

# Addressing alternatives through a tiered environmental assessment framework

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**Taken from “The optimum role of tiered environmental  
assessments relating to long-term radioactive waste  
management in the UK” thesis**

## Outline of presentation

- PhD research
- What is long-term radioactive waste management?
- What components of the environmental assessment framework have been studied?
- What is a tiered environmental assessment framework?
- How has the research been undertaken?
- Addressing radioactive waste management alternatives in a tiered environmental assessment framework

## Outline of PhD

Primary objective: To establish how environmental assessments can best be used within a radioactive waste management strategy. Incorporating various objectives exploring **alternatives**, **stakeholder involvement** and the **decision-making process** within **tiers** of the environmental assessment process.

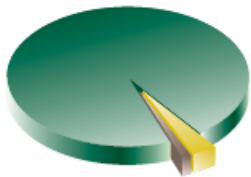
# What is radioactive waste?



Raw ILW



Raw LLW



	High-level waste (HLW) 2%
	Intermediate-level waste (ILW) 82%
	Low-level waste (LLW) 16%

**Types of waste in storage  
(by volume)**

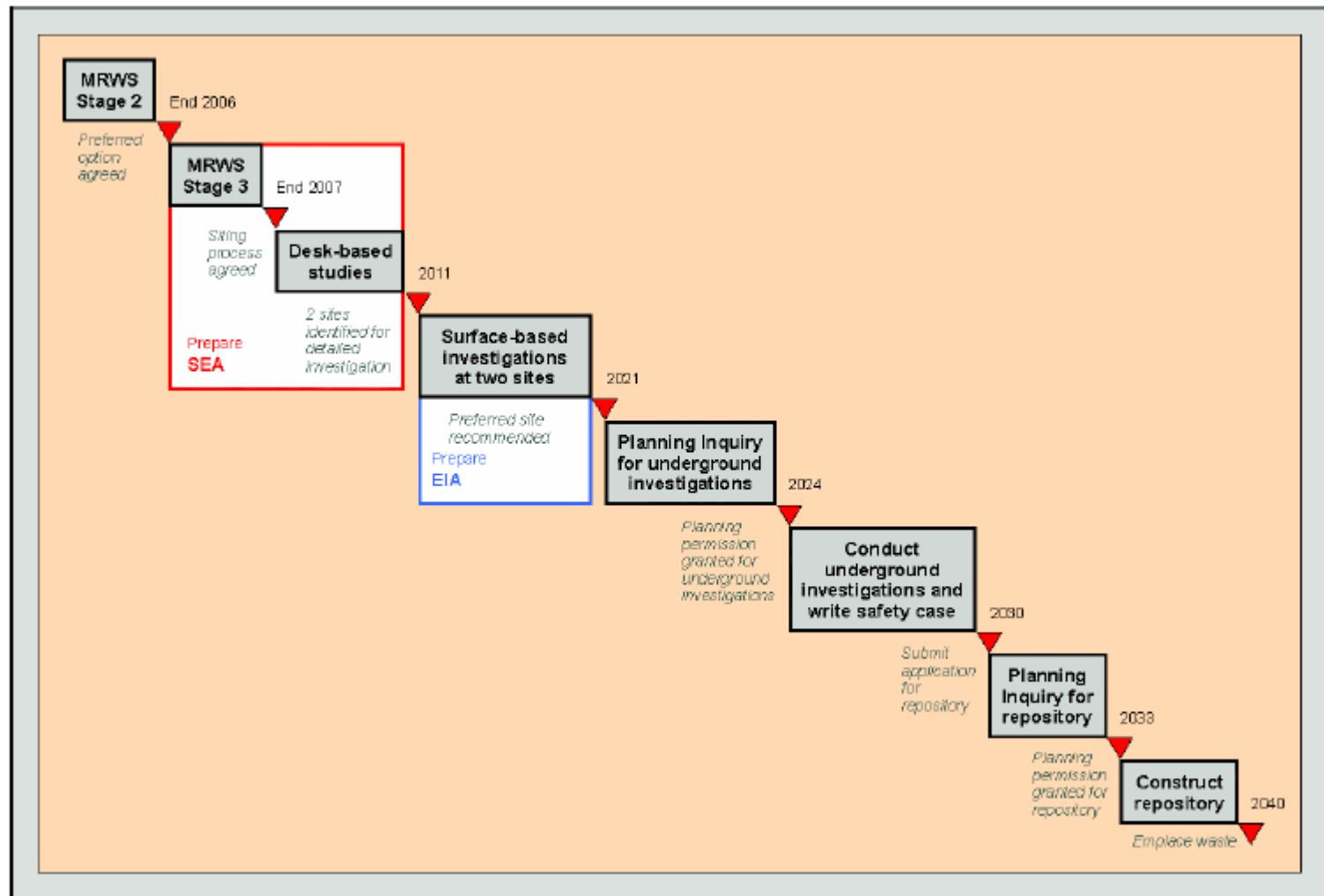


# How environmental assessments influence the radioactive waste management process?

Addressing  
alternatives

Stakeholder  
involvement

The decision-  
making  
process

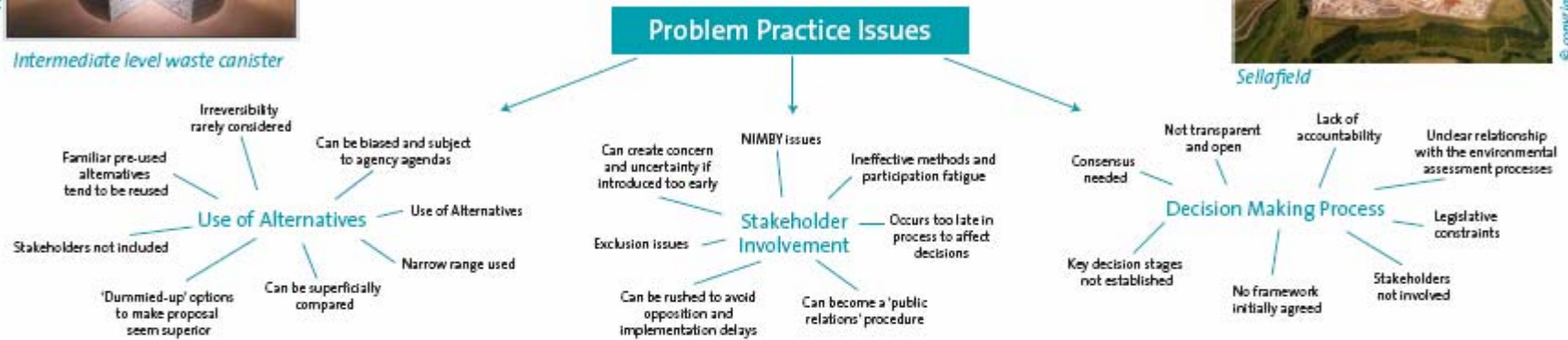




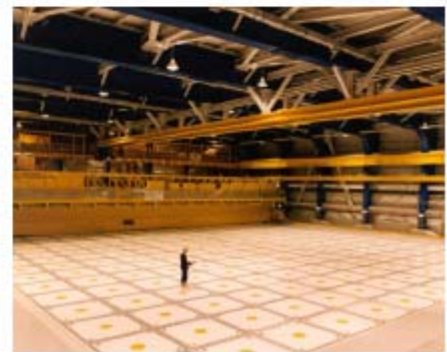
Intermediate level waste canister



Sellafield



Vitrified High-level Waste Containers





# What is a tiered environmental assessment framework?

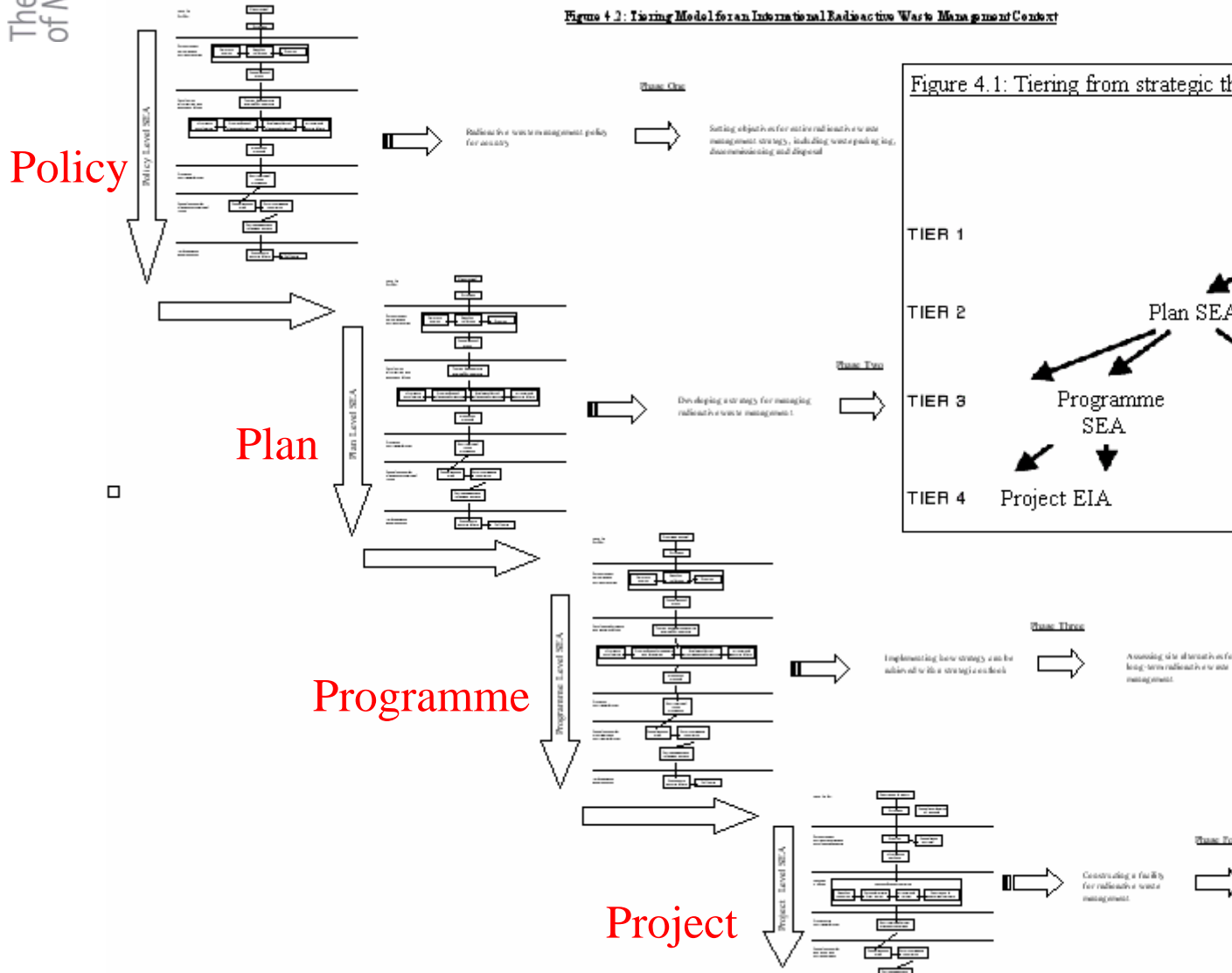
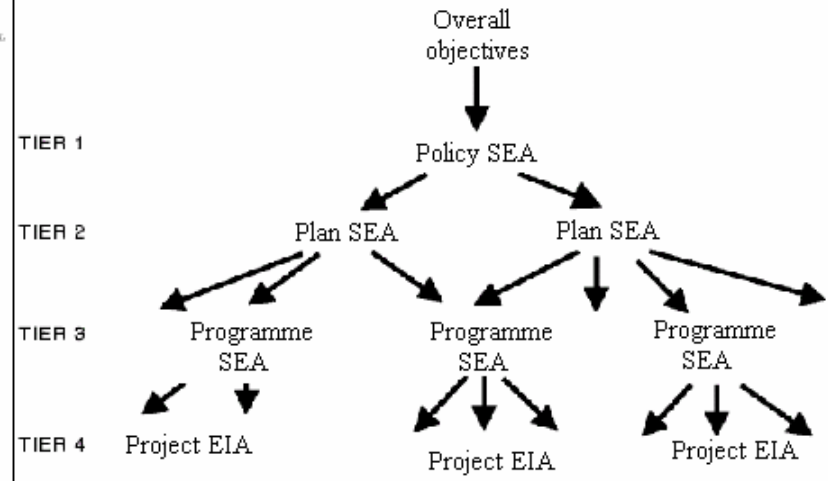
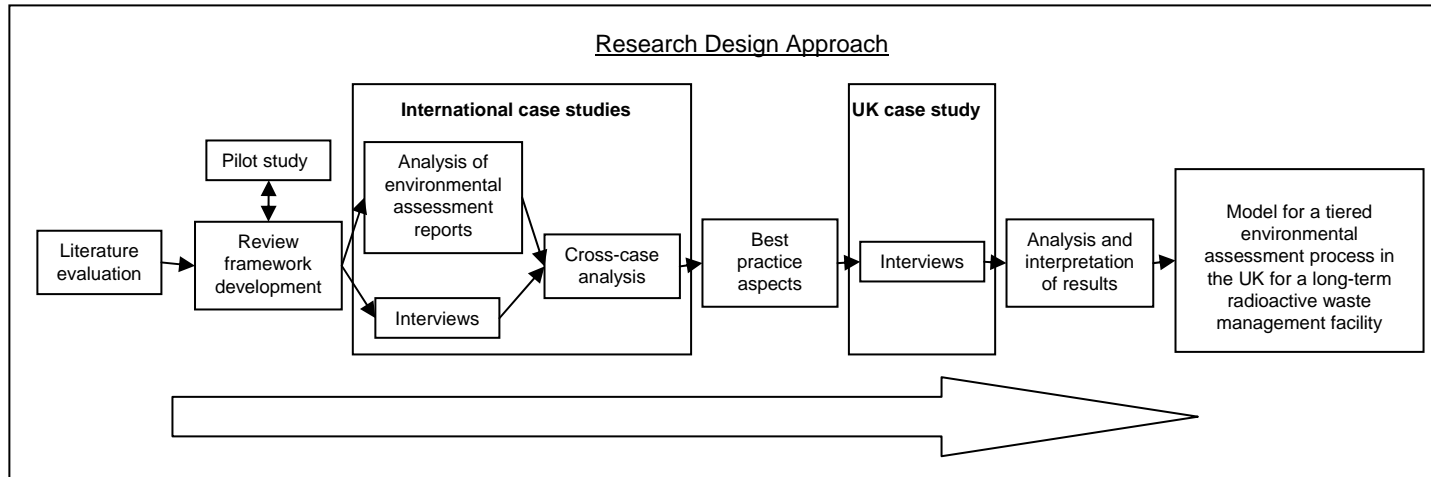


Figure 4.1: Tiering from strategic through to project level



Glasson *et al.*, 1994

# Approach to the research



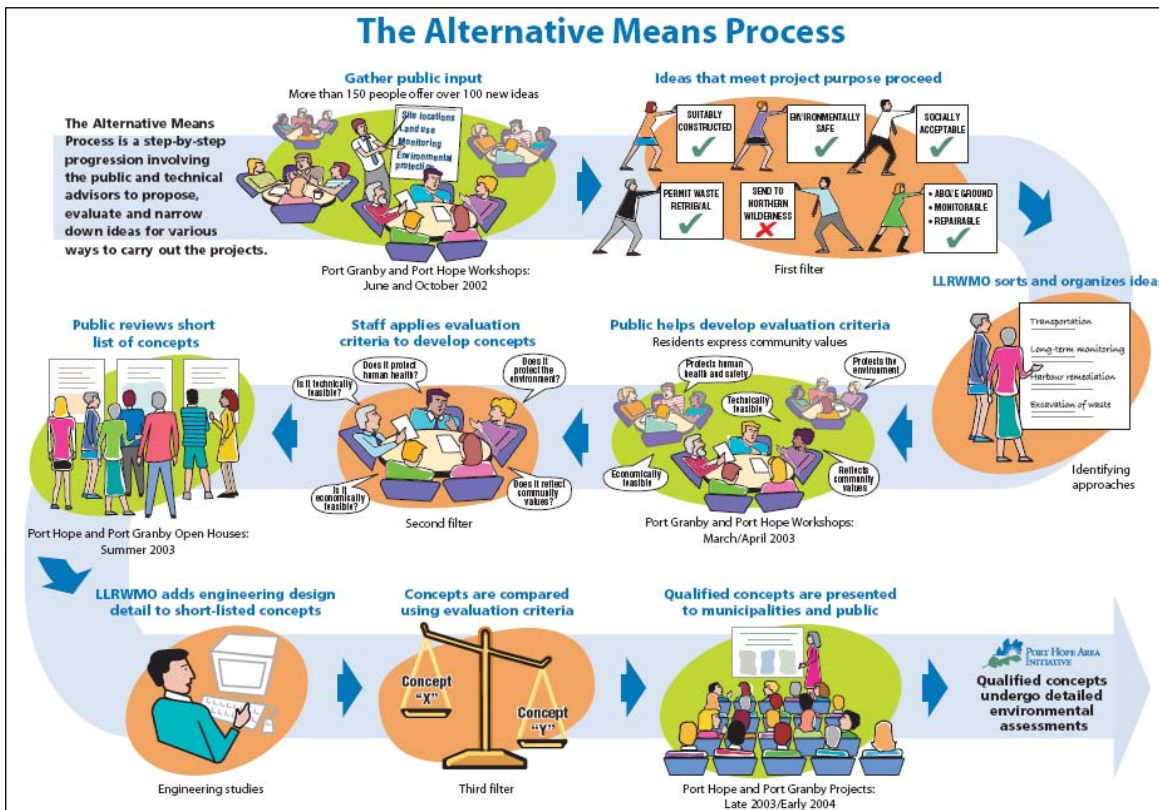
<u>Summarising findings of current environmental assessment practice through the tiers for the UK.</u>				
<u>Tier</u>	<u>Assessment</u>	<u>Alternatives</u>	<u>Participation</u>	<u>Decision Making</u>
Higher	SA	Strategic, Non-spatial	General, Less commitment	Vital, Influential
↓	SEA	↓	↓	↓
	EIA	Specific, Priority based	Easier, More active involvement	Consent specific



# Key best practice alternative aspects emerging from the research

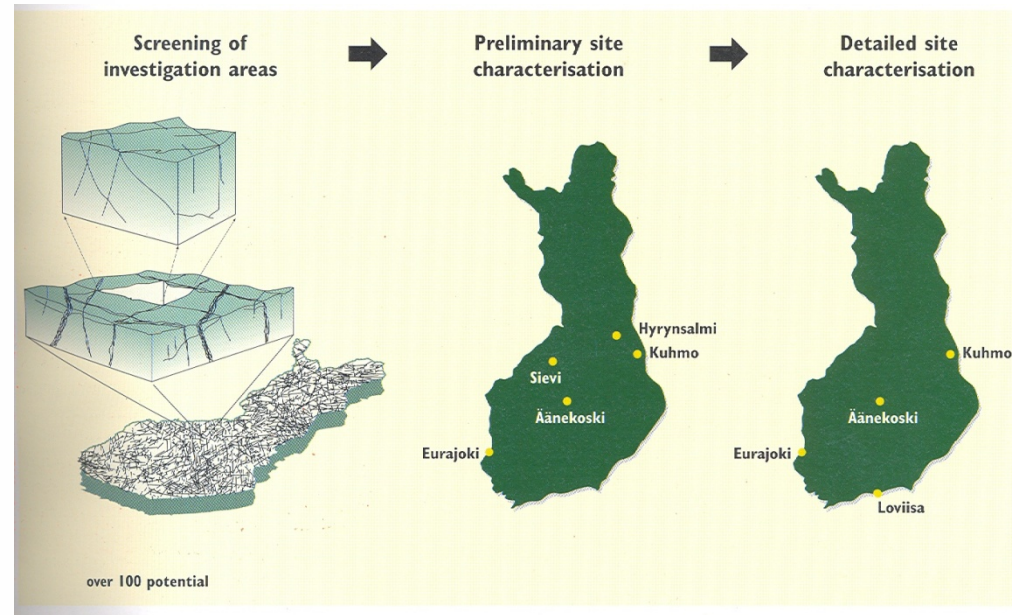
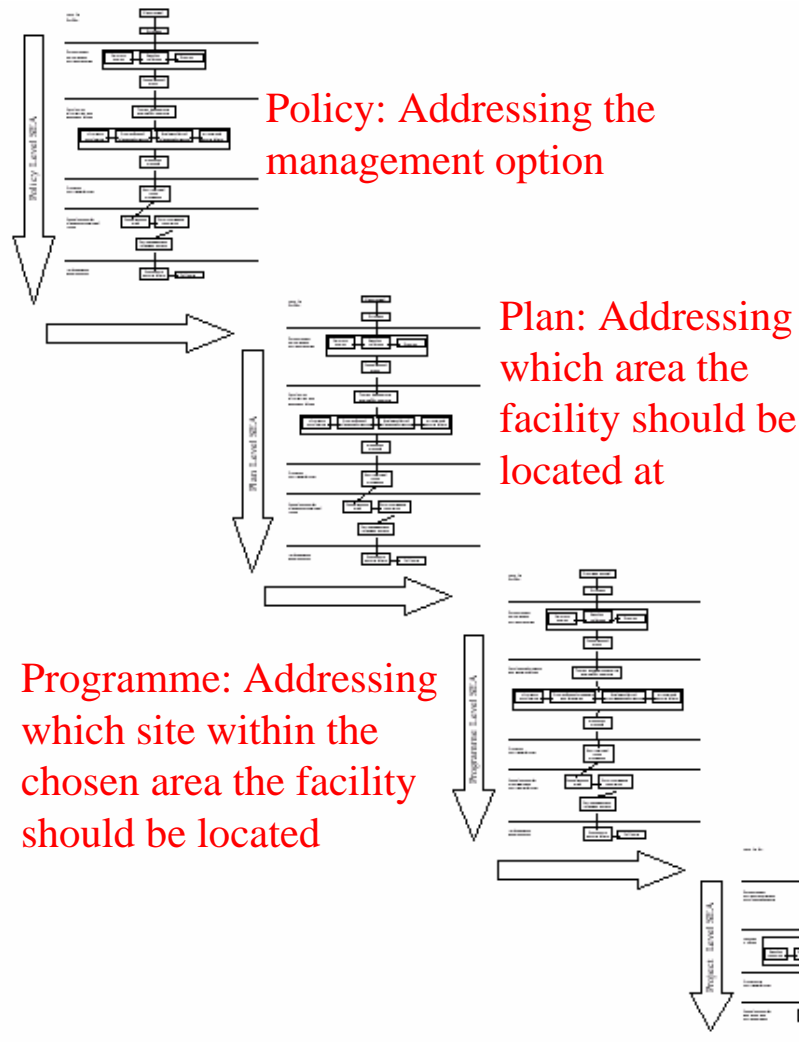
The alternatives affect “the range of evaluations and public discussions” so they ultimately define the scope of the assessment (Valve, 1999 p.125).

## The Alternative Means Process



- Clear objectives for each stage
- Range of alternatives.
- Consistent approach
- Including stakeholders
- Objective comparison

# Where and how alternatives should be addressed in a tiered environmental assessment framework?



## SEA POLICY – MANAGEMENT OPTION ALTERNATIVES

Government committee report

1977 Stipulation Act on  
radioactive waste responsibility

Management option project

Deep geological disposal decided

# The Swedish environmental assessment radioactive waste management framework

## SEA PLAN – IDENTIFYING SITE AREA ALTERNATIVES

R&D into generic repository design,  
siting criteria, desk studies into potential  
siting areas

Preliminary siting studies in 5 counties  
resulted in 2 taken forward for detailed  
site investigations

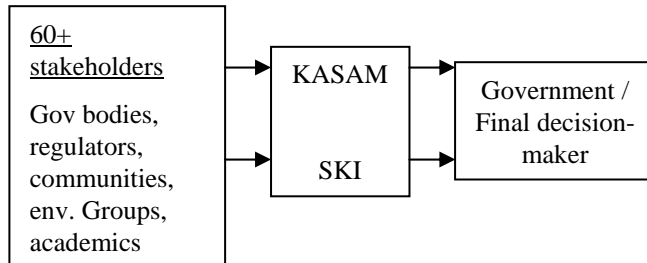
## SEA PROGRAMME \_ SITES WITHIN THE AREA ALTERNATIVES

Detailed site investigations in the  
municipalities of Oskarshamn and  
Osthammer.

Preparation for the EIA report

Decision to be taken on preferred site  
in 2008/9

## The decision-making review process every 3 years



## EIA PROJECT – ADDRESSING DESIGN ALTERNATIVES

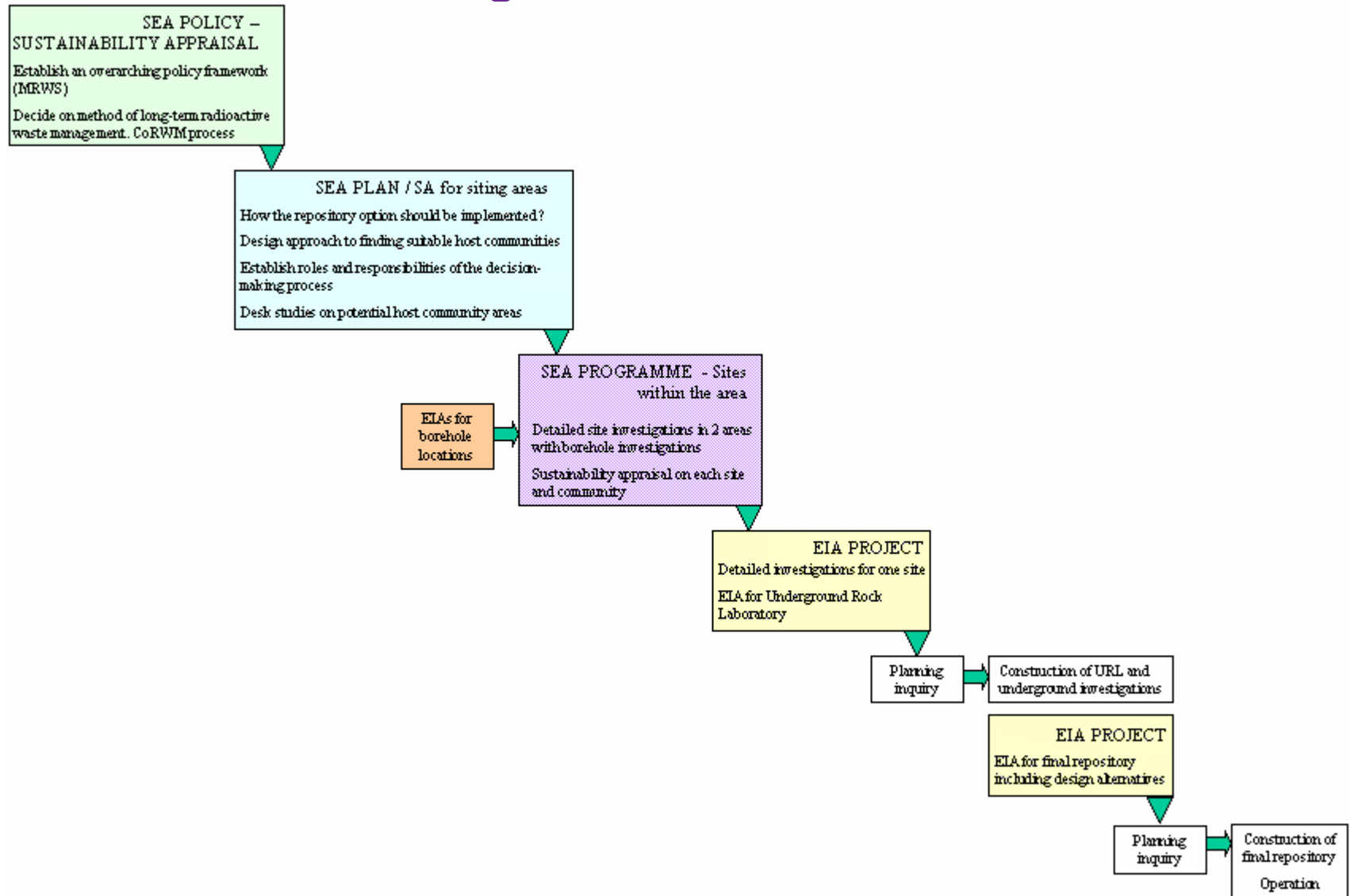
Detailed characterisation at site

Tailoring generic repository to the site with  
design alternatives e.g. emplacement  
techniques, tunnel construction, retrievability,  
backfill, fracture zones, etc.

# Applying an environmental assessment framework to the UK?

- Framework design from UK policy and timetables
- Input from preliminary interviews; Implementer, regulators, decision-makers, community representatives, Local Authorities, NGOs, academics, consultants
- Design incorporating international best practice aspects, literature, and ideas and experiences from key UK stakeholders
- Sections of process modelled e.g. Stakeholder interactions within the process, the decision-making system, roles and responsibilities etc.
- Second set of interviews with UK stakeholders to validate the research

# The UK environmental assessment radioactive waste management framework



## Conclusion

- Selected three components from the literature review which demonstrated practice deficiencies
- Developed an evaluation framework to analyse international case studies
- Key best practice aspects were established across the four case studies
- These were applied to the UK and this presentation demonstrated how alternatives can be addressed from a strategic level to a project level
- A tiered environmental assessment framework has been devised for the long-term radioactive waste management process for the UK, which these alternatives have then been integrated into
- The next phase is to evaluate how stakeholder involvement and the decision-making process can be addressed through this environmental assessment framework



# Any questions?

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## References

- Pope, J., Annadale, D., and Morrison-Saunders, A. (2004) Conceptualising sustainability appraisal. *Environmental Impact Assessment Review* **24**, (6), 595-616.
- Glasson, J., Therivel, R., and Chadwick, A. (1994) *Introduction to environmental impact assessment: Principles and procedures, process, practice and prospect*. UCL Press.
- Valve, H. (1999) Frame conflicts and the formulation of alternatives: Environmental assessment of an infrastructure plan. *Environmental Impact Assessment Review* **19**, 125-142.
- <http://www.llrwmo.org/en/porthope/index.html>