



What happens after decommissioning?

An Onshore Perspective



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What happens after Decommissioning?



- **What happens after Decommissioning...?**
 - Onshore Operations are not **AFTER** decommissioning,
 - They are essentially the end of the Decommissioning process...
- **“Getting it to the Beach”...**
 - ...is only part of the story...

Hopefully we can provide some insight into the onshore perspective.



Decommissioning – an Onshore perspective:

- **Background Information on Shetland Decommissioning**
 - **Who we are, Where we are, What we've achieved**
- **What can be done to Reduce Costs ?**
 - **Project Organisation and Optimisation**
 - **Effective / Efficient Waste Management**
 - **Re-use of equipment – the practicalities and opportunities**
- **How are Shetland Decommissioning Integrating these ideas?**
 - **Working with contractors/operators**
 - **Investigating infrastructure requirements**



Background - Decommissioning Interest began in 1999



● **Market Development**

- Established in 1999 to market and develop Decommissioning opportunity for Shetland
- Contract award in 2005 from Aker Solutions and Total for the Frigg Cessation Project
- Currently working on development & feasibility studies for Topsides, Jackets, Subsea & Single Lift

● **Operational Philosophy**

to build on Best Industry practice to develop Shetland into a

“centre of excellence”

for Decommissioning



Background - Company Stakeholders



● **Shetland Decommissioning**

- The marketing name for a joint venture / cooperation agreement between **PetersonSBS [PSBS]** and **Veolia Environmental Services [Veolia]** with support from **Lerwick Port Authority [LPA]**

● **Stakeholders Today**

- **Peterson SBS** Develop & Operate the Facility Providing Marine & Quayside Service
- **Veolia** provide the Decontamination, Deconstruction, Waste Management & Environmental Services
- **Lerwick Port Authority** Operate the Harbour



Background - Geography



Background - Geography



Background - Geography



Background - Geography



Background – Lerwick Harbour

- All Weather Port
- Open 24/7
- Over 3,000m of Quayside
- Excellent Freight Links with the UK Mainland
- Local Support Services with 30 years of Oil & Gas Experience

Drill Cuttings Plant

Energy Recovery Incinerator

Fabrication Facility

Decommissioning Facility

Greenhead Base

New Landfill Site



Background – Decommissioning Facility



● Decommissioning Facility

- Concrete Pad with impermeable membrane - covering an area of ~20,000 sq. m.
 - Includes Wash Bay, Bunded Storage, Quarantine Area & Emergency Stations
- The Pad is Fully Enclosed - all drainage leads to Class 1 Interceptor
 - Fully Licensed with PPC permit issued by SEPA
 - RSA authorisation approved for receipt, handling and temporary storage of LSA / NORM



Experience - Piece Small



● Piece Small Operations

- Piece Small Decommissioning of platform MCP-01 started in 2006
- The 1st Campaign ran from Aug-Dec 2006
- This was completed in 2008 with the 2nd Campaign running through Jan-Dec 2008
- The Greenhead Base acted as the forwarding supply for all of MCP-01 Logistics requirements
- All piece-small Waste materials were processed through Greenhead



Experience – Large Scale Decommissioning Operations



- **Load-in of TCP2 Module Support Frame**

- **8730 Te Structure** – with grillage and trailers = 11,100 Te crossing quay
- **Months of preparatory Engineering and Construction works required onshore**
- **358 axle lines mobilised** - Europe and America and Australia
- **Significant Barge works required in advance of operations – 3 weeks**
- **Operations scheduled for specific date and tide conditions**
- **Completed on Schedule and without significant incident or LTI**



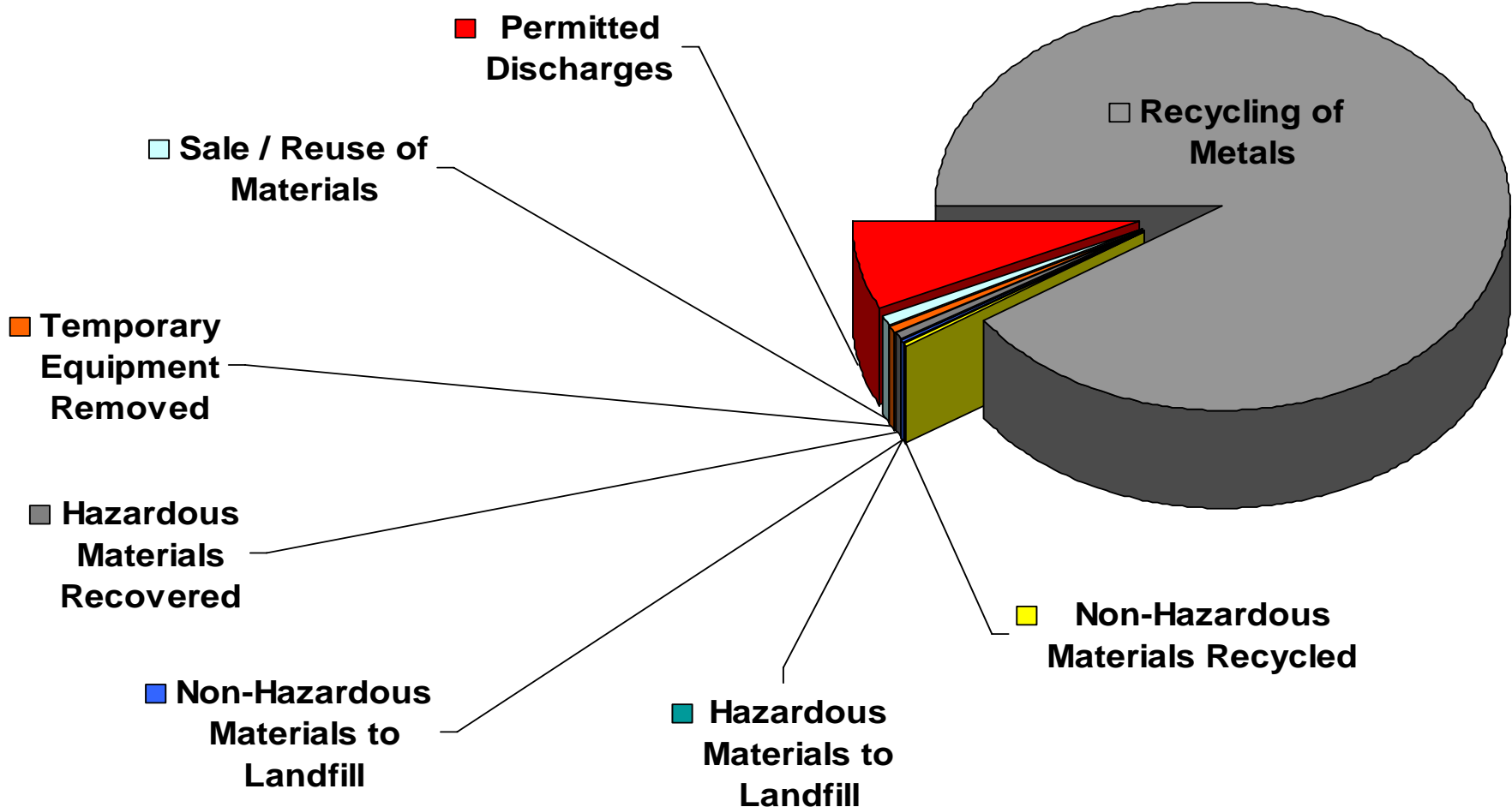
Experience – Onshore Decommissioning



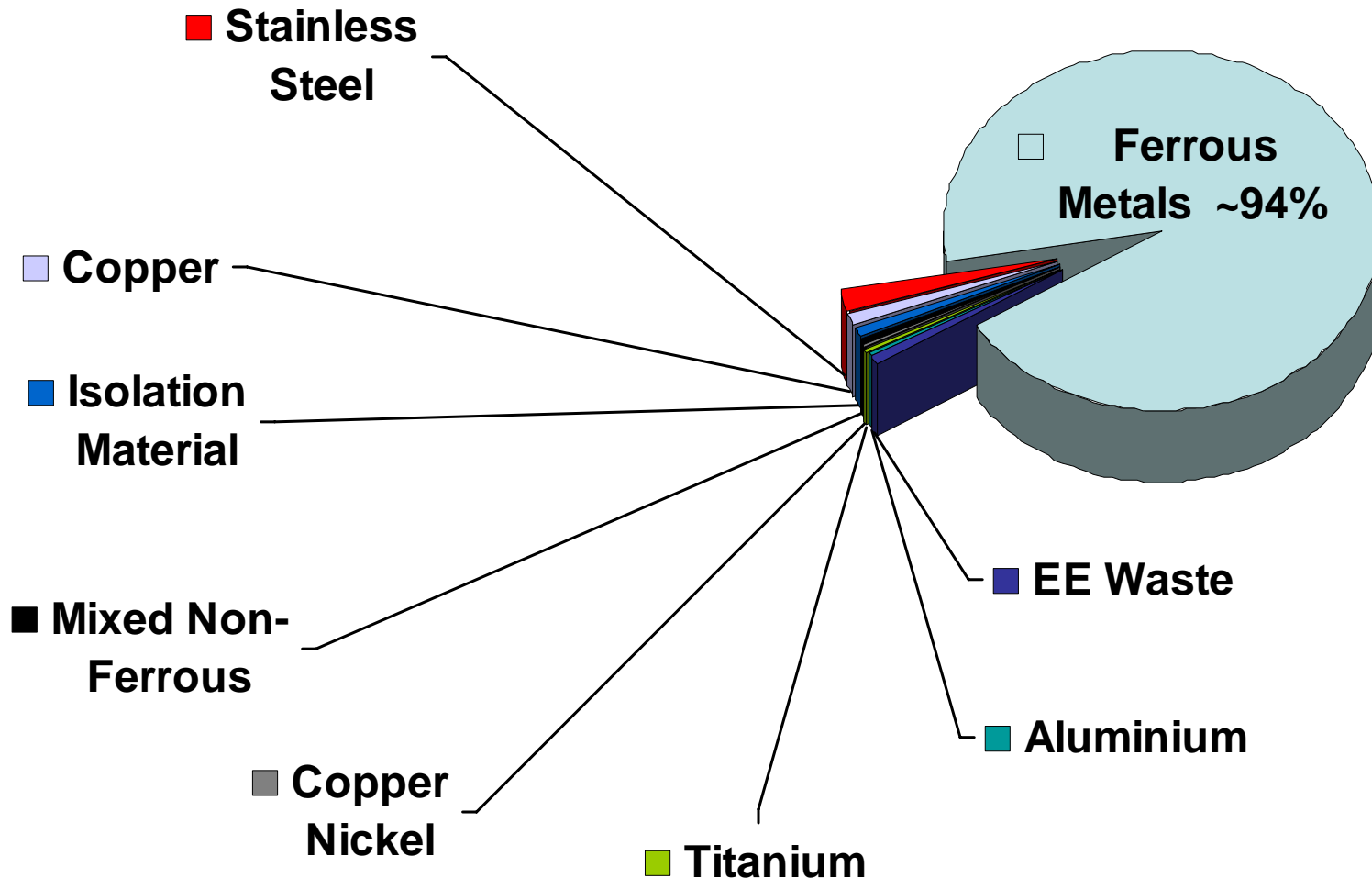
- **Decontamination & Deconstruction of TCP2 Module Support Frame**
 - **12 weeks of Decontamination works**
 - Establishing Safe Access, Detailed Inventory and finalising of the Deconstruction Plans
 - Handling: Asbestos, WEEE, NORM, Insulation Material, etc
 - **5 months of Deconstruction works**
 - Reduction by Machine maximised - Leibherr 984 + 19Te LaBounty shear
 - Hot-work & Pre-cutting required due to steel thickness (Up to 100mm)
 - **Full Environmental Accounting**



Waste Management – Indicative split of fractions



Waste Management – Indicative Metal Recycling Breakdown



What can be done to Reduce costs and Environmental Impacts?

- **Options for improvement/optimisation**

- Have a more integrated approach to the programme management of decommissioning from before CoP – not a staged approach
 - Engage the Onshore project team early in the design process to ensure Load-in and Deconstruction are taken into consideration
- Get actual characterisation data early – taking samples offshore, allows for more investigation into recovery options
- Plan the **Post Operational Clear Out [POCO]** phase based on decommissioning to optimise activities conducted offshore
- Full understanding of the programme work breakdown structure to remove duplication and smooth workflow



What can be done to Reduce costs and Environmental Impacts?

- **Effective/efficient waste management**

- Link into POCO offshore – focus on waste: “Is this activity going to create a problem onshore?” Built into decom planning mind set
- Plan activities so that cleaning only gets done once and the records are maintained and handed over to prove this
- Only maintain during NUI what is needed to maintain safety, any equipment needed during lifting operations, access equipment and recognised items with an identified re-use/re-sale route
- Offshore Sampling of wastes will enable more effective waste management planning
 - Allows Waste routes to be identified and fully costed – allowing for reduced risk exposure and hence reduced cost to client.



Re-use / Re-sale of Equipment – the practicalities

- **Considerations & Obstacles:**

- **Oil & Gas Industry does not generally want 2nd hand equipment**
- **Equipment from Decommissioned platforms may be 20-30 yrs old**
 - and hence can be out-moded / obsolete or at the end of its design life
- **Lack of Maintenance from CoP to Onshore**
- **Lack of certification for equipment when it arrives**
 - No maintenance or No certification = low value or lack of interest
- **Value of equipment vs. the Logistics of retrieving the equipment.**
 - Cutting access holes to extract the equipment deep from a structure
 - Rigging and Crane requirements for extraction
 - HSEQ issues
 - Delays to deconstruction programme from performing extraction
 - If you try to extract during deconstruction you introduce men to the workface and HSE issues
- **Must be wary of storing these items “in the garage” for a rainy day...**



Re-use / Re-sale of Equipment – opportunities

- **Opportunities:**

- **Specialist equipment can command high re-sale value if the buyer can be found**
- **Opportunity to provide RARE spares for older equipment in service on other platforms / fields**
- **Re-use of concrete structures should be investigated wherever possible**
 - The energy requirements for recovery / recycling are excessive
 - Re-use opportunities as Marine foundations or similar presents excellent added value to Waste hierarchy

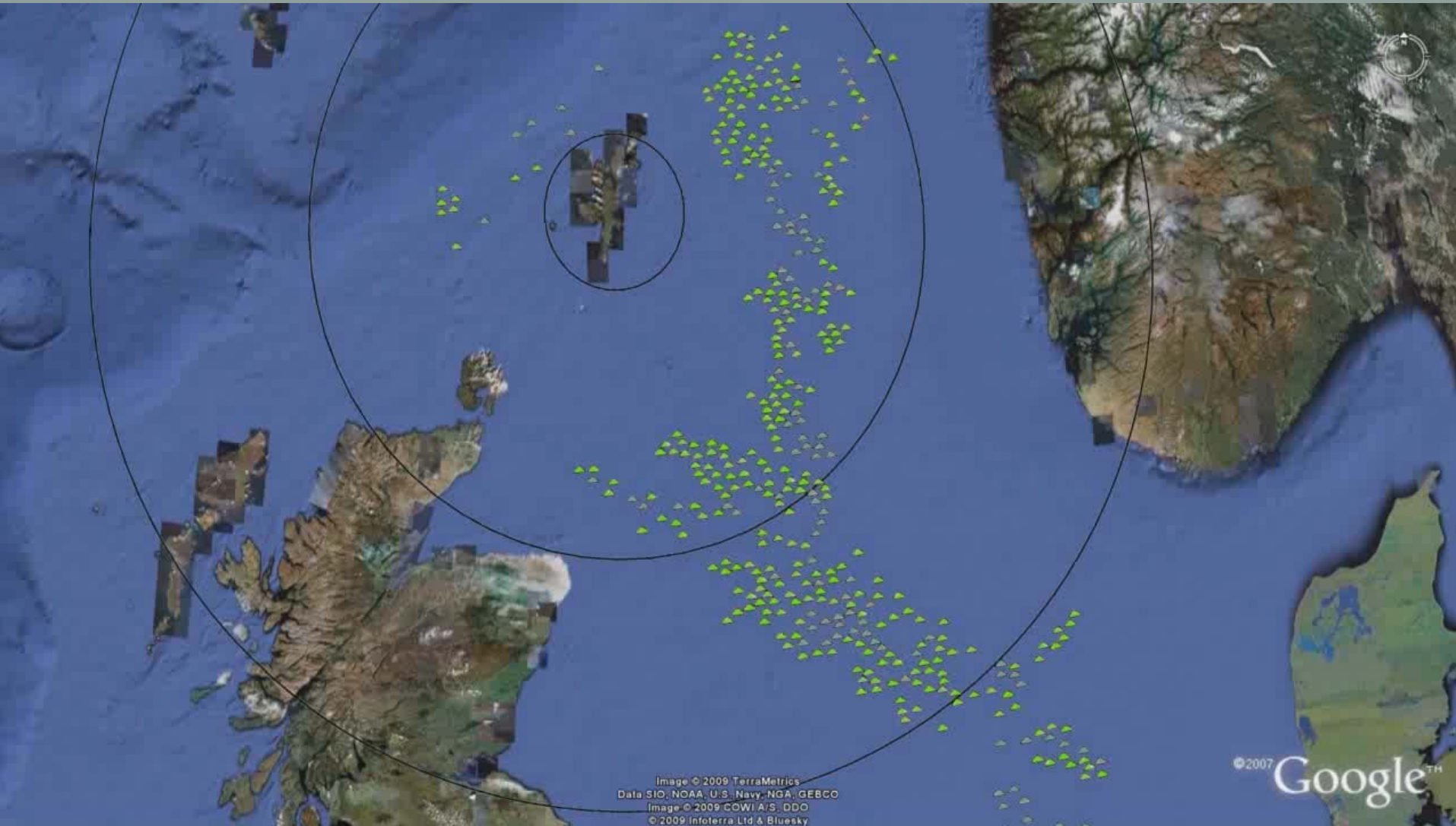


How are Shetland Decommissioning Integrating these ideas...

- **Marketing our Capabilities to the industry**
 - **Taking a proactive approach to integrating onshore disposal into the decommissioning design process**
 - **Forming collaborative relationships with operators / contractors**
 - Develop infrastructure investment process over several projects
 - Programme certainty is key to the development of facilities and stimulating the market to rise to the challenge
- **Optimising our Onshore solutions to client and contractors' specific requirements**
 - **Identified and Investigating Development options for future projects**
 - **Be it Subsea equipment, Piece Small materials, Modular receipt or Single Lift**



The Future – Potential Infrastructure Developments



The Future - Study works & Development Options - Animation



The Future - Study works & Development Options - Animation



Existing

The Future - Study works & Development Options - Animation



Development option - South

146 m

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The Future - Study works & Development Options - Animation



Development option - North

The Future - Study works & Development Options - Animation



Development option – North
Phase 2 – extend to -20m

The Future - Study works & Development Options - Animation



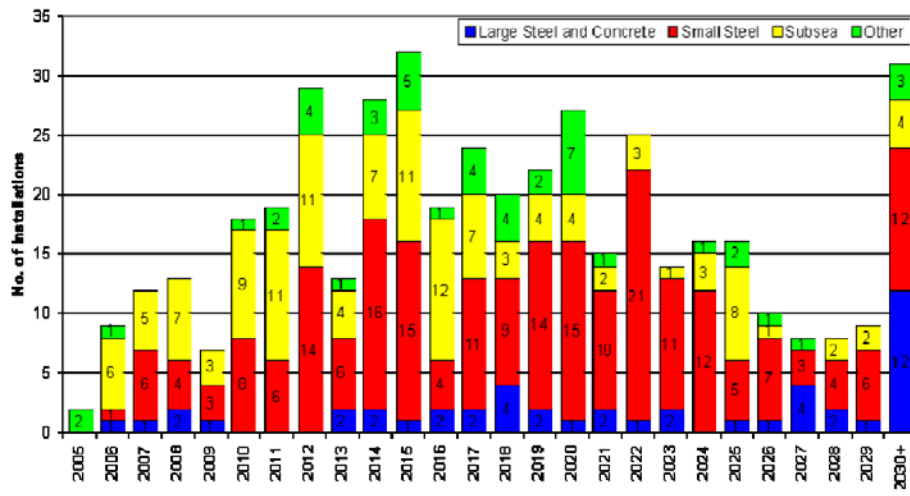
The Future - Study works & Development Options - Animation



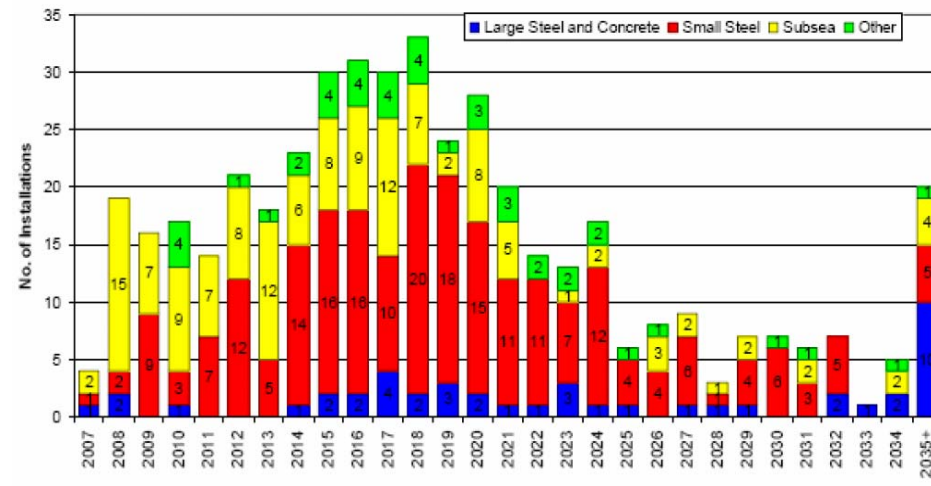
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The Future – Uncertainties



2005



2007

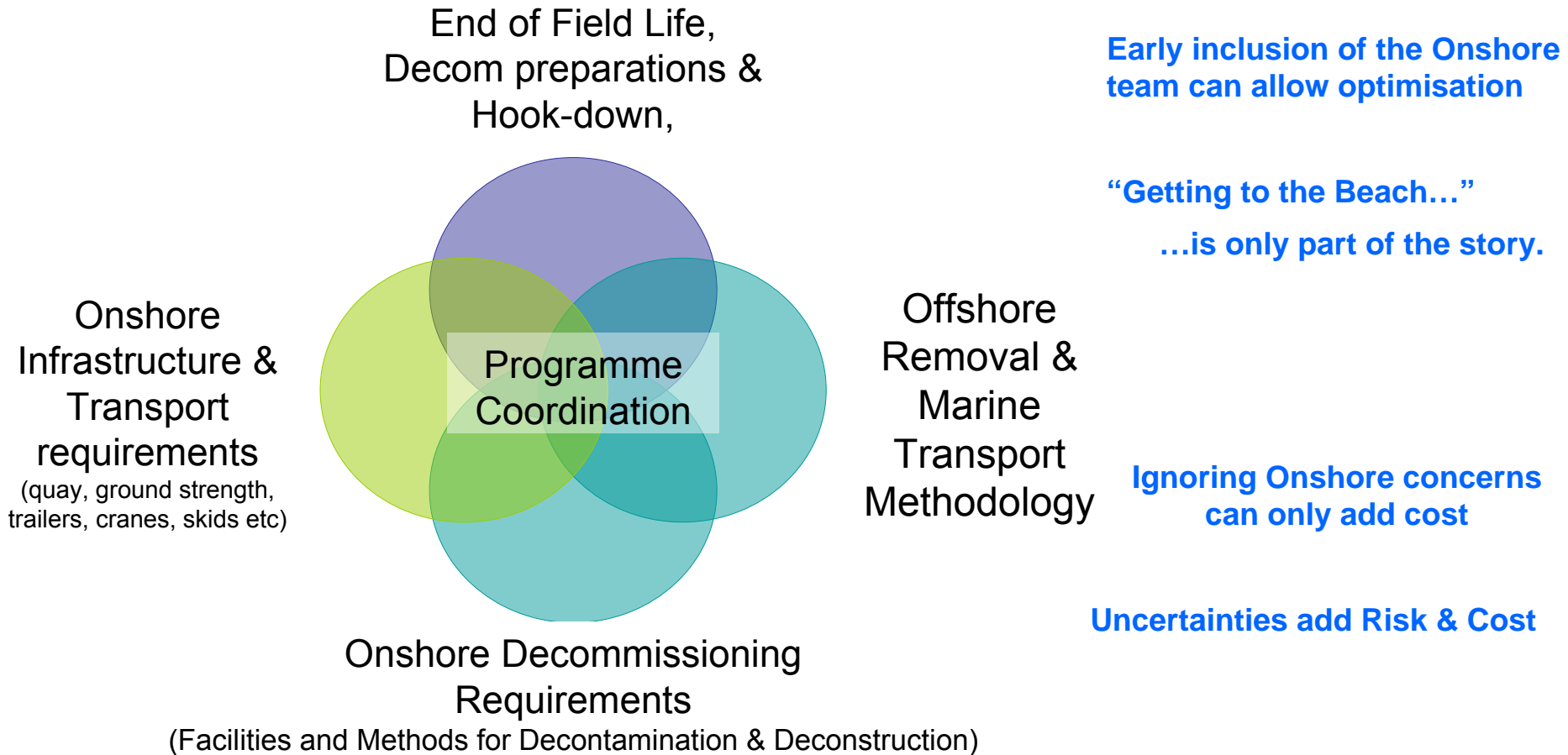
- **The Uncertainties:**

- **Market Timing – Projects always slip to the right...**

- **These uncertainties hinder investment.**



Integrated Approach – to Project Design & Programme Management





Thank you – any Questions



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