



Mineral Products Association BMAPA Sustainable Development Report 2019

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 550 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 2019 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 2018	2018	% Change	2017	2016	2015	2014
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	1102 km ²	+4.3%	1057 km ²	934 km ²	932 km ²	726 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	97.87 km ²	+7.6%	90.94 km ²	87.53 km ²	82.67 km ²	85.66 km ²

MARKET SUMMARY 2018	2018	% Change	2017	2016	2015	2014
Total GB aggregates market	251.9 Mt	+1.5%	248.2 Mt	245.9 Mt	236.9 Mt	226.5 Mt
Land-based aggregates	166.2 Mt	+2.6%	162.0 Mt	162.8 Mt	156.8 Mt	150.1 Mt
Recycled & secondary aggregates	72 Mt	+0.1%	71.9 Mt	69.0 Mt	66.9 Mt	64.6 Mt
Total marine aggregates production	19.6 Mt	+3.2%	19.0 Mt	18.8 Mt	19.5 Mt	17.3 Mt
Marine landings to GB aggregates market	13.7 Mt	-4.2%	14.3 Mt	14.1 Mt	13.2 Mt	11.8 Mt
Marine landings to European aggregates market	4.1 Mt	+32.3%	3.1 Mt	2.8 Mt	2.2 Mt	3.0 Mt
Beach replenishment/ contract fill	1.9 Mt	+18.8%	1.6 Mt	2.0 Mt	4.1 Mt	2.4 Mt

MARKET CONTRIBUTION TO GB SAND AND GRAVEL MARKET – 2018	2018	% Change	2017	2016	2015	2014
Total GB Market	62.6 Mt	+1.3%	61.8 Mt	63.0 Mt	61.8 Mt	59.6 Mt
Total England & Wales Market	57.0 Mt	+1.7%	56.0 Mt	56.8 Mt	56.2 Mt	54.5 Mt
Marine Landings to England & Wales	13.7 Mt	-4.2%	14.3 Mt	14.1 Mt	13.2 Mt	11.8 Mt
Marine Landings to SE England	11.3 Mt	-2.6%	11.6 Mt	11.7 Mt	11.1 Mt	9.9 Mt
Marine Landings to London & Thames Estuary	8.3 Mt	-3.5%	8.6 Mt	8.7 Mt	8.3 Mt	7.3 Mt
Marine Landings to Wales	0.6 Mt	-14.2%	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*

	2018	2017	2016	2015	2014
Number of Lost Time Injuries	0	4	2	3	3
Days lost through work-related injury	0	12 (sea staff) 0 (office staff)	75 (sea staff) 0 (office staff)	75 (sea staff) 0 (office staff)	154 (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 Lost Time Injury (LTI) and wider accident incidents on a monthly basis, with the sector remaining LTI free for the duration of 2018;
- Sharing practical experiences, whether of accidents or 'near-hits', via BMAPA Safety Alerts remains a continuing commitment, with 12 alerts issued during 2018 contributing towards a total of 137 issued since the initiative commenced in 2007;
- As part of their 'Safer by Competence' commitment, member companies continue to roll-out 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;
- During 2018, BMAPA commissioned independent H&S audits of seven ship repair facilities commonly used by member companies, the findings from which are to be used to update a 'Common Measures Guidance for Ship Repair Operations';
- The first marine 'Safer by Leadership' course was delivered to a mix of ships officers and office management.

*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)*

	2018	% Change	2017	2016	2015	2014
Office staff	60.5	+2.5%	59	53.5	54.5	57.5
Sea staff	304	-0.7%	306	334	347	351

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

	2018	% Change	2017	2016	2015	2014
Training days/employee	4.1	-32.8%	6.1	5.9	4.9	6.7

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 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 2018 represents the 21st 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

Upgraded Electronic Monitoring System

The original EMS, introduced in 1993, was a PC based solution that operated alongside a variety of sensors attached to dredging equipment. During 2018, a new, bespoke EMS system has been rolled out across the UK dredging fleet, comprising a secure black box that utilises a simple, stable operating system. An independent differential GPS is used to track vessel position, while an independent acoustic sensor indicates vessel dredging status with data recorded every 10 seconds – three times more frequently than the original.

The EMS automatically records the date, time and location of all dredging activities, and the data logs generated are encoded for security purposes and analysed by The Crown Estate to ensure compliance with both Marine Licences conditions and the terms of their commercial agreements.

*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

	2018	% Change	2017	2016	2015	2014
Total (Crown Estate Figures)	19.6 Mt	+3.2%	19.0 Mt	18.8 Mt	19.5 Mt	17.3 Mt
BMAPA reported production*	12.6 Mt	-7.4%	13.6 Mt	13.5 Mt	13.2 Mt	13.0 Mt

Key performance indicator: National/regional contribution to supply

	2018	% Change	2017	2016	2015	2014
Landings to England & Wales	13.7 Mt	-4.2%	14.3 Mt	14.1 Mt	13.2 Mt	11.8 Mt
Landings to South East England	11.3 Mt	-2.6%	11.6 Mt	11.7 Mt	11.1 Mt	9.9 Mt
Landings to Wales	0.6 Mt	-14.3%	0.7 Mt	0.7 Mt	0.7 Mt	0.7 Mt
Beach replenishment/ Fill	1.9 Mt	+18.8%	1.6 Mt	2.0 Mt	4.1 Mt	2.4 Mt
Exports	4.1 Mt	+32.3%	3.1 Mt	2.8 Mt	2.2 Mt	3.0 Mt

- Total marine aggregate production increased by 3.2% in 2018. While landings to the South East of England remained broadly stable, the reduction of overall landings to England and Wales reflected the softening construction market conditions outside of London and the South East of England;
- Demand for marine material in support of beach replenishment and major contract fill projects increased by 18%, with significant tonnages being delivered to projects at Lincshire, Felixstowe, Dover and Poole during 2018;
- Exports of construction aggregate to the near Continent continued to recover in 2018, with a 32% increase on the equivalent figures for 2017 resulting in a five-year high.

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*

	2018	% Change	2017	2016	2015	2014
Average age of dredging fleet (years)	23.1	+4.5%	22.1	21.1	20.5	19.6

- 19 vessels were operated by BMAPA members at the end of 2018, with an average age of 23.1 years.

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

	2018	% Change	2017	2016	2015	2014
Capital expenditure in vessels (not including maintenance)	£0.7M	-87.9%	£6.0M	£1.5M	£2.0M	£1.0M

	2018	% Change	2017	2016	2015	2014
Five year rolling investment	£11.1M	-19.0%	£13.7M	£8.7M	£9.8M	£12.0M

- Although the rolling five year investment total decreased in 2018, two new-build vessels are currently under construction and expected to come into service in 2020/2021.

*Based on reported data from 6 BMAPA member companies, operating 16 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***

	2018	% Change	2017	2016	2015	2014
Marine aggregate production	12.6Mt	-7.4%	13.6 Mt	13.5 Mt	13.2 Mt	13.0 Mt
Hours dredged	11,797 hrs	-9.7%	13,070 hrs	13,318 hrs	12,916 hrs	12,924 hrs
Tonnes landed/hour dredged	1,069t/hr	+2.7%	1,041t/hr	1,014t/hr	1,022t/hr	1,002t/hr

- The increase in tonnes landed per hour dredged would suggest that the overall level of screening activity reduced slightly during 2018.

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***

	2018	% Change	2017	2016	2015	2014
Total MGO	28,251t	-4.8%	29,659t	29,901t	29,899t	30,297t
Marine aggregate production	12.6 Mt	-7.4%	13.6 Mt	13.5 Mt	13.2 Mt	13.0 Mt
MGO/tonne landed	2.24kg/t	+2.8%	2.18kg/t	2.21kg/t	2.27kg/t	2.34kg/t

Key performance indicator: CO₂ emissions*

	2018	% Change	2017	2016	2015	2014
Total CO ₂ emissions	90,120t	-4.8%	94,614t	95,384t	95,378t	96,647t
Marine aggregate production	12.6 Mt	-7.4%	13.6 Mt	13.5 Mt	13.2 Mt	13.0 Mt
CO ₂ /tonne landed	7.15kg/t	+2.8%	6.96kg/t	7.06kg/t	7.23kg/t	7.46kg/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 16 of the 19 vessels working in UK waters.

- Both marine aggregate production and total fuel oil consumption/CO₂ emissions reported by BMAPA operators reduced slightly during 2018. As the reduction in annual production was greater, this resulted in a minor increase in the metrics for fuel and emissions per tonne landed (+2.8%).

OBJECTIVE 2 – MAXIMISE THE EFFICIENT USE OF THE DREDGING FLEET

Key performance indicator: tonnes landed per kilometre travelled*

	2018	% Change	2017	2016	2015	2014
Total km steamed	902,403 km	-7.0%	970,211 km	1,0 M km	952,334 km	942,359 km
Marine aggregate production	12.6Mt	-7.4%	13.6 Mt	13.5 Mt	13.2 Mt	13.0 Mt
Tonnes landed/km steamed	13.97t/km	-0.3%	14.0t/km	13.48t/km	13.86t/km	13.75t/km

- The reduction in total distance steamed corresponds closely with the reduction in reported production during 2018. As a consequence, the tonnes landed/km metric remained stable which suggests that operational efficiency was able to be maintained.



*Based on reported data from 6 BMAPA member companies, operating 16 of the 19 vessels working in UK waters.



Natural Environment



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

	2018	% Change	2017	2016	2015	2014
Area of seabed licensed for dredging	1102 km ²	+4.3%	1057 km ²	934 km ²	932 km ²	726 km ²
Active Dredge Area	571 km ²	+9.4%	522 km ²	452 km ²	337 km ²	332 km ²
Area dredged	97.9 km ²	+7.7%	90.9 km ²	87.5 km ²	82.7 km ²	85.7 km ²
Area of seabed where 90% dredging occurs	39.5 km ²	+3.1%	38.3 km ²	33.9 km ²	31.6 km ²	37.3 km ²
Area of seabed dredged for more than 1.25 hours	6.3 km ²	-14.7%	7.4 km ²	7.5 km ²	7.4 km ²	6.4 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.

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, and regional associations have been established by the industry to manage the regional-scale monitoring surveys that are now being delivered.

As well as seabed sampling surveys, the regional monitoring approach incorporates the standard multi-beam echo sounder and side scan sonar surveys that are routinely required across licence areas as part of the compliance regime.

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

During 2018, regional monitoring surveys were undertaken across the Outer Thames and Anglian regions while in 2019, regional monitoring surveys were completed across the Humber region.

Biosecurity Strategy

The risks associated with alien non-native species – otherwise known as Invasive Non-Native Species (INNS) – and how these are managed to reduce this potential threat (biosecurity planning) represents a growing area of concern.

Government's 25 Year Environment Plan (2018) identifies the

need to enhance biosecurity as one of ten goals and targets that are identified to protect the natural environment. Meanwhile a recent UN report on the state of the global environment (2019) identifies INNS as one of the five principal drivers for global environmental change, alongside changes in land & sea use, direct exploitation, climate change and pollution.

Ballast Water Management Plans, introduced through requirements under the International Ballast Water Convention, have already introduced measures to reduce the potential risks arising from INNS being transported through vessels ballast water.

A Biosecurity Strategy has now been developed for UK marine aggregate operations to identify and risk assess the means by which INNS could be encountered, along with a set of preventative control measures. This is supported by an awareness programme for wharves and dredging vessels, comprising a poster and biosecurity guidance booklet to help staff identify the most common INNS along with the steps needed should any of these be encountered.

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. Where appropriate, finds are reported to the Receiver of Wreck (items of wreck) or the Ministry of Defence (aircraft wreckage) and all finds are reported to the National Record of the Historic Environment and the appropriate local Historic Environment Record.

Since the protocol was introduced in 2005, over been 1,800 individual finds have been reported by marine aggregate industry staff. During the reporting period 2018/19, 43 reports were submitted covering 96 individual items ranging from medieval cannonballs and Victorian munitions to aircraft

wreckage and faunal remains. 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*

	2018	2017	2016	2015	2014
Number of pollution incidents	0	0	0	1	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 16 vessels operated by BMAPA members for which data has been reported in 2018 range in size from 1,250 tonnes to 10,000 tonnes capacity, with associated variations in vessel dimensions and engine power. 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 2018 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: 11.2% 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. (11 vessels/67,370t total hopper capacity: 88.8% 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 16 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

	2018	% Change	2017	2016	2015	2014
Production <3,000t capacity	2,261,403 t (18% total)	-6.1%	2,408,129 t	2,859,832 t	2,453,314 t	2,502,428 t
Production >3,000t capacity	10,346,369 t (82% total)	-7.6%	11,192,675 t	10,644,857 t	10,742,179 t	10,453,183 t

RESOURCE USE: OBJECTIVE 3 – MAKE THE MOST EFFICIENT USE OF AVAILABLE LICENSED RESOURCES
Key performance indicator: Area dredged and hours dredged

	2018	% Change	2017	2016	2015	2014
Hours dredged <3,000t	3,055 hrs (26% total)	-9.1%	3,359 hrs	3,494 hrs	3,723 hrs	4,080 hrs
Hours dredged >3,000t	8,742 hrs (74% total)	-10.0%	9,711 hrs	9,431 hrs	9,422 hrs	9,201 hrs

RESOURCE USE: OBJECTIVE 4 – MINIMISE THE SCREENING ACTIVITY IN THE PRODUCTION PROCESS
Key performance indicator: Tonnes landed per hour dredged

	2018	% Change	2017	2016	2015	2014
Tonnes landed/hour dredged (<3k t)	740 t/hour	+3.3%	717 t/hour	736 t/hour	702 t/hour	672 t/hour
Tonnes landed/hour dredged (>3k t)	1,184 t/hour	+2.7%	1,153 t/hour	1,129 t/hour	1,140 t/hour	1,136 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

	2018	% Change	2017	2016	2015	2014
MGO <3,000t capacity	3,311 t (12% total)	-6.8%	3,555 t	4,093 t	3,508 t	3,616 t
MGO >3,000t capacity	24,939 t (88% total)	-4.5%	26,104 t	25,807 t	26,390 t	26,681 t
MGO/tonne <3,000t capacity	1.46 kg/t	-0.8%	1.48 kg/t	1.43 kg/t	1.43 kg/t	1.44 kg/t
MGO/tonne >3,000t capacity	2.41 kg/t	+3.4%	2.33 kg/t	2.42 kg/t	2.46 kg/t	2.55 kg/t

Key performance indicator : CO₂ emissions

	2018	% Change	2017	2016	2015	2014
CO ₂ emissions <3,000t capacity	10,564 t (12% total)	-6.9%	11,341 t	13,057 t	11,193 t	11,535 t
CO ₂ emissions >3,000t capacity	79,556 t (88% total)	-4.5%	83,273 t	82,327 t	84,184 t	85,112 t
Kg CO ₂ /t landed <3,000t capacity	4.67 kg/t	-0.8%	4.71 kg/t	4.57 kg/t	4.56 kg/t	4.61 kg/t
Kg CO ₂ /t landed >3,000t capacity	7.69 kg/t	+3.4%	7.44 kg/t	7.73 kg/t	7.84 kg/t	8.14 kg/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>)

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

Key performance indicator: tonnes landed per kilometre travelled

	2018	% Change	2017	2016	2015	2014
Km steamed <3,000t capacity	200,767 km (22% total)	-12.1%	228,417 km	243,194 km	202,756 km	205,311 km
Km steamed >3,000t capacity	701,636 km (88% total)	-5.4%	741,794 km	758,610 km	749,578 km	737,049 km
Tonnes landed/km <3,000 t capacity	11.26 t/km	+6.8%	10.54 t/km	11.76 t/km	12.10 t/km	12.19 t/km
Tonnes landed/km >3,000 t capacity	14.75 t/km	-2.3%	15.09 t/km	14.03 t/km	14.33 t/km	14.18 t/km

BMAPA MEMBERS AND DREDGING FLEET

BMAPA Member	Vessel	Built	Capacity (cubic metres)	Capacity (tonnes)	Age (end of 2018)
Aggregate Industries	Al Avocet	1988	1,019	1,732	29
Britannia Aggregates	Britannia Beaver	1991	2,775	4,800	26
CEMEX UK Marine	Reimerswaal	2012	6,000	10,000	6
	Sand Falcon	1998	4,832	8,359	19
	Sand Fulmar	1998	4,000	6,290	19
	Sand Heron	1990	2,700	4,671	27
	Welsh Piper	1987	790	1,367	30
DEME Building Materials	Charlemagne	2002	5,000	8,650	15
	Victor Horta	2011	5,000	8,650	8
Hanson Aggregates Marine	Arco Avon	1986	2,890	5,000	31
	Arco Axe	1989	2,890	5,000	28
	Arco Beck	1989	2,600	4,500	28
	Arco Dart	1990	700	1,250	27
	Arco Dee	1990	700	1,250	27
Tarmac Marine	Arco Dijk	1992	5,100	8,800	25
	City of Cardiff	1997	1,418	2,300	20
	City of Chichester	1997	1,418	2,300	20
	City of London	1990	2,652	4,750	27
	City of Westminster	1990	3,000	5,200	27
			Total fleet capacity	Total fleet capacity	Average vessel age
			55,484 m ³	94,869t	23.1 years

Other BMAPA members (as of 31.12.18) who do not operate vessels: Brett Group, Norwest Sand & Ballast Co., Sea Aggregates, Volker Dredging





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his report contains data collected from year 2018 which is collated by MPA in 2019 for publication end of 2019/ early 2020.

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

Mineral Products Association

Gillingham House
38 - 44 Gillingham Street
London SW1V 1HU
Tel +44 (0)20 7963 8000
Fax +44 (0)20 7963 8001
info@mineralproducts.org
www.mineralproducts.org

