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Strength from the depths

Third sustainable development report for the British marine aggregate industry

December 2009

bmapa british marine aggregate producers association

Mineral Products Association

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Total marine aggregate production decreased from 23.20mt to 21.54mt

Area of seabed licensed for dredging reduced by nearly five per cent

Total tonnage landed for construction in England and Wales reduced by 9.3 per cent

Total CO_2 emissions reduced by more than 14 per cent

CO_2 emissions per tonne landed reduced by 10 per cent

Reduction in hours dredged of nearly 13 per cent suggests less intensive screening onboard

Successful Regional Environmental Assessment process extended to four more regions

Continuing industry support for Marine Aggregate Sustainability Fund programme

BMAPA commissions biodiversity action plan for the sector

Further significant finds reported under archaeological protocol

Key facts & figures

Key areas	2008	%	2007	%	2006	%
Area of UK seabed	867,000km^2	100%	867,000km^2	100%	867,000km^2	100%
Area of seabed licensed for dredging	1278km^2	0.147%	1,343.83km^2	0.155%	1,316.33km^2	0.151%
Area available to be worked	570.31km^2	0.066%	556.03km^2	0.064%	576.10km^2	0.066%
Area dredged	137.9km^2	0.016%	134.67km^2	0.016%	140.6km^2	0.016%

Market summary	2008	2007	2006
Total GB aggregates market	251mt	280mt	277mt
Land-based aggregates	175mt	195mt	193mt
Recycled and secondary aggregates	64mt	70mt	70mt
Total marine aggregates production	21.24mt	23.20mt	24.29mt
Marine landings to GB aggregates market	13.12mt	14.45mt	13.43mt
Marine landings to European aggregates market	6.21mt	6.65mt	6.71mt
Beach replenishment contract fill	2.21mt	2.10mt	4.15mt

Market contribution to GB sand & gravel market	2008	2007	2006
Total GB market	72mt	79mt	80mt
Total England & Wales market	64mt	73mt	73.6mt
Marine landings to England & Wales	13.12mt	14.45mt	13.43mt
Marine landings to South East England	9.61mt	10.56mt	9.60mt
Marine landings to London & Thames Corridor	7.18mt	7.36mt	6.71mt
Marine landings to Wales	0.9mt	1.12mt	0.99mt

Foreword

Royal assent for the Marine & Coastal Access Act in November represents a pivotal moment for the marine aggregate industry. Over the five years during which the Act has evolved, we have wholeheartedly supported its principles and believe it has the potential to create a long-overdue new system for managing our seas. Beyond all else, we hope it can protect sensitive marine life while delivering a new certainty that allows our own and other marine industries to fulfil our various roles for society.

We now move from high-level concept to practical implementation – the challenge of delivering practical change is only just beginning. Our members will continue to work closely with Defra, other government departments and the new Marine Management Organisation to support the process. In doing so, we aim to contribute to the sustainable long-term management of the seas around our shores.

There have been parallel developments in the creation of a network of Marine Protected Areas around the coastline. Consultation is taking place on plans for a series of proposed Special Areas of Conservation and Special Protection Areas under the European Habitats and Birds Directives, many of which are adjacent to, or coincide with, existing marine aggregate interests. The high-quality, high-resolution data that the industry has amassed over recent years will be crucial in helping to ensure that site and feature boundaries are based on the best available scientific evidence, and that the potential interaction with marine aggregate operations can be properly assessed to ensure that important habitats and species are protected.

In delivering this network, new Marine Conservation Zones are to be introduced to protect habitats and species of national importance. The identification of such sites is to be delivered through stakeholder participation on a series of regional projects, and we look forward to playing a constructive role as these develop. As a key element of this, we are in the process of developing a biodiversity action plan strategy for the sector.

Finally, the management of carbon and of climate change is a key consideration for us and this report reflects three years of data gathering on that front. We accept that we, in common with all other sectors of industry, must do all we can to manage our footprint. We start with one important advantage because our members deliver large volumes of a low-cost, bulk material close to the point of demand. Economy of scale is thus one of the sector's greatest advantages.

For the first time this year, we have been able to refine the information presented through breaking down the performance of our members by vessel size. For the shipping industry, it appears likely that some form of emissions trading scheme will be introduced in the near future, and we are working closely with our European colleagues to understand the implications this will have for dredging operations.

I hope you find this report interesting and helpful. We will welcome your comments and advice.

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

	2008	% change	2007	2006
Total (Crown Estate figure)	21.54mt	- 6.35%	23.20mt	24.29mt
BMAPA reported production	19.75mt	- 4.31%	20.64mt	20.29mt

Although the figures show a 4.3 per cent reduction in total tonnage compared to 2007, the reported tonnage represents 91.67 per cent of the total Crown Estate production in 2008, an increase of 2.7 per cent over 2007.

Key performance indicator: national/regional marine contribution to supply

	2008	% change	2007	2006
England & Wales	13.12mt	- 9.3%	14.45mt	13.43mt
London & Thames	7.18mt	- 2.36%	7.35mt	6.71mt
Wales	.90mt	- 18.9%	1.12mt	0.99mt
Beach replenishment /fill	2.21mt	+ 5.1%	2.10mt	4.15mt
Exports	6.21mt	- 6.58%	6.65mt	6.71mt

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

	2008	2007	2006
Age of dredging fleet	20 years	19.68 years	18.68 years

The apparent reduction in the year on year incremental change in the average age of the dredging fleet is due to the omission of Norwest Sand & Ballast Ltd (operator of the Sand Swan), which is no longer a member of BMAPA.

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

	2008	% change	2007	2006	2005	2004
Capital investment in vessels (excluding maintenance)	£9.92m	+170%	£3.67m	£2.49m	£4.97m	£8.53m
Rolling investment over previous five years	£29.44m	+19.29%	£24.67m	£54.35m	-	-

Key investments during 2008 included modifications to facilitate dredging in deep waters, upgrades to bridge navigation equipment and self-discharge control systems. Investment was also made in measures that will extend the working lives of individual vessels.

OBJECTIVE 3

Make the most efficient use of available licensed resources

Key performance indicator: area dredged and hours dredged

	2008	% change	2007	2006
Area of seabed licensed for dredging	1,278 km^2	-4.9%	1,343.83km^2	1,316.33km^2
Area available to be worked	570.31 km^2	+2.6%	556.03km^2	576.10km^2
Area dredged	137.90 km^2	+2.4%	134.67km^2	140.6km^2
Hours dredged	22,985 hrs	-12.7%	26,340 hrs	28,686 hrs

OBJECTIVE 4

Minimise the screening activity in the production process

Key performance indicator: tonnes landed per hour dredged

	2008	% change	2007	2006
Marine aggregate production	19.75mt	-4.31%	20.64mt	20.29mt
Hours dredged	22,985 hrs	-12.74%	26,340 hrs	28,686 hrs
Tonnes landed per hour dredged	859.12tph	+9.64%	783.57 tph	707.41tph

A reduction in hours dredged of nearly 13 per cent at a time when total production reduced by only 4 per cent suggests less intensive screening activity. As a consequence, the tonnes landed per hour dredged increased by 9.64 per cent.

OBJECTIVE 5

Develop and promote best practice for resource management

The successful Regional Environmental Assessment (REA) process developed by the industry in the East English Channel has now been extended to four other regions (South Coast, Thames, East Coast and Humber) to support a large-scale programme of licence renewals required by 2013. REAs provide a more robust, consistent approach to addressing regional-scale cumulative and in-combination impacts. Building on the East Channel model, operators have formed regional associations to manage the process. This includes gathering of high-quality, high-resolution regional baseline data to assist with site-specific EIA studies. The REA process will produce recommendations for regional scale monitoring, mitigation and management plans.

Based on reported data from six BMAPA member companies operating 23 vessels working 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 landed

	2008	% change	2007	2006
Total marine gas oil	42,206t	-14.32%	49,262.3t	49,593.6t
Marine aggregate production	19.75mt	- 4.31%	20.64mt	20.29mt
Marine gas oil per tonne landed	2.14kg/t	-10.43%	2.39kg/t	2.44kg/t

Key performance indicator: CO_2 emissions

	2008	% change	2007	2006
Total CO_2 emissions (tonnes)	134,637.140t	-14.32%	157,146.865t	158,203.584t
Marine aggregate production	19.75t	- 4.31%	20.64mt	20.29mt
CO_2 emissions per tonne landed	6.818kg/t	-10.45%	7.614kg/t	7.796kg/t

(Calculation from MGO tonnes to CO_2 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 indicator: tonnes landed per kilometre travelled

	2008	% change	2007	2006
Total kilometres steamed	1.46m km	-17.8%	1.77m km	1.47m km
Marine aggregate production	19.75mt	- 4.31%	20.64mt	20.29mt
Total landed per km travelled	13.54t/km	+16.4%	11.63t/km	13.76t/km

The reduction in overall fuel consumption (-14.32 per cent) and fuel per tonne landed (-10.43 per cent) correspond to the reductions in hours dredged (-12.7 per cent) and total kilometres steamed (-17.8 per cent). Likewise, the increase in tonnes landed per km steamed (+16.4 per cent) reflects the significant reduction in steaming distances (-17.8 per cent) against more modest reductions in overall production (-4.3 per cent). These changes are in turn reflected in the reduced carbon emissions overall (-14.32 per cent) and per tonne landed (-10.45 per cent).

The trends observed reflect a combination of responses to the economic downturn during 2008. During the first-half of the year, demand for marine aggregate was high and the ability for the industry to meet it was constrained by the capacity of the available dredging fleet. Operators were, therefore, maximising vessel productivity by reducing loading times and making use of newly permitted licence areas local to individual markets. However, as demand collapsed in the second-half of the year, vessel productivity was significantly reduced, with associated reductions in steaming distances, transit speeds, fuel burned and overall production.


HSBC

Natural resources and environmental protection

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

Area of seabed licensed for dredging

Key performance indicators	2008	% change	2007	2006
Area of seabed licensed for dredging	1,278km^2	-4.9%	1,344km^2	1,316km^2
Extent of active dredge area	570.31km^2	+2.6%	556km^2	576km^2
Area of seabed actually dredged	137.9km^2	+2.4%	134.7km^2	140.6km^2
Area of seabed where 90% of dredging occurs	48.22km^2	-3.5%	49.95km^2	49.19km^2
Area of seabed dredged for more than 1.25 hours	9.28km^2	-8.7%	10.16km^2	8.66km^2

OBJECTIVE 2

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

BMAPA members have supported the identification and definition of European marine sites by providing high resolution survey data to assist nature conservation agencies. The data held by operators is helping to refine the limits of features so that sites can be defined on the basis of best available scientific evidence.

Members continue to contribute to ongoing research into the identification and characterisation of biogenic reefs created by the polychaete worm Sabellaria spinulosa. The work is being undertaken in conjunction with The Crown Estate and the Marine Aggregate Levy Sustainability (MALSF) programme and is of significance because initial conclusions suggest that the species could actually benefit from sand released by dredging.

The marine aggregate sector directly supports the wider MALSF programme, both through participation on the steering group and through assistance given to projects. The third round of MALSF grants runs for three years to March 2012. Marine funds are administered by Cefas and English Heritage on behalf of Defra, who between them are managing a three year £13.5m research programme to improve the way that marine aggregate operations are planned, assessed and managed. As well as improving the performance of the marine aggregate sector, the research outputs have considerable added value potential in their synergy with other marine development sectors and in supporting Government's wider policy objectives under the Marine & Coastal Access Act. Some £4m has been invested in two new Regional Environmental Characterisation (REC) surveys – multidisciplinary studies to undertake broad-scale mapping of marine aggregate regions. These in turn will be used by regulators, advisors and operators to assist with the future management of marine aggregate operations – particularly important with the ongoing renewals process which is underway.

BMAPA has commissioned a biodiversity action plan strategy to help frame the sector's future contribution to UK marine biodiversity objectives, and the Governments' wider policy objectives for a network of marine protected areas.

OBJECTIVE 3

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

BMAPA members continue to contribute to a protocol for reporting and managing potential archaeological finds encountered during dredging operations – both at sea and on wharves. The protocol, developed in partnership with English Heritage, was introduced in 2005 and has been voluntarily implemented by BMAPA members across all marine aggregate operations in UK waters. The annual report for the period to September 2008 detailed 63 reports made, covering 162 individual artefacts ranging from prehistoric finds, to Roman pottery, cannon balls and ship anchors.

Of particular significance were a number of Palaeolithic hand axes, reported through the protocol in late 2007. These finds went on to be nominated 'best archaeological find' at the 2008 British Archaeology Awards. Since their discovery, the industry has directly supported further research studies which are investigating the licence area where these important finds are believed to have originated.

An ongoing awareness programme is being funded by English Heritage under the Marine Aggregate Levy Sustainability Fund to provide expert archaeological support to industry staff on wharves and at sea.

OBJECTIVE 4

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

Key performance indicator: number of recorded incidents

	2008	2007	2006
Incidents (all minor hydraulic leaks)	6	0	6

Based on reported data from six BMAPA member companies operating 23 vessels working 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 indicator: working days lost through work-related injury

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

A safety alert scheme has been introduced across BMAPA to allow individual members to share health and safety learning experiences. Electronic alerts are circulated to all vessels and offices operated by BMAPA members, allowing information about potential risks and solutions to be shared for the benefit of all.

OBJECTIVE 2

Improve employee development through vocational training

Key performance indicator: employment direct / indirect

	2008	% change	2007	2007
Office staff	64.6	-19.25%	80	121
Sea staff	429	- 8.13%	467	441

Key performance indicator: training days per employee

2008	% change	2007	2006
Training days per employee	2.21	- 45%	4.02	2.53

OBJECTIVE 3

Increase the transparency of activities, and maintain and develop further liaison with other marine stakeholders

Based on reported data from six BMAPA member companies operating 23 vessels working in UK waters.

Active dredge area charts

BMAPA continues to produce twice-yearly active dredge area charts in partnership with The Crown Estate, which define the extent of the area in which dredging is permitted to take place. These are widely distributed, in association with local Marine & Fisheries Agency offices, to provide fisheries interests with the most up to date information on the extent of marine aggregate operations. Industry representatives also continue to attend bi-annual fisheries liaison committee meetings that take place on the south and east coast.

Area involved initiative

BMAPA and The Crown Estate continue to report information on the extent of licensed and dredged area under their area involved initiative, which commenced in 1999, with the report for activity in 2008 representing the 11th annual report. As data from 2007 represented the 10th anniversary of this initiative, an additional review document has been produced to review trends in licence and dredged area since 1998. This includes presentation of new data on the area of the cumulative dredge footprint – the total area dredged over the period – and the extent of new seabed that has been dredged in each year.

Archaeology protocol report

The annual report for the BMAPA/English Heritage archaeology protocol is widely circulated – to regulators, heritage advisors and curators, as well as to all marine aggregate wharves and vessels.

Offshore renewable energy

Offshore renewable energy interests – wind, wave and tide – represent an increasingly important response to tackling the dual challenges of climate change and national energy security.

The marine aggregate industry operates in most of the English and Welsh offshore regions where marine renewable energy interests are being investigated and developed. As a consequence, there are some broad issues that may arise as both interests seek to develop and operate in close proximity. Beyond the immediate potential for interaction with current and future marine aggregate interests through the placing of structures and cables, there is also the potential for less obvious operational impacts.

A dredging licence producing one million tonnes-a-year would see 200 cargoes of 5,000 tonnes being dredged - each representing four to eight hours on site. Vessels, therefore, require safe access to the licence areas and the flexibility to navigate safely within a licence while dredging operations are underway.

The potential for interaction with marine aggregate operations also needs to be considered even if a potential offshore renewable site may appear to be a considerable distance away. BMAPA members operate 24 dredgers in British coastal waters, producing nearly 20 million tonnes of aggregate every year. This represents some 7,000 cargoes – equivalent to four to five cargoes per vessel each week. Dredgers are, therefore, constantly transiting British coastal waters as they navigate between production licence areas and ports.

To assist with the consideration of potential indirect impacts on marine aggregate interests, BMAPA has generated a series of charts to show the extent of dredger transit routes between production licence areas and the ports supplied relative to round 1, 2 and 3 offshore wind interests.

Economies of scale

Economies of scale achieved by delivering large volumes of a low-cost, bulk material close to the point of demand represent one of the marine aggregate sector's greatest advantages.

The 23 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 dimensions and engine power. However, all 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 earlier stages of this report because of the way in which figures are totalled with no recognition for vessel differences.

To assist further analysis of key performance indicator data we are, in this section of our report separating the dredging fleet into two categories.

SMALLER VESSELS – those with cargo capacities of less than 3,000 tonnes, which typically supply local wharves from near-shore 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 to 24 hours. This covers eight vessels with a total hopper capacity of 12,237 tonnes and represents 12.7 per cent of total fleet capacity.

LARGER VESSELS – those with cargo capacities greater than 3,000 tonnes which typically operate in more offshore licence areas and supplying more distant wharves, such as those along the River Thames and on the Continent. Vessels will typically supply a cargo every 24 to 48 hours. This covers 15 vessels with a total hopper capacity of 84,193 tonnes and represents 87.3 per cent 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 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 indicator: annual marine production

	2008
Smaller vessels – production	3,949,263 tonnes (20 per cent total)
Larger vessels – production	15,797,665 tonnes (80 per cent total)

OBJECTIVE 2

Make the most efficient use of available licensed resources

Key performance indicator: area dredged and hours dredged

	2008
Smaller vessels – hours dredged	6,831 hours (29.7 per cent total)
Larger vessels – hours dredged	16,154 hours (70.3 per cent total)

OBJECTIVE 3

Minimise the screening activity in the production process

Key performance indicator: tonnes landed per hour dredged

	2008
Smaller vessels – tonnes landed/hour dredged	578.14t/hour
Larger vessels – tonnes landed/hour dredged	977.94t/hour

Note: smaller vessels are defined as those with cargo capacities of less than 3,000 tonnes. Larger vessels are those with capacities of more than 3,000 tonnes.

Based on reported data from six BMAPA member companies operating 23 vessels working in UK waters.

Climate change & energy

OBJECTIVE 1

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

Key performance indicator: fuel oil consumed per tonne landed

	2008
Smaller vessels – fuel oil	5,742 tonnes (13.6 per cent total)
Larger vessels – fuel oil	36,464 tonnes (86.4 per cent total)
Smaller vessels – kg fuel/tonne landed	1.454kg/t
Larger vessels – kg fuel/tonne landed	2.308kg/t

Key performance indicator: CO_2 emissions

	2008
Smaller vessels – carbon emissions	18,316.980t (13.6 per cent total)
Larger vessels – carbon emissions	116,320.160t (86.4 per cent total)
Smaller vessels – CO_2/tonne landed	4.638kg CO_2/t
Larger vessels – CO_2/tonne landed	7.363kg CO_2/t

(Calculation from MGO tonnes to CO_2 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 indicator: tonnes landed per kilometre travelled

	2008
Smaller vessels – km steamed	322,990 km (22.15 per cent total)
Larger vessels – km steamed	1,135,517 km (77.85 per cent total)
Smaller vessels – tonnes landed/km steamed	12.227t/km steamed
Larger vessels – tonnes landed/km steamed	13.912t/km steamed

Appendices

GB market summary 1980 – 2008

	GDP Market prices chained volume measures	Construction output (GB) £m 2000 prices	Primary aggregates sales (GB) million tonnes	Crushed rock million tonnes	Sand and gravel (total) million tonnes
1980	631074	50728	199	103	96
1981	622722	45829	182	92	89
1982	635756	47487	194	103	91
1983	658798	51576	213	112	101
1984	676394	53627	211	111	100
1985	700740	54219	217	115	102
1986	728856	56178	228	123	106
1987	762107	62580	254	142	111
1988	800457	68616	291	162	130
1989	818719	71857	300	169	131
1990	825099	72085	278	162	116
1991	813610	66841	246	148	98
1992	814803	64033	233	144	89
1993	832910	62823	239	150	89
1994	868560	62589	259	162	98
1995	894988	63381	241	151	90
1996	920757	65776	215	133	82
1997	951208	67369	220	134	86
1998	985506	68411	218	132	86
1999	1019735	69294	221	133	88
2000	1059658	69676	219	130	89
2001	1085745	71087	222	134	88
2002	1108508	74090	210	127	83
2003	1139746	77852	203	123	80
2004	1171178	80254	214	128	86
2005	1195276	79540	204	122	82
2006	1229196	80426	207	127	80
2007	1266347	82424	209	130	79
2008	1275299	83248	187	115	72

Source: MPA 2008 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

Appendices

Marine aggregate summary statistics 1998 – 2007

	Area of seabed licensed for dredging (km²)*	Area available to be worked (km²)*	Area dredged (km²)*	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

* 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.

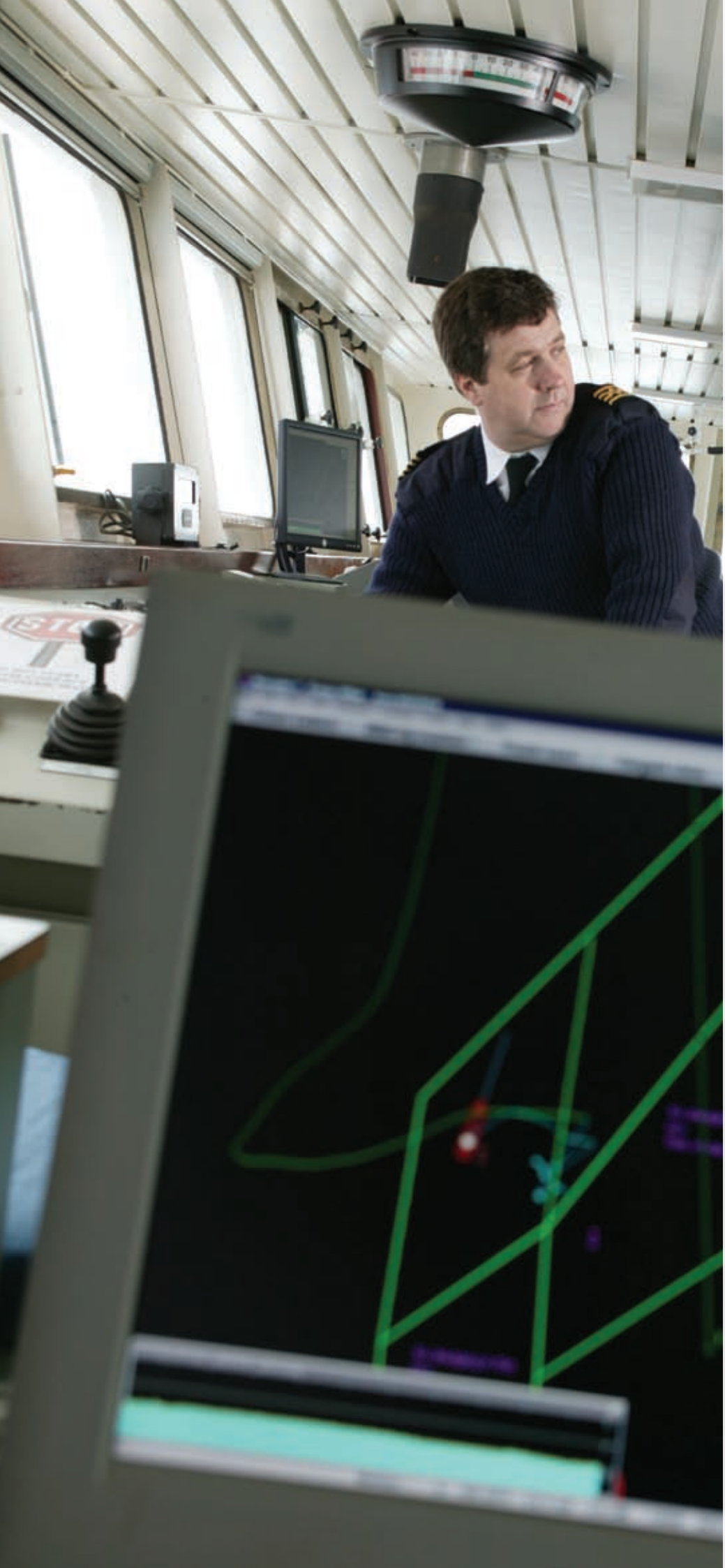
BMAPA members and dredging fleet

BMAPA member	Vessel	Built	Capacity (cubic metres)	Capacity (tonnes)	Age in 2008 (years)
Britannia Aggregates	Britannia Beaver	1991	2,775	4,800	17
CEMEX UK Marine	Sand Falcon	1998	4,832	8,359	10
	Sand Fulmar	1998	4,000	6,290	10
	Sand Harrier	1990	2,700	4,671	18
	Sand Heron	1990	2,700	4,671	18
	Sand Serin	1974	922	1,595	34
	Sand Weaver	1974	2,400	4,152	34
	Welsh Piper	1987	790	1,367	21
DEME Building Materials	Charlemagne	2002	5000	8,650	6
Hanson Aggregates Marine	Arco Adur	1988	2,890	5,000	20
	Arco Arun	1987	2,890	5,000	21
	Arco Avon	1986	2,890	5,000	22
	Arco Axe	1989	2,890	5,000	19
	Arco Beck	1989	2,600	4,500	19
	Arco Dart	1990	700	1,250	18
	Arco Dee	1990	700	1,250	18
	Arco Dijk	1992	5,100	8,800	16
	Arco Humber	1972	4,600	8,000	36
Northwood (Fareham)	Donald Redford	1981	440	775	27
	Norstone	1971	800	1,400	37
Tarmac Marine Dredging	City of Cardiff	1997	1,418	2,300	11
	City of Chichester	1997	1,418	2,300	11
	City of London	1990	2,652	4,750	18
	City of Westminster	1990	3,000	5,200	18
			Total fleet capacity	**Total fleet capacity**	**Average vessel age**
			63,997	**105,080**	**20**

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 01.01.09.



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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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