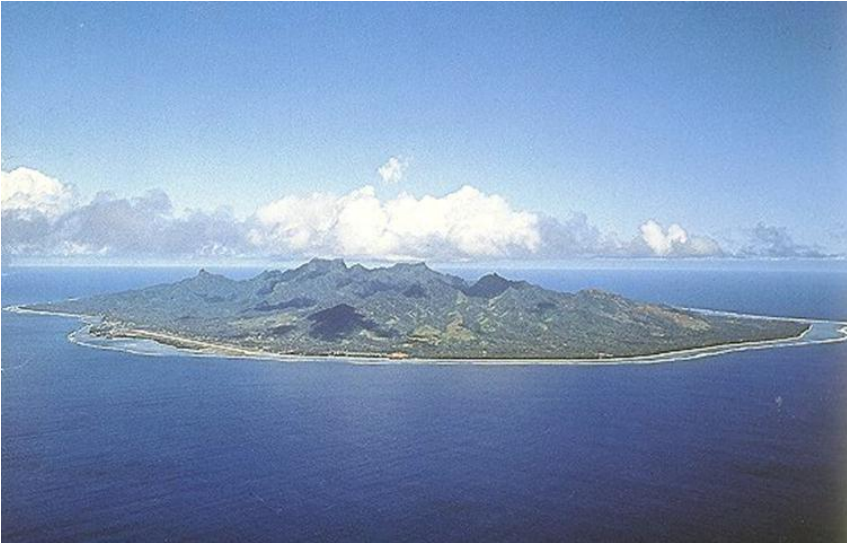


Rarotonga Coastal Protection Feasibility Study



CLIENT:
GHD Pty Ltd for
SOPAC, 2005



LOCATION

Cook Islands, Central South
Pacific.



PROJECT DESCRIPTION

Systems Engineering Australia Pty Ltd provided specialist technical support for GHD Pty Ltd in a study of the storm surge risk at Rarotonga in the Cook Islands for SOPAC.

A key outcome of the study was the provision of defensible design criteria in terms of reef-flat water levels and wave heights. These were derived from a Monte Carlo modelling process for tropical cyclones in the area and translation of the effects of these cyclones on the Avarua/Avatiu coastline. This process combined the variabilities inherent in predicting tropical cyclone effects including:

- Intensity of the storm
- Direction and travel speed of the storm
- Spatial extent of the extreme winds and waves
- Closest approach distance and relative location of storm path

A number of historical storms were simulated (including *Sally* in 1986 as shown in the photographs) to verify the operation of the various wave and surge models. Design conditions were able to be assigned a statistical return period or Average Recurrence Interval (ARI).



SEA PERSONNEL PROVIDED

- Tropical cyclone climatology and wind field model;
- Spectral wave modelling;
- Development of parametric storm tide models;
- Statistical modelling.



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