



Scottish Natural Heritage
Dualchas Nàdair na h-Alba

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ENDRICK MOUTH AND ISLANDS
Site of Special Scientific Interest

SITE MANAGEMENT STATEMENT

Site code: 610

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Purpose



This is a public statement prepared by SNH for owners and occupiers of the SSSI. It outlines the reasons it is designated as an SSSI and provides guidance on how its special natural features should be conserved or enhanced. This Statement does not affect or form part of the statutory notification and does not remove the need to apply for consent for operations requiring consent.

We welcome your views on this Statement.

This Statement is available in Gaelic on request.

Natural features of Endrick Mouth and Islands SSSI	Condition of feature (date monitored)	Other relevant designations
Fluvial Geomorphology of Scotland	Favourable, maintained (October 2011)	
Upland oak woodland	Unfavourable, declining (June 2008)	SAC
Hydromorphological mire range	Unfavourable, declining (July 2011)	
Breeding bird assemblage	Favourable, maintained (June 2002)	
Greenland white-fronted goose (<i>Anser albifrons flavirostris</i>), non-breeding	Favourable, maintained (February 2009)	SPA, Ramsar
Greylag goose (<i>Anser anser</i>), non-breeding	Favourable, maintained (March 2014)	
Vascular plant assemblage	Favourable, declining (May 2014)	
Bryophyte assemblage	Favourable, maintained (August 2005)	
Beetle assemblage	Favourable, maintained (July 2011)	

Features of overlapping SSSI and Natura sites that are not notified as natural features of Endrick Mouth and Islands SSSI	Condition of feature (date monitored)	Designation (SAC or SPA or SSSI)
Atlantic salmon (<i>Salmo salar</i>)	Unfavourable, recovering (August 2011)	SAC
Brook lamprey (<i>Lampetra planeri</i>)	Favourable, maintained (October 2010)	SAC
River lamprey (<i>Lampetra fluviatilis</i>)	Favourable, maintained (October 2010)	SAC
Otter (<i>Lutra lutra</i>)	Favourable, maintained (August 2003)	SAC
Capercaillie (<i>Tetrao urogallus</i>), breeding	Unfavourable, declining (March 2013)	SPA
Quaternary of Scotland geology	Favourable, maintained (April 2007)	Portnellan - Ross Priory – Claddochside SSSI

Description of the site

The Endrick Mouth and Islands Site of Special Scientific Interest (SSSI) is located at the south eastern corner of Loch Lomond. The seven compartments that make up the site include the mainland on both north and south of the Endrick Water and the following five islands; Aber Isle, Clairinsh, Inchcailloch, Torrinch and Creinch.

The natural features of the site include the habitats of upland oak woodlands, flood-plain fen, hydromorphological mire range and open water. These habitats support the natural species of note on this site, which are; breeding bird assemblage, Greenland white-fronted geese, greylag geese, vascular plant assemblage, bryophyte assemblage and an assemblage of beetles.

Geomorphology

Downstream of Woodend Lodge the River Endrick is of considerable geomorphological interest. It is an excellent example of a relatively unmodified highly sinuous lowland river with irregular meanders. In these lowest reaches the river channel has low rates of channel migration, where extensive overbank fine sedimentation occurs during floods. On the floodplain there are excellent examples of palaeo-features such as meander scrolls and an oxbow lake near Low Mains. This feature is in favourable condition.

Woodland Communities

On the islands are a range of oak woodland communities with a varied ground flora. Inchcailloch Island is the largest island on the site, and the woods are mainly sessile oak with some specimens approaching 200 years old. In wet areas there is alder coppice, and on the two summits there is Scots pine. The ground flora is similar on all the islands, dominated by great wood-rush, blaeberry, bluebells, and bracken. Torrinch has a mix of sessile oak and some aspen, but it is dominated by downy birch. Clairinsh is a small flat island with more diversity of species. On Creinch are sessile oaks and some ash, but most of the wood is coppiced wych elms that are occasionally parasitized by toothwort. Aber Isle has mostly alder and ash woodland and there is guelder rose and the site's only hornbeams. Browsing is having a negative impact on the ground and shrub field layers of the islands and will, if sustained at the current level, prevent recruitment of regenerating trees into the canopy and is placing the woodland in unfavourable declining condition. Deer management for the SSSI focuses on the woodland habitat on the islands, where deer control is implemented in partnership with a Deer Management Group for the islands. The role played by the canopy over some of the woodlands should be borne in mind. Woodland at this stage of ecological development tends to have a closed canopy that restricts the light reaching the woodland floor

and therefore limits natural regeneration. Canopy cover will change over the lifetime of the woodland and it is often preferable to allow this to happen naturally instead of intervening to thin the canopy over a shorter timescale.

On the mainland the oak woodlands are mostly young, with the occasional much older specimen tree. Ring Wood East and West are oak woodland with a mosaic of other species transitioning to downy birch in wet woodland. Pentagonal Wood is oak woodland with alder and ash. Shore Wood has a rocky shore with oak woodland mixed with ash and alder that are subject to regular inundation.

In contrast to the mainland part of the site, the islands form part of the Loch Lomond Woods Special Area of Conservation (SAC) which qualifies for Western acidic oak woodland, for which this is considered to be one of the best sites in the United Kingdom. In 2000, otter was added as a qualifying interest to the Loch Lomond Woods SAC. Although no holts are known within the SSSI, otters do frequent the site.

Fen Communities

The Endrick Mouth is naturally low lying and the hydromorphological mire range includes one of the best examples of a natural flood-plain in Scotland because it has not been severely modified by drainage or flood defences. Other habitats in the fen communities include grassland, bog, mire, marsh, reed bed, wet woodland and open water. The flood-plain fen is seasonally replenished with nutrients from the sediment deposits along the banks of the Endrick Water, from Woodend Field to Ring Point. There is a rich range of plants adapted to the various water table levels from free floating to those that tolerate seasonal water logging. This habitat supports many of the site's rare plants and birds, including the Nationally Scarce tufted loosestrife and cowbane, and there is a small population of the Nationally Rare Scottish dock. The Scottish dock is of particular importance as its UK distribution is limited to a few populations around the lower part of the Endrick catchment and the southern shore of Loch Lomond. The hydromorphological mire range is in unfavourable, declining condition due to the spread of reed canary grass, which may be a response to siltation and/or high nutrient levels in the soil.

Birds

The wetland and open water are noted for the breeding and migrant birds which roost here. The Endrick Mouth is regionally important for its wintering wildfowl, including a large wintering population of Greenland white-fronted geese. From autumn to spring around 2% of the UK population of Greenland white-fronted geese roost at Ring Point and Low Mains. The importance of Endrick Mouth for Greenland white-fronted geese has led to its classification in 1997 as part of the Loch Lomond Special Protection Area (SPA). The area south of the Endrick Water and the Islands (except for Aber Isle) were designated as a wetland of international importance under the Ramsar Convention in 1976.

Greylag geese roost off Ring Point and on Wards Pond. The Limehill Field and the Woodend Field, and Wards Pond are important grazing areas for geese.

Breeding birds from lowland damp grassland include ducks such as teal and waders such as redshank and snipe. Lowland open water and margins are the preferred habitat here for ducks such as shoveler and insectivorous birds such as the grasshopper warbler and the reed bunting. In the woodlands there are breeding tree pipit, redstart, and pied flycatcher. There is a heronry at Wards Pond. All of these bird features are in favourable condition.

Vascular plant assemblage

There are many plant species that are rare or scarce which make up the plant assemblage feature. One nationally-rare and threatened plant species is the Scottish dock, which is endemic to the Loch Lomond area. The nationally-scarce species present are cowbane, eight-stamened waterwort, and tufted loosestrife. Locally rare plants from the site are awlwort, brown sedge and thread rush. The regionally uncommon six-stamened waterwort and elongated sedge are frequently found on the site. The vascular plant assemblage was assessed previously during a time when the water level was high and that made locating both species of waterwort impossible to find. Their presence is now confirmed by the latest site condition monitoring so that this feature can now be described to be in favourable, declining condition. Restoring the functionality of the sluice from Wards Ponds is one step that would address the concerns about declining condition by providing a reliable means of maintaining habitat conditions for two species in the assemblage, eight-stamened waterwort and the narrow fruited water-starwort. That said, other options to manage water levels across the site may emerge from the ongoing consideration of this issue.

Bryophyte assemblage

The site is of bryological importance primarily for the presence of the near-threatened moss *Physcomitrium sphaericum* at the margins of Wards Ponds, one of only two recent sites in Scotland for this species. There are also at least two nationally-scarce species, *Cololejeunea rossettiana* on Creinch and *Sphagnum subsecundum* at Dragonfly Pond. The bryophyte flora of the woodlands is of some interest, and contains Atlantic elements, although they are much less rich than woodlands further to the north-west, including those on the west banks of Loch Lomond. The bryophyte feature is in favourable condition.

Beetle assemblage

The site is rich in invertebrates and there are three Red Data Book saproxylic species known from here; *Eutheia linearis*, a rove beetle *Tachinus rufipennis* and an ant beetle *Anthicus flavipes*. The endangered beetle *Eutheia linearis* lives in rotting vegetable material on Inchcailloch. In addition the Red Data Book aquatic beetle *Hydroporus rufifrons* inhabits this site. The invertebrates are in favourable condition.

The course of the Endrick Water within the Endrick Mouth and Islands SSSI forms part of the Endrick Water SAC, which qualifies for its populations of river lamprey, brook lamprey and Atlantic salmon.

The majority of the mainland of the Endrick Mouth SSSI overlays part of the Loch Lomond SPA. The features of the SPA are Greenland white-fronted geese and capercaillie. The capercaillie interest feature was found in unfavourable declining condition in 2013, their population has fallen sharply. There are a number of factors that are adversely affecting their population including; they are at the southern end of their range with a sub-optimal climate, with isolation from other populations, and this group has a poor genetic base for healthy breeding, with low brood counts, and roosting has been disturbed by people and dogs.

Ring Bog, Ring Wood with Ben Lomond	Wards Ponds
	

Past and present management

There are remains of crannogs near Clairinsh that show substantial amounts of timber were taken from the woodlands two thousand years ago.

Early written records show the sale of timber from the area to religious houses in the 13th century, and the felling and processing of timber on Inchcailloch to make a large barge for King James II in 1494. By this time, timber for building was scarce in Scotland's central belt, so Loch Lomondside became a prime source, with much being taken out by boat via the River Leven. Over the next 200 years new housing in Glasgow and the Clyde ports, together with wooden barrels used by the booming herring industry, added to the demand for wood.

Well before the industrial revolution began in the 18th century there were few large trees left. It was an open landscape and the woodlands (on the current Reserve area) were confined to parts of the islands and remnants around Buchanan Castle. In fact there was so little large timber that bark from coppiced trees had become a more valuable product than the wood itself. Crofters continued to cultivate potatoes and oats and graze common areas with cattle and other livestock, cutting bog hay for fodder. Even parts of Inchcailloch, today completely covered in oak woods, were cleared to grow grain.

Clairinsh was designated as a National Nature Reserve (NNR) in 1958. Following further extensions to the NNR in 1962, 1977 and 1987 almost all of the SSSI is now within Loch Lomond NNR. The woodland habitat on the islands in the NNR is managed on a minimum intervention basis, although deer control is needed to allow the woods to sustain themselves through natural regeneration. Inchcailloch, managed by the National Park Authority, is promoted for visitor use with trails, composting toilets and a campsite all managed by the Park rangers.

The Endrick Mouth part of the SSSI we see today began to be shaped after 1700 as farming started to change. The Montrose Estate, which owned the part of the Endrick Mouth east of the Aber Burn, became a leader in new farming technology and pioneered land drainage on a new scale. Ditches, still in use today, were dug and burns were straightened or even had their beds paved to allow carts easier access through the marshes.

By the early years of the 20th century, intensive management of the woods and fields was declining. This site has a history of peat cutting for domestic use, and no significant peat deposit remains. Subsequently, it was partially drained and has a fairly long agricultural history of being cut for bog hay for animal fodder and rough-grazed by cattle. However, much of the

Endrick Mouth is still managed for agricultural purposes, mainly rough grazing for sheep and cattle. The nature conservation interest of this site was recognised in the 1950s. It became part of the Loch Lomond National Nature Reserve (NNR) in 1962. This area is now covered by Nature Reserve Agreements with various landowners, who now include RSPB after they purchased Wards Farm in 2012.

Management of the Endrick Mouth's wetland feature varies across the reserve with different ownerships, tenancies and locations. Twenty Acre Meadow is managed under a wet meadow regime for its flora whereby it is cut after 1st August with aftermath grazing. The wetlands of the Crom Mhin, Low Mains, Wards Pond and Snipe Flats are grazed to varying degrees by farm stock. Water levels on Wards Pond are managed for winter wildfowl, breeding birds and for its important aquatic plant assemblage.

Non-native invasive plants have been controlled for several years with a fair degree of success. Himalayan balsam, giant hogweed were prevalent in areas and staff have also controlled few flowered leek, American skunk cabbage, Japanese knotweed and now pick-a-back-plant have become widespread.

To improve the wetland habitats in the hydromorphological mire range, the majority of the larger wetland feature, including this site, was bunded in the mid 1980s. This raised water levels and enhanced the botanical and ornithological interests of the site, while also diverting the polluted Aber Burn around the outside of the wetland. The Aber Burn is now a much cleaner water body, so a range of options are being considered for allowing the wetland to return to being a more natural component of the floodplain.

Objectives for Management (and key factors influencing the condition of natural features)

We wish to work with the owners and occupiers to protect the site and to maintain and where necessary enhance its features of special interest. SNH aims to carry out site survey, monitoring and research as appropriate, to increase our knowledge and understanding of the site and its natural features and to monitor the effectiveness of the management.

The EU Habitats and Birds Directives oblige Government to avoid, in SACs and SPAs, the deterioration of natural habitats and the habitats of species, as well as disturbance of the species for which the areas have been designated, where such disturbance could be significant in relation to the objectives of these Directives. The objectives below have been assessed against these requirements. All authorities proposing to carry out or permit to be carried out operations likely to have a significant effect on the European interests of this SSSI must assess those operations against the relevant Natura conservation objectives (which are listed on our website through the SNHi – SiteLink facility).

1. To maintain the extent and improve the age structure of the oak woodland and increase the understory shrub layer. Heavy grazing by deer needs to be controlled by maintaining recent levels of deer control through the Loch Lomond islands Deer Management Group. The role of canopy cover may be relevant to some of the woodlands and management to increase light levels reaching the woodland floor. The condition of the woodlands is also key to maintaining the condition of much the SSSI's bryophyte assemblage feature.

2. To review the management of the Aber Bogs area of the SSSI.

The wetland habitats around Aber Bogs have been profoundly altered by the bunds that were built around the wetland in the 1980s. These bunds raised the water table and prevented the then-polluted Aber Burn from carrying sewage-related pollution into the fen and swamp communities there. Now the Aber Burn has been cleaned up, there is the potential to remove some or all of the bunding to restore the Aber Bogs area to being a more natural component of

the floodplain. Options for achieving this are being researched we expect that a decision on the best way forward will be taken by 2016. Any solution will involve careful consideration of water level management in the drainage system running through the Aber Bogs area.

3. To maintain the habitats for roosting geese and breeding birds and ensure minimal disturbance. Ensure that there is limited disturbance (activity, light pollution, noise) to roosting geese and wintering waterfowl. Avoid disturbance during nesting times of the breeding bird population (including capercaillie) as detailed in the NNR management plan.

4. To maintain wetland habitat that supports many of the rare or scarce plants. This will be influenced by whatever decision is made about the bunding and management of the Aber Bogs area. This area holds part of the vascular plant assemblage and has a degree of hydrological connection with the Wards Ponds, itself a key botanical area, via the Endrick Water. Restoring the sluice system connecting the Ponds to the Endrick may be a good management solution for this part of the system, which also holds dwarf bladder moss, a component of the SSSI's bryophyte assemblage. In addition to managing the flows and water levels in these systems, management such as grazing or cutting to maintain wet, open conditions may be appropriate. Non-native plants such as giant hogweed and Himalayan balsam should be removed and there should be no use of manure or slurry.

5. To maintain the extent of deadwood on the islands that supports the rare beetles which live on the islands. Maintain a supply of deadwood available.

6. To avoid engineering or other mechanical interventions in the channel or banks of the Endrick Water to allow its geomorphological character to develop naturally.

Date last reviewed: 02 March 2015