EMSAGG

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CIRIA

Issue 14, June 2007

Report on the 19th EMSAGG members' meeting

EMSAGG would like to thank the Federal Public Service Economy for hosting the 19th meeting. The meeting included discussion on production of an e-bulletin and initial thoughts on the 2009 EMSAGG conference.

In this issue

Towards a more liberal market for mineral extraction in The Netherlands - a regional perspective

National position

At the end of 2002, the Dutch Ministry of Transport, Public Works and Water Management (VenW) decided to phase out its responsibility for designating quantitative targets to secure the extraction of raw minerals.

Historically the VenW was responsible for mineral planning policy. The main aim of the policy was to extract a sufficient quantity to meet the country's needs. This was the responsibility of the 12 provinces and the regional directorates of the VenW who issued a mineral extraction plan as part of their region spatial planning (Streekplan). This lasted 10 years and recorded the amount of relatively scarce aggregates (coarse sand for use in concrete, masonry mortars etc, gravel and silica sand) produced in each province. The current 10-year plan ends in 2008.

There will be no extraction assignments issued by government after 2008. The new policy is to establish a market-oriented approach thus phasing out the Ministry's directive role. Responsibilities for spatial planning regarding raw materials and policy on the sustainable use of these will rest with the Ministry of Housing, Spatial Planning and the Environment (VROM).

Extraction of sand will be embedded in projects with other primary goals such as water retention, flood protection and nature enhancement. The extraction industry is challenged to develop multi-functional projects that supply the market with the necessary building materials as well as improving spatial quality.

Although the policy shift may lead to smaller aggregate extraction sites, the integrated approach should be more effective.

Provincial approach

As a consequence of the new national approach, the provinces have had to revise their mineral extraction policy. The province of North-Brabant, one of three major national suppliers of coarse sand, modified its extraction policy in December 2006.

According to the old policy it was not permitted to excavate fine sand that would be used as filling material because of the abundance of alternative materials (secondary materials, marine aggregates and slightly polluted soil). In the new policy, the extraction industry will have to take the initiative for such projects with sufficient added value to ensure they are rooted in the local community in order to gain local support.

In the process of issuing extraction permits, an independent committee will advise the province on the quality of the project. The province will not include regulations in the extraction permission meant to restrict the free market, such as limiting the destination of the extracted sand or the speed of extraction. Subsequently the difference in policy between coarse sand and sand for filling has disappeared, which means that deep extraction for fine sand may now be possible again. The province of North-Brabant will continue to stimulate the use of alternative materials by advocating their use in its public works and encouraging the province's municipalities to follow suite.

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EMSAGG would like to welcome Arenaria Srl and MUMM University as the newest members to the group. If you are interested in becoming a member please email: simon.vilarasau@ciria.org

Maggnet – the Marine AGGregate NETwork

COST (Co-operation in the field of Scientific and Technical Research) is one of the longest-running instruments supporting co-operation among scientists and researchers across Europe.

Maggnet, established in November 2006, aims to add value to European research in marine aggregate extraction by bringing together researchers to discuss European marine strategy. The large number of research projects and collaborations within the continent produces many outputs which lack unity, causing grey areas which are open to interpretation. Maggnet's aim is to clarify and unify this breadth of research.

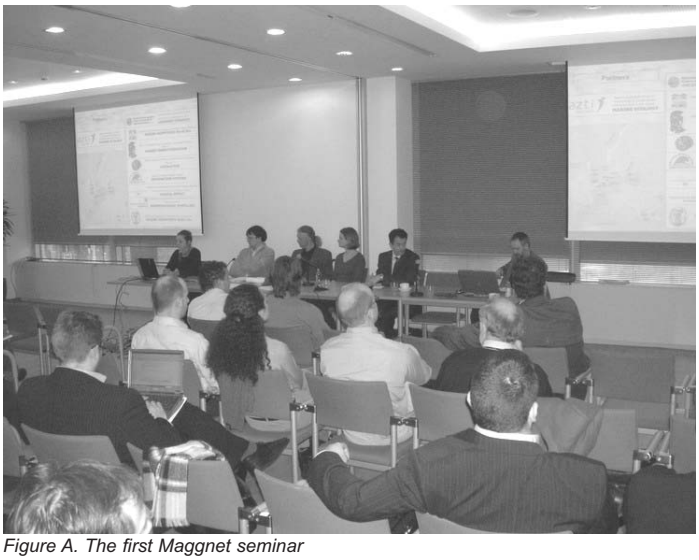

Figure A. The first Maggnet seminar

Maggnet is structured to provide opportunities for all members to network and exchange ideas. Members are divided into four working groups according to their interests and background:

WG 1: Environmental effects.
WG 2: Markets, materials and exploitation.
WG 3: Resource exploration and development.
WG 4: Technology and data management.

The first working group meeting held on 6-7 February 2007 in the Federal Public Service Economy offices in Brussels, was attended by over 50 delegates from 12 COST countries who came together to share ideas, and to address these cross-cutting issues. Working groups tackled topics including setting a current position of marine aggregates in Europe, establishing a Maggnet library of research and addressing regional and national differences and synergies. Maggnet is funded until 2010 when it aims to have a dissemination conference and publication.

Maggnet welcomes new members especially from COST member countries not already involved. To find out more about Maggnet and to join, please visit: www.cost.esf.org and search for Cost Action 638.

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The members of EMSAGG were instrumental in the development of MAGGNET. While there are differences in the objectives and scope of the networks any synergies are being effectively managed by those members participating in both networks and through discussion between the EMSAGG secretariat and network chairs.

Monitoring the sand extraction on the Belgian continental shelf: methodology, results and expectations

The aggregate extraction on the Belgian Continental Shelf is restricted to three control zones (Figure B). The governmental control on the extraction is two-fold. Each extraction vessel is required to maintain a register providing all relevant information on each extraction (vessel identification, date, location and discharging volume) and is equipped with a black box. The black boxes register parameters concerning the journey (identification and reference number) and automated data (timestamp, position, speed, status of the pumps and extraction activity).

The data revealed that since the beginning of the extraction in 1976, at least 75 per cent of the total extracted volume originates from only one sandbank: the Kwintebank. On this sandbank the two most dredged areas are morphologically distinguished by two depressions:

- one in the centre
- one in the northern part of the bank.

In order to limit the impact of the sand extraction on the bathymetry, the Fund for sand extraction closed the central depression of the Kwintebank for exploitation in February 2003.

To evaluate the impact of the extraction on the seabed, several monitoring zones were defined:

- two in the active control zones – (the two depressions on the Kwintebank)
- one situated outside the control zones, on the neighbouring bank, the Middelkerkebank (Figure C).

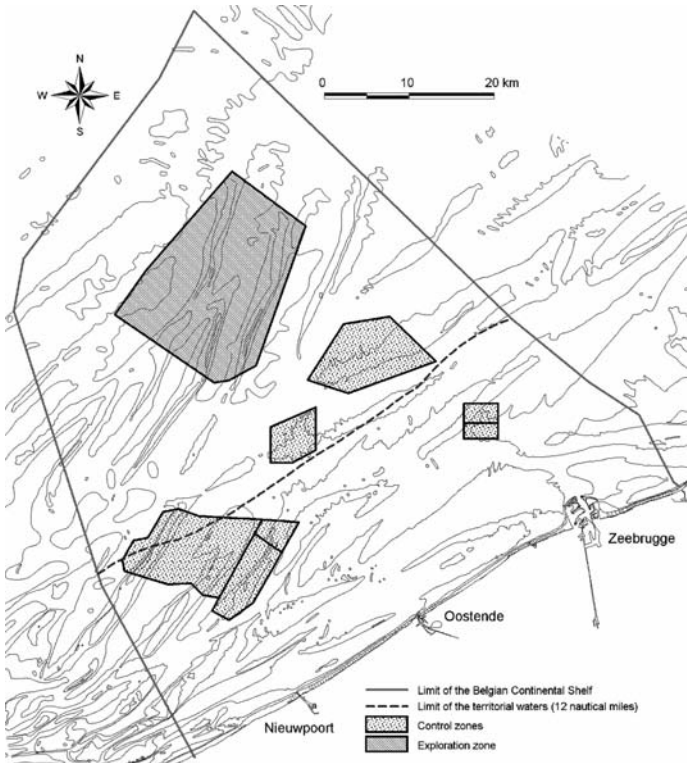

Figure B. General map of the Belgian Continental Shelf showing the extraction – control zones and most offshore, the exploration zone.

From November 1999 until June 2005, 17 surveys were carried out using a Kongsberg-Simrad EM1002 multibeam echosounder installed on board the RV Belgica on the central part of the Kwintebank (KBMA) and on the reference zone on the Middelkerkebank (R2). The resulting time series of digital terrain models and backscatter strength maps allow a detailed comparison of the bathy-morphological and sedimentary evolution of both areas.

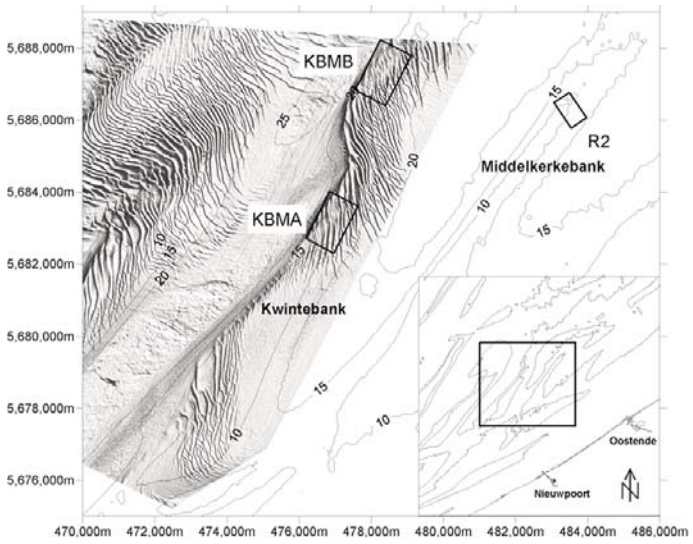

Figure C. Location of the monitoring areas, KBMA and KBMB on the most extracted areas on the Kwintebank (control zone 2), and R2 on the Middelkerkebank.

Since the start of multibeam monitoring in 1999 until February 2003, a global deepening of 0.5 m of the whole KBMA monitoring zone was observed after which the KBMA was closed for extraction and deepening became less important. The bathymetric evolution of KBMA can be considered as a combination of natural and anthropogenic factors. After the addition of the extracted volumes to the bathymetric evolution, the evolution of KBMA can be compared with the "natural" evolution of the R2 area and shows a high correlation. A smaller decrease after the closure of the zone for extraction and the lack of indications for cumulative effects on the bathymetry, is clear evidence of the local impact of the extraction.

The mapping of the backscatter values suggests a difference in sediments between the depression sensu stricto and the rest of the KBMA monitoring area. The central depression has a mean backscatter value of –24 dB (a value for medium to coarse sand). The values recorded on the east side of the KBMA area is up to –27 dB (very fine sand). The western side of the KBMA shows intermediate backscatter values. The focus of the extraction industry on this depressed part of the bank is explained by the presence of this medium to coarse sand. The backscatter strength values are fairly stable before or after the cessation of dredging. However, the seabed classification indicates a minor tendency towards finer and more homogenous sand in the depression after February 2003.

Seabed monitoring can still be improved. The important compensations for the draught of the vessel and the tidal height can be ameliorated and made available in real-time. Using a very shallow water high frequency echosounder, an adapted tool for the measurements, will greatly improve the accuracy, resolution and efficiency. Due to the limitations of the present system, monitoring is confined to small areas. Large-scale monitoring is currently executed by comparing the mapped sandbanks with recently sailed transects. With an efficient system the re-mapping of large structures is more feasible.

A 3D evaluation of the mineral resources and present sedimentary bodies is necessary to establish the impact on the available volumes of sand and gravel and to develop a sustainable exploitation. The Fund for sand extraction has launched a new project to develop and optimise techniques to transgress to a full 3D monitoring and cartography of the Belgian continental shelf.

The Fund for sand extraction wishes to thank the crew of the RV Belgica for their assistance during the surveys. The Management Unit of the Mathematical Model of the North Sea and the Scheldt Estuary (MUMM) is thanked for the provision of ship time on board the Belgica.

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Assessing the risks posed by marine aggregate extraction

A risk assessment framework for marine aggregate extraction has been developed by HR Wallingford in association with Royal Haskoning and the University of Newcastle. The MARA (Marine Aggregate extraction Risk Assessment) framework enables the risks to all potential sectors from dredging of marine aggregates to be assessed (such as marine ecology, archaeology and the fishing industry). It does this by providing a practical approach to assessing risk at a range of temporal and spatial scales, from extraction at a single site to regional assessments of multiple extraction activities. It provides techniques for both quantifying uncertainty and assessing cumulative and in-combination effects. The project has been completed under ALSF (Aggregate Levy Sustainability Fund) for Defra and CEFAS.

Offshore aggregate dredging has a range of potential environmental impacts. The extent of these impacts is currently evaluated using environmental impact assessments (EIA). The MARA framework may be used to support the completion or review of an EIA and allows progression in the assessment process, enabling greater transparency in quantifying impact.

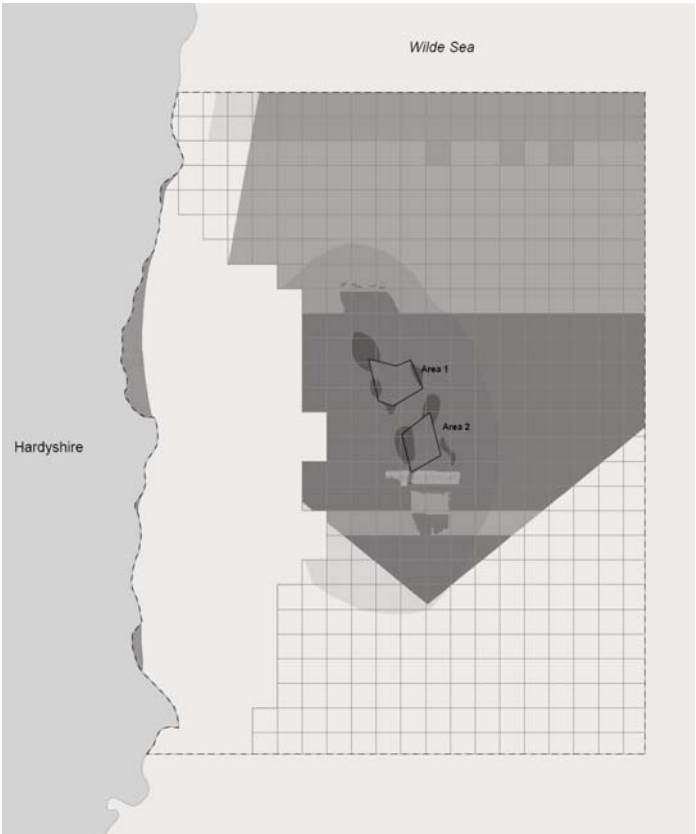

Figure D. Example map output from MARA assessment showing spatial variation in proportion of a particular species population that will experience stress due to dredging at areas 1 and 2 for a hypothetical case study.

The MARA approach for assessing the risks of marine aggregate dredging takes into account the consequences and the likelihood of those consequences occurring. It provides a means for quantifying the uncertainty associated with the analysis. This will enhance the transparency of assessments for dredging licence applications and make the decision-making process easily traceable and auditable. It also provides a framework for reconsidering the impacts of the activity as developments in scientific understanding and the results of site specific monitoring of a particular licence become available

The summary and technical reports are available on the MARA website: www.mara-framework.org.uk

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New online marine aggregates research database

Users can now access this comprehensive body of marine aggregate research through a specially designed website: www.MarineALSF.org.uk

Forthcoming events…

Port development and coastal environment
25 – 28 September 2007, Varna, Bulgaria
www.bsca.bg/pdce2007

Europort Maritime
Ahoy. Rotterdam, the Netherlands
6 – 9 November 2007
www.europortmaritime.nl

CEDA Dredging Days 2007. Conference and Exhibition
Ahoy. Rotterdam, the Netherlands
07-09 November 2007
www.dredgingdays.org

If you have an event you would like to feature here please email: emsagg@ciria.org