



Scottish Natural Heritage

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**INNER TAY ESTUARY
Site of Special Scientific Interest**

SITE MANAGEMENT STATEMENT

Site code: 809

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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.

Description of the site

The Inner Tay Estuary, or inner Firth of Tay, is one of the largest estuaries in eastern Scotland. It stretches approximately 20km eastwards from the confluence of the Rivers Tay and Earn to the Tay rail bridge in the east. At its widest the estuary is approximately 2.5km across. The site consists primarily of inter-tidal sand and mud flats that extend seawards out to the main channel of the estuary, the majority of which lie on the northern side of the estuary. These are backed landward by saltmarsh and *Phragmites* reedbeds again much of which lies on the northern side of the estuary. There is one large island, Mugdrum Island, which lies opposite Newburgh and is grazed by livestock.

The Inner Tay Estuary was selected as an SSSI on account of its importance as a roost for internationally important numbers of wintering geese and as a breeding, migratory and wintering area for birds linked with reedbeds, grazing marsh, saltmarsh, mudflats and sandbanks of the estuary and its margins, as well as the saltmarsh and reedbeds themselves – the latter forming a transition from saltmarsh through to freshwater fen and dry land.

The narrow form of the estuary and the large amounts of freshwater from the Earn and Tay mean that salt water influence does not penetrate to the west end of the site even at spring tides. As a consequence much of the tidal water in the estuary is freshwater or mildly brackish, and most of the 'real' saltmarsh has only developed in the Invergowrie to Monorgan part of the site. The mudflats in this area are the most productive for invertebrates and support the largest numbers of wintering and migrant waterfowl. Significant numbers of redshank, dunlin and bar-tailed godwit occur, all of which

contribute to the internationally important waterfowl assemblage within the Firth of Tay and Eden Estuary Special Protection Area (SPA) and Ramsar site.

Greylag and pink-footed geese roost in large numbers on the foreshore and on Mugdrum Island, and goldeneye and cormorants feed over the intertidal areas when they are flooded by the tide; the latter also roost out on the sandbars.

On the north side of the estuary stretching for some 15 km is thought to be the largest continuous expanse of reed in the UK. Although the reedbeds are tidal (being flooded on the spring tides) they support nationally important breeding populations of marsh harrier, water rail and bearded tit. These species together with others such as reed bunting, reed warbler and sedge warbler and waterfowl such as gadwall, teal and snipe, form part of a rich breeding bird assemblage for the site. Where there is rough grassland and scrub especially along sea walls, the occasional grasshopper warbler is recorded.

Although not part of the notified interest of the site, the estuary is a spawning ground for smelt (or spurling), one of only three for this fish in Scotland; the others are the Firth of Forth and the River Cree in Dumfries and Galloway. The estuary is also important as a route for migratory salmon, and to a lesser extent sea trout. Otters have been recorded, especially in water courses draining into the estuary. The reedbeds and associated wetlands support a large number of rare insects and invertebrates, some of which are unknown elsewhere in Scotland.

The SSSI lies within the Firth of Tay and Eden Estuary Special Protection Area (SPA) which is designated for both breeding and non-breeding birds. The site also lies within the Firth of Tay and Eden Estuary Special Area of Conservation (SAC) which is designated for common seals *Phoca vitulina*, intertidal mudflats and sandflats, and subtidal sandbanks. The site also lies within the Firth of Tay and Eden Estuary Ramsar which is designated for the following non-breeding birds: bar-tailed godwit (*Limosa lapponica*), greylag goose (*Anser anser*), pink-footed goose (*Anser brachyrhynchus*), and Redshank (*Tringa totanus*).

The site is contiguous with the River Tay SAC at the west end, and with Flisk Wood SSSI; it overlaps part of Balmerino - Wormit Shore SSSI. Part of the eastern end of the SSSI on the north shore has been designated as the Inner Tay Estuary Local Nature Reserve.



Current condition of the natural features

In 2004 the population of cormorant and goldeneye had both declined since the SSSI re-notification in 1999 and a status of unfavourable condition is recorded for these species. Goldeneye have experienced a significant national decline since 1995 and it is possible that improvements to waste water treatment in Invergowrie Bay has reduced organic effluent and as a result the populations of invertebrate food for this species. The reason for the decline in cormorant numbers is not clear and may be due to natural population fluctuations or sampling error. Similar reasons may apply to the declines in other species in the SPA.

The numbers of greylag geese have declined by more than 50% between 1994-1999 and 1999-2004 and as a result the feature is considered to be in unfavourable condition. However, it is not thought that the estuary is less suitable as a roost for these species, but that the decline is in line with the recent change in distribution of the wintering greylag population which has tended to remain in northern Scotland following migration from its Icelandic breeding grounds. The numbers of pink-footed geese have also declined over recent years.

The saltmarsh was considered to be unfavourable in 2000 primarily because of a loss of extent of saltmarsh habitat mainly through succession to reed and greater reed grass swamp. However the invasion by these species is probably a natural process due to reductions in grazing or changes in the saltmarsh and is likely to be limited by water salinity. As a result this assessment is likely to be amended to 'favourable condition'.

A summary of the latest site monitoring information is given below:

Natural features of Inner Tay Estuary SSSI	Feature condition (date monitored)	Other relevant designations
Breeding bird assemblage	Favourable maintained (March 2005)	-
Bearded tit <i>Panurus biarmicus</i> , breeding	Favourable maintained (August 2009)	-
Cormorant <i>Phalacrocorax carbo</i> , non-breeding	Unfavourable no change (January 2004)	SPA
Goldeneye <i>Bucephala clangula</i> , non-breeding	Unfavourable no change (January 2004)	SPA
Greylag goose <i>Anser anser</i> , non-breeding	Unfavourable no change (January 2004)	SPA/RAMSAR
Marsh harrier <i>Circus aeruginosus</i> , breeding	Favourable maintained (September 2009)	SPA
Pink-footed goose <i>Anser brachyrhynchus</i> , non-breeding	Favourable maintained (January 2004)	SPA/RAMSAR
Water rail <i>Rallus aquaticus</i> , breeding	Favourable maintained (April 2009)	-
¹ Transition saltmarsh	Favourable maintained (September 2002)	SAC

¹ This feature was previously monitored as "open water transition fen" in 2002. However, it is best described as "transition saltmarsh". The 2002 assessment is compatible with the new terminology.

Natural features of Inner Tay Estuary SSSI	Feature condition (date monitored)	Other relevant designations
Saltmarsh	Unfavourable declining ² October 2000	SAC

Features of overlapping Natura sites that are not notified as SSSI natural features ³	Feature condition (date monitored)	SPA, SAC or Ramsar
Bar-tailed godwit <i>Limosa lapponica</i> , non-breeding	Favourable maintained (February 2001)	SPA/RAMSAR
Dunlin <i>Calidris alpina alpina</i> , non-breeding	Unfavourable no change (February 2001)	SPA
Eider <i>Somateria mollissima</i> , non-breeding	Unfavourable no change (February 2001)	SPA
Goosander <i>Mergus merganser</i> , non-breeding	Favourable maintained (February 2001)	SPA
Grey plover <i>Pluvialis squatarola</i> , non-breeding	Favourable maintained (February 2001)	SPA
Icelandic Black-tailed Godwit <i>Limosa limosa islandica</i> , non-breeding	Favourable maintained (February 2001)	SPA
Oystercatcher <i>Haematopus ostralegus</i> , non-breeding	Unfavourable no change (February 2001)	SPA
Red-breasted merganser <i>Mergus serrator</i> , non-breeding	Unfavourable no change (February 2001)	SPA
Redshank <i>Tringa totanus</i> , non-breeding	Favourable maintained (February 2001)	SPA/RAMASR
Sanderling <i>Calidris alba</i> , non-breeding	Unfavourable no change (February 2001)	SPA
Shelduck <i>Tadorna tadorna</i> , non-breeding	Favourable maintained (February 2001)	SPA
Waterfowl assemblage, non-breeding	Favourable maintained (February 2001)	SPA/RAMSAR
Common seal <i>Phoca vitulina</i>	Favourable maintained (August 2004)	SAC
Intertidal mudflats and sandflats	Favourable maintained (December 2002)	SAC
Subtidal sandbanks	Favourable maintained (July 2002)	SAC
Estuaries	Not yet assessed	SAC

Part of Inner Tay Estuary SSSI overlaps with part of Balmerino - Wormit Shore SSSI which is notified for its old red sandstone igneous geology. This feature was monitored in October 2006 as being in favourable condition.

² It is likely that the assessment will be altered to 'favourable' as a result of a re-appraisal of the impacts of invasion by reed and reed grass

³ This lists excludes long-tailed duck, velvet scoter, common scoter and little tern (breeding) which do not occur in the Inner Tay Estuary.

Past and present management

Estuaries are dynamic systems which are constantly changing. Even within the last 20 years the distribution of sand and mud banks within the estuary has changed. The extent of reedbeds and saltmarshes change as well with some areas eroding and others expanding. Global sea level rise is a concern, but there is no evidence as yet that sea levels have risen locally.

Marshes once stretched several kilometres inland along the north shore but were drained and cultivated by Cistercian monks in the 15th and 16th centuries. In the 19th century reed was planted to protect the agricultural land, and with the help of groynes built out into the estuary the reedbeds have expanded naturally. The area of reed seems stable overall with some local losses due to erosion offset by colonisation of the mudflats in others.

A bunded area adjacent to Paddockmuir Wood was reclaimed for agriculture, but is believed to have been abandoned some time after World War II. Another bunded area lies adjacent to Hill of Errol - this area is thought to have been used to store timber floated down the estuary. At Cairnie Pier material has been removed from a borrow pit to build up the sea wall.

In 1974 commercial harvesting of the reedbeds for thatching reed began, and has continued to the present day albeit now on a reduced scale by RSPB. At its height approximately 30-40% of the reed beds were cut by Tayreed on an annual rotation (single wale) using a mechanical harvester known as a Seiga. Even at that extent the cutting was thought to have been compatible with, if not beneficial for, the bird, plant and insect interest of the reed beds.

Areas of reed were occasionally burnt off in order to prepare the beds for cutting the following year if a reedbed had not been managed for several years. A 10m or so buffer of uncut reed was left adjacent to the seawall/banking to retain habitat for breeding birds. Uncut strips are also left adjacent to ditch/channel edges and along the seaward margin which recreated a considerable length of reed edge, thought to be important for some bird species. The Seiga cutting machine also helped to create tracks and wet areas through the bed, which were also thought to be important for some species eg snipe and water rail.

Harvesting has now ceased in a number of reedbeds, most notably at Tay Lodge which was the largest bed cut by Tayreed. The implications for birds such as bearded tit and water rails which seem to benefit from reed management and which have been present in significant numbers at Tay Lodge are currently being investigated.

RSPB now manage a number of reedbeds in the SSSI and have undertaken trials to try to identify the impacts of different cutting regimes on breeding birds, as well as carrying out other habitat management such as pond creation. Tay Ringing Group constructed a pond at the eastern end of the Tay Lodge reedbed and assisted in the fencing of an area of wetland in the Powgavie section to prevent cattle grazing the reedbed.

In common with many riverside areas there have been increases in invasive non-native plant species, notably Himalayan balsam, Japanese knotweed and giant hogweed.

Successful control of Japanese knotweed was undertaken by Tayreed at Tay Lodge. Whilst control of giant hogweed using Roundup has been attempted intermittently at various locations over the years with varying degrees of success.

A few small areas of saltmarsh (e.g. at Powgavie, Templehall and Monorgan) have been used to graze livestock on a seasonal basis, and ponies graze a small area of wet grassland near Kingoodie.

Cattle and sheep have been grazed intermittently on Mugdrum Island, but access from Newburgh is difficult and requires use of a pontoon or similar. In the past the island has been managed as a nature reserve by the landowner with an emphasis on breeding ducks and waders and wintering geese. There is currently management on the island as part of a Rural Development Contract (RDC) with the aim of promoting suitable habitat for breeding waders such as redshank and wintering wildfowl, and reducing predation by crows. It is also hoped that this project will also provide suitable roosting habitat for the dwindling geese population within the Estuary.

Wildfowling on the estuary has a long history. It occurs in the winter months over the mudflats from breakwaters, from the Battery off Kingoodie, and also by boat in the reedbed islands off Newburgh. A comparatively small number of enthusiasts are involved and their impact is spread over what is a very large site; consequently their impact is thought to be small.

Perth and Kinross Council and Dundee City Council together manage a Local Nature Reserve (which is largely by agreement with other landowners) which extends from Dundee Airport ca 0.5 kilometres south-westwards to Templehall.

Aggregates are removed on a commercial basis downstream of Newburgh, and some dredging is undertaken from time to time to keep open the navigation channel to Perth Harbour. More extensive dredging of the channel between Perth and Newburgh has taken place in recent years to render the harbour more accessible to shipping at high tide for small commercial vessels.

Public roads run within a few hundred metres of the SSSI boundaries on both north and south banks. However there is little public access (besides wildfowling) except where there are convenient car parking places or where the road enters or abuts the site (Balmerino, Newburgh and Wormit (south bank); Cairnie Pier, Powgavie, Port Allen and Kingoodie/Dundee (north bank)). Several public rights of way enter the site or pass nearby and are being used increasingly, for example in and around Errol. Farm tracks and footpaths allow access at other points, particularly on the north bank.

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

The long term goals for the site are:

- to maintain the SSSI as a fully functioning estuarine ecosystem;
- to maintain the extent of the *Phragmites* reed bed;

- to maintain the extent and where possible expand the area of saltmarsh habitat, a rare and declining habitat in a national context;
- to maintain reedbed conditions suitable for breeding marsh harriers, water rail and other notable reedbed and wetland bird species, and to promote an increase in the size of the bearded tit population to improve long term viability;
- to maintain conditions suitable for winter roosts of pink-footed and greylag geese by insuring the intertidal mudflats and sandbanks remain undisturbed;
- to maintain conditions suitable for wintering and passage wildfowl populations, especially goldeneye and cormorant as well as the species that contribute to the SPA;

We wish to work with the owners to protect the site and to maintain and where necessary enhance its features of special interest. We aim to carry out site survey, monitoring and research as appropriate to increase our knowledge and understanding of the site, its natural features and the effectiveness of 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, in so far as such disturbance could be significant in relation to the objectives of these Directives. The objectives above 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).

Other factors affecting the natural features of the site

A number of housing developments, some quite substantial, have been proposed close to or adjacent to the site in the Errol area. The implications of potential increased disturbance will have to be taken into account, and it may be desirable to have a much more formal means of managing access in this area.

As part of the Perth and Kinross Core Path Network, new core paths were proposed adjacent to Errol Airfield and at Seaside. These have now been withdrawn in part because of concerns over disturbance.

A proposal has been put forward for a public access trail around the inner estuary. The implications in terms of disturbance are potentially significant and would have to be carefully considered.

A circuit/course for trails motor bikes has been set up near the Errol waste water treatment works, according to Perth and Kinross Council, without planning permission – this is another source of disturbance.

There have been one or two proposals for wind turbines near the SSSI and cumulative impact of such proposals may have to be considered in the longer term.

Date last reviewed: 10 September 2010.