



Coastal Zone Management: The Gold Coast experience, Australia

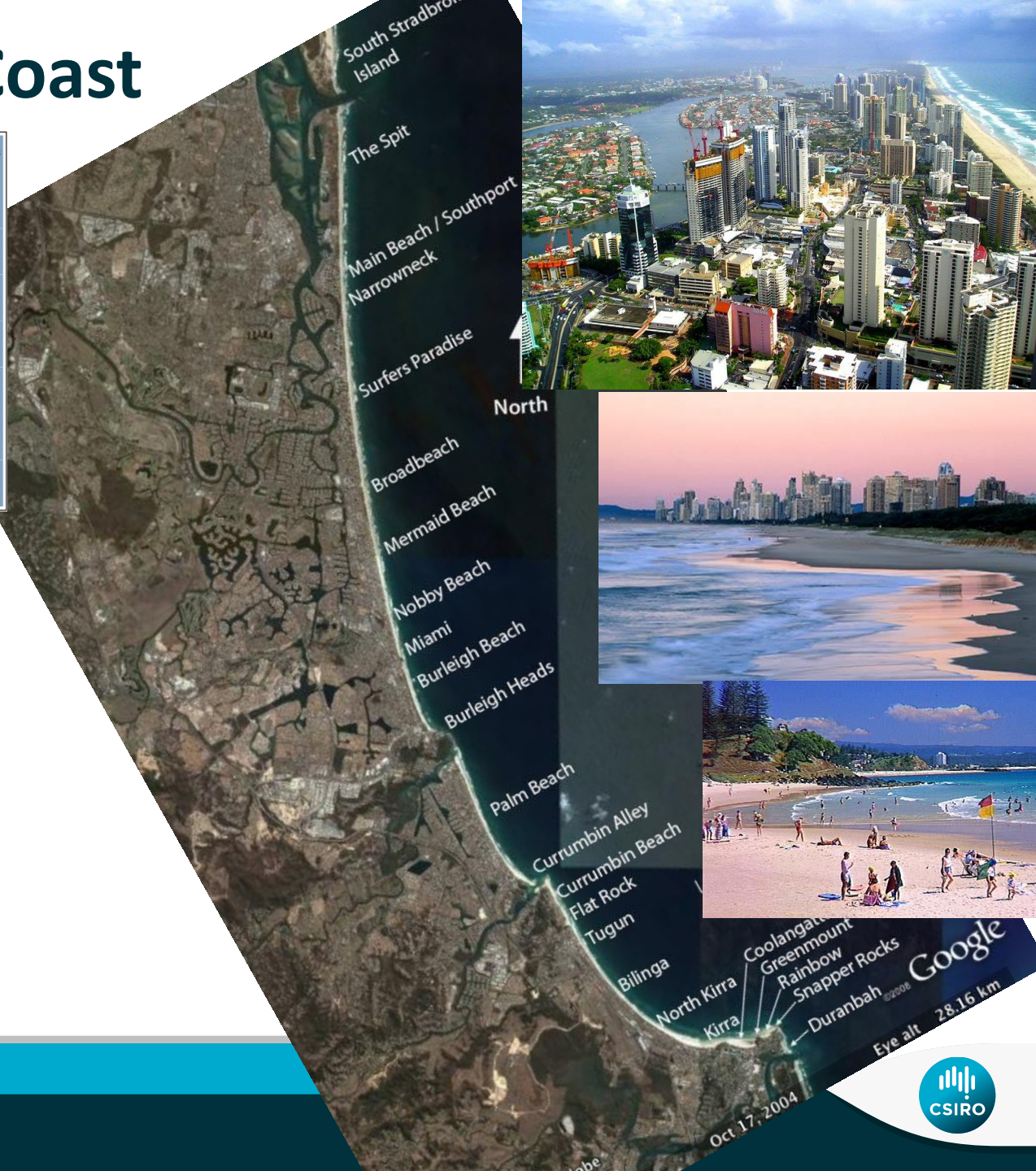
Dr Neil Lazarow, Organización Científica e Industrial de la Mancomunidad (CSIRO) y Universidad de Griffith

VII Seminario de Ingenieria y Operacion Portuaria, San Antonio 26-28 octubre 2016

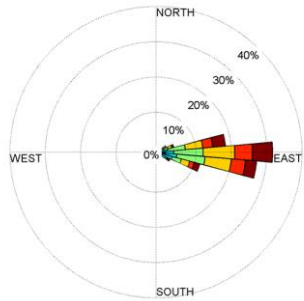
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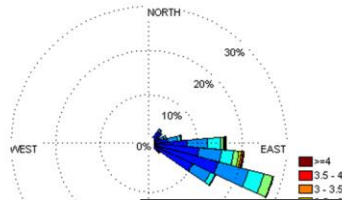
The Gold Coast



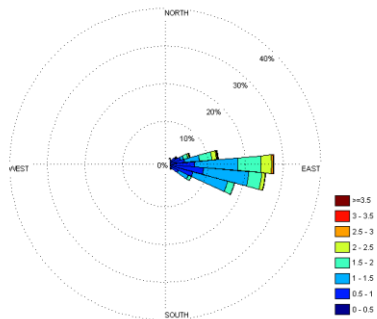
Gold Coast Wave Climate



Nov 2010 – March 2011



May – October 2011

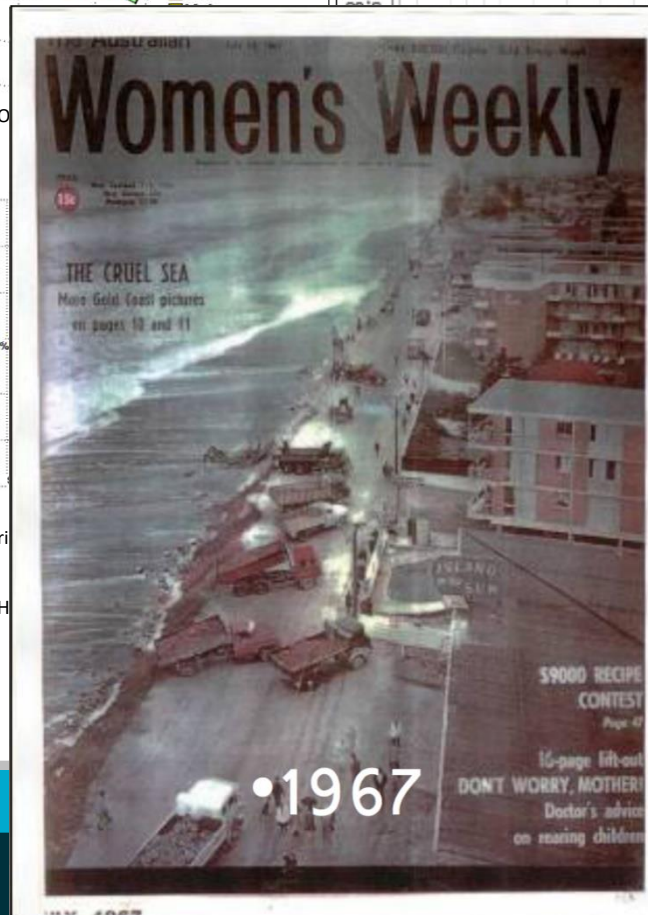
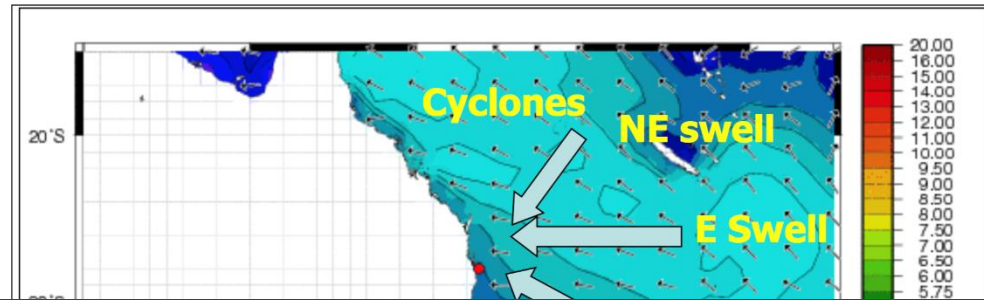


Nov 2011 – April 2012

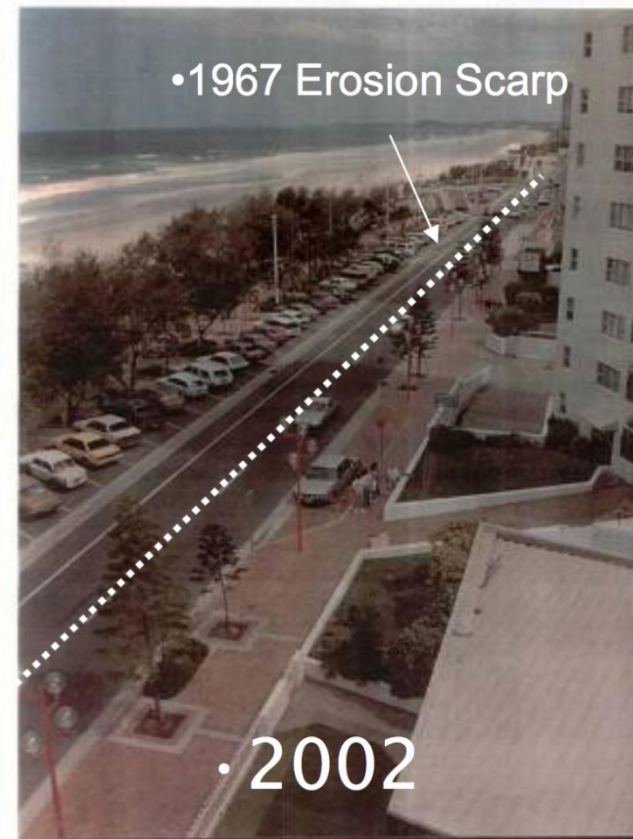


Nov 2012 – April 2013

Source: Gold Coast Seaway wave rider buoy (GCCC, DEH)



•1967

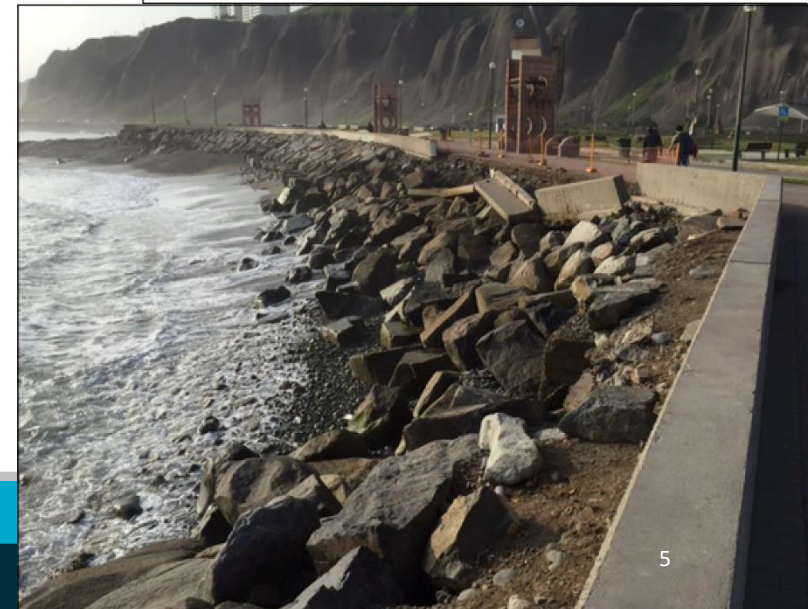
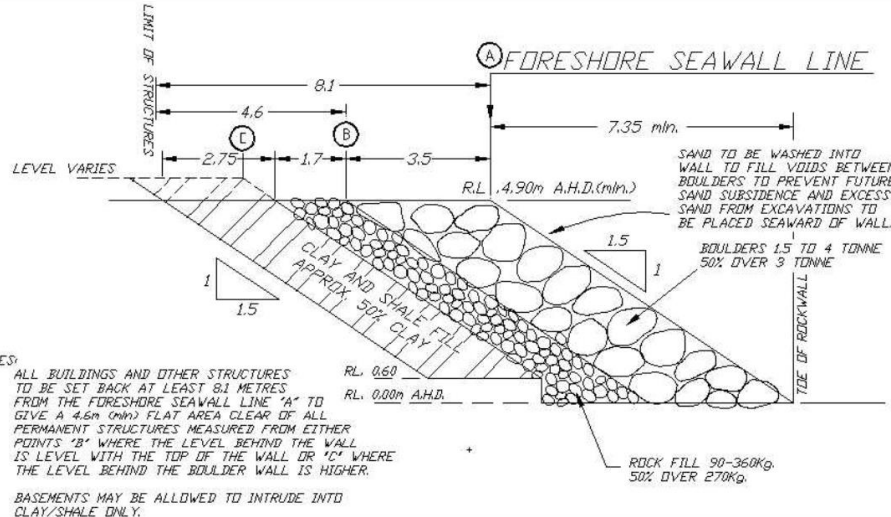
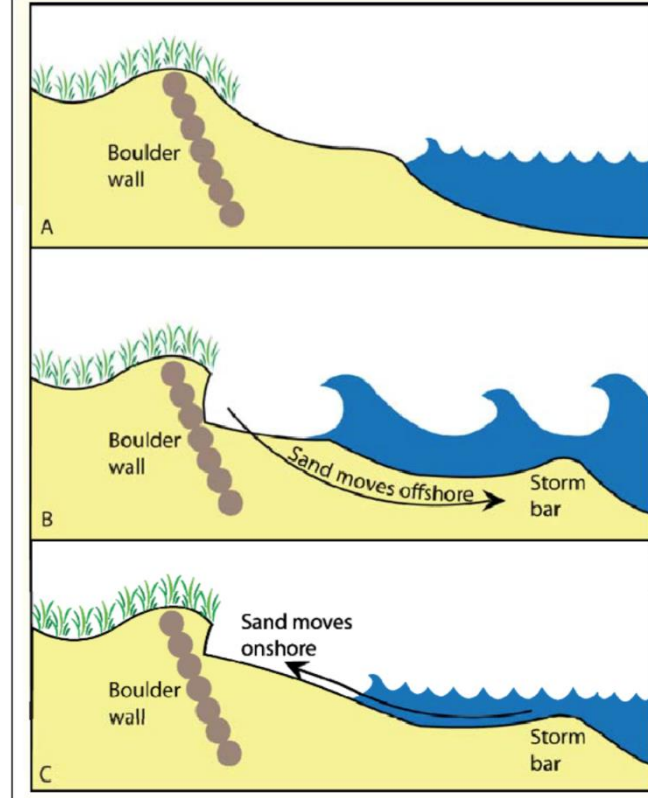


•2002

Gold Coast and coastal management

- Rapidly growing city >500,000
- 12 million visitors to the city p/a, 9 million beach visits p/a
 - Tourism ~\$US3B p/a
- Leader in coastal management for more than 50 years, driven by the need to protect the city and its shoreline from the impacts of storms
 - Priorities - - - Infrastructure, amenity, environment
- A suite of innovative policies, research, technologies and beach management techniques have been implemented on the Gold Coast and subsequently acknowledged and adopted as best practice throughout the world
 - Ocean Beaches Strategy (strategy)
 - Shoreline Management Plan (supporting science / evidence)
 - Sector management plans e.g. Northern Gold Coast Beach Protection Plan, Palm Beach Protection Plan etc (capital works plans)
 - Codes e.g. Seawall construction code

Gold Coast Planning Scheme



Sector management plans



Tweed River Entrance Sand Bypassing Project (TRESBP)

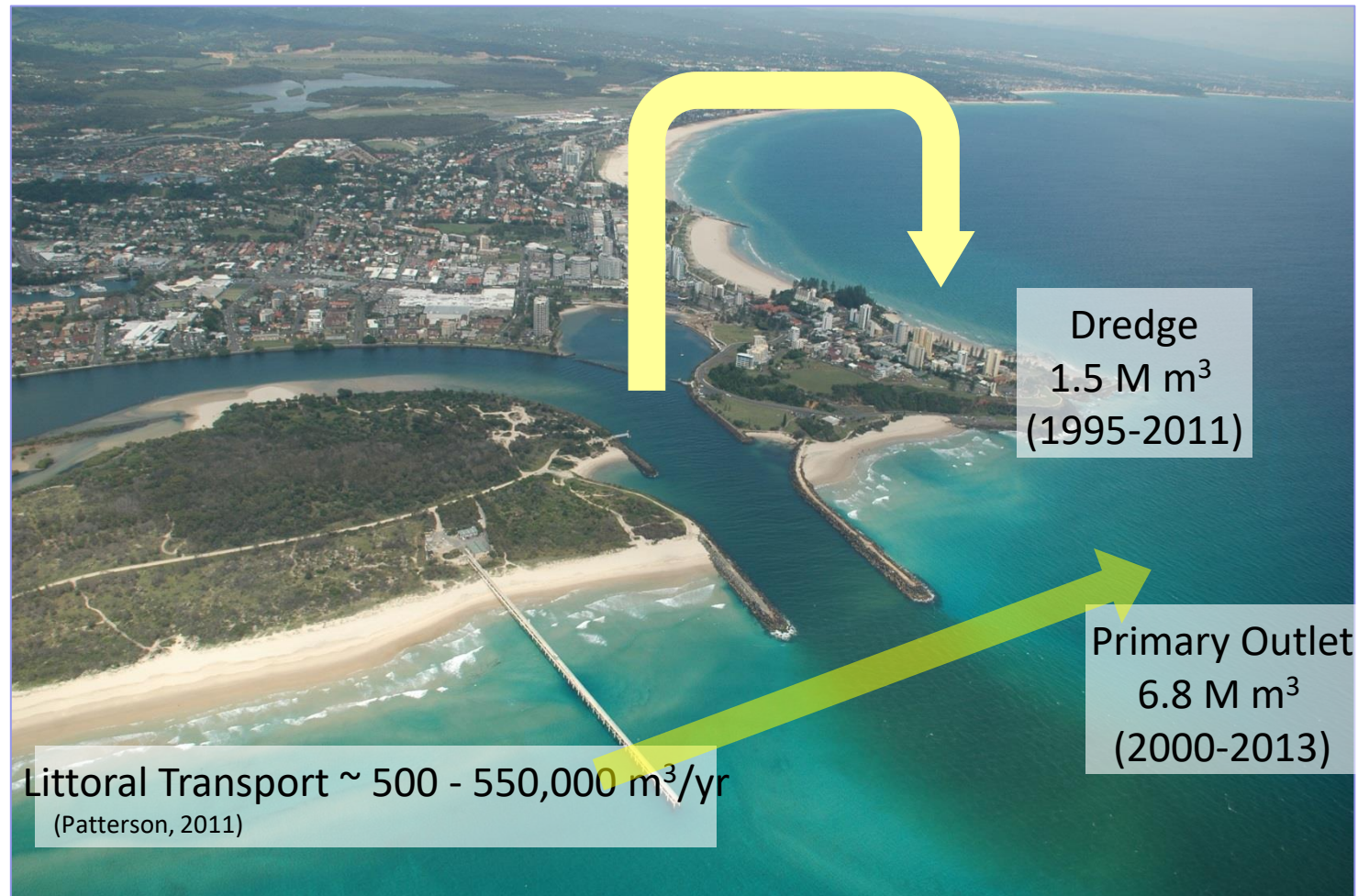


Image: D Strauss

How TRESBP works

SAND PUMPING JETTY AT LETITIA SPIT



1961



2004



1983. Gestión de la zona costera
Source: Dept. Harbour and Marine

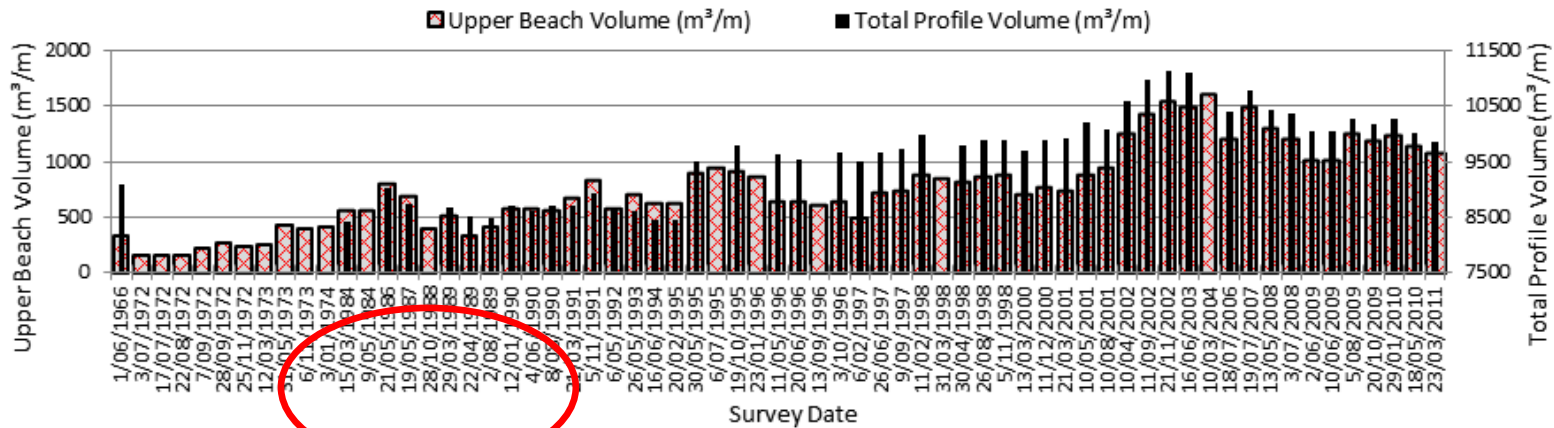
1974

Coolangatta Beach 1972

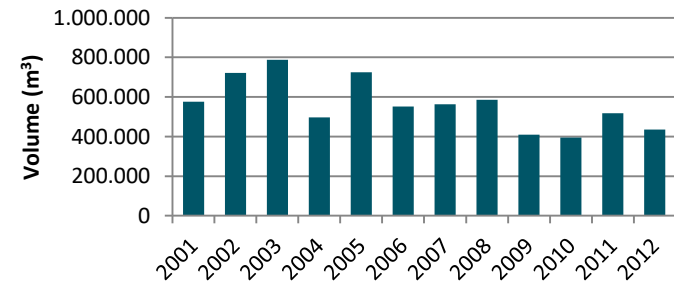


Coolangatta Beach 2010

Coolangatta (CG6) Beach Profile Volumes 1966 - 2011



Annual Bypass Volume (m^3)



Source: TRESBP (2013) NSW Land & Property Management Authority







Northern Gold Coast Beach Protection Strategy

Narrowneck Artificial Reef (2000)

- Award-winning, local concept
- Investigation, design, manufacture, construction, monitoring



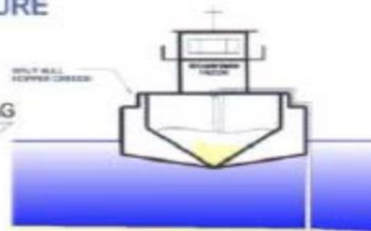
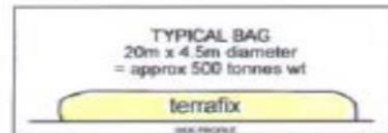
Narrowneck



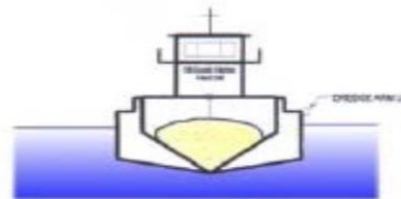
Pics: International Coastal Management; R. Tomlinson

MEGA SANDBAG FILLING PROCEDURE FOR ARTIFICIAL REEFS

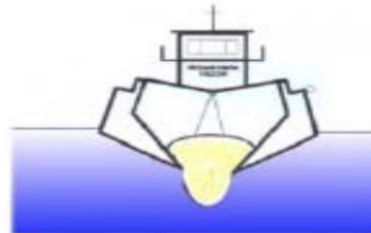
1. PUMPING SAND INTO TERRAFIX MEGA BAG



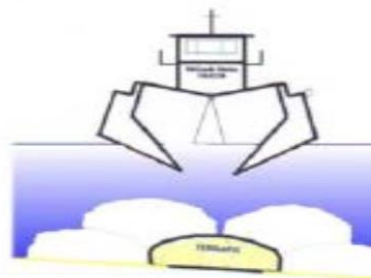
2. BAG FULL OF SAND



3. OPEN HOPPER TO DROP BAG



4. BAG DROPPED



INTERNATIONAL COASTAL MANAGEMENT



1936 Source: GCCC



1967 Source: GCCC

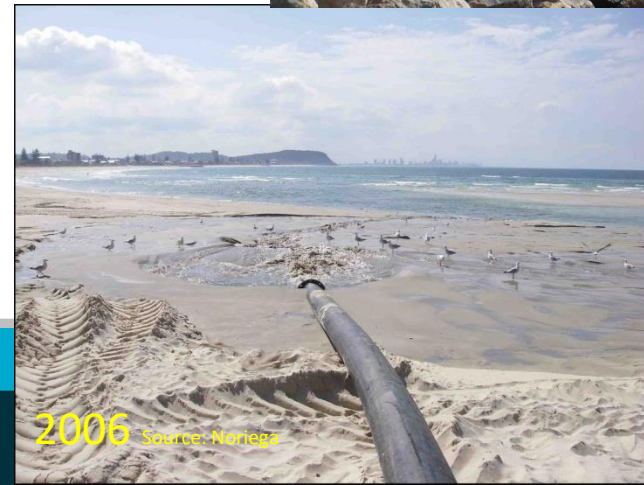


1974 Source: GCCC

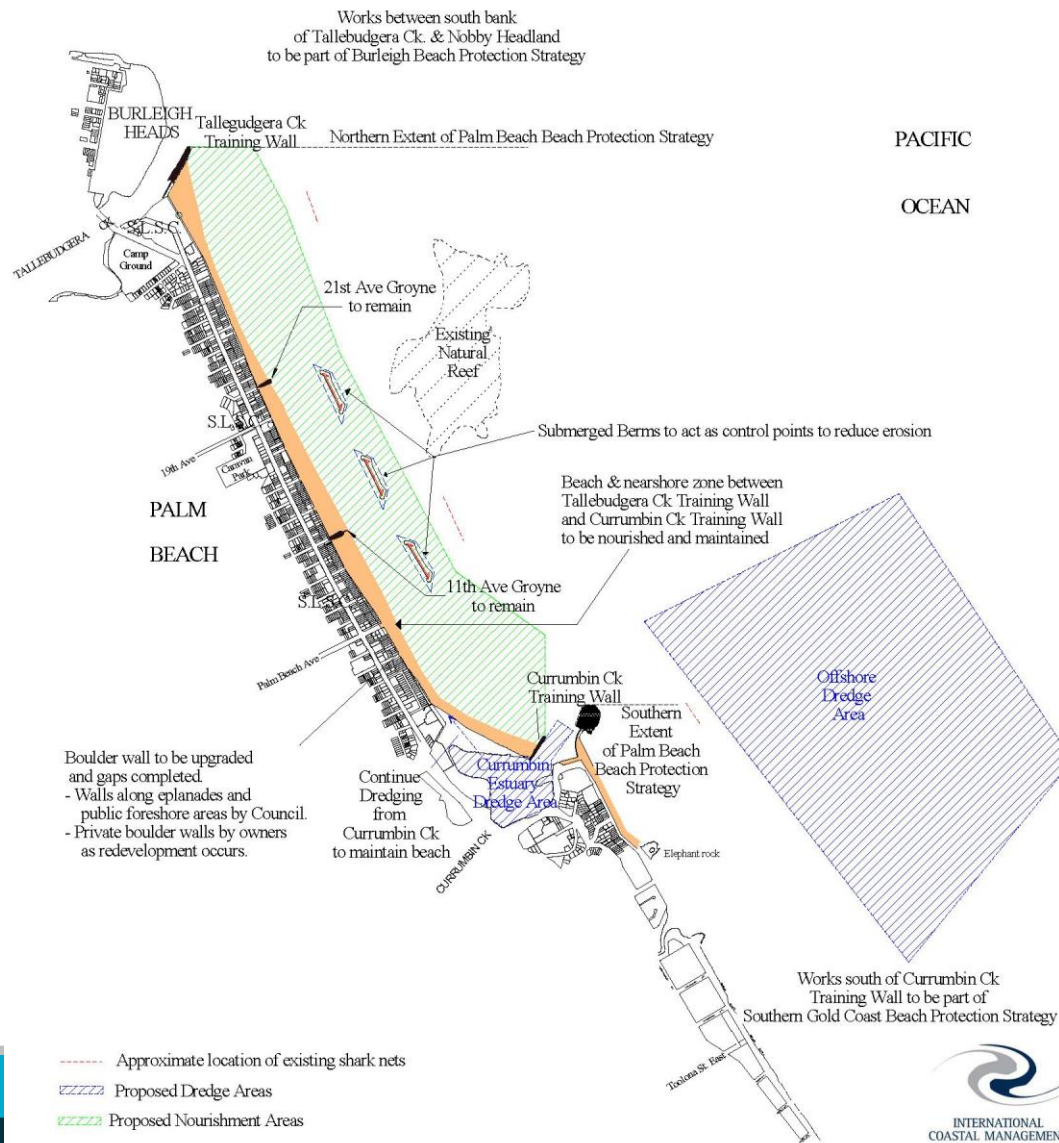


2006 Source: Kilpatrick

Palm Beach, Qld



Palm Beach Protection Strategy - 2003



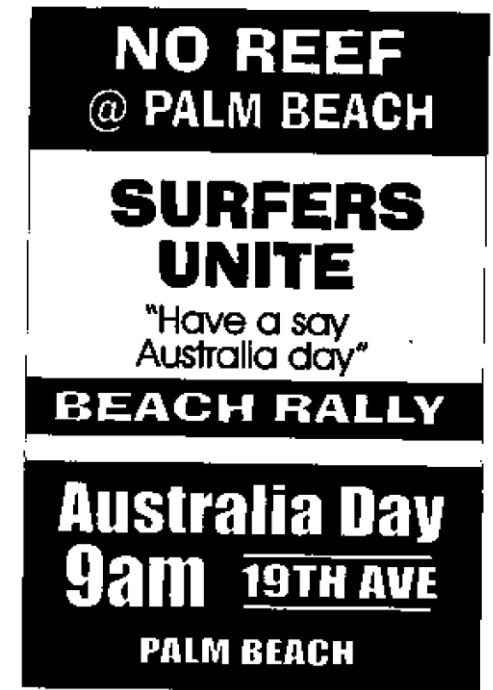
Source: ICM

Community opposition



Competing science:

“The GCCM technical reports relating to the design and impact assessment of the proposed reef(s) at Palm Beach are of a very poor standard and unsupported by data, numerical modelling predictions or evidence of any sort” (Mead, et al., 2004, p. 2).

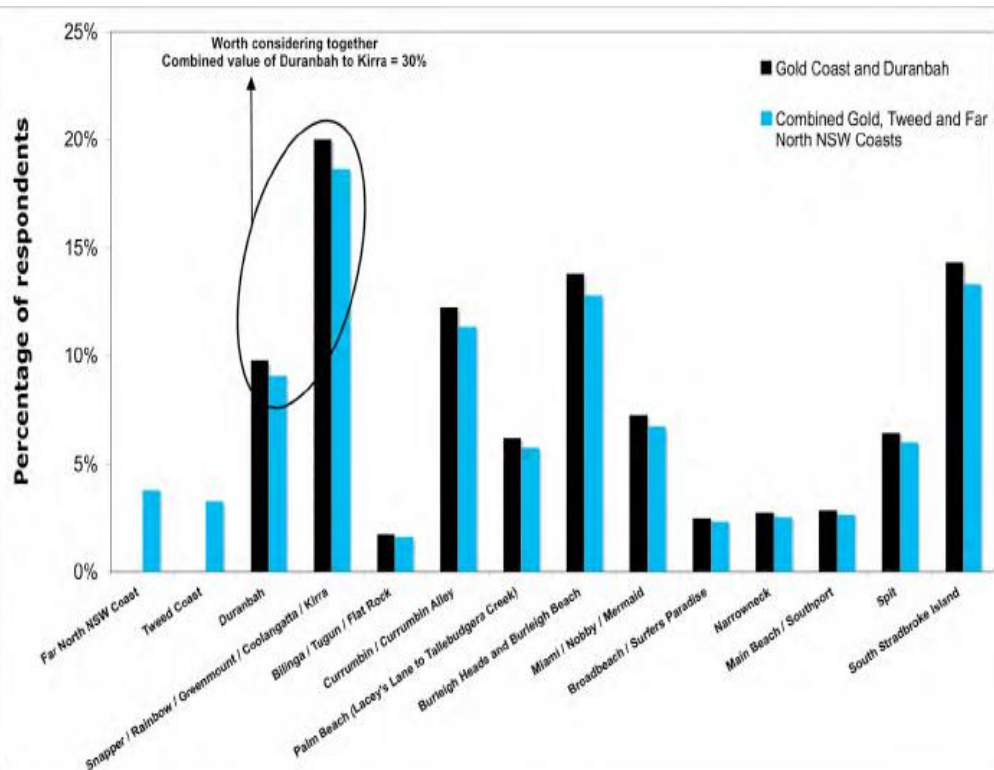


1999 project commences

2004 project suspended

2012 project recommences

Surfonomics



	Gold Coast	Trestles
Instrument	Web + face-to-face	Web
Average age	54% = 36 or less	35.6 (of those over 18)
Gender	90% male for online 75% male for f2f	92% male
Education (% college or more)	35%	65%
Income	\$AUD40-60K	\$US50-70K
Experience	43% advanced	84% high level of experience
Sessions per week	2.5	3
Sessions per year	104	109
Distance travelled (one way)	60% = 10kms or less	37km
Average expenditure per trip	\$AUD25	\$US40
Expenditure range per visit	\$AUD18-30	\$US23-40
Annual expenditure	\$2-4K	N/A

Sand bypassing system at northern end of Gold Coast

Narrowneck Artificial Reef (2001)

Nerang River Entrance
(Gold Coast Seaway, 1986)





Figure 1: View of The Spit as in Current State (Save Our Spit)



Figure 2: View of The Spit with Cruise Ship Terminal and Cruise Ship Superimposed (Save Our Spit)



Figure 3: Gold Coast Marine Development Project Vision (Government of Queensland, 2004a, p. 8)

Lessons from the Gold Coast

- Coastal management must be an ongoing investment.
- Poor standards and practice lead to sub-optimal outcomes, and are often more expensive in the longer-term.
- Monitoring, innovation and adaptation must be built into the planning regime.
- It is important to have a long-term strategic vision – sure we debate the details, but there is consensus about the direction and priorities.
- Consideration of the ‘value at risk’ when making decisions
- If you want beaches to be accessible and offer public open space, then rocks should be the last line of defence, not the first.
- The coastal manager alone is not in a position to resolve ‘conflicts of society’.

Dr Neil Lazarow, Senior Research Consultant e neil.lazarow@csiro.au m +61 427027458 s neillazarow

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