EXECUTIVE SUMMARY

During November-December 2001 the British Geological Survey and Emu Environmental Ltd, in association with National Aquatic Resources & Development Agency, Sri Lanka, carried out marine geophysical, geotechnical and diving investigations for offshore sand exploration. The survey examined five potential borrow areas, located off the southwest coast of Sri Lanka, between Colombo and Galle. The aim of the investigation was to locate suitable sand resources for dredging and beach renourishment, as part of a broad coastal stabilisation scheme, funded by the Asian Development Bank.

The scope of the consulting services provided were:

- Carry out field investigation to determine the availability of offshore sand,
- Quantify the sand available in the explored areas, and
- Diving inspection and reporting for the preparation of an EIA

The geophysical survey included acquisition of:

- Bathymetry data
- Seismic profiling data and
- Sidescan Sonar data

On the basis of preliminary assessment of the geophysical data, a geotechnical survey comprising grab and vibrocore sampling was undertaken. In the laboratory, samples were graded to BS5930 and BS1377 and described. An assessment of the seabed ecology was based on a diver survey during which video footage was recorded.

The report provided herewith is divided into two parts:

- Part 1 - Including an assessment of the sand resources of the areas surveyed, an environmental assessment of the impact of sand dredging in these areas and a dredge plan

- Part 2 - Includes supporting data and more detailed descriptions of the surveyed areas

- Part 3 - Drawings of the surveyed areas

Interpretation of the seismic and sampling data reveal that local sand supply options exist for each nourishment scheme. Whereas supplies for Colombo, Wadduwa and Hikkaduwa are clearly defined, there is a range of options for supplying the Kalutara and Bentota-Beruwala regions. Sand resources in these areas are, in most instances, overlain by overburden, that will have to be removed to expose the underlying sands. To establish the optimum borrow area it will be necessary to carry out a test-dredging programme in each area. Alternatively a single borrow area can be targeted and utilsed for all nourishment projects. The available evidence does not permit recognition of a single preferred area, however each of the proposed areas has enough volume to satisfy the total requirement in the region.

Environmental impacts will arise due to direct disturbance of the seabed, by dredging and as a result of plumes. As well as restricting the area of seabed directly impacted by dredging, the benthic communities are generally intolerant of high levels of suspended sediment. As a result, overflowing is the key environmental issue. Overflowing should be minimised and production concentrated in the clean, coarse-grained sands. A monitoring programme should be established to review, manage and minimise potential dredging impacts. If impacts are considered to be unacceptable it may be necessary to restrict dredging to tidal/seasonal windows and to modify dredging techniques to minimise impacts. Seabed survey may also be required to monitor the success of the mitigation plans.

It is recommended that the following approach to assessment and management of dredging activity be taken:

- a test dredging programme should be carried out before beginning full-scale production in each potential borrow area to establish the location of the best quality sands and potential plume dispersion,

- whereas the data from this (OSDS) survey is considered reliable, if necessary the dredging contractor may wish to complete a site specific resource survey,

- a dredging plan should be agreed with the dredging contractor following the completion of the test dredging programme,

- dredging data (trackplots etc) should be collected from the dredging contractor for each load to ensure best practice and,

- an environmental dredging management plan and monitoring programme should be carried out at each borrow area.