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International Marine Aggregates Management Strategic Review: Short Report

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Introduction

A comparison of the different types of federal and centralised aggregates-related heritage management in use around the world highlights how innovative the ALSF is in driving proactive, collaborative research of benefit to all stakeholders. The ALSF is a model of innovative heritage management, involving as it does peremptory public and private sector collaboration in the provision of strategic management of, and guidance upon, resources of benefit to all sectors, rather than relying on reactive management and/or burdensome federal and state controls.

Above all, ALSF heritage funding represents an extremely cost-effective form of *strategic* funding in comparison to other sources of heritage funding. The ALSF assists the development process through strategies such as mapping the distribution of unknown/unmapped heritage resources (particularly in the marine zone), the development of management strategies for such heritage (e.g. exclusion zones), and the provision of industry guidance and standards. All of these activities assist the aggregates and other industries in identifying, planning for, and mitigating risk (including unexpected cost and delays) in the medium and long-term.

Writing in early 2010, the benefits of the development of the long-term partnerships involving industry, government and academia that have been actively worked towards from the earliest days of the ALSF are also becoming ever more visible, as long-running projects come to fruition. Such partnerships – especially in the marine zone – help fulfil the wider aims of the ALSF, where truly inter-disciplinary approaches to research involving all stakeholders and both the natural and cultural heritage are increasingly evident. Such approaches make best use of resources and deliver added value to not just marine aggregate research but to wider research outcomes, a case point being the REC programmes discussed above.

Case Study: the Protocol for the Reporting of Finds of Archaeological Interest

A major achievement of the ALSF has been the introduction of the joint BMAPA (British Marine Aggregates Producers Association) and EH Guidance note *Marine Aggregates and the Historic Environment*, published in 2003¹. This was the marine aggregate industry and EH's proactive response to an identified policy gap, and led on to a comprehensive reporting protocol and implementation service (the *Marine Aggregate Industry Protocol for the Reporting of Finds of Archaeological Interest*), in which BMAPA members made a commitment to implement this Code voluntarily across all operations².



Photo from an awareness programme workshop (Image © Wessex Archaeology)

The introduction of the Protocol has been well received by the industry. The protocol's principal achievements lie in an increased archaeological understanding and awareness within industry and the participation of everyone involved in the aggregate dredging process. The success of the Code, Protocol and the working relationships between industry and heritage operatives have subsequently led to the incorporation of these requirements into dredging permissions by the Crown Estate.

The BMAPA Protocol project exemplifies the positive and mutual benefits of good collaboration between industry and archaeologists, and in doing so, helps to achieve a more informed and efficient regime for managing the historic environment.

The UK heritage community, when offered the opportunity of access to a new funding stream, wholeheartedly embraced the ALSF, and as a consequence rapidly undertook an extraordinarily diverse array of work that was good in every way – good in practice, being cost-effective and collaborative (particularly with industry), good on outreach, and good on dissemination. The result was an enhanced data set, tools-set and understanding-set of use to academia, government, industry and the general public alike. No other comparable international industries are so well provided with data on the location, impact and possible avoidance or mitigation strategies for the historic resource in relation to their activities, and no other specialist community (drawn either from the historic or natural environment communities) so well furnished with new data, techniques and above all working relationships with industry.

The marine historic environment component of the ALSF in particular has been recognised by the heritage community, industry and government as being one of the most successful components of the broader ALSF programme. The ALSF has led to a significant improvement of relationships between all stakeholders, and has had a considerable additional PR benefit promoting the understanding of the marine historic environment to the general public.

Marine Heritage Management and the Aggregates Industry – Centralised Governments

Nations with centralised heritage management systems akin to those of the UK are generally more proscriptive than federal states like the US and Australia. In the UK, heritage management effectively functions in support of, rather than opposition to, the planning development system; in comparison, several other EU member states effectively proscribe against all development through the blanket protection of (and thus assertion of State ownership of) all types of cultural heritage, both portable and monumental. This is the case in for example Greece, Italy, Sweden and Denmark, as well as non-EU European nations such as Norway and Switzerland. Meanwhile, the EU primarily protects cultural heritage as a part of wider trans-national marine planning. In part, this is to do with the EU preferring to defer to member states' own practices as regards the management of cultural heritage due to the extent of trans-national variation in this respect³.

Marine Heritage Management and the Aggregates Industry – Federalised Governments

The USA and Australia, which have similar long histories of heritage management to the UK, have significantly differing approaches to the conjoined management of their marine cultural and natural heritage. In such federal government systems, responsibility for heritage management is usually devolved to a sub-national level, although including forms of at least semi-centralised heritage management policies in conjunction with State-level legislation; this makes the management relatively more complex and expensive to those industries that are impacted on. Under such circumstances an overarching centralised strategy such as the ALSF would be neither possible nor legally desirable – as much as anything because of the logistical difficulties in operating such a centralised system in much larger federalised countries. However, many theme as well as project-specific components of the ALSF could be usefully applied in such nations, as discussed in the conclusion of this report.

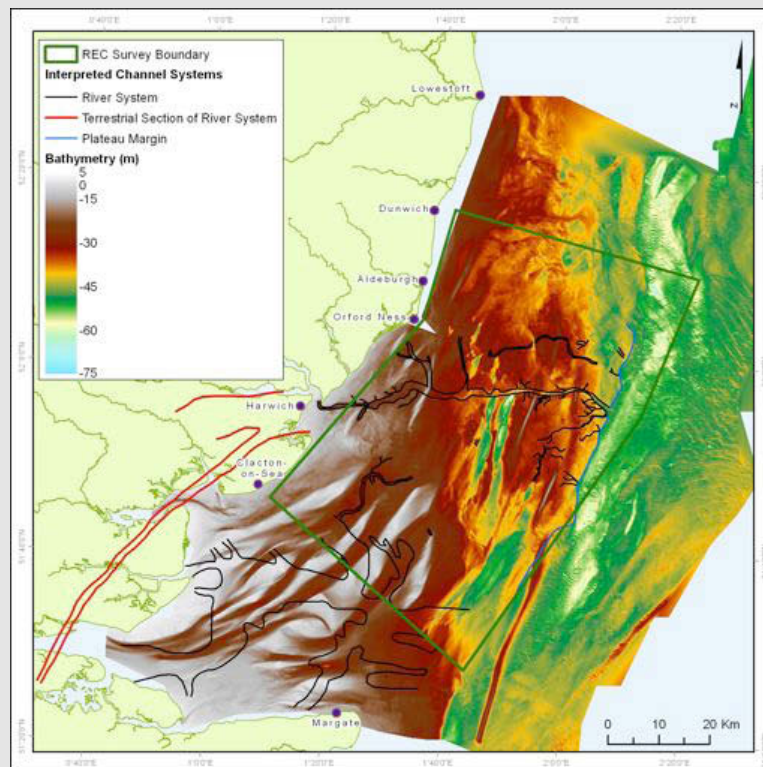
In the US the federal Minerals Management Service (MMS) (part of the Department of the Interior) manages aggregate extraction (terrestrial and marine) in a broadly similar fashion to the UK⁴ (although the federal government both pays for and manages applications – not the developer), with control undertaken on a case-by-case basis as applications for extraction are submitted, and Environmental Impact Assessments undertaken by consultants. The MMS often funds different studies designed to revise or update the guidelines published in the 'Notices to Lessees and Operators' (NTO) documents. They do this using money paid by the energy and aggregates industries in order to obtain lease rights. The MMS also undertakes proactive, ALSF-type work, under auspices of its own historic environment teams. This is usually in collaboration with State heritage organisations, industry and academia; it is aimed towards 'public heritage' agendas, and in some cases results in the production of teaching resources. Examples of recently funded projects with cross-comparison to the ALSF type include:

- Proactive desk-based resource assessments of areas of 'high archaeological potential' undertaken on the basis of reactive report data submitted by industry – e.g. evaluations of submerged sites on the Gulf of Mexico Outer Continental Shelf⁵. Such projects are comparable in scope and agenda to ALSF projects 3783/4728/4729/4731/5254 *England's Historic Seascapes*⁶.
- Non-invasive fieldwork utilising remote-sensing and also divers / ROVs on specific identified single or multiple archaeological sites at risk – e.g. collaborative research into the historic and natural environmental stability and significance of World War II era shipwrecks⁷, on the Viosca Knoll 19th century wreck⁸ and on the 'Mardi Gras' shipwreck⁹. Such projects are comparable in scope and agenda to ALSF projects 3324 *Assessing, Evaluating and Recording Wrecks on the Seabed*¹⁰; 3364 *High Resolution Sonar for the Archaeological Investigation of Marine Aggregate Deposits*¹¹; 3594 *Multi Beam Sonar on Wrecks*¹²; 3877 *Wrecks on the Seabed*¹³ and 5402 *Wrecks Ecology*¹⁴.
- Non-invasive analyses of the impact of specific invasive human activities on historic sites – e.g. analyses of the damage to historic sites of offshore dredging¹⁵. Such projects are comparable in scope and agenda to ALSF projects 3837 *Rapid Archaeological Site Surveying and Evaluation in the Marine Environment*¹⁶ and 5401 *Seabed Grab Sampling*¹⁷.

- Desk-based and remote-sensing modelling of site location probabilities – e.g. work on high-probability models for historic shipwrecks¹⁸. Such projects are comparable in scope and agenda to ALSF projects 3365 *Modelling Exclusion Zones for Marine Aggregate Dredging*¹⁹; 3876 *Seabed Prehistory*²⁰ and 3968 *Severn Estuary Assessment of Sources for Appraisal of impact of Maritime Aggregate Extraction*²¹.
- Creation of a teacher’s resource on the historic shipwrecks of the Gulf of Mexico²². Such projects are comparable in scope and agenda to ALSF projects 3963/5204 *Aggregates to Outreach*²³ and 4840 *Maritime Archaeology Access and Learning Workshops*²⁴.
- Examination and testing of potential prehistoric features on the offshore continental shelf²⁵. Such projects are comparable in scope and agenda to ALSF projects 3277 and 3543/3545 *Submerged Palaeo-Arun*, 3362 *Re-Assessment of the Archaeological Potential of Continental Shelves*²⁶ and 4632 *Transition Zone Mapping for Marine-Terrestrial Archaeological Continuity*²⁷.
- Inventory and analysis of historic site occurrence on the Atlantic Outer Continental Shelf²⁸. Such projects are comparable in scope and agenda to ALSF projects 3322 *Artefacts from the Sea*²⁹; 4000 *Beach Replenishment and Derived Archaeological Material*³⁰ and 3917 *Enhancing our Understanding: Navigational Hazards*³¹.

Case Study: the Regional Environmental Characterisation Programme

An interdisciplinary approach to research is visible in many ALSF funded projects, but most of all in the ‘Regional Environmental Characterisation’ (REC) programmes, where some £10m of ALSF funds have been used to support broad-scale regional marine mapping. The aim of the REC surveys is to acquire data of the highest quality and detail possible³².



Interpreted channel systems of the Outer Thames Estuary³³ (Image © Emu Ltd.; SeaZone bathymetry data © British Crown and SeaZone Solutions Ltd. Product Licence 052008.012. All rights reserved)

Though such programmes, the natural and historic environment communities draw ever more closely together, biologists and geologists on the one-hand thinking about links and project crossover with heritage interests, and the heritage community thinking likewise. In most cases the sites and primary data requirements are the same; it is just a matter of how such data can be processed at the secondary level to achieve research-specific outputs.

The Outer Thames Estuary REC, for example, published in July 2009, identifies both prehistoric submerged landscape data as well as evidence of historic shipwrecks that can be cross-referenced with the UK Hydrographic Office wreck records, as well as both site and region-specific natural environment data, models and outcomes³⁴.

Although organisations such as the MMS undertake directly aggregate-related heritage management broadly comparable to the historic environment component of the ALSF, it remains fair to generalise that US aggregate related heritage funding is far less extensive (in terms of funding proportion by tonnage of aggregate extracted) than in the UK. This is in most part because while the tonnages of aggregates extracted in the US are in all ways significantly greater than the UK: [a] the majority of these aggregates are derived from terrestrial sources; [b] the majority of historic environment mitigation work in response to extraction comes through reactive, polluter-pays, responses under State environment and planning law rather than proactive ALSF-type funding, with only limited strategically-directed funding by the MMS comparable to the ALSF.

In comparison to the UK and US it is notable that there is effectively no aggregate-related marine heritage management undertaken in Australia, for the simple reason that the size of the landmass, relatively low density of human occupation and wealth of easily accessible terrestrial minerals currently makes such exploitation unnecessary. Australia's marine cultural heritage is, as a consequence, some of the least understood of any developed nation in the world. Significant sections of the Australian coast, both terrestrial and marine, have never been subjected to even partial survey, meaning that the extent and cultural significance of remains is virtually impossible to calculate. It is worth, however, briefly considering the present situation in Australia in order to help identify ALSF projects that could be usefully applied in Australia in the future. For example, in comparison to the BMAPA/EH Guidance note 'Marine Aggregates and the Historic Environment'³⁵ and the related 'Marine Aggregate Industry Protocol for the Reporting of Finds of Archaeological Interest'³⁶, many Australian mining companies have established individual or communal codes of conduct for mineral exploration³⁷. This is particularly significant given the scale of extraction in some regions of Australia by major multinational organizations – e.g. Rio Tinto, which currently spends around nine million US dollars a year on its Australian exploration programme and which has negotiated over 65 Native Title Agreements for access over the period 1995-2005³⁸.

There is no reason why that these BMAPA/EH documents and procedures – indeed, virtually all of the ALSF marine zone mapping and management initiatives – could not be used as a model for future Australian marine zone aggregates management, involving the same types of industry/government cooperation. The same can also be said for many other nations around the world.

Endnotes

- ¹ See http://www.english-heritage.org.uk/upload/pdf/Marine_aggregate_dredging.pdf
- ² See <http://www.wessexarch.co.uk/projects/marine/bmapa/index.html>
- ³ See http://ec.europa.eu/culture/portal/activities/heritage/cultural_heritage_en.htm, also <http://www.european-heritage.net/sdx/herein/index.jsp>. The key heritage-specific EU directive is Article 151 of the 1974 Treaty (ex Article 128) (see <http://eur-lex.europa.eu/LexUriServ/site/en/oj/2002/ce072/ce07220020321en01420146.pdf>).
- ⁴ See <http://www.mms.gov/>
- ⁵ See MMS Report 2006-036 *Study to Conduct National Register of Historic Places Evaluations of Submerged Sites on the Gulf of Mexico Outer Continental Shelf*, <http://www.gomr.mms.gov/PI/PDFImages/ESPIS/3/3596.pdf>
- ⁶ See <http://www.english-heritage.org.uk/server/show/nav.001002003008006> and ALSF Projects 3783 *England's Historic Seascapes: Liverpool Bay Pilot Area* (http://ads.ahds.ac.uk/catalogue/archive/ehsliverpool_eh_2007/), 4728 *England's Historic Seascapes: Solent and Isle of Wight* (http://ads.ahds.ac.uk/catalogue/archive/ehsolent_eh_2007/), 4729 *England's Historic Seascapes: Southwold to Clacton* (http://ads.ahds.ac.uk/catalogue/archive/ehsclacton_eh_2007/), and 4731 *England's Historic Seascapes: Scarborough to Hartlepool* (http://ads.ahds.ac.uk/catalogue/archive/ehssc Scarborough_eh_2007/)
- ⁷ See MMS Report 2007-015 *Archaeological and Biological Analysis of World War II Shipwrecks in the Gulf of Mexico Artificial Reef Effect in Deep Water*, <http://www.gomr.mms.gov/PI/PDFImages/ESPIS/4/4239.pdf>
- ⁸ See MMS Report 2008-018 *Viosca Knoll Wreck: Discovery and Investigation of an Early Nineteenth-Century Wooden Sailing Vessel in 2,000 Feet of Water*, <http://www.gomr.mms.gov/PI/PDFImages/ESPIS/4/4315.pdf>
- ⁹ See MMS Report 2008-037 *Archaeological Excavation of the Mardi Gras Shipwreck (16GM01), Gulf of Mexico Continental Slope*, <https://www.gomr.mms.gov/PDFs/2008/2008-037.pdf>
- ¹⁰ See ALSF Projects 3324, 3594 and 3877 *Wrecks on the Seabed I Multibeam Sonar*, http://ads.ahds.ac.uk/catalogue/archive/wrecks_eh_2006/
- ¹¹ See ALSF Project 3364 *High Resolution Sonar for the Archaeological Investigation of Marine Aggregate Deposits*, http://ads.ahds.ac.uk/catalogue/archive/highsonar_eh_2008/
- ¹² See ALSF Projects 3324, 3594 and 3877 *Wrecks on the Seabed I Multibeam Sonar*, http://ads.ahds.ac.uk/catalogue/archive/wrecks_eh_2006/
- ¹³ See ALSF Projects 3324, 3594 and 3877 *Wrecks on the Seabed I Multibeam Sonar*, http://ads.ahds.ac.uk/catalogue/archive/wrecks_eh_2006/
- ¹⁴ See ALSF Project 5402 *Wrecks Ecology* http://ads.ahds.ac.uk/catalogue/archive/wrecksecology_eh_2008/
- ¹⁵ See MMS Report 2004-005 *Archaeological Damage from Offshore Dredging: Recommendations for Pre-operational Surveys and Mitigation During Dredging to Avoid Adverse Impacts*, <https://www.gomr.mms.gov/PDFs/2004/2004-005.pdf>
- ¹⁶ See ALSF Project 3837 *Rapid Archaeological Site Surveying and Evaluation in the Marine Environment*, http://ads.ahds.ac.uk/catalogue/archive/rasse_eh_2007/
- ¹⁷ See ALSF Projects 3876, 4600 and 5401 *Seabed Prehistory*, http://ads.ahds.ac.uk/catalogue/archive/seaprehist_eh_2009/
- ¹⁸ See MMS Reports 2003-060, 2003-061 and 2003-062 *Refining and Revising the Gulf of Mexico Outer Continental Shelf Region High-Probability Model for Historic Shipwrecks*, <http://www.gomr.mms.gov/PI/PDFImages/ESPIS/2/3033.pdf>, <http://www.gomr.mms.gov/PI/PDFImages/ESPIS/2/3034.pdf> and <http://www.gomr.mms.gov/PI/PDFImages/ESPIS/2/3035.pdf>
- ¹⁹ See ALSF Project 3365 *Modeling Exclusion Zones for Marine Aggregate Dredging*, http://ads.ahds.ac.uk/catalogue/archive/dredging_eh_2008/

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- ²⁰ See ALSF Projects 3876, 4600 and 5401 *Seabed Prehistory*, http://ads.ahds.ac.uk/catalogue/archive/seaprehist_eh_2009/
- ²¹ See ALSF Project 3968 *Severn Estuary: Assessment of Sources for Appraisal of the Impact of Maritime Aggregate Extraction*, http://ads.ahds.ac.uk/catalogue/archive/severnaggregate_eh_2007/
- ²² See MMS Project 2006-012 *Historic Shipwrecks of the Gulf of Mexico: A Teacher's Resource*, <http://www.gomr.mms.gov/PDFs/2006/2006-012.pdf>
- ²³ See ALSF Projects 3963 and 5204 *Solent Aggregates to Outreach*, http://ads.ahds.ac.uk/catalogue/archive/solaggs_eh_2008/
- ²⁴ See ALSF Project 4840 *Maritime Archaeology Access and Learning Workshops*, http://ads.ahds.ac.uk/catalogue/archive/access_eh_2008/
- ²⁵ MMS Project GM-92-42-136 *Examining and Testing Potential Prehistoric Archaeological Features on the Gulf of Mexico Offshore Continental Shelf*, see http://www.gomr.mms.gov/homepg/regulate/environ/ongoing_studies/gm/GM-92-42-136.html
- ²⁶ See ALSF Project 3362 *Reassessment of the Archaeological Potential of Continental Shelves*, http://ads.ahds.ac.uk/catalogue/archive/continentshelves_eh_2008/
- ²⁷ See ALSF Project 4632 *Transition Zone Mapping for Marine-Terrestrial Archaeological Continuity (Contiguous Palaeo-Landscape Reconstruction)*, http://ads.ahds.ac.uk/catalogue/archive/cplr_eh_2009/
- ²⁸ MMS Project GM-09-10 *Inventory and Analysis of Archaeological Site Occurrence on the Atlantic Outer Continental Shelf*, see http://www.gomr.mms.gov/homepg/regulate/environ/ongoing_studies/gm/GM-09-10.html
- ²⁹ See ALSF Project 3322 *Artefacts from the Sea*, http://ads.ahds.ac.uk/catalogue/archive/artefactssea_eh_2007/
- ³⁰ See ALSF Project 4000 *Beach Replenishment and Derived Archaeological Material*, http://ads.ahds.ac.uk/catalogue/archive/beach_eh_2008/
- ³¹ See ALSF Project 3917 *Mapping Navigational Hazards as Areas of Maritime Archaeological Potential*, http://ads.ahds.ac.uk/catalogue/archive/navigation_eh_2007/
- ³² See <http://www.alsf-mepf.org.uk/projects/rec-projects.aspx> and www.marinealsf.org.uk
- ³³ Source: Emu Ltd., 2009 *Outer Thames Estuary Regional Environmental Characterisation*. London: Marine Aggregate Levy Sustainability Fund, <http://www.alsf-mepf.org.uk/media/13567/outer%20thames%20estuary%20rec%20final%20report.pdf>
- ³⁴ See <http://www.alsf-mepf.org.uk/projects/2008/rec-0801/final-report.aspx>
- ³⁵ See *Marine Aggregate Dredging and the Historic Environment: Guidance Note (2003)*, http://www.english-heritage.org.uk/upload/pdf/Marine_aggregate_dredging.pdf
- ³⁶ See *Marine Aggregate Industry Protocol for the Reporting of Finds of Archaeological Interest*, <http://www.wessexarch.co.uk/projects/marine/bmapa/index.html>
- ³⁷ For example the Association of Mining and Exploration Companies' (AMEC) *Interim Code of Conduct*, see [http://www.amec.org.au/media/docs/AMEC-CodeOfConduct\(final\).pdf](http://www.amec.org.au/media/docs/AMEC-CodeOfConduct(final).pdf)
- ³⁸ See Lenegan, C. (2005) *Resourcing an Innovative Industry: Minerals Week 2005 Address on 'the Minerals Sector and Indigenous Relations'*. <http://www.atns.net.au/papers/Lenegan.pdf>