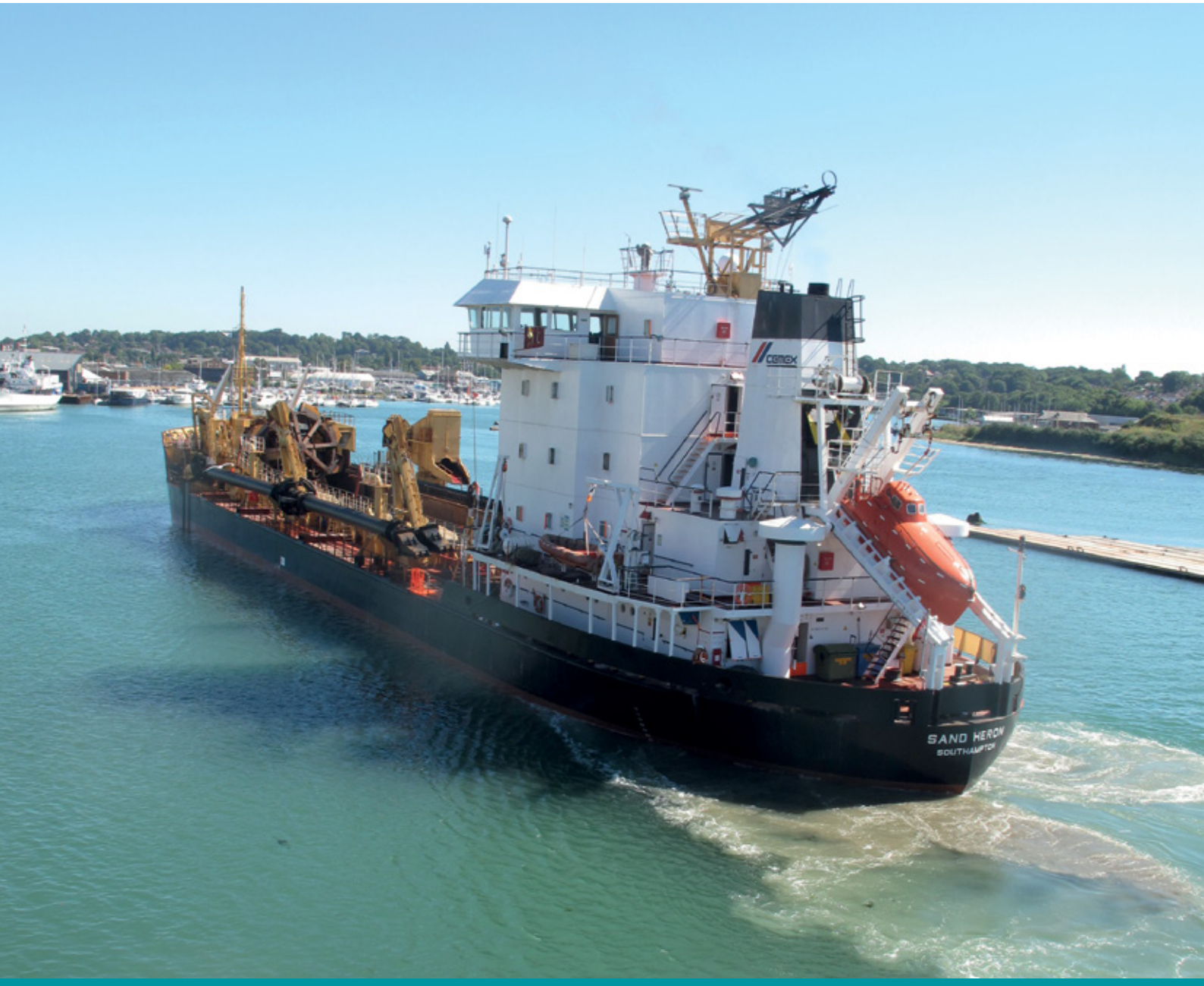
mpa
essential materials
sustainable solutions



Mineral Products Association

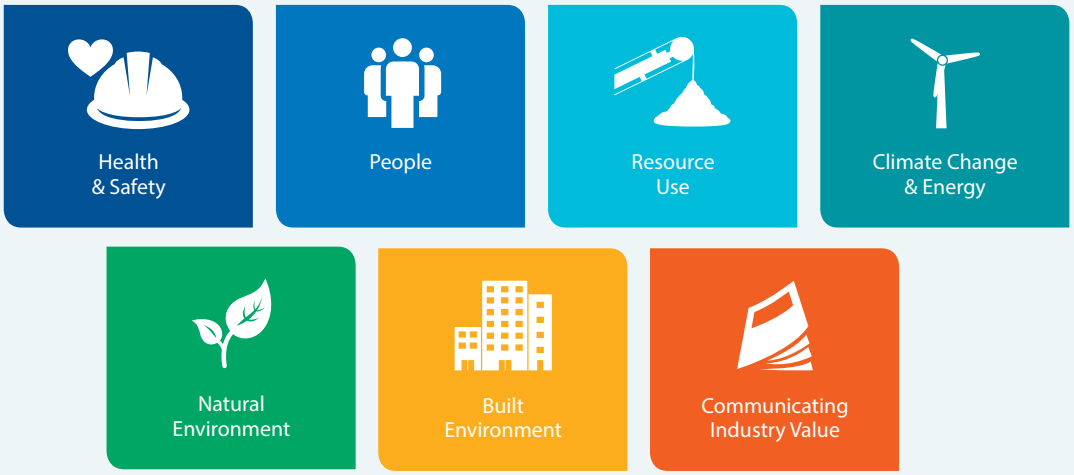
BMAPA Sustainable Development Report 2018

INTRODUCTION

The Mineral Products Association (MPA) is the trade association for the aggregates, asphalt, cement, concrete, dimension stone, lime, mortar and silica sand industries. It has a growing membership of 530 companies and is the sectoral voice for mineral products. MPA membership is made up of the vast majority of independent SME quarrying companies throughout the UK, as well as the major international and global companies. It covers 100% of GB cement production, 90% of aggregates production, 95% of asphalt and over 70% of ready-mixed concrete and precast concrete production.

MPA STRATEGIC PRIORITIES

Following the launch of the MPA Charter in 2017, the 2018 Sustainable Development Report for the British Marine Aggregate Producers Association (BMAPA) has been produced to align with the 7 MPA strategic priorities.



SUMMARY

KEY AREAS 2017	2017	% Change	2016	2015	2014	2013
Area of UK seabed	867,000 km^2		867,000 km^2	867,000 km^2	867,000 km^2	867,000 km^2
Area of seabed licensed for dredging	1057 km^2	+13.2%	934 km^2	932 km^2	726 km^2	739 km^2
Area available to be worked	552 km^2	+22.1%	452 km^2	337 km^2	332 km^2	332 km^2
Area dredged	90.94 km^2	+3.9%	87.53 km^2	82.67 km^2	85.66 km^2	98.67 km^2

MARKET SUMMARY 2017	2017	% Change	2016	2015	2014	2013
Total GB aggregates market	251.8 Mt	+1.8%	247.3 Mt	237.8 Mt	226.7 Mt	194.7 Mt
Land-based aggregates	162.0 Mt	-0.4%	162.7 Mt	156.8 Mt	150.1 Mt	123.8 Mt
Recycled & secondary aggregates	75.5 Mt	+7.2%	70.4 Mt	67.8 Mt	64.8 Mt	60.4 Mt
Total marine aggregates production	19.0 Mt	+1.1%	18.8 Mt	19.5 Mt	17.3 Mt	16.0 Mt
Marine landings to GB aggregates market	14.3 Mt	+1.4%	14.1 Mt	13.2 Mt	11.8 Mt	10.6 Mt
Marine landings to European aggregates market	3.1 Mt	+10.7%	2.8 Mt	2.2 Mt	3.0 Mt	4.1 Mt
Beach replenishment/ contract fill	1.6 Mt	-20.0%	2.0 Mt	4.1 Mt	2.4 Mt	1.3 Mt

MARKET CONTRIBUTION TO GB SAND AND GRAVEL MARKET – 2017	2017	% Change	2016	2015	2014	2013
Total GB Market	61.8 Mt	-1.9%	63.0 Mt	61.8 Mt	59.6 Mt	51.9 Mt
Total England & Wales Market	56.0 Mt	-1.4	56.8 Mt	56.2 Mt	54.5 Mt	47.0 Mt
Marine Landings to England & Wales	14.3 Mt	+1.4%	14.1 Mt	13.2 Mt	11.8 Mt	10.6 Mt
Marine Landings to SE England	11.6 Mt	-0.9%	11.7 Mt	11.1 Mt	9.9 Mt	8.7 Mt
Marine Landings to London & Thames Estuary	8.6 Mt	-1.1%	8.7 Mt	8.3 Mt	7.3 Mt	6.1 Mt
Marine Landings to Wales	0.7 Mt	0%	0.7 Mt	0.7 Mt	0.7 Mt	0.7 Mt

Health and Safety

OBJECTIVE 1: IMPROVE THE OCCUPATIONAL HEALTH AND SAFETY OF THE MARINE SECTOR'S EMPLOYEES

Key performance indicator: Working days lost through work-related injury*

	2017	2016	2015	2014	2013
Number of Lost Time Injuries	4	2	3	3	3
Days lost through work-related injury	12 (sea staff) 0 (office staff)	94 (sea staff) 0 (office staff)	75 (sea staff) 0 (office staff)	154 (sea staff) 0 (office staff)	112 (sea staff) 0 (office staff)

- Health and safety remains the marine aggregate sectors top priority. Our ultimate aim will always be "zero harm" to our workforce;
- The industry continues to collate and report of Lost Time Injury and wider accident incidents on a monthly basis, and at the end of August 2018 achieved the notable target of 12 months LTI free for the first time since January 2009;
- Sharing practical experiences, whether of accidents or 'near-hits', via BMAPA Safety Alerts remains a continuing commitment, with 25 issued during 2016 and a further 21 issued during 2017;
- As part of their 'Safer by Competence' commitment, companies continue to roll-out two new National Occupational Standards specifically developed by the sector to allow the crew working on board marine aggregate dredgers to demonstrate their competence when carrying out dredging and discharge operations. This enhances and compliments the Certificates of Competency already held by those working at sea;
- Common Measures – contractor guidance published, including contractor forum;
- Series of independent H&S audits of ship repair facilities commissioned by BMAPA;
- Marine 'Safer by Leadership' course developed.

*Based on reported data from 6 BMAPA member companies, operating 17 of the 19 vessels working in UK waters.

People

OBJECTIVE 2: IMPROVING EMPLOYEE DEVELOPMENT THROUGH VOCATIONAL TRAINING

Key performance indicator: Employment direct / indirect (office/ship crew)*

	2017	% Change	2016	2015	2014	2013
Office staff	59	+10.3%	53.5	54.5	57.5	59.5
Sea staff	306	-8.4%	334	347	351	335

Key performance indicator: Training days per employee (total no of training days)*

	2017	% Change	2016	2015	2014	2013
Training days/employee	6.1	+3.4%	5.9	4.9	6.7	4.1

OBJECTIVE 3: INCREASING THE TRANSPARENCY OF ACTIVITIES, AND MAINTAINING AND DEVELOPING FURTHER LIAISON WITH OTHER MARINE STAKEHOLDERS

Marine Aggregate Extraction & the Fishing Industry – Operational Code of Practice

A code of practice developed by the British Marine Aggregate Producers Association (BMAPA), the Marine Management Organisation (MMO) and The Crown Estate for the marine aggregate industry, has been established to minimise operational conflicts between aggregate dredging vessels and fishing vessels/activity – particularly the loss or damage of fishing gear. The code defines best practice for communication between marine aggregate operators and fisheries interests both in advance of dredging operations commencing and while dredging operations are taking place. It also includes the liaison required in advance of undertaking survey operations associated with marine aggregate interests, particularly where these may extend outside the boundaries of licensed areas or where the surveys are associated with a prospecting or application area that has yet to be licensed.

http://www.bmapa.org/issues/other_sea_users.php

Kingfisher Fortnightly Bulletin service

Working in partnership with The Crown Estate, BMAPA continue to fund an electronic reporting arrangement for marine aggregate specific issues through the Kingfisher Fortnightly Bulletin service, administered by Seafish. The service mirrors the equivalent arrangements already in place for the offshore oil & gas, renewable energy and offshore cables sectors, and allows information on changes to active dredging zones, commencement of works on new licence areas, notification of survey works and navigation obstructions to be electronically circulated to regional fisheries interests.

http://www.seafish.org/fishermen/kingfisher/fortnightly-bulletin/

Active dredge area charts

Since 2003, BMAPA has worked in partnership with The Crown Estate to produce twice-yearly active dredge area charts. These define the extent of the licence area within which dredging is permitted to take place, which are then enforced through analysis of the 'black box' Electronic Monitoring System data recorded by every marine aggregate dredger operating in UK waters.

Laminated versions of these charts are supplied to local offices of the Marine Management Organisation and Inshore Fisheries and Conservation Authorities and are also widely circulated to local fisheries interests. This ensures other marine users are provided with the most up to date information on the extent of marine aggregate operations.

http://www.bmapa.org/issues/other_sea_users.php

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 annual 'area involved' report for activity in 2017 represents the 20th produced, and the spatial data generated by this ongoing initiative continues to be a valuable reference for the extent and intensity of marine aggregate operations and how these have changed over time.

http://www.bmapa.org/issues/area_dredged.php

*Based on reported data from 6 BMAPA member companies, operating 17 of the 19 vessels working in UK waters.

Resource Use

OBJECTIVE 1 – MAINTAIN AND IMPROVE PROFITABILITY IN ORDER TO PROVIDE FOR CONTINUING INVESTMENT AND EMPLOYMENT

Key performance indicator: Annual marine production

	2017	% Change	2016	2015	2014	2013
Total (Crown Estate Figures)	19.0 Mt	+1.1%	18.8 Mt	19.5 Mt	17.3 Mt	16.0 Mt
BMAPA reported production*	13.6 Mt	+0.7%	13.5 Mt	13.2 Mt	13.0 Mt	13.3 Mt

Key performance indicator: National/regional contribution to supply

	2017	% Change	2016	2015	2014	2013
Landings to England & Wales	14.3 Mt	+1.4%	14.1 Mt	13.2 Mt	11.8 Mt	10.6 Mt
Landings to South East England	11.6 Mt	-0.9%	11.7 Mt	11.1 Mt	9.9 Mt	8.7 Mt
Landings to Wales	0.7 Mt	+1.4%	0.7 Mt	0.7 Mt	0.7 Mt	0.7 Mt
Beach replenishment/ Fill	1.6 Mt	-18.4%	2.0 Mt	4.1 Mt	2.4 Mt	1.3 Mt
Exports	3.1 Mt	+13.0%	2.8 Mt	2.2 Mt	3.0 Mt	4.1 Mt

- Total marine aggregate production remained largely flat in 2017, reflecting the general market conditions. This was further reflected with landings to England and Wales and to the South East of England;
- Demand for marine material in support of beach replenishment and major contract fill projects decreased by 18.4%, with projects including beach works at Dawlish and Pevensey and reclamation at Dover ;
- Exports of construction aggregate to the near Continent continue to show some recovery in 2017, with a 13% increase on the equivalent figures for 2016;

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*

	2017	% Change	2016	2015	2014	2013
Average age of dredging fleet (years)	22.1	+4.7%	21.1	20.5	19.6	19.6

- 19 vessels were operated by BMAPA members at the end of 2017, with an average age of 22.1 years.

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

	2017	% Change	2016	2015	2014	2013
Capital expenditure in vessels (not including maintenance)	£6.0M	+400%	£1.5M	£2.0M	£1.0M	£3.3M

	2017	% Change	2016	2015	2014	2013
Five year rolling investment	£13.7M	+57.5%	£8.7M	£9.8M	£12.0M	£15.2M

*Based on reported data from 6 BMAPA member companies, operating 17 of the 19 vessels working in UK waters.

OBJECTIVE 3 – MINIMISE THE SCREENING ACTIVITY IN THE PRODUCTION PROCESS

Key performance indicator: Tonnes landed per hour dredged

	2017	% Change	2016	2015	2014	2013
Marine aggregate production	13.6 Mt	+0.7%	13.5 Mt	13.2 Mt	13.0 Mt	13.3 Mt
Hours dredged	13,070 hrs	-1.9%	13,318 hrs	12,916 hrs	12,924 hrs	14,850 hrs
Tonnes landed/hour dredged	1041t/hr	+2.7%	1014t/hr	1022t/hr	1002t/hr	895t/hr

- The relative stability in the relationship between hours dredged (-1.9%) compared to reported production (+0.7%) suggests that the overall level of screening activity has remained broadly stable.
- As a consequence, the KPI metric for tonnes landed per hour dredged only increased by 2.7% compared to the equivalent figure for 2016.

OBJECTIVE 4 – DEVELOP AND PROMOTE BEST PRACTICE FOR RESOURCE MANAGEMENT

The marine aggregate sector continues to employ best practice guidance and methodologies to support resource management. This ensures that the sand and gravel resources being extracted meet the requirements of the markets and end-uses they support, and operations are undertaken in compliance with their regulatory licences.

These principles are applied to all marine licences, through a set of standard conditions that relate to marine aggregate extraction.

This includes a requirement for the marine licence area to correspond to the extent of the commercially viable resource that is being targeted, and for resource areas of veneer thickness (less than 0.5m) to be identified, and for suitable exclusion zones to be introduced to prevent them being dredged in order to support the ecological recovery of the dredged area.

Collectively, these steps ensure that the area of seabed that is licensed for marine aggregate extraction continues to be minimised, in line with industry best practice and the 'Area Involved' commitment, and that dredging operations only take place where the commercially viable sand and gravel resources are sufficiently thick so as not to expose underlying bedrock sediments.

Climate Change and Energy

OBJECTIVE 1 – REDUCE THE IMPACT OF ATMOSPHERIC EMISSIONS RELEASED THROUGH THE PRODUCTION AND TRANSPORT PROCESSES

Key performance indicator: Marine Gas Oil (MGO) consumed per tonne landed*

	2017	% Change	2016	2015	2014	2013
Total MGO	29,659t	-0.8%	29,901t	29,899t	30,297t	32,558t
Marine aggregate production	13.6 Mt	+0.7%	13.5 Mt	13.2 Mt	13.0 Mt	13.3 Mt
MGO/tonne landed	2.18kg/t	-1.4%	2.21kg/t	2.27kg/t	2.34kg/t	2.45kg/t

Key performance indicator : CO_2 emissions*

	2017	% Change	2016	2015	2014	2013
Total CO_2 emissions	94,614t	-0.8%	95,384t	95,378t	96,647t	103,860t
Marine aggregate production	13.6 Mt	+0.7%	13.5 Mt	13.2 Mt	13.0 Mt	13.3 Mt
CO_2/tonne landed	6.96kg/t	-1.4%	7.06kg/t	7.23kg/t	7.46kg/t	7.81kg/t

(The calculation from MGO tonnes to CO2 tonnes has been made using a conversion factor taken 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)

*Based on reported data from 6 BMAPA member companies, operating 17 of the 19 vessels working in UK waters.

- The small reduction in total fuel oil consumption and CO2 emissions reported by BMAPA operators during 2017 coupled with a slight increase in annual production resulted in a minor reduction in the metrics for fuel and emissions per tonne landed (-1.4%).

OBJECTIVE 2 – MAXIMISE THE EFFICIENT USE OF THE DREDGING FLEET

Key performance indicator: tonnes landed per kilometre travelled*

	2017	% Change	2016	2015	2014	2013
Total km steamed	970,211 km	-3.2%	1,0 M km	952,334 km	942,359 km	1.04M km
Marine aggregate production	13.6 Mt	+0.7%	13.5 Mt	13.2 Mt	13.0 Mt	13.3 Mt
Tonnes landed/km steamed	14.0t/km	3.9%	13.48t/km	13.86t/km	13.75t/km	12.73t/km

- The reduction in total distance steamed coupled with overall reported production remaining broadly stable during 2017, resulted in an increase in tonnes landed/km steamed (+3.9%). The overall trend in performance suggests improvements in efficiency.

*Based on reported data from 6 BMAPA member companies, operating 17 of the 19 vessels working in UK waters.

Natural Environment

OBJECTIVE 1 – MINIMISE THE SPATIAL FOOTPRINT OF DREDGING OPERATIONS THROUGH RESPONSIBLE AND EFFECTIVE MANAGEMENT

	2017	% Change	2016	2015	2014	2013
Area of seabed licensed for dredging	1057 km^2	+13.2%	934 km^2	932 km^2	726 km^2	739 km^2
Active Dredge Area	522 km^2	+15.4%	452 km^2	337 km^2	332 km^2	332 km^2
Area dredged	90.9 km^2	+3.9%	87.5 km^2	82.7 km^2	85.7 km^2	98.7 km^2
Area of seabed where 90% dredging occurs	38.3 km^2	+12.9%	33.9 km^2	31.6 km^2	37.3 km^2	39.2 km^2
Area of seabed dredged for more than 1.25 hours	7.4 km^2	-1.3%	7.5 km^2	7.4 km^2	6.4 km^2	6.8 km^2

OBJECTIVE 2 – MAINTAIN AND DEVELOP THE INDUSTRY CONTRIBUTION TOWARDS THE UNDERSTANDING OF MARINE SAND AND GRAVEL HABITATS

Regional Monitoring & Management

The marine aggregate industry continues to deliver the Regional Seabed Monitoring Plan (RSMP) approach, developed in partnership with Defra, the Marine Management Organisation, Welsh Government and The Crown Estate. This methodology focusses compliance effort on the status of seabed sediments in order to determine their ability to biologically recover once extraction activities have ended.

To support the delivery of this approach, the RSMP approach now forms part of the standard compliance conditions that apply to all marine licences for marine mineral extraction. The timing of these requirements have been aligned across the dredging regions, regional associations have been established by the industry to manage the regional-scale monitoring surveys that are now being employed.

As well as seabed sampling surveys, the regional monitoring approach has been extended by the industry to cover the standard multi-beam echosounder and side scan sonar surveys that are routinely required as part of the compliance regime.

As well as delivering a more consistent and scientifically robust approach to compliance monitoring, the RSMP process has also demonstrated opportunities for significant savings in time, effort and cost through the adoption of a more coordinated approach.

During 2017, the first regional monitoring surveys were undertaken across the South coast region, while in 2018 regional monitoring surveys were undertaken across the Outer Thames and Anglian regions.

Marine Protected Area Network

BMAPA and its member companies have continued to play a full and constructive role in the development of a network of Marine Protected Areas in UK seas, including the Marine Conservation Zone process that has been taking place in English waters.

The marine aggregate sector remains committed to working with Defra and the nature conservation agencies to help support the successful conclusion of the process to define an effective network of Marine Protected Areas – both in terms of the identification of potential new sites, but also the development of appropriate management measures for marine development activity that may be associated with them. The location of potential sites relative to long-standing marine aggregate licence areas means that in certain cases, the monitoring work routinely undertaken to help manage marine aggregate operations has the potential to offer significant added-value to MCZ site management.

*Based on reported data from 6 BMAPA member companies, operating 17 of the 19 vessels working in UK waters.

OBJECTIVE 3 – MAINTAIN AND DEVELOP INDUSTRY CONTRIBUTION TOWARDS THE UNDERSTANDING OF BRITAIN'S MARINE HISTORIC ENVIRONMENT

The archaeological reporting protocol that was originally developed by BMAPA and Historic England's predecessor organisation 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, co-funded by BMAPA and The Crown Estate. 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 the protocol was introduced in 2005, over 530 separate reports have been filed by marine aggregate industry staff (64 in 20116/17), covering over 1,700 individual items (c.93 in 2016/17). Finds reported ranged from Palaeolithic animal remains, through to cannon balls and a myriad of maritime artefacts including portholes, brass plate, and metal fittings. The implementation service includes an annual report which details every find reported during the reporting year, and commenting on trends emerging over time.

http://www.wessexarch.co.uk/projects/marine/bmapa/docs.html

To support the practical delivery of the protocol, an awareness programme to encourage its use amongst industry staff working on both wharves and on the dredgers themselves has been in place since 2005. The current programme, which has been in place since 2017, is co-funded by BMAPA and The Crown Estate and involves site visits by maritime archaeologists to provide industry staff with the knowledge and confidence to identify and report items of potential archaeological interest that may be found amongst dredged cargoes, as well as the production of twice-yearly 'Dredged Up' newsletters.

http://www.wessexarch.co.uk/projects/marine/bmapa/protocol-awareness.html

OBJECTIVE 4 – MAINTAIN EFFECTIVE CONTROLS TO MINIMISE THE POTENTIAL FOR POLLUTION TO THE MARINE ENVIRONMENT

Key performance indicator: number of recorded pollution incidents*

	2017	2016	2015	2014	2013
Number of pollution incidents	0	0	1	0	0

Communicating Industry Value

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 17 vessels operated by BMAPA members for which data has been reported in 2017 range in size from 1,250 tonnes to 10,000 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 covered by data reported during 2017 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. (5 vessels/8,467t total hopper capacity –10.5% of total reported 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. (12 vessels/72,370t total hopper capacity – 89.5% of total reported 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 in each class that would perhaps otherwise be masked in the summed dataset.

*Based on reported data from 6 BMAPA member companies, operating 17 of the 19 vessels working in UK waters.

RESOURCE USE: OBJECTIVE 1 – MAINTAIN AND IMPROVE PROFITABILITY IN ORDER TO PROVIDE FOR CONTINUING INVESTMENT AND EMPLOYMENT

Key performance indicator: Annual marine production

	2017	% Change	2016	2015	2014	2013
Production <3,000t capacity	2,408,129 t (17.7% total)	-15.8%	2,859,832 t	2,453,314 t	2,502,428 t	2,658,242 t
Production >3,000t capacity	11,192,675 t (82.3% total)	+5.1%	10,644,857 t	10,742,179 t	10,453,183 t	10,636,959 t

RESOURCE USE: OBJECTIVE 3 – MAKE THE MOST EFFICIENT USE OF AVAILABLE LICENSED RESOURCES

Key performance indicator: Area dredged and hours dredged

	2017	% Change	2016	2015	2014	2013
Hours dredged <3,000t	3,359 hrs (25.7% total)	-13.6%	3,887 hrs	3,494 hrs	3,723 hrs	4,080 hrs
Hours dredged >3,000t	9,711 hrs (74.3% total)	+3.0%	9,431 hrs	9,422 hrs	9,201 hrs	10,770 hrs

RESOURCE USE: OBJECTIVE 4 – MINIMISE THE SCREENING ACTIVITY IN THE PRODUCTION PROCESS

Key performance indicator: Tonnes landed per hour dredged

	2017	% Change	2016	2015	2014	2013
Tonnes landed/hour dredged (<3k t)	717 t/hour	-2.6%	736 t/hour	702 t/hour	672 t/hour	652 t/hour
Tonnes landed/hour dredged (>3k t)	1,153 t/hour	+2.1%	1,129 t/hour	1,140 t/hour	1,136 t/hour	988 t/hour

CLIMATE CHANGE AND ENERGY: OBJECTIVE 1 – REDUCE THE IMPACT OF ATMOSPHERIC EMISSIONS RELEASED THROUGH THE PRODUCTION AND TRANSPORT PROCESSES

Key performance indicator: Marine Gas Oil (MGO) consumed per tonne landed

	2017	% Change	2016	2015	2014	2013
MGO <3,000t capacity	3,555 t (12.0% total)	-13.1%	4,093 t	3,508 t	3,616 t	3,814 t
MGO >3,000t capacity	26,104 t (88.0% total)	+1.2%	25,807 t	26,390 t	26,681 t	28,744 t
MGO/tonne <3,000t capacity	1.48 kg/t	+3.5%	1.43 kg/t	1.43 kg/t	1.44 kg/t	1.43 kg/t
MGO/tonne >3,000t capacity	2.33 kg/t	-3.7%	2.42 kg/t	2.46 kg/t	2.55 kg/t	2.70 kg/t

Key performance indicator : CO_2 emissions

	2017	% Change	2016	2015	2014	2013
CO_2 emissions <3,000t capacity	11,341 t (12.0% total)	-13.1%	13,057 t	11,193	11,535 t	12,167 t
CO_2 emissions >3,000t capacity	83,273 t (88% total)	+1.2%	82,327 t	84,184 t	85,112 t	91,693 t
Kg CO_2/t landed <3,000t capacity	4.70 kg/t	+2.1%	4.57 kg/t	4.56 kg/t	4.61 kg/t	4.58 kg/t
Kg CO_2/t landed >3,000t capacity	7.44 kg/t	-3.8%	7.73 kg/t	7.84 kg/t	8.14 kg/t	8.62 kg/t

CLIMATE CHANGE AND ENERGY: OBJECTIVE 2 – MAXIMISE THE EFFICIENT USE OF THE DREDGING FLEET

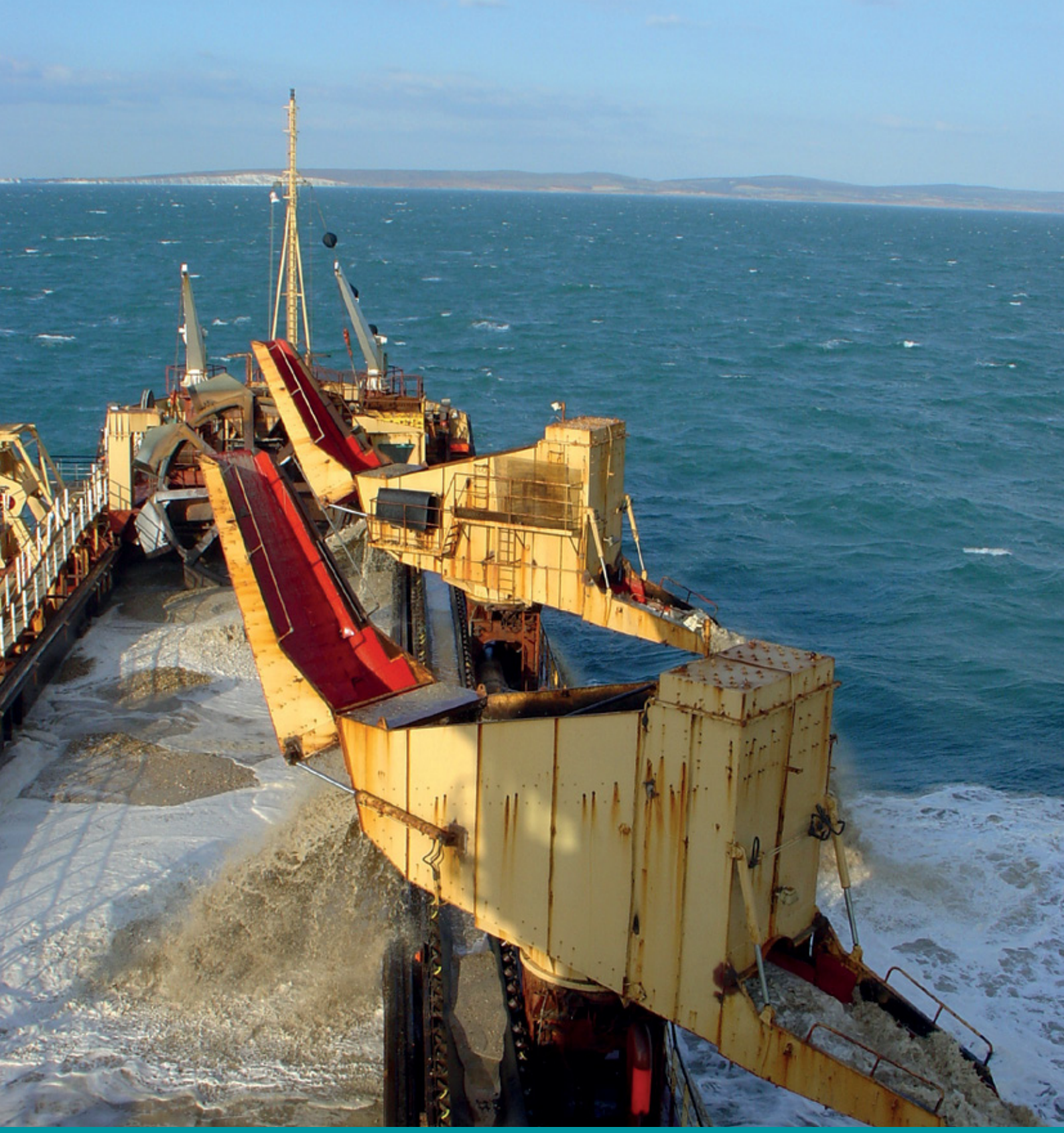
Key performance indicator: tonnes landed per kilometre travelled

	2017	% Change	2016	2015	2014	2013
Km steamed <3,000t capacity	228,417 km (23.5% total)	-6.1%	243,194 km	202,756 km	205,311 km	224,771 km
Km steamed >3,000t capacity	741,794 km (76.5% total)	-2.2%	758,610 km	749,578 km	737,049 km	819,296 km
Tonnes landed/km <3,000 t capacity	10.54 t/km	-10.4%	11.76 t/km	12.10 t/km	12.19 t/km	11.83 t/km
Tonnes landed/km >3,000 t capacity	15.09 t/km	+7.5%	14.03 t/km	14.33 t/km	14.18 t/km	12.98 t/km

BMAPA MEMBERS AND DREDGING FLEET

BMAPA Member	Vessel	Built	Capacity (cubic metres)	Capacity (tonnes)	Age (end of 2017)
Britannia Aggregates	Britannia Beaver	1991	2,775	4,800	25
CEMEX UK Marine	Reimerswaal	2012	6,000	10,000	5
	Sand Falcon	1998	4,832	8,359	18
	Sand Fulmar	1998	4,000	6,290	18
	Sand Heron	1990	2,700	4,671	26
	Welsh Piper	1987	790	1,367	29
DEME Building Materials	Charlemagne	2002	5,000	8,650	14
	Victor Horta	2011	5,000	8,650	7
Hanson Aggregates Marine	Arco Adur	1988	2,890	5,000	28
	Arco Avon	1986	2,890	5,000	30
	Arco Axe	1989	2,890	5,000	27
	Arco Beck	1989	2,600	4,500	27
	Arco Dart	1990	700	1,250	26
	Arco Dee	1990	700	1,250	26
	Arco Dijk	1992	5,100	8,800	24
Tarmac Marine	City of Cardiff	1997	1,418	2,300	19
	City of Chichester	1997	1,418	2,300	19
	City of London	1990	2,652	4,750	26
	City of Westminster	1990	3,000	5,200	26
			Total fleet capacity	Total fleet capacity	Average vessel age
			60,175 m^3	98,137t	22.1 years

Other BMAPA members (as of 31.12.17) who do not operate vessels: Brett Group, Norwest Sand & Ballast Co., Sea Aggregates, Volker Dredging



This report has been titled as 2018 to follow the general MPA nomenclature to use the year of data collection rather than the year of performance.

The Mineral Products Association is the trade association for the aggregates, asphalt, cement, concrete, dimension stone, lime, mortar and silica sand industries.

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