

Stakeholder Skill Setting - Geological Disposal

**Presentation at Nuclear Academics Meeting
September 2013**

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Overview

- Fundamentals of geological disposal
- What RWMD is doing
- Opportunity for academics

Government Policy

- Published 12 June 2008
- Sets out
 - Government's framework for managing higher activity radioactive waste through geological disposal
 - Key principles - voluntarism and partnership
- NDA as implementing body committed to:
 - Programme of R&D
 - Development of RWMD into delivery organisation
 - Preparation and planning for geological disposal
- DECC is currently consulting on revisions to the siting process

NDA



Llywodraeth Cymru
Welsh Assembly Government

BERR | Department for Business
Enterprise & Regulatory Reform



Department of the
Environment
environment.gov.uk



defra
Department for Environment
Food and Rural Affairs

Geological disposal – Objectives

Objectives of Geological Disposal: provide a passively safe system

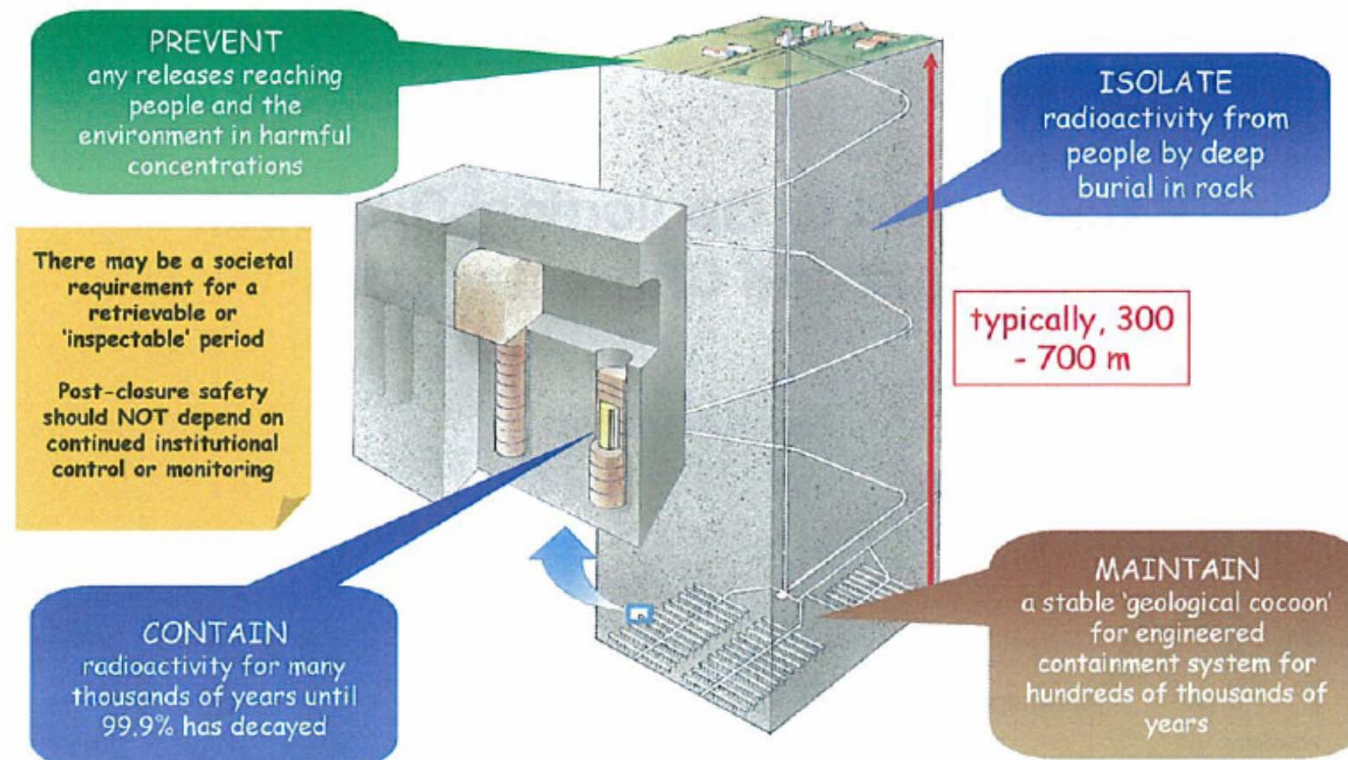
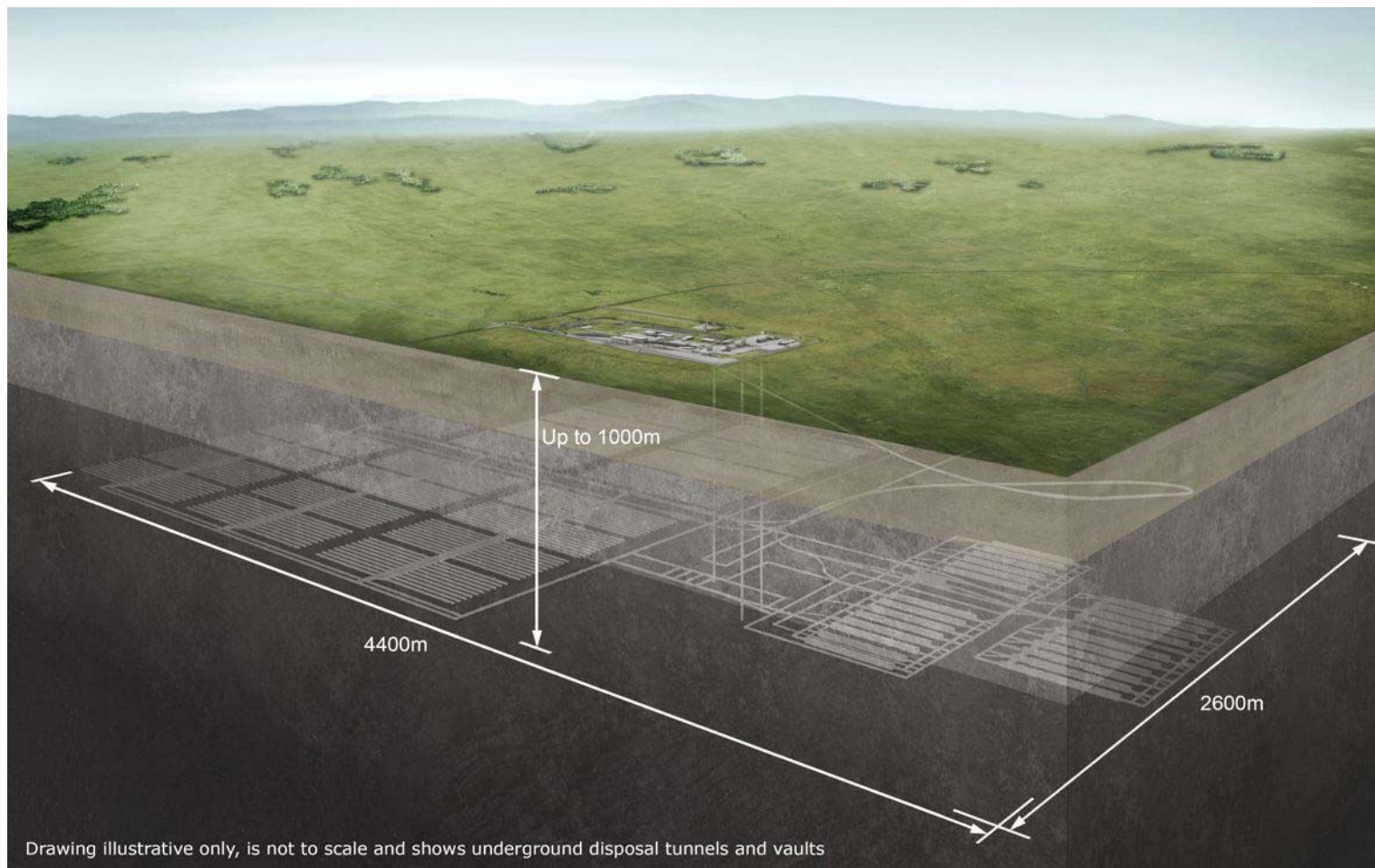
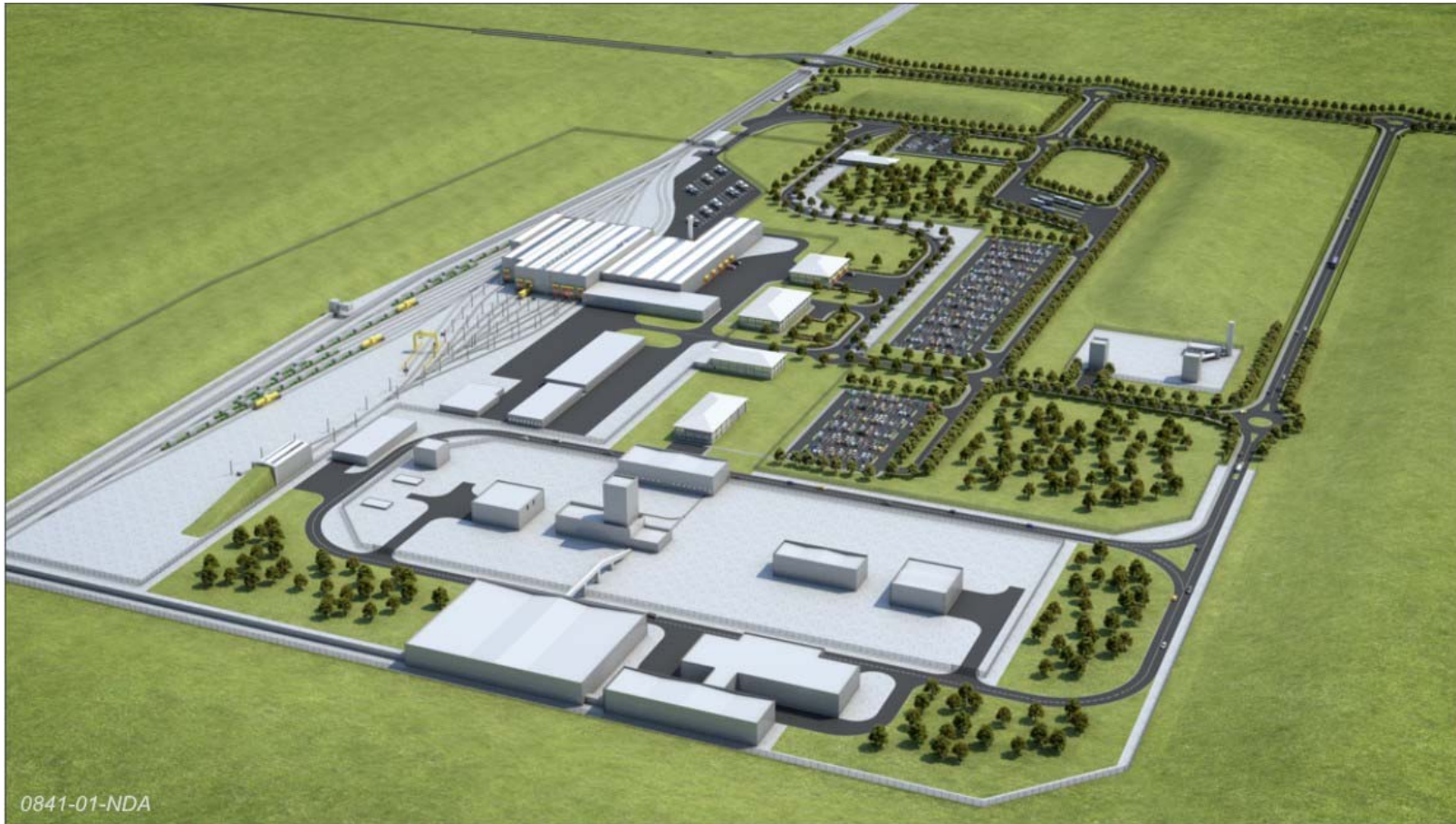


Image: SKB, Sweden

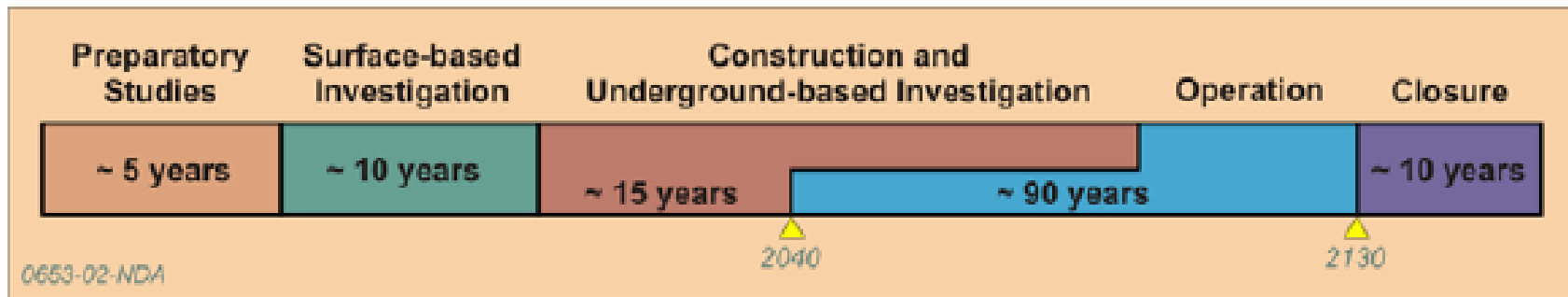
Schematic of a GDF



Generic surface layout



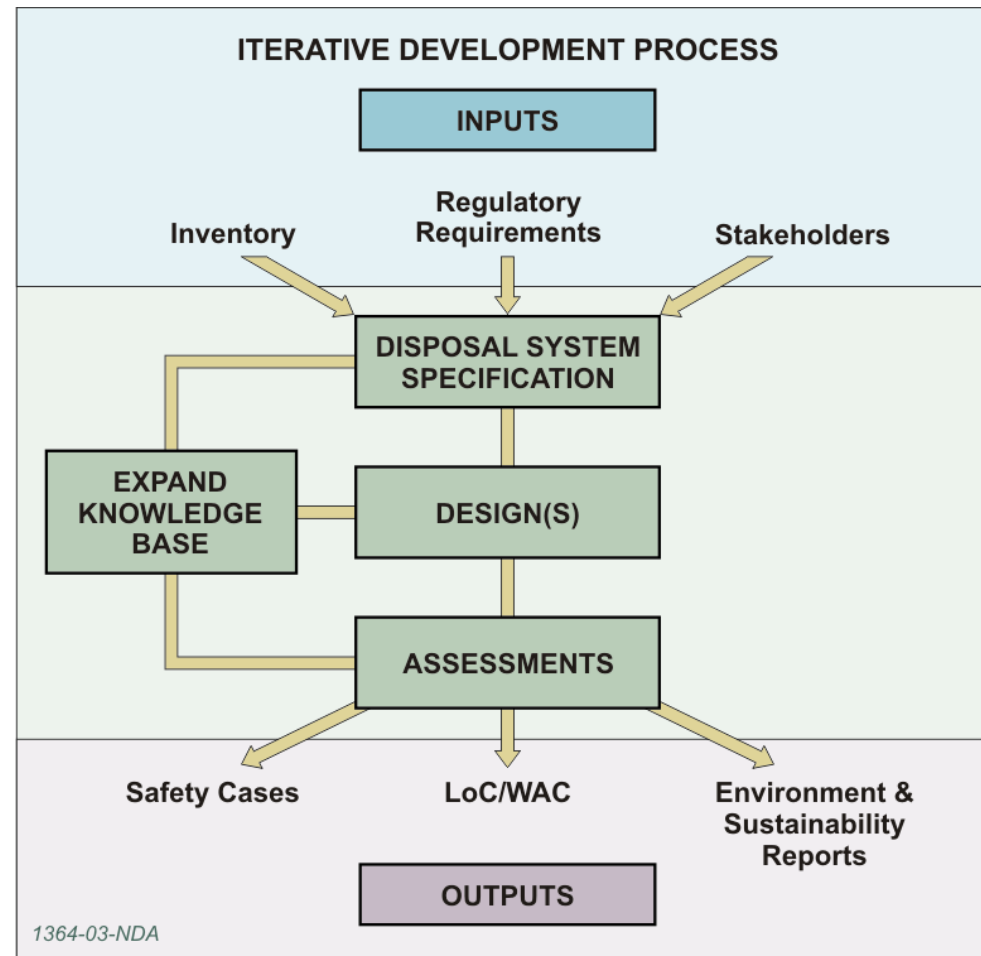
Baseline timescales



Baseline Programme

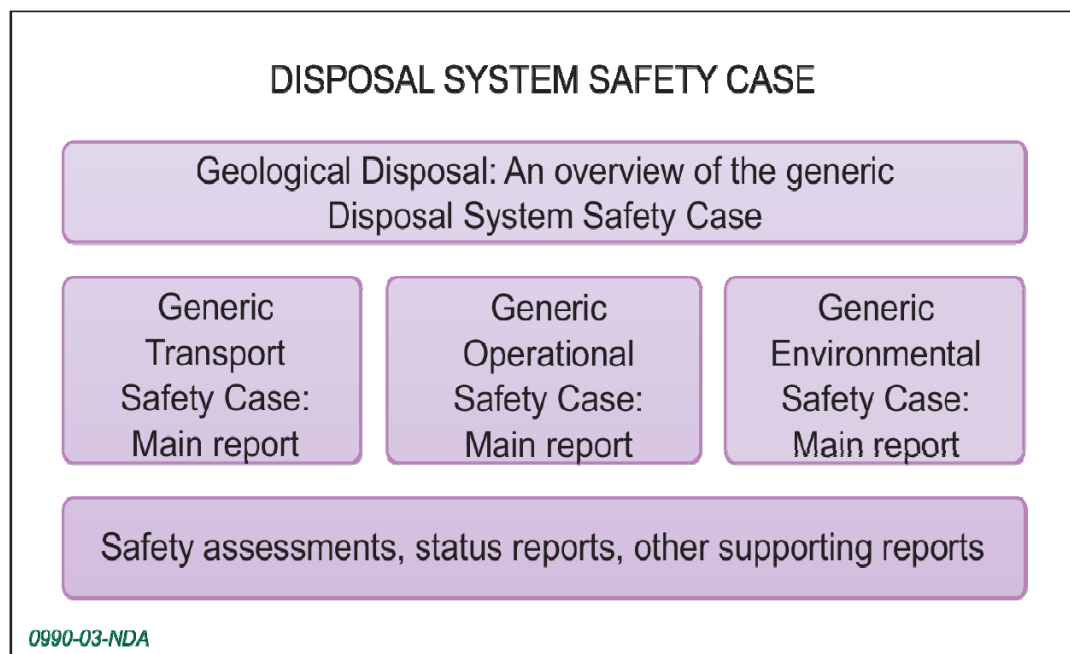
- First ILW waste emplacement – 2040
- First HLW waste emplacement – 2075
- If added to programme, first emplacement of spent fuel from new build – 2130
- All dates are indicative. Exact timing will be agreed with host community

RWMD Business Model



Disposal System Safety Case

A suite of documents collating analyses and scientific and engineering evidence to support our confidence in the safety of a geological disposal facility

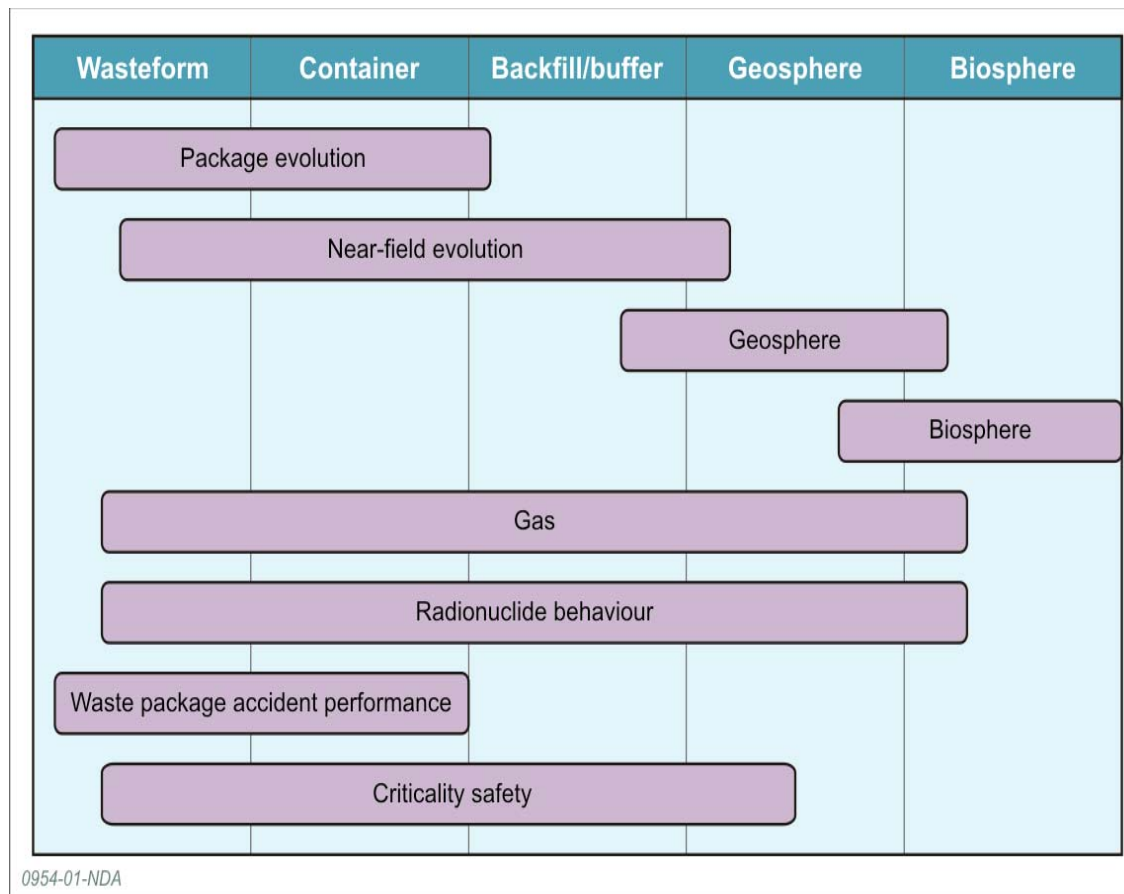


Generic DSSC rationale

- to provide confidence
- basis for disposability assessments of waste being packaged now
- to facilitate regulator scrutiny of our work (and hence feedback)
- to identify research and site characterisation needs

Underpinning science

- 8 reports on key topics
- Summarise evidence to support safety arguments in DSSC
- Draw on R&D carried out by and for NDA, sister organisations and others
- Justify key parameters used in DSSC
- Identify knowledge gaps – link to forward programme



Current status of science

“There is a worldwide scientific consensus that safe geological disposal is technically feasible (JRC, 2009)”

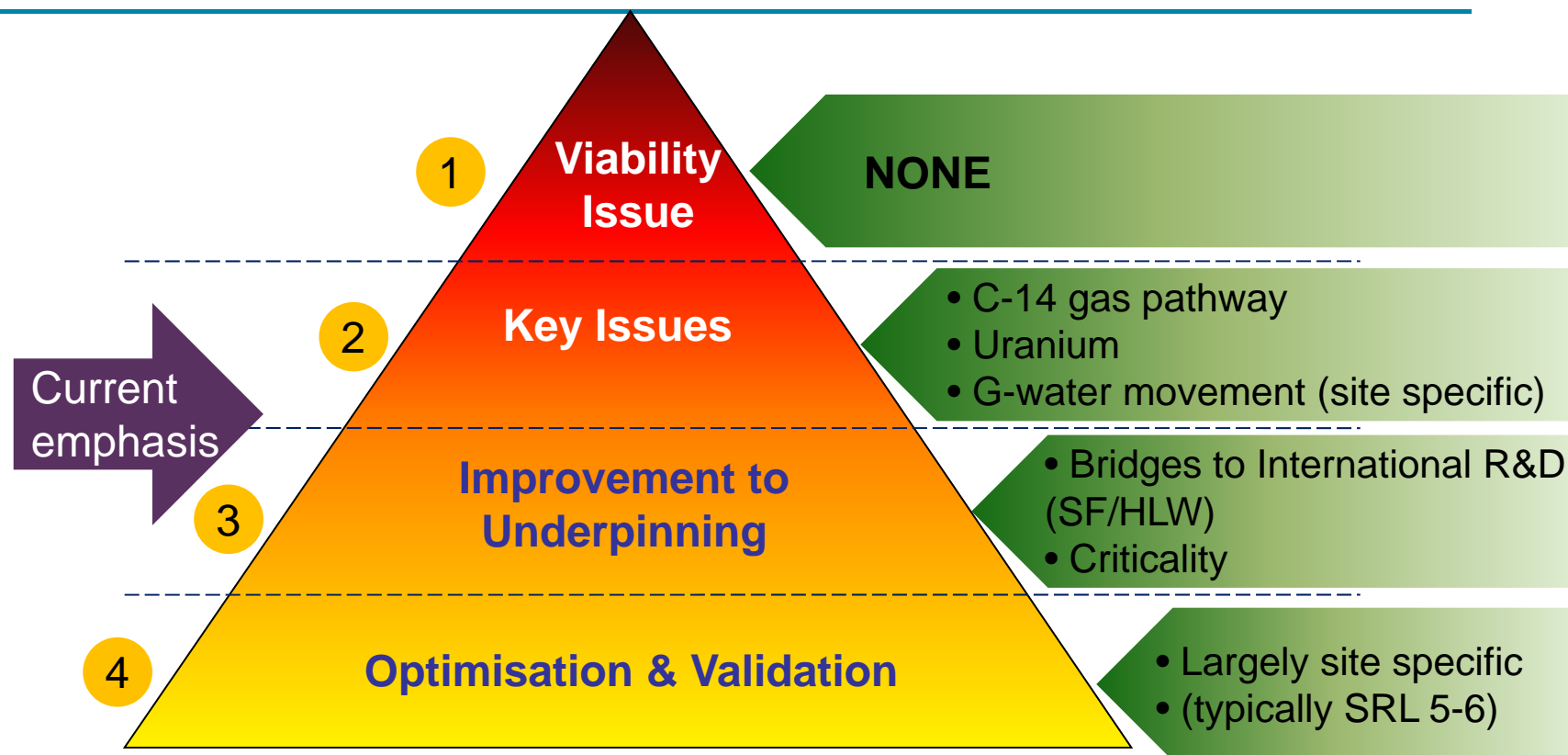
“Generic research has reached a level of maturity that will allow us to proceed with confidence towards stepwise implementation.....

.....research to address fundamental physical and chemical processes as well as materials behaviour... will have to continue” (JRC, 2009)

It is broadly accepted at the technical level that, at this time, deep geological disposal represents the safest and most sustainable option as the end point of the management of high-level waste and spent fuel considered as waste (EU, 2011)

“gDSSC provides confidence, to a degree appropriate at this early stage in implementing geological disposal, that a safety case for a GDF in the UK could be made, providing a suitable site is available.”. (EA, Dec 2011)

Evolution of geo-disposal R&D



RWMD's R&D programme

Needs-driven R&D

- Builds evidence base to support geological disposal in the UK

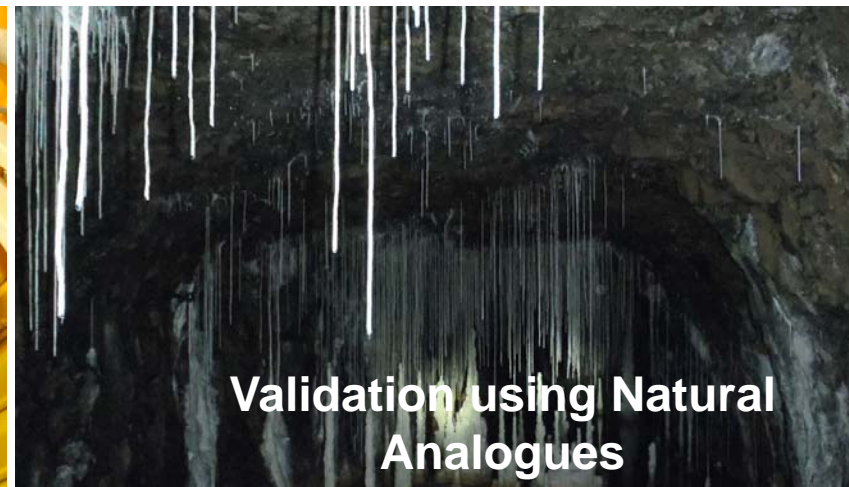
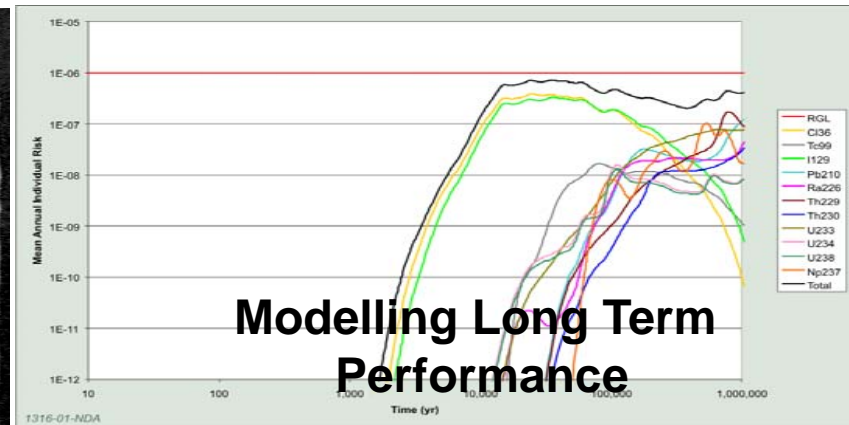
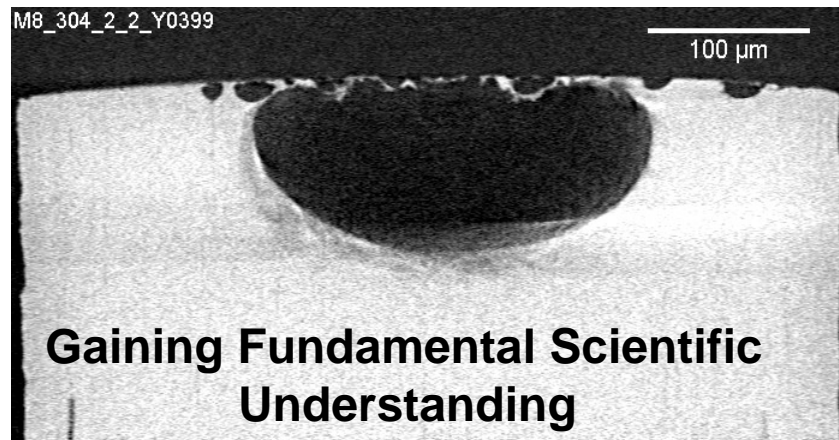
Delivery mechanism

- Through specialist technical suppliers

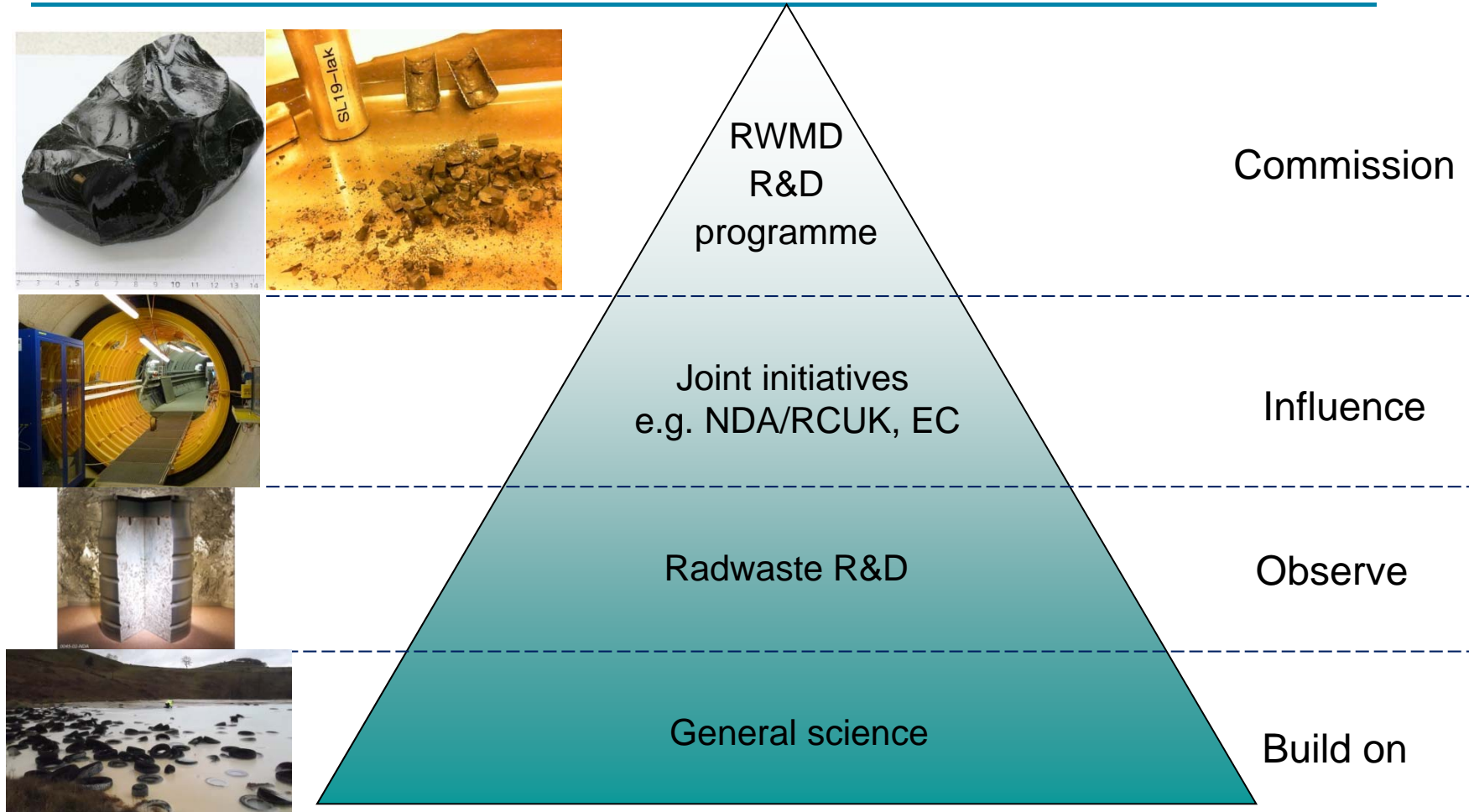
R&D documentation

- Strategy (2009)
- Status reports (2010))
- R&D Programme document (2011)
- Technical Plan
(Appendix C) (2013)

Scientific approach



Our science base



Opportunities - research

- **RWMD-funded research**
 - As member of delivery team
 - Planning and review
- **Joint programmes with Research Councils**
 - GEOWASTE (with EPSRC)
 - RATE (NERC, STFC, Environment Agency)
- **European activities**
 - Geological Disposal Technology Platform (IGDTP)
 - Framework programmes
- **Other funding bodies**
 - RWMD can provide letters of support and technical guidance

Opportunities - skills

- **Need a skilled workforce to deliver geological disposal in the UK**
 - Training at undergraduate and postgraduate level
- **RWMS is very willing to support**
 - Visiting lectures
 - Course direction
- **Job opportunities**

Thank you

RWMD Bibliography:

<http://www.nda.gov.uk/documents/biblio/search.cfm>

Any questions:

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