RURAL LAND USE IN THE NATIONAL PARK
CONFLICT & RESOLUTION
NATIONAL 4/5 & HIGHER GEOGRAPHY
# Contents

1. **Introduction to this resource** .................................................. 3

2. **Curriculum links:** ................................................................. 4
   Scottish Qualification Authority (SQA) Outcomes and Assessments Standard

3. **Background to Loch Lomond & The Trossachs National Park** .......... 5
   - National Parks in Scotland
   - Loch Lomond & The Trossachs National Park
   - History of Scottish National Parks
   - Aims of Scottish National Parks
   - Loch Lomond & The Trossachs National Park Authority
   - National Park Fact File

4. **Glaciated landscapes** ............................................................ 9

5. **Land Use in the Park** ............................................................ 11

6. **Other resources to support field visits to the Park** ....................... 12

**Appendices: Conflict and resolution: case studies**
   - Case Study 1: Camping in the National Park
   - Case Study 2: Upland Path Management
   - Case Study 3: Power craft and other water users
   - Case Study 4: Tourism and local communities
   - Case Study 5: Hydroelectric power schemes
   - Case Study 6: Goldmine development
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

**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 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 (220 miles).
- 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.
- 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:

- 1949: National Parks designated in England and Wales
- 1950
- 1960
- 1970
- 1980
- 1990
- 2000
- 2010
- 2020

- 2000: National Parks (Scotland) Act passed
- 2002: Loch Lomond & The Trossachs National Park opened
- 2003: Cairngorms National Park opened

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.

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 Commission 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 regularly 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:**

- 65% Agriculture – mainly extensive livestock farming (hill sheep and beef cattle), not much arable farming
- 27% 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 Commission 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 Inchcaill Loch 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, Inchcaill Loch 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 Commission 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.
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 loch shores. As one of the busiest rural areas in Scotland this specific area needs active management to deal with the visitor pressure.

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.

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
Resolution and role of the National Park Authority

The Park Authority is helping to resolve these conflicts. One of our key initiatives to do this is through our Your Park programme:

‘Your Park’ is a programme to enhance the camping experience in Loch Lomond & The Trossachs National Park and to improve our most cherished lochshores. Unfortunately, our most popular and accessible lochshores are suffering from damaging overuse and the irresponsible behaviour of some. You can access some of these images on our Flickr account.

Through delivery of all elements of the ‘Your Park’ programme, the National Park aims to increase enjoyment of our National Park, through providing opportunities for people to camp on our lochshores 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.

Questions and pupil enquiry

- Why does the National Park have a Respect Your Park campaign?
- Why do the Your Park Byelaws cover zones along loch shores? Read more here
- 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
- East Loch Lomond Byelaws
- East Loch Lomond Byelaws Three year report

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.
The National Park is a fantastic recreation resource, providing opportunities for different physical activities in an outstanding environment. With many popular hill routes, the area is used regularly by walkers which can result in pressures on certain sensitive hill and mountain habitats.

Ben A’an, at 454m, isn’t the tallest of hills but is certainly one of the most popular in the Loch Lomond & The Trossachs National Park.

Loved and conquered by many, the ‘wee hill’ is easily accessible from anywhere in the central belt and can offer a range of walking and climbing experiences.

It provides an easy to moderate walk with something for people of all ages, however, the final ascent to the summit is steep and more physically demanding. The popularity of this walk makes it a jewel in the crown of hill paths within the Trossachs and with spectacular views from the summit of Ben Venue, Loch Katrine and as far, on a clear day, as the Arrochar Alps, it is thoroughly worth the effort.

Ben A’an is owned and managed by Forestry Commission Scotland. Works began in October 2014 to improve the habitat on the hill. These works are part of The Great Trossachs Forest Project, which aims to restore a large scale area of Scotland’s native woodland. During these works all the non-native trees were felled and part of the area will be re-planted with native trees.

The Problem

The path, having previous works dating from around the 1980’s, has over the years suffered badly from drainage and erosion issues.

Erosion on the Ben A’an hill path was caused by a combination of factors, both human and physical. Hikers boots, mountain bikes, horseriding and livestock grazing can all play a part in damaging the path. These factors combined with natural forces, such as wind strength and direction, rainfall, frost, type of rock and vegetation as well as the angle of the slope compound the problem.

This erosion, along with drainage problems, had resulted in a boggy and rough path. The majority of people hill walking in Scotland prefer to stay on the paths as they feel safer, however when the path is in a poor condition, walkers start to walk around the edges, or avoid the built path altogether. This results in a wider path with multiple routes. The average width of the path on Ben A’an was 3 metres, 2 metres wider than it should be. This widening of the path has reduced the quality of the surrounding habitat.
Due to the severity of the erosion problem 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. This is a flagship project of the Cairngorm Outdoor Access Trust in partnership with the Heritage Lottery Fund, Forestry Commission Scotland, Scottish Natural Heritage and Scotland’s two National Park Authorities, Cairngorms and Loch Lomond & The Trossachs.

Following a detailed survey, it was decided to build a ‘high and dry’ type path, using on site materials, whilst following the old path line and incorporate any suitable existing path features. The solution to use this method of path construction will effectively ‘lift’ users out of the boggy sections and create a much more discernible, usable and long-lasting path.

The path building included both machine and hand build, with one section being built completely by hand due to the topography and access difficulties for machines. There was not enough stone on site to build the whole path, this meant importing 120 tonnes of stone from a local quarry. This stone was brought to site by a helicopter.

The repaired Ben A’an hill path has greatly improved the route, making it easier and more enjoyable for people of all ages. The new path reduces the maintenance requirement for the path which means that this popular path will be open to all in the long term. This will have long term benefits, not just for the local area and habitats, but the wider communities and users who can enjoy this hill experience well into the future.
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.
- National Park Ranger Service promote the Scottish Outdoor Access Code
- Under the Land Reform (Scotland) Act 2003, the National Park Authority must prepare a Core Paths Plan which sets out a network of routes for visitors and residents to enjoy the special qualities of the National Park. Core paths have an important role to play in ensuring that people can easily get around and enjoy the Park in a way that minimises the potential for conflict with people who manage the land.
  
  This includes keeping paths away from sensitive sites:
  
  - 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 Commission 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 body 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 bylaw enforcement and compliance activity on the loch. The Park Authority operates two public launch facilities on Loch Lomond (Duncan Mills Memorial Slipway and Milarrochy Bay) that are open for launching 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 2007 and 2011.

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<th>TYPE</th>
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Byelaw Violations

The table below outlines violations by boat type of the byelaws for the same 5 year period. The violations have predominantly been for speeding, with boat registration being the second highest recorded offence.

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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.

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

The Scottish Government have organised a ‘Planning Charrette’ in different parts of Scotland annually since 2011. These 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 there was a Balloch Charrette with workshops jointly run by Loch Lomond & The Trossachs National Park Authority and West Dunbartonshire Council.

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.

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

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.

The Loch Sloy Hydro Electric Power Scheme 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 meters 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.

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.
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 Milingavie 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 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 44 approved run of river schemes.
- Twenty of these schemes are now operational
- 13 are currently under construction (May 2016)
- 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.
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](#)
- **Scottish Natural Heritage:**
  - [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 1980’s 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. The main differences between the two proposals 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. This is a 30 year management strategy covering the Cononish Estate and will include:

- 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 of the edges of the Forestry Commission 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.

The second application had to demonstrate how the proposal would conserve and enhance the natural and cultural heritage of the area. It did this by re-designing the scheme to ensure a better restoration plan; and also by proposing '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 is therefore concluded that, on balance, there is no conflict in this case 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 proposal would not affect protected habitats and species in the long term. Blanket Bog would be permanently lost, however woodland planting within the Greater Cononish Glen would compensate for this.

Economic Benefit
There may 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 proposal would 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 would 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.

While approval of the development is 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
  - Recent application in 2016
- Video clip
  - BBC Tales from the National Parks