

Marine suppliers look to future

The advent of a marine planning regime presents a mixture of challenges and opportunities for the marine aggregates industry but the way ahead looks bright for the industry, **Mark Russell** concludes

The marine aggregate sector contributes around six per cent of the UK's primary aggregate demand. Across a national and regional canvas, however, the contribution of the sector becomes more significant.

Marine sources meet around 20 per cent of sand and gravel demand in England and Wales, around a third of the primary aggregate used in London and the South East and 90 per cent of the natural sand consumed in south Wales. Around 80 per cent of all marine aggregate sales in England and Wales are used for concrete, for which marine supply contributes around 18 per cent of total sales.

A dozen companies operate 26 vessels on 70 production licence areas located off the coast of England and Wales. Licence areas are grouped into seven broad regions, reflecting the discrete geological distribution of the relict fluvio-glacial deposits that are targeted by the industry. At the end of 2009, 1,286km² of seabed was licensed for marine aggregate extraction in the waters around England and Wales, an area equivalent to three times the Isle of Wight. Around 124km² is dredged in a typical year.

These areas represent around 0.15 per cent and 0.016 per cent of the total UK continental

shelf area respectively. A further 1,931 km² of seabed is currently under application or covered by prospecting licences. In this respect, the marine aggregate sector is responsible for managing a significant portion of the UK seabed through the exclusive licences and options operators receive from the Crown Estate.

Substantial offshore deposits available

In order to meet these various needs, the marine aggregate sector is dependant upon identifying and licensing economically viable sand and gravel deposits to secure sufficient reserves to maintain long-term supply to existing and well established markets. Just as on land, the location of such deposits is extremely localised around the waters of England and Wales. Sources are restricted to their geological distribution and their geographical position in relation to the market's location.

However, unlike the majority of equivalent resources on land, the potential sand and gravel resource that is available offshore is considerable. Estimates suggest that resources present in existing licence and

application areas are sufficient to support at least 50 years' production, subject to the necessary consents being issued, and considerably more resources are present on the UK continental shelf.

The resource potential of marine aggregate deposits is illustrated by the Maasvlakte 2 project in the Netherlands, which is extending Rotterdam harbour into the North Sea. New licence areas have been consented on the Dutch continental shelf specifically to provide the fill material. Over the next five years, a total of 250 million cubic metres of marine sand, weighing 375 million tonnes, will be dredged to reclaim the new land area. The 64,000km² Dutch continental shelf is less than one-tenth the size of the UK shelf, which gives a feel for the potential scale of the marine aggregate resource available to the UK.

The challenge for the marine aggregates industry is to maintain resources that are already licensed, to secure permissions for new resources and to ensure that areas of potential resource are safeguarded from other forms of development. Of the current licence areas, more than 30 have to be renewed by the end of 2013. Each renewal will require a site-

Marine aggregates: highlighting current production trends for the UK industry

In 2009, the UK industry produced 20,190,000Mt of marine sand and gravel, almost half of which was landed in England and Wales for construction aggregate. Of this total, more than 5.8Mt was landed at wharves along the Thames Estuary, equivalent to three cargoes of 5,000 tonnes being delivered every day of the year.

Reflecting the reduced demand for construction aggregates, production by British Marine Aggregate Producers Association members fell by almost 25 per cent during 2009. By the end of that year, the capacity of the dredging fleet had been reduced by 11 per cent as five vessels were either laid up or put on part-time working. While the marine sector's supply into markets along the Thames remained relatively stable during 2009, more local markets such as those along the south coast, the Bristol Channel and the Irish Sea have seen a significant reduction in production demand.

Against this background, overall production from marine aggregate licences only dropped

by six per cent during 2009. This was largely the result of one-off contract fill projects to support major infrastructure projects, such as the port extension at Felixstowe and the new airport development at Ronaldsway on the Isle of Man.

With government support for the construction of nine more offshore wind farm zones and offshore wind construction moving into deeper water, the use of gravity base foundations (GBFs) is likely to grow. This type of technology has already been employed at the Thornton Bank wind farm 30km off the Belgian coast, where 60 turbines have been installed. With each GBF requiring 1,000m³ of concrete and a further 2,000m³ of sand for ballast fill once installed, demand for marine aggregate materials could be significant.

Some 30 per cent of total production from UK waters – 5.7Mt in 2009 – is exported to France, the Netherlands and Belgium for use as construction aggregate. This export market exists because the availability of locally-won

terrestrial aggregates is becoming increasingly constrained in these countries.

The Netherlands and Belgium are heavily reliant upon imports of construction aggregate from adjacent nations, especially Germany and France, along with crushed rock by sea from Scandinavia. While both countries have significant volumes of fine-medium sand which are widely exploited for beach nourishment, land reclamation and construction, neither has any significant resource of the coarse sand or gravel required for concrete production on their continental shelves.

This ability to supply a diverse range of markets represents one of the marine sector's key strengths in responding to challenging economic conditions – whether supplying construction aggregate in the UK or overseas, providing beach nourishment material for coastal defences or supporting major capital infrastructure projects such as ports or energy installations.



Sand Falcon: dredger unloading its cargo of marine aggregates at Angerstien Wharf on the Thames

specific environmental impact assessment (EIA). Licence renewal is also being supported through voluntary industry-led regional environmental assessment studies to consider cumulative issues.

This approach has been adapted from groundbreaking work undertaken in support of new dredging permissions for the Eastern English Channel. It has seen operators working together through regional associations, in conjunction with the Crown Estate, to complete four such studies. The overall objective is to make the assessment process more consistent, robust and effective for operators, regulators and consultees alike, with site-specific EIAs drawing on the regional findings.

This format fits closely with government's move towards an ecosystem approach to marine management at a regional scale. This is now being used as a model to assist the assessment of the current offshore wind round. Building on this, the industry is also working in partnership with the Crown Estate to develop a regional model for licence management and monitoring. Again, this looks to deliver a more consistent, robust and effective approach to consent monitoring and management.

Historically, the wide range of activities that take place in the marine environment have been considered in isolation from one another, often supported by sectoral policies and regulations that take little or no account of the wide range of other activities or uses that exist. The result has been growing levels of conflict and competition between activities, as the UK marine area and the various resources it contains become subject to increasing levels of pressure.

This situation has arisen in the absence of a

more strategic integrated planning and policy framework, similar to that which exists on land. It has been further compounded by the fact that unlike on land, the marine environment is generally subject to multiple use. Shipping, fishing, aggregate extraction and recreational activities all potentially take place over the same geographic area.

Principle changes brought in by new Act

The Marine and Coastal Access Act, which received Royal Assent in November 2009, fundamentally changes marine management, by introducing a more integrated, holistic approach to planning, using and protecting UK seas, an approach which is firmly grounded on the principles of sustainable development. The Act, which took some five years to develop, now provides a high level legislative framework for the delivery of sustainable marine use and integrated planning and management.

As far as marine aggregates are concerned, the act will result in five principal changes:

- The establishment of a new Marine Management Organisation (MMO) to deliver the sustainable use of the marine environment, including planning and regulatory responsibilities.
- The development of a UK marine policy statement to define the vision and policy priorities for sustainable marine use.
- A new system of marine planning.
- A new integrated marine licensing regime.
- A new network of nationally important marine conservation zones.

The development of a marine policy statement (MPS) is well advanced, and the final version should be published by April. This document will provide the high-level policy context for the development of

national marine plans and will also guide decisions made under the new marine licensing regime. In this respect, the content of the MPS is absolutely central to securing the marine aggregate sector's "licence to operate" for the medium to long term.

Marine aggregates vital for development

The draft MPS recognises that "the UK has some of the best marine aggregate resources in the world" and that "marine sand and gravel makes a crucial contribution to meeting the nation's demands for construction aggregate materials". The policy document also highlights the role marine aggregate supplies play in underpinning wider government policy priorities, such as climate change adaptation through beach nourishment, energy through nuclear new build and renewable energy and port development.

The draft requires marine planning authorities to, as a minimum, make provision for marine aggregate supplies to contribute to the overarching government objective of "securing an adequate and continuing supply to the UK for various uses". They must also take into account "the potential long-term requirement for marine-won sand and gravel, taking into account trends in construction activity, likely climate change adaptation strategies and major project development". For the first time, the MPS acknowledges the need to safeguard reserves for future extraction.

A new process of integrated marine planning instigated at a national scale will translate these policy objectives and visions into delivery – a first for UK waters. Each of the devolved administrations is responsible for delivering marine planning in its own jurisdiction. In English waters, where the majority of UK marine aggregate interests lie, responsibility for delivery rests with the MMO.

Ten marine plan areas have been defined for English waters, covering both near-shore and offshore areas. Marine aggregate interests can be found within seven of these. Consequently, the development of the marine planning process will be of central importance to the industry, both in terms of maintaining current licensed interests and looking to the future. The planning process, which will commence in April, will see two plan areas developed in parallel. These are expected to be adjacent

nearshore and offshore areas. Similar processes will take place in Welsh, Scottish and Northern Irish waters.

Each regional plan will take two to three years to be completed. At the end of October, the first two English marine plan areas were announced by the MMO. Collectively they cover an area of the southern North Sea extending from Flamborough Head in Yorkshire down to Felixstowe in Suffolk. They incorporate a wide range of activities, including significant offshore renewable energy developments, carbon capture and storage and European marine protected sites as well as the Humber and east coast dredging regions, which together account for around 50 per cent of the sector's current production.



BRITISH MARINE AGGREGATE PRODUCERS ASSOCIATION


Dredging: UK has 70 production licence areas

This planning process is very much in its infancy, and there are considerable advantages for the industry in being directly involved in the first plans to be developed. The advent of the Marine and Coastal Access Act has certainly resulted in a change in the way that the marine environment is planned, used and protected. Each of the components introduced


by the act represents a significant step change in the way that the marine aggregate sector will be regulated and managed.

However, the challenges facing the industry in responding to the policy and management changes over the next few years are considerable. These challenges have to be balanced against opportunity for developing a more robust and certain future for the industry in the long term. Given the potential of UK marine aggregate resources and range of strategically important policy areas they can support, the long-term outlook for the marine aggregate industry looks bright. ■

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