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Screening Matrix: Alternative sources of seed mussel for bottom cultivation in Carlingford Lough.

Name of Project or Plan.	**Alternative sources of seed mussel (*Mytilus edulis*) for bottom cultivation in Carlingford.**
Name and location of Natura 2000 site (s)	**Carlingford Lough Special Protection Area** Area: 827.12 hectares Grid Reference: J230129 Date Classified: 09/03/98 See Figure 1 for a map of the site boundary. Carlingford Lough is a sea lough at the mouth of the Newry (or Clanrye) River on the east coast of Ireland bordering both Ireland (county Louth) and Northern Ireland (counties Down and Armagh). The upper reaches of the lough are shallow and dominated by fine muddy sand beds and intertidal mud-flats, whilst the seaward entrance to the lough is a mixture of boulder, cobble and bedrock forming numerous small islands and reefs. The SPA lies between Killowen Point and Soldiers Point on the northern shores of the lough and the landward boundary is entirely coincident with that of the Carlingford Lough Area of Special Scientific Interest (ASSI). The SPA boundary includes all lands and intertidal areas seawards to the limits of territorial waters. Marine areas below mean low water are not included. On the 14th of January 2016 the then Department of the Environment opened a public consultation on a proposed extension to the existing SPA boundary. The proposal extends the site boundary to include the marine areas adjoining the existing SPA and a further area off the south-east County Down coast (Figure 2). The proposed new SPA boundary covers an area of approximately 11,143.10 hectares. No additional species were proposed at this time. Figure 3 shows the boundaries of the other designated sites (and proposed designated sites) within Carlingford Lough.
Natura 2000 site features:	This site qualifies under Article 4.1 of the Directive (79/409/EEC) by supporting populations of European

	importance of the following species listed on Annex I of the Directive: **During the breeding season;** Common Tern *Sterna hirundo*, 339 pairs representing 10.9% of the all-Ireland breeding population (5 year mean, 1993-1997). Sandwich Tern *Sterna sandvicensis*, 575 pairs representing 13.1% of the all-Ireland breeding population (5 year mean, 1993-1997). This site was designated before the UK SPA review which was undertaken in 2001 (Stroud *et al* 2001). During this review an additional qualifying species was identified for this site. As a result of the review described above this site now also qualifies under Article 4.2 of EC Directive 79/409 on the Conservation of Wild Birds by supporting populations of European importance of the following migratory species; **Over Winter (non breeding);** Light-bellied Brent Goose (*Branta bernicla hrota*). For the period 1990-1995 the five year peak mean for Light-bellied Brent Goose at this site was 319 individuals which represented 1.6% of the wintering Canada/Ireland population. This site forms also part of an extended cross-border site which supports internationally important numbers of overwintering Light-bellied Brent Geese *Branta bernicla hrota*. The extended site also supports nationally important numbers of the following wader species: Oystercatcher *Haematopus ostralegus* 850 birds (five year mean for 1991/92 to 1995/96) representing 1.7 % of the Irish population. Ringed Plover *Charadrius hiaticula* 168 individuals (mean period not specified) representing 1.3% of the Irish population. Grey Plover *Pluvialis squatarola* 58 individuals (mean period not specified) representing 1.5% of the Irish population.

	Dunlin *Calidris alpina* 1494 individuals (mean period not specified) representing 1.2% of the Irish population. Redshank *Tringa totanus* 640 individuals (mean period not specified) representing 2.6% of the Irish population. Although the site supports nationally important numbers of the above species they are not included within the Carlingford Lough SPA designation.
Description of the Project or Plan	AFBI are planning to work with two of the Carlingford Lough mussel producers to trial spat collectors in Carlingford Lough. The main objective of this project is to investigate alternative sources of mussel seed for the bottom grown mussel sector within Northern Ireland. It is hoped that this project will help to address one of the main issues facing this industry, namely shortages of wild seed mussel. AFBI are requesting a permit under Section 14 of the Fisheries Act for the temporary deployment of two continuous seed mussel collectors within Carlingford Lough. It is hoped that these devices will be deployed between April and September 2022. AFBI have permission from the producers within Carlingford Lough who operate Licenced sites C5 and C6 to deploy the trial seed mussel collectors on their licenced aquaculture sites. The location of these aquaculture sites is shown in Figure 4. **Size and scale** Each trial mussel spat collector system will be approximately 200 m long and consist of a set of 28, 200 L barrels, with approximately 7 m spacing between barrels and double barrels at either end for extra buoyancy. The barrels to be used area shown in Figure 5. These barrels float on the surface with Double head lines will be attached to the barrels and collector ropes (extending to 1m depth) will be attached to each header line with secure ties, as per the example shown in Figure 6. These trial spat collector systems will be secured in position by Stingray high performance anchors as shown in Figures 6 and 7. **Land-take** The only portion of the two proposed trial spat collectors that will be in contact with the seabed are the anchors at either

	end. The remainder of the system will be suspended in the water column (the collector ropes) or floating on the surface (the buoys and header ropes). Both proposed trial spat collector systems will be deployed within the boundary of a licenced aquaculture site. One within site C5 in Carlingford Lough and one within C6 in Carlingford Lough. Towed video surveys will be undertaken within the boundary of C5 and C6 prior to the deployment of the trial systems to determine the benthic habitats present under and in the vicinity of the proposed deployment areas. **Distance to key features of the site** Both proposed deployment sites (C5 and C6) for the trail spat collector systems are within the boundary of the proposed extension to the Carlingford Lough SPA (Figure 8).
Is the Project or Plan directly connected with or necessary to the management of the site (provide details)?	No
Describe the individual elements of the project (either alone or in combination with other plans or projects) likely to give rise to impacts on the Natura 2000 site.	AFBI are proposing to install two trial spat collector systems within licenced aquaculture sites in Carlingford Lough. One in C5 and one in C6. Each system will be approximately 200m long and consist of 28, 200L barrels, double head lines and collector rope extending to 1 meters depth. Each system will be secured in position by 2 Stingray anchors. AFBI will check these systems routinely throughout the period of deployment. The systems will be deployed and retrieved by the operators of the licenced aquaculture sites on which they are positioned. It is anticipated that these systems will be deployed in May 2022 and retrieved in September 2022. **Impacts that may occur to the designated features of the Carlingford Lough SPA as a result of the proposed deployment of trial spat collector systems within aquaculture sites C5 and C6 are:** - **Disturbance to bird colonies** **<u>Breeding bird species</u>** Carlingford Lough SPA is designated for breeding populations of two tern species, Sandwich Terns and Common Terns. These birds breed on three islands near the

mouth of the Lough which are monitored annually by the Royal Society for the Protection of Birds (RSPB) (Figure9).

The most recent figures for breeding Tern species within Carlingford Lough have been extracted from the Seabird Monitoring Programme (SMP) online database (http://jncc.defra.gov.uk/smp/) and is represented graphically in Figures 10-12. Although three sites are monitored for Tern numbers the data is presented as an annual figure for the Lough. Figure 10 shows a gradual increase in Common Tern numbers within Carlingford Lough between the years 2009 to 2015 after which numbers begin to fall. From Figure 11 it can be seen that numbers of Sandwich Tern within Carlingford Lough between the years 2009 to 2019 still remained low. This is similar to the trend observed between the years 1988 to 1992 when Sandwich Tern numbers within the Lough were greatly reduced (Figure 11). These figures show that both Sandwich Tern and Common Tern numbers within Carlingford Lough have remained generally low in recent years.

When measured on GIS the proposed deployment sites for the trial spat collector systems area over 4.5 km from the islands on which the Tern species within Carlingford Lough breed. Aquaculture site C6 is approximately **4.87 km** at the closest point to Green Island (the most Northerly of the islands where Tern species breed in Carlingford Lough) and aquaculture site C5 is approximately **5.33 km** from Green island at the closest point.

Terns are colonial breeding waterbirds (Gonzalez-Solis *et al* 2001) and their high density nesting habits make them particularly sensitive to human disturbance (Rodgers and Smith, 1995). Several studies investigating the distance at which terns flush in response to human disturbance have been undertaken in America. Within these investigations flushing distances ranged from 100 m (Rodgers and Smith, 1997), to 180 m (Rodgers and Smith, 1995) and 200 m (Erwin 1989). Using these values as a guide in the absence of any site specific field data we can surmise that the deployment of trial spat collector systems within aquaculture sites **over 4.5 km** from Tern nest sites will not cause significant negative impacts on this feature of the SPA.

Overwintering bird species

The Carlingford Lough SPA is also designated due to the presence of overwintering populations of light bellied Brent

Geese. Light Bellied Brent Goose numbers within Carlingford Lough are counted annually through the Wetland Bird Survey (WeBS) Wildfowl and Wader Core Counts. These surveys divide the Lough into sections which are counted at high tide throughout the year. Figure 13 shows the Location of the different WeBS count sectors within Carlingford Lough in relation to aquaculture sites C5 and C6. Figure 14 shows the distribution of Light Bellied Brent Geese for the winters of 2009/10 to 2019/20. As can be seen in Figure 14 the highest numbers of Light Bellied Brent Geese have been observed within count sectors 1407 and 1419 and the lowest numbers were observed within count sector 1911 (the sector within which aquaculture sites C5 and C6 are located).

Figure 15 shows the WeBS total count data for the Light Bellied Brent Goose population within Carlingford for the winters of 1989/90 to 2019/20.

The most recent Site Condition Assessment for the Carlingford Lough SPA (NIEA 2015) lists this species as being in "Favourable" condition.

- **Removal of a feeding area for birds.**

Breeding bird species

The proposed marine extension to the Carlingford Lough SPA is based on analysis and reports undertaken by the Joint Nature Conservation Committee (JNCC) (NIEA, 2015). The proposed marine extension aims to protect the foraging areas of the Tern colonies within Carlingford Lough.

Terns are surface feeding seabirds (Furness and Tasker, 2000; Einoder, 2009) who feed primarily on fish species (Greenstreet *et al*, 1999; Burger and Gochfeld 2003; Cramp and Simmons, 2004 (cited in Christel *et al* 2013); and Comeau *et al* 2009), such as Sandeels which are an important component in the diets of tern species (Dunn, 1972 and Tasker and Furness 1996).

As the proposed marine extension to the Carlingford Lough SPA aims to protect tern foraging areas it is important to establish if the benthic habitats within the boundary of the aquaculture sites C5 and C6 are suitable for sandeels. Sandeels have been shown to have a preference for sediments classified as medium and coarse sand (Holland *et al* 2005). A benthic habitat map for Carlingford Lough was produced as part of the Northern Ireland Nearshore Subtidal

	Habitat mapping project (EHS 2014). Through this project the areas occupied by aquaculture sites C5 and C6 were predominantly classified as habitat code MU which relates to low energy sheltered environments with sediments comprised of >70% mud (Figure 16). Sandeels have a preference for depths ranging between 30 to 70 m (Holland *et al*, 2005, Wright *et al* 2000) but have been found to occur as shallow as 15 m and up to depths of 120 m (Wright *et al* 1998 cited in Holland *et al*. 2005). From Admiralty charts it can be seen that the water depth within aquaculture sites C5 and C6 is less than 3 m and therefore not within the depth range preferred by sandeels (Figure 17). Mussel beds are not the preferred habitat for herring therefore it can be inferred that Tern species within Carlingford Lough are not feeding within the areas where bottom culture of mussels is undertaken. Resultantly the deployment of trail spat collector systems within the areas of aquaculture sites C5 and C6 will not disturb feeding terns. **Overwintering bird species** The preferred food of Brent Geese is intertidal eelgrass (Owen and Black 1990, Hassall and Lane 2005, Inger *et al.* 2006) therefore the proposed deployment of trial spat collector systems within subtidal aquaculture sites C5 and C6 will not negatively impact Brent goose food sources.

N2K Feature: Mention all features	Describe any likely direct, indirect effects to the N2K features arising as a result of: Loss, reduction of habitat area; disturbance; habitat or species fragmentation; reduction in species density; changes in key indicators of conservation value (e.g. water quality, climate change).	*Effect Significant/Not Significant? Why?
Common Tern	The proposed deployment of trail spat collector systems within licenced aquaculture sites C5 and C6 has the potential to cause disturbance through human presence within nesting areas and damage/disturbance to feeding areas/species.	Aquaculture sites C5 and C6 are over 4.5 km from the islands within Carlingford Lough on which Common Tern breed. The proposed activities at these sites with therefore not cause disturbance to nesting Terns. The benthic sediments within sites C5 and C6 were identified as predominantly mud (EHC 2004) which is not the preferred habitat of sandeels (an important component of Tern diets). Therefore, the proposed activities within these sites will not impact on prey availability for fish eating Tern species. Therefore, this proposal will not negatively impact breeding Common Tern populations within Carlingford Lough.
Sandwich Tern	The proposed deployment of trail spat collector systems within licenced aquaculture sites C5 and C6 has the potential to cause disturbance through human presence within nesting areas and damage/disturbance to feeding areas/species.	Aquaculture sites C5 and C6 are over 4.5 km from the islands within Carlingford Lough on which Sandwich Tern breed. The proposed activities at these sites with therefore not cause disturbance to nesting Terns. The benthic sediments within sites C5 and C6 were identified as predominantly mud (EHC 2004) which is not the preferred habitat of sandeels (an important component of Tern diets). Therefore, the proposed activities within these sites will

		not impact on prey availability for fish eating Tern species. Therefore, this proposal will not negatively impact breeding Sandwich Tern populations within Carlingford Lough.
Light bellied Brent goose	The proposed deployment of trail spat collector systems within licenced aquaculture sites C5 and C6 has the potential to cause disturbance through human presence within preferred habitats and damage/disturbance to feeding areas/species.	WeBS Wildfowl and Wader Core Counts indicate that Brent Geese do not utilise the area in the vicinity of aquaculture sites C5 and C6. The preferred food of Brent Geese is intertidal eelgrass therefore the proposed deployment of trial spat collector systems within subtidal aquaculture sites C5 and C6 will not negatively impact Brent goose food sources. Therefore, this proposal will not negatively impact Light bellied Brent goose populations within Carlingford Lough.

Describe any potential effects on the Natura 2000 site as a whole in terms of: interference with the key relationships that define the structure or function of the site	This proposal to deploy two trial spat collector systems for seed mussels within the boundaries of licenced aquaculture sites C5 and C6 in Carlingford Lough will not result in interference to the key relationships that define the structure of the Carlingford Lough SPA. The proposed marine extension to the Carlingford Lough SPA aims to protect the foraging areas of the Tern colonies within Carlingford Lough. Terns feed primarily on fish species such as Sandeels which are an important component in their diet. The sediments within aquaculture sites C5 and C6 are not suitable sandeel habitat. The tern species within Carlingford Lough breed on islands over 4.5 km from the aquaculture sites C5 and C6 and will therefore not be disturbed by human presence whilst deploying and maintaining the trial spat collector systems within these areas. The third species for which the site is

	designated feeds predominantly on intertidal eelgrass, the proposed deployment of trial spat collector systems within subtidal aquaculture sites C5 and C6 will not negatively impact Brent goose food sources. The proposed deployment of trail spat collector systems within licenced aquaculture sites C5 and C6 in Carlingford Lough will not negatively impact the conservation objectives of the designated features of the Carlingford Lough SPA.

Provide details of any other projects or plans that together with the project or plan being assessed could (directly or indirectly) affect the site.	Fast Ferry activity, yachting, pleasure boating, dog walkers, agriculture, bait collectors, seaweed collectors, recreational walkers, sewage discharges, scientific research, other fisheries and other leisure activities.

Is the potential scale or magnitude of any effect likely to be significant? :	
Alone?	**Yes**☐ **No**☒
In-combination with other projects of plans?	**Yes**☐ **No**☒

List of Agencies / Organisations Consulted: Provide contact name and telephone or email address.	DAERA Marine and Fisheries Division
Habitats Regulations Assessment Summary	The proposed deployment of trail spat collector systems within licenced aquaculture sites C5 and C6 in Carlingford Lough will not negatively impact the conservation objectives of the designated features of the Carlingford Lough SPA. Please refer to the information contained in the paragraphs above for further details.

Conclusion: Is the proposal likely to have a significant effect on an N2K site?	**Yes**☐ **No**☒

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Screening Matrix: Alternative sources of seed mussel for bottom cultivation in Carlingford Lough.

Name of Project or Plan.	**Alternative sources of seed mussel (*Mytilus edulis*) for bottom cultivation in Carlingford.**
Name and location of Natura 2000 site (s)	**Murlough Special Area of Conservation** Area: 11,903.9 hectares Date Classified: May 2005
Natura 2000 site features:	This site has been designated due to the presence of the following Annex I Habitats: **Atlantic decalcified fixed dunes (*Calluno-Ulicetea*)** This feature is classified as A for Representativity on the Natura 2000 data form for this site and occupies approximately 93 hectares. **Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*)** This feature is classified as C for Representativity on the Natura 2000 data form for this site and occupies approximately 8.5 hectares. **Dunes with *Salix repens ssp. Argentea* (*Salicion arenariae*)** This feature is classified as C for Representativity on the Natura 2000 data form for this site and occupies approximately 0.2 hectares. **Embryonic shifting dunes** This feature is classified as C for Representativity on the Natura 2000 data form for this site and occupies approximately 2 hectares. **Fixed dunes with herbaceous vegetation (grey dunes)** This feature is classified as B for Representativity on the Natura 2000 data form for this site and occupies approximately 127 hectares. **Mudflats and sandflats not covered by seawater at low tide** This feature is classified as C for Representativity on the Natura 2000 data form for this site and occupies approximately 785 hectares.

	Sandbanks which are slightly covered by seawater all the time This feature is classified as C for Representativity on the Natura 2000 data form for this site and occupies approximately 10,000 hectares. **Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes)** This feature is classified as C for Representativity on the Natura 2000 data form for this site and occupies approximately 4.5 hectares. This site has been designated due to the presence of the following Annex II Species: **March Fritillary *Euphydryas aurinia*** This site is considered to be one of the best areas in the United Kingdom for this species. **Common seal *Phoca vitulina*** A resident population of 84 individuals is stated within the Conservation Objectives for this site.
Description of the Project or Plan	AFBI are planning to work with two of the Carlingford Lough mussel producers to trial spat collectors in Carlingford Lough. The main objective of this project is to investigate alternative sources of mussel seed for the bottom grown mussel sector within Northern Ireland. It is hoped that this project will help to address one of the main issues facing this industry, namely shortages of wild seed mussel. AFBI are requesting a permit under Section 14 of the Fisheries Act for the temporary deployment of two continuous seed mussel collectors within Carlingford Lough. It is hoped that these devices will be deployed between April and September 2022. AFBI have permission from the producers within Carlingford Lough who operate Licenced sites C5 and C6 to deploy the trial seed mussel collectors on their licenced aquaculture sites. The location of these aquaculture sites is shown in Figure 4. **Size and scale** Each trial mussel spat collector system will be approximately 200 m long and consist of a set of 28, 200 L barrels, with approximately 7 m spacing between barrels and double

	barrels at either end for extra buoyancy. The barrels to be used area shown in Figure 5. These barrels float on the surface with Double head lines will be attached to the barrels and collector ropes (extending to 1m depth) will be attached to each header line with secure ties, as per the example shown in Figure 6. These trial spat collector systems will be secured in position by Stingray high performance anchors as shown in Figures 6 and 7. **Land-take** The only portion of the two proposed trial spat collectors that will be in contact with the seabed are the anchors at either end. The remainder of the system will be suspended in the water column (the collector ropes) or floating on the surface (the buoys and header ropes). Both proposed trial spat collector systems will be deployed within the boundary of a licenced aquaculture site. One within site C5 in Carlingford Lough and one within C6 in Carlingford Lough. Towed video surveys will be undertaken within the boundary of C5 and C6 prior to the deployment of the trial systems to determine the benthic habitats present under and in the vicinity of the proposed deployment areas. **Distance to key features of the site** Aquaculture sites C5 and C6, the proposed locations of the trail spat collector systems are over **20 km** (by sea) from the boundary of the Murlough SAC (Figure 18).
Is the Project or Plan directly connected with or necessary to the management of the site (provide details)?	No
Describe the individual elements of the project (either alone or in combination with other plans or projects) likely to give rise to impacts on the Natura 2000 site.	AFBI are proposing to install two trial spat collector systems within licenced aquaculture sites in Carlingford Lough. One in C5 and one in C6. Each system will be approximately 200m long and consist of 28, 200L barrels, double head lines and collector rope extending to 1 meters depth. Each system will be secured in position by 2 Stingray anchors. AFBI will check these systems routinely throughout the period of deployment. The systems will be deployed and retrieved by the operators of the licenced aquaculture sites on which they are positioned. It is anticipated that these systems will be deployed in May 2022 and retrieved in September 2022.

	Impacts that may occur to the designated features of the Murlough SAC as a result of the proposed deployment of trial spat collector systems within aquaculture sites C5 and C6 are: - **Disturbance to harbour seal (*Phoca vitulina*) populations** Aquaculture sites C5 and C6, the proposed locations of the trail spat collector systems are over 20 km (by sea) from the boundary of the Murlough SAC (Figure 18). Data on the location of seal haulout sites within Carlingford Lough were supplied by DAERA (Figure 19). As can be seen in Figure 19 aquaculture sites C5 and C6 are not within 2 km of any of these sites. The Sea Mammal Research Unit (SMRU) deployed telemetry tags on harbour seals within the UK (Russell and McConnell 2014). At total of 33 harbour seals were tagged in Northern Ireland between the years 2006 and 2012. Harbour seals were tagged in the Narrows area of Strangford Lough. Figure 20 (taken directly from Russell and McConnell, 2014) shows that the seals tagged in Northern Ireland moved between sites in Strangford Lough and Murlough but did not appear to utilise Carlingford Lough.

N2K Feature: Mention all features	**Describe any likely direct, indirect effects to the N2K features arising as a result of: Loss, reduction of habitat area; disturbance; habitat or species fragmentation; reduction in species density; changes in key indicators of conservation value (e.g. water quality, climate change).**	***Effect Significant/Not Significant? Why?**
Atlantic decalcified fixed dunes (*Calluno-Ulicetea*)	There is no spatial overlap between licenced aquaculture sites C5 and C6, the proposed locations of the trial spat collector systems, and this feature of the SAC.	Not Significant.

Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*)	There is no spatial overlap between licenced aquaculture sites C5 and C6, the proposed locations of the trial spat collector systems, and this feature of the SAC.	Not Significant.
Dunes with *Salix repens ssp. Argentea* (*Salicion arenariae*)	There is no spatial overlap between licenced aquaculture sites C5 and C6, the proposed locations of the trial spat collector systems, and this feature of the SAC.	Not Significant.
Embryonic shifting dunes	There is no spatial overlap between licenced aquaculture sites C5 and C6, the proposed locations of the trial spat collector systems, and this feature of the SAC.	Not Significant.
Fixed dunes with herbaceous vegetation (grey dunes)	There is no spatial overlap between licenced aquaculture sites C5 and C6, the proposed locations of the trial spat collector systems, and this feature of the SAC.	Not Significant.
Mudflats and sandflats not covered by seawater at low tide	There is no spatial overlap between licenced aquaculture sites C5 and C6, the proposed locations of the trial spat collector systems, and this feature of the SAC.	Not Significant.
Sandbanks which are slightly covered by seawater all the time	There is no spatial overlap between licenced aquaculture sites C5 and C6, the proposed locations of the trial spat collector systems, and this feature of the SAC.	Not Significant.
Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes)	There is no spatial overlap between licenced aquaculture sites C5 and C6, the proposed locations of the trial spat collector systems, and this feature of the SAC.	Not Significant.

March Fritillary *Euphydryas aurinia*	There is no spatial overlap between licenced aquaculture sites C5 and C6, the proposed locations of the trial spat collector systems, and this feature of the SAC.	Not Significant.
Common seal *Phoca vitulina*	Potential disturbance at haulout sites in Carlingford Lough if utilised by the Murlough harbour seal population.	There are no seal haulout sites (as identified by DAERA) within 2 km of aquaculture sites C5 and C6 so potential impacts are not considered significant.

Describe any potential effects on the Natura 2000 site as a whole in terms of: interference with the key relationships that define the structure or function of the site	There is no spatial overlap between the designated features of the Murlough SAC and licenced aquaculture sites C5 and C6, the proposed locations of the trial spat collector systems. There is potential for disturbance at seal haulout sites in Carlingford Lough if utilised by the Murlough harbour seal population. The proposed locations of the trial spat collector systems are greater 2 km away from the closest seal haulout site within Carlingford Lough (as measured in ArcGIS v10.6). Therefore this proposal will not negatively impact the Harbour seal populations within the Murlough SAC.

Provide details of any other projects or plans that together with the project or plan being assessed could (directly or indirectly) affect the site.	Fast Ferry activity, yachting, pleasure boating, dog walkers, agriculture, bait collectors, seaweed collectors, recreational walkers, sewage discharges, scientific research, other fisheries and other leisure activities.

Is the potential scale or magnitude of any effect likely to be significant? :	
Alone?	**Yes**☐ **No**☒
In-combination with other projects of plans?	**Yes**☐ **No**☒

List of Agencies / Organisations Consulted: Provide contact name and telephone or email address.	DAERA Marine and Fisheries Division

Habitats Regulations Assessment Summary	The proposed deployment of trail spat collector systems within licenced aquaculture sites C5 and C6 in Carlingford Lough will not negatively impact the conservation objectives of the designated features of the Murlough SAC. Please refer to the information contained in the paragraphs above for further details.

Conclusion: Is the proposal likely to have a significant effect on an N2K site?	**Yes**☐ **No**☒

Data collected to carry out the assessment

Who carried out the assessment?	The Agri-food and Bioscience Institute (AFBI)
Sources of data	**WeBS** – Core count data for Light bellied Brent Geese in Carlingford Lough **Seabird monitoring programme online database** – Tern data **DAERA** – Northern Ireland aquaculture shapefiles and eelgrass data **AFBI data holdings**
Level of assessment completed	Stage one: Screening
Where can the full results of the assessment be accessed and viewed?	DAERA Marine and Fisheries Division

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Figures

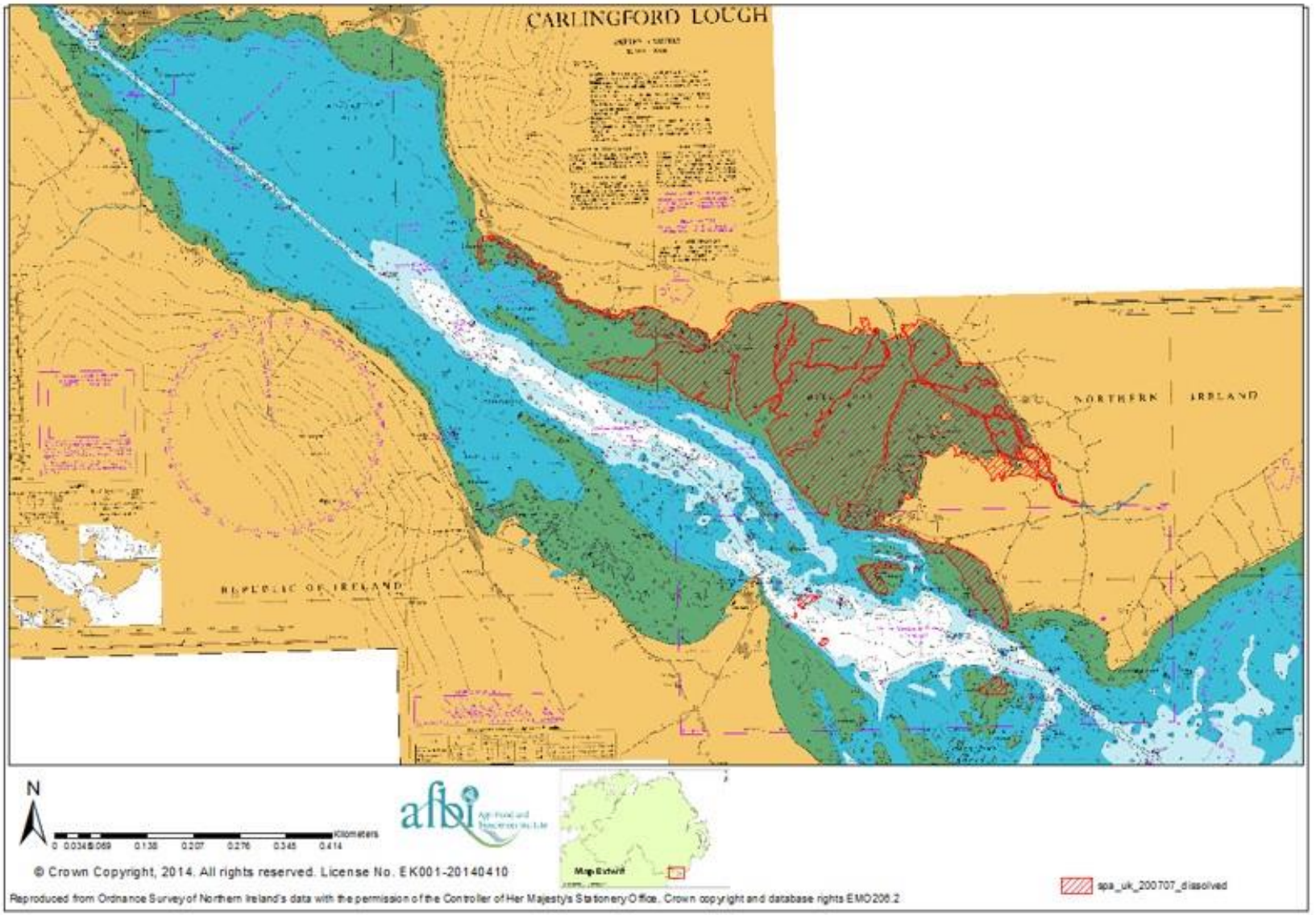

Figure 1: Map showing the boundary of the Carlingford Lough SPA.

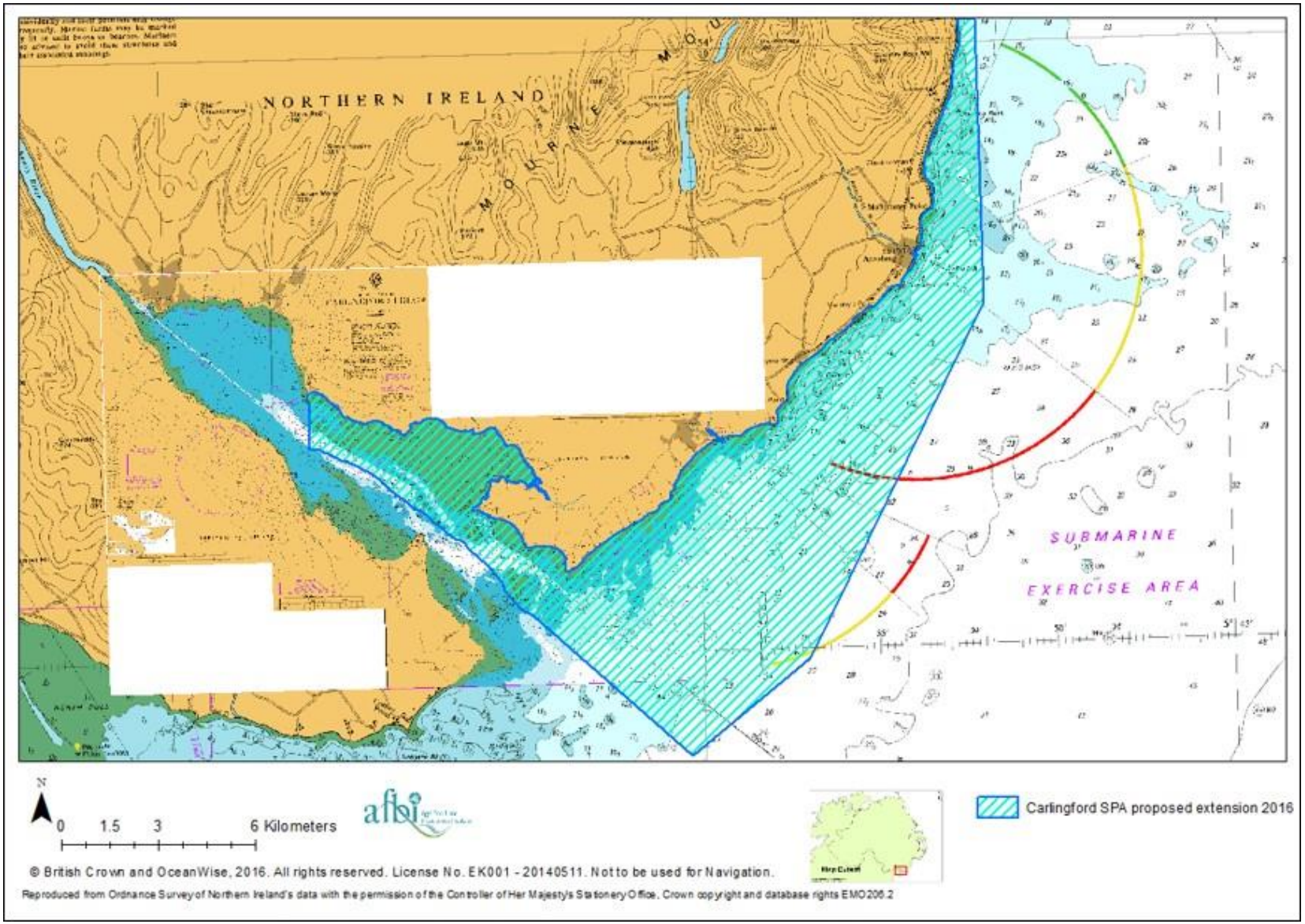

Figure 2: Map showing the proposed extended marine boundary of the Carlingford Lough SPA.

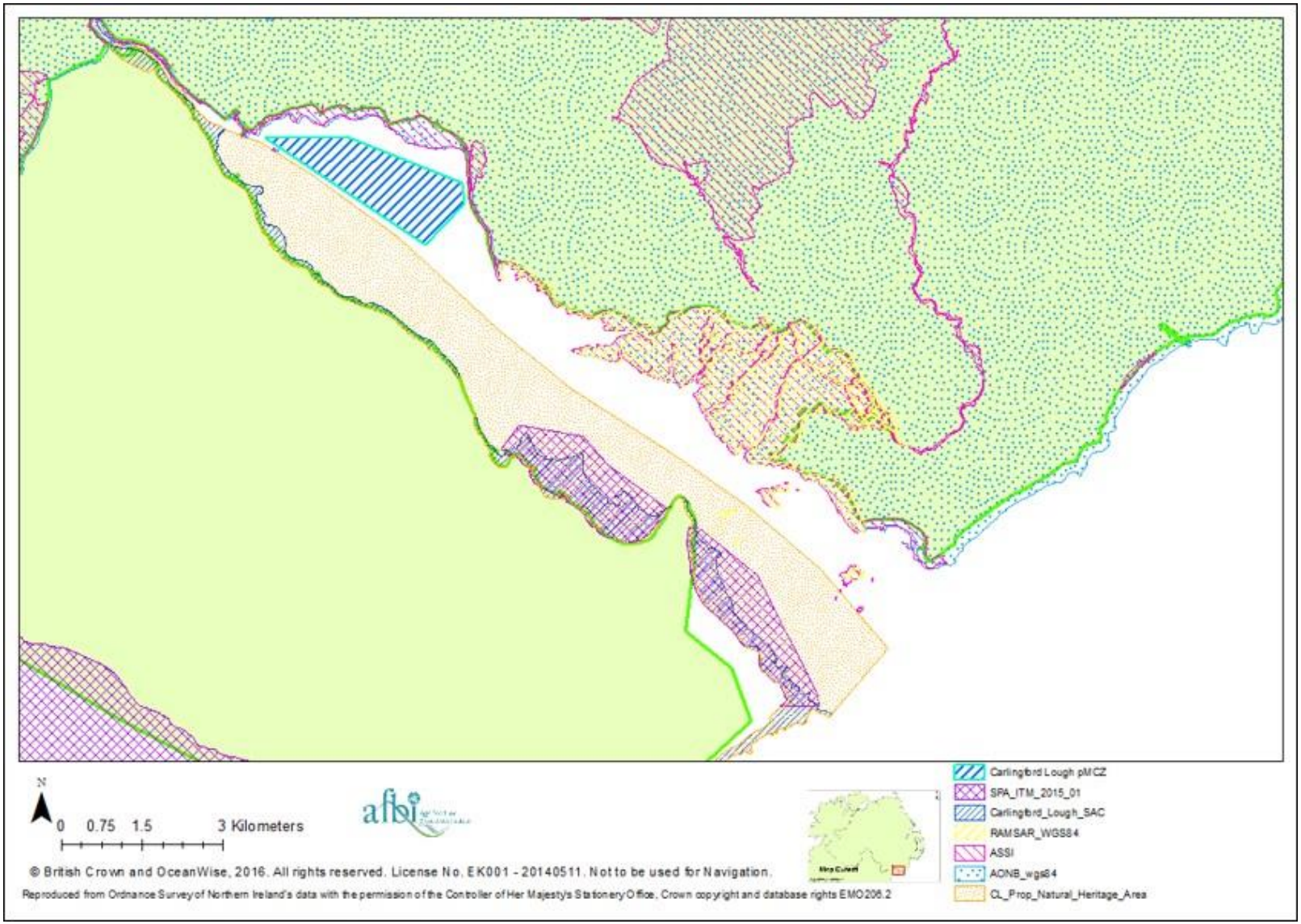

Figure 3: Map showing the boundaries of other designated sites within Carlingford Lough and the boundary of the Marine conservation Zone in the northern area of Carlingford Lough.

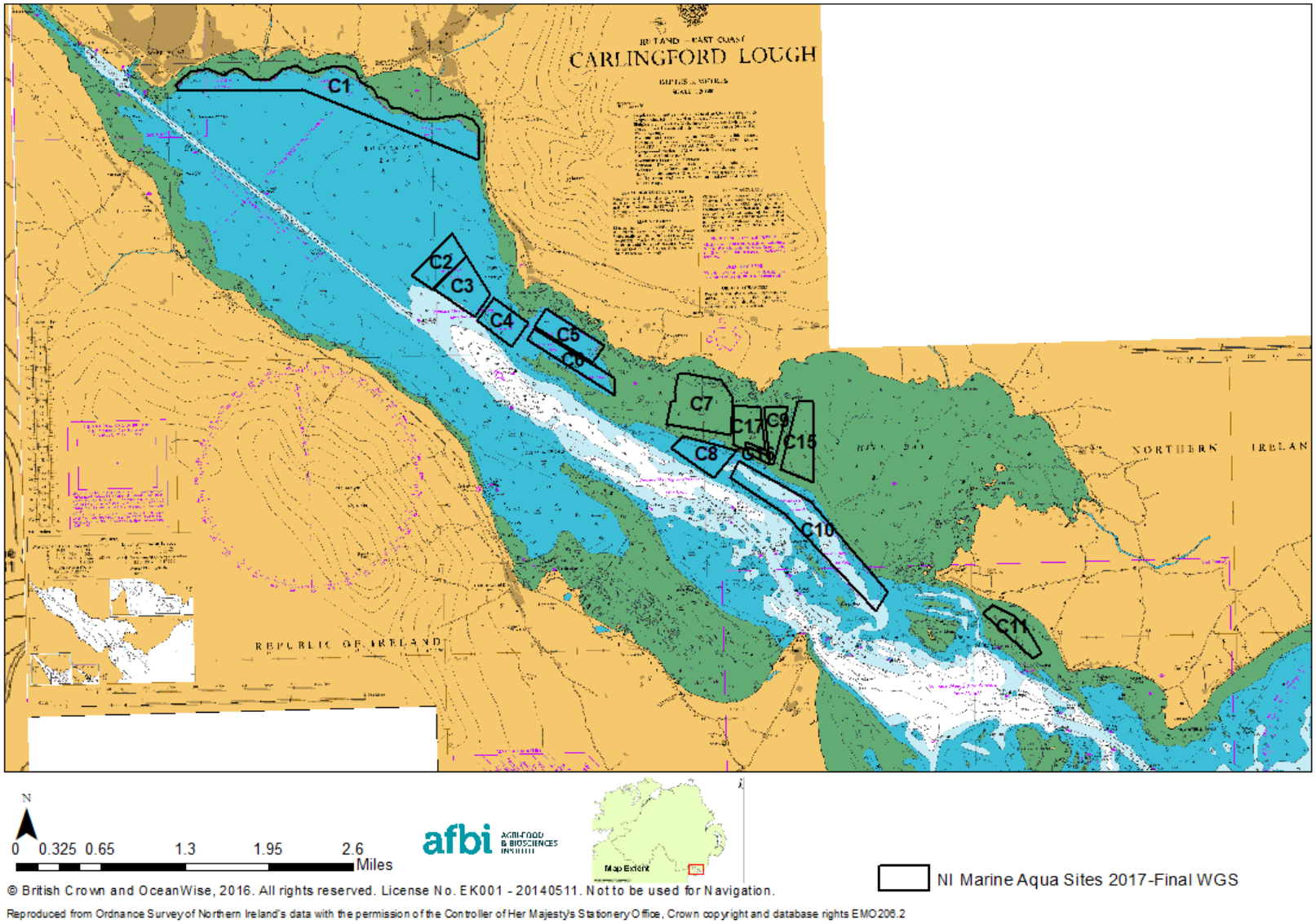

Figure 4: Map showing the location of aquaculture sites C5 and C6 in Carlingford Lough.

Figure 5: Photo showing the barrels to be deployed as part of the trial spat collector system.

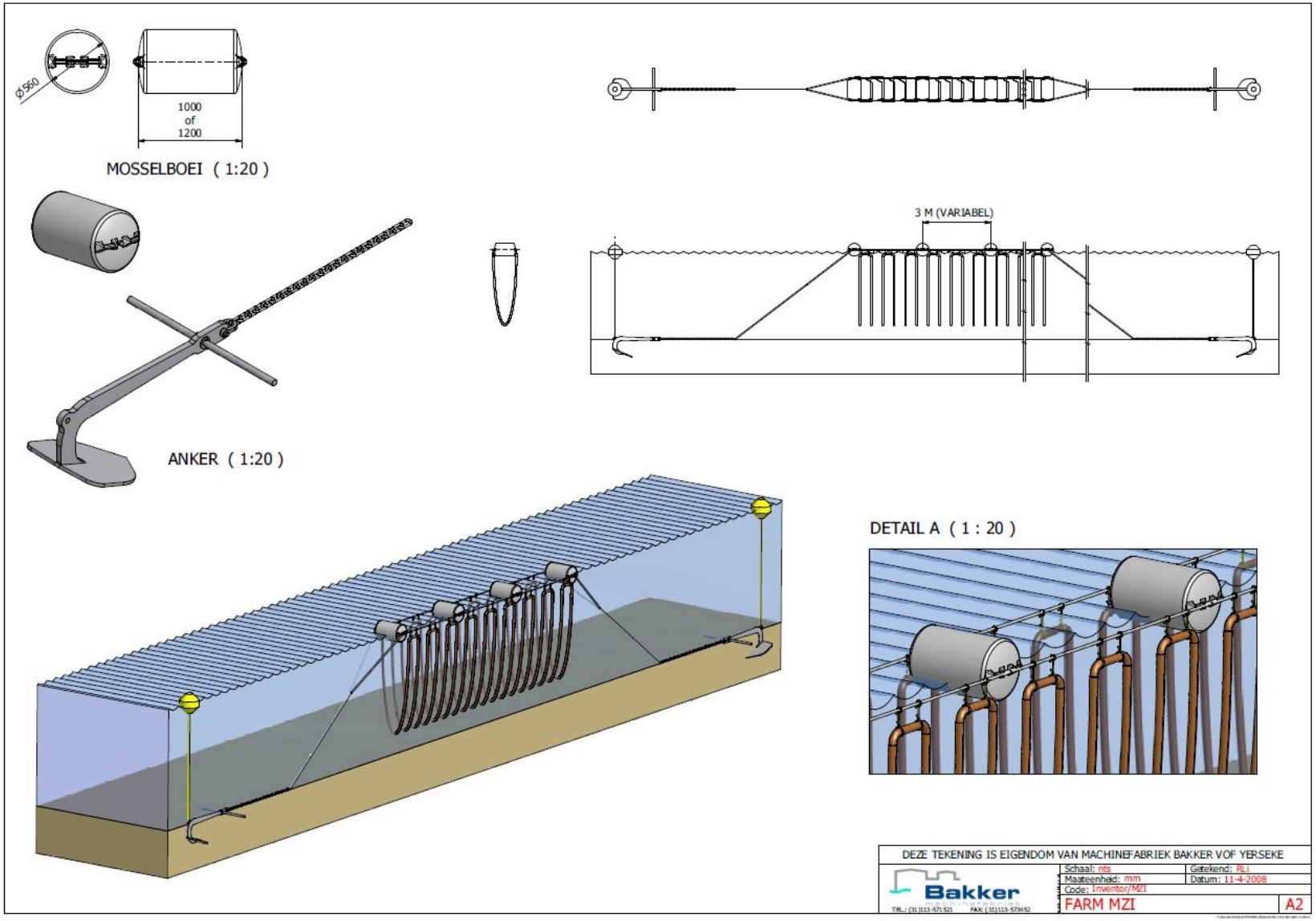

Figure 6: Diagram showing the proposed trail spat collector system to be deployed in sites C5 and C6.

Figure 7: Photo showing the anchors to be deployed as part of the trial spat collector system.

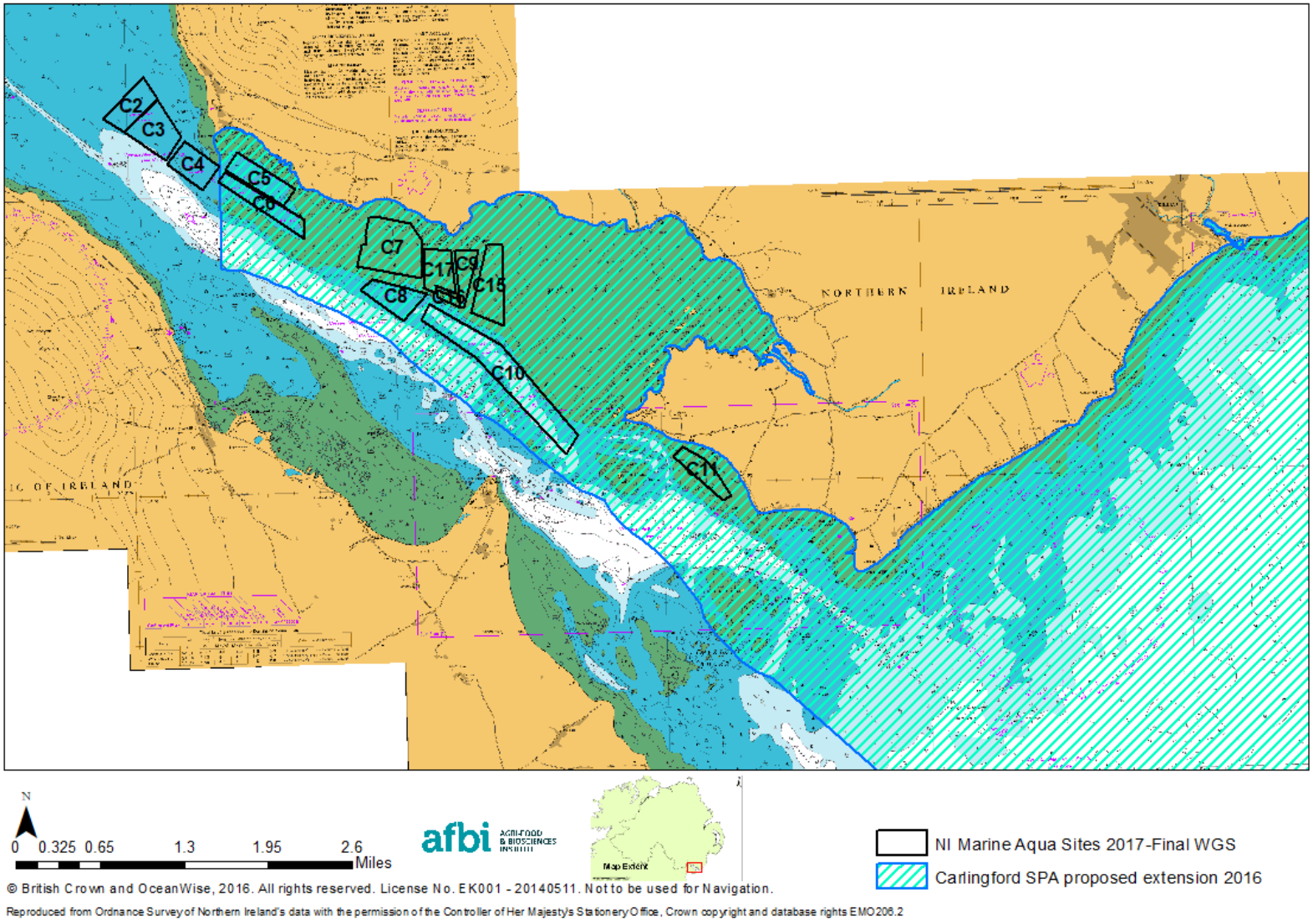

Figure 8: Map showing the location of aquaculture sites C5 and C6 in relation to the proposed new extended boundary of the Carlingford Lough SPA.

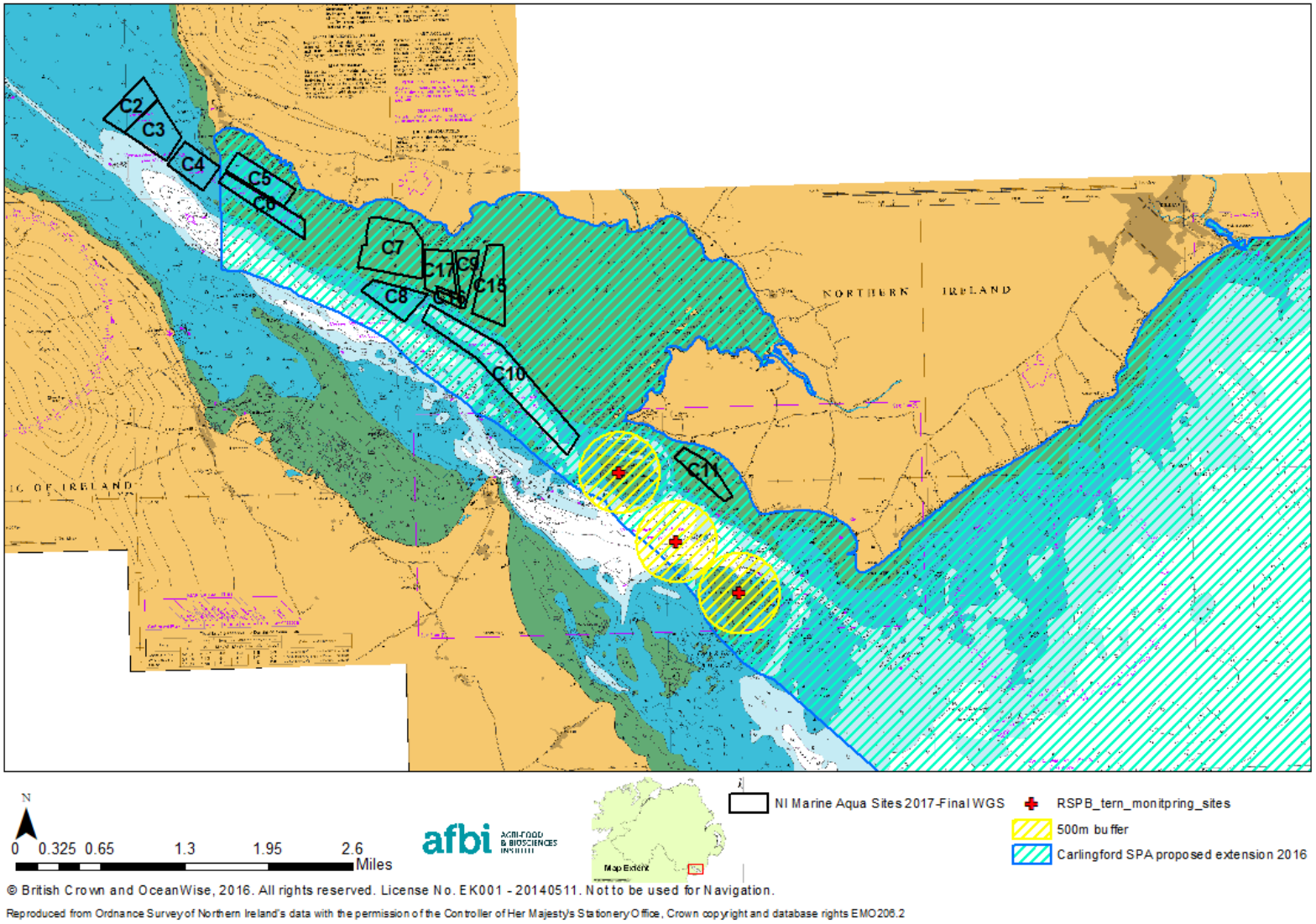

Figure 9: Map showing the location of aquaculture sites C5 and C6 in relation to the islands within Carlingford Lough used as breeding sites by Tern species.

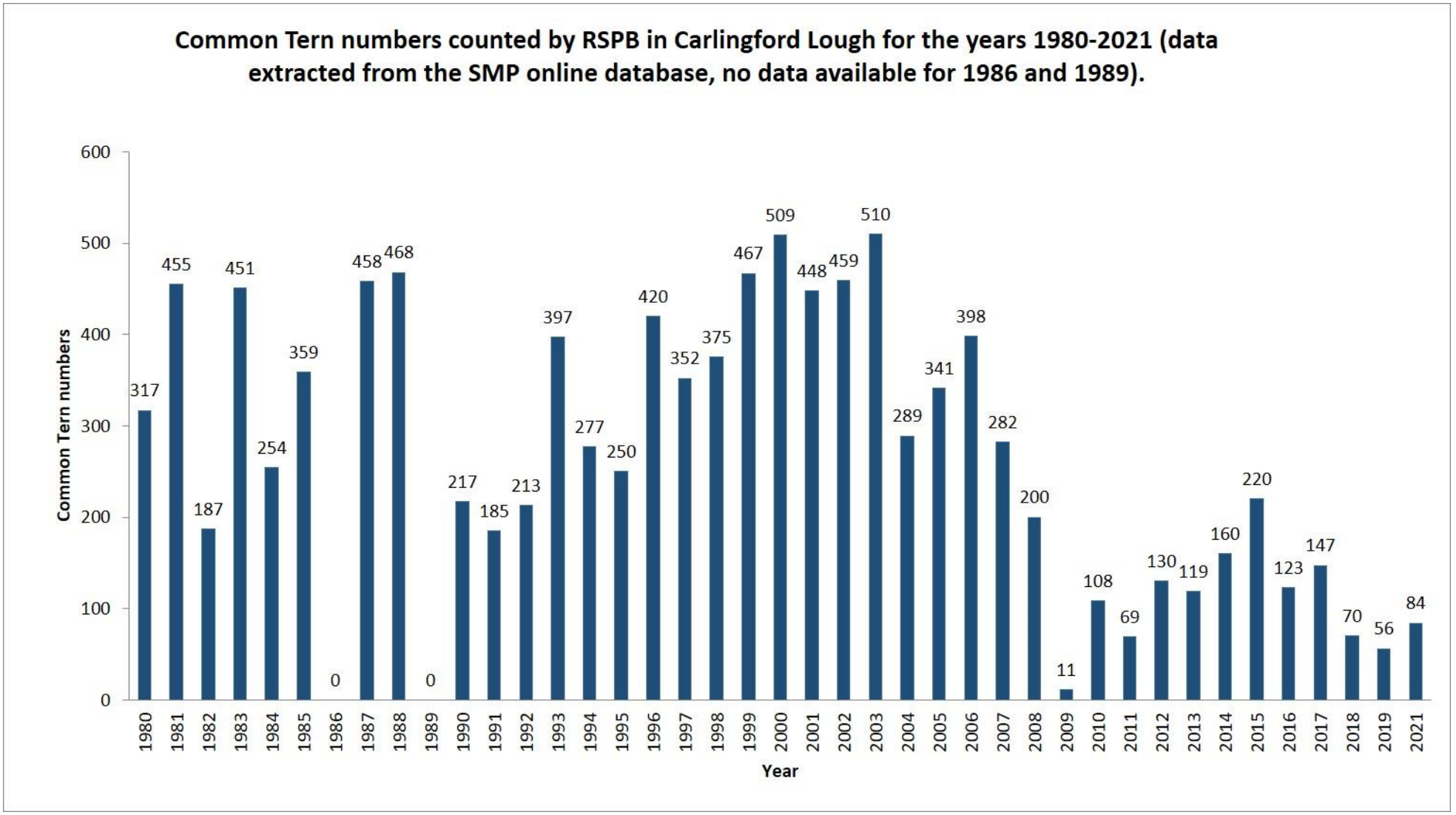

Figure 10: Graph showing the RSPB count numbers for Common Tern populations within Carlingford Lough.

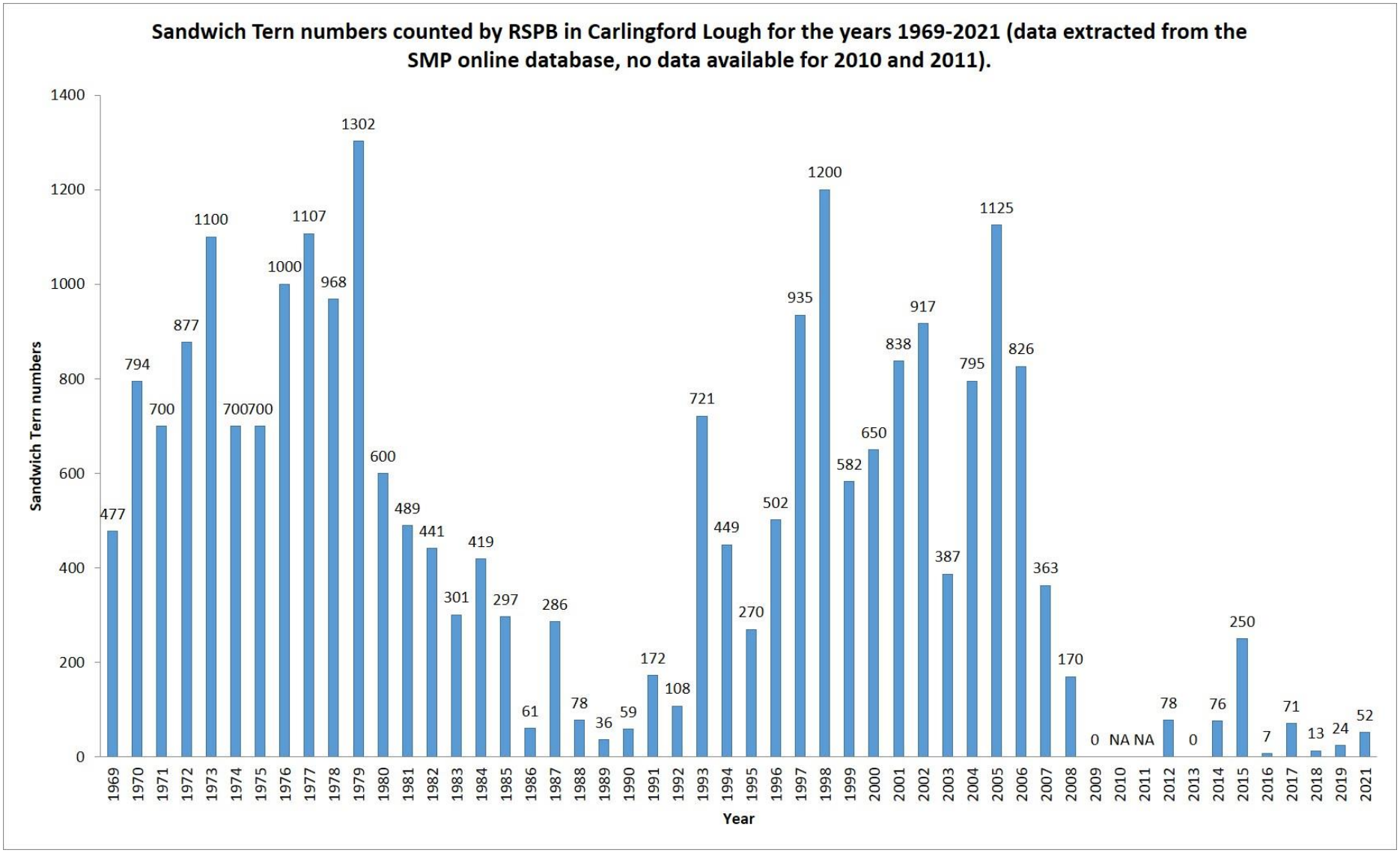

Figure 11. Graph showing the RSPB count numbers for Sandwich Tern populations within Carlingford Lough.

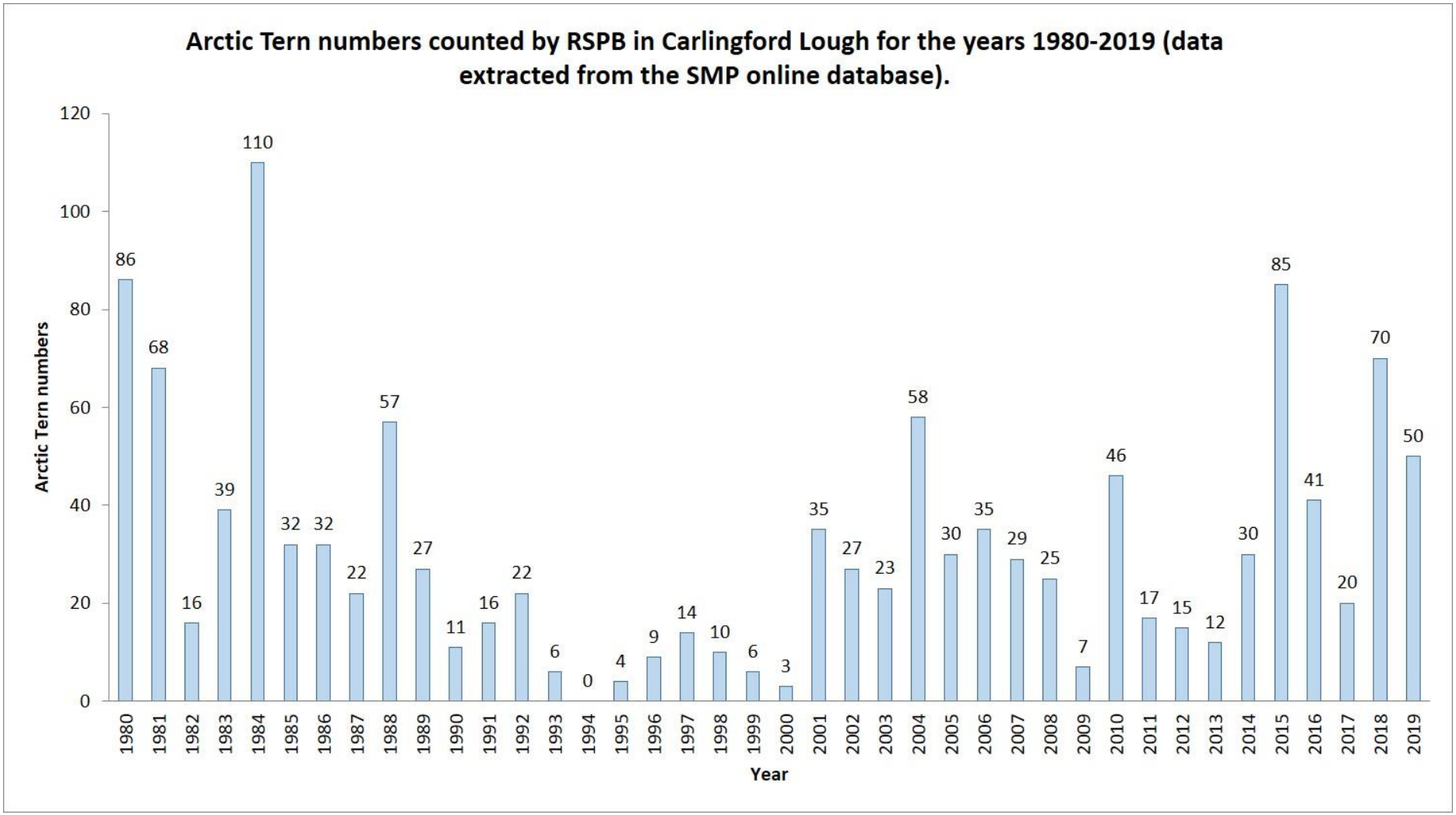

Figure 12: Graph showing the RSPB count numbers for Arctic Tern populations within Carlingford Lough.

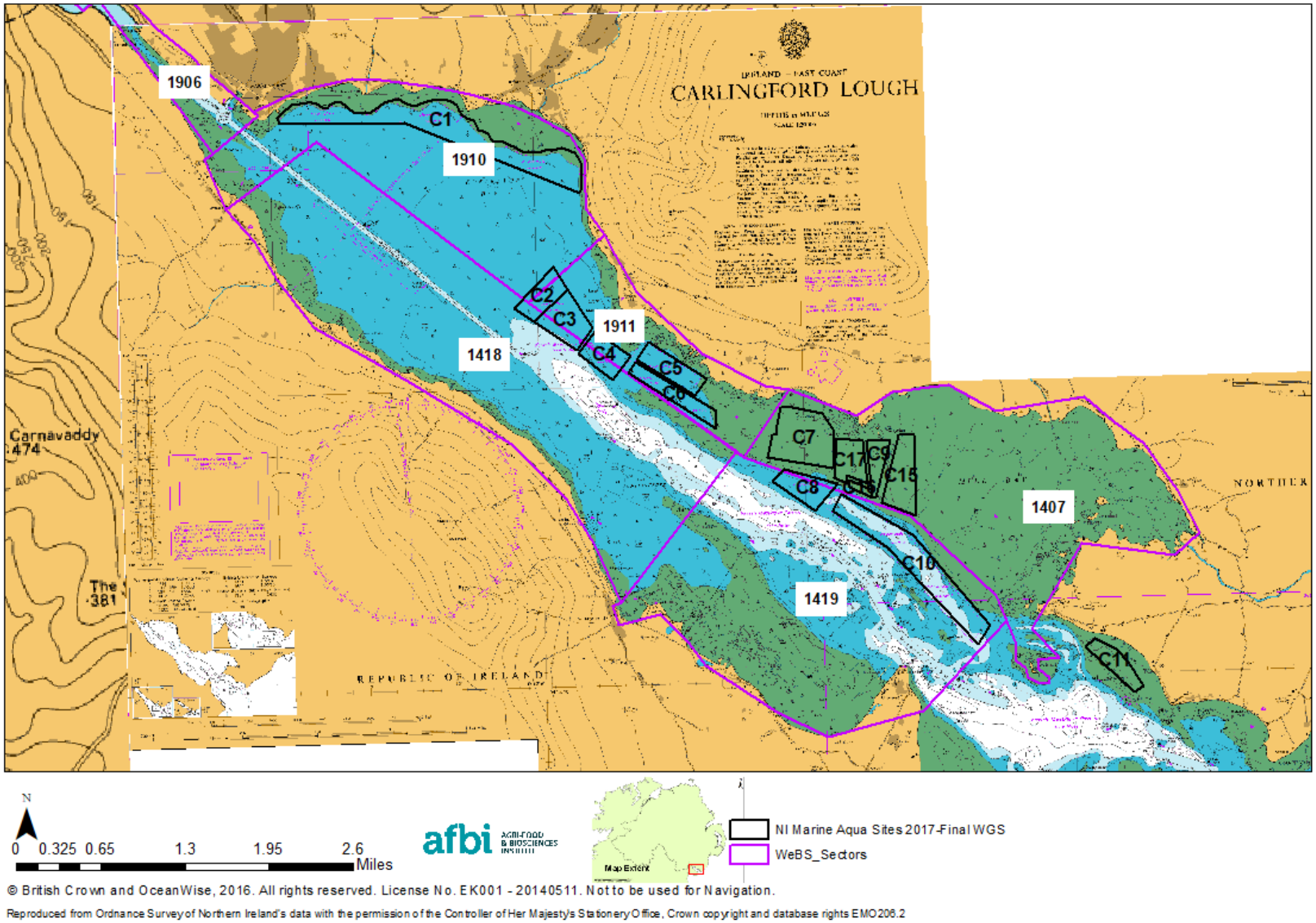

Figure 13: Map showing the location of aquaculture sites C5 and C6 in relation to the WeBS Core Count Sectors.

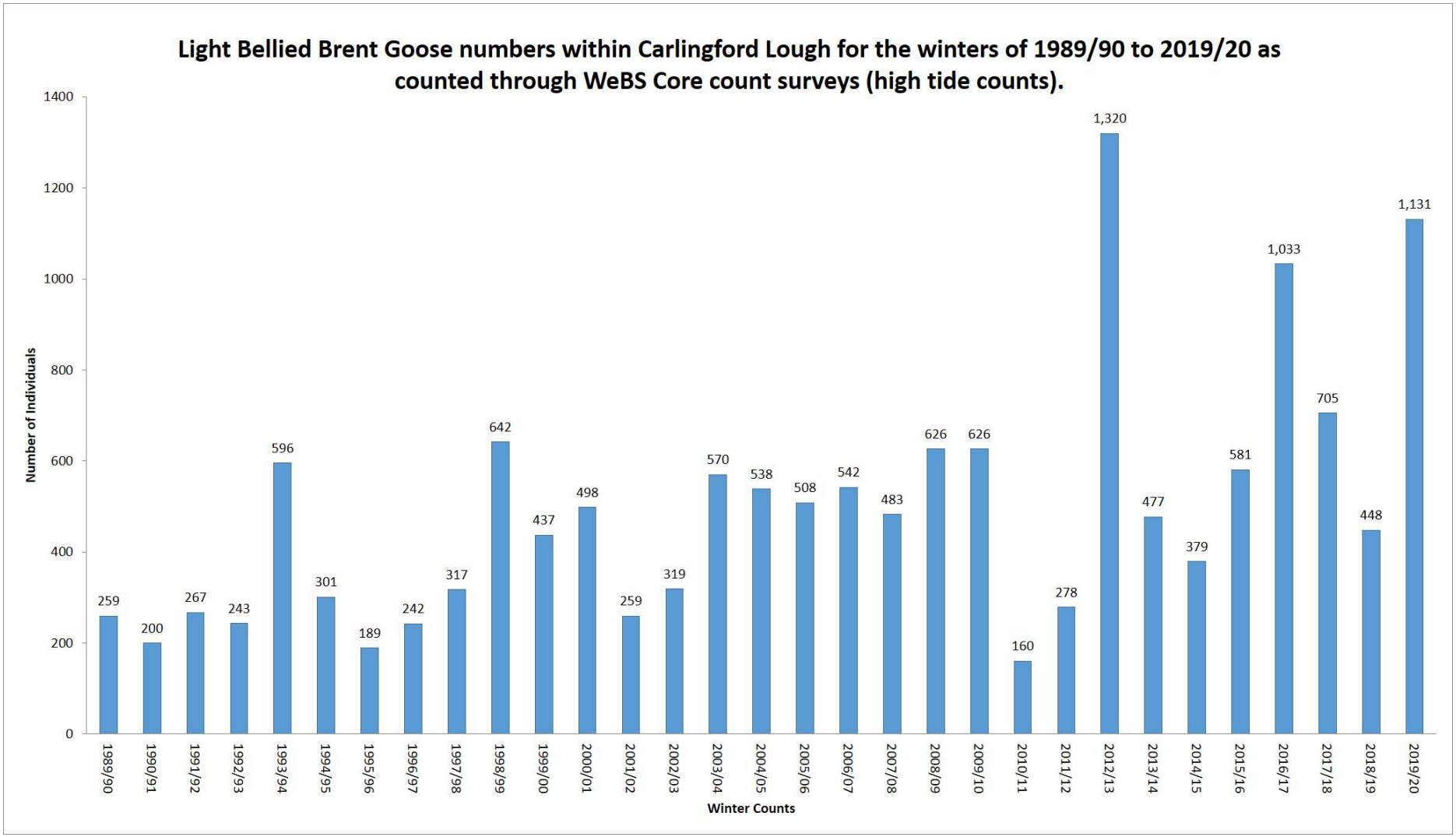

Figure 14: Graph showing the maximum numbers of Light bellied Brent Goose counted (per count season) within WeBS Core counts (high tide counts) within Carlingford Lough (for the winters of 1989/90 to 2019/20 (data supplied by DAERA).

Sector code	Sector Name	Species	2009_10	2010_11	2011_12	2012_13	2013_14	2014_15	2015_16	2016_17	2017_18	2018_19	2019_20
01418	Omeath to Carlingford	Light-bellied Brent Goose	0	87	25	7	14	5	NC	NC	20	22	NC
01417	Mill Bay	Light-bellied Brent Goose	224	NC	NC	214	208	163	145	982	685	358	NC
01419	Carlingford to Greenore	Light-bellied Brent Goose	330	45	278	245	185	158	NC	NC	301	NC	489
01906	Warrenpoint to Newry	Light-bellied Brent Goose	25	36	11	0	40	0	NC	NC	17	96	NC
01910	Rostrevor to Warrenpoint	Light-bellied Brent Goose	23	30	23	0	15	0	NC	51	32	15	NC
01911	Killowen	Light-bellied Brent Goose	8	10	9	0	0	0	NC	NC	4	0	NC

Figure 15: Table showing the WEBS count data for Light bellied Brent goose within Carlingford Lough for the winters of 2009/10 to 2019/20. NC indicates that this sector was not counted. The location of these count sectors is shown in Figure 13. The re text indicates the sector within with aquaculture sites C5 and C6 are located.

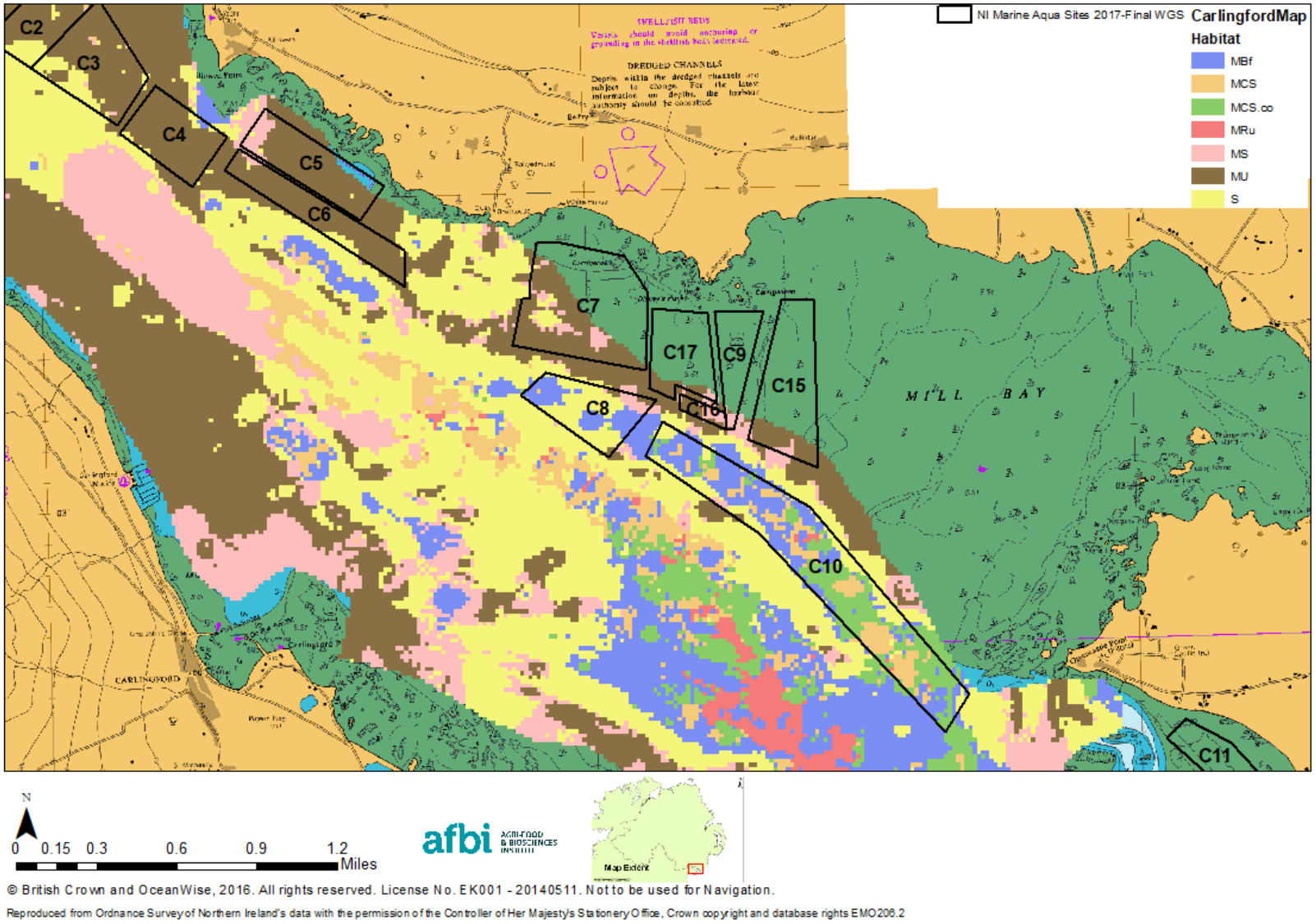

Figure 16: Map showing the benthic habitats (as per EHS 2004) within aquaculture sites C5 and C6 in Carlingford Lough.

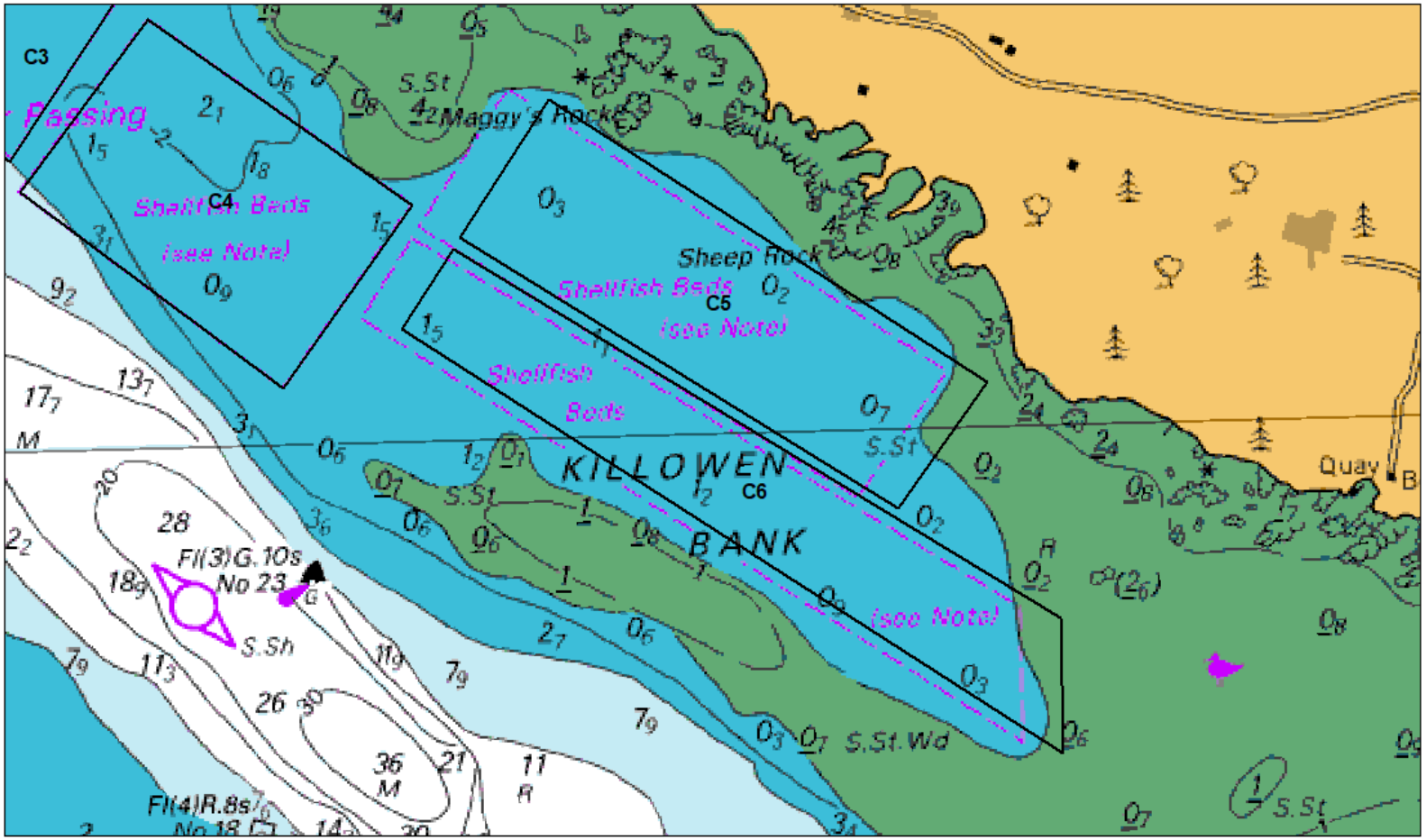

Figure 17: Admiralty chart showing the water depth within aquaculture sites C5 and C6 in Carlingford Lough.

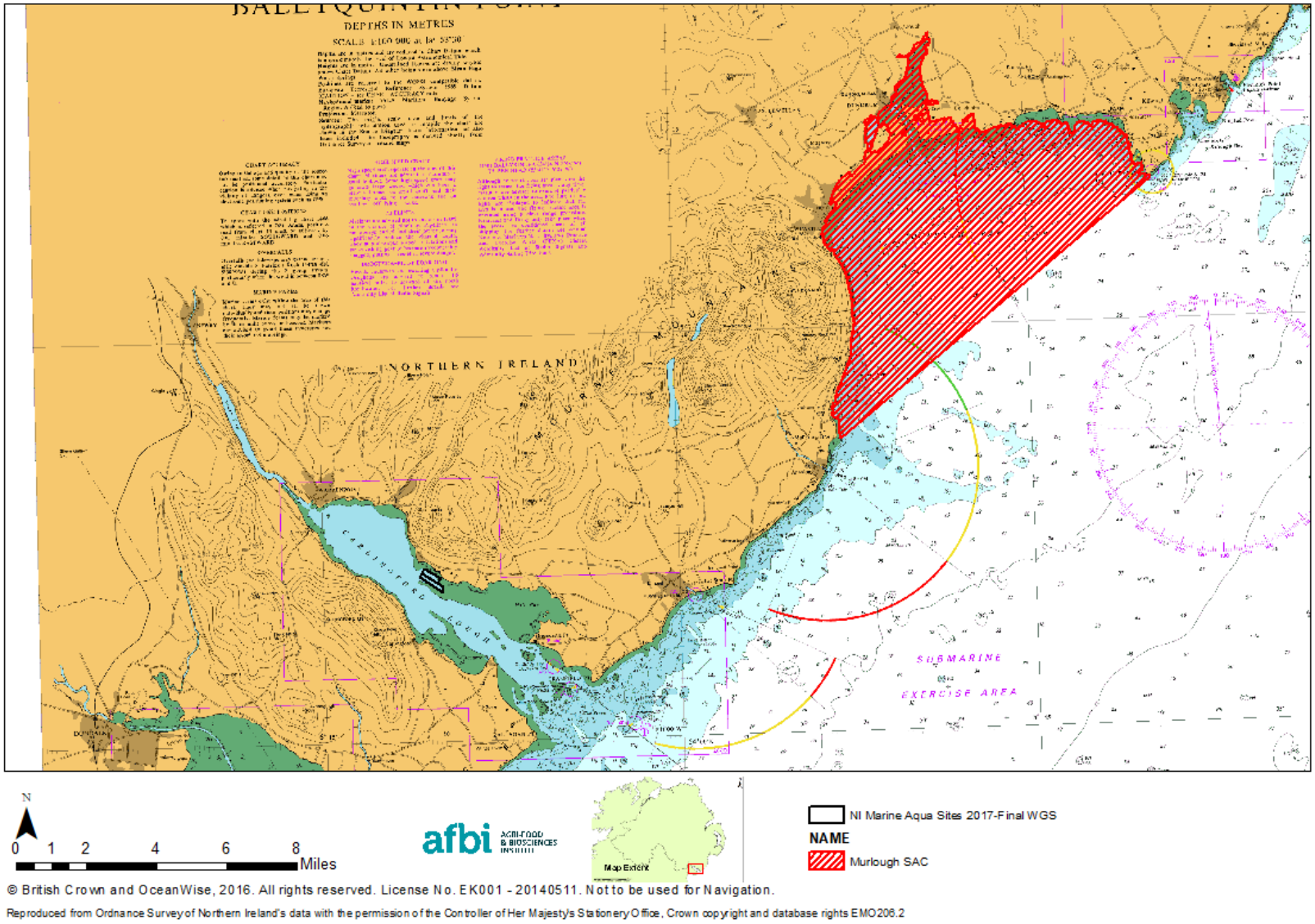

Figure 18: Map showing the location of aquaculture sites C5 and C6 in relation to the boundary of Murlough Lough SAC.

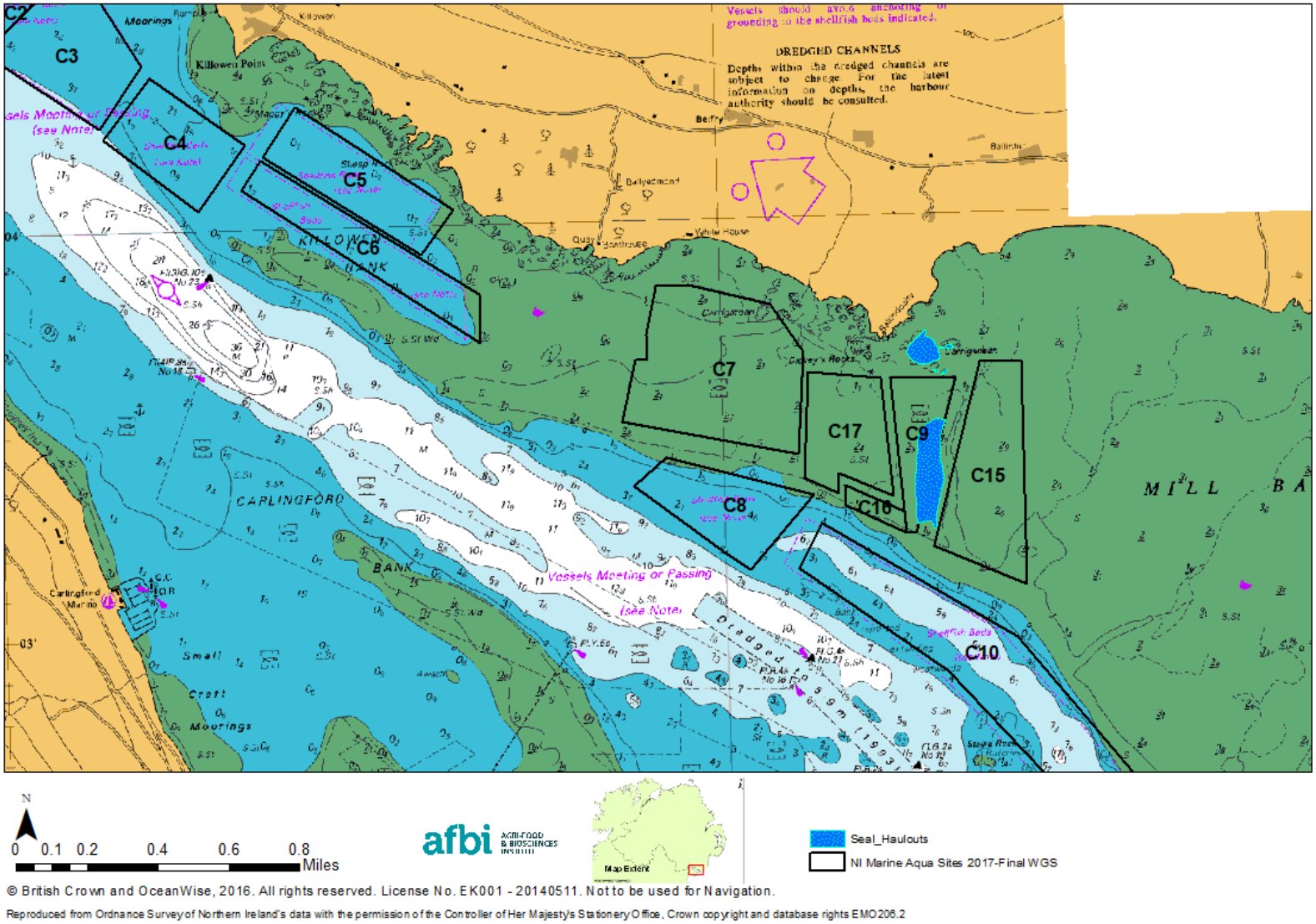

Figure 19: Map showing the location of aquaculture sites C5 and C6 in relation to the closest seal haulout in Mill Bay within Carlingford Lough (as identified by DAERA).

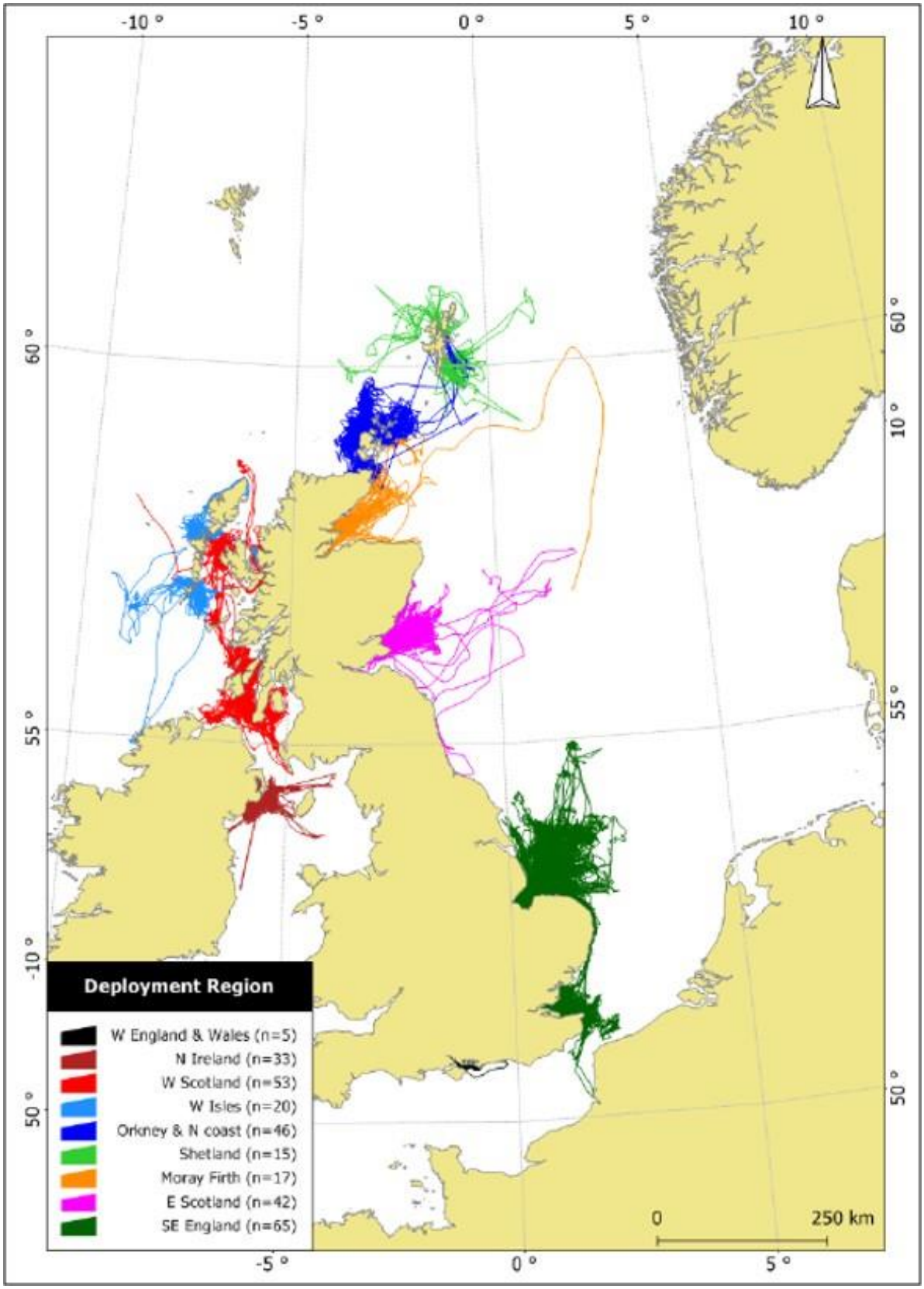

Figure 20: Figure taken from Russell and McConnell (2014) showing telemetry tracks by deployment region for harbour seals aged one year or over. Projection is in Universal Transverse Mercator zone 30N.