



To: Danny O'Brien, DAFF  
CC: Terry McMahon, Chair MLVC  
From: Francis O'Beirn, Marine Institute  
Date: September 11, 2009

24

RE: **Foreshore Application from Bioatlantis Ltd. for the proposed harvest of specific Seaweed in Bantry Bay, Co. Cork. Reference Number: MS51/8/1363**

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The applicant wishes to harvest kelp from Bantry Bay using a suction and cutter device that targets and cuts the kelp at a fixed distance above the attachment substrate. The selective nature of the cutting mechanism is positive when compared with the non-selective and highly destructive nature of dredges and 'scouidou' used in other jurisdictions (Norway and France, respectively). Notwithstanding this, there are still likely impacts on marine habitats and species that are as yet un-determined. The provision of review documents highlight some of the impacts documented elsewhere but these are not sufficient to address some of the concerns highlighted by the ad-hoc group on Mechanical Harvest of Kelp (see below).

A number of issues remain outstanding that should be addressed in advance of a recommendation to the Minister relating to this and other applications:

1. Relating to the biomass of kelp in the area:
  - what are the estimates of kelp in the proposed area,
  - how were these estimates generated (confidence in estimates) and
  - will they be sufficient to meet the commercial needs of the company.
2. What are the specific areas around the points provided in the application required for harvesting? (Question for DAFF: Was there a map provided with the application?)
3. What is the commitment of the applicant to monitoring the likely impacts of the activity beyond that which is stated in the application, i.e., regeneration of stock?

In addressing the last point, the *ad-hoc* kelp group drafted a range of monitoring parameters that might be considered in light of the proposed activity, i.e. trials of commercial scale harvest. While some of these parameters may be more relevant than others (especially in light of the harvest method), all should initially be considered by the applicant (and advisors) and prioritised. These monitoring parameters may also form discussion points for the MLVC in deliberation over this application.

**In summary, assuming the biomass estimates indicate sufficient stocks for commercial harvest, a long-term commitment to monitoring the effects of this activity should be sought from the applicant. The source of funding (for monitoring) and the academic partners should also be clearly identified and engaged. Finally, the outputs of the monitoring could be objectively reviewed and form the basis of management recommendations towards the future of this harvest mechanism (consistent with RTDI goals identified in Appendix 2). Annual reporting of harvest and monitoring activities could also be included as a licence condition and inform annual licence renewals.**

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## Monitoring Biological & Physical Parameters for Mechanical Kelp Harvesting Trials

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### Overriding Issues

Any assessment must have due consideration to

- Biomass estimates – assessment of total accessible resource (e.g. the output/status of the Sea Change objectives – Appendix 2)
- Geographic location
- Gear type proposed for fishery

If trials are proposed such that are different combinations of the latter two points above, separate assessments must be designed to account for the differences.

There are a number of characteristics that might be assessed during an assessment of a trial that relate to biological and physical characteristics of the environment

1. Fauna – epifauna, mobile invertebrates, fishes, birds
2. Flora – epiphytes, target and non-target macroalgae
3. Hydrographic – tidal range, tidal flow

In addition, there are a number of factors that must be considered in light of the biological/physical assessment parameters:

1. Test versus control locations
2. Near and far-field effects
3. Broadscale geographic differences
4. Seasonal aspects of recovery/impact (harvest timing and habitat/species sensitivity, e.g. reproductively active periods)
5. Impact assessment format will also be dictated by
  - a. type of gear to be used
  - b. topography of seabed
6. Extent of harvest will govern the overall experimental design
  - i. Need for replication
  - ii. Avoid pseudoreplication
  - iii. Issues of scale, patch size vs recovery
  - iv. Near (edge) and far-field effects (gradient of impact moving away from test site).
7. Timing:

minimum of 4-year programme: consisting of a pre harvest (assessment (baseline/background) and (initially) 4 years post-harvest. It may be necessary to review and refine programme 1 year post-harvest – harvest and control sites

### Biological & Physical Parameters

#### 1. Fauna

##### *Invertebrates*

- Inventory of epifauna (seasonal and geographically) pre- and post-(initial 12 months – seasonal sampling at pre- locations after subject to review )
- harvest (divers using quadrates, fixed or random), replicates numbers
- Epifauna include fauna attached to kelp and holdfast as well as to rock in under-story
- Inventory of mobile invertebrates pre and post harvest (crustaceans – pots, creels)

### **Fish**

- Importance of kelp for fish species? Design experiment to evaluate importance of kelp to fish. Kelp habitat may be useful to fish for a number of reasons, refugia, as nursery habitat and potentially as migratory cues (visual). Some year-round residents have been identified as conger eels, ballan wrasse and rockling. Communication with Peter Green (CFB) has identified the three potential means of evaluating fish use of kelp habitat (this might be very tricky) as visually, using divers or video, fishing, or small trammel net. This might be placed among the kelp or between kelp bed and open ground to assess movement patterns between the areas. A small gill net might suffice for this purpose as well.
- Fish sampling should account for the impact of kelp harvest on the harvest area and adjacent habitat.
- Fish sampling should account for seasonal variation.

### **Birds**

A birds survey should assess bird usage in and around kelp areas as well as determining the importance of kelp naturally deposited on the seashore that might provide forage material for shorebirds. A number of parameters could be measured in relation to shore detritus

- Composition of detritus – coastal beaches in vicinity of survey area
- Macroinvertebrate communities associated with detritus
- Bird usage over kelp beds on seasonal and geographic basis

## **2. Flora**

### **Macro-algae**

- Epiphytes on kelp and rock substrate should occur pre- (12 months) and post-harvest
- Recovery of target species in the harvest area taking account of:
  - o species composition ratio of target species to non-target competitors,
  - o biomass
  - o productivity

## **3. Hydrography**

ADCP on and near selected sites pre- and post-harvest to assess impact of harvest on current regime and local hydrographic conditions. This will help to answer some issues relating to dampening effect of kelp beds and potential of coastal erosion. The deployment should be of sufficient period to assess long-term patterns and during storm events to assess dampening effect. These data can also be linked to flora and fauna assemblage information derived from other investigations.

### **Potential Assessment Mechanisms**

There are two potential mechanisms to carry out the proposed work. For the longer-term assessments (4 yrs), it is envisioned that these assessments could form the basis of a PhD. Given the once-off nature of the single assessments, it is likely that these are best effected by consultancies. The table below summarizes the views expressed.

Parameter	PhD	Consultancy
Invertebrates	Seasonal	Near & far field effects
Fish	Seasonal	
Birds	Seasonal	

Flora	Seasonal	Near & far field effects
Hydrography	Seasonal	Pre- & Post-harvest

## Appendix 1

### Background Note on *ad-hoc* group on Mechanical Harvest of Kelp

An *ad-hoc* group met for the first time in February 2003 to discuss issues relating to the mechanical harvest of kelp in Irish waters. The group consisted of member of the Marine Institute, BIM, Taidge-Mara Teo., the Irish Seaweed Centre (NUIG), Martin Ryan Institute (NUIG). The group was established as a discussion forum on the development of mechanical harvest of kelp with specific emphasis placed upon the impacts of this activity. Another goal was to establish a basis with which to engage other state agencies that could contribute to understanding the impacts and the implications of such activity. One agency specifically mentioned was NPWS as much of the kelp resource is likely found within SACs.

In order to recommend any strategy towards development of the industry it was felt that information relating to the following was required:

1. The amount of resource in Ireland.
2. Current harvest practices and management elsewhere (France and Norway)
3. Studies on the impact of the harvest on the ecology of the environment
4. To assess the sustainability of the activity.

To this end, the Marine Institute and Taighde-Mara commissioned the Irish Seaweed Centre to carry out a desk review of mechanical harvesting techniques employed, the impacts observed, management practices and results of experiments carried out to assess impacts. A number of specific outcomes of the review required were:

- To identify information gaps and how they might be filled.
- Discuss the impacts of mechanical harvesting and what mitigation/management strategies can be put in place to ensure sustainability.

A follow-up meeting was held in Galway on November 14, 2003 where representative from DCMNR (Tom Burke CZMD and Dick McKeever Engineering) and NPWS (Liz Sides, Eamon Kelly and David Lyons) were in attendance. The meeting consisted of an overview of the commissioned report and a discussion on the way to progress assessing the impacts of mechanical harvesting of kelp may have on the environment.

The issue of licensing was discussed and how a system may be structured to allow for the mechanical harvest of kelp. It was brought to the attention of the group that the current licensing system (the Foreshore Act) could accommodate this activity. However, it was equally made clear that it was unlikely that a license would be issued in the absence of information relating to the impact of this activity on the environment and other users (see Tom Burkes note attached).

On the basis of this observation the group decided that the best way to progress the development of mechanical harvest of kelp would be to fill the information gaps relating to the impacts. Specifically the group discussed some acceptable measures to experimentally determine;

- a. What is the accurate extent of the kelp biomass in Ireland and what are the best methods to quantify this resource.
- b. What the impacts might be under a number of sampling scenarios (geographic and spatial scale variation)
- c. How sustainable the activity might be and measures to mitigate that impacts

To progress the process it was decided to establish a smaller group with one representative of every state agency to develop a proposal to examine and assess the impacts of Kelp Harvesting on the environment. This group will consist of the following persons: Francis O'Beirn, MI; Mark Norman, Taighde Mhara; Eamon Kelly, NWPS; Martin Walsh, BIM; Stefan Kraan, ISC. When coastal erosion will be discussed Dick McKeever or a representative of the Engineering Division, DCMNR will be invited.

This subgroup met a number of occasions (3) with a view to devising a sampling protocol to outline a scientific assessment protocol. Broadly it was advised by the group that any trial resulting from application to the Department should be conducted outside of Natura sites this is consistent with the position of the Department. In addition, a second report was commissioned and funded by the Marine Institute and Taidge Mara Teo., to review methods for the assessment of kelp biomass and recommend appropriate methods to assess kelp biomass in Ireland focusing specifically on remote methods for kelp assessment. This study was conducted by Oceanide and is available by request. To further the biomass assessment methodology the Marine Institute is funding, through the Sea-Change funding initiative, a project entitled "Development of a method for the quantification of Ireland inshore kelp resources". This project is currently underway. The last meeting of the group was held in June 2006.

## Appendix 2

Sea Change RTDI requirements for period 2007-2013

Objectives 2013	RTDI Requirements	Key Outputs
<p>Agree, with National Parks &amp; Wildlife Service (NPWS), Department of Communications, Marine &amp; Natural Resources (DCMNR) [now DAFF] and research agencies, a regulatory framework and management plan for sustainable harvest of wild seaweed.</p>	<ul style="list-style-type: none"> <li>&gt; Trials in mechanical harvesting and rotation for the key species</li> <li>&gt; Monitoring and assessment of environmental impacts of mechanical harvesting</li> <li>&gt; Assess constraints, profile other users and integrate seaweed harvesting within Marine Spatial Plans</li> <li>&gt; Assess resource and draft long-term harvest and management plans</li> </ul>	<ul style="list-style-type: none"> <li>&gt; Map of resource availability and identified harvesting sites and cycles</li> <li>&gt; Best practice/regulatory guidelines for mechanical harvesting of seaweed</li> </ul>



Cornhshaol, Oidhreacht agus Rialtas Áitiúil  
Environment, Heritage and Local Government



19

26<sup>th</sup> August 2009

Our Ref: M0009/2009  
Your Ref: MS51/8/1363



Danny O'Brien,  
Foreshore Section,  
Coastal Zone Management Division,  
Department of Agriculture, Fisheries and Food,  
Johnstown Castle Estate,  
Co. Wexford.

**Re: Foreshore licence application for proposed harvesting of seaweed at Bantry Bay, Cork**

A Chara,

We refer to the application in relation to the above-proposed development. Outlined below are the underwater archaeological and nature conservation recommendations of the Department of the Environment, Heritage and Local Government.

#### **Underwater Archaeology**

The Underwater Archaeology Unit requests further information on the proposed methodology for harvesting the seaweed. The nature, extent and dynamics of the proposed methodology is not clear from the supplied documentation and we seek clarification on what the possible impacts to potential underwater archaeological sites or artefactual material may be. Large areas are highlighted as being potential areas to target for this harvesting, including areas of high archaeological potential such as Lonehort harbour on Bere Island. This is a recorded monument with direct links to the Viking Period and may retain potential underwater archaeology. The Underwater Archaeology Unit also has a large listing of shipwrecks for the Bantry Bay area, with the remains of such sites also having the potential to be located within the proposed areas of harvesting.

We therefore request that this information be forwarded to this Department in advance of any decision being made on this application.

The Underwater Archaeology Unit will be available to meet to discuss the harvesting methodology or to meet in Cork to view the process, if this would progress this application.

#### **Nature Conservation**

The Department of the Environment, Heritage & Local Government refers to an application under the Foreshore Acts for the mechanical harvesting of seaweed in Bantry Bay and the corresponding request for observations received from the Department of Agriculture, Fisheries and Food.

This Department recalls inter-departmental discussions during 2004-2006 concerning the possible introduction of mechanical kelp harvesting in Ireland and the work of the Ad Hoc Inter-Departmental Working Group on



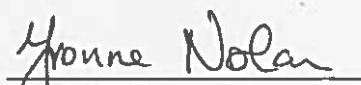
the subject. Specifically, on 29th March 2006 and in response to a previous application to introduce mechanical kelp harvesting (MS 51/12/581), Mr Tom Burke (Assistant Principal, Coastal Zone Management Division) wrote that his Minister supported his Department's policy not to consider applications for licences to permit the mechanical harvesting of kelp "until such time as the impacts on issues such as the viable continuance, as a species, of those species which live in or feed on kelp and their contribution to community and ecological integrity has been assessed and an assessment made of the impacts of mechanical kelp harvesting on the ability of kelp forests to protect soft coasts from erosion have been assessed by consideration of the results of properly constituted scientifically based pilot projects, the Department is not prepared to consider applications for licences to permit the commercial mechanical harvesting of seaweeds." He further added that any pilot projects to support such assessments would be sponsored by "the Kelp Harvest Group or some other group including a recognised scientific and ecological membership."

The introduction of mechanical kelp harvesting to Ireland should be carefully considered in light of potential in combination impacts on species (commercial and non-commercial) and habitats (including coastal integrity). Any decision to approve the introduction of this activity should be fully informed to ensure consistency with nature conservation obligations. To that end, this Department requests copies of the impact assessments previously indicated by Coastal Zone Management Division as an essential pre-cursor to their consideration of applications to introduce commercial mechanical harvesting of seaweeds in order that it might consider this application and its likely impacts on protected habitats and species in the marine and coastal environment. Such assessments should also inform the likelihood of significant impacts on Natura 2000 sites from such *in situ* and *ex situ* activities and the corresponding requirement for appropriate assessments.

Further, direct, observations may issue from our Water Quality Section. Kindly forward to this office any Further Information or documentation received by the Department of Agriculture, Fisheries and Food or in the event of a final decision being made please forward a copy of your decision and the licence, when it issues, to the following address:

The Manager,  
Development Applications Unit,  
Department of the Environment, Heritage and Local Government,  
4<sup>th</sup> Floor, Dún Scéine,  
Harcourt Lane,  
Dublin 2.

Is mise le meas,



Yvonne Nolan,  
Development Applications Unit,  
Ph: (01) 888 2760  
Email: [yvonne.nolan@environ.ie](mailto:yvonne.nolan@environ.ie)



Marine Survey Office,  
Ballyshannon Town C,  
Ballyshannon,  
Co. Donegal.  
Ireland.

Tel: 071-9822400

17

Fax:

Memorandum to	CZAD – Foreshore Section
Attention	Danny O'Brien
Fax No	
From	Nick Cantwell
No of Pages	1
Date	14 July 2009
Reference	MS51/8/1363 Seaweed Harvesting. Bantry Bay Co Cork.
CC	

- This office has no objections from a navigational viewpoint to the above application, however prior to the application been granted, the applicant should apply to the Marine Survey Office Dublin to arrange for an Irish load line certificate for the vessel to permit it to carry cargo. A passenger boat licence may also be required. To facilitate this a Survey 6 form may be downloaded from the MSO website.

On receipt of the above, the following conditions apply:

- **The applicant is required** to arrange the publication of a local marine notice. This local marine notice should give a general description of operations and approximate dates of commencement and completion. An advertisement in a locally read newspaper will suffice.
- The local harbour authority should be contacted for opinion.

Yours faithfully

*Nicholas W. Cantwell*

N.W.Cantwell (Capt.)  
Nautical Surveyor



15

**OBrien, Danny**

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**From:** Michael Mc Partland [mcpartland@swrfb.ie]  
**Sent:** 13 July 2009 16:55  
**To:** OBrien, Danny  
**Subject:** MS51/8/1363 Proposed Harvest of Seaweed at Bantry Bay.

Danny

With reference to the above proposal it would appear that a general literature review has been carried out rather than any serious assessment of the impact of the proposed works in fish and their habitat. In this context it would appear best to defer the application pending a serious assessment of the impacts on fish life.

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