

Strength from the depths

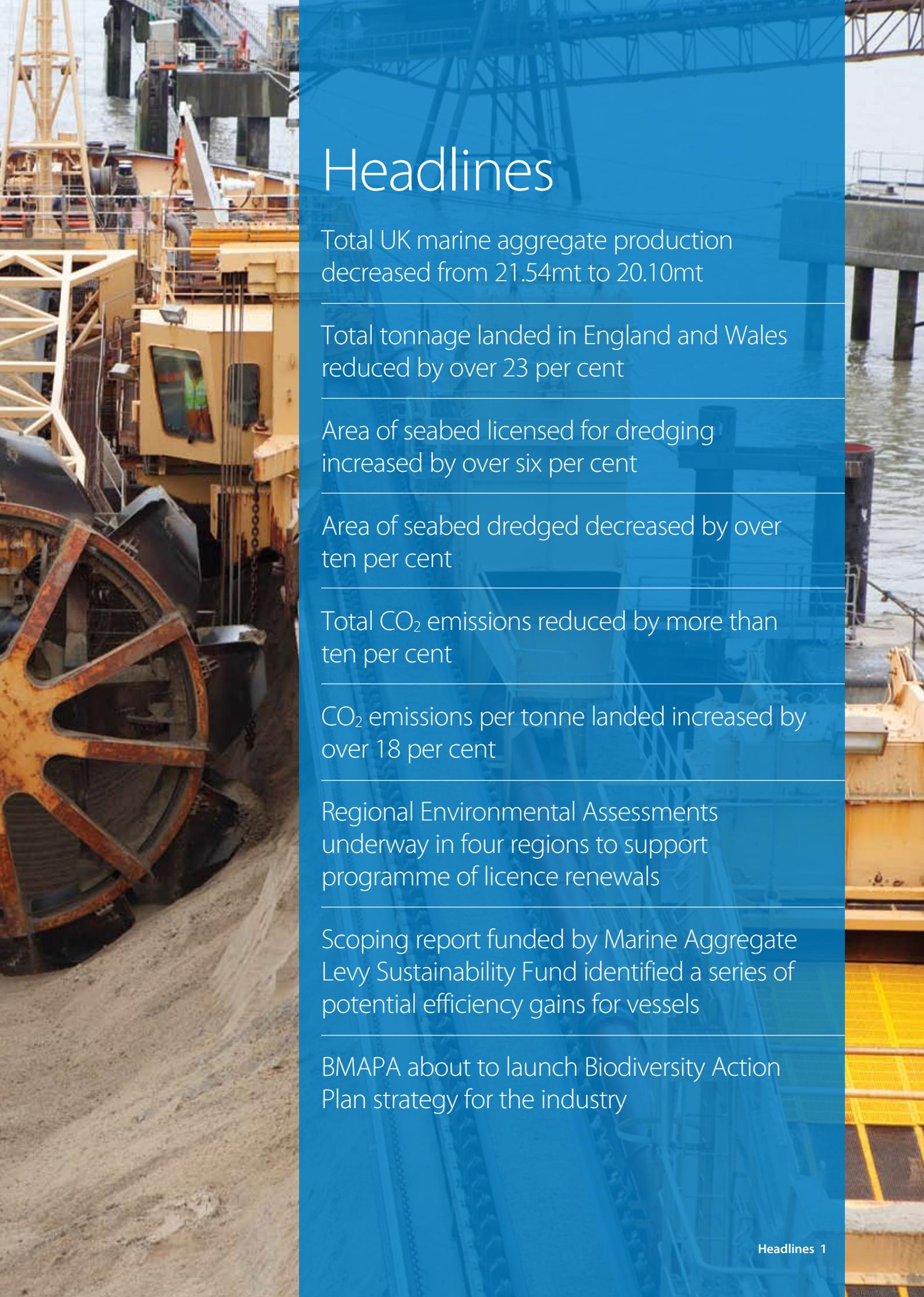
Fourth sustainable development report for the
British marine aggregate industry

December 2010

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Headlines

Total UK marine aggregate production decreased from 21.54mt to 20.10mt

Total tonnage landed in England and Wales reduced by over 23 per cent

Area of seabed licensed for dredging increased by over six per cent

Area of seabed dredged decreased by over ten per cent

Total CO₂ emissions reduced by more than ten per cent

CO₂ emissions per tonne landed increased by over 18 per cent

Regional Environmental Assessments underway in four regions to support programme of licence renewals

Scoping report funded by Marine Aggregate Levy Sustainability Fund identified a series of potential efficiency gains for vessels

BMAPA about to launch Biodiversity Action Plan strategy for the industry

Key facts and figures

Key areas

Area of UK seabed
Area of seabed licensed for dredging
Area available to be worked
Area dredged

2009	% change	2008	2007	2006
867,000km ²	N/A	867,000km ²	867,000km ²	867,000km ²
1,286km ²	+0.63%	1,278km ²	1,343.83km ²	1,316.33km ²
536km ²	-6%	570.31km ²	556.03km ²	576.10km ²
123.63km ²	-10.3%	137.9km ²	134.67km ²	140.6km ²

Market summary

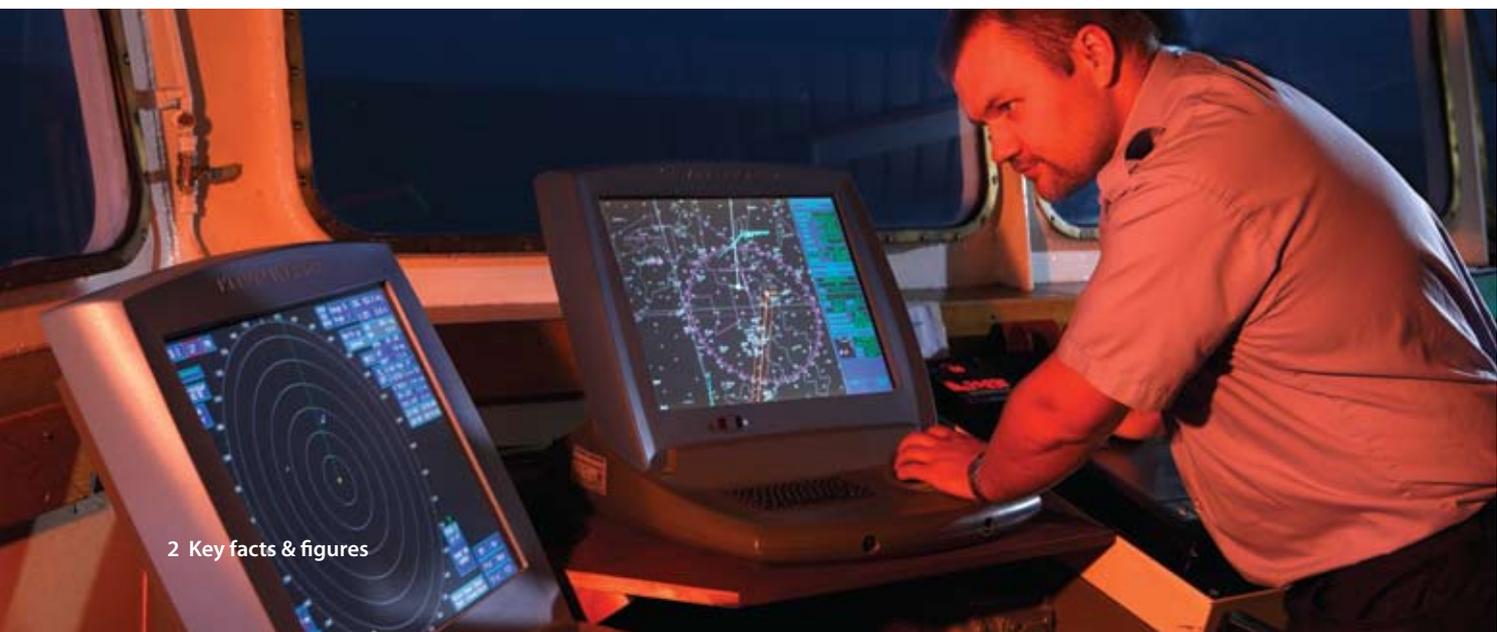
Total GB aggregates market
Land-based aggregates
Recycled and secondary aggregates
Total marine aggregates production
Marine landings to GB aggregates market
Marine landings to European aggregates market
Beach replenishment contract fill

2009	% change	2008	2007	2006
198mt	-21.1%	251mt	280mt	277mt
141mt	-19.4%	175mt	195mt	193mt
57mt	-10.9%	64mt	70mt	70mt
20.10mt	-5.4%	21.24mt	23.20mt	24.29mt
10.03mt	-23.6%	13.12mt	14.45mt	13.43mt
5.66mt	-8.9%	6.21mt	6.65mt	6.71mt
4.50mt	+103.6%	2.21mt	2.10mt	4.15mt

Market contribution to GB sand and gravel market

Total GB market
Total England & Wales market
Marine landings to England & Wales
Marine landings to South East England
Marine landings to London & Thames Corridor
Marine landings to Wales

2009	% change	2008	2007	2006
55mt	-23.6%	72mt	79mt	80mt
49mt	-23.4%	64mt	73mt	73.6mt
10.03mt	-23.6%	13.12mt	14.45mt	13.43mt
7.97mt	-17.1%	9.61mt	10.56mt	9.60mt
5.85mt	-18.5%	7.18mt	7.36mt	6.71mt
0.65mt	-27.8%	0.9mt	1.12mt	0.99mt





Foreword

The economic downturn has had a significant impact on the construction sector and, with it, the marine aggregate industry. BMAPA member production fell by nearly 25 per cent during 2009 and the production capacity of the dredging fleet had to be reduced by 11 per cent with five vessels laid up or put onto part-time working. While supply into some markets along the Thames remained relatively stable, local markets such as those along the South Coast, in the Bristol Channel and in the Irish Sea have seen significant reductions in demand.

Interestingly, overall production from marine aggregate licences only reduced by six per cent compared with the previous year. This was largely as a result of one-off demand for contract fill to support major infrastructure projects such as the port extension at Felixstowe and the new airport development at Ronaldsway in the Isle of Man. This capability to supply a diverse range of markets represents one of the sector's key strengths in responding to challenging market conditions.

INTERESTINGLY, THE OVERALL PRODUCTION FROM MARINE AGGREGATE LICENCES ONLY REDUCED BY 6% COMPARED TO THE PREVIOUS YEAR.

The draft Marine Policy Statement, issued earlier this year, recognised the diverse range of markets that can be supplied by the marine aggregate industry, which often support the successful delivery of wider national strategic policies relating to transport infrastructure, energy or climate change adaptations. This should ensure that the new marine planning regime takes account of the strategic need and importance of marine aggregate supplies into the future.

The industry continues to work closely with national nature conservation agencies and with regional Marine Conservation Zone projects in the development of a network of Marine Protected Areas. High-resolution data generated from projects funded by the Marine Aggregate Levy Sustainability Fund, alongside data provided by individual operators, continues to play a crucial part in helping ensure that site and feature boundaries are based on the best available scientific evidence, and that important habitats and species are protected.

During the summer, the UK Government published Charting Progress 2 which assesses the state of UK seas and follows up an original assessment published in 2005. The new review was prepared by the UK Marine Monitoring and Assessment Strategy (UKMMAS) community, of which BMAPA is a member

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through the Productive Seas Evidence Group. It assesses progress towards achieving the vision of clean, healthy, safe, productive and biologically diverse oceans and seas.

Significantly, this assessment includes a detailed description of the range of socio-economic uses of the waters around the UK and the pressures that result. The importance of planning, assessing and managing activities at a regional, ecosystem scale is something the marine aggregate sector has been working towards for some time. Four regional environmental assessments are currently underway in support of a programme of dredging licence renewals required by the end of 2013. With regional-scale management and monitoring plans being developed in parallel by the industry in conjunction with The Crown Estate, this marks a shift towards managing marine aggregate activity at a regional scale which is in line with both national and international policy objectives.

John Miller, Chairman, British Marine Aggregate Producers Association

Sustainable production

Core values

Sustainable products: we understand our role in sustainable construction and actively promote the most efficient use of our products

Resource conservation: we recognise that we must make the most efficient use of all resources

OBJECTIVE 1

Maintain and improve profitability in order to provide for continuing investment and employment

Key performance indicator: Annual marine production

Total marine aggregate production from UK licence areas during 2009

	2009	% change	2008	2007	2006
Total (Crown Estate figures)	20.10mt	-6.6%	21.54mt	23.20mt	24.29mt
BMAPA reported production ¹	14.94mt	-24.4%	19.75mt	20.64mt	20.29mt

Key performance indicator: National/regional contribution to supply

	2009	% change	2008	2007	2006
Landings to England & Wales	10.03mt	-23.6%	13.12mt	14.45mt	13.43mt
Landings to London & Thames	7.97mt	+18.5%	7.18mt	7.35mt	6.71mt
Landings to Wales	0.65mt	-27.8%	0.90mt	1.12mt	0.99mt
Beach replenishment /fill	4.49mt	+103.6%	2.21mt	2.10mt	4.15mt
Exports	5.66mt	-8.9%	6.21mt	6.65mt	6.71mt

Total marine aggregate production was able to remain relatively stable on account of two one-off major fill contracts which saw 3.665 million tonnes supplied from BMAPA members licence areas by third party vessels (Felixstowe port development and the extension of Ronaldsway airport on the Isle of Man).

The significant drop in BMAPA reported production reflected the downturn in construction activity. This reduction meant that the direct BMAPA contribution to overall marine aggregate production fell to 74% of total production in 2009 (91.67% in 2008).

OBJECTIVE 2

Maintain and increase investment in dredgers and dredging technology in order to improve efficiency and environmental performance

Key performance indicator: Profile of age/capability of dredging fleet

	2009	2008	2007	2006
Average age of dredging fleet	20.39 years	20 years	19.68 years	18.68 years

23 vessels operated by members at the end of 2009 (Sand Serin was sold in 2009).

With the reduced demand for construction aggregate throughout 2009, companies took the decision to reduce the production capacity of the dredger fleet during the year by either laying up vessels or only working vessels part time. Five vessels were affected in this way (three stopped and two reduced to part time working) with the end result being that by the end of 2009 the fleet capacity was reduced by 11,300 tonnes – a reduction of 10.9%.

Key performance indicator: investment in vessels/technology over previous five years¹

2009 cap-ex investment in vessels (not including maintenance):

2009	% change	2008	2007	2006	2005
£4.20m	-57.5%	£9.90m	£3.67m	£2.49m	£4.97m

Rolling investment over previous five years

2009	% change	2008	2007	2006	2005
£25.24m	-14.3%	£29.44m	£24.67m	£54.35m	-

OBJECTIVE 3**Key performance indicator: Area dredged and hours dredged**

Make the most efficient use of available licensed resources

	2009	% change	2008	2007	2006
Area of seabed licensed for dredging	1,286km ²	+6.3%	1,278km ²	1,343.83km ²	1,316.33km ²
Area available to be worked	536km ²	-6%	570.31km ²	556.03km ²	576.10km ²
Area dredged	123.63km ²	-10.3%	137.90km ²	134.67km ²	140.6km ²
Hours dredged ¹	17,778 hrs	-22.7%	22,985 hrs	26,340 hrs	28,686 hrs ¹

OBJECTIVE 4**Key performance indicator: Tonnes landed per hour dredged¹**

Minimise the screening activity in the production process

	2009	% change	2008	2007	2006
Marine aggregate production	14.93mt	-24.4%	19.75mt	20.64mt	20.29mt
Hours dredged	17,778 hrs	-22.7%	22,985 hrs	26,340 hrs	28,686 hrs
Tonnes landed/hour dredged	840.14tph	-2.2%	859.12tph	783.57tph	707.41tph

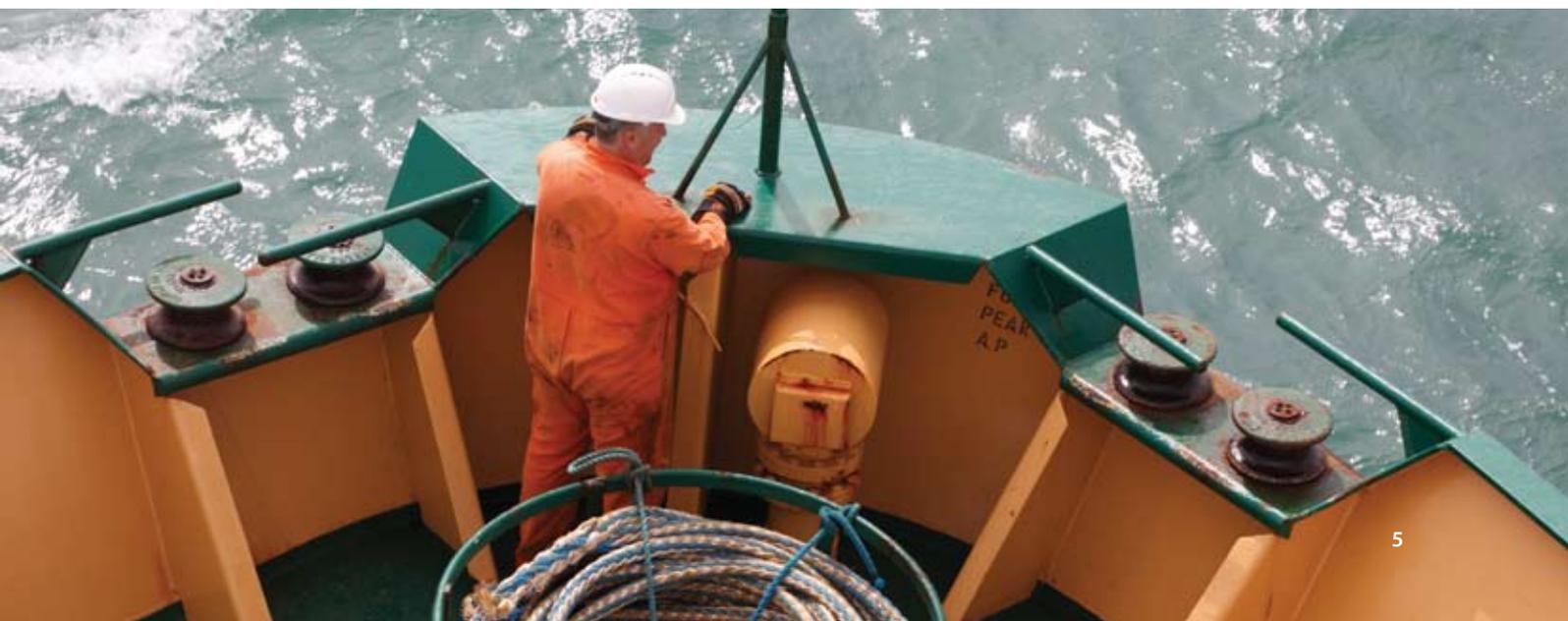
Reduction in hours dredged (-22.7%) would appear to closely correlate with the reduction in overall production (-24.4%) which suggests that the overall level of screening activity has remained constant. As a consequence, the tonnes landed per hour dredged has remained comparatively stable, decreasing by only 2.2%.

OBJECTIVE 5

Develop and promote best practice for resource management

Marine Aggregate Regional Environmental Assessments (MAREA's) are now underway in four regions (South coast, Thames, East coast and Humber) in support of a programme to renew a number of existing production licence areas by the end of 2013. The MAREA's, which have been instigated and led by the industry with support from The Crown Estate, will provide regional scale context to marine aggregate operations, reviewing potential cumulative and in-combination impacts and identifying areas of potential sensitivity. The outputs of the MAREA process will help to inform the site specific environmental impact process that will be required to inform decisions over licence renewals. In parallel with the regional assessments, industry is working with The Crown Estate to develop a blueprint for regional management and monitoring in conjunction with regulators and their advisors.

¹ Based on reported data from 22 out of 23 vessels operated by BMAPA members in UK waters.



Climate change and energy

Core values

Carbon management: we support the Government policy of reducing emissions of greenhouse gases

Transport: we are committed to reducing the impact of the transportation of aggregates and quarry products

OBJECTIVE 1

Reduce the impact of atmospheric emissions released through the production and transport processes

Key performance indicator: Fuel oil consumed per tonne landed¹

Total fuel oil consumed during 2009, broken down by vessel capacity:

	2009	% change	2008	2007	2006
Total marine gas oil	37.87t	-10.27%	42,206t	49,262.3t	49,593.6t
Marine aggregate production	14.94mt	-24.4%	19.75mt	20.64mt	20.29mt
Marine gas oil per tonne landed	2.54kg/t	+18.7%	2.14kg/t	2.39kg/t	2.44kg/t

Key performance indicator: CO₂ emissions¹

	2009	% change	2008	2007	2006
Total CO ₂ emissions (tonnes)	120.81t	-10.27%	134,64t	157,15t	158,20t
Marine aggregate production	14.94mt	-24.4%	19.75mt	20.64mt	20.29mt
CO ₂ emissions per tonne landed	8.09kg/t	+18.6%	6.82kg/t	7.61kg/t	7.80kg/t

(Calculation from MGO tonnes to CO₂ tonnes made using conversion factor from DEFRA (2008) Guidelines to DEFRA's Greenhouse Gas Conversion Factors for Company Reporting. Department for Environment, Food and Rural Affairs, London. Accessed from: <http://www.defra.gov.uk/environment/business/reporting/conversion-factors.htm>)

Reduction in fuel oil and associated CO₂ emissions reflects a combination of reduced production (-24.4% 2008) and also a drop off in the production capacity of the dredging fleet throughout the year (-10.8% by 2009 year end). The production capacity of the nearshore fleet (<3000t capacity) was particularly constrained, which meant that larger capacity vessels were generally tasked with replacing their production. The combination of vessels moving between regions to fill production gaps and the fact that larger vessels generally result in a higher fuel cost per unit delivered meant that the fuel/carbon cost per tonne landed increased.

OBJECTIVE 2

Maximise the efficient use of the dredging fleet

Key performance indicator: Tonnes landed per kilometre travelled¹

	2009	% change	2008	2007	2006
Total kilometres steamed	1.08m km	-25.9%	1.46m km	1.77m km	1.47m km
Marine aggregate production	14.94mt	-24.4%	19.75mt	20.64mt	20.29mt
Total landed per km travelled	13.82t/km	+2%	13.54t/km	11.63t/km	13.76t/km

The reduction in steaming distance broadly correlates with the reduction in overall production. The relatively stable ratio between tonnes landed and kilometres steamed reflects the fact that the contribution to overall production by larger vessels increased during 2009.

¹ Based on reported data from 22 out of 23 vessels operated by BMAPA members in UK waters.



Reducing the impact of marine aggregate operations

With fuel use and associated carbon emissions being associated with every aspect of marine aggregate dredgers operations, maximising the efficiency of the fleet of vessels that undertake marine aggregate extraction is critical. This fact is recognised by the Marine Aggregate Levy Sustainability Fund, who commissioned a scoping report to examine the issues associated with the operational efficiency of marine aggregate dredgers. This project, undertaken by Dutch contractors MARIN, identified a number of distinct areas where potential savings could be made, including real time performance monitors on the bridge of vessels, hull and propeller cleaning, ballasting strategies to ensure the most efficient hull form and the addition of energy saving devices to improve the efficiency of hulls and propellers.

A follow-up project is currently underway to explore some of these options in more detail in conjunction with BMAPA members. This will see real time performance monitoring equipment installed on three marine aggregate dredgers, alongside the consideration of other areas such as hull and propeller cleaning, ballasting strategies, and computer modelling the potential of energy saving devices on existing vessels. The final report should identify some key findings relating to improving the efficiency of marine aggregate operations which can then be taken up by individual operators.

Natural resources and environmental

Core values

Environmental protection: we recognise the potential of our operations to impact upon the marine environment and are committed to minimising and mitigating such effects

Biodiversity: we recognise the importance of marine biodiversity and the contribution we can make to better understanding and protection of marine species and habitats

Heritage: we recognise the historic significance of the seabed around the UK and believe that we can make a positive contribution to the understanding and protection of the marine historic environment

Marine stewardship: we have a responsibility to manage our operations in order to minimise the significance of our operations to stakeholders and the environment

OBJECTIVE 1

Minimise the spatial footprint of dredging operations through responsible and effective management

Key performance indicators: Area of seabed licensed for dredging

	2009	% change	2008	2007	2006
Area of seabed licensed for dredging	1,286km ²	+6.3%	1,278km ²	1,344km ²	1,316km ²
Extent of active dredge area	536km ²	-6%	570.31km ²	556km ²	576km ²
Area of seabed actually dredged	123.63km ²	-10.3%	137.9km ²	134.7km ²	140.6km ²
Area of seabed where 90% of dredging occurs	43.45km ²	-9.9%	48.22km ²	49.95km ²	49.19km ²
Area of seabed dredged for more than 1.25 hours	6.83km ²	-26.4%	9.28km ²	10.16km ²	8.66km ²

OBJECTIVE 2

Maintain and develop the industry contribution towards the understanding of marine sand and gravel habitats

Biodiversity Action Plan Strategy

Recognising the important role that marine aggregate operators can play in developing the understanding of broadscale sand and gravel habitats and their associated features, BMAPA is shortly to publish a Biodiversity Action Plan strategy which has been developed with input from Natural England and the Countryside Council for Wales.

The approach being taken is similar to that adopted for the monitoring of heritage issues, in that a single strategy and reporting process developed for the sector as a whole represents a more coherent, consistent and robust approach for operators, regulators and advisors.

The strategy will cover marine aggregate operations at a national scale, and it is intended that the Biodiversity Action Plans themselves and the associated future reporting will be developed at a regional scale – building on the Regional Environmental Assessment process, and linking into the regional management and monitoring blueprints which are currently evolving.

Marine Protected Area Network

BMAPA and its member companies continue to play a full and constructive role in the development of a network of Marine Protected Areas in UK seas.

As the nearshore proposals for Special Areas of Conservation to protect sand bank and biogenic reef features have developed, BMAPA has worked closely with Natural England to help ensure that site boundaries and the definition of the features within them have been based on the best available evidence. This has included geological understanding, the provision of licence specific resource monitoring data and ongoing research and monitoring data from other sites, including the ongoing research into Sabellaria spinulosa, being funded by marine aggregate operators in conjunction with The Crown Estate.



BMAPA is actively represented on all four National Marine Conservation Zone projects that are currently underway – Net Gain (in the North Sea), Balanced Seas (in the English Channel), Finding Sanctuary (in the South West) and the Irish Sea Marine Conservation Zone Project, as well as contributing to the development of the various national guidance documents generated by the Statutory Nature Conservation Agencies that direct them. As well as contributing to the regional processes for MCZ site selection, the marine aggregate industry has also been feeding evidence and data into the projects to ensure that site boundaries and the features within them are able to be based on the best available evidence.

National Physical Laboratory

The marine aggregate sector continues to play an integral part in supporting research commissioned by the Marine Aggregate Levy Sustainability Fund (MALSF) programme. The MALSF, supported by a multidisciplinary steering group comprising Government policy makers, regulators, advisors, The Crown Estate and BMAPA, is responsible for overseeing a research programme worth £4m, with the objective to reduce the environmental impact of marine aggregate extraction. As well as improving the evidence base to improve the way that the sector is planned, assessed, managed and monitored, a key objective of the programme is to address gaps in knowledge and understanding. One such gap concerns the scale of acoustic impact that results from marine aggregate operations, and BMAPA members have supported a project undertaken by the National Physical Laboratory, supported by Southampton Oceanography Centre and Loughborough University to acquire source term data for 7 vessels in three regions around England. This data will allow the significance of the noise resulting from marine aggregate operations to be placed into context with other pressures, and also feed directly into the evidence base to inform the appropriate descriptor (introduction of energy including noise) for Good Environmental Status under the European Marine Strategy Framework Directive.

Beach Nourishment Research

BMAPA is co-funding a project, being led by the Countryside Council for Wales to examine the potential for undertaking beach nourishment works in Wales in response to the challenges of climate change. The project, which is also being funded by the Aggregate Levy Sustainability Fund for Wales and The Crown Estate, is also exploring the opportunities that could result from beach nourishment works in terms of not only protecting local communities and infrastructure, but also protecting coastal sites of nature conservation importance and the potential for such works to enhance the amenity value of Welsh beaches.

Natural resources and environmental protection - continued

OBJECTIVE 3

Maintain and develop industry contribution towards the understanding of Britain's marine historic environment

The archaeological reporting protocol which was developed by BMAPA and English Heritage to enable archaeological finds encountered during marine aggregate operations (either on board dredgers or at the wharves) continues to be delivered through an implementation service provided by Wessex Archaeology. The service allows finds recovered by industry staff to be identified and assessed for their significance by heritage experts, and where necessary for appropriate mitigation to be introduced on production licence areas to protect previously unknown sites of importance, for example aircraft crash sites.

Since 2005, over 200 reports covering some 750 individual items have been submitted.

From September 2009, The Crown Estate agreed to become a co-funder of the implementation service, working in partnership alongside BMAPA.

The details of the Protocol, annual reports and descriptions of finds can be found at <http://www.wessexarch.co.uk/projects/marine/bmapa/index.html>

OBJECTIVE 4

Maintain effective controls to minimise the potential for pollution to the marine environment

Key performance indicator: number of recorded pollution incidents¹

Number of pollution incidents during 2009	2008	2007	2006
7 (All minor hydraulic leaks)	6	0	6

¹ Based on reported data from 22 out of 23 vessels operated by BMAPA members in UK waters.





Creating sustainable communities

Core values

Health & safety: our highest priority is the health & safety of employees, contractors and visitors

Employment: we recognise that our activities are an important source of employment and economic activity

Competence: we recognise the need to maintain and develop a competent workforce

Good neighbours: we engage with marine stakeholders, strive to be seen as good operators by other marine users and recognise the importance of partnerships in achieving both of these

Stakeholder accountability: we recognise the importance of operating as good corporate citizens

OBJECTIVE 1

Improve the occupational health and safety of the marine sector's employees

Key performance indicators: Working days lost through work-related injury¹

	2009	2008	2007	2006
Reportable accidents	6	3	5	7
Days lost	219 (sea staff) 0 (office)	391	251.5	164

OBJECTIVE 2

Improving employee development through vocational training

Key performance indicators: Employment direct / indirect (office/ship crew)¹

	2009	% change	2008	2007	2006
Office staff	57	-11.76%	64.6	80	121
Sea staff	427	-0.46%	429	467	441

Key performance indicators: Employment direct / indirect (office/ship crew)¹

	2009	% change	2008	2007	2006
Training days per employee	8.02	+262.9%	2.21	4.02	2.53

OBJECTIVE 3

Increasing the transparency of activities, and maintaining and developing further liaison with other marine stakeholders

Active dredge area charts

BMAPA continues to produce twice-yearly active dredge area charts in partnership with The Crown Estate. These define the extent of the area in which dredging is permitted to take place, enforced by analysis of Electronic Monitoring Data. The charts are widely circulated by local Marine Management Organisation offices to provide fisheries interests with the most up to date information on the extent of marine aggregate operations.

Industry representatives continue to attend bi-annual fisheries liaison committee meetings that take place on the south and east coast of England.

Area involved initiative

BMAPA and The Crown Estate continue to report summary information on the extent of licensed and dredged area under their area involved initiative which commenced in 1999. The report for activity in 2009 represented the 12th annual report, and the spatial data generated by this ongoing initiative is expected to become increasingly important as the marine conservation network and marine planning processes evolve in English and Welsh waters.

¹ Based on reported data from 6 BMAPA member companies, operating 22 out of 23 vessels working in UK waters.

Archaeology reporting initiative

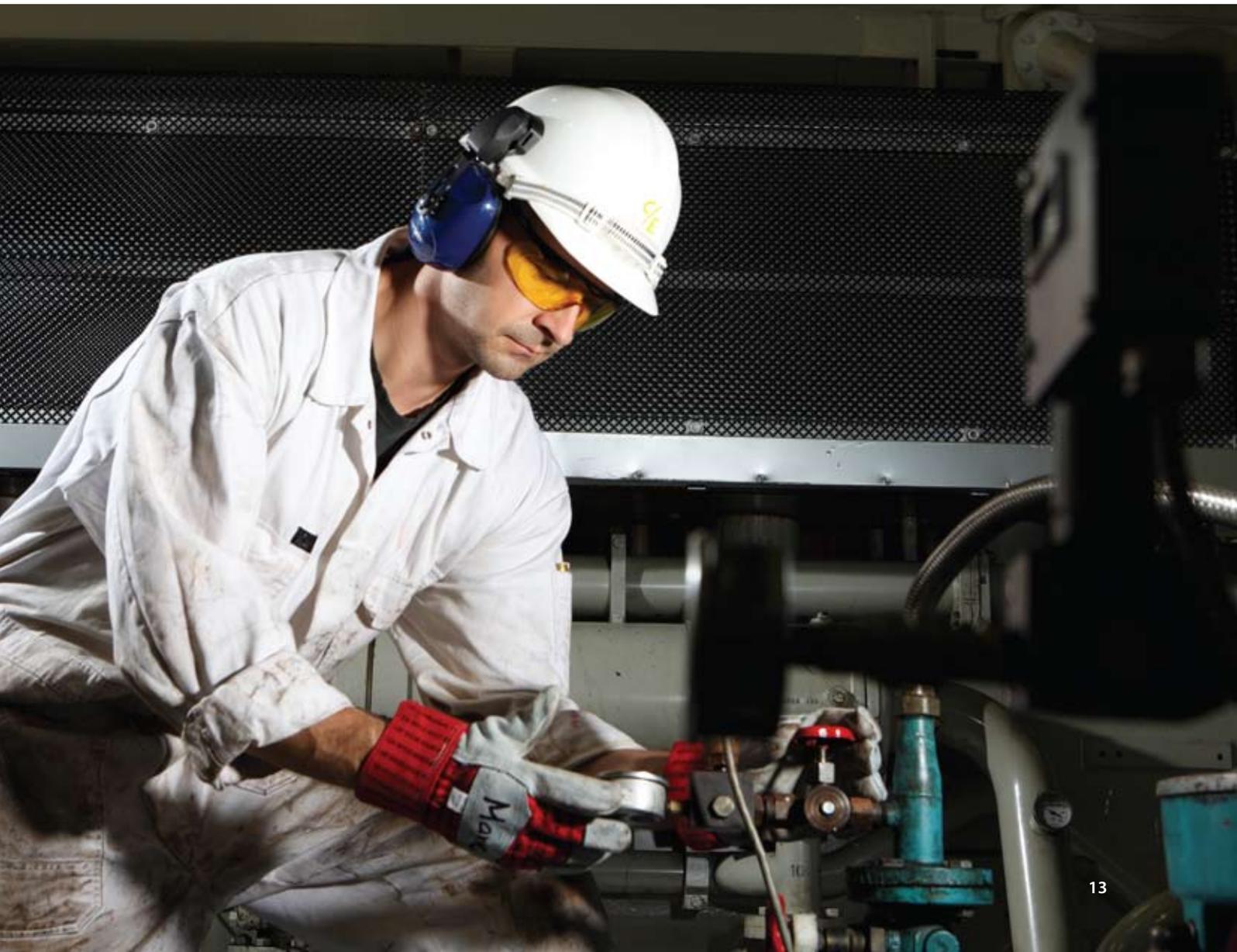
The annual report for the BMAPA/English Heritage archaeology reporting protocol is widely circulated to regulators, heritage advisors and curators, as well as to all marine aggregate wharves and vessels. During the reporting period October 2009 to September 2010, a total of 45 reports were made by industry staff, encompassing 81 individual finds.

The details of the Protocol, annual reports and descriptions of finds can be found at <http://www.wessexarch.co.uk/projects/marine/bmapa/index.html>

Marine aggregate glossary document

There are a wide range of terminologies and associated acronyms that are quite specific to various aspects of marine aggregate operations. In an effort to help third parties understand more clearly how the industry operates, BMAPA and The Crown Estate have produced a comprehensive reference document of marine aggregate terms which provides illustrated explanations of over 200 terms and acronyms.

Details can be found at http://www.bmapa.org/downloads/BMAPA_Glossary.pdf



Economies of scale

By delivering large volumes of a low cost, bulk material close to the point of demand, economies of scale represent one of the marine aggregate sectors greatest advantages.

The 22 vessels operated by BMAPA members for which data has been reported range in size from 880 tonnes to 8,800 tonnes capacity, with associated variations in vessel dimensions and engine power. However, all the vessels are highly specialised and fulfil particular roles in supplying essential marine sand and gravel supplies to the market place. This variation is effectively masked in the summing of overall key performance indicator information.

To assist analysis of key performance indicator data, the dredging fleet can be separated into two categories.

- i. Vessels with cargo capacities below 3,000 tonnes, which typically supply local wharves from nearshore licence areas, such as along the south coast, in the Bristol Channel and in the Irish Sea. Vessels will typically supply a cargo every 12-24 hours. (7 vessels/10,642t total hopper capacity – 10.2% of total fleet capacity)
- ii. Vessels with cargo capacities greater than 3,000 tonnes which typically operate in more offshore licence areas supplying more distant wharves, such as those along the River Thames and on the Continent. Vessels will typically supply a cargo every 24-48 hours. (15 vessels/93,743t total hopper capacity – 89.8% of total fleet capacity)

The two classes of vessel generally supply very different markets, therefore by separating their operational data it is possible to better understand and present the differences between the two. Over time, this should also allow the identification of trends that may occur over time in each class that would perhaps otherwise be masked in the summed dataset.

Sustainable production

OBJECTIVE 1

Maintain and improve profitability in order to provide for continuing investment and employment

Key performance indicators: Annual marine production

	2009	% change	2008
Production <3,000t capacity	2,409,769t (16% total)	-38.9%	3,949,263t (20% total)
Production >3,000t capacity	12,526,171t (84% total)	-20.7%	15,797,665t (80% total)

OBJECTIVE 2

Make the most efficient use of available licensed resources

Key performance indicators: Area dredged and hours dredged

	2009	% change	2008
Hours dredged <3,000t	3,734 hours (21% total)	-45.3%	6,831 hours (29.7% total)
Hours dredged >3,000t	14,044 hours (79% total)	-13%	16,154 hours (70.3% total)

OBJECTIVE 3

Minimise the screening activity in the production process

Key performance indicators: Tonnes landed per hour dredged

	2009	% change	2008
Tonnes landed/hour dredged (<3kt)	645.36t/hour	+11.63%	578.14t/hour
Tonnes landed/hour dredged (>3kt)	891.92t/hour	-8.78%	977.94t/hour



Climate change and energy

OBJECTIVE 3

Reduce the impact of atmospheric emissions released through the production and transport processes

Key performance indicators: Fuel oil consumed per tonne landed

	2009	% change	2008
Fuel oil <3,000t capacity	3,593t (9.49% total)	-37.4%	5,742t (13.6% total)
Fuel oil >3,000t capacity	34,280t (90.51% total)	-5.99%	36,464t (86.4% total)
<3kt kg fuel/tonne	1.491kg/t	-2.54%	1.454kg/t
>3kt kg fuel/tonne	2.737kg/t	+18.59%	2.308kg/t

Key performance indicators: CO₂ emissions

	2009	% change	2008
<3kt carbon emissions	11,461.67t (13.6% total)	-37.4%	18,316.980t (13.6% total)
>3kt carbon emissions	109,353.20t (86.4% total)	-5.99%	116,320.160t (86.4% total)
<3kt CO ₂ /t landed	4.756kg CO ₂ /t	+2.54%	4.638kg CO ₂ /t
>3kt CO ₂ /t landed	8.730kg CO ₂ /t	+18.56%	7.363kg CO ₂ /t

(Calculation from MGO tonnes to CO₂ tonnes made using conversion factor from DEFRA (2008) Guidelines to DEFRA's Greenhouse Gas Conversion Factors for Company Reporting. Department for Environment, Food and Rural Affairs, London. Accessed from: <http://www.defra.gov.uk/environment/business/reporting/conversion-factors.htm>)

OBJECTIVE 2

Maximise the efficient use of the dredging fleet

Key performance indicators: Tonnes landed per kilometre travelled

	2009	% change	2008
Km steamed <3,000t capacity	159,074km (14.7% total)	-50%	322,990km (22.15% total)
Km steamed >3,000t capacity	921,905km (85.3% total)	-18.8%	1,135,517km (77.85% total)
<3kt t landed/km steamed	15.148t/km steamed	+23.9%	12.227t/km steamed
>3kt t landed/km steamed	13.587t/km steamed	-2.3%	13.912t/km steamed

Impact of the downturn

While the overall performance of the sector has been significantly affected by the economic downturn, the KPI data for different classes of vessels shows very clearly that it is the smaller capacity vessels which have been impacted the most. Compared to 2008, overall production reduced by nearly 40%, with corresponding reductions in hours dredged, steaming distances, fuel use and carbon emissions. This reflects the significant reduction for construction aggregates in the local markets generally supplied by these vessels.

With the market for smaller vessels constrained, several vessels were stopped or worked part-time, with larger vessels then used to fill the production gaps. This saw the larger vessels contribution to the sectors overall production increase during 2009, although in absolute terms their total production reduced by 20% compared to the previous year.

While the hours dredged and distance steamed by larger vessels broadly corresponded to the reduction in production (a reduction of around 20%), an apparent anomaly can be seen in the fuel consumption (a reduction of only 6%). This resulted in both the fuel and carbon cost per tonne for large vessels increasing. This can be explained by the fact that irrespective of whether a vessel is steaming, loading or at anchor, its engines are running and therefore using fuel. The increase in fuel and carbon cost per tonne landed reflects the fact that the larger vessels were generally less productive per unit of time during 2009 thanks to the lack of demand. This underlying baseline operational cost also helps to explain why five vessels were either laid up or switched to part-time working during the year.





Appendices GB market summary 1980 - 2009

	GDP Market prices chained volume measures	Construction output (GB) £m 2005 prices	Primary aggregates sales (GB) million tonnes	Crushed rock million tonnes	Sand and gravel (total) million tonnes
1980	631,074	50,728	199	103	96
1981	622,722	45,829	182	92	89
1982	635,756	47,487	194	103	91
1983	658,798	51,576	213	112	101
1984	676,394	53,627	211	111	100
1985	700,740	54,219	217	115	102
1986	728,856	56,178	228	123	106
1987	762,107	62,580	254	142	111
1988	800,457	68,616	291	162	130
1989	818,719	71,857	300	169	131
1990	825,099	72,085	278	162	116
1991	813,610	66,841	246	148	98
1992	814,803	64,033	233	144	89
1993	832,910	62,823	239	150	89
1994	868,560	62,589	259	162	98
1995	894,988	63,381	241	151	90
1996	920,757	65,776	215	133	82
1997	951,208	67,369	220	134	86
1998	985,506	68,411	218	132	86
1999	1,019,735	69,294	221	133	88
2000	1,059,658	69,676	219	130	89
2001	1,085,745	71,087	222	134	88
2002	1,108,508	74,090	210	127	83
2003	1,139,746	77,852	203	123	80
2004	1,171,178	80,254	214	128	86
2005	1,195,276	79,540	204	122	82
2006	1,229,196	80,426	207	127	80
2007	1,266,347	82,424	209	130	79
2008	1,275,299	83,248	187	115	72
2009	1,295,159	91,863	142	86	55

Source: MPA 2009 SD report.

Marine sand and gravel figures exclude beach nourishment/contract fill and exports.

Sand & gravel (marine) million tonnes	Recycling (est) million tonnes	Total Aggregates (GB) million tonnes	Asphalt (GB) million tonnes	Ready-mixed concrete (GB) million cu m
12.5	20	219	24	22.4
11.5	18	200	22	19.9
11.9	19	213	26	20.7
12.8	21	234	27.2	21.5
12.6	21	232	25.5	20.8
13.8	22	239	26.9	21.6
15.3	23	251	28.4	21.5
16.2	25	279	29.9	24.3
19.6	29	320	31.8	28.8
20.7	32	332	33.7	29.6
17.2	33	311	36.7	26.78
12.4	34	280	36.4	22.53
10.6	35	268	36.6	20.78
10.1	37	276	36.3	20.77
11.3	39	298	37.7	22.93
11.6	42	283	34.9	21.68
11.5	45	260	29.3	20.89
12.0	48	268	27.5	22.33
13.0	51	269	27.7	22.93
13.4	54	275	26	23.55
14.4	57	276	25.7	23
13.6	60	282	26.5	23
13	62	272	27.8	22.54
12	64.5	268	27.8	22.3
13.0	67	281	26.9	22.9
13.0	68.3	272	27.9	22.4
14.0	70	277	25.7	22.9
14.0	71.0	280	25.7	23.5
12.6	64	251	25	20.1
10.0	56.5	198	20.5	14.4

Appendices Marine aggregate summary statistics 1998 - 2009

	Area of seabed licensed for dredging (km ²)*	Area available to be worked (km ²)*	Area dredged (km ²)*	Quantity dredged (million tonnes) **
1998	1,458		222.6	
1999	1,455		220.3	20.47
2000	1,464		155.4	23.68
2001	1,408	972	150.6	20.68
2002	1,359	896	149.8	22.76
2003	1,264	890	143.8	21.93
2004	1,257	780	134.5	22.23
2005	1,179	596	137.6	21.45
2006	1,316	576	140.6	21.09
2007	1,344	556	134.7	24.18
2008	1,278	570	137.9	21.24
2009	1,286	536	123.6	20.10

* Taken from 'Marine Aggregate Dredging – The Area Involved' annual reports published by BMAPA and The Crown Estate between 1999 and 2009.

** Extracted from annual 'Marine Aggregates, Crown Estate Licences, Summary Statistics reports published by The Crown Estate between 1998 and 2009. Quantity dredged comprises GB landings of construction aggregates, export landings of construction aggregates and beach replenishment / contract fill.



BMAPA members and dredging fleet

BMAPA member	Vessel	Built	Capacity (cubic metres)	Capacity (tonnes)	Age in 2009 (years)
Britannia Aggregates	Britannia Beaver	1991	2,775	4,800	18
CEMEX UK Marine	Sand Falcon	1998	4,832	8,359	11
	Sand Fulmar	1998	4,000	6,290	11
	Sand Harrier	1990	2,700	4,671	19
	Sand Heron	1990	2,700	4,671	19
	Sand Weaver	1974	2,400	4,152	35
	Welsh Piper	1987	790	1,367	22
DEME Building Materials	Charlemagne	2002	5000	8,650	7
Hanson Aggregates Marine	Arco Adur	1988	2,890	5,000	21
	Arco Arun	1987	2,890	5,000	22
	Arco Avon	1986	2,890	5,000	23
	Arco Axe	1989	2,890	5,000	20
	Arco Beck	1989	2,600	4,500	20
	Arco Dart	1990	700	1,250	19
	Arco Dee	1990	700	1,250	19
	Arco Dijk	1992	5,100	8,800	17
	Arco Humber	1972	4,600	8,000	37
Northwood (Fareham)	Donald Redford	1981	440	775	28
	Norstone	1971	800	1,400	38
Tarmac Marine Dredging	City of Cardiff	1997	1,418	2,300	12
	City of Chichester	1997	1,418	2,300	12
	City of London	1990	2,652	4,750	19
	City of Westminster	1990	3,000	5,200	19
			Total fleet capacity	Total fleet capacity	Average vessel age
			63,005	103,485	20.39

Other BMAPA members who do not operate vessels: Brett Group, Kendall Brothers (Portsmouth), Lafarge Aggregates, Sea Aggregates, Volker Dredging.

Tarmac Marine Dredging was previously known as United Marine Dredging.

Figures as of 31.12.09.



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The British Marine Aggregate Producers Association is part of the Mineral Products Association, the trade association for the aggregates, asphalt, cement, concrete, lime, mortar and silica sand industries

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