Summary of Australia's risk-based approach to remediation

CRCCARE
A safer, cleaner environmental future

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REMTECH

RemTech, Ferrara-Italy

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CRCCARE- Cooperative Research Centre Contamination Assessment and Remediation of the Environment

Site owners/ industry

bhpbilliton resourcing the future

Australian Institute of Petroleum

RioTinto

Chevron

Government

Australian Government Department of Defence

EPA Victoria

EPA South Australia

Government of Western Australia Department of Environment Regulation

Queensland Government

Australian Government National Measurement Institute

Research providers

The University of Newcastle Australia

The University Of Queensland Australia

Curtin University of Technology

CSIRO

University of Technology Sydney

UniSA

University of Western Sydney Bringing knowledge to life

Southern Cross University A new way to think

ChemCentre

RMIT University

Service providers

HLM Asia Group Limited

ACLCA

GHD

ch2m

JBS&G

FibreCell Australia Pty Ltd

VeruTEK Technologies

Agilent Technologies

Goals include: remediation which is cost effective and sustainable

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OUTLINE

1. Assessment framework

Environment Protection (Assessment of site contamination) Measure 1999

2. Remediation framework

National Remediation Framework 2019

A national approach to remediation

Land management and environmental protection

- a state responsibility
- each State has their own approach to **remediation**
- >30 state regulatory/guidance instruments

Assessment of contamination

- harmonised national approach
  - *National Environment Protection Measure*
  - cannot legally be extended to remediation

Remediation and management of contamination

- State regulators suggested
  - a *national remediation framework*
  - NRF to complement the NEPM (assessment)
  - CRC CARE to develop

NEED FOR HARMONISATION

Why harmonisation…?

- provide a **structure** for thinking through strategies
- **systematise practices** currently being applied to many sites
- provide more **rigorous approach** for considering issues
- reduce risk of adoption of poor strategic options
- provide a **sustainable approach** to remediation and management
- provide **seamless linkages with**:

  1. **Assessment of Site Contamination NEPM, 1999**
  2. **National Remediation Framework NRF, 2019**
  3. **State requirements (legislation and policy)**

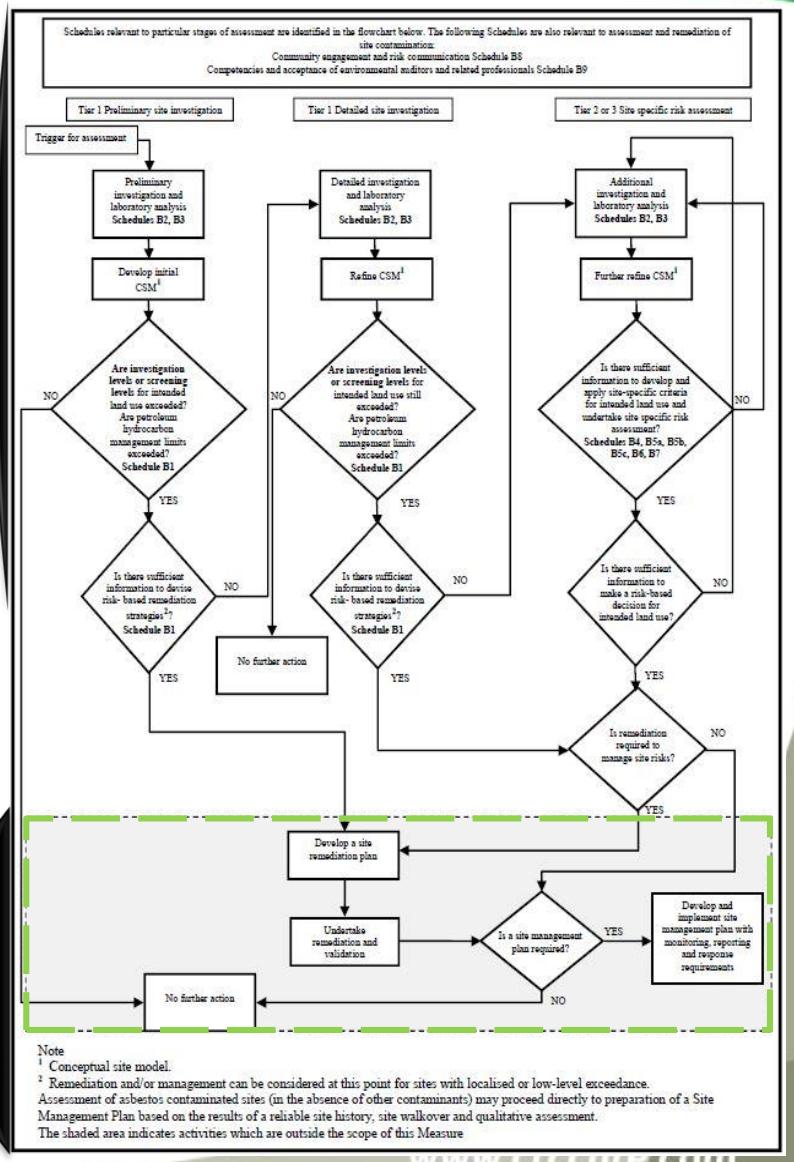
General process for assessment

	Tier 1 - PSI	Tier 1 - DSI	Tier 2 & 3
Level of investigation	Primary site investigation	Detailed site investigation	• Site-specific risk assessment • Studies eg modelling
Screening levels	Generic screening levels	Generic screening levels	Site-specific risk-based criteria
Conceptual site model	Initiate	Refine	Refine

- *Are generic screening levels exceeded?*
  - *professional judgement maybe required*
  - *These are not remediation criteria*

Outcomes from assessment

- No unacceptable risk → No further action
- Unacceptable risk present → remediation
- Needs ongoing monitoring → site management plan



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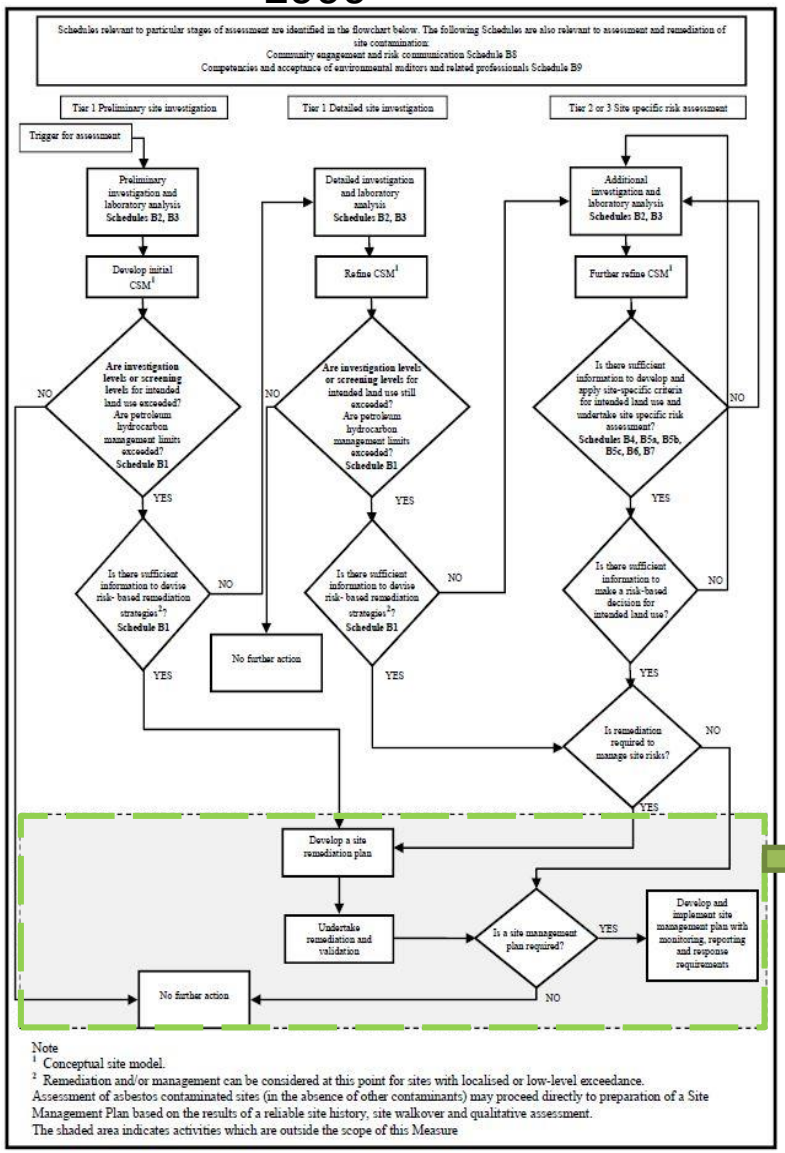
Assessment of Site Contamination NEPM

- General process for assessment

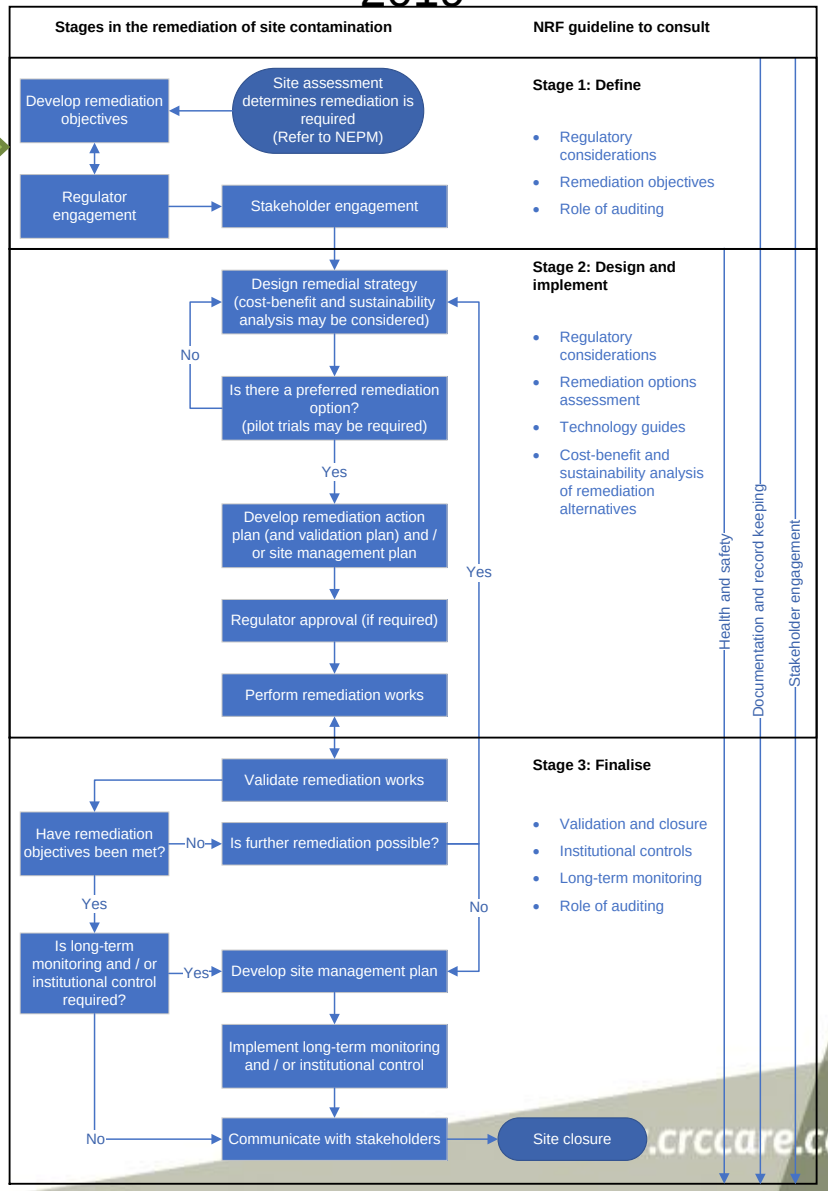
- 9 guidelines:
  1. Site characterisation
  2. Lab analysis of potentially contaminated soil
  3. Site-specific health risk assessment methodology
  4. Ecological risk assessment, including guideline on derivation of ecological investigation levels
  5. Ecological Investigation Levels for Arsenic, Chromium (III), Copper, DDT, Lead, Naphthalene, Nickel and Zinc
  6. Risk-based assessment of groundwater contamination
  7. Derivation of health-based investigation levels (and specific contaminant HILs)
  8. Community engagement and risk communication
  9. Competencies and acceptance of environmental auditors and related professionals

MOVING FROM ASSESSMENT TO REMEDIATION

1999



2019



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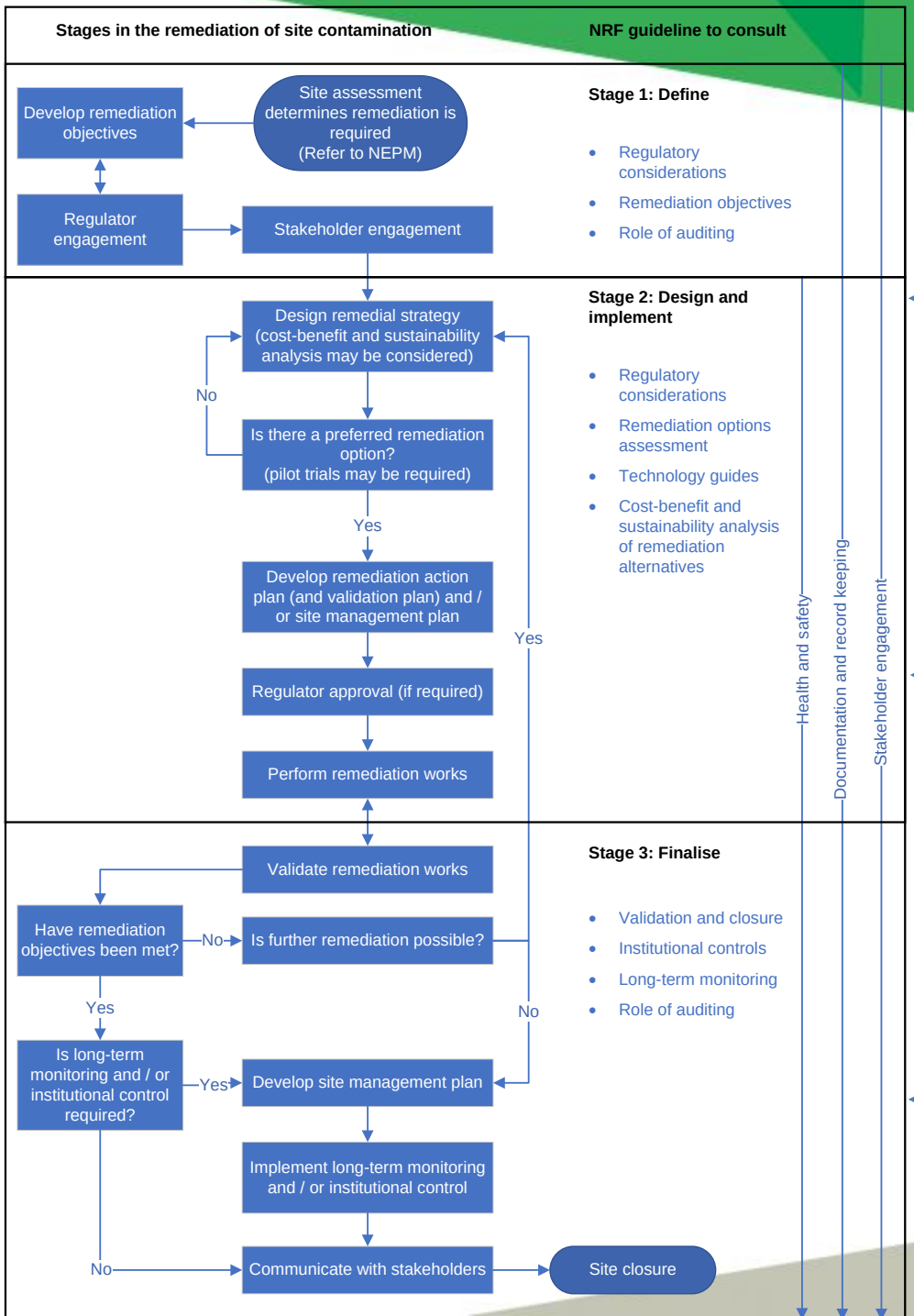
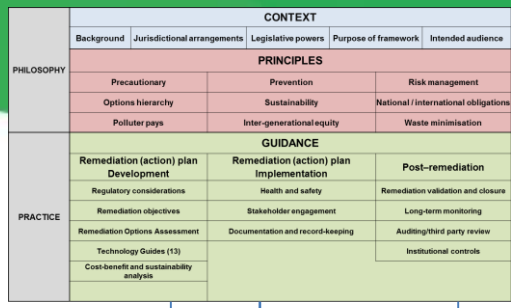
National Remediation Framework, 2019
Schematic

PHILOSOPHY	CONTEXT				
	Background	Jurisdictional arrangements	Legislative powers	Purpose of framework	Intended audience
	PRINCIPLES				
	Precautionary		Prevention		Risk management
	Options hierarchy		Sustainability		National / international obligations
	Polluter pays		Inter-generational equity		Waste minimisation
PRACTICE	GUIDANCE				

General process for remediation & the 24 Guidelines





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Remediation objectives

ROs provide a clear indication of what remediation needs to achieve:

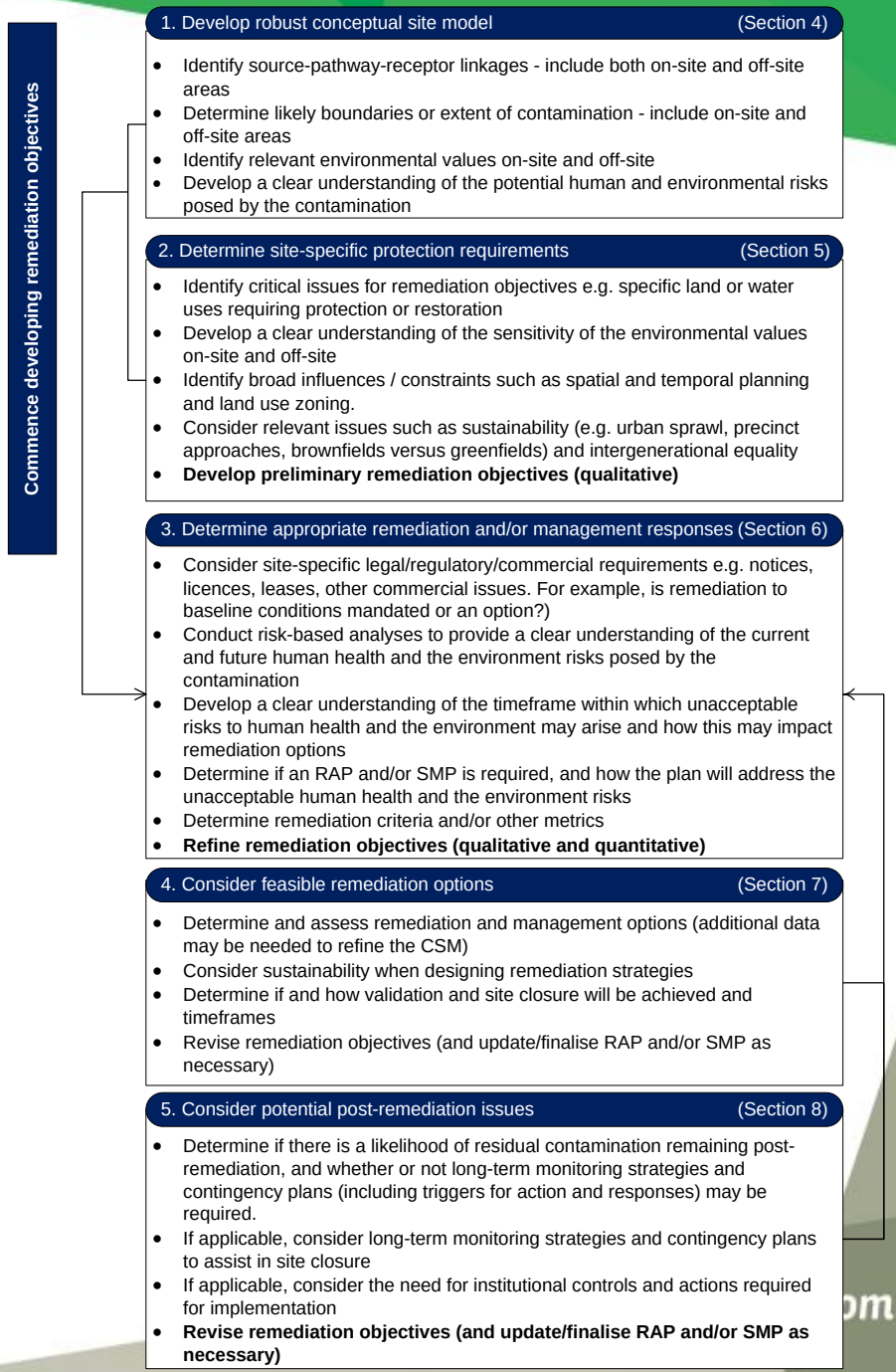
- in order to address unacceptable **risks** to human health and the environment from contamination
- defined in terms of **beneficial uses** or **environmental values**
- for the remediation to be considered *complete*

Objectives

- usually stated in qualitative terms
- supported by measurable remediation end-points

When objectives have been achieved

- regulators may agree to site closure (when no further active remediation is required)



Environmental Values (also, Beneficial uses)

A particular value or use of the environment which:

- is important for a healthy ecosystem
- is conducive to public benefit, welfare, safety, health or aesthetic enjoyment which requires protection, or
- is declared in state or territory environment protection policy to be a beneficial use.

Examples of environmental values:

- *Human health eg drinking water or house gardens*
- *Aquatic ecosystems*
- *Agricultural land*
- *Kids playground/school*
- *Open park lands*
- *Air quality*
- *Aesthetic/intrinsic values*

Establishing remediation objectives conti..

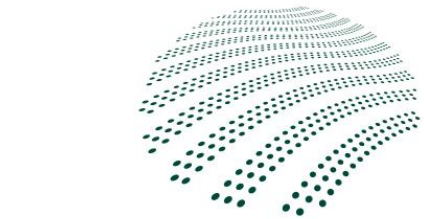
- assessment and remediation are closely linked
- risk-based approach
- objectives to align with:
  - **environmental values/beneficial uses**
  - **proposed land use**
  - on-site and off-site issues
- may require **iterative** approach
- importance of refining **conceptual site model (conservatism vs $)**
- considers **residual contamination** (post-remediation guidelines)
- site closure (guidelines on validation and closure)

National Remediation Framework
Timetable for consultation and finalisation

Final consultation stage

– complete package uploaded to CRC CARE website	**Nov 2018**
– consultation period on complete package – start	**Nov 2018**
– National roadshow – all capital cities	**Feb 2019**
– **Submissions by**	**31 March 2019**
– consideration of submissions	**April-July 2019**
– consideration by NRF Steering Group	**August 2019**
– consideration by Heads of EPAs	October 2019
– Publication and development of website	in progress

Thank you!



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For more information, please feel free to contact me!

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