

## Bombora controlled beachbreaks

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### Surf spots on the New South Wales (NSW) coast

The NSW coast enjoys a high energy wave climate, which is dominated by southerly to south-easterly swells. The NSW coast has 721 beaches and is 1590km in length. Maroubra is a typical Sydney beach with; an east-southeast aspect, wide open swell window, and headlands at the north and south end of the beach. A surf diary for Maroubra Beach (304 records, 83% of days captured) suggests wave height is greater than knee height on 97% of days, overhead on more than 26% of days, with median wave height of waist high on 37% of days. With one thousand metres of sand, the beachbreaks are surfed on 94% of days ('surfable'), with 'nobody out' on only 6% of days. The boulder field reef at the southern end is surfed on less than 11% of days. Autumn is the most popular surfing season with cleaner swells, lighter winds and water temperature up to 24°C.

Topographic features (including headlands and groynes) are associated with popular surfing beaches. The 'corner ends' of Maroubra beach are favoured surfing locations for three reasons;

- 1) **'smooth water'**, the lee of the headland(s) offers shelter from winds and/or the ocean is fanned offshore/sideshore with 75% of wind directions, the resulting smooth clean water surface provides a faster surfing ride;
- 2) **'easy access'**, topographic/headland-controlled-rips create semi-permanent deep channels providing reliable and easy access routes (back) into the 'lineup';
- 3) **'better banks'**, the headland-controlled-rips deposit sand well seaward of the beach and shape sand banks more conducive to longer length of ride.

The "North End Bowl" at Maroubra Beach is the most popular location due to the above features and greater exposure to the predominant south/southeasterly swells.

The NSW coast has more than 205 recognised surfing reefs. They are spread unevenly. Seventy nine percent (79%) of these reefs are located in the Sydney Basin, a geological province dominated by sedimentary sandstones and siltstones. This distinct 34% length of coast contains a whopping 79% of the states surfing reefs. By comparison, only 6% of the 205 surfing reefs are located in the southern geological province (Lachlan Orogen) which is dominated by harder geology like basalt and granite. Yet this is NSW's most rocky coastline (50%) and extends over 17% of the coastline. This spatial distribution begs the question, is there a link between softer sedimentary rock and the likelihood of surfing reefs? Conversely, are surfing reefs less likely to occur in regions of harder geology?

### Bombora-controlled-beachbreaks

More than 26 of NSW's most popular surfing beachbreaks are located inshore of deep water reefs or bomboras. The term bombora is sourced from the Aboriginal Eora language group and describes the sound of breaking waves on an offshore reef that is always submerged and separate from the shore.

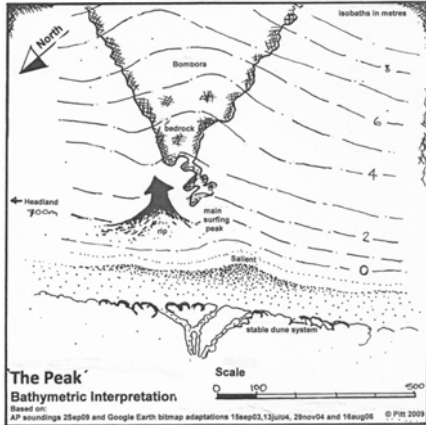
'Bombora controlled beachbreaks' in NSW include; North Narrabeen, Old Bar, Booti Booti, Pelicans, Merewether, Woonona, North Narrawallee, Wairo and Congo. At these locations surfing takes place over sand, yet in the lee of a bombora. The bomboras are rarely, if ever, surfed. This topographic arrangement is not limited to NSW, other examples of bombora controlled beachbreaks include:- Pitta St Peregrian (Qld), Woolamai (Vic), 13<sup>th</sup> Beach (Vic) and Gisborne Pipe (New Zealand).



'The Peak', bombora controlled beachbreak, south coast NSW, photo sequence by Steve

Bombora controlled beachbreaks are popular with surfers because of:

- 1) **'certainty'**, the bomboras focus advancing waves to a more certain location on the beach,
- 2) **'swell magnets'**, wave height is larger by a factor of 1.25 to 2, depending on wave period,
- 3) **'length of ride'**, waves are more likely to break as 'peaks' (rather than 'closeouts') and offer a longer length of ride,
- 4) **'safety'**, at North Narrabeen and The Peak, most surfing action takes place over a sand foundation, it is safer to wipeout on a sandy seafloor than a reef. The deep outer reefs are rarely surfed, except on days with extra large waves.



## Significance

A greater understanding of bombora controlled beachbreaks can assist in the development, planning, design, location, scale and form of artificial surfing reefs. An alternative and indirect method to improve wave breaking quality and frequency at a beachbreak - would be to modify the seafloor in the wave pre-conditioning zone. The advantages of developing bomboras in this zone include;

- 1) **'budget'**, cheaper to construct because less accuracy is required in the placement of materials, plus risky shallow water construction is avoided,
- 2) **'safety'**, on most days surfers would be riding over and wiping out on a sandy seabed, not over/on the bombora reef materials.
- 3) **'consistency'**, beachbreaks are surfable from knee height to overhead, under a broad range of climatic conditions and accessible to a variety of skill levels.

Bombora controlled beachbreaks combine the best features of surfing reefs; certainty, swell magnetism and length of ride, with the best features of beachbreaks; safety, consistency and variety. A greater understanding of bombora controlled beachbreaks can assist in the development, preservation, conservation and management of surfing reefs, beachbreaks and bombora controlled beachbreaks.

**Bio - Andrew Pitt** is the principal surfing reef architect at *Surfing Ramps*, a consultancy with a niche in surf spot development, management and preservation. Andrew has a degree in Landscape Architecture from the University of NSW and was a Masters Candidate at the Coastal Studies Unit, University of Sydney researching *Surfing Reefs: the role of bathymetry* under the supervision of Prof Andy Short. Andrew has served as president of UNSW Surfriders Club and as committee member of the Maroubra Beach National Surfing Reserve. He is the event founder of the 1<sup>st</sup> International Surfing Reef Symposium in 1997 and Event Director of the 7<sup>th</sup> International Surfing Reef Symposium in 2010. Andrew lives in Maroubra on Sydney's eastern beaches, with wife Terri Janke and two children, Tamina and Jaiki. His favourite surfing reefs are in Ulladulla.

