LOCH LOMOND & THE TROSSACHS NATIONAL PARK

RURAL LAND USE IN THE NATIONAL PARK

CONFLICT & RESOLUTION

NATIONAL 4/5
& HIGHER GEOGRAPHY

Contents

1. Introduction

This resource 'Land use in the Loch Lomond & The Trossachs National Park: conflict and resolution' has been developed to support the Geography curriculum:

National 4/5 Physical environments – land use conflict in a glacial landscape

Higher - Case study on Loch Lomond & The Trossachs National Park

It contains background information on the Loch Lomond & The Trossachs National Park, its special qualities, the main land uses, and provides examples of land use conflict, highlighting the role of the National Park Authority in mitigating conflicts.

Each case study provides additional references and web links to encourage further reading and research, and makes suggestions for field visits to the National Park.

The final section highlights other resources available to support learning and visits to Loch Lomond & The Trossachs National Park.

The resource can be used by both educators and by students.

This resource has been developed by Loch Lomond & The Trossachs National Park Authority in partnership with the Cairngorms National Park Authority and The Mountains and The People Project (managed by the Cairngorms Outdoor Access Trust).

2. Curriculum Links

SQA Outcomes and Assessment Standards

National 4 Physical Environments

OUTCOME 2: Draw on straightforward knowledge and understanding of physical environments and weather in the United Kingdom by:

- 2.1 Describing key features of one landscape type in the United Kingdom
- 2.2 Giving brief descriptions of the formation of one landscape type in the United Kingdom
- 2.3 Giving brief descriptions and brief explanations of factors affecting weather conditions and weather systems in the United Kingdom
- 2.4 Giving brief descriptions of the possible land uses and brief explanations of a landscape management issue for one landscape type in the United Kingdom

National 5 Physical Environments

OUTCOME 2: Draw on a detailed knowledge and understanding of physical environments and weather in the United Kingdom by:

- 2.1 Describing, in detail, key features of one landscape type in the United Kingdom
- 2.2 Giving detailed explanations of the formation of one landscape type in the United Kingdom
- 2.3 Giving descriptions and detailed explanations of factors affecting weather conditions and weather systems in the United Kingdom
- 2.4 Giving detailed descriptions of the possible land uses and detailed explanations of a landscape management issue for one landscape type in the United Kingdom

Higher Physical Environments

OUTCOME 1: Use a range of mapping skills and techniques in physical environment contexts by:

- 1.1 Interpreting complex geographical information from at least two sources
- 1.2 Annotating a geographical source
- 1.3 Presenting complex geographical information
- 1.4 Analysing geographical information

OUTCOME 2: Draw on and apply knowledge and understanding of the processes and interactions at work within physical environments on a local, regional or global scale by:

- 2.1 Giving detailed descriptions and detailed explanations of a process/interaction at work in physical landscapes
- 2.2 giving detailed descriptions and detailed explanations of the impact of weather systems and climate on a physical environment
- 2.3 giving detailed descriptions and detailed explanations of a complex management issue in a physical environment

At Higher, National Parks will fall into the "Lithosphere" unit;

- Formation of erosional and depositional features in glaciated and coastal landscapes
- Rural land use conflicts and their management related to an upland or coastal environment within the developed world

It can be seen from the SQA information outlined above that a Case Study of a National Park is an important aspect of the new qualifications in Geography. This unit of work will concentrate on land use rather than the actual formation of the landscape.

3. Background

National Parks in Scotland

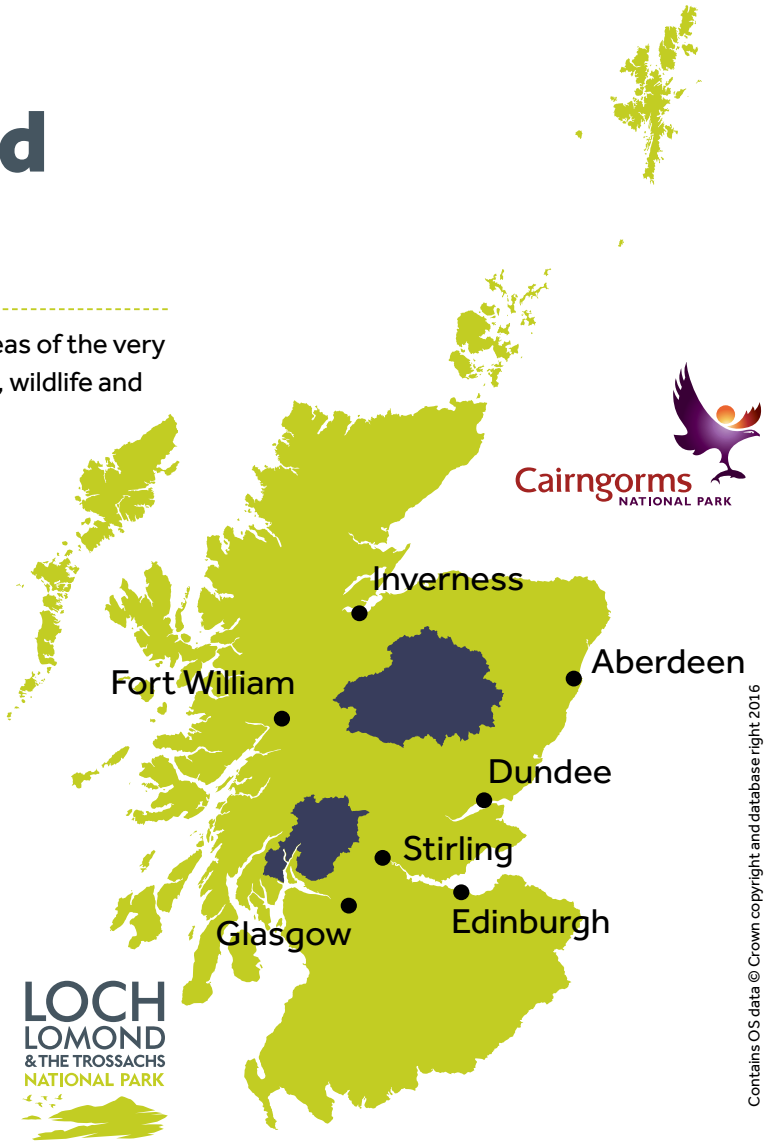
In Scotland, National Parks are extensive areas of the very highest value to the nation for their scenery, wildlife and cultural heritage.

They provide an integrated approach to management and sustainable development to safeguard the special qualities of these areas for the long term.

They also provide opportunities for the public to enjoy the special natural and cultural heritage.

There are two National Parks in Scotland: Loch Lomond & The Trossachs and Cairngorms. For more information visit the official National Park websites:

- **www.lochlomond-trossachs.org**
- **www.cairngorms.co.uk**



Loch Morlich - Cairngorms National Park

Loch Lomond & The Trossachs National Park

The Loch Lomond & The Trossachs National Park became fully operational on 19 July 2002 and was officially opened by Princess Anne on 24 July 2002 and encompasses around 720 sq miles (1,865 sq km) of some of the finest scenery in Scotland.

It is a place of contrasts from rolling lowland landscapes in the south to high mountains in the north, and has many lochs and rivers, forests and woodlands. It is also a living, working landscape which has been influenced by people for generations and is visited and enjoyed by many for its recreational value.

The National Park includes Loch Lomond, the largest freshwater loch in Scotland, as well as nearly 40 miles of coastline around three sea lochs – Loch Long, Loch Goil and the Holy Loch.

It also contains The Great Trossachs Forest, which is the largest National Nature Reserve (NNR) in Scotland and will be the largest area of native broadleaved woodland in the UK.

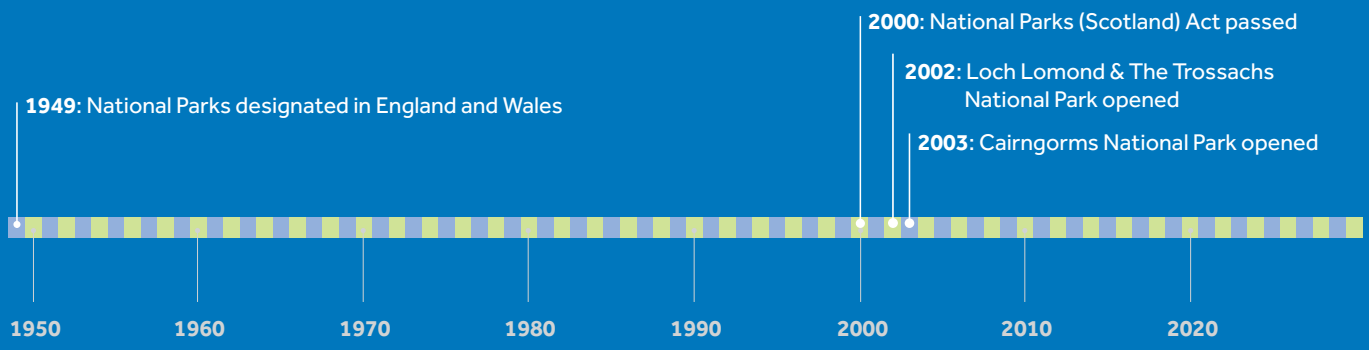
The National Park is home to a rich variety of important wildlife including red squirrels, black grouse, otters, deer, eagles and powan – a rare freshwater fish native to only Loch Lomond and Loch Eck.

Loch Lomond & The Trossachs National Park Fact File

- The Park is 1,865 sq km (720 sq miles) and has a boundary length of 350km (220miles).
- 50% of Scotland's population lives within an hour's drive of the National Park.
- There are 21 Munros (mountains above 3,000ft) in the Park and the highest is Ben More at 1,174m.
- There are 19 Corbetts (mountains between 2,500ft and 3,000ft).
- There are 22 larger lochs, with numerous smaller lochs and lochans.
- About 50 rivers and large burns.
- 15,168 people live in the National Park (2011 census).
- There are two Forest Parks – Queen Elizabeth in the Trossachs and Argyll in Cowal.
- is crossed by long distance routes – including West Highland Way and John Muir Way
- contains 73 designated special nature conservation sites and 60 Sites of Special Scientific Interest (SSSI)

History of Scottish National Parks - Timeline

Some of the key dates for designation of National Parks in the UK and Scotland:



Aims of Scottish National Parks

As set out in the National Parks (Scotland) Act 2000:

- To conserve and enhance the natural and cultural heritage of the Park
- To promote sustainable use of the natural resources of the area
- To promote enjoyment and understanding of the special qualities of the Park, including enjoyment in the form of recreation
- To promote sustainable economic and social development of the Park's communities

National Park Partnership Plan – A Strategy for the Park

The Park Plan is the strategic guiding document for all public bodies operating in the Park and provides guidance and focus for our partners. It outlines the significant outcomes which can be achieved for the National Park area through the collaboration of the public, private and voluntary sectors as well as Park communities and local businesses.

View our National Park Partnership Plan here

The challenge in managing a successful National Park is that of delivering all four aims together. The National Park combines an internationally important environment with a fragile rural economy and a renowned visitor destination. This brings inevitable tensions.

All of the above can result in problems/conflicts within the Park area. Loch Lomond & The Trossachs National Park Authority has a role to play in minimising this conflict and providing a resolution through bringing key partners together; increasing dialogue between them and developing policy to guide the future management of the Park.

Where there appears to be a conflict between the aims of the Park e.g. conservation versus economic development, the National Parks (Scotland) Act 2000 will give greater weight to conserving and enhancing the natural and cultural heritage. This is called the Sandford Principle.

4. Glaciated landscapes

Around 410 million years ago, Scotland was a series of big islands, once part of North America. They belonged to a continent called Laurentia, separated by the Iapetus Ocean from another continent, Avalonia, which included what is now England.

The two continents drifted together and their collision caused most of the big islands to form a single land mass, sliced through by major fault lines. The most significant of these is the Highland Boundary Fault. It passes through Conic Hill at Balmaha and the island called Inchcailloch on Loch Lomond – and it divides the Highlands from the Lowlands.

Over the last two million years, Scotland experienced a series of ice ages. Glaciers flowed over the land, scraping and scouring the rocks. They left a tortured landscape, gouging out trenches like the bed of Loch Lomond.

As they moved and melted, they left deposits of ground-up rock which later formed soil. Harder rock was left as crags. This glaciation finally came to an end around 11,500 years ago, after a period known as The Loch Lomond Stadial (because evidence for it was discovered around Loch Lomond!). This was a time when warming was suddenly halted and freezing conditions returned for 1500 years.

More than 10,000 years ago, as the last glaciers melted, the land breathed a sigh of relief and it slowly began to heave itself up.

As a result, sea levels dropped and left raised beaches where their waters once lapped. Soon, Loch Lomond was no longer a sea loch and it's now filled with fresh water. It has the largest surface area of all Scottish lochs and stretches 24 miles (38km) into the Highlands.

The line of the Highland Boundary Fault still divides Scotland in two. North of the line, the landscape close to Loch Lomond boasts peaks such as Ben Lomond and the Arrochar Alps. Beyond are the great, brooding, heather-clad mountains of Breadalbane and bristly hills of the Trossachs.

The hills of the Lowlands are gentler in shape and stand guard over broad fertile valleys. Rivers meander rather than rush and habitats reflect the underlying rock and its less rugged features.

Glaciated Landscape features

The ice sculpted and changed the area diverting whole river systems – Loch Arklet occupies a broad **U-shaped valley**, which once carried water from the west eastward into the Forth river system. During the last ice-age, ice flowing down from the mountains to the north of Loch Lomond, scoured out the shape of the Lomond valley and cut off this river system from the land to the west.

The ice has had a major impact on the landscape of Scotland and many of the typical features of a glaciated landscape can be seen in the National Park. Strath Gartney where Loch Katrine is situated is a typical **U- shaped valley** eroded by glaciers. The effects of the ice can be seen along the sides of Strath Gartney as a series of **truncated spurs** and **hanging valleys**. The burns that run into Loch Katrine are examples of **misfit streams** - running in wide U-shaped valleys that they did not erode.

On the lower ground there are **till deposits**, where material taken from higher up has been deposited by the ice. These include moraines, which are areas of hummocky, uneven ground. Near Callander there is a well preserved **Terminal Moraine** which marks the edge of a glacier that existed during the Loch Lomond Stadial.

At the top of Bochastle Hill there is a large boulder called Samson's Putting Stone. According to local legend it is the result of a putting competition between a family of giants (Samson the giant won!). It is a **glacial erratic** – a boulder that was picked up by the ice and carried by the glacier before being deposited where it now sits.

5. Land Use in the Park

A variety of land uses can be found in the National Park.

Forestry

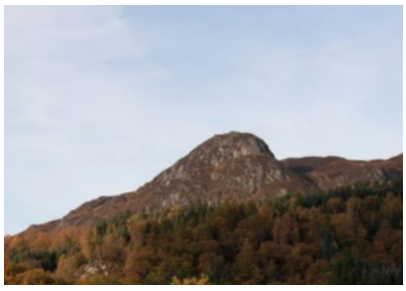
conifer plantations are a source of timber, but the land is also used for recreation. They are managed by the Forestry and Land Scotland, the largest landowner in the Park.

Water Based Recreation

with large bodies of freshwater in the Park, the area is very popular with watersports enthusiasts. Both motorised and non-motorised recreational users regulary visit areas such as Loch Lomond and Loch Earn.

Farming

The main farming activity is livestock production as the landscape conditions of the Park are most suited for this.



Most land within the Park is owned and managed by private individuals or businesses. The management of the land shapes the landscapes, the habitats and species and special qualities, as well as being an integral part of the economy and employment in the Park.

Land Use:

- **62% Agriculture – mainly extensive livestock farming (hill sheep and beef cattle), not much arable farming**
- **31% Woodland cover – swathes of commercial forestry plantations, but also ancient broadleaves, wood pasture, farmland and policy trees**
- **7% Water – lochs and rivers**

Land Ownership:

- **56% private – farms and estates**
- **38% Public – mainly Forestry and Land Scotland**
- **5% Charities and Non Governmental Organisations – includes RSPB (Nature Reserves), Scottish Wildlife Trust (SWT)**

Summary

There are many and varied land uses and aspirations for managing land across the National Park. Combined with a growing desire for people to live in and visit the National Park for recreation, and the environmental pressures this imposes on an internationally important area, it is not surprising that some tensions can arise between land uses and land users.

Some examples of conflict between land uses and how the National Park Authority manages them are provided in this resource.

6. Resources to support field visits to the National Park

Resource packs

A teachers guide for visiting Inchcailloch is available for Loch Lomond National Nature Reserve (NNR). It provides guidance for schools and groups to help organise a visit to the island.
Download the guide here

'Getting into National Parks and National Nature Reserves' contains advice and guidance for teachers and group leaders on planning a visit to National Parks and NNRs. Download the pack here

Websites

Education Scotland's on-line resource provides a wealth of information, guidance, advice and resources for taking learning outdoors.

Outdoor Learning Directory
Scotland's Outdoor Learning Directory aims to provide a portal to services supporting outdoor learning which are provided by a collaboration between Cairngorms National Park, Loch Lomond & The Trossachs National Park, Forestry Commission Scotland, Royal Botanic Gardens Edinburgh, Scottish Environmental Protection Agency and Scottish Natural Heritage.

Ranger Service

Make use of the National Park Ranger service to enrich your learning experience.
To book visit our website or e-mail education@lochlomond-trossachs.org

National Nature Reserves (NNRs)

There are two NNRs in the Park, Inchcailloch and The Great Trossachs Forest which protect an amazing range of wildlife and landscapes, where you can base your visit and learning experience.
Find these NNRs here.

The Great Trossachs Forest

The Great Trossachs Forest is a superb place for getting children of varying ages out into the countryside. Specifically designed for Secondary School pupils, the education pack covers a range of elements within the Curriculum for Excellence including art & design, geography and biology. This pre-prepared resource is a good source of inspiration for environmental, literacy, numeracy and cooperative learning themes and can be taught in the classroom or to facilitate outdoor learning.

Forests and woodlands

Discover the sights, sounds and experiences of the forest at Forestry and Land Scotland sites in the Park, including Queen Elizabeth Forest Park in Aberfoyle and Argyll Forest Park in Glenbranter, Argyll. Find out more here.

John Muir Award

Your visit to the Park may well fit in with gaining a John Muir Award, an environmental award scheme that focuses on wild places such as the National Park. Find out more here

Travel Grant

A travel grant scheme is available to support schools and groups to make educational visits to the Park, offering up to £200 or 75% of transport costs.
Download the application form and guidance here.

PÀIRC NÀISEANTA
LOCH LAOMAINN
IS NAN TRÒISICHEAN

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Tourism, recreation and local residents

CAMPING PRESSURES

The National Park is very close to a large number of urban areas and can receive high levels of visitor pressure, which often includes informal camping activity around popular loch shores. As one of the busiest rural areas in Scotland this specific area needs active management to deal with the visitor pressure.

The Park Authority sought to ease camping pressures and enhance the visitor experience in Loch Lomond & The Trossachs National Park through the delivery of different initiatives. Unfortunately, our most popular and accessible loch shores are suffering from damaging overuse and the irresponsible behaviour of some. You can access some of these images on our Flickr account

Irresponsible camping

Responsible camping

Conflicting National Park aims:

As a National Park Authority we regularly have to make difficult decisions over what is the best way to proceed. At the heart of these decisions are two, sometimes conflicting, National Park Aims.

- To conserve and enhance the natural and cultural heritage of the Park
- To promote enjoyment and understanding of the special qualities of the Park, including enjoyment in the form of recreation

Role of the National Park Authority in managing pressures

The National Park aims to increase enjoyment of our National Park, through providing opportunities for people to camp on our loch shores in well maintained sites, which have the right facilities and where visitor numbers are managed sustainably. We believe that this will allow visitors to enjoy these popular beauty spots and help protect the environment for future generations to enjoy.

Abandoned campsite

The East Loch Lomond Camping Byelaws were introduced in 2011 to help tackle problems of mis-use and overuse. The loch shore had been suffering for many years and the National Park Authority introduced byelaws to help get the area back to being a place that both locals and visitors can enjoy, and reduce the impacts of years of visitor pressure and anti-social behaviour.

A number of other measures were also implemented as part of the East Loch Lomond Visitor Management Plan, including car park upgrades, provision of camping facilities and toilets and a programme of signage improvements. At the same time, Stirling Council introduced a ban on drinking Alcohol in the restricted zone.

East Loch Lomond is regularly patrolled by both National Park Rangers and the Police during peak holiday periods and the summer months.

Visitors to the area are welcomed, advised of the byelaws and the justifications behind them and encouraged to enjoy the area but at the same time to act responsibly and respect it. National Park Rangers and the Police are authorised to enforce the byelaws and encourage compliance.

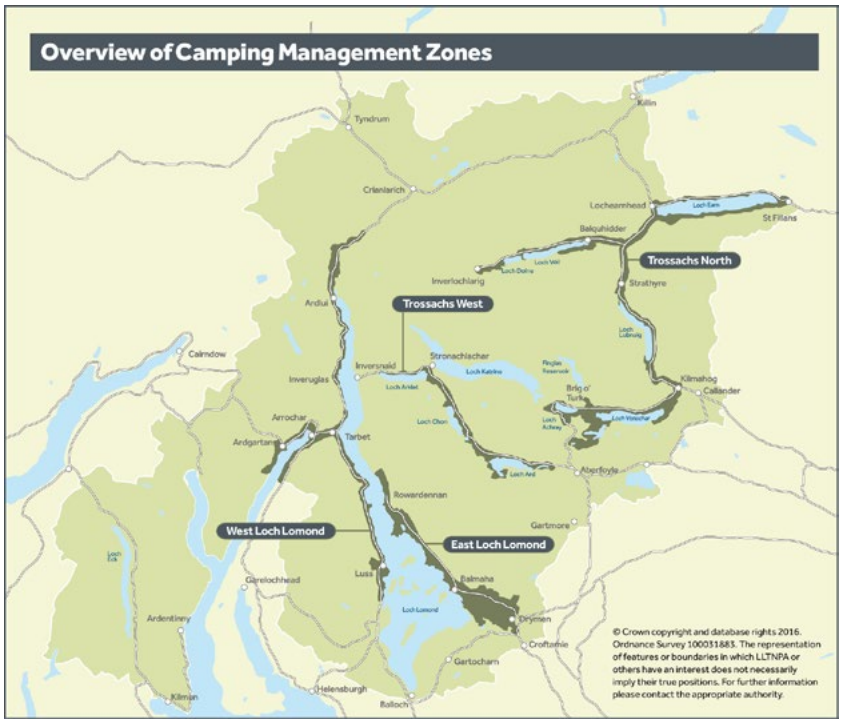
The experience on East Loch Lomond led to the consideration of further byelaws and the 'Your Park' project, to address similar problems in other areas of the National Park.

Following a public consultation and approval by Scottish Ministers, Camping Management Byelaws were introduced in 2017 covering some of the most heavily visited loch shore areas of the National Park.

A series of measures and infrastructure improvements were brought in to support the introduction of the byelaws including engagement, education and information tools, a seasonal camping permit scheme within Camping Management Zones (see map below) and the development of new, low-cost campsites within these zones.

LOCH LOMOND & THE TROSSACHS NATIONAL PARK

CAMPING IN THE PARK



Environmental Impacts

- In most areas where camping was historically popular but is now prohibited from March to September, findings to date indicate there have been improvements in terms of vegetation and bare ground recovery. In many areas where managed camping is permitted there are slower signs of recovery, or in a few places declines in vegetation and bare ground condition.

- The overall numbers of irresponsible fire sites has been in general decline for a number of years including prior to the byelaws. Numbers of fire sites have remained relatively low in the Camping Management Zones, with slightly higher numbers in permit areas.

- Findings on litter presents a complex picture. Generally litter is being found less frequently, however when it is found, it tends to be in higher volumes than pre-byelaw era. Specifically camping-related litter was only the fourth most common type of litter found in popular camping areas over the three years.

Irresponsible Behaviour

- Prior to the introduction of the byelaws there was some concern that there could be widespread disregard or deliberate contravention of them once in place, however the vast majority of campers complied with the byelaws.
- Of the total number of people that camped in a permit area or one of the new low-cost campsites over the three seasons, 2,492 (3.5%) of those who camped had their details taken in relation to an alleged contravention of the byelaws.
- During the time of the implementation of the byelaws the incidences of specific camping-related antisocial behaviour have remained low. From all available data, there is no significant change in the level of antisocial behaviour across the Camping Management Zones to date and visitors have indicated they feel safe when camping.

Other Findings

- **Number and profile of campers:** Over the three seasons that the byelaws have been in operation so far, more than 70,000 people (57,000+ adults and 13,000+ children) have camped in a permit area or one of two new low-cost campsites. The number of adults camping increased by 62% from 2017 to 2019 and the number of children camping rose by 90% from 2017 to 2019.
- **Camping supply and demand:** The provision for informal camping created through the permit scheme and low-cost campsites appears to have been sufficient to meet demand. Over the 642 nights that the byelaws have been in place (March – September each year in 2017- 2019), so far capacity was reached on three nights.
- **Camping satisfaction levels:** feedback surveys sent after every stay have been completed by almost 5000 people camping. Satisfaction scores have risen each year, with 93% of respondents saying they would be 'quite likely' or 'very likely' to recommend staying in a permit area in 2019.

Other Findings (continued)

- **Camping volume and density:** the byelaws are managing both the number and density of people camping at peak times. The overall number of tents recorded in Camping Management Zones has declined since the introduction of the byelaws. Despite the increases in people being seen in areas where camping is permitted from 2017 to 2019, the overall density of people camping is still lower than prior to the introduction of the byelaws.
- **Human waste:** Campers feedback and Ranger patrol data indicate that inappropriate toileting behaviour continues to pose an ongoing problem in some areas within the Camping Management Zones, particularly around busy parts of Loch Earn. Learning from an innovative behaviour change pilot in 2019 offers potential for further development and testing in other areas, to work towards tackling this issue.
- **Displacement:** There is currently very little direct or anecdotal evidence of displacement of informal camping being caused by the byelaws, although camping associated problems do continue to take place in some historic sites outside the Camping Management Zones within and around the boundary of the National Park.
- **Recreational impacts:** Although there is no evidence of direct correlation with the byelaws, increases in levels of recreational activities such as walking, fishing, canoeing and cycling have been recorded at popular lochshore locations since 2017, including in Camping Management Zones.
- **Visitor economy:** Findings to date indicate that the visitor economy remains strong across the National Park. While not directly attributable to the camping byelaws, it appears that there has been no negative impact on the tourism economy of the National Park.
- **Public perceptions:** In terms of wider public perceptions, the majority of National Park residents including businesses remain in favour of the byelaws.
- **Adaptive management:** All three seasons have provided real opportunities for the National Park Authority, its partners and stakeholders to 'learn through doing', particularly in the first season when the concept of camping byelaws and permit areas was new to many. This has been a major new programme of work, with some steep learning curves; yet staff, visitors, communities and partners adapted, making the 2018 and 2019 seasons more straightforward than the first season in 2017.

Following the initial years of implementation there should be continued investment in engagement and education with all visitors. This would include responsible camping and fire-lighting; waste disposal and toileting behaviours. This could be targeted at areas where managed camping is permitted; alongside an appropriate monitoring programme to ensure the Park Authority can respond to visitor pressures

Questions and pupil enquiry

- Why does the National Park have a Respect Your Park campaign?
- Why do the Camping Management Byelaws cover zones along loch shores?
- What other solutions can you suggest to address the anti-social behaviour associated with irresponsible camping?
- What other ways can we promote responsible camping in the National Park?

FURTHER GUIDANCE

Online

- Case study of East Loch Lomond
- Camping in the National Park
- Camping Management Byelaws
- Annual reports on Camping Management Byelaws 2017
- Three year report on Camping Management Byelaws 2017

Video clips

Your Park – Transforming Our Loch Shores

Camping in the National Park

National Park Land Use video

Exploring Loch Lomond & The Trossachs

Responsible Camping

Site visits

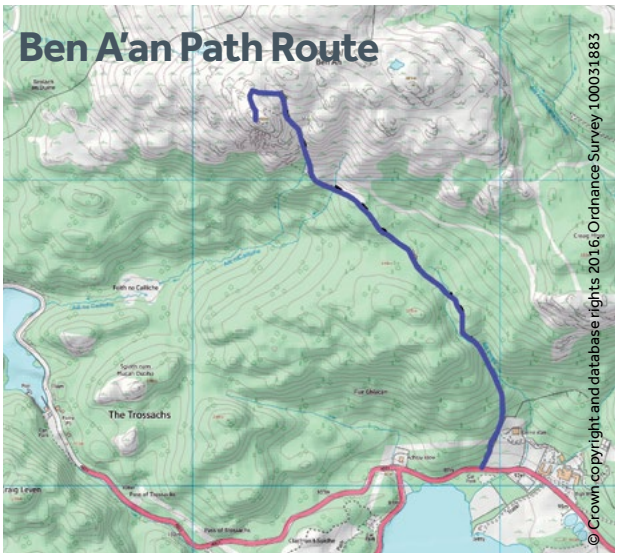
- Balmaha on east Loch Lomond is a great location to base a field visit, with the National Park Visitor Centre and Outdoor Classroom available for school groups.
- Other sites suitable for field visits include Luss, Loch Lomond Shores and Loch Lubnaig in the Trossachs.

Upland Path Management

IMPACT OF FOOTPATH EROSION ON UPLAND HABITATS

The National Park is a fantastic place for outdoor recreation, with opportunities for many different activities in an outstanding environment. The area experiences lots of use by walkers which can result in pressures on some of our sensitive hill and mountain habitats. Ben A'an, (454m) is easily accessed and offers a range of walking and climbing experiences, it is the second most popular hillwalk in the National Park (after Conic Hill) and is climbed by approximately 70,000 people each year. It provides an easy to moderate walk for people of all abilities, however, the final ascent to the summit is steep and physically demanding. The popularity of this walk makes it a jewel in the crown of hill paths in the Trossachs area, with spectacular views from the summit of Ben Venue, Loch Katrine and on a clear day, the Arrochar Alps; it is worth the effort.

Ben A'an is owned and managed by Forestry and Land Scotland – the government department responsible for managing Scotland's public forests. In October 2014 work started to improve the habitat on the hill.



These works were part of The Great Trossachs Forest Project, which aimed to restore a large area of native woodland. During these works the non-native trees were felled and part of the area was re-planted with native trees.

The Problem

The Ben A'an path had previously been worked on the 1980s, but over the years it had suffered badly from drainage and erosion issues. Path erosion is caused by a combination of factors; boot treads, mountain bike tyres, horse riding and livestock grazing all play their part.

These factors combined with natural forces such as wind, rainfall, frost, type of rock and vegetation as well as the steep slopes, compounded the problem. The combination of erosion and drainage problems resulted in a boggy, rough path that was difficult to use and presented a barrier to people's enjoyment.

The majority of people hill walking prefer to walk on good paths as they feel safer and have a better experience, however, when the path is in poor condition, people start to walk around the edges. This results in a wider path with multiple routes - in places the path on Ben A'an had become 5m wide. This widening of the path had reduced the quality of the environment and was resulting in loss of the surrounding habitat.

The Solution

Due to increasing levels of the erosion on Ben A'an and the high volume of people using the path, it was identified as a priority for upgrading as part of The Mountains & The People Project, a flagship £6 million initiative to restore many of the best hill and mountain paths in the two National Parks.

The project was a partnership between the Heritage Lottery Fund, Forestry and Land Scotland, NatureScot and the two National Park Authorities, (Cairngorms and Loch Lomond & The Trossachs) and the Outdoor Access Trust for Scotland. Following a detailed survey, it was decided to build a 'high and dry' type path using as much material that could be 'won' on-site. This construction method effectively 'lifts' users out of the boggy mire to create a usable and long-lasting path. The path was built using machines and hand tools, and 120t of stone from a local quarry was flown in by helicopter to construct the large drainage and path features.

The repaired path has greatly improved the route, making it easier and more enjoyable for people of all ages. The new path reduces the amount of maintenance required, meaning the path will be open to all for many years to come. This has many long-term benefits; supports the rural economy, community resilience and sustainability and helps conserve the sensitive upland habitat.

Before
Section on hill with steep cross slope

After
Benched raised path with stone features and catchment ditching

Conflicting National Park aims:

As a National Park Authority we regularly have to make difficult decisions over what is the best way to proceed. At the heart of these decisions are two, sometimes conflicting, National Park Aims.

- To conserve and enhance the natural and cultural heritage of the Park
- To promote understanding and enjoyment (including enjoyment in the form of recreation) of the special qualities of the Park by the public

Resolution and role of the National Park Authority

The National Park helps to address these issues in various ways:

As the Access Authority, the National Park Authority provides advice to land managers and the public on access rights, and promotes responsible behaviour in the countryside. The National Park Ranger Service promote the Scottish Outdoor Access Code and help people enjoy the National Park.

The National Park Authority have prepared a Core Paths Plan illustrating the network of routes for visitors and residents in the National Park - core paths have an important role to play by ensuring that people can enjoy recreational access and minimise the potential for conflict with farming, forestry etc.

For more information on our Core Paths visit our website.

Questions and pupil enquiry

- What are the main causes of footpath erosion?
- What are the problems caused by footpath erosion?
- What factors should be considered when importing stone to build the path?
- What are the main benefits to a well-constructed footpath at Ben A'an?

FURTHER GUIDANCE

Online

- Forestry and Land Scotland: Ben A'an
- The Mountains & The People project
- The Great Trossachs Forest
- Upland path work manual

Interactive

- 360 view from the top of Ben A'an

Water based recreation

LOCH LOMOND BYELAWS

Loch Lomond is the largest area of freshwater in mainland Britain. The loch and its islands are used by visitors throughout the year for a range of recreation interests. In addition the loch is important for a range of environmental reasons, as the source of drinking water for many, and as a key attraction for businesses and communities.

A wide variety of groups use Loch Lomond. These include fishermen, canoeists, jet skiers, powerboats, yachts, sailing craft and even sea planes. The banks and beaches of the loch are also used for activities such open water swimming and picnics.

Problems can include:

- The noise from sea planes, speedboats and jet skis disturbs wildlife, residents and other visitors.
- Long trawling lines from fishing boats can be cut by other craft passing too near their sterns.
- Speedboats and jet skis also produce large wakes (waves) behind them which can cause erosion of the banks of the loch.
- Oil and diesel spills from boats pollute the environment.
- People having picnics beside the loch can leave litter, broken glass and scorch marks from barbeques and camp fires.

There is a real need to balance environmental, economic and social pressures on Loch Lomond, to ensure that the loch can be used safely and responsibly, and prevent the things that make it special from being overused or degraded.

Conflicting National Park aims:

As a National Park Authority we regularly have to make difficult decisions over what is the best way to proceed. At the heart of these decisions are, sometimes conflicting, National Park Aims.

- To conserve and enhance the natural and cultural heritage of the Park
- To promote enjoyment (including recreation) and understanding of the special qualities of the Park
- To promote sustainable economic and social development of the Park's communities.

Resolution and role of the National Park Authority

The Loch Lomond Navigation Byelaws were introduced in 1996 by the Loch Lomond Regional Park Authority. Their purpose is to protect the islands, the National Nature Reserve and wildlife, provide a larger area for quieter activities and further improve safety.

The main aim of the Loch Lomond Byelaws is to help achieve this balance, by protecting the loch from environmental damage, whilst supporting the many types of recreational activity to be undertaken safely and responsibly.

The National Park Ranger Service undertakes most of the byelaw enforcement and compliance activity on the loch. The Park Authority operates a public launch facility for Loch Lomond at Duncan Mills Memorial Slipway in Balloch. The facility is open seven days a week. It employs staff throughout the year to manage the work associated with the Loch Lomond Byelaws, takes on extra staff during the summer season and operates three patrol boats.

Boat Registration

Loch Lomond remains a very popular destination for visitors seeking water-based recreation. In the current byelaws there is a requirement for the owner of a power-driven boat to register their boat with the Park Authority before using it on Loch Lomond. The table below shows the boat registration data for five years between 2015 and 2019.

Type of craft	2019	2018	2017	2016	2015
Canoe	13	15	15	13	17
Dinghy / Inflatable Dinghy	97	97	105	96	86
Jet ski	1,240	1,240	1,239	1,240	1,240
Motor Boat /Motor Cruiser	1,245	1,245	1,245	1,245	1,257
Sailing Boat	253	253	251	253	248
Rib	456	454	455	453	239
Speedboat	1,276	1,270	1,278	1,276	1,279
Tender	544	456	556	456	556
Fishing Boat	823	825	833	822	825
Other	152	174	165	168	56
Unspecified	30	31	29	23	22
Total Number of registered Craft	**6,129**	**6,060**	**6,171**	**6,045**	**5,825**

Use of the Loch

Since 1989 the University of Glasgow has made an annual survey of recreational craft use on Loch Lomond during peak activity periods (May to September). Over 22 years from 1989 to 2011 a total of 103,112 craft were recorded. During the 2011 survey a total of 352 craft were recorded on any single day (Saturday 30 July). The daily mean craft use in 2011 was 153 ± 92 (mean ± standard deviation).

This represents a gross (whole loch) density of 5.00 craft per km² during the 2011 survey period. There have been changes to the pattern of use, with some zones seeing an increase in usage. The long-term data also shows a significant increase in the following types of cruising craft: tour boats, ferry boats, canoes, fishing boats and rowing boats. The same data shows a significant decrease in day boats, speedboats, windsurfers and yachts.

Byelaw Violations

The tables below outline the types of craft breaching byelaws and the type of violations for a 3 year period. The predominant craft types encountered breaching byelaws are jet skis and speed boats. The violations have predominantly been for speeding, with Annual Mark missing/not visible being the second highest recorded offence.

Type of craft	2019	2018	2017
Jet ski	73	99	75
Motor Boat / Motor Cruiser	36	56	18
Sailing boat	1	0	0
Rib	2	5	3
Speedboat	33	54	37
Tender	1	2	1
Fishing Boat	8	8	6
Other	31	23	10
Total Number of violations	**185**	**247**	**150**

Type of violation	2019	2018	2017
Failure to Register	21	16	6
Letter/Numbers missing/not visible (not clear)	9	28	14
Annual Mark missing/not visible	58	69	29
Failure to notify Authority of transfer of boat ownership	1	0	0
No authority to transfer number/annual mark	1	0	0
Failure to obey and conform to the directions of a Ranger, Police Offier or any other authorised person	1	0	0
Enforcement - refusal to provide or provision of false/misleading details	1	0	0
Non compliance with lighting byelaws for craft under 12m	1	0	0
Navigating any craft in a reckless manner - Byelaw 3.5(1)(a)	0	0	2
Navigating any craft in a reckless manner - Byelaw 3.5(1)(b)	0	0	4
Navigating any craft without due care and attention	0	1	0
Failure of Master to ensure sufficient and suitable life jackets available for crew and passengers	1	7	1
Failure to wear a lifejacket on a Powered Water Craft	1	1	4
Failure to observe speed limit in speed restricted areas	86	114	79
Failure to observe speed limit within 150m off shoreline - Byelaw 3.7(1)(a)	4	10	8
Failure to observe speed limit within 150m off shoreline - Byelaw 3.7(1)(b)		1	3
Total Number of violations	**185**	**247**	**150**

Questions and pupil enquiry

- What are the key reasons that Loch Lomond is so popular for water based recreation?
- How do the Byelaws on Loch Lomond reduce the noise disturbance to residents and visitors along the shores and on the islands?
- What are the most popular craft registered to use Loch Lomond, and why do you think this is?
- Why is speeding the most common Byelaw violation recorded?
- Long term data shows trends in the types of craft using the Loch. Can you give reasons why there may be increases in some types, but decreases in others?

FURTHER GUIDANCE

Online

Loch Lomond Navigation Byelaws

Video clip

VisitScotland: Scotland's Spirit
A short film of Rangers on Loch Lomond

Site Visits

- Duncan Mills Memorial Slipway, Balloch
- Milarrochy Bay, east Loch Lomond

Sustainable Tourism development and local communities

BALLOCH CHARRETTE

Background

Charrettes aim to engage communities with planning processes through workshops which allow the local community to discuss how they wish to see their local area developed over the next 10-20 years, with support from planners and architects. Each Charrette results in projects being illustrated in a final report.

In February 2016, supported by the Scottish Government there was a Balloch Charrette with workshops jointly run by Loch Lomond & The Trossachs National Park Authority and West Dunbartonshire Council. The charrette process also informs the Local Development Plan.

Balloch Charrette Report

The workshops resulted in a final report which describes the input from the local community, including local residents, businesses, schools, youth groups, community groups including the Steamship Company and Loch Lomond Water Sports Association. The Report includes an Action Plan which clarifies which organisation leads on each of the projects and which partner organisations support the work

A Charrette workshop allows us to discuss different views in a public setting and lets attendees hear a range of opinions in terms of planning developments. For example, this may relate to locations identified for future development opportunities.

Conflicting National Park aims

As a National Park Authority we regularly have to make difficult decisions over what is the best way to proceed. At the heart of these decisions are, sometimes conflicting, National Park Aims.

- To promote sustainable economic and social development of the Park's communities.
- To conserve and enhance the natural and cultural heritage of the Park

Resolution and role of National Park Authority

The role of the National Park was to host, communicate about the proposed projects and help facilitate the Charrette events. The National Park held numerous meetings with West Dunbartonshire Council and the Charrette Design Team, and meetings with an advisory group made up of local representatives to organise and communicate about Charrette events.

There was also pre-Charrette development which included youth engagement with local schools, a business breakfast and specific workshops on recreation/ leisure and built environment.

A bespoke website LIVE in Balloch was created and social media was used to promote the process and outcomes of the Charrette events.

Example of conflict resolution

West Riverside is the largest site in Balloch with a proposed development, identifying a number of conflicts both in terms of its environmental sensitivity as well as views on its suitability from local residents. The area is at risk of flooding, is located on an area of contaminated land, has a gas line running through it and also contains significant proportions of wooded areas used by a variety of wildlife.

Identifying these issues through the Charrette allows the developer to acknowledge and address them when creating their development proposals and plans.

In addition, the area is heavily used by a wide range of different user groups, for boating, swimming, visits to Lomond Shores and the Maid of the Loch. All of these visitors have different requirements and priorities.

It is useful to allow these conversations to be held at this early informal stage, through the Charrette process. Development can now address the concerns raised and support different user requirements e.g. designing in a shared café or toilet/shower facility.

We are continuing to work with partners to deliver the charrette priorities with the delivery of public realm improvements at Balloch village square enhancements and work just about to begin on designing improvements to Balloch railway station and the surrounding area to make it a more attractive arrival point into Balloch.

Questions and pupil enquiry

- How does the Charrette process ensure developments take environmental considerations into account?
- How many different land uses can you list from the image above?
- Describe as many positive and negative impacts of leisure and recreation as you can think of.
- What kind of potential conflicts may arise from developing a village for tourism?

FURTHER GUIDANCE

Online

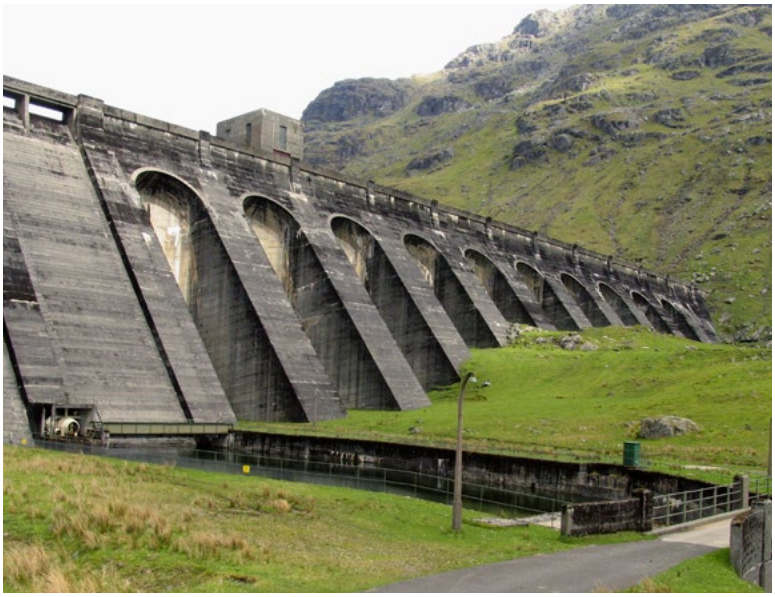
LIVE Park

Site visits

- Lomond Shores, Balloch

Renewable energy and biodiversity

THE IMPACT OF HYDRO ELECTRIC POWER DEVELOPMENTS ON THE LANDSCAPE AND BIODIVERSITY



Hydro Electric Power (HEP) generation involves the extraction of energy from moving water. The amount of energy generated depends on the volume and flow of water and water pressure.

The main types of hydro power generation are:

1. **Diversion (run-of-river) –** where a proportion of water is diverted via a weir or lade into a penstock (pipe) to a turbine (which generates electricity) before returning the water to the river downstream;
2. **Low Head** – run-of-river scheme that operates with a head of 20 metres or less;
3. **Impoundment** – where a dam or series of dams hold water back in flooded valley systems, creating a hydraulic head from which electricity is generated; and
4. **Pumped storage** – which uses similar principles to large scale impoundment but where a second reservoir is also used to pump water back into the first reservoir during off-peak hours. This provides a larger volume of water that can be used to generate electricity during periods of peak electricity usage.

The Loch Sloy Hydro Electric Power Scheme (above) on the west side of Loch Lomond is the largest of its type in Scotland, built in the 1940s. To make hydro-electric power you need an area with high rainfall and to be able to drop the water from a height on to a turbine. Water drops a height of 280 metres from the Loch Sloy dam down a series of pipes into the power station on the banks of Loch Lomond.

The power station can be at maximum power in five minutes (the time for the water to flow down the pipes to the turbines). The four turbines can produce 130Mw of electricity, enough to power 50,000 homes. The energy produced is a renewable source of electricity and does not create pollution in the form of greenhouse gases.

This location was chosen as this is one of the wettest areas in Scotland (annual rainfall is over 2500mm) and a hanging valley above Loch Lomond could be easily dammed to create a reservoir. The steep slopes of nearby Ben Vorlich allow rainwater to collect in the reservoir quickly and the hard, impermeable rocks provided excellent, sturdy foundations for a dam to be built on.

The main concern with the Sloy Scheme is the pylons and power cables which take the electricity generated to the National Grid. These can spoil the scenery, particularly when they run along hilltops and are easily seen. However putting these cables underground can often disturb important habitats and is very costly.

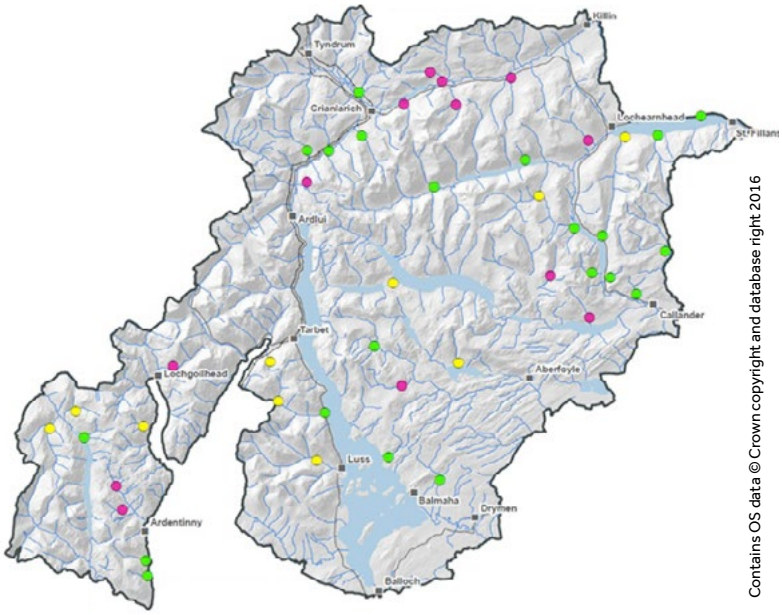
Water Supply

There are 22 large lochs in the National Park, many of these are very deep and are able to store large volumes of water. Loch Lomond itself supplies water to several towns including Helensburgh, Dumbarton and Balloch.

Glasgow's water has been supplied from Loch Katrine in the Trossachs since 1859. It is pumped 24km through a system of aqueducts and underground pipes to Milngavie Reservoir on the city's northern edge. Water from two neighbouring lochs, Loch Arklet and Finglas Reservoir, is piped to Loch Katrine to increase its catchment area.

Loch Katrine

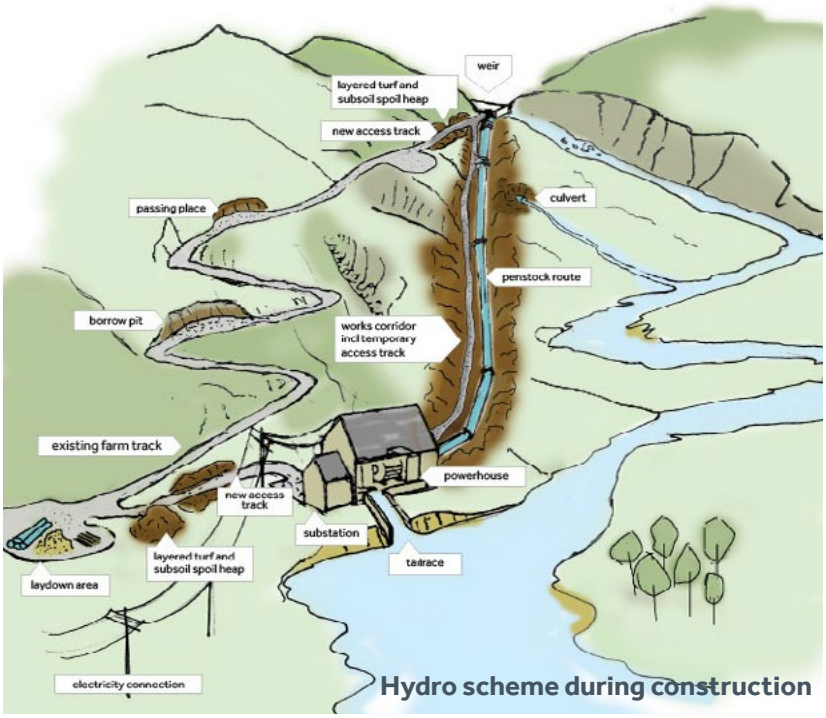
Loch Katrine is owned and managed by Scottish Water, a public organisation which supplies the whole of Scotland with water and sewage services. In 2004, work started on the Katrine Water Project, a £100 million scheme to upgrade the water supply to the 700,000 residents of the Glasgow area. Water quality now has to meet strict UK and EU quality standards, particularly for levels of bacteria. New treatment works and pipes will ensure Glasgow's supply is properly disinfected.



Renewable energy policy for the National Park

Small scale run-of-river technology is considered to be the most compatible to the National Park's geography and special qualities.

- Within the National Park there are 45 approved run of river schemes.
- 38 of these schemes are now operational
- 2 are currently under construction (February 2020)
- These schemes together provide enough power for 25,000 homes which is more than three times the number of houses within the National Park. It is also enough power to provide energy for Balloch, Alexandria and most of Dumbarton.



Hydro scheme during construction

Glen Douglas run of river Hydro scheme.

One of the first hydro schemes built this century is at Glen Douglas. Approval for the Construction of run-of-river hydro scheme (995kw) was given May 2008 with the works being completed in 2011. The location of the pipeline corridor through protected ancient woodland close to Loch Lomond made this a high profile project.

The route of the pipeline was carefully chosen so as to minimise loss of larger tree species. To further reduce the potential for damage to the woodland during the construction phase some additional mitigation was required which included:

- Ecological Clerk of Works present while putting pipeline through woodland,
- Use of geotextile ground protection to reduce damage by machinery
- Subsoil and top-soil separated during construction to aid vegetation recovery
- Woodland management plan in place for restoration after construction.

The intake where water is collected is very natural looking now. The stone preventing erosion of the river bank and the concrete weir that channels water into a pipeline has weathered and has integrated into the existing landscape.

Conflicting National Park aims

As a National Park Authority we regularly have to make difficult decisions over what is the best way to proceed. At the heart of these decisions are, sometimes conflicting, National Park Aims.

- To promote sustainable economic and social development of the Park's communities.
- To conserve and enhance the natural and cultural heritage of the Park

Resolution and role of The Park Authority

The National Park as a Planning Authority has the role of preparing and delivering the Local Development Plan. This identifies potential development sites and sets out policies to guide development that is needed in order to support our communities, visitors and local economy. Landscape is always an important consideration in these decisions.

Example of conflict resolution

The Local Plan provides support for small scale renewable energy development with a focus on supporting the National Park's communities and businesses. 'Small scale' can be defined as a development which has a low impact on the landscape, natural or built heritage, rather than its generation capacity.

Run of the river schemes up to 2MW are likely to provide the greatest opportunity whilst still considered to be small scale. Planning policy minimises the impacts from Hydro Developments by considering the key points:

- Engineering works - location, design or scale of the turbine house
- River profile - no decrease in stream flows reducing ecological value or visual attractiveness as a natural feature;
- Cumulative impacts on landscape, natural or cultural heritage, and the water environment
- Noise generation - residential amenity, protected species or tranquillity
- Pipes and power lines placed underground
- Recreation impacts - fishing, canoeing and kayaking access interests

All hydro schemes could potentially have an adverse impact on freshwater and terrestrial habitats and species. The ecological impacts from hydro schemes will often be site specific although impacts may be wider, for example downstream of the site.

The National Park Authority has an obligation to prevent any deterioration of the Park's high quality water resources under the Water Framework Directive. We also have a duty to consider impacts of changes to water flow on the important salmon rivers in the National Park.

Safeguards are put in place to protect fish populations to ensure they can still travel upstream and spawn in the gravel beds often found at the edge of hillside watercourses. Metal screens are placed at the end of the pipeline where the water is returned to the watercourse to ensure that otters do not enter the pipe.

Questions and pupil enquiry

- Why is Hydro favoured as the main form of renewable energy suitable for the National Park?
- What are the impacts of a hydro development on the landscape and water environment?
- What benefits do run of river hydro schemes bring to the land owner or local community?
- Multiple small scale hydro developments in an area could result in cumulative impacts on landscape, ecology, water quality and quantity, and recreation and access.
  Can you give examples of these impacts?

FURTHER GUIDANCE

Online

LIVE Park Renewable Energy Supplementary Planning guidance

NatureScot: Hydroelectric schemes and the natural heritage

Site visits [CS5]

- Callander Hydro (Callander Development Trust)
- Cashel Hydro (Cashel)

Mineral Extraction and the impact on landscape, recreation and biodiversity

GOLDMINE

There is a substantial history of mineral extraction in the National Park with building materials tending to reflect the nature of the local geology. There is also a history of planning consents for exploratory and extraction workings for gold at Cononish near Tyndrum.

Cononish Gold and Silver Mine is located within Cononish Glen, at the north western corner of the National Park. Initial prospecting work took place in the 1980s when Stirling Council was the Planning Authority for the area.

In 2010 a planning application for a commercial gold and silver mine was submitted to Loch Lomond and The Trossachs National Park Authority. This was the most complex planning application the National Park has ever received. The application was refused for six reasons, including being contrary to the first (conservation) and third (recreation and enjoyment) aims of the National Park.

A revised proposal was submitted in 2011 and approved by the National Park Authority in 2012. A series of further planning applications were made between 2012 and 2014, mainly relating to variations to conditions and legal agreements. The site was then subject to proposals for processing of waste material on the site, left over from exploratory investigations, with planning permission being granted in 2016 for a "bulk processing trial" processing an existing stockpile of ore over a nine month period allowing time for the establishment and commissioning of the processing plant and for around six months of production. The time period for this trial was then extended by a further twelve months through another planning application which was approved in 2017.

In August 2017 a further revised planning application was submitted and on 27 February 2018 The National Park Board was minded to approve planning permission subject to conditions and a section 75 legal agreement. The planning permission was issued on 19 October 2018 following the conclusion of the s75 legal agreement. Works started on site on 3 January 2019.

The main differences between the proposal which was refused and the proposal which was granted planning permission were the size and shape of the Tailings Management Facility (TMF) which would be left on the hillside once the mine closed, and 'planning gain' in the form of the Greater Cononish Glen Management Plan.

Entrance to mine

Mine site in the Glen

This is a 30 year management strategy covering the Cononish Estate which includes:

- Planting native woodland in the lower Glen, riparian areas and around the mine site at Cononish.
- Management of grazing with new fencing to enhance the habitat, particularly upland heath, of Ben Lui.
- Restructuring the edges of Forestry and Land Scotland's plantation on the north side of the Glen through selective felling and new planting.
- Improvements to soften the landscape impact of the Glen track.
- Maintenance of access for walkers and climbers using the Glen.
- Signage situated at the public car park at Dalrigh to illustrate this, with further locational signage (way markers) on the Cononish Glen track.

Conflicting National Park aims:

As a National Park Authority we regularly have to make difficult decisions over what is the best way to proceed. At the heart of these decisions are, sometimes conflicting, National Park Aims.

- To promote sustainable economic and social development of the Park's communities.
- To conserve and enhance the natural and cultural heritage of the Park

Resolution and role of The National Park

The first application was refused due to the conflict between the first and fourth aims, and the overriding 'Sandford' principle whereby the greater weight must be given to the first conservation aim.

The application raised a number of complex issues. The short term impacts of the operation of the mine were weighed against longer term restoration/mitigation proposals and the compensatory measures proposed, including the Greater Cononish Glen Management Plan.

Subsequent applications had to demonstrate how the proposal would conserve and enhance the natural and cultural heritage of the area. The scheme was re-designed to ensure a better restoration plan; and also proposed 'planning gain' in the form of the Greater Cononish Glen Management Plan (GCGMP) –bringing conservation and landscape improvements in the wider glen.

Assessment against National Park Aims

The 10 year operating impacts of the mine would be contrary to the aims of the National Park because of the impacts on landscape and scenic qualities, wild and remote character and the associated recreation experience of walking and climbing in the surrounding area. However, as these losses and impacts would not be permanent and the special qualities and recreation experience could be recovered and moderately improved within a 10 to 15 year period the proposals could be argued to support these aims.

As the impacts on natural heritage interests will be temporary and those interests will be ultimately conserved and enhanced in the long term the proposal will ultimately contribute positively to the conservation and enhancement of the natural heritage of the area. It was therefore concluded that, on balance, there is no conflict between aims.

Assessment against National Park Aims (continued)

Landscape and Special Qualities

Following mine restoration, if restoration techniques are rigorously enforced and the GCGMP successfully delivered, there will be an overall improvement in the landscape, special qualities and relative wildness of the area within 15 years of the development commencing.

Ecological Impacts and Habitat Restoration

The development will not affect protected habitats and species in the long term. Blanket Bog would be permanently lost, however woodland planting within the Greater Cononish Glen will compensate for this.

Economic Benefit

There will be considerable economic benefits to the rural economy and local community from the mine operating. There are wider economic benefits of Scottish gold presenting other opportunities for the local area including in the form of employability and media and tourism interests.

Impact on Recreational Experience and Access

The development will significantly diminish the recreational experience of the Cononish Glen due to the loss of wild and remote character and introduction of industrial activities during the operation of the mine. However with conditions imposed, the proposal would be consistent with recreation use such as the Rights of Way, core paths, wider access network and West Highland Way routes which will be protected from adverse impacts.

The recreation experience will be restored and improved within 15 years of the mine commencing.

Summary

On balance, the significant negative impacts on Cononish Glen Special Qualities (expected to last for at least 10 years) are acceptable because of the overall benefits expected following decommissioning and restoration and the full implementation of the Greater Cononish Glen Management Plan.

Whilst approval of the development was a departure from some policies, it is not considered that this represents a major departure from the Development Plan as a whole due to the temporary nature of the impacts, the environmental improvements that will be delivered, the economic benefits of the development, and the unique nature of the mineral to be extracted at this location.

Questions and pupil enquiry

- Considering the upland landscape around the mine, list the types of land use present in the area.
- What are the main areas of conflict that could result from the mining operations?
- What are the reasons for the conflicts?
- Was the local community in favour of the mine being opened? Give reasons for your answer.
- Why are the positive impacts for the Greater Cononish Glen Management Plan described over long periods of time?

FURTHER GUIDANCE

Online

Planning application for Goldmine in 2017

Video clip

BBC Tales from the National Parks