**Beneficial Use of Dredging in the Solent Project (BUDS)**

**Terms of Reference**

**Background**

There has been a strong desire amongst Solent Forum members to find solutions to the many barriers which are preventing the effective use of dredged material to augment Solent intertidal sites and, hence, to provide other benefits associated with such restoration work (especially enhanced coastal protection).

For many years now there has been a ‘general desire’ in the UK to carry out beneficial use and there is a requirement to consider such initiatives as part of the Marine Licencing process. However, such ambitions have not been enough to overcome other challenges and, as a consequence, there has been very limited project implementation and the vast majority of dredged sediments are not beneficially used for habitat restoration. A stakeholder workshop hosted by ABPmer in March 2014 identified the barriers as being: cost; absence of Governmental leadership (linked to lack of legislative drivers); risk aversion by regulators over environmental impacts; and both technical and logistical challenges associated with marrying sediment sources to sites of sediment need.

There are signs, however, that more organisations are keen to realise beneficial use projects. For instance the MMO will have a policy in the emerging South Marine Plan to identify disposal sites to re-use arisings, and in the last 5 years there have also been some significant examples of beneficial use of sediments in the Solent, especially at Lymington.

To make such projects happen however they will need to be actively driven forward. The Central Dredging Association (CEDA) have just set up a new commission for dredging management.

**Project Aims and benefits**

With this in mind, the Solent Forum now seeks to build on and not repeat past work and lead on the development of a proposal that has the following primary aim. The Forum’s role will be to launch the first phase of the project and facilitate communications thereafter:

To bring about beneficial use of dredging within one or more Solent sites, using an incrementally phased approach to scope and cost sediment sourcing and sediment receiver sites, building a system of protocols and guidance.

More specifically the project will aim to:

1. To identify a set of criteria to help assess the suitability of the sites (including type of material, volume of sediment, accessibility of site, potential partnership funding, value of the site as habitat or flood and coastal management, other engineering challenges)
2. Identify project site(s) using the above criteria within the Solent where beneficial use would be most practical and beneficial, providing a high level of cost benefit analysis, aligning costs and benefits to regulatory bodies
3. Work in partnership with a range of regional stakeholders to find solutions to known challenges based on their knowledge and existing shoreline strategies. To especially examine regulatory barriers to include smothering of existing habitat and contaminated waste concerns
4. Develop a strong feasibility case for undertaking significant ‘regional flagship’ beneficial use project(s) in the Solent, and enable the implementation of that project through further phases.
5. Develop a love mapping system so that receiver sites can call for sediment.
6. Ensure that there is a collaborative exchange of lessons between the regional work of the Solent Forum and other initiatives being undertaken at a national level by parties such as the RSPB­, MMO, ABPmer or The Crown Estate. Specifically to ensure that the work leads to systems (such as the love mapping system) that can be replicated and that protocols and guidance are developed.

This work should build on a wealth of information much of which relates to the Solent including amongst others work from River Hamble Harbour Authority and the University of Southampton, Lymington (see section on Sources of Information). It is important that the work does not replicate previous work and that the budget is used to build upon it.

It will only be possible to make real advances in the Solent if the benefits of re-use of dredging is really understood and costed, and these benefits are aligned to objectives of regulatory bodies and coastal managers. This will need to be considered throughout and some of the key benefits and beneficiaries are:

Key benefits:

* Protection of saltmarsh and mudflats
* Halt loss of saltmarsh and mudflats
* Coastal defence and flood risk management

Why

* Protecting (or similar word) The rich ecosystems and habitats they represent
* Stopping adverse affects to habitats as required by the Habitats Regulations
* Retaining and improving soft defences vital to Solent protection from flood and erosion

Who cares

* Local Authorities – flood defence, BAP targets
* Harbour Authorities – enable dredging, harbour protection
* Nature Conservation agencies, regulators and charities
* Marina Operators and Landowners

This can be brought about by careful understanding of the roles and drivers of all partners. Partners will need to come together in this project and this will be done by forming a Project group to steer the project and a wider stakeholder group. The various phases of the project will involve obtaining information from stakeholders and bringing stakeholders together in workshops.

**Stakeholder Organisations**

* Marine Management Organisation
* The Crown Estate
* Solent Harbour Authorities
* Solent Local Authorities
* Eastern Solent Coastal Partnership
* Southern Coastal group/SCOPAC (research budget)
* Channel Coastal Observatory (CCO)
* Environment Agency
* Natural England
* Dredging contractors (e.g. Westminster Dredging, Boskalis, Hanson, ML Dredging)
* Owners/operators of dredge sites (harbour authorities, yards, marinas, clubs etc)
* CEDA
* RSPB – (Horsea Island)
* Solent Protection Society
* Landowners of potential receiver sites
* Academic & research sector
* Coastal Partnerships and Coastal Partnership Network

**Project Group Direction**

A Project Group has been formed to guide the project. They will approve the Terms of Reference and the tender documents.

The members of the group are as follows

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| Karen McHugh | KM | Chair, Solent Forum (SF) |
| Adam Cave | AC | Environment Agency (EA) |
| Hilary Crane | HC | Natural England (NE) |
| Sue Hawley | SH | Isle of Wight Council/Estuaries Project (IoWC) |
| Alison Fowler | AF | River Hamble Harbour Authority (RHHA) |
| Pete Ferguson | PF | New Forest District Council (NFDC)  |
| Paul Tosswell | PT | Lymington Technical Services |
| Michiel Luyken | ML | Boskalis Westminster |
| Sue Simmonite | SS | ABP |
| Sam Cope | SC | Eastern Solent Coastal Partnership (ESCP) TBC |
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The Project Group met to discuss the Terms of Reference and gave the following direction.

There needs to be a strong definition of what dredged material we will be defined as and that rather than use terms such as capital and maintenance dredge material, we will spell out what the material is. Harbour authorities and marinas may need to use the terms capital and maintenance, however what matters to the project is the type of material produced for re-use.

There will be a strong emphasis on material which will be of use to make mudflats and saltmarsh. Other materials may be considered however it was felt that the re-use of gravel or sand for beach recharge forms an important but separate procedure. The group members would still like to consider the latter, but not focus upon it. An understanding of the objectives of receiver sites is required i.e: Habitat creation/and or coastal defence; beach creation for leisure etc – budgets for each.

The last detailed project in the Solent to map potential re-use sites with dredging was completed in 2010 by Southampton University. Since then there has been a focus on locations in Lymington and very recently the Hamble. PhD work was conducted by Natalie Foster from the University of Southampton in 2014, and this aimed to gain a greater understanding and decision making for the sustainable use of intertidal mudflats and saltmarshes. It was agreed that there is now a need to update previous information, and that this should be done in phase 1 using a high level methodology to bring it within budget. The RHHA study recently completed looks at this in detail using multi criteria analysis of each site (the budget of BUDS project is not sufficient to go into such detail). There is an interest in looking at large and small receiver sites. Isle of Wight north Solent sites to also be considered.

In the past there have been significant barriers to beneficial re-use especially due to the way regulatory bodies have looked at affects to existing habitats from smothering and what may be deemed as contaminated waste. There is a need to respect the complex natures of these organisations in the regulatory regime and at the same time maintain some momentum to help them realise a desire within their own organisations to bring about beneficial re-use projects in the Solent. This will be helped by developing clear systems leading to the development of protocol and guidance to enable projects that they can consent.

At the heart of the project is a sediment “dating” system. The challenge is not only matching the right sediment to use and receiver site but also getting the timing right. There is a need to consider important issues such as: holding areas (Boskalis can potentially dump coarse sediment in aggregate area for later use), how far sediment can be taken, how a dredging job is arranged (could it be arranged in stages so as to allow smaller receiver sites time to be able to accept the sediment).

There is a real need to understand costs, however, it was felt that costs should not drive the project. This is because it was felt that something that might seem to be cost prohibitive now may not be in the future. All ideas should be on the table initially.

Exact matching of material to a receiver site may be too big an expectation and so the project needs to understand how flexible recipients of material can be, and whether a pragmatism of understanding that a percentage of material will be lost can be encouraged, and at what cost. Looking for long terms solutions, rather than thinking only of the short term (thinking of the long term may require more investment).

There will be a need to understand different techniques and effectiveness of putting dredgings on receiving sites. It is not clear whether this will be within later phases of the project. Also some understanding of technical issues of taking the dredging including the amount of water transported and, for coarser sediments, whether overflow techniques could help. An important part of the project will be to understand where there is a need to improve mudflat and saltmarsh quality and extent.

**Sources of Information**

* Southampton University project (S.Bray) 2010: Site analysis for beneficial dredge spoil use for restoration and recharge of intertidal soft sediment resources within the Solent
* ABPMer report for the MMO 1073 report
* Dorset EU project – Rance . Horizon 100
* Towards understanding & Improving decision making for the conservation & sustainable use of intertidal mudflats and saltmash, Natalie Michelle Foster 2014 (work Hudson, M.Bray)
* River Hamble Harbour Authority Study on soft sediment habitat retention 2016 (Ahti Group)
* Local Solent work: Gosport (ESCP), Hamble, Lymington and Royal Victoria Country Park

+ Many more

**Funding**

The Solent Forum has funding of up to £10,000, including cash and some in-kind funding. The funding can be used on phase 1. The Solent Forum will be trying to obtain further project funding from stakeholders and bids as the project progresses.

**Project Programme and Phases**

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| 1 | Project scoping and partnership buildingTo be competitively tendered as a discrete packageEst £5-£10kTimetable: 3 – 6 monthsTenders to be soughtSolent Forum lead | Literature review of previous Solent work, issues, challenges and constraints, including understanding of national context and drawing upon past review work – this element to be very light touch; it is very important that this phase does not just repeat old work, but describes how it can be built upon.High level review of beneficial use projects in Solent. Some detail required on criteria for assessment, and how to measure efficacy, using best practice and lessons learnt of projects elsewhere. Create a high level strategic GIS planning map of Solent dredge locations and disposal sites and areas of potential value for recharge work. Building a stakeholder network for the exchange of information (the project group is the core). Survey relevant Solent Authorities and stakeholder network for potential donor material and receiver sites.High-level feasibility study including cost benefit analysis and costing of proposals to undertake beneficial use project (highlighting the range of beneficiaries) Optional: Some consideration of further work for further phases indicated below.  |
| 2 | Working with stakeholders to develop further phases of work and to develop strategic guidance and protocolsWork may be conducted by Solent Forum and othersEst £1k3 – 6 months | Using workshops and stakeholder meetings:Understanding lessons learned on maintenance dredge and disposal licensing. This could lead to a protocol and guidanceTo feedback the mapping of Solent dredge locations and disposal sites and areas of potential value for recharge work to national players. To provide detailed matching analysis |
| 3 | Feasibility Study and detailed cost Benefit AnalysisTenders to be soughtEst 55k12 – 18 monthsTo be lead by Industry (tbc) | Develop options for the Solent for a project(s) for beneficial use within a set time period and for preferred options to develop full feasibility plans for actual use of dredging at some key sites. To consider whether a scheme may be a one off or one that can be repeated. An idea of locations many be Isle of Wight sites, Lymington, Gosport, Hamble. Consideration to bigger sites such as Southampton Water. This study would detail exact timings and costs of sources of sediment to match with receiver site needs. It would identify funding sources for complete projects. The beneficial costs will be firmed up so as to fully calculate cost benefit. Licences and permissions to be obtained. EIAs conducted. Updated detailed cost benefit analysis required as well as technical analysis of recharge techniques and efficacy |
| 4 | Beneficial Use ProjectsTenders to be soughtEst £100k6 – 8 monthsTo be lead by Industry (tbc) | Replicability – buying in the necessary kit for all sites. Benefits of scale. Pump, monitoring system. (link with protocol) Actual site work |

**Phase 1 Outline Brief**

Title

***Beneficial Use of Dredging in the Solent: Phase 1***

***High Level Scoping of opportunities and costs in the Solent using a partnership approach***

Sections

* The above terms of reference
* Section on procurement to set a guide of £5- £10k budget and to request that suppliers list their hourly rates
* Timing recommended to be approximately 3 months

Suppliers to approach

* ABPmer
* AHTI Ltd
* H R Wallingford

Scope of works required

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| **Basic literature review and context building** |
| Literature review of issues, challenges and constraints, including understanding of national context and drawing upon past review work – this element to be very light touch; it is very important that this phase does not just repeat old work, but describes how it can be built upon. |
| **Identify criteria for assessment** |
| To identify a set of basic criteria at a high level to help assess the suitability of the sites (including type of material, volume of sediment, accessibility of site, potential partnership funding, value of the site as habitat or flood and coastal management, other engineering challenges) Criteria for evaluating sites to build on work from previous reports and crucially develop a survey of relevant Solent Authorities and stakeholders to identify opportunities. Ideally would develop a multi criteria analysis but recognise that the budget would not allow any detail on this. |
| **High level GIS mapping of potential areas in the Solent for beneficial reuse and areas where material can be sourced** |
| Create a high level strategic GIS planning map of Solent dredge locations and disposal sites and areas of potential value for recharge work, using the criteria aboveUpdating previous extensive information in the Solent potential donor sites and receiver sites Consider whether beneficial use can be regularly repeated from donors to recipient sitesBuild a database on both the donor and receiver sideReceiver information to include: suitability of sites, material required, timing and for what reason), reason for requiring sediment (habitat or flood/erosion management).Sources of sediment by type and amount (Donor information to include: type of material, amount and timings)Focus on fine materials for re-use on mudflats and saltmarsh in the Solent (including north Isle of Wight); consideration to coarser material can be given |
| **Measuring Efficacy and cost benefit analysis** |
| High-level feasibility study including cost benefit analysis and costing of proposals to undertake beneficial use project (highlighting the range of beneficiaries) Aligning costs and benefits to regulatory bodiesSome detail required on how to measure efficacy. Some context building on measuring efficacy using best practice and lessons learnt in evaluating efficacy of projects elsewhere. High level cost benefit analysis of sites to show benefits using ecosystem service benefits |
| **Building a stakeholder network for the exchange of information**  |
| Building a stakeholder network for the exchange of information. Survey relevant Solent Authorities and stakeholder network for potential donor material and receiver sites.To especially examine regulatory barriers to include smothering of existing habitat and contaminated waste concerns, and find ways of addressing these concernsThis network to be used for communications throughout life of the project. Methods of communication to include workshops and questionnairesThe Solent Forum can aid in communicating with the network |
| **Evaluation and Recommendations** |
| Recommendation of a number sites (large and small) for further analysis with some indication of future costings to develop feasibility and finally implementation. Consideration of sites that will help the development of future guidance and protocols for both large scale and small scale dredging and large and small scale requirements.Some consideration of costs of further phases to complete project |