

Committee: **SCOPAC**

Date: **APRIL 2013**

Title : **RESEARCH PROGRAMME**

REPORT OF THE CHAIRPERSON OF THE SCOPAC RESEARCH SUB-GROUP

1 CURRENT RESEARCH PROGRAMMES

1.1 EVOLUTION OF COASTAL SEDIMENT STORES AND SINKS STUDY

Channel Coastal 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 geo-rectified and digitised to provide the area of offshore sinks
- Difference plots of digital terrain models have been produced by the Regional Monitoring Programmes, 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 (2012/2013) surveys
- Earliest (2002/2003) to most recent (2012/2013) surveys

Some 2012/2013 baseline surveys are still to be surveyed.

- Recycling and renourishment logs have been checked by the Local Authorities and the Environment Agency to eliminate areas of accretion or erosion on the beaches attributed to recycling or renourishment events.

Next steps include:

- Ongoing incorporation of 2012/2013 Regional Monitoring surveys
- Ongoing subtraction of recycling/renourishment volumes from sediment accretion volumes
- Analysis of Admiralty tide charts (1960's and 2000 series)
- Analysis of seabed mapping to identify where offshore shoals are mobile sediment rather than rock

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.

Eastern Solent Coastal Partnership undertaking Sediment Tracer Studies. Minor contribution of £4,000 (2012/2013)

The SCOPAC funding (£4,000) is contributing 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)**
The deployment will assist in confirming the presence of a drift divide at Solent Breezes and the quantity of eroded cliff material flowing south towards the littoral sink at Portsmouth's ebb tidal delta. The particle size distribution was analysed and 500 appropriately sized tracers were deployed in March 2013. These will be tracked over a 6 month period. If necessary, a further 500 tracers will be deployed once the initial survey results have been analysed.
- **Sediment tagging and detection at Lee-on-the-Solent to track beach nourishment material (500 tracers)**
500 tracers were deployed at the nourished beach at Lee-on-the-Solent in March 2013 to monitor the direction and rate of sediment transport along the coast over a 6 month period. The particle size distribution was analysed and appropriately sized tracers were deployed.

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

500 tracers were deployed at Stokes Bay to establish how beach material is currently moving in relation to changes in morphology. The particle size distribution of the beach was analysed prior to tracer deployment to ensure the tracer pebbles replicated this. The tracers will be tracked along the frontage over a 6 month period.

More specifically, the SCOPAC contribution will fund 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.

To date:

- The tracers were deployed in March 2013 at the locations listed above
 - The follow up surveys are in progress
- The burial depth study was submitted to the SCOPAC Research sub-group. A series of tests were carried out to assess the detection range of the various sizes of RFID tag at different orientations to the reading antennas in different beach compositions.

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:

- surveyed the existing groynes to determine if settlement or dispersal of rock is a problem
- investigated whether the construction and design of the rock groynes in Poole and Christchurch Bays is a pragmatic approach for the future.

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.

Dr David Harlow interviewed engineers from the relevant councils and compiled his findings into a report. The report was circulated to the SCOPAC Research sub-group in March 2013 and minor comments were incorporated where relevant. Dr Harlow presented his findings to the Southern Coastal Group on the 14th March 2013. The final report can be downloaded from the SCOPAC website (<http://www.scopac.org.uk/non-standard-rock-groynes.html>).

Recommendation: For information

1.3 SCOPAC MINOR PROJECTS FUND (2013/2014)

A call for new research projects that would benefit from a minor contribution from SCOPAC (up to £4,000) was sent out to SCOPAC officers and members. Full member SCOPAC officers will cast a vote for their preferred project following a discussion at the next Southern Coastal Group meeting. The outcome will be reported back to SCOPAC at the next SCOPAC meeting. The awarded research project will be expected to send quarterly updates on progress to the Research Chair, produce a short report of findings and present results to the Southern Coastal Group or SCOPAC as appropriate.

Recommendation: For information

1.4 SCOPAC BIBLIOGRAPHIC DATABASE UPDATE

Channel Coastal Observatory, David Carter and Dr Malcolm Bray from the University of Portsmouth £13,000 (2012-2013)

The update of the SCOPAC Bibliographic Database is completed.

The Channel Coastal Observatory managed the project, collated Defra and Local Authority reports and inputted publications into the database. Dave Carter collated academic publications and harbour conservancy/authority information. Dr Malcolm Bray provided additional publications and reviewed the outputs. Overall, an additional 700 references were added to the database for the period between 2002 and 2012.

The revised database will be uploaded onto the SCOPAC website and will underpin the literature review section of the Regional Sediment Transport Study update.

Recommendation: For information

1.5 SCOPAC AND SCG WEBSITES

The Southern Coastal Group approved the continued maintenance of the SCOPAC and Southern Coastal Group websites, by Vivid Websites and the Channel Coastal Observatory, for the total sum of £3,000 for this financial year (2013/2014).

Recommendation: For information

1.6 REGIONAL STUDIES DELIVERED VIA MTP

The New Forest District Council is the lead authority for the *Regional Sediment Transport Study update* (£150,000) and the *Reducing Regional Flood and Erosion Risk from Wave Action on the Channel Coast project* (£250,000).

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

- Maintenance of coastal structures Phase 1 Timber groynes: *Professor A Bradbury/CCO - £9000 (2012/2013). Workshop undertaken to start project. Professor Bradbury to provide feedback.*
- Evolution of coastal sediment sinks: Southampton University/CCO - £25,000 (2012/13). *Started 2011.*
- SCOPAC Bibliographic Database update: Channel Coastal Observatory, David Carter and Dr Malcolm Bray from the University of Portsmouth - £13,000 (2012-2013). *Completed.*
- 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. Completed.*

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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