NUCLEAR RISK INSURERS

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Jonathan Cooper
Claudio Mares

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Decommissioning in the UK

Nuclear Decommissioning Authority estate

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EDFE estate

- Advanced Gas-cooled Reactor stations
- Pressurised Water Reactor station

Nuclear Decommissioning Authority estate

- Magnox Ltd stations
- Sellafield
- Other sites

EDFE estate

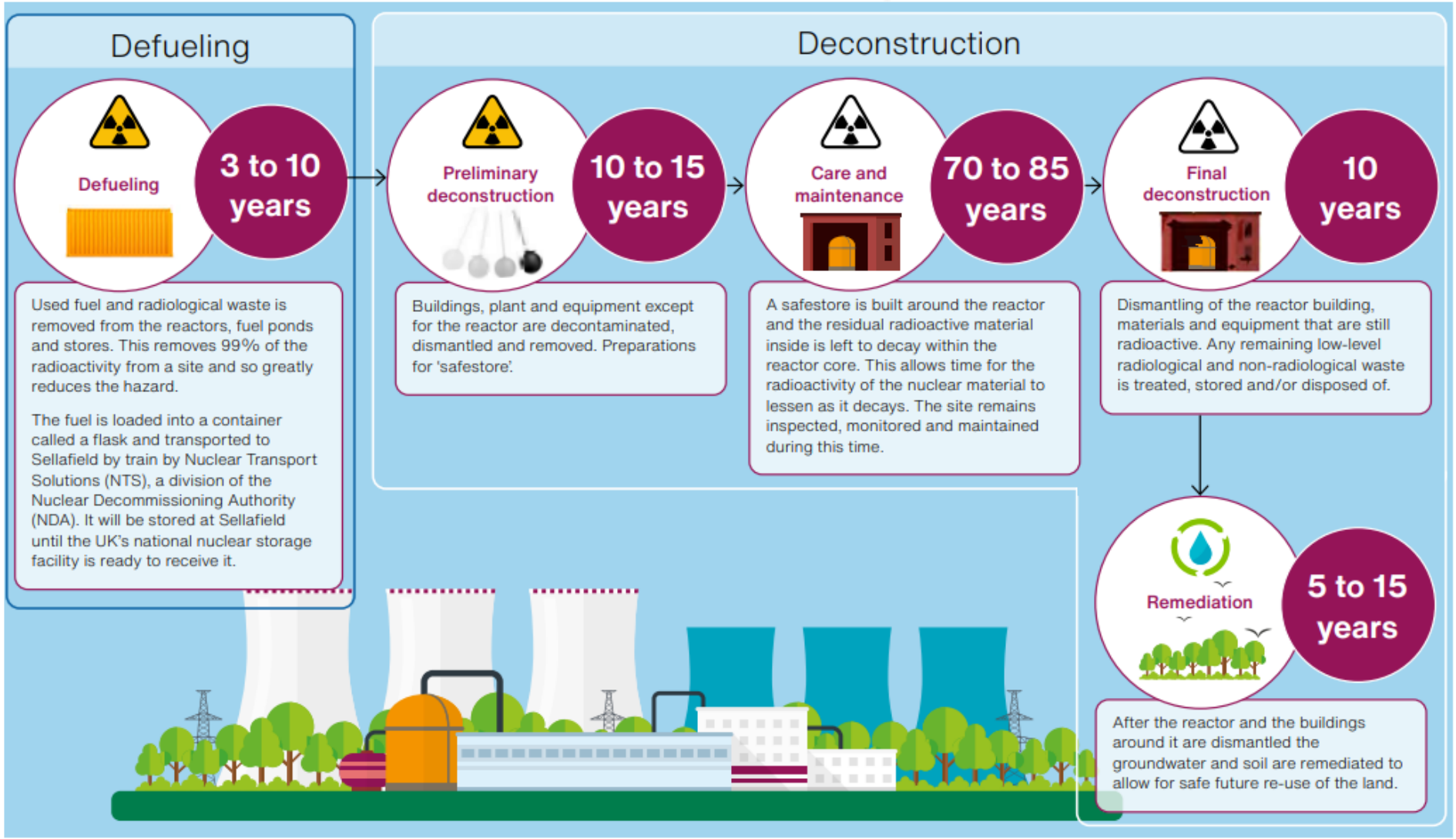
1. Torness
2. Hartlepool
3. Sizewell B
4. Dungeness B
5. Hinkley Point B
6. Heysham 1
7. Heysham 2
8. Hunterston B

- Only 1 of the 8 existing NPP's in the UK will remain operational by 2030 (SZB)
- All 7 AGR's to move into decommissioning
  - DNB
  - HNB
  - HPB (R3 off, R4 off end of Aug 22)
- HPC under construction
- SZC yet to be granted FID
- MAGNOX leading the way, EDF following
- By 2030, the ratio of operational to decommissioning plants will be 1-24 (2-24 if HPC is commissioned on schedule)

Source: National Audit office - The decommissioning of the AGR nuclear power stations Department for Business, Energy & Industrial Strategy

Decommissioning cycle

UK experience to date



Source: National Audit office - The decommissioning of the AGR nuclear power stations Department for Business, Energy & Industrial Strategy

Defueling: 3-10 years

Fuel is removed from the reactor and ponds significantly reducing the nuclear hazard however, risk remains.
Fuel is moved for reprocessing by rail/road

Defueling/Deconstruction

*MAGNOX Optimized Decommissioning Program (MODP) using the 'lead and learn' model - Bradwell and Trawsfynydd

- Fuel pond clean up
- Fuel Element Debris (FED) – Separation of active material from inert waste, dissolution and discharge.
- Standardised Intermediate Level Waste (ILW) model.
- Plant and Structures - De-planting, demolishing, and remediating structures.

MODP benefits to date

£1.8 billion saved using this approach compared to previous decommissioning cost estimates

34 year reduction from the total required to place all sites into C&M - Reduction in insurance exposure.

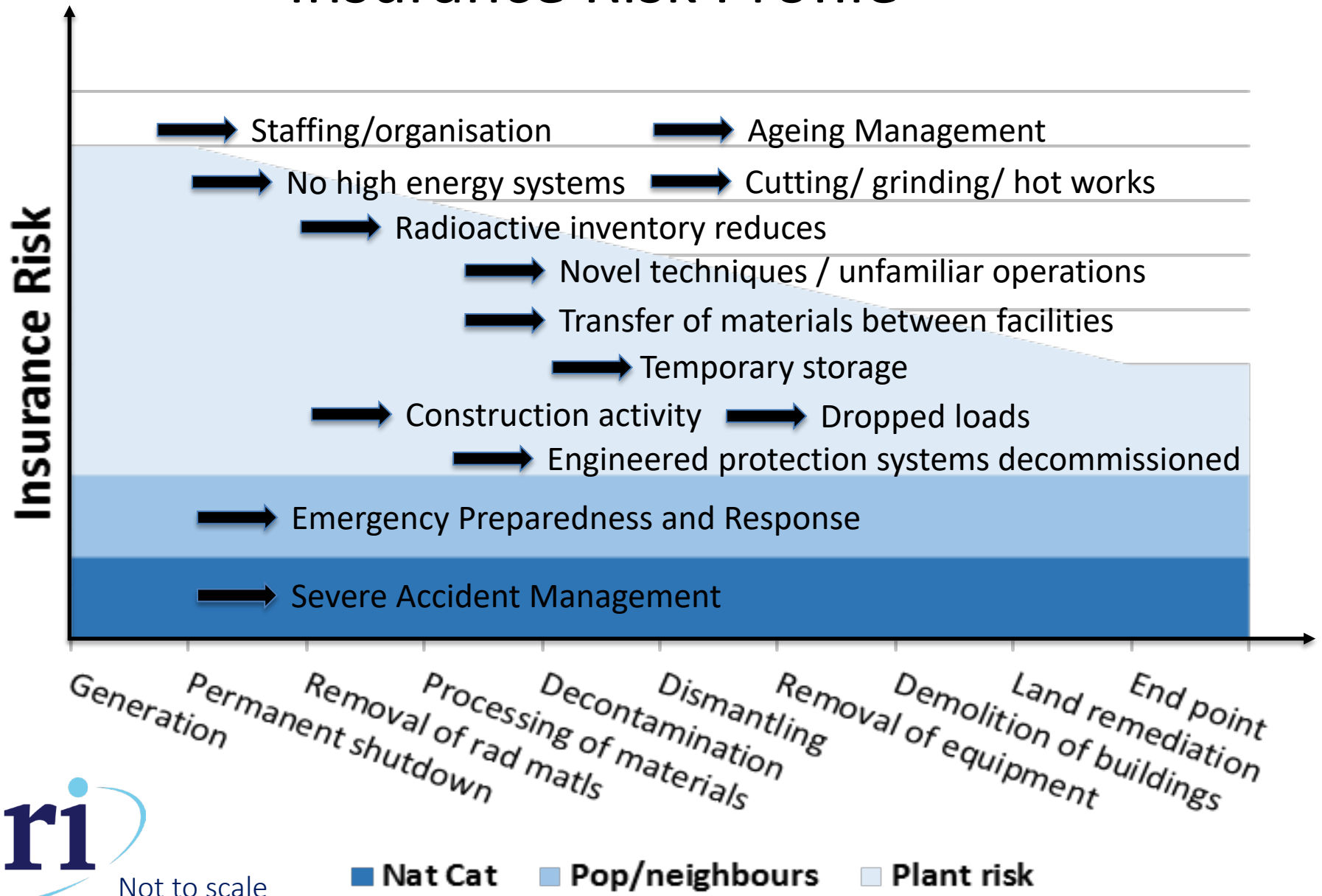
Bradwell and Trawsfynydd successfully moved into C&M in 2015 & 2016 respectively.

Considerations

- Learn from those that have experience
- Availability of expertise – Global demand for specialist radiological workers
- Embrace technology & innovation – FED, drones, robots, AI, vacuum excavation
- Planning and preparation: engagement of key contractors, ID & categorise radiological waste, ID of key risks

*Source: https://www.powermag.com/uk-uses-lead-and-learn-strategy-for-magnox-reactor-fleet-decommissioning/

Insurance Risk Profile



Not to scale

Throughout the various phases, material damage and third party liability insurance (including transit liability) protection is available.

Through NRI's close cooperation with The China Nuclear Insurance Pool (CNIP), we will be able to support you.

Decommissioning Risk Management

Insurance considerations also include:

- Safety analysis and assessment
  - Required for each stage in programme, must remain current
  - Identification of fault sequences with potential dose to public
  - Probabilistic assessment unlikely
- Safety systems
  - Reliability and availability claims on active systems
  - Passive safety features
  - Reliance on admin controls
- Nuclear Safety Culture
- Contractor use & oversight
- OPEX
- Site Security
- Accelerated, faltering or changing programmes
- A major accident could lead to unscheduled decommissioning resulting in a shortfall in the decommissioning fund

Contact details

Jonathan Cooper
Risk Engineer
jonathan.cooper@nuclear-risk.com
+44 20 7929 8941

Claudio Mares
Senior Underwriter
claudio.mares@nuclear-risk.com
+44 20 7929 8937

NUCLEAR RISK INSURERS

Nuclear Risk Insurers Limited, 5th Floor, 18 St Swithin's Lane, London EC4N 8AD
t + 44 (0) 20 7621 1100 • f + 44 (0) 20 7621 1199 • enquiries@nuclear-risk.com • www.nuclear-risk.com