

East Channel association

**Regional Environmental
Monitoring & Management
Reporting Programme**

First Regional Monitoring Review (RMR I) Framework Proposal

The East Channel Association (ECA)

The ECA is an association of marine aggregate companies who are permitted, or have applied for permission, to extract sand and gravel from the East Channel Region (ECR). Read more about their plans and operations at www.eastchannel.info

The companies of the ECA are:



Britannia Aggregates Ltd



CEMEX UK Marine Ltd



DEME Building Materials Ltd



Hanson Aggregates Marine Ltd
(now part of the Heidelberg Cement Group)



United Marine Dredging Ltd



Volker Dredging Ltd

The ECA Charter

The companies of the ECA have committed to operate under the terms of a 'code of practice' known as the ECA Charter.

The ECA Charter

The ECA have developed a code of practice to assist management of their activities. The ECA are committed to managing their activities cooperatively in the ECR in order to:

- Implement the results and recommendations of the REA and ensuing studies as appropriate to individual applications.
- Co-operate with and fund future regional environmental studies and research.
- Recognise the results of further environmental studies and respond to recommendations.
- Monitor, mitigate and manage environmental impacts and operational activity on a regional basis.
- Carefully manage dredge areas, with an aim of reducing the dredged area to a minimum.
- Restrict operational dredging areas through zoning of permission areas.
- Only target resources >2m thick.
- Minimise screening.
- Ensure transparency – make all relevant dredging data publicly available through regular company reporting.
- Enable Audit – all relevant data will be made available for analysis by independent experts.

Document Information

This document has been created by MarineSpace Ltd on behalf of the East Channel Association (ECA) to provide an outline for the framework and scope for the first regional substantive review of dredging in the East Channel Region (ECR).

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1. Introduction

Dredging in the East Channel Region (ECR) began in 2006. The East Channel Association (ECA) are undertaking a coordinated programme of regional environmental monitoring and dredging management that is designed to detect and describe the impact of their operations and provide mechanisms for modification of dredging operations. A major aspect of the regional monitoring and management programme is completion of a substantive review of activities in the region that is due for completion in the fifth year of dredging in the region.

To initiate the substantive review, referred to as the First Regional Monitoring Review (RMR I), the ECA have asked the Regional Development Manager to develop a proposal for the works. This document provides the background to the project and a framework and scope for the RMR I.

2. Timescales

As noted, the RMR I is due for completion in the fifth year of dredging in the ECR. Bearing in mind that dredging began in 2006, the RMR must be completed and submitted to the regulators, Defra's Marine & Fisheries Agency (MFA) in 2011. It is particularly important that the RMR is completed early in 2011 to enable the findings of the review to be drawn upon by ECA members wishing to extend individual licences to dredge in the region for a further 5 year term.

To ensure a timely completion of the RMR, the process must be initiated in 2009. A proposed timeline for completion of the RMR I is provided in Table 1.

In simple terms, all components required to create the RMR must be identified early in 2009, the works required to complete these components must be commissioned and started in 2009 and components must be completed by the end of 2010. It is likely that due to the time required for deliberations by MFA regarding extension of licences that the RMR I must be submitted for review by March 2011.

3. Terms of Reference

3.1. Background

In 2003 the Regional Environmental Assessment (REA) was published. This document provides the foundation for consideration of the regional effects of dredging in the ECR. The document has been used to direct development of the regional monitoring programme, develop mitigation measures applied to dredging management and ensure that the work of the ECA is undertaken in a cooperative and coordinated way.

Completing the REA required a significant effort over an extended period. Bearing in mind the timescales involved in production of the REA it would be unfeasible to re-create the scope of the REA for the purposes of the RMR I. In addition to this, the nature of the REA and the RMR I, whilst intrinsically linked, are markedly different. The REA utilised a very wide variety of data to identify the potential impacts of dredging in the region and predict their significance, whereas the RMR I will need to utilise empirical evidence of regional environmental conditions and dredging impact to test the predictions of the REA.

With this in mind a fundamentally different approach, albeit one which draws on the REA, will need to be employed for the RMR I.

3.2. The Regional Monitoring and Management Programme

Since 2005, the ECA have commissioned an extensive programme of regional monitoring and engaged in a coordinated dredging management programme that was described in the Regional Monitoring Blueprint (v0.3). The outputs of the monitoring programme are varied in their nature, describing, for example, clearly definable metrics such as bathymetric change, along with more esoteric environmental issues such as herring spawning activity. For this reason, the framework/scope for the RMR I and the outputs that will be generated by the works, must be carefully considered to ensure that the review generates the maximum possible value when considering the proposals for continuation of dredging in the region in years 6-10.

Table 1. Timeline for Completion of RMR I.

2008-2009	2009	2010	2011
Determine RMR I framework, scope of works, document format & outputs.	Initiate work to complete RMR I components.	Complete components & begin drawing together to form final document	Finalise RMR I & circulate outputs for use in licence extension applications.

4. Components of the RMR I

The scope of the regional monitoring and management programme provides a good starting point when considering the structure of the RMR. The programme targets specific issues that will all need consideration during the project. A brief outline of the issues requiring consideration during the RMR is provided below.

4.1. Review of Years 1-5 Activity

It will be necessary in the RMR I to summarise the activities that have been ongoing during years 1-5 of dredging. This is essential as it will constitute the main part of the 'substantive review of dredging'. To achieve this task it is proposed that all elements of the regional environmental monitoring and management programme are considered and summarised. More detail regarding the proposed content of each section of the review is provided below.

4.1.1. Dredging Activity

All dredging activity data up to and including that for 2010 must be collated to present a picture of the extraction operations. At present this data is already gathered for annual dredging activity reports which will significantly reduce the effort required for the RMR I. Activity reporting will provide both a spatial record of dredging activity, a record of the tonnage of aggregate removed from the region and also the intensity of dredging activity undertaken. This information will provide a key input to considerations of the severity of impacts that have resulted from dredging in the context of the productivity of the region as a supply source for aggregate resources.

4.1.2. Regional Environmental Monitoring

4.1.2.1. Physical Process Monitoring

Monitoring of physical processes, to test the predictions of the REA model, is being undertaken at Area 473 East in three principle ways:

- i. Seabed sediment surveys
- ii. Tracer survey
- iii. Plume survey

Additionally, the results of these component studies will be combined to provide a more coherent view of the physical effects of dredging. The key findings of the component physical monitoring studies and the results of the combination study will be presented in the RMR I.

Seabed Sediment Surveys

The findings of the seabed sediment surveys undertaken at Area 473 East will be distilled and considered in the context of the predictions of the REA model. Changes in the character of the seabed sediment within and surrounding the active dredge area will be identified and described. The nature of changes will be considered in the context of the extraction activity that has taken place. The findings of the assessment of changes at Area 473 East will subsequently be extended to other active areas in the ECR to provide an assessment of the likely cumulative effects of dredging at multiple licences, both spatially and temporally.

Tracer Survey

The findings of the tracer survey will be reported in the context of the predictions of the REA model. The direction and rate of seabed sediment transport will be described along with a consideration of the likely fate of sediment liberated by the dredging process. The findings of the survey should be applied to active licences across the region to gauge the cumulative effects of dredging at multiple licences, both spatially and temporally.

Plume Survey

The findings of the plume survey will be presented in the context of the predictions made in the REA. The nature of plumes generated in the ECR under the regional hydrodynamic conditions will be determined to describe the impacts resulting from plumes. The findings of the plume survey will be applied to all licences in the ECR to determine the cumulative effects of dredging both spatially and temporally.

Combination of the Findings of Physical Process Studies

In addition to consideration of the results of the individual physical process studies, the RMR I will seek to provide an integrated consideration of their findings. This element of the review process will provide clear conclusions regarding the physical effects of dredging at extraction levels achieved during the initial licence term. Based on these conclusions predictions will be made regarding the likely effects of dredging under various scenarios for the following five year licence term. Predictions will describe the potential impacts in terms of area of direct and secondary impact and the nature of changes in seabed sediment composition over such areas.

4.1.2.2. Biological Community Monitoring

Monitoring of biological communities is now an established practice in the ECR. The methods by which data are acquired and analysed are accepted as being capable of providing the information required to detect and described impacts resulting from dredging in the ECR.

The monitoring programme is currently entering into a phase where comparative analysis of annual survey data is being undertaken to more fully describe the nature of changes to habitats and faunal communities in the context of dredging activity.

Emu have already begun this comparative analysis process and it is likely that the first round of comparative reports will be completed in 2009. Once these reports are finalised it will be possible to better determine the nature of the information that will be presented in the RMR I and used as a basis for informing licence extension proposals. The work being undertaken by Emu will inform the RMR I and describe dredging impacts, spatially and temporally, and provide information upon which companies can base their year 6-10 proposals.

4.1.3. Collated Data Studies

Several studies are being undertaken that collate, analyse and report wide-region context data. These reporting streams will be considered in the RMR I as follows.

4.1.3.1. Regional Environmental Context Data

Whilst context data has not been reported as part of the regional monitoring programme it is worthwhile considering the available wider region data at the end of the first five year period. Effort should be focused on identifying relevant data sets (e.g. MESH, EECMHM, ICES, CHARM) and incorporating these data sets into the GIS related to activities in the ECR.

4.1.3.2. Herring Spawning Potential Assessment

The assessment of the potential for the seabed to support herring spawning activity in the region will need to be drawn to a conclusion by the end of 2010. To date RPS have advanced understanding and methods to a point where for the 2008-2009 report only the mechanical process of data procurement and input was required along with consideration of the possibility of using wider environmental datasets in subsequent work.

It is considered likely that a greater amount of effort will be required in 2010 to draw together the various data sets and provide some definitive answers regarding the potential for dredging to influence herring spawning in the region. It is proposed that part of the 2009 work will involve scoping of the RMR section related to herring spawning potential ready for the work to be initiated in early 2010. Completion of the final herring spawning potential assessment for the first five year period will be required by end 2010 to allow time for input the RMR I.

4.1.3.3. Fishing Activity Assessment

The methods of assessing the location, type and intensity of fishing activity in the region, and the types and tonnages of species landed were established in the REA and subsequent ECR reports. Now that these methods have been established work between end 2008 and end 2010 will involve ongoing collation of the required data and input to the assessment. In addition to this there are a number of wider region studies that could provide valuable context data for the relevant section in the RMR. During 2009, these datasets will be identified and acquired and in 2010 work will be required to incorporate them into the ECR assessment. This element of the regional monitoring programme will have reached a point by the end of 2010 that enables input of findings to the RMR I.

4.1.3.4. Archaeological Assessment

The methods for collation and report of archaeological interests in the region are now established and should be maintained during the lifetime of the operations in the region. The RMR I will provide a good opportunity to formalise the understanding of the location of known archaeological interests in the region and publicise information resulting from BMAPA/EH initiatives. Measures implemented during the first 5 years of dredging to protect archaeological sites should also be catalogued. Beyond these issues, the RMR I will seek to establish if the region, based on current understanding, is likely to contain potential archaeological interests in the form of drowned/buried landscapes and, where relevant, the location of such areas.

4.1.4. Regional Dredging Management

There will be a section in the RMR I that formalises the approaches to coordinated regional management of dredging applied by the ECA. The ECA have pursued some new and novel approaches to dredging management and consideration should be given to the levels of success achieved and if changes to management processes are warranted in years 6-10 of activity.

The elements for consideration in this section of the RMR I will include:

- i. Aggregate Extraction Management
- ii. The ECR BAP
- iii. Liaison Management
- iv. Website and GIS
- v. Reporting
- vi. Information Dissemination and Stakeholder Engagement

More detail regarding the proposed scope of these sections is provided below.

4.1.4.1. Aggregate Extraction Management

This section will describe the methods employed by companies during the first five years of dredging, that were used to manage and mitigate the impacts of dredging. This will include licence specific measures, e.g. implementation of exclusion zones, screening restrictions, and also any regionally focussed measures designed to prevent significant cumulative effects, e.g. restrictions on dredging in adjacent licence areas.

It will be possible in this section of the RMR I to discuss the need for maintenance of some management and mitigation measures in light of the results of the regional monitoring programme. Consideration should be given to isolating management and mitigation measures that may be modify, the monitoring data that provides assurance that modification is possible without significant effect and the modifications that may be considered, e.g. removal of seasonal dredging or screening restrictions.

4.1.4.2. The ECR BAP

The purpose of the ECR BAP was to provide a framework for management of activities to ensure that due consideration was given to the sensitivities of regional biodiversity, habitats and species. The regular review and update of the BAP has ensured that it aims and targets have remained relevant and current. This process of review and update will continue up to the RMR I.

When considering the BAP in the context of the RMR I, a section should be included that provides the results of a BAP audit. The audit will consider the original ECR BAP, and its aims and targets, and whether the BAP process has resulted in improved understanding of the regional habitats and species. The work will also seek to determine the aspects of the ECR BAP that have proved worthwhile and those that should be amended to improve their utility.

There will also be a consideration of whether the improvement in understanding of the location, extent and quality of regional seabed habitats has implications for the nature of dredging activity in the future. Recommendations will be made in the RMR I to guide revision of the ECR BAP and ensure biodiversity remains at the core of ECA operations in years 6-10.

4.1.4.3. Liaison

A review of the liaison activities in years 1-5 will be provided in the RMR I including measures related to navigation and fishing liaison. A review of formal protocols for communication with relevant authorities and stakeholders (i.e. the Common Measures for Ensuring Safe Navigation and the Fishing Liaison Protocol) will be undertaken to ensure that the protocols remain valid. Where necessary, suggestions for amendments to the documents will be made to ensure that liaison with interested parties is maintained to a high standard in years 6-10.

4.1.4.4. Website and GIS

The form and function of the ECA website will be reviewed and general 'housekeeping' undertaken to ensure that content is up to date. A short report will be included in the RMR I to describe changes to the site, its utility, and how the site might develop in years 6-10.

The function and use of the ECR WebGIS will be reviewed and depending on comments received following introduction (during 2009-2010) modifications made as required. It is likely that there will need to be minor modifications made to ensure that the best value is obtained from the application both by ECA members and stakeholders alike.

4.1.4.5. Reporting

An audit of the annual reporting programme will be included in the RMR. This will describe the status of Volume I reports and provide a programme for completion of any elements that are unfinished.

It would be of use to review the reporting process and provide recommendations for reporting in years 6-10. The review will investigate the necessity for annual reporting, the scope of reports and the timescales currently employed for issue of reports. To ensure that the best use of time and resources is reached, rationalisation of the reporting programme will be considered to ensure that in future reporting effort is focussed both in terms of timing, scope and scale.

4.1.4.6. Information Dissemination and Stakeholder Engagement

The methods of information and dissemination employed during years 1-5 will be described and critically evaluated to determine their efficacy. Information from the review of reporting will provide input to this process along with a review of stakeholder (ECEN and technical) meetings held during years 1-5. The scale of engagement and the organisations/individuals contacted will be audited to determine recommendations for updating and optimising stakeholder group membership and improving methods of dissemination and engagement.

4.2. Years 1-5 Impact Assessment and Years 6-10 Proposals

Following on from the first section of the RMR I it will be necessary to provide an assessment of impacts detected in years 1-5 in the context of the predictions made in the original REA. This process will enable a better understanding of how impacts have developed as a result of known levels of extraction and therefore how future extraction proposals can be expected to affect the environment. The process will ultimately enable sound dredging, monitoring and mitigation plans to be developed for years 6-10 based on empirical evidence from the region.

4.2.1. Years 1-5 Impact Assessment

A staged approach to impact assessment will be carried by reviewing the predictions of the REA, describing the impacts detected in years 1-5 and undertaking an impact assessment that provides a set of impact statements. The proposed process is described in more detail below.

4.2.1.1. REA Predictions

The first stage of the process will be to summarise all the predictions made in the REA. Combination of the predictions made should be attempted to provide broad areas of interest (e.g. plumes, seabed sediments, herring etc). A comprehensive list of impact predictions will be presented that will be referred to in subsequent sections of the RMR I.

4.2.1.2. Impact Assessment

Following the review of predictions made in the REA, it will be necessary to describe all dredging related impacts detected by the regional monitoring programme. It will be important to ensure that dredging impacts are isolated from naturally occurring changes and also that any impacts identified are categorically ascribed to specific dredging operations. Many of the impacts detected will have been isolated from work undertaken prior to 2010 but further work will be required to set the impacts detected in a regional, dredging related, context.

Impact Assessment Methodology

As stated previously, the RMR I will not replicate the format of the original REA. Outputs from the regional monitoring and management programme will need to be incorporated into the RMR I and a assessment methodology utilised that is capable of investigating the nature of impacts resulting from dredging in the ECR.

In order to achieve this, it is proposed that a methodological framework for investigation of impacts is applied as outlined in Figures 1 and 2. The framework allows for consideration of the original predictions made in the REA to be incorporated into the process along with the findings of regional monitoring surveys and wider region context data. Using these data, a series of impact descriptions will be developed that can then be tested against the predictions of the original REA.

Impact Statements

When all the impacts detected have been described, and wherever possible an impact source been identified, a series of impact statements will need to be completed. The purpose of the impact statements is to both formalise the understanding of the effects of dredging and also provide information capable of informing decisions regarding the next five years of dredging activity.

The output of this testing procedure will be a series of impact statements that describe the impacts detected, utilising indicators of change, and compare them with those predicted in the REA. Depending on the nature of the comparison (i.e. impacts =, < or > predicted) a series of actions will be provided to guide decision making for the subsequent 5 year licence term. The proposed actions may involve increases in the permitted tonnages, increases in the area available for dredging, or, in case where impacts are greater than those predicted in the REA, a maintenance of permitted off-take levels until further work is carried out. In some cases, the actions dictated by the impact statements may involve recommendations for further survey work or data interpretation to improve understanding of issues.

4.2.2. Years 6-10 Proposals

When the impact assessment for years 1-5 is complete and the impact statements are finalised, it will be necessary to provide information regarding the ECA proposals for years 6-10. This section of the RMR I will outline how dredging will continue in years 6-10, make predictions of impacts that may result from the proposed dredging and present mitigation, monitoring and management plans for the period.

4.2.2.1. Dredging Proposals and Impact Predictions for Next 5 Years

When the impact assessment and impact statements for years 1-5 have been completed a much clearer understanding of the spatial and temporal nature of dredging impacts will be possible. Using this basis the ECA will be able to plan the years 6-10 dredging programme and make predictions for this period.

It will important to consider likely levels of impact based on a number of dredging scenarios, as in the original REA. Companies should determine what the maximum and minimum extraction tonnages would be for economic viability and sustainable production to be maintained. Based on the regional totals, impact scenarios for years 6-10 can be investigated.

It will not only be important to make clear predictions regarding issues that are well understood but it will also be vital that issues that are less well understood are identified and relevant monitoring/mitigation measures implemented for years 6-10.

4.2.2.2. Indicators of Change

Identification of suitable indicators of change should be complete by the end of year 5 of dredging. It is likely that these indicators of change will principally be based on changes in sediment composition, changes in bathymetry and changes in the composition of faunal communities. It will be important in the RMR I to clearly describe which indicators have been identified and also their potential utility value in the future for tracing the impact of dredging.

It will be necessary to define the natural variability of the indicators identified and also how other anthropogenic activities (e.g. demersal fishing) might affect them. The RMR I will also be an opportunity to discuss the value of thresholds when considering management decisions.

4.2.2.3. Mitigation, Monitoring and Management in Years 6-10

Once proposals and predictions for years 6-10 have been finalised, suitable mitigation measures will be proposed along with a five year monitoring plan. In addition to this, regional management plans for years 6-10 should be formalised.

Mitigation measures proposed will address any areas of uncertainty that remain following the first five years of activity in the region.

4.2.3. Conclusions & Recommendations

A section of the RMR I will provide a summary of conclusions and recommendations for the continuation of aggregate extraction in the region. The significant findings, and improvements in understanding of the regional impact of aggregate extraction, developed during the first five years monitoring and management activity will be formalised in order that they can be adopted for subsequent periods of dredging.

It will be important to make some definitive statements regarding how dredging affects the regional environment and to place the impacts identified in broader context. Determining the regional significance of impacts identified will be of prime importance when determining how dredging can continue in years 6-10.

5. RMR I Production and Dissemination

Following completion of all the content for the RMR I effort will be required to produce the final document and circulate it to interested parties. It will also be necessary to engage in a period of consultation to determine stakeholders view regarding ECA proposals for years 6-10.

5.1. Report Production

Along with the full RMR I document, it is proposed that a non-technical summary will be produced to describe the RMR I process, highlight the main findings and summarise the proposals for years 6-10.

5.2. Dissemination & Engagement

Following circulation of the RMR I document to interested parties a period of engagement will need to be completed. It is proposed that the document is circulated in March 2011 with a request for comments prior to the 2011 ECEN meeting (likely to be held in July). This will provide ample opportunity for stakeholders to present comments and queries prior to the ECEN meeting where issues can be discussed.

Bearing in mind that continuation of dredging activities into year 6 will begin at the end of August 2011, the ECA are planning to reach agreement on years 6-10 proposals by the end of July 2011.

Figure 1. Process for Regional Management and Review of Dredging Activities in the ECR – Years 1-10.

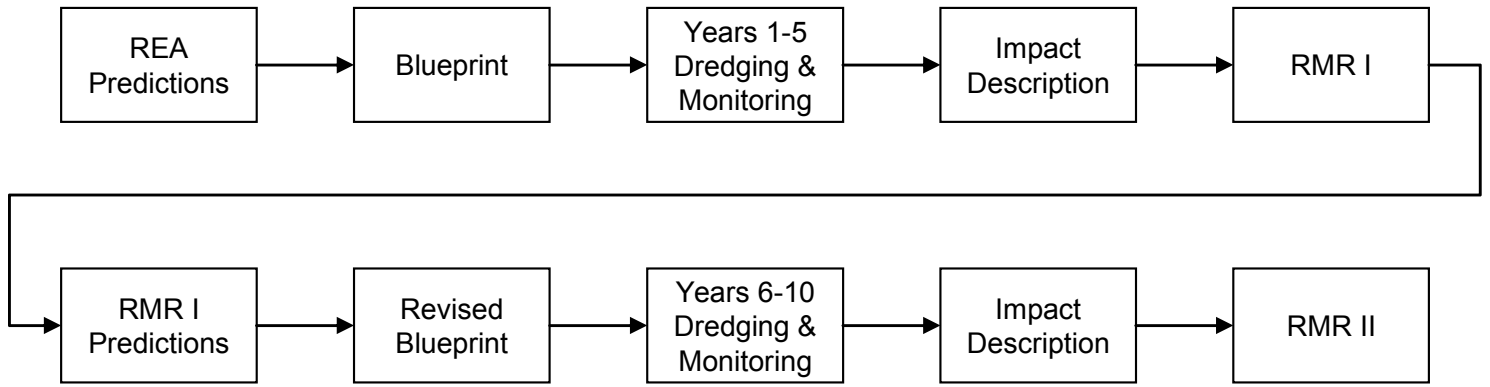


Figure 2. Process for Review of REA and RMR I Predictions based on the Results of the Regional Monitoring Programme.

