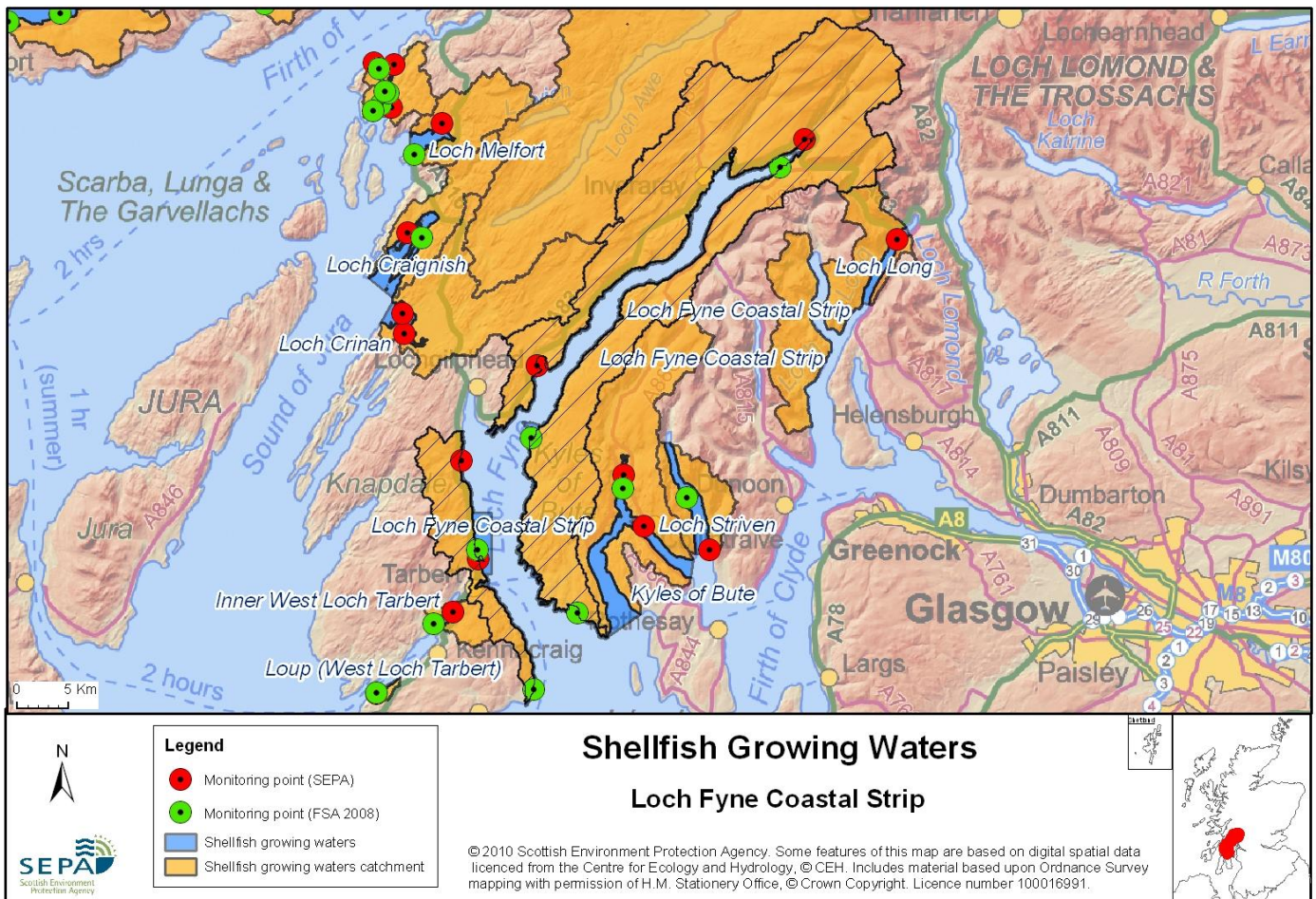


9 Loch Fyne Coastal Strip



For ease of description the Loch Fyne Coastal Strip has been split into its three natural basins:

- Loch Fyne Coastal Strip – North Basin Loch head
 - Minard (Northings NN96)
- Loch Fyne Coastal Strip – Middle Basin Minard
 - Otter Ferry (Northings NN84)
- Loch Fyne Coastal Strip – South Basin
 - Otter Ferry to Loch mouth.

Name	Loch Fyne Coastal Strip
Report Reference Number	9
WFD Code	UKS799239
Local Information	An area comprising the waters of Loch Fyne extending from NR9129957344 (Skipness Point) to NR9937363899 (Ardlamont Point), excluding areas between NR8515784002 to NR8772583895 (Loch Gilp) and NN0890307296 to NN1037709624 (Inveraray), this area extends from MHWS to 100 m seaward of MLWS, except between NR8620076000 and NR8730070000 where it extends from MHWS to a line between NR8800076000 and NR8800070000.
Designated Area (km²)	33.33
Year of Designation	1998
Sampling Points	Loch Fyne at Barmore Island, South Bay - NR 86768 71521 Loch Fyne at Loch Fyne Head Mussel Site - NN 18699 12499 Loch Fyne at Whitehouse Bay Mussel Site - NR 85111 81114 Loch Gair at Loch Gairnr - NR 92548 90420 Loch Gair at Village Mussel Site - NR 92548 90420
Commencement of Monitoring	1982

9.1 Commercial Shellfish Interests

Loch Fyne Coastal Strip is a large Shellfish Water which stretches along the east and west coast of Loch Fyne. Within this area there are four Food Standards Agency (FSA) designated Shellfish Harvesting Areas.

Loch Fyne: Ardkinglas has three sites (Policy Gates, The Point, The Shore) that are classified for the production of Common mussels (*Mytilus edulis*) and Pacific oysters (*Crassostrea gigas*). And are all classified as below.

Loch Fyne: Ardkinglas – all sites (Common mussels)
2011 = A - April to August, November & December
B - September & October
2012 = A - January to March

Loch Fyne: Ardkinglas – all sites (Pacific oysters)
2011 = A - April to June, December
C - August & September
B – July, October to December
2012 = A - January to March

Loch Fyne: Otter Ferry has just one site (Balliemore) that is classified for Pacific oysters (*Crassostrea gigas*).

Loch Fyne: Otter Ferry – Balliemore (Pacific oysters)

2011 = A - April to June

B - July to December

2012 = B - January

A - February to March

Loch Fyne: Skipness has just one site (Skipness) that is classified for both Common otter shell (*Lutraria lutraria*) and Razors (*Ensis arcuatus*)

Loch Fyne: Skipness (Common otter shell)

2011 = A - April & May, July & August, October to December

B - June & September

2012 = A - January to March

Loch Fyne: Skipness (Razors)

2011 = A - April to July, October to December

B - June & September

2012 = A - January to March

Loch Fyne: Stonefield has three sites (North Bay, South Bay, North Bay oysters) for the production of Queen scallops (*Chlamys (Aequipecten) opercularis*) and Pacific oysters (*Crassostrea gigas*),

Loch Fyne: Stonefield – North and South Bays (Queen scallops)

2011 = A - April to December

2012 = A - January to March

Loch Fyne: Stonefield – North Bay oysters (Pacific oysters)

2011 = A - April to September

B - October to December

2012 = B - January to March

Category A sites are of the highest standard and means that shellfish can go directly for human consumption however category B requires that shellfish must be depurated, heat-treated or re-laid prior to human consumption. Category C requires that shellfish must be relayed for 2 months to meet category A or B prior to human consumption. Shellfish can also be heat treated by approved method.

FSA have carried out sanitary surveys for Ardkinglas and Stonefield.

For more information on Food Standards Agency Classification please visit:

<http://www.food.gov.uk/scotland/safetyhygienescot/shellmonitorscot/shellclassesscot/>

9.2 Bathymetric Information

Loch Fyne has a length of 60.5 km. Two sills divide the loch into three basins. One is located just north of Minard and the other at Otter Ferry.

Maximum water depths are 135 m, 60 m and 185 m in the north, mid and south basins respectively. As a whole, the loch takes 13 days to fully flush but each basin will have its own local flushing characteristics, the relatively open waters of the outer basin being more dynamic than the inner areas.

The total catchment area of Loch Fyne is 894 km². Fresh/tidal flow ratio, which reflects the degree of possible influence of fresh water on the overall salinity is low (0.2) due to the large size and volume of the loch, resulting in salinities generally close to that of open sea water.

There are no morphological pressures in any of the basins.

9.3 Conservation Designations

There are four FSA Shellfish Harvesting Areas in Loch Fyne Coastal Strip (see 9.1 Commercial Shellfish Interests for details)

To the East of Loch Fyne is Kyles of Bute designated Shellfish Water ([UKS799238](#)) and Loch Striven designated Shellfish Water ([UKS7992389](#)). Both are partially designated by FSA as Shellfish Harvesting Areas. Ettrick Bay is also designated as a FSA Shellfish Harvesting Area.

West of Loch Fyne is Inner West Loch Tarbert designated Shellfish Water ([UKS79923104](#)) – this is also designated as a Shellfish Harvesting Area by the FSA

National Nature Reserves (NNR) – [Mealdarroch](#)

Designated 22/10/1987

Special Protected Area (SPA) – [Glen Etive and Glen Fyne](#)

Designated 28/10/2010 for aggregations of internationally important breeding birds - Golden eagle (*Aquila chrysaetos*)

Special Area of Conservation (SAC) – [Glen Shira](#)

Designated 17/03/2005 for internationally important habitat - Western acidic oak woodland

Special Area of Conservation (SAC) – [Tarbert Woods](#)

Designated 17/03/2005 for internationally important habitat - Western acidic oak woodland

This is also a **Groundwater Dependent SAC**

Site of Special Scientific Interest (SSSI) – [Glendaruel Wood and Craggs](#)

Designated 23/08/1985 for Rocky slopes (includes inland cliff, rocky outcrops, chasmophytic vegetation) and Upland oak woodland

Site of Special Scientific Interest (SSSI) – [Ardchylene Wood](#)

Designated 01/11/2002 for Upland oak woodland

Site of Special Scientific Interest (SSSI) – [Hells Glen](#)

Designated 21/12/1984 for Bryophyte assemblage, Lichen assemblage and upland oak woodland

Site of Special Scientific Interest (SSSI) – [Beinn an Lochain](#)

Designated 09/11/1995 for Siliceous scree (includes boulder fields), tall herb ledge, upland assemblage (mosaic)

Site of Special Scientific Interest (SSSI) – [Strone Point, North Loch Fyne](#)

Designated 29/06/1990 for Structural and metamorphic geology (Dalradian)

Site of Special Scientific Interest (SSSI) – [Knapdale Lochs](#)

Designated 12/04/2000 for aggregations of breeding birds - Black-throated diver (*Gavia arctica*)

Site of Special Scientific Interest (SSSI) – [Inverneil Burn](#)

Designated 28/06/1985 for Bryophyte assemblage, Lichen assemblage and upland oak woodland

Site of Special Scientific Interest (SSSI) – [Artilligan and Abhain Srathain Burns](#)

Designated 31/01/1986 for Upland oak woodland

Site of Special Scientific Interest (SSSI) – [Craignure Mine](#)

Designated 18/11/1991 for Mineralogy of Scotland

Site of Special Scientific Interest (SSSI) – [Glen Ralloch to Baravalla Woods](#)

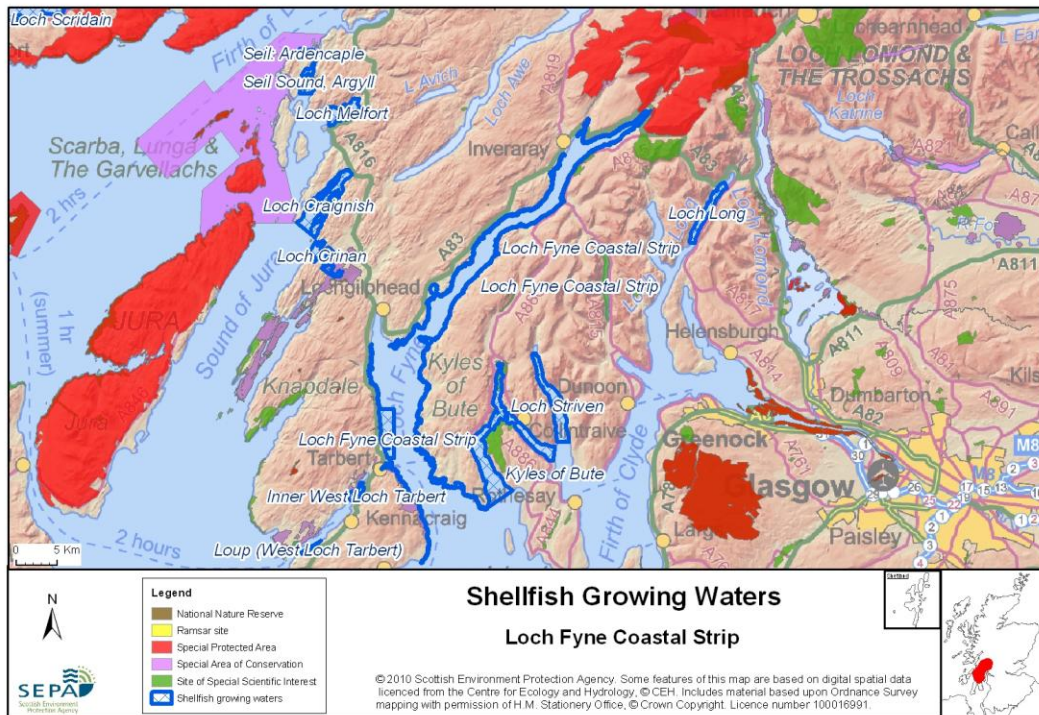
Designated 29/09/1989 for Bryophyte assemblage, Lichen assemblage and upland oak woodland

Site of Special Scientific Interest (SSSI) – [Claonaig Wood](#)

Designated 28/06/1985 for upland oak woodland

Site of Special Scientific Interest (SSSI) – [Tarbert to Skipness Coast](#)

Designated 29/09/1989 for Bryophyte assemblage and upland oak woodland



9.4 Topography and Land Use – Potential Diffuse Pollution Sources

Loch Fyne is a 60 km long narrow fjordic loch with an approximate coastline of 200 km, all of which is accessible by road. The land that drains into Loch Fyne is sparsely populated and primarily used for non-intensive agriculture. The upper reaches of the loch are surrounded by steep rocky hill land rising to over 900 metres.

Land use is restricted to extensive livestock production and forestry. The hill land is given over to hill sheep production and deer stalking. The gentler slopes are either in forestry or used for beef and hill sheep production.

The topography of the area and the extensive nature of farming reduce the likelihood of significant point sources of agricultural pollution.

Forestry within this area is actively managed and a significant area is reaching maturity and due to be harvested. Essential drainage works will be carried out after harvest and prior to any replanting.

There are several freshwater inputs to the designated shellfish area, including River Fyne, Kinglas Water, River Aray, Leacann Water, Cuillarstich Burn and the Crinan Canal. There are no significant pollution problems in these watercourses.

There are three significant communities, one included in the coastal strip and two within 2 km. There are also ten small coastal communities and a number of single house/small group developments along the main A83 road.

North Basin

This is an extensive area of hill land rising to over 900 m and dissected by the steep valleys of Glen Shira, Fyne, Array and Kinglas. Over half of this area is mountainous and of little agricultural use other than for deer stalking and extensive hill sheep production. There is forestry on the lower slopes along with extensive systems of livestock production. There are ten known farms in beef and sheep production. Strachur, Furnace, Minard, Cairndow, St. Catherines and Crarae are the six small coastal communities in the area.

Middle Basin

The catchment of the middle coastal strip is an undulating upland area rising to 400m and dissected by many small burns. The majority of the land in this area is forested and agriculture is limited to extensive livestock production with beef and sheep production on four known farms. Coastal communities in the area include Lochgair and Port Ann/Achnaba with a large number of isolated houses along the coastal road.

South Basin

The catchment of the south coastal strip is undulating, rising to 250 m and dissected by many small burns. The majority of the land area is forested. Agriculture is limited to fairly extensive livestock production with beef and sheep production on eight known farms.

Diffuse pollution from agriculture as well as by direct/indirect sewage discharges. Discharges from Tarbert, Inverneil, Lochgair, Minard, Furnace, Argyll Caravan Park, Cairndow, St Catherine's, Strachur, Newton and Largiemore are thought to be among the main underlying causes of occasional failures in the Guideline standard

9.5 Point Source Discharge

The historical development of the coastal communities in this area has resulted in a multiplicity of small-scale sewage schemes with outfalls to Loch Fyne or to watercourses that discharge to Loch Fyne.

North Basin

Type	Name	Treatment	Consent No.	NGR	PE	Additional Information
Scottish Water Asset	Inveraray STW	Septic tank	CAR/L/1008718	NN 0961 0794	720	Scheme completed 2003
	Cairndow ST	Septic tank	Multiple discharges	-	40/ 120	
	Minard ST	-	Multiple discharges	-	152	New sewage collection and treatment scheme for each under Q&S II
	Crarae & Coille Mhinnean Outfalls	-	CAR/L/1000541	-	150	
	Furnace STW	Septic tank	CAR/L/1003722	NS 0275 9985	170	New scheme completed 2003

	Strachur Outfall	Septic tank	CAR/L/1000540	-	133 439	New sewage collection and treatment scheme for each under Q&S II
Other	Argyll Caravan Park ST	Septic tank	CAR/L/1000209	NN 074 050	400	
	Saint Catherines ST	Septic tank	Multiple discharges	-	40 / 140	
Industrial	Furnace Quarry	-	No discharge to controlled water	-	-	Hard rock extraction and road stone coating plant
	Panfish Fish Processing Unit, Cairndow	Air floatation	PPC/W/0020061	NN 17614 10901	-	No microbiological loading

* There is no CAR authorisation for this site at present.

Middle Basin

Type	Name	Treatment	Consent No.	NGR	PE	Additional Information
Scottish Water Asset	Lochgilphead & Ardrishaig Sewerage Scheme	Secondary	-	-	3500	Lochgilphead/Ardrishaig scheme upgraded under Q&S II
	Lochgair ST	Septic Tank	Multiple Discharges	-	60	Lochgair scheme removed from Q&S II and deferred to a later investment period including first time provision.
	Achnaba Sewerage System	Septic Tank	WPC/W/11067-11068 *	-	60	

* There is no CAR authorisation for this site at present.

South Basin

Type	Name	Treatment	Consent No.	NGR	PE	Additional Information
Scottish Water Asset	E L Tarbert	Primary settlement and screening	Various	-	1300	New WWTW and network upgraded under Q&S II
	Tarbert CSO	-	Various	-	-	
Other	Inverneil ST	-	Various	-	60	
	Skipness	-	Various	-	50	

There are 11 marine cage fish farms in Loch Fyne. These sites have a total consented biomass of salmon of approximately 12149 tonnes.

Category	Name	Consent No.	NGR	Biomass (t)	Additional Information
Fish Farm	Meall Mhor	CAR/L/1015860	NR 8650 7450	900	-
	Rubha Stillaig	CAR/L/1000891	NR 9250 6820	900	-
	Port a Mhadaidh	WPC/W/30183*	NR 928 694	100	-
	Glenan Bay	CAR/L/1010474	NR 9180 6980	1356	-
	Quarry Point	CAR/L/1003088	NR 9980 9800	1344	-
	Ardcastle	CAR/L/1010775	NR 9559 9241	1560	-
	Tarbert South	CAR/L/1010476	NR90206530	1030	-
	Ardgaddan	CAR/L/1010817	NR90938099	1696	-
	Gob a Bharra	CAR/L/1010773	NR90407680	1405	-
	Strondoir Bay	CAR/L/1003721	NR85707970	1408	-
	Furnace	CAR/L/1003090	NN 0340 0010	450	-

* There is no CAR authorisation for this site at present.

9.6 Compliance Monitoring Regime

Year	Monitoring Regime
2005 -	<ul style="list-style-type: none"> • twice a year for Sal, DO, pH, temperature, visible oil • Annually for metals and organohalogens in mussels • Twice yearly for metals in water • E. Coli in mussels

9.7 Compliance History

UKS799239 - Loch Fyne Coastal Strip				
	Compliance history for Waters and Biota, excluding faecal coliforms data			Compliance history for faecal coliforms
Year	Overall Result	Imperative	Guideline	Guideline
1999	Pass	Pass	Pass	Fail
2000	Pass	Pass	Fail ¹	Fail (Whitehouse Bay)
2001	Fail	Fail ^{2,3}	Fail ⁴	Fail (Loch Fyne Hd & Loch Gair)
2002	Pass	Pass	Fail ⁵	Pass (All Sites)
2003	Pass	Pass	Fail ⁶	Fail

2004	Pass	Pass	Pass	Fail (Loch Fyne Hd & Loch Gair)
2005	Fail	Fail ⁷	Fail ⁸	Fail (Loch Fyne Hd)
2006	Pass	Pass	Pass	Fail (Loch Fyne Hd & Loch Gair & Whitehouse Bay)
2007	Pass	Pass	Pass	Fail (Loch Gair & Whitehouse Bay)
2008	Pass	Pass	Pass	Pass
2009	Pass	Pass	Pass	Fail
2010	Pass	Pass	Fail ⁹	Pass

^{1,4,5,6,8} Failures reflect only low results for salinity in water taken at the head of Loch Fyne in March 2000 (0.4‰), March 2001 (5.3‰), March 2002 (10.0‰), November 2003 (1.6‰) and March 2005 (0.8‰) which fail the Guideline standard of 12-38 ‰. There did not appear to be any harm to local mussel populations. The monitoring site at the head of Loch Fyne was selected because of the abundance of mussels. However, it is strongly influenced by fresh water inputs from the river entering the loch adjacent to these natural mussel beds, hence the lowered salinities. This phenomenon is not linked to any undesirable impact on water quality. Further failure for salinity in 2010⁹

² Failure relates to a single result of 6.48 for pH for a sample taken at Whitehouse Bay in March 2001, which fails the Imperative standard of 7-9. This result, associated with the above low salinity, was due to heavy rainfall or increased fresh water input to the loch at the time. There did not appear to be any harm to local mussel populations. Results to 2005 passed for the Imperative standard for pH.

³ Failure relates to a result of 6.9 for pH which just fails the Imperative standard of 7-9, for a sample taken at the Loch Gair site in March 2001. This result was most likely due to heavy rainfall or increased fresh water input to the Loch at the time. There did not appear to be any harm to local mussel populations. Results to 2005 passed for the Imperative standard for pH.

⁷ Failure relates to high zinc results in September 2005 from Loch Gair (24.6 µg/l), Whitehouse Bay (16.0 µg/l) and Loch Head (15.5 µg/l) which fails the Imperative standard of 10.0 µg/l.

The waters only passed the Guideline standard for faecal coliforms in 2002 and 2008.

9.8 Future Monitoring

Biannual sampling is continuing for metals and organochlorines in waters along with annual sampling of mussels for organohalogenes and metals. This area will be monitored monthly for T, Sal, DO and pH in water.

In the event of any chemistry parameter failing to meet any EQS, the site will be revisited and re-sampled for the failed parameter. Samplers are asked to identify any evidence of visible harm to the shellfish population at the site.

Loch Fyne coastal strip ECSGW will continue to be monitored quarterly for faecal coliforms in mussels.

9.9 Improvement Actions

New mains sewerage schemes were completed and commissioned in 2003 at Inveraray and Furnace, replacing formerly unsatisfactory discharges.

Further such schemes were installed at Minard, Crarae and Strachur by Scottish Water as part of their Q&SII programme in 2005/2006.

Where local impacts are identified, individual septic tanks discharging to the area may have their consents reviewed to ensure appropriate treatment by 2006.

There are also improvements proposed to private sewage and trade effluent from Loch Fyne Oysters.

WFD Objectives

Under the Water Framework Directive, the target objectives expect this shellfish water to Pass by 2015 (first River Basin Management Plan Cycle) for Imperative Shellfish Growing Water Standards, with high confidence.

The Guideline Shellfish Growing Water Standards are not predicted to pass until 2027 (third first River Basin Management Plan Cycle), with low confidence.

Objective	First Cycle 2015	Confidence	Second Cycle 2021	Confidence	Third Cycle 2027	Confidence
Imperative Shellfish Growing Waters Standard	Pass by 2015	High	Pass by 2021	High	Pass by 2027	Low
Guideline Shellfish Growing Waters Standard	Fail by 2015	Low	Fail by 2021	Low	Pass by 2027	Low

9.10 Summary of Actions

Action	Deadline
New mains sewerage commissioned, Inverary, Furnace, Minard, Crarae, Strachur under Q&SII.	Done
New improvements planned for private sewage and trade effluent from Loch Fyne Oysters	Unspecified