

Managing Coastal Hazards – a history of coastal erosion and the Planned Retreat strategy within Byron Shire



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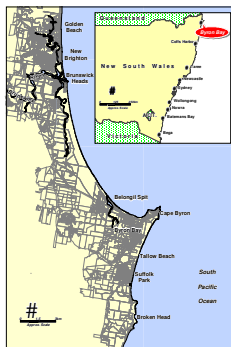
Overview

This presentation explores the history of the Byron Shire coastline with relevance to:

1. large coastal storm events and associated coastal erosion
2. Planning controls - "Planned Retreat" strategy and legal challenges



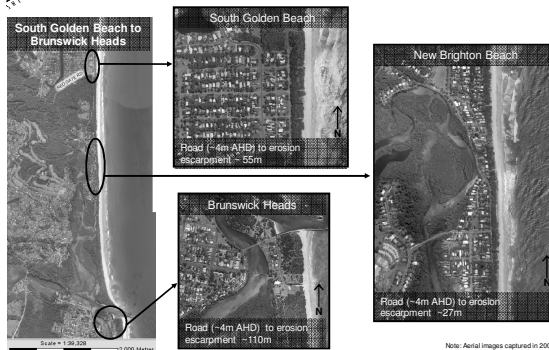
The Byron Shire



Source: Byron Coastline Hazard Definition Study (WBMA 2006)



Immediate Coastal Development Northern Byron Shire



Note: Aerial images captured in 2004.



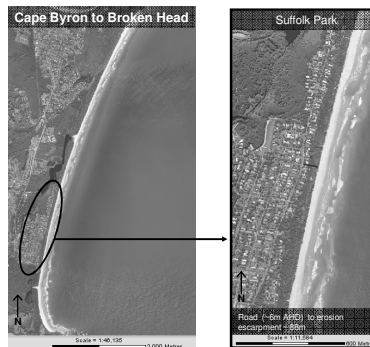
Immediate Coastal Development Mid Byron Shire



Note: Aerial images captured in 2004.





Immediate Coastal Development South Byron Shire



Note: Aerial images captured in 2004.


Byron Shire Coastal History

- 1888** First Jetty built (402 m long) in Byron Bay
- 1889-96** Numerous shipwrecks from easterly gales and storms
- 1921** "MV Wollongbar" wrecked off Byron Bay in easterly gale
- 1928** New jetty built (610 m long) due to damage to old jetty from heavy seas
- 1933-36** Period of severe extensive beach erosion
- 1948** New jetty damaged and six fishing boats lost
- 1954** Cyclone, extensive erosion to beaches, damage to new jetty, all 26 fishing boats lost
- 1955-56** Period of severe beach erosion
- 1972-73** Severe beach erosion, remains of jetty removed
- 1974** February - Cyclone Pam: Beach erosion and property loss including Sheltering Palms Village
May/June - Severe Erosion
- 1975** NSW Government initiates a study of the coastline for the north coast
- 1978** PWD Hastings to Byron Bay Study completed
- 1988** BSC adopts planned retreat in Development Control Plan

Source: Byron - Hastings Point Erosion Study (PWD, 1978)

Cyclones affecting Byron Bay to Hastings Point embayment 1956 - 1978



1918 - 1913/19
1919 - 20/1/19
1920 - 8/2/19
1918 - 8/18/18
1919 - 8/15/18
JUDY 20/1 - 5/2/15
SONIA 20/1 - 7/2/17
BANBARA 19/2 - 22/2/17
OLENDA 20/3 - 8/1/17
JOAN 19/2 - 19/3/17
GARY 7/2 - 14/2/72
KESLEY 20/2 - 1/3/73
PAK 4/12 - 10/2/74
JOE 7/3 - 14/3/74
DAVID 16/1 - 20/1/76
COLIN 20/2 - 14/3/76
HOPK 11/3 - 13/3/78


This graphic represents a portion of the contents of the final report of the study of the 1988-89 coastal erosion of the embayment from TROUSAR CANYON to AUSTRALIAN BUBBLE, ASSETTED BY JOE STELLINGMA, Bureau of Meteorology, January 1973.

PATHS OF TROPICAL CYCLONES AFFECTING BYRON BAY TO HASTINGS POINT EMBAYMENT 1956-1978

FIGURE 8.4.2

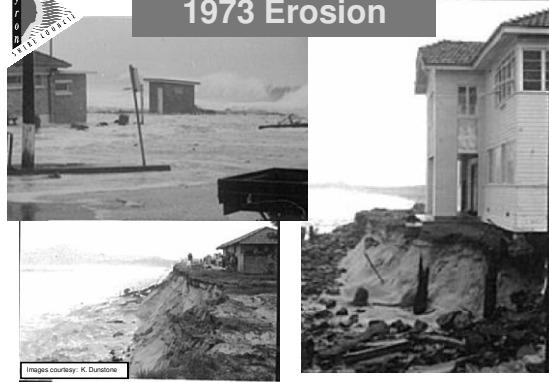
Source: Byron Bay to Hastings Point Erosion Study (PWD, 1978)

1972 Erosion.



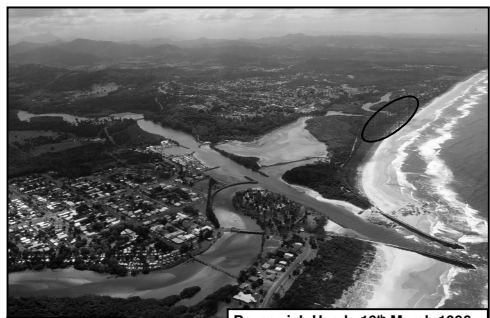
Erosion Escarpment Byron Bay, 13th July 1972
In an effort to slow the beach recession rate, the local residents placed old car bodies along the toe of the scarp.
Source: Byron Bay - Hastings Point Erosion Study (PWD, 1978)

1973 Erosion



Images courtesy: K. Durabala

Sheltering Palms Abandoned/Resumed in mid 1970's



Courtesy: P. Watson (DECC)


Brunswick Heads 19th March 1996

Sheltering Palms, 1976



Courtesy: P. Watson (DECC)


Sheltering Palms, 1977



Courtesy: P Watson (DECC)

By late 1977 a total of 17 houses had been abandoned and purchased under the Government's Coastal Lands Protection Scheme

Sheltering Palms



Sheltering Palms, 9th July, 1975
The village is already badly damaged by the beach recession during the storms of 1974.

Sheltering Palms, 1st June, 1977
Dwellings in the village are abandoned. During storms waves overlap the low dune moving sand into the river behind.

Sheltering Palms, 28th August, 1977
All trace of the village has been removed. An artificial dune constructed by pushing sand from the washovers into a pile along the front of the beach is complete. This is intended to serve as a temporary buffer to prevent breakout of the river to the ocean.


Source: Byron Bay — Hastings Point Erosion Study (PWD, 1978)

Planning History – PWD Study

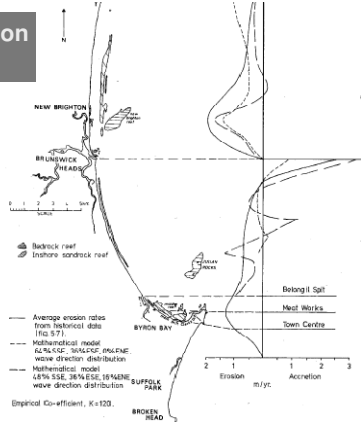
The Byron Bay to Hastings Point Erosion Study (1978)

Following the storms of the mid 1970's PWD undertook the study which identified 50 and 100 year erosion precincts and made recommendations on managing coastal hazards and erosion.

"Byron was selected because it was already suffering major erosion problems and was potentially subject to enormous further pressure from beach front development...[and represented]...the most pressing problems faced in the northern part of the state" (PWD, 1978)



PWD Erosion Rates



• Following a stormy period PWD projected recession rates for the Byron Shire compartments.

• Given the loss of roads, development, and observed recession rates it was apparent that the beaches of the shire were not accreting, but were receding!

The figure shows average erosion rates from mathematical model for varying wave directional distributions

Source: Byron Bay — Hastings Point Erosion Study (PWD, 1978)

Recommendations

"In the past, unwise development has occurred due to the lack of understanding of the coastal processes by all parties concerned. In the future, persons wishing to disregard the long term erosional trend identified by this investigation, or the implications of that trend, do so at their own risk" (PWD, 1978)

PWD Study proposed 5 categories of Management Options

1. No co-ordinated management plan
2. A re-zoning of affected areas
3. A policy of relocation
4. An insurance scheme
5. Engineering Works

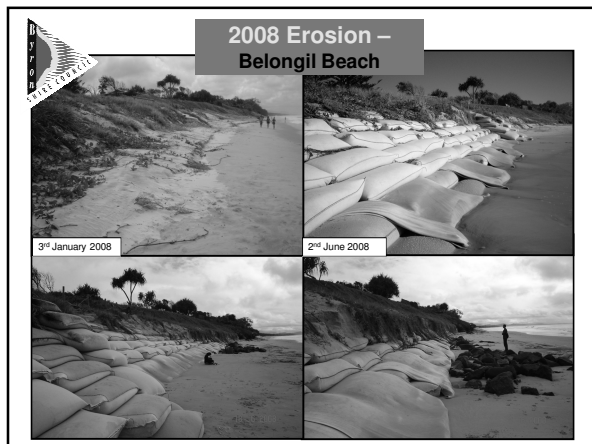
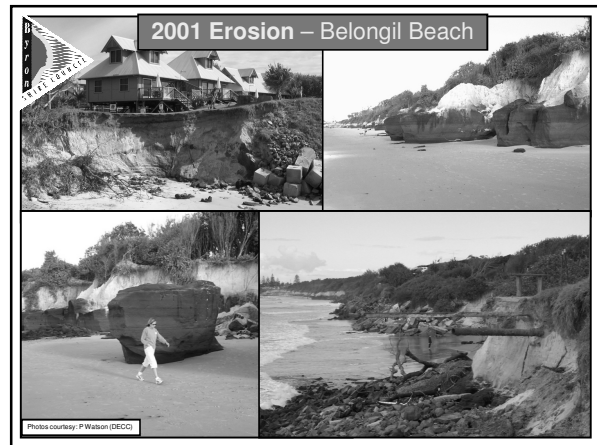
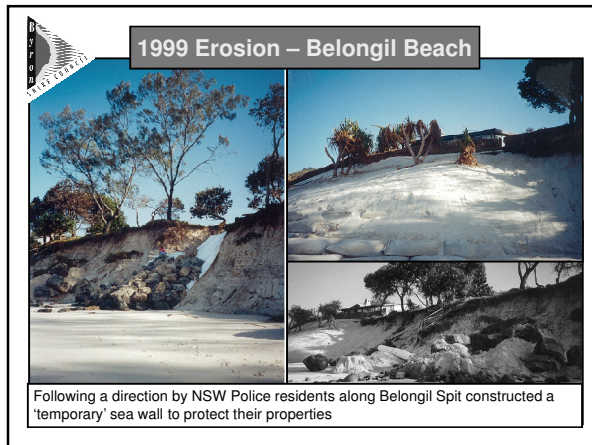
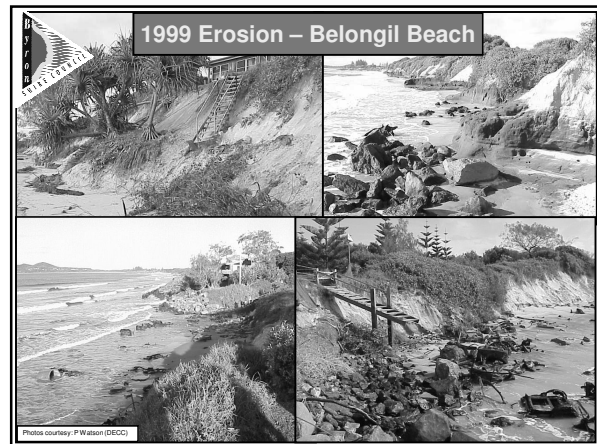
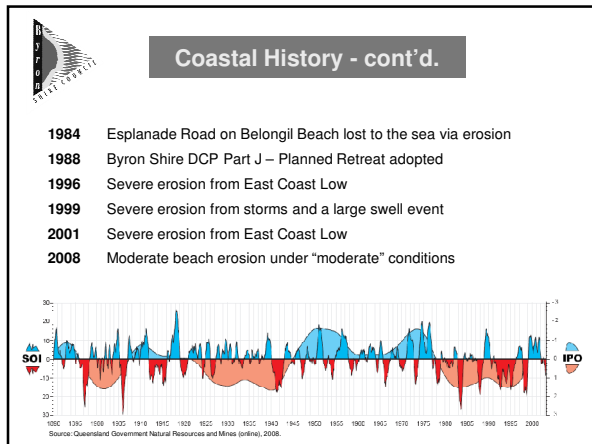
PWD 1978: "retain a buffer zone (as above) and allow the construction of transportable and removable structures. In this case it would be advisable that the area be zoned such that protective works can not be undertaken and that buildings have to be removed as soon as they become affected by the landward boundary of the buffer zone"

DCP Part J Planned Retreat

Purpose
to provide advice, guidelines and development standards addressing coastal hazard issues in Byron Shire.

Objectives

- To make provision for the orderly and economic development of land within the coastal erosion zones.
- To ensure that such development is carried out in a manner which does not adversely affect coastal processes and which will not be adversely affected by coastal processes.
- To provide guidelines for determination of the merits of development on coastal lands as required by section 79C(a)(iv) of the Environmental Planning and Assessment Act 1979.



Planning History

- 1979** *Coastal Protection Act, 1979*
- 1988** **BSC adopted DCP (1988)**
 - Planned Retreat
 - Hazard precincts based on the PWD (1978) precincts
 - Restrictions on use on property transfer notices (S149 Certificates)
- 1990** **NSW Coastline Management Manual (endorses Planned Retreat)**
- 1997** **NSW Coastal Policy / Established Coastline Committee**
- 2000** **Coastline Values Study adopted**
- 2000** **Hazard Definition Study completed**



Planning History

- 2003 Investigate sand nourishment for Belongil/Byron Bay**
- 2004 Adopted the Byron Coastline Management Study**
 - adopted "Retreat" under public and private ownership for development and infrastructure
- 2006 Council considers Sand Lobe report and**
 - abandons sand nourishment option
 - Recommits to planned retreat for CZMP
- 2008 Preparing a draft CZMP**
 - implementation of planned retreat ongoing

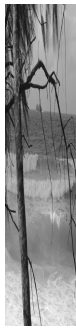


LEGALS

- 1985/86** — Court upholds Council refusals and of condition of **approval lapsing** subject to proximity to escarpment – 54m, 80, (Hogan, Belongil by the Sea, Cooper & Greaves,
- 1988** – Demolition orders upheld – Bolens, Trainor,
- 1990** – Court upholds refusal of large demountable dwelling – Vaughan
- 1991** – Challenge S88E Restriction on Use – Court upheld as valid -Vella
- 1996** – Court upholds Council refusal of a **seawall** DA to protect several houses – Scott
- 1999** – Council unsuccessful in application for injunction to stop emergency rock works by residents under State Emergency and Rescue Management Act 1999 – Vaughan & others
- 1999** – Consent orders – works installed under police emergency notice only 'interim protection works'
- 2003** - Appeal against DA refusal for a **rock wall** dismissed on grounds that the application was 'unclear' as to what effect the construction of the proposed wall would have on adjoining properties and the DA was deemed to be invalid – Parkes
- 2004** – Court upholds Council refusal of application for **change of use of house** to bed and breakfast dismissed – Parkes
- 2004** - Application seeking declaration that property has "**existing use rights**" refused by the Court. The realisation of the coastal erosion trigger in the s88E Restriction on Use rendered the development unlawful and it had no 'existing use rights'. – Kendall St
- 2006** – Court upholds refusal of application to replace a previously **existing building** in the same location dismissed – Van Haandel



Overview of BSC Coastal Management Policy

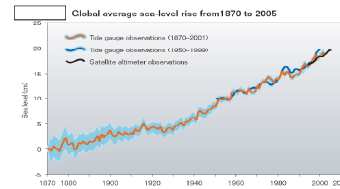


- Planned retreat has been applied for more than 20 years, via LEP (land zoning) and DCP (development controls) provisions.
- A draft CZMP is in final stages of preparation in accordance with Act and Manual based on Planned Retreat
- Council has also adopted Climate Change parameters for a whole of council approach including flood, estuary, infrastructure and coastal management
- Council is seeking local provisions to be added to the LEP template to provide for the current coastal planning processes
- A submission to the Federal Government Climate Change inquiry has attracted a lot of attention



Stay Tuned

The Draft Plan will be on Public Exhibition soon and we welcome submissions



Note: Observed global average sea-level rise inferred from tide gauge data with 95% confidence limits shown as blue shading and satellite altimetry data.
Source: Church & White (2006), Pickart & Woodworth (2004), Leclaire et al. (2004).
Source: Garnall Report 2008



References

- Bureau of Meteorology 2008 (online)
- Garnaut, R. (2008) Garnaut Climate Change Review (online). Australia
- Gordon, A. D., Lord, D. B. and Nolan, M. W. (2008) Byron Bay - Hastings Point Erosion Study. Department of Public Works NSW, Report No. PWD 78026 November, 1978.
- Helman, P (2008) Unpublished PHD Thesis. Southern Cross University, Lismore. Australia
- NSW Government (1990) Coastline management Manual. New South Wales.
- WBM (2000b) Byron Shire Coastline Hazard Definition Study. WBM Oceanics Australia.