



FOR THE OIL AND GAS INDUSTRY IN SOUTH AFRICA

Financial Provisioning for Contaminated Land

PRESENTED BY PERRINE MARTIN AND KATLEGO MAAKE FROM ERM

Sustainability is our business

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Presenters



Perrine Martin
Consulting Director

- Perrine Martin finished her Master in Environmental Engineering in 2009 with a specialization in soil and water management.
- She joined the contaminated land team at ERM in Brussels, Belgium in 2010 and transferred to the ERM Africa division in 2014.
- She has 14 years of experience in the environmental industry and is actively involved in programme management for international companies, supporting the clients with corporate environmental risk management, environmental due diligence and contaminated land investigations and remediation.



Katlego Maake
Principal Consultant (Pr.Sci.Nat)

- Katlego Maake finished his Master in Hydrogeology in 2023 with specialization on groundwater flow mechanisms within karst aquifers.
- Katlego is professionally registered scientist with over 9.5 years experience on contaminated land, waste and mining hydrogeology projects.
- His experience ranges from conducting environmental site assessments, remediation, waste characterisation, due diligence on confidential transactions and preparation of liability estimates for oil and gas clients in South Africa.

- 1 Regulatory Background and Requirements
- 2 Types of Provisioning
- 3 Methodology for Calculating Financial Provisions
- 4 Financial provisioning – Benefits
- 5 Appendix: Examples of Financial Provisioning Vehicles

Regulatory Background and Requirements

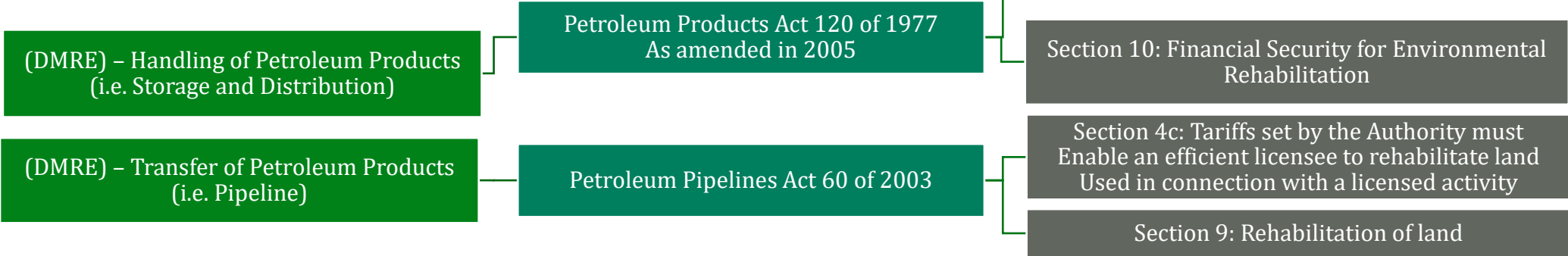
ALL



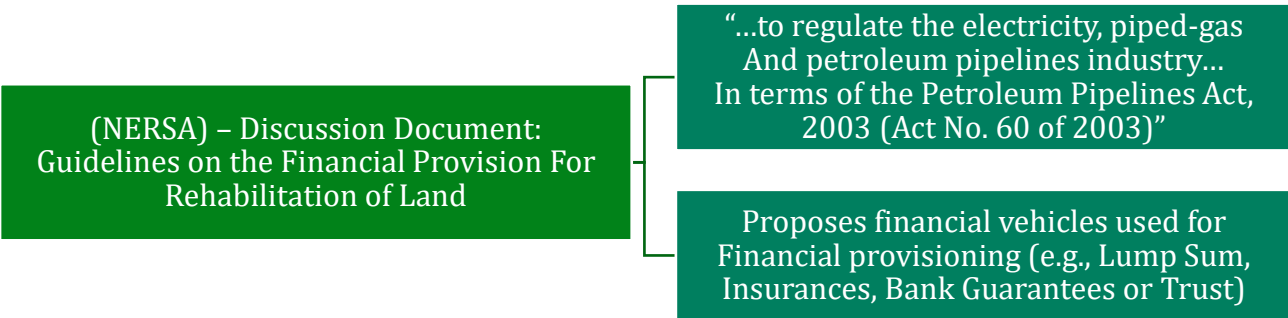
UPSTREAM



MIDSTREAM & DOWNSTREAM



MIDSTREAM

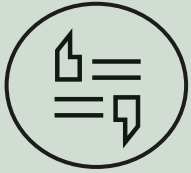


Types of Financial Provisioning for Contaminated Land

Known Liabilities

VS

Contingent Liabilities



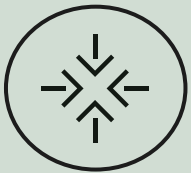
Definition

Obligations that are certain and quantifiable; Contamination has been identified, and costs are reasonably estimated.



When Is It Applicable?

- Clear evidence of contamination;
- Legal obligation to remediate.
- Duty of care



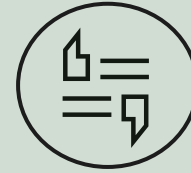
Example

- Remediation of land identified as contaminated through assessments;



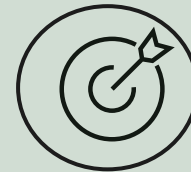
Financial Provisioning

- Funds must be set aside or financial assurance provided (e.g., trust funds, bank guarantees).
- Provisioned amount based on cost estimates of remediation.



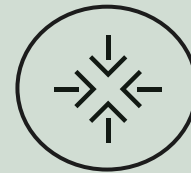
Definition

Potential obligations dependent on uncertain future events; Uncertain occurrence, timing, or amount.



When Is It Applicable?

- Uncertainty about contamination existence or regulatory requirements.



Example

- Unknown contamination pending further investigation;
- Potential future obligations due to land use change



Financial Provisioning

- No immediate funds set aside; disclosed in financial statements.
- Reclassified as known liabilities if likelihood increases.

IAS 37 - Recognition of a Provision



Provision must be recognised if, and only if

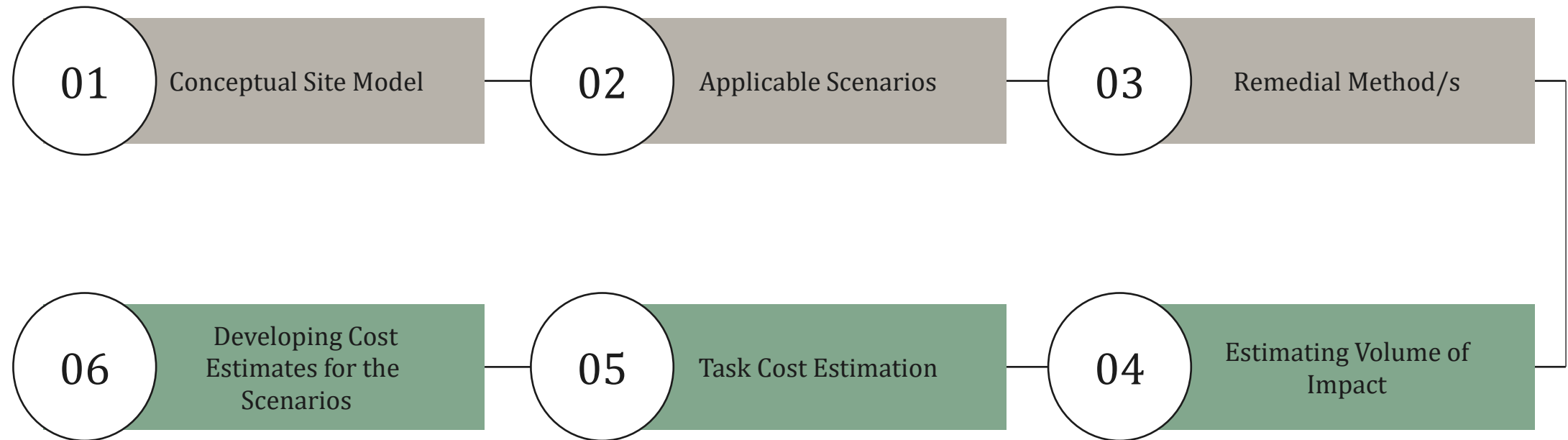
1. A present obligation (legal or constructive) has arisen as a result of a past event (the obligating event),
2. Payment is probable ('more likely than not'), and
3. The amount can be estimated reliably (even though timing or amount is somewhat uncertain)



If the liability obligation does not meet items 2 and 3, it is considered a contingent liability and a provision is not required (but disclosure is)

Calculating Methodology – Known Liabilities

Use of the most recent soil and groundwater data for the site to provide likely cost ranges for future potential management of identified hydrocarbons in the subsurface from client's operations at the time of exit



- If site conditions change, a **re-assessment** of rehabilitation requirements will be necessary.
- NERSA requires an annual review of the reserve amounts.

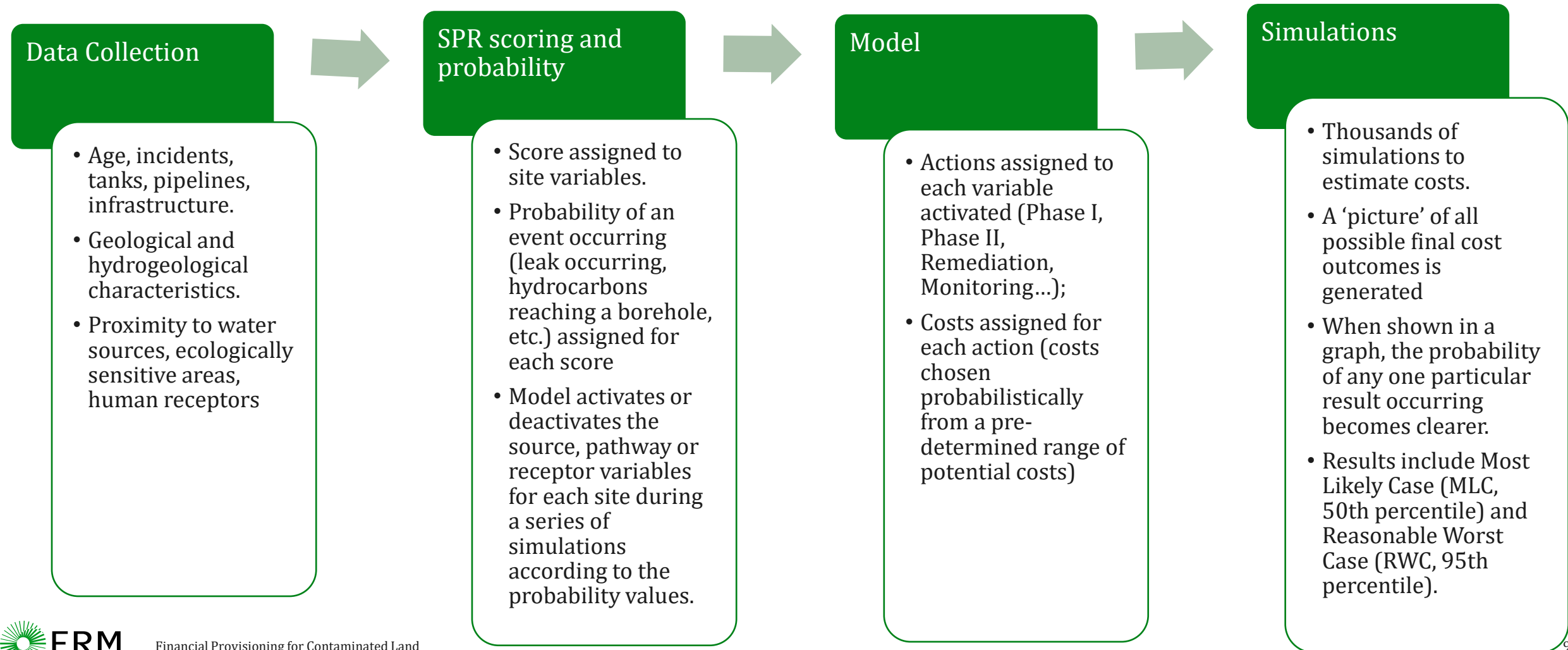
Calculation Methodology – Known Liabilities

Assumptions normally considered by ERM – Can be site and client specific

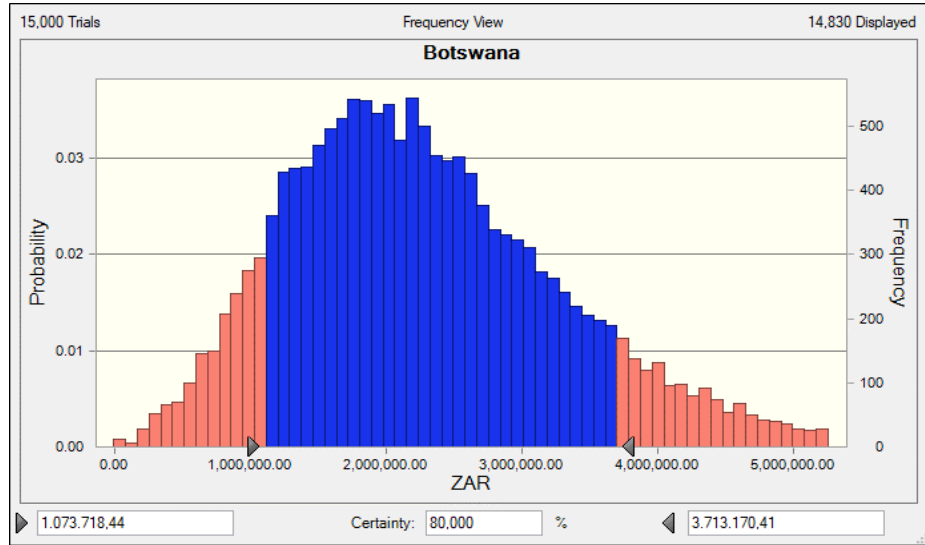
- The Pipeline (Act 60 of 2003) and Petroleum Products (Act 120 of 1977 as amended in 2005) Acts of refers to the rehabilitation of Land, which is inferred by ERM to mean ‘remediation’ as defined in the National Environmental Management: Waste Act (NEMWA, Act no 59, 2008), and specifically as it relates to Part 8 (as amended) which outlines the process for the assessment and remediation of contaminated land.
- Rehabilitation is inferred by ERM to mean ‘remediation’ as petroleum handling sites do not have residue deposits to rehabilitate after site exit and are mostly repurposed for other activities (e.g. container handling storage facilities, residential or industrial activities) or infrastructure is removed before accessing soil and groundwater for remediation.
- The calculation of the rehabilitation costs is based on the requirements for remediation as described in Part 8 of NEMWA, as well as considering the National Norms and Standards for the Remediation of Contaminated Land and Soil Quality (no. 37603, May 2014).
- Land use of the site and the site’s immediate surrounds remains unchanged or change is clearly defined.
- No costs for demolition, removal, replacement or rebuilding of existing fuel infrastructure or other site infrastructure is included. It is assumed that full and free access to the subsurface will be available to conduct soil and/or groundwater management/rehabilitation activities.
- Cost only account for soil and groundwater remediation within the boundaries of Part 8 of NEMWA and do not account for surface infrastructure decommissioning and demolition (including contaminated rubble) which is estimated separately. The cost for other permitting and/or authorisation are not accounted for either in the cost scenarios unless specifically required.
- There are no ongoing unidentified sources of hydrocarbons to the subsurface at the site.
- Cost estimates have been calculated using current costs with no escalation, and do not represent the net present value for potential spend in future years.

Calculation Methodology – Contingent liabilities

Approach - Inherent uncertainties can be most effectively managed using cost-probability distributions using Monte Carlo analysis following a Source-Pathway-Receptor (SPR) approach (aligned with NEMA)



Calculation Methodology – Contingent liabilities



- Monte Carlo modeling estimates liability provisioning amounts by simulating a wide range of possible outcomes.
- It runs thousands of scenarios using different assumptions and variables.
- This method provides insights into the likelihood of various outcomes.
- Helps in understanding the range of possible costs, from optimistic to pessimistic scenarios.
- Particularly useful in situations with high uncertainty.
- Aids in making informed decisions by showing the probability of different outcomes.

Assumptions

- Estimates for soil and groundwater restoration, excluding operational and capital budgets
- Cost estimates have been calculated using current costs with no escalation, and do not represent the net present value for potential spend in future years.
- Excludes outlier costs from significant releases or litigation.

Financial Provisioning – When?

1. Acquisition and investment decision

2. Asset Management and Operations

3. Stakeholder's communication

4. Asset decommissioning and Closure



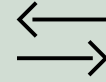
Effective Reserve Rationalisation is Essential for Mitigating Environmental Liabilities, Optimising Financial Performance, and Ensuring Long-Term Sustainability



Ensure adherence to **Reserve Policies & Procedures** including triggers & forecasting approaches to uphold transparency and accountability, ensuring consistency



Share Price Stability: Safeguard shareholder confidence by effectively managing liabilities and allocating reserves prudently



Predict and Anticipate Changes: Utilize predictive modelling to foresee future liabilities and proactively address emerging trends (environmental, regulatory)



Reduce Liabilities, Optimise Cash Flow: Mitigate potential liabilities and optimise cash flow strategically to bolster balance sheet



Utilise **Financial Cost Modelling** (Monte Carlo) with probabilistic output for dynamic provision adjustments to ensure accuracy and relevance of reserve allocations



Pre-Acquisition Portfolio Risk Review: Assess environmental liabilities before acquisitions to mitigate risks associated with acquired assets



Digital Dashboard for Stakeholder Accessibility: Provide stakeholders with real-time access to relevant data, facilitating informed decision-making and audit processes as well as trend assessment



Enabled **"Clean-Break" LBO Sale:** Minimise liabilities to facilitate smooth divestiture, Enhance attractiveness to potential buyers through reduced indemnity requirements

Thank you

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Examples of Financial Provisioning Vehicles



Environmental Insurance Policies

- Covers costs for spill clean-ups and third-party damages.
- Ensures funds are available for unforeseen environmental impacts.



Internal Reserves

- Allocated budget for environmental compliance and remediation.
- Flexible resource for ongoing or unexpected obligations.



Trust Funds/Escrow Accounts for Decommissioning

- Regular contributions accumulate for future site restoration.
- Common in industries with long-term environmental liabilities.



Letters of Credit

- Guarantees funds for environmental obligations.
- Assurance to regulators for compliance.



Bank Guarantees

- Ensures funds for cleanup if a company fails to perform.
- Provides financial security to cover environmental restoration.



Performance Bonds

- Covers potential environmental damage during construction.
- Ensures compliance with regulatory requirements.