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28th February 2006.

For the attention of: Dr. L. J. Seiderer, Marine Ecological Surveys Ltd.,
24a Monmouth Place, Bath BA1 2AY.

Dear Dr. Seiderer, Area 202 (Cross Sands) : Application for Licence Extension.

We are writing to you under the terms of the Government View procedure operated by the Office of the Deputy Prime Minister (ODPM) with respect to the consultation on the Environmental Statement Update (ES Update) which is part of the Licence Extension Application by Hanson Aggregates Marine Limited in respect of Area 202 (Cross Sands) off Great Yarmouth.

We are grateful to you for the provision of a copy of the ES Update prepared and assembled by your company.

GV Procedure and Area 202.

Before we offer our comments on the ES Update and the licence extension application for Area 202, may we observe to you that this licence extension application has not been publicly announced by means of an advertisement in the normal journals (e.g. Fishing News), and therefore is, in our opinion, in violation of the Government View (GV) procedure which requires an opportunity for public involvement at the GV consultation stage.

Accordingly, it is our recommendation that this licence extension for Area 202 should not be allowed to proceed at the present time until the matter of public advertisement and public consultation is verifiably in accordance with established procedures set out in Marine Minerals Guidance Note 1.

Area 436.

We have also noted that the aggregate dredging licence which expired at the end of 2005 (and to which this licence extension relates) involved Area 436, Cross Sands Extension, and that Area 436 is to be surrendered by the applicant and, thus, the licence for Area 436 will expire.

We observe that the ES Update does not adequately report on the condition of Area 436, either in terms of the condition of the seabed which now exists there, or in terms of the depth of

sand and gravel which remains, or the condition of its benthic community to enable the provisions of Marine Minerals Guidance Note 1 (as set out below) to be complied with:

" *It may also be necessary, in appropriate cases, to demonstrate that:*

(i) an adequate depth (normally at least 50 cm) of suitable material has been left as a 'capping layer' to provide a substrate for recolonisation." Reference: MMG1, para. 41.

and

"*Dredging should aim to leave the seabed in a similar physical condition to that present before dredging started in order to enhance the possibility of, and rate at which, the seabed recovers physically and biologically to its pre-dredging condition.*" Reference: MMG1, Annex A12.

It is apparent to us that the ES Update, whilst notifying ODPM of the surrender of Area 436, has not established whether an adequate depth of suitable material remains, and has not established whether the seabed is being left in a physical condition similar to that pertaining before dredging started.

Additionally, in our opinion, there is inadequate data in the ES Update specific to Area 436 to enable a full baseline benthic monitoring programme to be commenced upon surrender of the licence in order to determine the nature and rate of benthic recovery. Nor, indeed, is there any outline of such a monitoring programme into the future. Without such a monitoring programme the recovery or otherwise of the site will remain unknown. This is a wholly inadequate way to surrender the custodianship of the site; and, equally importantly, the absence of any future monitoring of benthic recovery fails to collect information essential to the scientific basis of environmental impact assessments governing future undredged sites.

Accordingly, we recommend that the licence extension application for Area 202 should not proceed until it has been determined by the applicant whether the physical condition of Area 436 is sufficient to meet the requirements of MMG1 relating to depth of the remaining sand and gravel; the leaving of the seabed in a condition similar to that at the commencement of the licence; and, the provision of an adequate programme of monitoring to determine the rate and nature of the recovery of the benthic community.

We now proceed to matters in the ES Update relating directly to the licence extension application for Area 202.

<u>Impact on Coastal Processes and Site Sediment</u>.

We have noted the following statements in the ES Update:

1. The seabed in Area 202 has been lowered by around 3 metres between 2003-2004, and by around 5 metres in localised areas.

2. There has been no in-filling of the lowered areas.

3. There has been no significant change in particle size of the sediment in Area 202.

4. The eastern limit of South Cross Sands (west of Area 202) has migrated westward and the southern limit of Middle Cross Sand (north of Area 202) has migrated northward, but it is not considered that dredging accounts for this change, but rather that this change is due to natural processes. Also, it is considered that neither South Cross Sands nor Middle Cross Sands have been affected adversely by dredging in Areas 202 and 436 over the past five years.

5. It is observed that "the overall change in bed levels in the two extraction areas represents a loss of approximately 9 million cubic metres of sediment over the last 5 years, of which only about 20% was removed by dredgers" ref. Report EX5252 by H R Wallingford, section 4.2 (Appendix 6 in ES Update), and that "the lowering of the seabed caused by dredging is only a modest proportion of the overall lowering brought about by natural morphological processes" ref. Report EX5252, section 4.2.

There are a number of points of concern to us regarding these statements. We suspect that these matters of concern are interconnected, but for the sake of clarity we will endeavour to deal with them individually at this time.

Loss of Seabed.

We are surprised and concerned by the statement that the loss of sediment from the seabed in Areas 202 and 436 during the past five years is only 20% attributable to removal by dredgers, and that the remaining 80% is attributable to "natural morphological processes". We feel there are a number of questions which need to be answered, and that the answers are not evident in the ES Update.

Firstly, what are these "natural morphological processes" ? They are not defined or analysed in the ES Update. If they are currents on the seabed and these currents are acting in an erosive manner (in effect, excavating the seabed), are these currents acting in the same manner in adjacent areas ? There is no evidence on this matter in the ES Update.

Secondly, if such natural forces are at work, this raises a serious question as to whether the mineral resources (sand and gravel) available in the Great Yarmouth block of licences are likely to disappear long before the aggregate extraction industry is able to excavate them. Clearly, this is a profound issue. Why is there no discussion of this issue in the ES Update, or indeed in other Environmental Statements relating to the Great Yarmouth block of licences ?

Thirdly, the statement that natural morphological processes are operating and excavating large amounts of sediment may be in "error". For example, it may be that excavating a physical depression in the seabed intensifies the natural erosive force of the seabed currents i.e. these currents dig deeper into the seabed and thus intensify the erosion. We see no examination of this or similar type hypotheses in the ES Update.

Fourthly, it may be possible that natural benthic features in Areas 202 and 436, such as biogenic reefs of *Sabellaria spinulosa* (Ross worm) and *Modiolus modiolus* (Horse mussels) – both in their mature and immature stages of growth and development – are in fact binding the seabed together and preventing erosion by seabed currents. Thus when dredging commences, resulting in the fatality of these benthic communities, the protection afforded to the seabed by these benthic communities ceases.

Whatever, the true picture and explanation, we are profoundly unhappy by the statement in the ES Update that 80% of the sediment lost in Areas 202 and 436 – amounting to a depth of between 3 and 5 metres – is due to causes other than aggregate dredging.

This is a matter which needs urgent investigation. It needs to be established whether this phenomenon is happening throughout the entire block of licences. It needs to be established whether there is any historical pattern to this occurrence. It needs to be established whether the offshore sandbanks – vital to the defence of the coast – are at risk from this phenomenon. In short, there are a raft of challenging issues all demanding an exact and clear explanation of this phenomenon and its causes.

Accordingly, we are recommending that this phenomenon of erosion of the seabed due to "natural morphological processes" be urgently studied and reported upon, and that no re-licencing of Area 202 should be permitted until this study has reported and it has been concluded that it safe to proceed with dredging, both in terms of coastal impact and impact on the marine benthos. In addition we recommend that this study must be undertaken with reference to other dredging sites in the Great Yarmouth block and their cumulative impact.

Offshore Sandbanks.

It is asserted in the ES Update that whilst the eastern limit of South Cross Sands has migrated westwards (landward) and the southern limit of Middle Cross Sands has migrated northwards, the integrity of these sandbanks is unaltered and that these changes are due to natural processes and not dredging.

It is to be noted that dredging occurs in close proximity to both offshore sandbanks, and the boundaries of Area 436, and a lesser extent Area 202, are adjacent to the foot of these sandbanks.

We have also examined Appendix 3, Seabed Profiles of the Licence Area and surrounding seabed for 1999-2005 in H. R. Wallingford's Study (Appendix 6 in the ES Update). Whilst these profiles do not state their exact location, they do provide clear evidence of the 1999 profile compared to the 2005 profile. We tabulate the character of these profiles in the Table below. We seek to establish the nature of any change in the crest of the sandbank (higher or lower relative to Chart Datum), and we seek to establish whether the profile of the seaward side of the sandbank and its toe (the foot of the sandbank) has experienced any erosion. In this Table + signifies an increase in height of crest or enlargement of bank and toe, N signifies no apparent change, and – signifies erosion. The term "seaward" in the Crest column signifies a movement of the crest seaward (i.e. easterly). All characterisations are approximations based on a visual reading.

Profile Number	Crest	Bank and Toe
Profile 1	-	-
Profile 2	-	-
Profile 3	-	-
Profile 4	N	N
Profile 5	+ Seaward	N
Profile 6	N Seaward	-
Profile 7	+ Seaward	-
Profile 8	+	-
Profile 9	N	-
Profile 10	-	-

We observe that these profiles indicate that there appears to have been clear erosive forces at work on the seaward bank and toe of these sandbanks, and that in eight out of ten profiles the Bank and Toe is displaying an eroded profile in 2005 relative to 1999. In the case of the Crest four profiles are recording erosion, three record an increase and three no change. Interestingly, three Crest profiles record a seaward movement of the profile.

Whilst the ES Update does acknowledge that erosion of the offshore sandbanks has occurred, this erosion is regarded in the ES Update as natural movement rather than erosion i.e. a natural change in the position of the sandbank and no damage to its overall mass and integrity.

However, our examination of these profiles in Appendix 3 of H. R. Wallingford's Report (EX5252) does not lead us to the same confident conclusion. It is of concern to us that eight out of ten profiles are showing erosion of the bank and toe of the sandbanks – an indication, we suggest, that dredging may be impacting on the sandbank. The evidence on the profile of the crest is less clear, but is not in our opinion definitively reassuring that no damage to the integrity of the sandbank is taking place.

Accordingly, we are recommending that these Profiles need further analysis. Specifically, we wish to see an clear explanation of why the erosive character of the seaward 1999 bank and toe profiles relative to the 2005 profiles - in all ten instances - does not lead to the apparent logical conclusion that the integrity of the sandbanks is being damaged.

Nature of Sediment on Seabed.

The ES Update asserts that the particle size of sediment on the seabed has remained largely unaltered, and that there has been no infilling of the lowered areas. The latter point - no infilling – is also used in an argument to suggest that the sandbanks are not being eroded (eroded material filling the lowered areas).

Our view of these matters suggests that there are some important unanswered questions in the ES Update.

Firstly, the gravel content in the seabed sediment of Areas 202 and 436 is stated to be, on average, just under 40%. It is known that the ideal mix for the aggregate companies of landed aggregate is 60% gravel and 40% sand (to suit the construction industry, its principal customer).

This means that significant amounts of sand will have been discharged back to sea during the dredging operations in Areas 202 and 436 in order to meet this aggregate mix. Further, this material forms a plume and, it is asserted in most Environmental Statements, the substantial body of the discharged material (sand and other fine material) is redeposited within 200 to 300 metres of the actual dredging location. If this is correct, then the ES Update would be expected to record the presence of this material in the dredged areas i.e. a reduction of particle size in seabed sediment and a tendency to infill the lowered areas.

However, neither of these processes is being recorded. It is important to ask why this is not so ? And, why is this site (Areas 202 and 436) not displaying the characteristic common to other sites ?

An Environmental Statement that cannot answer these questions has not addressed the basic issues. In this ES Update there is no consideration, let alone answers, of these questions.

It is also to be noted that there is no Plume Study, commonly agreed to be an essential component of any Environmental Statement, in this ES Update. One must therefore assume that the applicant has done no monitoring of plume dispersal during the past five years. This is a very serious deficiency, and one that prevents a proper assessment of impact of dredging upon the benthic community where is it known that plume smothering can have a significant adverse effect. It is to be noted that there is a sizable *Sabellaria spinulosa* community to the north of the dredging licence area (a potentially notifiable habitat under the Habitats Directive 92/43/EEC), and the ES Update also mentions a *Modiolus modiolus* community within the dredging licence area (a habitat requiring protection under the UN Convention on Biodiversity and, possibly, Directive 92/43).

Are we therefore to assume that all the material discharged from the dredgers during the dredging operations over the past five years has left the licence area ? If so, this is a remarkable occurrence, and one which requires further explanation and, particularly so, as to its cause.

Also, if the material has left the dredged site, where has it gone ? It seems essential that the fate of this material is logged and established for without this information it is impossible to determine the sediment budget and its movements within the larger offshore area, and hence the integrity of any assertion made in regard to the ES Coastal Impact Study. At the present time, this information is not contained within the ES Update for Area 202.

It is also to be noted that this ES Update contains no specific analysis with regard to the wave regime in the area, nor offers a wave model based on known data. Given the importance of the offshore sandbanks to the protection of the coastline, we regard this as a serious omission and particularly so since the ES Update has recorded unexplained erosive forces acting on the seabed.

Accordingly, we recommend that Area 202 should not receive a new licence until such time as a proper Plume Study and Sediment Budget for the wider area has been undertaken, and answers have been provided as to why discarded sediment is no longer present on the seabed at the location of the dredged areas. Allied to these studies must be the provision of a data based wave model with reference to the impact on the offshore sandbanks and coastline.

Impact on Benthic Community.

We have noted that the benthic surveys prior to 1999 are recorded in the ES Update as having been of insufficient quality to enable any serious contemporary comparative studies to be made with earlier conditions i.e. before 1999. And, since 1999 the benthic community is described as being impoverished, largely in a “natural sense” due to the physical nature of the seabed sediments and strong tidal currents.

This portrait causes us concern. Not only does the inadequate nature of the pre-1999 benthic surveys confirm a long-standing suspicion that Environmental Impact Assessments until very recent time have been seriously deficient in this specific domain, but it also means that it is now impossible to quantify the assertion that the benthic community in such Areas as 202 and 436 is “naturally impoverished”.

We have serious questions in this regard. It is known, for example, that to the north of Area 202/436 and in adjacent dredging areas in the Great Yarmouth block (e.g. Area 401/2) that *Sabellaria spinulosa* communities display strength and some abundance. These communities are easily damaged by dredging, and not only in their mature condition – when they form biogenic reefs which are potential Annex I habitats under Directive 92/43/EEC – but also in their immature condition and early stages of development.

Sabellaria spinulosa is a keystone species and the principal biotope in Areas such as 202 and 436. If this species and the related biotope – upon which benthic diversity is dependent – is being improperly mapped and catalogued, and consistently damaged by dredging activity, then it is not surprising that surveys will find the benthic community in the area to be impoverished.

At the present time, we see no strategic assessment of the *Sabellaria spinuslosa* biotope in the Great Yarmouth block of licences, other than reference to its existence – but not official protection - in JNCC Report 325 (Natura 2000 in UK Offshore Waters, published 2002). The ES Update perpetuates this failure.

We have also noted the reference to the *Modiolus modiolus* community in Area 202. Once again this is a keystone species and a potentially a significant biotope. Yet the ES Update offers virtually no evaluation of this community, and there appears to be no historical record of this species and its communities in Areas 202 and 436 and, indeed, wider afield in the Great Yarmouth block of licences. Moreover, this biotope is even more sensitive that the *Sabellaria* biotope to damage from dredging. The MarLin catalogue records *Modiolus modiolus* as "very sensitive" to extractive activities such as trawling and dredging. This status, "very sensitive", is defined as no recovery within ten years once serious damage has occurred and, in a species like *Modiolus*, very probably not within 25 years or indeed ever.

Given that species like *Sabellaria* and *Modiolus* form the dominant biotopes, and that these species bind the seabed sediments and protect these sediments from erosion by the strong currents, it is clearly obvious that damage to them is going to have profound consequences on the overall well-being of the benthic community.

There is no such analysis or appraisal in the ES Update.

Accordingly, it is our clear recommendation that Area 202 should not be relicenced until there has been a proper evaluation of the key biotopes in Area 202; and, given the conservation status of these biotopes under Directive 42/93/EEC and the UN Convention on Biodiversity, a full and appropriate assessment is required before Area 202 is relicenced to ensure that dredging activity will not harm them and will ultimately lead to their return to a favourable conservation status.

The Ecosystem Approach to Management.

It is now UK Government policy to manage the marine environment using an ecosystem-based approach. This policy requirement is stated in Safeguarding Our Seas, DEFRA, 2002, and is defined as:

"*An ecosystem-based approach to management represents a new and more strategic way of thinking. It puts the emphasis on a management regime that maintains the health of ecosystems alongside appropriate human use of the marine environment, for the benefit of current and future generations. This requires setting clear environmental objectives both at the general and specific level, basing management of the marine environment on the principles of sustainable development, conservation of biodiversity, robust science, the precautionary principle and stakeholder involvement.*" Ref, section 1.17.

We have seen no mention of this approach to the management of the marine resources in Area 202 in the ES Update.

We also believe that the ecosystem approach requires benthic studies in the Environmental Statement to address the question of the abundance of meiofauna (marine animals sized between 1 mm and 0.1 mm) and microfauna (marine animals smaller than 0.1 mm and, generally speaking, not visible to the naked eye).

We believe this is essential because meio- and microfauna are the basis of the marine food chain, and any evaluation of the importance of the fishery in the area has little meaning if the abundance and security of this food chain has not been assessed.

We know that Marine Minerals Guidance Note 1 places no obligation on the applicant to consider meio- and microfauna, but nor does MMG1 refer to the ecosystem approach as defined by DEFRA. This is because policy has evolved since MMG1 was written, and it is essential that Environmental Statements evolve in accordance with new thinking and best practice.

If this were not so, applicants would still be undertaking benthic assessments in accordance with practice that pre-dated 1999, and the shortcomings of that situation and approach have already been demonstrated.

Therefore it is vital that fishery studies, and the general approach to the management and evaluation of dredging activity, take account of the ecosystem approach. This in turn requires a study and evaluation of the meio- and microfauna resource and the conditions necessary for its abundance and well-being. Only then will the Fishery Study within the Environmental Statement have any true integrity.

Accordingly, we are recommending that the ES Update must respond, before the Confirmation Stage of the Government View procedure, to the requirement to apply the ecosystem approach to the assessment of the fisheries in Area 202, and that this must include an assessment of the abundance of meiofauna and microfauna and the conditions necessary for their well-being.

Conclusion.

At the present time we do not believe the ES Update is adequate to the task of deciding whether it is right and proper to relicence Area 202. Indeed, we have identified a number of areas where we believe there are serious deficiencies in the ES Update which, if a fair and reasoned decision is to be arrived at, make it impossible to offer a favourable Government View on the basis of the evidence presented.

Accordingly, we are recommending a rejection of the relicencing application for Area 202 until such time that these deficiencies have been properly and satisfactorily addressed; and, until such time as a proper and satisfactory basis for the surrender of the licence for Area 436 has been presented by the licence holder.

Yours sincerely

S. D. Eades
On behalf of
MARINET.