

Report on the 26th September 2008 Great Yarmouth AODA Presentation

AODA, the Anglian Offshore Dredging Association, is formed from members of CEMEX UK Marine Ltd, Hanson Aggregates Marine Ltd, United Marine Dredging Ltd, Sea Aggregates Ltd, MAREA Consultants, EMU Ltd. and Volker Dredging Ltd in association with the British Marine Aggregates Producers Association (BMAPA), CEFAS (Centre for Environment, Fisheries and Aquaculture Science) and The Crown Estate. (For further information on AODA please contact justina.southworth@emulimited.com)

The united bodies are commencing a Scoping Study, and as a forerunner to applying for licences to dredge further areas off the Norfolk and Suffolk coastline, to give the case from their viewpoint, gave presentations to invited stakeholders at the Great Yarmouth Racecourse on Friday 26th September 2008, which MARINET and many other concerned organisations and individuals attended. An introduction to this Scoping Stage giving the background information for consultees is at http://www.anglian-marea.org/downloads/Scoping_Leaflet.pdf

AODA's web site is at <http://www.anglian-marea.org/> from where their presentations of 'An Introduction to Marine Aggregate Dredging Legislation', 'The Importance of Marine Aggregates', 'Conservation Designations', the 'Potential Impacts from Dredging', 'The Current Licenses and Proposals' and the Consultee List may be viewed by clicking on the list on the right hand side of the home page.

The handout provided at the meeting containing the FAQ's can be seen by going to:

http://www.anglian-marea.org/downloads/AODA_FAQ_Handout.ppt#1 .

Whilst the replies to many of the questions tabled are factual, this is not the case with A5, the answer to Q5, which claims "Dredging does not cause coastal erosion". They claim there is no evidence of sand movement between the shoreline and the offshore dredging areas, whilst we know from both observation and the numerous findings researched by astute independent expert bodies as given under 'Scientific Studies from around the world on the erosion resulting from offshore sand and gravel dredging' at:

<http://www.marinet.org.uk/mad/scientificstudies.html>

...that the claim that dredging does not cause coastal erosion is not so.

Their reply in A7, the answer to Q7, is devious as regards dredging by the Dutch. The fact is that the Netherlands do not dredge aggregate within 25km of their shoreline in coastal waters whose depth is less than 20 metres, other than to maintain navigation in the port shipping channels. But sand and shingle taken far closer to the coastline of the UK is used to make up the deficit, as thirty five per cent of that dredged from off Great Yarmouth is

exported by taking it to overseas ports such as Nieupoort, Amsterdam and Flushing. (please refer to <http://www.marinet.org.uk/mad/madbrief.html>)

MARINET tabled a number of specific questions, written and sent in well before the meeting, in order to give good time to research meaningful answers. (Many others were tabled at the meeting itself). Those written in and the replies given can be found by going to:

http://www.anglian-marea.org/downloads/Coastal_impact_questions_and_answers.pdf.

They are reproduced below and followed by our considered comments.

Answers to the questions posed by Pat Gowen in his email of 27th August 2008 to Emu Ltd _

'Q' is the question posed, 'A' is the answer from AODA, whilst '[MARINET Comment](#)' is MARINET's response to that reply.

Q1. On what basis do DEFRA and the dredging companies ignore the copious independent international evidence that offshore aggregate dredging is responsible for coastal erosion?

A1. The evidence from overseas case studies is not ignored; however the evidence which we assume is being referred to relates to dredging in completely different environmental circumstances. For example the Eurosion report (commissioned by the European Commission in 2004) provides case studies from the continent of dredging very close to the coastline or in estuaries where these are thought to have caused erosion. The examples cited are for the removal of foreshore materials, river dredging or coastal navigational and beach replenishment dredging, *not* UK offshore aggregate dredging. Indeed, the report provides no evidence relating to UK marine aggregate extraction causing coastal impacts due to the much greater distances offshore and the absence of any link to the coastal sediment system (see below for an explanation of the origins of the aggregate deposits). The Eurosion report states that dredging can affect the coast in 2 ways: by removing foreshore materials and by contributing to the sediment deficit in coastal sediment cells, mechanisms with which we would concur. However, neither is taking place in the case of aggregate dredging offshore East Anglia, which is why this activity is specifically not referred to in the report. Off Great Yarmouth, dredging occurs between 5 and 30 miles offshore in water depths of between 20 and 40 m, well beyond the coastal zone.

Another overseas example of dredging reportedly affecting the coast was derived from research 20 years ago by the American Corps of Engineers into dredging off Florida. This investigated the impacts of dredging a deep navigation channel from Canaveral Harbour, extending 14 miles offshore. The pre-dredge water depths were shallow across the area and in this case impact

on the coast was due to an interference with coastal processes, for example near shore waves and shallow water coastal sediment transport. We stress that this is very different to marine aggregate dredging offshore from Great Yarmouth, where the aggregate deposits are in waters well over 20 m deep and are not mobile or part of the coastal sediment system. Near shore navigational dredging involves excavating deep and long channels very close to the coast for port access to large ships whilst aggregate extraction commonly involves removing relict or “fossil” immobile deposits well away from the coast, where no coastal impacts are possible. The two activities are therefore not directly comparable. Depths of extraction in the dredging areas off Great Yarmouth range from 1 m to about 6 m, depending on the thickness of the deposit. Capital and navigational maintenance dredging can involve dredging to greater than these depths very close to the coast.

Another misplaced example commonly quoted is Hallsands in Devon where dredging took place between low and high water marks next to the fishing village. This occurred 100 years ago when there were no effective controls over, or environmental assessments of, extraction. The village was tragically destroyed due to the gradual loss of the protective beach but this was clearly inevitable as it was the beach that was being removed to build Devonport naval dockyards. Modern UK aggregate dredging, in contrast, only takes place where there is no impact on the coast and no UK marine aggregate extraction is now permitted to take place on the shoreline like that at Hallsands, or anywhere else where similar impacts on the coast could occur. See “Hallsands: a village betrayed” by Steve Melia (Forest Publishing, 2002) for further details.

MARINET Comment:

The EuroSION report specifically states under "Living with Coastal Erosion – EuroSION Policy Recommendations December 2003" in section 2.2.2 that Human structures and activities **have** exacerbated coastal erosion:

“(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 modify the long-shore and cross-shore sediment transport patterns.”

Empirical (note **empirical practical findings - not computerised models**) research by American Corps of Engineers into dredging off Cape Canaveral (Florida) proved that dredging a total of less than two million tonnes of sand over a four year period 14 miles from the coast of Cape Canaveral brought about massive erosion of previously accreting beaches **forty miles away**. So what would we find if similar research took place between Winterton and Corton where over 150 million tonnes have been

dredged much within four miles of the coastline ? Don't we know this already from the results ?

As for the Hallsands tragedy, that was the event that led to the British Association for the Advancement of Science establishing a Committee in 1883 *"for the purpose of inquiring into the rate of erosion of the Sea-Coasts of England and Wales, and the influence of the artificial abstraction of shingle and other materials in that action"* .It reported in 1885 that shingle extraction was causing loss of land and property. The British Government set up The Royal Commission on Coastal Erosion. The Minutes of this appeared in 1908 and 1909, and the Final Report in 1911. This Royal Commission on Coastal Erosion that started work in 1907 presented its Final Report in 1911. The Royal Commission Final Report (1911 p.158) concluded:

"The removal of materials from many parts of the shores of the Kingdom and the dredging of material from below low water mark, have resulted in much erosion on neighbouring parts of the coast" and that "Removal of sediments from the shore should be illegal" (Para. 7(a) p.160).

It further recommended *"systematic observations"* of change below low water, deep water sediment travel and sandbanks movements for which *"information at present is scanty and vague"*. Little subsequent action was taken, nor has it to this day.

The Final Report (1911, Part II) said that on the basis of foreshore losses *"the gradient of the foreshore must be becoming steeper."* (p.45). However, there was no recognition by the authorities of the implications. More recently, Taylor et al (2004) report that 61% of the coastline was steepening and 33% had flattened. This recognition, long before the onset of Global Warming, is critical to the debate about coastal changes, especially in the discussion of sand-mining impacts, as it indicates a progressive exposure of beaches to serious damage.

Q2. Is it not obvious that digging holes offshore will steepen the shore profile, and therefore lead to beach draw-down and coastal erosion?

A2. Dredging the seaward extension (toe) of a beach deposit could certainly result in the remaining beach sediments being drawn down by wave action into the depression that has been created– as was the case at Hallsands. However, dredging off Great Yarmouth does not steepen the shore profile because it is well beyond the coastal zone, where the sediment transport regime is dominated by tides rather than waves. Between the dredging areas and the coast are miles of sand banks and deep channels which effectively separate the extraction areas from the coast. The sandbanks are extremely shallow on their crests and the intervening deeps are commonly much deeper than the dredging areas themselves. There is therefore no uniform slope leading down from the coast to the dredging areas and it is therefore inconceivable that dredging offshore could steepen the shore profile. The coast is effectively “unaware” of the dredging taking place. Dredging is taking

place in water depths of over 20 m and over 5 miles offshore, beyond the coastal zone. The north-south orientation of the tidal currents offshore East Anglia prevents any interchange of sediment from the dredging areas to the near shore banks and vice versa, let alone to the coast. We will present diagrams illustrating this at the meeting.

MARINET Comment

As said regarding the previous point, research by the American Corps of Engineers into dredging off Cape Canaveral (Florida) proved that dredging a total of less than two million tonnes of sand over a four year period 14 miles from the coast of Cape Canaveral brought about massive erosion of previously accreting beaches **forty miles away**. No similar research has been attempted in the UK.

The sandbanks close to the dredging zone, which protect the main shoreline by breaking the bigger waves, have been seriously diminished since dredging took place close to them. Prior to this we had marram, seal and tern colonies on Scroby Sands, always well above water. Now it is only seen on the very lowest tides. The power lines of the Scroby wind farms, once buried deep in the ocean bed, were left suspended well above it, and consequently had to be replaced due to fracture. (See Mike King's points)

Furthermore, steepening of the beach and shore profile can be caused by a changed wave regime. Larger waves and waves with greater velocity will cause this change. If the crest height of offshore sandbanks is lowered (as we know has happened at Scroby) then the wave regime will alter. This, in turn, will impact on the shoreline and change its profile. This evidence may be seen in Stephen Eades comments on the wave regime model for Area 401/2 at <http://www.marinet.org.uk/mad/objection/401-2stephen.pdf> Here it is shown that the wave regime model used by the companies for the Great Yarmouth block is inadequate, and all rely heavily on this Area 401/2 study.

Q3. Why do Suffolk Coastal District Council, Halcrow, The Environment Agency, DEFRA, The Crown Estate and BMAPA combined still maintain that massive dredging operations are not responsible for coastal erosion, when they have not a shred of evidence to support that claim?

A3. These organisations have reviewed the background evidence that UK aggregate dredging is not causing erosion and are satisfied that this is strong. The evidence base that is available can be separated into four distinct categories:

i. Geological origins of the deposits being dredged

Independent geological evidence clearly demonstrates that the aggregate deposits are relict (i.e. formed in environments and by processes no longer prevailing), being formed in Ice Age fluvial environments and are not therefore part of the coastal system (see the BGS memoir on the Geology of the Country around Great Yarmouth, Arthurton et al 1994, for example). Bellamy

in a 1998 Geological Society Engineering Geology Special Publication (Number 13) explains that the aggregate deposits off Great Yarmouth are part of the infill of the former River Yare and originated during the Pleistocene when sea level was much lower than present.

ii. Physical processes acting upon the geological deposits

A recent ABP Mer and BGS study (entitled “A synthesis of current knowledge on the genesis of the Great Yarmouth and Norfolk Bank systems,” Cooper *et al* 2008 (available from the Crown Estate website)) comments that the sediments in the dredging areas do not contribute to any significant degree to the inshore bank system and are immobile. This is because the near shore banks are separate from the relict sediments of the dredging areas and that the dredging areas are not part of the coastal/near shore bank system. Furthermore, the Southern North Sea Sediment Transport Study repeatedly refers to aggregate dredging being too far offshore to be of significance to coastal processes and cites much sediment transport evidence to demonstrate the high degree of confidence in this judgement. This landmark 2002 study was sponsored by the major coastal local authorities, independent of the dredging industry sponsored assessments.

Furthermore again, the Tyndall Centre for Climate Change Research in a 2006 assessment (Working Paper 97) entitled “The effect of dredging off Great Yarmouth on the wave conditions and erosion of the North Norfolk coast, concluded the following (quoted in full): “The effects of extreme dredging on wave conditions and cliff erosion between Happisburgh and Blakeney have been explored with model simulations [by the Tyndall Centre]. Effects on wave conditions were found to be very small and were no larger than the error margin inherent in the modelling process. Given this the subsequent modelling of cliff evolution was not strictly justified. Nevertheless the models were run and minor fluctuations in cliff recession were observed, both positive and negative. No link was found between seabed lowering in the dredged area and increased cliff recession.”

Finally, the Kelling to Lowestoft Ness Shoreline Management Plan First Review, written by Halcrow (2006) on behalf of the main coastal local authorities, states in the “basis for the development of the plan” section 3 (page 9) that “Licensed aggregate dredging is often cited as a cause of erosion, but studies conducted to assess this activity indicate that it does not have a noticeable impact upon coastal evolution and there is no evidence to the contrary. Indeed there are many other observations that can be made to support these studies, including the fact that significant erosion of this coast took place long before present dredging activities commenced.”

iii. Site specific assessments of proposed dredging

The evidence industry commonly presents consists of aggregate licence application environmental impact assessments and coastal impact studies involving wave transformation studies and sediment mobility assessments. These are undertaken by leading scientists and consultancies and their work is scrutinised by Government scientific advisors and other stakeholders.

iv. **Site specific monitoring of actual dredging**

Monitoring from bathymetric surveys required by the Marine and Fisheries Agency for several areas off Great Yarmouth shows that the dredged depressions do not infill with coastal sediment – or any sediment for that matter. This is no surprise as the deposits are relict and once removed will not reform. The resulting depressions are shallow, low profile features which allow the natural sediment transport processes to continue across and out of the areas, uninterrupted.

Contrary to your assertion therefore, there is a good deal of evidence, both industry sponsored and independent, of which the organisations you mention are aware, which shows that aggregate dredging off Great Yarmouth is not causing or accelerating coastal erosion.

[MARINET Comment](#) .

How's that for a selective review ? They have obviously ignored the host of evidencing independent studies as reported on our website under 'Scientific Studies from around the world' on the erosion resulting from offshore sand and gravel dredging that can be seen by going to <http://www.marinet.org.uk/mad/scientificstudies.html>

Have they studied the evidence from the 'Erosion Report' to be found at <http://www.marinet.org.uk/mad/scientificstudies.html#eep> which specifically notes the erosion resultant in North Norfolk due to offshore aggregate dredging?

Have they studied the far more recent findings presented in the 'April 2004 second Sandpit' report to be found by visiting <http://www.marinet.org.uk/mad/sandpit.html> ? Both were made from very large groups of independent expert world wide scientists and can be seen as conclusive evidence of the impact. And there's more where they came from.

Did they read under <http://www.marinet.org.uk/mad/scientificstudies.html#uns> the Corps of Engineers 1990 report of the Cape Canaveral dredge results and under 'USA - March 1993' that finding at Pea Island too? And are they really not aware of the Coastal Zone 07 paper presented by Professor Vincent May 'Why are our Beaches eroding?' that may readily be seen by visiting <http://www.marinet.org.uk/mad/coastalzone07.html> ?

And did they see at conclusion of my briefing paper at <http://www.marinet.org.uk/mad/madbrief.html> the resulting graph of my long term study between Winterton and Caister-on-Sea where the correlation of the level, timing and point of offshore dredging is related to the beach sand loss and tide mark incursion ? This, in statistical terms, was said by Professor Peter Croghan at UEA to be highly significant.

We know that in Area 436 (see last ES Update at the time of the site's surrender) that the excavation depth reached 5 metres, 80% of which could not be accounted for by dredging activity. The consultant explained the

hollowing due to "natural morphological process". **If** such processes exist, they are clearly severe. They thus need to be explained, and their action and implications properly assessed. This has never been done, and until and unless this is done, it would appear that these 'natural morphological processes' are a wild concept and subject to no real understanding. There is no anomaly as it is fully explained by the dredging impact, yet this is dismissed out of hand. Can this situation be in any way satisfactory ?

Finally, there's the over 100 year old report from the ROYAL COMMISSION ON COAST EROSION (RCCE) to be found by visiting <http://www.marinet.org.uk/mad/coastalzone07.html> which states "The removal of materials from many parts of the shores of the Kingdom and the dredging of material from below low water mark, have resulted in much erosion on neighbouring parts of the coast" and that "Removal of sediments from the shore should be illegal" (Para. 7(a) p.160).

Q4. Why have no significant and meaningful post-dredging impact studies been carried out following dredging?

A4. Post dredging studies are undertaken in the form of ongoing monitoring for several of the dredging areas off East Anglia – monitoring of worked out dredging areas clearly shows that they are not infilling. This is the case in licence areas 401, 202, 254, 221, and 436. We will display reports and charts at the meeting.

MARINET Comment:

There has been no assessment of the physical condition of Area 436 at the time of the surrender of the licence. This assessment of the physical condition at the expiry of the licence is a requirement of MMG2. Nor has there been any assessment of the biological condition of Area 436 at the time of the expiry of the licence. Hence, there is no benchmark to measure "recovery".

Furthermore, those studies referred to are short lived and are not conducted so as to evidence the shoreline to offshore movement of material, nor of the effect of long term huge scale dredging with the obvious cumulative effect. What is more, they rarely continue for more than a year following the termination of the dredging project, when the onset result of it along the shoreline can commence up to three years following the operation. (see <http://www.marinet.org.uk/mad/madbrieft.html>) No study has been conducted as to why the seabed has deepened in dredged areas, why the beach slope has increased or where the mass of sand stripped from our beaches has gone to. That which is blatantly obvious was put down to unspecified 'natural causes'. Seabed exploitation is anything but 'natural'.

Q5. Why are Environmental Impact Studies merely assessments based upon computerised outputs made using inputs of speculative and assumed data rather than actual findings?

A5. Impact studies are not simply based on computerised outputs and do not use speculative data. Whilst they do include conservative wave transformation modelling using widely accepted, calibrated and tried and tested numerical models, this is based on realistic and known wave climates, wave return periods, tidal current vectors, wind regimes and dredging scenarios, validated by the outputs of historical monitoring effort. Results are interpreted by specialists who use professional judgement and clear findings to reach conclusions, which are then subject to scrutiny from Government advisors before decisions are made. "Actual findings" are commonly used, for example seismic and sampling data reveals the structure, geometry and grain size of the aggregate deposits and bathymetric data reveals water depths and the form of the seabed. It is from this that we know that the aggregate deposits are relict and unrelated to the coast. Wave changes due to dredging off Great Yarmouth are either zero or are so small that they could not be measured – see the independent Tyndall Centre reference above.

[MARINET Comment:](#)

See the earlier comments about the wave regime model for Area 401/2 as given in our comments following A4.

But wave pattern change is but one factor. Beach draw down is another. Sand movement from the shoreline and other effects such as the reduction of protective offshore sand banks need investigation over long-term periods following dredging. The computer modelling hitherto employed has never been backed by findings that would result from a practical investigation.

Q6. Why hasn't a long term sand-tracking study been made of sand transport from the eroding coasts to the dredging sites and the aggregate landings, to reveal any mobility and transport of the original shoreline material to the place of no return?

A6. This would be unnecessary because the deposits extracted are already known to be unrelated to the coast from a range of geological and hydrodynamic studies, see above for a selection of references.

[MARINET Comment:](#)

To refuse a study on this most important of all factor on grounds that it is claimed that it does not happen will not supply that evidence required so as to support their claim of no impact. MARINET feel that such an investigation by a non-aligned body would conclusively prove such mobility and fully account for the huge discrepancy between the claims of 'no impact' and the readily seen findings. In fact, this has already been shown (see Mike Kings points later)

Q7. Why are Aggregate Extraction Licences (EIA) issued without any attempt to evaluate the movement of offshore sand which feeds the coastal dune system? Recent examples are EIAs issued for Area 457 (Liverpool Bay), and Areas 401/2 and 202/436 off Great Yarmouth. Such

omissions of data obviously reduce ability to anticipate the effect extraction will have on the neighbouring coast, and therefore fail to protect the coast from erosion.

A7. The aggregate deposits do not feed the coast – if they did then dredging permissions would not be issued. Off Great Yarmouth the deposits are relict fluvial sediments which have remained immobile since their deposition during the Ice Age. Overlying these submerged river gravels are very thin and localised veneers of mobile sands but these are moving very slowly north (coast parallel) under the action of the tidal currents, not in towards the coast. Any feed to or from the coast would occur only at the most inshore banks and the nesses protruding from the coast, see Cooper et al 2008, cited above. Nevertheless the potential for sediment feed to the coast is always assessed in EIAs and an aggregate licence would not be granted if the coast was dependent on feed from such an area.

[MARINET Comment](#)

We do not agree that the aggregate deposits do not feed the coast. In the case of Area 457, Liverpool Bay, it is established knowledge that the sand offshore on the seabed does feed the beach and dune system along the Sefton/W.Lancashire coast. Without this sand transfer from offshore to on shore, the dune system would not exist. Therefore there is concern, in the case of Area 457, that excavation offshore could interfere with this sea to land movement of sand.

But that is not the whole or main issue. What we recognise is that the coastal deposits feed to offshore, particularly when the bed depth has increased leading to greater beach slopes and higher erosive waves. Further, due to this, that the beaches have steepened. As far as we are able to determine, the laws of gravity have not been repealed, so sand movement from high points to low must result in any semi-fluid medium.

Q8. Why are actual and realistic post-dredging studies not carried out, extending into the future by several years, over which time the impact becomes evident?

A8. See answer to Q4. Furthermore, dredging has been taking place at area 401-2 since 1995. Biennial monitoring is required at this site providing a time series of nearly 15 years of data that clearly show the areas of impact and the effects of offshore marine aggregate extraction. The scientific advisors to Government (Cefas) have also looked closely at the effects of aggregate extraction on area 221 where dredging stopped nearly 10 years ago. The results of these studies can be explained further at the open day.

[MARINET Comment:](#)

See our comment on A4. The CEFAS study referred to only looked at the recovery of the eco-system of the sea bed, and found no signs of recovery from the dredging onslaught. (Fishermen have found no recovery after 20

years following dredging). The CEFAS did not investigate the erosion brought about to the shoreline. They did not really need to do so, as it is obvious to any coastal observer who has seen the manifold result over the years.

Q9. Why is there no attempt to look for, and to sponsor, significant research that would show up any causal connection between dredging and coastal erosion?

A9. Much has been sponsored on this issue, independent of industry – the Southern North Sea Sediment Transport Study, the Shoreline Management Plan, the ABP Mer/BGS study by Cooper et al 2008, the 2006 Tyndall Centre modelling, the BGS Memoir on the Geology of the Country around Great Yarmouth (2004) and the EuroSION study. The Government sponsored Marine Aggregates Levy Sustainability Fund report entitled “Marine aggregate extraction: helping to determine good practice” (September 2006) states that confidence in the understanding of the impact of offshore aggregate dredging on coastal processes is “high” and states that “Almost all marine aggregate extraction areas are too far offshore to have any effect on the coastline.....”

[MARINET Comment](#)

The 'independent' studies referred to rely upon that given by dredging aligned sources. One cannot say that those conducting the surveys referred to are independent from the dredging companies, the Crown Estate and government. They are financially dependent upon them for income, and obviously must recognise that a report opposing dredging would not result in further contracts. But such are the only reports considered when granting dredging licences. And no second opinion is permitted by DEFRA, etc.

Q10. Is it not now generally accepted that Halcrow's 1992 predictions for the Norfolk coastline of the sea approach covering 60 years, i.e. up to 2052, were under-estimates by a factor of 12, the lines being crossed within 5 years? Is it not accepted that this error was the consequence of Halcrow's failure to take into account the effect of aggregate dredging on the coast? When dredging is taken into account, do not the actual coastal loss figures become fully explainable?

A10. Halcrow have considered dredging in the recent SMP first review and conclude no concerns from this activity given the amount of research previously undertaken. We cannot comment on their previous assessment of coastal issues as this is a matter for them, but their conclusions are quite clear - dredging is not contributing to erosion.

[MARINET Comment](#)

One cannot account for this discrepancy in any other way. Where else could all our beaches, sand banks and soft cliffs have gone to ?

A question was asked by Peter Boggis at the meeting. *"Are you aware that Halcrow had taken wave size increases due to dredging into account, in the rehash of the Southwold sea defence and are you aware of the Halcrow paper on the movements of the offshore banks at Lowestoft".* (It has already been admitted that the previous dredging off Southwold risks more powerful waves reaching the shore. This has resulted, and has been found to be very noticeable by the local people, as this is producing serious coastline change.

Q.11. Why do the Dutch use aggregate dredged off our coast, but ban dredging at similar depths and distances from off their own? Is it not because they know the damage to sea life and the coastal erosion it causes?

A11. The Dutch have not banned dredging at similar depths and distances offshore. They dredge 40 million tonnes per year from their seas, nearly double the extraction from UK waters. It is also worth noting that the Dutch authorities have recently approved the extraction of over 380 million tonnes of marine sand from licences on their continental shelf over a 5 year period to support the extension of Rotterdam harbour (Maasvlakte 2 project).

Details on the use, regulation, policy and management of marine aggregate extraction in north-western Europe can be found on the following link from the International Council for the Exploration of the Sea (ICES) – an intergovernmental organisation that deals with marine and fisheries science: <http://www.ices.dk/iceswork/wgdetail.asp?wg=WGEXT>

It is worth noting that the reason that marine aggregates are exported to Holland and other near continental nations is that their continental shelves have no coarse aggregate (sand or gravel). They do however have vast volumes of fine and medium grained sand, which are extensively dredged off Holland and Belgium – both for construction and for fill and beach replenishment purposes. It should be noted that the UK also *imports* substantial volumes of minerals, whether it be hard rock from Scandinavia for coastal defence and civil engineering purposes, coal from Eastern Europe, or limestone from France.

Another common misconception is that UK marine aggregates are exported to protect continental beaches. This is incorrect, as all the marine aggregates that are exported are used for construction purposes, with all continental beach replenishment requirements being met from local European sources.

[MARINET Comment](#)

The Dutch Minister for the Environment, the Ports Manager and their Euro-MP's emphatically all state that The Netherlands gave up offshore dredging nine years ago, as testified on our MARINET video interviews. Other than to keep their ports clear for navigation, they are not permitted to dredge within 25 km of their own coastline, and then only in sea depths of more than 20 metres. But Van Oord are dredging off **our** coastline, and over one third of aggregate dredged off East Anglia is taken to Holland. The Dutch and Belgians, due to the erosion and damage to fish stocks known to be caused, now rely upon importing their needs of sand and gravel from Britain, taking well over 7 million tonnes of the aggregate dredged offshore to

Great Yarmouth each year. This is mainly used to build their beaches and protect their coastline, this use taking some 8 million cubic metres of sand annually, compared with just 2 million used in Britain.

Q12. Why is it that dredging off our coastline continues and additional dredging sites are being sought here when BMAPA announced two years ago that the deposits on the East Coast were exhausted and that these areas would be abandoned in favour of the South Coast and Channel sites?

A12. While the coarse (gravel) sediment reserves of many licence areas off the east coast may be nearing exhaustion, as suggested by BMAPA, these areas still contain significant volumes of coarse sand. Therefore the dredging areas off the east coast are not exhausted of all potential resources. New licences in the eastern English Channel mean that there is now likely to be a reduced dependency on east coast areas where gravel is relatively scarce. This means that remaining reserves off the east coast will last for longer and potentially more could be used for beach replenishment.

[MARINET Comment](#)

It wouldn't just be that the release of so much sand and shingle from our beaches and soft cliffs due to our ailing sea defences and consequent 'Managed Retreat' dictated erosion is proving this new supply, would it? Personal chats with men working on the dredgers revealed that the dredging had taken place right down to the clay (note: leaving no cover as is supposed to happen) and that it was very hard work to find any good deposits off Great Yarmouth. But now apparently more has arrived.

Q13. Is it not that these new findings off Great Yarmouth and Southwold have been deposited by migration of material from the beaches, dunes and soft sand cliffs of the East Anglian coastline ?

A13. The sediments that are being extracted are relict and are completely unrelated to sediments at the coast. The reason applications are being made to renew many existing licence areas is that not all of the in situ reserves in the original dredging areas have been extracted. New licence permissions and licence renewals are being sought to permit extraction of the remaining in situ reserves from these original areas of seabed.

[MARINET Comment](#)

See A12 and A13 and our comment to these above. And yet again the seaward migration from our shoreline to the emptied area is denied.

Q14. What influence on coastal shoreline stability do you feel is contributed by the loss of beach and seabed cohesivity due to the decreasing ratio of the coarse granular sand removed and that of non-cohesive 'soft sand' dumped overboard in dredging operation ?

A13. There is no influence whatsoever. There is no “decreasing ratio” of different sand types so the premise of the question is wrong. The region in question already has a very high level of natural bedload (mobile sediment), with transport processes driven by the dominant tidal currents. The sediments returned by the screening process simply add to this natural bedload.

MARINET Comment

This has never been researched, so it cannot be evidenced that there is no decreasing ratio of different sand types and that the premise of the question is wrong. It is very noticeable that the cohesivity of our beaches has declined over the years. Where once one could cycle along a beach when the tide had receded, this is normally now impossible. It is difficult to evidence this as no past records are available, and the beach structure varies to such a degree, tide to tide, day by day and month to month that it would be difficult to prove this point to any degree of confidence.

Q15. Have BMAPA and the dredging companies considered the implementation of sub-seabed extraction so less destroying the surface fauna and flora in order to assist stability and retain the existing eco-system?

A15. This is impossible and in any case would not alter environmental impacts because the deposits in question are commonly less than 3 metres thick. Pumping sand and gravel from the seabed requires high sea water contents (>80%) drawn into the head of the suction pipe while it rests on the seabed. Any attempt at sub-seabed extraction would fail to pump the aggregate to the sea surface as there would be insufficient water content. The effects of marine aggregate extraction are essentially related to physical disturbance and it is both Government policy and industry best practice to minimise the area that is dredged at any time, thus reducing the environmental footprint of extraction operations. Cefas and ALSF sponsored research shows that marine life returns over periods ranging from a few months to several years depending on the species in question and the environmental conditions.

MARINET Comment

There have been papers on such methodology from The Netherlands, but of course such a method would be more expensive in time and equipment, so may be thought to be commercially unviable. Whilst it would aid the recovery of a decimated area, it would have little or no effect on preventing beach draw down, as the same seabed lowering and hence the steepening slope from the beach would be much the same.

Q16. In the absence of government re-imburement of losses brought about by those losing their housing, businesses, income and amenity, have BMAPA considered overwriting these losses with a fund built from the profits of their companies considerable profits?

A16. Dredging is not affecting the coast in any way, so compensation from the dredging companies would be inappropriate. Having arranged public meetings several times in the past few years both in East Anglia and in other regions, we understand and sympathise with the concerns over coastal erosion and have addressed the understandable perception that dredging could be partly to blame. There is now a large body of established, independent evidence demonstrating that aggregate dredging is not affecting coastal erosion, a position the dredging industry has always maintained. The coast of East Anglia has been eroding in many places for centuries, well before any offshore dredging, and this process will continue with or without offshore dredging.

MARINET Comment

Again we see a refusal to recognise the parasitic impact of dredging on the shoreline. But if the impact from dredging **were** conclusively proven and fully admitted, it would open the way to huge compensation demands. So, from the profit point of view, there's a good reason not to open the flood doors for compensation.

And we must also address the impact upon the seabed ecosystem and that of the entire sea of the damaged area. Aggregate dredging, far more than drag trawling, damages the marine benthos (the sea life living on the seabed). It removes the physical habitat, and it kills the life living there during the extraction event. It further smothers others with the silt rejected overboard. The loss of habitat further impacts on sites which, on a seasonal basis, may be used by fish species for spawning and as nurseries. This whole question needs to be considered.

Also, these sand areas in the North Sea are often described by the aggregate companies and their consultants as being biologically "naturally impoverished". This is not true. The North Sea seabed was once ecologically rich and used to be covered in Victorian times (and long before) by vast oyster beds - see page 2-3 of Marinet submission to Defra on Marine Bill, item on Charles Clover's book 'The End of the Line' <http://www.marinet.org.uk/marinebill/marinebillsubmission1.pdf> Therefore this once used to be a biologically very rich area until man's excavatory activities started to change it, with oysters being a keystone species - i.e. a species which creates a habitat which enables other species to colonise the area. Remove the keystone, and the biological community collapses. The same applies today with sandworms, *Sabellaria spinulosa* and *Sabellaria alveolata*. These worms create physical reefs made of sand which then enables a complex biological community to develop. Sand extraction destroys these reefs, both in their mature form and their embryonic form. These "biogenic" reefs are in fact Annex I EU Habitats Directive habitats. It is therefore untrue

to claim that the seabed offshore of the east coast is "naturally impoverished". Rather, it is impoverishment is due to man's activities over a very long period. Remove man and his activities, and this potentially complex biological community will be re-born - eventually.

Questions at the Meeting

There were many additional questions placed at the meeting. One from me was *"Why is it that only the claims of those selected by, appointed by and paid by the dredging companies themselves are considered whilst the copious level of evidence showing the erosive impact of offshore aggregate dredging is ignored ?"* and *"Why is no second opinion permitted when considering granting licences for offshore aggregate dredging ?"* The reply both of these questions was just "How else could we do it ?" Do we need to tell them ?

Questions were asked by Peter Lanyon, concerned at the terrifying possibility of undermining of the Sizewell nuclear power stations should dredging the new area much larger and much closer to the coast be permitted. But again the likelihood of this frightening scenario was rebuffed.

Mike King stated his concern that judging by both the public displays and presentations it appeared that AODA had already determined the study results and were attempting to convince the public that the offshore dredging in this region had no effect on coastal erosion because of the distance from the shoreline where it was being carried out, and that it was his belief that these studies were just appeasement. He gave the widely held belief that the whilst the presenters were obliged to consult the public and concerned organisations there was no obligation to accept their local experience, findings and evidence, or to change anything.

He pointed out that the recent Unit 3b (Kelling to Lowestoft Ness) Shoreline Management Plan extensive consultation process was such an example of such public appeasement, as when this plan was circulated for public consultation during 2006 there were more than 2,400 responses; only 10 of these responses did not totally reject the plan and only 4 of the 10 found this SMP acceptable. All local authorities and organisations also opposed this plan.

Mike added that in spite of the above we all hoped that they would perform a comprehensive study of the cumulative effects of the intense offshore dredging off the Norfolk and Suffolk coast line, and include scientific tests in these studies as those carried out by Blackpool Council during 2007. (This test employed fluorescent tiny glass balls and Xe-133 isotope radioactive tracer labelled sand, then tracking them to destination. It was carried out because Blackpool Council became very concerned when just 2" [!] of sand was lost from their holiday beach. It was found - in the aggregate landed by the dredgers!)

Mike suggested out that such research had intentionally not been demanded by DEFRA nor performed by those employed by the dredging companies for EIA provision, as that would conclusively prove that shoreline and beach erosion was due to dredging, which they certainly don't wish to be revealed.

Concern expressed by Richard and Jenny Docwra on behalf of the many angry fishermen whose livelihood is so critically impaired were responded to by claiming that the dredging areas recover in a year, when this has never been evidenced. CEFAS research showed that two years after dredging there was no recovery, whilst the Burns brothers, fishermen off the Suffolk coast found no recovery of their once prime fishing ground off Orford fifteen years following dredging. The Norfolk East Coast fishermen find the same. Over 90% of them have now given up fishing because of this.

It appeared that there was a high level of collusion from a united front of the presentations speakers, all of whom were seen to be in favour of the continuity of offshore aggregate dredging and decidedly not in favour of heeding the evidence given to them by those who have experienced the catastrophic results of it.

The general consensus among those attending was that it was obviously an exercise in hype optimisation, disguised as 'fact finding' and that the dredgers are going to do what they like regardless of others rights. But at least it was a far better presentation than the dreadful pack of misinformation trotted out at the previous GY Racecourse meeting ran by BMAPA on 19th April 2005 (see 'Meeting the Dredgers' by going to:

<http://www.marinet.org.uk/mad/meetingdredgers.html>)

There was a noticeable absence of any recording of what was said at that AODA presentation/consultation. No tape recorders, no microphones and no designated scribes. The one AODA fellow with a clip-board and pen plainly didn't write down what was said, asked, or 'answered'. One has to wonder if such an omission invalidates the required public consultation.

Other Comment

Two adjacent letters to AODA appear on this website that add to the findings above. These contain detailed points not fully covered in this report. One is from Mike King at:

<http://www.marinet.org.uk/mad/objection/reamike1aoda.pdf>

The other emanates from MARINET coordinator Stephen Eades, seen at:

<http://www.marinet.org.uk/mad/objection/reastephen1aoda.pdf>

This is rather a précis of a two hour meeting, but the main points are covered.

Pat Gowen, 23rd October 2008