

**First International Forum on the
Decommissioning of the Fukushima
Daiichi Nuclear Power Station
10th/11th April 2016**

Session V

Sellafield Waste Management Strategy

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Background

- 2 Square Miles
- >200 nuclear facilities
- Significant inventory
- Supporting nuclear generation
- Major national priority



Sellafield has more than 60 years of history...



1940s/50s

- Nuclear build begins
- Initially a military programme
- Later civil programme begins

1960s/70s

- Waste stored safely – pending treatment
- Storage capacity extended incrementally
- Coarse segregation of waste arising from process
- Magnox reprocessing starts

1980s

- Main expansion of site
- Major waste treatment focus
- Environmental impact substantially reduced

1990s

- Commercialisation of reprocessing — Thorp comes online
- Waste arising from processes treated in 'real time'
- Product waste forms compatible with disposal concepts

2000s

- NDA formed
- Stop start progress in Decommissioning
- Calder Hall ceased generating power after 47 years in operation

2010s

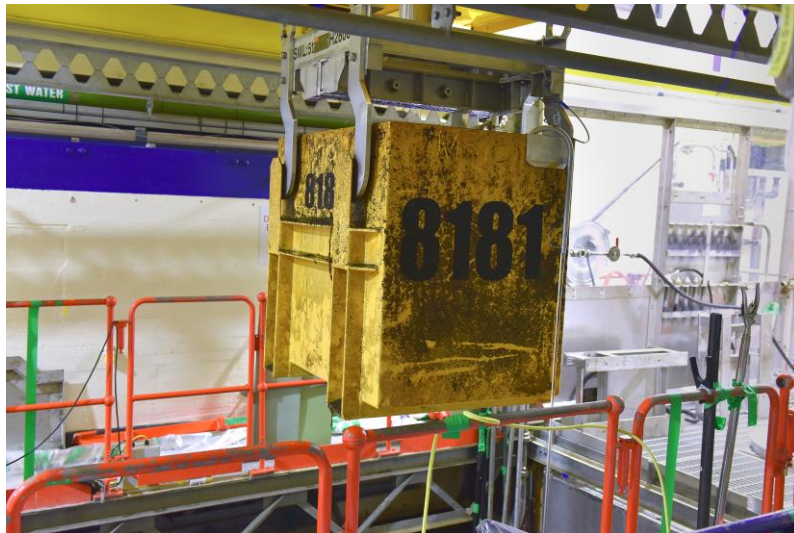
- Decision taken to end Thorp reprocessing
- Vitrification of all overseas Highly Active Waste complete
- Decommissioning gathering pace
- First sludge exports from FGMSF

Decommissioning Challenges

- Material at risk
 - Large and uncertain inventories
 - Uncertain material conditions; original and current
 - Characterisation ranges from difficult to extremely challenging
- Inadequate storage facilities
 - Uncertain design
 - Aging (~half-century or older)
 - Current condition and future service life unclear
- Extended (decades) hazard removal terms
 - Complex and unprecedented tasks
 - Variable confidence in schedule

Recent successes – Pile Fuel Storage Pond

Last skip of metal fuel removed



Decanner removal



Over 70% of the inventory safely retrieved in the past year

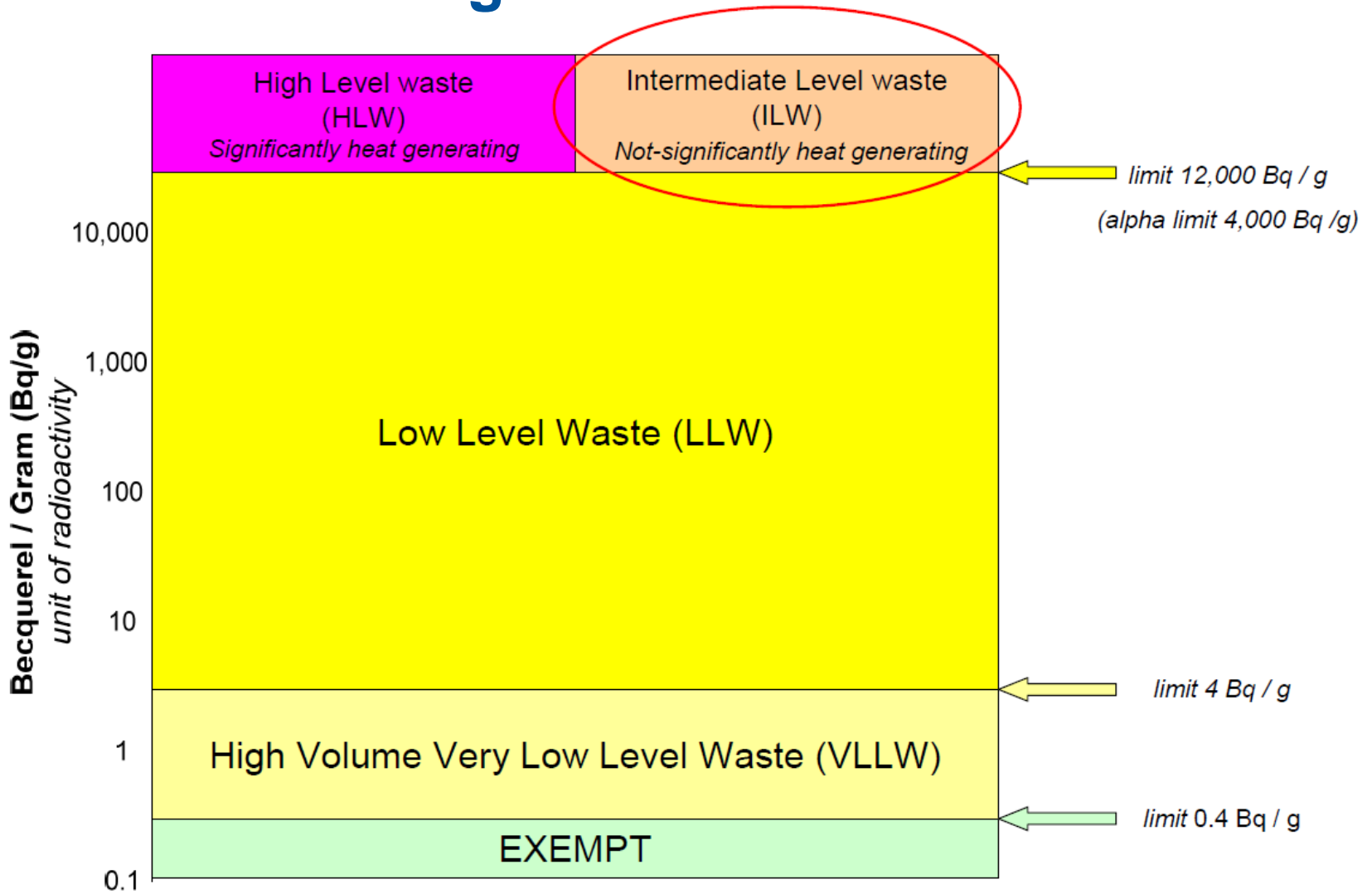
IWM Principles – links with Government policy

Integrated Waste Management Objective:

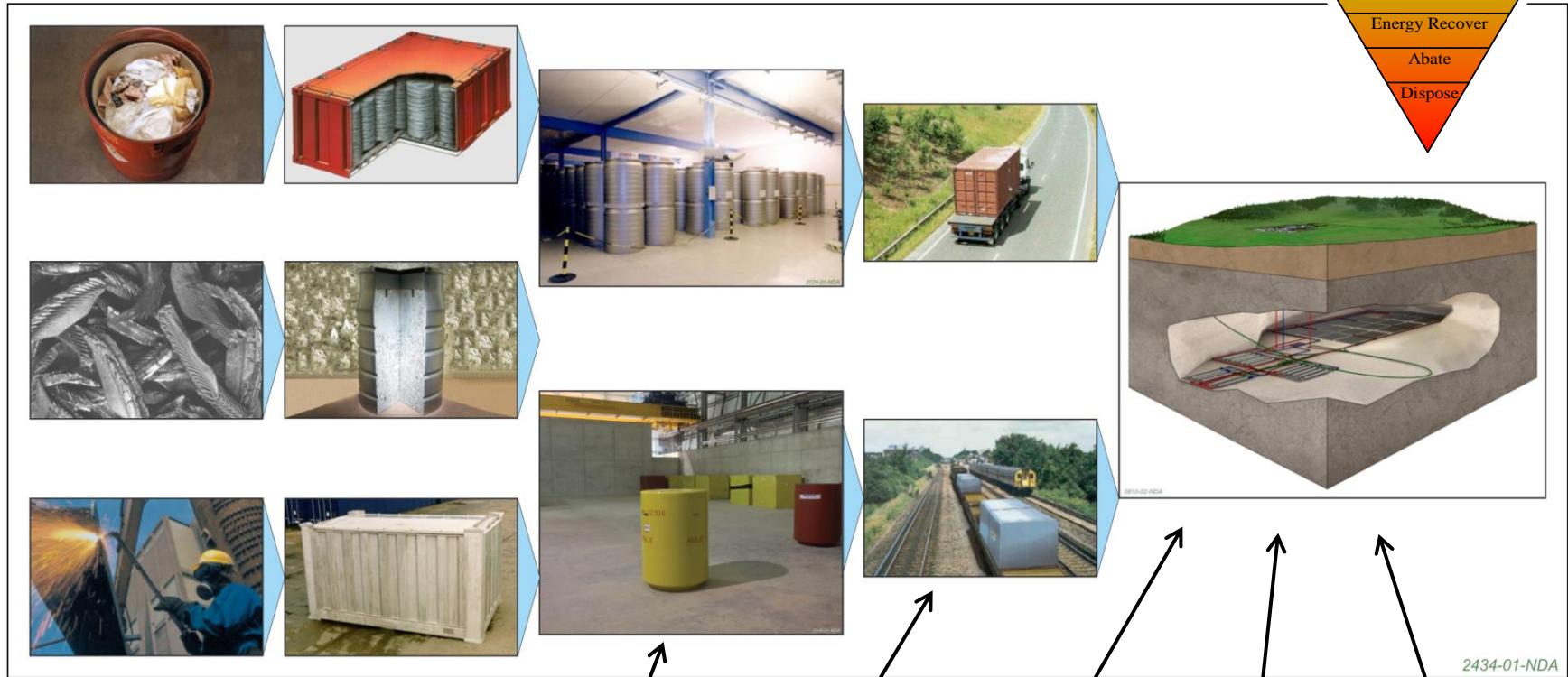
- To ensure that wastes are managed in a manner that protects people and the environment, now and in the future, and in ways that comply with government policies and provides value for money.



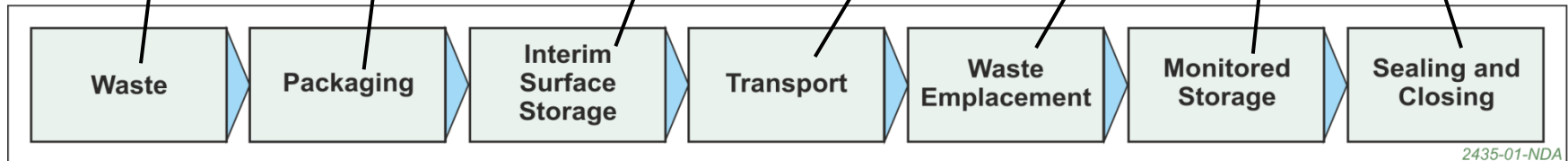
UK Waste Categories



Managing Radioactive Waste



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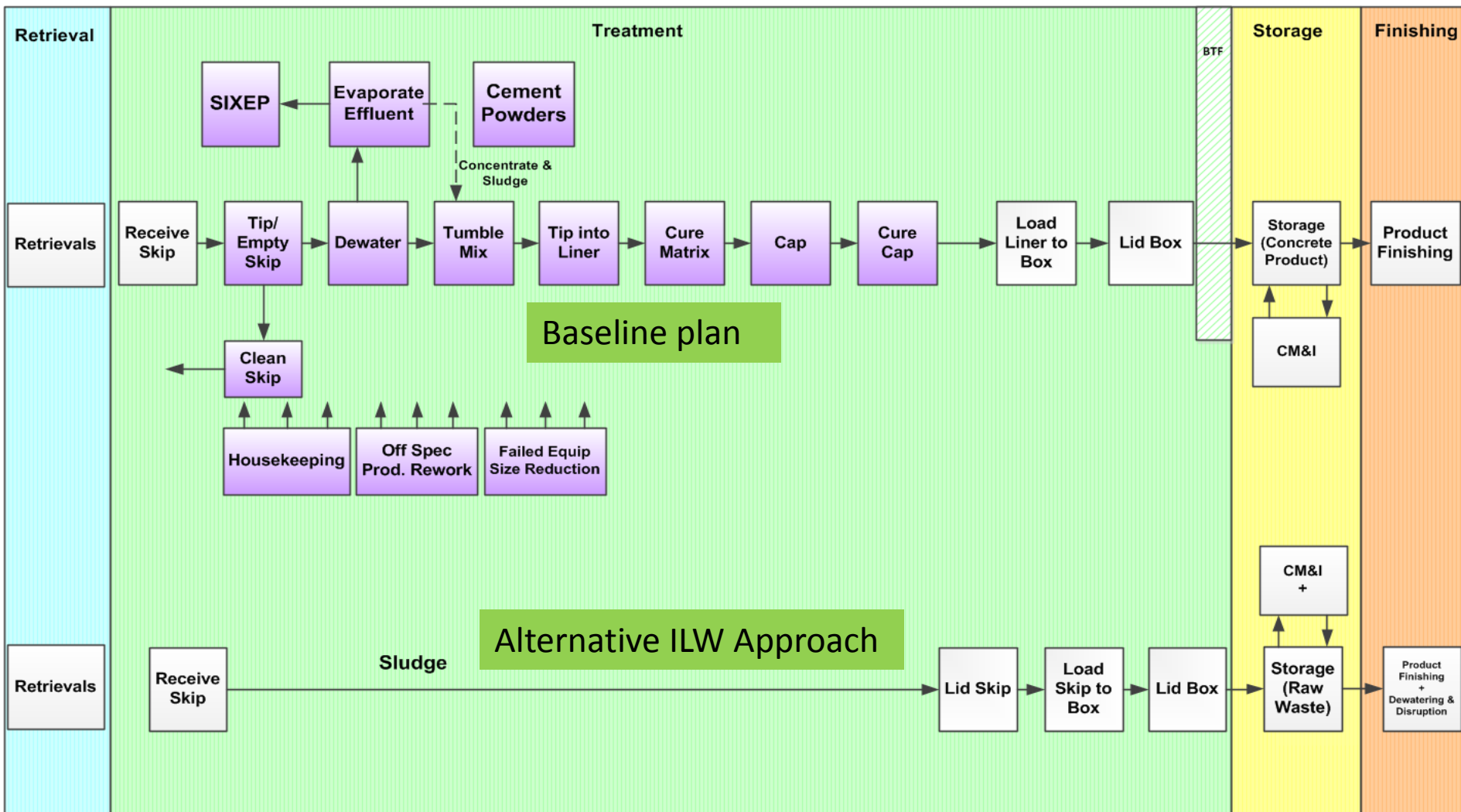
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Waste Management Strategy

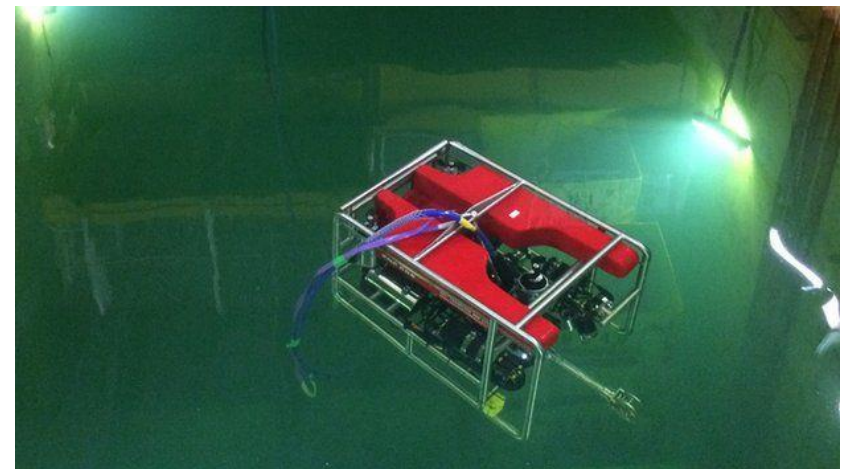
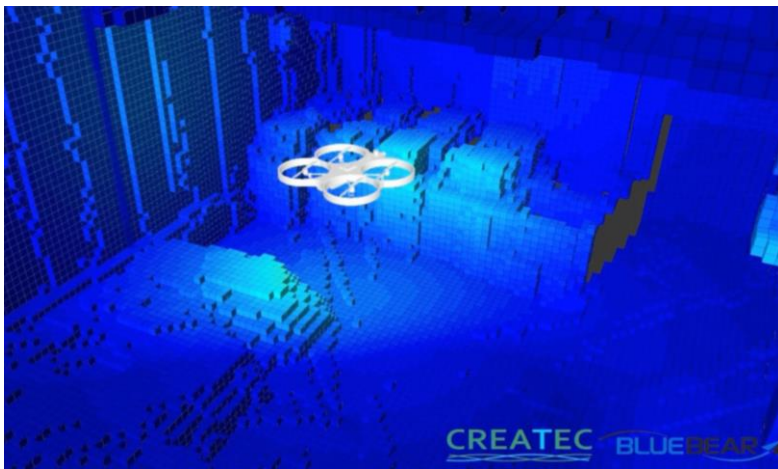
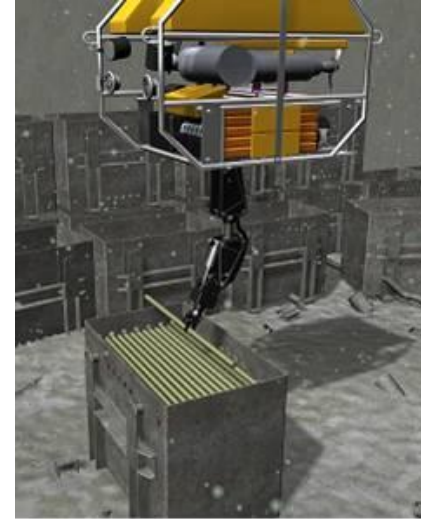
- Understand the arisings and therefore the options
- Consider the impacts on
 - High hazard and risk reduction
 - Environment
 - ALARP/BAT
 - Costs
- 10- 50 year look ahead
 - Geological Disposal Facility
 - 2040 for intermediate level waste
 - 2075 for high level waste
- Legacy waste retrievals
 - We have continued to seek the best available approach
- Spent fuel is not categorised as waste in the UK
 - Reprocessing waste handled in near real time
- Potential for significant and targeted innovation
 - Challenge the paradigm
 - Technically rigorous solutions
 - Commanding broad support from Regulators and key stakeholders



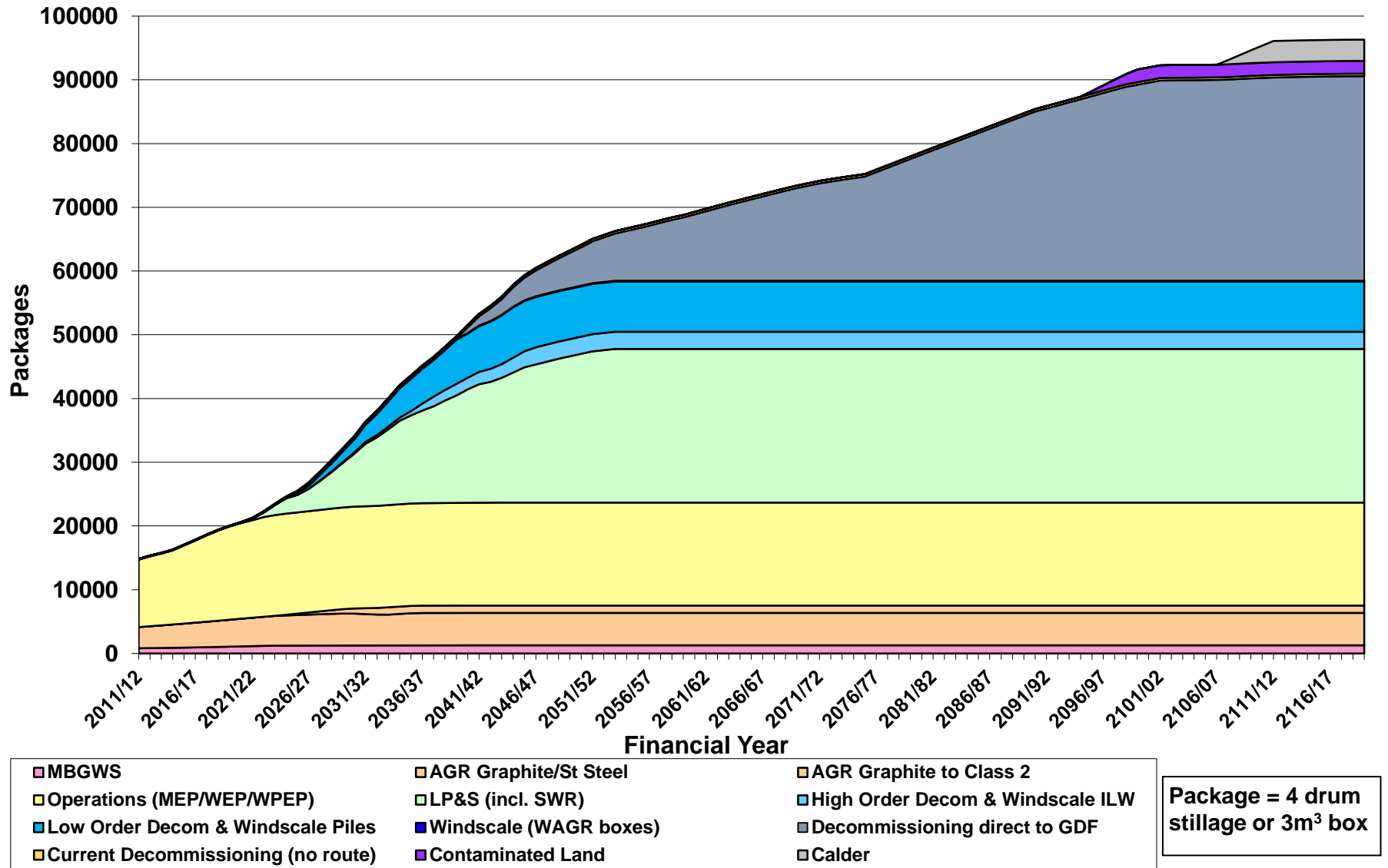
Challenging the paradigm – an example



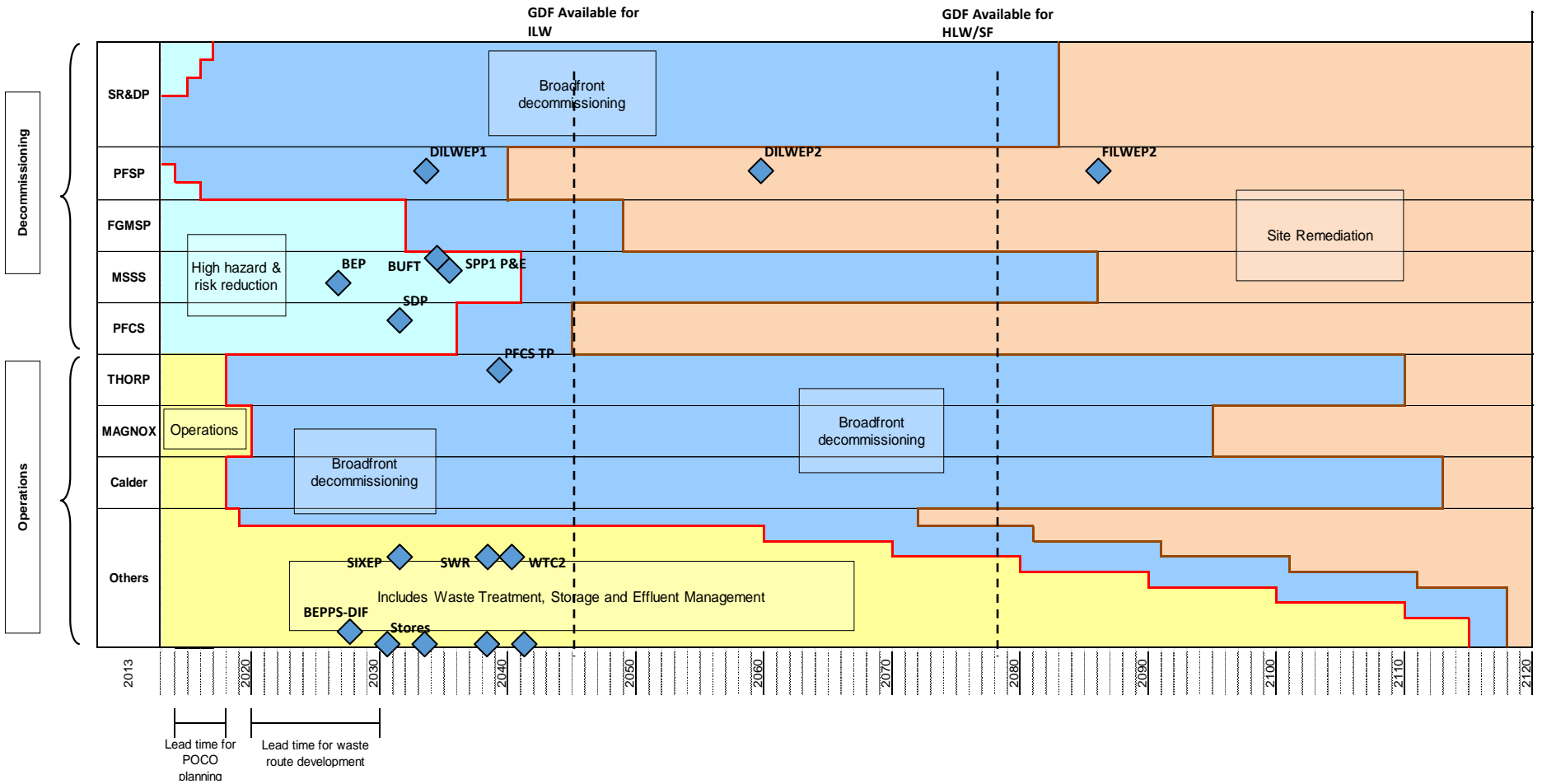
Innovative technologies



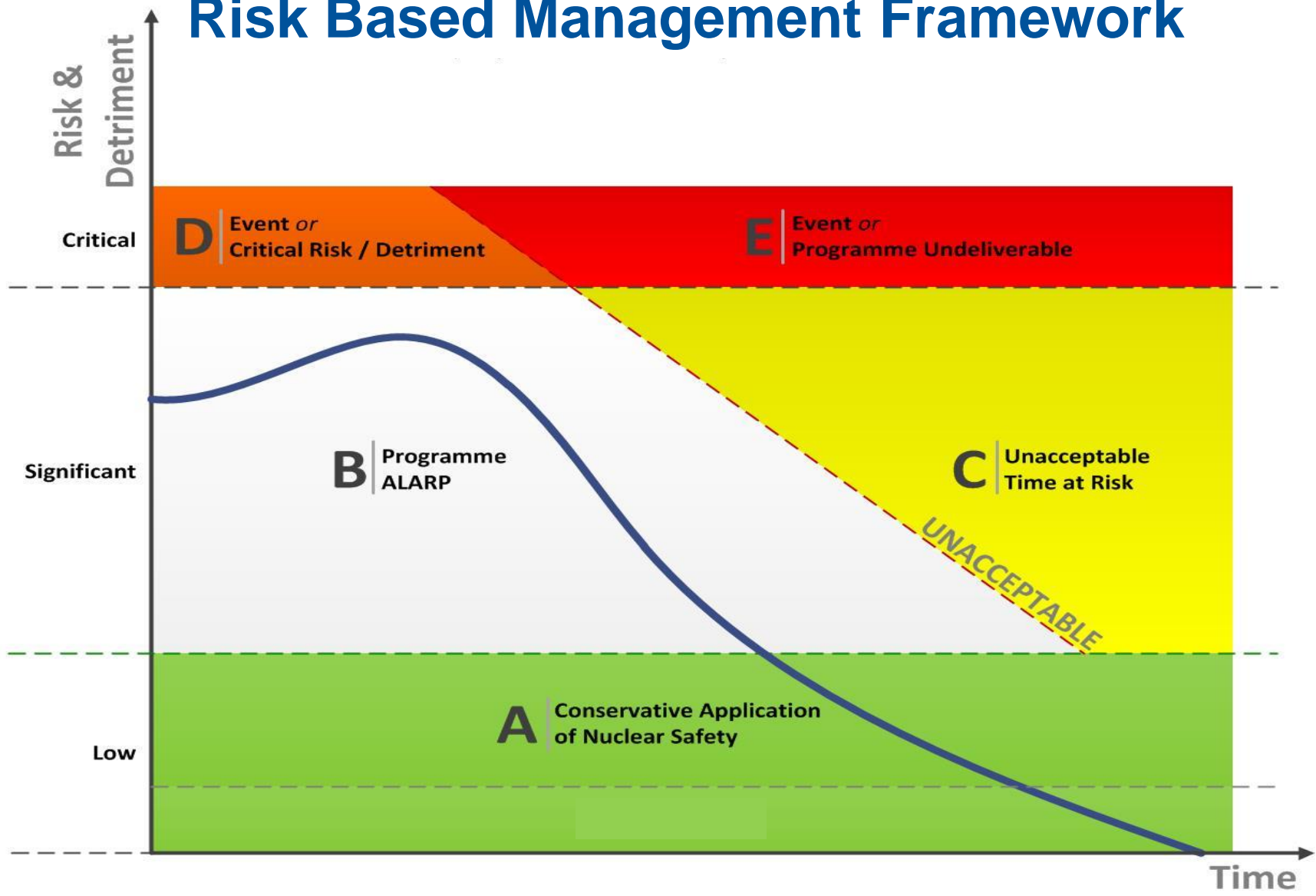
Understanding and planning



Strategy enabling End State delivery



Risk Based Management Framework



Regulation at Sellafield

- Robust, independent regulation – ENFORCEMENT
- Collaborative working to deliver hazard and risk reduction – ENGAGEMENT & ENCOURAGEMENT
- Demanding and effective Internal Regulatory function
- Efficient delivery through “Engagement Week” model
- Regulatory Interface Meeting
- Transparency and Publication

What next?

- Unrelenting focus on maintaining nuclear safety and security
- Successful transition completed – now wholly owned NDA subsidiary
- Driving fit for purpose solutions, such as
 - Pile Fuel Cladding Silo
 - Removal of ventilation stacks
 - Completion of Magnox reprocessing
 - Start-up of new HA Evaporator
- Effective and Efficient spend of public money, delivering lasting value
- Integrated waste strategy is key to effective delivery