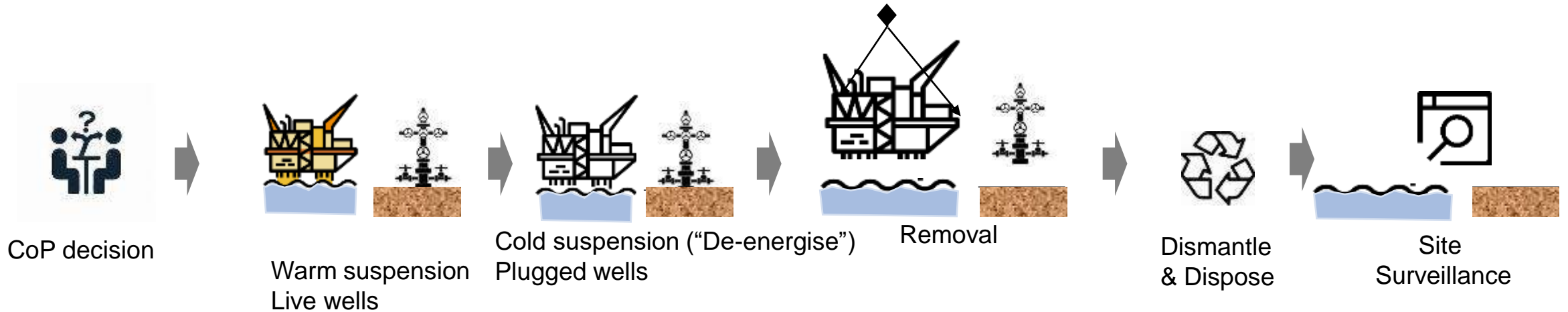


# Module 1a: An overview of the decommissioning process

from late life operation, cessation of production (**CoP**) to decommissioning



5 years prior to Removal

- Late life maintenance activities
- Form decom. project team
- Pre-decom. surveys
- Data gathering, Studies
- **Stakeholder engagements**

2 years prior to Removal

- Prepare onshore demolition yard
- Mobilise equipment
- Well plugging
- Hydrocarbon free (de-oil, de-energise, isolate)
- Removal preparatory work

- Site restoration
- Cutting
- Removal
- Waste management

- Plan to execute decommissioning- prepare Decommissioning Plan, waste management plans, EIA, contracts etc

# Stakeholders

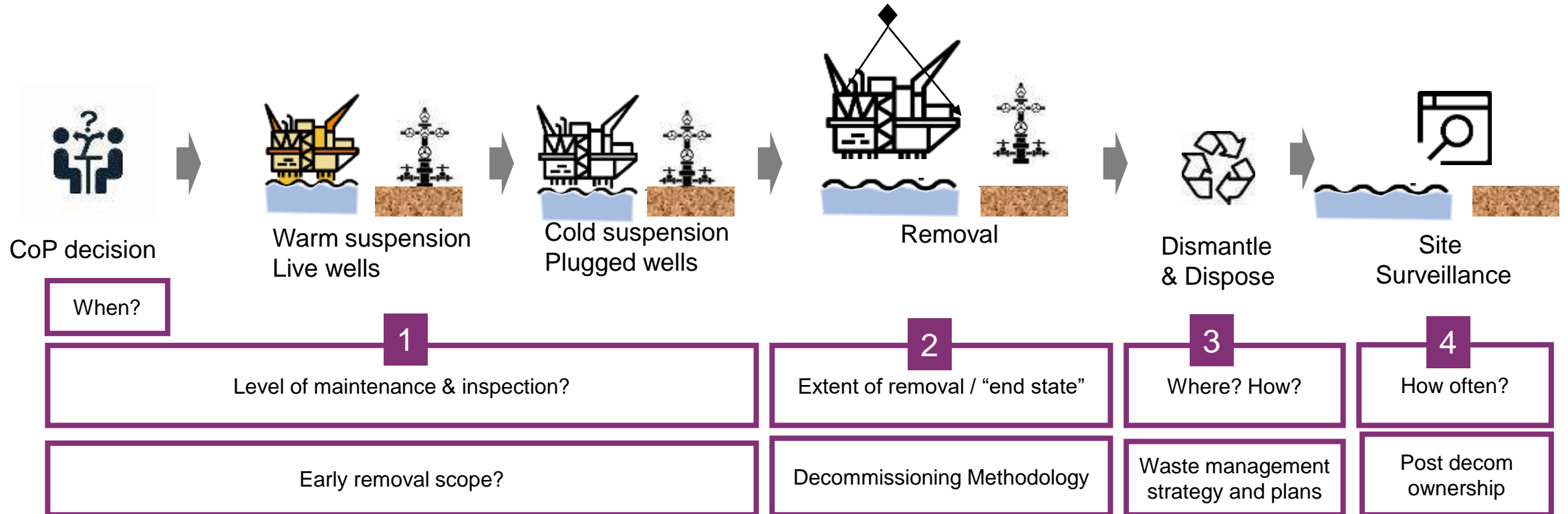
General	Onshore	Near shore / beach specific	Offshore
<ul style="list-style-type: none"><li>• Asset owners (O&amp;G companies)</li><li>• Regulators</li><li>• Government (<i>increase local employment</i>)</li><li>• Environmental NGOs</li><li>• Community</li></ul>	<ul style="list-style-type: none"><li>• Town and Country planning Department</li><li>• Forestry Department</li><li>• Land owners</li></ul>	<ul style="list-style-type: none"><li>• Local fishers</li></ul>	<ul style="list-style-type: none"><li>• Commercial fishers</li><li>• Seafarers / Mariners</li><li>• Marine Department</li></ul>

## Common goals:

1. No harm to the environment (During and after decommissioning)
2. No harm to people (During and after decommissioning)
3. Cost effective – *owners, government*

# Key decommissioning decisions

Options selected via a multi criteria decision analysis / comparative assessment process considering safety, environment, social economic and stakeholders' views

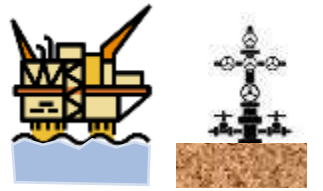


# Options and decisions:

1

Level of maintenance & inspection?

Early removal scope?



Warm/ Cold suspension

Discuss what should be the minimum requirement of maintenance? Discuss what happens if no maintenance occurs

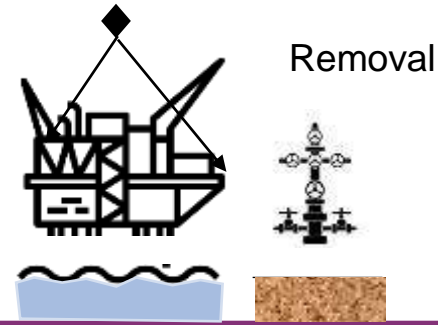
- All wells not yet plugged: checks for pressure.
- For large offshore platform- some critical equipment e.g. crane, facilities to enable safe access (helideck, boatlanding), underwater- ensure platforms have cathodic protection in-place.

# Options and decisions:

2

Extent of removal / "end state"

Decommissioning Methodology



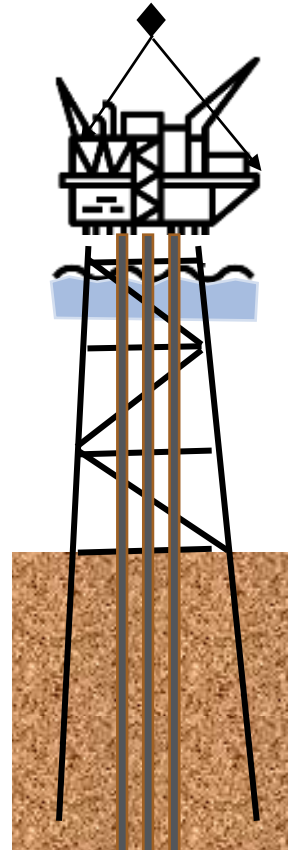
## Onshore



Typically

- 1 permanent downhole plug & environment plug
- All above ground facilities: Fully removed
- Underground facilities- Pipelines etc- risk-based
- Conductor cut below ground level

## Offshore



Typically

- Topsides – removed to shore for dismantling

Jacket, Conductors, Piles

- Options: Remove all or partial removal – depends on a range of factors
- Conductor and piles cut below seabed level

Pipelines

- if buried or rock-dumped- leave in situ
- If on seabed, depends - if there are bottom fish trawling, or present snagging risk- remove / rock-dump / bury

Refer to later module: Onshore case decommissioning module

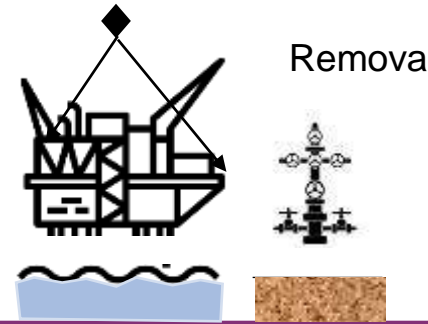
Refer to later modules: Offshore case study- run through process; and decision-making tools used (Comparative Assessment, Multi Decision Criteria Analysis)

# Options and decisions: Methods of removal

2

Extent of removal / "end state"

Decommissioning Methodology



- Options: Piece small / single lift
- [Onshore demolition](#)
- Technology has advanced significantly, allowing for safer and faster removal.
  - Single lift of Brent Bravo (25000MT topsides in 9 Seconds) in 2020 by Marine Vessel (MV) Pioneering Spirit: [Pioneering Spirit removes third platform from Shell's Brent field – YouTube](#) (3.5mins)



Piece-small



Piece-medium/  
Modular

# Options and decisions:



Dismantle & Dispose

3

Where? How?

Waste management strategy and plans

Refer to later modules: Onshore decommissioning

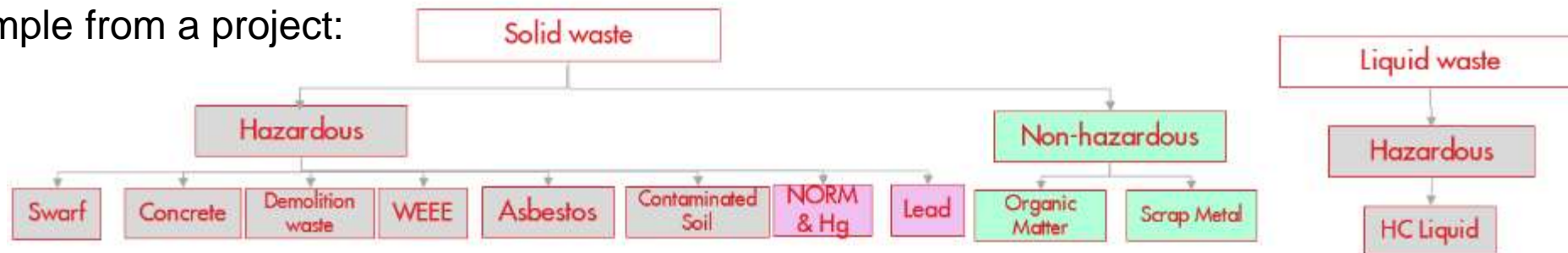
- Dismantling Ninian Legs by explosives: <https://youtu.be/29tNV5nBR4I>

Early in the project, the project team must:

- 1- estimate the volume
- 2- assess if current system can process wastes
- 3- develop a strategy to manage the waste stream



Example from a project:

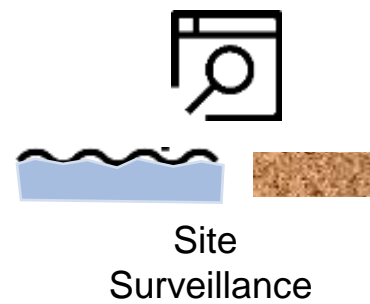


# Options and decisions:

4

How often?

Post-decom  
ownership

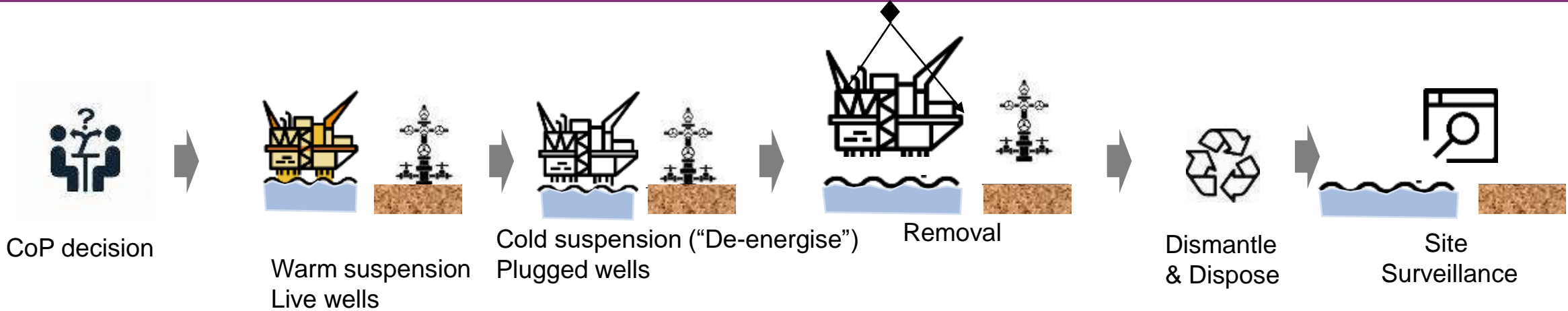


What happens after decommissioning? Who owns the site / asset if decommissioned in-situ?

- At the decommissioned site, the assets are left in an *agreed final* state with the regulators. This can mean
  - All items above ground/ above seabed removed from site. Well conductors are cut e.g. 2m below ground/ seabed level
  - There are items decommissioned in-situ after made safe to people and environment- e.g. steel structure footings, underground pipelines
- Various models exist globally, ranging from:
  - The site / assets being handed over to the government after an agreed observed period or at time of acceptance of decommissioning close-out report
  - The ownership stays with the last asset owner in perpetuity. If owner ceases to exist, then it is returned to the state
  - The ownership is transferred to the state after the mining license expires
- Abandoned and orphaned wells: [Alberta Energy Regulator: https://youtu.be/\\_uCKjJVVACkA](https://youtu.be/_uCKjJVVACkA) (1 min- starts at 1:41 to 2:32)



# Summary-1



5 years prior to Removal

2 years prior to Removal

- Late life maintenance activities
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Deeper dive into these in subsequent modules

# Summary-2

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1. Where options are available, decisions are made considering multiple criteria- e.g. safety, environment, technical feasibility/costs, socio-economic impact etc.
2. Depending on project complexity, **early planning is critical to a successful outcome**. It is Important for all to estimate timing of cessation of production to ensure sufficient planning period

## Early planning

- Ensure sufficient funds available
  - Agree decision making process with stakeholders
  - Align stakeholders view
  - Allow time for data gathering
  - Understand constraint –e.g. waste management capacity
  - Assess opportunities
3. Plan for risk-based assets inspection and maintenance