



Patrick J.A. Gowen JP MIST,  
Head of North Sea Action Group,  
17 Heath Crescent,  
Hellesdon,  
Norwich,  
Norfolk  
NR6 6XD

Tel/Fax/Answer 01603 402554



**Friends of  
the Earth**

Pat Gowen, MARINET & NSAG  
17 Heath Crescent,  
Hellesdon,  
Norwich,  
Norfolk  
NR6 6XD  
UK

17th January 2009

Tel/Fax/Answerphone: 01603-402554  
Mobile Telephone: 07767-041443  
Skype: patgowen1932  
e-mail: [pat.gowen@ntlworld.com](mailto:pat.gowen@ntlworld.com)  
Website: [www.marinet.org.uk](http://www.marinet.org.uk)

Dear Doctor Bruce Tomlinson,

Your Ref: J/1/06/1302/0828

Thank you for the copy and CD Rom of the Marine Aggregates Regional Environmental Assessment (MAREA) Scoping Report which we in MARINET have now studied in order to comment upon your study and its report. Our findings were that your Appendix has some very good informative content and was far more meaningful than the written report itself

Whilst we compliment the Anglian Offshore Dredging Association (AODA) and EMU on the layout, comprehensive content, and clear presentation of your document and appendix in those aspects of the situation it has sought to address, we would wish to point out that we are conscious that inadequacies are present, particularly those in that aspect of greatest concern to those living or making a living on the coastline, i.e. that of the ongoing and escalating erosion of the shoreline attributable to long term cumulative offshore aggregate dredging.

Whilst I back and applaud the comments already provided to you by our Mike King and Stephen Eades, I would wish to amplify some of these and add additional points of comment rather than repeat that already supplied to you.

You will recall that prior to the AODA presentation/consultation held at Great Yarmouth Racecourse on Friday 26th September 2008 I wrote to you ahead with a series of questions that MARINET wished to see answered at that meeting. That you did by producing a pamphlet containing these questions

and your answers to them, rather than orating and debating them at the meeting itself. As a result we were not in a position to consider and discuss your replies at that time.

To remind you of just two of these questions and replies, I asked in one question:

*" 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."*

To which your reply was: "The aggregate deposits do not feed the coast – if they did then dredging permissions would not be issued".

Firstly, we observe that you have provided no empirical evidence to support your assertion, and secondly I was referring to the well known and obvious offshore to inshore and inshore to offshore movement of the sand and shingle that has a highly marked impact upon our beach levels and beach slope, hence to the erosion, and not to the fixed deposits in the ancient river beds themselves. This mechanism showing the lowering of the shoreline due to the offshore 'sandpits' is established in the recent SANDPIT Report which can be viewed at: <http://sandpit.wldelft.nl/reportpage/reportpage.htm> . This document is the Second Sandpit Report "Scientific Report of Sandpit Project April 2003 – April 2440 (year 2) May 2004 Sandpit EC Fifth Framework Project No EVK3-2001-000056". It emanates from a large group of independent European Scientists concerned with the impact of Offshore Aggregate Dredging.

Amid other points it gives:

*"Large-scale mining pits will have a significant impact on the near-field and far-field (up to the coast) flow and wave patterns; the flow velocities inside the pit will be reduced and the wave heights may also be reduced, depending on the depth of the pit. As a consequence, the sand transport capacity inside the pit will decrease and sediments will settle in the pit area, resulting in deposition. Thus, the pit will act as a sink for sediments originating from the surrounding areas and depending on the local flow and wave patterns. Hence, erosion of the sea floor will take place in the (immediate) surrounding of the pit."*

Yet this astute report by international non-aligned expertise you have chosen to ignore, as this has no mention in your references. Instead you have relied almost exclusively on HR Wallingford's reports, e.g. their North Sea Sediment Transport Study (Phase 2) 2000 and 2008 reports, also referencing their Physical Process Scoping Study Technical Note Report DDM6151-1 in Appendix C, EX 2977, October 1994, EX 2976 June 1994, EX 3028 June 1994, EX 3039 September 1994, Ex 3050 September 1994, EX 3102

November 1994, EX 3140 January 1995, EX 3280 September 1995, EX 3466 August 1996, EX 3280, EX 4570 May 2002, EX 4576 May 2002 and EX 5041 January 2005.

In another question I asked of you:

*"Why hasn't a long term empirical 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?"*

Your answer to this was *"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"*. In other words you suggest that such a study would not be performed because it is the preferred option to believe that such resultant erosion does not result, this again resulting from those reports you have selectively chosen to accept whilst ignoring others.

Moreover, once again you have provided no empirical evidence to support your assertion. The whole purpose of the REA is surely to examine with care the empirical evidence that exists and, where such empirical evidence does not exist, to commission studies in order to address the deficiency. At present, it appears from the Scoping Report that the REA is failing in this function.

A further anomaly needing explanation resulted when marine consultants Halcrow used computer simulation in 1992 to produce erosion line predictions of the sea approach covering sixty years, i.e. up to 2052. Most of these lines were crossed within five years, i.e. by 1997. In other words, more than twelve times the rate of loss of coast to the sea that they had confidently predicted. This serious inaccuracy was undoubtedly because the Halcrow Report did not allow for the impact of Offshore Aggregate Dredging. When that factor is allowed to enter the equation, the apparent anomaly immediately becomes fully explainable. The obvious and readily apparent reason is that the beach level has been dropped by sand and shingle stripping, so the sea covers it to a point far further inland.

It is necessary to explain the fact that we currently have sea-level rise of 3.2mm per annum (maximum estimate) added to by 2mm of East Anglian land sink annually, an equivalent of a sea rise of 5.2mm per year. Thus one would have expected an effective sea rise of  $(3.2 + 2) \times 35 = 182\text{mm}$ , i.e. 18.2 cm over the thirty-five years since 1972 when east coast dredging began in earnest. (Perhaps add a mite more due to degraded weather, more northerly winds, etc).

On an average Norfolk and Suffolk 1 in 20 mean beach slope this would have produced a sea incursion of the mean high tide mark of  $18.2 \text{ cm} \times 20 = 3.64$  metres, perhaps allowing that little more for the worsening climatic conditions accompanying global warming. In fact the mean rate of approach along our eastern to northerly coastline from Scratby up to Overstrand has

been between eight times and fifteen times this, accompanied by far deeper water offshore and normal high tide waves regularly right up to the sea wall and the seaward front of dunes at many points along much of the East Anglian coastline. It is therefore obvious not that the sea has risen so much, but that the beach has been lowered by draw-down, so allowing the tide mark to encroach so much further inland. The Environmental Agency agrees with MARINET fully on this point. What factor other than beach draw down due to sediment removal causing gravitational movement in the fluid situation to the deepened offshore areas coupled with enhanced wave erosion due to sea bed deepening can exist other than dredging ? This needs both explanation and careful study within the REA. At present, we see no evidence in the scoping report that this specific study will be undertaken. If so, this is an unacceptable deficiency in the design of the REA.

And how is it that all the material liberated from our dunes and cliffs plus the beach loss since the onset of dredging is seen to give such low sediment drift? All this sediment has virtually disappeared over the past ten years - whereas, in reality, because of the contribution of far more sand and shingle from the eroded sand cliffs and beaches, there should be far **more** sediment, not less. So where could it have gone other than into the holds of the dredgers? This also needs explanation, and requires specific identification with the Scoping Report.

Whilst you could have rejected the need for further studies of this component on the grounds that such studies have already long been undertaken and so the research has been completed, this response implies that the contents of those reports and papers evidencing the link between offshore aggregate dredging and coastal erosion were understood and accepted. However, these studies in no way indicate "*the deposits extracted are already known to be unrelated to the coast*" but the very opposite. But if the findings of these prior studies conducted by many independent bodies who are **not** selected by, appointed by or paid for by the dredging companies themselves (thus seen to be unbiased) are claimed to be non-evidencing and so not included, then it is apparent that new research is called for. There would therefore be good reason to reproduce and replicate them in order to establish what is fact and what is fiction to produce a level of mutual acceptability. Indeed, is it not the purpose of the REA to re-evaluate evidence in a thorough and independent manner in order to check that facts and assumptions have legitimacy and, if where such legitimacy proves suspect, to establish a new empirical base?

On Page 2 you state "*A review of existing and available literature*" as one of four key tasks for your report. Whilst you did not state "*A review of **all** existing and available literature*" which would fill copious volumes, a fairer balance of inputs, particularly of those from other expert bodies would have been expected and most certainly appreciated.

But I note that your remit, under 6.0 'Scope of work for Anglian Offshore Region MAREA, on Page 72 of your report, is given as "*The overall aim of the MAREA is to inform and support the industry's applications for licence renewals or new applications ...*" rather than to provide a fair and balanced

appraisal of the impact of Marine Aggregate Dredging, so perhaps we should not be surprised. We should like you comment further on this specific point because if you reaffirm this as your purpose, then we will feel it necessary to raise this matter with Government.

Our clear understanding of an REA is that it exists to provide an *objective, empirical assessment of the facts*, rather than to “support” the industry. Accordingly, we request your clear response to this specific point.

It is also noted that despite the obvious evidence of the erosion of our coastline, its dunes and sand cliffs and the undermining of our sea defences you talk on page 30, 5.4.1 of the "**Potential Impacts of Aggregate Extraction**" despite the results that are clearly visible (and have been increasingly so) on a previously 100 year plus accreting coastline suffering only over the past thirty years since intense cumulative offshore dredging began in earnest.

However, you already have been advised of a listing of many of these studies evidencing offshore aggregate dredging as stimulating coastal erosion, but it is clear from the references in your report that you have chosen to ignore them in favour of those created to deny that coastal erosion resultant from dredging exists. To remind you, most of the references that we attempted to bring to your attention are to be found on our MARINET website at <http://www.marinet.org.uk/mad/scientificstudies.html> under 'Scientific Studies from around the world on the erosion resulting from offshore sand and gravel dredging'. There is no indication in your references that attention has been given to these.

Among our evidencing documents is that when over 100 years ago the Royal Commission was set up to investigate losses of our shoreline and took evidence from a three year research programme. As a result of the findings, The Royal Commission concluded that offshore aggregate dredging should be banned. But even in those days, the vested exploitive interests won their way, and dredging continued to escalate. (Please refer to our briefing to be seen at <http://www.marinet.org.uk/mad/madbrief.html>)

It is thus our main concern that the reports and references you have selected for inclusion in your report are selective of that research performed by those involved with the dredging companies themselves, undoubtedly since privatisation financially dependent upon the income made from the provision of reports that aid and aback the industry in their desire to seek approval of new and continued areas for dredging. This we have perceived from EA's and EIA's constructed to back the granting of further licences. We are also aware that no second opinion is permitted by the licensing authority. The result is that evidence we have supplied opposing further or continued dredging licences has been rejected because all such applications have hitherto been approved. It is not that the erosive effect of such dredging is unknown. The situation as we see it is that those who benefit from the industry prefer not to recognise such research, only heeding that which agrees with what they wish to believe.

In particular we would mention that this further puts into question the wave modelling computer simulations which H.R. Wallingford did in the Southern North Sea Sediment Transfer study. SANDPIT stated that such computer/mathematical modelling needs to be backed up by appropriate and scientific field study work, and this has not been done. To have any credibility, Regional Environmental Assessment must include a tracer study to monitor the movement and final destination of the considerable levels of sand taken from the coast and beaches by sea movement under all conditions.

It is argued by the aggregate companies that 'draw-down' between the beaches and the offshore dredging sites does not occur, yet no tracer studies have hitherto been undertaken in the East Anglian coastal area to confirm this assertion. Where such have been carried out, e.g. by Blackpool Council in 2007, New Zealand, etc. using Xenon-137 tracer or small glass balls have shown that the movement of shoreline deposit to the offshore dredged aggregate general area has resulted.

There is powerful correlative evidence of the impact of offshore aggregate dredging to be seen from my long term study 'Correlations of Offshore Dredging Levels with Coastal Losses' that can be seen at <http://www.marinet.org.uk/mad/madbrief.html> This was brought to your attention, but obviously ignored, as there is no mention of this in the Scoping Report, nor are any other papers showing the relationship of offshore dredging with coastal erosion given in your references.

We therefore have to say that we have little confidence in the wave regime work by H.R. Wallingford, and feel that the nature of the wave regime needs to be re-visited. Their work on this reported for Area 202 relied upon the wave regime model devised for Area 401/2, upon which we recognised deficiencies, as drawn to the attention of HAML's consultant EMU in our submission summarised to them on 24th March 2005 to HAML Ltd. at the time of the relicensing of Area 401/2.

This full submission may be viewed at: <http://www.marinet.org.uk/mad/objection/401-2stephen.pdf> It is of our opinion that to be acceptable the Regional Environmental Assessment must include an up to date wave regime model. This model must use offshore, contemporaneous meteorological data in order to ensure accuracy of computation, as the wave regime is a key factor in determining the erosive force of the sea upon the coast.

Yet to be fair to H.R.Wallingford they have stated in the Area 401/2 Dredging Licence Coastal Impact Study Report EX 5030 of August 2004 "*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*" Thus, H R Wallingford are admitting that a diminishment in these offshore sandbanks will, as a direct consequence, also diminish the ability of these sandbanks to prevent beach draw down

H.R.Wallingford also submit in Appendix C. of the Physical Process Scoping Study Technical Note Report DDM6151-1 that the seaward edges of our offshore sand banks, such as Scroby, be used as the shoreline reference point for the purposes of assessing any erosion brought about by Offshore Dredging. We are in full agreement with this recommendation as we recognise that these offshore sand banks are an important part of the sea defences for the Great Yarmouth coastline area because they reduce the energy of wave attack on the shoreline. Yet, despite the clearly visible loss of height and area reduction of Scroby Sands following the commencement of intensive and cumulative Offshore Aggregate Dredging there is no mention of their demise nor to attempt detailed studies of this in your Scoping study. This is an unacceptable deficiency.

The SANDPIT Report states that waves and currents interact in all water depths, and that very few, if any, field study work/investigations have been undertaken in deep water to analyse current behaviour. This further puts into question the wave modelling computer simulations which H.R. Wallingford did in the Southern North Sea Sediment Transfer study. SANDPIT also said that computer/mathematical modelling needs to be backed up by appropriate and scientific field study work. This was neither quoted nor referenced in your report, and must therefore be corrected.

The current wave regime model must take account of changes in the depth of the sea between the offshore sites and the coast. In particular, changes in the nature of offshore sandbanks must be included in the computations of this study. There is good visual evidence to such changes following dredging in the fact that between 3 and 5 metres has disappeared from the seabed in the dredged areas, that the Scroby Sandbank has diminished considerably, and that a large loss of sand depth has come about on our beaches since offshore dredging commenced. There has been no attempt to explain these losses to date, nor of the current levels and positions of the other sandbanks. These issues are central to the REA, and must therefore be identified for study by the Scoping Report.

Again, it is our opinion that the REA must include a full-scale tracer monitoring study to establish the facts of the movement and final destination of sand taken from the coast and beaches by tides. It is insufficient to carry this out over the period of extraction, but for at least three years after completion, as the shoreline reduction is delayed according to the distance of the dredging from the shoreline, as can be seen by the correlating graph in my long term study 'Correlations of Offshore Dredging Levels with Coastal Losses' that can be seen at <http://www.marinet.org.uk/mad/madbrief.html> already referred to earlier.

Yet it is argued by the aggregate companies that 'draw-down' between the beaches and the offshore dredging sites does not occur. To the best of our knowledge no tracer studies have been undertaken to confirm this assertion. Once again, it is clear to us that an REA is charged with the responsibility of making good such gaps in empirical evidence.

H.R.Wallingford is a company which has authored many EIAs and, in particular, the Coastal Impact Study within EIAs. The company was privatised in 1982 under the Thatcher government. Since then the company has become far less involved with independent, empirical research and has become instead more reliant on financially viable contracts for its income. Dr. Stephen Huntingdon, the company's Operations Director, confirmed this in his evidence to the House of Commons Environment Committee (HoC Env Com) in 1992 when he stated that the company had "*altered the balance between consultancy work and research, partly in order to maintain its income in a commercial environment*". The House of Commons Environment Committee noted that licence decisions were exclusively dependent on the company's evidence and were unsupported by a second opinion. The Committee stated their concern by saying, "*the conclusions reached by HR Wallingford are never scrutinised for second opinion*". This need for a second opinion was supported by MAFF and the (then) NRA, but up to now this has never come about. We thus therefore clearly state to you that it is the purpose of a REA to perform this function of providing a second opinion, and that it should do so from an independent perspective.

We cannot blame H.R.Wallingford themselves for the situation we have, as it is only logical to recognise that financially they are dependent upon the funding from the dredging companies for their income. It is also obvious that those desirous of obtaining dredging licences would only support such investigations that would provide favourable to the provision of existing and new dredging licences. But we are of the opinion that your almost sole reliance upon their reports at the expense of others non-supportive of the issue of further dredging licences can hardly be said to be unbiased, when we would have hoped to have seen a fair and balanced summary of the situation.

To summarise, in order to strengthen your Scoping Report and its outline of the future work of the REA itself, it needs to be clearly stated that the REA will be informed by empirical evidence, much of which is currently lacking and which therefore needs to be commissioned – and, if it cannot be commissioned due to an absence of financial resources, then the absence of this empirical evidence will be clearly “flagged-up” by the REA Report. This empirical evidence is mainly concerned up to date wave modelling, sand pathway and level flow from the offshore sandbanks and the coastline, any infill of the pits dredged, in the form of tracing, empirical back up of the simulated wave modelling hitherto employed, and for surveys far more extensive over the period up to four years following the onset and termination of major dredging, and a full review of all papers, findings and literature on the impact of offshore dredging.

A study of the possible loss of cohesivity of beaches due to removal of coarser material from the system would also help evidence a further element in the disappearance of our coastline.

Whilst your content suggests that many of these concerns will be covered in Stage 2, we wish to be sure that attention is given to the above points to as to

provide a basis of consolidated meaningful information that will explain the serious losses experienced along much of the East Anglian coastline. This needs to be free of speculation and assumption and based upon independently investigated findings in order to overcome the claims and counter claims so far ongoing between the dredgers and those who are fully aware that the impacts have come about since the exploitation of the offshore seabed.

Please forgive me for a very blunt and to the point presentation of our criticism, but it must be realised that we are dealing with a very angry situation here, where many like myself have lost their coastal properties or will soon be facing such loss. There is also massive concern of the likely loss of six Broadland villages, the salination of The Broads, 1,000 homes, 1,400 caravan and chalet pitches, six hotels and guest houses, seven historic buildings, six ancient churches, three major wildlife sites, 3.5km of road, seven golf course holes and three community halls to the sea. On top of the £100m property price tag, another £357m of the local tourist income would be lost to the local economy due to the loss of The Broads, beaches and wildlife areas. Already we have lost the world famous Cley and Salthouse marshes, whilst Titchwell will soon follow.

This is what is threatened by 'Coastal Realignment' a.k.a.'Managed Retreat' a.k.a. 'Making Room for Water' by proclaimed government policies and lack of sea defence funding. To add to the threat imposed by sea rise, that of beach draw down and consequent undermining of the existing sea defences by what is seen as the result of past and continuing marine aggregate dredging is not an acceptable option.

The ball is now in your court to ameliorate this serious situation.

Yours Sincerely,

Pat Gowen

MARINET & NSAG