

Strength from the depths

second sustainable development report
for the British marine aggregate industry



British Marine Aggregate Producers Association November 2008

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Headlines

Total UK marine aggregate production decreased from 24.29mt to 23.20mt but proportion attributable to BMAPA members increased from 83% to 89% **Total tonnage landed for construction in England and Wales increased by over one million tonnes, but beach replenishment and contract fill fell by over two million tonnes (page 2)** Total hours dredged reduced by 8.2%, while tonnes landed per hour dredged increased by 10.7% **Fuel used per tonne landed reduced slightly (-2%), as did CO₂ emissions (-2.3%)** Constructive stakeholder dialogue in support of the Marine Bill (page 3) **Good practice on regional environmental assessment established in east Channel now being employed in other regions (page 9)** Series of research projects added to bank of knowledge and protection of marine biodiversity (page 9-10) **Archaeological reporting protocol helped generate significant new finds (page 11)** New video raised workforce awareness of munitions (page 13)

Facts & figures

Key areas	2007	%	2006	%
Area of UK seabed	867,000km²	100%	867,000km ²	100%
*Area of seabed licensed for dredging	1,343.83km²	0.155%	1,316.33km ²	0.151%
*Area available to be worked	556.03km²	0.064%	576.10km ²	0.066%
*Area dredged	134.67km²	0.016%	140.6km ²	0.016%

Market summary	2007	2006
Total GB aggregates market	285mt	277mt
Land-based aggregates	200mt	193mt
Recycled and secondary aggregates	71mt	70mt
**Marine landings to GB aggregates market	14.45mt	13.43mt
**Marine landings to European aggregates market	6.65mt	6.71mt
**Marine beach replenishment contract fill	2.10mt	4.15mt
**Total marine aggregates production	23.20mt	24.29mt

Marine contribution to GB sand & gravel market	2007	2006
Total GB market	81mt	80mt
Total England & Wales market	73mt	73.6mt
**Marine landings to England & Wales	14.45mt	13.43mt
**Marine landings to South-East England	10.56mt	9.60mt
**Marine landings to London & Thames Corridor	7.36mt	6.71mt
**Marine landings to Wales	1.12mt	0.99mt

*Taken from 'Marine Aggregate Dredging - The Area Involved 2007' published by BMAPA and The Crown Estate (2008).

**Taken from annual 'Marine Aggregates, The Crown Estate Licences, Summary of Statistics' reports published by The Crown Estate.

Foreword



Welcome to this, our second sustainable development report. It marks another key stage in our strategy because the new figures it contains provide the first opportunity to start considering year-on-year change in performance.

The progress that is evident in this report comes against a background of ever evolving policy and regulation. In particular, we have new statutory dredging regulations that have been supported and welcomed by the industry.

We are similarly supportive of the draft Marine Bill, which we believe offers an unprecedented opportunity to deliver a more consistent and robust policy and planning environment across UK seas. As operators, it should give us greater certainty and confidence to take business decisions. Its more integrated approach is founded in the principles of sustainable development and will, therefore, ensure that the marine environment is consistently protected while at the same time supporting the social and economic activities that make such a significant contribution to the success of UK plc.

The Marine Bill has provided a valuable opportunity to engage with other marine industries under the umbrella of the Seabed User & Developer Group. The spirit of constructive dialogue also underpinned a joint statement with Wildlife and Countryside Link highlighting areas of common agreement on the draft Bill with the aim of ensuring sustainable development in the marine environment.

Continued positive engagement is vital - as are the initiatives to build on existing knowledge, with valuable financial support from the marine element of the Aggregates Levy Sustainability Fund. Given that approach, this industry is committed to continuing to play its role as part of the solution in the quest for UK sustainability.

As before, we would welcome comment on this report and on our wider strategy.

John Miller
Chairman
British Marine Aggregate Producers Association

The core values shown in this report have been re-positioned in line with UK sustainable development priority areas. This follows a wider review undertaken by our parent organisation, the Quarry Products Association in conjunction with the Environment Council. The format in which our information is being reported has also been amended to align more closely with the overarching QPA reporting.

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.

The strategic importance of the marine aggregate sector has been emphasised through the commissioning of an authoritative study from the British Geological Survey (BGS). It examined in particular its socio-economic contribution, considering in particular the future opportunities for the industry given the changing policy and business environments under which it operates.

Annual marine production

Key performance indicators	2007	2006
Total	23.20mt	24.29mt
Reported BMAPA production	20.64mt	20.29mt

Based on returns from 24 of the 25 vessels operated by BMAPA members.

National/regional contribution to supply

Key performance indicators	2007	2006
England & Wales	14.45mt	13.43mt
South East England	10.55mt	9.60mt
London & Thames Corridor	7.35mt	6.71mt
Wales	1.12mt	0.99mt
Beach replenishment	2.10mt	4.15mt
Exports	6.65mt	6.71mt

Taken from annual 'Marine Aggregates, The Crown Estate Licences, Summary of Statistics' reports published by The Crown Estate

Objective 2

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

Profile of age/capacity of dredging fleet

Key performance indicators	2007	2006
Age of dredging fleet	19.68 years	18.68 years

Investment in vessels/technology over previous five years

Key performance indicators	2007	2006
Total investment over five years	£24.67m	£54.35m

Objective 3

Make the most efficient use of available licensed resources.

Dredging areas and hours dredged

Key performance indicators	2007	2006
Area of seabed licensed for dredging	1,343.83km²	1,316.33km ²
Area available to be worked	556.03km²	576.10km ²
Area dredged	134.67km²	140.6km ²
Hours dredged*	26,340	28,686

**Based on returns from 24 of the 25 vessels operated by BMAPA members.*

Objective 4

Minimise the screening activity in the production process.

Production and dredging hours

Key performance indicators	2007	2006
Marine aggregate production	20.64mt	20.29mt
Hours dredged	26,340	28,686
Tonnes landed per hour dredged	783.57	707.41

Based on returns from 24 of the 25 vessels operated by BMAPA members.

Objective 5

Develop and promote best practice for resource management.

In pursuing their individual plans to secure new dredging licences in the eastern English Channel, operators recognised the need to understand the cumulative impacts and worked together to produce a Regional Environmental Assessment. With permissions

now in place, this approach has moved forward with a region-wide management plan. The benefits of this approach are now being seen in four other more established regions, where operators are using the same approach in seeking a series of licence renewals.

Sustainable production is the new heading for the section previously titled Economic growth. Our core values have also been adjusted to bring them into line with an overarching review process undertaken by our parent organisation, the Quarry Products Association in conjunction with the Environment Council.

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.

Climate change and energy is the new heading for the previous Natural resources category.

Objective 1

Reduce the impact of atmospheric emissions released through the production and transport process.

The consideration of sulphur dioxide and nitrogen dioxide emissions has currently been put on hold. Such emissions depend upon the specific equipment used by individual vessels, which varies greatly and makes it difficult to generalise. This issue will be kept under review.

Fuel oil consumption

Key performance indicators	2007	2006
Total marine gas oil	49,262t	49,593.6t
Marine aggregate production	20.64mt	20.29mt
Marine gas oil per tonne landed	2.39kg	2.44kg

Based on returns from 24 of the 25 vessels operated by BMAPA members.

CO₂ emissions

Key performance indicators	2007	2006
Total CO ₂ emissions	157,146.865t	158,203.584t
Marine aggregate production	20.64mt	20.29mt
CO ₂ emissions per tonne landed	7.614kg	7.796kg

Based on returns from 24 of the 25 vessels operated by BMAPA members.

Objective 2

Maximise the efficient use of the dredging fleet.

The fact that dredgers can deliver large volumes direct to the heart of urban areas and close to the point where aggregate is required, represents one of the sector's major environmental advantages. In London, this equated in 2007 to 20,000 tonnes (four cargoes) delivered every day - the equivalent of 1,000 lorry loads.

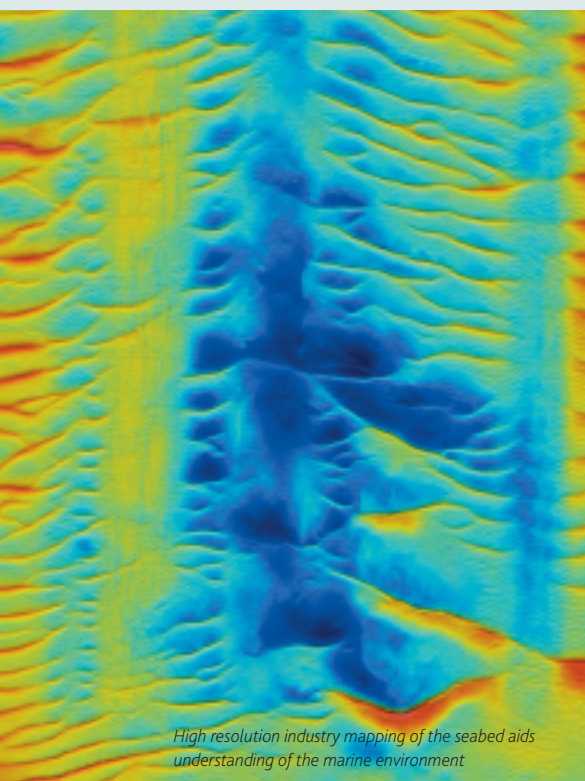
Transport

Key performance indicators	2007	2006
Total kilometres steamed	1.77m	1.47m
Marine aggregate production	20.64mt	20.29mt
Total landed per kilometre travelled	11.63t	13.76t

Based on returns from 24 of the 25 vessels operated by BMAPA members.

The apparent increase in the 2007 figure for kilometres steamed arises from a change in the methodology some member companies have used to calculate steaming distances. The original 2006 figure is considered to underestimate the real distance travelled.

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.

Natural resources and environmental protection is the new heading for the section previously titled Environmental protection.

Objective 1

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

Area of seabed licensed for dredging

Key performance indicators	2007	2006
Area of seabed licensed for dredging	1,344km ²	1,316km ²
Extent of active dredge area	556km ²	576km ²
Area of seabed actually dredged	134.7km ²	140.6km ²
Area of seabed where 90% of dredging occurs	49.95km ²	49.19km ²
Area of seabed dredged for more than 1.25 hours	10.16km ²	8.66km ²

Taken from 'Marine Aggregate Dredging - The Area Involved 2007' published by BMAPA and The Crown Estate (2008).

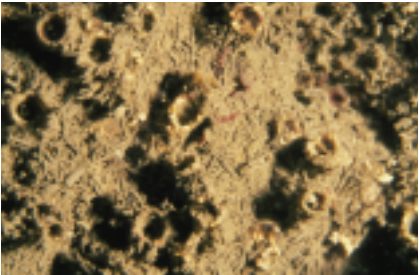
Objective 2

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

One of the key contributions that marine aggregate operators can make towards protecting and conserving sensitive marine habitats and species is through the sharing of the data that it acquires over the lifetime of a marine aggregate licence. In many cases, such information represents the first time high quality, high resolution information has been available. The sector is, therefore, able to make a constructive, positive contribution towards the identification and protection of marine habitats and species. The industry also supports a wide range of marine research effort - both directly funding projects and also providing in-kind support through provision of information and technical expertise.

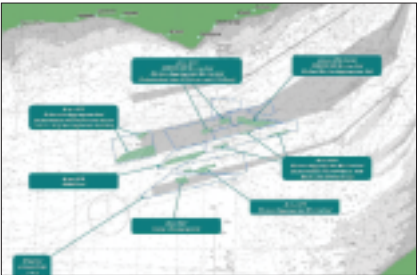
Sabellaria research

Investigations continue to be funded by industry, The Crown Estate and the marine Aggregates Levy Sustainability Fund programme into the identification and characterization of biogenic reefs created by the polychaete worm *Sabellaria spinulosa*. This focuses on two production licence sites: Hastings Shingle Bank in the eastern English Channel; and Cutline in the outer Thames estuary. These are following up initial conclusions that suggested the species could actually benefit from the additional supply of sand moving across the seabed as a result of dredging activity.



East Channel BAP

The East Channel Association's Biodiversity Action Plan provides a basis for management of operator activities in the new East Channel Region with respect to biodiversity and conservation. These interests include sublittoral sands and gravels, stony reef, biogenic reef, bedrock reef, sandbanks, brittlestar beds, grouped commercial fish, cetaceans and grouped sharks and rays. These are monitored as part of the annual monitoring programme in the region and the BAP is updated annually.



Natural resources and environmental protection

Overfalls project

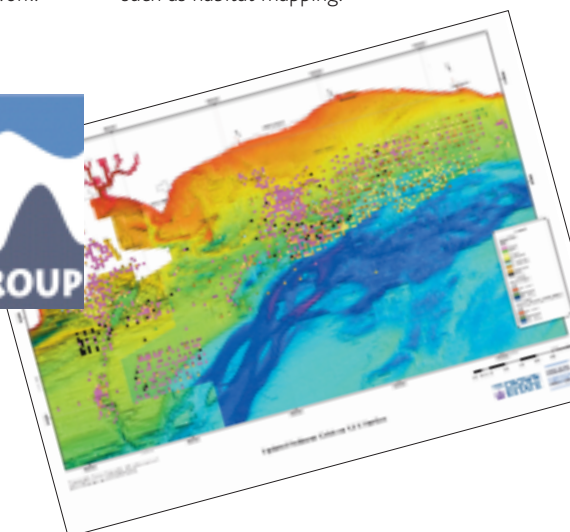
The Overfalls is a partnership project between a marine aggregate developer, commercial and recreational fishing interests and the local Wildlife Trust, focussing on a series of sand and gravel ridges rising above the surrounding seabed some 12 nautical miles south of Chichester Harbour. It has interesting geology and biodiversity, and provides a valuable habitat for sand eels, blonde rays and bass. While the fish are especially important to fishermen, the sand and gravel ridges have potential for aggregate extraction. The project seeks to foster stakeholder-led sustainable management of the bank system through a collaborative consensus-based framework.

Use of mapping data

BMAPA supported The Crown Estate in commissioning the British Geological Survey to undertake a pilot study to examine the potential for added value to be derived from historical prospecting data acquired by the industry to help inform habitat mapping. The study considered some 33 prospecting reports, which included 91 maps and over 3,500 sediment sample descriptions. Even taking into account the commercial sensitivities of the data, the study concluded that the industry holds considerable survey data from which geological information can be extracted to produce derived data for use within studies such as habitat mapping.

ALSF programme

The industry has provided significant support to the marine element of the Aggregates Levy Sustainability Fund (ALSF). Over £9m was spent between 2002 and 2006 on research related to marine aggregate dredging. The current marine fund, known as the Marine Environment Protection Fund (MEPF) administered £2.5m of research funding during 2007/08 across a wide range of themes, with the principle objective of reducing the environmental impact of marine aggregate extraction. Projects have included Regional Environmental Characterisation (REC) surveys, research into biogenic reefs, palaeo-landscape reconstruction, ecosystem health and aircraft crash sites.



BMAPA Chairman John Miller
with Defra Minister Huw
Irranca-Davies



© Wessex Archaeology

Objective 3

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

The industry continues to build upon the Marine Historic Environment Guidance Note and the Protocol for reporting finds of archaeological interest developed in partnership with English Heritage to ensure that all aspects of the marine historic environment are fully taken into account during every stage of the marine aggregate development life cycle. Key to this is ensuring that all staff directly involved in production or processing are aware of the types of archaeological finds that may be encountered.

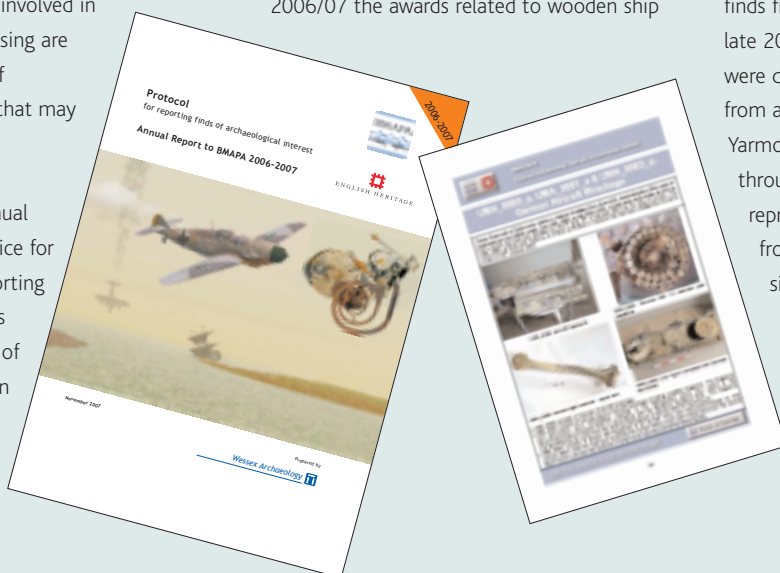
BMAPA funds an annual implementation service for the archaeology reporting protocol. This ensures that the significance of any potential finds on board dredgers or at marine aggregate wharves can be

properly assessed. In some instances, this can result in operators instigating precautionary exclusion zones or undertaking further site investigations. The implementation service is provided by professional archaeologists. During 2006/07, a total of 30 individual reports were submitted by BMAPA members, covering 350 separate finds - a significant increase from the first year of the initiative.

To maintain awareness across the industry, BMAPA sponsors annual awards for the most significant finds and the most professional application of the reporting protocol. In 2006/07 the awards related to wooden ship

wreckage discovered by crew working on a vessel working in the Irish Sea and Second World War aircraft wreckage from a licence area in the southern North Sea reported by staff at two London wharves. The latter resulted in the development of further guidance for finds relating to aircraft crash sites.

One of the most significant archaeological finds from northern European seas came in late 2007 when a number of flint hand axes were discovered in marine aggregate dredged from a production licence area off Great Yarmouth. The hand axes were reported through the reporting protocol and represented the first such finds recovered from a truly offshore setting. The significance of the hand axe finds was recognised with the *Best Archaeological Discovery Award* at the prestigious 2008 British Archaeology Awards - described as the 'Oscars' of the archaeological world.



Objective 4

Minimise effective controls to minimise the potential for pollution to the marine environment.

Number of recorded incidents

Key performance indicators	2007	2006
Number of recorded incidents	0	6

Based on returns from 24 of the 25 vessels operated by BMAPA members.

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 recognised as good operators by other marine users and understand the importance of partnerships in achieving both of these.

Stakeholder accountability

We recognise the importance of operating as good corporate citizens.

Creating sustainable communities is the new heading for the section previously titled Social progress.

Objective 1

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

New safety initiatives include a video designed to raise employee awareness of the potential hazards from wartime and other munitions being dredged and brought ashore. The training video was produced in conjunction with The Crown Estate, and with the support of Hampshire Police and 11th EOD Regiment, Royal Logistics Corps.

Objective 2

Improving employees development through vocational training.

Employment figures have been refined so that they relate only to staff directly involved in marine aggregate operations and production up to the point at which the sand and/or gravel leaves the vessel. There have been further reductions as a result of company restructuring.

Objective 3

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

The industry has long recognised the benefits of communicating and constructively engaging with its key stakeholders, and does so through a number of routes. During 2007, BMAPA

Working days lost through work-related injury

Key performance indicators	2007	2006
RIDDOR equivalent reportable accidents	6	7
Days lost	251.5	164

Based on returns from eight companies who operate 24 out of the 25 BMAPA member vessels.

Employment direct/indirect

Key performance indicators	2007	2006
Office	80	121
Ship crew	467	441

Based on returns from eight companies who operate 24 out of the 25 BMAPA member vessels.

Training

Key performance indicators	2007	2006
Training days per employee	4.02	2.53

Based on returns from eight companies who operate 24 out of the 25 BMAPA member vessels.

refreshed its website www.bmapa.org with a number of new features designed to assist and interest different audiences. It also twice updated its "active dredge charts", produced in conjunction with The Crown Estate, as a means of keeping fishermen in particular abreast of areas being dredged at any time. Four liaison meetings were also held with representatives of the fisheries industry.

Other liaison included five dredger trips, two wharf visits, two university lectures, two local presentations and two papers given at international conferences. BMAPA was an active participant in the Seabed User & Developer Group, the Productive Seas Evidence Group, and the Marine Environment Protection Fund Steering Group.

Appendices

GB market summary 1980 - 2007

	GDP chained volume measures £million	Construction output (GB) £million 2000 prices	Primary aggregate sales (GB) million tonnes	Crushed rock million tonnes	Sand & gravel (total) million tonnes
1980	607,787	50,728	199	103	96
	599,011	45,829	182	92	89
	610,489	47,487	194	103	91
	632,065	51,576	213	112	101
	648,325	53,627	211	111	100
1985	671,375	54,219	217	115	102
	697,894	56,178	228	123	106
	729,638	62,580	254	142	111
	765,932	68,616	291	162	130
	782,429	71,857	300	169	131
1990	788,152	72,085	278	162	116
	777,403	66,841	246	148	98
	779,563	64,033	233	144	89
	798,489	62,823	239	150	89
	833,681	62,589	259	162	98
1995	857,522	63,381	241	151	90
	880,854	65,776	215	133	82
	908,655	67,369	220	134	86
	938,101	68,411	218	132	86
	966,551	69,294	221	133	88
2000	1,005,542	69,676	219	130	89
2001	1,027,906	71,087	222	134	88
2002	1,048,456	74,090	210	127	83
2003	1,074,858	77,852	203	123	80
2004	1,108,890	80,254	214	128	86
2005	1,127,741	79,540	204	122	82
2006	1,157,062	80,569	204	123	81
2007	1,196,419	82,424	214	133	81

*Marine sand and gravel volumes include only GB landings for construction purposes.

Sand & gravel (marine)* million tonnes	Recycled/ secondary (GB) million tonnes (est)	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	48	268	27.5	22.33
13	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	67	281	26.9	23
13	68.3	272	27.9	22.4
13	70	274	25.7	22.9
14	71	285	25.7	23.5

Appendices

Marine aggregate summary statistics 1998 - 2007

	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

*Taken from 'Marine Aggregate Dredging - The Area Involved' annual reports published by BMAPA and The Crown Estate between 1999 and 2008.

**Extracted from annual 'Marine Aggregates, Crown Estate Licences, Summary Statistics' reports published by The Crown Estate between 1998 and 2008. 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 (years) (at 2007)
Brittania Aggregates	<i>Britannia Beaver</i>	1991	2775	4800	16
CEMEX UK Marine	<i>Sand Falcon</i>	1998	4000	6920	9
	<i>Sand Fulmar</i>	1998	4000	6920	9
	<i>Sand Harrier</i>	1990	2700	4671	17
	<i>Sand Heron</i>	1990	2700	4671	17
	<i>Sand Serin</i>	1974	900	1557	33
	<i>Sand Weaver</i>	1974	2400	4152	33
	<i>Welsh Piper</i>	1987	790	1367	20
DEME Building Materials	<i>Charlemagne</i>	2002	5000	8650	5
Hanson Aggregates Marine	<i>Arco Adur</i>	1988	2890	5000	19
	<i>Arco Arun</i>	1987	2890	5000	20
	<i>Arco Avon</i>	1986	2890	5000	21
	<i>Arco Axe</i>	1989	2890	5000	18
	<i>Arco Beck</i>	1989	2600	4500	18
	<i>Arco Dart</i>	1990	700	1250	17
	<i>Arco Dee</i>	1990	700	1250	17
	<i>Arco Dijk</i>	1992	5100	8800	15
	<i>Arco Humber</i>	1972	4800	8000	35
Norwest Sand & Ballast	<i>Sand Swan</i>	1970	840	1453	37
Northwood (Fareham)	<i>Donald Redford</i>	1981	510	880	26
	<i>Norstone</i>	1971	1075	1860	36
United Marine Dredging	<i>City of Cardiff</i>	1997	1300	2300	10
	<i>City of Chichester</i>	1997	1300	2300	10
	<i>City of London</i>	1990	2775	4800	17
	<i>City of Westminster</i>	1990	3000	5200	17
			61525	106301	19.68
			Total Fleet	Total Fleet	Average
			Capacity	Capacity	Vessel Age

Other BMAPA members during 2007 who do not operate vessels: **Kendall Brothers (Portsmouth)**, **Lafarge Aggregates** and **Volker Dredging**.

At the beginning of 2008 two new members joined BMAPA: **Brett Group** and **Sea Aggregates**.



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BMAPA is one of the constituent bodies
of the Quarry Products Association



The trade association for all aggregates, asphalt,
ready-mixed concrete, mortar, silica sand and lime