Marine
Aggregate Levy
Sustainability Fund
MALSF

www.alsf-mepf.org.uk

Marine Aggregate Levy Sustainability Fund (MALSF)

Green Innovations

Mark Russell

British Marine Aggregate Producers Association

Richard Newell

MALSF Science Co-ordinator

GB Aggregate Demand

251Mt per annum (2008), of which:

- 187Mt primary aggregates (75%)
- 64Mt secondary/recycled aggregates (25%)

Equivalent to 4.2t per person each year

Image courtesy of British Energy

Scale of UK Marine Aggregate Activity

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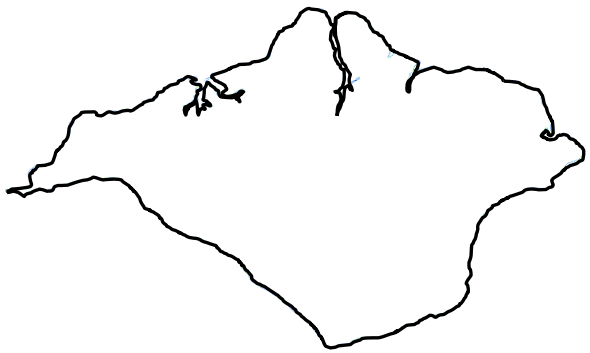
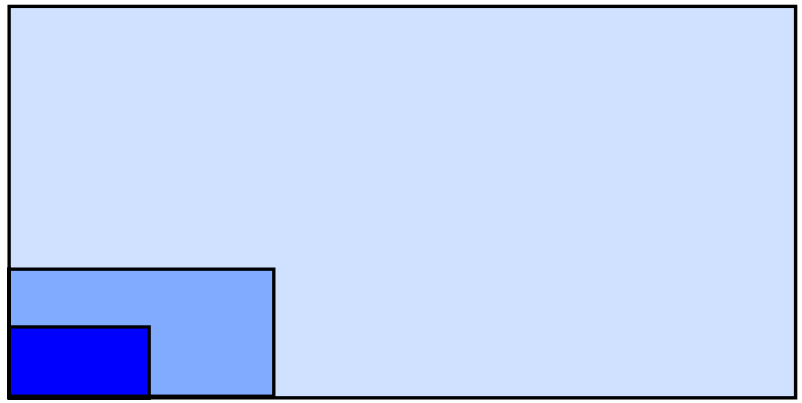


Isle of Wight – 400km^2



Licensed area – 1286km^2

Dredged area – 124km^2

90% dredging effort – 43.45km^2

Extent of UK marine aggregate industry

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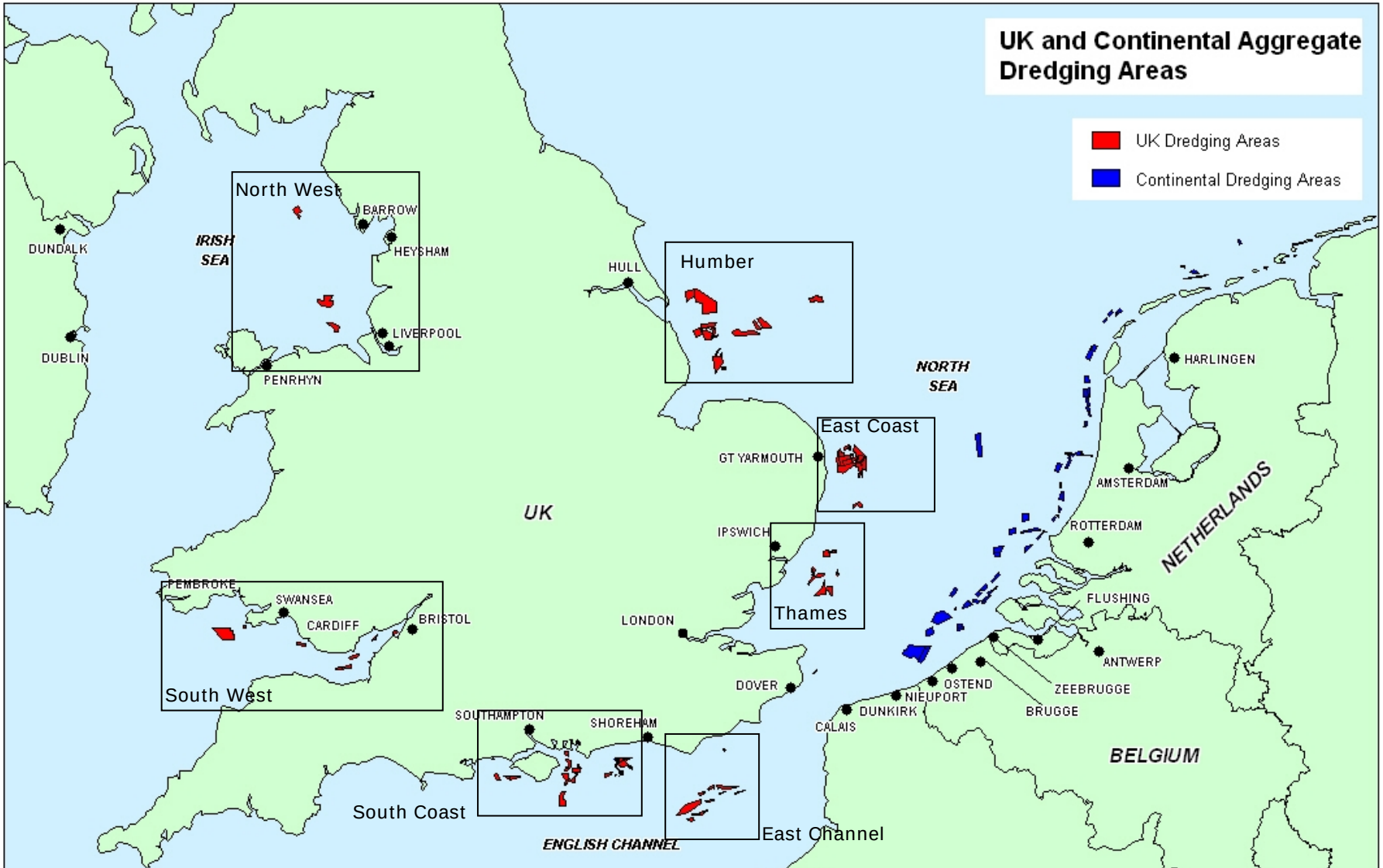

Aggregate Levy Sustainability Fund

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- Aggregates Levy = environmental measure
- £2.00/tonne tax on all primary aggregate sales, including marine (187Mt in 2008 = £374M revenue to Treasury)
- % of the total revenue (a.£20M/year) provided by Treasury and released by Defra through the Aggregate Levy Sustainability Fund (ALSF)
- % of the ALSF ring fenced for marine projects

Marine ALSF Strategic Objective:

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…to develop the science and information required to improve the way in which marine aggregate extraction activities are planned, assessed and managed

Strategic aims:

1) To develop and use **seabed mapping** techniques

2) To increase understanding of the **effects** of marine aggregate dredging activities and their **significance**

3) To develop **monitoring, mitigation and management** techniques

4) To research and understand the **socio-economic** issues associated with aggregate dredging activities

5) To promote **co-ordination** and establishment of **sustainable archives** for the **dissemination** of research

Key Issues Recognised by The EuDA Environment Committee

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- The small scale at which dredging might affect the marine environment compared with the scale at which ecosystems function.
- Of the many factors that affect the marine environment only 4 out of 11, identified in the European Marine Strategy Directive, were relevant to dredging:
  - seabed integrity
  - changes in hydrography
  - contaminants
  - noise.
- Many of these factors have been addressed in the MALSF research programme.

Aggregate Dredging in Context

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MALSF funded 6 major Regional Environmental Characterisation (REC) Surveys

- Define geological, archaeological, historic and biological resources.
- Place impacts of aggregate dredging in context in relation to the distribution of resources of conservation significance.

REC Surveys

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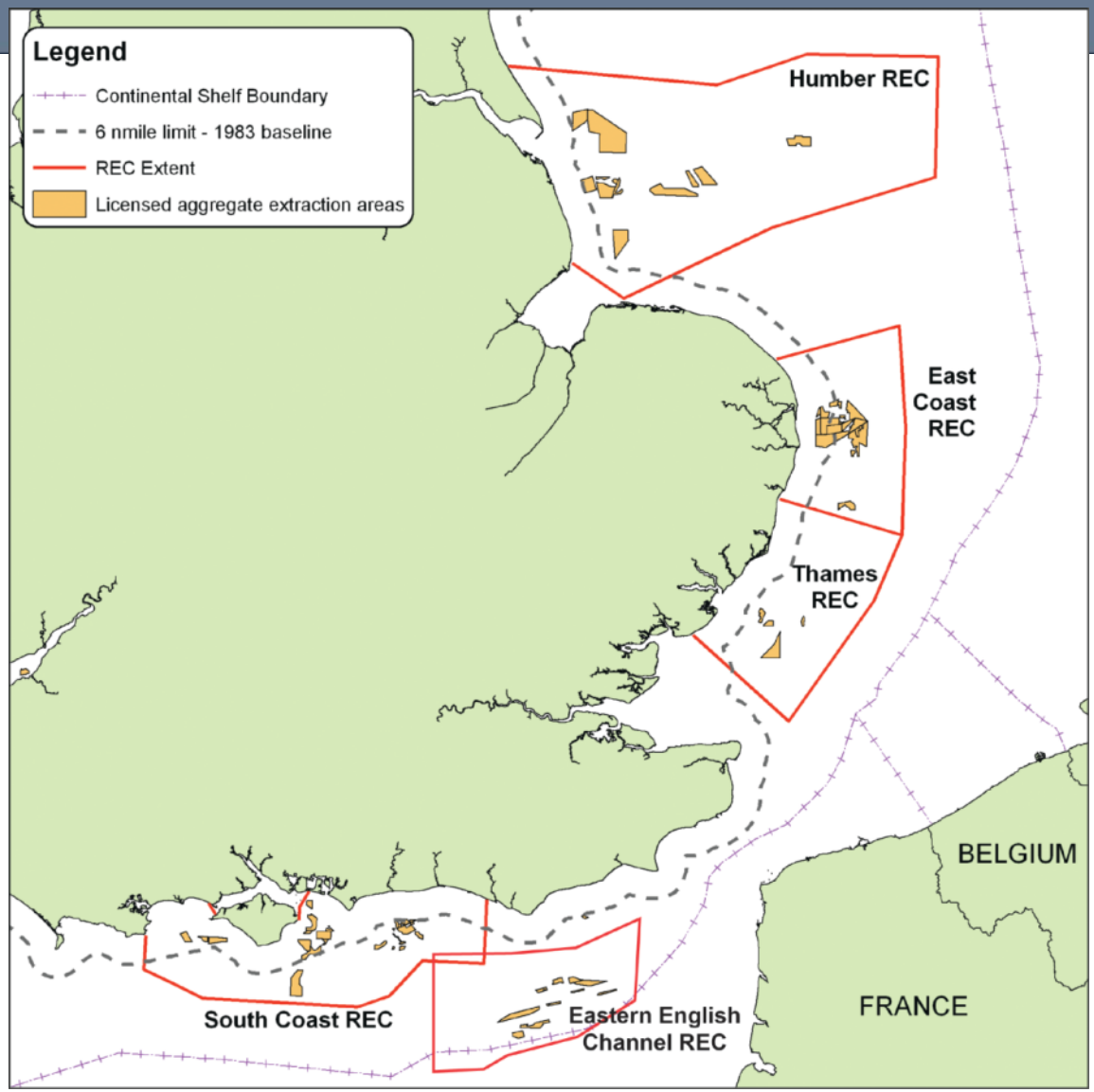

Identified:

- Areas of biogenic reefs.
- The importance of marine palaeo-landscapes.
- Distribution of major biotopes.
- Features of geological significance.
- Features of historic significance.

Physical Impacts on Seabed Sediments

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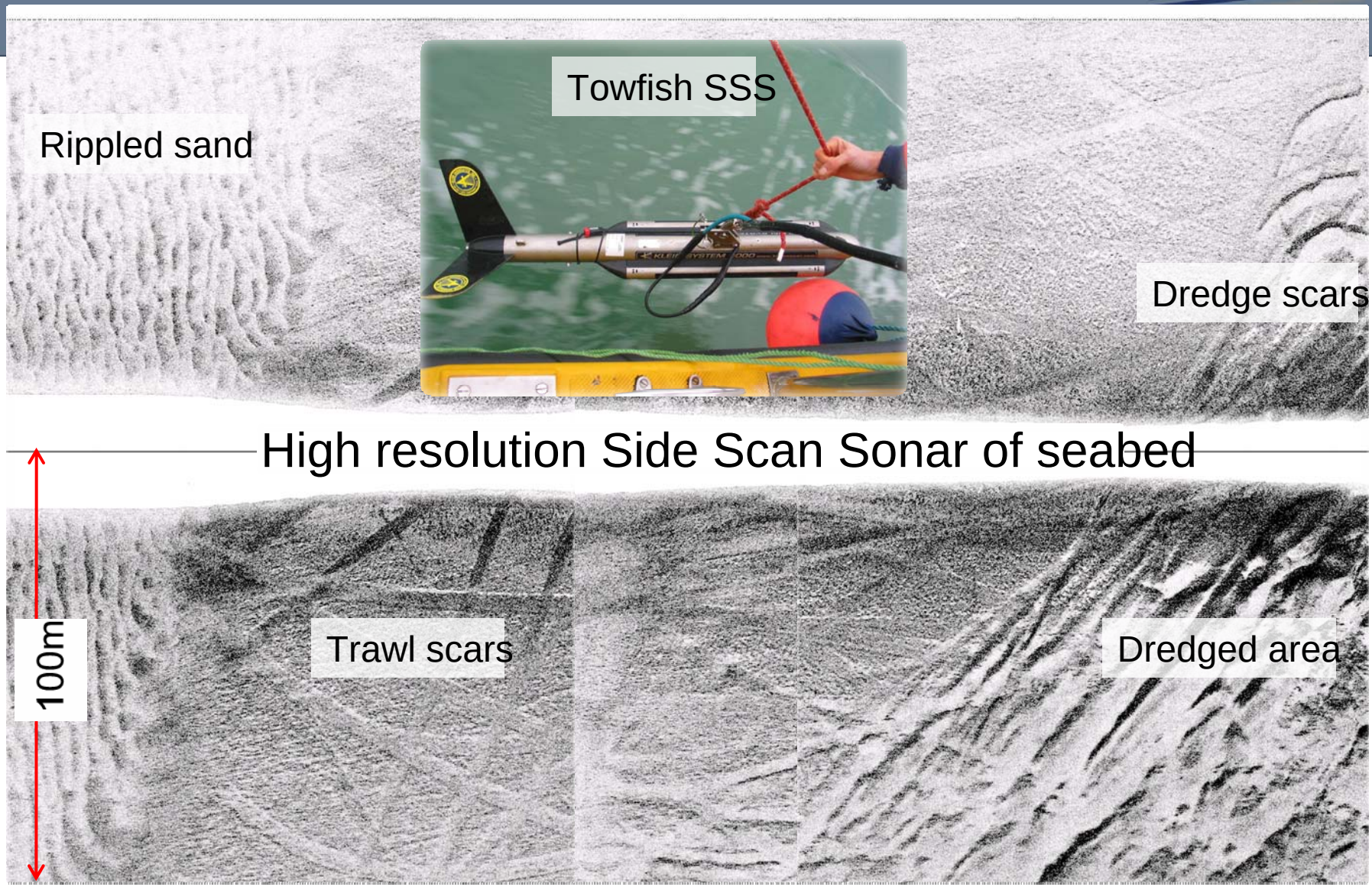

Scale of Impacts of Other Activities

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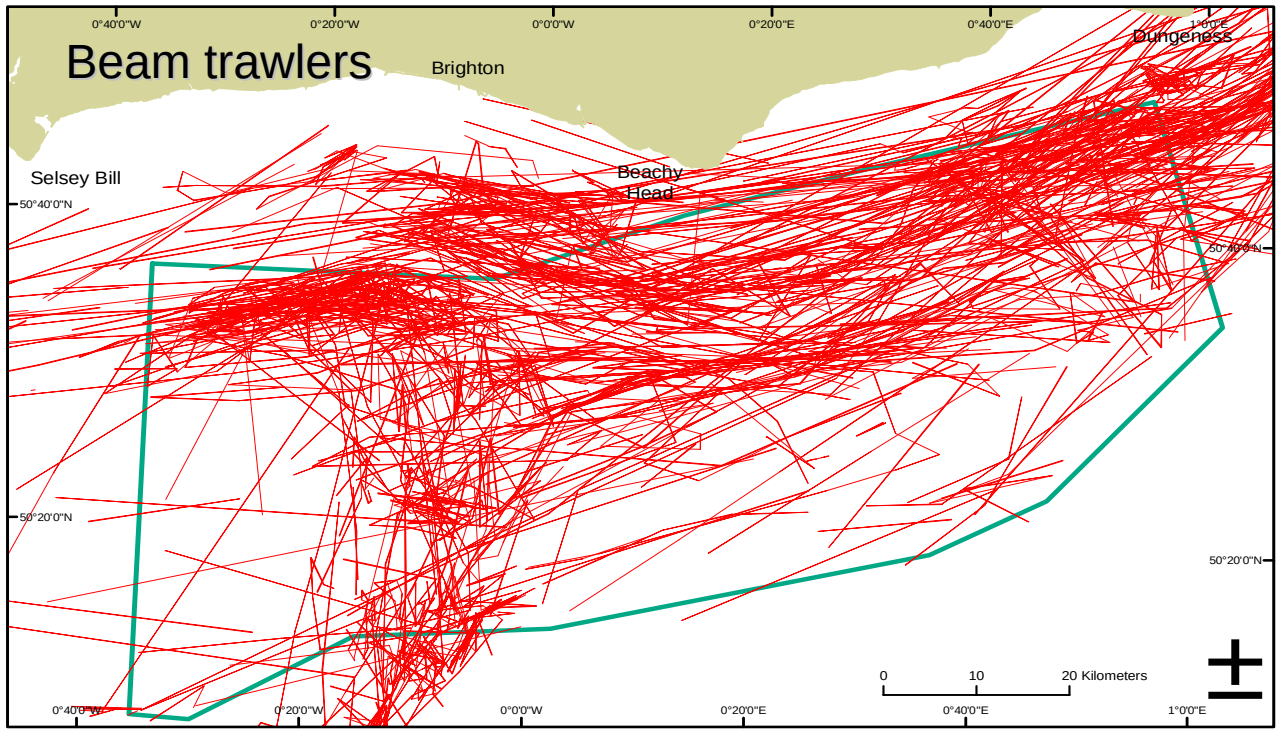
Intensity of Fishing Effort in Eastern English Channel



Footprint of Dredging Impact

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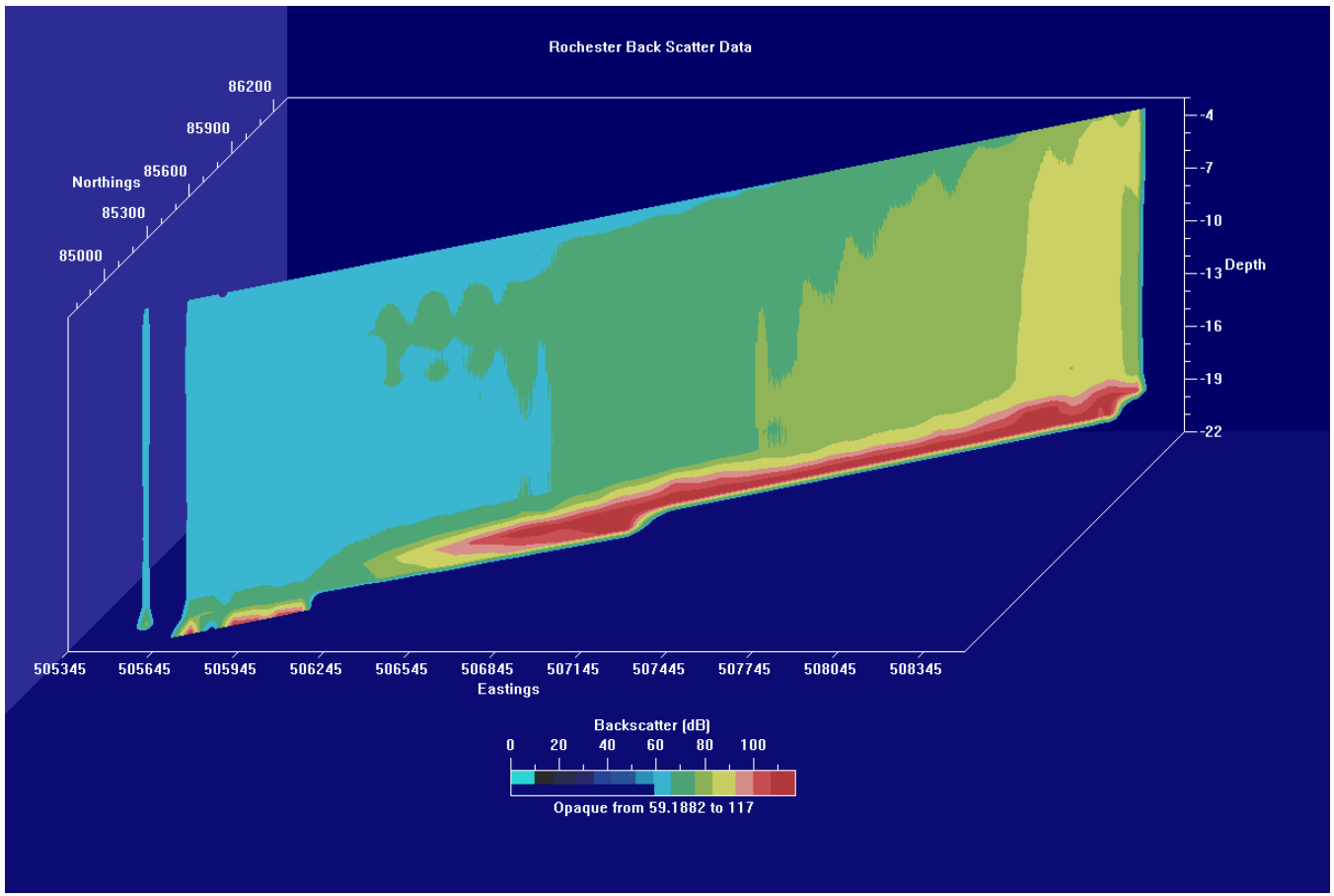
Acoustic Backscatter Plot of a Dispersing Plume during Screening



Courtesy D. R. Hitchcock

Model of Dispersion of Dredging Plume

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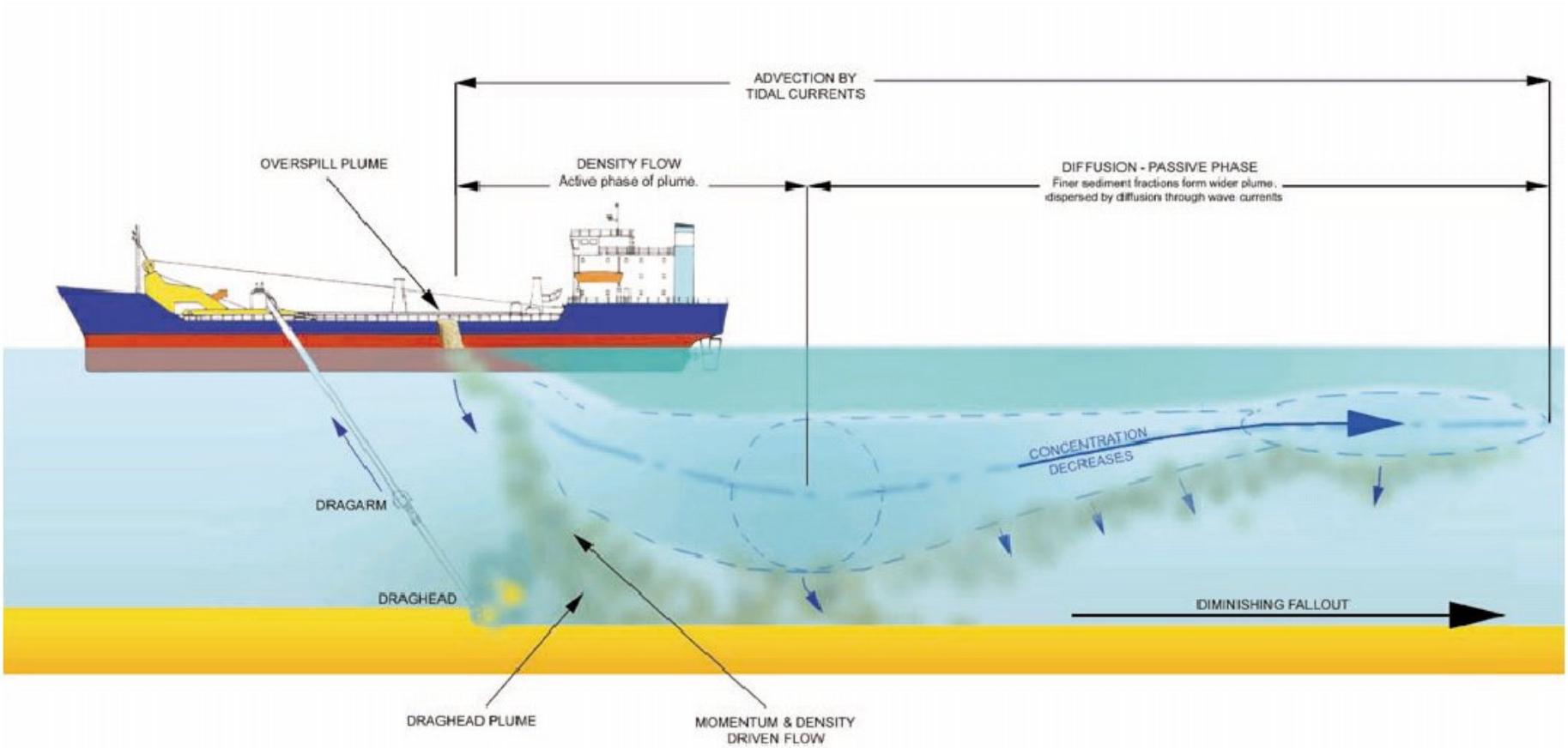
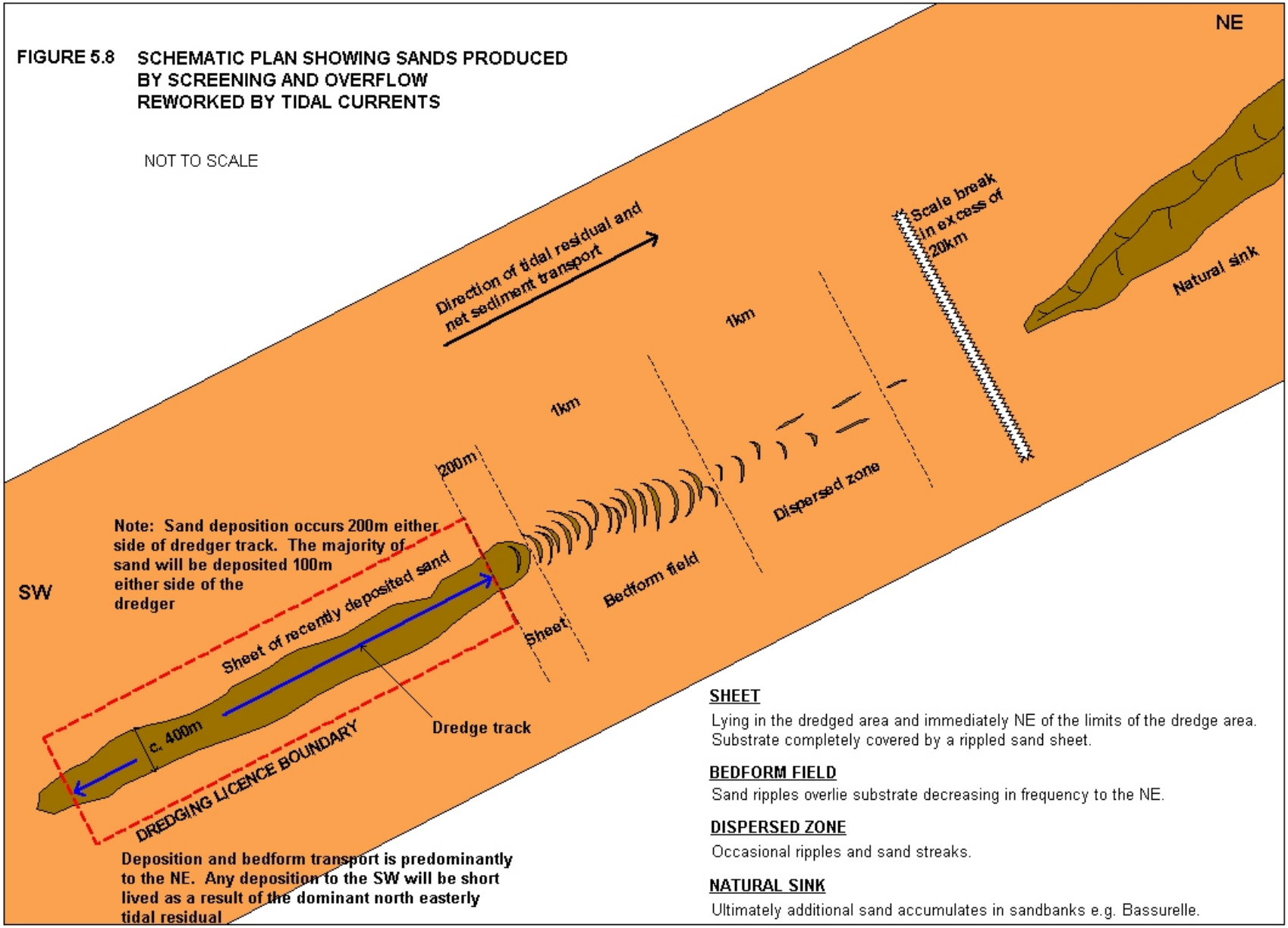


FIGURE 5.8 SCHEMATIC PLAN SHOWING SANDS PRODUCED BY SCREENING AND OVERFLOW REWORKED BY TIDAL CURRENTS

NOT TO SCALE



SHEET

Lying in the dredged area and immediately NE of the limits of the dredge area. Substrate completely covered by a rippled sand sheet.

BEDFORM FIELD

Sand ripples overlie substrate decreasing in frequency to the NE.

DISPERSED ZONE

Occasional ripples and sand streaks.

NATURAL SINK

Ultimately additional sand accumulates in sandbanks e.g. Bassurelle.

Impacts on Biological Resources

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- It is known that there is a significant removal of marine animals under the path of the drag-head. This can lead to a 60-90% loss of benthic biomass.
- Outside the dredge area the effects of burial are being investigated on a wide variety of invertebrates.
- In many cases benthic animals are very resistant to burial.
- A biological traits handbook has been prepared showing the sensitivity of marine invertebrates to disturbance and their rate of recovery.

Recovery of Biological Resources

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- Many animals that characterise sands & gravels are adapted to disturbance & show a high rate of re-colonisation & growth.
- However, some components may take many years to re-colonise & grow to full size.
- Repeated disturbance may lead to a shift in community composition towards small fast growing species.

Re-colonisation & Growth

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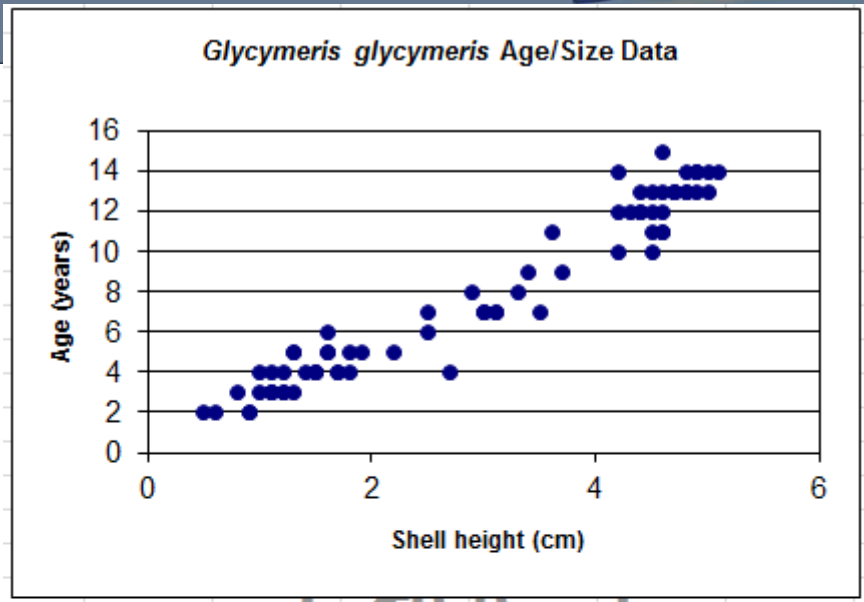
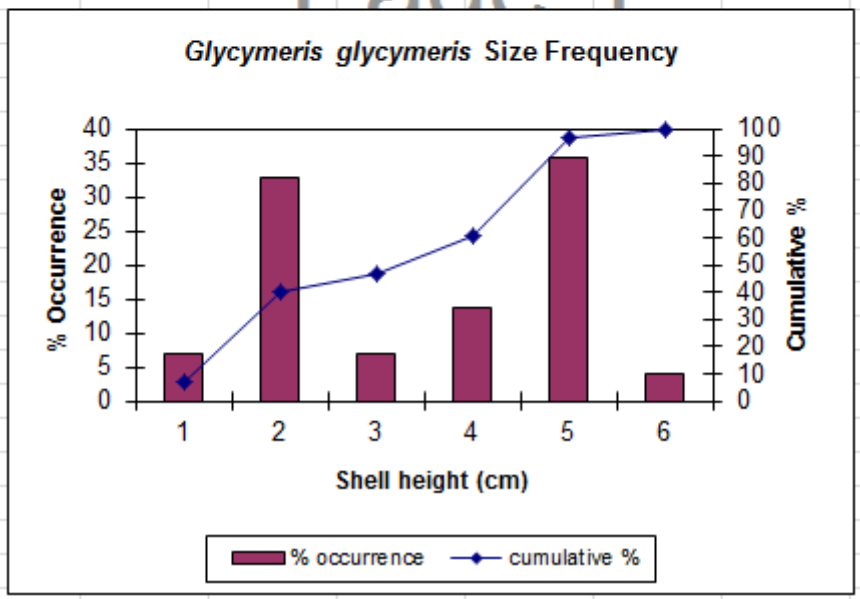
The Dog Cockle – *Glycymeris glycymeris.*
A typical long-lived component of marine sands & gravels.



Shows re-colonisation occurs at intervals of about 7 yr & that it may take a further 14 yr for the cockle to grow to full size – a recovery time of about 20 yr for this long-lived component.



Noise Generated by Dredgers

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- A recent project has investigated the noise from a variety of dredgers operating in different deposit types.

- The results have not yet been fully reported but the following features are of interest.

Underwater Noise Measurement of Dredging Vessel During Aggregate Extraction Operations

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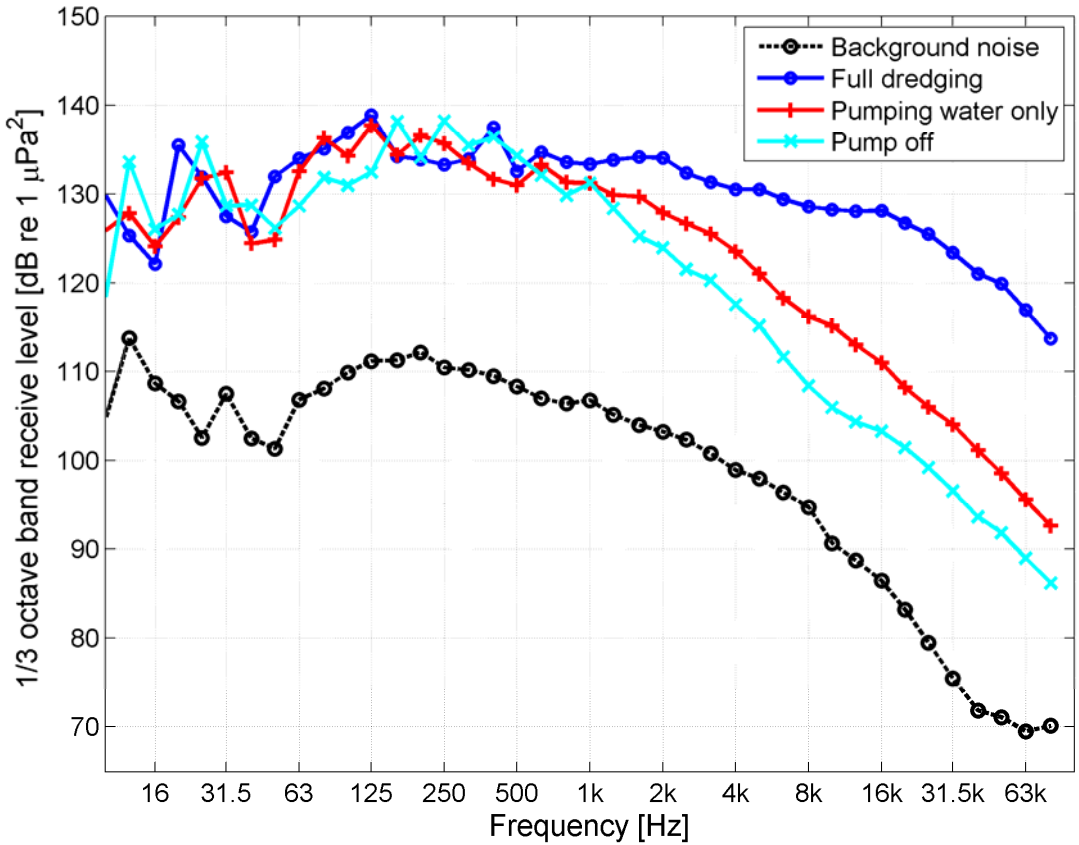

- Significantly above background levels.
- Values for pump off and water pumping are lower than for full dredging in the high frequency range.

Conclusions

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- The footprint of marine aggregate dredging is small compared with the impacts of other activities (notably heavy bottom fishing gear).
- We have good information on the wider distribution of resources of conservation significance, including geological, palaeo-historic and biological importance. This places impacts of aggregate dredging in context.
- We have good information on the sensitivity and recoverability of marine benthos.
- Recent projects are providing source terms on the noise generated by dredgers & possible design changes that may improve the efficiency of operation of dredging.

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