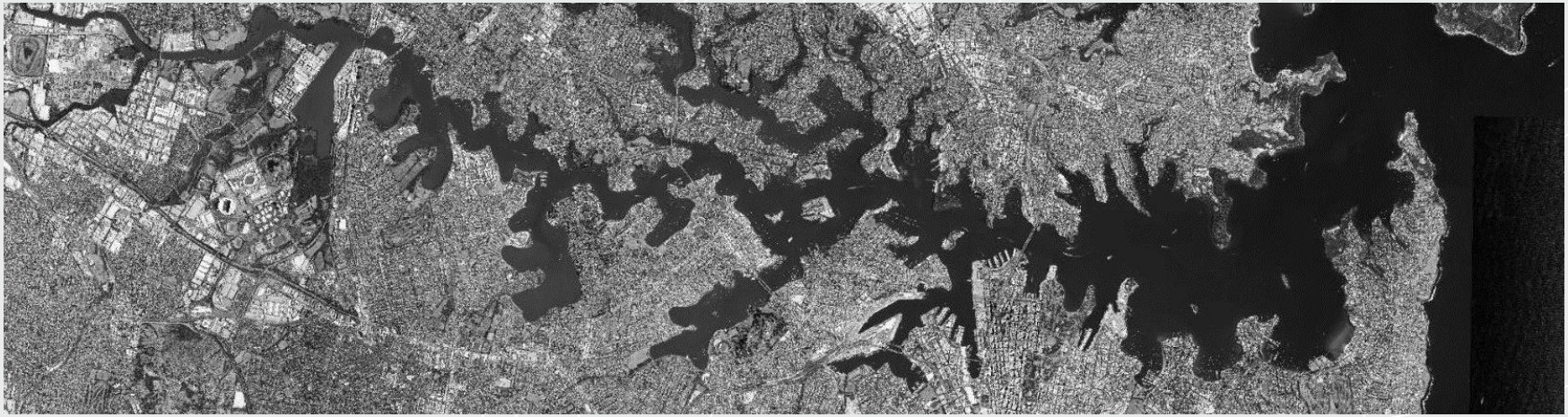
‘Greater’ Sydney Harbour Estuary Coastal Management Program Scoping Study

Paul Donaldson and **Geoff Withycombe**, BMT

SCCG Sydney Harbour Coastal Management Program Information Session, February 2019



Scoping Study Overview

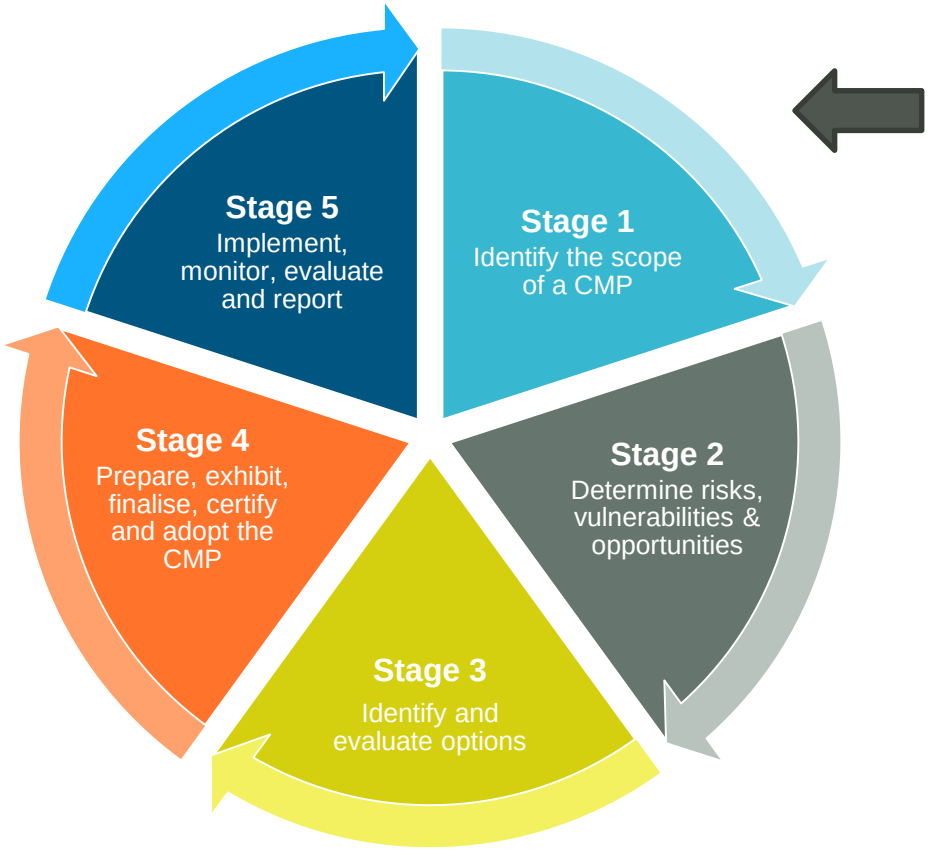
Background

- New Coastal Management Framework
  - Greater Sydney in NSW coastal zone - comprised of 4 new management areas
  - Focus – coordinated management at system wide scale (estuaries, sediment compartments)
- CMPs to set long term strategy

Greater Sydney CMP Scoping Study

- Initiated by LLS
- Prepared by BMT, in consultation with OEH, SCCG, PRCG, foreshore councils and State Government Agencies
- First CMP Scoping Study for large coastal system
- Stage 1 (of 5) in CMP process

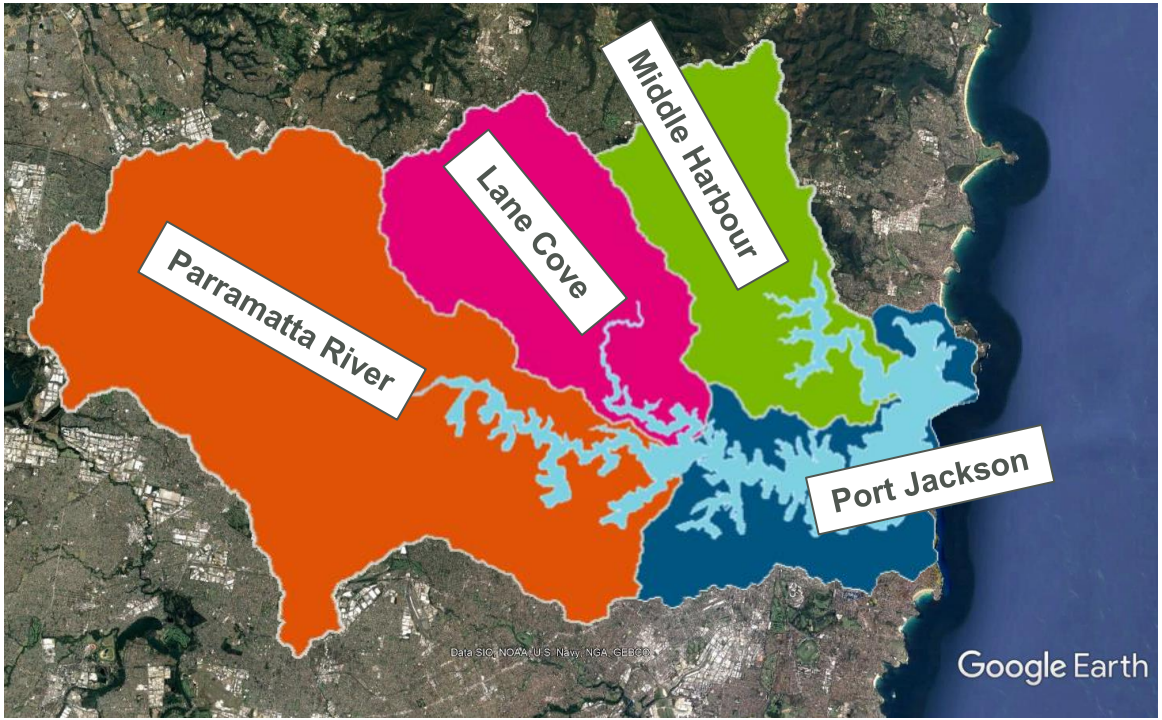
Image source: SIMS (2014)



Coastal Management Program (CMP) Five Stage Process

Image source: SIMS (2014)

Physical Setting



Geography

- NSW East Coast

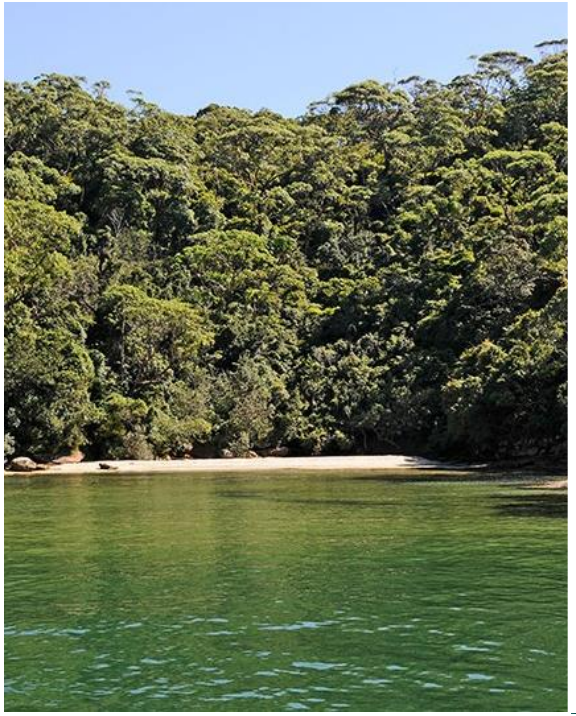
Geology

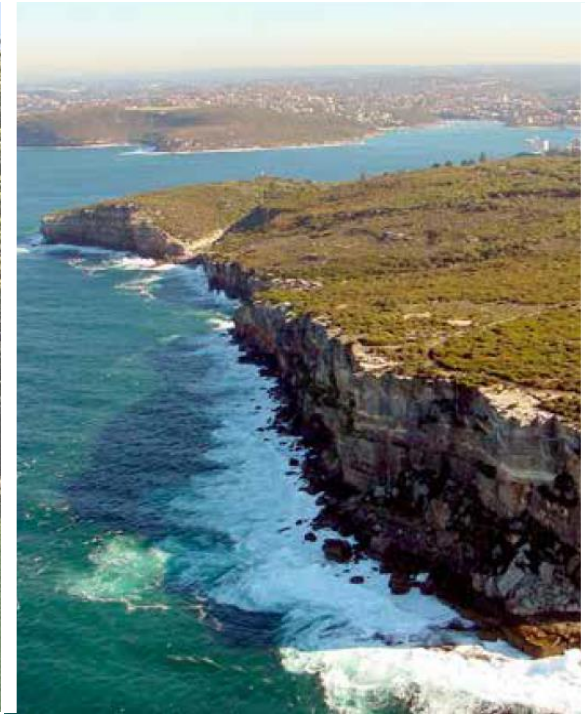
- Hawksbury s'stone
- Quaternary sediments

Geomorphology

- Sydney Harbour Sediment compartment
- Catchment / bathymetry
- Hydrology / coastal processes
- Varied shoreline types / coastal substrates

Environment and Heritage Context





Biodiversity

- Diversity hotspot
- Marine / estuarine / terrestrial habitats

Geodiversity

- Iconic landscape
- Catchment, estuary and coastal processes

NSW Marine Estate

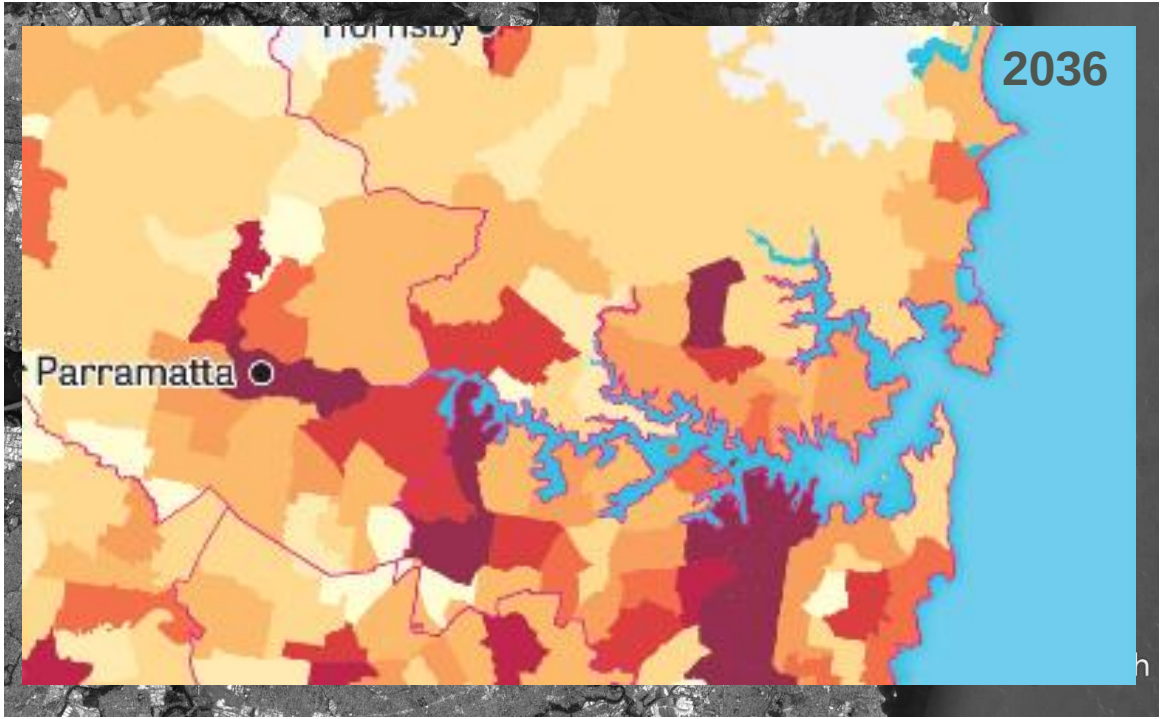
- Hawkesbury Shelf Bioregion

Heritage

- Aboriginal, European

Image source: NSW Government; SIMS (2015)

Development Context



Development

- Highly modified
- Population: 4.7M (>80% by 2056)
- 12 foreshore LGAs (21 catchment LGAs in total)
- CBDs: Sydney & Parramatta

Industries

- Past and present

Ports / Harbours

Bridges / Structures

- Widespread seawalls

GSC: Dwelling density per hectare (0-80) | 1996 > 2016 > 2036

Coastal Planning and Governance

Legislation & Planning

- 4 Commonwealth Govt. Acts;
  27 State Govt. Acts:
  - CM Act: Sydney now in coastal zone (4 CMAs)
- 18 State Environmental Planning Policies
- Sydney Harbour REP (new Environment SEPP in draft)
- Greater Sydney Region & District Plans
- 12 foreshore (21 catchment) LEPs
- CZMP spatially and temporally variable

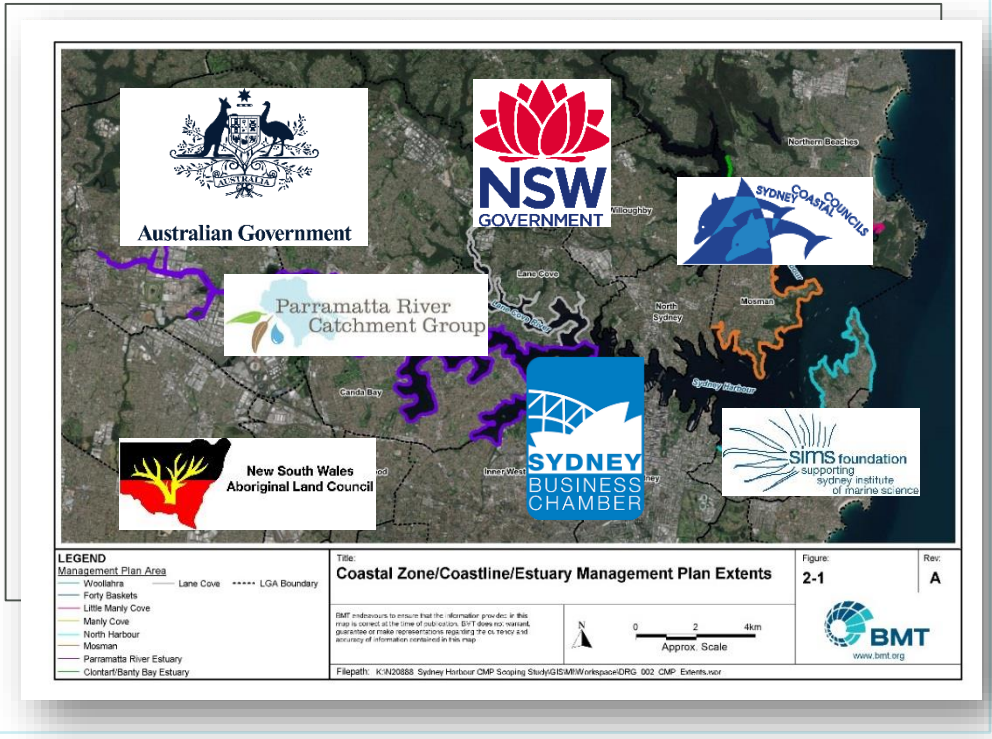


Image source: NSW Government; BMT (2018)

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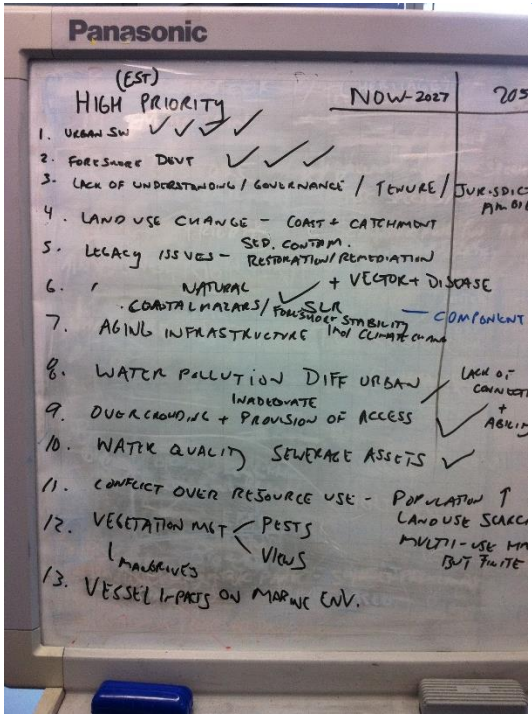
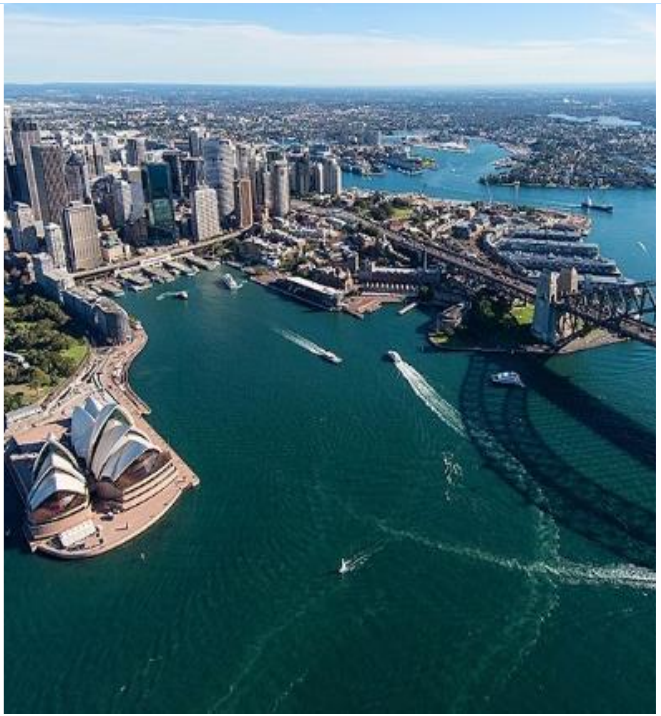
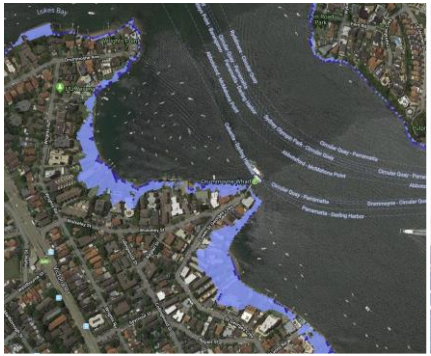
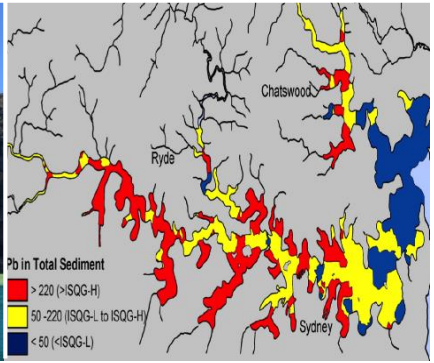
Stakeholder Engagement:
Values, Threats, Governance and Vision





Greater Sydney Harbour Threats / Hazards





Issue Themes

- Land use intensification
  - *e.g. urban stormwater discharge*
- Resource use and conflict
  - *e.g. shipping, boating and marine infrastructure*
- Public safety
  - *e.g. degraded / failing coastal structures*
- Natural hazards
  - *e.g. coastal inundation, climate change*
- Governance

Image source: CoastalRisk; RMS; Sydney Morning Herald; SIMS

Greater Sydney Harbour Values

Value Categories

- Clean waters
- Biodiversity: ecosystem value
- Geodiversity: form and process value
- Amenity / recreation / participation value
- Cultural value
- Education / scientific value
- Economic value
- Symbolic value

Image source: SIMS (various); GSC

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NATIONAL NSW TOURISM

Australia's best known building now worth $6.2 billion

By Helen Pitt
6 December 2018 — 2:34pm

A A A

The Sydney Opera House may be priceless to most Australians. But a report released on Thursday by accounting firm Deloitte has valued it at $6.2 billion, an increase of 24 per cent in real terms since the last time the firm valued it five years ago at $4.6 billion.

In 2013, the building's 40th anniversary year, the Deloitte report *Valuing An Icon* estimated the Opera House's economic contribution at $775 million and its total social asset value at $4.6 billion.

The Sydney Opera House. DEAN SEWELL

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SYDNEY BUSINESS CHAMBER

Sydney's 'Iconic' Nature Helps Attract Investment

03 Apr 2018

Sydney is in the midst of a construction boom and is second in the world only to Dubai in boasting the most cranes in the sky.

There are 350 cranes across Greater Sydney with 109 Sydney suburbs seeing the machines on their skylines, according to the RLB Crane Index.

RLB Director of Research and Development Stephen Ballesty says the construction boom will not be ending anytime soon.

"A stable non-residential sector is important to the construction industry as a whole, as it showcases new investment and confidence in both government spending on social infrastructure assets, and the private sector's spend on long-term investments," he says.

NSW's economic growth rate, at 3.5 per cent, is faster than any other state, and with massive infrastructure projects and developments underway across Sydney, the city's crane index will not come as a surprise to some.

Lendlease Project Director for Urban Regeneration at Darling Square, Neil Arckless, says Sydney's reputation is a big factor in attracting the right investment.

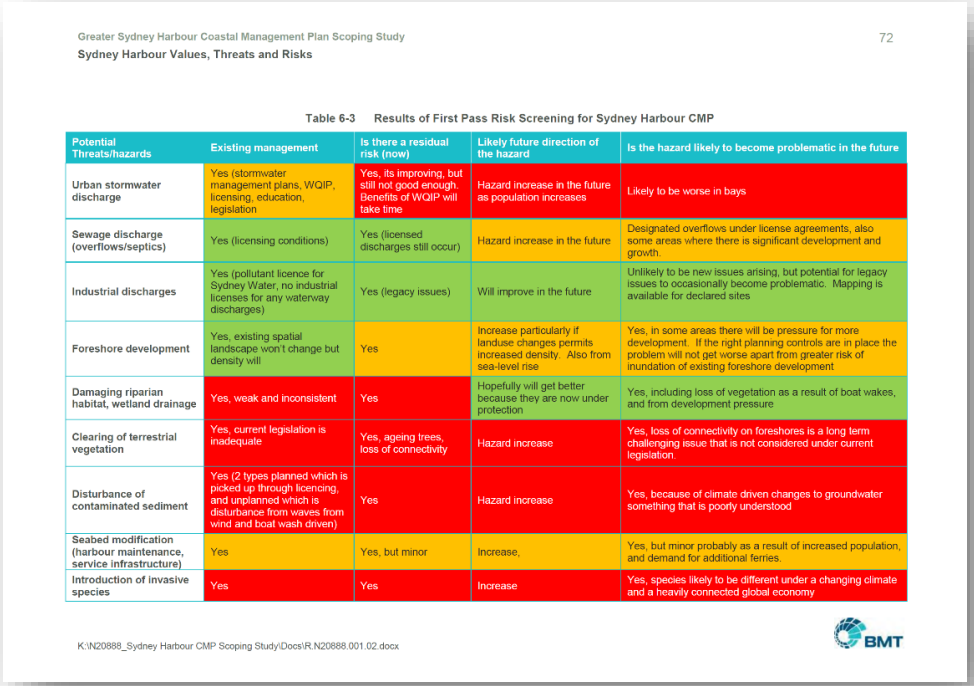
"The iconic nature really does help as well as the global awareness to attract talent."

GSC

Advantages & Opportunities Identified by Stakeholders for a System-wide CMP

Image source: SIMS (2014)

‘First Pass’ Risk Assessment



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Sydney Harbour Values, Threats and Risks

Table 6-3 Results of First Pass Risk Screening for Sydney Harbour CMP

Potential Threats/hazards	Existing management	Is there a residual risk (now)	Likely future direction of the hazard	Is the hazard likely to become problematic in the future
Urban stormwater discharge	Yes (stormwater management plans, WQIP, licensing, education, legislation	Yes, its improving, but still not good enough. Benefits of WQIP will take time	Hazard increase in the future as population increases	Likely to be worse in bays
Sewage discharge (overflows/septics)	Yes (licensing conditions)	Yes (licensed discharges still occur)	Hazard increase in the future	Designated overflows under license agreements, also some areas where there is significant development and growth.
Industrial discharges	Yes (pollutant licence for Sydney Water, no industrial licenses for any waterway discharges)	Yes (legacy issues)	Will improve in the future	Unlikely to be new issues arising, but potential for legacy issues to occasionally become problematic. Mapping is available for declared sites
Foreshore development	Yes, existing spatial landscape won't change but density will	Yes	Increase particularly if landuse changes permits increased density. Also from sea-level rise	Yes, in some areas there will be pressure for more development. If the right planning controls are in place the problem will not get worse apart from greater risk of inundation of existing foreshore development
Damaging riparian habitat, wetland drainage	Yes, weak and inconsistent	Yes	Hopefully will get better because they are now under protection	Yes, including loss of vegetation as a result of boat wakes, and from development pressure
Clearing of terrestrial vegetation	Yes, current legislation is inadequate	Yes, ageing trees, loss of connectivity	Hazard increase	Yes, loss of connectivity on foreshores is a long term challenging issue that is not considered under current legislation.
Disturbance of contaminated sediment	Yes (2 types planned which is picked up through licencing, and unplanned which is disturbance from waves from wind and boat wash driven)	Yes	Hazard increase	Yes, because of climate driven changes to groundwater something that is poorly understood
Seabed modification (harbour maintenance, service infrastructure)	Yes	Yes, but minor	Increase,	Yes, but minor probably as a result of increased population, and demand for additional ferries.
Introduction of invasive species	Yes	Yes	Increase	Yes, species likely to be different under a changing climate and a heavily connected global economy

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Present Risks

- Damage to riparian vegetation and wetlands
- Degraded seawalls / structures*
- Disturbance of contaminated sediments

Future Risks

- Loss of terrestrial vegetation
- Introduction of invasive species
- Shipping, boating and marine infrastructure
- Coastal and tidal inundation (SLR)
- Overland flooding; groundwater*

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Image source: BMT (2018)

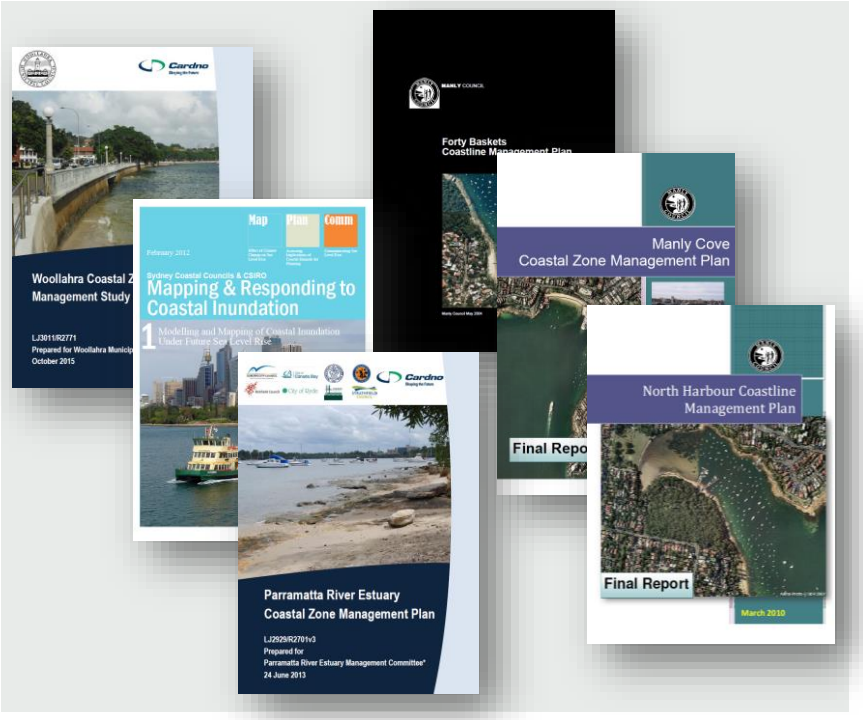
Consistent Approach to Hazard Assessment / Mapping

Need

- Significant risk from hazards (especially Coastal Inundation)
- Existing work good, but patchy and different methods / assumptions applied in some instances
- No all (x7) *CM Act* hazards mapped

Advantages

- Cost-sharing advantages
- Land use planning outcomes
- Opportunity to develop probabilistic method / model to inform CBA of costly adaptation options



CMP to Dovetail with Parallel Planning Initiatives

Image source: NSW MEMA; NSW LLS; GSC

Greater Sydney Region and District Plans

- **Greater Sydney Commission** – leading metropolitan planning for Greater Sydney
- **Region Plan** sets out vision and strategy
- Implemented through **5 District Plans**, incl. 3 across Sydney Harbour:
- 10 directions > 40 objectives > strategies
- **A Greater Sydney Harbour CMP would support several objectives and strategies**

O.3: Infrastructure adapts to meet future needs

O.13: Environmental heritage is conserved and enhanced

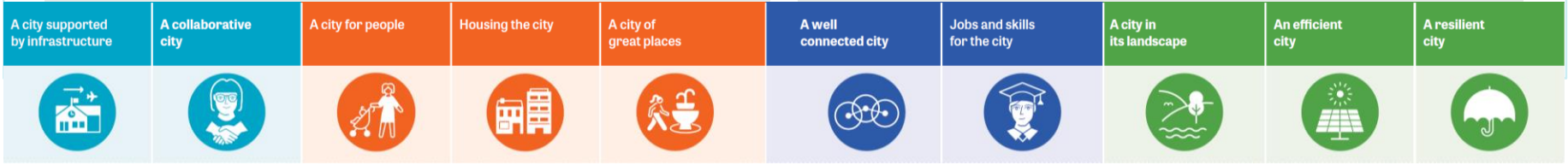
O.25: Coast and waterways are protected and healthier

O.27: Biodiversity is protected, urban bushland and remnant vegetation is enhanced

O.28: Scenic and cultural landscapes are protected

O.36: People and places adapt to climate change and future shocks and stresses

O.37: Exposure to natural and urban hazards is reduced



Greater Sydney Region and District Plans

NSW GOVERNMENT | Greater Sydney Commission

- *Strategy 12.1: Conserve and enhance environmental heritage by: engaging with the community early in the planning process to understand Aboriginal, European and natural heritage values; conserving and interpreting Aboriginal, European and natural heritage to foster distinctive local places.*
- *Strategy 25.1: Protect environmentally sensitive coastal areas and waterways.*
- *Strategy 25.2: Enhance sustainability and liveability by improving and managing access to waterways, foreshores and the coast for recreation, tourism, cultural events and water-based transport.*
- *Strategy 25.3: Improve the health of catchments and waterways through a risk-based approach to managing the cumulative impacts of development including coordinated monitoring of outcomes.*
- *Strategy 25.4: Reinstate more natural conditions in highly modified urban waterways.*
- *Strategy 36.1: Support initiatives that respond to the impacts of climate change.*

Governance

Governance Issues

- Governance is multi-layered and *jurisdictional ambiguity exists*
- Current management typically in response to localised plans and initiatives

CMP Opportunity

- Opportunity to establish a governance framework for managing Greater Sydney Harbour with system-wide CMP

CMP Structure Options (pros, cons)

- LGA scale CMPs (x12)
- Sub-catchment CMPs (x4)
- System-wide CMP (x1)

Table 5-2 Sub-Catchment Scale CMPs: Pros and Cons

Opportunities and Advantages	Considerations and Limitations
The sub catchment scale may still encompass local issues as well as targeting larger issues affecting the estuary at the sub-catchment scale	Sub-catchment scale CMP would have lesser political drive to generate funds outside of typical NSW Coastal Management Funding Program (i.e. Federal, Business)
There is still opportunity at the sub catchment scale to access funds to tackle larger problems that could not be addressed by 1 or even a couple of councils/agencies alone (e.g. Parramatta River CZMP).	The sub-catchment CMP may not adequality address some system wide risks, and certainly will miss the opportunity to address governance issue.
Sub-catchment plans would still increase the collaboration between councils and agencies	The CMPs may be repetitious across catchments, particularly where issues span the entire estuary, and particularly where each CMP must still cover each of the four coastal management areas
	There would be a need for a coordinator for each CMP to ensure implementation
	Individual councils that border more than one sub-catchment may find it difficult to track implementation of actions where they are responsible for different actions within different CMPs for different areas
	How successful have sub-catchment scale plans been in the past to manage issues and improve outcomes for Sydney Harbour? (e.g. Lane Cove CZMP, Manly Cove CZMP etc etc). Can we learn from mistakes and successes?

Image source: BMT (2018)

CMP Structure and Governance

A single, whole-of-system CMP is needed to facilitate coordinated and integrated management of Australia's most iconic and important waterway

- Consider 3-tiered CMP structure:
  (i) overarching system-wide CMP
  (ii) subordinate catchment scale plans
  (iii) LGA-scale implementation schedules
- Strong leadership needed at the outset to driver system-wide CMP forward, good for OEH to play a central role (initially at least)
- Stage 2 governance study proposed
- Interim governance structure proposed

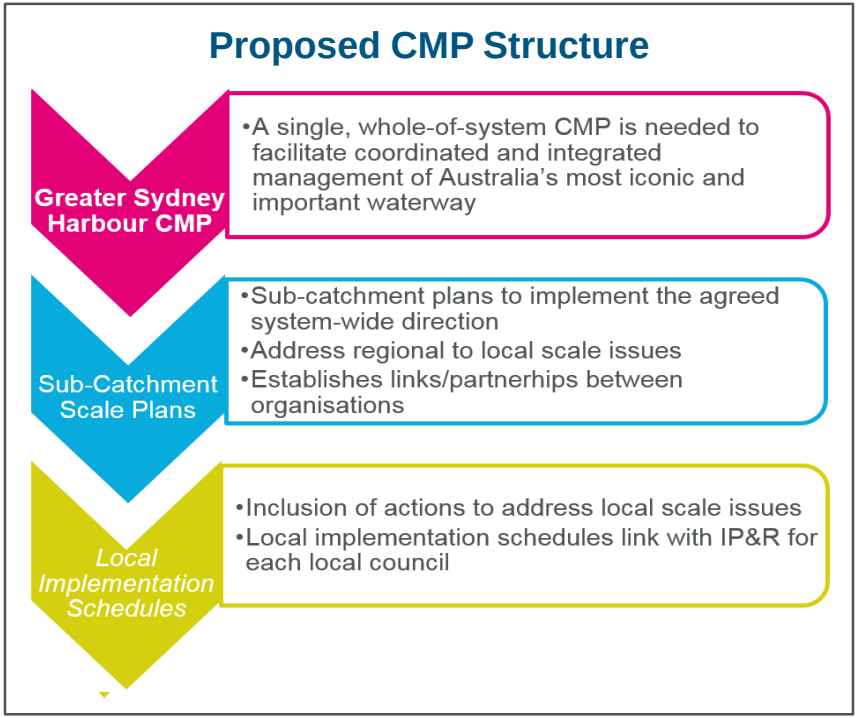
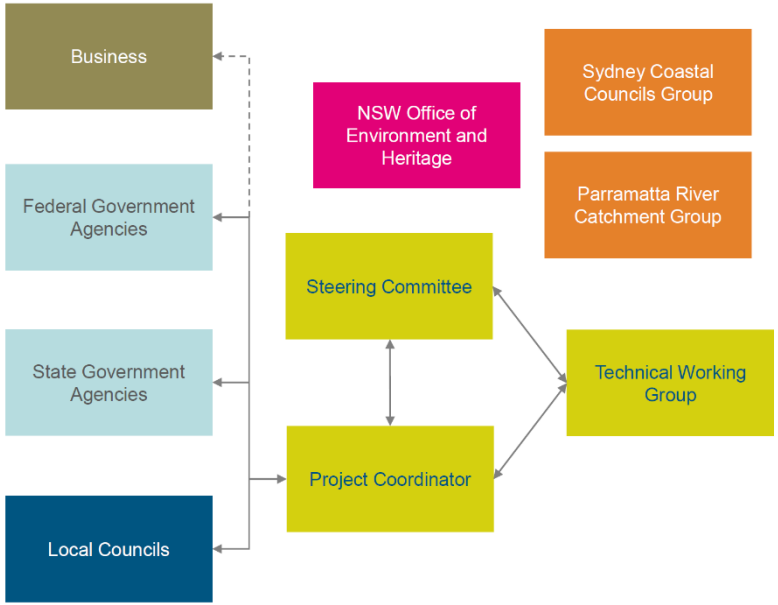


Image source: BMT (2018)

CMP Structure and Governance

Interim CMP Governance Arrangement



Proposed CMP Structure

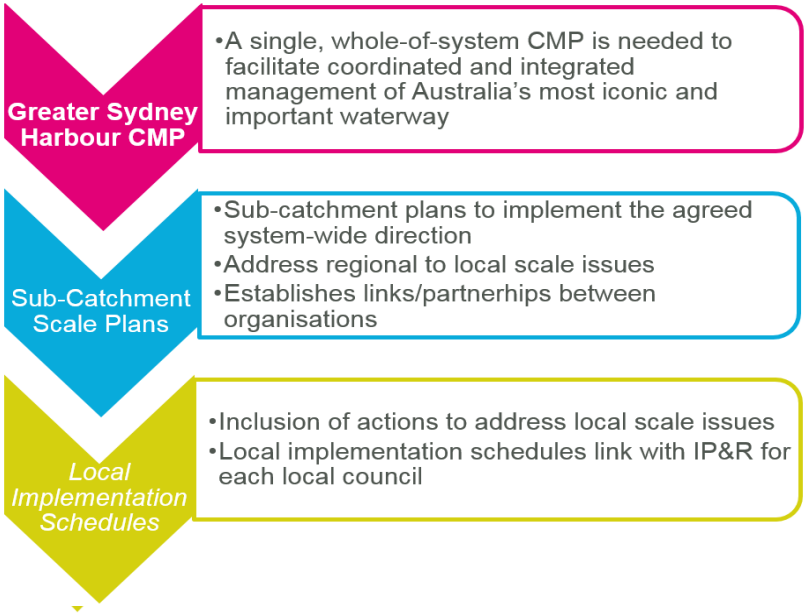


Image source: BMT (2018)

What are the Benefits?
CMP Preliminary Business Case

Benefits to council for preparing a CMP

- **Opportunity to understand and manage coastal climate risks**
- Requirement for **state agencies** to participate in, and **have regard for CMPs** in their management operations *(CM Act s23)*
- Great **forum for community engagement**
- **Good** social, environmental and economic **outcomes for council's coastal zone!**
- **Statutory immunity** for councils, when coastal management decisions / actions are in accordance with a certified CMP *(LG Act s733 good faith provision)*
- **Access to State Govt. funding** for coastal planning and implementation ($83.6M)

Benefits of a preparing a system-wide CMP

1. Working collaboratively to **attract funding and investment**
2. **Efficiency savings** (*economies of scale*, *reducing duplication* - stage 2 studies, community/stakeholder engagement)
3. Improved capacity to **address strategic and harbour-wide issues and interests** (but opportunity to 'choose your own adventure')
4. Improved **communication, advocacy and promotion**

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Coastal Management Program - Forward Plan

CMP Stage	Timing	Overview	$$ Estimates*	Details / Comments
Stages 2 to 4 **Project coordination** **Engagement**	3 - 4 years	**Establish a CMP project coordinator** **Engagement (ongoing)**	Moderate (up to $400K) Moderate (~$250K)	**CMP project coordinator** • Dedicated project coordinator to drive CMP forward. **Community and stakeholder engagement** • Implement, review and refine engagement strategy
Stage 2 **Determine risks, vulnerabilities and opportunities**	~2 years	**Governance** • Study to identify CMP governance **Technical studies** • Governance • Coastal hazards • Habitat studies • Groundwater • Asset surveys + registers • Risk assessment	Low (~$100K) High (~$1M)	**Governance** • Drive CMP planning forward initially with interim governance arrangement • governance study to: reach an agreed governance arrangement & facilitate cost sharing negotiation **Studies** • Undertake technical studies outlined in Chapter 7 • Develop asset register in GIS • Detailed risk assessment, with input from stakeholders
Stage 3 **Identify and evaluate options**	~2 years	**Options assessment** **Cost benefit assessment (CBA)** **Prepare business plan**	High (~$1M)	• Review, collate, and compile actions from elsewhere (Estuary Processes Study; CZMPs, WQIP etc) • Evaluate options/actions, CBA • Clarify roles, responsibilities, implications of actions • Economic studies; cost sharing; funding mechanisms
Stage 4 **Prepare, exhibit, finalise CMP**	~6 months	**Prepare and exhibit draft CMP** **Review, finalise and certify CMP**	Moderate (~$250K)	• Prepare CMP with IP&R links; in line with Stages 1 to 3 outcomes; in consultation with project partners • Exhibit, review, finalise CMP > certification
Stage 5 **Implement, monitor, evaluate and report**	>5 years	**Council implement CMP through IP&R** **Other organisations implement CMP through relevant work programs**	*Unknown*	• Implement CMP for 5 to 10-year period (councils through IP&R) • Monitor, evaluate, report (ongoing)
TOTAL CMP PLANNING COSTS			**Approx. $3M**	

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Making CMPs Work:
‘Enablers’ are as Important as ‘Products’

Image source: SIMS (2014)
Coastal adaptation enabler concept: Webb, Rissik, Petheram, Beh and Stafford-Smith (2018)

Summary: Opportunities and Recommendations

Opportunities from a Sydney Harbour CMP

- Potential to establish a clear **governance framework** for managing Greater Sydney Harbour
- Provides an opportunity to develop a **strategic and integrated long-term plan** for Sydney Harbour (for the first time), that can address system-wide threats and **drive parallel planning processes** / strategies (i.e. GSC Region Plan & District Plans, MEMA Strategy, WQIP)
- Provides a **vehicle to secure significant funding** for planning and action (e.g. business, federal and state government)

Scoping Study Recommendations

- **Prepare a Greater Sydney Harbour CMP** that encompasses Sydney Harbour estuary tidal waterways and catchment land
- **Establish a whole-of-government partnership** for the CMP planning and implementation
- **Establish a collaborative governance arrangement** to drive the CMP forward
- *There is the **need for strong and senior leadership to drive the CMP forward** from the outset, and progress in a timely manner*

Some Next (Interim) Steps for a Greater Sydney Harbour CMP

Promotion and Engagement

- Generate support, buy-in & ownership for CMP process

Establish Governance

- Establish foundations to drive forward a new and necessary approach to manage Sydney Harbour

Audit of Existing Management and Plans

- Establish what works, what didn't and why
- Learnings for: governance, forward plan, action tables; current & future investment

Collaborative CMP Forward Planning

- Help project partners to plan out their CMP

Image source: LLS (2018)
(c) Matt Kemp

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Thank you – Questions?

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