An Roinn Talmhaíochta,
Bia agus Mara
Department of Agriculture,
Food and the Marine

T09/93.

AQUACULTURE - LICENSING UNDER

FISHERIES (AMENDMENT) ACT 1997 as amended

and

FORESHORE ACT 1933 as amended

Application Form for an Aquaculture and Foreshore Licence for a single specific site.
If a Licence is required for more than one site a separate application form must be completed for each site.

Important Note

Section 4 of the Fisheries and Foreshore (Amendment) Act, 1998 (No. 54 of 1998) prohibits any person making an application for an Aquaculture Licence from commencing aquaculture operations until duly licensed under the Fisheries (Amendment) Act, 1997 (No. 23 of 1997), and provides that a breach of that prohibition will cause the application to fail.

A copy of an Environmental Impact Statement and Natura Impact Statement should be enclosed, if required, with all new, review and renewal applications. See Guidance Notes Section 3.

Aquaculture & Foreshore Management Division
Department of Agriculture, Food and the Marine
National Seafood Centre
Clonakilty, Co. Cork
P85 TX47
Telephone: (023) 8859500
Fax: (023) 8821782

Revised May 2018

AQUACULTURE AND FORESHORE LICENCE APPLICATION FORM, for purposes of FISHERIES (AMENDMENT) ACT, 1997 and FORESHORE ACT, 1933

NB: The accompanying Guidance Notes should be read before completing this form.

Note: Details provided in Parts 1 and 2 will be made available for public inspection. Details provided in Parts 3 and 4 and any other information supplied will not be released except as may be required by law, including the Freedom of Information Act 1997 as amended.

USE BLOCK CAPITALS IN BLACK INK PLEASE

For Office Use

Application Ref. No. T09/93

Date of Receipt (Dept. Stamp):

Type of Applicant (tick one)		
Sole Trader		
Partnership		
Company		
Co-Operative		
Other	Please specify-	Govt. Agency

PART 1: PRELIMINARY DETAILS

Applicant's Name(s)
1. Marine Institute
Address: Rinville Oranmore County Galway H91 R673 Ireland
2.
Address:
4.
Address:

PART 1: PRELIMINARY DETAILS

Contact in case of enquiries (if different from above)	
Contact Name	DAVID JACKSON
Organisation Name (if applicable)	MARINE INSTITUTE
Address	RINVILLE ORANMORE COUNTY GALWAY H91 R673 IRELAND

TYPE OF APPLICATION – please indicate relevant type of application
This Application Form is valid for each type of application ***- See Guidance Note 3.1***

(i) Aquaculture Licence	
(ii) Trial Licence	
(iii) Foreshore Licence, if Marine Based	
(iv) Review of Aquaculture Licence	Review
(v) Renewal of Aquaculture Licence	Renew

TYPE OF AQUACULTURE *See Guidance Note 3.2*

Indicate the relevant type of application with a tick.

(i) MARINE-BASED

Finfish		x	Go to Parts 2.1 and 2.1A
Shellfish	***Subtidal***	x	Go to Parts 2.2 and 2.2A
	Intertidal		Go to Parts 2.2 and 2.2A
Seaweed/Aquatic Plants/Aquatic Fish Food		x	Go to Parts 2.3 and 2.3A

(ii) LAND-BASED

Finfish ☐ **Shellfish** ☐ Go to Parts 2.4 and 2.4A

Aquatic Plants ☐ **Aquatic Fish Food** ☐ Go to Parts 2.4 and 2.4A

(iii) TRIAL LICENCE ☐ Go to appropriate Parts as above **and** to Part 2.5.

PART 2: DETAILS RELATING TO THE PROPOSED AQUACULTURE PROJECT

2.1 MARINE-BASED AQUACULTURE – FINFISH

When filling out this section refer also to 2.1A and Guidance Note 3.3 for information on Conditions and Documents required with this application type

Proposed Site Location

(i) Bay: BEIRTREACH BUÍ BAY

(ii) County: GALWAY

(iii) OS Map No: O.S. SHEET 51

(iv) Co-ordinates of Site: (please specify coordinate reference system used e.g. Irish Grid (IG) Irish Grid (Easting and Northing)

078664, 240493 to Irish National Grid Reference point
079061, 240707 to Irish National Grid Reference point
079320, 240266 to Irish National Grid Reference point
079054, 240119 to Irish National Grid Reference point
078820, 240220 to the first mentioned point

(v) Size of Site (hectares): 21.761 Ha

(vi) Species (common and scientific name):

VARIOUS TO INCLUDE SPECIES OF THE FAMILIES GADIDAE; SALMONIDAE; MUGILIDAE; LABRIDAE; CYCLOPTERIDAE (FOR MORE DETAIL SEE ANNEX 1).

(vii) Proposed source and strain of stock for use in the operation:

STOCK WILL BE SOURCED FROM LICENCED COMERCIAL AND/OR RESEARCH FACILITIES.

(NB Importation of smolts into the State or movement of smolts within the State requires notification to the Marine Institute as per the Fish Health Authorisation Regulations.) (Refer to Guidance Notes Section 6. – Fish Health Authorisation)

(viii) Method of culture (e.g. nets, tanks, cages etc):

NET PEN CAGES (50m CIRCUMFERENCE) AND SENTINEL NET PENS (4m x 4m)

(ix) Number, type and shape, cubic capacity, depth of cages/tanks:

MAXIMUM OF 12 CAGES OF 50m CIRCUMFERENCE, 10m DEPTH (SEE ANNEX 1 AND ASSOCIATED DRAWINGS FOR MORE DETAIL).

(x) Sea Cage characteristics (mesh size, net type):

CAGES ARE 50m DIAMETER HDPE MANUFACTURED BY KAMES AQUACULTURE EQUIPMENT LTD. NETS ARE MANUFACTURED BY SWAN NET GUNDRY AND ARE 16mm MESH OF KNOTLESS NYLON.

(xi) Maximum stocking density within cages Biomass (per cubic metre):

<25kg per m^3

(xii) Biomass (maximum) in tonnes – enter in table below:

N/A. SITE IS FOR RESEARCH PURPOSES (SEE ANNEX 1 FOR MORE DETAIL). STOCKING IS ROUTINELY RECORDED ON SITE RECORDS.

Species	Year 1	Year 2	Year 3	Year 4

2.1 Marine Based Aquaculture – Finfish (continued)

(xiii) Reasons for site selection: (refer to Environmental Impact Statement – EIS)

EXISTING LICENSED SITE.

(xiv) Is the site located in/adjacent to a sensitive area e.g. SPA (Special Protection Area) or SAC (Special Area of Conservation) i.e. a Natura 2000 site? (Refer to Guidance Note 3.3.1.- Natura 2000

ADJACENT TO CONNEMARA BOG COMPLEX, A TERRESTRIAL SITE: SPA (004181), SAC (002034).

(xv) Methods used to harvest the biomass and details of any subsequent processing of biomass

N/A – THE SITE IS FOR RESEARCH PURPOSES ONLY. ALL FISH WILL BE HUMANELY EUTHANISED ACCORDING TO EU DIRECTIVE 2010/63/EU AND DISPOSED OF IN A LICENSED PREMISES.

(xvi) **Is the application accompanied by an Environmental Impact Statement (EIS), Natural Impact Statement (NIS) and/or an Integrated Pest Management Plan (where required)**

THE SITE IS EXEMPT FROM AN EIS AS PER S.I. 464 of 2016. A NATURA IMPACT STATEMENT (NIS) AND AN INTEGRATED PEST MANAGEMENT (IPM) PLAN HAVE BEEN SUPPLIED WITH THE APPLICATION.

Refer to Guidance Note 3.3.1 for information on the Environmental Impact Statement (EIS)/Natura Impact Statement (NIS) and Guidance Note 3.3.2 for Integrated Pest Management Plan, which are to be included separately for this application.

See Part 2.1A for details of documentation to be included with this application type

2.1A DOCUMENTATION REQUIRED FOR MARINE-BASED FINFISH AQUACULTURE
(to be included separately with a Licence Application for a new site or for a renewal or review (if required) of an existing Licence)

1. **Environmental Impact Statement (EIS) and Natura Impact Statement (NIS)**
   Regulations 4 and 5 of the Aquaculture (Licence Application) Regulations 1998 (S.I.No. 236 of 1998) as amended provides that it is mandatory to submit an EIS with certain aquaculture licence applications. All such applications located within or adjacent to a "Natura 2000" site must accompanied by a Natura Impact Statement (NIS). The Guidance Note, Section 3.3.1 gives information on the requirement to submit both an Environmental Impact Statement and Natura Impact Statement.

2. **Integrated Pest Management Plan (IPM)**
   An Integrated Pest Management (IPM) Plan for the control of sea lice infestations on salt water salmon farms must be established for the proposed application in compliance with the National Monitoring Protocol for Offshore Finfish Farms.

   The Plan must be developed in conjunction and with the agreement of the Marine Institute (MI), and supporting correspondence from the MI must be attached to demonstrate this.
   The Guidance Note, Section 3.3.2 gives information on Integrated Pest Management Plans.
   The IPM Plan must contain the information as specified in Annex B of the Guidance Note.

3. **Scale drawing of the structures to be used and the layout of the farm.** The proposed site drawings must illustrate all site structures above and below the water including mooring blocks. (See Guidance Note 3.3.2)

4. **An appropriate Ordnance Survey Map (recommendation is a map to the Scale of 1:10,000 / 1:10,560, i.e. equivalent to a six inch map).** Note: The proposed access route to the site from the public road across tidal foreshore, (e.g. pier or slipway) must also be shown on the map.

5. **The prescribed application fee (See Guidance Note Section 4)**

6. **If the applicant is a limited Company within the meaning of the Companies Act 1963, as amended, the Certificate of Incorporation and Memorandum and Articles of Association.**

7. **If the applicant is a Co-operative, the Certificate of Incorporation and Rules of the Co-operative Society.**

NOW COMPLETE PARTS 2.6, 3, 4 AND 5 PLEASE

2.2 MARINE-BASED SHELLFISH AQUACULTURE

When filling out this section refer also to 2.2A and Guidance Note 3.3 for information on Conditions and Documents required with this application type

Proposed Site Location

(i) Bay: BEIRTREACH BUÍ BAY

(ii) County: GALWAY

(iii) OS Map No: O.S. Sheet 51

(iv) Co-ordinates of Site: (please specify coordinate reference system used e.g. Irish Grid (IG) or Irish Transverse Mercator (ITM) or Latitude/Longitude [in which case specify whether ETRS89 or WG84 etc.]
Irish Grid (Easting and Northing)

078664, 240493 to Irish National Grid Reference point
079061, 240707 to Irish National Grid Reference point
079320, 240266 to Irish National Grid Reference point
079054, 240119 to Irish National Grid Reference point
078820, 240220 to the first mentioned point

(v) Size of Site (hectares): 21.761 Ha.

(vi) Species (common and scientific name) and whether native or non-native species: (see Guidance Notes 3.3.1)

VARIOUS NATIVE INVERTEBRATE SPECIES FROM THE PHYLUM MOLLUSCA (MOLLUSCAN BIVALVE SHELLFISH), PHYLUM ECHINODERMATA (E.G. URCHINS, SEA CUCUMBERS) AND THE SUBPHYLUM CRUSTACEA (E.G. LOBSTERS) (SEE ANNEX 1 FOR MORE DETAIL).

(vii) Whether production will be sub-tidal or inter-tidal?

CULTIVATION WILL BE SUB-TIDAL.

(viii) Please supply details of (a) source of seed e.g. wild hatchery and location and (b) means of collection and introduction to culture.

SEED WILL BE SOURCED FROM LICENSED COMMERCIAL AND/OR RESEARCH FACILITIES, OR FROM NATURAL SETTLEMENT E.G. ON COLLECTORS PLACED ON SITE. IF SOURCED FROM THE WILD, PRIOR APPROVAL FROM THE RELEVANT AUTHORITIES WILL BE SOUGHT.

NB Importation of seed into the State or movement of seed within the State requires notification to the Marine Institute as per the Fish Health Authorisation Regulations – See Guidance Notes Section 6

(ix) Method of culture (rope, trestles – intensive; bottom – extensive; other)

ROPE AND SUSPENDED CULTURE USING LONGLINES, LANTERN NETS, OYSTER TRAYS, OYSTER BASKETS. ECHINODERMS SUCH AS SEA CUCUMBERS MAY BE CULTURED IN SMALL CAGES ON THE SEA BED.

(x) Proposed number of lines/ropes/trestles as per site layout drawing

VARIOUS, SUSPENDED FROM THE LONGLINES IN THE LOW TROPHIC GRID (SEE ANNEX 1).

(xi) Proposed Production Tonnage:

N/A SITE IS FOR RESEARCH PURPOSES. STOCKING IS ROUTINELY RECORDED ON SITE RECORDS.

Year 1		Year 2		Year 3		Year 4		Year 5	

(xii)

(a) Please outline the reasons for site selection:

EXISTING AQUACULTURE LICENCE.

(b) If using trestles please outline the physical characteristics of the site which make it suitable for using trestles

N/A

(xiii) Is it intended that the product is for direct human consumption or half grown? Please specify

NEITHER, RESEARCH PURPOSES ONLY.

(xiv) How will the visual impact issues of the flotation devices for the proposed application be addressed?

LOW IMPACT CAGES AND LONGLINE FLOATS WILL BE USED IN ACCORDANCE WITH BEST PRACTICE.

(xv) Is the site located in Designated Shellfish Waters Area? (Refer to Guidance Note 3.3.2)

Yes [ ] No [X]

If **yes** give details.

If **no** outline the reasons why you believe the site suitable for the proposed aquaculture, notwithstanding its location outside Designated Shellfish Waters Area?

THE SITE IS FOR RESEARCH PURPOSES ONLY AND STOCK IS NOT DESTINED FOR HUMAN CONSUMPTION.

(xvi) Has the area been classified under Food Safety Legislation? (For Bivalve Molluscs). What is the current classification of the area for the proposed species applied for?

NOT CURRENTLY CLASSIFIED.

(xvii) Is the site located in/adjacent to a sensitive area e.g. SPA (Special Protection Area) or SAC (Special Area of Conservation) i.e. a Natura 2000 site? (Refer to Guidance Note 3.3.1-Natura 2000 sites)

ADJACENT TO CONNEMARA BOG COMPLEX, A TERRESTRIAL SITE: SPA (004181), SAC (002034).

(xviii) Are there known sources of pollution in the vicinity e.g. sewage outfall? Yes / No
If yes please give full details.

NO.

(xix) Methods used to harvest the shellfish and details of any subsequent processing of shellfish

N/A, SHELLFISH ARE PRODUCED FOR RESEARCH PURPOSES ONLY AND NOT FOR HUMAN CONSUMPTION.

(xx) Describe any proposed purification facilities to be used:

N/A, SHELLFISH ARE PRODUCED FOR RESEARCH PURPOSES ONLY AND NOT FOR HUMAN CONSUMPTION.

(xxi) What are the main predators of the species to be cultivated?

STARFISH.

(xxii) Describe the method(s) which will be used to control them.

SUSPENDED OFF-BOTTOM CULTURE OR SMALL MESH CAGES ON THE BOTTOM, EXCLUDING ACCESS FOR PREDATORS.

See Part 2.2A for details of documentation to be included with this application type

2.2A DOCUMENTATION REQUIRED FOR MARINE-BASED SHELLFISH AQUACULTURE

(to be included separately with a Licence Application for a new site or for a renewal or review of an existing Licence)

1. **An appropriate Ordnance Survey Map (recommendation is a map to the Scale of 1:10,000/1:10,560, i.e. equivalent to a six inch map).** Note: The proposed access route to the site from the public road across tidal foreshore must also be shown on the map.

2. **Scale drawing of the structures to be used and the layout of the farm.**
   The proposed site drawings must illustrate all site structures above and below the water including mooring blocks. (recommended scales normally 1:100 for structures and 1:200 for layout) (See Guidance Note 3.3.2)

3. **The prescribed application fee (See Guidance Note Section 4)**

4. **If the applicant is a limited Company within the meaning of the Companies Act 1963. as amended, the Certificate of Incorporation and Memorandum and Articles of Association**

5. **If the applicant is a Co-operative, the Certificate of Incorporation and Rules of the Co-operative Society**

6. **Environmental Impact Statement (if required) in certain cases- See Guidance Notes Section 3.3.1**

7. **Alien Species dossier (where required) – See Guidance Notes Section 3.3.1**

NOW COMPLETE PARTS 2.6, 3, 4 AND 5 PLEASE

2.3 MARINE-BASED SEAWEED/AQUATIC PLANTS/AQUATIC FISH FOOD AQUACULTURE

When filling out this section refer also to 2.3A and Guidance Note 3.3 for information on Conditions and Documents required with this application type

Proposed Site Location

(i) Bay: BEIRTREACH BUÍ BAY

(ii) County: GALWAY

(iii) OS Map No: O.S. Sheet 51

(iv) Co-ordinates of Site: (please specify coordinate reference system used e.g. Irish Grid (IG)

078664, 240493	to Irish National Grid Reference point
079061, 240707	to Irish National Grid Reference point
079320, 240266	to Irish National Grid Reference point
079054, 240119	to Irish National Grid Reference point
078820, 240220	to the first mentioned point

(v) Size (hectares): 21.761 Ha

(vi) Species (common and scientific name):

SEAWEED MACRO-ALGAE SPECIES OF THE PHYLUM CHLOROPHYTA (GREEN ALGAE), RHODOPHYTA (RED ALGAE) AND PHAEOPHYTA (BROWN ALGAE) (SEE ANNEX 1 FOR MORE DETAIL).

(vii) What is the source of plantlet?

LICENCED COMMERCIAL AND/OR RESEARCH FACILITIES. OCCASIONALLY WILD PLANTLETS FROM THE LOCALITY MAY BE USED FOR EXPERIMENTAL CULTIVATION IF PLANTLETS ARE NOT AVAILABLE.

(viii) Cultivation Method?

LONGLINE ROPE CULTURE.

(ix) Proposed total number of lines/ropes.

VARIOUS, BUT NOT MORE THAN 1 KM IN TOTAL. THE LOW-TROPHIC GRID HAS CAPACITY FOR 780M IN TOTAL, AN ADDITIONAL 3 X 50M LONGLINES ARE LOCATED ON THE WESTERN SIDE OF THE SITE.

(x) Proposed Production:

N/A SITE IS FOR RESEARCH PURPOSES (SEE ANNEX 1 FOR DETAIL). STOCKING IS ROUTINELY RECORDED ON SITE RECORDS.

Year 1		Year 2		Year 3		Year 4		Year 5	

(xi) Reasons for site selection:

EXISTING LICENCED SITE.

(xii) Provide detailed information on the techniques for cultivation in use or to be used. Are these techniques currently in use in the industry or are they new? Please give details;

THE PRIMARY METHOD OF CULTIVATION IS LONGLINE CULTURE WHICH IS CURRENTLY IN USE. DUE TO THE RESEARCH NATURE OF THE SITE NEW TECHNIQUES WILL BE TRIALLED WHEN REQUESTED.

(xiii) Methods used for harvesting.

HAND HARVESTING, CUT FROM THE LONGLINES.

(xiv) Has the site sufficient space for the site structures including mooring blocks?

YES.

Please provide separately detailed drawings of both over and under water structures including moorings. (See Guidance Note on Site Structures 3.3.2)

(xv) How will the visual impact issues of the flotation devices for the proposed application be addressed?

LOW IMPACT CAGES AND LONGLINE FLOATS WILL BE USED IN ACCORDANCE WITH BEST PRACTICE.

(xvi) Is the site located in a sensitive area e.g. SPA (Special Protection Area) or SAC (Special Area of Conservation) i.e. a Natura 2000 site? (Refer to Guidance Note 3.3.1- Natura 2000 sites)

If Yes give details

ADJACENT TO CONNEMARA BOG COMPLEX, A TERRESTRIAL SITE: SPA (004181), SAC (002034).

See Part 2.3A for details of documentation to be included with this application type

2.3A DOCUMENTATION REQUIRED FOR MARINE-BASED SEAWEED/AQUATIC PLANTS/AQUATIC FISH FOOD AQUACULTURE

(to be included separately with a Licence Application for a new site or for a renewal or review of an existing Licence)

1. **Scale drawing of the structures to be used and the layout of the farm.** The proposed site drawings must illustrate all site structures above and below the water including mooring blocks. (recommended scales normally 1:100 for structures and 1:200 for layout) (See Guidance Note 3.3.2 on Site Structures)

2. **An Appropriate Ordnance Survey Map (recommendation is a map to the Scale of 1:10,000/ 1:10,560, i.e. equivalent to a six inch map).** Note: The proposed access route to the site from the public road across tidal foreshore, (e.g. pier or slipway) must also be shown on the map.

3. **The prescribed application fee (See Guidance Note Section 4)**

4. **If the applicant is a limited Company within the meaning of the Companies Act 1963, as amended, the Certificate of Incorporation and Memorandum and Articles of Association**

5. **If the applicant is a Co-operative, the Certificate of Incorporation and Rules of the Co-operative Society**

6. **Environmental Impact Statement (if required) in certain cases- See Guidance Notes Section 3.3.1**

NOW COMPLETE PARTS 2.6, 3, 4 AND 5 PLEASE

2.4 LAND-BASED AQUACULTURE – FINFISH, SHELLFISH, AQUATIC PLANTS & AQUATIC FISH FOOD

When filling out this section refer to 2.4A and Guidance Note 3.3 for information on Conditions and Documents required with this application type

Proposed Site Location

(i) Full address of Townland:_____

_____

(ii) County: _____

(iii) OS Map No: _____

(iv) Co-ordinates of Site: (please specify coordinate reference system used e.g. Irish Grid (IG) or Irish Transverse Mercator (ITM) or Latitude/Longitude [in which case specify whether ETRS89 or WG84 etc.]

_____

_____

_____

(v) Size of Site (hectares): _____

(vi) Species (common and scientific name): _____

(vii) Proposed source of stock for use in the operation? _____

_____

NB Importation of ova/fry/parr/smolts or seed into the State or movement of ova/fry/parr/smolts or seed within the State requires notification to the Marine Institute as per the Fish Health Authorisation Regulations. (Refer to Guidance Notes Section 6 – Fish Health Authorisation)

(viii) State proposed system of culture e.g. pond, raceway, circular tank, cage or other method:

_____

Please state the number and cubic capacity of holding facility

_____

_

(ix) Proposed Annual Production:

(x) Reasons for site selection:

_____

_____

_

(xi) Is the site located in or adjacent to a sensitive area e.g. SPA (Special Protection Area) or SAC (Special Area of Conservation) i.e. a Natura 2000 site? *(Refer to Guidance Note 3.3.1 - Natura 2000 sites)*

If yes give details

_____

(xii) Source of water supply:_____

(xiii) Estimate dry weather flow (if applicable) of water source in litres/second:

_____

_

(xiv) Is recirculation of water proposed within the development? **YES/NO**

If YES provide details of the proposed recirculation system (including water treatment and waste stream components) and describe the % recirculation of source water involved and the target quality criteria thresholds proposed for recirculation of water in the proposed system.

_____

_____

_____

(xv) Are there any possible sources of pollution upstream of the site e.g. discharge from sewage plant, stormwater runoff, farmyard, sheep dip facility, silage effluent, quarry, sandpit or factory? YES/NO

If YES please identify:_____

_____

See Part 2.4A for details of documentation to be included with this application type

2.4A DOCUMENTATION REQUIRED FOR LAND-BASED AQUACULTURE

(to be included separately with a Licence Application for a new site or for a renewal or review of an existing Licence)

1. **Environmental Impact Statement (EIS), if required**
   Regulation 5 of the Aquaculture (Licence Application) Regulations provides that is mandatory to submit an EIS with certain aquaculture licence applications. The Guidance Note, Section 3.3.1 gives information on the requirement to submit an Environmental Impact Statement.

2. **Water Quality Analysis Report.**
   The Guidance Note, Section 3.3.3 gives information on Water Quality Analysis Report.
   The Water Quality Analysis Report must contain information as specified in Annex A of Guidance Note.

3. **Decision of Planning Authority under the Planning Acts**
   (See Guidance Note 3.3.3)

4. **Copy of Licence under Section 4 of the Local Government (Water Pollution) Act, 1977 – Effluent Discharge Licence**
   (See Guidance Note 3.3.3)

5. **An appropriate Ordnance Survey Map (recommendation is a map to the Scale of 1:10,000 /1:10,560, i.e, the equivalent of a six inch map) showing the location of the site marked in red on which the project will be located**

6. **A sketch of the layout of the site in relation to the river(s), road(s) and building(s)**

7. **Scale drawing of the structures to be used and the layout of the farm in relation to river(s), road(s), and building(s).** (recommended scales normally 1:100 for structures and 1:200 for layout)

8. **The prescribed application fee (See Guidance Note Section 4)**

9. **If the applicant is a limited Company within the meaning of the Companies Act 1963, as amended, the Certificate of Incorporation and Memorandum and Articles of Association**

10. **If the applicant is a Co-operative, the Certificate of Incorporation and Rules of the Co-operative Society**

11. **Alien Species dossier (where required) – See Guidance Notes 3.3.1**

Please note that the following conditions must be met in order to allow for consideration of licensing of land-based aquaculture:

- The buildings and equipment must be put in place to the Department's satisfaction
- The operation must comply with Local Authority requirements

(See Guidance Note 3.3.3)

NOW COMPLETE PARTS 2.6, 3, 4 AND 5 PLEASE

2.5 TRIAL LICENCE
(To be completed if appropriate)

(See Guidance Note: 3.1(ii))
(i) Describe experimental or investigative nature of the proposed project:

A TRIAL LICENCE IS NOT BEING APPLIED FOR.

(ii) Outline how performance will be assessed:
(a) Stock

(b) Environmental

[Use separate page if required – all additional pages to be signed and dated]

2.6 Employment, Qualifications, Experience, etc
TO BE FILLED IN BY ALL AQUACULTURE APPLICANTS

(i) Please provide details of experience/qualifications of the applicant and any key personnel which are relevant to the aquaculture now proposed:

Dr David Jackson: Over thirty years' experience in aquaculture research. Section Manager of the Aquaculture Section in the Marine Institute. Principle Investigator in many internationally funded research projects. Circa. 150 research related publications including peer reviewed papers, book chapters and national and international reports.

Alan Drumm: Senior Laboratory Analyst. Over 30 years' experience working within Aquaculture. Joined the Salmon Research Trust in 1987 and the Marine Institute in 1999. Currently, managing the Freshwater Rearing Facilities in Newport, Co Mayo and the Marine Research site in Beirtreach Bui, Connemara.

(ii) If a new application please provide details of projected employment creation during first four years of the proposed aquaculture project:

(iii) In the case of a renewal please provide current and future details:

N/A

FULLTIME JOBS

Year 1:		Year 2:		Year 3:		Year 4:	

PART TIME JOBS

Year 1:		Year 2:		Year 3:		Year 4:	

PART 5: APPLICATION DOCUMENTATION

The following documents are enclosed with this application:
NB: Refer to Guidance Note Section 3.3 – Guidance on Application Documentation

No.	DOCUMENTATION	YES	NO	N/A
1a	**An appropriate Ordnance Survey Map (recommendation is a map to the scale of 1:10,000/10:10,560, i.e., equivalent to a six inch map)**	✓		
1b	The proposed access route to the site from the public road across tidal foreshore must also be shown	✓		
2a	**Scale drawing of the structures to be used** (recommended scale normally 1:100 for structures).	✓		
2b	**Scale drawing of farm layout (**recommended scale normally 1:200 for layout)	✓		
3	**The prescribed application fee**	✓		
4	**Environmental Impact Statement (EIS), if required**			✓
4a	**Natura Impact Statement (NIS), if required**	✓		
5	**Water Quality Analysis Report, if appropriate**	✓		
6	**Decision of Planning Authority under the Planning Acts, if required**			✓
7	**Copy of Licence under Section 4 of the Local Government (Water Pollution) Act, 1977 – Effluent Discharge, if required**			✓
8	**If the applicant is a limited Company within the meaning of the Companies Act 1963, as amended, a copy of the Certificate of Incorporation and Memorandum and Articles of Association.**			✓
9	**If the applicant is a Co-operative, a copy of the Certificate of Incorporation and Rules of the Co-operative Society**			✓
10	**Integrated Pest Management Plan, if required**	✓		
11	**Alien Species documentation, if required.**			✓

PART 5: DECLARATION AND SIGNING

NB: Refer to Guidance Note Section 3.5 and Section 4 - Guidance on Declaration and Signing and Annual Aquaculture and Foreshore Licence Fees

If this is a renewal/review have you met all licence conditions of the existing aquaculture licence? If applicable, explain why you have not complied with all conditions:

YES, ALL CONDITIONS OF THE EXISTING AQUACULTURE LICENCE HAVE BEEN MET.

I/We hereby declare the information provided in Parts 1, 2, 3 and 4 above to be true to the best of my/our knowledge and that I am over 18 years of age. I/We enclose an application fee* of €190.46 with this application.

Signature(s) of Applicant(s):
(Please state capacity of persons signing on behalf of a Company/Co-op) INSPECTOR OF FISHERIES

Date: 26th March 2019

NB All persons named on this licence application must sign and date this application form.
Only the existing licence holder(s) can apply for the renewal/review of an Aquaculture Licence.

*Preferred method of payment is by cheque or bank draft. The fee should be made payable to the Department of Agriculture, Food and the Marine.

Refer to Guidance Note Section 4 - Guidance on Aquaculture and Foreshore Licence Fees

The application form should be forwarded, with the required documents and application fee, to:

Aquaculture Licensing
Aquaculture & Foreshore Management Division
Department of Agriculture, Food and the Marine
National Seafood Centre
Clonakilty
Co. Cork

ANNEX 1 Description of the Project

Background

The Marine Institute holds an aquaculture license for a sea cage site at Lehanagh Pool in Beirtreach Buí Bay (Bertrabuoy Bay) T9/93. This site is of 21.761 hectares and was previously used to conduct research on cod (*Gadus morhua*) for a number of years. The research was supported by a mixture of national (Marine Research Measure, Sea Change, BIM R & D funding and Marine Institute core funding) and international (Inter Reg IIIC) competitive funding.

The Marine Institute successfully applied to have the licence converted into a Multispecies Research License to permit the use of experimental and novel equipment and techniques and to enable the evaluation of multispecies and multi-trophic aquaculture in line with current National and EU policies. To date over €2M has been secured in National and EU funding to enable this research and a number of research projects are underway funded by competitive research funding from the EU Horizon 2020 Programme, EMFF and Enterprise Ireland https://www.marine.ie/Home/site-area/infrastructure-facilities/lehanagh-pool-marine-research-site?language=en .

Current moorings

The moorings have been updated under the current license to ensure that they are in line with best international practice. Six-cage mooring grids are deployed designed to commercial standards based on the Norwegian Standard. The grid is based on fourteen HSS500Kg Plough anchors linked to 38mm open link chain and 56mm 3 strand Powerflex (or similar) rope (as per attached drawing). Shackles and mooring plates are specified in terms of MBLs required by the Norwegian standard. Certified drawings were supplied in line with the ***DAFM Structural Design Protocol 2016*** prior to installation. Detailed drawings have been supplied with this application.

The wave climate at the site has been demonstrated empirically over the last thirty years of the operation of the site to be relatively benign. The site is sheltered by a combination of islands and shallow bars and is effectively, as the name suggests, a pool which is not subject to storm surges or swells. In order to underpin this information, we have conducted a wave climate investigation using the Marine Institute SWAN model (Appendix I). This confirms that the 6-year mean significant wave height at the mouth of Beirtreach Buí Bay was found to be **1.58** metres and that the wave climate at Lehanagh Pool would be expected to be much more benign than that at the entrance to the bay. The proposed mooring grid has been designed for the much more exposed commercial sites off Irelands west coast and are substantially over specified for this sheltered location.

Mooring Grid and Structures for renewed license

The upgraded mooring currently installed under the existing license will be retained. Under the proposed research license two such grids can be utilised to permit the installation of up to 12 finfish cages and a number of long lines for shellfish and seaweed cultivation. Currently, the site has one mooring grid installed (as described

above) allowing up to six 50m circumference net cages on site. At present, five net cages are installed on site together with a pontoon barge. Additional structures include a databuoy (Mobilis DB2000 with twin point mooring) and a low trophic grid. The low trophic grid is annexed to the main mooring grid and consists of two 35m x 60m submerged rectangles with a capacity for 780m of longline total length. Smaller structures (e.g. lantern nets, oyster baskets etc.) will be suspended from these longlines for the cultivation of shellfish species as required. Additionally, smaller $4m^3$ sentinel net cages can be installed within the larger 50m circumference net cages to facilitate specific trials. Presently, ten sentinel net cages have been used and are stored off-site when not in use. Overall this has reduced the number of licensed structures on the site from an initial (pre-marine Institute) 48 to a maximum of 24. At present, this includes up to a maximum of 12 x 50m circumference finfish cages, 1 x low-trophic grid (as described above), 1 x pontoon (see drawings for detail), 1 x data buoy and 3 x 50m longlines on the western side of the site. As the site is for research purposes, the size and configuration of the structures is smaller than those of the commercial equivalents. The sentinel cages and small shellfish cultivation equipment (e.g. lantern nets, oyster baskets) are not considered as structures. Photographs of the main structures can be found in Appendix II.

Visual Impact

The current site has been in operation for over thirty years. It is in fact one of the earliest licensed finfish aquaculture sites in south Connemara. As such, the site and the structures thereon are part of the existing built landscape, in much the same way as the local roads, buildings and stone walls. The proposed renewal will not alter the area the aquaculture structures have occupied for the last thirty years. The conversion to a research licence had two main effects on visual impact. Firstly, the number of permitted structures was reduced from 48 to 24. Secondly as the structures are for research use and not commercial production they are in general smaller and less visually obtrusive. In addition to this, half of the structures deployed are essentially sub surface in nature. Taken together with the reduction in the number of structures and their small size this has the effect of reducing the visual impact to a fraction of that of the previously licensed 48 fin fish cages. This is consistent with the provisions of ***Section 101 of the Sea Fisheries and Maritime Jurisdiction Act 2006*** on the deployment of novel or experimental equipment where visual impact should be no greater than that which existed prior, in this case 48 fin fish cages. The site is not adjacent to any major roads or scenic viewing points.

Proposed Research, program of work

The Research License has permitted the site to support a wide range of research, including research into sea lice management strategies, basic research on fish welfare and IMTA (integrated multi-trophic aquaculture).

The site is to be utilised as a multi-species site using:

- **Finfish:** such as fish of the Families Gadidae e.g. Atlantic cod *Gadus morhua*; Salmonidae e.g. Atlantic salmon *Salmo salar*; Mugilidae e.g. grey mullet *Mugil cephalus*; Labridae e.g. Ballan wrasse *Labrus bergylta*; and Cyclopteridae e.g. lumpfish *Cyclopterus lumpus*,

- **Molluscan shellfish** of the Class Bivalvia such as e.g. blue mussel *Mytilus edulis*, King scallop *Pecten maximus*, Variegated scallop *Chlamys varia*, European flat oyster *Ostrea edulis*;
- **Echinoderm** animals such as e.g. Purple sea urchin *Paracentrotus lividus*, Black sea cucumber *Holothuria forskali*;
- **Crustaceans** such as e.g. European lobster *Homarus gammarus*;
- **Seaweed** macro-algae species in the Phylum Chlorophyta (green algae), Rhodophyta (red algae) and Phaeophyta (brown algae).

All species to be used on site are naturally occurring in Ireland.

The total standing biomass currently licensed at the site for fin-fish will not be exceeded (and in accordance with SI 464 of 2016) and stocking of the site with a mix of species will be contingent on an approved fish health management plan and an approved SBM plan being in place prior to each such stocking.

The site forms part of a national aquaculture research infrastructure and is currently used to support a number of national and internationally funded research projects (https://www.marine.ie/Home/site-area/infrastructure-facilities/lehanagh-pool-marine-research-site?language=en), in association with project partners in both Irish third level institutions and partners in other EU states. As such it is a valuable part of the States marine research infrastructure.

The exact type and configuration of the cages, structures and longlines may vary from time to time as the nature of the research evolves. In line with current protocols any proposed changes will be notified to DAFM for approval prior to deployment and all structures will be designed to best international practice and fit for purpose.

Natura

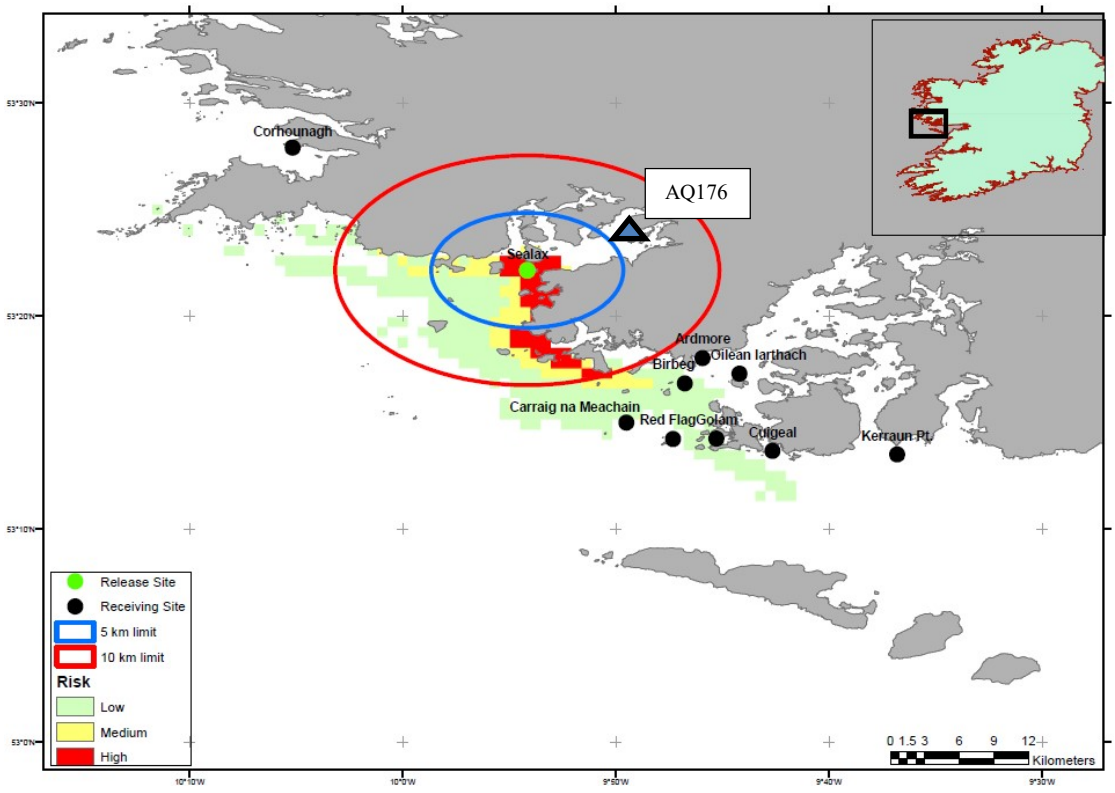
A comprehensive screening exercise was carried out for potential impacts on adjacent Natura sites in December 2016. A screening document of the potential impacts of the proposed aquaculture licence (AQ176) variation on the listed features and species of all SAC's and SPA's in the environs of Beirtreach Buí Bay is appended (Appendix III). The document assesses the likely significant effects of the proposed fish farm upon the Habitats and species elements of the Natura site network. Aquaculture license AQ176 is not located within a designated SPA. The desktop review of potential linkages and analysis of spatial overlap indicated with high confidence that the proposed amendment to licence AQ176 would not have any significant impact on any SCI bird species of the adjacent SPA's. Aquaculture license AQ176 is not located within a designated SAC. The desktop review of potential linkages and analysis of spatial overlap indicate with high confidence that the proposed amendment to licence AQ176 would not have any impact on the protected features and species of the adjacent SAC's.

Management and disposal of stocks

The site will be used for research purposes only and as such the stocks cultivated thereon will not directly give rise to harvested tonnage for commercial production

destined to enter the human food chain. The care and husbandry of animals used in the course of research is governed by ***EU directive 2010/63/EU*** and ***S.I. No. 543 of 2012*** (as amended) and the site is fully authorised, under this legislation, by the Health Products Regulatory Authority (HPRA) under authorisation number AE19121. The care, husbandry and slaughter of all stocks will be in full compliance with this legislation and subject to regular audits from HPRA. This is in addition to the normal rules governing the husbandry of aquaculture animals.

A fish health management plan will be in place and in the event of a disease outbreak the protocols as set out in the ***Contingency Plan for diseases of fish as required under Council Directive 2006/88/E***, (MI Publication 2014) (Appendix IV) will be adhered to. Carcases will be disposed of by rendering in an EPA and DAFM approved Category 1 rendering plant as appropriate. As the site is relatively distant from all adjacent commercial fin-fish production sites the risk of cross infection is considered very low, even from the nearest production site in Beirtreach Buí Bay (see map).



Summary of license requested:

Research license to cultivate fin-fish, shellfish and marine macro-algae.

Site co-ordinates:

Irish Grid (Easting and Northing)

078664, 240493	to Irish National Grid Reference point
079061, 240707	to Irish National Grid Reference point
079320, 240266	to Irish National Grid Reference point
079054, 240119	to Irish National Grid Reference point
078820, 240220	to the first mentioned point

Site area: 21.761 hectares.

Species to be cultivated:

The site is to be utilised as a multi-species site using:

- **Finfish:** such as fish of the Families Gadidae e.g. Atlantic cod *Gadus morhua*; Salmonidae e.g. Atlantic salmon *Salmo salar*; Mugilidae e.g. grey mullet *Mugil cephalus*; Labridae e.g. Ballan wrasse *Labrus bergylta*; and Cyclopteridae e.g. lumpfish *Cyclopterus lumpus*,
- **Molluscan shellfish** of the Class Bivalvia such as e.g. blue mussel *Mytilus edulis*, King scallop *Pecten maximus*, Variegated scallop *Chlamys varia*, European flat oyster *Ostrea edulis*;
- **Echinoderm** animals such as e.g. Purple sea urchin *Paracentrotus lividus*, Black sea cucumber *Holothuria forskali*;
- **Crustaceans** such as e.g. European lobster *Homarus gammarus*;
- **Seaweed** macro-algae species in the Phylum Chlorophyta (green algae), Rhodophyta (red algae) and Phaeophyta (brown algae).

All species to be used on site are naturally occurring in Ireland.

Stocking and outputs: Maximum biomass not to exceed 100 tonnes, annual harvest output not to exceed 50 tonnes of fin-fish.

Note: as the stocks will be used for research it is not envisaged that there will be any significant harvested output.

Structures and moorings; Two mooring grids to accommodate a maximum of 24 structures (cages and long-lines as appropriate) for the conducting of field research as per attached technical drawings.

Appendix I

Wave climate at Lehanagh Pool

The Marine Institute run an operational wave model based on the SWAN (Simulating Waves Nearshore) modelling code which simulates the wave climate for all Irish waters at 0.025 degrees horizontal resolution. The model has been validated using measured data from the weather and wave buoys situated around the Irish coast and has been found to simulate the wave climate with good skill. The model has been operational since mid 2010.

In an effort to provide an estimate of the wave climate at the proposed aquaculture site in inner Beirtreach Buí Bay, an analysis was carried out on 6 years of data from the model grid point located closest to the proposed site. As can be seen from Figure 1 the model grid point is actually at the entrance to Beirtreach Buí Bay rather than at the proposed site. This is because the SWAN model does not have a high enough horizontal resolution to simulate the climate within the bay itself.

Table 1 shows the annual mean and max significant wave height (Hs) for the chosen model grid point. The 6-year mean was found to be **1.58** metres and the maximum Hs was **3.74** metres.

However, these values need to be put in context. The proposed site at Lehanagh Pool is in a much more sheltered location than the relatively exposed location of the model grid point used to calculate these statistics. The topography of Beirtreach Buí Bay and the shallower waters of the bay would be expected to have a significant impact on the wave climate of a location at the eastern end of the bay so the wave climate at Lehanagh Pool would be expected to be much more benign than that at the entrance to the bay. Given this, the significant wave height statistics quoted here are very likely to be significantly less at Lehanagh Pool.

Figure 1: Locations of proposed aquaculture site at Lehanagh Pool in inner Beirtreach Buí Bay and the closest SWAN grid point located at the entrance to Beirtreach Buí Bay

Year	Mean Hs (m)	Max Hs(m)
2011	1.67	3.58
2012	1.36	3.54
2013	1.52	3.72
2014	1.68	3.74
2015	1.81	3.69
2016	1.60	3.67

Table 1: Annual mean and max Hs (significant wave height) at Beirtreach Buí model point

Appendix II

Examples of structures currently in use at Lehanagh Pool (T9/93).

Visual of the site from the shore.

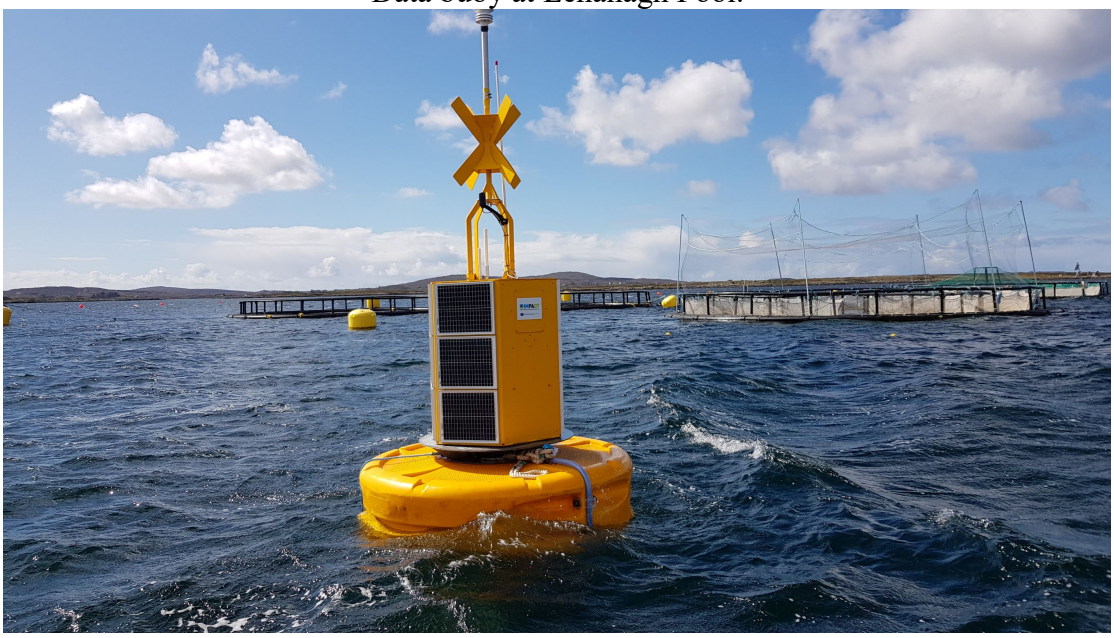
The Marine Institute Lehanagh Pool Research Site (T09/93)

50m circumference net pens with bird nets, at Lehanagh Pool.

Sentinel cage set-up within a larger 50m net pen.

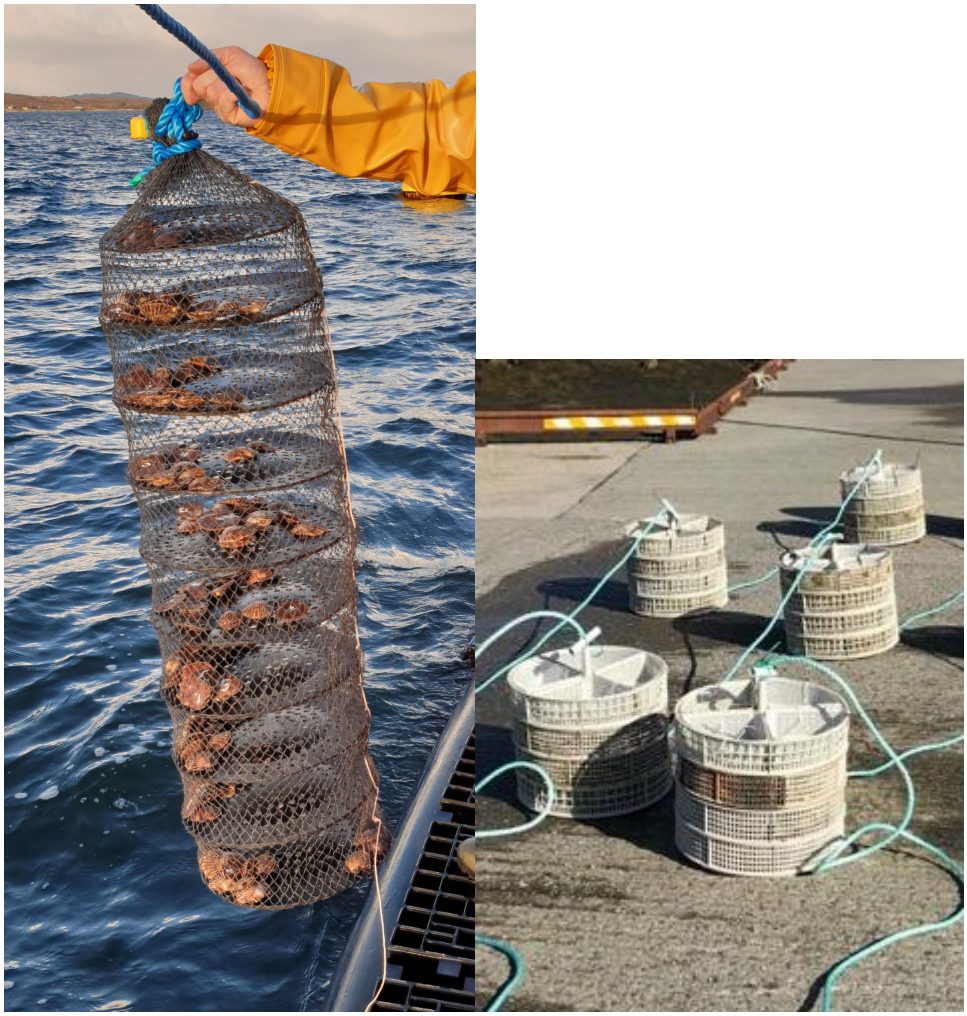
The low-trophic grid for seaweed and shellfish cultivation trials.

Data buoy at Lehanagh Pool.



Seaweed longline at Lehanagh Pool.

Oyster baskets for shellfish cultivation trials at Lehanagh Pool.



Lantern nets (left) and oyster trays (right) for suspended culture of shellfish.

Appendix III

Screening statement

Aquaculture license AQ176 variation - Lehannah Pool in Beirtreach Buí Bay (Bertraghboy Bay).

December 2016

Contents

1.0 Introduction

This document represents a screening document of the potential impacts of the proposed aquaculture licence (AQ176) variation on the listed features and species of all SAC's and SPA's in the environs of Bertraboy Bay. The document assesses the likely significant effects of the proposed fish farm upon the Habitats and species elements of the Natura site network.

Article 6(3) of the Habitats Directive (92/43/EEC) states that 'Any plan or project not directly connected with or necessary to the management of the site but likely to have a significant effect thereon, either individually or in combination with other plans or projects, shall be subject to appropriate assessment of its implications for the site in view of the site's conservation objectives.'

For the purposes of this document Natura 2000 sites are those identified as sites of community importance designated under the Habitats directive (Special Areas of Conservation (SAC's), and sites designated under the Birds Directive (Special Protection Areas (SPA's))

The proposed fish farm could potentially affect the following Natura sites;

- Connemara Bog Complex SPA (004181)
- Slyne head to Ardmore Point Islands SPA (004159)
- Inishmore Island SPA (004152)
- Connemara Bog Complex SAC (002034)
- Kilkieran Bay and Island SAC (002111)
- Slyne Head Islands SAC (000328)
- Inishmore Island SAC (000213)
- West Connaught Coast SAC (002998)

The document has been prepared by BIM on behalf of the project proponent (Marine Institute) and should be cited as:

BIM (2016) Screening statement - Aquaculture license AQ176 variation - Lehannah Pool in Beirtreach Buí Bay (Bertraghboy bay).

2.0 Methodology

The methodology used in this assessment is devised with reference to the EU guidance documents on the methodology of an appropriate assessment (EC, 2001) and the national guidance, "Appropriate Assessment of Plans and Projects in Ireland: Guidance for Planning Authorities", (DEHLG, 2009). This document defines Screening as the process which identifies the likely effects of a plan or project, either alone or in combination with other projects or plans, upon a Natura 2000 site and considers whether these impacts are likely to be significant.

3.0 Project Description

The Marine Institute holds an aquaculture license AQ176 for a sea cage site at Lehannah Pool in Beirtreach Buí Bay (Bertraghboy Bay). This site is of 23.3 hectares and has been used to conduct research on cod (*Gadus morhua*) for a number of years. The research was supported by a mixture of national (Marine Research Measure) and international (InterReg IIIC) funding.

The Marine Institute is seeking a variation of the license in order to use the site to support a wider range of research, including research into sea lice management strategies, basic research on fish welfare and IMTA (integrated multi-trophic aquaculture). They are seeking permission to use the site as a multi-species site using fin-fish {cod, salmonids and cleaner fish of the wrasse family (Labridae) and lumpsucker (*Cyclopterus lumpus*) shellfish {blue mussels and or other bivalves and possibly sea urchins or crustaceans} and seaweed {marine macro-algae of the genera *Alaria, Laminaria* etc.}.

The site was originally licensed to hold salmon and this was amended to permit the culture of cod in 2010. The license permits the use of up to 48 cages at the site. The Marine Institute are currently updating the moorings, in line with best international practice, to accommodate six cages moored in a grid as per attached drawing. Two such grids will be installed to permit the installation of up to 12 fin fish cages and a number of long lines for shellfish and seaweed cultivation, up to a maximum of 12. This would reduce the number of licensed structures on site from the current 48 to 24. As the site is for research purposes the size and configuration of the structures will be smaller than those of the commercial equivalents.

There is no proposal to alter the current licensed standing biomass for fin-fish (100 tonnes) and the Marine Institute expect that stocking of the site with a mix of species would be contingent on an approved fish health management plan and an approved SBM plan prior to each such stocking.

The plan is to use the site in the coming years to support a number of projects (including the IMTA proposal mentioned above), in association with project partners in both Irish third level institutions and partners in other EU states. It will also be used to support a major international project TAPAS which has received €7million from the EU under Horizon 2020. As such it will be a valuable part of the States marine research infrastructure.

The exact type and configuration of the cages and longlines will vary from time to time as the nature of the research evolves. In line with current protocols any proposed changes will be notified to DAFM for approval prior to deployment and all structures will be designed to best international practice and fit for purpose.

4.0 Brief description of the Natura 2000 sites

4.1 Site Synopses

All site descriptions and conservation objectives were extracted directly from the NPWS site synopsis databases.

http://www.npws.ie/protectedsites/specialareasofconservationsac/

Accessed 09/12/2016

4.1.1 Connemara Bog Complex SPA (004181)

The Connemara Bog Complex SPA is a large site encompassing much of the south Connemara lowlands of Co. Galway. The site consists of three separate areas - north of Roundstone, south of Recess and north-west of Spiddal. It is underlain predominantly by a variety of igneous and metamorphic rocks including granite, schist, gneiss and gabbro.

The whole area was glaciated during the last Ice Age which scoured the lowlands of Connemara. The Connemara Bog Complex SPA is characterized by areas of deep peat surrounded by heath-covered rocky outcrops. The deeper peat areas are often bordered by river systems and the many oligotrophic lakes that occur, resulting in an intricate mosaic of various peatland/wetland habitats and vegetation communities; these include Atlantic blanket bog with hummock/hollow systems, inter-connecting pools, Atlantic blanket bog pools, flushes, transition and quaking mires, as well as freshwater marshes, lakeshore, lake and river systems.

The site is a Special Protection Area (SPA) under the E.U. Birds Directive, of special conservation interest for the following species: Cormorant, Merlin, Golden Plover and Common Gull.

The SPA is located approximately 6km from the licenced site under consideration

4.1.2 Slyne head to Ardmore Point Islands SPA (004159)

The site includes a number of islands in 5 clusters along the Connemara coast, Co. Galway, from Slyne Head to Kilkieran Bay. It is characterised by a large number of small, uninhabited islands, rocks and skerries. Some of the islands are up to 4 km from the mainland, whilst others are in very shallow waters close to the shoreline. The larger islands in the site include Inishlackan, Croaghnakeela Island, St Macdara's Island, Masson Island, Birmore Island, Freaghillaun, Illaunamid and Illaunurra. Most of the larger islands support maritime grassland; machair occurs on Masson Island. The surrounding seas to a distance of 200 m, which are used as foraging areas by terns and other seabirds, are included within the site.

The SPA is of high ornithological importance as it supports an internationally important Barnacle Goose population. It also has nationally important populations of three tern species, including the largest breeding population of Arctic Tern in the country. Barnacle Goose, Sandwich Tern, Arctic Tern, Little Tern, Common Tern and Roseate Tern are all listed on Annex I of the of the E.U. Birds Directive.

The site is a Special Protection Area (SPA) under the E.U. Birds Directive, of special conservation interest for the following species: Barnacle Goose, Sandwich Tern, Arctic Tern and Little Tern. The islands within the site support an internationally important wintering population of Barnacle Goose. The islands used by the geese include St Macdara's Island, Croaghnakeela Island, Illaunacroagh More, Illaunacroagh Beg, Inishmuskerry and Birmore Island.

Inishlackan and Freaghillaun are the closest islands in the SPA to the licenced area under consideration (Approximately 7km)

4.1.3 Inishmore Island SPA (004152)

Situated approximately 8 km off the south coast of County Galway, Inishmore (Árainn) is the largest of the three Aran Islands. The site comprises all of the cliffs and rocky shore along the entire southern side of the island, part of the low cliffs/rocky shore at the west end, and the low cliffs/rocky shore at the east end - a distance of over 17 km of coastline. Also included are the two islands west of Inishmore (Brannock Island and Rock Island), Straw Island at the east end of Inishmore, the dune system at Barr na Coise, and the adjacent seas. The cliffs vary in height between 20m and 80m and in angle. Littoral and sublittoral reef communities are well-developed within the site

The Inishmore SPA is an important site for breeding seabirds, with four migratory species having populations of national importance. Of note is that two of the seabird species, Arctic Tern and Little Tern, as well as the resident Peregrine and Chough, are listed on Annex I of the E.U. Birds Directive.

The SPA is located approximately 27km from the licenced site under consideration

4.1.4 Connemara Bog Complex SAC (002034)

The Connemara Bog Complex is a large site encompassing the majority of the south Connemara lowlands, Co. Galway. The site is bounded to the north by the Galway- Clifden road and stretches as far east as the Moycullen-Spiddal road. Because of its large size the site contains a wide range of habitats. Extensive tracts of western blanket bog form the core interest, but there are also areas of heath, woodland, lakes, rivers and streams.

The Connemara Bog Complex encompasses a large area of relatively undamaged lowland Atlantic blanket bog of high conservation significance both in Ireland and at a European level. The site also contains good examples of at least 13 other habitats listed on Annex I of the E.U. Habitats Directive, as well as four species listed in Annex II.
Further, the site supports a number of threatened and protected plant species. The site is internationally important for Cormorant and nationally important for Greenland White-fronted Goose, and contains nesting sites for Golden Plover.

Atlantic salmon, a species listed under Annex II of the E.U. Habitats Directive, occurs in many of the rivers within the site. The Cashla and Ballynahinch systems are good examples of western acidic spate rivers which support the species. Good spawning and nursery grounds for the species occur in these systems.

The SAC is located approximately 1km from the licenced site under consideration.

4.1.5 Kilkieran Bay and Island SAC (002111)

Kilkieran Bay and Islands SAC is located just north of Galway Bay and extends from Keeraun Point, south of Carraroe, westwards to Mace Head, west of Carna, all in Co. Galway. The site contains a large area of open marine water, many islands and rocky islets, and the coastline is much indented with a series of bays (notably the interconnected Kilkieran Bay and Greatman's Bay), channels and inlets. The entrances of the bays face the prevailing south-westerly winds and they are subject to strong tidal streams as the sea

funnels between islands and through channels. A number of streams, lakes and lagoons drain into the bays. The bedrock of the site is igneous, composed of granite, felsite and other intrusive rocks rich in silica. Generally, the site has a rocky shoreline which in most places gives way to mud in shallow water. The surrounding land is dominated by lowland blanket bog, with rock outcrops and small hills to the north.

Kilkieran Bay and Islands is an extensive coastal complex site that is of high conservation value, particularly for the fine examples of marine and terrestrial E.U. Habitats Directive Annex I habitats that it supports and for its important Slender Naiad, Otter, seal and seabird populations.

The islands and islets of Kilkieran Bay, mainly those on its western side, are important for their colonies of seabirds, particularly breeding terns - Arctic Tern, Common Tern and Little Tern. All of these tern species are listed on Annex I of the E.U. Birds Directive. Inishmuskery, and probably other islands, are used by a population of Barnacle Goose in winter, a species that is also listed on Annex I of the Birds Directive. Eagle Rock is of interest for its population of Black Guillemot. The site also supports colonies of gulls - Herring Gull, Great Black-backed Gull and Black-headed Gull.

The SAC is located approximately 12km by sea from the licenced site under consideration.

4.1.6 Slyne Head Islands SAC (000328)

This site comprises a long archipelago of islands, islets, rocks and reefs located off the western shores and south-western tip of the Slyne Head Peninsula in Co. Galway. The surrounding shallow marine areas are also included as part of the site. The islands are mostly low-lying and have a covering of a grassy maritime turf. A few sandy coves occur on the larger islands, along with shingle. The islands are uninhabited apart from an automated lighthouse on Illaunamid.

This site is an important example of exposed low-lying western islands with good examples of reefs, a significant grey seal population and important colonies of breeding birds.

The SAC is located approximately 24km from the licenced site under consideration

4.1.7 Inishmore Island SAC (000213)

The site is selected for lagoon, fixed dune, machair, orchid-rich grassland and limestone pavement, all priority habitats on Annex I of the E.U. Habitats Directive. The site is also selected as a candidate SAC for other habitats listed on Annex I of the directive – lowland hay meadows, perennial vegetation of stony banks, reefs, sea cliffs, shifting dunes, Marram dunes, dune slack, dunes with Creeping Willow, marine caves, alpine heath and dry heath. In addition, the site is also selected as a candidate SAC for Vertigo angustior, a snail species listed on Annex II of the E.U. Habitats Directive.

The SAC is located approximately 28km by sea from the licenced site under consideration.

4.1.8 West Connaught Coast SAC (002998)

This site consists of a substantial area of marine waters lying off the coasts of Counties Mayo and Galway in the west of Ireland. Comprising two parts, in its northern component the site extends from the coastal waters off Erris Head westwards beyond Eagle Island and the Mullet Peninsula in Co. Mayo. From there it extends southwards immediately off the coast as far as the entrance to Blacksod Bay.

In its southern component, the site stretches from Clare Island and the outer reaches of Clew Bay at Old Head and continues southwards off the Mayo coast to the Connemara coast near Clifden and Ballyconneely, Co Galway. Predominantly coastal in nature, the site extends westwards into Atlantic continental shelf waters up to approximately 7-11 km from the mainland; although in its southern component it remains mostly inshore of the main islands: Clare Island, Inishturk, Inishbofin and Inishshark. Its area contains subtidal waters fringing these and other islands, as well as islets and rocky skerries off the Co. Mayo and Co. Galway coasts.

The waters of the West Connacht Coast represent an exceptional area of key conservation importance for Bottle-nosed Dolphin in Ireland.

The northern component of the SAC is located approximately 70 km from the licenced site under consideration.

The southern component of the SAC is located approximately 37km by sea from the licenced site under consideration.

4.2 Conservation Objectives

The overall aim of the Habitats Directive is to maintain or restore the favourable conservation status of habitats and species of community interest. These habitats and species are listed in the Habitats and Birds Directives and Special Areas of Conservation and Special Protection Areas are designated to afford protection to the most vulnerable of them. These two designations are collectively known as the Natura 2000 network.

European and national legislation places a collective obligation on Ireland and its citizens to maintain habitats and species in the Natura 2000 network at favourable conservation condition. The Government and its agencies are responsible for the implementation and enforcement of regulations that will ensure the ecological integrity of these sites.

The maintenance of habitats and species within Natura 2000 sites at favourable conservation condition will contribute to the overall maintenance of favourable conservation status of those habitats and species at a national level.

Favourable conservation status of a habitat is achieved when:

- its natural range, and area it covers within that range, are stable or increasing, and
- the specific structure and functions which are necessary for its long‐term maintenance exist and are likely to continue to exist for the foreseeable future, and
- the conservation status of its typical species is favourable.

The favourable conservation status of a species is achieved when:

- population dynamics data on the species concerned indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats, and
- the natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future, and
- there is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis.

In addition to the general objectives above the protection areas under consideration in this screening statement have either generic or specific conservation objectives developed by the NPWS, these are listed in Table 1 below

Table 1 Conservation Objectives

NATURA SITE	CONSERVATION OBJECTIVES
Connemara Bog Complex SPA (004181)	• To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA: Cormorant *Phalacrocorax carbo*, Merlin *Falco columbarius*, Golden Plover *Pluvialis apricaria*, Common Gull *Larus canus* (NPWS (2016a))
Slyne head to Ardmore Point Islands SPA (004159)	• To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA: Barnacle Goose, Sandwich Tern, Arctic Tern Sterna, Little Tern Sterna (NPWS (2016b))
Inishmore Island SPA (004152)	• To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA: Kittiwake *Rissa tridactyla*, Arctic Tern *Sterna paradisaea*, Little Tern *Sterna albifrons*, Guillemot *Uria aalge* ((NPWS (2016c))
Connemara Bog Complex SAC (002034)	Detailed conservation objectives have been developed for this SAC, all the following objectives are supported by a list of attributes and targets (NPWS (2015a)); • To maintain the favourable conservation condition of coastal lagoons • To maintain the favourable conservation condition of reefs • To maintain the favourable conservation condition of oligotrophic waters containing very few minerals of sandy plains (*Littorelletalia uniflorae*) • To maintain the favourable conservation condition of oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and/or *Isoeto-Nanojuncetea* • To maintain the favourable conservation condition of Natural dystrophic lakes and ponds • To maintain the favourable conservation condition of Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation • To restore the favourable conservation condition of Northern Atlantic wet heaths with *Erica tetralix* • To restore the favourable conservation condition of European dry heaths • To maintain the favourable conservation condition of Molinia meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*) • To restore the favourable conservation condition of Blanket bogs • To restore the favourable conservation condition of transition mires and quaking bogs • To restore the favourable conservation condition of depressions on peat substrates of the *Rhynchosporion* • To restore the favourable conservation condition of Alkaline fens • To maintain the favourable conservation condition of Old sessile oak woods with Ilex and *Blechnum* in the British Isles • To maintain the favourable conservation condition of Marsh Fritillary • To restore the favourable conservation condition of Atlantic Salmon • To maintain the favourable conservation condition of Otter • To maintain the favourable conservation condition of Slender Naiad
Kilkieran Bay and	Detailed conservation objectives have been developed for this SAC, all the following

Island SAC (002111)	objectives are supported by a list of attributes and targets (NPWS (2014)); • To maintain the favourable conservation condition of Mudflats and sandflats not covered by seawater at low tide • To maintain the favourable conservation condition of Coastal lagoons • To maintain the favourable conservation condition of Large shallow inlets and bays • To maintain the favourable conservation condition of Reefs • To restore the favourable conservation condition of Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) • To restore the favourable conservation condition of Mediterranean salt meadows (*Juncetalia maritimi*) • To restore the favourable conservation condition of Machairs • To maintain the favourable conservation condition of Lowland hay meadows (*Alopecurus pratensis, Sanguisorba officinalis*) • To restore the favourable conservation condition of Otter • To maintain the favourable conservation condition of Harbour Seal • To maintain the favourable conservation condition of Slender Naiad
Slyne Head Islands SAC (000328)	Detailed conservation objectives have been developed for this SAC, both objectives are supported by a list of attributes and targets (NPWS (2012)); • To maintain the favourable conservation condition of Reefs • To maintain the favourable conservation condition of Grey Seal
Inishmore Island SAC (000213)	Detailed conservation objectives have been developed for this SAC, all the following objectives are supported by a list of attributes and targets (NPWS (2015b)); • To maintain the favourable conservation condition of coastal lagoons • To maintain the favourable conservation condition of reefs • To maintain the favourable conservation condition of perennial vegetation of stony banks • To maintain the favourable conservation condition of vegetated sea cliffs of the Atlantic and Baltic coasts • To maintain the favourable conservation condition of embryonic shifting dunes • To maintain the favourable conservation condition of shifting dunes along the shoreline with *Ammophila arenaria* ('white dunes') • To restore the favourable conservation condition of fixed coastal dunes with herbaceous vegetation ('grey dunes') • To maintain the favourable conservation condition of dunes with *Salix repens ssp. argentea* (*Salicion arenariae*) • To maintain the favourable conservation condition of humid dune slacks • To restore the favourable conservation condition of Machairs • To maintain the favourable conservation condition of European dry heaths • To maintain the favourable conservation condition of semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco Brometalia*) • To maintain the favourable conservation condition of lowland hay meadows (*Alopecurus pratensis, Sanguisorba officinalis*) • To maintain the favourable conservation condition of Limestone pavements • To maintain the favourable conservation condition of Submerged or partially submerged sea caves • To maintain the favourable conservation condition of Narrow-mouthed Whorl Snail The status of Alpine and Boreal heaths as a qualifying Annex I habitat in Inishmore

	Island SAC is currently under review. The outcome of this review will determine whether a site specific conservation objective is set for this habitat
West Connaught Coast SAC (002998))	A detailed conservation objective have been developed for this SAC, the following objective is supported by a list of attributes and targets (NPWS (2015c)); • To maintain the favourable conservation condition of Common Bottlenose Dolphin

5.0 Analysis of Listed Annex I habitats and Annex II species

The characteristic features of SPA and SAC sites list are identified in Table 2 where a preliminary screening is carried out by means of a desktop review and the likely interaction with aquaculture activities based upon spatial overlap.

Table 2 Qualifying features and screening

NATURA SITE	QUALIFYING FEATURES [CODE]	AQUACULTURE SCREENING
Connemara Bog Complex SPA (004181)	Cormorant *Phalacrocorax carbo* [A017]	Connemara Bog Complex SPA is of high ornithological importance, in particular for its nationally important breeding populations of Cormorant in particular at Lough Scannive, located within Roundstone Bog approximately 10km from aquaculture licence AQ176 The aquaculture license AQ176 is located approximately 6km from the edge of this terrestrial SPA, but is located within the foraging range of this species (A maximum foraging distance of 35 km has been recorded for this species. The mean of all the maximum foraging ranges recorded by different studies is 2 25 km (Thaxter et al, 2012)). However as with any predator, cormorants attempt to catch the necessary food with minimum effort (energy expenditure) at maximum perceived security. In energetic terms, flying 'costs' are at least eight times – and diving six times – than the birds' resting metabolism. The choice of feeding sites is therefore particularly governed by a) the distance they are from the roost or nesting area, b) fish densities, and c) the experience with certain prey and foraging sites. Given the small area occupied by the proposed aquaculture license in comparison with the foraging range of the species and the distance from the protected site, it is regarded as extremely unlikely that any interactions with aquaculture activities at Aquaculture licence AQ176 will be of a significant level – excluded from further analysis
	Merlin *Falco columbarius* [A098]	Connemara Bog Complex SPA is of high ornithological importance, in particular for its nationally important breeding populations of Merlin This species is typical of upland areas during breeding season (Documented foraging range is within 5km of nest site during the breeding season (SNH, 2013)). The aquaculture licence AQ176 is located approximately 6km from this terrestrial SPA and thus is outside the range of this species during the breeding season. Merlin are much more widely distributed in the winter. They move away from high ground and can often be seen on the coast, where concentrations of other birds are attractive as prey species However given the small area occupied by the proposed aquaculture it is regarded as extremely unlikely that any interactions with aquaculture activities at Aquaculture license AQ176 will be of a significant level – excluded from further analysis
	Golden Plover *Pluvialis apricaria* [A140]	Connemara Bog Complex SPA is of high ornithological importance, in particular for its nationally important breeding populations of Golden Plover. Golden plover breed in heather moors, blanket bogs & acidic grasslands where there is no spatial overlap with the proposed project. Throughout the winter, Golden Plovers are regularly found in large, densely-packed flocks, and in a variety of habitats, both coastal and inland. This species feeds on d on a variety of soil and surface-living invertebrates and thus if utilising Berthraboy bay with be limited to intertidal and coastal feeding. No spatial overlap or likely interactions with aquaculture activities at Aquaculture license AQ176– excluded from further analysis

NATURA SITE	QUALIFYING FEATURES [CODE]	AQUACULTURE SCREENING
	Common Gull *Larus canus* [A182]	Connemara Bog Complex SPA is of high ornithological importance, in particular for its nationally important breeding populations of Common Gull, this SPA is approximately 6km from the protected sites but is within foraging range of this species (During the breeding season the mean-maximum foraging range of common gull has been estimated at 50 km (Thaxter et al., 2012)). Common gulls typically feed on farmland, playing fields, estuaries and in coastal waters, and are relatively uncommon offshore (Forrester et al., 2007). The main prey items of common gull are aquatic and terrestrial invertebrates which are obtained by direct foraging and also food piracy (BWPi, 2009). Given the small area occupied by the proposed aquaculture license in comparison with the foraging range of the species and the distance from the protected site, it is regarded as extremely unlikely that any interactions with aquaculture activities at Aquaculture licence AQ176 will be of a significant level – excluded from further analysis
Slyne head to Ardmore Point Islands SPA (004159)	Barnacle Goose (*Branta leucopsis*) [A045]	Inishlackan and Freaghillaun are the closest islands in the SPA to the licenced area under consideration (Approximately 7km). Neither of these Islands is described as important for this species. In addition this species is primarily a grazer, feeding on grasses and sedges on the tundra during the breeding season, and on coastal pastures during the winter. There is no spatial overlap or likely interactions with aquaculture activities at Aquaculture license AQ176– excluded from further analysis
	Sandwich Tern (*Sterna sandvicensis*) [A191]	Inishlackan and Freaghillaun are the closest islands in the SPA to the licenced area under consideration (Approximately 7km). This aquaculture site is within the foraging range of this species (49 km mean- maximum foraging range) but the spatial overlap of the site is extremely small in comparison to this range. Given the small area occupied by the proposed aquaculture license in comparison with the foraging range of the species and the distance from the protected site, it is regarded as extremely unlikely that any interactions with aquaculture activities at Aquaculture licence AQ176 will be of a significant level – excluded from further analysis
	Arctic Tern (*Sterna paradisaea*) [A194]	Inishlackan and Freaghillaun are the closest islands in the SPA to the licenced area under consideration (Approximately 7km). This aquaculture site is within the foraging range of this species (24.2 km mean- maximum foraging range) but the spatial overlap of the site is extremely small in comparison to this range. Given the small area occupied by the proposed aquaculture license in comparison with the foraging range of the species and the distance from the protected site, it is regarded as extremely unlikely that any interactions with aquaculture activities at Aquaculture licence AQ176 will be of a significant level – excluded from further analysis
	Little Tern (*Sterna albifrons*) [A195]	Inishlackan and Freaghillaun are the closest islands in the SPA to the licenced area under consideration (Approximately 7km). Eglington (2013), in a literature review of foraging ecology of terns, concluded that most studies, including those citing anecdotal information, reported a foraging radius less than 4km from the colony. Therefore there is no spatial overlap or likely interactions with aquaculture activities at Aquaculture license AQ176– excluded from further analysis
Inishmore Island SPA (004152)	Kittiwake Rissa tridactyla, [A182]	Inishmore island SPA is distant from the licenced area under consideration (Approximately 27km). Kittiwake have a foraging range of approximately 60km, but given the small area occupied by the proposed aquaculture license in comparison

NATURA SITE	QUALIFYING FEATURES [CODE]	AQUACULTURE SCREENING
		with the foraging range of the species and the distance from the protected site, it is regarded as extremely unlikely that any interactions with aquaculture activities at Aquaculture licence AQ176 will be of a significant level – excluded from further analysis
	Arctic Tern (Sterna paradisaea) [A194]	Inishmore island SPA is distant from the licenced area under consideration (Approximately 27km). Aquaculture license AQ176 is beyond the typical foraging range of this species (24.2 km mean- maximum foraging range) Therefore there is no spatial overlap or likely interactions with aquaculture activities at Aquaculture license AQ176– excluded from further analysis
	Little Tern (Sterna albifrons) [A195]	Inishmore island SPA is distant from the licenced area under consideration (Approximately 27km). Eglington (2013), in a literature review of foraging ecology of terns, concluded that most studies, including those citing anecdotal information, reported a foraging radius less than 4km from the colony. Therefore there is no spatial overlap or likely interactions with aquaculture activities at Aquaculture license AQ176– excluded from further analysis
	Guillemot Uria aalge [A199]	Inishmore island SPA is distant from the licenced area under consideration (Approximately 27km). Guillemot have a foraging range of approximately 84km, but given the small area occupied by the proposed aquaculture license in comparison with the foraging range of the species and the distance from the protected site, it is regarded as extremely unlikely that any interactions with aquaculture activities at Aquaculture licence AQ176 will be of a significant level – excluded from further analysis
Connemara Bog Complex SAC (002034)	Coastal lagoons [1150]	No spatial overlap or likely interactions with aquaculture activities at Aquaculture license AQ176– excluded from further analysis
	Reefs [1170]	No spatial overlap or likely interactions with aquaculture activities at Aquaculture license AQ176– excluded from further analysis
	Oligotrophic waters containing very few minerals of sandy plains (Littorelletalia uniflorae) [3110]	No spatial overlap or likely interactions with aquaculture activities at Aquaculture license AQ176– excluded from further analysis
	Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae and/or Isoeto-Nanojuncetea [3130]	No spatial overlap or likely interactions with aquaculture activities at Aquaculture license AQ176– excluded from further analysis
	Natural dystrophic lakes and ponds [3160]	No spatial overlap or likely interactions with aquaculture activities at Aquaculture license AQ176– excluded from further analysis
	Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation [3260]	No spatial overlap or likely interactions with aquaculture activities at Aquaculture license AQ176– excluded from further analysis
	Northern Atlantic wet heaths with Erica tetralix [4010]	No spatial overlap or likely interactions with aquaculture activities at Aquaculture license AQ176– excluded from further analysis
	European dry heaths [4030]	No spatial overlap or likely interactions with aquaculture activities at Aquaculture license AQ176– excluded from further analysis
	Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae) [6410]	No spatial overlap or likely interactions with aquaculture activities at Aquaculture license AQ176– excluded from further analysis

NATURA SITE	QUALIFYING FEATURES [CODE]	AQUACULTURE SCREENING
	Blanket bogs (* if active bog) [7130]	No spatial overlap or likely interactions with aquaculture activities at Aquaculture license AQ176– excluded from further analysis
	Transition mires and quaking bogs [7140]	No spatial overlap or likely interactions with aquaculture activities at Aquaculture license AQ176– excluded from further analysis
	Depressions on peat substrates of the Rhynchosporion [7150]	No spatial overlap or likely interactions with aquaculture activities at Aquaculture license AQ176– excluded from further analysis
	Alkaline fens [7230]	No spatial overlap or likely interactions with aquaculture activities at Aquaculture license AQ176– excluded from further analysis
	Old sessile oak woods with Ilex and Blechnum in the British Isles [91A0]	No spatial overlap or likely interactions with aquaculture activities at Aquaculture license AQ176– excluded from further analysis
	Euphydryas aurinia (Marsh Fritillary) [1065]	No spatial overlap or likely interactions with aquaculture activities at Aquaculture license AQ176– excluded from further analysis
	Salmo salar (Salmon) [1106]	The following attributes contribute to the conservation objectives of this feature in the Connemara bog complex SAC; • Distribution (in freshwater) • Adult spawning fish (Conservation limits in freshwater) • Fry abundance (freshwater) • Out-migrating smolt abundance • Number and distribution of redds (in freshwater) • Water Quality (in freshwater) The aquaculture licence AQ176 under consideration is for research purposes and thus there is no proposal to alter the current licensed standing biomass for fin-fish (100 tonnes) and the Marine Institute expect that stocking of the site with a mix of species would be contingent on an approved fish health management plan and an approved SBM plan prior to each such stocking. However in line with commercial sites, Site AQ176 will operate in accordance with DAFM's Integrated Pest Control Strategy (IPCS) for controlling sea lice, all Irish marine salmon farms are obliged to allow the Marine Institute to monitor for sea lice infestations on an ongoing basis and to take remedial action when necessary. This process involves the inspection and sampling of each year class of fish at all active marine fish farm sites up to fourteen times per annum in accordance with an agreed National Protocol. The four main purposes of the National Sea Lice Monitoring Plan are: • To provide an objective measurement of infestation levels on farms; • To investigate the nature of the infestations; • To provide management information to drive implementation of the control and management strategies; and • To facilitate further development and refinement of the control and management strategies. The management strategies employed work to reduce the development of infestations and to ensure the most effective treatment of developing infestations. They minimise lice levels whilst controlling reliance on, and reducing use of, veterinary medicines. The effectiveness of this protocol in managing the risk to wild salmonids has been assessed twice by DG Environment. DG environment in its response to the complainant FIE, stated that "the Irish sea lice monitoring and control system is unique in the world in terms of its comprehensive nature, the fact that all results are made publicly available and that all inspections are carried out by independent state inspectors".

NATURA SITE	QUALIFYING FEATURES [CODE]	AQUACULTURE SCREENING
		The principles of the control system are also in line with those recommended in risk assessments of other salmon growing areas (Serra-Llinares et al., 2014). The site synopsis states that – "Atlantic Salmon, a species listed under Annex II of the E.U. Habitats Directive, occurs in many of the rivers within the site. The Cashla and Ballynahinch systems are good examples of western acidic spate rivers which support the species. Good spawning and nursery grounds for the species occur in these systems" Both systems are in the south of the SAC remote from the proposed development and both Owenmore and Cashla rivers are currently exceeding their conservation limits (The target in the Conservation objectives) Thus considering current regulatory requirements and that the attributes listed for this species are specific to freshwater and/or confined to the southern portion of the SAC (migration from Cashla and Owenmore Rivers) and are therefore, sufficiently far removed such that interaction with aquaculture activities at AQ 176 are highly unlikely. This attribute is excluded from further analysis.
	Lutra lutra (Otter) [1355]	The following attributes contribute to the conservation objectives of this feature in the Connemara bog complex SAC; • Distribution (assume terrestrial, marine and freshwater) • Extent of terrestrial habitat • Extent of marine habitat • Extent of freshwater (river) habitat • Extent of freshwater (lake/lagoon) habitat • Couching sites and holts • Fish Biomass available SAC is located approximately 1km from Aquaculture license AQ176, therefore the site is outside the typical foraging range of this species. This assertion is linked to the objectives for the site which states that that otters tend to forage within 80m of the shoreline (NPWS, 2015a) No spatial overlap or likely interactions with aquaculture activities at Aquaculture license AQ176– excluded from further analysis
	Najas flexilis (Slender Naiad) [1833]	No spatial overlap or likely interactions with aquaculture activities at Aquaculture license AQ176– excluded from further analysis
Kilkieran Bay and Island SAC (002111)	Mudflats and sandflats not covered by seawater at low tide [1140]	No spatial overlap or likely interactions with aquaculture activities at Aquaculture license AQ176– excluded from further analysis
	Coastal lagoons [1150]	No spatial overlap or likely interactions with aquaculture activities at Aquaculture license AQ176– excluded from further analysis
	Large shallow inlets and bays [1160]	No spatial overlap or likely interactions with aquaculture activities at Aquaculture license AQ176– excluded from further analysis
	Reefs [1170]	No spatial overlap or likely interactions with aquaculture activities at Aquaculture license AQ176– excluded from further analysis
	Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330]	No spatial overlap or likely interactions with aquaculture activities at Aquaculture license AQ176– excluded from further analysis
	Mediterranean salt meadows (Juncetalia maritimi) [1410]	No spatial overlap or likely interactions with aquaculture activities at Aquaculture license AQ176– excluded from further analysis
	Machairs [21A0]	No spatial overlap or likely interactions with aquaculture activities at Aquaculture license AQ176– excluded from further analysis
	Lowland hay meadows (Alopecurus pratensis,	No spatial overlap or likely interactions with aquaculture activities at Aquaculture license AQ176– excluded from further analysis

NATURA SITE	QUALIFYING FEATURES [CODE]	AQUACULTURE SCREENING
	Sanguisorba officinalis) [6510]	
	Otter [1355]	The following attributes contribute to the conservation objectives of this feature in the Kilkieran Bay and Islands SAC; • Distribution (assume terrestrial, marine and freshwater) • Extent of terrestrial habitat • Extent of marine habitat • Extent of freshwater (river) habitat • Extent of freshwater (lake/lagoon) habitat • Couching sites and holts • Fish Biomass available • Barriers to connectivity SAC is located approximately 12km by sea from Aquaculture license AQ176, therefore the site is outside the typical foraging range of this species. This assertion is linked to the objectives for the site which states that that otters tend to forage within 80m of the shoreline (NPWS, 2015a) No spatial overlap or likely interactions with aquaculture activities at Aquaculture license AQ176– excluded from further analysis
	Harbour Seal [1365]	The following attributes contribute to the conservation objectives of this feature in the Kilkieran Bay and Islands SAC; • Access to suitable habitat • Breeding behaviour • Moulting behaviour • Resting behaviour • Disturbance SAC is located approximately 12km from Aquaculture license AQ176, all attributes and measures are site and spatial specific to the site. No spatial overlap or likely interactions with aquaculture activities at Aquaculture license AQ176– excluded from further analysis
	Najas flexilis (Slender Naiad) [1833]	No spatial overlap or likely interactions with aquaculture activities at Aquaculture license AQ176– excluded from further analysis
Slyne Head Islands SAC (000328)	Reefs [1170]	No spatial overlap or likely interactions with aquaculture activities at Aquaculture license AQ176– excluded from further analysis
	Halichoerus grypus (Grey Seal) [1364]	No spatial overlap or likely interactions with aquaculture activities at Aquaculture license AQ176– excluded from further analysis
Inishmore Island SAC (000213)	Coastal Lagoons [1150]	No spatial overlap or likely interactions with aquaculture activities at Aquaculture license AQ176– excluded from further analysis
	Reefs [1170]	No spatial overlap or likely interactions with aquaculture activities at Aquaculture license AQ176– excluded from further analysis
	Perennial Vegetation of Stony Banks [1220]	No spatial overlap or likely interactions with aquaculture activities at Aquaculture license AQ176– excluded from further analysis
	Vegetated Sea Cliffs [1230]	No spatial overlap or likely interactions with aquaculture activities at Aquaculture license AQ176– excluded from further analysis
	Embryonic Shifting Dunes [2110]	No spatial overlap or likely interactions with aquaculture activities at Aquaculture license AQ176– excluded from further analysis
	Marram Dunes (White	No spatial overlap or likely interactions with aquaculture activities at

NATURA SITE	QUALIFYING FEATURES [CODE]	AQUACULTURE SCREENING
	Dunes) [2120]	Aquaculture license AQ176– excluded from further analysis
	Fixed Dunes (Grey Dunes) [2130]	No spatial overlap or likely interactions with aquaculture activities at Aquaculture license AQ176– excluded from further analysis
	Dunes with Creeping Willow [2170]	No spatial overlap or likely interactions with aquaculture activities at Aquaculture license AQ176– excluded from further analysis
	Humid Dune Slacks [2190]	No spatial overlap or likely interactions with aquaculture activities at Aquaculture license AQ176– excluded from further analysis
	Machairs [21A0]	No spatial overlap or likely interactions with aquaculture activities at Aquaculture license AQ176– excluded from further analysis
	Dry Heath [4030]	No spatial overlap or likely interactions with aquaculture activities at Aquaculture license AQ176– excluded from further analysis
	Alpine and Subalpine Heaths [4060]	No spatial overlap or likely interactions with aquaculture activities at Aquaculture license AQ176– excluded from further analysis
	Orchid-rich Calcareous Grassland [6210]	No spatial overlap or likely interactions with aquaculture activities at Aquaculture license AQ176– excluded from further analysis
	Lowland Hay Meadows [6510]	No spatial overlap or likely interactions with aquaculture activities at Aquaculture license AQ176– excluded from further analysis
	Limestone Pavement [8240]	No spatial overlap or likely interactions with aquaculture activities at Aquaculture license AQ176– excluded from further analysis
	Sea Caves [8330]	No spatial overlap or likely interactions with aquaculture activities at Aquaculture license AQ176– excluded from further analysis
	Narrow-mouthed Whorl Snail (Vertigo angustior) [1014]	No spatial overlap or likely interactions with aquaculture activities at Aquaculture license AQ176– excluded from further analysis
West Connaught Coast SAC (002998)	*Tursiops truncatus* (Common Bottlenose Dolphin) [1349]	The following attributes contribute to the conservation objectives of this feature in the Kilkieran Bay and Islands SAC; • Access to suitable habitat • Disturbance The northern component of the SAC is located approximately 70 km from the licenced site under consideration. The southern component of the SAC is located approximately 37km by sea from the licenced site under consideration. No spatial overlap or likely interactions with aquaculture activities at Aquaculture license AQ176– excluded from further analysis

6.0 Cumulative Assessment

All aquaculture activities (Licenced and application) in Bertraghboy Bay are considered as part of the cumulative assessment.

Aquaculture activities include:

- 4 salmon sites (Inclusive of AQ176)
- 3oyster sites
- 1 seaweed application

Extent of areas and activities are presented in Table 3 below

Table 3 Spatial extent of activities in the bay

FEATURE	AREA IN HA
Area of Bay (Inside a line from Gorteen Pt. to Mace Head)	4650
Designated areas (Inishlackan and Freaghillaun and surrounding buffer as part of Slyne head to Ardmore Point Islands SPA)	283
Finfish Aquaculture (Including AQ176)	65
Oyster Aquaculture	11
Seaweed Aquaculture (Application)	62

Spatial overlaps are presented in Table 4 below

Table 4 Percentage overlap

FEATURE	OVERLAP %
Aquaculture in Bay	3%
Finfish Aquaculture in Bay	1.4%
Oyster Aquaculture in Bay	0.24%
Seaweed Aquaculture	1.33%
Aquaculture on designated areas	0

The cumulative assessment indicates no disturbing impacts on protected species, aquaculture in the bay is at a low level (3%) and there is no spatial overlap on any protected features.

7.0 Outcomes

Aquaculture license AQ176 is not located within a designated SPA. The desktop review of potential linkages and analysis of spatial overlap indicate with high confidence that the proposed amendment to licence AQ176 will not have any significant impact on any SCI bird species of the adjacent SPA's. Therefore the proposal is excluded from further analysis

Aquaculture license AQ176 is not located within a designated SAC. The desktop review of potential linkages and analysis of spatial overlap indicate with high confidence that the proposed amendment to licence AQ176 will not have any impact on the protected features and species of the adjacent SAC's. Therefore the proposal is excluded from further analysis

8.0 References

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Appendix IV

Contingency Plan for diseases of fish as required under Council Directive 2006/88/EC

Fish Health Unit
Marine Institute
www.fishhealth.ie

January 2014

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Foreword

The purpose of the following Contingency Plan is to describe the roles, responsibilities, reactions and resources that have been identified as critical to successfully managing outbreaks of listed diseases of farmed fish in Irish waters. The Plan follows the criteria as laid down in Article 47 of Council Directive 2006/88/EC. The Contingency Plan also describes the hierarchy and reporting structure of the National Disease Strategy Group and the National Control Centre and provides supporting procedural guidelines for reaction scenarios.

In compiling this document, the Marine Institute acknowledges the invaluable input and cooperation from all members of the Aquaplan Steering Committee including industry representatives, Vet Aqua International and Global Trust Certification. In addition, the willingness of the Australian Chief Veterinary Officer to allow access to the comprehensive material presented in the Australian AQUAVET Plan is gratefully acknowledged. Finally, we would like to acknowledge the guidance and input provided by Paddy Rogan CVO (retired) who has given very willingly of his time and experience in working with the Marine institute to complete this document.

This Contingency Plan is a working document and is intended to be used in association with other resource documents/forms as detailed in the Appendices. It will be subject to continual review and will be revised at least every five years to maintain its effectiveness, to improve its usefulness and to reflect any new developments in national and EU legislation.

Fish Health Unit
Marine Institute
January 2014

Introduction

Article 47 of Council Directive 2006/88/EC requires Member States to draw up contingency plans for emerging and exotic diseases of aquaculture animals. Whilst there is no legal imperative to draw up contingency plans for non-exotic diseases of aquaculture animals or for those diseases for which Ireland has national measures under Article 43 of Directive 2006/88/EC, it has been decided that it is logistically important to have plans in place to deal with the non-exotic diseases VHS, IHN, ISA and KHV as well as the diseases BKD, and SVC for which Ireland has national measures. Details of these diseases are outlined below:

DISEASES LISTED IN ANNEX IV, PART II OF DIRECTIVE 2006/88/EC

DISEASE	SUSCEPTIBLE SPECIES
Epizootic haematopoietic necrosis (EHN)	Rainbow trout and redfin perch
Viral haemorrhagic septicaemia (VHS)	Herring, whitefish, pike, haddock, Pacific cod, Atlantic cod, Pacific salmon, rainbow trout, rockling, brown trout, turbot, sprat, grayling
Infectious haematopoetic necrosis (IHN)	Chum salmon, coho salmon, Masou salmon, rainbow or steelhead trout, sockeye salmon, pink salmon, Chinook salmon, Atlantic salmon
Koi herpes virus (KHV)	Common carp and koi carp
Infectious salmon anaemia (ISA)	Rainbow trout, Atlantic salmon, brown trout and sea trout

DISEASES FOR WHICH IRELAND HAS NATIONAL MEASURES UNDER ARTICLE 43 OF DIRECTIVE 2006/88/EC

DISEASE	SUSCEPTIBLE SPECIES
Spring viraemia of carp (SVC)	Bighead carp, goldfish, Crucian carp, Grass carp, common carp, koi carp, silver carp, sheathfish, tench
Bacterial kidney disease (BKD)	Family: Salmonidae
Infection with Gyrodactylus salaris *	Atlantic salmon, rainbow trout, Arctic char, North American brook trout, grayling, North American lake trout, brown trout

*National measures under Article 43, are also in place for the parasite *Gyrodactylus salaris* but a separate Plan has been devised to deal with that pathogen.

The objective of the current Plan is to:

specify the measures required to maintain high levels of disease awareness and preparedness,

ensure environmental protection and

define the measures to be implemented in the event of an outbreak of an emerging disease.

The criteria for drawing up the plan for emerging and exotic diseases are set out in Council Directive 2006/88/EC, Article 47. This framework has also been used to create the contingency plan for the other diseases outlined above.

The detailed procedures to be followed in the event of a suspected or confirmed disease outbreak are set out in the Plan.

This contingency plan will be reviewed and updated as required, at least every five years.

1. Legal Powers

1.1 The statutory powers for the control of a listed or emerging disease are contained in S.I.(261 of 2008 European Communities (Health of Aquaculture Animals and Products) Regulations (Regs. 11, 12, 13, 14, 15, 41) as amended by S.I. No 398 of 2010 and S.I.No.430 of 2011.

1.2 This S.I. also includes legislation on authorisation, transport, identification, slaughter of infected fish, contact sites and fallowing. Statutory powers for the notification of increased mortalities and control of movements are also contained in S.I.261 of 2008 (as amended).

2. Financial provisions

2.1 Application has been made to have fish included in the budgetary provisions which exist within the Department of Agriculture, Food and the Marine (DAFM), to deal with supplementary funding required to cover disease outbreaks in terrestrial animals. This funding would cover personnel costs, the cost of equipment and consumables and where necessary, the cost of slaughter, destruction and sanitation.

2.2 Compensation payments

Council Decision 90/424/EC on Expenditure in the Veterinary Field provides for compensation for the eradication of diseases listed in Council Directive 2006/88/EC. Matching national funding is however, required to allow draw down of funds via the EFF (European Fisheries Fund) although this is not currently provided for in S.I.261 of 2008 (as amended).

3. Personnel and the Chain of Command

3.1 The Marine Institute is the State Agency tasked with implementing the contingency plan. Depending on the circumstances, the Institute may request assistance from other state bodies such as the Department of Agriculture, Food and the Marine; the Sea Fisheries Protection Authority or Inland Fisheries Ireland. A collaborative arrangement is already in place between the MI and DAFM Veterinary Services Division, in relation to veterinary inspections under Directive 2006/88/EC.

The Marine Institute has established a National Disease Strategy Group (NDSG) which is responsible for the implementation of this contingency plan. The NDSG shall comprise of the following:

Chief Executive of the Marine Institute (MI) or his nominee (Chair)
Director of the Marine Environment & Food Safety Division (MEFS, MI)
Head of the Fish Health Unit (MI)

Epidemiologist (Centre for Veterinary Epidemiology and Risk Analysis) / DAFM
DAFM veterinarian (to be nominated by the Chief Veterinary Officer)
Veterinary representative from NI Authorities – when disease outbreak has a potential impact on the disease status of NI

Principal Officer with responsibility for fish health issues (DAFM)

Principal Officer in charge of Inland Fisheries Division (DCENR) - when the outbreak has the potential to impact freshwater fisheries.

3.2 The NDSG will have the following functions:

Where cases of listed and Article 43 diseases are suspected; activating the contingency plan. This activation automatically triggers the establishment of the

National Control Centre (NCC)
In the case of an emerging disease situation, following the flow chart outlined in Annex 1. If the outcome of this process indicates the emerging disease is infectious and the risk is perceived to be high, the contingency plan is activated.
Overseeing the implementation of the contingency plan.
Securing the financial and other resources required to implement the contingency arrangements.
Appointing the head of the National Control Centre.
Working with the Head of the NCC and the Co-ordinator of the NCC to assess the response to the disease outbreak, taking account of the factors outlined in Annex 2.
3.3 The NDSG will meet, as necessary, during any suspected or confirmed outbreak and shall convene once a year to review preparedness of these contingency arrangements. The NDSG will be chaired by the CEO of the MI or his nominee.
3.4 The head of the National Control Centre (NCC) will be appointed by the NDSG and will normally be the Director of MEFS (MI).
3.5 Other representatives on the NCC committee will be FHU Administration and DAFM Veterinary Inspectors working with the FHU (or other personnel who may be appointed from DAFM/SFPA/IFI if required).
3.6 The responsibilities of the NCC will be the practical implementation of the contingency plan i.e.
Investigating suspected disease outbreaks
Carrying out epizootic investigations

Assisting with the taking of samples of fish, or other materials and submitting them for laboratory analysis
Advising on areas to be subject to designation
Determining control measures to be implemented including movement restrictions and prohibitions
Applying the disease control measures in accordance with the EC (Health of Aquaculture Animals & Products) Regulations 2008 and the detailed contingency arrangements set out in this document
Ensuring compliance with all controls which are applied
Supervising disinfection and cleaning programmes
Making arrangements for the disposal of dead fish
Liaising with bodies such as the EPA in respect of treatments and waste disposal
Initiating immediate contact with other fish farmers or fishery owners to introduce preventative measures to minimise and control the spread of disease
Responding to technical enquiries relating to the disease
Providing regular summary reports to NDSG members on the disease situation
Making and issuing restriction notices, withdrawing restriction notices and issuing general and specific licenses
Advising on fish disease policy
Ensuring that the MI Press Officer is fully briefed so that she can ensure Ministers, Press Officers, other government departments and the public where relevant, are kept fully informed of developments
Administering the NCC and working with the NDSG to ensure that the resources and facilities necessary for the effective operation of the contingency plan are provided
Liaising with Legal Services Division, as required.
3.7 To ensure effective implementation of the contingency plan, representatives from the NCC will have regular and open communication with:
Managers and veterinarians of farms/companies involved

Executive secretary of farmers organisation (IFA Aquaculture)
Representatives from other relevant State Agencies
3.8 In addition, a co-ordinator for the NCC will be appointed, based at the MI in Rinville, Oranmore, Co. Galway and contact details will be as follows:
Contact Fiona Geoghegan
Fax 091 387201
Email Fiona.geoghegan@marine.ie
Mobile (24 hours) 087 2490105

An organogram showing the composition of the NDSG and the NCC as well as their relationship with each other is shown in Annex 3.
3.9 The MI Communications Section shall provide media services and will take the lead responsibility for issuing final press releases and dealing directly with the media. A press release might be issued under the following circumstances:
To announce confirmation of disease
To announce imposition of restrictions where lab results are positive
To announce removal of restrictions
To give a general overview of the spread of the disease and the measures being taken to deal with it
To announce the setting up of national and local control centres
To announce decisions on containment and/ or eradication plans
To announce the provision of advice to stakeholders
To announce any trade restrictions
To advertise helplines, websites etc. where information will be available
To advertise general disease control measures
3.10 The Head of the NCC and the NCC coordinator will take responsibility for:
Working with the NDSG to consider the factors outlined in Annex 2 and assess the appropriate disease response
Notifying industry and farmers organisations (contact details Annex 4)
Liaising with interested parties, external to the NCC
Notifying the European Commission (DG SANCO) at appropriate stages during the incident process
Briefing the Minister and Administrative teams dealing with all incoming enquiries and consider a web page/bulletin board if appropriate.
3.11 An epidemiological investigation must be initiated without delay. Should the investigation reveal possible risk to wild fish in waterways, the Director of Field Operations at IFI should be contacted (Annex 4).
3.12 The role of the NCC is considered to be ended when procedures for either longterm management or eradication of the disease risk have been implemented, a final report completed, and the handling of the incident reviewed.

4. National Control Centre (NCC)

4.1 In the initial phase of a disease outbreak, it is likely that the NCC will be located at the Marine Institute (MI) premises at Oranmore, however, where circumstances dictate, for example if there are several outbreaks or if the infected premises are too far from

MI HQ; alternative premises will be chosen and designated as the Local Disease Control Centre (LDCC). Suitable premises have been identified in each finfish farming area.

These are as follows:
Marine Institute office, Killybegs, Co. Donegal
Marine Institute office, Rossaveal, Co. Galway
Marine Institute office, Bantry, Co. Cork
Marine Institute office, Dunmore East, Co. Wexford
Marine Institute office, Clogher Head, Co. Louth
4.2 A meeting room and a laboratory in the MI HQ have been identified as the potential NCC and will be equipped as follows:
Telephones
Fax machine
Computer hardware and software with broadband internet access
Maps and navigation charts
Advice leaflets, posters and signs
Contact lists
List of fish farms in the area
Equipment (fish anaesthetic, diagnostic sampling kits, disposable protective clothing, disinfectant, disinfectant sprayers)

5. Environmental co-ordination

5.1 Established contacts exist between the MI and the Environmental Protection Agency (EPA). If a listed or emerging disease is confirmed, the EPA and Local Authorities (where appropriate), will be consulted as necessary re carcass disposal and/or discharges from the infected site.
5.2 The aim will be to minimise:
risk to soil, air, surface or ground water, plants and animals
nuisance from noise or odours

6. Resources (personnel, laboratory, equipment)

6.1 During an unfolding disease emergency it may be necessary to quickly deploy staff and equipment to LDCCs. This will be the responsibility of the NCC co-ordinator based in the MI. An investigative team will be sourced initially from 1) current Fish Health Unit personnel and DAFM Veterinary Inspectors working to the FHU, 2) current MI and DAFM personnel, 3) retired MI & DAFM staff, 4) private veterinary practitioners and 5) fish health professionals/veterinarians from other EC member states. Administrative staff will be sourced primarily from the MI. If additional staff are required then these will be sourced initially from DAFM and then potentially from other government departments. As far as field capabilities are concerned, DAFM VIs, the SFPA and the IFI Officials are authorised under S.I.No. 261 of 2008 (as amended) and as such will be available to assist MI Fish Health Inspectors in obtaining appropriate samples from both farmed and wild fish, and in enforcing any statutory controls that may be required.
6.2 The MI maintains a list of veterinary and technical staff that can be called upon if there is a disease outbreak and maintains a list of staff details including name, address, telephone number, grade, line manager.
Those experienced in the operation of a NCC are listed in Annex 5.
6.3 The number of staff required to operate a NCC or a LDCC will be dictated by the number of outbreaks and the size of the containment area.
6.4 The staff will include;
administrative personnel capable of dealing with the management of disease emergencies and persons trained in the maintenance of record systems
veterinarians/fish health professionals trained in finfish disease diagnosis, slaughter,

disinfection and other procedures at infected premises, the operation of movement controls and other restrictions
technical support staff capable of dealing with implementing appropriate procedures at infected premises, the operation of movement controls, etc.
6.5 MI Human Resources Section will collaborate with the HR Department of DAFM to establish pay rates for privately employed, non-MI/DAFM staff and will review them annually.
6.6 When arranging staff deployment it is important to allow for rest periods. Staff must have at least one day off per week.
6.7 Staff duties must be clearly defined at local level. The required number of each stream (veterinary/technical and administration) will be decided by the MI, in the context of the extent of the outbreak.
6.8 Accommodation, training (including an initial rapid briefing session), and supply of equipment will be the responsibility of the FHU, MI.
6.9 Equipment resources in the event of a disease outbreak should have a minimum of the items listed in Annex 6. These will be in addition to the sampling equipment required for disease diagnosis and investigation (sample kits and equipment for parasitology, histopathology, bacteriology, molecular biology and virology) and there should be sufficient equipment to allow at least two suspect cases to be investigated simultaneously. This list will be reviewed annually by the MI. These kits will be stored at the MI (NDCC) but be ready to be sent to the LDCC very quickly if required.

7. Response options

7.1 In the event of confirmation of the presence of a listed or serious emerging disease on an aquaculture site in Ireland, the advice from the NDSG and the NCC may be to commence immediate destruction of the fish on the infected site. Under certain circumstances, risk assessment may however, allow some of the fish from the infected site to be on-grown for a limited period of time under prescribed conditions.
7.2 In such cases, fish from an infected site may only be harvested in a processing plant which has been authorised under Article 4.2 of Council Directive 2006/88/EC. Harvest bins used to bring fish from the infected site to the authorised processing plant should be leak-proof, lined with polythene bags and have secure lids and bindings. Bins should not be overfilled to prevent spillage of blood in transit. Vehicles used to transport harvest bins should be fitted with a collection system and sump to collect any spillage. Trucks should carry disinfectant and drivers should be trained in the use of equipment and chemicals to be applied in the case of a spillage.
7.3 Any wellboat used to transport fish must travel with closed wells when carrying infected fish. Fish must be transferred directly from the wells and not held in pens at the processing plant prior to harvest. Wellboat water should either pass through the processing plant effluent treatment system prior to discharge or be disinfected before supervised discharge from the boat. This should only happen once the boat is more than one tidal excursion or 5km away from any fish farm site.
7.4 All transporters must be registered with the Marine Institute as required under S.I. 261 of 2008.

8. Culling and disposal of livestock

8.1 There will be different options available for removal of the affected stock depending on their life stage, biomass and holding units as well as the disease affecting them. In the case of small biomass and juvenile fish in a contained tank unit which are not for direct human consumption then options for euthanasia include (i) overdose with anaesthetic or (ii) stunning by electrical current or (iii) physical means. For fish in a

large freshwater pond systems portable electrofishers[1] could be utilised or alternatively fish seine netted out and stunned manually or stunned by using the onsite stunning machine if available. For a large biomass of fish in semi-open pen systems then fish should be moved to the slaughter house/harvest station in a closed well boat and slaughtered by percussive stunning, electrical stunning (or pharmacological means e.g. anaesthetic overdose, where the fish are not destined for human consumption). The welfare of the fish should remain of high priority during any emergency and veterinary supervision will be required. The recommendations of the European Food Safety Authority should be adhered to through any emergency cull[2].

8.2 With regard to anaesthetic use, the bath water used should be retained in a suitable container to allow degradation of MS222 by sunlight for a minimum of 30 days following which the residue may be disinfected and disposed of in soil away from water courses. Such disposal will require an EPA waste license. Alternatively, activated carbon is effective in removing MS222 from water and anaesthetic bath water could be pumped through a carbon filter.

8.3 The NCC will recommend means for carcass disposal. This will depend on the nature of the pathogen and quantity of biomass. Communication with the EPA has indicated that rendering at a Class I Animal By-Products facility is the best option. They have advised that landfill should be the last option considered and that it is not legal to bury carcasses in a greenfield site. When an existing landfill site is to be considered, any movement of material would require a waste collection permit and the acceptance of the material at landfill would require operator agreement and EPA approval.

8.4 Containers used for holding any mortalities or culled fish prior to processing must be leakproof and any transporter must carry documentation detailing the origin and details of the material for disposal. Labels should be adhered to the containers, indicating that the contents are not for human consumption.

8.5 Where a factory is to process fish from an infected site as well as those from uninfected sites, there must be separation of delivery days for the different categories of carcass (infected or uninfected) and all items and equipment (including harvest bins, trucks, protective clothing) involved in the delivery of infected stock must be cleaned with a degreasing agent and then disinfected in accordance with manufacturers recommendations.

9. Disinfection

9.1 Cleaning and disinfection procedures will be vital to preventing the spread of disease. For that reason, a Decontamination Manual has been devised to provide guidance in relation to this matter [See Annex 7.]

10. Movement restrictions

10.1 Where a listed or serious emerging disease is suspected or confirmed, livestock must not be moved to another site without the permission of the MI. The only situation where such movement may be considered by the MI is (a) in accordance with a Movement Permit [see Annex 8], where the site to which the stock are proposed to be moved is also affected by the same disease or (b) for harvest in accordance with a Harvesting License [see Annex 8]. However, in either case, the fish should not be moved unless they are clinically healthy.

The management and control of infected, suspect and other relevant sites is dealt with as outlined in Annex 9.

11. Fallowing

11.1 Fallowing or resting a site between livestock crops can break infection cycles and

allow restoration of the local environment. The mandatory fallowing period for each disease will be laid down by the Commission. Until such time as that occurs, the fallow period for all listed diseases except ISA, is at the discretion of the Competent Authority. According to Commission Decision 2003/466/EC, the mandatory fallow period for a site infected with ISA is at least 6 months.
11.2 Fallowing should start immediately after site cleaning and disinfection. This is carried out after removal of all susceptible species of aquatic animals and removal of water in which infected stocks were reared, where feasible. Equipment and other materials contaminated or otherwise able to harbour infection should be removed and be subject to cleaning and disinfection.
11.3 Once the fallow period has expired, the site can be restocked and will then be subject to a surveillance program appropriate to the disease. Stocking with sentinel fish prior to full re-stocking may also be considered.

12. Surveillance following restocking

12.1 Any farm or site which has been exposed to a listed disease or has been a contact for such a farm or is in the same water body as an affected farm, and has either culled or harvested and then fallowed and restocked should be subject to disease surveillance. Surveillance levels may be prescribed by the EU or the MI depending on the disease. Draft legislation is being drawn up by DG SANCO and until this is finalised, the regime that was in place under Directive 91/67/ECC (Commission Decisions 2001/183/EC and 2003/466/EC) should be used.

13. Training programmes and awareness

13.1 Training for MI staff, DAFM Vets, SFPA, private veterinary practitioner, etc., is as follows:
refresher courses on listed and emerging finfish diseases as well as control, biosecurity and disinfection are organised by the MI.
training of farm, veterinary, technical and administrative staff at a local level is arranged by the MI and BIM.
laboratory staff are seconded to reference laboratories in the EC for refresher training in new diagnostic tests and equipment.
field exercises (announced and unannounced) may be scheduled.

14. Public awareness

14.1 The MI has organised awareness exercises through lectures presented at the annual Fish Health Seminars which are open to all interested parties. The threat of the introduction of exotic fish diseases through the import of fish stocks is highlighted by public notices/announcements at points of entry to the country. Additional posters warning of the dangers of exotic fish diseases are displayed at angling clubs, fisheries, veterinary offices, fish processors, public aquaria and other locations. The target audience is primarily tourists, fishermen, anglers, fish farmers, fish hobbyists, aquarists and private veterinary practitioners.
14.2 Press releases would be prepared in the event of an emerging disease outbreak and information and advice given via TV/radio/newspaper, MI website, as required.

15. Rendering plants

15.1 As outlined above, rendering is the preferred option for disposal of carcases. The relevant rendering plant must be approved by the EPA and DAFM to handle infected carcases.
Ireland has one Category 1 rendering plant which handles fish carcasses. This is College

Proteins, in Nobber, Co. Meath (capacity 3000 tonnes/week) (details in Annex 10 Rendering plant contact details).
There are 3 further Cat 1 plants which do not currently take fish but which could be contacted in an emergency situation. These are as follows:
Dublin Products, Dunlavin, Co. Kildare.
Waterford Proteins, Ferrybank, Co. Waterford.
Ecosafe Systems, Kylemore Road, Dublin 10.

16. Resources and further reading

Department of Agriculture, Fisheries and Forestry (2008). Operational Procedures Manual Decontamination (Version 1.0) Australian Aquatic Veterinary Emergency Plan (Aquavetplan), Australian Government Department of Agriculture, Fisheries and Forestry, Canberra, ACT.
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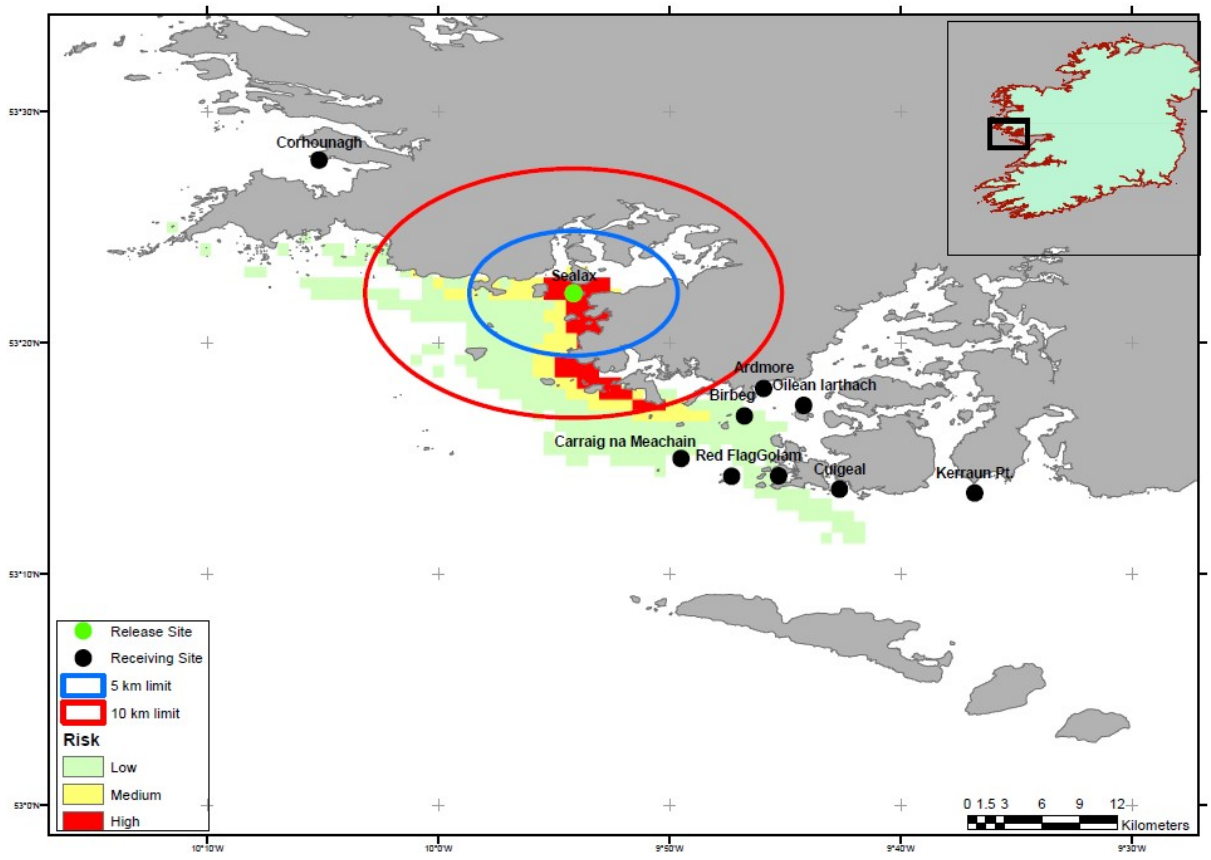
Corhounagh
Sealax
Ardmore
Oilean Iarthach
Birbeg
Carraig na Meachain
Red Flag
Golam
Cúgeal
Kerraun Pt.
Release Site
Receiving Site
5 km limit
10 km limit
Risk
Low
Medium
High
0 1.5 3 6 9 12
Kilometers
53°30'N
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53°10'N
53°0'N
10°10'W
10°0'W
9°50'W
9°40'W
9°30'W

Data Protection Notice:

Part A:

Information applicable to all Department of Agriculture, Food and the Marine customers:

1. The Department of Agriculture, Food and the Marine is fully committed to keeping all personal data submitted by its customers, fully safe and secure during administrative processes. All necessary technical measures have been put in place to ensure the safety and security of the systems which hold this data. Department staff are also considered as customers of the Department from a Data Protection perspective and may exercise their data protection rights in the same way.

2. Transparency and openness in the use of personal data held is important to the Department and therefore we aim to fully inform all our customers about the purpose(s) for which their data will be used and why, where it may be shared elsewhere, and why and how long their data may be held by the Department. Information on the rights of customers will also be provided.

3. The current legislation for Data Protection in Ireland is the Data Protection Act 1998 as amended by the 2003 Data Protection Act. The General Data Protection Regulations (EU 2016/679) will come into effect on 25 May 2018.

4. The Data Controller for the collection and processing of all personal data in the Department of Agriculture, Food and the Marine is the Department itself, as a legal entity.

5. The Data Protection Officer can be contacted as follows:

   Data Protection Officer
   Data Protection Unit, Corporate Affairs
   Department of Agriculture, Food and the Marine
   Grattan Business Park, Dublin Road,
   Portlaoise, Co Laois.
   Email: dataprotectionofficer@agriculture.gov.ie

6. Personal data processed by the Department will only be used for the specific purpose(s) as outlined when the data is collected, or in later communications, and will only be used in accordance with the Data Protection legislation in force.

7. Rights of the individual in relation to personal data held by the Department:
   When you, as a customer, provide personal data to the Department you have certain rights available to you in relation to that data. These rights are outlined below and can be exercised by contacting the Data Protection Officer, as detailed above, indicating which right(s) you wish to exercise:

   Currently our customers have the following rights (up to 24 May 2018):

   - access to their data
   - rectification of their data
   - erasure of their data
   - right to lodge a complaint with the Supervisory Authority

   From 25 May 2018 onwards all Department customers will also have the following additional rights:

   - restriction of processing
   - data portability
   - objection to processing
   - withdraw consent if they previously gave it in relation to processing of their personal data
   - relating to automated decision making, including profiling

Part B – Information specific to the personal data being collected
The following information is specific to the personal data processed for *Aquaculture and Foreshore Licence applications*:

8. Specified purpose:
   The personal data sought from you, the applicant, is required for the purpose of making a determination on an application for an Aquaculture and Foreshore licence. Failure to provide all the personal data required to facilitate the processing of the

application, including data testing, will result in the Department being unable to process the application.

9. Legal basis:
   Applications for Aquaculture and Foreshore Licences are processed pursuant to the following legislation:

   Fisheries (Amendment) Act 1997 (as amended)

   Foreshore Act 1933 (as amended)

   S.I. No. 236/1998 - Aquaculture (Licence Application) Regulations, 1998 (as amended)

   S.I. No. 270-1998 - Aquaculture (Licence Application and Licence Fees) Regulations, 1998

   EU Habitats Directive of 92/43/EEC

   EU Birds Directive 79/409/EEC

   Consolidated Environmental Impact Assessment Directive 2011/92/EU and Directive 2014/52/EU

   Public Participation Directive (Aarhus Convention)

10. Recipients:

    If an Environmental Impact Assessment (EIA) Screening is required, the above legislation provides that the following agencies will participate and are provided with details of your application as part of this process:

    - Bord Iascaigh Mhara
    - Marine Institute.

The following consultees are contacted by the Department to provide observations on your licence application:

- Bord lascaigh Mhara
- Marine Institute
- the Minister for Culture, Heritage and the Gaeltacht
- the Minister for Housing, Planning and Local Government
- the Minister for Communications, Climate Action and Environment
- Udaras na Gaeltachta, if the proposed aquaculture is to take place in, or contiguous to, its functional area
- the Local Authority, within whose functional area, or contiguous to whose functional area, the proposed aquaculture is to take place
- Fáilte Eireann
- Inland Fisheries Ireland (IFI)
- the Commissioners of Irish Lights
- An Taisce - The National Trust for Ireland
- a Harbour Authority within the meaning of the Harbours Act, 1946, or a company established under the Harbours Act, 1996, as appropriate, if the proposed aquaculture is to take place in, or contiguous to, its functional area.
- Irish Water
- Sea Fisheries Protection Authority
- Marine Survey Office of the Minister for Transport, Tourism and Sport.

Details pertaining to your aquaculture and foreshore licence application, and the determination, are published in local newspapers, Iris Oifigiúil, and on the Department's website, as required under the Public Participation Directive (Aarhus Convention).

Aquaculture Licences Appeals Board (ALAB)

In the event of the Aquaculture Licences Appeals Board (ALAB) receiving an appeal of the Minister's decision on whether or not to grant you an aquaculture and foreshore licence, your file, containing personal details, will be forwarded by the Department to ALAB to make a decision on the appeal.

The Aquaculture Licences Appeals Board is an independent authority for the determination of appeals against decisions of the Minister on aquaculture licence applications.

11. Transferred outside the EU:

    Information you provide as part of your Aquaculture and Foreshore licence application is not currently transmitted outside of the EU.

12. Retention Period:

    The data collected for this purpose will be held by the Department only as long as the legal purpose(s) for which it was collected apply. After this time it will be marked for destruction in accordance with legal obligations under the National Archives Act 1986, and associated permissions received from the National Archives Office in this regard.

13. Data provision being statutory or contractual obligation:

    The data provided for this purpose is requested under the requirements of the following legislation:

    Fisheries (Amendment) Act 1997 (as amended)

    Foreshore Act 1933 (as amended)

    S.I. No. 236/1998 - Aquaculture (Licence Application) Regulations, 1998 (as amended)
    S.I. No. 270-1998 - Aquaculture (Licence Application and Licence Fees) Regulations, 1998

    EU Habitats Directive of 92/43/EEC

    EU Birds Directive 79/409/EEC

Consolidated Environmental Impact Assessment Directive 2011/92/EU and Directive 2014/52/EU

Public Participation Directive (Aarhus Convention)

The client is obliged under law to provide this information to enable the Aquaculture and Foreshore Management Division to process applications for Aquaculture and Foreshore licences.
If the customer chooses not to provide this information the application for Aquaculture and Foreshore licences cannot proceed.

14. Automated Decision Making:

Not applicable.

15. Information from Third Party:

Personal data in relation to an Aquaculture and Foreshore licence application is obtained from the applicant in line with this Department's requirement to process your application in accordance with applicable legislation. In circumstances where this Department did not gather your personal data you are still entitled to exercise your rights in relation to this personal data and the details on how to exercise individuals rights are detailed above.

16. Technical information on data collected:

Technical information on the cookies used on our Department's website is available at the following link: https://www.agriculture.gov.ie/legalnotices/privacy/

- personal data
- relating to automated decision making, including profiling.

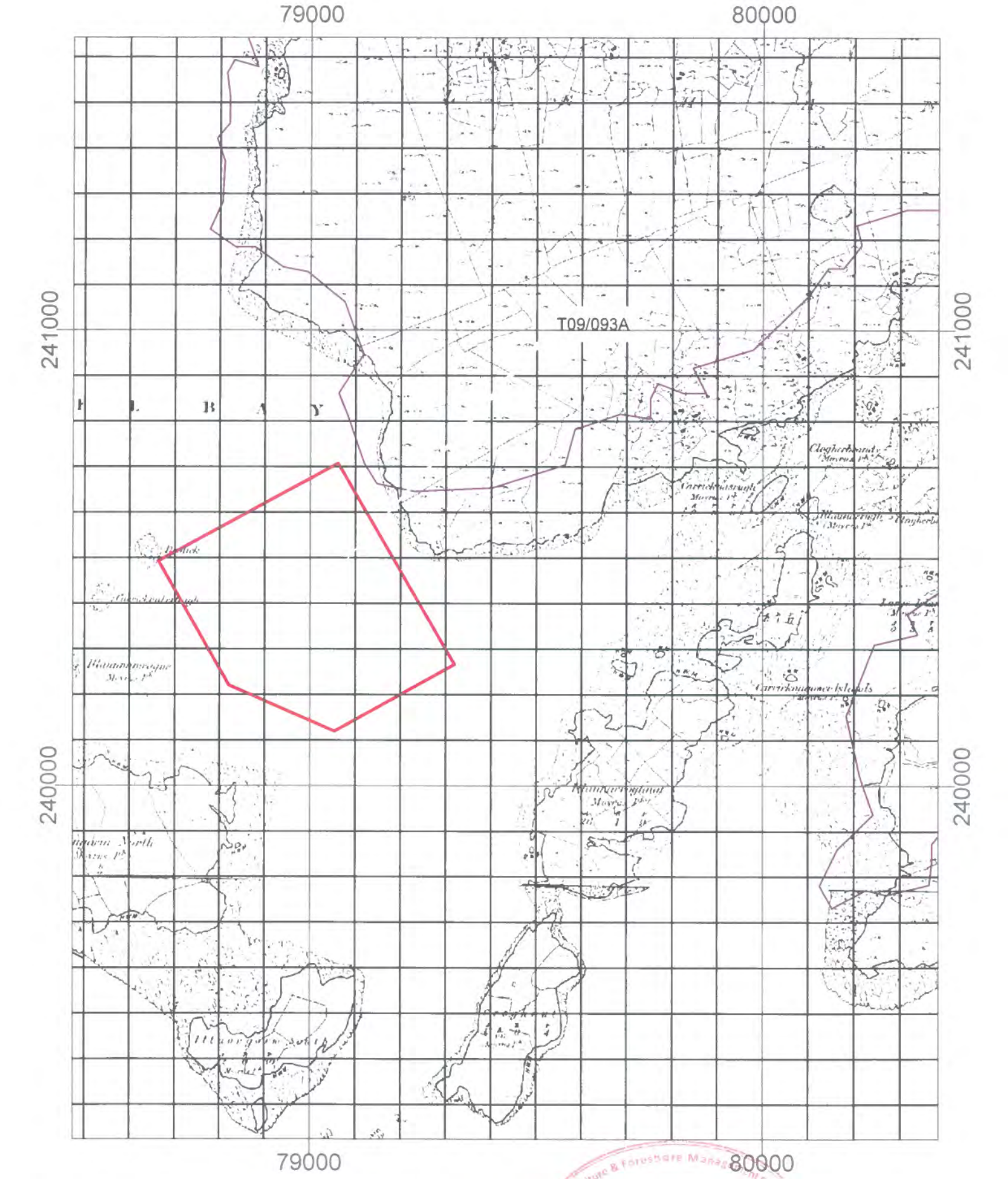
1 NO. SITE AT BERTRAGHBOY BAY CO.GALWAY

Co-ordinates & Area

Site T09/093A (21.761 Ha)

The area seaward of the high water mark and enclosed by a line drawn from Irish National Grid Reference point

078664, 240493 to Irish National Grid Reference point
079061, 240707 to Irish National Grid Reference point
079320, 240266 to Irish National Grid Reference point
079054, 240119 to Irish National Grid Reference point
078820, 240220 to the first mentioned point.



Aqua Culture Sites
<all other values>
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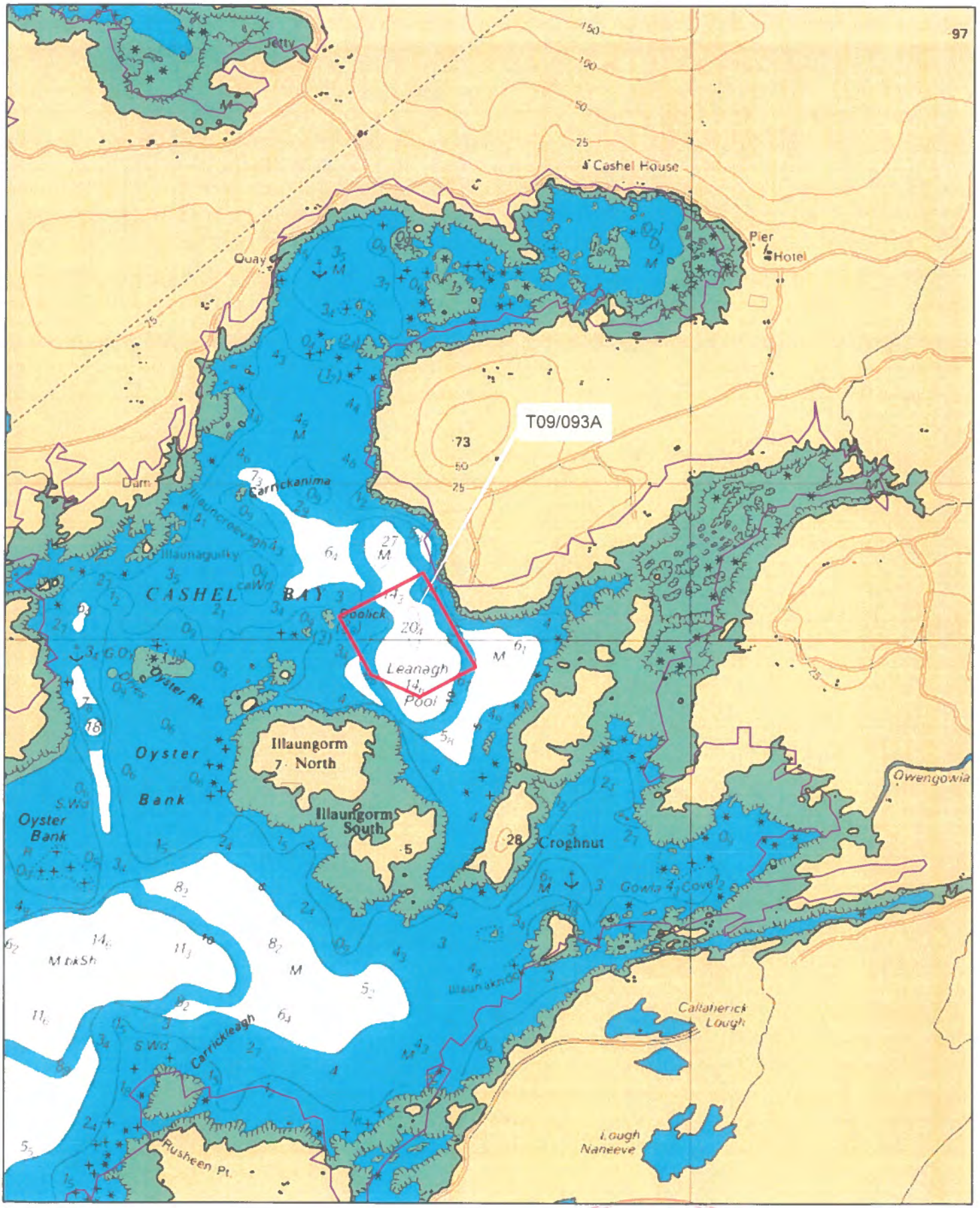
Under Appeal
Application
Lapsed
Licensed
Refused
Revoked
Surrendered
Withdrawn
100 Meter Reference Grid

1:10,560

Sites highlighted in red denotes Application

An Roinn Talmhaíochta, Bia agus Mara
Department of Agriculture, Food and the Marine



Aqua Culture Sites
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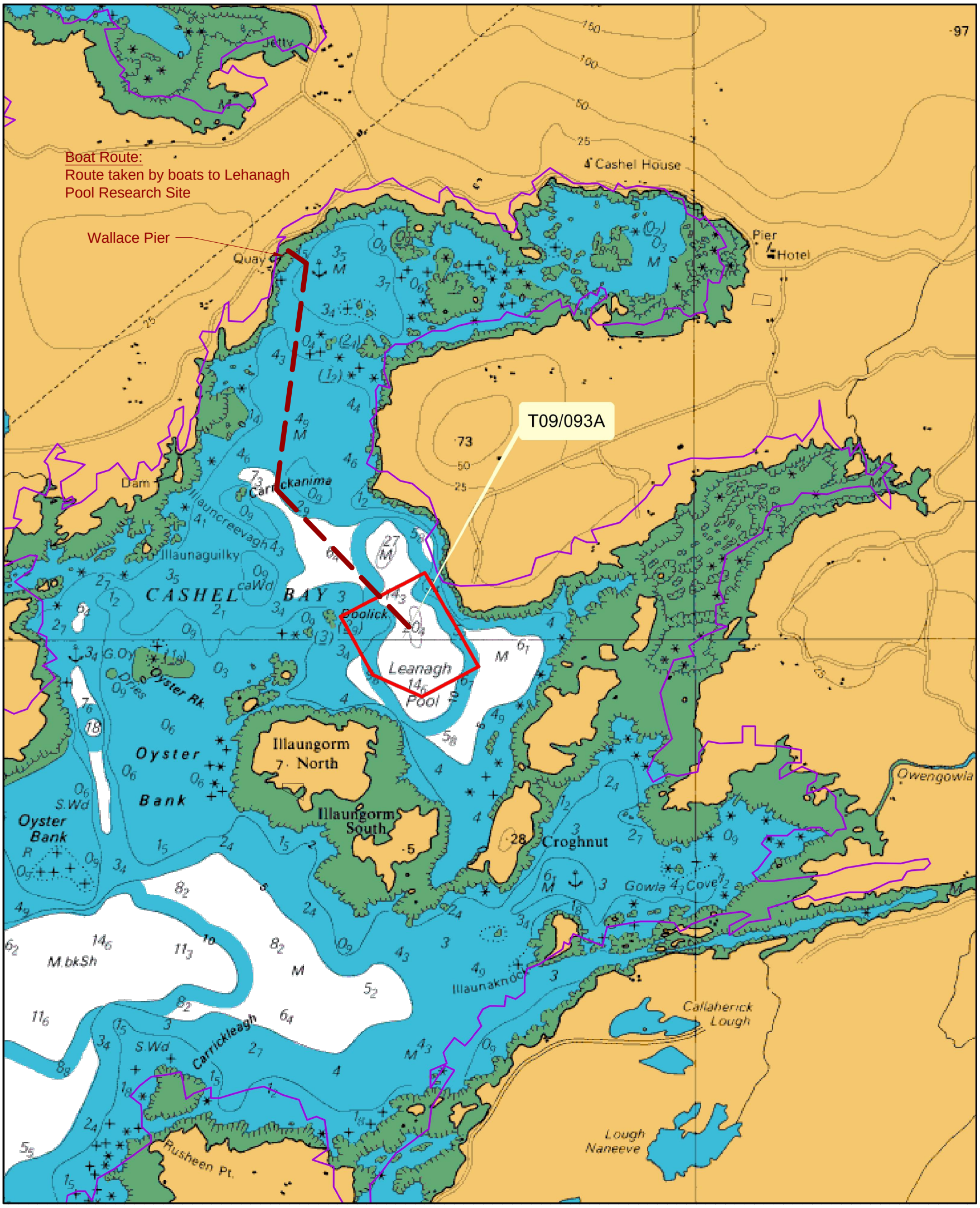
Site_Status
Under Appeal
Application
Lapsed
Licensed
Refused
Revoked
Surrendered
Withdrawn

1:24,000

Sites highlighted in red denotes Application

Part of Admiralty Chart No =2709-0
Not to be used for Navigation

An Roinn Talmhaíochta, Bia agus Mara
Department of Agriculture, Food and the Marine



REV.	DATE	MODIFICATIONS

CLIENT
Marine Institute

PROJECT
Lehanagh Pool Research Site

TITLE	REVISION
Access Route	Rev.0
DRAWING: MI-LPRS-07	DATE: 02-11-21
	DRAWN BY: NOH
	SCALE: n.t.s. / SIGN:

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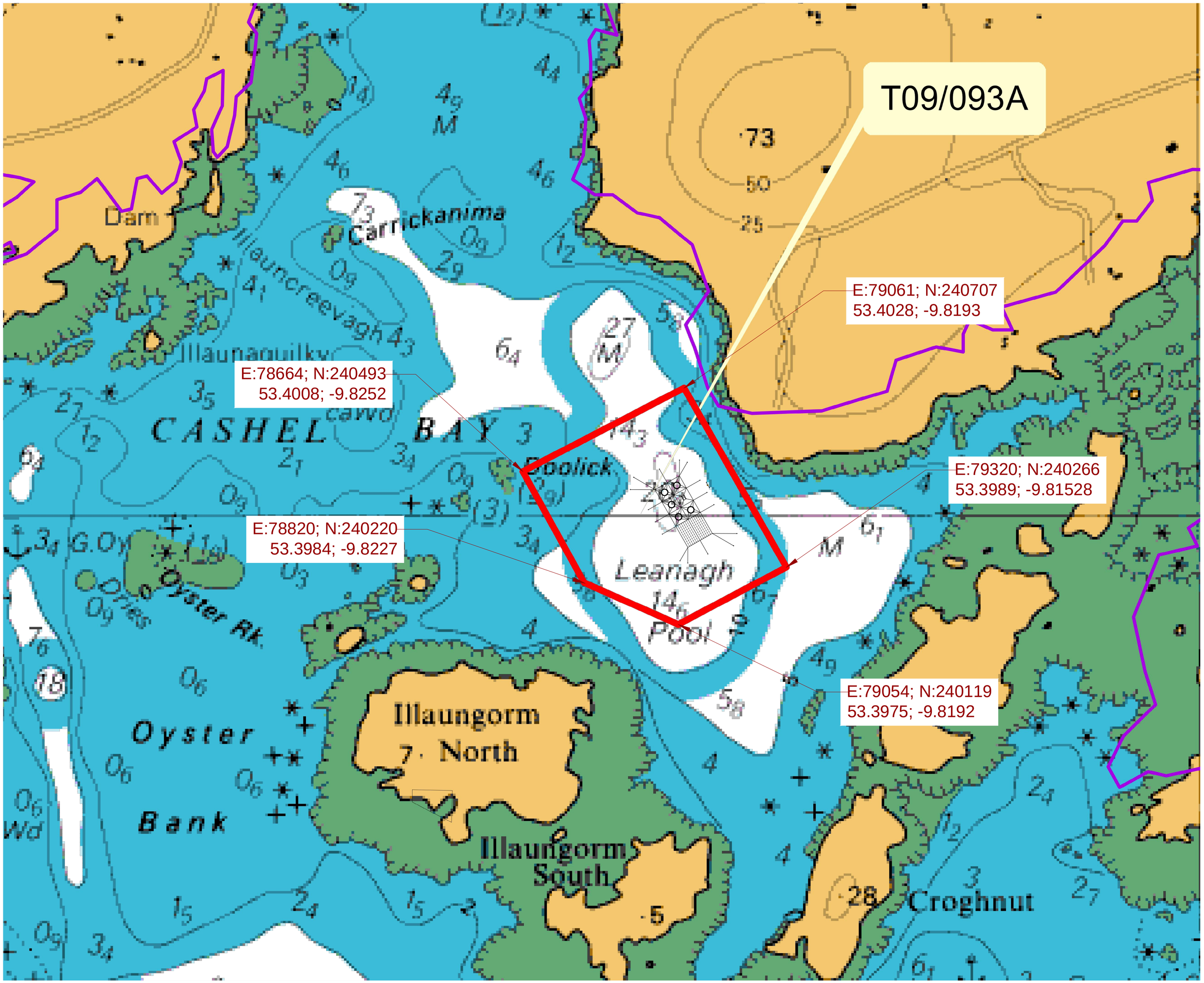

REV.	DATE	MODIFICATIONS

CLIENT
Marine Institute

PROJECT
Lehanagh Pool Research Site

TITLE
Site Grid Points

REVISION
Rev.1

DRAWING
MI-LPRS-08

DATE
10-12-21

DRAWN BY
NOH

SCALE
N.T.S.

SIGN

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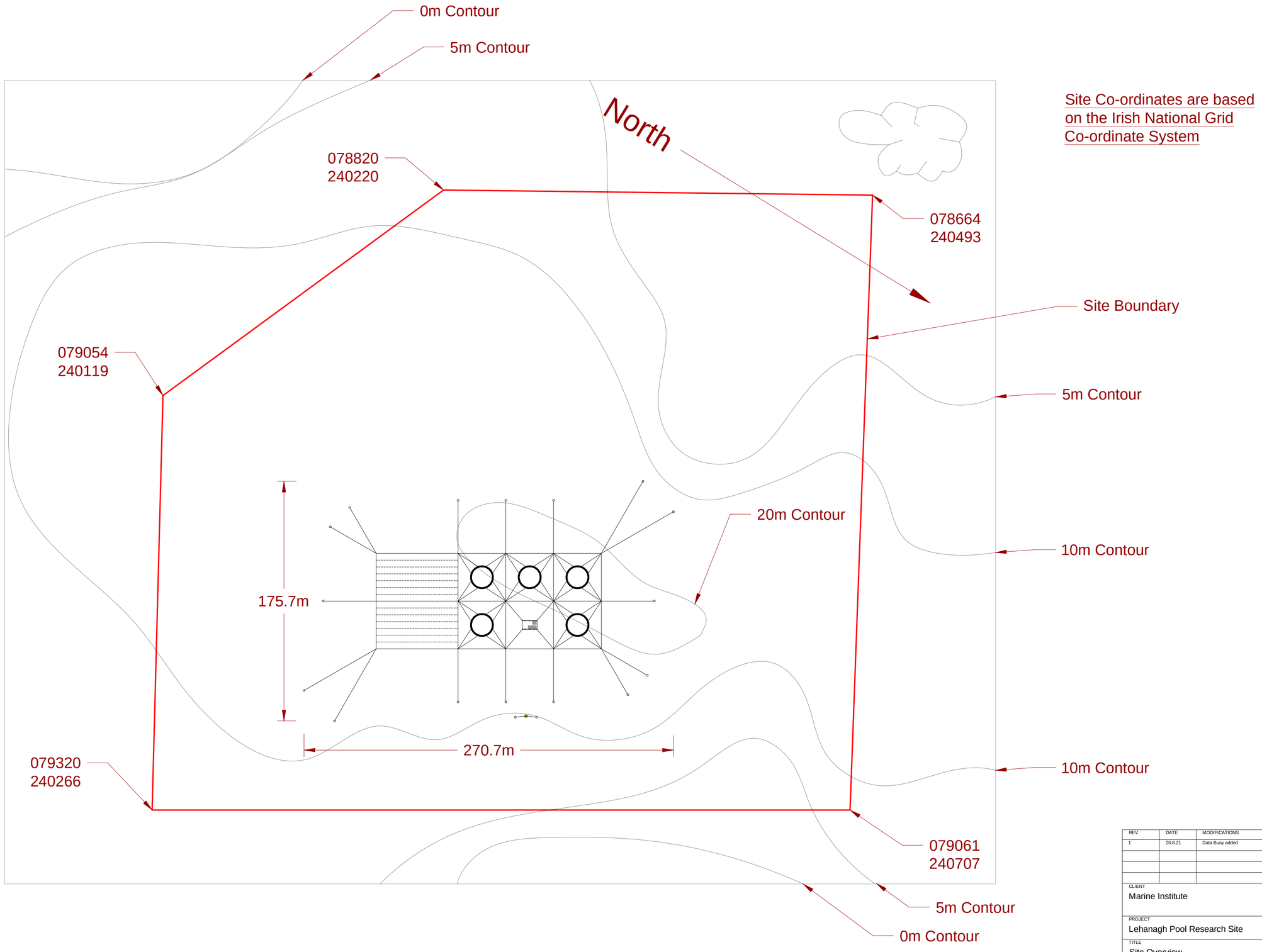

REV.	DATE	MODIFICATIONS
1	20.8.21	Data Buoy added

CLIENT
Marine Institute

PROJECT
Lehanagh Pool Research Site

TITLE	REVISION
Site Overview	Rev.1
DRAWING: MI-LPRS-01	DATE: 20-08-21
	DRAWN BY: NOH
	SCALE: 1:2000 / SIGN

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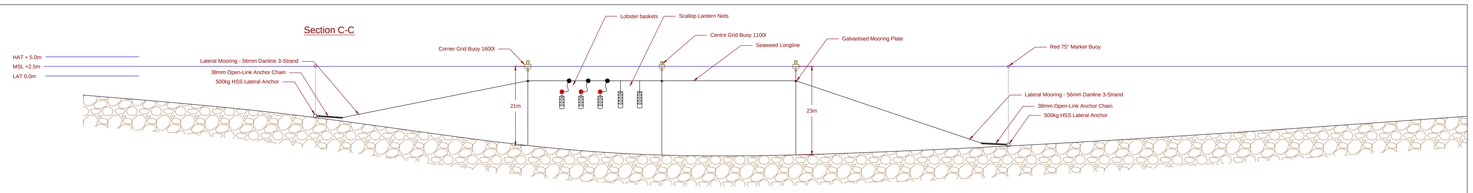
Section C-C



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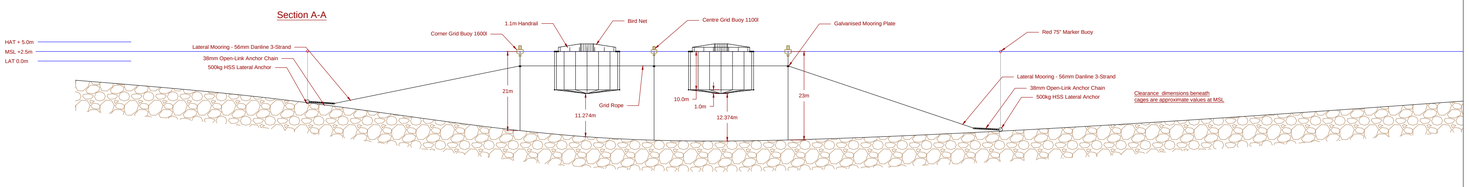

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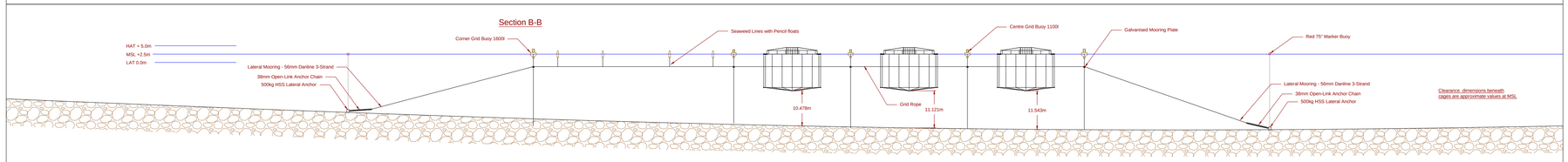
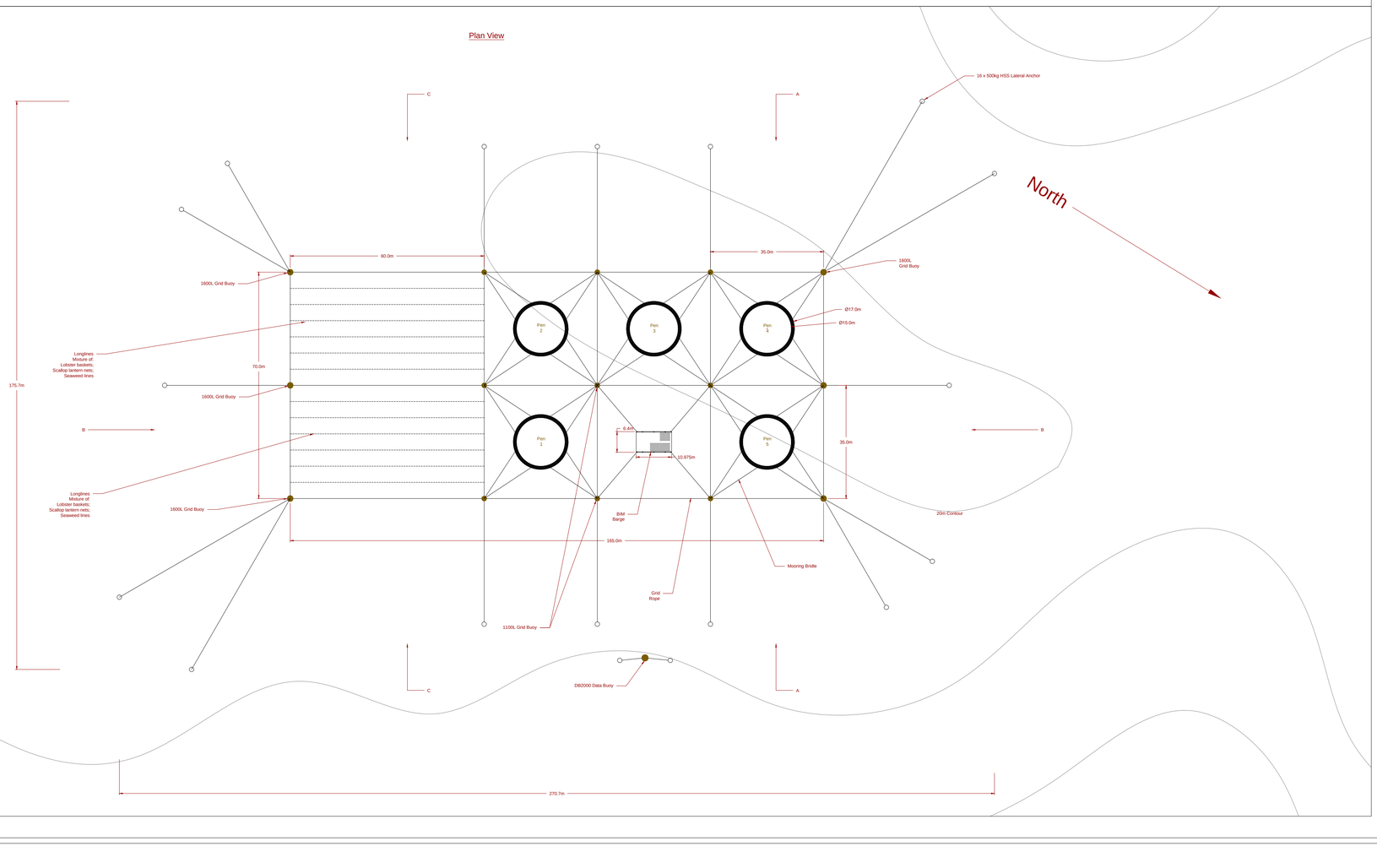


Plan View



REV.	DATE	MODIFICATIONS
1	20.8.21	Data Buoy added
2	02.11.21	Clearance beneath cages added
3	19.01.22	Buoy diagram updated

CLIENT
Marine Institute

PROJECT
Lehanagh Pool Research Site

TITLE
Site Details

REVISION
Rev.3

DRAWING
MI-LPRS-02

DATE
19-01-22

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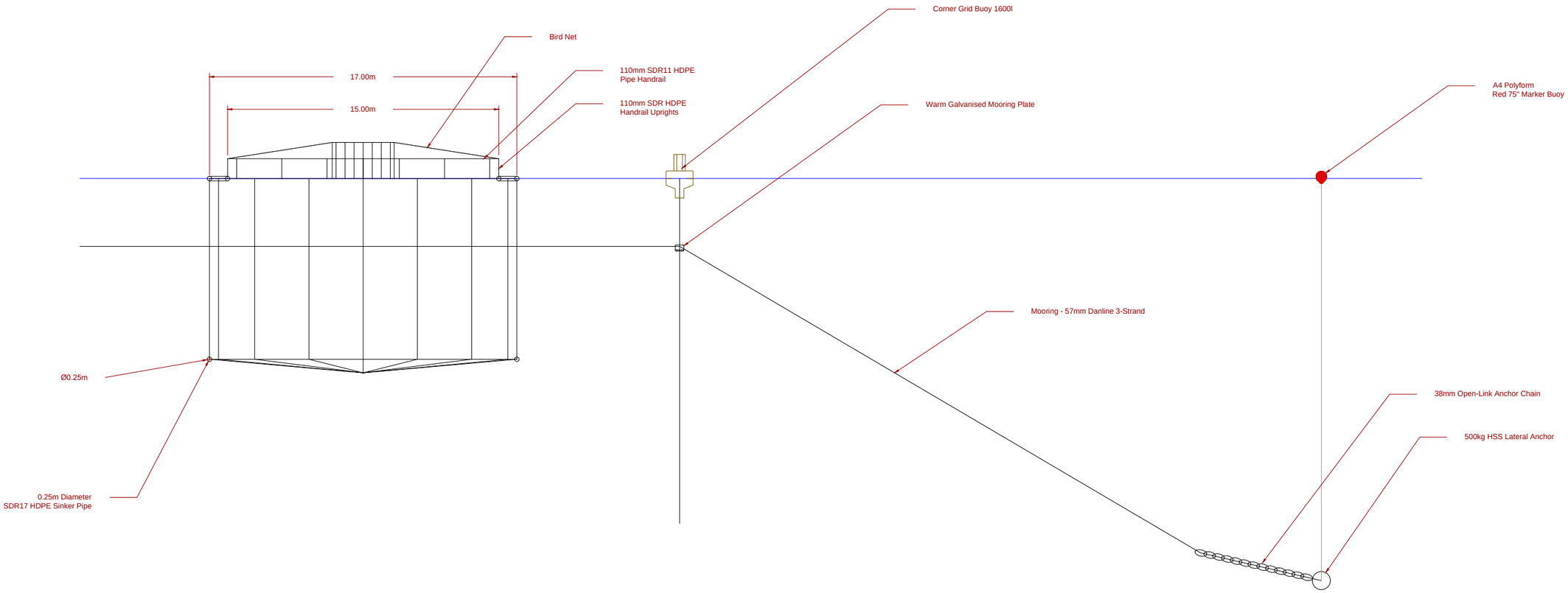

REV.	DATE	MODIFICATIONS
1	19.01.22	Buoy updated

CLIENT
Marine Institute

PROJECT
Lehanagh Pool Research Site

TITLE
Cage Detail

REVISION
Rev.1

DRAWING
MI-LPRS-05

DATE
19-01-22

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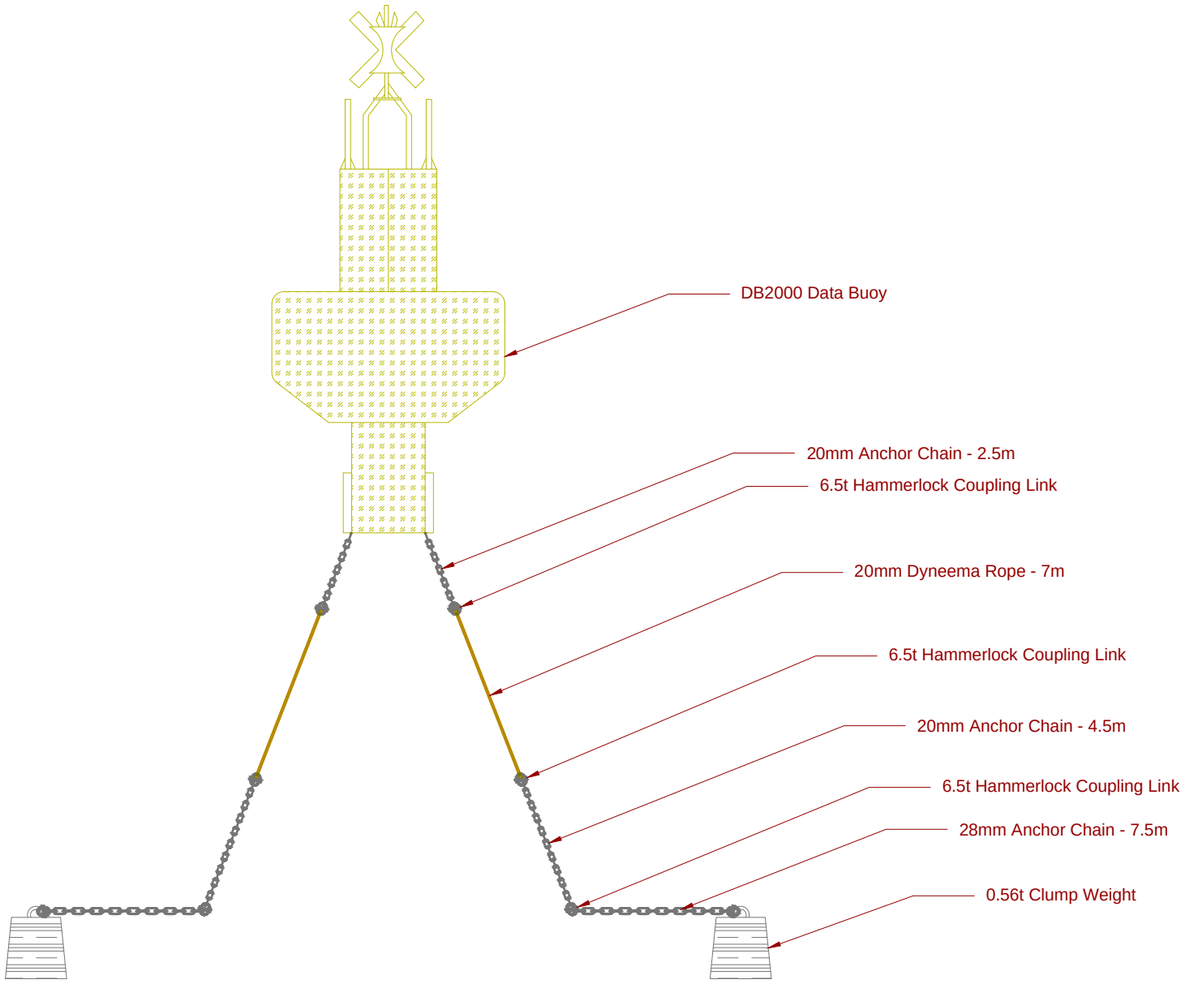
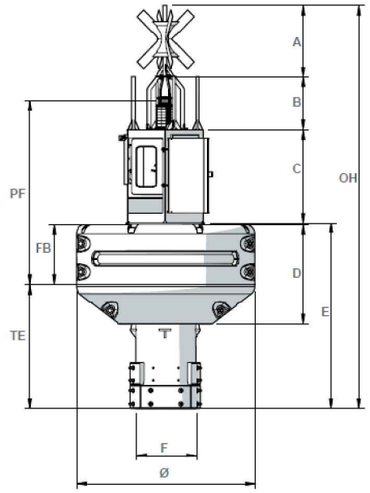


Data Buoy - Mobilis DB2000
(Drawing from Mobilis-SA



Dimensions	
Ø	1.9m
PF	1.9m
TE	1.3m
FB	0.6m
OH	4.3m
A	0.7m
B	0.5m
C	1.0m
D	1.1m
E	1.9m
F	0.6m

N.T.S.

REV.	DATE	MODIFICATIONS

CLIENT
Marine Institute

PROJECT
Lehanagh Pool Research Site

TITLE
Data Buoy

REVISION
Rev.0

DRAWING
MI-LPRS-06

DATE
19-08-21

DRAWN BY
NOH

SCALE
n.t.s.

SIGN

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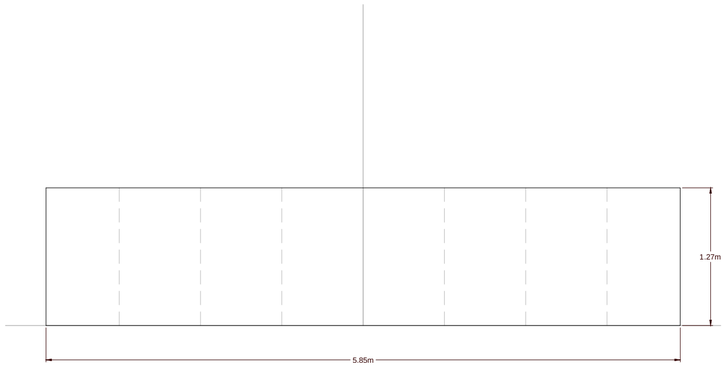
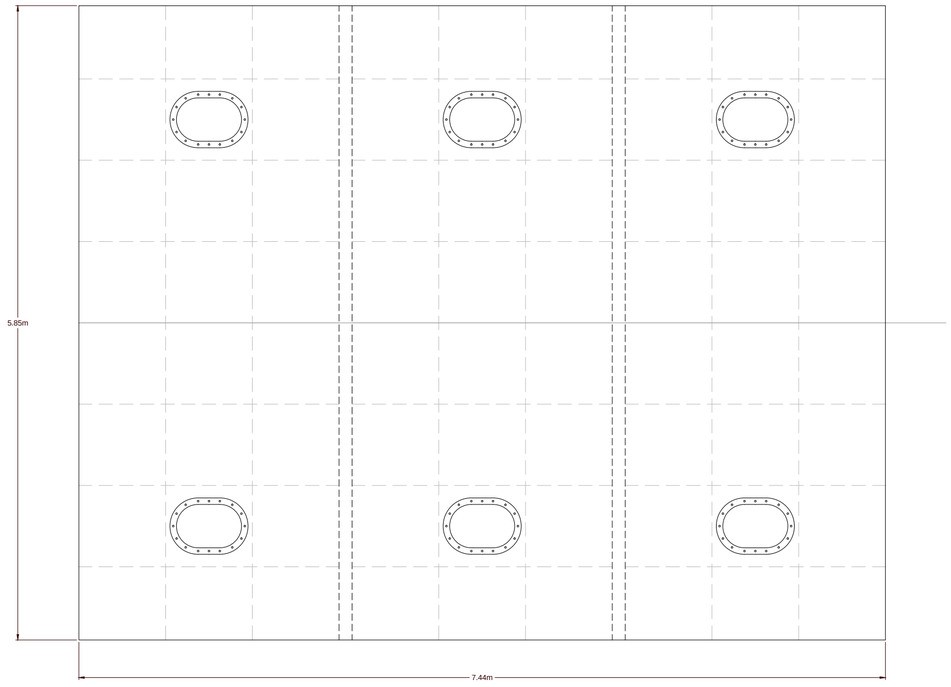
Profile View



Front View



Plan View

REV.	DATE	MODIFICATIONS

CLIENT
Marine Institute

PROJECT
Lehanagh Pool Research Site

TITLE
M.I. Pontoon

REVISION
Rev.0

DRAWING
MI-MIP-03

DATE
17-08-21

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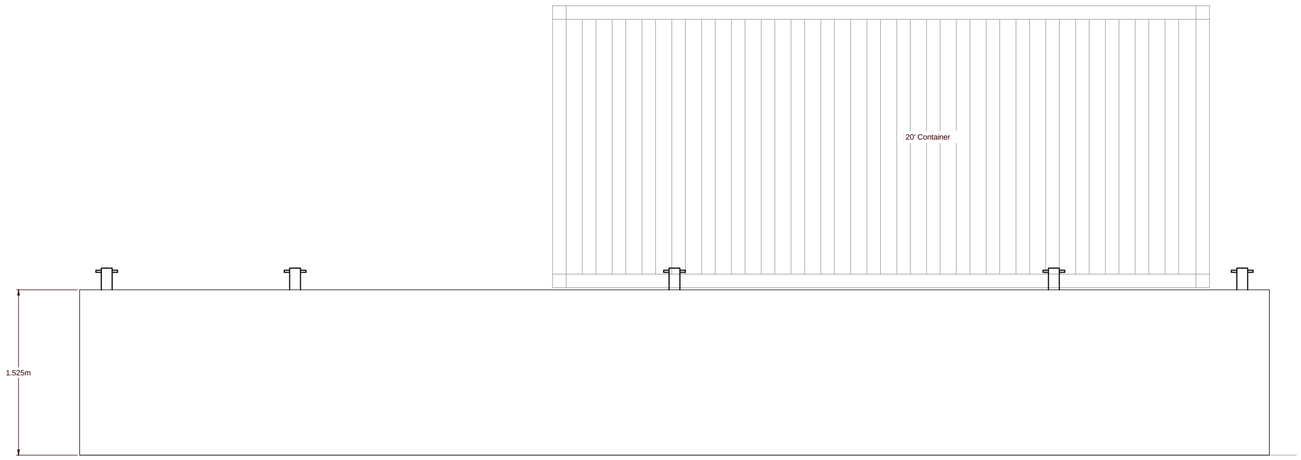
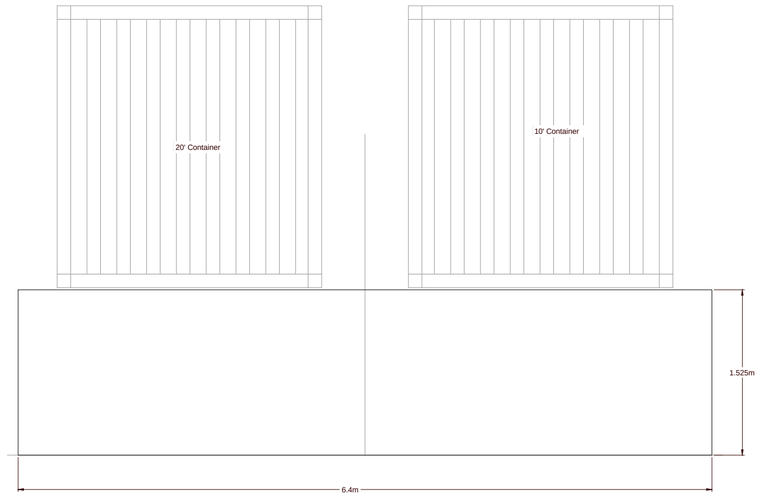
DRAWN BY
NOH

SCALE
1:40

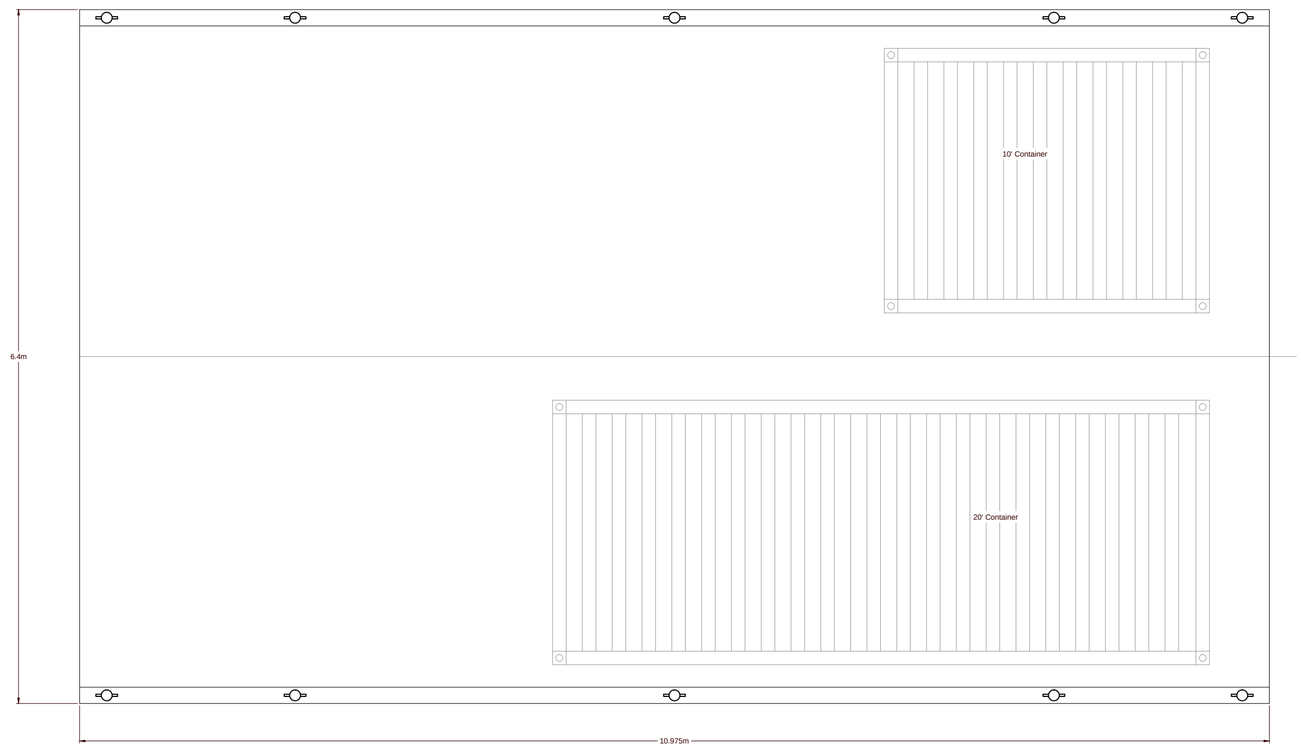
SIGN



Profile View



Front View



Plan View

REV.	DATE	MODIFICATIONS
1	17-08-21	Edit deck equipment

CLIENT
Marine Institute

PROJECT
Lehanagh Pool Research Site

TITLE
BIM Barge

REVISION
Rev.1

DRAWING
MI-BB-04

DATE
17-08-21

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SCALE
1:40

SIGN

INTEGRATED PEST MANAGEMENT PLAN

LEHANAGH POOL MARINE RESEARCH SITE

2022

Contents

Integrated Pest Management Plan: Lehanagh Pool Marine Research Site

1. INTEGRATED PEST MANAGEMENT

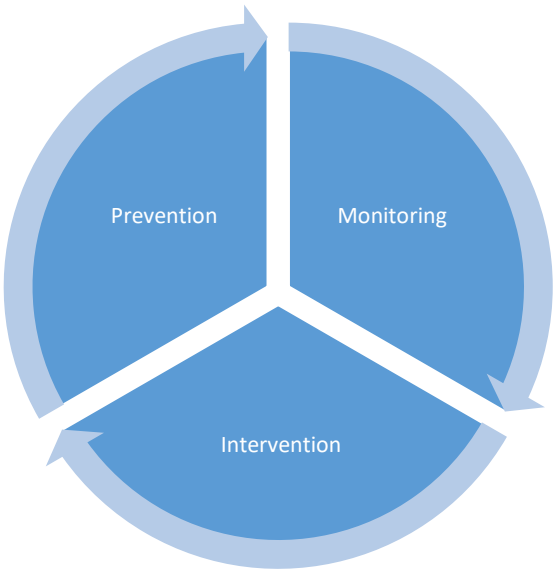
Integrated pest management (IPM) is an approach used to control pests in the agriculture sector and has been widely adopted in marine aquaculture for the control of parasitic infestations. The IPM approach can provide direct benefits to producers through regular monitoring enabling timely decisions based on observations and an optimum use of control methods considering the current health status of the stock, economic considerations, and potential environmental impacts.

The Lehanagh Pool site (T09/093A) is a research site run by the Marine Institute supporting a number of national and internationally funded research projects with particular focus on integrated multi-trophic aquaculture (IMTA). IMTA allows for the production of multiple species, from different trophic levels, within a location in a way that allows the outputs and wastes (e.g., nitrogen, phosphorus, etc.) associated with fed species e.g. Atlantic salmon, to be recaptured and be used as nutrients for the growth of the lower trophic species (e.g. seaweed utilising the nutrient output from fin fish). The site also contributes to ongoing environmental and water quality monitoring in the coastal marine environment.

Regulated by the Health Products Regulatory Authority (HPRA), Lehanagh Pool is an authorised establishment (AE19121) under the EU (Protection of Animals Used for Scientific Purposes) Regulations 2012 (SI 543 of 2012 as amended) and EU Directive 2010/63/EU[1].

[1] Directive 2010/63/EU of the European Parliament and of the Council on the protection of animals used for scientific purposes. Official Journal of the European Union L 276/33 – 79.

This Plan outlines the approach to be taken by the Marine Institute for the control of sea lice *Lepeophtheirus salmonis* and *Caligus elongatus* infestations at the Lehanagh Pool Marine Research Site.



Schematic outline of the Integrated Pest Management Plan for Lehanagh Pool.

2 PREVENTION

2.1 Single Bay Management

Single Bay Management has been in place for all Atlantic salmon farming areas in Ireland since 1997 and was designed to co-ordinate and ensure that husbandry practices on each farm in the management areas are compatible.

The Marine Institute will adhere to the principles of Single Bay Management:

- Fallowing – see section 2.2 below.
- Stocking – see section 2.2. below.
- Annual plans – a pest management plan will be developed for the control of sea lice at the site and will be updated annually as required.

- Health certification – all stocks of finfish will be certified prior to any movement on site as required under the EU 'Animal Health Law'[2]. A Fish Health Management Plan is updated annually.
- Husbandry practices – practices include daily monitoring of fish and infrastructure, regular removal of dead fish and at the end of each cycle all fish are removed, culled and disposed of in a rendering facility.
- The Marine Institute is also a member of the Bertraghboy Bay/Kilkieran Bay Coordinated Local Aquaculture Management System (CLAMS).

2.2 Stocking & Fallowing

Only a single generation of Atlantic salmon will be stocked on site at any one time. The current stocking regime is for S0 Atlantic salmon smolts to be stocked each year in late November until early March the following year. A second stocking of S1 Atlantic salmon smolts occurs in late April until the end of August/early September. This stocking plan is subject to change depending on the requirements of the specific projects being supported on site.

Fallowing will be undertaken for a minimum of 30 continuous days, twice per year, as outlined in the DAFM Protocol on Fallowing[3]. The site is fallowed of Atlantic salmon twice per year, from mid-March to late-April and from September to late-November, as outlined in the figure below.

An outline of the typical stocking and fallowing periods for the Lehanagh Pool Marine Research Site.

[2] Regulation (EU) 2016/429 of the European Parliament and of the Council on transmissible animal diseases and amending and repealing certain acts in the area of animal health ('Animal Health Law'). Official Journal of the European Union L 84/1 – 208.

[3] Department of the Marine & Natural Resources, 2000. Protocol for fallowing at offshore fin fish farms.

2.3 Health Management & Welfare

A fish health management programme is in operation and is outlined in the *Fish Health Management Plan* for the site, which is reviewed annually. All aspects of fish husbandry relating to disease are covered, in particular bio-security protocols preventing the introduction of pathogens and the containment of disease outbreaks should they occur. Feed stores are designed to prevent contamination by vermin and protocols dealing with the handling and feeding of fish are designed to prevent the spread of any aquatic pathogens.

The Lehanagh Pool Marine Research Site holds a valid Fish Health Authorisation (FHA-595). All fish are monitored daily and health checks are carried out routinely on a representative number of fish (the number of pens and fish examined is variable and depends on observed swimming behaviour and feeding patterns). Fish are also screened as pre-smolts prior to any movement on to the site, by the Fish Health Unit of the Marine Institute and subject to inspection by DAFM Veterinary Inspectors. Standard fish treatment and hygiene protocols are also documented in the *Fish Rearing Manual* for Lehanagh Pool. Fish husbandry procedures are also subject to inspection by HPRA under the protection of animals used for scientific purposes regulations.

3 MONITORING

3.1 Monitoring Requirements

At a minimum, sea lice monitoring is performed as outlined in Monitoring Protocol No. 3[4]. When Atlantic salmon are stocked on site, monitoring is performed on a fortnightly basis during the months of March – May and monthly thereafter. In practice, sea lice levels are monitored on site on a weekly basis and if levels are deemed to be increasing, an official inspection will be performed and appropriate action will be taken if required.

[4] Department of the Marine and Natural Resources, 2000. Monitoring protocol no. 3 for offshore finfish farms – sea lice monitoring and control.

3.2 Sampling

At least two pens on the site will be sampled on a monthly basis from June – February, and twice monthly from March – May, when fish are on site. Thirty fish per pen will be sampled at each inspection, depending on the numbers of fish stocked for the trials. There are currently five pens on site into which Atlantic salmon can be stocked, therefore at least 40% of the pens are sampled at each inspection.

3.3. Reporting

The results of each inspection will be prepared into a report within ten working days of the inspection and made available to relevant stakeholders. All reports are retained within the site record files and made available for inspection when required by DAFM Veterinary Inspectors and HPRA officers. Details to be recorded in each report include:

- Date of inspection
- Pen number and fish stock
- Total ovigerous females per fish – *L. salmonis* & *C. elongatus*
- Total adult male per fish – *L. salmonis* & *C. elongatus*
- Total adult female per fish – *L. salmonis* & *C. elongatus*
- Total mobile pre-adult per fish – *L. salmonis* & *C. elongatus*
- Water temperature, dissolved oxygen levels & *salinity*

4 INTERVENTION

4.1 Veterinary Medicines

Authorised veterinary medicines for the control of sea lice will not be routinely used on the site, with the exception of specific research projects authorised by HPRA.

4.2 Biological Control

Biological control of sea lice levels will be undertaken through the use of hatchery reared cleaner-fish. Currently, only lumpfish, *Cyclopterus lumpus* are available in Ireland. Lumpfish will primarily be used for the winter/spring stocking of S0 Atlantic salmon smolts at a rate of

4 – 10 lumpfish per 100 Atlantic salmon. Prior to movement on site, cleanerfish will be certified as disease free and all movements will be notified to the Fish Health Unit at the Marine Institute as required under the animal health law.

The cleanerfish will also contribute to small scale studies into the welfare and performance of these fish using a PIT tag antennae array. The array allows us to obtain an accurate reading on the number of cleanerfish in a pen and their movements in relation to feeding (choice of diets) and habitat preference (choice of hides).

4.3 Freshwater/Hyposaline Bathing

When required, sea lice levels will be controlled during the spring/summer input of S1 Atlantic salmon smolts by freshwater/hyposaline bathing. In conjunction with BIM, the Lehanagh Pool site uses a reverse osmosis (RO) unit producing potable water from sea water. RO removes virtually all salt and other impurities (Fig 1). This yields ion-modified water with greatly reduced content of salt and heavy metals. Technically the RO unit achieves purity using membranes with pore sizes < 1 nm (0.001 µm). Practically all dissolved solids are retained, what passes the membrane is based on solubility and diffusion in the membrane material itself. Pressure is the driving force for the separation, and in RO plants pressures from 30 to 85 bar must be applied. With the help of RO, it is now possible for organic farms to be independent of a freshwater source on land, transforming sea water to fresh water and in so doing maximizing biosecurity.

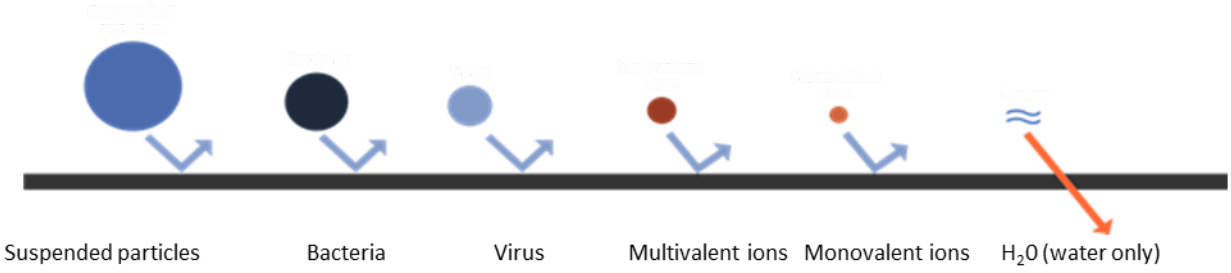


Fig. 1. Reverse osmosis (RO) with pore size < 0.001 µm producing freshwater

A tarpaulin pen (5 x 5 x 2 m) is filled with hyposaline water with the fish to be treated pumped into the pen for a minimum four-hour bathing period, before being pumped back to their

original pen (Fig. 2). This method has been shown to be effective in the control of both sea lice and amoebic gill disease[5].

Fig. 2. Bathing pen filled with RO hyposaline water for sea lice/AGD treatments.

[5] McDermott et al. 2021. Novel use of nanofiltered hyposaline water to control sea lice and amoebic gill disease, on a commercial Atlantic salmon farm. Aquaculture Reports 20, 100703.