

SURFING REEFS – DOLLARS AND SENSE

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This paper presents indicative costs for a range of coastal works. These include surfing reefs; more traditional “hard” coastal engineering structures such as offshore breakwaters, seawalls and river entrance breakwaters/training walls; and more recent “soft” engineering options such as sand nourishment, beach scraping and sand bypassing plants.

Approximate costs are provided in Table 1 to give an order of magnitude for the range of options. Despite real costs of “doing nothing”¹ or “unplanned retreat” exceeding more traditional coastal protection measures, many high risk coastal settlements in NSW and other places remain in a stalemate situation. Elements of the community are opposed to traditional coastal protection measures such as seawalls, due to aesthetics, loss of beach amenity or ideology. This situation persists despite the foreseeable loss of private and public infrastructure, and ultimately beach amenity, from present day storms and future effects of Climate Change and sea level rise.

The most important service categories for coastal communities include safe and well maintained beaches, rock pools, parks and recreational areas. In a typical Australian coastal community, over 20% of rate payers’ revenue is dedicated to management of these priority areas, with a further 20% being assigned to environmental management services (Warringah Council, 2007).

A summary of costs of coastal works is presented in Table 1. Many of the engineering options presented in Table 1 such as sand bypassing plants and river entrance breakwaters/training walls have formed surf breaks, however, the cost of these works far exceeds the cost of surfing reefs alone. Constructed offshore reefs forming a salient, and/or bombora controlled beaches coupled with imported sand nourishment may be cheaper than more traditional coastal protection measures.

Perhaps the additional aesthetic appeal of a constructed reef coupled with recognised ecological returns and bonus recreational amenity values can overcome the present stalemate in coastal protection.

¹ Doing nothing in areas with known coastal hazards may be quantified in terms of losing existing private and public property, loss of beach amenity and even loss of life. History shows that the cost of doing nothing (often as an emergency service) far exceeds a planned approach to managing coastal hazards.

Table 1: Indicative costs of coastal works

Description/Location		Construction/details	Cost	Source
Surf Reefs				
Completed at time of reference				
Bargara	QLD	Rock	\$10k	Jackson et al (2007)
Cables	WA	Rock	\$1.4M	Jackson et al (2007)
Narrowneck	QLD	Mega geocontainers	\$2.8M	Jackson et al (2007)
Prattes (now removed)	USA	Geocontainers	\$385k	Jackson et al (2007)
Not completed at time of ref				
Mount Manganui	NZ	Mega geocontainers	\$1.4M	Jackson et al (2007)
Opunake	NZ	Mega geocontainers	\$760k	Jackson et al (2007)
Offshore breakwater				
Semaphore Park	SA	Geotubes	\$1.2M	Carley et al (2001)
	SA	Rock	\$1.2M	Carley & Mariani (2007)
Sand pumping station				
Tweed (Snapper-Superbank)	NSW	Capital plus pumping	\$23M+\$3M/yr	Carley et al (2005)
Nerang (The other side)	QLD	Capital plus pumping	\$16M+700k/yr	Carley et al (2005)
Sand shifting costs	AUS	Typical from 5 sites	\$4 to \$5/m ³	Carley et al (2005)
Major breakwater/training wall				
Clarence River (Iluka/Yamba)	NSW	Replacement cost	\$95M	MHL (1994)
Tweed River (Duranbah)	NSW	Replacement cost	\$20M	MHL (1994)
Other coastal options				
Beach nourishment for 0.9 m SLR		Based on \$10/m ³	\$10M/km	Carley et al (2002)
Rock rubble seawall on open coast			\$10M/km	Carley et al (2002)
Concrete seawall on open coast			\$20M/km	Carley et al (2002)
Retreat	NSW	Public and private land	\$60M/km	WBM (2003)

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