First-Pass Risk Assessment: What does this really mean, and how can it be used to scope a Coastal Management Program?

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Talk Outline

- **Risk Management**: brief overview of process, and its value for Coastal Management
- **The Past**: Risk management process for NSW Coastal Management before 2018
- **The Present**: Coastal risk requirements in NSW Coastal Management Framework
- **First Pass Risk Assessment**: for Scoping Studies – what does this mean?
- **Outcomes focused**: Explanation of the process developed for CMP scoping studies
- **What next?** Stage 2 and beyond
- **Conclusions**

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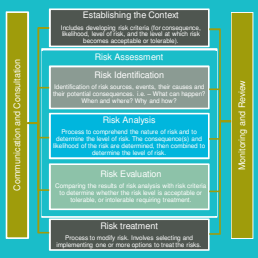
- **Water and Environment**
- **Machinery**
- **Navel and Maritime**

Introduction to Risk Management

- Invaluable process used in almost all industries, inc. natural resource management
- Risk is defined as *"the effect of uncertainty on objectives."*
- Risk is often expressed as a combination of the consequences of an event and the associated likelihood of occurrence, i.e.

Risk = Likelihood x Consequence

ISO 31000:2009 Risk Management Process



Risk Management – Why is it important to Coastal Management?

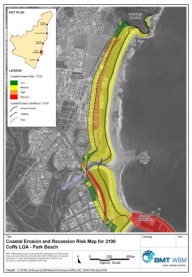
- Coastal hazards impacts and timeframes are uncertain – **risk process is highly effective for managing this uncertainty transparently**
- Can be a good communication tool - accepted process, outcomes focussed, journey for participants
- Transparently uses any form of available data for determining outcomes
- Can (and should) be **tailored to the specific requirements (context and objectives)** being assessed
- Iterative process – **can and should be repeated** regularly to ensure risks are being flagged and managed

Risk – the effect of uncertainty on objectives

ISO 31000:2009 – Risk Management Principles and Guidelines

Risk in the Former NSW Coastal Management Framework

- Former Coastal Zone Management Plans **required a "risk-based approach"** for assessing coastal risk, and developing management actions.
- **Detailed "likelihood and consequence" analysis** and risk matrix applied
- Qualitative data can and was readily used
- Allowed for the "likelihood" of a coastal hazard to be separated from its consequence:
  - hazards are not "catastrophic" at every location / asset etc
  - High likelihood risks may still be tolerable or acceptable.



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NSW Coastal Management Framework

Environmental Planning & Assessment Act 1979 (EP&A Act)

Coastal Management Act 2016 (CM Act)

Marine Estate Management Act 2017 (MEM Act)

Section 9.1 Directions (Coastal Management)

State Environmental Planning Policy (Coastal Management) 2018 (CM SEPP)

Marine Estate Management Strategy (2018)

NSW Coastal Management Manual 2018 (the Manual)

Coastal and Estuary Grants Program

Coastal Management Programs (CMPs)

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Coastal Management Programs (CMPs)

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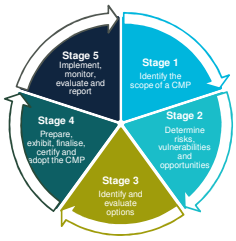
5-Stage CMP Process: Risk Assessment Requirements



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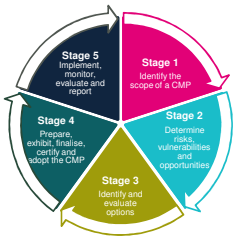
5-Stage CMP Process: Risk Assessment Requirements

Scoping Study

- **Purpose, vision and objectives of the CMP**
- **CMP scope: areas and issues**
- **First-pass risk assessment**
- **Information review and gap analysis** – existing knowledge, management arrangements, etc
- **Stakeholder and Community Engagement Strategy**
- **Business Case** for preparing the CMP
- **Forward works program** for preparing the CMP



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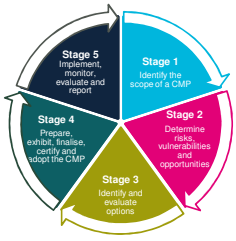
5-Stage CMP Process: Risk Assessment Requirements

Stage 2

- **Refine understanding of key management issues**
- **Identify areas exposed to coastal hazards and threats to coastal values**
- **Detailed risk assessment: analyse and evaluate current and future risks**
- Identify scenarios for social and economic change and related opportunities for coastal communities
- **Engage with community and stakeholders**
- **Prepare maps for commencing gateway process**
- **Identify timing and priorities for responses, thresholds and lead times**



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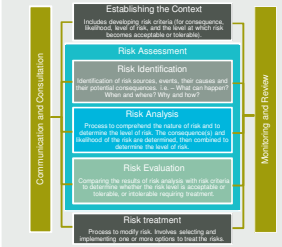
So…What is a "First Pass" Risk Assessment?

Manual provides extensive details about the risk assessment process generally. Questions remain:

- ***What is a "first pass" compared with the later "detailed" risk assessment?***
- ***How does the "first pass risk assessment" link with the key aims and outcomes of a scoping study?***
- ***How does the first pass risk assessment help us write the forward program?***

Risk Management Definitions: ISO 31000:2009

- *Risk is defined as "the effect of uncertainty on objectives."*
- *Risk is often expressed as a combination of the consequences of an event and the associated likelihood of occurrence, i.e. Risk = Likelihood x Consequence.*



Risk source (Threat / Hazard): element which alone or in combination has the intrinsic potential to give rise to risk.
E.g. Coastal inundation, pollutants in stormwater run off, and vegetation clearing are all risk sources.

Event: occurrence or change of a particular set of circumstances. An event without consequences can be referred to as a "near miss", "incident" or "close call".
E.g. A storm that results in coastal inundation is an event.

Consequence: outcome of an event affecting objectives. It can be certain or uncertain; it can have positive or negative effects on objectives; it can be expressed qualitatively or quantitatively.
E.g. unsuitable water quality for human health is the consequence of pollutants in stormwater run off.

Likelihood: chance of something happening; whether defined, measured or determined objectively or subjectively, qualitatively or quantitatively, and described using general terms or mathematically (such as probability or a frequency over a given time period). The term "probability" is often narrowly interpreted as a mathematical term. Therefore, in risk management terminology, "likelihood" is used with the intent that it should have the broad interpretation described above.
E.g. The quantitative likelihood of a storm may be defined as 1% Probability of Exceedance in any one year; the qualitative likelihood of a storm may be defined as "unlikely" or very low chance of occurring in any one year. The ability to define a qualitative or quantitative likelihood depends on the quality of information available about the risk.

Level of risk: magnitude of a risk (or a combination of risks) expressed in terms of the combination of consequences and their likelihood. Simply, risk = likelihood x consequence.
E.g. the level of risk from pollutants in stormwater is high.

Risk criteria: terms of reference against which the level of a risk is evaluated. Risk criteria are based on organisational objectives, and external and internal context; and can be derived from standards, laws, policies and other requirements.
E.g. a high risk is typically deemed intolerable, requiring treatment.

First Pass Risk Assessment Approach

- Workshop process
- Determine the level of risk for priority threats / risks / issues, inc. coastal hazards;
- Not drilling down to full analysis of likelihood and consequence, instead
- Broadly assess risk as "high / medium / low"
- Consider current risk, and future path of the risk considering population growth, climate change, regional plans, etc;

First Pass Risk Assessment

Risk / Issue / Threat	Level of Risk		
	High	Medium	Low

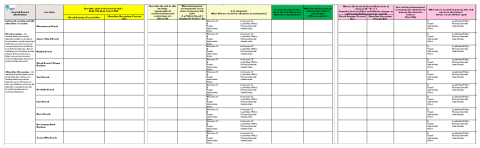
Full Scale Risk Assessment

Likelihood	Consequence				
	Insignificant 1	Minor 2	Moderate 3	Major 4	Catastrophic 5
Almost Certain 5	Medium	High	High	Very High	Very High
Likely 4	Medium	Medium	High	High	Very High
Possible 3	Low	Medium	High	High	High
Unlikely 2	Low	Low	Medium	Medium	High

First Pass Risk Assessment Approach

As part of the FPRA, **we also assess**:

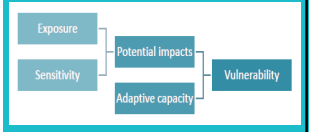
- Effectiveness and adequacy of **existing management actions** and governance arrangements, **now and in future**
- **Adequacy of existing information** to understand and manage the risk, and therefore **key knowledge gaps**



Stage 2: Detailed Risk Assessment (and beyond)

Building and evolving our past detailed risk assessment approach, now use:

- Stage 2 - **Probabilistic assessment of hazards** in high vulnerability / consequence areas = quantitative rather than qualitative "likelihood" component of the risk assessment (e.g. NSW, QLD, WA)
- Stage 2 or 3 **– iterative feedback models/tools** e.g. to test the delivery of a management action, or test its effectiveness
- Stage 3 – Risk assessment outcomes help **prioritise selection of options** when we undertake **detailed MCAs, feeding into priority CBAs.**



NSW Coastal Management Manual Part B: Stage 2 – Determine risks, vulnerabilities and opportunities, p34

Conclusions

BMT have developed a First Pass Risk Assessment process that delivers the key outcomes for a scoping study and directly feed into the forward program. *Through our process we:*

- Assess the **existing and future risk** (as high / med / low with likelihood and consequence intrinsic)
- **Tie in the assessment of existing data and existing and future management responses**
- Effectively **brings together councils, agencies and other interests** to collaborate in the process

We use our first pass risk assessment + data review + management assessments+ shared stakeholder knowledge and our experience to design the studies and stages for the forward program

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Thank you

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