



Project Information Sheet

November 2005

Locke Estate Busselton Investigation of Beach Stabilisation New Coastal Assets

1 Essex St Fremantle Western Australia

Overview

In December 2004, the Department for Planning and Infrastructure completed a study into the causes of coastal erosion at the Locke Estate, Busselton and developed a number of options for foreshore stabilisation.

The study identified the coastal processes responsible for driving the erosion and considered a range of options for long-term foreshore remediation and infrastructure protection, which were presented to the Shire of Busselton for its consideration.

Project Status

The Locke Estate is a series of 17 recreational campsites situated on a Crown reserve vested in the Shire of Busselton. The campsites are leased to a number of community groups. In 1967, when the Locke Estate properties were originally developed, they were located at a minimum of 100m inland from the shoreline; however, this proved insufficient to cater for the subsequent shoreline recession.

Coastal erosion in this area has threatened the adjacent camp infrastructure and decreased the beach amenity for some years. Over this time, various strategies have been used to manage the erosion and its effects, including minor sand nourishments, construction of private seawalls, relocation of infrastructure, and construction of five low-profile timber groynes.

Coastal protection works designed to provide adequate storm protection are required if the existing beach line is to be retained and the adjacent land and infrastructure protected.

Study Results

The study investigated the technical aspects of a range of foreshore stabilisation options and recommended solutions based on appropriateness and value for money.

The stabilisation and restoration of the western and eastern sections of the beach were considered separately. The western section of foreshore is already partially protected by a series of groynes while the eastern section has no artificial protection. A number of stabilisation options were investigated and costed for each section.



Locke Estate Busselton

Investigation of Beach Stabilisation

Study Results (continued)

For the western section the condition of the existing groynes was investigated, with a view towards either their removal or their retention and repair. For the eastern section, six coastal protection options were considered - sand nourishment, conventional groynes, alternative groynes, seawall, offshore breakwaters/headlands or a perched beach.

For the western section, the study found it would be most practicable and cost-effective to retain all five existing composite timber-rock low-profile groynes. It was recommended that these groynes be restored and extended to increase their sand retention capacity, then nourished with additional sand to provide an extra storm buffer and reduce downdrift erosion.

For the eastern section, the study found that the combination of two 50m conventional rock groynes and sand nourishment would be the most cost-effective and lowest risk stabilisation option. This is entirely consistent with the existing works, relatively low cost in the long-term and could be staged in accordance with funding availability.

In addition, a number of possible sources for nourishment sand were investigated. It was recommended that sand be obtained from updrift foreshore sites of excessive accretion giving the additional benefit of reducing the problems caused by the accretion at these sites.

Credits

New Coastal Assets acknowledge the significant contributions made by:

- Bruce Lorimer, Shire of Busselton for direction and comments on the report from the Shire's perspective;
- Laura Dubczuk, Department for Planning and Infrastructure for undertaking the study and writing the report;
- Peter Boreham, Department for Planning and Infrastructure for direction and review of the study; and
- Bill Andrew and Stuart Barr, Department for Planning and Infrastructure for comments on the report.



Groyne 1



Groyne 2



Groyne 3



Groyne 4



Groyne 5

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