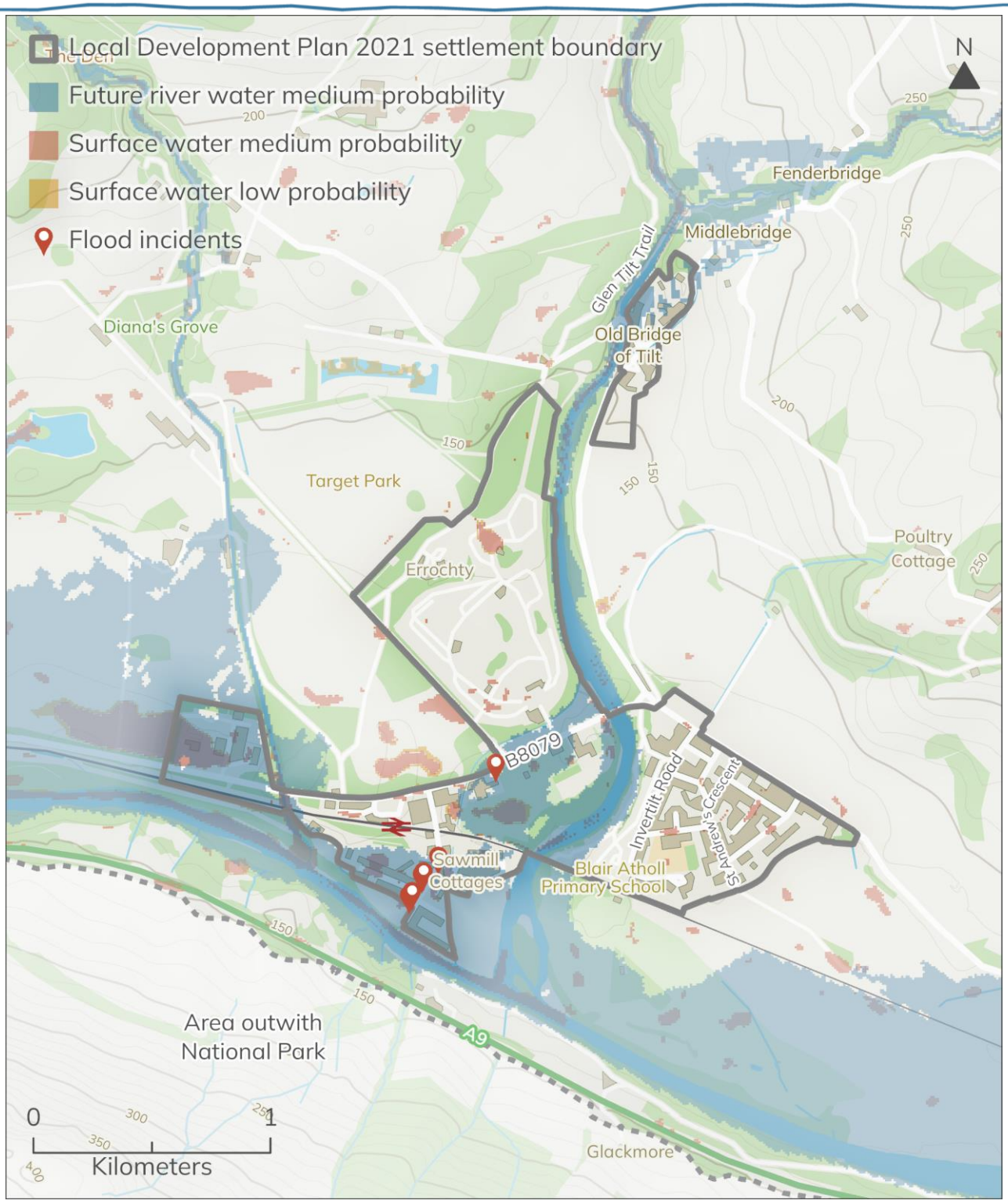


Figure 62 Future river and current surface water flood extents and historic flood incidents in and around Blair Atholl.

Other settlements

Other settlements within the Tay catchment area are not located within potentially Vulnerable Areas and therefore have no specific actions within the Tay Local Flood Risk Management Plan 2022 – 2028. However, a spatial analysis of the flood risk within these settlements can still be carried out, the information for which is presented in a map of each settlement.

Bruar and Pitagowan

Bruar and Pitagowan are small communities which lie four miles to the north of Blair Atholl. They rely on tourism and the House of Bruar to support their economy. With no defined settlement boundary, and no new development allocations, development here should be of a small-scale, organic nature designed to meet local need. It's identified as a Rural Settlement in the Partnership Plan.

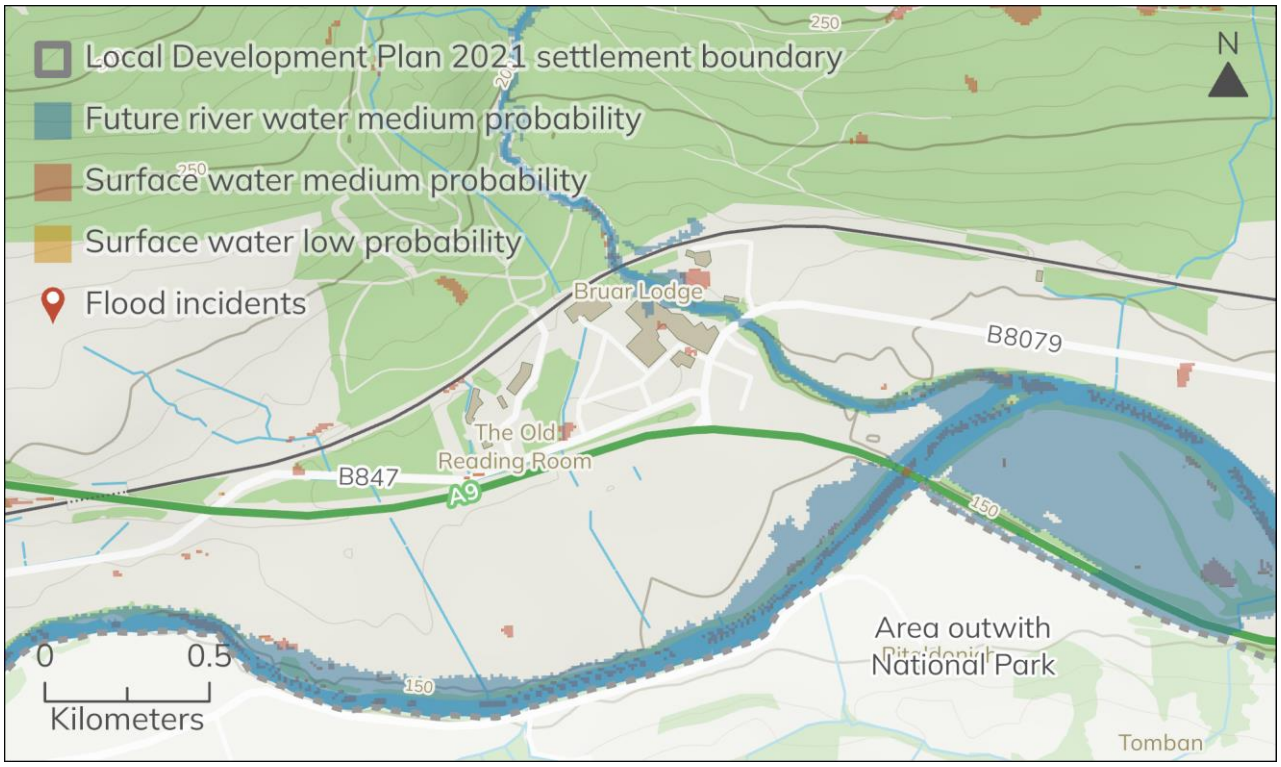


Figure 63 Future river and current surface water flood extents and historic flood incidents in and around Bruar and Pitagowan.

Calvine

Calvine lies to the north of Blair Atholl and is bound by the A9 to the north and railway to the south. It is a small community focused on tourism. With no defined settlement boundary in the 2021 Local Development Plan, development here should be of a small-scale, organic nature designed to meet local need. It's identified as a Rural Settlement in the Partnership Plan. In December 2006 Railway Cottage, which is located just outwith the National Park, was threatened from overland flow from high ground.

Figure 64 Future river and current surface water flood extents and historic flood incidents in and around Calvine.

Killiecrankie

Killiecrankie is a small village in Highland Perthshire. The local economy is focused on tourism and outdoor leisure. It's identified as a Rural Settlement in the Partnership Plan.

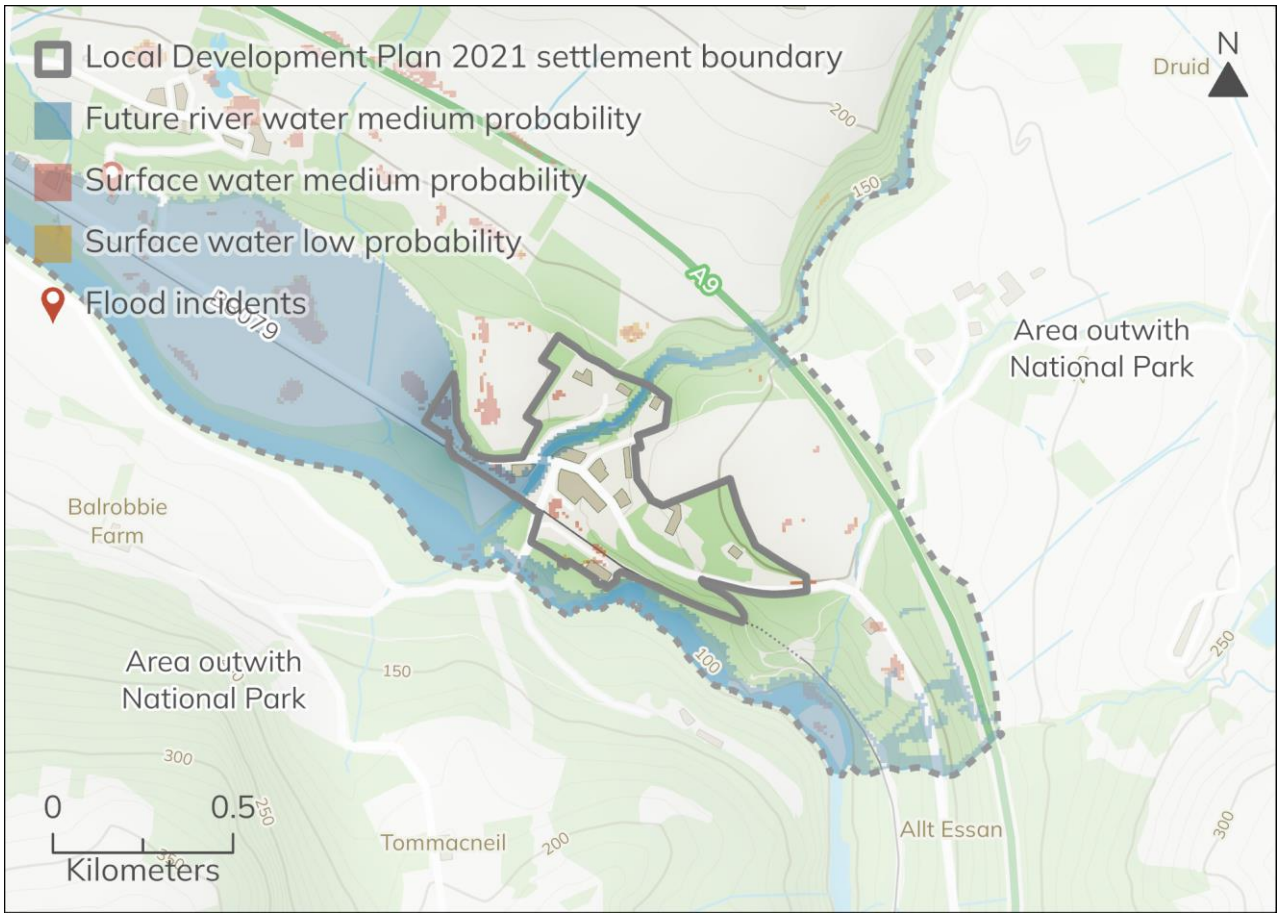


Figure 65 Future river and current surface water flood extents and historic flood incidents in and around Killiecrankie.

Spittal of Glenshee

Glenshee is a small, dispersed community in the south of the National Park and is located on the route to the ski centre at Glenshee. There are no defined settlement boundaries or development allocations in the current Local Development Plan, development and therefore future development is likely to be of a small-scale, organic nature designed to meet local need. It's identified as a Rural Settlement in the Partnership Plan. A flood incident is recorded as having affected the Spittal of Glenshee Hotel in December 2006.

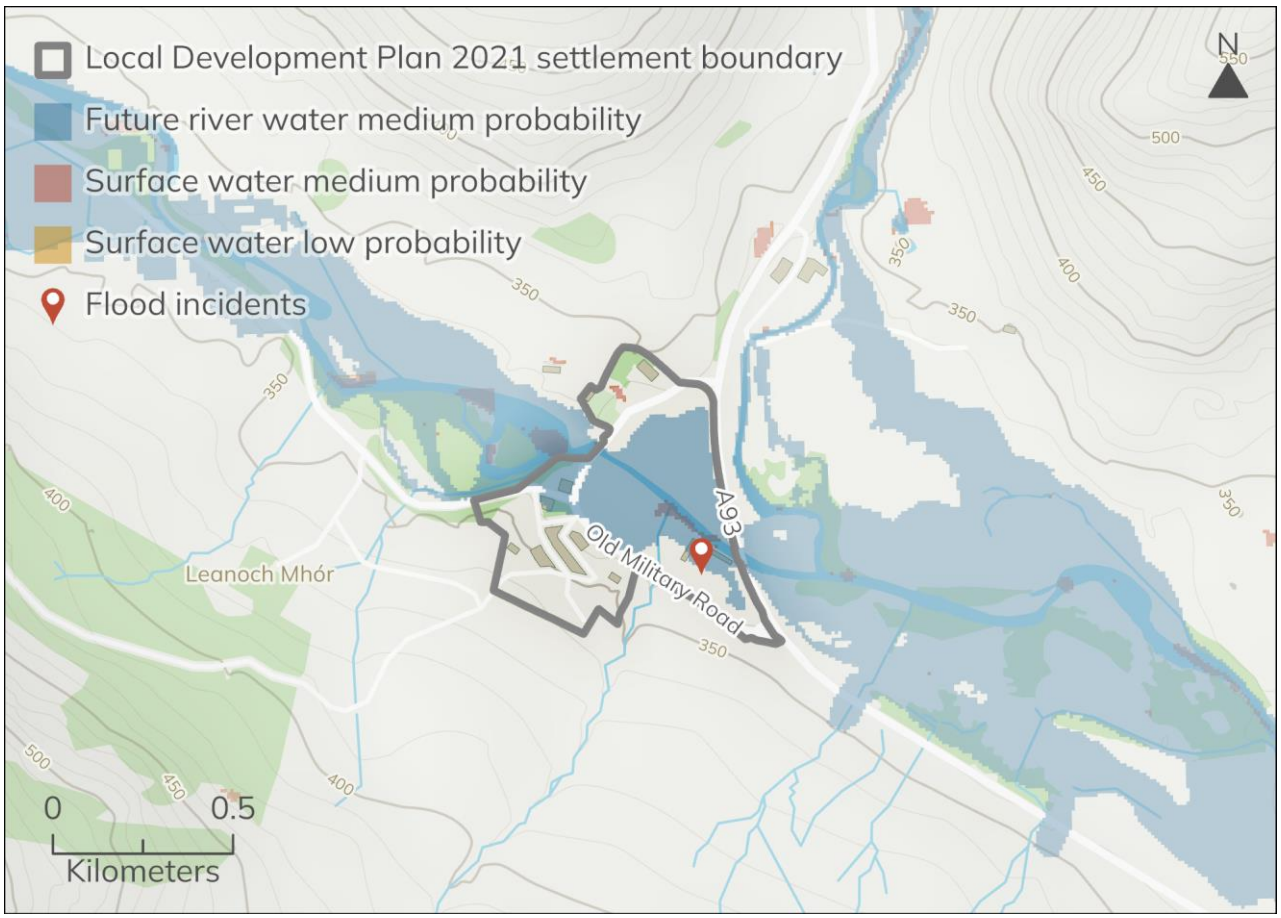


Figure 66 Future river and current surface water flood extents and historic flood incidents in and around Spittal of Glenshee.

Implications for Proposed Plan

Based on the evidence gathered in this assessment, the following implications for the preparation of the Proposed Plan have been identified.

Maintain up to date evidence base

The strategic flood risk assessment may become out of date in time because of significant improvements in flooding data, or large flood events may alter our understanding of the hazard. A review of the data will be required during the preparation of the Proposed Plan to ensure that the settlement strategy and proposed development sites meet the requirements of National Planning Framework 4's Policy 22.

Site assessment methodology

Data from the strategic flood risk assessment should form part of the Proposed Plan's site assessment methodology and inform the assessment of sites through the Plan's Strategic Environmental Assessment.

Beaver management

Due to the potential of beavers to use and block culverts and similar structures, which may be required as part of a development's access and egress arrangements and / or sustainable drainage system, consideration should be given to a policy or suite of site-specific requirements within the Proposed Plan that seek to reduce the risk of flooding resulting from beaver activity. For example, by requiring particular standards of construction for infrastructure within areas that have the potential to support a beaver population.

Appendix 1: Historic flood incidents

This appendix provides a summary of the historic flood incidents identified in this report. This is not a full list of every single event that has occurred within the National Park. It largely represents incidents reported to local authority flood risk management teams. Incidents that were not reported have not been captured. This data has been supplemented by information found within the small number of historic sources and detailed flood risk studies carried out for a few specific locations.

River Spey catchment area

Table 4 Historic flood incidents recorded within the River Spey catchment area.

Date of incident	Waterbody	Description	Source
August 1829	River Spey	The Muckle Spate was a great flood in August 1829 when heavy rain caused severe flooding in northeast Scotland. Waters of Loch Insh raised by around 7 to 8 feet.	The Highland Council / Great Moray Floods of 1829, Sir Thomas Dick Lauder, 1873
August 1829	River Feshie	The Muckle Spate was a great flood in August 1829 when heavy rain caused severe flooding in northeast Scotland. Large stones and heavy trees were swept along the River Feshie, with waters destroying a wood mill and crops destroyed.	The Highland Council / Great Moray Floods of 1829, Sir Thomas Dick Lauder, 1873
August 1829	River Feshie	The Muckle Spate was a great flood in August 1829 when heavy rain caused severe flooding in northeast Scotland. River Feshie overflowed, destroying farmland at Dalnavert and cutting new channel.	The Highland Council / Great Moray Floods of 1829, Sir Thomas Dick Lauder, 1873

Date of incident	Waterbody	Description	Source
August 1829	River Spey	The Muckle Spate was a great flood in August 1829 when heavy rain caused severe flooding in northeast Scotland. Loch Alvie rose to an 'unprecedented height'.	The Highland Council / Great Moray Floods of 1829, Sir Thomas Dick Lauder, 1873
August 1829	River Spey	The Muckle Spate was a great flood in August 1829 when heavy rain caused severe flooding in northeast Scotland. Kinrara House slightly damaged.	The Highland Council / Great Moray Floods of 1829, Sir Thomas Dick Lauder, 1873
August 1829	River Spey	The Muckle Spate was a great flood in August 1829 when heavy rain caused severe flooding in northeast Scotland. At the Doune of Rothiemurchus the whole flat part of the lawn was inundated, and the house stood on an island.	The Highland Council / Great Moray Floods of 1829, Sir Thomas Dick Lauder, 1873
August 1829	River Druie	The Muckle Spate was a great flood in August 1829 when heavy rain caused severe flooding in northeast Scotland. The River Druie swept away a house at Upped Dell and surrounded the house of the Dell of Rothiemurchus.	The Highland Council / Great Moray Floods of 1829, Sir Thomas Dick Lauder, 1873
August 1829	River Druie	The Muckle Spate was a great flood in August 1829 when heavy rain caused severe flooding in northeast Scotland. The River Druie swept away a house at Upped Dell and surrounded the house of the Dell of Rothiemurchus.	The Highland Council / Great Moray Floods of 1829, Sir Thomas Dick Lauder, 1873

Date of incident	Waterbody	Description	Source
August 1829	River Spey	The Muckle Spate was a great flood in August 1829 when heavy rain caused severe flooding in northeast Scotland. Waters of Loch Pityoulish rose above five feet with water from the Spey flowing into it.	The Highland Council / Great Moray Floods of 1829, Sir Thomas Dick Lauder, 1873
August 1829	River Spey	The Muckle Spate was a great flood in August 1829 when heavy rain caused severe flooding in northeast Scotland. Waters reached Cullachie, 6 to 8 feet above the level of the flood plain.	The Highland Council / Great Moray Floods of 1829, Sir Thomas Dick Lauder, 1873
August 1829	River Nethy	The Muckle Spate was a great flood in August 1829 when heavy rain caused severe flooding in northeast Scotland. Road swept away by River Nethy.	The Highland Council / Great Moray Floods of 1829, Sir Thomas Dick Lauder, 1873
August 1829	River Nethy	The Muckle Spate was a great flood in August 1829 when heavy rain caused severe flooding in northeast Scotland. Houses swept away by Rive Nethy. Dorback changed course destroying farmland.	The Highland Council / Great Moray Floods of 1829, Sir Thomas Dick Lauder, 1873
August 1829	River Nethy / River Spey	The Muckle Spate was a great flood in August 1829 when heavy rain caused severe flooding in northeast Scotland. Bank swept away at Coulnakyle.	The Highland Council / Great Moray Floods of 1829, Sir Thomas Dick Lauder, 1873
August 1829	River Dulnain	The Muckle Spate was a great flood in August 1829 when heavy rain caused severe flooding in northeast Scotland. The saw-mill of Dalnahatnich was nearly swept	The Highland Council / Great Moray Floods of 1829, Sir Thomas Dick Lauder, 1873

Date of incident	Waterbody	Description	Source
		away, and the miller's house was inundated.	
August 1829	River Dulnain	The Muckle Spate was a great flood in August 1829 when heavy rain caused severe flooding in northeast Scotland. The Bridge of Sluggan, 32 feet span, was swept away.	The Highland Council / Great Moray Floods of 1829, Sir Thomas Dick Lauder, 1873
August 1829	River Dulnain	The Muckle Spate was a great flood in August 1829 when heavy rain caused severe flooding in northeast Scotland. The River Dulnain washed away the win-walls of the Bridge of Carr leaving it as it looks today.	The Highland Council / Great Moray Floods of 1829, Sir Thomas Dick Lauder, 1873
August 1829	Craggan (Glenbeg) Burn	The Muckle Spate was a great flood in August 1829 when heavy rain caused severe flooding in northeast Scotland. Glenbeg Burn burst banks destroying bridge.	The Highland Council / Great Moray Floods of 1829, Sir Thomas Dick Lauder, 1873
August 1829	River Spey	The Muckle Spate was a great flood in August 1829 when heavy rain caused severe flooding in northeast Scotland. Inverallan Cemetery inundated.	The Highland Council / Great Moray Floods of 1829, Sir Thomas Dick Lauder, 1873
August 1829	River Spey	The Muckle Spate was a great flood in August 1829 when heavy rain caused severe flooding in northeast Scotland. Mill of Dalvey was destroyed by its burn.	The Highland Council / Great Moray Floods of 1829, Sir Thomas Dick Lauder, 1873

Date of incident	Waterbody	Description	Source
January 1849	Raitts Burn	Very severe flooding was experienced on the River Spey and other rivers in the region. Flooding at Lynchat was up to 6 to 7 feet deep and made the road impassable for several days.	The Highland Council / Highland Floods of the Nineteenth Century, D. Nairne, 1895
January 1849	River Spey	Very severe flooding was experienced on the River Spey and other rivers in the region. Flooding at Lynchat was up to 6 to 7 feet deep and made the road impassable for several days.	The Highland Council / Highland Floods of the Nineteenth Century, D. Nairne, 1895
January 1849	River Spey	Very severe flooding was experienced on the River Spey and other rivers in the region. Flooding at Kinrara even greater than flood of 1829. Farmhouse and suare inundated to height of 4 feet.	The Highland Council / Highland Floods of the Nineteenth Century, D. Nairne, 1895
January 1849	River Spey	Very severe flooding was experienced on the River Spey and other rivers in the region. Farmland at Doune damaged.	The Highland Council / Highland Floods of the Nineteenth Century, D. Nairne, 1895
January 1869	River Spey	The Spey overflowed its banks in many places and at Kincraig and threatened to damage the railway.	The Highland Council / Oban Times - Saturday January 13 1879
January 1892	River Spey	River flooding casued by snowmelt and rain.	The Highland Council / Highland Floods of the Nineteenth Century, D. Nairne, 1895
February 1892	River Spey	River flooding casued by snowmelt and rain.	The Highland Council / Highland

Date of incident	Waterbody	Description	Source
			Floods of the Nineteenth Century, D. Nairne, 1895
June 1914	Baddengorm Burn	The fourth coach into the torrent, and killing 5 passengers. Water levels reached 6m above bed level on the upstream side of the bridge and 2.6m on the downstream.	The Highland Council / BHS Chronology website: British Railway Disasters, p.163-165
June 1914	Baddengorm Burn / Allt Ruaidh	In 1914 the flood water came almost entirely off the drainage area of the Baddengorm and Allt Ruadh Magaig burns, an area of 3 sq. miles	The Highland Council / BHS Chronology website: British Rainfall for 1923, p 49-51
June 1914	Baddengorm Burn	The burn was in very high flood at the time. Five passengers on the passenger train drowned owing to the bridge collapse. The report of its time concluded that the accident was caused by an unusually heavy rainstorm which swelled the bridge and caused it to collapse.	The Highland Council / details and pictures found on the www.ambaile.org website
1973	River Spey	Flooding to property along Dalfaber Road, Aviemore.	The Highland Council / Highland Council: Flooding in Badenoch and Strathspey Final Report Vol 1, Nov 1990. Prepared by RH Cuthbertson and Partners

Date of incident	Waterbody	Description	Source
July 1956	River Enrick	Wash aways of railway lines occurred between Inverness and Daviot, on the direct linebetween Invernessand Aviemore via Carr Bridge and between Dunphail and Dava on the older Forres-Aviemore line. Severe flooding also took place at many places.	The Highland Council / Jacob Babtie, Final Report, May 2006, SAFER - Flood Risk Assessment & Survey of River Enrick
January 1975	River Spey	Flooding to property along Dalfaber Road, Aviemore.	The Highland Council / Highland Council: Flooding in Badenoch and Strathspey Final Report Vol 1, Nov 1990. Prepared by RH Cuthbertson and Partners
November 1978	River Spey	Flooding to property along Dalfaber Road, Aviemore.	The Highland Council / Highland Council: Flooding in Badenoch and Strathspey Final Report Vol 1, Nov 1990. Prepared by RH Cuthbertson and Partners
March 1979	River Spey	Flooding to property along Dalfaber Road, Aviemore.	The Highland Council / Highland Council: Flooding in Badenoch and Strathspey Final Report Vol 1, Nov 1990. Prepared by RH Cuthbertson and Partners

Date of incident	Waterbody	Description	Source
October 1981	River Spey	Flooding to property along Dalfaber Road, Aviemore.	The Highland Council / Highland Council: Flooding in Badenoch and Strathspey Final Report Vol 1, Nov 1990. Prepared by RH Cuthbertson and Partners
January 1983	River Spey	Flooding to property along Dalfaber Road, Aviemore.	The Highland Council / Highland Council: Flooding in Badenoch and Strathspey Final Report Vol 1, Nov 1990. Prepared by RH Cuthbertson and Partners
January 1984	River Spey	Flooding to property along Dalfaber Road, Aviemore.	The Highland Council / Highland Council: Flooding in Badenoch and Strathspey Final Report Vol 1, Nov 1990. Prepared by RH Cuthbertson and Partners
January 1989	River Spey	High flow on River Spey which is experienced periodically.	The Highland Council / Scottish Environment Protection Agency
January 1989	River Spey	Flooding near Spey Dam	The Highland Council / Flood Levels on the Upper River Spey

Date of incident	Waterbody	Description	Source
January 1989	River Spey	Flooding near Spey Dam	The Highland Council / Flood Levels on the Upper River Spey
January 1989	River Spey	Flooding near Kinrara House.	The Highland Council / Flood Levels on the Upper River Spey
January 1989	River Spey / River Truim	Flooding near Invertruim House.	The Highland Council / Flood Levels on the Upper River Spey
January 1989	River Spey	Flooding near Gergask, Laggan.	The Highland Council / Flood Levels on the Upper River Spey
January 1989	River Spey	Flooding near A86 east of Laggan.	The Highland Council / Flood Levels on the Upper River Spey
January 1989	River Spey	Flooding near A86 at Laggan.	The Highland Council / Flood Levels on the Upper River Spey
January 1989	River Spey	Flooding near sewage works, Newtonmore.	The Highland Council / Flood Levels on the Upper River Spey
January 1989	River Spey	Flooding south of railway station, Newtonmore.	The Highland Council / Flood Levels on the Upper River Spey
January 1989	River Spey	Levels in the River Spey reached 224.27m flooding fields and part of Kingussie.	The Highland Council / Flood Levels on the Upper River Spey /

Date of incident	Waterbody	Description	Source
			Kingussie Flood Study
January 1989	River Spey	Flooding at the Schoolhouse, Insh.	The Highland Council / Flood Levels on the Upper River Spey
January 1989	River Spey	Flooding near Tomdhu, Kincraig.	The Highland Council / Flood Levels on the Upper River Spey
January 1989	River Spey	Flooding of railway line, Aviemore.	The Highland Council / Flood Levels on the Upper River Spey
January 1989	River Spey	Flooding to property along Dalfaber Road, Aviemore.	The Highland Council / Highland Council: Flooding in Badenoch and Strathspey Final Report Vol 1, Nov 1990. Prepared by RH Cuthbertson and Partners
February 1989	River Spey	Flooding to property along Dalfaber Road, Aviemore.	The Highland Council / Highland Council: Flooding in Badenoch and Strathspey Final Report Vol 1, Nov 1990. Prepared by RH Cuthbertson and Partners
January 1990	River Spey	High flow on River Spey which is experienced periodically.	The Highland Council / Scottish Environment Protection Agency

Date of incident	Waterbody	Description	Source
January 1990	River Spey	High flow on River Spey which is experienced periodically.	The Highland Council / Scottish Environment Protection Agency
February 1990	River Spey	High flow on River Spey which is experienced periodically.	The Highland Council / Scottish Environment Protection Agency
February 1990	River Spey / River Truim	River flooding near Invertruim House	The Highland Council / Flood levels on the River Spey
February 1990	River Tromie	River flooding near Tromie Mills	The Highland Council / Flood levels on the River Spey
February 1990	River Spey	River flooding on River Spey	The Highland Council / Flood levels on the River Spey
February 1990	River Spey	River flooding near Sewage works, Boat of Garten	The Highland Council / Flood levels on the River Spey
February 1990	River Dulnain	River flooding at Balriaan Cottage	The Highland Council / Flood levels on the River Spey
February 1990	River Spey	Flooding at Spey Bridge, Grantown on Spey	The Highland Council / Flood levels on the River Spey
February 1990	River Spey	Flooding near Spey Dam	The Highland Council / Flood levels on the River Spey

Date of incident	Waterbody	Description	Source
February 1990	River Spey	Flooding near Spey Dam	The Highland Council / Flood levels on the River Spey
February 1990	River Spey	Flooding near Gergask, Laggan.	The Highland Council / Flood levels on the River Spey
February 1990	River Spey	Flooding along A86 near Laggan.	The Highland Council / Flood levels on the River Spey
February 1990	River Spey	Flooding along A86 near Laggan.	The Highland Council / Flood levels on the River Spey
February 1990	River Spey	Flooding near Spey Bridge, Newtonmore.	The Highland Council / Flood levels on the River Spey
February 1990	River Spey	Flooding near Spey Bridge, Newtonmore.	The Highland Council / Flood levels on the River Spey
February 1990	River Spey	Flooding near sewage works, Newtonmore.	The Highland Council / Flood levels on the River Spey
February 1990	River Spey	Levels in the River Spey reached 223.87m flooding fields and part of Kingussie.	The Highland Council / Flood levels on the River Spey / Kingussie Flood Study
February 1990	River Spey	Railway flooded, Kingussie.	The Highland Council / Flood

Date of incident	Waterbody	Description	Source
			levels on the River Spey
February 1990	River Spey	Flooding at the Schoolhouse, Insh.	The Highland Council / Flood levels on the River Spey
February 1990	River Spey	Flooding on Braeriach Road, Kincraig	The Highland Council / Flood levels on the River Spey
February 1990	River Spey	Flooding near B970 between Aviemore and Inverdruie	The Highland Council / Flood levels on the River Spey
February 1990	River Spey	Flooding of railway at Aviemore.	The Highland Council / Flood levels on the River Spey
February 1990	River Spey	Flooding near Broomhill Bridge.	The Highland Council / Flood levels on the River Spey
February 1990	River Spey	Flooding at Dalvey Farm	The Highland Council / Flood levels on the River Spey
February 1990	River Spey	Flooding on A95 near Strathtulchan.	The Highland Council / Flood levels on the River Spey
February 1990	River Spey	Flooding near Loch Buidhe near Newtonmore.	The Highland Council / Highland Council: Flooding in Badenoch and Strathspey Final Report Vol 1, Nov

Date of incident	Waterbody	Description	Source
			1990. Prepared by RH Cuthbertson and Partners
February 1990	Gynack Burn	Flooding to rear of Post House, Kingussie.	The Highland Council / Highland Council: Flooding in Badenoch and Strathspey Final Report Vol 1, Nov 1990. Prepared by RH Cuthbertson and Partners
February 1990	River Spey	Flooding south of railway, Newtonmore.	The Highland Council / Highland Council: Flooding in Badenoch and Strathspey Final Report Vol 1, Nov 1990. Prepared by RH Cuthbertson and Partners
February 1990	River Spey	Flooding along B9152, Lynchat.	The Highland Council / Highland Council: Flooding in Badenoch and Strathspey Final Report Vol 1, Nov 1990. Prepared by RH Cuthbertson and Partners
February 1990	River Spey	Flooding along A9 near Meadowside.	The Highland Council / Highland Council: Flooding in Badenoch and Strathspey Final Report Vol 1, Nov

Date of incident	Waterbody	Description	Source
			1990. Prepared by RH Cuthbertson and Partners
February 1990	Loch Insh	Flooding at Loch Insh Outdoor Centre	The Highland Council / Highland Council: Flooding in Badenoch and Strathspey Final Report Vol 1, Nov 1990. Prepared by RH Cuthbertson and Partners
February 1990	River Spey	Flooding at Doune Farm	The Highland Council / Highland Council: Flooding in Badenoch and Strathspey Final Report Vol 1, Nov 1990. Prepared by RH Cuthbertson and Partners
February 1990	River Spey	Flooding near Spey Bridge, Aviemore.	The Highland Council / Highland Council: Flooding in Badenoch and Strathspey Final Report Vol 1, Nov 1990. Prepared by RH Cuthbertson and Partners
February 1990	River Spey	Flooding at Speyside Highland Leisure Park, Aviemore.	The Highland Council / Highland Council: Flooding in Badenoch and Strathspey Final Report Vol 1, Nov

Date of incident	Waterbody	Description	Source
			1990. Prepared by RH Cuthbertson and Partners
February 1990	River Spey	Flooding at Craigellachie House, Aviemore.	The Highland Council / Highland Council: Flooding in Badenoch and Strathspey Final Report Vol 1, Nov 1990. Prepared by RH Cuthbertson and Partners
February 1990	River Spey	Flooding of railway line, Aviemore.	The Highland Council / Highland Council: Flooding in Badenoch and Strathspey Final Report Vol 1, Nov 1990. Prepared by RH Cuthbertson and Partners
February 1990	Aviemore Burn	Flooding to property near Aviemore Burn.	The Highland Council / Highland Council: Flooding in Badenoch and Strathspey Final Report Vol 1, Nov 1990. Prepared by RH Cuthbertson and Partners
February 1990	River Spey	Flooding to property along Dalfaber Road, Aviemore.	The Highland Council / Highland Council: Flooding in Badenoch and Strathspey Final Report Vol 1, Nov

Date of incident	Waterbody	Description	Source
			1990. Prepared by RH Cuthbertson and Partners
February 1990	River Spey	Flooding neaer Garva Bridge	The Highland Council / Highland Council: Flooding in Badenoch and Strathspey Final Report Vol 1, Nov 1990. Prepared by RH Cuthbertson and Partners
February 1990	River Spey	Flooding along A86 south of Laggan.	The Highland Council / Highland Council: Flooding in Badenoch and Strathspey Final Report Vol 1, Nov 1990. Prepared by RH Cuthbertson and Partners
February 1990	River Spey	Flooding near A889 near Laggan	The Highland Council / Highland Council: Flooding in Badenoch and Strathspey Final Report Vol 1, Nov 1990. Prepared by RH Cuthbertson and Partners
February 1990	River Spey	Flooding near railway, Kingussie.	The Highland Council / Highland Council: Flooding in Badenoch and Strathspey Final Report Vol 1, Nov

Date of incident	Waterbody	Description	Source
			1990. Prepared by RH Cuthbertson and Partners
February 1990	Gynack Burn	Flooding at rear of Post House, Kingussie.	The Highland Council / Highland Council: Flooding in Badenoch and Strathspey Final Report Vol 1, Nov 1990. Prepared by RH Cuthbertson and Partners
February 1990	River Spey	Flooding along B9152, Lynchat.	The Highland Council / Highland Council: Flooding in Badenoch and Strathspey Final Report Vol 1, Nov 1990. Prepared by RH Cuthbertson and Partners
February 1990	River Spey	Flooding along A9 near Meadowside House.	The Highland Council / Highland Council: Flooding in Badenoch and Strathspey Final Report Vol 1, Nov 1990. Prepared by RH Cuthbertson and Partners
February 1990	River Spey	Flooding along Braeriach Road, Kincraig.	The Highland Council / Highland Council: Flooding in Badenoch and Strathspey Final Report Vol 1, Nov

Date of incident	Waterbody	Description	Source
			1990. Prepared by RH Cuthbertson and Partners
February 1990	River Spey	Flooding Insh Church.	The Highland Council / Highland Council: Flooding in Badenoch and Strathspey Final Report Vol 1, Nov 1990. Prepared by RH Cuthbertson and Partners
February 1990	Surface water	Flooding south of Insh.	The Highland Council / Highland Council: Flooding in Badenoch and Strathspey Final Report Vol 1, Nov 1990. Prepared by RH Cuthbertson and Partners
February 1990	River Spey	Flooding on B970 near Milton Burn.	The Highland Council / Highland Council: Flooding in Badenoch and Strathspey Final Report Vol 1, Nov 1990. Prepared by RH Cuthbertson and Partners
February 1990	River Spey	Flooding at Craigellachie House, Aviemore.	The Highland Council / Highland Council: Flooding in Badenoch and Strathspey Final Report Vol 1, Nov

Date of incident	Waterbody	Description	Source
			1990. Prepared by RH Cuthbertson and Partners
February 1990	River Spey	Flooding along railway line, Aviemore.	The Highland Council / Highland Council: Flooding in Badenoch and Strathspey Final Report Vol 1, Nov 1990. Prepared by RH Cuthbertson and Partners
February 1990	River Spey	Flooding near Spey Bridge, Aviemore.	The Highland Council / Highland Council: Flooding in Badenoch and Strathspey Final Report Vol 1, Nov 1990. Prepared by RH Cuthbertson and Partners
February 1990	River Spey	Flooding at West Croftmore	The Highland Council / Highland Council: Flooding in Badenoch and Strathspey Final Report Vol 1, Nov 1990. Prepared by RH Cuthbertson and Partners
February 1990	Surface water	Flooding Carn Lethendry, near Carrbridge.	The Highland Council / Highland Council: Flooding in Badenoch and Strathspey Final Report Vol 1, Nov

Date of incident	Waterbody	Description	Source
			1990. Prepared by RH Cuthbertson and Partners
February 1990	River Spey	Flooding near Broomhill Bridge	The Highland Council / Highland Council: Flooding in Badenoch and Strathspey Final Report Vol 1, Nov 1990. Prepared by RH Cuthbertson and Partners
February 1990	River Spey	Rising water levels overtopping floodbank	The Highland Council / Highland Regional Council - Department of Water & Sewerage - Flooding In Badenoch and Strathspey, Final Report, Volume 2, RH Cuthbertson and Partners, November 1990
February 1990	Loch Insh	property inudated	The Highland Council / Highland Regional Council - Department of Water & Sewerage - Flooding In Badenoch and Strathspey, Final Report, Volume 2, RH Cuthbertson

Date of incident	Waterbody	Description	Source
			and Partners, November 1990
February 1990	Milton Burn	property inudated	The Highland Council / Highland Regional Council - Department of Water & Sewerage - Flooding In Badenoch and Strathspey, Final Report, Volume 2, RH Cuthbertson and Partners, November 1990
February 1990	River Spey	property inudated both in February and June 1990	The Highland Council / Highland Regional Council - Department of Water & Sewerage - Flooding In Badenoch and Strathspey, Final Report, Volume 2, RH Cuthbertson and Partners, November 1990
February 1990	River Spey	Section of road covered in flood water	The Highland Council / Highland Regional Council - Department of Water & Sewerage -

Date of incident	Waterbody	Description	Source
			Flooding In Badenoch and Strathspey, Final Report, Volume 2, RH Cuthbertson and Partners, November 1990
February 1990	River Spey	Section of road covered in flood water	The Highland Council / Highland Regional Council - Department of Water & Sewerage - Flooding In Badenoch and Strathspey, Final Report, Volume 2, RH Cuthbertson and Partners, November 1990
February 1990	River Spey	Section of road covered in flood water	The Highland Council / Highland Regional Council - Department of Water & Sewerage - Flooding In Badenoch and Strathspey, Final Report, Volume 2, RH Cuthbertson and Partners, November 1990

Date of incident	Waterbody	Description	Source
February 1990	River Gynack	photographic evidence of high flood level	The Highland Council / Highland Regional Council - Department of Water & Sewerage - Flooding In Badenoch and Strathspey, Final Report, Volume 2, RH Cuthbertson and Partners, November 1990
March 1990	River Spey	Flooding to property along Dalfaber Road, Aviemore.	The Highland Council / Highland Council: Flooding in Badenoch and Strathspey Final Report Vol 1, Nov 1990. Prepared by RH Cuthbertson and Partners
March 1990	River Spey	Flooding to property along Dalfaber Road, Aviemore.	The Highland Council / Highland Council: Flooding in Badenoch and Strathspey Final Report Vol 1, Nov 1990. Prepared by RH Cuthbertson and Partners
March 1990	River Spey	Flooding to property along Dalfaber Road, Aviemore.	The Highland Council / Highland Council: Flooding in Badenoch and Strathspey Final Report Vol 1, Nov

Date of incident	Waterbody	Description	Source
			1990. Prepared by RH Cuthbertson and Partners
June 1990	River Feshie	Massive erosion caused during 24 hour spate	The Highland Council / Highland Regional Council - Department of Water & Sewerage - Flooding In Badenoch and Strathspey, Final Report, Volume 2, RH Cuthbertson and Partners, November 1990
June 1990	River Feshie	Further erosion including damage to fencing	The Highland Council / Highland Regional Council - Department of Water & Sewerage - Flooding In Badenoch and Strathspey, Final Report, Volume 2, RH Cuthbertson and Partners, November 1990
June 1990	River Feshie	Steep slope erosion at Speybank, downstream of the Feshie/Spey confluence which has gradually reduced the level ground in front of a precariously situated cottage by about 25 metres during this century	The Highland Council / Highland Regional Council - Department of Water & Sewerage - Flooding In

Date of incident	Waterbody	Description	Source
			Badenoch and Strathspey, Final Report, Volume 2, RH Cuthbertson and Partners, November 1990
June 1990	River Spey	flood water at entrance of property	The Highland Council / Highland Regional Council - Department of Water & Sewerage - Flooding In Badenoch and Strathspey, Final Report, Volume 2, RH Cuthbertson and Partners, November 1990
July 1990	River Tromie	Flooded ground around	The Highland Council / Highland Regional Council - Department of Water & Sewerage - Flooding In Badenoch and Strathspey, Final Report, Volume 2, RH Cuthbertson and Partners, November 1990
July 1990	River Tromie	Flooded in frount of house	The Highland Council / Highland Regional Council - Department of Water &

Date of incident	Waterbody	Description	Source
			Sewerage - Flooding In Badenoch and Strathspey, Final Report, Volume 2, RH Cuthbertson and Partners, November 1990
July 1990	River Spey	High flood mark inside the cottage on furniture	The Highland Council / Highland Regional Council - Department of Water & Sewerage - Flooding In Badenoch and Strathspey, Final Report, Volume 2, RH Cuthbertson and Partners, November 1990
November 1996	River Spey	Stage 2 warning received from Police, level checked and found to be 1.5m at 15:00, danger level 1.2m	The Highland Council
November 1996	River Spey	Stage 2 warning received from Police, level checked and found to be 0.9m, danger level 1.8m	The Highland Council
Match 1997	River Spey	flooded garage	The Highland Council / Strathspey and Badenoch Herald newspaper Thursday March 6 1997

Date of incident	Waterbody	Description	Source
Match 1997	River Spey	flooded farmland	The Highland Council / Strathspey and Badenoch Herald newspaper Thursday March 6 1997
July 1997	Surface water	On Route A86, Torrential rain, gullies unable to cope	The Highland Council
August 1997	River Spey	Flash flooding caused the sewer to discharge at 9, 11 & 13 Kylintra Crescent	The Highland Council / Letter from North of Scotland Water Authority held at THC, Flood Team Office, Dingwall, dated 28 August 1997
July 1998	Gynack Burn	Photographic evidence of Burn in high spate	The Highland Council
2000	Gynack Burn	Roads and transport depot has been flooded on two occasions with the loss of around 200 tonnes of salt	The Highland Council / 2nd Biennial Flood Report (2000)
February 2001	Kylintra Burn	Water flowing from field at rear of property into garden and threatening to enter conservatory	The Highland Council / 3rd Biennial Flood Report (2001)
September 2011	Surface water	Water running off hill overloading road side ditch and flowing over road and into property	The Highland Council / 3rd Biennial Flood Report (2001)
January 2004	River Dulnain	Flooding near Ellan footbridge, Carrbridge.	The Highland Council / Scottish Environment Protection Agency

Date of incident	Waterbody	Description	Source
January 2004	River Dulnain	Flooding near Ellan footbridge, Carrbridge.	The Highland Council / Scottish Environment Protection Agency
January 2004	River Dulnain	Flooding near Ellan footbridge, Carrbridge.	The Highland Council / Scottish Environment Protection Agency
January 2004	River Dulnain	River flooding along track running from garage, Carrbridge.	The Highland Council / Scottish Environment Protection Agency
January 2005	Milton Burn	Water from blocked culvert flooded garden of 8b Craig na Gower Avenue, Aviemore.	The Highland Council / 5th Biennial Flood Report (2005)
January 2005	Gynack Burn	Flood water at Spey Street Bridge making road impassable, all properties on Gynack Street, Spey Street and Kingussie High School threatened.	The Highland Council / 5th Biennial Flood Report (2005) / Kingussie Flood Study
January 2005	River Spey	Flood water on U220 at Coul Farm making road impassable	The Highland Council / 5th Biennial Flood Report (2005)
January 2005	River Spey	Flooding at Dalnavert Farm.	The Highland Council
January 2005	River Spey	Flooding at Dalnavert Farm.	The Highland Council
January 2005	River Spey	Flooding at Dalnavert Farm.	The Highland Council
January 2005	River Spey	Flooding at Kinrara House	The Highland Council
January 2005	River Spey	Flooding at Kinrara House	The Highland Council

Date of incident	Waterbody	Description	Source
January 2005	River Spey	Flooding at Kinrara House	The Highland Council
January 2005	River Spey	Flooding at Kinrara House	The Highland Council
January 2005	River Spey	Flooding at Kinrara House	The Highland Council
January 2005	River Spey	Flooding at Kinrara House	The Highland Council
January 2005	River Spey	Flooding at Kinrara House	The Highland Council
January 2005	River Spey	Flooding at Kinrara House	The Highland Council
January 2005	River Spey	Flooding at Kinrara House	The Highland Council
January 2005	River Spey	Flooding at Kinrara House	The Highland Council
January 2005	River Spey	Flooding at Kinrara House	The Highland Council
January 2005	River Spey	Flooding at Kinrara House	The Highland Council
December 2006	River Spey	Flooding near Old Barracks	The Highland Council / 6th Biennial Flood Report (2007)
December 2006	River Spey	Flooding at bridge, Boat of Garten.	The Highland Council
December 2006	River Spey	Flooding at bridge, Boat of Garten.	The Highland Council
December 2006	River Spey	Flooding at bridge, Boat of Garten.	The Highland Council
December 2006	River Spey	Flooding at bridge, Boat of Garten.	The Highland Council
December 2006	River Spey	Flooding at bridge, Boat of Garten.	The Highland Council
December 2006	River Spey	Flooding at Kinrara House	The Highland Council

Date of incident	Waterbody	Description	Source
December 2006	River Spey	Flooding at Kinrara House	The Highland Council
December 2006	River Spey	Flooding at Kinrara House	The Highland Council
December 2006	River Spey	Flooding at Kinrara House	The Highland Council
December 2006	River Spey	Flooding at Spey Dam	The Highland Council
December 2006	River Spey	Flooding at Spey Dam	The Highland Council
December 2006	River Spey	Flooding at Spey Dam	The Highland Council
December 2006	River Spey	Flooding at Craigellachie House, Aviemore	The Highland Council
December 2006	River Spey	Flooding at Craigellachie House, Aviemore	The Highland Council
December 2006	River Spey	Flooding at Craigellachie House, Aviemore	The Highland Council
December 2006	River Spey	Flooding at Craigellachie House, Aviemore	The Highland Council
December 2006	River Spey	Flooding at Craigellachie House, Aviemore	The Highland Council
December 2006	River Spey	Flooding at Craigellachie House, Aviemore	The Highland Council
December 2006	River Spey	Flooding at Craigellachie House, Aviemore	The Highland Council
December 2006	River Spey	Flooding at Craigellachie House, Aviemore	The Highland Council
December 2006	River Spey	Flooding at Craigellachie House, Aviemore	The Highland Council
December 2006	River Spey	Flooding at Craigellachie House, Aviemore	The Highland Council
December 2006	River Spey	Flooding at Craigellachie House, Aviemore	The Highland Council
December 2006	River Spey	Flooding at Craigellachie House, Aviemore	The Highland Council

Date of incident	Waterbody	Description	Source
December 2006	River Spey	Flooding at Craigellachie House, Aviemore	The Highland Council
December 2006	River Spey	Flooding at Craigellachie House, Aviemore	The Highland Council
December 2006	Gynack Burn	Flooding of Gynack Burn upstream of all 3 bridges in Kingussie, flooding Spey Street, Gynack Street, Market Lane, Ruthven Road and Kingussie High School.	The Highland Council / THC, Kingussie, Badenoch & Strathspey, Flooding in Kingussie from the Gynack Burn, Draft copy January 2008 / Kingussie Flood Study
January 2008	Gynack Burn	Flooding in Kingussie from Gynack Burn from High Street Bridge to Spey Street Bridge making the road impassable.	The Highland Council / The Highland Council: Flood Preventation & Land Drainage (Scotland) Act 1997-Biennial Report No.7 November 2009 / Kingussie Flood Study
November 2011	River Spey	River Spey bursts its banks upstream of Laggan Bridge, Flooding fields and the A96 Trunk road	The Highland Council
January 2012	Surface water	Believed that the combined sewer along Clune Terrace and Strone Road, Newtonmore, was at capacity causing surface water to flow down towards Main Street	The Highland Council

Date of incident	Waterbody	Description	Source
		flooding properties before ponding on Main Street	
January 2012	Surface water	There is Scottish Water combined sewer and culverted watercourse that interact with each other causing flooding to Main Street/Old Glen Road, Newtonmore.	The Highland Council
August 2014	River Dulnain	Believe a watercourse overtopped and flooded the A938 at Dulnain Bridge.	The Highland Council
August 2014	Gynack Burn	Ex-hurricane Bertha – Gynack Burn burst its banks flooding to several roads and properties in Kingussie: Silverfjord Hotel, Station Road, Spey Street, Kingussie High School and the bowling green.	Scottish Environment Protection Agency / The Highland Council / Kingussie Flood Study
November 2014	Gynack Burn	Bridges were destoryed on the Pitmain Estate and on Kingussie Golf Course. The Road Bridge and Railway Bridge overtopped, causing flooding to the railway line. The High School, Council Office and Public Park flooded.	The Highland Council
January 2015	Gynack Burn	Station Road, Kingussie, flooded and the railway line was closed after Gynack Burn burst its banks.	Scottish Environment Protection Agency / The Highland Council / Kingussie Flood Study
December 2015	Gynack Burn / River Spey	Railway line at Kingussie closed due to flooding from Gynack Burn / River Spey.	Scottish Environment Protection Agency / The Highland

Date of incident	Waterbody	Description	Source
			Council / Kingussie Flood Study
December 2015	Surface water	Large bog area above Insh House in Kingussie drains via a catchpit and stone drain to the lower side of the B970. The stone drain has become blocked and water cannot drain away.	The Highland Council
December 2015	River Spey	River Spey breached its banks in 2 reported locations in Aviemore- the holiday park containing a number of static caravans and at Dalfaber Road, where the Old Bridge Inn PH, adjacent bunkhouse and road, and a number of gardens were flooded.	The Highland Council
December 2015	River Spey	River Spey breached its banks in 2 reported locations in Aviemore- the holiday park containing a number of static caravans and at Dalfaber Road, where the Old Bridge Inn PH, adjacent bunkhouse and road, and a number of gardens were flooded. 25 people & 7 dogs evacuated.	The Highland Council
September 2018	River Spey	Coul & Blargie farms flooded when Spey Dam overtopped. Water spilled out of the north bank at two main locations / breaks, spilling over the road into fields. Flows spilled across field east of road at bend (to the north of gravel island). Livestock has to be moved and sheep rescued.	River Spey Hydraulic / Hydrological assessment / Spey Catchment Initiative

Date of incident	Waterbody	Description	Source
July 2019	Gynack Burn / River Spey	Railway line at Kingussie closed due to flooding from Gynack Burn / River Spey.	Scottish Environment Protection Agency / The Highland Council / Kingussie Flood Study
November 2019	Gynack Burn	Gynack Burn burst its banks, causing flooding in Kingussie and the railway line to close.	Scottish Environment Protection Agency / The Highland Council / Kingussie Flood Study
December 2019	River Spey	Coul & Blargie farms flooded when Spey Dam overtopped. Flooding at the corner of the road at the gravel island.	River Spey Hydraulic / Hydrological assessment / Spey Catchment Initiative
March 2021	River Spey	Coul & Blargie farms flooded when Spey Dam overtopped. Video provided by the farms' owner, showing flood extents and depths. Flood waters reached 2/3 of the way up the road north towards Blargie Farm.	River Spey Hydraulic / Hydrological assessment / Spey Catchment Initiative
Unspecified	River Spey	Flooding near Speyside Highland Leisure Park, Aviemore	The Highland Council / Scottish Environment Protection Agency
Unspecified	River Spey	Flooding at Spey Dam	The Highland Council / Scottish Environment Protection Agency

River Dee catchment area

Table 5 Historic flood incidents recorded within the River Dee catchment area.

Date of incident	Waterbody	Description	Source
August 1829	River Dee	The Muckle Spate was a great flood in August 1829 when heavy rain caused severe flooding in northeast Scotland. The River Dee rose rapidly above its normal level, many bridges were washed away including the bridge at Ballater.	Chronology of British Hydrological Events website / Ballater Flood Protection Study.
1877	River Dee	Reports of cellars in the lower part of Ballater were flooded.	Scottish Environment Protection Agency / Ballater Flood Protection Study.
1920	River Dee	Ballater town and roads infrastructure were flooded. Reports mention the main cause was heavy runoff from bare fields post clear felling. The flood of 1920 was also reported to have drove the river into its old course at Inch of Culter.	Scottish Environment Protection Agency / The Ballater & Crathie Eagle, Winter 2014, Issue 76, Dee Catchment partnership / Ballater Flood Protection Study.
January 1929	River Dee	Ballater town and roads infrastructure were flooded.	Scottish Environment Protection Agency / Ballater Flood Protection Study.
1990	River Dee	Local reports are Deebank Road, Bridge Street Richmond Place and Braichlie Road were all badly flooded with water coming up through drains.	Aberdeenshire Council / Ballater Flood Protection Study.

Date of incident	Waterbody	Description	Source
1937	River Dee	The River Dee burst its bank and caused significant flooding.	Aberdeen Journals / Ballater Flood Protection Study.
1956	River Dee	The Cairngorms Flood causes damage.	Dee Catchment Partnership / Ballater Flood Protection Study.
November 2002	Clunie Water	Flooding to a domestic property in Braemar.	Aberdeenshire Council
2008	Surface water	Surface run-off entered the Netherly Guesthouse in Ballater.	Scottish Environment Protection Agency / Ballater Flood Protection Study.
August 2014	River Dee	Ballater caravan park was closed and 150 people were evacuated from the site as well as a number of roads being closed as a result of the River Dee Flooding.	Newspaper / Youtube / Scottish Environment Protection Agency / Ballater Flood Protection Study.
August 2014	River Dee / Clunie Water	Fields flooded along northern boundary of Braemar.	Aberdeenshire Council
November 2014	Unknown	Water sitting in the back garden and in the Memorial park behind house in Braemar for two weeks. No watercourse nearby.	Aberdeenshire Council
January 2015	River Dee / River Muick	Concern about bank erosion behind his house.	Aberdeenshire Council
January 2015	Clunie Water	Flooding to a domestic property in Braemar.	Aberdeenshire Council
January 2015	Clunie Water	Flooding to a domestic property in Braemar.	Aberdeenshire Council

Date of incident	Waterbody	Description	Source
December 2015	River Dee	Footage available on Youtube indicates the River Dee burst its banks – this caused flooding to over 300 residential and commercial properties in Ballater resulting in 100 residents having to be evacuated and substantial damage occurring to the Cambus O'May Bridge, a section of the A93 between Ballater and Balmoral Castle as well as the police station. An article in The Telegraph stated that it was estimated to "be the highest river level on the Dee since 1928"	Newspaper / Youtube / Scottish Environment Protection Agency. Ballater Flood Protection Study.
December 2015	Clunie Water	Inundation of service station and buildings in Braemar during Storm Frank in 2015	Aberdeenshire Council
January 2016	Clunie Water	Flooding occurred during January 2016 storm affecting 14 private and council-owned properties in Braemar.	Aberdeenshire Council
November 2022	River Dee	Flooding from Dee affecting three residential properties and golf course and caravan park in Ballater.	Aberdeenshire Council
July 2023	Surface water / road gullies / soakaways	Reported road flooding with surface water in Ballater.	Aberdeenshire Council
Unspecified	Surface Water	Owner of Braemar caravan park describes flooding events taking place since houses to the south were built and the drainage channel between new houses and his land is now a source of flooding.	Aberdeenshire Council

River Don catchment area

Table 6 Historic flood incidents recorded within the River Don catchment area.

Date of incident	Waterbody	Description	Source
February 2015	River Don	Flooding around buildings at Waterside, Strathdon, from seepage through raised bank.	Aberdeenshire Council
June 2015	River Don	Shingle build up under Ernan Bridge, Strathdon.	Aberdeenshire Council

River Tay catchment area

Table 7 Historic flood incidents recorded within the River Tay catchment area.

Date of incident	Waterbody	Description	Source
January 2001	Surface water	B8079/A9 at Essengal, Killiecrankie. Flooded road up to 0.9m.	Perth and Kinross Council
November 2002	Unnamed ditch	A93 north of Finegand, Glenshee. Flooded road.	Perth and Kinross Council
December 2006	No information	Spittal of Glenshee Hotel, Glenshee.	Perth and Kinross Council
December 2006	No information	8 Ford Road, Blair Atholl.	Perth and Kinross Council
December 2006	River Garry	Ford Road, Blair Atholl. Property threatened.	Perth and Kinross Council
December 2006	River Garry	Garryside, Blair Atholl. Flooded road.	Perth and Kinross Council
December 2006	Surface water	Railway Cottage, Struan, Pitlochry. Property threatened from overland flow from high ground.	Perth and Kinross Council
July 2010	Surface water	A93 at Dalhenzean Cottage, Glenshee. Flooded road.	Perth and Kinross Council
January 2011	No information	Highbury House, B951, Blairgowrie. Flooded house and garden.	Perth and Kinross Council

Date of incident	Waterbody	Description	Source
November 2014	Surface water	Highbury House, B951	Perth and Kinross Council
December 2015	River Garry	Ford Road, Blair Atholl	Perth and Kinross Council
December 2015	River Garry	Ford Road and Garryside, Blair Atholl	Perth and Kinross Council
December 2015	No information	Dalnaglar Cottage, Glenshee, Blairgowrie. Flooded house.	Perth and Kinross Council
July 2016	Groundwater spring	Dalnasgadh House, Killiecrankie.	Perth and Kinross Council
February 2020	Surface water	The drain system at the bus shelter is bunged up with dead leaves and debris, leading to back flooding into the shelter. There is another issue of flooding between the castle entrance and the Church where large pools form on both sides (and can meet in the middle). In addition, after moderate rain, there are several pools on the south (pavement) side between the Church and Bank House, which then flows into the garder of the bank house. (Bank House, Blair Atholl).	Perth and Kinross Council

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