Natura Impact Appropriate Assessment and Statement

As part of the "Fore shore Licence Application to the Department of Environment, Community and Local Government. Ref: MS51/15/695

For the Continuation of Sustainable Sea Algae Harvesting by Algaran, at Muckross Head, Kilcar (Donegal Bay) Co. Donegal.

March 3rd 2014

Applicant:

Algaran

Ms Rosaria Piseria and Mr Michael Mccloskey

Cashlings

Kilcar

Donegal

Co. Donegal.

EU Natura Report by Catherine Storey CEnv, MIEnvSc, MCIEEM

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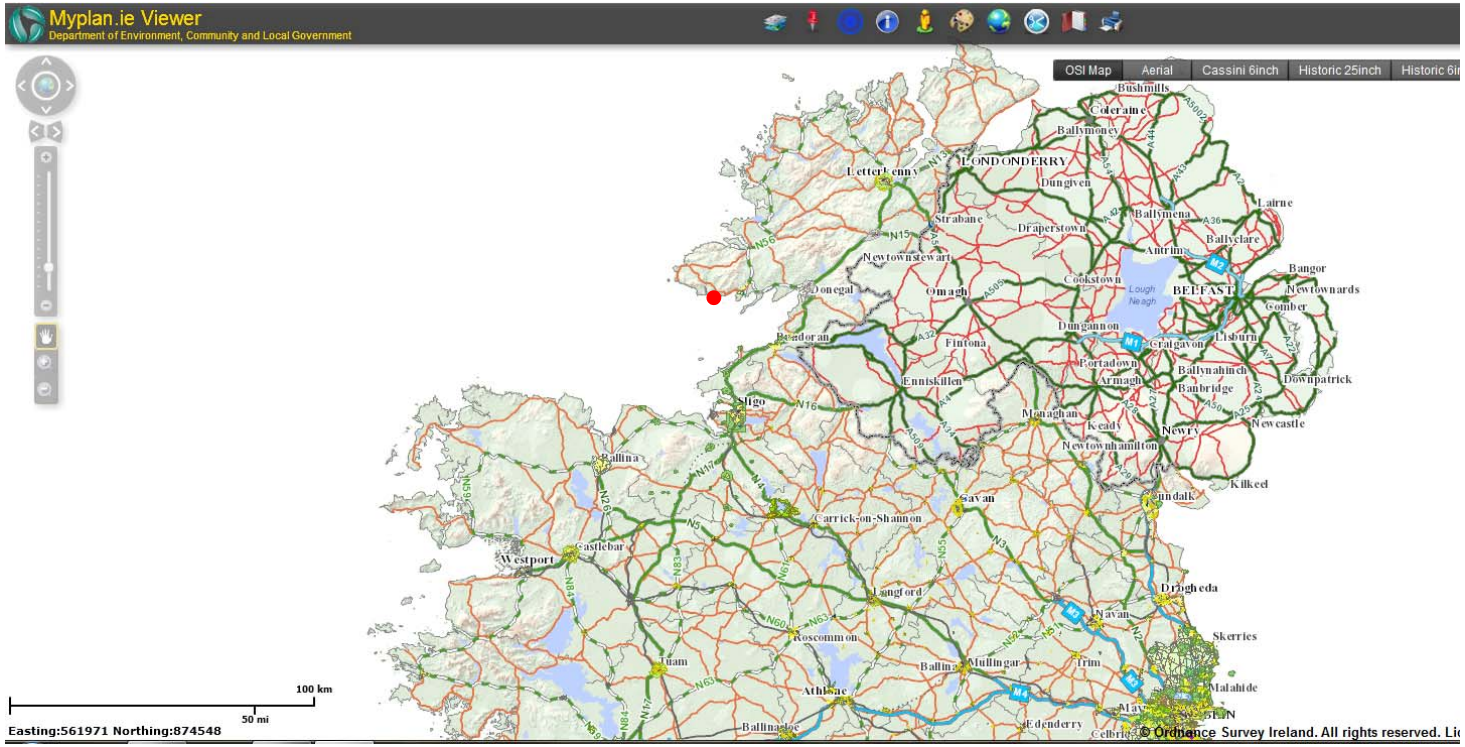
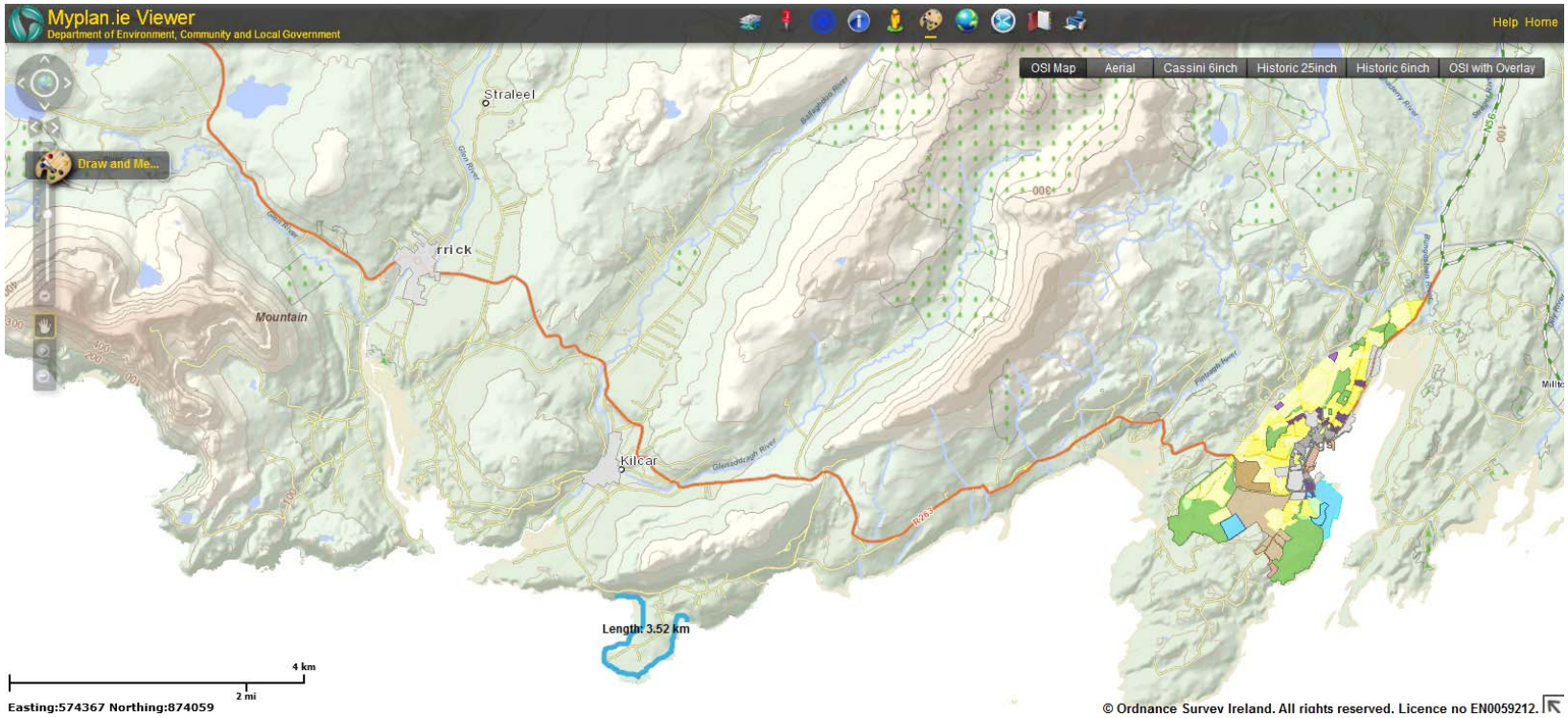
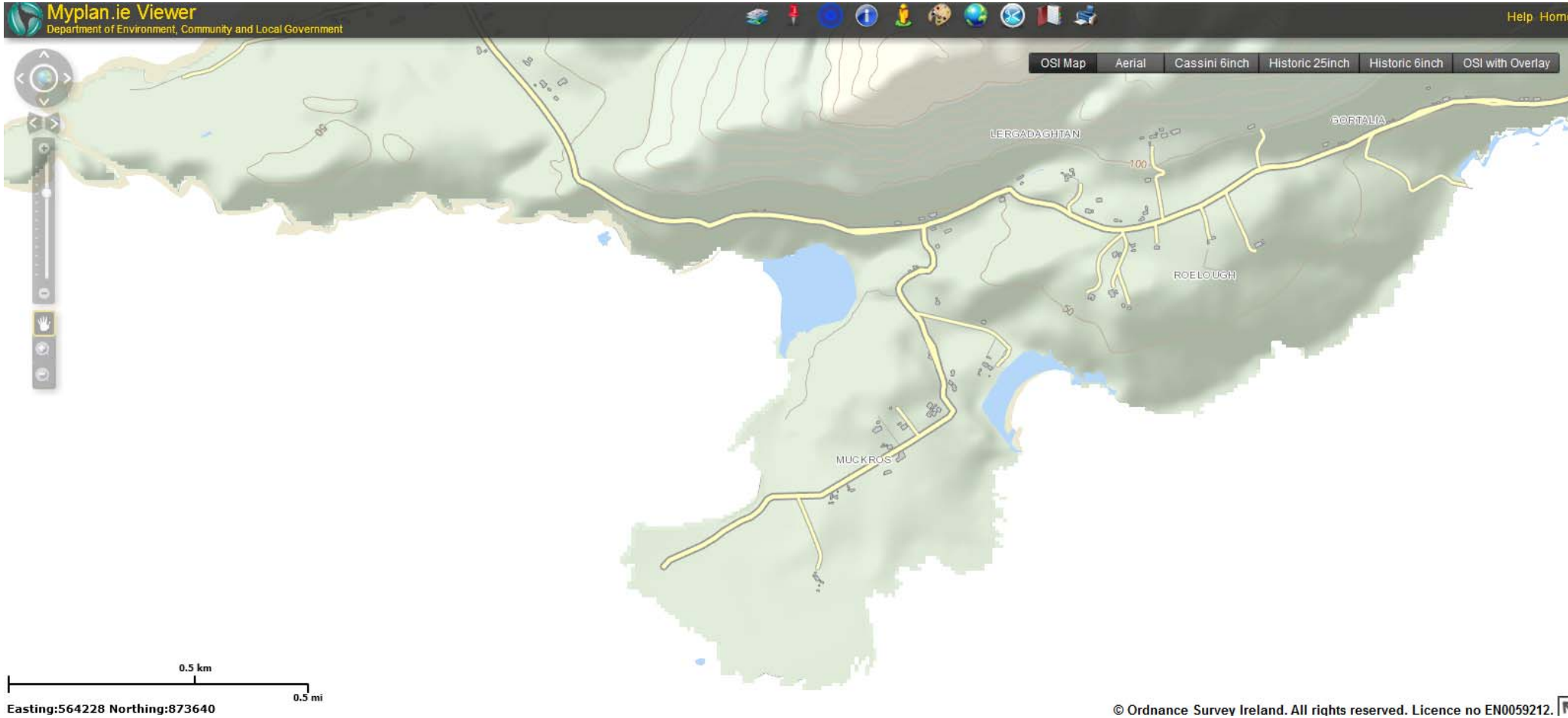


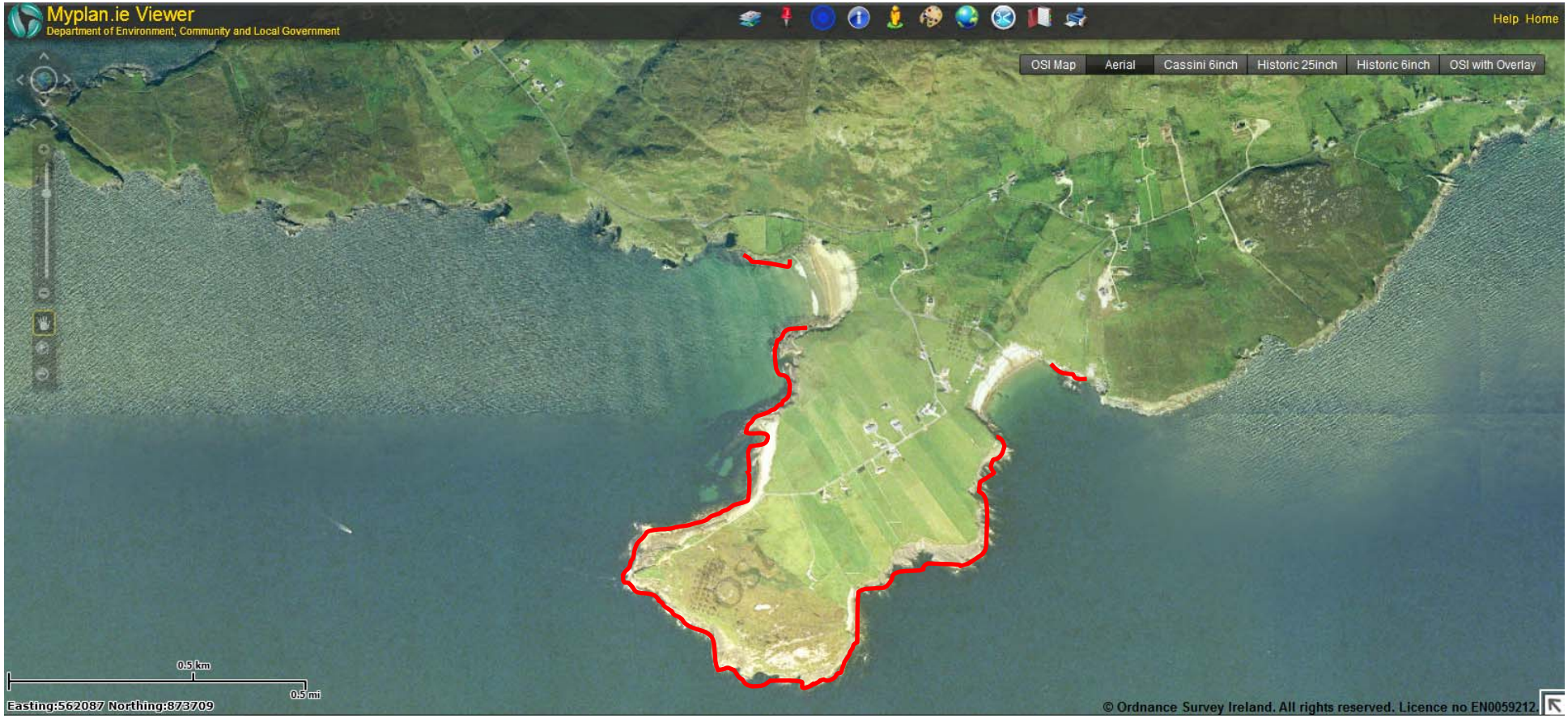
Map 1. Site location marked with red dot.



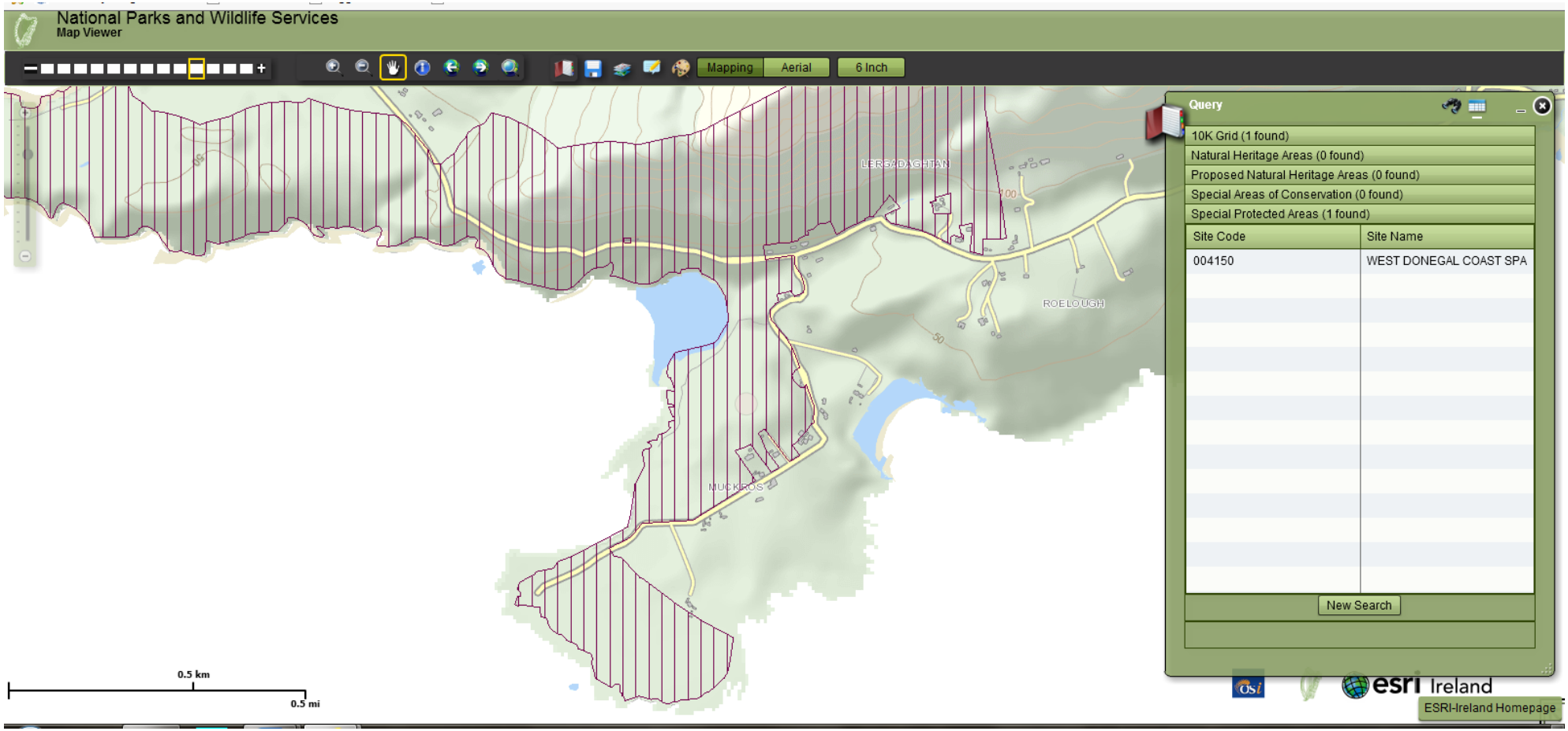
Map two. Site Location of sea weed harvesting.. Total distance of 3.52Km of foreshore, outlined in Blue. Scale 1:50000.



Map 3. Access to site via road. Map scale 1:10000

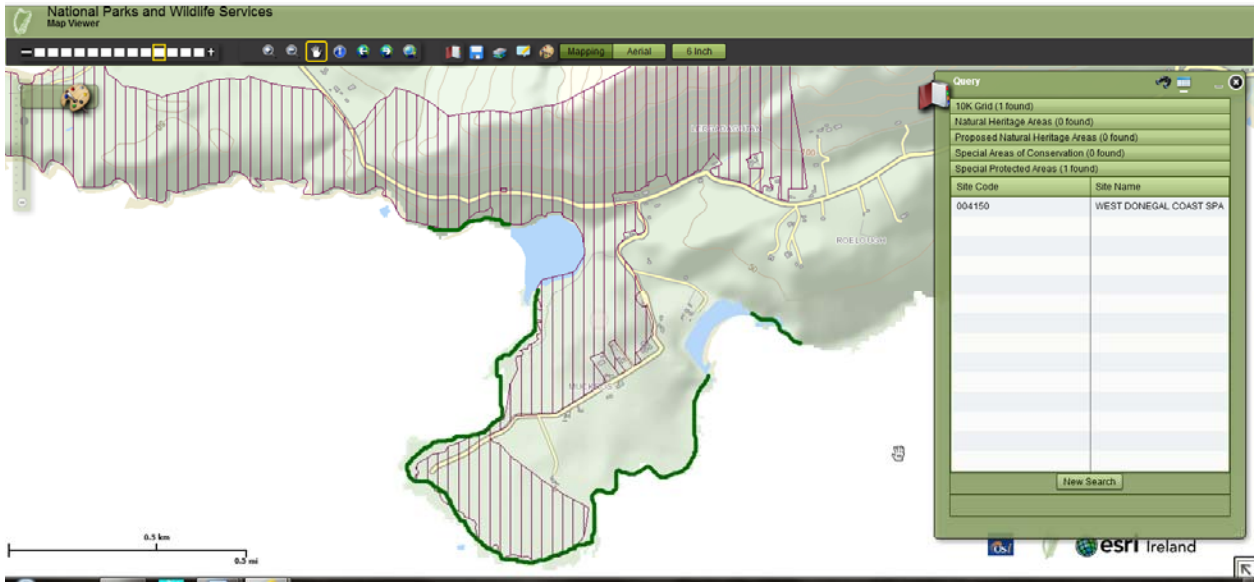


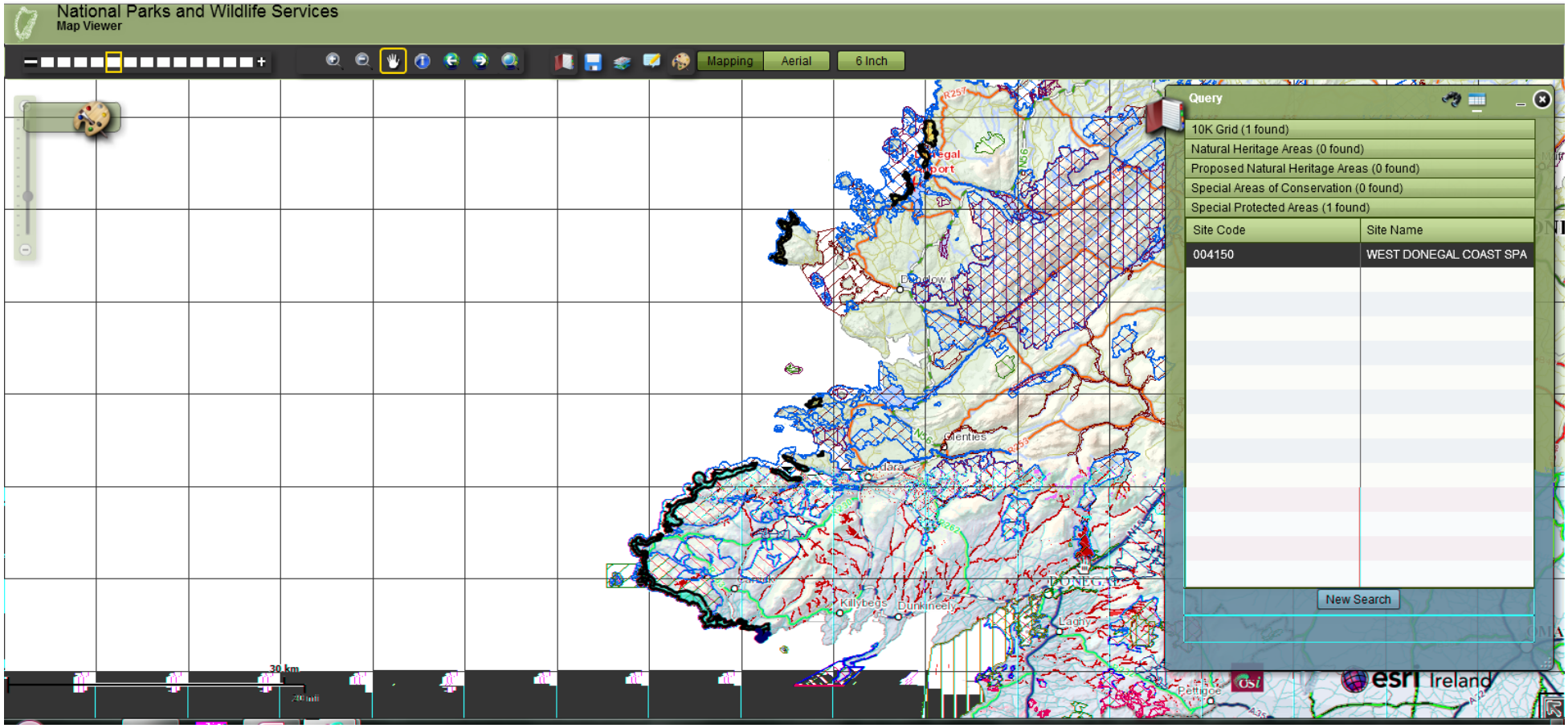
Map 4. Satellite view of the site at Muckros. Sea weed Harvesting zone outlined in Red.



Map 5. The area used for sea weed harvesting is partially located with SPA IE 04150 West Donegal coast Special Protected Area.

Scale 1:10000





Map 7. Map of West of Donegal coast line, yellow highlighted areas show total range of SPA IE 004150 West Donegal coast Special Protection Area with Muckros in green and a part of SPA IE 004150.

Contents

1.0. Introduction

I, Catherine Storey BSc ENvSc, CEnv, MIENvSc, MCIEEM a qualified Environmental Scientist/ecologist, have studied and worked team member in Coastal zone Management Plans, a keen sea snorkeler with research specialism of sea and fresh water algae, also a member of British Phycological Society, and Carnets Geologica. I have been commissioned by the applicants: Ms, Rosaria Piseri and Mr. Michael McCloskey, to provide an Natura Assessment Report and Statement on their behalf, as part of their application, for "Foreshore License" to collect seaweed, from the foreshore of Muckross Head, Kilcar, Co. Donegal.

The "Foreshore License" is for the continuation of sea algae collection from the area of Muckross Head. The sea algae is collected and dried at the operations site at Cashel, Kilcar, after drying it is packaged and sold regionally, nationally and globally. The process provides local employment, of 2 full time employees. The process of sea algae harvesting from the shoreline is via " Sustainable harvesting method" that is only the sea algae fronds are cut not pulled during harvest collection, the sea algae hold fast is left insitu to ensure regrowth, trampling of the harvested area is kept to a minimum, ecologically (low impact) the collected sea algae is taken to the premises at Cashel to be sun dried when possible, or air dried, dependant on climatic conditions. It is then graded by species type, and packaged

The application has been screened to its requirement for a Natura Impact Assessment, due to its location within EU Natura 2000 Special Area of Conservation SPA 004150, West Donegal Coast, a Natura Assessment is required. Contact was made via phone with local NPWS (National Parks and Wildlife Ranger Ms. Emer McGee, her response that the continuation of sea algae harvesting from this site would not have a significant impact on the local environment and ecology.

A request for a Natura Impact was made as part of the application for the "Foreshore License" to harvest Sea algae within Donegal Bay @ Muckross Head, Kilcar, co. Donegal by Mr Peter Connaughton, Department of environment, community and Local government, Marine Planning-Foreshore Unit, Newtown road, Wexford Town. The Fore shore License application is for the continuation of Sea algae harvesting at Muckross Head. DoECLG ref number MS51/15/695. A full Natura Assessment Report and statement has been produced for this site at Muckross Head, Kilcar, Co. Donegal , in accordance with guidelines for Appropriate Assessment Article 6(3) and Article 6(4) of the EU Habitats Directive (Council directive 92/43/EEC

1.1.The Development
Application:

Application for "Foreshore License" for the continued harvesting of Sea algae.

Location:

Muckross head, Kilcar, Donegal bay.

Harvesting within the mid Littoral surf zone

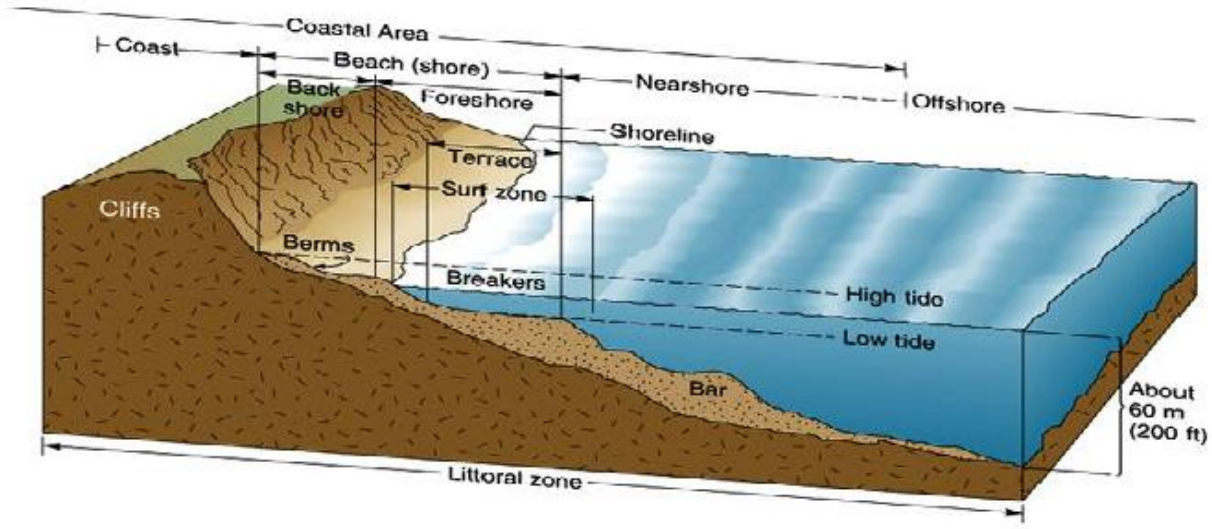


Plate 1. Image of Littoral zone from www.wilkedpedia.com

1.2. Information Requested

Natura Impact Screening: as the site is located with EU Natura designated area of Special area of conservation West Donegal coast a Natura Assessment is required.

1.3. Desktop survey

A desktop survey of the proposed location was carried out by reviewing the NPWS Maps and Data site[1] Contact with local NPWS ranger Ms Emer McGee by phone was made by client and later by the ecologist regarding this site, the ecological impact of harvesting of sea algae impact by sustainable method is low.

1.4. Legislation

An appropriate assessment (AA) is an essential component of planning application requirement in areas of EU and national conservation designation. The EU Natura Habitats Directive requires the protection of habitats and fauna to ensure that conservation status of a site is maintained. The Natura 2000: European Directive (82/43/EEC) on the Conservation of Natural Habitats and Wild Flora and Fauna (the **Habitats Directive**) protects habitats and species of European nature conservation

[1] www.NPWS.ie

importance. The Habitats Directive establishes a Network of internationally important sites designated for their ecological status. These are referred to as Natura 2000 sites or European Sites, and comprise:

- Special Areas of Conservation (SAC) designated under the Habitats Directive including candidate SACs (cSAC)
- Special Protection Areas (SPAs) designated under Council Directive 79/409/EEC on the conservation of wild birds the Birds Directive

therefore an Appropriate Assessment (AA), also known as "Natura Impact Assessment " is required under the Habitats Directive (92/43/EEC) for any plan or project likely to have a significant effect on European sites designated for nature conservation, as specified in Articles 6(3) and 6(4) of the EU Habitats Directive. . Guidelines on AA were launched by the Department of Environment, Heritage and Local Government (DEHLG) in December 2009. The EU Habitats Directive requires an 'Appropriate Assessment' to be carried out where a plan or project is likely to have a significant impact on a Natura 2000 site. NPWS estimate that 12% of the land area of the Republic of Ireland has been designated as EU Natura sites. The sites have been nominated as Special Areas of Conservation (SACs) and Special Protection Areas (SPAs) under the Habitats and Birds Directives.

It is Articles 6 (3) and 6 (4) of the Habitats Directive that require AA to be undertaken on proposed plans or projects which are not necessary for the management of the site but which are likely to have a significant effect on one or more European sites either individually, or in combination with other plans and projects. In December 2009, this requirement was transposed into Irish law.

There are four stages to the Natura Impact Assessment (Appropriate Assessment)[2]

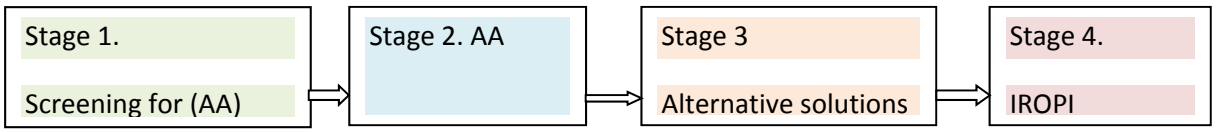


Table 1.2. Stages of Appropriate Assessment

The following Natura Impact Assessment has been requested by the client due to the location of the proposed development location , within proximity of EU SPA IE West Donegal coast. The total harvest area within the SPA designated zone is the west and south section of Muckross headland. The East side of Muckross has not been included within the EU designated area.

[2] The report follows Department Of Environment Heritage and Local Government (10/12/2009)"Appropriate Assessment of Plans and Projects in Ireland – Guidance for Planning Authorities DEHLG Ireland.

Stage 2. Natura Assessment:

2.0. Field Survey

An Ecological field survey of the proposed site was carried out on 17th February r 2014. A overcast day with light showers and westerly breeze. The site was surveyed after a gale storm event.

The reason for the assessment is due to the proposed site location adjacent and within SPA IE 004150 of west Donegal coast.

The geology of this site is interesting; local bedrock was formed during the Dinantian period in the early Carboniferous period. Rhinn point Limestone and associated Basic Clastic stone, Muckross sand stone and The exposed bedrock remains exposed horizontally as limestone/sand stone pavement, which is stepped to the cliff. The cliff face is approximately 15m height at the highest point of the sea stack (Muckross Crag) The bedrock shelf is similar to the bedrock shelf exposed at Enniscrone, but has only low amount of fossilized fauna and algae. The rocks are heavily burrowed, but the fossils not evident, in comparison to the Enniscrone rock shelf which has distinct fossilised remains .

Limpets, snail , Barnacles, and other small crustaceans in habitat the burrows.

There appears to be no se bird roosting at this site. There is no sign of iguana, bird droppings that shows continued use of cliff face by bird population. Off shore a number of sea birds were seen in flight, including cormorant, shag, Herring gull, Oyster catchers were seen in the cove.

2.1. Results of field survey

A Habitat survey of the site and surrounding area was carried out on the 17th[h] February 2014, to determine the local habitat, and to determine if ecological impact occurs during the harvesting process, level of cumulative impact and effect on the sea algae flora of the area.

The sea algae is harvested using sustainable methodology, giving essential consideration to the environment, and method that ensures continued growth of the algae. The hold fast (stead fast of the algae is always left insitu on the rock, the sea weed frond is cut carefully by kife or with sicissors. Ms Rosaria Piseri has given a full methodology statement of their harvesting methods contained in Appendix 1 of this report.

2.2. Other projects and activities at Muckross Head

The area of Muckross Head consist of small farm steads and residential dwellings (as shown on map 3) There is road access into the site; it is a tourist stop point. The area is used for walking and sea fishing. Two small coves are attractive to families with young children. The on shore seastack: Muckross Crag at times attracts free rock climbers. At present rock climbing at this location is limited. Recently a booklet has been produced showing free rock climb routes . The local geology is constantly eroding, due to weathering and the recent 6 gale storms since 2013. Rock climbing impact vulnerability and stress to the cliff and stack does need to be addressed.

2.3. Operational phase

1. Continue present harvesting method leaving Sea algae stead fast (holdfast) intact,
2. Limit trampling within the area of sea algae during maxium growth period of spring and summer.
3. Maintain health and safety compliance, whilst on site, reflective jacts/gilets, always wear hard safety helmet in case of stone fall from cliff face. And protective non slip footware.

Statement

The Natura Impact Assessment and this statement are part of the Foreshore License application, to continue Sea algae harvesting by Algaran at the Muckross head site (Donegal Bay) The clients operate their harvesting events using sustainable methodology giving due consideration to the local marine environment. Consideration on harvest method ensures and encourages algae regrowth. The Diversity of Sea Algae species diversity at this site is high and continues to be maintained with the harvesting methodology used.

It is concluded that sea Algae harvesting methodology will maintain low and beneficial impact, to foreshore marine ecology. Impact to the local geology of limestone and calcaric sand stone is minimum and of limited duration.

Catherine Storey CEnv MIEnvSc MIEEM

A

Appendix 1. Env. management statement by Ms Rosaria Piseri

ALGARAN

Certified Organic
IE-ORG-03 Licence No. 778
Origin:EU

ENVIRONMENTAL IMPACT STATEMENT

Our activity on the shore is limited to hand harvesting the seaweed that we process in our factory at Cashlings, Kilcar, Co. Donegal. The use of the seaweed is for food preparations and for cosmetics.

It is our interest to respect the shore / marine environment, as it is the only way for us to sustain abundant and unpolluted seaweed destined to our exigent customers.

The crops are monitored for presence of heavy metals or other pollutant, as our products are Certified Organic by Organic Trust Ltd, Licence 778.

We take good care of the shore, as well as we do not over-harvest, as it might lead to extinction of some species and therefore is to be avoided at all times.

It took us a few years of observation to build up a routine of harvesting that would not harm our potential raw material (seaweed).

Crustaceans and starfish are rinsed back in the sea water before carrying the seaweed to the provided buckets or bags.

For example, Periwinkles are often attached to the fronds of some seaweed and it is important for us to leave them back on the shore, as it seems that they help the endogenous Nitrogen production (due to a sort of a defence system?!?) which is naturally occurring in some species of seaweed (Fucaceae) that can be used in agriculture. To preserve the natural habitat of Periwinkles and other sea animals, we harvest only in patches, leaving odd areas, until the previous crop has grown again (different times for different seaweed).

Harvesting Method

We only use plain knifes or Garden scissors for cutting the seaweed. We access the shore only by walking. We never harvest seaweed when is too young, because we want to respect the environment, but also because awaiting the right time we can get a bigger crop.

Harvesting Routine

Harvesting has to be carefully planned at the beginning of the harvesting day. Only after we consider how deep on the shore we can walk, and what species are convenient for the day, we decide how to move. We only harvest a maximum of 2-3 hours per harvesting day.
We never met on our way people carrying out any other activity on the shore. If this might be the case, we would check that they take no action harming the environment in any ways and we would inform the local authorities, if this is the case.

Observations

We have a good knowledge of how seaweed can be respected and we have learned how to behave while harvesting every single type of seaweed.
For example, we observed that some seaweed can disappear from a shore for one season (may be due to weather conditions), but it might grow back even more abundant at the next season. Some species are naturally overtaking other species at times, but normally the variety balance is quickly recreated as this is the task in nature.
We often have visitors (students) who wish to understand the sea life on the shore, and we are happy to teach them the importance of seaweed in our life.
Our respect for the environment is our priority and it is the only way to make our business viable also in a long term period..

Algaran Teoranta Registered office: Cashlings Kilcar Co. Donegal Ireland
Tel.+353 74 9738961 fax +353 749738823 VAT IE6408981Q

Km 3,380

0 100 200 400 600 800 1,000 Metres

0 300 600 1,200 1,800 2,400 3,000 Feet

Plot Ref. No. 19634751_1
Plot Date 25-MAR-2013

871868

563109

Any additional Information

This Application is only concerning the Licence for harvesting wild seaweed of about 20 types and in limited quantities.
The harvesting will take place in concomitance with spring tides (New moon or Full moon) for species growing in deep waters. The other species will be harvested any day of the year, provided that weather conditions make it safe and possible.

No species of seaweed are growing in the vicinity of bird nests and the harvesting action is not affecting any wild animal species.

Here below is the list of the seaweeds of our interest. The reference A, B, etc. will be reported in the attached Survey Map, to locate the seaweed beds.

The seaweeds can grow only a few months of the year or all year around. This is the reason why in some spots on the map there are more species than others.

The harvesting is made by hand only, (sometimes with the aid of a knife or garden scissors) to promote the regrowth of the seaweed within a few weeks / months.

We cut only the fronds of the seaweed and we leave from 3 to 30 cm of stems (depending on the height of the species) to promote the regrowth and to avoid disturbing the small shellfish and crustaceans life.

We cut the seaweeds in spots, leaving patches of full length seaweed also to respect other sea creatures' life.

The seaweed is never stored on the Shore, as we strictly cut only the quantity we need to process and sell.

The Shore is accessible only during the lowest tides and the harvesting may last between 1 and 3 hours, depending on the tide time and on the seasons. During the long summer days we might be able to access the shore twice in the same day, but this is a rare event.
We never over harvest, also because our drying rooms can contain only limited amounts every 24 hours.

After cutting, the seaweeds are rinsed in the sea water, to leave any possible trapped sea life back to the sea. The rinsing action also allows the broken bits of seaweed to flow back on the rocks, helping the reseeding process.

Within the harvesting area (enhanced on the provided Map) there are no special Conservation Areas and no National Parks. Our harvesting times and methods do not disturb or interfere with any type of wild life. We have asked confirmation of non-interference and eventual instructions to the "Wild Life Ward" appointed for the Muc Ros Peninsula area: Emar McGee (tel. 087 6468439), who is based in Dungloe, Co. Donegal. Emar reassured us that our Harvesting Practise (as described above) is not damaging the environment nor disturbing any form of wild life.

We also consulted the Officer of the North West Fishery Board in charge in Killybegs, Co. Donegal: Paddy Gallagher, who confirmed us that we are not disturbing any fishing or other marine activity that might be carried out in the area of our interest (see Survey Map attached). Paddy Gallagher details are mob 087-8211722, office no. 070 9731264.

To access the shores / seaweed beds, we will drive the Company Van (Nissan NV200 or similar) to the provided Car park at the end of the Public Road (P). Then, we carry by hand 20 lt plastic buckets and several Net bags to the spot of harvesting. After collecting the needed amount of seaweed, we carry the containers by hand back to the Van. The quantity harvested depends on the depth of the tide and can vary between 10 kg and 50 kg per day. Average, the number of harvesting days per solar year will be 120-150.

ALGARAN

Certified Organic
IE-ORG-03 Licence No. 778
Origin:EU

LEGENDA SURVEY MAP:

Ⓟ Parking Vehicle

Seaweed Symbols

A. **Ascophyllum nodosum (A)** 5000 kg – cut only fronds. Regrowth within next 4 months observed
B. **Alaria esculenta (B)** 1400 kg – cut only fronds. Regrowth within next 6 months observed
C. **Asparagopsis armata (C)** 20 kg – cut with care. Seasonal seaweed (twice a year). Regrowth every year observed.
D. **Chondrus crispus (D)** 2000 kg – cut with care, not pulled. Regrowth within next 4 months observed
E. **Dumontia contorta (E)** 10 kg – seasonal seaweed (only between April and June) Regrowth every year observed
F. **Falkembergia rufolanosa (F)** 5 kg – rarely needed. It grows in the same area as Type C
G. **Fucus serratus (G)** 1500 kg – abundant type, almost invasive. It is used for Seaweed Bath purposes.
H. **Fucus spiralis (H)** 50 kg – It grows in abundance. Harvested on demand.
I. **Fucus vesciculosus (I)** 300 kg – It grows in patches, among other Fucus species. Harvested on demand.
L. **Himanthalia elongata (L)** 3000 kg – Seasonal growth, abundant and reproducing / growing fast.
M. **Laminaria digitata (M)** 5000 kg – Cut only fronds. It grows all year around. Fast regrowth.
N. **Laminaria hyperborea (N)** 500 kg – Cut only fronds. It grows all year around. Fast regrowth.
O. **Laurentia pinnatifida (O)** 50 kg – Cut with care. It grows on rocks and regrowth is quite fast (3 months)
R. **Palmaria palmata (R)** 2000 kg– It grows in patches. Regrowth time about 6 months observed
S. **Porphyra umbilicalis (S)** 2000 kg – Cut with care. Regrowth time 4-6 months. It grows more abundant when cut
T. **Saccharina latissima (T)** 4000 kg – Deep sea seaweed. Cut by hand with care. Grows more abundant if cut.
U. **Ulva spiralis (U)** 2000 kg – Seasonal growth (only spring-early summer time). Regrows in abundance if cut.
V. **Ulva lactuca (V)** 500 kg – Seasonal growth (only spring – summer). Regrows abundant every year.

Algaran Teoranta Registered office: Cashlings Kilcar Co. Donegal Ireland
Tel.+353 74 9738961 fax +353 749738823 VAT IE6408981Q

Appendix 2. Site assessment, photographs and map

Km 3,380

0 100 200 400 600 800 1,000 Metres

0 300 600 1,200 1,800 2,400 3,000 Feet

Plot Ref. No. 19634751_1
Plot Date 25-MAR-2013

871868

563109

Survey Title AlgAran Natura Assessment	Site Name Muckross. Kilcar. Co. Donegal	Weather conditions Westerly breeze with cloud
Grid Ref.	Geology: MK, RP, RPbc	OS Discovery SeriesMap 10
Surveyor(s)Catherine Storey CEnv MIEnvSc, MCIEEM	Survey Date(s): 17/02/2014	
Conservation status: EU Natura 2000: SPA	Site Code: SPA IE 004150 West Donegal Coast Special Protection Area	
County:Donegal	LA District	Townland
Habitat code:	Donegal Town	Muckros

Target note

Terrain

Thearea of sea algae harvesting arounde the headland consist of Rock shore pavement with steps sea intertidal levels, with small bay areas of shingle and sandy gravels, providing niche habitat for sea algae growth.

The seaweed (sea algae) is harvested along the foreshore by hand, from shoreline of Muckross head. The seaweed is naturally organic. The diversity of sea weeds harvested is high.

The sea algae is harvested from the rock ledges that form shelves. The algae ranges from red, brown, to green, dependent on its submergence in salt water and tidal level which it grows in.

The Atlantic washes the shoreline twice daily. The underlying geology is an important factor tofor the sea algae ecology, under lying bedrock, with sea spray provides an unique environment for sea algae growth and for the diversity and range of sea algae growth at this site.

The terrain is rocky shoreline. The rock shoreline features a area of vertical cliff and on shore sea stack. The rock pavements occur at different levels proving nche habitats for sea algae growth and an essential zone for algae holdfast to attach to the rocks. The algae is harvested from the mid to lower rock shelf level. The seaalgae is harvested by **sustainable harvest methodology**, leaving behind the essential holdfast to ensure continued growth of the sea weed. The sea algae growth patterns are encouraged by the sustainable harvesting method, which encourages sea algae

diversity to flourish and continue at this site.

Underlying geology

Consist of Muckross sandstone formation, consisting of calcareous sandstone and sandy oolites.
Rhinn Point Limestone Dark fine Calcarenite and calcareous shale with
RPbc Basal Clastic.
The bedrock is well exposed at this site, with a sea stack reaching a height of 15m.
The exposed bedrock provides an ideal location for the natural growth of sea algae, and the ideal location for sea algae to locate their steadfast.

Upper head land

Consist of dry heath grassland habitat, it is a wind swept and climatically exposed site with low spreading heath shrub and heath grasses. The ground is exposed in places showing a gravel sub strata and sandy peat podzols soil.

Key words: Habitat, Blanket bog, degraded, cutover

A. Woodland	**B. Grassland**	**C. Tall herb/fern**	**D. Heathland Affinity to dry heath grassland D5**	**E.Mire**
F. Swamp	**G. Open water**	**H. Coastland**	**I. Rock etc**	**J. Miscellaneous**
		H.8.1 hard cliff H.1.3 boulder and rocks (main harvesting area) H 8 *5 coastal heath.(D5)		

Dominant Plant Species recorded		
Dominant Plant species	Standard species Code	Notes: (include habitat code, species status abundance) H.1.3.1. Intertidal Zostera beds H 1.3.2. intertidal Green algal beds H.1.3.3. intertidal Brown algal beds
Ascophyllum nodsum	A	Zone 3
Alaria esculenta	B	Low water Zone 3
Asparagopsis armata	C	Zone 2
Chondrus crispus (carrageen)	D	Low tide red seaweed
Durmontia contorta	E	Red algae,Mid shore on gravel/seaweed
Falkenbergia rufolanosa	F	Zone 3
Fucus serratus	G	
Fucus spiralis	H	Zone 3
Fucus vesciculosus	J	Zone 3
Himanthalia elongata	L	Zone 3
Laminaria digitata	M	Zone 2Green algae
Laminaria hyperborean	N	Zone 3
Laurentia pinnatifida	O	Zone 3
Palmaria palmate Dulse)	R	
Porphyra umbilicalis (sloke/Laver)	S	Low water
Saccharina latissima	T	High water red algae
Ulva spiralis	U	
Ulva lactuca Sea lettuce)	V	Zone 1 to 2 green algae Zone 1to 2 green algae
Other species of interest, (nationally scarce, notable, indicator etc.		Unique rock shore habitat enhanced by sustainable sea algae harvesting.

Plate 1. North western secion of harvest area at Muckross head

Consisting of gravel sand shore line

Plate 2.

Westward facing rock shoreline Muckross sand stone and Rhinn point limestone with Grikes and Clints

Plate 3. regenerating sea algae by the summer wil be abundant and coating the rocks

Plate 4, sand stone and limestone rock pavement and steps

Plate 5 regenerating sea algae

Plate 6 sea algae stead fast are left behind at harvesting to encourage new growth

Plate 7 north facing shoreline

Recent storm lifted and moved large lenticular boulders and deposited 50 m from orginal site, during recent storm surge.

Plate 8

Stepped pavement

Photo 9

Muckross crag sea stack, no evidence of sea bird roosting on this sea cliff or stack though there are a number of sea birds within the locality.

Plate 7, close up of sea stack, found no evidence of bird roost, may be due to extreme exposed nature of the stack.

Plate 8, atlantic breaker after recent storm

Plate 9 west facing shoreline

Rock pavement and high hard cliff ranging from 10m to 15m

Plate 10 sea cave, growing between grikes among the sea weed stead fast are tufts of sea thrift growing on sparse sand within the grikes.

Plate 11 and 12

the sumit of the plateau of Muckross head is eroded exposing underlying substrata of sandy gravels over laid with peat

Plate 13

Rabbit burrows on the grassland heath

Plate 14

View south to Sligo mountains

Here the cliff is dipping in a south westerly direction .

Plate 15. View across the coastal heath grass-land of Muckross head

Plate 16 south westerly dipping pavemenr

Plate 17 stone wall boundary

Plate 18 view back to the NW

Plate 19 low cliff at the boundary of SPA West of Donegal Coast

Plate 21

South section of the head land

Plate 22

View to south east of the headland, this area is not included with SPA pf the West Donegal coast, but adjacent to the EU Natura designate area.

Plate 23 lower shoreline to the east

Plate 24

Plate 25.

Associated rock boulders strewn across the souther section of the site

Rhinn point limestone RPbc Rhinn point basal clastic, Muckross sandstone

Plate 26 Limestone cemented with Muckross sandstone, no fossils found within the rock specimen

Plate 27 eastern cove at Muckross head

Gravel and sandy shoreline continuing to dipped Rhinn point limestone pavement

Coordinate Position

Irish National Grid: 162126, 373521

Bedrock 100k Solid Geology

Name of the geological formation or member:	Muckros Sandstone Formation
Brief description of the dominant rock types:	Calcareous sandstone & sandy oolite
100k Sheet No.:	3
Stratigraphic code for unit:	MK
unique identifier:	CDMUCK
Area of polygon in square kilometres:	0.164538
Perimeter of polygon in metres:	1615.93
Map Label - Combination of Strat Code and Lith Code:	MK
Legend Label - Combination of Label and Formation Name:	MK - Muckros Sandstone Formation

Coordinate Position

Irish National Grid: 162261, 373723

Bedrock 100k Solid Geology

Name of the geological formation or member:	Rinn Point Limestone Formation
Brief description of the dominant rock types:	Dark fine calcarenite & calcareous shale
100k Sheet No.:	3
Stratigraphic code for unit:	RP
unique identifier:	CDRIPT
Area of polygon in square kilometres:	0.25315
Perimeter of polygon in metres:	2066.13
Map Label - Combination of Strat Code and Lith Code:	RP
Legend Label - Combination of Label and Formation Name:	RP - Rinn Point Limestone Formation

Coordinate Position

Irish National Grid: 162361, 374123

Bedrock 100k Solid Geology

Name of the geological formation or member:	Basal clastics
100k Sheet No.:	3
Stratigraphic code for unit:	RPbc
unique identifier:	CDBACL
Area of polygon in square kilometres:	0.108062
Perimeter of polygon in metres:	1493.51
Map Label - Combination of Strat Code and Lith Code:	RPbc
Legend Label - Combination of Label and Formation Name:	RPbc - Basal clastics

Coordinate Position

Irish National Grid: 162185, 374377

Bedrock 100k Solid Geology

Name of the geological formation or member:	Termon Formation
Brief description of the dominant rock types:	Banded semi-pelitic & psammitic schist
100k Sheet No.:	3
Stratigraphic code for unit:	TE
unique identifier:	TERM
Area of polygon in square kilometres:	80.4501
Perimeter of polygon in metres:	58041.7
Map Label - Combination of Strat Code and Lith Code:	TE
Legend Label - Combination of Label and Formation Name:	TE - Termon Formation

Coordinate Position

Irish National Grid: 162126, 373521

Bedrock 100k Solid Geology

Name of the geological formation or member:	Muckros Sandstone Formation
Brief description of the dominant rock types:	Calcareous sandstone & sandy oolite
100k Sheet No.:	3
Stratigraphic code for unit:	MK
unique identifier:	CDMUCK
Area of polygon in square kilometres:	0.164538
Perimeter of polygon in metres:	1615.93
Map Label - Combination of Strat Code and Lith Code:	MK
Legend Label - Combination of Label and Formation Name:	MK - Muckros Sandstone Formation

Coordinate Position

Irish National Grid: 162261, 373723

Bedrock 100k Solid Geology

Name of the geological formation or member:	Rinn Point Limestone Formation
Brief description of the dominant rock types:	Dark fine calcarenite & calcareous shale
100k Sheet No.:	3
Stratigraphic code for unit:	RP
unique identifier:	CDRIPT
Area of polygon in square kilometres:	0.25315
Perimeter of polygon in metres:	2066.13
Map Label - Combination of Strat Code and Lith Code:	RP
Legend Label - Combination of Label and Formation Name:	RP - Rinn Point Limestone Formation

Coordinate Position

Irish National Grid: 162361, 374123

Bedrock 100k Solid Geology

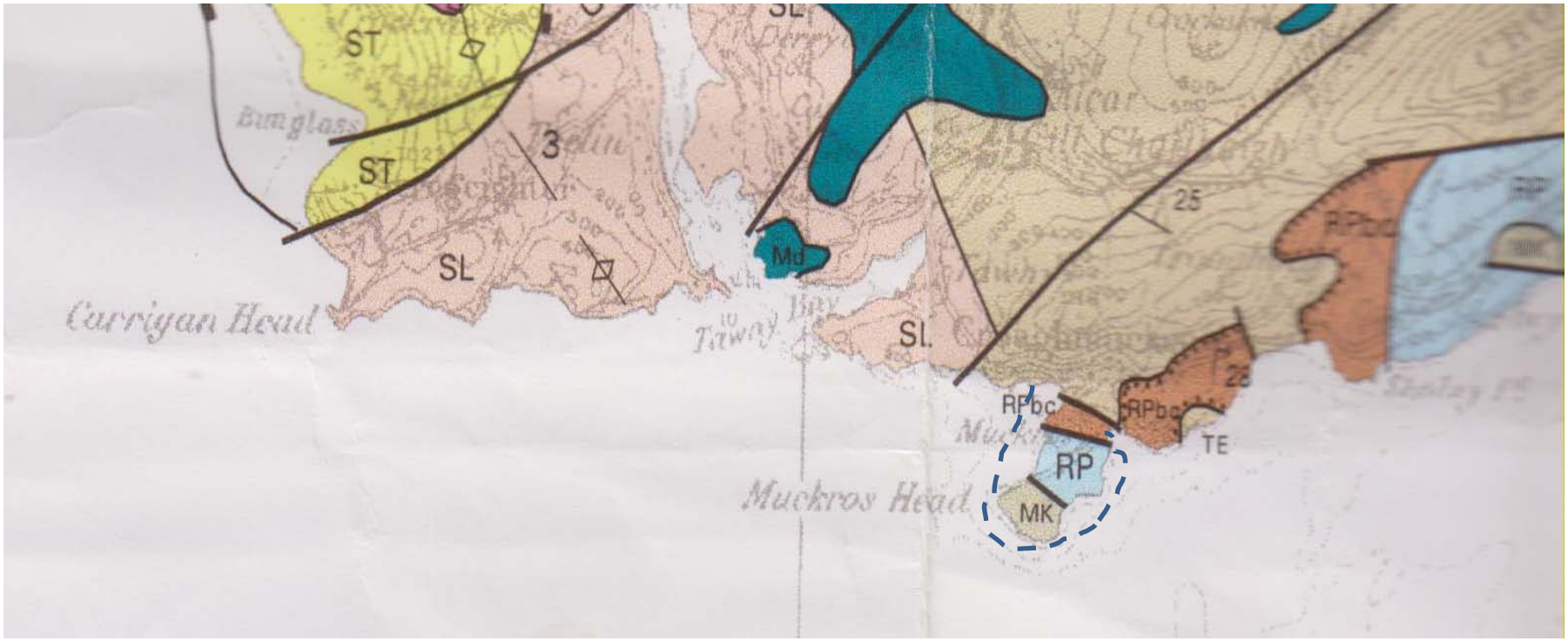
Name of the geological formation or member:	Basal clastics
100k Sheet No.:	3
Stratigraphic code for unit:	RPbc
unique identifier:	CDBACL
Area of polygon in square kilometres:	0.108062
Perimeter of polygon in metres:	1493.51
Map Label - Combination of Strat Code and Lith Code:	RPbc
Legend Label - Combination of Label and Formation Name:	RPbc - Basal clastics

Coordinate Position

Irish National Grid: 162185, 374377

Bedrock 100k Solid Geology

Name of the geological formation or member:	Termon Formation
Brief description of the dominant rock types:	Banded semi-pelitic & psammitic schist
100k Sheet No.:	3
Stratigraphic code for unit:	TE
unique identifier:	TERM
Area of polygon in square kilometres:	80.4501
Perimeter of polygon in metres:	58041.7
Map Label - Combination of Strat Code and Lith Code:	TE
Legend Label - Combination of Label and Formation Name:	TE - Termon Formation



Legend: Geological stratigraphic succession Dinantian during the early Carboniferous era

Area of sea Algae harvesting

RPbc Rhinn Point Basal Claustics

RP Rhinn Point Limestone formation: (Dark fine limestone and calcareous shale

MK Muckross sandstone formation(calcareous sandstone and sandy oolites

Fault line

South Donegal GWB: Summary of Initial Characterisation.

Hydrometric Area Local Authority		Associated surface water bodies	Associated terrestrial ecosystems	Area (km^2)
Hydrometric Area 37 Donegal Co. Co.		***Rivers:*** Ballintra, Bridgetown, Cloghanmore, Clogher, Corabber, Crow, Cunlin, Lough Stream, Drumenny, Eany Beg Water, Eany More Water, Eglish, Eske, Fintragh, Glen (Carrick), Glendarragh, Laghy Stream, Loughadeery, Lowerymore, Oily, Owenteskiny, Owenwee (Carrick), Stragar, Tullinteane. ***Streams:*** 1920 unnamed streams ***Lakes:*** see list below *	Croaghhonagh bog, Lough Eske and Ardanamona Wood, Lough Nillan Bog (Carrickatlieve), Meenaguse/Ardbane Bog, Slieve League, Slieve Tooey/Tormore Island/Loughros Beg Bay, Dunragh Loughs/Pettigo Plateau and River Finn (O'Riain, 2004)	532
Topography	Covering much of south Donegal, this irregularly shaped GWB is bounded to the southwest by the coastline. The northern, eastern and south-eastern boundaries comprises topographic divides (Hydrometric Areas 38, 01 and 36), and the central-southern boundary is marked by more productive aquifers. There are two distinct landscape units: i) lower lying, drumlin (SW-NE trending) dominated terrain to the east, and ii) more mountainous, upland zones in the west, and along the northern and eastern boundaries. Typical inter-drumlin elevations range from 30-90 mAOD, becoming higher further inland. The drumlins are generally an additional 40-60 m higher. Elevations in the west range from <10mAOD at the coast to 600-700 mAOD along the northeast boundary. Surface water flow is both southwards and eastwards, towards the coast.			
Geology and Aquifers	**Aquifer type(s)**	The majority of the GWB (c.90%) comprises **Pl:** Poor aquifer which is generally unproductive except for local zones, although just under 10% in the east is categorised as **Ll:** Locally important aquifer, moderately productive only in local zones. There are also a number of smaller units of **Pu:** Poor aquifer, generally unproductive.		
	Main aquifer lithologies	Precambrian Quartzites, Gneisses & Schists dominate this GWB (82.97%) with an area of Dinantian Lower Impure Limestones trending N-S in the south (8.14 %), and a smaller area of Granites & Other Igneous Intrusive Rocks along the northeast boundary (4.98%). Other smaller units include Dinantian Age rocks (1.52%), Old Red Sandstones (1.61%) and Precambrian Marbles (0.78%). Refer to Table 1 for details.		
	Key structures.	The rocks in this part of Donegal have been significantly deformed, resulting in a large number of approximately SW-NE faults e.g Slieve League, Ballaghdoo, Barneslough, Barnesmore and Laghy Faults. Dips in the rock succession are variable: ranging from 20-70°, and to the N, NE, E and SE. There are also a number of anticline and syncline folds.		
	Key properties	The 17 available yields for the Precambrian rocks range from 9-218 m^3/d, with 12 yields <50 m^3/d. Three specific capacity values are also available: 4.5, 4.8 and 28.4 $m^3/d/m$. Although there are no transmissivity data for the GWB, they are likely to be low, with the possibility of higher values in faulted zones, especially in the coarser-grained rocks (quartzites and gneisses). Transmissivity values for similar granites in the Leinster region range from 20-30 m^3/d. A specific dry weather flow of 0.96 $l/s/km^2$ exists for the Precambrian rocks, indicating these aquifers do not make a particularly large baseflow contribution to streamflow. Storativity is also expected to be low, as would also be expected for the other rock groups. 60% of the 36 groundwater levels are 0-5 m below ground level. The data are inadequate to calculate groundwater gradients however, these are expected to be relatively steep. *(Precambrian Aquifer Chapter; Granites Aquifer Chapter; Donegal GWPS*)		
	Thickness	Most groundwater flux is expected to be in the uppermost part of the aquifer comprising a broken and weathered zone typically less than 3 m thick, a zone of interconnected fissuring 10 m thick, and a zone of isolated poorly connected fissuring typically less than 150 m. Deeper water strikes are recorded between 32-70 m bgl in 7 boreholes. This suggests some deeper flow component, although it is likely to be limited.		
Overlying Strata	**Lithologies**	The GWB is predominantly covered by peat subsoil (62%) with smaller proportions of till (18% – more prevalent in the lower-lying areas), and mapped rock outcrop (17%).		
	Thickness	Subsoil is absent or thin over much of the GWB, especially on the higher areas. Generally, thicker deposits (>3 m) are evident in the narrow valleys and thicker peat is likely to occur in the western region. In the east, each drumlin represents a thicker till deposit, frequently >10 m thick, with rock near the surface of the inter-drumlin areas.		
	% area aquifer near surface	*[Information will be added at a later date]*		
	Vulnerability	From the Donegal GWPS, vulnerability ranges from Extreme over the higher areas, to Moderate in the thicker peat and valleys areas, and Low over the thick drumlin deposits.		
Recharge	**Main recharge mechanisms**	Diffuse recharge occurs via rainfall percolating through the thinner/more permeable subsoil and rock outcrops. Due to the low permeability of the thicker drumlin and peat subsoil deposits and the aquifers themselves, a high proportion of the effective rainfall will discharge to the streams in the GWB. In addition, the steeper mountain and drumlin slopes will promote surface runoff. The high stream density is likely reflect the lower permeability rocks, as well as the subsoil.		
	Est. recharge rates	*[Information will be added at a later date]*		

Discharge	**Important springs and high yielding wells**	Springs: Some low yielding springs used as public supplies e.g. Carrick-Teelin Public Supply (240 m^3/d). Sources: None identified. Excellent Wells: None identified. Good Wells: Largybrack (218 m^3/d), Meenaneary (175 m^3/d), Ballymoon (153 m^3/d), Kilcar (130 m^3/d, 110 m^3/d).
	Main discharge mechanisms	The main groundwater discharges are to the rivers and streams crossing the GWB, reflecting short groundwater flow paths. Small springs and seeps are likely to issue at the stream heads and along their course. Seepages will develop on the coastal cliff faces. Groundwater may also flow into the adjacent, higher permeability GWBs e.g. Inver-Banagherhill (Lm aquifer), and Donegal-Ballintra (Rk^d aquifer).
	Hydro-chemical Signature	No available data within this particular GWB. ***National classification:*** Non-calcareous with bi-modal alkalinity distribution although the higher range is possibly caused by thin marble bands and overlying limestone subsoil. Alkalinity (mg/l as $CaCO_3$): range of 14-400; mean of 168 (41 'non limestone subsoils' data points) Total Hardness (mg/l): range of 46-412; mean of 200 (39 'non limestone subsoils' data points) Conductivity (μS/cm): range of 160-752; mean of 446 (45 'non limestone subsoils' data points) *(Calcareous/Non calcareous classification of bedrock in the Republic of Ireland report)*
Groundwater Flow Paths		In the absence of inter-granular permeability, groundwater flow is expected to be concentrated in upper fractured and weathered zones and in the vicinity of fault zones. Available groundwater levels are mainly 0-5 m below ground level. Unconfined flow paths are likely to be short (30-300 m), with groundwater discharging rapidly to nearby streams and small springs. Water strikes deeper than the estimated interconnected fissure zone suggest a component of deep groundwater flow, however shallow groundwater flow is thought to dominant. Groundwater flow directions are expected to follow topography – both southwards and eastwards.
Groundwater & surface water interactions		Groundwater will discharge locally to streams and rivers crossing the aquifer and also to small springs and seeps. Owing to the poor productivity of the aquifers in this body it is unlikely that any major groundwater - surface water interactions occur. Baseflow to rivers and streams is relatively low.
Conceptual model		• Northern, eastern and south-eastern boundaries are topographic divides with the southwest bounded by coastline and the central-south boundary comprising more productive aquifers. The terrain over the western region and along northern and eastern boundaries is characteristically hilly to mountainous cut by deep, narrow valleys. The eastern part of the GWB is dominated by drumlins, which have a general SW-NE orientation. • The GWB is composed primarily of low transmissivity rocks. Most of the groundwater flux is likely to be in the uppermost part of the aquifer comprising: a broken and weathered zone typically less than 3 m thick; a zone of interconnected fissuring typically less than 10 m; and a zone of isolated fissuring typically less than 150 m. • Recharge occurs diffusely through the thin/permeable subsoil and rock outcrops, although is limited by any thicker till/peat and the low permeability bedrock itself. Therefore, most of the effective rainfall is not expected to recharge the aquifers. • Flow paths are likely to be short (30-300 m) with groundwater discharging rapidly to the streams crossing the aquifer, and to small springs and seeps. Overall, the flow directions are expected to be to the south and east, as determined by the topography.
Attachments		Figure 1. Table 1.
Instrumentation		**Stream gauges:** 37003, 37004, 37005, 37006, 37007, 37011, 37012, 37014, 37020*, 37021, 37070, 37071, 37073. * adjusted dry water flow data available **EPA Water Level Monitoring boreholes:** None identified. **EPA Representative Monitoring points:** None identified.
Information Sources		Lee M. and Fitzsimons V. (2004). *County Donegal Groundwater Protection Scheme.* Main Report. Draft Report to Donegal County Council. Geological Survey of Ireland 58pp. Long, C.B. and McConnell (1999) *Geology of South Donegal: A geological description, to accompany bedrock geology 1:100,000 scale map, Sheet 3, South Donegal*. With contributions by G.I. Alsop, P. O'Connor, K. Carlingford and C. Cronin. Geological Survey of Ireland, 116pp. O' Riain, G. 2004. *Water Dependent Ecosystems and Subtypes (Draft)*. Compass Informatics in association with National Parks and Wildlife (DEHLG). WFD support projects.
Disclaimer		Note that all calculation and interpretations presented in this report represent estimations based on the information sources described above and established hydrogeological formulae

**** Lakes:***

Barnes Lough, Birchhill Lough, Black Lough, Breen Lough, Cormullin Lough, Craigroe Lough, Croagh Lough, Croaghnanmeal Lough, Croaghonagh Lough, Croleavy Lough, Cullionboy Lough, Cunlin Lough, Dunragh Beg Lough, Dunragh Lough, Dunragh Middle Lough, Durlough, Fannia Lough, Garlagh Lough, Glasskeeragh Lough, Golard Lough, Hugh Boyle's Lough, Illanmore Lough, Lake Alaban, Lake Namanfin,	Lough Acarnan, Lough Achallan, Lough Achully, Lough Aderry, Lough Agh, Lough Aguse More West, Lough Alaban, Lough Alagh, Lough Alowney, Lough Amarla, Lough Amincheen, Lough Anabosin, Lough Anabrack, Lough Anaddy, Lough Anarget, Lough Ancarn, Lough Ankeeran, Lough Anore, Lough Ariddoge, Lough Aroshin, Lough Aruddy, Lough Ascolta, Lough Asgartha, Lough Asmullan,	Lough Atannia, Lough Atlieve, Lough Auva, Lough Awillin, Lough Belshade, Lough Boyle, Lough Brockagh, Lough Cronagorma, Lough Cuill, Lough Cullion, Lough Divna, Lough Doo, Lough Doo Beg, Lough Doo More, Lough Eske, Lough Fad, Lough Farlaggy, Lough Folla, Lough Garlagh More, Lough Geeta, Lough Gillaganliany, Lough Gulladuff, Lough Keerari, Lough Kib,	Lough Lagan, Lough Leabane, Lough Lilly, Lough Mardal, Lough Meenanea, Lough Meenaviller, Lough Naboy, Lough Nabrackbautia, Lough Nabrackboy, Lough Nabrackdeelan, Lough Nabrackmore, Lough Nabradan, Lough Nabreen, Lough Nacollum, Lough Nacroagh, Lough Nacroaghy, Lough Nacrow, Lough Nadarragh, Lough Nadrooa, Lough Nageage, Lough Nagolan, Lough Nagrockgranagh, Lough Nahoory, Lough Nalugraman,	Lough Namaddy, Lough Nambraddan, Lough Nameeltoge, Lough Narath, Lough Nashane, Lough Nasheeoge Lough Natragh, Lough Naweeloge, Lough O' Muilligan, Lough Reagh, Lough Robin, Lough Sallagh, Lough Shivnagh, Lough Slug, Lough Tamur, Lough Unna, Lough Unshagh, Lougheraherk, Loughinisland, Meenadreen Lough, Meenaguse Lough, Meenawley Lough, Miley's Lough, Rath Lough, Tamur Lough.

Figure 1. Location and boundaries of South Donegal GWB

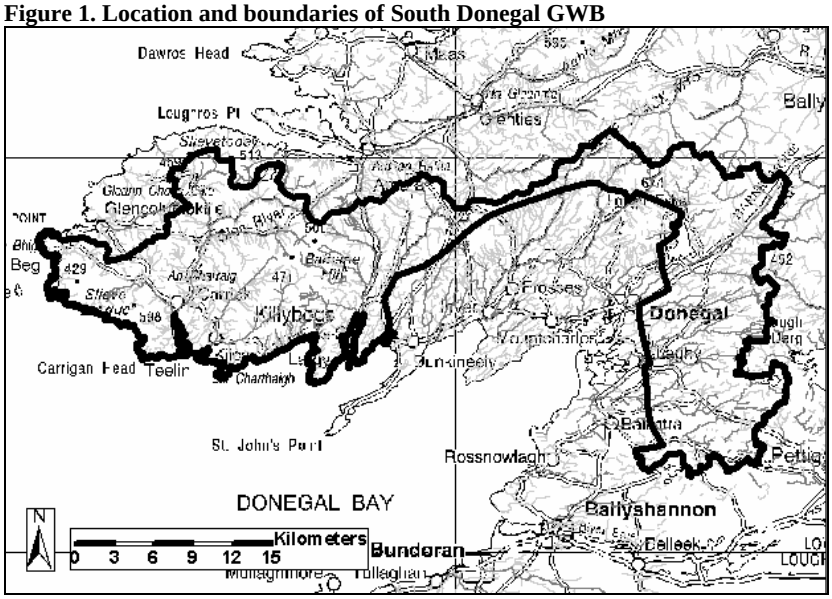


Table 1. List of Rock units in South Donegal GWB

Rock Unit Name	Code	Description	Rock Unit Group	**Aquifer Class.**	% Area
Termon Formation	TE	Banded semi-pelitic & psammitic schist	Precambrian Quartzites, Gneisses & Schists	Pl	30.10%
Slieve League Formation	SL	Flaggy quartzite and dark schist	Precambrian Quartzites, Gneisses & Schists	Pl	14.98%
Lough Mourne Formation	LM	Quartz & feldspar pebbles, green matrix	Precambrian Quartzites, Gneisses & Schists	Pl	11.29%
Psammitic paragneiss	SWQ	Granoblastic quartzofeldspathic psammite	Precambrian Quartzites, Gneisses & Schists	Pl	11.11%
Argillaceous limestones & calc. shales	BSag	Argillaceous limestones & calc. shales	Dinantian Lower Impure Limestones	Ll	8.14%
Slieve Tooey Quartzite Formation	ST	Whitish quartzite with pebble beds	Precambrian Quartzites, Gneisses & Schists	Pl	5.83%
G2 variety	BaG2	main granite (adamellite)	Granites & other Igneous Intrusive rocks	Pl	3.03%
Lough Eske Psammite Formation	LE	Feldspathic psammite; quartzite, marble	Precambrian Quartzites, Gneisses & Schists	Pl	2.76%

Rock Unit Name	Code	Description	Rock Unit Group	**Aquifer Class.**	% Area
Croaghgarrow Formation	CW	Schist and aluminous schist	Precambrian Quartzites, Gneisses & Schists	Pu	2.02%
G3 varieties of sheet complex	BaG3	Leucogranite and porphyritic aplogranite	Granites & other Igneous Intrusive rocks	Pl	1.62%
Edergole Formation	ED	Conglomerate, sandstone, siltstone	Devonian Old Red Sandstones	Ll	1.61%
Metadolerite	Md	Hornblendic and sometimes schistose	Precambrian Quartzites, Gneisses & Schists	Pl	1.59%
Mullyfa and Deele Formations	MF	Psammite, pebble beds, marble, schist	Precambrian Quartzites, Gneisses & Schists	Pl	0.80%
Gaugin Quartzite Formation	GA	Pale quartzite, pebble beds, rare schist	Precambrian Quartzites, Gneisses & Schists	Pl	0.63%
Malin Schist Formation	MS	quartzofeldspathic & micaceous psammite	Precambrian Quartzites, Gneisses & Schists	Pu	0.59%
Basal sandstones	BSbc	limestones & shales	Dinantian (early) Sandstones, Shales and Limestones	Ll	0.57%
Aghyaran & Killygordon Limestone	DG	Marble, quartzite, psammite; graphitic	Precambrian Marbles	Pl	0.56%
Rinn Point Limestone Formation	RP	Dark fine calcarenite & calcareous shale	Dinantian Upper Impure Limestones	Ll	0.47%
Basal clastics	RPbc	Basal clastics	Dinantian Sandstones	Ll	0.43%
Lower Crana Quartzite Formation	LC	Psammitic schist, some marble beds	Precambrian Quartzites, Gneisses & Schists	Pl	0.43%
Port Askaig Formation	PA	Diamictite, schist & quartzite	Precambrian Quartzites, Gneisses & Schists	Pu	0.40%
Glencolumbkille Pelite Formation	GP	Black graphitic pelitic schist	Precambrian Quartzites, Gneisses & Schists	Pu	0.35%
Appinite suite	Ap	undifferentiated	Granites & other Igneous Intrusive rocks	Pl	0.22%
Glencolumbkille Limestone Formation	GL	Dolomitic marble & semi-pelitic schist	Precambrian Marbles	Pl	0.21%
Microgranite and related rocks	mGr	Porphyritic & non-porphyritic sheets	Granites & other Igneous Intrusive rocks	Pl	0.06%
Muckros Sandstone Formation	MK	Calcareous sandstone & sandy oolite	Dinantian Sandstones	Lm	0.06%
Tectonic schist	ts	Mylonitic	Precambrian Quartzites, Gneisses & Schists	Pl	0.05%
Thorr Granite	Th	Coarse grained monzogranite to tonalite	Granites & other Igneous Intrusive rocks	Pl	0.05%
Quartzite	qz	Quartzite	Precambrian Quartzites, Gneisses & Schists	Pl	0.03%
Appinite suite intrusive breccia	Ab	Wallrock in appinitic matrix	Precambrian Quartzites, Gneisses & Schists	Pl	0.02%
Marble	mb	Marble	Precambrian Marbles	Pl	0.01%

Appendic 3. EU Site synopsis

SITE SYNOPSIS

SITE NAME: WEST DONEGAL COAST SPA

SITE CODE: 004150

The West Donegal Coast SPA comprises separate sections of the Co. Donegal coastline and extends from Muckros Head in the south, northwards to Slieve League, Malin Beg, Rocky Point, Glen Head, Slieve Tooey, Maghera, Loughros Point, Dunmore Head, Aran Island, Magheradrumman, Carrickfin, Carnboy, Bunbeg, Magheragallan, Lunniagh, as far as Carrick, to the south of Bloody Foreland. The site includes the high coast areas and sea cliffs of the mainland and Aran Island, the land adjacent to the cliff edge (inland for 300 m), areas of sand dunes/machair at Maghera, Mullaghderg, Braade/Carrickfin/Carnboy, Magheragallan and Lunniagh/Carrick, and also several areas further inland of the coast at Croaghmuckros and Slieve League, north of Glencolumbkille and south of Dunmore Head. A low-lying area of land on the coast at Bunbeg used by roosting Chough is also included. The high water mark forms the seaward boundary, except at Tormore Island where the adjacent sea area to a distance of 500 m from the cliff base is included to provide areas for foraging and socialising activities for breeding seabirds. Most of the site is underlain by granite and quartzite, though various other, particularly metamorphic, rock types also occur; rocks of Carboniferous age are found at Muckros Head.

The site is a Special Protection Area (SPA) under the E.U. Birds Directive, of special conservation interest for the following species: Chough, Peregrine, Fulmar, Cormorant, Shag, Herring Gull, Kittiwake and Razorbill.

Vegetated sea cliffs are the predominant habitat of the site; these occur along its length and support a good variety of plant species typical of the habitat, including some rarities. The cliff tops support heath, blanket bog or coastal grassland. The northern section of the site includes several areas of machair. Apart from the sea cliffs and machair, the site includes areas of dry heath, wet heath, blanket bog, upland acid grassland, dense Bracken (*Pteridium aquilinum*), scrub, semi-improved and improved pasture grassland, fixed and mobile dune grassland, freshwater marsh, streams, oligotrophic lakes, bedrock shores and islets.

The site supports an important population of breeding Chough, a Red Data Book species that is listed on Annex I of the E.U. Birds Directive; 39 breeding pairs were recorded from the site in the 1992 survey and 58 in the 2002/03 survey. Concentrations of breeding pairs occur on the Glencolumbkille Peninsula, from Killybegs in the south to Loughros Beg Bay in the north and on Aran Island. On Aran the exposed maritime situation coupled with sheep grazing has resulted in large areas of short sward suitable for foraging Chough. Flocking activity is centred on some of the extensive sand dune systems present; flocks of 76, 22 and 40 birds were recorded at Carrick, Dooey and Sheskinmore respectively in October 2004. At Sheskinmore, which is included in a separate SPA, larger flocks of as many as 140 birds have been previously reported. Up to 40 birds have been recorded roosting at Glen Head near Glencolumbkille and feeding in that area during September 2004. Flock birds feeding at Sheskinmore were roosting at nearby Dunmore Head during October 2004 and a communal roost site associated with dune feeding exists near Bunbeg, Gweedore within sight of the dunes at Magheragallan.

Landuse at the site is predominantly grazing by stock. The grazing regime, which results in a tight vegetation sward, is beneficial to Chough. The habitats present are quite robust, and there are few noticeable activities negatively impacting on the Chough population. However, changes in landuse, particularly a reduction in grazing levels, could pose a threat to the species. One other

potential threat is the residue left in livestock dung due to the application of broad-spectrum anti-parasitic drugs.

The site supports a large and important Peregrine population (9 pairs in 2002); this species is listed on Annex I of the E.U. Birds Directive. The site also holds nationally important populations of Fulmar (1,879 pairs), Cormorant (71 pairs in 1999 and 2006), Shag (86 pairs), Herring Gull (229 pairs), Kittiwake (1,037 pairs), Razorbill (322 pairs) and Black Guillemot (155 individuals), as well as smaller populations of other breeding seabirds: Guillemot (366 pairs), Great Black-backed Gull (15 pairs) and Lesser Black-backed Gull (2 pairs) – all seabird data from 1999 except where indicated. The most important breeding seabird colony in the site is at Tormore Island, a small precipitous grassy sea stack rising to a peak of 139 m, on the north side of the Glencolumbkille Peninsula. Puffin have been recorded breeding on Tormore in the past, with an estimated 3,000 birds in 1970, though such high numbers are no longer considered to occur. Small groups of Barnacle Goose, also an E.U. Birds Directive Annex I species, occasionally graze on the sward on top of the stack. The West Donegal Coast SPA is also of importance for breeding Twite and Ring Ouzel, both Red-listed species.

The West Donegal Coast SPA contains nationally important breeding populations of both Chough and Peregrine. It also supports a range of breeding seabirds, including populations of Fulmar, Cormorant, Shag, Herring Gull, Kittiwake, Razorbill and Black Guillemot of national importance, as well as populations of the Red-listed Twite and Ring Ouzel. The presence of good populations of Chough and Peregrine, species that are listed on Annex I of the E.U. Birds Directive, is of particular significance.

13.11.2006

Appendix 4. other activities