

# PAPER B

Purpose : For Discussion

Committee: **SCOPAC**

Date: **OCTOBER 2012**

Title : **RESEARCH PROGRAMME**

## REPORT OF THE CHAIRPERSON OF THE SCOPAC RESEARCH SUB-GROUP

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### **1 CURRENT RESEARCH PROGRAMMES**

#### **1.1 EVOLUTION OF COASTAL SEDIMENT STORES AND SINKS STUDY**

*Channel Coast Observatory £25,000 (2011-2013)*

The primary aim of the project is to identify sediment stores and sinks across the SCOPAC region for future recycling operations. There are large cost savings to be had by using locally sourced material for beach replenishment and recycling schemes.

The project is focusing on active sediment stores and sinks, particularly those areas undergoing large changes in volume (i.e. Pagham Harbour spit, Hengistbury Head, North Point).

A key objective of the project is to understand why the sediment is building up.

More specifically the project will:

- Define sediment sinks, stores, throughputs (drawing on the SCOPAC Sediment Transport Study).
- Scope available information (literature review)
- Map location of sediment sinks and stores
- Map historical evolution (area change)
- Estimate historical and existing volumes/areas
- Document any known sediment extractions
- Summarise environmental protection laws (MMO, Crown Estates etc)

The following has been undertaken to date:

- Recent Admiralty tide charts have been digitised to provide the area of offshore sinks
- Difference plots of digital terrain models have been produced to indicate accretion and erosion along the beaches of the SCOPAC coastline. The digital terrain models are based on real time kinematic Global Positioning System baseline surveys and laser scan surveys where possible, otherwise Lidar is used. Three epochs in total have been analysed;

- earliest (2002/2003) to mid (2007/2008) surveys
- Mid (2007/2008) to most recent (2012) surveys
- Earliest (2002/2003 to most recent (2012) surveys

Some 2012 baseline surveys are still to be surveyed.

- Recycling and renourishment logs have been checked by the Local Authorities and the Environment Agency. This data will be used to eliminate areas of accretion from the difference plots and add in areas of extraction into the difference plots. This will highlight, “natural changes” in beach volumes.
- The bathymetric surveys will not be used as the survey dates do not coincide with the beach data and the survey dates are too close together to obtain any certain changes in sediment volume.

Next steps include:

- Analysis of historical Admiralty tide charts (1950's)
- Analysis of seabed mapping to identify where offshore shoals are mobile sediment rather than rock
- Ongoing incorporation of 2012 beach surveys
- Ongoing analysis of recycling and renourishment log data in relation to difference plots

Recommendation: For information

## **1.2 SCOPAC MINOR PROJECTS FUND (2011/2012 AND 2012/2013)**

The following projects were awarded £4,000 each from the SCOPAC Minor Projects fund.

### ***Havant, Portsmouth and Gosport Partnership undertaking Sediment Tracer Studies. Minor contribution of £4,000 (2012/2013)***

The SCOPAC funding (£4,000) will contribute towards the 6 month tracer study element (£16,000) of the River Hamble to Portchester Castle Coastal Strategy which is undertaking the following:

- **Sediment tagging and detection for Solent Breezes to establish location of drift divide (1000 tracers)**  
Tracers have already been deployed at all the drift divides in littoral sub-cell 5a. The studies currently being undertaken will help confirm the presence of a drift divide at Solent Breezes and help quantify the volume of eroded cliff material flowing south towards the littoral sink at Portsmouth's tidal delta. The particle size distribution has been analysed and 1000 tracers will be deployed and tracked along the frontage over a 6 month period.
- **Sediment tagging and detection at Lee-on-the-Solent to track beach nourishment material (500 tracers)**  
500 tracers will be deployed at the nourished beach at Lee-on-the-Solent to monitor the direction and rate of sediment transport along the coast. The

particle size distribution has been analysed and appropriately sized tracers will be deployed and tracked along the frontage over a 6 month period.

- **Sediment tagging and detection at Stokes Bay to establish the contemporary sediment pathways (500 tracers)**

500 tracers will be deployed at Stokes Bay and monitored over a 6 month period to establish how beach material is currently moving in relation to changes in the morphology. The particle size distribution of the beach has been analysed to ensure the tracer pebbles replicate this.

More specifically, the SCOPAC funding will cover the following elements of the tracer studies:

- 500 of the 2000 pebbles to be tagged and 10 survey days to detect the tracers.
- Establish tracer burial depth detection range and orientation issues. A series of tests will be carried out to assess the detection range of the various sizes of RFID tag at different orientations to the reading antennas. An assessment of burial depth on the read range will also be carried out.

**To date:**

- 100 tracers have been tagged and deployed at Lee-on-the-Solent; the tracers are moving in an easterly direction, supporting the SCOPAC Sediment Transport Study findings. Some tags have crossed the top of rock groynes.
- 2,000 pebbles have been drilled in total. These will be tagged and deployed at a later date.

*Minor Fund contribution 2010/2011- update*

Radio Frequency Identification (RFID) tags have been used successfully over a 21 month period to monitor the transport pathways of beach material at key locations in the East Solent. This has helped confirm the presence of two drift divides, and disprove the presence of a third. Transport across a potential barrier to littoral drift at Fort Cumberland, Eastney, has also been documented. Future monitoring will quantify attrition rates of the tracers.

***Bournemouth Borough Council undertaking Non-standard Rock Groynes Project. Minor contribution of £2,000 (2011/2012) and £2,000 (2012/2013)***

Poole, Bournemouth, Christchurch and New Forest Councils have all built rock groynes which do not conform to the Rock Manual Guidelines. Anecdotal evidence suggests that all these non-standard groynes are performing satisfactorily.

The study proposes:

- to survey the existing groynes and determine if settlement or dispersal of rock is a problem
- to determine if this pragmatic approach is appropriate for future rock groyne construction.

This topic is especially relevant to Bournemouth where the Timber Groyne Renewal Programme (TGRP) will require the removal of 51 life expired timber groynes

between 2013 and 2029, and it is anticipated that the new structures will be rock groynes.

Dave Harlow has interviewed engineers from the relevant councils and has compiled his findings into a report. The report was circulated to the SCOPAC Research sub-group in March and October. Comments have been incorporated where relevant. The proposed guidelines and findings are currently being drafted.

Recommendation: For information

### **1.3 UPDATE ON THE SCOPAC BIBLIOGRAPHIC DATABASE**

SCOPAC approved £13,000 to update the Bibliographic Database. The Channel Coastal Observatory have been managing the project, collating Defra and Local Authority reports and inputting the publications into the database. Dave Carter has been collating academic publications and harbour conservancy/authority information and inputting data into the database. Dr Malcolm Bray has provided additional publications and will check the final draft of the database once completed.

The majority of SCG officers have forwarded on relevant publications. There are still some outstanding publications to be sent from the South-west officers.

The estimated date of completion is November 2012. The database will underpin the Sediment Transport Study update.

Recommendation: For information

### **1.4 SOUTHERN COASTAL GROUP WORKSHOP**

Following the last Southern Coastal Group meeting in June, the next workshop in the series, "A problem Shared" will be on *Sediment Renourishment*. The aim of the workshop series is to share best practice and to assist operating authorities with basic skills development. The date of the 1<sup>st</sup> February 2013 has been proposed.

Recommendation: For information

### **1.5 SCOPAC AND SCG WEBSITES: STRATEGY STUDY UPDATE**

The Strategy Study page on both the Southern Coastal Group and SCOPAC websites is out of date (<http://www.scopac.org.uk/strategystudies.htm>). As part of maintaining the websites, a new map has been produced and the original text updated by each of the Strategy lead officers. The final map and text will be uploaded onto the websites following approval at the recent Southern Coastal Group meeting.

Recommendation: For information

## **1.6 SCOPAC SUMMER 2012 VISIT FOR ELECTED MEMBERS AND OFFICERS**

The 2012 SCOPAC field trip for elected members and officers was to Hurst Spit in the West Solent. The site was chosen as it encompasses a wide variety of coastal management topics such as the 1996 replenishment scheme, designated inter-tidal and vegetated shingle habitats, the offshore Shingles Bank and North Point used for sediment recycling. In addition, the site has an interesting history and is surrounded by artifacts of archaeological significance.

Approximately 40 delegates attended the morning which commenced with a ferry trip from Keyhaven to Hurst Castle.

Councillor Roger Elkins (Chairman of SCOPAC) introduced the event followed by Professor Andy Bradbury (Chairman of the Southern Coastal Group) who provided the context of the day.

Delegates visited the west wing of the castle where Professor Andy Bradbury gave a talk on engineering of Hurst Spit, followed by a talk by Peter Ferguson (New Forest District Council) on maintenance of the spit to reduce the likelihood of overwashing and breaching events.

At the east wing of the castle Andrew Colenutt (New Forest District Council) gave a talk on saltmarsh evolution in context with coastal management, followed by a talk by Dr Uwe Dornbusch (Environment Agency) on the South-east Regional Habitat Creation Programme, which aims to strategically offset any losses to European designated habitat resulting from coastal management across south-east England.

There was also a tour of the castle's history led by Sean Crane (Hurst Castle manager) and a talk by James Brown (New Forest National Park) on the archaeological importance of artifacts surrounding the castle.

We had positive feedback from councillors. On behalf of SCOPAC I would like to thank the speakers for their interesting talks.

Recommendation: For information



## 2. SUMMARY OF CURRENT AND NEW RESEARCH

The following programme of work was extracted from the Southern Coastal Group Business Plan (2009) as a reminder of the priorities for research approved by SCOPAC at its meeting on 15th February 2008, Item 28 (ii). The list of prioritised work was formalised following a 'Research Review'.

### 2.1 CURRENT RESEARCH

- Extreme wave conditions study: Professor A Bradbury £18,000 (2008 - 2010). **Completed – awaiting short summary.**
- Maintenance of coastal structures Phase 1 Timber groynes: Professor A Bradbury/CCO £2,500 (2010/11) and £15,500 (2011/2012). **Workshop undertaken to start project.**
- Evolution of coastal sediment sinks: Southampton University/CCO - £25,000 (2011/12). **Started 2011.**
- Minor funds (£4,000 for 2011/2012 and £4,000 for 2012/2013)
  - *Havant, Portsmouth and Gosport Partnership, minor contribution of £4,000 (2012/2013) to Sediment Tracer Studies. Started 2012.*
  - *Bournemouth Borough Council, minor contribution of £2,000 (2011/2012) and £2,000 (2012/2013) to Non-standard Rock Groynes Project. Draft report circulated to Research sub-group.*

Completion of the following projects will be dependent on future funding availability.

### 2.2 NEW RESEARCH

- Validation of new Met office wave data: CCO/Southampton University £15,000 (Year 1), £10,000 (Year 2).
- Climate change local scenarios study: External consultants £35,000 (Year 1), £35,000 (Year 2).
- Saltmarsh evolution study: CCO - £15,000 (Year 1), £10,000 (Year 2).
- Design guidance for mixed beaches - £30,000 (Year 1), £30,000 (Year 2).

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