

Manase Beach Replenishment, Savai'i, Samoa



Date

March 2013 - December 2016

Total cost of project

NZD 1 million

Client

Samoa Tourism Authority (STA)

Project overview

In December 2012, Cyclone Evan slammed into Samoa, wreaking immense damage and causing significant economic and infrastructural losses, particularly in the tourism sector. The severe erosion of Manase Beach slashed visitor numbers and devastated the local economy. The Samoan Tourism Agency - established to assist the Samoan tourism sector to rehabilitate and rebuild - administers the Tourism Cyclone Recovery Programme (TCRP), which is funded by the New Zealand Aid Development Programme. Manase Beach was identified by the TCRP, the Disaster Management Office and the Planning and Urban Management Agency (PUMA) for the first comprehensive study of coastal protection options and design. Tonkin + Taylor International (T+TI) was commissioned by the STA to assess options for shoreline protection for Manase Beach, to carry out preliminary design and develop an implementation plan for the best and most practical solution.

Services provided

T+TI coastal engineers found that coastal erosion is an ongoing issue at Manase. A range of options to address the issues of coastal erosion were compared - including their technical feasibility, time of effectiveness, economics and social and

environmental effects. Preferred short, medium and long-term options were selected to address erosion problems and increase resilience to natural hazard and climate change. To address coastal erosion in the short-term, beach replenishment along 170m of eastern Manase Beach using 2,000m³ cubic metres of externally-sourced sand was proposed, along with control structures to maintain sand position and limit migration out of the replenishment area. While no significant living corals, fish or invertebrates were found on or around the area of work, there were extremely significant seagrass and algae beds supporting a population of endangered green turtles. In consideration of this, size and location of the beach replenishment and offshore control structures were designed to ensure that there was no disturbance of the seagrass area.

Two low crested, emergent breakwaters were built to maintain a beach in front of Vacations and Regina's Beach Fales. Each is 35m long (25m at the water level) and located some 50m offshore. These increase wave sheltering and modify the wave direction to shore, reducing sediment losses offshore and alongshore.

Sectors

Coastal and environmental engineering

Performance

A valued beach amenity was restored for tourists and locals, providing improved protection for adjoining land from coastal erosion and storm damage.

Key personnel

- Design lead - Tom Shand
- Environmental approvals - Sarah McCarter
- Construction observation - Peter Quilter