EMSAGG

The bi-annual bulletin of the European Marine Sand And Gravel Group

CIRIA

Issue 15, December 2007

Report on the 20th EMSAGG members' meeting and site visit

The 20th EMSAGG members' meeting was held at Arenaria S.r.l.'s offices in Bologna. The meeting was used to discuss the forthcoming EMSAGG conference scheduled for February 2009 in Rome. The meeting also included a site visit to the Moses project on the island of Lido (in the Venetian Lagoon) where members saw the methodology used for laying the base for the future barrier first hand.

In this issue

Monitoring sand extraction on the Adriatic continental shelf

Arenaria S.r.l. is the only company to have obtained a permit from the Italian Government allowing exploitation of a sand deposit located 30 miles off the Marches Region. The deposit is located at depths of between 80-90 m. To date Arenaria has dredged over 1 million m³ of fine sand from it.

Dredging operations have direct impacts on the physical environment being dredged as well as on the marine flora and fauna. To quantify this impact, parameters related to morphology and characteristics of the seabed, hydrological and dynamical characteristics of water body, benthic population and ichthyic population were recorded.

These measurements were taken by Arenaria, following the standard Italian procedure set down by Central Institute for the Technological-Scientific Research Applied to the Sea (ICRAM), for investigation of impact induced by dredging activities on the dredging area. This was part of the final phase of a wider surveying programme, named "Specific methodology protocol for the study of environmental aspects for the use of offshore marine sand sediments and beach nourishment", that encompassed detailed surveys before, during and after dredging. Analyses were performed in collaboration with ISMAR-CNR – marine geology department – in Bologna and ICRAM. The data recorded before the dredging, demonstrated that the material could be dredged and used to replenish areas of the Italian shoreline because:

- the deposit comprises fine/medium-fine sand, with no coarse sand surface layer
- the terrigenous fraction of the sampled sediment comprises calcite and quartz granules, with lesser quantities of feldspar and mica
- the concentrations of heavy metals, polycyclic aromatic hydrocarbons, polychlorobiphenyls, organic substance and phosphorus (total phosphorus), when found, were within the limits established by the Italian Decree 367/2003; the values are similar to those found within sediments in natural conditions
- the microbiological parameters do not indicate the presence of current or past coliform, virus and mycete contamination
- the benthonic population is limited, both with regards to the number of individuals as with the types of species present

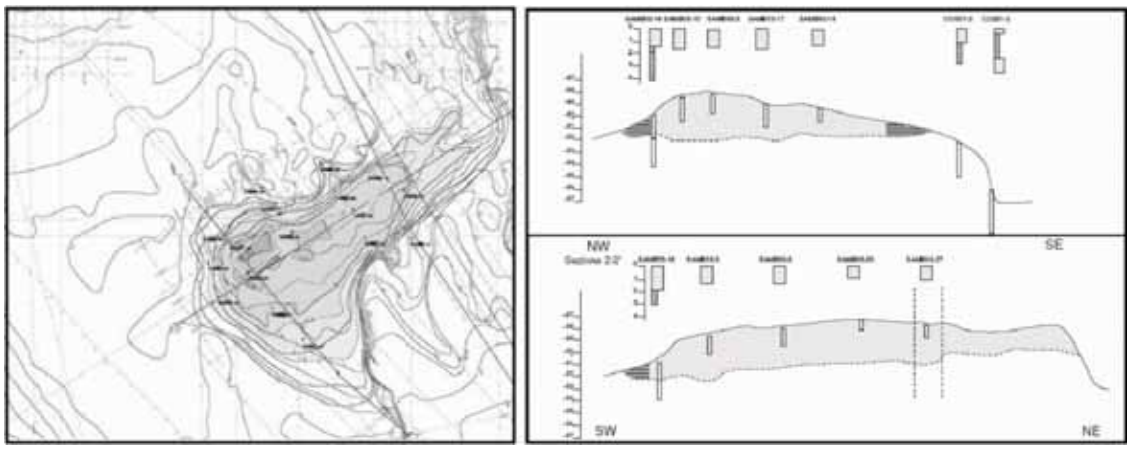

Figure 1 Map (left) and cross-section (right) of marine sand deposit granted to Arenaria in the Adriatic Sea

CIRIA, Classic House, 174-180 Old Street, London EC1V 9BP
Tel: +44 (0) 20 7549 3300 Fax: +44 (0) 20 7253 0523 email: simon.vilarasau@ciria.org

- dredging does not have negative implications for the survival of the ichthyic population.

Surveys conducted during the dredging confirmed pre-existing data. They also recorded that the dredging had not caused changes to the benthic population or variations to water quality because the suspension of sand (turbid cloud) had a narrow-banded distribution and rapid fall velocity.

Monitoring post-operation was conducted three months from the cessation of all dredging activities. It confirmed, using seabed topography surveys, that the dredged area had returned to its original conditions. This seems to indicate that Arenaria's exploiting activities had no long-term environmental implications or effects on the marine dredged area and sediment supplies locally could rapidly re-adjust.

Arenaria Srl
www.arenariasabbie.com
info@arenariasabbie.com

Sandscript 1...

Update on COST Action 638 – Maggnet had its second working group meeting in Milan on 21st November 2007. Maggnet has also recently published their website which includes updates on the progress made by the group and contact details for many of its members. ***www.maggnet.info***

Marine aggregate statistics – Belgium

As controlling authority of the Belgian continental shelf, the Federal Public Service, Economy, is tasked with obtaining and publishing the annual statistics on marine aggregate extraction in Belgium.

In 2006 12 licensed companies extracted 1.57 million m³ of marine aggregate from the Belgian seabed. This is a 14 per cent increase in relation to the figures for 2005. The quantity extracted in 2005 was the decade's lowest.

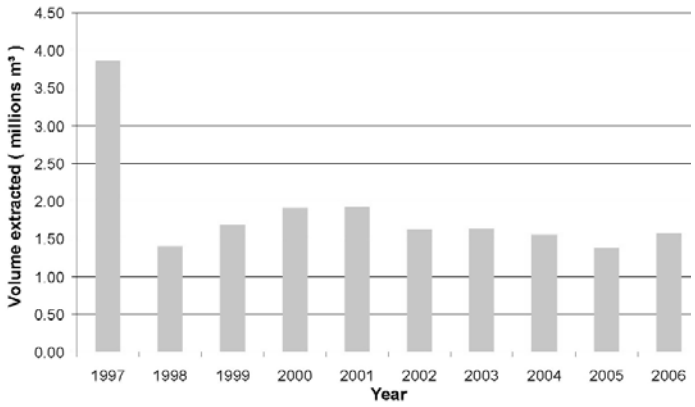

Figure 2 Volume of extracted material in Belgium over the last decade

As expected, most (83 per cent) of the extracted material was un-loaded at the Belgian coastal towns of Brugge, Nieuwpoort and Oostende. The remainder was transported to France (8 per cent), the Netherlands (4 per cent) and the Belgian provinces of Antwerpen (4 per cent) and Limburg (1per cent).

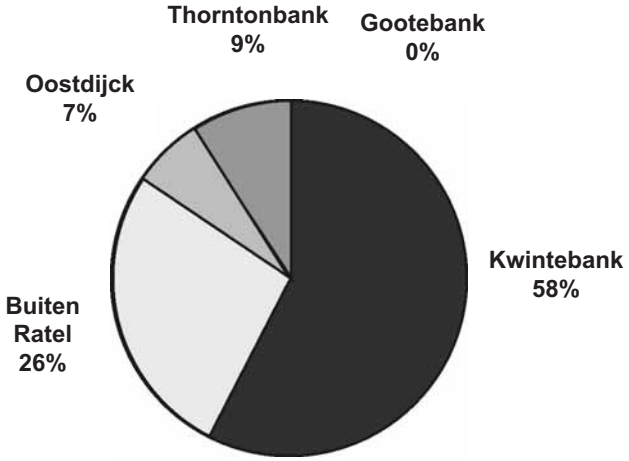

Figure 3 Percentages of extracted material from the Belgian continental shelf

The main source area of the extracted aggregates remains the Kwintebank, although its majority continues to decrease (down from 66 per cent in 2005 to 58 per cent in 2006).

P. Schotte
Federal Public Service Economy – Continental Shelf
patrik.schotte@economie.fgov.be

Sandscript 2...

Planning for the February 2009 EMSAGG conference in Rome is well underway and the group will be opening a call for papers shortly. If you would like to present, or are interested in sponsoring, please visit the EMSAGG conference page ***www.ciria.org/emsagg/conference09.htm*** *for the most up-to-date information.*

The importance of the marine aggregate industry to the UK

The construction industry is an important sector of the UK economy. It uses large quantities of construction aggregates, which are obtained from a variety of sources. Among these are marine aggregates dredged from the seabed. The construction industry will continue to require an adequate and steady supply of aggregates over the long-term, so aggregate supply issues are important and ongoing.

A report was commissioned by the British Marine Aggregate Producers Association (BMAPA) to examine the strategic role and importance of marine aggregates to the overall supply of aggregates in the UK. It focuses on the socio-economic issues associated with the production and use of marine aggregates, and their contribution to national and regional supply.

The report is intended to provide a better understanding of the important contribution that marine aggregates make to supply, not only to the construction industry but also coastal protection. The information in it provides an important contribution to future policy developments arising from the Marine Bill and the proposed new system of marine spatial planning.

Current Scenario

The demand for aggregates is driven by activity in the construction industry and the economy as a whole. Marine sand and gravel accounted for eight per cent of total primary aggregate demand in England and Wales in 2005, but more significantly 19 per cent of total sand and gravel sales in England and 46 per cent in Wales. Regionally it is even more important. It makes a crucial contribution to aggregate supplies in London and the South East of England, which together account for over one third of construction and economic activity in the UK and where 70 per cent of marine aggregates are landed. Supplies to other regions, notably South Wales, are also very significant. Marine aggregate supplied 18 per cent of the UK total demand for concrete aggregate in 2005 – the principal market for all primary aggregates.

Exports make a modest, positive contribution to the UK balance of payments.

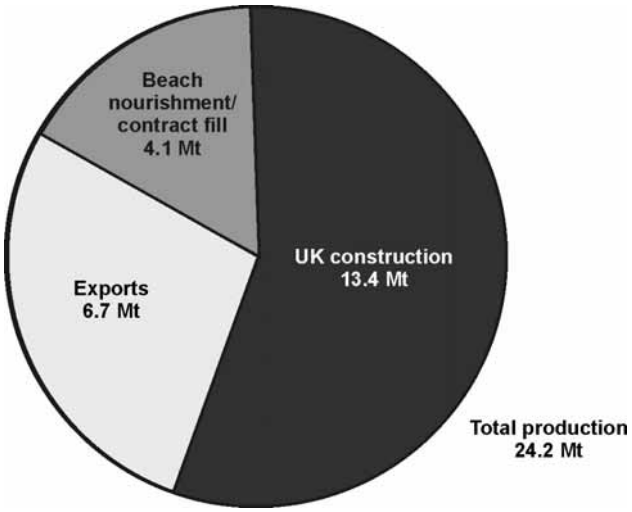

Figure 4 Landings of marine aggregates by principal market, 2006 (courtesy The Crown Estate)

The future demand scenario

Coastal erosion is a growing problem with increased storminess and sea-level rise. There will be a continuing demand for marine aggregates for beach recharge for which there is no viable alternative. Moreover, the future role of nuclear power in Britain is currently being considered. Many nuclear power stations are located on vulnerable coastlines and must be adequately protected throughout their full life cycle – including the extensive decommissioning phase. Tidal barrage schemes, which could tap into a significant renewable energy resource and contribute to the twin challenges of climate change and security of supply, would require large volumes of aggregate for fill purposes and construction, and marine aggregate would represent an obvious source.

The new permitting process, a new Marine Bill and the establishment of the proposed "marine management organisation", with its core functions of marine spatial planning and integrated licensing, will enable a more strategic and long-term view of the management of the marine area to be taken. This should provide the industry with greater business certainty to make the £600–900 million capital investment in new ships that will be required to maintain and develop the marine aggregate contribution to overall supply in the medium to long-term.

Linda Hetherington
British Geological Survey
lest@bgs.ac.uk

Sandscript 3...

The Extractive industry geology conference will be held in Cardiff on the 25-27th June 2008. The conference will have two main themes:
1 The security of minerals supply.
2 Technical issues in the UK extractive industry.
If you would like to make a presentation, please visit ***www.eigconference.org*** *for further information*

Marine Aggregates Levy Sustainability Fund (ALSF) update

Research journal published

The Marine Environment Protection Fund (MEPF) has published the findings of over £9 million of research related to marine aggregate dredging. The published journal, "Marine aggregate extraction – helping to determine good practice", was based on the proceedings of a two day conference held in Southampton, England in 2006. The ALSF, (managed by Defra), was set up in England and Wales to develop the science and information required to improve the way in which marine

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

A summary report accompanies the main research journal which dentifies areas for future research should the ALSF continue. Electronic versions of both documents can be downloaded at **www.alsf-mepf.org.uk/july2007.asp** Limited hard copies are available from the MEPF Secretariat.

How to assess the recovery of the seabed

One of the current MEPF projects, lead by the Centre for Environment Fisheries and Aquaculture Science (Cefas) involves a new research programme in partnership with the University of St Andrews in Scotland. This new programme builds on earlier work by Cefas and is designed to examine the utility of novel statistical techniques for assessing the biological recovery of the seabed following the cessation of marine aggregate extraction. Past work has relied on traditional approaches to assessing biological recovery. This has involved an examination of the degree to which the biological community returns to a state similar to that which existed prior to disturbance (ie a return of the same species and in similar numbers).

This new research will examine different methods for assessing the functional health of the seabed following the cessation of dredging. As a result, it should improve the quality of advice to environmental managers and help to determine the acceptability of changes to the seabed in different circumstances.

Conference planned for February 2008

The next Marine ALSF conference is being arranged for the end of February 2008 to disseminate the final outputs from the current projects. For advanced registration to the conference and/or offer display materials, please contact the MEPF Secretariat via: kate.francis@cefas.co.uk

Kate Francis
CEFAS
kate.francis@cefas.co.uk

The standard cost of dredging success

Dredging is a capital intensive industry, often involving only a few pieces of marine construction equipment on each project. Due to the inhospitable environment, where dredging frequently takes place, site investigation, and construction costs and risks can be high. As a consequence, dredging works tend to be subject to variation, re-

Figure 5 Close-up view of cutter head (Courtesy of Nick Bray)

measurement and occasionally disputes relating to valuation. The capital and related costs of equipment are crucial to the evaluation of these matters.

CIRIA's publication C655 Cost standards for dredging equipment 2005 is the most up-to-date guide for all stakeholders looking for transparency, and an insight into the capital and related costs of dredging equipment. Over 660 copies have now been sold worldwide, making it a must-have for anybody involved in the dredging industry. The publication describes the characteristics of the various common types of dredging equipment and examines the philosophy behind the internationally accepted costing conventions prevalent in the industry. On the basis of 40 years of data, it gives information allowing the non-direct costs relating to dredging equipment, the amortisation, maintenance and repair to be estimated. These can then be incorporated into a detailed estimate of a dredgers running cost.

CIRIA, in collaboration with the IADC, is in the process of updating the 2005 publication and this will be available (with relevant costs) in 2008.

If you would like to support or become involved with this project please email nick.bean@ciria.org