BMT Group

"Where will our knowledge take you?"

ICOLL Entrance Management in Practice

NSW Coastal Conference
Estuaries Workshop
Ulladulla | 11 November 2014

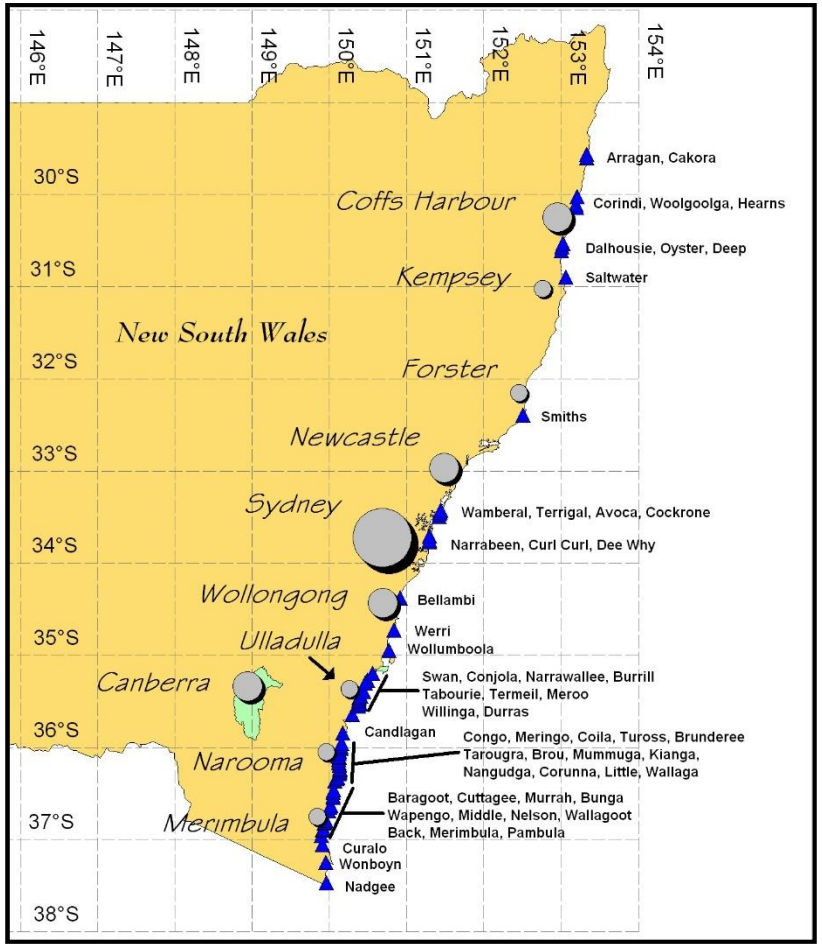
Presentation Outline

Kempsey

Wollongong

Warringah

Gosford



BMT WBM

Kempsey: Killick and Saltwater Creek

- Managed as per Estuary Management Plans
- Saltwater: 4 times in 14 years: Cost of about $1000 per event.
  RL 1.8m AHD in summer (tourism park flood)
  RL 2.0m AHD in winter
- Killick: many occasions, but not in last 3 years due to scoured entrance: Cost of about $2-3000 per event
  WQ driver for opening (DO, pH, secchi, FC)
- Do not want separate Entrance Management Policies, and happy to stay ‘in accordance with CZMP’
- Increasing trigger levels considered through the Flood Program

Kempsey: Back Creek

- Largely a trained entrance, so usually open
- Managed by Department of Lands
- Private contractor is used to extract some from estuary for economic gain as and when the contractor desires.

Wollongong: Towradgi Creek and Fairy Creek

- Formal policies for both creeks
- MHL water level monitoring and alerts set-up (sent to works staff)
- Towradgi: RL 1.6m AHD
  Fairy: RL 1.6m AHD*, but alert at 1.3m AHD.
  Plus rain falling and berm > 1.7m AHD.
  Emergency opening at 1.8m AHD.
- Towradgi – generally opens itself, but maybe about once per year artificial. Cost of about $2000 per event
- Fairy – couple of times a year. Cost of about $2000 per event
- Increase in triggers guided by Flood Program

Wollongong: Belambi Lagoon

- Draft Entrance Management Plan (awaiting outcomes from flood study)
- Need to protect heritage/conservation values in the northern dune
- Trial beach scraping (channel realignment) event in 2010-11: about $6000
- Monitoring by visual observations and photo records
- Trigger is related to entrance channel encroaching onto steep dune scarp

Bellambi Entrance Beach Scraping

Plate B- 1 Beach scraping - filling in northern part of entrance channel, June 2010

Plate B- 2 Beach scraping with excavator in background, June 2010

Plate B- 3 Beach scraping - safety tape in background at carpark, June 2010

Plate B- 4 Beach scraping with excavator on northern side of channel, March 2011

Plate B- 5 Sand infill following beach scraping, looking east from dunes, March 2011

Plate B- 6 Sand infill following beach scraping, looking north, March 2011

Warringah: Dee Why and Curl Curl Lagoons

- Formal policies and internal operational management standard. Part V Assessment considered under SEPP Infrastructure
- MHL Water level monitoring
- Dee Why: RL 2.2m AHD. Trigger at lower level then watch rain (5mm rain – 1cm WL). About 3 – 5 times per year: $2000 per event
- Curl Curl: RL 2.2m AHD:– 20cm window. (1mm rain = 1cm WL). Usually opens naturally – about 3 times/yr artificial: $2000 per event (by contractors)
- Increase in triggers dependent on vulnerability of infrastructure (Pittwater Rd) and private property (back yards in Curl Curl)

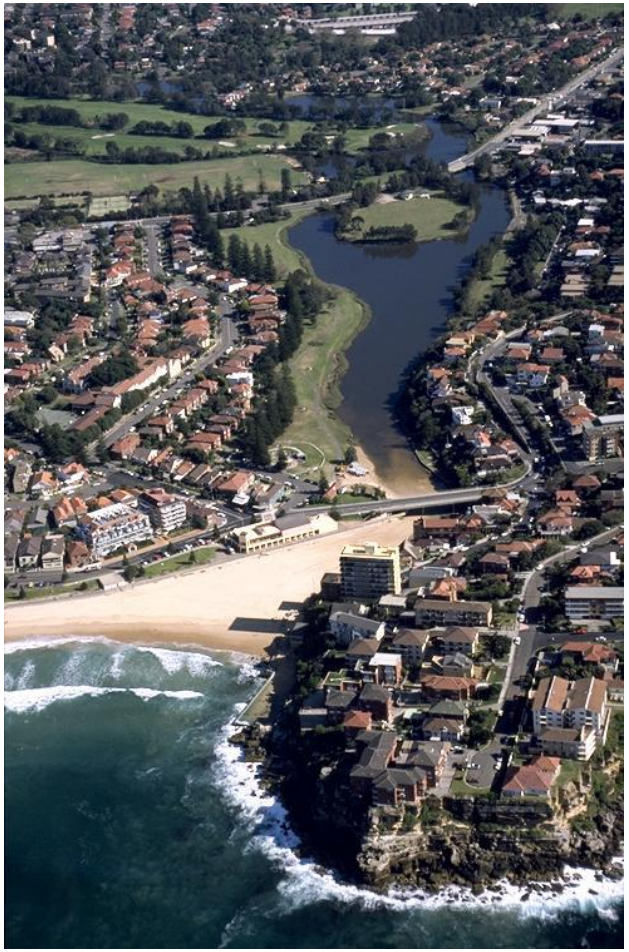
BMT WBM

Warringah: Narrabeen Lagoon

- Usually open ICOLL
- Formal policy
- Periodic Entrance Clearance Works to remove flood tide shoal to minimise chance of closure – 35-40,000m3 removed (2011) (2015 next): Cost of about $800,000 - $1m.
- Monitored by MHL: Triggered when WL is RL1.3m AHD. Small hydraulic head to drive outflow once opened, so slow drawdown
- Considering open with water quality triggers
- Very low-lying private properties controlling WL trigger. Flood Program to consider increases to trigger in future as part of FPMS

Warringah: Manly Lagoon

- Jointly between Manly and Warringah Councils
- Formal entrance management policy
- Low flow pipes means that tidal flushing largely maintained
- MHL Water level recorder
- Scour channel is maintained about 3 – 5 times per year on upstream side of low flow pipes



BMT WBM

Warringah: WH&S

- Concerns regarding public liability during entrance opening events.
- Risks to public / children weighed against risks to assets: have discussed with insurers
- Risk of someone getting caught in a standing wave
- ‘chain surfing’ incidents at ocean pools highlights liability for Councils
- Swift water rescue teams on call
- Possibly opening entrance at night to minimise public safety exposure. But what if people are around and don’t see the rush-out of water?!

Gosford: Wamberal, Terrigal, Avoca, Cockrone Lagoons

- Formal entrance management policy. Entrance MUST be opened when WL reaches trigger (written primarily for flood mitigation)
- Relocation of sewerage infrastructure and better understanding of lagoon processes and ecological values means that Policy and procedures should be revisited soon
- Liability for Council if entrance not opened in accordance with Policy, so best to revise Policy to reflect changed Council direction
- Wamberal entrance on NPWS property, but Council does works. 1990 POM for Park does not include entrance opening (also needs updating to reflect entrance management)

BMT WBM

Gosford: Wamberal, Terrigal, Avoca, Cockrone Lagoons

- MHL gauging of water levels – trigger for opening
- Managed beach berm levels (mostly Terrigal). Encourages unauthorised openings.
- Wamberal: 2.4m AHD, 2.6-2.7m AHD berm (about 3 per year)
- Terrigal: 1.23m AHD, 1.7m AHD berm (about 13 per year)
- Avoca: 2.09m AHD, 2.7-2.8m AHD berm (about 3.5 per year)
- Cockrone: 2.53m AHD, 3.3-3.5m AHD berm (about 2.4 per year)
- Costs of about $5000 per opening = $110k/yr

Gosford: Wamberal, Terrigal, Avoca, Cockrone Lagoons

- Public risk also an issue – lifeguards present during openings
- Terrigal very low trigger level (due to road being flooded) – marginally above HAT. This will develop into an untenable position in the future as tide levels increase due to SLR.
- Low managed berm level for Terrigal also has limited longevity. Checked monthly, but usually only lasts a few days.
- Masterplan for water and sewerage around lagoons includes SLR provisions
- Wanting to ensure that entrance management facilitates desired ecological values, balancing against asset management

Key Messages for ICOLL Entrance Management

- Is an entrance management policy necessary? What about Part V Assessment? What about when entrance is within land under POM? Responsibilities?
- Old estuary management plans vs new CZMPs. Do they need to be updated? Can entrance management plans be established fro FRMP?
- Integration between Flood Management and Natural Resource (ecosystem values) Management, especially for future increases in trigger levels. Relocation, flood-proofing, protection.
- Need for asset management around lagoons to improve resilience to inundation. Consideration of new assets and allowance for higher WL
- Long term desire for minimal entrance intervention? Conflicting with assets…
- Location of entrance channel can have impacts on dune vegetation, access, ecological values (nesting birds), coastal processes etc, especially if it migrates quickly

Key Messages for ICOLL Entrance Management

- Natural variability in entrance levels would be better to mimic natural processes
- Passive management – lower berm level (but inciting illegal opening?)
- Timing with respect to tides can influence the effectiveness of the opening. Different for every lagoon as different run-out times
- Need for artificial closure??
- Response of entrance management to future sea level rise – more openings needed as head difference reduces and berm level increases
- Safety of public during openings. Liability for Councils or authorities undertaking works. How is S733 indemnity capturing ICOLL entrance management works?