

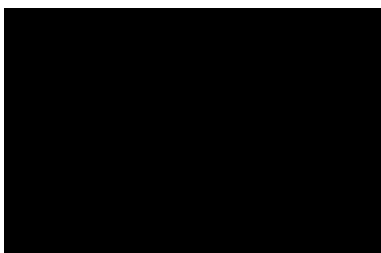


License Application for Sustainable hand-harvesting of *Ascophyllum nodosum* at Clew Bay (SAC Site Code 1482). In accordance with National Parks & Wildlife Service conservation objectives for marine and coastal habitats and species and the EU Habitats Directive 92/43/EEC.

Appendix 7:

Assessment of cumulative and in-combination effects.

Prepared by: BioAtlantis Ltd.
Date of submission: 04/11/2014
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1. Introduction

Overview: This section provides an assessment of the distribution and extent of existing and planned operations in Clew Bay, which in combination with proposed hand harvesting activities, may have potential to have cumulative effects. This assessment is required to ensure that continuous disturbance of each community type does not exceed an approximate area of 15%, as recommended by NPWS and in adherence to the EU commissions' requirements.

Site Name: Clew Bay Complex (Site Code 1482)

Activity under assessment: Harvesting *A. nodosum* in Clew Bay and it's potential in combination effects with existing and planned activities.

Assessors: BioAtlantis Ltd.

Scope of current assessment:

BioAtlantis have assessed the potential for in combination effects with existing and planned activities, which include: Recreational & Tourism, Existing harvest activities, Aquaculture and Harvesting of invertebrates.

Methodology employed:

- Current activities: A thorough assessment of current activities (Recreational & Tourism, Existing harvest activities, Aquaculture and Harvesting of invertebrates) was undertaken by assessing online resources and relevant literature.
- Planned activities: Assessment of planned activities was undertaken by assessing publications listed on websites belonging to the Mayo County Council, Department of Agriculture and others. Assessment was generally limited to documents published between 2012-2014. Some knowledge is considered common knowledge within the public domain, and is not published.
- Mitigation: In cases where risk was identified, mitigation measures were developed and incorporated in the BioAtlantis "Codes of Practice" for protected the Clew Bay SAC. This ensures that any potential in combination effects do not occur, thereby ensuring disturbances of community types do not exceed 15%.
- This analysis was originally undertaken following recommendations by NPWS (30/07/2014). The document was updated following the public consultation period which took place between December 2014 and January, 2015. This analysis includes additional activities in Clew Bay planned or undertaken since 2014, along with additional mitigation measures where required.

2. Summary of cumulative and in combination effects & mitigation measures

This section provides a summary of potential in combination effects of existing and planned operations on Annex I habitats and Annex II species and protected bird species. Interactions with the coastal and inland environment is deemed unlikely as hand harvest of *A. nodosum* will take place in the marine environment. Risks and mitigation measures are listed in Section 3. Detailed decision tables are provided in Section 4. All mitigation measures have been incorporated in the BioAtlantis “Codes of Practice” (see Appendix 4). Key: “*No. risks”, refers to the number of different types of risks identified in Appendix 7. The figures of 0% are assigned to areas where *A. nodosum* does not grow or where BioAtlantis have specifically avoided in this application due to the sensitive nature of some of these areas.

(a) Marine community types summary

Marine community types (Clew Bay SAC)	Total Area in Clew Bay SAC (m ²)	Area affected by harvest activities/ annum		Area of Large Shallow Inlets and Bays [1160] affected/annum (%)	Potential in-combination effects				Do mitigation measures prevent in-combination effects? (Y/N)
		(m ²)	(%)		Existing Operations		Planned Operations		
					Type	No. of risks	Type	No. of risks	
Zostera Community	1,423,891	0	0.0%	0%	0	0		0	n/a
Shingle	1,855,000	235,549	12.7%	0.23%	• Recreation & Tourism	2	• Recreation & Tourism	2	Yes. See Appendix 4, “Codes of Practice”.
Reef	26,870,000	1,331,699	4.9%	1.31%	• Existing harvest activities	3	• Harvest activities	0	
					• Existing aquaculture	0	• Aquaculture	0	
					• Invertebrate harvesting	3	• Invertebrate harvesting	0	
Maerl Dominated community	2,878,607	0	0.0%	0%	0	0	0	0	n/a
Fine Sands Dominated by <i>Nephtys cirrosa</i> community	2,950,308	0	0.0%	0%	0	0	0	0	n/a
Intertidal sandymud with <i>Tubificoides benedii</i> and <i>Pygospio elegans</i> community complex	7,817,100	0	0.0%	0%	• Recreation & Tourism	0	0	0	Yes. See Appendix 4, “Codes of Practice”.
					• Existing harvest activities	0			
					• Existing aquaculture	1			
					• Invertebrate harvesting	0			
Mudflats & sandflats not covered by seawater at low tide	12,541,069	0	0.0%	0%	• Recreation & Tourism	0	0	0	Yes. See Appendix 4, “Codes of Practice”.
					• Existing harvest activities	0			
					• Existing aquaculture	1			
					• Invertebrate harvesting	0			

(b) Annex II Species & protected bird species summary

Key: “*No. risks”, refers to the number of different types of risks identified in Appendix 7.

Species	Potential in-combination effects identified				Mitigation measures
	Existing Operations		Planned Operations		Do measures prevent in-combination effects? (Y/N)
	Type	No. of risks	Type	No. of risks	
Harbour seals	<ul style="list-style-type: none"> • Recreation & Tourism • Existing harvest activities • Existing aquaculture • Invertebrate harvesting 	1 0 0 0	<ul style="list-style-type: none"> • Recreation & Tourism • Harvest activities • Aquaculture • Invertebrate harvesting 	0 0 1 0	Yes. See Appendix 4, “Codes of Practice
Protected bird species	<ul style="list-style-type: none"> • Recreation & Tourism • Existing harvest activities • Existing aquaculture • Invertebrate harvesting 	1 0 0 0	<ul style="list-style-type: none"> • Recreation & Tourism • Harvest activities • Aquaculture • Invertebrate harvesting 	0 0 1 0	Yes. See Appendix 4, “Codes of Practice”.
Otter	<ul style="list-style-type: none"> • Recreation & Tourism • Existing harvest activities • Existing aquaculture • Invertebrate harvesting 	0 0 0 0	<ul style="list-style-type: none"> • Recreation & Tourism • Harvest activities • Aquaculture • Invertebrate harvesting 	0 0 0 0	Not applicable, as no in-combination risk have been identified.

(c) Risks from existing operations and appropriate mitigation measures

- **Recreation & Tourism:**

Risks:

- There are two major tourists sites at Collanmore and Mulranny. During peak tourist season, there is an increased potential for in combination effects associated with increased anthropogenic disturbances, in general.
- There are several small bases throughout the bay, used for commercial recreation activities such as Dinghy, Kayaks. In some cases, transference of equipment from bases into the water may give rise to small patches which contain reduced density of intertidal seaweed, thus raising the potential for in combination effects.
- Marine-based activities may cause disturbance to harbour seals and birds at sensitive sites. In Clew Bay, such activities include power boat trips, sea trampoline, sit on top kayaking, waterskiing, sea kayaking, windsurfing, kite surfing, dinghy sailing and visits to “seal colonies”.

Mitigation:

- As a general policy, hand harvesters will avoid sites where tourism and recreation activities are taking place. This will be determined on a day-to-day basis.
- Harvest will not take place at Mulranny. Harvest will only occur on Collanmore between Sept-April. This prevents any in combination effects associated with increased anthropogenic disturbances which may occur during summer due to increased numbers of tourists on the island.
- Hand harvesters will not work within 50m of bases where equipment or vessels are manually introduced in the water. This ensures that no in combination effects occur.
- Hand harvest will not take place at sites which are relevant to seals or birds at sensitive times of the year. This prevents any in combination effects from occurring.

- **Existing harvest activities:**

Risks:

- In recent years, 2-3 companies have sourced significant quantities of *A. nodosum* from local hand harvesters.
- Some hotels, health Spas and others provide seaweed baths and related services, raw materials of which may be sourced from Clew Bay.
- Mulranny Tourism Office have advertised “Seaweed Harvesting Discovery Days” in the past.

Mitigation:

- Do not harvest in areas where there are existing appurtenant rights or burdens in relation to the harvesting, gathering or removal of seaweed from the shore.
- BioAtlantis will be responsible for commercial *A. nodosum* harvesting activities. To ensure compliance with the conservation objectives for the site, the following is required:
 - If unlicensed large-scale commercial harvesting is observed to occur, this will be recorded and advice will be sought from the relevant authorities on how to proceed. BioAtlantis will not harvest in such areas until *A. nodosum* has regenerated and will work to ensure that any harvesting is limited to 20% of the total available biomass/site/annum and continuous disturbance of each community type does not exceed the required limit.
 - Commercial users with small requirements of ~1 tonne per annum (e.g. hotels, health Spas) will be identified and BioAtlantis will work to prevent in combination effects.
 - BioAtlantis will not harvest beyond Rossmurrevagh, thus avoiding much of the Mulranny area. This avoids in combination effects with excursions in the area.

- Harvesters will not interfere with people who harvest small volumes of seaweed, edible seaweeds or invertebrates for their own personal use, e.g. dillisk, carrageenan, limpets, mussels, clams, periwinkles and scallops.

- **Existing aquaculture:**

Risks:

- Hand harvest activities could exacerbate existing effects attributed to licensed aquaculture activities, e.g. disturbance of mudflats and sandflats.
- Hand harvest activities may exacerbate existing effects that may be attributed to licensed aquaculture activities, e.g. disturbance at sites relevant to harbour seals. Overall, the risk of such interactions is considered low (Marine Institute, 2014 and 2019).

Mitigation:

- Code of practice for environmentally safe navigation will be followed to ensure no in combination effects which would damage mudflats and sandflats.
- Caution is required when approaching or operating near areas where existing aquaculture sites are known to be in relatively close proximity to harbour seal breeding sites (e.g. Inishcarrick, Inishcorky, Inishdasky, Inishilra), harbour seal moulting sites (e.g. Inisheeny), harbour seal resting sites (e.g. Inishtubrid), bird breeding sites (e.g. MoynishBeg, Inishcorky, Mauherillan) and bird wintering sites (e.g. Inisheeny).
- Adhere to all aspects of Section 5 of the Code of Practice: "Working in the vicinity of aquaculture sites".

- **Invertebrate harvesting:**

Risks:

- Periwinkle harvesting in Clew Bay causes some reductions in periwinkle population numbers due to removal and anthropogenic disturbances caused by trampling. There is potential for in-combination effects on periwinkles associated with *A. nodosum* hand harvest as *A. nodosum* represents an important biotope for these species.
- Potential impacts of cockle gathering in Clew Bay include impacts on intertidal sedimentary communities (Mudflats and sandflats not covered by seawater at low tide [1140]). There is potential for in-combination effects associated with *A. nodosum* hand harvest activities and cockle hand gathering, as seaweed hand harvesting may involve activities along the rock shoreline beyond mudflats and sandflats.
- There is a risk that hand harvesting may impact on slow moving invertebrates in general given that nets/bags are used along the intertidal zone.

Mitigation:

- Harvest of *A. nodosum*: Harvesters will be taught to leave between 8-12 inches of the crop behind. Cutting below 8 inches will be prevented. This standard will be monitored by the Resource Manager. This approach avoids:
 - (a) extensive removal of *A. nodosum* canopy coverage and damage to the ecosystem,
 - (b) avoids interactions with or by-catch of dormant or resting periwinkles positioned at the base of the *A. nodosum* canopy and
 - (c) ensures that on development into free-living forms, *L. Littorina* species are able to settle and establish within the intact canopy.
- *L. obtusata* eggs: Harvesters will work to avoid *A. nodosum* plants which contain visible *L. obtusata* egg masses. This is important to prevent harvest of viable eggs, thereby promoting maintenance of population size.
- Do not harvest Fucus: Fucus content will be limited to <5%, thus preventing removal of an additional canopy source which supports periwinkles and other species.
- Inadvertent co-removal of periwinkles on the collection vessel (if deemed applicable to the area) will be assessed, with species collected and returned to the water, where possible.

- A code of practice is in place to ensure that (a) Harvesters will work to ensure that co-harvesting of other species does not occur. Inadvertent co-removal of Animalia identified post-harvest will be collected and returned to the water, where possible.
- A code of practice is in place to ensure environmentally safe navigation when operating mudflats and sandflat areas. This will prevent any impact on intertidal sedimentary communities (See Appendix 4).

(d) Risks from planned operations and appropriate mitigation measures

- **Recreation & Tourism**

Risks:

- Westport Towns and Environs Development Plan 2010-2016: Roman Island has been targeted for considerable development in terms of marine-based activities and tourism (ref: Mayo County Council 2010), thus raising the potential for interaction between hand harvesting (e.g. increased anthropogenic disturbances). Increased numbers of small bases may be developed at Roman Island for commercial recreation activities such as (Dinghy, Kayaks). In some cases, transference of equipment from bases into the water may give rise to small patches which contain low density of intertidal seaweed, thus raising the potential for in combination effects. Planning permission has also been granted for the construction of a new reinforced concrete slipway and installation of a floating pontoon just north of Roman Island. The development will supplement proposals to develop a coastguard station in this area, and a number of other recreational uses.
- Mayo County Council 2014 Budget (ref: Hynes, 2014): funding has been granted for new marine tourism/leisure infrastructure at Westport Harbour, thus raising the potential for interaction between hand harvesting and increased tourism-related activities at Westport Quay (e.g. increased anthropogenic disturbances).

Mitigation:

- Hand harvesters will not work at Roman Island or Westport harbour between May and August. This prevents any in combination effects from occurring during peak season.
- Hand harvesters will not work within 50m of bases where equipment or vessels are manually introduced in the water. This ensures that no in combination effects occur.

- **Harvest activities:** no planned operations identified

- **Aquaculture**

Risks:

- Hand harvest activities may exacerbate existing effects attributed to licensed aquaculture activities, e.g. disturbance at sites relevant to harbour seals. Overall, the risk of such interactions is considered low (Marine Institute, 2014 and 2019). Impacts on Otter (*Lutra lutra*) is deemed not significant. However, the Marine Institute cannot rule out potential effects of a proposed future Abalone culture on seal behaviour at Inishcorky and potentially neighbouring sites: Inishdeashmore, Inishdeashbeag, unnamed neighbouring island of Inishdeashbeag and Inishnacross (pg. 78, Marine Institute, 2014). A number of new aquaculture applications have also been filed (Marine Institute, 2019).

Mitigation:

- Seasonal avoidance of sensitive harbour seal sites will be adhered to for all haul out sites, including Inishcorky. Caution is required when approaching or operating near areas where planned aquaculture sites are known to be in relatively close proximity to harbour seal breeding sites (e.g. Inishilra) and bird breeding sites (e.g. Mauherillan). This will ensure that harbour seals are unaffected (Code of Practice, appendix 4).

- **Invertebrate harvesting:** no planned operations identified

3. Detailed assessment of in combination effects & mitigation measures

(a) Existing Operations

- i. Recreation & Tourism.
- ii. Harvest activities
- iii. Aquaculture
- iv. Harvesting of invertebrates

(i) Recreational & Tourism

There are many recreation and tourism activities in the Clew Bay area, including a wide range of land and marine-based activities.

Recreational/Tourism Activity	Ref./source of information	No. of operators /sites	Locations/extent of operations	Potential interaction with <i>A. nodosum</i> harvesting in Clew Bay (inc. mitigation measure if applicable)
Equestrian Centres	Failte Ireland (2012)	3	Inland (Achill island, Westport)	No interaction.
Golf Courses	Failte Ireland (2012)	6	Inland (Achill island, Ballinrobe, Castlebar)	No interaction.
Visitor Centres	Failte Ireland (2012)	13	Inland (inc. Westport, Murrisk & Louisburgh)	No interaction.
Bike Hire	Failte Ireland (2012)	9	Inland (including Westport and Achill island)	No interaction.
Cycle Routes	Failte Ireland (2012)	6	<ul style="list-style-type: none"> Achill cycle hub Great western Greenway (walking & cycling) Louisburgh cycle hub National coastal route (Westport-Murrisk) Wesport cycle hub Granuaile cycle trail (Achil island – Mulranny, Rockfleet, Carraighowley, Wesport house, Louisburgh, Roonagh Pier) 	<p>No interaction.</p> <p>Seasonal mitigation measures are in place for hand harvest activities to ensure that there is no disturbance to sensitive harbour seal and bird populations. This also prevents any in combination impacts which could arise due to the presence of cyclists along routes close to these sites.</p>

Recreational/Tourism Activity	Ref./source of information	No. of operators /sites	Locations/extent of operations	Potential interaction with <i>A. nodosum</i> harvesting in Clew Bay (inc. mitigation measure if applicable)
Great Western Greenway	http://www.greenway.ie/Trail-Map-01.html	Extensive range	An extensive 42 kilometres (26 miles) long rail trail, beginning in Westport and ending in Achill. It runs along the coast of Clew Bay and passes through Newport and Mulranny. The greenway may soon extend from Roonagh to Achill.	No interaction. As above.
Play areas	Failte Ireland (2012)	~10	Inland	No interaction.
Leisure Centres	Failte Ireland (2012)	2	Inland	No interaction.
Farmers Markets:	Failte Ireland (2012)	4	Inland	No interaction.
Walking Guides: Tourism Pure Walking Holidays, Castlebar. Croagh Patrick Walking Tours, Belclare, Westport	Failte Ireland (2012)	2	Inland	No interaction.
Walking Routes	Failte Ireland (2012)	~20	Bothy Loop, Newport Bunnahowna Loop, Mulranny Dooagh Loop, Achill Island Enniscoe House Loop, Crossmolina Great Western Greenway – linear route from Westport Quay to Achill Sound Keenagh Loop, Newport Letterkeen Loop, Newport Lettermaghera Loop, Newport Lookout Hill Loop, Mulranny Lough Aroher Loop, Newport National Coastal Route – linear route from Westport town to Murrisk Abbey The Western Way (Mayo)	No interaction. Seasonal mitigation measures are in place for hand harvest activities to ensure that there is no disturbance to sensitive harbour seal and bird populations. This also prevents any in combination impacts which could arise due to the presence of people walking in routes close to these sites.
Shore walks	n/a	Several	Some shores are used for walking, leisure activities and to study sealife.	Interactions are unlikely. As a general policy, harvesters will not interact with people engaging in sports, leisure activities, education excursions or retreats on the shore.

Recreational/Tourism Activity	Ref./source of information	No. of operators /sites	Locations/extent of operations	Potential interaction with <i>A. nodosum</i> harvesting in Clew Bay (inc. mitigation measure if applicable)
Recreational/Tourism Activity	Ref./source of information	No. of operators /sites	Locations/extent of operations	Potential interactions with <i>A. nodosum</i> harvesting in Clew Bay (inc. mitigation measure if applicable)
Bird watching	The Irish Wetland Bird Survey and other sources.	~4	Examples of locations include: •Southern Bay •Westport Bay •Newport Bay •Northern Bay	As <i>A. nodosum</i> harvesting is unlikely to impact on birds' site visitation (Johnston <i>et al.</i> 2024), potential interactions or in combination effects are unlikely to occur. Measures are in place to ensure that disturbance events and in combination effects with other marine activities does not occur.
Blue Flag beaches (general)	https://www.destinationwestport.com/	~10	Old Head Blue Flag Beach Carrowmore Blue Flag Beach Clare Island Blue Flag Beach Elly Bay Blue Flag Beach Mullaghroe Blue Flag Beach Golden Strand Blue Flag Beach, Achill Keem Blue Flag Beach, Achill Keel Blue Flag Beach, Achill Dugort Blue Flag Beach, Achill Dooega Blue Flag Beach, Achill	No interaction, as beaches will not be subject to hand harvest activities. Also, beaches associated with Achill are beyond the scope of this application.
Bertra Blue Flag Beach	https://www.destinationwestport.com/	1	Activities include walking and bird-watching, as well as kite-surfing and windsurfing.	No interaction, as beaches will not be subject to hand harvest activities.
Carrowniskey Green Coast beach	https://www.destinationwestport.com/	1	Surfing and surfing schools	No interaction, as beaches will not be subject to hand harvest activities.
Mulranny Blue Flag beach	https://www.destinationwestport.com/	1	A rare large saltwater marsh is located inland from the beach.	No interaction, as beaches will not be subject to hand harvest activities.
Beach/Coast cleans	'Clean coasts'	≥1	Activities involving groups interested in local beaches, beach clean-ups, marine litter surveys, seas and marine life.	No interaction, as beaches will not be subject to hand harvest activities. Such activities in beach areas and other coastal areas are likely to occur periodically and are usually restricted to relatively small areas, thus reducing the potential for anthropogenic disturbances or disturbance to Annex I & II

Recreational/Tourism Activity		Ref./source of information	No. of operators /sites	Locations/extent of operations	Potential interaction with <i>A. nodosum</i> harvesting in Clew Bay (inc. mitigation measure if applicable)
					Species (harbour seals, otters & birds). Mitigation is not required.
The Adventure Islands (Westport Company)		www.theadventureislands.com	3 main sites	Westport, Achill, Collanmore, Clare Island	There are potential interactions which may require mitigation (see below)
	Deep sea fishing	www.theadventureislands.com	Several	Takes place en route to Clare island	No interaction.
	Sea Safari (Power Boat Trips)	www.theadventureislands.com	Several	To Dornish Island, Inish Gort Lighthouse and several islands in the bay. May involve stop-offs on various island beaches.	<p>Annex II species: Harbour seal and Birds: Speed boat activity can cause disturbance to harbour seals and birds at sensitive sites.</p> <p>Anthropogenic disturbances: unlikely as activity is largely water-based, with entry into the water being typically from established locations. However, transference of equipment from bases into the water may give rise to small patches which contain low density of intertidal seaweed.</p> <p>Mitigation:</p> <ul style="list-style-type: none"> • Hand harvest will not take place at harbour seal and bird sites at sensitive times of the year, thus preventing any in combination effects. • Hand harvesters will not work within 50m of bases where equipment or vessels are manually introduced in the water. This ensures that no in combination effects occur.
	"Sea Trampoline"	www.theadventureislands.com	Several	At TAI Water Park, Westport. May take place in proximity to the rocky shorelines	<p>Annex II species (Harbour seal and Birds): Human activity associated with sea trampoline may cause disturbance to harbour seals and birds at sensitive sites.</p> <p>Anthropogenic disturbances: Sea trampoline activity can take place in waters adjacent to rocky shorelines containing <i>A. nodosum</i>. Transference of equipment from bases into the water may give rise to small patches which contain low density of intertidal seaweed.</p>

Recreational/Tourism Activity		Ref./source of information	No. of operators /sites	Locations/extent of operations	Potential interaction with <i>A. nodosum</i> harvesting in Clew Bay (inc. mitigation measure if applicable)
					Mitigation: <ul style="list-style-type: none">• Hand harvest will not take place at harbour seal and bird sites at sensitive times of the year, thus preventing any in combination effects.• Hand harvesters will not work within 50m of bases where equipment or vessels are manually introduced in the water. This ensures that no in combination effects occur.
	“Sit On Top Kayaking”	www.theadventureislands.com	Several	Collanmore Island base	Annex II species (Harbour seal and Birds): Collanmore is not considered a site for sensitive harbour seals or protected bird species. Anthropogenic disturbances: Collanmore is a very active destination for recreation tourists. ‘Sit On Top Kayaking’ is marine based, with activities starting from established bases on the island. However, by virtue of increased number of recreation tourists in general, there is a chance for increases in anthropogenic disturbances. Individuals may also rest their kayaks on shingle or rocky shorelines containing <i>A. nodosum</i> . Transference of equipment from bases into the water may give rise to small patches which contain low density of intertidal seaweed. Mitigation: <ul style="list-style-type: none">• Harvest will only occur on Collanmore between Sept-April. This prevents any in combination effects associated with increased anthropogenic disturbances which may occur during summer due to increased numbers of tourists on the island.• Hand harvesters will not work within 50m of bases where equipment or vessels are manually introduced in the water. This ensures that no in combination effects occur.

Recreational/Tourism Activity		Ref./source of information	No. of operators /sites	Locations/extent of operations	Potential interaction with <i>A. nodosum</i> harvesting in Clew Bay (inc. mitigation measure if applicable)
	Snorkelling	www.theadventureislands.com https://westporttourism.com/the-blueway/	Several	Throughout Clew Bay, including Westport.	<p>Annex II species (Harbour seal and Birds): Increased human presence in the form of snorkelling along the shore, may cause disturbance to harbour seals and birds at sensitive sites.</p> <p>Anthropogenic disturbances: Unlikely to be affected by snorkelling. However, transference of equipment from bases into the water may give rise to small patches which contain low density of intertidal seaweed.</p> <p>Mitigation:</p> <ul style="list-style-type: none"> • Hand harvest will not take place at sites which are relevant to seals or birds at sensitive times of the year. This prevents any in combination effects from occurring. • Hand harvesters will not work within 50m of bases where equipment or vessels are manually introduced in the water. This ensures that no in combination effects occur.
	Wakeboarding	www.theadventureislands.com	1	Collanmore Island	<p>Annex II species (Harbour seal and Birds): Collanmore is not considered a site for sensitive harbour seals or protected bird species.</p> <p>Anthropogenic disturbances: Unlikely to be affected by wakeboarding. Collanmore is a very active tourist destination and by virtue of increased number people, there is a chance for increases in anthropogenic disturbances. Also, transference of equipment from bases into the water may give rise to small patches which contain low density of intertidal seaweed.</p> <p>Mitigation:</p> <ul style="list-style-type: none"> • Harvest will only occur on Collanmore between Sept-April. This prevents any in combination effects associated with

Recreational/Tourism Activity		Ref./source of information	No. of operators /sites	Locations/extent of operations	Potential interaction with <i>A. nodosum</i> harvesting in Clew Bay (inc. mitigation measure if applicable)
					<p>increased anthropogenic disturbances which may occur during summer due to increased numbers of tourists on the island.</p> <ul style="list-style-type: none"> • Hand harvesters will not work within 50m of bases where equipment or vessels are manually introduced in the water. This ensures that no in combination effects occur.
	Waterskiing	www.theadventureislands.com	Several	Clew bay bases	<p>Annex II species: Harbour seal and Birds: Waterskiing activity can cause disturbance to harbour seals and birds at sensitive sites.</p> <p>Anthropogenic disturbances: unlikely as activity is largely water-based, with entry into the water being typically from established locations. However, transference of equipment from bases into the water may give rise to small patches which contain low density of intertidal seaweed.</p> <p>Mitigation:</p> <ul style="list-style-type: none"> • Hand harvest will not take place at harbour seal and bird sites at sensitive times of the year, thus preventing any in combination effects. • Hand harvesters will not work within 50m of bases where equipment or vessels are manually introduced in the water. This ensures that no in combination effects occur.
	Sea Water Park (trampoline, Water Slides, Water Swings)	www.theadventureislands.com	1	Collanmore Island	<p>Annex II species (Harbour seal and Birds): Unlikely to be affected as Collanmore Island is not considered a site for sensitive harbour seal and bird species.</p> <p>Anthropogenic disturbances: activity can take place in waters adjacent to rocky shorelines containing <i>A. nodosum</i>. Transference of equipment from bases into the water may give rise to small patches which contain low density of intertidal seaweed.</p>

Recreational/Tourism Activity	Ref./source of information	No. of operators /sites	Locations/extent of operations	Potential interaction with <i>A. nodosum</i> harvesting in Clew Bay (inc. mitigation measure if applicable)
Sea Kayaking	www.theadventureislands.com http://www.clewbaybikehire.ie/sea-kayaking https://westporttourism.com/the-blueway/	Several	Various islands near Clew Bay (none specified).	Mitigation: <ul style="list-style-type: none"> Hand harvesters will not work within 50m of bases where equipment or vessels are manually introduced in the water. This ensures that no in combination effects occur.
				Annex II species (Harbour seal and Birds): Increased human presence in the form of Sea Kayaking, may cause disturbance to harbour seals and birds at sensitive sites. Anthropogenic disturbances: While individuals may rest their kayaks on shingle or rocky shorelines containing <i>A. nodosum</i> , this is likely to be brief and unlikely to have any significant impact on the biotope. However, transference of equipment from bases into the water may give rise to small patches which contain low density of intertidal seaweed. Mitigation: <ul style="list-style-type: none"> Hand harvest will not take place at sites which are relevant to seals or birds at sensitive times of the year. This prevents any in combination effects from occurring. Hand harvesters will not work within 50m of bases where equipment or vessels are manually introduced in the water. This ensures that no in combination effects occur.
Windsurfing	www.theadventureislands.com	Several	Unknown	Annex II species (Harbour seal and Birds): Windsurfing may cause a level of disturbance to harbour seals and birds at sensitive sites. Anthropogenic disturbances: Unlikely to be affected by windsurfing. However, transference of equipment from bases into the water may give rise to small patches which contain low density of intertidal seaweed.

Recreational/Tourism Activity		Ref./source of information	No. of operators /sites	Locations/extent of operations	Potential interaction with <i>A. nodosum</i> harvesting in Clew Bay (inc. mitigation measure if applicable)
					Mitigation: <ul style="list-style-type: none"> Hand harvest will not take place at sites which are relevant to seals or birds at sensitive times of the year. This prevents any in combination effects from occurring. Hand harvesters will not work within 50m of bases where equipment or vessels are manually introduced in the water. This ensures that no in combination effects occur.
	Kitesurfing	https://www.theadventureisland.com/	~2	Westport and Achill Island	Annex II species (Harbour seal and Birds): Kitesurfing may take place along beaches, single or occasionally in proximity to rock shorelines. This may cause a level of disturbance to harbour seals and birds at sensitive sites. Anthropogenic disturbances: Unlikely to be affected by windsurfing. However, transference of equipment from bases into the water may give rise to small patches which contain low density of intertidal seaweed. Mitigation: <ul style="list-style-type: none"> Hand harvest will not take place at sites which are relevant to seals or birds at sensitive times of the year. This prevents any in combination effects from occurring. Hand harvesters will not work within 50m of bases where equipment or vessels are manually introduced in the water. This ensures that no in combination effects occur.
	Dinghy Sailing	https://www.theadventureisland.com/	~2	Rosmoney Pier, Collanmore island, Schoolhouse Bay, Sruhnameel channel, Mayo Sailing Club. Sailing boats have also been reported in the vicinity of Westport , Clare Island and towards the outer reaches of the complex.	Annex II species (Harbour seal and Birds): Collanmore is not considered a site for sensitive harbour seals or protected bird species. There have been some sightings of otter in the vicinity of locations where sports, tourism and recreation activities take place in Clew Bay. However, otters are also reported to occur in areas where these activities do not take place. As harvesters are required

Recreational/Tourism Activity	Ref./source of information	No. of operators /sites	Locations/extent of operations	Potential interaction with <i>A. nodosum</i> harvesting in Clew Bay (inc. mitigation measure if applicable)
				<p>to avoid sites where sports, tourism and recreation activities take place, the risk of in combination effects is therefore extremely low.</p> <p>Anthropogenic disturbances: Collanmore is a very active destination for recreation tourists. 'Dinghy Sailing' is marine based, with activities starting from established bases on the island. However, by virtue of increased number of recreation tourists in general, there is a chance for increases in anthropogenic disturbances. Individuals may also rest their kayaks on shingle or rocky shorelines containing <i>A. nodosum</i>. Also, there is evidence in Rosmoney that the process involved in introducing dinghys from bases into the water, can give rise to small patches which contain low density of intertidal seaweed (http://www.theadventureislands.com/images/thingsToDoInWestport/Dinghy%20Sailing/Sailing-Rosmoney-13.jpg) .</p> <p>Dinghy Sailing is also known to takes place in the vicinity of Mayo Sailing Club, Sruhnameel channel and Schoolhouse Bay.</p> <p>Mitigation:</p> <ul style="list-style-type: none"> • Harvest will only occur on Collanmore between Sept-April. This prevents any in combination effects associated with increased anthropogenic disturbances which may occur during summer due to increased numbers of tourists on the island. • Hand harvesters will not work within 50m of bases where equipment or vessels are manually introduced in the water. This ensures that no in combination effects occur. • As a general policy, hand harvesters will maintain distance from other boats or vessels, such as power boats, cruise boats, ferries, kayaks, rib boats, row boats, rib boats, fishing boats when travelling to sites, thus preventing any

Recreational/Tourism Activity	Ref./source of information	No. of operators /sites	Locations/extent of operations	Potential interaction with <i>A. nodosum</i> harvesting in Clew Bay (inc. mitigation measure if applicable)
				<p>in combination effects. In particular, harvesters will respect the space of all recreational users when operating in the complex.</p> <ul style="list-style-type: none"> • Harvesters and operators of boats will keep well clear of boats during training, racing, etc. • Harvesters and operators of boats will observe "power gives way to sail" conventions when appropriate. • Harvesters and operators of boats will ensure caution when operating in the vicinity of floating watersports, yacht moorings and areas where and other sports such as dinghy sailing, water skiing and jet skiing are taking place (e.g. in the vicinity of Mayo Sailing Club, the Sruhnameel Channel and Schoolhouse Bay). • Ensure caution when operating in known areas of importance to swimmers and kayakers (e.g. Rosmindle Pool). • Follow pre-planned schedules in order to avoid congestion at pick up points such as piers that may be busy at certain times.
"Stand Up Paddle Boarding" / "Stand Up Paddling (SUP)"	https://www.theadventureisland.com/ http://newportmayo.ie/t-activities.html	Several	Various Clew Bay locations: Collanmore Island, Rosmoney and on lake at Westport House location. Stand up Paddling takes in Newport (Black Oak River and Seven Arch Bridge) and Mulranny beach.	<p>Annex II species (Harbour seal and Birds): Collanmore and Rosmoney are not considered as sites for sensitive harbour seals or protected bird species. There is no spatial overlap between harvesting activities and The Black Oak River and Seven Arch Bridge at Newport. There is no spatial overlap between harvesting and activities at Mulranny beach. However, "Stand Up Paddle Boarding" may involve other areas of relevance to seals or birds.</p> <p>Anthropogenic disturbances: Collanmore is a very active destination for recreation tourists. "Stand Up Paddle Boarding" is marine based, with activities starting from established bases on the island. However, by virtue of increased number of recreation</p>

Recreational/Tourism Activity	Ref./source of information	No. of operators /sites	Locations/extent of operations	Potential interaction with <i>A. nodosum</i> harvesting in Clew Bay (inc. mitigation measure if applicable)
				<p>tourists in general, there is a chance for increases in anthropogenic disturbances. Also, it is possible that the process involved in introducing Paddle Boards from bases into the water, may give rise to small patches which contain low density of intertidal seaweed.</p> <p>Mitigation:</p> <ul style="list-style-type: none"> • Harvest will only occur on Collanmore between Sept-April. This prevents any in combination effects associated with increased anthropogenic disturbances which may occur during summer due to increased numbers of tourists on the island. • Hand harvesters will not work within 50m of bases where equipment or vessels are manually introduced in the water. This ensures that no in combination effects occur.
"Keel Boat Sailing"	https://www.theadventureisland.com/	Several	Sessions begin at Rosmoney Pier	<p>Annex II species (Harbour seal and Birds): "Keel Boat Sailing" may takes place in deeper waters. However, this may involve coming in close proximity with sensitive seal or bird sites.</p> <p>Anthropogenic disturbances: Unlikely to be affected by Keel Boat Sailing. However, it is possible that the process involved in introducing equipment from bases into the water, may give rise to small patches which contain low density of intertidal seaweed.</p> <p>Mitigation:</p> <ul style="list-style-type: none"> • Hand harvest will not take place at sites which are relevant to seals or birds at sensitive times of the year. This prevents any in combination effects from occurring. • Hand harvesters will not work within 50m of bases where equipment or vessels are manually introduced in the water. This ensures that no in combination effects occur.

Recreational/Tourism Activity		Ref./source of information	No. of operators /sites	Locations/extent of operations	Potential interaction with <i>A. nodosum</i> harvesting in Clew Bay (inc. mitigation measure if applicable)
	Surfing	www.theadventureislands.com	Several	Sessions at surf spots in Westport and Clew Bay areas. This includes Carrownisky Strand and Achill island. Belmullet, Achill Island and the beaches around in the Westport/Louisburgh area.	No interaction. Surfing areas will not be targeted for hand harvesting activities.
	“Westport Island Guided Walks”	www.theadventureislands.com	<u>1</u>	Hiking on Collanmore Island.	Annex II species (Harbour seal and Birds): Collanmore is not considered a sensitive site for harbour seals or protected bird species. Anthropogenic disturbances: Given the increased presence of people on the island during the summer, there is an increased chance for anthropogenic disturbances to occur. Mitigation: Harvest will only occur on Collanmore between Sept-April. This prevents any in combination effects.
Achill Island Scuba Dive Centre,		www.achilldivecentre.com		Several dive sites around Achill island	No interaction. Achill is out of the scope of the current application
Achill Outdoor Education Centre. Canoeing, Archery, Body Boarding Campcraft, Dinghy Sailing, Group Challenge, Hillwalking, Kayaking, Navigation Skills, Powerboating, Raft Building, Rockclimbing, Surfing, Traditional Sailing, Team Building, Windsurfing, Coasteering		www.achilloutdoor.com		Achill	No interaction. Achill is out of the scope of the current application
Achill Surf & Kayak,		http://www.achillsurf.com/		Achill	No interaction. Achill is out of the scope of the current application

Recreational/Tourism Activity	Ref./source of information	No. of operators /sites	Locations/extent of operations	Potential interaction with <i>A. nodosum</i> harvesting in Clew Bay (inc. mitigation measure if applicable)
Allplay Windsurfing,	https://www.discoverireland.ie/		Bertra Strand, Murrisk	<p>Annex II species (Harbour seal and Birds): Windsurfing may cause disturbance to harbour seals and birds at sensitive sites.</p> <p>Anthropogenic disturbances: It is possible that the process involved in introducing equipment from bases into the water, may give rise to small patches which contain low density of intertidal seaweed.</p> <p>Mitigation:</p> <ul style="list-style-type: none"> • Hand harvest will not take place at sites which are relevant to seals or birds at sensitive times of the year. This prevents any in combination effects from occurring. • Hand harvesters will not work within 50m of bases where equipment or vessels are manually introduced in the water. This ensures that no in combination effects occur.
Atlantic Adventure Centre Canoeing, Bogie Boarding, Rock Climbing, Abseiling, Mountain Climbing, Orienteering, Pier Jumping, Hill Walking, Shore Fishing, Gaisce Award Training, Outback Camping Trips	---		Westport. <i>Blue-Flag beaches</i> of Old Head, Bertra and Carramore,	No interaction. Marine based activities listed generally take place at beach sites. Hand harvest will not take place at beaches.
Glenans Irish Sailing Centre	---		Collanmore Island, Rosmoney Pier, Westport	<p>Annex II species (Harbour seal and Birds): Collanmore is not considered a site for sensitive harbour seals or protected bird species.</p> <p>Anthropogenic disturbances: Collanmore is a very active destination for recreation tourists. By virtue of increased number of recreation tourists in general, there is a chance for increases in anthropogenic</p>

Recreational/Tourism Activity	Ref./source of information	No. of operators /sites	Locations/extent of operations	Potential interaction with <i>A. nodosum</i> harvesting in Clew Bay (inc. mitigation measure if applicable)
				<p>disturbances. It is possible that the process involved in introducing equipment from bases into the water, may give rise to small patches which contain low density of intertidal seaweed.</p> <p>Mitigation:</p> <ul style="list-style-type: none"> • Harvest will only occur on Collanmore between Sept-April. This prevents any in combination effects associated with increased anthropogenic disturbances which may occur during summer due to increased numbers of tourists on the island. • Hand harvesters will not work within 50m of bases where equipment or vessels are manually introduced in the water. This ensures that no in combination effects occur.
Horizon Adventure & Education Centre (range of inland, coastal and marine activities)	---		Westport	<p>Annex II species (Harbour seal and Birds): Some of these activities, such as Kayaking, can cause disturbance to harbour seals and birds at sensitive sites.</p> <p>Anthropogenic disturbances: While individuals may rest their kayaks on shingle or rocky shorelines containing <i>A. nodosum</i>, this is likely to be brief and unlikely to have any significant impact on the biotope. However, transference of equipment from bases into the water may give rise to small patches which contain low density of intertidal seaweed.</p> <p>Mitigation:</p> <ul style="list-style-type: none"> • Hand harvest will not take place at sites which are relevant to seals or birds at sensitive times of the year. This prevents any in combination effects from occurring. • Hand harvesters will not work within 50m of bases where equipment or vessels are manually introduced in the water. This ensures that no in combination effects occur.

Recreational/Tourism Activity	Ref./source of information	No. of operators /sites	Locations/extent of operations	Potential interaction with <i>A. nodosum</i> harvesting in Clew Bay (inc. mitigation measure if applicable)
Pure Magic Kitesurfing,	www.puremagic.ie		Achill Island	No interaction. Achill is out of the scope of the current application.
Clew Bay Cruises	http://www.clewbaycruises.com/	<u>1</u>	Involves visits the Clew Bay “seal colonies”. So-called “Clew Bay Heritage Cruises” involve departure from Westport Quay, sailing past sheltered islands, Inishgort lighthouse and Dorinish Island.	<p>Annex II species (Harbour seal and Birds): The presence of cruise boats which in the vicinity of harbour seals sites may cause disturbance.</p> <p>Anthropogenic disturbances: Unlikely.</p> <p>Mitigation: Hand harvest will not take place at sensitive sites at sensitive times of the year. This prevents any in combination effects from occurring.</p>
Clare Island Ferry Company,	http://www.clareislandferry.com/	1	Clare Island and Inishturk or Achill.	No interaction. These sites are out of the scope of the current application.
Mulranny Park Hotel	https://www.mulrannyparkhotel.ie/watersports.html	1	Advertise a wide range of water sports, Boat Trips, fishing, some of which are provided by outside companies.	<p>Annex II species (Harbour seal and Birds): Some of the proposed water sports and boats trips may cause a level of disturbance to harbour seals and birds at sensitive sites.</p> <p>Anthropogenic disturbances: Transference of equipment from bases into the water may give rise to small patches which contain low density of intertidal seaweed.</p> <p>Mitigation:</p> <ul style="list-style-type: none"> • Harvest will not take place at known seal or bird sites in the vicinity of Mulranny at sensitive times of the year, thus preventing in combination effects with increased human activities at such sites. • Hand harvesters will not work within 50m of bases where equipment or vessels are manually introduced in the water. This ensures that no in combination effects occur.

Recreational/Tourism Activity	Ref./source of information	No. of operators /sites	Locations/extent of operations	Potential interaction with <i>A. nodosum</i> harvesting in Clew Bay (inc. mitigation measure if applicable)
Surf Mayo	www.surfmayo.com	1	Carrownisky Strand, Louisburgh, Co. Mayo	No interaction. Surfing areas will not be targeted for hand harvesting activities.
Blackfield Surf School and Surfhire	https://blackfield.com/	1	Closhreed - Achill Island	No interaction. Surfing areas will not be targeted for hand harvesting activities. Achill is also out of the scope of the current application.
Professional Coaching Services	---	1	Sailing , windsurfing, powerboating.	<p>Annex II species (Harbour seal and Birds): Some of these activities, such as sailing, windsurfing, powerboating, can cause disturbance to harbour seals and birds at sensitive sites.</p> <p>Anthropogenic disturbances: Transference of equipment from bases into the water may give rise to small patches which contain low density of intertidal seaweed.</p> <p>Mitigation:</p> <ul style="list-style-type: none"> • Hand harvest will not take place at sites which are relevant to seals or birds at sensitive times of the year. This prevents any in combination effects from occurring. • Hand harvesters will not work within 50m of bases where equipment or vessels are manually introduced in the water. This ensures that no in combination effects occur.
Ireland West Seakayaking	www.irelandwestseakayaking.com	1	Kayaking Trips	<p>Annex II species (Harbour seal and Birds): Some of these activities, such as Kayaking, can cause disturbance to harbour seals and birds at sensitive sites. Also, some of these activities may involve getting close to seal colonies and birdlife on many islands.</p> <p>Anthropogenic disturbances: Transference of equipment from bases into the water may give rise to small patches which contain low density of intertidal seaweed.</p>

Recreational/Tourism Activity	Ref./source of information	No. of operators /sites	Locations/extent of operations	Potential interaction with <i>A. nodosum</i> harvesting in Clew Bay (inc. mitigation measure if applicable)
				Mitigation: <ul style="list-style-type: none"> Hand harvest will not take place at sites which are relevant to seals or birds at sensitive times of the year. This prevents any in combination effects from occurring. Hand harvesters will not work within 50m of bases where equipment or vessels are manually introduced in the water. This ensures that no in combination effects occur.
Tomás MacLochlainn - Cursaí Amuigh Faoin Spéir (watersports & walking)	https://achilltourism.com/	<u>1</u>	Achill	No interaction. Achill is out of the scope of the current application.
The Surf Coach	---	1	Achill	No interaction. Achill is out of the scope of the current application.
West Coast Adventure & Surf School	https://www.discoverireland.ie/	1	Cross Beach (near Louisburgh)	No interaction. Louisburgh is out of the scope of the current application.
Tours & Tasting Experiences	https://www.croaghpatrickseafoods.ie/tours/	≥1	Oyster Farm Tour & Tasting Experience	Interactions are unlikely as sites will be avoided where such as activities are observed to be taking place.
Sea Angling/Sea Fishing Operators	Failte Ireland (2012)	≥20	<ul style="list-style-type: none"> Marine and coastal activity. Sea angling clubs, shore angling clubs Junior shore angling, e.g. Newport Sea Angling club. Recreational and shore angling takes place in areas including: Altapheebera, Bertra, Carrowmore Strand, Carrownisky, Corraun, Inisnakillew, Kilsallagh, Lecanvey Pier, Lough Furnace, Mallarany beach/strand, Newport, Newport pier, Newport Quay, Old Head, Louisburgh, Roonagh Quay, Ross, Rossanrubble, Rossnakilly, Westport Pier, Whiteheather, 	<p>Interaction with anglers is unlikely to impact on Annex II species or Annex I habitats. However, it is important that harvesters follow the Code of Practice to ensure that other interactions do not occur.</p> <p>Mitigation:</p> <ul style="list-style-type: none"> There are several sites of relevance to fisheries and sea angling in Clew Bay. Harvesters will work to ensure that the space of fishermen and sea angler's is respected at all times. Ensure that the space of recreational/shore anglers is respected at all times, particularly when competitions and festivals are taking place, particularly during summer including the following areas: Mallaranny Strand, Curraun, Lough Furnace Newport pier, Newport Quay, Rossnakilly,

Recreational/Tourism Activity	Ref./source of information	No. of operators /sites	Locations/extent of operations	Potential interaction with <i>A. nodosum</i> harvesting in Clew Bay (inc. mitigation measure if applicable)
				Rosnakilly, Ross, Rossanrubble, Altapheebera and Whiteheather.
Game Angling Operators	Failte Ireland (2012)	≥2	Marine	Interaction with anglers is unlikely to impact on Annex II species or Annex I habitats.
Ferries to Offshore Islands	Failte Ireland (2012)	≥4	Clare Island Ferry Co Ltd, Clare Island. T: 098 23737 O'Malley Ferries, Clare Island. T: 086 8870814	No interaction. Ferries routes to offshore islands (Clare island, Inishturk, etc) are not included in this application.
Passenger ferries and cargo vessels ports, their routes and activities	Draft National Marine Planning Framework and references therein, 2019.	n/a	There are several ports and routes for ferries and passenger vessels in Clew Bay, in northern, southern and central areas, and towards the outer reaches of the complex to Clare Island and other areas.	No interaction. However, harvesters will be advised as part of the Code of Practice to work to ensure no interactions with passenger ferries and cargo vessels ports, their routes and activities.
WESTPORT Tourism Organisation (WTO)	https://westporttourism.com/	~13	Promotion of tourism in Mayo, including: <ul style="list-style-type: none"> • Fishing and boating • Golfing • Hiking • Cycle Routes • The Greenway • The Blueway • Blue Flag Beaches • Scenic Drives • Adventure • Island Tours (Clare Island, Achill Island) • Equestrian • Glenkeen Farm • Westport War Games 	No interaction. Many of these activities occur on land and interactions with other activities that take place in marine areas are unlikely. A range of mitigation measures are also in place to ensure no interactions with tourism and leisure related activities.
Discovery Points	Draft National Marine Planning Framework and references therein, 2019.	~4	Discovery Points	No interaction, as these sites are mainly land based. Existing measures are in place to prevent interactions with tourism and recreation on the shore.

Recreational/Tourism Activity	Ref./source of information	No. of operators /sites	Locations/extent of operations	Potential interaction with <i>A. nodosum</i> harvesting in Clew Bay (inc. mitigation measure if applicable)
Comhdháil Oileáin na hÉireann (Irish Islands Federation)	<ul style="list-style-type: none"> • Draft National Marine Planning Framework, 2019. • National Marine Planning Framework (“Rural Coastal and Island Communities”). • Official website: http://oileain.net/ • Our Living Islands – National Islands Policy 2023-2033. • Our Living Islands – Action Plan 2023-2026. 	≥9 islands in Clew Bay	<p>Work in the tourism area:</p> <p>Tourism is an important part of the economy on most of the islands and in order to boost tourism to the islands, a new tourism marketing campaign.</p> <p>Policies</p> <ul style="list-style-type: none"> • Improvements in access • Attractive, sustainable employment • Adequate, appropriate housing • Support for new, sustainable enterprises <p>Renewable Energy</p> <p>Local – National – European projects</p> <p>Island in Mayo: Clare Island, Inishbiggle, Inishcottle, Inishlyre, Clynish, Inishgort, Inishnakillew, Islandmore, Inishturk, Claggan, InishTurk Beg.</p>	<p>As outlined above, a range of mitigation measures are in place to prevent interactions with tourism, sport or recreation related activities. As such, there is no interactions with the work of Comhdháil Oileáin na hÉireann.</p> <p>There are no interactions with the policies Comhdháil Oileáin na hÉireann and their work in the area of renewables other European projects (e.g. EU Interreg).</p> <p>The application aligns with the NMPF (“Rural Coastal and Island Communities”) and the “Our Living Islands National Islands Policy 2023-2033” which provides a list of ‘Marine Economy’ sectoral activities most relevant to island economies, such as “<i>Blue Bioeconomy including marine Biotechnology and Bio based products</i>”. Our Living Islands Action Plan 2023-2026 also refers to the bioeconomy.</p>

(ii) Existing harvest activities

Group	Ref./source of information	No. of operators /sites	Locations/extent of operations	Potential interaction with <i>A. nodosum</i> harvesting in Clew Bay (inc. mitigation measure if applicable)
Commercial <i>A. nodosum</i> harvesting	None. Knowledge is common and/or garnered through word of mouth.	Approx. 3	Clew Bay	<p>Risk: <i>A. nodosum</i> has been harvested in Clew Bay in recent years by a number of companies, including Arramara. Quantities harvested are unknown. There is a risk for in combination effects of the proposed hand harvesting by BioAtlantis Ltd. and existing harvest activities.</p> <p>Mitigation: To ensure compliance with Clew Bay's conservation objectives and prevent in combination or cumulative effects, the following applies:</p> <ul style="list-style-type: none"> • Harvesting cannot occur in areas with existing appurtenant rights/burdens in relation to seaweed, without first obtaining permission from the person to whom those rights belong. • Where Profit-à-Prendre harvesting rights are successfully registered with the PRAI, the harvesting plans will be adjusted to ensure that those individuals can continue to harvest <i>A. nodosum</i>. • If unlicensed large-scale commercial harvesting is observed to occur, this will be recorded and advice will be sought from the relevant authorities on how to proceed. BioAtlantis will not harvest in such areas until <i>A. nodosum</i> has regenerated and will work to ensure that any harvesting is limited to 20% of the total available biomass per site per annum and continuous disturbance of each community type does not exceed the required limit. • Any commercial user having small requirements of approximately 1 tonne per annum (e.g. hotels, health Spas)

				<p>will be identified and BioAtlantis will work to prevent in combination effects.</p> <ul style="list-style-type: none"> Harvesters will not interfere with people who harvest small volumes of seaweed, edible seaweeds or invertebrates for their own personal use, e.g. dillisk, carrageenan, limpets, mussels, clams, periwinkles and scallops.
Traditional hand harvesters	As above	~20 individuals	As above. In addition, some people harvest small volumes of edible seaweeds for their own personal use including dillisk, carrageenan and other seaweeds.	<p>Risk: as above</p> <p>Mitigation:</p> <ul style="list-style-type: none"> BioAtlantis will employ /contract traditional hand harvesters will work with BioAtlantis' system. This will ensure that traditional hand harvest activities are incorporated seamlessly into a fully licensed system, thus protecting traditional methods, the harvesters themselves and the environment, in tandem. BioAtlantis aim to get the best from the traditional approach but provide improvements which ensure better conditions and compliance with the SAC objectives. Harvesting cannot occur in areas with existing appurtenant rights/burdens in relation to seaweed, without first obtaining permission from the person to whom those rights belong. Where Profit-à-Prendre harvesting rights are successfully registered with the PRAI, the harvesting plans will be adjusted to ensure that those individuals can continue to harvest <i>A. nodosum</i>.
Hotels, Health SPAs and other local companies (listed below)	Listed below	~12 companies	Clew Bay	<p>Risk: Some local hotels and local businesses may currently source seaweed from harvesters in Clew Bay.</p> <p>Mitigation: Any commercial user having small requirements of approximately 1 tonne per annum (e.g. hotels, health Spas) will be identified and BioAtlantis will work to prevent in combination effects.</p>
<ul style="list-style-type: none"> Clew Bay Hotel 	https://www.clewbayhotel.com/	1	Westport	<p>Risk: Not known if seaweed is used.</p>

				Mitigation: as above
<ul style="list-style-type: none"> • Hotel Westport • Mill Times Hotel • The Carlton Atlantic Coast Hotel • Mulranny Park Hotel 	www.hotelwestport.ie www.westportcoasthotel.ie www.mulrannyparkhotel.ie	4	Westport, Mulranny	Risk: Not known if seaweed is used. Mitigation: as above
<ul style="list-style-type: none"> • The Castlecourt Hotel 	https://www.castlecourthotel.ie/	1	Westport	Risk: 'Seaweed treatments' service advertised. Unknown if seaweed is sourced from Clew Bay or supplied by other companies or commercial products. Mitigation: as above
<ul style="list-style-type: none"> • The Knockranny House 	https://www.knockrannyhousehotel.ie/	1	Westport	Risk: Not known if seaweed is used. Mitigation: as above
<ul style="list-style-type: none"> • The Wyatt Hotel 	www.wyathotel.com	1	Westport	No seaweed treatments offered
<ul style="list-style-type: none"> • Westport Plaza Hotel 	https://www.westportplazahotel.ie/	1	Westport	Risk: 'Seaweed treatments' service advertised. Unknown if seaweed is sourced from Clew Bay or supplied by other companies or commercial products. Mitigation: Any commercial user having small requirements of approximately 1 tonne per annum (e.g. hotels, health Spas) will be identified and BioAtlantis will work to prevent in combination effects.
<ul style="list-style-type: none"> • Westport Woods Hotel 	https://www.westportwoodsotel.com/spa-packages.html	1	Westport	Risk: 'Seaweed' treatments are provided. Unknown if seaweed is sourced from Clew Bay or supplied by other companies or commercial products. Mitigation: as above
<ul style="list-style-type: none"> • Rosmoney Spa & Seaweed Baths 	---	1	Westport	Risk: 'Traditional Seaweed Baths' service is provided. Unknown if seaweed is sourced from Clew Bay or supplied by other companies or commercial products. Mitigation: as above

Mulranny Tourism Office: Seaweed harvesting discovery days	---	1	Mulranny	<p>Risk: Seaweed harvesting discovery days are organized by a number of groups in the Mulranny area.</p> <p>Mitigation: BioAtlantis will not harvest beyond Rossmurvagh, thus avoiding much of the Mulranny area. This avoids in combination effects with excursions in the area.</p>
Slow Food Mayo	https://slowfoodireland.com/	1	Locations include: Old head Pier, Old Head Beach, Louisburg.	<p>Risk: Beach foraging for edible seaweed and seaweed foraging excursions/walks and talks are organized, demonstrating how to identify, sustainably harvest and use native species of seaweed. Harvesting will not take place at Old head Pier, Old Head Beach, Louisburg.</p> <p>Mitigation: BioAtlantis will also avoid beach areas and will avoid sites where seaweed foraging days are observed to be taking place. This avoids in combination effects with these excursions/activities.</p>
Salmon draft licence	n/a	>1	Clew Bay, e.g. Owenwee River. Salmon draft licenses and draft net fishing takes place at several locations, including areas adjacent to estuaries.	<p>Risk: In combination effects between harvesting and draft net fishing are extremely unlikely to occur. However, some people with salmon draft licences “cut back” seaweed to allow for use of their nets.</p> <p>Mitigation: Keep distance and do not interfere with licensed salmon draft fishermen who may cut back seaweed when using their nets.</p>

(iii) Existing Aquaculture

The Marine Institute have characterised the extent of existing aquaculture activities in Clew Bay (2019 report).

Aquaculture activity	Ref./source of information	No. of operators/sites	Locations/extent of operations	Potential interaction with <i>A. nodosum</i> harvesting in Clew Bay (inc. mitigation measure if applicable)																																																						
Licensed activities: <ul style="list-style-type: none">• Abalone - <i>Haliotis tuberculata</i>• Crawfish• King Scallops (<i>Pecten maximus</i>)• Lobster (<i>Homarus gammarus</i>)• Manila clams (<i>Venerupis phittipinnarium</i>)• Mussels (<i>Mytilus Edulis</i>)• Oyster (<i>Crassostrea gigas</i>);• Prawns• Seaweeds (brown, red and green).	Department of Agriculture, Food and the Marine Marine Institute (2019)	58	<p>Activity; no. of licenses:</p> <ul style="list-style-type: none">• Abalone - <i>Haliotis tuberculata</i>; n=1• Crawfish, n=1• King Scallops (<i>Pecten maximus</i>) ; n=2• Lobster (<i>Homarus gammarus</i>); n=2• Manila clams (<i>Venerupis phittipinnarium</i>), n=2• Mussels (<i>Mytilus Edulis</i>), n=9• Oyster (<i>Crassostrea gigas</i>); n=48• Prawns; n=1• Seaweeds (brown, red and green), n=1 <p>Clew Bay: Existing aquaculture sites in Clew Bay are listed below. Maps showing the location of sites in relation to harbour seals haul out sites are provided in Figures A and B.</p> <table><tr><th>No.</th><th>Licence application</th><th>Activity</th></tr><tr><td>1</td><td>AQ 826 T10-56 B Masterson & D McNulty</td><td>Blue mussel (<i>Mytilus edulis</i>)</td></tr><tr><td>2</td><td>AQ 827 T10-198 Patrick Gavin</td><td>Oyster (<i>Crassostrea gigas</i>)</td></tr><tr><td>3</td><td>AQ 828 T10-236 Colm Cronin</td><td>Oyster (<i>Crassostrea gigas</i>)</td></tr><tr><td>4</td><td>AQ 829 T10-245 Carrowholly Shellfish</td><td>Oyster (<i>Crassostrea gigas</i>)</td></tr><tr><td>5</td><td>AQ 830 T10-261 Eirshell Ltd</td><td>Lobster and crawfish</td></tr><tr><td>6</td><td>AQ 831 T10-276 SOFI Shellfish</td><td>Oyster (<i>Crassostrea gigas</i>)</td></tr><tr><td>7</td><td>AQ 832 T10-277 SOFI Shellfish</td><td>Oyster (<i>Crassostrea gigas</i>)</td></tr><tr><td>8</td><td>AQ 833 T10-278A Sean O'Grady</td><td>Oyster (<i>Crassostrea gigas</i>)</td></tr><tr><td>9</td><td>AQ 834 T10-278B Sean O'Grady</td><td>Oyster (<i>Crassostrea gigas</i>)</td></tr><tr><td>10</td><td>AQ 835 T10-278C Sean O'Grady</td><td>Oyster (<i>Crassostrea gigas</i>)</td></tr><tr><td>11</td><td>AQ 836 T10-278D Sean O'Grady</td><td>Oyster (<i>Crassostrea gigas</i>)</td></tr><tr><td>12</td><td>AQ 837 T10-278E Sean O'Grady</td><td>Oyster (<i>Crassostrea gigas</i>)</td></tr><tr><td>13</td><td>AQ 838 T10-279 Anthony Legg</td><td>Abalone - <i>Haliotis tuberculata</i></td></tr><tr><td>14</td><td>AQ 839 T10-283 Thos Muldoon</td><td>Oyster (<i>Crassostrea gigas</i>)</td></tr><tr><td>15</td><td>AQ 840 T10-285 Peter McManamon</td><td>Oyster (<i>Crassostrea gigas</i>)</td></tr><tr><td>16</td><td>AQ 841 T10-288 SOFI Shellfish</td><td>Oyster (<i>Crassostrea gigas</i>)</td></tr><tr><td>17</td><td>AQ 842 T10-290 MI Fahy</td><td>Oyster (<i>Crassostrea gigas</i>)</td></tr></table>	No.	Licence application	Activity	1	AQ 826 T10-56 B Masterson & D McNulty	Blue mussel (<i>Mytilus edulis</i>)	2	AQ 827 T10-198 Patrick Gavin	Oyster (<i>Crassostrea gigas</i>)	3	AQ 828 T10-236 Colm Cronin	Oyster (<i>Crassostrea gigas</i>)	4	AQ 829 T10-245 Carrowholly Shellfish	Oyster (<i>Crassostrea gigas</i>)	5	AQ 830 T10-261 Eirshell Ltd	Lobster and crawfish	6	AQ 831 T10-276 SOFI Shellfish	Oyster (<i>Crassostrea gigas</i>)	7	AQ 832 T10-277 SOFI Shellfish	Oyster (<i>Crassostrea gigas</i>)	8	AQ 833 T10-278A Sean O'Grady	Oyster (<i>Crassostrea gigas</i>)	9	AQ 834 T10-278B Sean O'Grady	Oyster (<i>Crassostrea gigas</i>)	10	AQ 835 T10-278C Sean O'Grady	Oyster (<i>Crassostrea gigas</i>)	11	AQ 836 T10-278D Sean O'Grady	Oyster (<i>Crassostrea gigas</i>)	12	AQ 837 T10-278E Sean O'Grady	Oyster (<i>Crassostrea gigas</i>)	13	AQ 838 T10-279 Anthony Legg	Abalone - <i>Haliotis tuberculata</i>	14	AQ 839 T10-283 Thos Muldoon	Oyster (<i>Crassostrea gigas</i>)	15	AQ 840 T10-285 Peter McManamon	Oyster (<i>Crassostrea gigas</i>)	16	AQ 841 T10-288 SOFI Shellfish	Oyster (<i>Crassostrea gigas</i>)	17	AQ 842 T10-290 MI Fahy	Oyster (<i>Crassostrea gigas</i>)	<p>Risk: Hand harvest activities may exacerbate existing effects attributed to licensed aquaculture activities, e.g. disturbance at sites relevant to harbour seals and effects on mudflats and sandflats. Overall, the risk of such interactions is considered low. In a report by the Marine Institute (2019), supporting Appropriate Assessment of Aquaculture and Risk Assessment of Fisheries in Clew Bay Complex SAC, it is concluded that:</p> <ul style="list-style-type: none">• “The likely overlap between these activities [<i>seaweed harvesting</i>] and intertidal shellfish culture is considered small as the (reef) habitat is not considered suitable for shellfish culture”.• “It is unlikely that the in-combination impacts of transport routes across the intertidal flats will result in a persistent disturbance of >15% on intertidal sandflats and mudflats”.• “Current activities [<i>aquaculture</i>] do not physically overlap with any breeding or moulting locations.”• “The current levels of licenses aquaculture (existing and renewals) and the new applications are considered non-disturbing to harbour seal conservation objectives”• “the interaction with bottom culture operators/ operations with the otter is likely to be minimal. It is unlikely that this culture type poses a risk to otter populations in Clew Bay. Impacts can be discounted”.• “The activities proposed in areas that potentially overlap with otter habitat do not pose a threat to the conservation status of this species”.
No.	Licence application	Activity																																																								
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			18	AQ 843 T10-291 Clew Bay Marine Services	Cultivation of King Scallops (<i>Pecten maximus</i>) and Lobsters (<i>Homarus gammarus</i>)
			19	AQ 844 T10-292A Padraic Gannon	Farming of Pacific Oysters (<i>Crassostrea gigas</i>), Manila clams (<i>Venerupis phittipinarius</i>) and mussels (<i>Mytilus edulis</i>).
			20	AQ 845 T10-292B Padraic Gannon	Farming of Pacific Oysters (<i>Crassostrea gigas</i>), Manila clams (<i>Venerupis phittipinarius</i>) and mussels (<i>Mytilus edulis</i>).
			21	AQ 846 T10-293 Carrowholly Shellfish	Oyster (<i>Crassostrea gigas</i>)
			22	AQ 847 T10-294 Fergal Guilfoyle	Oyster (<i>Crassostrea gigas</i>)
			23	AQ 848 T10-295 Fergal Guilfoyle	Oyster (<i>Crassostrea gigas</i>)
			24	AQ 849 T10-300 Thos Muldoon	Oyster (<i>Crassostrea gigas</i>)
			25	AQ 850 T10-302A Connemara Seafoods	Oyster (<i>Crassostrea gigas</i>)
			26	AQ 851 T10-302B Connemara Seafoods	Oyster (<i>Crassostrea gigas</i>)
			27	AQ 852 T10-303 McNulty Oyster Farms	Oyster (<i>Crassostrea gigas</i>)
			28	AQ 855 T10-304C Maitias Burke	Oyster (<i>Crassostrea gigas</i>)
			29	AQ 856 T10-304D Maitias Burke	Oyster (<i>Crassostrea gigas</i>)
			30	AQ 857 T10-305A Rosmoney Shellfish	Oyster (<i>Crassostrea gigas</i>)
			31	AQ 858 T10-305B Rosmoney Shellfish	Oyster (<i>Crassostrea gigas</i>)
			32	AQ 859 T10-308 Niall O'Boyle	Mussels, Pacific Oysters, King Scallops, Seaweed and Prawns.
			33	AQ 860 T10-321 SOFI Shellfish	Oyster (<i>Crassostrea gigas</i>)
			34	AQ 888 T10-299 Irish Oysters Harvest Ltd	Oyster (<i>Crassostrea gigas</i>)
			35	AQ 889 T10-301A Blackshell Farm Ltd	Mussels
			36	AQ 890 T10-301B Blackshell Farm Ltd	Mussels
			37	AQ 891 T10-301C Blackshell Farm Ltd)	Mussels
			38	AQ 893 T10-73B Rosmoney Shellfish Ltd	Oyster (<i>Crassostrea gigas</i>)
			39	AQ 895 T10-298A Sean O'Grady	Oyster (<i>Crassostrea gigas</i>)
			40	AQ 896 T10-298B Sean O'Grady	Oyster (<i>Crassostrea gigas</i>)
			41	AQ 897 T10-298C Sean O'Grady	Oyster (<i>Crassostrea gigas</i>)
			42	AQ 894 T10-202/1 Sean O'Grady	Oyster (<i>Crassostrea gigas</i>)
			43	AQ 949 T10-260 John Mc Manamon	Oyster (<i>Crassostrea gigas</i>)
			44	AQ 909 T10-252 Charles O'Malley	Oyster (<i>Crassostrea gigas</i>)
			45	AQ 907 T10-259 Phoenix Sea Farm Ltd	Mussels
			46	AQ 853 T10-342A Atlantic Greenway Oysters Ltd	Oyster (<i>Crassostrea gigas</i>)
			47	AQ 854 T10-342B Atlantic Greenway Oysters Ltd	Oyster (<i>Crassostrea gigas</i>)
			48	AQ 1289 T10-336 Charles O' Malley	Oyster (<i>Crassostrea gigas</i>)

Mitigation:

Although the risk of in combination effects between planned and existing aquaculture and *A. nodosum* harvesting very low, the following mitigation measures will be put in place:

- Seasonal avoidance of sensitive harbour seal and bird breeding/wintering sites will be adhered to. Particular caution is required when operating near or approaching areas where planned and existing aquaculture sites are known to be in relatively close proximity to harbour seal breeding site (Inishcarrick, Inishcorky, Inishdasky, Inishilra), harbour seal moulting sites (Inisheeny), harbour seal resting sites (Inishtubrid), bird breeding sites (MoynishBeg, Inishcorky, Mauherillan) and bird wintering sites (Inisheeny). This will ensure that harbour seals and birds are unaffected (Code of Practice, appendix 4).
- The Code of practice for environmentally safe navigation will be followed to ensure no in combination effects which would damage mudflats and sandflats.
- Ensure caution when travelling in the vicinity of defined aquaculture navigation routes. Do not impede workboat or tractor access to aquaculture sites along defined access routes, including but not limited to those associated with Clynish, Inishcottle, Inishcottle Pier, Kilmeena, Murrisk, Newfield (Mulranny), Roigh Pier (near Rockfleet bay), Roskeen South (Carrowbeg), Rosmoney Pier, Ross, Rosslaher, Rossmalley, Rossmoney and Rossmailley.
- Do not interfere with aquaculture users who may be licensed to harvest or grow seaweed.
- Ensure that no aspects of *A. nodosum* harvesting gives rise to any physical interaction or contact with aquaculture production units, their structures or anchors.

			<table><tr><td>49</td><td>AQ 1292 T10-339 Kevin Kilroy</td><td>Oyster (<i>Crassostrea gigas</i>)</td></tr><tr><td>50</td><td>AQ 1284 T10-301 Blackshell Farm Ltd</td><td>Mussels, seaweeds (brown, red and green).</td></tr><tr><td>51</td><td>AQ 1285 T10-329 John Moran</td><td>Oyster (<i>Crassostrea gigas</i>)</td></tr><tr><td>52</td><td>AQ 1286 T10-333 Joseph Mc Manamon</td><td>Oyster (<i>Crassostrea gigas</i>)</td></tr><tr><td>53</td><td>AQ 1287 T10-334 Padraig Mc Manamon</td><td>Oyster (<i>Crassostrea gigas</i>)</td></tr><tr><td>54</td><td>AQ 1288 T10-335 Rosmoney Shellfish Ltd</td><td>Oyster (<i>Crassostrea gigas</i>)</td></tr><tr><td>55</td><td>AQ 1290 T10-337 Atlantic Greenway Oysters Ltd</td><td>Oyster (<i>Crassostrea gigas</i>)</td></tr><tr><td>56</td><td>AQ 1291 T10- 338 SOFI Shellfish Ltd</td><td>Oyster (<i>Crassostrea gigas</i>)</td></tr><tr><td>57</td><td>AQ 1293 T10- 340 John McManamon</td><td>Oyster (<i>Crassostrea gigas</i>)</td></tr><tr><td>58</td><td>AQ 1294 T10- 341 Phoenix Seafarm Ltd</td><td>Mussels</td></tr></table>	49	AQ 1292 T10-339 Kevin Kilroy	Oyster (<i>Crassostrea gigas</i>)	50	AQ 1284 T10-301 Blackshell Farm Ltd	Mussels, seaweeds (brown, red and green).	51	AQ 1285 T10-329 John Moran	Oyster (<i>Crassostrea gigas</i>)	52	AQ 1286 T10-333 Joseph Mc Manamon	Oyster (<i>Crassostrea gigas</i>)	53	AQ 1287 T10-334 Padraig Mc Manamon	Oyster (<i>Crassostrea gigas</i>)	54	AQ 1288 T10-335 Rosmoney Shellfish Ltd	Oyster (<i>Crassostrea gigas</i>)	55	AQ 1290 T10-337 Atlantic Greenway Oysters Ltd	Oyster (<i>Crassostrea gigas</i>)	56	AQ 1291 T10- 338 SOFI Shellfish Ltd	Oyster (<i>Crassostrea gigas</i>)	57	AQ 1293 T10- 340 John McManamon	Oyster (<i>Crassostrea gigas</i>)	58	AQ 1294 T10- 341 Phoenix Seafarm Ltd	Mussels	
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Aquaculture Organizations: <ul style="list-style-type: none">• C.L.A.M.S.• The Clew Bay Marine Forum (C.B.M.F.)• Clew Bay Oyster Co-op (C.B.O.C.).	n/a	4	<ul style="list-style-type: none">• C.L.A.M.S: Co-ordinated Local Aquaculture Management Systems• The Clew Bay Marine Forum (C.B.M.F.): includes shellfish farmers, for mussels, gigas oysters & scallops, finfish farmers for salmon & trout• Clew Bay Oyster Co-op (C.B.O.C.): native oysters.• Clew Bay Potfishermens associations (CBPA): lobster, crab, prawn & shrimp.	<i>A. nodosum</i> harvesting is entirely compatible with the activities undertaken by members of CLAMS, CBMF and CBOC. This is evidenced by the long history of commercial <i>A. nodosum</i> harvesting in Clew Bay alongside these activities, which is oftentimes undertaken by members of the aquaculture and fishing communities. As outlined above, mitigation measures are in place to ensure that the harvesting does not interact with or lead to in combination effects with aquaculture and fisheries activities. In addition, two reports by the Marine Institute (2014, 2019) concludes that <i>A. nodosum</i> harvesting has a very low spatial overlap with intertidal aquaculture and that in combination effects of transport routes are unlikely to give rise to significant disturbance. As such, potential impacts on Annex I and II species and habitats are unlikely to occur.																														

The Marine Institute have characterised the extent of existing aquaculture activities in Clew Bay (2014 report).

Aquaculture activity	Ref./source of information	No. of operators /sites	Locations/extent of operations	Potential interaction with <i>A. nodosum</i> harvesting in Clew Bay (inc. mitigation measure if applicable)
Licensed activities: shellfish species (oyster, mussels, clams), culture of Atlantic Salmon, fish hatchery, etc	Marine Institute (2014)	>30	Clew Bay	<p>Risk: hand harvest activities may exacerbate existing effects attributed to licensed aquaculture activities, e.g. disturbance at sites relevant to harbour seals and effects on mudflats and sandflats. Overall, the risk of such interactions is considered low (Marine Institute, 2014). Impacts on Otter (<i>Lutra lutra</i>) is deemed not significant. However, the Marine Institute cannot rule out potential effects of proposed aquaculture on seal behaviour at Inishcorky (pg. 78, Marine Institute, 2014).</p> <p>Mitigation:</p> <ul style="list-style-type: none"> Seasonal avoidance of sensitive harbour seal sites will be adhered to for all haul out sites, including those listed above. This will ensure that harbour seals are unaffected (Code of Practice, appendix 4). Code of practice for environmentally safe navigation will be followed to ensure no in combination effects which would damage mudflats and sandflats.

Data on aquaculture-related activities in proximity to harbour seal haul out sites

There are substantial mollusc production activities in the Clew Bay Complex (see Tables below).

Boundary	Bed name	Species
Area bounded to the south by 53° 52.6'N and to the West by 09° 37'W and to the east by 09° 35.15'W1	Newport Bay	Oysters, mussels
Area within a one nautical mile (1,852 M) radius of Roskeen Pt. (53° 53.46'N, 09° 40.10' W)	Tieranaur Bay	Oysters
Area bounded to the west by a line from Mulranny Pier to Old Head and to the south east by 09° 35.37'W1	Corrie Channel and Rosslaher Beds	Mussels and Oysters.

General distribution of designated Mollusc Production areas in Clew Bay (adapted from The Status of Irish Aquaculture report, Browne *et al.*, 2006).

Production area	Species	X coordinates	Y coordinates
Carraholly	Not specified	-9.5933	53.7997
Murrisk	M. edulis	-9.6297	53.7917
Corrie Channel	M. edulis	-9.577	53.861
Rosslaher	C. Gigas	-9.572	53.857
Mynah	C. gigas	-9.584	53.848
Inishlaughil	C. gigas	-9.631	53.863
Inisquirk	C. gigas	-9.6775	53.8856

Classified Mollusc Production Areas 2013 (adapted from Sea Fisheries Protection Authority, 2013)

The risk of cumulative or in-combination effects of *A. nodosum* harvesting on these activities is very low given that:

- Corrie Channel, Rosslaher, Mynah, Murrisk and Carraholly production areas do not represent documented haul-out sites for harbour seals nor do they lie in close proximity to haul out sites.
- The production site at Inishlaughil does not represent a haul out site, nor does it lie in close proximity to haul out sites. The nearest haul out site to Inishlaughil is over 200 meters away, and is largely shielded from the harbour seal's view by the presence of Inishfeis and Inishpult.

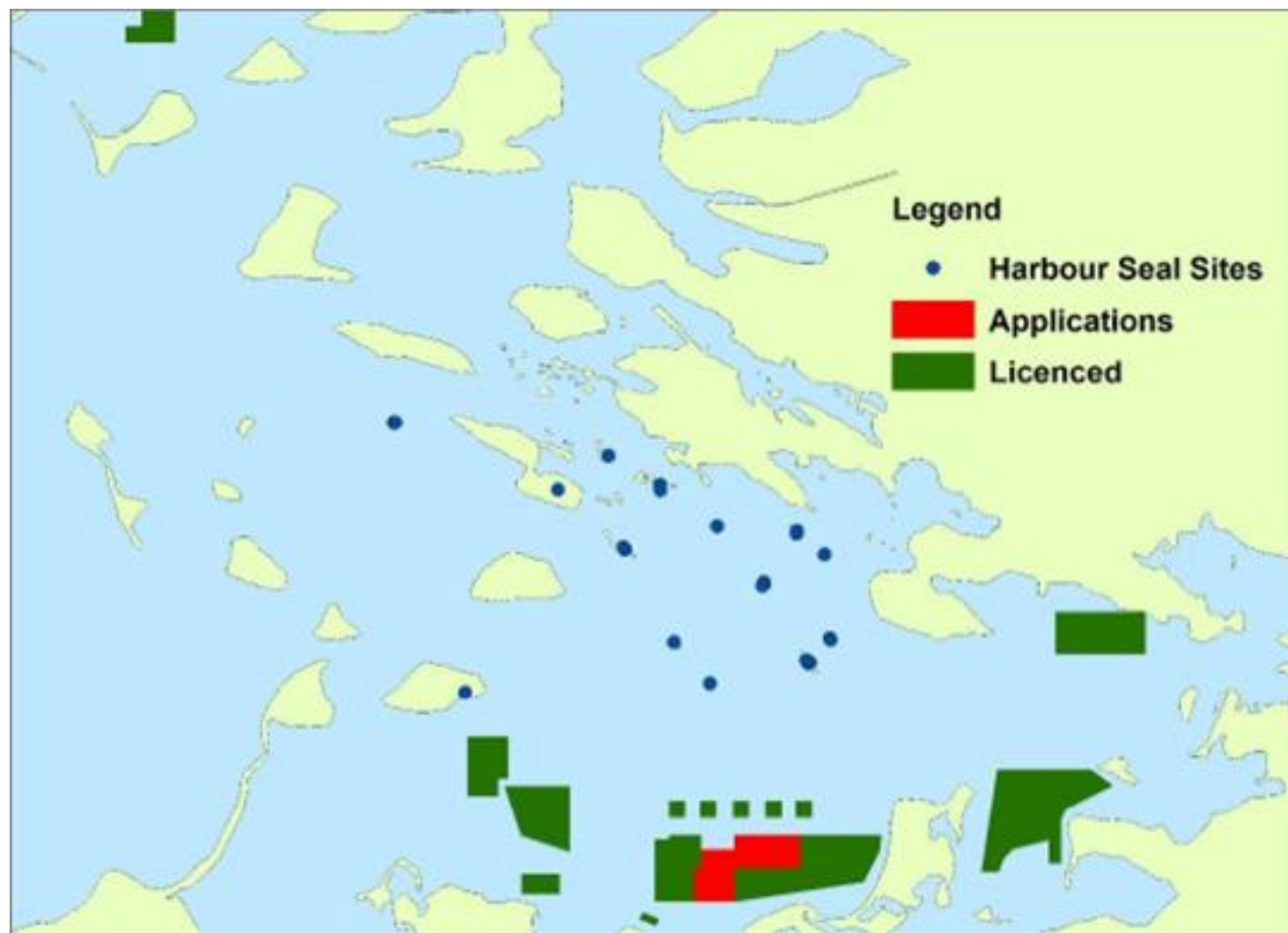
There are two breeding sites located in very close proximity to Inishquirk. Harvest activities will not take place at these sites during breeding season between May and July. Between Oct-April, harvest activities will be undertaken according to the BioAtlantis code of practise for protection of the harbour seal (see Appendix 4), thus ensuring that any potential impact on seal behaviour is averted.

Figure A: Aquaculture and Harbour Seal Sites in North Clew Bay



Adapted from the Marine Institute, 2019

Figure B: Aquaculture and Harbour Seal Sites in South Clew Bay



Adapted from the Marine Institute, 2019

(iv) Harvesting of invertebrates

Invertebrate harvesting	Ref./source of information	No. of operators /sites	Locations/extent of operations	Potential interaction with <i>A. nodosum</i> harvesting in Clew Bay (inc. mitigation measure if applicable)
Periwinkles	Marine Institute (2014) Marine Institute (2015)	unknown	Hand gathering of periwinkle occurs within the intertidal zone of Clew Bay, on shores containing <i>A. nodosum</i> and <i>Fucus</i> sp.	<p>Risk: Potential risks associated with periwinkle harvesting are reductions in periwinkle population numbers due to their removal and anthropogenic disturbances caused by trampling. There is potential for in-combination effects associated with <i>A. nodosum</i> hand harvest activities and existing periwinkle harvest activities.</p> <p>Mitigation: The standards developed as part of the Codes of Practice (Appendix 4) reduce the likelihood of any in combination effects associated with existing hand gathering of periwinkles activities.</p> <ul style="list-style-type: none"> • Harvest of <i>A. nodosum</i>: Harvesters will be taught to leave between 8-12 inches of the crop behind. Cutting below 8 inches will be prevented. This standard will be monitored by the Resource Manager. This approach (a) avoids extensive removal of <i>A. nodosum</i> canopy coverage and damage to the ecosystem, (b) avoids interactions with or by-catch of dormant or resting periwinkles positioned at the base of the <i>A. nodosum</i> canopy and (c) ensures that on development into free-living forms, <i>L. Littorina</i> species are able to settle and establish within the intact canopy. • <i>L. obtusata</i> eggs: Harvesters will work to avoid <i>A. nodosum</i> plants which contain visible <i>L. obtusata</i> egg masses. This is important to prevent harvest of viable eggs, thereby promoting maintenance of population size. • Do not harvest <i>Fucus</i>: <i>Fucus</i> content of harvested <i>A. nodosum</i> will be limited to <5%, thus preventing removal of

				<p>an additional canopy source which supports periwinkles and other species.</p> <ul style="list-style-type: none"> • By-catch checks: Inadvertent co-removal of periwinkles identified post-harvest will be collected and returned to the water, where possible.
Cockles There is no commercial dredge fishery for cockles. Hand gathering may occur.	Marine Institute (2014)	Unknown	Cockles are abundant on intertidal muddy sand shores, e.g. east of Mullranny.	<p>Risk: Potential impacts of cockle gathering include impacts on intertidal sedimentary communities (Mudflats and sandflats not covered by seawater at low tide [1140]). There is potential for in-combination effects associated with <i>A. nodosum</i> hand harvest activities and cockle hand gathering, as seaweed hand harvesting may involve activities along the rock shoreline located beyond mudflats and sandflats.</p> <p>Mitigation: A code of practice is in place to ensure environmentally safe navigation when operating mudflats and sandflat areas. This will prevent any impact on intertidal sedimentary communities (See Appendix 4).</p>
Clew Bay Potfishermens associations (CBPA): lobster, crab, prawn & shrimp.	Marine Institute (2019)	>16	<ul style="list-style-type: none"> • Shrimp potting: n=15 vessels. Primarily operate in deep water along outer reaches of the bay. • Prawn potting: Small scale. Mainly occurs in middle area of the bay over mud and sand substrates. • Lobster and crab: n=16 fishermen. Primarily a subtidal activity along the outer reaches of the complex. • Whelk: 2 vessels; subtidal activity. 	<p>Risk: As there is no overlap between <i>A. nodosum</i> harvesting and potting, the risk of interactions is extremely low. Harvesting activities will be limited to the intertidal zone to prevent interactions from occurring.</p> <p>Mitigation:</p> <ul style="list-style-type: none"> • Ensure that seaweed harvesting only takes place in the intertidal zone and not in subtidal areas of relevance to fisheries activities such as potting (Lobster, crab, shrimp, whelk and nephrops), dredging (e.g. scallop, native oyster, cockle), trammel net fishing for bait, otter trawl, tangle net (crayfish), gillnet, Mid-water trawl. Activities in subtidal waters include site visits, transport and transfer of <i>A. nodosum</i> to pick up points.
Other invertebrates	none	Unknown	e.g. Amphipods, isopods.	<p>Risk: Harvesting of invertebrates in Clew Bay is primarily limited to deeper waters, thus removing any risk of in-</p>

			Some individuals harvest or collect invertebrates for their own personal use, including: limpets, mussels, clams, periwinkles and scallops.	<p>combination effects associated with hand harvesting activities. However, there is a risk that hand harvesting could lead to by-catch of slow moving invertebrates in the intertidal zone.</p> <p>Mitigation:</p> <ul style="list-style-type: none">• By-catch: A code of practice is in place that requires harvesters to work to ensure that co-harvesting of other species does not occur.• Inadvertent co-removal of Animalia identified post-harvest will be collected and returned to the water, where possible.• Do not interfere with individuals who harvest or collect invertebrates, e.g. limpets, mussels, clams, periwinkles and scallops.
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(b) Planned Operations

- i. Recreational & Tourism.
- ii. Harvest activities
- iii. Aquaculture
- iv. Harvesting of invertebrates

(i) Recreation, Tourism and other plans

Planned activity	Ref./source of information	No. of operators /sites	Locations/extent of operations	Potential interaction with <i>A. nodosum</i> harvesting in Clew Bay (inc. mitigation measure if applicable)
Louisburgh	Mayo county council plans for developing Clew Bay, 2014-2020 (Ref: Mayo Council, 2013a)	1	Mayo county council aim to encourage development in the town of Louisburgh	Risk: no risk of in combination effects as Louisburgh is out of the scope of the current application. Mitigation: not required
Newport	Mayo county council plans for developing Clew Bay, 2014-2020 (Ref: Mayo Council, 2013a) Newport Business Association strategy (NBA), 2019.	1	Mayo county council aim to: <ul style="list-style-type: none"> • Develop the town. • Enhance existing amenity areas/facilities. E.g. river/estuary, playground, sporting pitches; tennis courts, Grace Kelly Amenity Park and the Great Western Greenway. • Provide adequate waste water and water infrastructure, in line with further growth. • Maintain and develop walking routes and linkages to routes throughout the town. Newport Business Association (NBA): Strategy and aims to brand and promote Newport as “The Town of the Two Graces” (Grainne Uaile and Grace Kelly). Key action: to commission sculptures of the Two Graces.	Risk: no risk of in combination effects. Mayo County Council have committed to developing Newport with respect to SAC/SPA requirements. Therefore, in combination effects between hand harvesting and future developments are unlikely. Current factors influencing the integrity of cSAC have been identified by Mayo County council (ref: pg.29-30, Mayo County Council, 2013). A statement demonstrating their commitment is as follows: “It is an objective of the Council to implement Article 6 of the EU Habitats Directive, by subjecting any plan or project likely to have significant adverse effects on the integrity of Natura 2000 or European Sites (SACs, SPAs), whether directly (in situ), indirectly (ex-situ) or in combination with other plans or projects, to an appropriate assessment in order to inform decision making” (ref: pg.116, Mayo County Council, 2013). There is no risk of in combination effects with the Newport Business Association strategy or in combination effects with

Planned activity	Ref./source of information	No. of operators /sites	Locations/extent of operations	Potential interaction with <i>A. nodosum</i> harvesting in Clew Bay (inc. mitigation measure if applicable)
				aims to brand and promote Newport as “The Town of the Two Graces” or the commissioning of the two sculptures of the Two Graces, which are both land-based. Mitigation: not required
Westport	Westport Towns and Environs Development Plan 2010-2016 (ref: Mayo County Council, 2010)	1	Mayo county council aim to: <ul style="list-style-type: none"> • Encourage and promote sustainable tourism developments and activities • Facilitate community-led job created schemes. • To support the implementation of the Failte Ireland West: Regional Tourism Development Plan (2008) • Identify suitable development which utilizes Roman Island as a tourism/recreational area for Westport. • To encourage and provide marine related tourism, sport and leisure facilities, bathing area and public access to the shore at Roman Island • Prevent pollution of existing watercourses and Clew Bay by the continuing Maintenance of the Westport drainage sewerage network and waste water treatment plant. 	Risk: There are potential risks of in-combination effects with Westport Towns and Environs Development Plan 2010-2016. However, this is likely to be minimal as Mayo County Council have committed to “sustainable tourism developments and activities”. In particular, they have created a guide which lists 'vulnerable areas' in map format, which will allow them determine which areas are appropriate for development. A map was produced with layers key sensitive areas in Clew Bay. This was done as part of the Strategic Environmental Assessment of the Plan. Given the commitment of Mayo County Council the objectives for Clew Bay SAC, the potential for in combination effects between hand harvesting and planned developments for 2010-2016 are reduced. However, Roman Island has been targeted for considerable development in terms of marine-based activities and tourism. It is important to mitigate against any potential interaction between hand harvesting and increased tourism-related activities, e.g. increased anthropogenic disturbances. Peak tourist season in Westport is defined as July-August. Mitigation: <ul style="list-style-type: none"> • Hand harvesters will not harvest at Roman island between May and August. This prevents any in combination anthropogenic disturbances from occurring. • Hand harvesters will not work within 50m of bases where equipment or vessels are manually introduced in the water. This ensures that no in combination effects occur.

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Newport, Westport.	Strategic Flood Risk Assessment to the Draft Mayo County Development Plan 2014-2020 (ref: Mayo County Council, 2014)	1	Mayo county council aim to: Minimise risk of flood to people, business, infrastructure and the environment by identifying flood risks (existing and future)	Risk: no risk of in combination effects identified. Mitigation: not required
Mayo	Draft noise action plan 2013-2018 (Mayo County Council, 2013b).	1	Mayo county council aim to: Address environmental noise from sections of major roads.	Risk: no risk of in combination effects identified. Mitigation: not required
Mayo	Hynes, P. (2014). Adopted Annual Budget for Mayo County Council	1	Mayo County Council have budgeted for the following operations in 2014: <ul style="list-style-type: none"> • NS9 Westport-Newport at Kilbride, Phase I 3 kms. This scheme incorporates a cycle-way, as part of the Great Western Greenway which extends from Westport to Mulranny • Newport: Repair to walls of Newport Quay • Westport harbour: funding for new marine tourism/leisure infrastructure 	Risk: there are no risks of in combination effects between hand harvesting and the cycle way from Westport to Mulranny, or repairs being performed to walls of Newport Pier. However, It is important to mitigate against any potential interaction between hand harvesting and increased tourism-related activities at Westport Quay, e.g. increased anthropogenic disturbances. Peak tourist season in Westport is defined as July-August. Mitigation: <ul style="list-style-type: none"> • Hand harvesters will not harvest at Westport Quay between May and August. This prevents any in combination anthropogenic disturbances from occurring. • Hand harvesters will not work within 50m of bases where equipment or vessels are manually introduced in the water. This ensures that no in combination effects occur.
Mayo	Mayo county development plan, 2021-2027 (draft: 2018) Mayo County Development Plan 2022-2028	1	Mayo County Council are setting out policies and objectives on topics, which will guide the physical, economic and social development of County Mayo from 2020-2026. These include; <ul style="list-style-type: none"> • Settlement planning • Housing 	Risk: no risk of in combination effects. <ul style="list-style-type: none"> • Mayo County Council will be conducting environmental assessments in the course of preparing the plan. This will include a Habitats Directive Assessment which incorporates Natura 200 sites such as Clew Bay. • No impacts on land based aspects such as settlements, housing, town a village renewal, rural development or infrastructure are identified.

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			<ul style="list-style-type: none"> • Town and village regeneration/renewal • Rural development • Economic development • Social and community development • Infrastructure (e.g. transport, energy, telecommunications etc) • Climate change • Natural resources • Environmental protection • Heritage 	<ul style="list-style-type: none"> • No impacts on economic development, social and community development are identified. • No impacts on heritage are identified. Mitigation measures are in place to ensure no interactions with archaeological sites. • No impacts on Environmental Protection, natural resources or climate change are identified. Marine macrophytes such as seaweed account for low levels of global net primary production of carbon per annum (0.95%). As hand harvesting of <i>A. nodosum</i> is a renewable activity and will be undertaken in a sustainable manner to allow regeneration of the resource, net primary production will not be significantly affected. • The sustainable harvesting of <i>A. nodosum</i> in this proposal is in line with blue economy sectors such and marine biotechnology. The application aligns with Mayo County Council's, Marine Economy Policies and Objectives and Green Economy Policies and Objectives, particularly in relation to the development of the circular and bioeconomy and blue economy sectors such as marine biotechnology and research and development. The application also aligns with Government actions to support the development of the bioeconomy and steps needed to deliver on these actions, including facilitating opportunities for new high added-value biobased products and ensuring that enterprise, industrial and research policy support the goal of moving from research to industrial production with accelerated speed (The National Bioeconomy Action Plan 2023-2025). <p>Mitigation: not required</p>

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Mayo/Ireland	<p>Mayo County Council: Climate Adaptation Strategy 2019-2024</p> <p>Mayo County Council: Draft Climate Action Plan 2024 - 2029 - AA and SEA Consultation</p> <p>National plans, strategies, policies in relation to climate change and related aspects:</p> <ul style="list-style-type: none"> • Draft National Marine Planning Framework; Marine Spatial Planning. • Climate Action Plan (2019). • Climate Action Plan (2023). • Climate Action Plan (2024). • Ag Climatise (2020). • Ireland's Long-Term Strategy on Greenhouse Gas Emissions Reduction (2019). • Climate Action and Low Carbon Development (Amendment) Bill (2020). • Climate Action and Low Carbon Development (Amendment) Bill (2021). • Ireland's National Biodiversity Action Plan 2023–2030. 	>5	<p>Mayo County Council's Climate Adaptation Strategy 2019-2024 and the associated documentation: Sets out strategic priorities, measures and responses for adaptation in County Mayo over the next five years. The Strategy is based on five main themes:</p> <ul style="list-style-type: none"> • Governance, • Critical Buildings and Infrastructure, • Natural and Cultural Capital, • Water Resource and Flood Risk Management • Community Services <p>Risks and gains to tourism are outlined in the strategy document, including Blue Flag Beaches, Greenways, water-based and other outdoor activities.</p> <p>Ireland's National plans, strategies, policies in relation to climate change and related aspects incorporate the whole island or parts of it.</p> <p>Draft Climate Action Plan 2024-2029: accompanied by an Environmental Report, in accordance with the European Communities (Environmental Assessment of Certain Plans and Programmes) Regulations 2004 (S.I.435 of 2004 as amended by S.I. 200 of 2011) for Strategic Environmental Assessment (SEA) and Appropriate Assessment (AA) natura Impact Report, pursuant to Article 6 of the Habitats Directive 92/43/EEC. Materials:</p> <ul style="list-style-type: none"> • Mayo County Council Draft LACAP 2024 - 2029 	<p>Risk: no risk of in combination effects or other interactions between sustainable harvesting of <i>A. nodosum</i> and Ireland's national GHG inventory, Climate action plans and other related plans, strategies, frameworks and Bills. In addition, there is no risk of in combination effects or other interactions between sustainable harvesting of <i>A. nodosum</i> and Mayo County Council's plans, strategies and policies in relation to climate change and other activities such as tourism:</p> <ul style="list-style-type: none"> • Hand harvesting of <i>A. nodosum</i> takes place in the intertidal zone in highly sheltered areas. It is a sustainable existing human marine activity and a sustainable use of renewable marine resources. There are no in combination effects with the following five themes of the councils Climate Adaptation Strategy: Governance, Critical Buildings and Infrastructure, Natural and Cultural Capital, Water Resource and Flood Risk Management and Community Services. • Interactions or in combination effects with tourism will not arise, as the hand harvesters code of practice requires them to avoid sites where tourism and recreation activities are observed to be taking place. • <i>A. nodosum</i> is a renewable resource. As hand harvesting of <i>A. nodosum</i> will be undertaken in a sustainable manner to allow regeneration of the resource, net primary production of carbon will not be significantly affected. In addition, marine macrophytes such as seaweed account for low levels of global net primary production (NPP) of carbon per annum (0.95%) compared to other sources, e.g. the combined category of land sources (e.g. land plants, forestry, crops) and marine phytoplankton together account for 99% of global NPP of carbon per annum. As above, <i>A. nodosum</i> harvesting is entirely compatible with Ireland's National and local

Planned activity	Ref./source of information	No. of operators /sites	Locations/extent of operations	Potential interaction with <i>A. nodosum</i> harvesting in Clew Bay (inc. mitigation measure if applicable)
	<ul style="list-style-type: none"> National Adaptation Framework Planning for a Climate Resilient Ireland, 2024. The National Bioeconomy Action Plan 2023-2025. The European Green Deal, EU Farm to Fork strategy (EC, 2020), EU biodiversity strategy for 2030 and EU soil strategy for 2030. 		<ul style="list-style-type: none"> Annex 1. Baseline Emissions Inventory Mayo Annex 2. Climate Change Risk Assessment Mayo Annex 3. SEA Environmental Report Mayo CAP Annex 4. Non Technical Summary SEA Mayo CAP Annex 5. AA Screening Report Mayo CAP Annex 6. Natura Impact Statement Mayo CAP Annex 7. Mayo CAP Pre-Draft Engagement Report 	<p>authority plans, strategies, policies in relation to climate change and the Climate Action Bill.</p> <ul style="list-style-type: none"> The sustainable harvesting of <i>A. nodosum</i> in this proposal is in line with blue economy sectors such and marine biotechnology. The application aligns with Mayo County Council's Climate Adaptation Strategy and objectives, particularly in relation to projects that will contribute to growing the Circular and Bio-economy. The application also aligns with The National Bioeconomy Action Plan 2023-2025. As hand harvesting of <i>A. nodosum</i> is a sustainable and renewable activity, the proposal aligns with the Government's climate action plan in relation to the Marine Environment. BioAtlantis' products also provide a means of enhancing crop yields (10% increase) without increased use of fertilizer and agrichemicals, thus aligning closely with the action plan. Drought is listed as a sectoral impact associated with climate change, due to impacts on crop growth and soil. BioAtlantis has developed a 'Molecular Priming technology' (based on bioactive compounds from <i>A. nodosum</i>) that enhances crop tolerance to drought stress. This technology has been validated by the Max Plank Institute and the University of Potsdam in Germany and by the Center of Plant Systems Biology and Biotechnology (CPSBB), Bulgaria, as part of a number of EU Horizon research projects (ref: Rasul <i>et al.</i>, 2021. <i>International Journal of Molecular Sciences</i>, 22(3), p.1469). The application aligns with targets specifying requirements for a licence to harvest seaweed. The application is compatible with biodiversity policies, as harvesting will be undertaken sustainably and with

Planned activity	Ref./source of information	No. of operators /sites	Locations/extent of operations	Potential interaction with <i>A. nodosum</i> harvesting in Clew Bay (inc. mitigation measure if applicable)
				<p>ecological monitoring. Studies also show that hand-harvesting of <i>A. nodosum</i> in Ireland has no impact on overall biodiversity.</p> <ul style="list-style-type: none"> The application aligns with Government actions to support the development of the bioeconomy and steps needed to deliver on these actions, including facilitating opportunities for new high added-value biobased products and ensuring that enterprise, industrial and research policy support the goal of moving from research to industrial production with accelerated speed (The National Bioeconomy Action Plan 2023-2025). The application aligns with the European Green Deal, EU Farm to Fork strategy (EC, 2020), EU biodiversity strategy for 2030 and EU soil strategy for 2030, as BioAtlantis' products are organically certified and provide a means of growing crops in an environmentally sustainable manner. <p>Mitigation: not required</p>
Mayo	Mayo County Council - Westport Harbour (2016)	1	Foreshore lease and licence application for the construction of a new reinforced concrete slipway and installation of a floating pontoon. The development will supplement proposals to develop a coastguard station in this area, and a number of other recreational uses. The site is located just north of Roman Island.	<p>Risk:</p> <ul style="list-style-type: none"> There is no risk of interactions between <i>A. nodosum</i> harvesting and the proposed development (new reinforced concrete slipway and installation of a floating pontoon). However, Roman Island has been targeted for considerable development in terms of marine-based activities, tourism and also proposals for a coastguard station. It is important to mitigate against any potential interaction between hand harvesting and increased tourism-related activities, e.g. increased anthropogenic disturbances. <p>Mitigation:</p> <ul style="list-style-type: none"> Hand harvesters will not harvest at Roman Island between May and August. This prevents any in combination anthropogenic disturbances from occurring.

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				<ul style="list-style-type: none"> Hand harvesters will not work within 50m of bases where equipment or vessels are manually introduced in the water. This ensures that no in combination effects occur.
Mayo	Mayo County Council - Mulranny Pier (2018)	1	The proposed Mulranny pier enhancement works include the installation of a floating pontoon, 5 No. circular hollow steel piles and access gangway, construction of an extension to existing slipway parallel to the existing pier and levelling and surfacing of the car parking area. Potential of marine tourism is mentioned under employment implications.	Risk: no risk of in combination effects identified. Mitigation: not required.
Mulranny	Mulranny Community Action Plan 2016 – 2021	1	The Main Priorities of the Mulranny Community Action Plan 2016 – 2021 are as follows: <ul style="list-style-type: none"> Extend the pier and develop a marina. Upgrade the Causeway and develop outdoor activities. Extend the golf links or develop a pitch and putt course. Expand facilities on the Blue Flag beach. Preserve and maintain coastal environment. 	Risk: No risk of in combination effects are identified. <ul style="list-style-type: none"> Harvest will not occur at Mulranny. Hand harvesting of <i>A. nodosum</i> is a sustainable marine activity that takes place in the intertidal zone in highly sheltered areas and will have no in combination effects on the coastal environment or land activities/developments. Mitigation: not required.
Mulranny	Mulranny Community Futures Submission on the NMPF: https://www.housing.gov.ie/sites/default/files/public-consultation/files/responses/128_mulranny_community_futures.pdf	1	<ul style="list-style-type: none"> To Develop Mulranny Pier, Improve Access to Mulranny's Marine Environment and Develop Marine Tourism To develop Mulranny as a Marine Tourism Destination and a hub for Marine Enterprise within Clew Bay. Aim to improve marine access through further development of its pier, thus enabling its use when the tide is out. This would open up significant marine recreation and tourism opportunities for local residents and visitors alike 	Risk: No risk of in combination effects are identified. <ul style="list-style-type: none"> Harvest will not occur at Mulranny. Hand harvesting of <i>A. nodosum</i> is a sustainable marine activity that takes place in the intertidal zone in highly sheltered areas and will have no in combination effects on the coastal environment or land activities/developments. Mitigation measures are in place to ensure there are no in combination effects with recreation and tourism activities in Clew Bay SAC. Mitigation: not required.

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Mayo	Mayo County Council: Clew Bay Greenway Project.	1	Clew Bay Greenway Project will represent a 5km extension of the Great Western Greenway between Belclare and Murrisk. It will provide routes to nearby points of interest.	<p>Risk: No interaction. Seasonal mitigation measures are in place for hand harvest activities to ensure that there is no disturbance to sensitive harbour seal and bird populations. This ensure that there are now in combination effects due to the presence of people or cyclists along routes close to these sites, including any potential future greenways.</p> <p>Mitigation: not required</p>
Mayo	The Clew Bay Visitor Experience Development Plan.	1	The Clew Bay Visitor Experience Development Plan is being drafted, following consultation with tourism stakeholders. This forms part of a process to increase visitor revenue, length of stay and quality of experiences to visitors on the Wild Atlantic Way.	<p>Risk: no risk of in combination effects identified. Interactions or in combination effects with tourism will not arise, as the hand harvesters Code of Practice requires them to avoid sites where tourism and recreation activities are observed to be taking place.</p> <p>Mitigation: not required</p>
Mayo	Island of World Peace (meditation retreat centre).	1	Foreshore licence application for construction of a floating pontoon/jetty. Planning to install pontoon. NMRC Ltd. (FS006494), May 26, 2015; Inishraher, Clew Bay, Co Mayo. Applicant Address: 58 Lower Newtown, Waterford.	<p>Risk: In combination effects between harvesting and the meditation centre are highly unlikely to arise or impact on annex I and II species and habitats in Clew Bay. However, the shore is used for walking and paddling by those attending the retreat centre and interactions with other human activities should be avoided</p> <p>Mitigation: Mitigation measures to prevent effects on annex I and II species and habitats in Clew Bay are not required. As a general policy however, hand harvesters will avoid sites where sports, leisure activities, education excursions, retreats, seaweed foraging days, discovery tours or workshops are observed to be taking place. This will be determined on a case-by-case basis. Harvesters will not interact with people on the shore engaging in these activities. Harvesting will not take place on the eastern side of Inishraher where the retreat centre is located.</p>

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WESTPORT Tourism Organisation (WTO)	<ul style="list-style-type: none"> https://westporttourism.com/ http://www.con-telegraph.ie/2020/04/19/making-case-for-westport-marina-and-clew-bay-masterplan/ http://www.con-telegraph.ie/2020/05/16/vision-for-250-berth-marina-set-out-in-plan/ <p>Submission on the NMPF: https://www.gov.ie/en/consultation/bd098b-public-consultation-on-the-draft-national-marine-planning-framework/#public-consultation-responses-for-public-consultation-on-the-draft-national-marine-planning-framework</p>	≥1	<p>The WTO has put forward a case for the development of a marina at Westport Harbour and an overall plan for Clew Bay. The following recommendations have been made:</p> <ul style="list-style-type: none"> Construct 250-berth marina. Moorings would be available for 100 boats with an option to expand to cater for 250 boats in future. Expansion of hard standings for boats. Winter storage of vessels on land and water. Create facility for Irish and international sailing boats, large sailing vessels and transport cruise ships to transport passengers further out along the bay. Utilize all harbours: Murrisk, Lecanvey, Old Head, Roonagh, Rosmoney, Newport, Rockfleet, Mulranny, Cloughmore. Develop direct ferry link from Westport to Clare Island and potentially Inishturk. Develop employment, tourism and revenue all around the shores. Create a safe harbour to cruising, sailing, fishing and research vessels, and repairs and maintenance. Sea angling in harbours could be expanded to cater to the international tourist market. Promote watersports (sea-kayaking, currach-rowing and small dinghy sailing). The greenway, Blue Way and harbours could be linked via sailing and watersports. Create lagoon on south of Roman Island. 	<p>Risk: No risk of in combination effects are identified. Many tourism activities take place on land. Interactions with other activities that take place in marine areas are unlikely and a range of mitigation measures are already in place to ensure no interactions with tourism and leisure related activities. The Code of Practice will also apply to any future tourism and recreation developments and activities in Clew Bay.</p> <p>Mitigation: Mitigation measures are already in place to ensure that hand harvesters will not work at Roman Island or Westport harbour between May and August. This prevents any in combination effects from occurring during peak season. In the case of any future development of a marina in Westport and other parts of Clew Bay, similar measures will apply to ensure interactions do not occur.</p>

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			<ul style="list-style-type: none"> • A greenway could be put in place circling Roman Island and the proposed lagoon. • Offer watersports left of the marina. • Clubs, tuition, racing, festivals and events would take place and be promoted throughout the year. • Attract cruise ships or larger sailing vessels to come as far as Inishlyre and for tenders to transport people to Westpost Marina from there. 	
Comhdháil Oileáin na hÉireann (Irish Islands Federation)	<ul style="list-style-type: none"> • Draft National Marine Planning Framework, 2019. • National Marine Planning Framework (“Rural Coastal and Island Communities”). • Official website: http://oileain.net/ • Our Living Islands – National Islands Policy 2023-2033. • Our Living Islands – Action Plan 2023-2026. 	≥9 islands in Clew Bay	<p>Work in the tourism area: Tourism is an important part of the economy on most of the islands and in order to boost tourism to the islands, a new tourism marketing campaign.</p> <p>Policies</p> <ul style="list-style-type: none"> • Improvements in access • Attractive, sustainable employment • Adequate, appropriate housing • Support for new, sustainable enterprises <p>Renewable Energy</p> <p>Local – National – European projects Island in Mayo: Clare Island, Inishbiggle, Inishcottle, Inishlyre, Clynish, Inishgort, Inishnakillew, Islandmore, Inishturk, Claggan, InishTurk Beg.</p>	<p>As outlined above, a range of mitigation measures are in place to prevent interactions with tourism, sport or recreation related activities. As such, there is no interactions with the work of Comhdháil Oileáin na hÉireann.</p> <p>There are no interactions with the policies Comhdháil Oileáin na hÉireann and their work in the area of renewables other European projects (e.g. EU Interreg).</p> <p>The application aligns with the NMPF (“Rural Coastal and Island Communities”) and the “Our Living Islands National Islands Policy 2023-2033” which provides a list of ‘Marine Economy’ sectoral activities most relevant to island economies, such as “<i>Blue Bioeconomy including marine Biotechnology and Bio based products</i>”. Our Living Islands Action Plan 2023-2026 also refers to the bioeconomy.</p>
‘Our Living Islands’	https://www.gov.ie/en/policy-information/a7188-our-living-islands/	2	<p>The Our Living Islands Policy and Plan are outlined as follows:</p> <ul style="list-style-type: none"> • National Islands Policy 2023-2033. • Action Plan 2023-2026. 	The application aligns with the “Our Living Islands” National Islands Policy and Plan (see above).

Planned activity	Ref./source of information	No. of operators /sites	Locations/extent of operations	Potential interaction with <i>A. nodosum</i> harvesting in Clew Bay (inc. mitigation measure if applicable)
<p>National Plans, including Co. Mayo and other counties:</p> <p>“Expanding Ireland’s Marine protected area Network”</p> <p>National Marine Planning Framework (NMPF)</p> <p>Maritime Area Planning Act</p> <p>Marine Protected Areas Bill</p>	<ul style="list-style-type: none"> • Marine Protected Area Advisory Group (2020). • National Marine Planning Framework (NMPF) • Maritime Area Planning Act • Marine Protected Areas Bill. 	≥4	<p>Marine recreation and tourism are potentially associated with 15 pressures in Ireland’s marine environment:</p> <p>Hydrological:</p> <ul style="list-style-type: none"> • Emergence regime changes (tidal level) • Temperature changes, • Water flow (tidal currents) changes, <p>Chemical:</p> <ul style="list-style-type: none"> • Organic enrichment, • Synthetic compound contamination, • Non-synthetic compound contamination. <p>Physical:</p> <ul style="list-style-type: none"> • Disturbance of substrate. • Physical change to seabed or sediment type. • Death by injury or collision • Light pollution. • Litter. • Visual disturbance. <p>Biological:</p> <ul style="list-style-type: none"> • Introduction of invasive non-indigenous species. • Removal of non-target species. • Removal of target species. 	<p>Risk: no risk of in combination effects between sustainable harvesting of <i>A. nodosum</i> and marine recreation and tourism, that would impact on Ireland’s aims to expand its MPA network:</p> <ul style="list-style-type: none"> • Hand harvesting of <i>A. nodosum</i> is a sustainable marine activity that takes place in the intertidal zone in highly sheltered areas. The sustainable nature of this activity and the associated management plan ensures that there are no in combination effects between sustainable commercial-scale harvesting and plans to expand MPAs in Ireland. • Pressures potentially associated with seaweed harvesting in Ireland’s marine environment are outlined in Appendix 5, along with control measures where relevant to prevent these pressures or others impacts from occurring. The measures outlined in Appendix 5 also ensure no in-combination or cumulative effects with potential pressures that are associated with tourism, including but not limited to: water flow (tidal currents) changes, organic enrichment, non-synthetic compound contamination, disturbance of substrate, death by injury or collision, light pollution, litter, noise pollution, visual disturbance, introduction of invasive non-indigenous species, removal of non-target species and removal of target species. • Interactions or in combination effects with tourism will not arise, as the hand harvesters code of practice requires them to avoid sites where tourism and recreation activities are observed to be taking place. • <i>A. nodosum</i> is a renewable resource. As hand harvesting of <i>A. nodosum</i> will be undertaken in a sustainable manner to allow regeneration of the resource, net primary production of carbon will not be significantly affected. In addition, marine macrophytes such as seaweed account for low levels of global net primary production (NPP) of carbon per

Planned activity	Ref./source of information	No. of operators /sites	Locations/extent of operations	Potential interaction with <i>A. nodosum</i> harvesting in Clew Bay (inc. mitigation measure if applicable)
				<p>annum (0.95%) compared to other sources, e.g. the combined category of land sources (e.g. land plants, forestry, crops) and marine phytoplankton together account for 99% of global NPP of carbon per annum. As such, <i>A. nodosum</i> harvesting is entirely compatible with Ireland's plans in relation to climate change and the proposed expansion of MPAs.</p> <p>There is no risk of in combination effects between sustainable harvesting of <i>A. nodosum</i> and marine recreation and tourism, that would impact on Ireland's Maritime Area Planning Act, National Marine Planning Framework (NMPF) or MPA Bill. A statement of consistency with the National Marine Planning Framework (NMPF) and Marine Spatial Planning (MSP) policies is attached to this application.</p>
Foreshore notices	https://www.gov.ie/en/foreshore-notices/	≥7	<p>Potential for interactions with foreshore license applications have been assessed (last checked on 21/02/2024: https://www.gov.ie/en/foreshore-notices/). Most applications have been screened out, as they are either located outside the license area or do not give rise to any potential interactions (e.g. site surveys, marine site investigations, modelling studies, subsea fibre optic cables, etc). A number of applications were further evaluated, as follows:</p> <ul style="list-style-type: none"> • FS006494 N.M.R.C. Limited: construction of a floating pontoon/jetty. Inishraher, Clew Bay. • FS006632 Mayo County Council: Westport Harbour. Foreshore lease and licence application for the construction of a new reinforced concrete slipway and installation of a floating pontoon. • FS005837 Mayo Yacht Club: Foreshore lease application for extension to existing hard 	<p>Risk:</p> <ul style="list-style-type: none"> • FS006494: In combination effects between harvesting and the meditation centre are highly unlikely to arise or impact on annex I and II species and habitats in Clew Bay. However, the shore is used for walking and paddling by those attending the retreat centre and interactions with other human activities should be avoided. • FS006632: Many tourism activities take place on land. Interactions with other activities that take place in marine areas are unlikely and a range of mitigation measures are already in place to ensure no interactions with tourism and leisure related activities. The Code of Practice will also apply to any future tourism and recreation developments and activities in Clew Bay. • FS005837: No risk identified - harvesting will not impact on the extension to the existing hard standing. In addition, measures are already in place to prevent interactions with

Planned activity	Ref./source of information	No. of operators /sites	Locations/extent of operations	Potential interaction with <i>A. nodosum</i> harvesting in Clew Bay (inc. mitigation measure if applicable)
			<p>standing for storage of boats and other uses auxiliary to Mayo Sailing Club. Clew Bay.</p> <ul style="list-style-type: none"> • FS006798 Mayo County Council: Mulranny Pier. The proposed Mulranny pier enhancement works include the installation of a floating pontoon, 5 No. circular hollow steel piles and access gangway, construction of an extension to existing slipway parallel to the existing pier and levelling and surfacing of the car parking area. • FS005836 Mayo County Council: Clew Bay Foreshore lease application for the construction of a floating pontoon and associated access walkway. Location: Island More, Clew Bay. • FS005828 Mayo County Council: Rosmoney. Foreshore lease for the installation of new floating pontoons and repairs to existing pier. • FS006734 Noel Devery: Foreshore Lease application for the construction of a floating pontoon/landing stage. Inishgowla South, Clew Bay, Westport. 	<p>activities taking place in the vicinity of Mayo Sailing Club (see pages 17, 18, 19 in Section 3(2) (i) above).</p> <ul style="list-style-type: none"> • FS006798: No risk identified, as harvesting will not occur at Mulranny. • FS005836: No risk identified as harvesting will not take place in the vicinity of the floating pontoon. • FS005828: No risk identified as harvesting will not take place in the vicinity of the floating pontoon and harvesting will not interfere with repairs to existing pier. • FS006734: No risk identified as harvesting will not take place in the vicinity of the floating pontoon/landing stage. <p>Mitigation:</p> <ul style="list-style-type: none"> • FS006494: Mitigation measures to prevent effects on annex I and II species and habitats in Clew Bay are not required. As a general policy however, hand harvesters will avoid sites where sports, leisure activities, education excursions, retreats, seaweed foraging days, discovery tours or workshops are observed to be taking place. This will be determined on a case-by-case basis. Harvesters will not interact with people on the shore engaging in these activities. Harvesting will not take place on the eastern side of Inishraher where the retreat centre is located. • FS006632: Mitigation measures are already in place to ensure that hand harvesters will not work at Roman Island or Westport harbour between May and August. This prevents any in combination effects from occurring during peak season. In the case of any future development of a marina in Westport and other parts of Clew Bay, similar measures will apply to ensure interactions do not occur. • FS005837: Measures are already in place to prevent interactions with activities taking place in the vicinity of

Planned activity	Ref./source of information	No. of operators /sites	Locations/extent of operations	Potential interaction with <i>A. nodosum</i> harvesting in Clew Bay (inc. mitigation measure if applicable)
				Mayo Sailing Club (see pages 17, 18, 19 in Section 3(2) (i) above)
Applications for a Maritime Area Consent (MAC) under the Maritime Area Planning Act, 2021	https://www.maritimeregulator.ie/applications-received/	1	Potential for interactions with MAC applications have been assessed (last checked on 21/02/2024): MAC20230002: Westport House/Inishoo Management (2013). Westport House Estate, Westport. Construction of a pedestrian bridge and associated works. Westport.	Risk: No risk identified - harvesting will not will not interfere with construction of the pedestrian bridge and associated works. Mitigation: Not required.
Applications for a Licence under the Maritime Area Planning Act, 2021	https://www.maritimeregulator.ie/applications	0	Potential for interactions with Licence applications have been assessed (last checked on 21/02/2024). All applications were screened out, as they are located outside the license area or do not give rise to any potential interactions. None of the existing applications currently on https://www.maritimeregulator.ie/applications relate to marine or coastal areas in County Mayo.	Risk: No risk identified. Mitigation: Not required.

(ii) Harvest activities

No Plans identified

(iii) Aquaculture

2019: The Dept. of Agriculture, Food & Marine website have published a report by the Marine Institute (2019), which assesses the potential impact of fishing and planned aquaculture activities in Clew Bay. This includes details of planned activities. Planned aquaculture operations are of relevance to the current to the BioAtlantis plan to hand harvest *A. nodosum*, particularly given the potential impacts on Annex II species. Potential risk and mitigation measures are provided below.

Planned Aquaculture activity	Ref./source of information	No. of operators /sites	Locations/extent of operations	Potential interaction with <i>A. nodosum</i> harvesting in Clew Bay (inc. mitigation measure if applicable)																					
Licensed activities: <ul style="list-style-type: none">• Oyster (<i>Crassostrea gigas</i>);• Mussels (<i>Mytilus Edulis</i>)• Seaweeds (brown, red and green).	Department of Agriculture, Food and the Marine Marine Institute (2019)	11 new applications	<p>Planned Activity:</p> <ul style="list-style-type: none">• Oyster (<i>Crassostrea gigas</i>); n=9• Mussels (<i>Mytilus Edulis</i>), n=1• Seaweeds (brown, red and green): 1 <p>Current applications: Applications for aquaculture sites in Clew Bay are listed below (applications last checked on 21/02/2024: https://www.gov.ie/en/collection/d8ea9-aquacultureforeshore-licence-applications/). Maps showing the location of site applications in relation to harbour seals haul out sites are provided in Figures A and B.</p> <table><tr><th>No.</th><th>Licence application</th><th>Activity</th></tr><tr><td>1</td><td>T10-301 Blackshell Farm Ltd, Michael Mulloy</td><td>Subtidal: <i>Alaria Esculenta</i>, <i>Laminaria</i> spp., <i>Saccarina Latissim</i>, <i>Saccorhiza polyschides</i>, <i>Chondus crispus</i>, <i>Palmaria palmata</i>, <i>Pophyra dioica</i>, <i>Asparagopsis armata</i>, <i>Ulva</i> spp. In proximity to mussel cultivation.</td></tr><tr><td>2</td><td>T10-329 John Moran</td><td>Intertidal: Oyster— <i>crassostrea gigas</i></td></tr><tr><td>3</td><td>T10-333 Joseph McManamon</td><td>Intertidal: Oyster — <i>crassostrea gigas</i></td></tr><tr><td>4</td><td>T10-335 Rosmoney Shellfish Ltd. (Stephen Fitzgerald)</td><td>Intertidal: Oyster — <i>crassostrea gigas</i></td></tr><tr><td>5</td><td>T10-336 Charles O'Malley</td><td>Intertidal: Oyster — <i>crassostrea gigas</i></td></tr><tr><td>6</td><td>T10-339 Kevin Kilroy</td><td>Intertidal: Oyster — <i>crassostrea gigas</i></td></tr></table>	No.	Licence application	Activity	1	T10-301 Blackshell Farm Ltd, Michael Mulloy	Subtidal: <i>Alaria Esculenta</i> , <i>Laminaria</i> spp., <i>Saccarina Latissim</i> , <i>Saccorhiza polyschides</i> , <i>Chondus crispus</i> , <i>Palmaria palmata</i> , <i>Pophyra dioica</i> , <i>Asparagopsis armata</i> , <i>Ulva</i> spp. In proximity to mussel cultivation.	2	T10-329 John Moran	Intertidal: Oyster— <i>crassostrea gigas</i>	3	T10-333 Joseph McManamon	Intertidal: Oyster — <i>crassostrea gigas</i>	4	T10-335 Rosmoney Shellfish Ltd. (Stephen Fitzgerald)	Intertidal: Oyster — <i>crassostrea gigas</i>	5	T10-336 Charles O'Malley	Intertidal: Oyster — <i>crassostrea gigas</i>	6	T10-339 Kevin Kilroy	Intertidal: Oyster — <i>crassostrea gigas</i>	<p>Risk: Hand harvest activities may exacerbate existing effects attributed to licensed aquaculture activities, e.g. disturbance at sites relevant to harbour seals and effects on mudflats and sandflats. Overall the risk of such interactions is considered low. In a report by the Marine Institute (2019), supporting Appropriate Assessment of Aquaculture and Risk Assessment of Fisheries in Clew Bay Complex SAC, it is concluded that:</p> <ul style="list-style-type: none">• “The likely overlap between these activities [<i>seaweed harvesting</i>] and intertidal shellfish culture is considered small as the (reef) habitat is not considered suitable for shellfish culture”.• “It is unlikely that the in-combination impacts of transport routes across the intertidal flats will result in a persistent disturbance of >15% on intertidal sandflats and mudflats”.• “Current activities [<i>aquaculture</i>] do not physically overlap with any breeding or moulting locations.”• “The current levels of licenses aquaculture (existing and renewals) and the new applications are considered non-disturbing to harbour seal conservation objectives”• “the interaction with bottom culture operators/ operations with the otter is likely to be minimal. It is
No.	Licence application	Activity																							
1	T10-301 Blackshell Farm Ltd, Michael Mulloy	Subtidal: <i>Alaria Esculenta</i> , <i>Laminaria</i> spp., <i>Saccarina Latissim</i> , <i>Saccorhiza polyschides</i> , <i>Chondus crispus</i> , <i>Palmaria palmata</i> , <i>Pophyra dioica</i> , <i>Asparagopsis armata</i> , <i>Ulva</i> spp. In proximity to mussel cultivation.																							
2	T10-329 John Moran	Intertidal: Oyster— <i>crassostrea gigas</i>																							
3	T10-333 Joseph McManamon	Intertidal: Oyster — <i>crassostrea gigas</i>																							
4	T10-335 Rosmoney Shellfish Ltd. (Stephen Fitzgerald)	Intertidal: Oyster — <i>crassostrea gigas</i>																							
5	T10-336 Charles O'Malley	Intertidal: Oyster — <i>crassostrea gigas</i>																							
6	T10-339 Kevin Kilroy	Intertidal: Oyster — <i>crassostrea gigas</i>																							

	7	T10-334 Padraig McManamon	Intertidal: Oyster — crassostrea gigas
	8	T10-337 Atlantic Greenway Oysters Ltd	Intertidal: Oyster — crassostrea gigas
	9	T10-338 SOFI Shellfish Ltd	Intertidal: Oyster — crassostrea gigas
	10	T10-340 John McManamon	Intertidal: Oyster — crassostrea gigas
	11	T10-341 Phoenix Seafarm Ltd	Mytilus Edulis- Blue Mussel

unlikely that this culture type poses a risk to otter populations in Clew Bay. Impacts can be discounted”.

- “The activities proposed in areas that potentially overlap with otter habitat do not pose a threat to the conservation status of this species”.
- “the activities proposed in areas that potentially overlap with otter habitat do not pose a threat to the conservation status of this species”.

The above conclusions relate to existing and planned aquaculture units in Clew Bay. The 11 proposed sites are generally in areas that are unlikely to give rise to in combination effects with harbours seal sites or otters.

Mitigation:

Although the risk of in combination effects between planned and existing aquaculture and *A. nodosum* harvesting very low, the following mitigation measures will be put in place:

- Seasonal avoidance of sensitive harbour seal and bird breeding/wintering sites will be adhered to. Particular caution is required when operating near or approaching areas where planned and existing aquaculture sites are known to be in relatively close proximity to harbour seal breeding sites (e.g. Inishilra), moulting sites, resting sites, bird breeding sites (e.g. Mauherillan) or bird wintering sites. This will ensure that harbour seals and birds are unaffected (Code of Practice, appendix 4).
- The Code of practice for environmentally safe navigation will be followed to ensure no in combination effects which would damage mudflats and sandflats.
- Ensure caution when travelling in the vicinity of defined aquaculture navigation routes. Do not impede workboat or tractor access to aquaculture sites along defined access routes, including but not limited to those

				<p>associated with Inishcottle Pier, Roskeen south, Tiernaur, Murrisk and Knockmanus.</p> <ul style="list-style-type: none"> Do not interfere with aquaculture users who are licensed to harvest or grow seaweed. Ensure that no aspects of harvesting give rise to any physical interaction or contact with aquaculture production units, their structures or anchors.
Aquaculture Organizations: <ul style="list-style-type: none"> C.L.A.M.S. The Clew Bay Marine Forum (C.B.M.F.) Clew Bay Oyster Co-op (C.B.O.C.). Clew Bay Pot fishermen's associations (CBPA). 	n/a	4	<ul style="list-style-type: none"> C.L.A.M.S: Co-ordinated Local Aquaculture Management Systems The Clew Bay Marine Forum (C.B.M.F.): includes shellfish farmers, for mussels, gigas oysters & scallops, finfish farmers for salmon & trout Clew Bay Oyster Co-op (C.B.O.C.): native oysters. Clew Bay Potfishermens associations (CBPA): lobster, crab, prawn & shrimp. 	<p>Risk: <i>A. nodosum</i> harvesting is entirely compatible with the activities undertaken by members of CLAMS, CBMF, CBOC and CBPA. This is evidenced by the long history of commercial <i>A. nodosum</i> harvesting in Clew Bay alongside these activities, which is oftentimes undertaken by members of the aquaculture and fishing communities. As outlined above, mitigation measures are in place to ensure that the harvesting does not interact with or lead to in combination effects with aquaculture and fisheries activities. In addition, two reports by the Marine Institute (2014, 2019) concludes that <i>A. nodosum</i> harvesting has a very low spatial overlap with intertidal aquaculture and that in combination effects of transport routes are unlikely to give rise to significant disturbance. As such, potential impacts on Annex I and II species and habitats are unlikely to occur.</p> <p>Mitigation: not required.</p>
National Plans, including Mayo: “Expanding Ireland’s Marine protected area Network” National Marine Planning Framework (NMPF)	<p>Marine Protected Area Advisory Group (2020).</p> <ul style="list-style-type: none"> National Marine Planning Framework (NMPF) Maritime Area Planning Act 	≥4	<p>Aquaculture is potentially associated with 23 pressures in Ireland’s marine environment:</p> <p>Hydrological:</p> <ul style="list-style-type: none"> Water flow (tidal current) changes Wave exposure changes Deoxygenation <p>Chemical:</p> <ul style="list-style-type: none"> Nutrient enrichment Organic enrichment Synthetic compound contamination Non-synthetic compound contamination 	<p>Risk: no risk of in combination effects between sustainable harvesting of <i>A. nodosum</i> and aquaculture that would impact on Ireland’s aims to expand its MPA network:</p> <ul style="list-style-type: none"> Hand harvesting of <i>A. nodosum</i> is a sustainable marine activity that takes place in the intertidal zone in highly sheltered areas. The sustainable nature of this activity and the associated management plan ensures that there are no in combination effects between sustainable commercial-scale harvesting and plans to expand MPAs in Ireland. Pressures potentially associated with seaweed harvesting in Ireland’s marine environment are outlined

<p>Maritime Area Planning Act</p> <p>Marine Protected Areas Bill</p>	<ul style="list-style-type: none"> • Marine Protected Areas Bill. 		<p>Physical:</p> <ul style="list-style-type: none"> • Disturbance of the substrate • Physical change to seabed or sediment type • Physical loss (to land or freshwater habitat) • Barrier to species movement • Changes in suspended solids (water clarity) • Death or injury by collision • Light pollution • Litter • Smothering and siltation rate changes • Noise pollution • Visual disturbance <p>Biological</p> <ul style="list-style-type: none"> • Genetic modification & translocation of indigenous species • Introduction of microbial pathogens • Introduction or spread of invasive non-indigenous species (INIS) • Removal of non-target species • Removal of target species 	<p>in Appendix 5, along with control measures where relevant to prevent these pressures or others impacts from occurring.</p> <ul style="list-style-type: none"> • The measures outlined in this document and Appendix 5 ensure no in-combination or cumulative effects with potential pressures associated with aquaculture, including but not limited to: water flow (tidal current) changes, wave exposure changes, deoxygenation, nutrient enrichment, organic enrichment, non-synthetic compound contamination, disturbance of the substrate, changes in suspended solids (water clarity), death or injury by collision, light pollution, litter, noise pollution, visual disturbance, introduction or spread of invasive non-indigenous species (INIS), removal of non-target species and removal of target species. • Interactions or in combination effects with aquaculture will not arise, as the Code of Practice requires harvesters to operate in a manner that prevents any such interactions or effects (See Sections 3a (iii) and 3b (iii) of this document and Appendix 4 for the Code of Practice and relevant control measures). <p>There is no risk of in combination effects between sustainable harvesting of <i>A. nodosum</i> and aquaculture that would impact on Ireland's Maritime Area Planning Act, National Marine Planning Framework (NMPF) or MPA Bill. A statement of consistency with the National Marine Planning Framework (NMPF) and Marine Spatial Planning (MSP) policies is attached to this application.</p>
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2014 & 2019: The Dept. of Agriculture, Food & Marine website have published reports by the Marine Institute (2014, 2019), which assesses the potential impact of fishing and planned aquaculture activities in Clew Bay. This includes details of planned activities. Planned aquaculture operations are of relevance to the current to the BioAtlantis plan to hand harvest *A. nodosum*, particularly given the potential impacts on Annex II species. Potential risk and mitigation measures are provided below.

Planned Aquaculture activity	Ref./source of information	No. of operators /sites	Locations/extent of operations	Potential interaction with <i>A. nodosum</i> harvesting in Clew Bay (inc. mitigation measure if applicable)
Abalone culture in the vicinity of Inishcorky island and neighbouring islands	Marine Institute (2014)	1 new site proposed	Inishcorky island (North west Clew Bay)	<p>Risk: hand harvest activities may exacerbate existing effects attributed to licensed aquaculture activities, e.g. disturbance at sites relevant to harbour seals. Overall the risk of such interactions is considered low (Marine Institute, 2014). Impacts on Otter (<i>Lutra lutra</i>) is deemed not significant. However, the Marine Institute cannot rule out potential effects of aquaculture on seal behaviour at Inishcorky and potentially neighbouring site: Inishdeashmore, Inishdeadbeag, unnamed neighbouring island of Inishdeadbeag and Inishnacross (pg. 78, Marine Institute, 2014).</p> <p>Mitigation:</p> <ul style="list-style-type: none"> Seasonal avoidance of sensitive harbour seal sites will be adhered to for all haul out sites, including Inishcorky. This will ensure that harbour seals are unaffected (Code of Practice, appendix 4).

(iv) **Harvesting of invertebrates**
No Plans identified

(c) Other Activities

The activities listed in the table below are derived from a report prepared by the Marine Protected Area Advisory Group (2020): “Expanding Ireland’s Marine Protected Area Network: A report by the Marine Protected Area Advisory Group”, and references therein. Information on the nature, location and extent of fisheries activities is adapted from a report prepared by the Marine Institute supporting an Appropriate Assessment of aquaculture and risk assessment of fisheries in Clew Bay Complex SAC (ref: Marine Institute, 2019). Information on existing fisheries activities is also provided in an Article 6.2 (Habitats Directive) Risk Assessment on the effects of fisheries on Qualifying Interests in Special Areas of Conservation in Irish coastal waters (Marine Institute, 2015).

Additional Planned and/or Existing Activities	Description/extent/location of operations and potential overlap/interactions.	Mitigation measure, where applicable.																	
Fishing and Fisheries: <ul style="list-style-type: none">• Pelagic, line, purse seine• Demersal fishing, trawling, dredging• Set (fixed) net, push nets, traps. Marine Institute (2015). Marine Institute (2019).	Risk: The spatial overlap between <i>A. nodosum</i> harvesting and fisheries activities is relatively low and absent in many cases (see summary table below):	Mitigation: To ensure that no interactions, cumulative or in combination effects occur, a range of mitigation measures have been put in place, including the following: <ul style="list-style-type: none">• Ensure that seaweed harvesting only takes place in the intertidal <i>A. nodosum</i> zone and not in subtidal areas of relevance to fisheries activities such as potting (Lobster, crab, shrimp, whelk and nephrops), dredging (e.g. scallop, native oyster, cockle), trammel net fishing for bait, otter trawl, tangle net (crayfish), gillnet, bottom trawl, mid-water trawl. Activities in subtidal waters that are permitted include site visits, inspections, surveys, collection of harvested seaweed, transport and transfer to pick up points.• There are several sites of relevance to fisheries and sea angling in Clew Bay. Harvesters will work to ensure that the space of fishermen and sea angler’s is respected at all times.• Ensure that the space of recreational/shore anglers is respected, particularly when competitions and festivals take place.																	
	<table><tr><th>Type</th><th>Description/extent/location of fisheries activity</th></tr><tr><td>Potting for shrimp</td><td>Mainly located along the outer reaches of the complex (overlap with BioAtlantis’ proposed license area is low).</td></tr><tr><td>Potting for prawns</td><td>Mainly located along the outer reaches of the complex (overlap with BioAtlantis’ proposed license area is low).</td></tr><tr><td>Potting for crab and lobster</td><td>Mainly located along the outer reaches of the complex (overlap with BioAtlantis’ proposed license area is low).</td></tr><tr><td>Potting for whelk</td><td>In 2013, a new pot fishery for whelk began (2 vessels; 400 pots each) in an area from Newport River Estuary to deeper waters and on subtidal habitats. It is unclear if this fishery is still in operation.</td></tr><tr><td>Tangle netting for crayfish</td><td>Mainly located along the outer reaches of the complex (overlap with BioAtlantis’ proposed license area is low).</td></tr><tr><td>Gill netting for Pollack and other netting</td><td>Mainly located along the outer reaches of the complex (overlap with BioAtlantis’ proposed license area is low).</td></tr><tr><td>Dredging for scallop</td><td>Scallop occurs in subtidal waters of 10-20m in depth on gravel/cobble substrates, within the inner reaches of the complex and beyond the SAC.</td></tr></table>		Type	Description/extent/location of fisheries activity	Potting for shrimp	Mainly located along the outer reaches of the complex (overlap with BioAtlantis’ proposed license area is low).	Potting for prawns	Mainly located along the outer reaches of the complex (overlap with BioAtlantis’ proposed license area is low).	Potting for crab and lobster	Mainly located along the outer reaches of the complex (overlap with BioAtlantis’ proposed license area is low).	Potting for whelk	In 2013, a new pot fishery for whelk began (2 vessels; 400 pots each) in an area from Newport River Estuary to deeper waters and on subtidal habitats. It is unclear if this fishery is still in operation.	Tangle netting for crayfish	Mainly located along the outer reaches of the complex (overlap with BioAtlantis’ proposed license area is low).	Gill netting for Pollack and other netting	Mainly located along the outer reaches of the complex (overlap with BioAtlantis’ proposed license area is low).	Dredging for scallop	Scallop occurs in subtidal waters of 10-20m in depth on gravel/cobble substrates, within the inner reaches of the complex and beyond the SAC.	
	Type		Description/extent/location of fisheries activity																
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Dredging for scallop	Scallop occurs in subtidal waters of 10-20m in depth on gravel/cobble substrates, within the inner reaches of the complex and beyond the SAC.																		

Additional Planned and/or Existing Activities	Description/extent/location of operations and potential overlap/interactions.		Mitigation measure, where applicable.
	Dredging for oyster	Oysters are fished from <10m vessels using fixed toothed dredges.	<ul style="list-style-type: none">• Keep distance and do not interfere with licensed salmon draft fishermen who may cut back seaweed when using their nets.• Harvesting activities must not impact with individuals who harvest or collect invertebrates, e.g. limpets, mussels, clams, periwinkles and scallops.• Follow the Code of Practice to ensure environmentally safe navigation when operating mudflats and sandflat areas. This will prevent any impact on intertidal sedimentary communities.• Adhere to the Code of Practice to ensure that <i>A. nodosum</i> is harvested in a manner that does not negatively impact on periwinkles. See Section 3 (a) (iv) of this document for further details.• BioAtlantis Ltd. will manage harvesting activities in a sustainable manner to ensure that excessive removal of <i>A. nodosum</i> does not occur and is limited to 20% of the total available biomass per site per annum. In addition, no activities will take place in important areas of the Burrishoole catchment such as Lough Feeagh & Lough Furnace, thus preventing any impact during important life-cycle stages.• Avoid interactions with non-<i>A. nodosum</i> habitats which represent the broader habitat range of fish, shellfish, invertebrates and fisheries species during adult and early-life stages, including: seagrass, estuarine areas, saltmarsh, lagoons, maerl, subtidal gravel/coarse bottom, subtidal soft bottom areas, intertidal soft bottom areas and exposed shores. <p>These mitigation measures and several others are outlined in the Code of Practice (Appendix 4) and relevant sections within Appendix 5.</p>
	Bottom trawling for mixed demersal fish	Outside license area. (no overlap with BioAtlantis’ proposed license area).	
	Mid-water trawling for pelagic fish	Outside license area. (no overlap with BioAtlantis’ proposed license area).	
	Hook and line fishing for mackerel and Pollack	This fishery uses trolling and bottom set lines operated in a mechanized and manual manner (approx. 16 vessels use trolling/jigging gears).	
	Draft net fishing for salmon	Newport river estuary and Bunowen River.	
	Trammel net fishing for bait	Mainly located along the outer reaches of the complex (overlap with BioAtlantis’ proposed license area is low).	
	Hand gathering of periwinkle and cockle	Periwinkle fishing takes place in the inner reaches of Clew Bay on semi exposed shores on the mainland and on islands. Cockles are abundant east of Mullranny on intertidal muddy sand shores and are hand gathered.	

Additional Planned and/or Existing Activities	Description/extent/location of operations and potential overlap/interactions.	Mitigation measure, where applicable.
Extraction of genetic resources	Risk: No interaction. Harvesting of <i>A. nodosum</i> (a renewable resource) will be undertaken in a sustainable manner to allow for regeneration of the resource post harvesting. Extraction of non-renewable, finite resources will not occur.	<ul style="list-style-type: none"> • Mitigation: not required.
Aquaculture	Risk: See sections 3a (iii) and 3b (iii) of this document.	<ul style="list-style-type: none"> • Mitigation: See sections 3a (iii) and 3b (iii) of this document.
Marine research	Risk: No interaction. The sustainable harvesting of <i>A. nodosum</i> and management therein, will have no negative impacts on marine research and its requirements.	<ul style="list-style-type: none"> • Mitigation: not required.
Extraction/disposal aggregates/minerals	Risk: No interaction. The sustainable harvesting of <i>A. nodosum</i> and management therein, will not give to extraction/disposal aggregates/minerals.	<ul style="list-style-type: none"> • Mitigation: not required.
Gas storage operations	Risk: No interaction. The sustainable harvesting of <i>A. nodosum</i> and management therein, will have no interactions with gas storage operations.	<ul style="list-style-type: none"> • Mitigation: not required.
Oil and gas activity and exploration	Risk: No interaction. The sustainable harvesting of <i>A. nodosum</i> and management therein, will have no interactions with oil and gas activity and exploration.	<ul style="list-style-type: none"> • Mitigation: not required.
Marine renewable energy	Risk: No interaction. The sustainable harvesting of <i>A. nodosum</i> and management therein, will have no interactions with marine renewable energy.	<ul style="list-style-type: none"> • Mitigation: not required.
Shipping and vessel movements	Risk: No interaction.	<ul style="list-style-type: none"> • Mitigation: not required. However, the Code of Practice (Appendix 4) requires hand harvesters to maintain distance from other boats or vessels, such as power boats, cruise boats, ferries, kayaks, rib boats, row boats, rib boats, fishing boats when travelling to sites, thus preventing any in combination effects. In particular, harvesters will respect the space of all recreational users when operating in the complex.
Marine construction: cables/pipelines	Risk: No interaction. The sustainable harvesting of <i>A. nodosum</i> and management therein, will not impact marine construction, e.g., cables/pipelines.	<ul style="list-style-type: none"> • Mitigation: not required.
Defence and military activities	Risk: No interaction. The sustainable harvesting of <i>A. nodosum</i> and management therein, will not impact defence and military activities.	<ul style="list-style-type: none"> • Mitigation: not required.
Cultural and heritage sites	Risk: No interaction.	<ul style="list-style-type: none"> • Mitigation: Archaeological sites have been identified and will be avoided by a distance of 20m. Prior to harvesting near these sites, the Resource Manager will mark them.
Marine recreation and leisure	Risk: See sections 3a (i) and 3b (i) of this document.	<ul style="list-style-type: none"> • Mitigation: See sections 3a (i) and 3b (i) of this document.

Additional Planned and/or Existing Activities	Description/extent/location of operations and potential overlap/interactions.	Mitigation measure, where applicable.
Coastal Infrastructure	Risk: No interaction. The sustainable harvesting of <i>A. nodosum</i> and management therein, will not impact existing or planned coastal infrastructure	<ul style="list-style-type: none"> • Mitigation: not required. However, measures are in place to ensure no interactions with future coastal infrastructure developments, particularly those in relation tourism and recreation (see sections 3 (a) and 3 (b) above).
Coastal management activities	Risk: No interaction. The sustainable harvesting of <i>A. nodosum</i> and management therein, will not impact existing or planned coastal management activities.	<ul style="list-style-type: none"> • Mitigation: not required.
Industrial discharge / agricultural run-off	Risk: No interaction. The sustainable harvesting of <i>A. nodosum</i> and management therein, will not impact industrial discharge / agricultural run-off.	<ul style="list-style-type: none"> • Mitigation: not required.
Sewage disposal	Risk: No interaction. The sustainable harvesting of <i>A. nodosum</i> and management therein, will not impact sewage disposal.	<ul style="list-style-type: none"> • Mitigation: not required.

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