

FAO: Dr. L. J. Seiderer, Marine Ecological Surveys Ltd,  
24A Monmouth Place, Bath BA1 2AY.

c.c. Mr. Matthew Louis, Minerals & Waste Planning Division  
Office of the Deputy Prime Minister, Zone 4/B 1Eland House,  
Bressenden Place, Victoria, London SW1E 5DU

Our Ref: MARINET/NSAG6

22nd February 2006

## **EXTENSION OF AREA 202 CROSS SANDS DREDGING LICENCE**

Dear Mr. Louis,

I refer to Hanson seeking to extend its licence for dredging Area 202, a ca 3 sq km patch of seabed claimed to be 9km but in fact only 4.7km off the Caister coastline.

My group have been given to understand that ODPM, the planning authority, have already given permission for Hanson to continue to dredge Area 202 for six months past the termination deadline of January 1<sup>st</sup> 2006 and that a licence may be given for a further period, without a need for an ES. We find this surprising and outside the impartial behaviour expected of your Department.

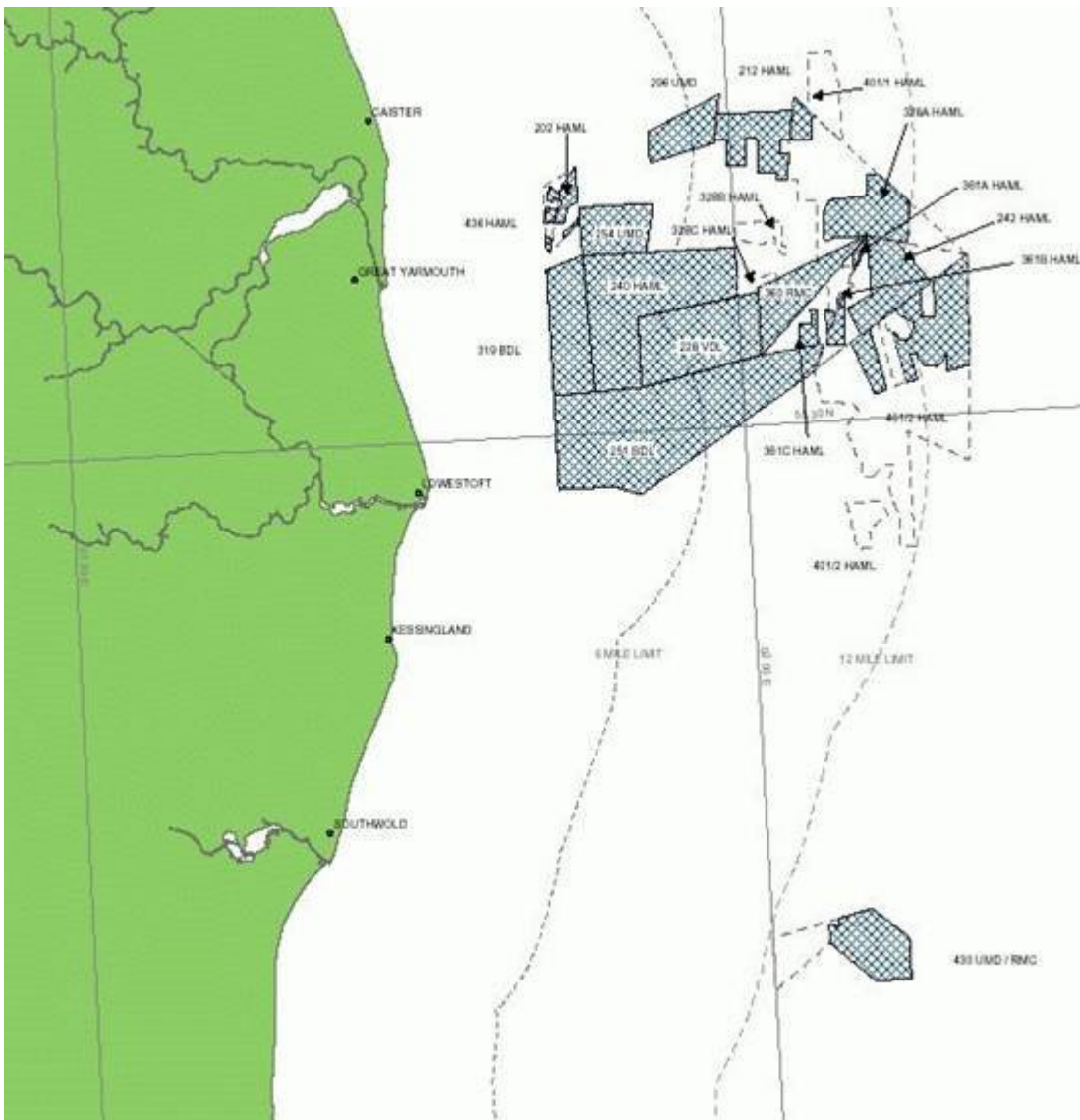
We have further learned that the ODPM has ruled that press notices are not required for the application to further dredge Area 202 beyond the period permitted by the original licence that terminated on 1<sup>st</sup> January 2006, with no requirement for the usual Environmental Statement. We have always considered these notices to be obligatory. In the absence of such, the public and concerned marine environmental organisations are denied an opportunity to raise their concerns, particularly with the absence of individual notification as was supplied by DEFRA prior to the ODPM inheriting this responsibility.

That over 300 letters of objection have resulted from advertising the licence application for Area 401/2 and have evidenced the huge majority reaction requiring your refusal to grant a licence to dredge that area, we respectfully ask whether this would account for your reluctance to respond to the informed local people and the serious local points of contention because of the difficulty for your department in providing a satisfactory response.

Studying what information we have been able to gather, we would wish to lodge the following objections to your granting a further licence for Area 202, initially to the inaccuracies of some of the claims made.

### **1. Proximity to the shoreline**

The following Crown Estate map of the area planned to be further dredged clearly shows the western edge of Areas 202 and 436 as being 4.7 km from the shore.



Not that this is important, other than as an indicator of crass inaccuracy. The closer proximity to the shoreline will merely mean that the resultant erosion will commence all the sooner and all the greater but in a somewhat more localised area.

## 2. Impact of prior dredging on the seabed

I have studied Marine Ecological Survey's report 'Update of the ES 5 years post-dredging' made for Hanson's in relation to Area 202 and the discovery of the 5 metre lowering of the seabed, on which it states: -

"The overall lowering is concluded to be part of the natural evolution of this part of the seabed. Since no adverse changes between 1999 and 2005 have been found there is no cause for concern, from the viewpoint of coastal impacts, related to the proposed future dredging."

It would have been far better to study the changes that have come about since the commencement of large scale commercial aggregate dredging in the late 1970's so as to relate the more meaningful and long term and cumulative impact.

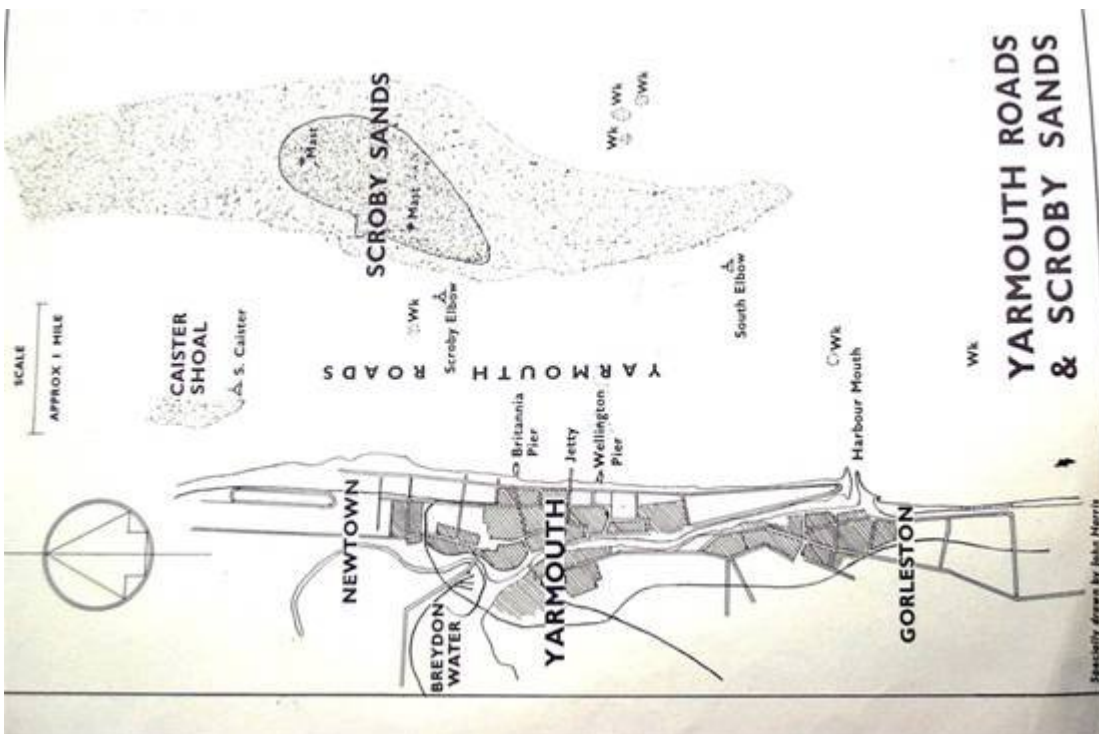
The interpretation of the causes of lowering of the seabed as being 'natural' or 'unknown' is, to say the least, exceedingly myopic. There is no evidence whatsoever to show that the findings produced point to anything other than long term and cumulative dredging. Such deepened offshore water will permit the generation of greater waves at the shoreline and increased beach draw down, so further escalating coastal erosion.

The report Appendix 3 relates to the 1999-2005 sea bed profile and the South Cross Sandbank interchange with the sand bank(s) providing the crest to base steepness. Eight of these ten profiles measured clearly indicate erosive changes of the banks where only two fail to do so. Despite the fact that the data shows otherwise, the assertion is made that no change in the sea bed profile has resulted. Whilst we might have confidence in the findings of this survey, we are quite unable to support the conclusion drawn.

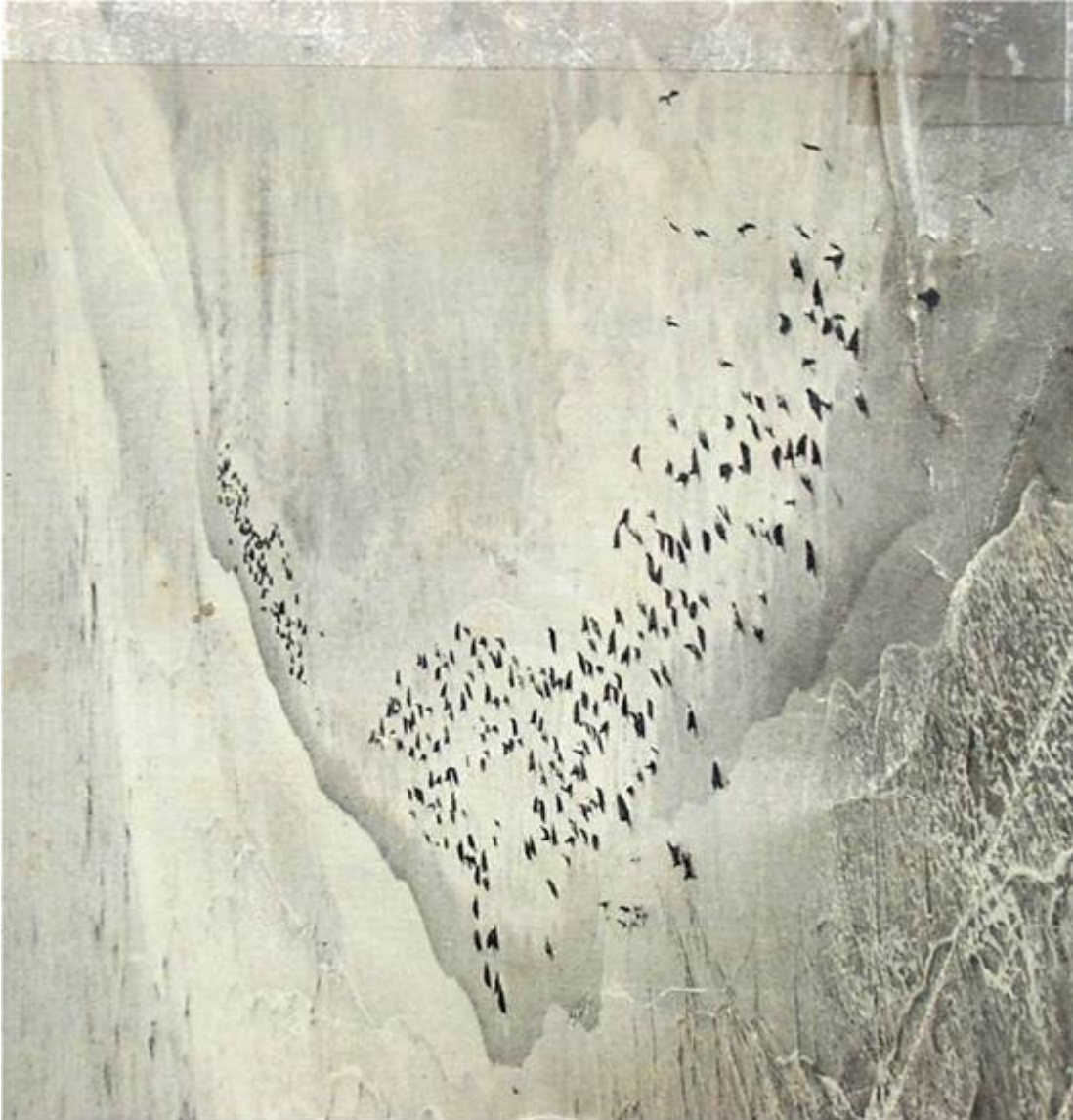
### 3. Impact on Offshore Sandbanks

The update continues to cling to the assumption that Scroby Sands has not declined since dredging commenced, but those who intimately study the situation know otherwise. (I personally have visited this offshore major sandbank many times).

Here is a map of Scroby made ca 1959 showing the permanently 3.5 sq.km. dry area and that intertidal. This remained so until after adjacent dredging commenced.



Prior to the commencement of offshore aggregate dredging Scroby was accreting and held annual breeding tern and seal colonies and even small dunes as seen below, an aerial photograph taken 1959. None of these can exist in sea covered areas.



A section of Scroby was always above water even on the highest tide as seen on the above map. It was not until the late 1980's following large scale aggregate dredging that Scroby began to diminish. Now it is covered by the sea most of the time, only briefly appearing as a small area of some one quarter of the original on the lowest tides.

This major sandbank serves to guard the coast from the major eroding waves by breaking on the bank. The eroding power of a wave is proportional to the height of its crest; therefore the loss of Scroby will escalate erosion of the coastline, as already long evidenced.

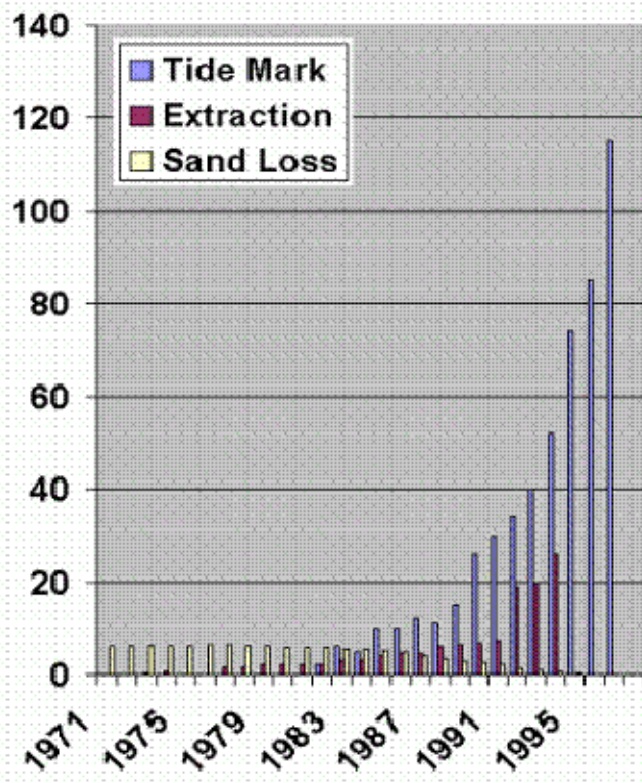
### **Impact on the Shoreline**

It was stated "no adverse effects have arisen from dredging off Great Yarmouth". That claim is totally erroneous and recognised as being so by all those who know and have studied this area's coastline. The impact has been nothing short of enormous, there for all to see. In the 1970's the mean Norfolk erosion rate was 0.9m/year. Now it varies between

2 and 16 times that, according the specific area impacted and the dredge site operations, timing and positioning.

Our members (and myself personally as the loser of our coastal residence due to offshore dredging induced erosion) are extremely concerned regarding the increasing rapid erosion of our beaches, dunes and soft sand cliffs since the commencement of aggregate dredging offshore to our coastline. Before dredging commenced this was an accreting shoreline as earlier provided as information to DEFRA regarding the concern of previous dredging licence applications.

I attach a graph of my study of a major section of the impacted coastline that correlates the level and timing of the dredging with the delay in mean beach draw down and the encroaching tide mark. I restate that prior to the time that offshore aggregate dredging began; this section of our coastline was accreting. This cannot be accounted for by sea rise alone, as over the same period of time, accepting a sea rise of some 6 mm per annum we would have seen only some 18 centimetres rise due to thermal expansion plus icecap and glacial meltdown. It is not that sea levels have risen to produce what we see so much as it is that beach draw down that has allowed encroachment of the sea to the dune, sand cliff and sea wall bases.



### Correlations of Offshore Dredging levels with Coastal Losses.

The graph shows the delayed correlation between the accumulated levels taken by offshore aggregate dredging as **Extraction** in millions of metric tonnes up to 1994 (in purple), the sea incursion by the mean of the tidal reach in metres as **Tide Mark** (in blue) and the mean beach sand depth level stripped as **Sand Loss** up to 1997 (in yellow) also in metres.

The survey took place over a 10Km shoreline between North Winterton-on-Sea and

California, Norfolk, between 1972 and 1997, with the data taken four times per year in January, April, July and October. Over the period of the study the total offshore aggregate removed rose from close on zero up to 260 million metric tonnes, with the majority coming from the site mapped on the previous page.

Over the period of the study the mean tidemark encroached 115 metres whilst six metres of sand was stripped from the beach, producing underminement leading to the loss of three of the previously stable dune hills that had supported coastal bungalows. Prior to the commencement of offshore aggregate dredging these beaches were accreting, as indeed they had been for the previous eighty years. The build up ceased within two years and the loss of sand and shoreline became noticeable some three years after East Anglian offshore dredging commenced between Winterton-on-Sea and Corton in Suffolk, increasing year by year after this. Severe erosion then followed along the Suffolk coastline, later in Essex also.

Whilst sea rise due to thermal expansion, melting icecaps and glaciers, added to by escalating, stronger and more frequent northerly gales due to Global Warming, these added to by East Anglian sinkage, have all significantly contributed to the loss of coastline and beach sand, the marked correlation shown powerfully links the main shoreline loss to the retarded natural recapture of coastal sand deposits by the dredged out offshore areas. The increase of erosive wave energy due to the loss of offshore wave breaking potential is a further aggravating factor when sand and gravel are taken from areas immediately opposite the vulnerable coastline. However, I note again that the losses to the shoreline are being compared by the applicant to the findings of five years ago, when they should be related the status prior to the commencement of wholesale and cumulative aggregate dredging, e.g. the 1970's.

### **Impact upon fishing and biomass**

The 80% reduction of fish, the loss of biomass and other benthic species (e.g. sabellaria spinulosa) and the change from the original granular spawning ground nature of the seabed to more silt is noted. That the dredgers are finding a greater ration of fine silt to the required coarse granular material of commercial value is due to the fact that more waste material is dumped overboard, this in turn creating an even greater silt to coarse aggregate ratio as more of the cargo is placed overboard as waste.

Not only does this change the nature of the seabed in the dredged area but it further smothers the downtide areas so leading to an even greater loss of the flora and fauna of the sea bed. It further causes that material arriving along the shoreline to be less cohesive, therefore permitting greater stripping from our beaches and consequently more erosion.

### **Destination and need of landed product**

This remains unknown, although earlier given by other licence applications it was 'A number of UK coastal ports, the Thames estuary and at mainland Europe, Amsterdam, Ostend and Bruges'. These countries do not permit such aggregate dredging so near to their own shoreline due to the erosion and damage to fish stocks that would result were they to do so. To export this aggregate at a time when 'managed retreat' is in vogue, when the sea defence budget is being cut and when losers of property due to erosion are refused reimbursement and compensation is unacceptable is not in the national interest.

Note also that none of the aggregate dredged was destined to be placed back as beach nourishment to help restore those beaches suffering sand and gravel loss due to prior dredging.

### **Impact upon the Fishing Industry**

Prior to dredging we had a viable longshore fishing industry. All fishermen without exception blame dredging for the demise of their industry. The reason for the 90% reduction of fishermen is due to the loss of fish, and this is due to the dredging. This finding should not be used as an excuse of there now being little fishing therefore little harm will result from further dredging.

### **Impact on the marine ecosystem**

My report is based upon evidence of serious physical damage, but the main address to the impact to the eco-system I shall leave to the expertise of Mr. Stephen Eades.

### **Cumulative Effect**

Over 135 million tonnes of aggregates has been dredged from the offshore Great Yarmouth and adjacent areas over the last 15 years, this a far greater level of exploitation of the seabed than any other area in the world. As a consequence the north, north-east and eastern sections of the Norfolk coastline have suffered the greatest level of erosion in Europe. Most of this coastline has only vulnerable soft sand, dunes and soft cliff as its sea defences, which have suffered by undermining to allow a far more accelerated rate of coastal erosion.

Two years ago the BMAPA announced that aggregate dredging would cease offshore adjacent to Great Yarmouth because of exhaustion of suitable aggregate, although stating their concern regarding the environmental impact. Yet as well as Area 202 HAML are now additionally applying to renew their license to continue dredging Area 401/2. It thus has to be assumed that in the absence of any new stable deposits, that this new source must have newly arrived at the extraction point from material eroded from the shoreline due to the previous cumulative dredging operations.

Neither the North Sea Action Group nor MARINET, the Marine Environmental Information Network, are satisfied by the interpretation given on the findings listed, less so on those not listed. We find that explanations in the letters and technical notes and accompanying Impact Studies are not valid and consider that our objections listed in our earlier submitted returns have not been satisfactorily addressed.

Our objections are based on the recognition that: -

(a) Offshore Marine Aggregate Dredging Accelerates Coastal Erosion.

(b) Offshore Marine Aggregate Dredging is the main cause of beach draw-down and the consequential loss of protective beach sand and shingle.

(c) Offshore Marine Aggregate Dredging impacts and is exploitive of the natural longshore drift and the offshore/onshore sediment movement from the offshore sand banks and natural sediment flows.

(d) Offshore Marine Aggregate Dredging is in stark contrast to the Draft Kelling to Lowestoft Shoreline Management Plan (SMP) policy of “No Active Intervention” for area unit 3b14 (Winterton to California).

### **Independent evidence of the damaging impact of dredging**

All of these points may be evidenced by the published results of empirical research conducted by bodies not aligned to the licence needs of the dredging companies, viz: -

(a) Dredging as far as fourteen miles offshore caused erosion of previously accreting shorelines. The Study for Cape Canaveral harbour made by the US Army Corps of Engineers (Final Feasibility Report and Environmental Impact Statement – August 1990) evidenced that modest dredging of a channel 14 miles offshore created a large, hydraulically self-sustaining open pit mine offshore serving to denude the onshore coastline. The report concluded that even though this dredging took place so far from the coastline and, although a relative small project, it brought about massive shoreline changes, reversing previous accreting and causing highly significant coastal erosion.

(b) The EUrosion Project Report “Living with Coastal Erosion – Eurorosion Policy Recommendations December 2003” states clearly in section 2.2.2 “(ii) Aggregate extraction. Dredging of river and seabed for navigational purposes (i.e. deepening navigation channels) or constructional purposes (e.g. sand and gravel mining) removes an important amount of sediments. This creates a sediment starvation which is in certain circumstances compensated by (re)activation erosion processes along the shore areas. This has proved to be the case in a significant number of cases including Cove do Vapor (Portugal), the Western Scheldt estuary (Netherlands and Belgium), Donegal (Ireland), Cavado (Portugal), and North Norfolk (UK). In some cases, dredging activities, by modifying the water depth in the near-shore area, induce wave refraction which in turn modifies the long-shore and cross-shore sediment transport patterns.”

(c) An addendum to the EUrosion Project Report dated December 2005 stated “Since the EUrosion report was written two years ago, following studies of further UK dredging in the Wash and off Great Yarmouth, it has been found that the main original North to South sediment flow has all but ceased”.

### **The wider impact**

A denial was given to the point that offshore dredging is eroding Scroby Sands and interrupting the sediment flows to Scroby Sands and the offshore Sand Banks, but the evidence of the reverse can be clearly seen by simple observation and by studying the photographs appended.

Prior to the commencement of commercial scale Offshore Aggregate Dredging Scroby was some three metres higher and five times greater in area, with marram, tern and seal colonies present. Even on the highest tides Scroby remained visible. Now the former large sand bank it is only visible on the very lowest tides. This marked reduction of some three

metres in height water cannot be explained by the 6 mm/pa sea rise brought about by Global Warming induced marine thermal expansion and icecap/glacial melt over the period of loss.

This major sand bank (and the adjacent previously shallow areas) promotes the breaking of the larger waves, preventing these reaching the coastline. (The eroding power of a wave is proportional to the height of the crest).

It was revealed by Hanson that between 2003 and 2004 the seabed of the dredging area had been lowered by 3metres, and that by 2005 this had increased to 5m in actively-dredged zones, despite the company only extracting 0.9 million tonnes during the previous five years. Such deepening of the seabed promotes greater eroding waves and increases the slope of the shoreline, so promoting a greater beach draw down with the consequent reduction of the beach volume and area, followed by the destruction of protective sand cliff and dunes. Such loss of sea bed material cannot be explained other than due to aggregate exploitation, as the volume lost has not appeared elsewhere, e.g. on our beaches which too are seriously denuded.

The Coastal Impact Study Report submitted with Emu Environmental Statement 'Area 401/2 Dredging Licence Coastal Impact Study Report EX 5030 August 2004' carried out by HR Wallingford states "A system of sandbanks between the dredged area and the coastline will prevent the direct interchange of material between the coast and the dredged area". This is factual, but it also tells us that the loss of these sandbanks due to dredging would permit such direct interchange of material between the coast and the dredged area, and there is evidence that this is exactly what has come about.

The offshore dredging companies operations along this coastline are undoubtedly accelerating the erosion of the offshore sand banks, beaches and coastline and in our opinion this environmental destruction constitutes 'Active Intervention' as negated in the Kelling to Lowestoft Shoreline Management Plan (SMP) policy for area unit 3b14 (Winterton to California). We thus ask the ODPM to terminate all offshore dredging offshore of this coastline pending the outcome of a public inquiry led by an independent expert.

Protection from the offshore sandbanks off Great Yarmouth, Caister, Scratby, Newport, Hemsby and Winterton is essential, as these areas, due to long-term cumulative dredging, are now eroding rapidly. The dredge site is adjacent to these protective banks. They are diminishing.

### **Impact upon sediment supply**

(5) The main tidal movement at Great Yarmouth is known to be offshore, i.e. eastbound, then in the sandbank area northbound. It then comes inland toward our north and north-east Norfolk coast. (Evidence from the Southern North Sea Sediment Transfer Study). Thus removal of vital sediment offshore to Great Yarmouth will deplete Happisburgh and down to Winterton and beyond, where the sediment bearing flow would normally permit some degree of deposition. That this main sediment flow is now known to have all but ceased accounts for the severe shoreline loss of the coast between Happisburgh and to Winterton and beyond. It seems apparent that the massive dredging programme over many years off Great Yarmouth has brought this about.

The NSAG and MARINET therefore refute the significance given of 'no impact' or 'low impact' and that therefore mitigation and monitoring is not required as given in some previous reports. We now have the results of many years of high level aggregate dredging as evidence. Unless monitoring is undertaken, it can be continued to be claimed that these results do not come about. A long term 'before and after' monitoring scenario is called for so that the results are fully evidenced.

### **Shoreline Stability**

Arising from my earlier comment, the sediment put overboard from the dredgers has resulted in changing the beach sand from that of an original granular cohesive nature to a far finer silted format, which, when coming ashore (as some still does in the months of summer, although not as prior to offshore dredging) decreases the ability of the beaches to remain stable under the greater and therefore more erosive waves that will result. As a result of the deeper offshore sea water, the loss of wave breaking banks and the increase the slope of the beach, the cohesion stability continuity of the protective beaches now attains importance.

### **Sea Bed Cover**

That 0.5 metres of aggregate resource is promised to be left by some dredgers is a positive step, but, as the binding plant root structures stabilizing the seabed will be destroyed by the dredging, and the coarse silt required for concrete manufacture will be replaced by the finer silt and sand washed off and overboard from the dredger, the rapid tidal movement in that area will reduce that coverage down to the chalk, so that the seabed flora and hence the fauna will no longer be able to have a foothold to restore the damaged seabed environment.

### **Sea Bed Recovery**

That dredged areas do not recover has been evidenced by CEFAS, who found no restoration after three to four years, and by numerous fishermen including Rodney and Graham Burns of Aldeburgh, who found that the area dredged off Orford twenty years ago has still not recovered. Nevertheless, that opportunity should be given in the long term hope of recovery of the devastated areas. A moratorium on dredging should come about now to promote this.

### **Reduced period of dredging activities**

The reduced period of dredging offered as a compromise by some contractors is welcome, but will not prevent irreversible damage. It is in the top layers of the coarse sand that spawning occurs, and that will be stripped by dredging. It is considered that although no signs of species repopulation of the sea bed have resulted even twenty years following dredging, an opportunity should now be given to attempt to allow the recovery.

Because of the over exploitation of the seabed during the last 15 years along this vulnerable soft sand and marram banked otherwise unprotected coast line we ask for immediate cessation of all offshore dredging operations along the Norfolk coastline.

In view of the overwhelming number of outstanding objections (> 300, mainly from the general public) to the renewal of the licence for HAML's Marine Aggregate Extraction Licence Area 401/2 (A&B) which would apply to this application also were it generally known, we strongly request that a public inquiry, led by an independent expert who is not under contract, being paid by or has previously carried out studies for any dredging company or their association instigated if/before any extension of this licence is even considered.

### **Threat to the Public**

We are now in a period when greater winter storms, lower barometric pressures and greater wind speeds will result in an escalation of North Sea surges, these probably far greater than that experienced in 1953 when three hundred people died in East Anglia. To continue to permit an operation that correlates powerfully with the loss of our protective sand cliffs, dune systems, salt marshes and the undermining of our sea walls when a severe insufficiency of affordable protection is apparent is seen as highly irresponsible. At this time of reduced funding for coastal protection, 'managed retreat' and denial of compensation for those losing their properties and businesses, this is both unethical and indefensible. Whilst the correlation between offshore aggregate dredging mechanism is well researched and understood in most of coastal Europe, so banning this activity, we ask of you who doubt these findings that at least the precautionary principle be invoked in the United Kingdom, even if the evidence you have of the damage is not felt to be entirely conclusive to you.

I have restricted my input to the physical aspects of further offshore aggregate dredging. The ecological and environmental impact upon species will be addressed by MARINET's Stephen Eades in his submission to you.

Pat Gowen,  
MARINET & NSAG,  
17 Heath Crescent,  
Hellesdon,  
Norwich,  
Norfolk  
NR6 6XD  
Tel/Fax: 01603-402554