

Chairman's foreword and report on the 24th EMSAGG members' meeting

The 24th EMSAGG members' meeting was held in Rotterdam, the Netherlands, at the Maasvlakte 2 project's information centre, Futureland. I would like to express my thanks to Gerard Loman, PUMA and Cees Laban, Deltares for arranging and also hosting the day.

We had a full agenda for the day, discussing industry news, the bulletin and also forward planning EMSAGG as a network. The EMSAGG steering committee especially debated the opportunity to extend its membership. This bulletin includes a brief summary of EMSAGG, its activities and also information on how to become a member.

At the meeting, the steering committee also had the opportunity to find out more about the Maasvlakte 2 project as presentations were given by Gerard Loman and colleagues. The presentations were concluded with a tour of the site.

I hope you will find the articles included interesting. If you have any ideas and/or questions, please contact the EMSAGG secretariat on email: emsagg@ciria.org

Daniel Leggett
Chairman, EMSAGG

In this issue:

- Visit to Maasvlakte 2, Rotterdam, the Netherlands
- Faunal friendly dredging system
- Geo-Seas: a Pan-European infrastructure for management of marine and ocean geological and geophysical data
- EMSAGG membership opportunity
- European Marine Observation and Data Network (Emodnet)
- The International Council for the Exploration of the Sea: working group on marine extraction
- COST Action 638 update of fifth working group and management committee meetings, Paris, December 2009.

Visit to Maasvlakte 2, Rotterdam, the Netherlands

On 2 October 2009, the EMSAGG steering committee visited the exciting Maasvlakte 2 project. The Maasvlakte 2 project is a mega land reclamation project in the Netherlands that involves a port area expansion of about 2000 ha. During the first phase, an 11 km long sea defences will be constructed as well as c700 ha of the harbour premises.

Early in 2008, the design, construct and maintenance (DCM) contract of the first phase of Maasvlakte 2 (the seaward extension of the Port of Rotterdam) was awarded to PUMA – a joint venture of Boskalis and Van Oord.

The day at Maasvlakte 2 included three presentations offered by PUMA:

- 1 **Gerard Loman** gave an insight in the functional requirements and verified design of the project.
- 2 **Fedor Meulenkamp** outlined the geotechnical investigations and interpretation of the sand borrow area of Maasvlakte 2.
- 3 **Dirk Hamer** concluded the session by exploring the planning and execution of the works.



Figure 1 Gerard Loman (courtesy J Slikker)

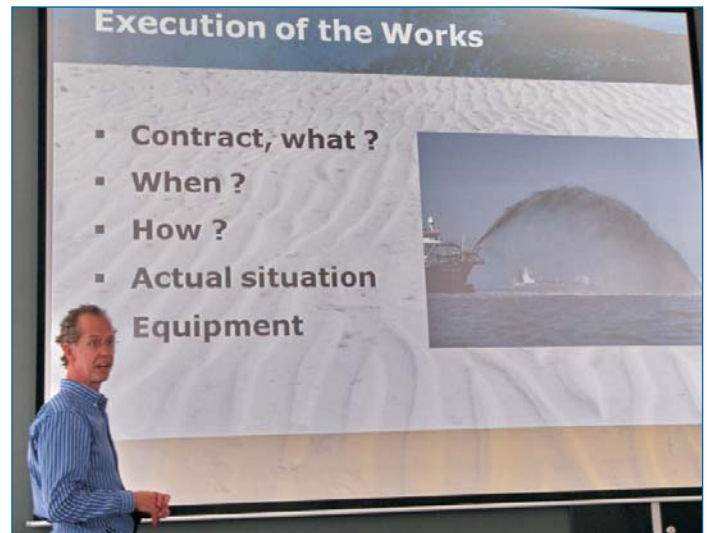


Figure 2 Dirk Hamer (courtesy J Slikker)



Figure 3 Maasvlakte 2 site visit (courtesy J Slikker)



Figure 4 Maasvlakte 2 site visit (courtesy J Slikker)

Following the presentations, PUMA hosted a site tour of Maasvlakte 2. The site visit started at the Futureland information centre. Futureland is situated next to the port construction and offers fantastic views of the work being undertaken from its panorama deck. Within its 1800 m² it also offers an insight into the many different aspects involved in the construction of a new port, including the number of interactive activities, such as a virtual trip over the Maasvlakte or a look into 2033 with the Future Flight Experience.

A faunal friendly dredging system

In the UK, the marine aggregates industry is closely regulated to minimise the impact of extraction upon the marine environment and, in particular, benthic ecology.

Measures that the industry has adopted include minimising the area dredged and suspension of dredging during periods of key sensitivity, such as the herring spawning season and inshore sole migration. While the direct and indirect ecological impacts of marine aggregate dredging on benthic macrofauna are well documented, less is known of the effects of trailer suction dredging upon benthic fish (see Figure 1). Dredging noise may well trigger an avoidance in some species but such a response is less likely in species with poor hearing including flatfish. The Centre for Environment, Fisheries and Aquaculture Science (Cefas) is currently undertaking research into the potential effects of dredging noise.



Figure 5 15 minute trawl sample from Eastern English Channel Region baseline survey

Evidence of entrainment of fish by hydraulic dredgers was presented in a comprehensive review of studies on entrainment by the US Army Corps of Engineers in 1998 in response to the frequency of issues affecting their operational dredging programme. Table 1 is an extract from this report citing evidence of entrainment rates. While the species listed are different from those found in UK waters, similar species of the same genera are found in marine aggregate licence areas in the English Channel. The propensity for flat fish species to entrainment is interesting, given their hearing insensitivity.

Applying a multiplier of 3000 to the rates quoted for Pleuronectes and Sole gives an indication of the numbers of individuals of these species that could be entrained in a typical marine aggregate dredger cargo.

Table 1 Mean fish entrainment rates by species (fish/cy) for hydraulic dredges (adapted from Larson and Moehl, 1990¹ and McGraw and Armstrong, 1990²)

Species	Hopper ¹ (fish/cy)	Hopper ² (fish/cy)	Pipeline ² (fish/cy)
Anchovy (Engraulidae)	0.008	0.001	-
Northern Anchovy (Engraulis mordax)	-	0.018	-
Herring (Clupeiformes)	0.008	-	-
Arrowtooth Flounder (Atheresthes stomias)	-	0.008-0.022	-
Starry flounder (Platichthys stellatus)	-	0.001-0.002	-
English Sole (Pleuronectes vetulus)	-	0.006-0.035	0.001-0.003
Sand Sole (Psettichthys melanostictus)	-	0.001-0.016	-
Slender Sole (Lyopsetta exilis)	-	0.001	-
Pacific Sanddab (Citharichthys sordidus)	-	0.004-0.076	-
Speckled Sanddab (Citharichthys sordidus)	-	0.003	-
Flatfish (Pleuronectiformes)	0.008	0.001-0.028	-

Note:

Source: Reine, K, and Clarke, D (1998) *Entrainment by hydraulic dredges – a review of potential impacts* Technical Note DOER-E1, US Army Engineer Research and Development Center, Vicksburg, MS

The Faunal Friendly Dredging System (FFDS) is a conceptual design to reduce the direct impact of the draghead upon the epifauna and fish by removing a proportion of the fauna before the main suction. Marine organisms will be captured in a forward funnelled chamber. A combination of hydrodynamic flow (as the dredger progresses through the water) augmented by low grade suction channels allow these organisms to pass via a bypass duct, returning them to the seabed largely unharmed and without compromise to the dredging process.

For further information on the FFDS, please contact Ray Drabble on email: RDrabble@abpmer.co.uk or tel: +44 (0)2 38 0711 861.

Geo-Seas: a pan-European infrastructure for management of marine and ocean geological and geophysical data

On 1 May 2009 the proposed initiative *Geo-Seas: a pan-European infrastructure for management of marine and ocean geological and geophysical data* as part of the EU FP 7 framework programme was granted. Geo-Seas will create a research infrastructure consisting of 26 marine geological and geophysical data centres of ocean institutes, geological surveys, research institutes and hydrographic offices, in 17 European coastal countries. As a result the project researchers will be able to locate and access pan-European, harmonised and federated marine geological and geophysical datasets and data products held by the data centres through a single common data portal.

Geo-Seas will adopt and adapt the existing SeaDataNet research infrastructure to include marine geological and geophysical data, data products and services. This will create a joint infrastructure covering both oceanographic and marine geoscientific data. Common data standards and exchange formats will be agreed and adopted across the data centres. Other organisations holding geological and geophysical data will be encouraged to adopt the Geo-Seas protocols, standards and tools.

Objectives

The objectives of Geo-Seas are:

- to expand the SeaDataNet infrastructure by including the network of national geological surveys and selected geological research institutes, and their marine geological and geophysical data holdings
- to publish and maintain a common catalogue and index of available data, data products and services, managed by national geological surveys and research institutes in Europe
- to harmonise quality standards, and exchange formats, and to allow access to and delivery of these data to the various user communities, including research, government and industry
- to provide federated, marine geological and geophysical datasets, ready for use in user communities, via the internet to their networks and grid infrastructures
- to develop and provide new dedicated geological and geophysical data products and services
- to formulate, determine, and assist arrangements for use of these data and data products for consolidation and long-term exploitation of the Geo-Seas infrastructure
- to promote the infrastructure and its services to users and to encourage adoption of the protocols, standards and tools by other marine geological and geophysical institutes and companies.

Benefits

Geo-Seas offer several benefits including:

- users will be able to search trans-national, harmonised ISO/INSPIRE compliant metadata and marine geological and geophysical datasets, supplied in common, standard formats and ready for use via the data portal
- new trans-national geological and geophysical data products and services will be developed to fulfill the diverse needs of end user communities
- the outputs of the previous EU-SeaSed and SEISCANEX EU-funded projects will be incorporated and upgraded in Geo-Seas

- the data infrastructure, standards and policies being developed by SeaDataNet will be strengthened and used more widely across Europe by both the oceanographic and marine geoscience communities
- greater co-operation between the data centres, coherency of data management services, trans-national outreach to user communities and the development of new trans-national data products.

Priorities

The first priority for Geo-Seas is to upgrade the present infrastructure by establishing interoperability and common standards between the data centres to provide harmonised access to metadata and data. The second priority is to expand the services of the Geo-Seas infrastructure by developing and adopting several standard data products and viewing services of interest to research communities, as well as exploring several more complex services with high potential.

To achieve these priorities the Geo-Seas plan of work will include:

- **six networking activities:** the activities will include sharing experience and knowledge on the infrastructure operation, system monitoring, and populating and updating common directories. They will involve organisation training and technology transfer activities for data managers and technicians, promotional activities among both data users and potential other data providers. The activities also include establishing standards for metadata, data transport, quality control and quality flags, adapting SeaDataNet standards, and bringing in experiences from the EU-SEASED developments and international projects, such as GeoSciML. It also includes adapting the SeaDataNet data policy and user licence to fit with the provision of geological and geophysical data and data services
- **one service activity:** this will involve providing integrated online trans-national access to meta databases and distributed databases, by applying common standards for data and communication between the data centres, and interfacing middleware tools developed in the joint research activity. Users will benefit from a pan-European one-stop shop for identifying relevant datasets and for requesting and gaining access to datasets by downloading and viewing, as well as in the form of integrated cross-border and cross-sector data products
- **four joint research activities** to adapt and to expand the tools and system components previously developed for SeaDataNet, to the geological and geophysical domains. These will make the data centres in Geo-Seas

interoperable and make the composite Geo-Seas infrastructure interoperable with SeaDataNet, other INSPIRE based infrastructures and the GRID.

Geo-Seas and EMSAGG

Considering the role EMSAGG will play in relation to the Geo-Seas project, active dialogue and consultation will be vital to the project. Consultation will be undertaken with potential user communities, such as marine researchers, environmental agencies, oceanographic and hydrographic organisations and marine industries (sand and gravel extraction, energy, ports, pipelines) to retrieve their user requirements and ideas for several standard data products and services. The consultation will be performed by CIRIA, the Management Unit of North Sea Mathematical Models (MUMM) and the Centre for Environment, Fisheries and Aquaculture Science (CEFAS).

It is envisioned, the consultation will be undertaken by several methods:

- questionnaire via email to a large group of representatives of user communities
- via the European-wide networks
- in-depth interviews by telephone to selected users
- by organising national panels, bringing different user types together, to propose different data products and viewing services, and to collate their feedback and further suggestions.

It is hoped, the synthesis of responses and opinions will result in a list of user requirements and potential ideas for standards, data products and viewing services. A distinction will be made in geological and geophysical products and viewing services.

Possible areas of interest will include:

- viewing services via the internet for seabed maps and acoustic imagery, for geological logs and for seismic reflection data and analyses
- establishing standard mapping of important fish habitats, seabed habitat mapping and resource mapping.

The feasibility, complexity and priority of each required product, standard and service will be analysed and many items will be targeted.

The Geo-Seas questionnaire

Your expert requirements and preferences are highly valuable for the development and customisation of data products and web viewing services. However participation of more general users is vital to gain insight in present day data and information needs. To completely capture your requirements, preferences and needs a questionnaire has been developed. If you wish to view and complete the questionnaire please visit the Geo-Seas project page on CIRIA's website: www.ciria.org/service/con177

Please note that the deadline for this questionnaire is 15 January 2010. For more information please visit the Geo-Seas website: <http://www.geo-seas.eu/> or contact:

Peter Davis
EU-Consult
Tel: +0031 6 538 12 687
Email: EU-CONSULT@xs4all.nl

EMSAGG membership opportunity

Established in 1998 by European professionals, EMSAGG is an independent body that draws together stakeholders from across industry, including dredging organisations, European government departments and agencies, regulators, economists, resource planners, environmental agencies and academic as well as research institutions. EMSAGG provides a forum for the exchange of ideas and learning across Europe.

Marine sand and gravel continues to make an important contribution to the development of European economies, with demand expanding for numerous end uses. Planning to meet future demand by ensuring long-term resources are available and responsibly managed is important for achieving sustainable development at a European level. To address the potential for increased demand of marine sand and gravel around Europe, techniques for the investigation, development and management of marine sand and gravel require continuous improvement.

EMSAGG:

- helps identify developments and information needs for the marine sand and gravel constituents, concerning all aspects of the industry
- enables exchange of information on, and experiences of, the research, licensing, execution and monitoring relating to the extraction and use of marine sand and gravel throughout Europe
- allows wider interest groups, such as clients, government, regulators, planners, economists and environmentalists to get involved by sharing information and discussing important issues – particularly at a European level. Improved communication and understanding the issues will be beneficial to all involved in marine sand and gravel

- organises information and knowledge sharing visits to European countries, to discuss developments and information needs concerning sand and gravel and to identify specific EMSAGG initiatives
- disseminates information to public and private marine sand and gravel stakeholders through bi-annual meetings, regular bulletins, the web and its popular conference.



Figure 6 EMSAGG Bulletin



Figure 7 EMSAGG conference 2009

What are EMSAGG's activities?

- meetings:** the group meets formally twice a year to discuss innovation and developments within the industry
- bi-annual bulletin:** includes articles highlighting work of interest to its contacts and the latest information from across the industry
- conference:** a popular information sharing conference every three years
- website:** (hosted by CIRIA) includes downloadable bulletins, conference reports and papers, details of members and of relevant CIRIA publications, projects and proposals and also useful links to industry stakeholders.

Why join EMSAGG?

There are many benefits of being an EMSAGG member, including:

- network and develop contacts throughout the marine aggregate and related industries, linking with suppliers, regulators, users and leading research organisations
- keep ahead and become part of a forum for the rapid exchange of information relevant to marine aggregates and improve your access to current research, best practice and case studies

- raise the profile of your organisation and its role in an international forum
- opportunities to guide and participate in future international research and cross-industry initiatives.

We would be interested in hearing from you, so please contact the EMSAGG secretariat on email: emsagg@ciria.org to discuss membership opportunities, including subscription rates.

The European Marine Observation and Data Network (EMODNET)

The EMODNET initiative was set up within the EU following an announcement in the EU's *Maritime Policy Blue Book*.

One of the main objectives of EMODNET is to improve marine knowledge and make high quality data more widely available.

A multidisciplinary expert group of 21 individual specialists was set up in March 2009 to guide and support the process. This group includes geologists, hydrographers, marine biologists, marine archaeologists, oceanographers and biochemists. There are representatives from research centres, government and the private sector, all appointed individually.

In the first years of the programme, there are three main initiatives:

- A study into the legal aspects of marine data (available at http://ec.europa.eu/maritimeaffairs/study_monitoring_en.html). A main conclusion is that there are no serious legal problems to access the data. The rules should have little effect on intellectual property rights and their ability to help data flows.
- A study of marine data infrastructure. This report will soon be available and follows a consultation and analysis of the situation in several European countries

The award of contracts to set up pilot projects in the fields of geology, hydrography, biology, chemistry and habitats across one or more of the European regional seas. These three-year projects were awarded this year and each has a consortium of partners preparing a pilot study based on providing free access products. The geological project is based on the North Sea, Baltic Sea and Atlantic Margin and the results will be a new geological map of the seabed geology that will be released via the One Geology website: www.onegeology.org

A roadmap of EMODNET's aims has also been produced.

The pilot projects are based on free data and are not of the highest quality or greatest resolution. However this is seen as a good start in the process of making data more widely available and will try and demonstrate the power of unified pan-European products all produced to a standard format. The future aim will be to expand the projects across all of the European seas and move from overview maps and models to more detailed products. With bathymetry data, some countries maintain a strict licensing system, some are legally bound to maintain detailed data, such as multibeam confidential, and others make the data freely available. There are similar issues with geological and meteorological data. This reflects the financial models applied in different sectors and different countries. Consultation suggests that there is strong support for free access to data and products, and this seems to be the favoured model in the EU. However there are several problems with this model in terms of funding high quality products and maintaining their status as up-to-date if there is no income stream other than ever decreasing government funding. The debate will continue.

The full list of experts is available at:

http://ec.europa.eu/maritimeaffairs/eu-marine-observation-data-network-members_en.html including three geologists: Jean-François Bourillet (IFREMER), Robert Gatliff (BGS, EMSAGG) and Henry Vallius (Geological Survey of Finland, chair of the EuroGeoSurveys Specialist Group).

The International Council for the Exploration of the Sea: working group on marine extraction

The Working Group on the Effects of Extraction of Marine Sediments on the Marine Ecosystem (WGEXT) of the International Council for the Exploration of the Sea (ICES) has published guidelines for the management of marine sediment extraction. The Oslo-Paris Convention (OSPAR) agreed that the contracting parties should take these guidelines into account within their procedures for authorising the extraction of marine sediments. The guidelines include a checklist for the issues that should be part of environmental impact assessment studies.

Most coastal countries in North Western Europe and the Baltic, and also the USA and Canada are involved in WGEXT.

Main terms of reference of WGEXT are:

- review data on marine extraction activities, developments in marine resource and habitat mapping, information on changes to the legal regime and associated

environmental assessment requirements, governing marine aggregate extraction

- review and evaluate the use and application of the ICES WGEXT 2003 guidelines across member countries
- consider the scope and implementation of monitoring programmes instigated in relation to marine sediment extraction activities
- review scientific programmes and research projects relevant to the assessment of environmental effects of the extraction of marine sediments.

To fulfil these terms of reference the members of WGEXT are not only scientists but also those that are involved in the policy and licensing of marine extraction, and from the industry.

The annual meeting is organised by one of the member countries, giving the possibility to visit sites where marine sand or gravel is used. During the annual meeting there is an exchange of results on the monitoring of the morphological and ecological effects of extraction. The information of research in other countries can help to formulate the contents of environmental impact assessments and the requirements for extraction in licenses.

The Annual Reports of WGEXT are available on www.ices.dk/workinggroups (search WGEXT). A co-operative report is made every five years, eg for use within OSPAR. The last co-operative report (CRR 297) was published in August 2009. It is available on www.ices.dk (under *Publications*).

COST Action 638 update

The Marine Aggregate Network (Maggnet): *investigating and managing the impacts of marine sand and gravel extraction and use* held its fifth working group meeting in Paris on 3–4 December 2009. The meeting was hosted by Jean-Luc Hall, Bureau du Contrôle des Activités Maritimes and was held at the Arche de la Défense.

Plenary discussions included working group chairs highlighting and summarising work plans for the remaining period of the COST 638 Maggnet Action (end October 2010). The plenary meeting also included several papers that will be available from the Maggnet website shortly.

The next Maggnet meeting will be held in May 2010. For more information and to join Maggnet, please visit Maggnet's website www.maggnet.info