Appendix 4

Summary of findings from end user consultations

Southern North Sea Sediment Transport Study, Phase 2
Sediment Transport Report

Appendix 4 Summary of findings from end user consultations

A wide ranging consultation on sediment related issues was undertaken in the study. Those consulted are listed in the Table below. The consultation process comprised a letter sent to the consultees – see following pages – followed up with a short meeting or discussion by telephone.

CONSULTATION RECORD SNS2

A: LOCAL AUTHORITIES

Organisation	**Personnel**
East Riding of Yorkshire Council	Patrick Ferguson / Adrian Dawson / Neil Mclauchlan
North East Lincolnshire Council	Adrian Coy
Suffolk Coastal D.C.	Barry Sanders / Roy Stoddard
Tendring D.C.	John Ryan
Waveney D.C.	Julian Walker / Paul Patterson / Ivan Baldwin
North Norfolk D.C.	Peter Frew
Kings Lynn and West Norfolk D.C.	Tony Porter
Great Yarmouth B.C.	Ian Boon
Southend-on-Sea B.C.	Richard Atkins
Canterbury City Council	Peter Brookes
Maldon D.C.	Nicky Spur / Nigel Harmer

B: ENVIRONMENT AGENCY

Area Covered by Representative	**Personnel**
Anglian Region	Clive Flanders / Jane Rawson
Anglian Region	Dave Denness
Norfolk / Suffolk and Essex	Karen Thomas
Norfolk / Suffolk and Essex	Mark Dixon
Lincolnshire	John Ulyat
Norfolk / Suffolk	Stan Jeavons
Essex	Tom Miller

C: ENGLISH NATURE

Area Covered by Representative	**Personnel**
Entire Study Area (national)	Chris Pater
Yorkshire	Denice Coverdale
Lincolnshire	Ian Patterson / Rebecca Tibbetts
Suffolk	Duncan Smith
Essex	Robin Hamilton

Letter sent to consultees

JGLG/cc

12th October 2000

SOUTHERN NORTH SEA

SEDIMENT TRANSPORT STUDY, PHASE 2

The above study has now been commissioned and is being undertaken by a consortium led by H.R. Wallingford.

The aim of the study is to improve the overall knowledge of coastal sediment transport for the Southern North Sea, with particular reference to addressing areas of concern or uncertainty with respect to shoreline management and to that relating to the dredging industry.

Phase II builds upon the information gathered and understanding developed in Phase I. This involves more in depth modelling and measurement.

A strong emphasis within Phase II is that the study should be driven by and ultimately produce answers for the end users, the coastal managers and those involved with decision making on the coast and within the coastal zone.

Within the initial stage of Phase II there is the need to identify clearly these issues of concern, so that work in subsequent stages of Phase II is properly focussed. To this end we are undertaking a targeted consultation and data gathering exercise.

Our first task is to undertake a review of all Shoreline Management Plans for the area and we will be contacting all lead authorities in this respect.

In addition we would hope to organise meetings with the coastal manager of each of the coast protection authorities and the Environment Agency. This letter is to advise you of our intentions and notify you that we will contact you during the next week to discuss this.

In order to highlight the sort of information we would wish to discuss, I am pleased to set out our "shopping list" on the attached sheet.

I understand that the client project manager, Waveney District Council, may have already been in contact and I hope that the above and the attached helps clarify our initial consultation approach.

Thank you for your assistance in this matter. If you have any comment in the meanwhile please contact either myself (ext 6380) or Alun Williams (Ext.6361)

Yours sincerely,
for and on behalf of Posford Duvivier

J G L Guthrie

PRELIMINARY CONSULTATION SHEET

Through coastal managers and from SMP's and strategies we hope to identify information in the following typical areas:

The interaction between sediment processes occurring at the shore and those within the nearshore/offshore area.

The principal understanding of processes along the shore.

Unresolved or unresolvable issues or areas of uncertainty relating to the interaction of sediment behaviour.

Concerns or perceptions of concerns relating to the interactions between sediment movement or human interference with the pattern of movement.

The aim of the consultation is to place some of these issues in perspective.

Typically, therefore, we would hope that during our consultation meeting you would provide further information on the following:

1. MANAGEMENT ISSUES

Overall Aim: With regards to management issues our aim is to establish the importance of sediment and its movement for the management of a particular stretch of coastline. This will facilitate the focussing of subsequent work on specific sediment transport pathways.

Specific Areas of Interest:

a) To what degree is coarse (shingle), medium (sand) or fine (muds and silts) material important to your frontage:

- For coastal defence.
- For recreation and amenity.
- Environmentally.

b) Are you able to identify or prioritise specific areas along the frontage.

c) Are there perceived threats to these areas:

- Due to changing natural processes.
- Due to human intervention

d) Are these perceived threats:

- Supported by evidence
- Widely held beliefs
- A function of misconceptions which could be dealt with during the study.
- A vocal minority with other agendas.

2. THE SMP

Overall Aim: With regards to SMP's our aim is to highlight areas of uncertainty or concern regarding sediment processes.

Specific Areas of Interest:

a) Clarification of your organisations involvement with the SMP process.
b) Were there areas where you felt there is uncertainty or inconsistency in the interpretation of sediment processes, either along the shore or in the interaction of the shore, the nearshore and offshore regimes. (Do you feel this uncertainty is expressed in the SMP).
c) To what degree has this influenced the development of the SMP policy or the subsequent implementation of policy.
d) To what degree has this influenced or driven public concerns as to the SMP policy or associated management of the shore. (i.e. how critical have you found this uncertainty to be).

3. FURTHER OR PREVIOUS STUDIES

Overall Aim: Discussions regarding previous and further studies will further assist in the highlighting of areas of uncertainty

Specific Areas of Interest:

a) What other studies, principally process studies, have been undertaken along your frontage.
b) Are they available for loan.
c) Are these studies related to issues identified in 1 above. If so, have these issues been satisfactorily resolved or is there still uncertainty and concern.

The above questions are by no means exhaustive and are intended as a guide as to what issues you may wish to raise.

We recognise that in undertaking the study we must not only deal with the actual sediment transport regime but also, if we are to build confidence in our results, to deal with people's perception of how the regime behaves.

Thank you for your assistance.

Collation process following the consultation:

The results from the consultation process are presented in the following pages. The Strategic issues identified in the following pages have been focussed and summarised into a series of Issues A to K in the main report:

Issue A	Northern Boundary
Issue B	Role of Holderness
Issue C	The Role of the Wash
Issue D	Nearshore Banks
Issue E	North Norfolk Drift Divide
Issue F	Sediment Circulation Cromer to Benacre Ness
Issue G	The Role of the Sizewell-Dunwich Banks
Issue H	Suffolk Coastline
Issue I	Clacton
Issue J	North Kent Coast and Nearshore
Issue K	Thames Estuary

Wherever possible other issues (i.e. at the strategic, local and public perception level) have also been brought into the summaries. Each of these issues is addressed in the main report using results synthesised directly from the study.

Southern North Sea Sediment Transport Study	
Consultation: Environment Agency	Date: 22/11/00
Present: Jane Rawson, Clive Flanders (EA) Greg Guthrie, Alun Williams (PD)	
Issue Raised	**Issue Classification**
1. The Wash Embayment The mouth of the Wash was identified as being an area of uncertainty with respect to sediment transport, particularly with regard to finer sediments. This was highlighted by the Agency as being an area of importance. There is a need to know how much material passes in and out of the embayment	Strategic
2. Suffolk Circulation Systems A number of circulation systems are recognised off the Suffolk coast. The Agency highlighted the importance of understanding how these systems link together, if in fact they do.	Strategic
3. Suffolk Shingle Shingle was identified by the Agency as being of importance to the Suffolk coast The Agency are therefore interested in the supply of this shingle i.e. is it an exhaustive supply?	Strategic / Strategy
4. Lincshore The Agency highlighted the need for a better understanding of the Lincshore recharge. Their specific area of interest relates to how the recharge feeds into the sediment transport system of the surrounding area.	Strategy/
5. Offshore Reefs Work has been carried out previously on the impact of the reefs on sediment movement. However these investigations have only been small scale in terms of area covered. The Agency would be interested in details of general reef impacts in terms of sediment movement and nearshore streams on a wider scale.	Strategy/(possibly strategic in relation to the separation of different zones of movement. Sediment lanes.)
6. Shell Haven It was pointed out by the Agency that a capital dredging and reclamation was planned at Shell Haven. An Agency concern is that this may interrupt fine sediment movement and therefore impact on the North Thames estuary and the Essex coast.	Local
7. Dredging The Agency highlighted a general perception that dredged material is exported to countries that have banned dredging in order to protect their own coastline.	Public Perception
8. Offshore Reefs The Agency identified two public perceptions regarding offshore reefs. (1) Reefs prevent all sediment movement (2) Reefs deflect material offshore	Public Perception

Other Notes:

- Other Studies

Prof. Dominic Reeve (Notts): Study on the offshore banks at Great Yarmouth
Prof Ken Pye (London): Study relating the Lincshore recharge (PD involved)
North Norfolk Nearshore Evolution Study. (CCMS)
Gibraltar Point strategy (Halcrow) [Chris Allwork (EA contact)]
Dr Gerhard Masselink (Loughborough, researching sand supply to the Lincshore dunes.)
Academic meeting / debate regarding N Norfolk: The meeting was taped (P. Lambley / M Herman contact for copy of tape.)

- Data

Dengie (Essex): wave and tide data being collected (UCL: John French)

Southern North Sea Sediment Transport Study	
Consultation: English Nature	Date: 08/12/00
Present: Chris Pater (EN) Alun Williams (PD)	
Issues Raised	
1. Lincshore EN's concern is how sustainable is the recharge scheme and how does the sediment used in the recharge subsequently feed into the overall sediment transport system.	Strategic
2. The Nesses EN highlighted the importance of maintaining a supply of material to the Nesses and the detrimental impact that interrupting such a supply would have.	Strategic
3. Great Yarmouth EN understand the area offshore of Great Yarmouth to be an important dredging area. Their main concern with respect to this is that the cumulative effects of dredging are not presently considered.	Strategic
4. The Wash EN would like to see the SNS2 project feed information to the Wash Estuary Management Plan.	Strategic
5. Spurn Head EN would like to see Spurn evolve naturally without human interference	Strategy
6. North Norfolk EN highlighted the conservation value of the North Norfolk coast. It was also pointed out that the study could be used to fill in the gaps in data that exist off the North Norfolk coast. EN believe there to be a good existing understanding of this coast, however the area has not be looked at as a whole, rather individual sections.	Strategy
7. Kent Coast EN identified the inter-tidal habitats of Kent to be of importance along with a number of geological SSSI's and reef features. Any information the study could provide regarding sediment transport that would aid the management of such sites / features would be beneficial to EN.	Strategy
8. Gibraltar Point From an EN perspective, the continued supply of sediment to Gibraltar Point is of importance.	Local
Notes: • Geological SSSI: Holderness Coast:- EN's primary concern is to prevent any disruption to the natural regime that may prevent the continued exposure of the site. • SMP's: EN recognised that SMP's do not fully explain sediment movement in the offshore zone. • EN pointed out that it would be useful if the district councils could form groups in order to apply for MAFF funding for nearshore data collection platforms. This would allow some of the geographical gaps in data to be addressed.	

Southern North Sea Sediment Transport Study	
Consultation: East Riding of Yorkshire District Council	Date: 08/11/00
Present: Adrian Dawson, Patrick Ferguson, Neil Mclauchlan (East Riding of Yorks. District Council) Greg Guthrie, Alun Williams (PD)	
Issue Raised	**Issue Classification**
1. Flamborough Head The northern boundary of SNS2 area. The Council highlighted the importance of quantifying the amount of material coming around Flamborough Head to supply Holderness coastline.	Strategic
2. Easington Offshore / Longshore Divide The SMP identified a transport divide at Easington. Some material transported offshore to feed offshore banks, some transported along coast to Spurn. Council highlighted the management significance of this divide. There is a need to know the percentage of material that goes offshore and longshore. This could affect the supply of material from the Holderness coast to the N.E. Lincs coastline. The offshore pathway is critical. This issue was identified by the Council as being a primary concern (see also consultation notes for N.E. Lincs. Council)	Strategic
3. Spurn Spit Transport and Circulation Observations by Spurn Head Warden indicated that material moved south along spit was then circulated northwards to the neck of the spit via The Binks. The Council highlighted the importance of understanding this circulation in the vicinity of Spurn. This was identified as being an important issue on a local level in part linked to the issue above.	Strategy / Strategic
4. Smithic Bank The Council identified uncertainty regarding the exchange of material between the Smithic Bank and the coast in the vicinity of Bridlington. This interaction is important to the local strategy, rather than being of strategic importance An understanding of this exchange is crucial to further protection works in the Bridlington region.	Strategy
5. Sunk Island Sands / Sunk Bright With reference to finer material, the Council highlighted the area in the lea of Spurn spit. Specifically, their interest is the origin of the material deposited in this region.	Local

Other Notes:

- The HECAG SMP has not been adopted by East Riding due to the political implications of a 'Do Nothing' policy.
- Mike Elliot (Hull University) has a MPhil running regarding historical sediment budgets for the Humber.
- There is an LGA study about to commence regarding social intangibles. The Holderness coastline is to be used as a case study for this project.
- Halcrow is completing a study on the Withernsea area.
- Posford Duvivier is carrying out strategies at Hornsea and Bridlington and is doing further modelling for the Bridlington Marina proposal.
- The Dimlington Cliffs are a geological SSSI that require continued retreat for exposure purposes.

Southern North Sea Sediment Transport Study	
Consultation: North East Lincolnshire Council	Date: 08/11/00
Present: Adrian Coy (North East Lincs. Council) Greg Guthrie, Alun Williams (PD)	
Issue Raised	**Issue Classification**
1. *Holderness Sediment Supply* Sediment supplied by Holderness , moving across the Humber to N.E.. Lincolnshire was highlighted by the Council as being of primary concern. It is of critical importance for N.E. Lincs to know if material eroded from Holderness does supply their coastline. This will determine whether or not any protection schemes on Holderness will impact on the Lincs. Coast.	Strategic
2. *Spurn Head* Council highlighted that breaches to Spurn Head have been recorded in the past. If such a breach was to occur, the council are concerned as to the availability of material to re-seal the breach. Council are concerned that adverse impacts would result from a breach, for example, siltation in Grimsby Docks.	Strategy
3. *Mud and Silts in the Humber* Council stated that they would like to know more about the movement of silts and muds within the Humber itself. In particular the apparent link along the shore to Cleethorpes. pockets of mud have developed following dredging further within the estuary.	Strategy
4. *Dredging* There is a public perception that dredging involves the digging of a large hole into which all the surrounding sediment gets pulled.	Public Perception
5. *Spurn Head* During storm events waves can be seen breaking on Spurn Spit. As a result there is public perception that Spurn head provides protection to the region.	Public Perception
Notes: Other Studies: North Promenade Sea Defence Improvements. Eng. Report. Oct 1995. For Cleethorpes Borough Council (Posford Duvivier Report) The Cleethorpes frontage is re-nourished in the vicinity of the seawalls annually using material from the Humber channel (N.E. Lincs have an agreement with EN to use 5,000cubic meters per year.) Spurn Head previous breaches: 17th and 14th century. Both events caused siltation problems in Grimsby Docks. In 1870 there was also a breach. This breach was filled by the Army using chalk.	

Southern North Sea Sediment Transport Study	
Consultation: Denice Coverdale (EN: Yorkshire)	
Issue Raised	**Issue Classification**
1. Supply to sediment to Humber Estuary EN stated that an area of particular concern to them was the supply of fine material to sites of importance within the Humber estuary (e.g. Sunk Island Sands). Links have been made suggesting some of the finer material derived from the erosion of the Holderness coast is transported into the estuary. EN would be interested in any information relating to this link.	Strategy
2. Suspended Sediment Transport EN highlighted that from their perspective the movement of fines along the Holderness coast and around the mouth of the Humber is of particular importance.	Strategy
3. Previous Issues EN agreed with all the previously raised issues along the Holderness coast. These issues were: transport around Flamborough Head, Easington offshore / longshore divide, Spurn Spit transport and circulation and Smithic bank (See East Riding of Yorks. Consultation sheet for further details)	N/A

Southern North Sea Sediment Transport Study	
Consultation: John Ulyat (EA: Lincolnshire)	Date: 01/02/01
Carried out by Telephone: A Williams (PD)	
Issue Raised	**Issue Classification**
1. Lincshore Recharge It would be of benefit to the Agency to improve the understanding of sediment transport in the vicinity of the Lincshore recharge. This would assist in the answering of questions such as: Where is the sediment transported subsequent to its placement on the beach / where does the material lost from the beach re-enter the coastal system?	Strategic
2. The Wash Sediment is known to be entering and accumulating within the Wash. It would be of benefit to the Agency to establish whether the volumes of material involved have the capacity to keep pace with erosion.	Strategy Level
3. Mablethorpe The beach at Mablethorpe is accreting. This has resulted in problems regarding the gravity outfalls at this location (e.g. Saltfleet). Due to the accretion on the beach the Agency have to complete maintenance work to keep the outfall open. As a result of this the Agency would like top know if accretion at this location is likely to continue.	Local

Southern North Sea Sediment Transport Study	
Consultation: Ian Patterson / Rebecca Tibbetts (EN: Lincolnshire)	
Letter Received	
Issue Raised	**Issue Classification**
1. Lincshore Recharge EN stated that a more detailed understanding of the relationship between the material that has been added through the recharge scheme and material that would arrive at Gibraltar Point naturally needs to be clarified.	Strategy

Southern North Sea Sediment Transport Study	
Consultation: Kings Lynn and West Norfolk District Council	Date: 17/11/00
Present: Tony Porter (K.L & W. Norfolk D.C.) Greg Guthrie, Alun Williams (PD)	
Issue Raised	**Issue Classification**
1.The Wash There is a perception amongst groups within the Wash that the embayment is isolated in terms of sediment transport. The council would like to have evidence defining to what extent this is the case. If the area is not isolated, how much material is exchanged, where is it supplied from and in what regions does exchange take place. (coarse supply from North Norfolk and Lincolnshire and mud from offshore)	Strategic (fines) Strategy (coarse)
2.Holderness and the Wash (link to issue 1, above) There is a perception that material from Holderness does not feed the Wash. It is important for the council to have this confirmed or dismissed.	Strategic
3.Holme / Gore Beach These beaches have been identified by the council as eroding. The council would therefore be interested in obtaining an improved understanding of sediment transport in this region.	Local
4.Lincshore recharge The council expressed concern regarding the Lincshore recharge scheme. They would like a better understanding of how this scheme will affect the Wash in terms of sediments.	Strategy
5.Dredging There is a belief amongst local fisherman that all dredging should be stopped. The fisherman attribute many changes in the marine environment to dredging. The councillors need evidence in order to re-assure Fisherman that dredging effects are understood.	Perception
Other Notes: • The Council expressed view that SNS2 should produce a report containing non-technical terminology, with plenty of figures and maps. It was suggested that this could then be backed up with a technical report.	

Southern North Sea Sediment Transport Study	
Consultation: North Norfolk District Council	Date: 17/11/00
Present: Peter Frew (N. Norfolk D.C.) Greg Guthrie, Alun Williams (PD)	
Issue Raised	**Issue Classification**
1. Holderness: E. Anglia Link The erosion of the Holderness coast introduces significant amounts of sediment into the North Sea. The council are interested in whether this material feeds the East Anglia coast or whether it is not transported south of Lincshore and the Wash.	Strategic
2. Offshore Nearshore Interaction The council summarised one of their main concerns regarding sediment transport as: requiring a better understanding of the effects of offshore systems on nearshore systems	Strategic
3. Sheringham-Cromer Drift Divide One of the councils main concerns is the Sheringham-Cromer drift divide. Conflicting evidence exists regarding the location of the drift divide. The council would like its existence and location confirmed.	Strategic
4. Great Yarmouth / Winterton Nearshore Circulation A circulation system has been identified around the nearshore banks of Great Yarmouth and Winterton. The Council would like to know how this links into sediment movement in the Cromer area. The Council stated that they would like measurements to focus on the Winterton area to determine if the Great Yarmouth Winterton circulation is large scale or localised.	Strategic
5. Cromer / Sheringham Offshore Area The Council highlighted gaps in knowledge regarding sediment movement in the area immediately offshore of the Cromer / Sheringham area.	Strategy
6. Air Photography clearly indicates the presence of a nearshore bar under certain circumstances. This can be a near continuous feature from Cromer to Winterton. The Council would like to understand this better. In particular whether this acts as a nearshore sediment pathway and if so: in which direction and to what degree is this indicative of sediment lanes of movement along the coast, do the Sea Palling Breakwaters cut across this pathway or act to move sediment into a different sediment lane; are they short circuiting a sediment loop.	Strategic
7. Dredging There is a public perception that a large hole is created during the dredging process, into which all the surrounding material is pulled. The councils dredging concerns relate to: (1) The sediment plume created by dredging (2) The cumulative impacts of dredging (3) The impact on benthic communities and (4) The disruption to potential sediment supply	Public Perception

Other Notes:

- Muds /silts: appear at Wells. This is a recreational problem
- Shingle: appears progressively more at Cromer and is spreading southwards
- The Council highlighted the directional variability of sediment transport on their coast.
- There is a lack of wave data relating to the Norfolk coast. The Council asked whether, given the fact that sediment transport measurements may focus on Winterton, Waveriders could be deployed in the region.
- Other Studies

Happisburgh and Cromer currently have strategies being prepared (HR)

Southern North Sea Sediment Transport Study	
Consultation: Stan Jeavons (EA: Norfolk)	Date: 01/02/01
Carried out by Telephone: A Williams (PD)	
Issue Raised	**Issue Classification**
1. E. Anglia Drift Variability The variability in drift along the E. Anglian coast in terms of direction was highlighted. A further understanding of the temporal variability in drift patterns would be beneficial to the management of this coast.	Strategic
Comments on Existing Issues	
1. Offshore Banks Issue The banks are important to the Agency locally from the point of view of wave attenuation. Therefore any increased understanding regarding the natural processes in the vicinity of the banks would be beneficial. This would allow the impact of man activities on the banks to be better understood and hence predicted. In addition the Agency would like an improved knowledge of how longshore and cross-shore movement around the banks link together.	Strategic
2. Dredging The Agency regularly have to deal with questions regarding the potential impacts of dredging. The greater the amount of information they have with which to provide confident responses to this question the better.	Strategic
3. The Wash The exchange of material across the open coast / wash boundary (south side of the Wash) was highlighted as being of importance. It would also be of benefit to have an idea of, if and how this may change in the future.	Strategy
4. Cromer – Winterton Nearshore Bar This was highlighted as being a key area to the Agency. There is a need to better understanding sediment transport along this stretch. Particularly, it would be of benefit to have sediment movements quantified.	Strategic
5. Dunwich – Sizewell Banks The Agency was in agreement with this issue. However it was felt that consideration should be given to Walberswick to Sizewell as opposed to Dunwich to Sizewell. It was also noted that on a local scale the Dunwich Sluice was important in local process terms.	Strategic
6. Orford Ness The Agency highlighted the volatility of the area around Orford Ness – in particular at Shingle Street and Hollesley Bay.	Strategy
7. Holme / Gore Beach The Agency are aware that a Regime type approach has been used to explain the long term evolution of this area, whereby changes in the tidal prism related to previous reclamation's have been used to explain the behaviour of the coastline. It would be beneficial to the Agency to have this theory tested in some form.	Local

Southern North Sea Sediment Transport Study	
Consultation: Great Yarmouth Borough Council	Date: 21/11/00
Present: Ian Boon (GY) Greg Guthrie, Alun Williams (PD)	
Issue Raised	**Issue Classification**
1. Beach / Nearshore / Offshore interaction The council indicated that an improved understanding of the interaction of material on the beaches and in the nearshore and offshore banks would be beneficial.	Strategic
2. The outer harbour proposal is of concern to the council due to the distance that this proposed structure will extend offshore. The council believe that this would interrupt transport along the coast and could have broader impacts	Strategic
3. Sea Palling The council are interested in understanding the impacts of the sea Palling scheme on sediment transport onto the Great Yarmouth frontage and consider Winterton Ness to be a key location.	Strategic
4. Wave Focussing The Great Yarmouth frontage experiences pockets of erosion. The location of these erosional areas can change over time. This could be attributable to wave focussing by sand banks. The council would be interested in further understanding this process.	Local
5. A tern colony exists on the Great Yarmouth frontage. This colony is reliant on an accreting beach.	Local
6. Dredging The council highlighted the common public perception that any fall in beach levels is caused by offshore dredging.	Public Perception
Other Notes: • In the 1930's at North Denes (North Yarmouth) the sea was up to the seawall and sandbags were used to prevent scour and undermining. The water line is now 30m seaward of this point. • I.B Identified that supply along the shore tended to be glutty (there are gluts and dearths of material). • Other studies: Harbour Study (PD/HR Involved) Halcrow Strategy (Contact name: Ben Hamer)	

Southern North Sea Sediment Transport Study	
Consultation: Waveney District Council	Date: 15/11/00
Present: Julian Walker, Paul Patterson, Ivan Baldwin (Waveney D.C.) Greg Guthrie, Alun Williams (PD)	
Issue Raised	**Issue Classification**
1. *Offshore banks* The council stated that there is currently a good understanding of the banks through the various strategies that have been undertaken. This understanding relates to both the interaction of the banks and the coast and the role of the banks as a protection system. The strategies have explored the circulation systems linking the banks with the coast. However the limits of the circulation systems is not well defined. A more accurate definition of how these systems link together, particularly along their outer face and the outer banks would be of benefit to the council.	Strategic
2. *Great Yarmouth / Waveney Sediment Transport Boundary* Sediment circulations have been indicated off the coast of Great Yarmouth and Waveney. The Council are interested in whether these are two separate systems of if they are joined.	Strategic
3. It was felt important to identify whether dredging was occurring (could occur) along the main sediment pathways linked to the shore. There was, therefore, a need to establish these sediment pathways.	Strategic
4. *Benacre Ness and Offshore Banks* The council highlighted the value of an improved understanding of the connection between Benacre Ness and the offshore banks south of Lowestoft. This was the council's main area of concern and lack of knowledge within their region.	Strategy
5. *Banks and Wave Focussing* It is indicated from studies that the banks result in wave focussing on the coast. This implies that the movement of the banks will result in the concentration of wave energy at different locations. A better understanding of the process was identified as being beneficial.	Strategy
5. *Southwold Training Walls* There is a public perception that the training walls prevent material moving from Waveney D.C.'s area to Suffolk Coastal D.C.'s area	Public Perception
6. *Dredging* Both the public and councillors link coastal problems with offshore dredging. The council also highlighted their concern that the cumulative effects of dredging may be a threat. At present each dredging licence application is considered on an individual basis and not on a cumulative basis The council highlighted the benefit of outlining standard dredging procedures within some section of the study report. The council also pointed out their interest in the establishing a framework for objections to be made to dredging applications.	Public Perception

Notes:

Shingle was identified as being the important beach building / anchoring material.
Sand was highlighted as being important for amenity purposes.

Studies:
Gt Yarmouth to Lowestoft – Halcrow (report available)
Benacre to Thorpeness – Halcrow.

Southern North Sea Sediment Transport Study	
Consultation: Karen Thomas (EA: Norfolk, Suffolk and Essex)	Date: 01/02/01
Carried out by Telephone: A Williams (PD)	
Issue Raised	**Issue Classification**
1. Offshore Banks The Agency would like to know how important the banks are in terms of acting as wave breaks and therefore affording protection to the coast. A number of other issues are related to this question, such as: What are the impacts of dredging in the vicinity of the banks, how does material circulate both around and within the banks and if the movement of material on the banks leads to a decrease in the protection afforded due to wave breaking does this lead to an increase in protection elsewhere?	Strategy
2. Languard Point / Orford Ness It would be beneficial for the Agency to know if an on-off shore movement occurs at this location and how much shingle is transported into the Harwich channel and subsequently dredged by HHA (Harwich Haven Authority). If a significant quantity of material is dredged by HHA, it would be of use to the Agency to know to what extent it interrupts this shingle pathway.	Strategy

Southern North Sea Sediment Transport Study	
Consultation: Suffolk Coastal District Council	Date: 13/11/00
Present: Barry Sanders, Roy Stoddard (Suffolk Coastal District Council) Greg Guthrie, Alun Williams (PD)	
Issue Raised	**Issue Classification**
1. Dunwich - Sizewell Banks The banks are recognised to feed the nearshore zone The council would like to know how strong the link between the two is and whether this link can be quantified.	Strategic
2. *Landguard Point* Landguard Point is known to act as a sink for shingle The council expressed an interest is understanding where the shingle is transported to after deposition at this point. This shingle does not accumulate in the river (the river is only dredged for silts) and it is not moved to the Tendring frontage (This frontage consists of sand). This is important in identifying possible constraints on the Council's activities for management of their southern shoreline.	Strategic
3. *Sizewell - Dunwich Banks* The Council considers sediment movement on the offshore side of the banks to be poorly understood. An improved understanding would contribute to a better overall knowledge of local circulation (links with issue 1 above)	Strategic / local
4. *Orford Ness* The council highlighted the benefit of a better understanding of sediment movement in the vicinity of Orford Ness. In particular, identifying the source of material	Strategy
Other Notes: At Aldeburgh, there is an old groyne field. This beach is currently stable, however movement of material does occur periodically. The council indicated that the SMP had highlighted uncertainties in the area and allowed individual strategies to address areas lacking knowledge. Studies undertaken: Hollesly to Bawdsey – Posford Duvivier Benacre to Thorpeness – Halcrow Landguard to Cobbles Point – due to be commissioned.	

Southern North Sea Sediment Transport Study	
Consultation: Tendring District Council	Date: 13/11/00
Present: John Ryan (Tendring D.C.) Greg Guthrie, Alun Williams (PD)	
Issue Raised	**Issue Classification**
1. *Cork Sands* A sediment circulation system exists around Cork Sands. An improved and quantified understanding of this circulation would be of benefit to the council.	Strategic
2. *Sand Bank / Estuary Interaction* Evidence of how the nearshore banks and the estuarine system interact was identified as an issue.	Strategic
3. The SMP identifies a movement onshore at Clacton and this is supported by inference to the drift divide on the frontage. The nature of this sediment corridor is uncertain and may link to the Gunfleet or to the Harwich system. Where material comes from is clearly important.	Strategic
4. *Sediment Divides* It is established that one sediment divide exists along this frontage, however, it has been suggested that a second divide may exist. Evidence for this is provided by a build up of material to either side of groynes. The council would like this suggestion confirmed or dismissed.	Strategy
5. *The Gunfleet* The council expressed an interest in understanding the mechanisms by which the Gunfleet accretes and erodes.	Strategic
6. *Dredging* There is a public perception that offshore dredging leads to erosion on the coast.	Public Perception
7. *Harwich Channel Dredging* Dredging of the Harwich channel is perceived by the public to cause erosion.	Public Perception
Notes: Some beaches on the Tendring frontage consist of a sand veneer overlying clay. During a storm event, the sand is removed and the underlying clay can be eroded. This process can result in significant drawdown of the beaches. The Naze is currently eroding at a rate of 2m/yr.	

Southern North Sea Sediment Transport Study	
Consultation: Maldon District Council	Date: 01/02/01
Present: Nicky Spurr / Nigel Harmer (Maldon D.C.) Greg Guthrie, Alun Williams (PD)	
Issue Raised	**Issue Classification**
1. Sediment Plume into Estuary Through examination of aerial photography and observation in the field, a plume of suspended sediment has been identified moving into to the estuary on the flood tide. This is of concern to the council, especially considering the siltation issue in the upper reaches. The council would like to know more as to its source. There has been a suggestion that it arrives from Harwich (see below).	Strategic
2. Siltation in Upper Blackwater. The main issue of concern to the council is the observed accumulation of material in the upper estuary around the town of Maldon. Material is believed to be eroded from the creeks in the area of Osea Island and deposited in the upper reaches of the estuary (in the Lea of Northey Island). This process has significant management implications for the estuary and is of concern for the various users in the upper reaches.	Strategy Level
3. Beneficial use of Dredged Material Relevant to the above, (2), is the council's need to know how best to deal with dredged material. One strategy could involve recharging the creeks of Osea Island. However, it is recognised as being possibly unsustainable if the material erodes from here and simply contributes to the problems at Maldon.	Strategy Level
4. Erosion of Saltmarshes The council noted that considerable erosion of the saltmarshes within the estuary has occurred over the last 15 – 20 years. (see Note regarding University of Newcastle report)	Local
5. Sales Point Accretion The Agency placed barges just offshore at Sales Point (to the north end of St Peters Flat). This has resulted in a significant build up of material on the beaches in the lea of the 'breakwaters'. This material provides a hard foreshore.	Local
6. Tollesbury Fleet Poldering The Poldering in the vicinity of the mouth of Tollesbury Fleet has not been very successful due to tidal action.	Local
7. Siltation due to Dredging There is a general perception that siltation within the Blackwater has increased since the recent dredging around Harwich.	Public Perception

Notes:
Other Studies:
A study is currently being conducted by HR Wallingford regarding siltation within the Blackwater Estuary
A report has been produced for the Agency by the University of Newcastle entitled: “Erosion of the Saltmarshes of Essex between 1988 and 1998”
Two local action groups exist: 1. Blackwater and Colne Users Action Group and 2. Blackwater and Colne Sailing Protection Association. Both groups are primarily concerned with impacts of siltation within the estuaries.
The Agency has recently carried out recharge schemes at both Shinglehead Point and Bradwell Island.

Southern North Sea Sediment Transport Study	
Consultation: Mark Dixon (EA: Essex)	Date: 01/02/01
Carried out by Telephone: A Williams (PD)	
Issue Clarification	
1 Erosion of Saltmarshes Issue The EA wished to point out that the erosion of the saltmarshes (noted on previous consultation sheets as occurring over the last 15 – 20 years) is in fact a long-term phenomenon.	
2. Sales Point Accretion Issue The EA highlighted that no accretion had occurred in the lee of the barges (breakwaters) at Sales Point (as pointed out on previous consultation sheets). However, barges were used at Marsh House (adjacent to Dengie Flats). At this location significant accretion has occurred. It is worth noting that the Marsh House location is East facing and the Sales Point Location is North facing.	
3. Blackwater Issue With regards to the Blackwater Plume Issue highlighted during previous consultations, the Central Electricity Generating Board undertook a study into sediment entering and leaving the estuary. This was related to the viability of the nuclear power station. They concluded that the estuary was self-contained with little exchange of material with the open-sea.	
4. Shingle Dredging Mark Dixon pointed out that a permanent shingle dredger was in operation (land based) at Landguard Point. However, this operation was closed down when the supply of material ceased.	
Notes: a. FEPA Licences It was pointed out that FEPA licences would provide a good guide to the quantities of material dredged from the Essex estuaries. b. Holocene Framework MD highlighted the importance within coastal studies of placing contemporary processes into the longer term Holocene framework. It was suggested that SNS2 could include a section aimed at this. c. Biological Impacts The importance of biological factors on sedimentation (especially in estuaries) was highlighted. It was suggested this could be considered in some form within the study. d. Estuary Erosion / Accretion The EA use brushwood polder fences in the Essex estuaries and monitor trends in bed levels around them. The data from this monitoring suggests erosion in the outer estuaries is equalled by accretion in the upper estuaries. MD also noted that accretion and erosion in estuaries is weather dependant. In Essex, an easterly storm leads to sediment build-up. Rain at low tide washes large quantities of mud into the estuary (this is not to be confused with increased fluvial input following heavy rain.	

Southern North Sea Sediment Transport Study	
Consultation: Tom Miller (EA: Essex)	
Carried out by Telephone: A Williams (PD)	
Issue Raised	**Issue Classification**
1 Maldon Issue The EA re-iterated the issue previously highlighted issue of siltation within the Blackwater, particularly around the town of Maldon. This process causes problems to many of the activities and industries within the estuary.	Strategy
2. Walton–on-the Naze The EA pointed to the erosion at Walton-on-the-Naze as being of concern. Any increase in understanding relating to the site with regards to factors such as time-scales and quantities of erosion would be beneficial.	Strategy

Southern North Sea Sediment Transport Study	
Consultation: English Nature (Essex)	Date: 01/02/01
Present: Robin Hamilton + area representatives (EN) Greg Guthrie, Alun Williams (PD)	
Issue Raised	**Issue Classification**
1. Sediment Transport Driving Mechanisms English Nature highlighted the importance to their work of understanding the overall pattern of sediment transport along the Essex coast. In particular, it would be of benefit to EN to have an improved understanding of the main driving mechanisms behind sediment transport along this coast. This would allow them to consider potential works on the coast in terms of the extent to which they will interrupt any driving mechanisms and therefore disrupt existing sediment transport pathways.	Strategic
2. Future Changes in Sediment Transport Related to 1 above, the current understanding of how the identified driving mechanisms behind sediment transport are likely to alter in the future would be of benefit to EN. This would assist in their consideration and assessment of the future behaviour and performance of existing habitats.	Strategic
3. Estuary Boundary Conditions The Essex coastline is dominated by the presence of a number of estuaries. For this reason, understanding the net movement of material to / from the estuaries is of management significance. The point is of particular importance to the work of EN as it would define boundary conditions for more detailed consideration of how these estuaries behave.	Strategic
Note: Points 1 to 3 above all relate to EN's need to have a coherent understanding of transport pathways in order to assess (a) the impacts of potential schemes on these pathways and hence the impacts on adjacent locations and (b) the future "default" behaviour of habitats, allowing proper development of management plans.	
4. Colne Point It was noted that the shingle section of Colne Point is becoming progressively narrower. This is of concern to English Nature. EN would like to know details of the supply of material to this location i.e. has the supply been changed in recent times and where is the supply from, or is this a natural development of the geomorphology.	Strategy Level
5. Clacton Frontage The Clacton frontage is currently the subject of a proposed scheme. EN would like a further understanding of sediment movement along the Clacton frontage. For Example, how, if at all, does the Gunfleet link into the coast in terms of sediment transport and how does material from the Gunfleet feed into the adjacent estuaries (Colne and Blackwater)?	Strategy Level

6. Thames Estuary EN noted that a large port proposal was currently under consideration in the Thames Estuary. An improved knowledge of sediment movement in the estuary would be of benefit. In addition the Thames was highlighted as being of importance due to the diversity of its sediment.	Strategy Level
7. Harwich Various views and interpretations were put forward as to the sediment pathways within and around the Harwich / Walton frontages. It was stated that until the 1920's, the Pye Bank was a location for sediment accumulation. The bank was then dredged and has since eroded. Material from the Cork Sands is believed to feed to the Walton frontage, but drift south beyond Frinton is believed to be limited? Any additional information provided by the study in this area would be beneficial to EN.	Strategy Level
Notes: Other Studies: There is a University of Newcastle study currently under way regarding net movements in and out of the Crouch and Roach estuaries. The Buxey and Dengie Sands were identified by EN as being very dynamic forms EN did not believe that the SMP for the region provided sufficient detail with regard to sediment transport. In terms of justifying the policy recommendations.	

Southern North Sea Sediment Transport Study	
Consultation: Southend-on-Sea Borough Council	Date: 23/11/00
Present: Richard Atkins (Southend-on-Sea B.C.) Greg Guthrie, Alun Williams (PD)	
Issue Raised	**Issue Classification**
1. Chapman Sands The Chapman Sands is a sand bar situated off the Southend coast. The council has received reports from local fisherman that the bar is accreting resulting in noticeable growth towards the pier. The reasons for this growth and the origins of the sand is of interest of the council	Strategy
2. The channel behind the Two Tree Island has moved to the south causing erosion.	Local

Other Notes:

- All the Southend-on-Sea beaches are artificially created.
- The foreshore on the frontage consists of silt and clay, overlain by artificial recharge.
- Until the 1960's Southend-on-Sea B.C. had its own dredger and the beaches were replenished regularly.
- The beaches are now becoming depleted.
- A natural shingle beach exists to the east of Shoebury point.
- Fagot polders have been used at the west end of the frontage to encourage saltmarsh growth / prevent erosion.
- Other studies

Mouchel strategy for frontage (Contact name: Zoe Hutchinson)
Halcrow design for recharge scheme (Contact name: Rachel Fowler)

Southern North Sea Sediment Transport Study	
Consultation: Canterbury City Council	Date: 29/11/00
Present: Peter Brookes (Canterbury C.C.) Greg Guthrie, Alun Williams, Simon Howard (PD)	
Issue Raised	**Issue Classification**
1. Margate Sand Margate Sand and Margate Hook are located in the nearshore to the north west of the town of Margate. These sand banks have been identified as having an important role in supplying material to the Margate / Whitstable frontage. An improved understanding of the interaction of these banks and the coast would be useful for management purposes.	Local
2. Isle of Sheppey Sheppey has an eroding coastline and as such is an important source of material for this stretch of coast. There is some debate as to whether material eroding from this retreating coastline feeds into the Medway (an important sink for the area) or elsewhere. Further understanding in this region would be beneficial.	Local
3. Whitstable / Margate The Council highlighted the area between Whitstable and Margate as being a region in which onshore transport is of importance. There is also believed to be a longshore sediment divide in this region.	Strategy
4. Swale Erosion Within the Swale estuary, English Nature are losing saltings. Therefore they are interested in sediment transport around the mouth of the Swale. In particular they are concerned with the transport of silts.	Strategy
5. Tankerton Bay Within Tankerton Bay the council has difficulty in maintaining beach levels (shingle).	Local
6. Beach Levels The council identified a general perception amongst the public that beach levels are lower at present than they have been historically. This perception is commonly based on Victorian / Edwardian postcards and pictures showing high beach levels.	Public Perception

Notes: • The general drift along the Canterbury frontage is from east to west, although this is reversible with wind direction. • In general, along the frontage, the beach comprises a shingle uppershore and a sand lower shore. • At Hampton, a large pier was built. This resulted in a build up of material on the eastern side of the structure and erosion on the western side. Various protection measures have since been added to alleviate the problems caused by this. • Float tracking data available for the frontage. • Actual drift rates possibly less than in SMP. Drift across Whitstable Harbour used to be of the order of 500 m^3 / year. Since works this has reduced.	