OFFSHORE NORGE

HANDBOOK

DECOMMISSIONING BEST PRACTICE

19 February 2026

Org nr: 956 685 818 | offshorenorge.no

1 PREFACE

This handbook has been developed by a working group within the Decommissioning Specialist Network which is a part of Offshore Norge (ON).

The Handbook is owned by Offshore Norge.

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2 SUMMARY

This best practice document has been developed to consolidate insights from a range of completed and ongoing decommissioning projects. The primary objective is to disseminate these experiences so that future decommissioning projects can benefit from past learnings, ultimately enhancing efficiency and effective implementation.

One of the key takeaways from previous projects is the importance of early planning. Initiating decommissioning planning promptly—once a likely cessation of production date is identified—is essential. This often occurs within a specific timeframe, which may vary depending on asset complexity and whether derogation under OSPAR 98/3 is being considered. Applications for such derogations can significantly extend the planning phase due to the required approvals from the OSPAR Commission.

The purpose of this document is to provide guidance on considerations for each stage of the decommissioning process, from initiation to final closeout and environmental monitoring. It must be noted that every decommissioning project presents unique challenges, and adaptations will be necessary. This document serves solely as a reference and guide for those involved in decommissioning activities.

The experiences presented are drawn from projects on the Norwegian Continental Shelf (NCS), compiled by a team from the Offshore Norge (ON) specialist decommissioning network member companies. The content has also undergone review by other ON network members to ensure comprehensive coverage of relevant issues.

A high-level well decommissioning strategy is addressed during the planning phase (see section 6.3.7), reflecting its significance within the broader decommissioning framework and its interactions with other asset decommissioning components. The Permanent Plugging and Abandonment, (PP&A) of wells is a critical task that should be coordinated as part of the overall decommissioning plan. For platform wells, it is cost-effective to complete as many PP&A operations as possible before production ceases. In contrast, for subsea tie-back fields, cessation of production may precede PP&A activities.

Operational responsibility for de-energizing topside facilities, including maintenance strategies, is assumed and thus only covered at a high level (see section 6.3.7 - Plant Decommissioning).

This document is structured into five key phases:

- Business Identification
- Planning
- Execution
- Close Out

- Post-Decommissioning Environmental Monitoring

Each phase addresses specific topics, as outlined in section 4.1, together with recommended best practices. The compiled experiences highlight critical considerations and suggest actionable measures; however, users are encouraged to assess and determine the most suitable course of action for their individual projects.

The business identification phase encompasses the earliest considerations and includes recommendations to establish a dedicated governance structure for decommissioning prior to planning commencement. Details on how the planning phase interfaces with later stages of production are provided in section 6.1. Early planning is advantageous—even if asset life extensions occur, preparatory work provides a solid foundation for future remobilization. If planning is paused, it is vital to document completed tasks, archive information appropriately, and record outstanding decisions or actions.

Offshore Norge annually gathers data on planned decommissioning activities for the next ten years, covering both quantities and costs. This effort enhances transparency regarding upcoming workloads and facilitates forward planning. The collected data follows the Work Breakdown Structure (WBS) detailed in section 8.2.1, enabling stakeholders to visualize future work levels for each WBS element. These elements must be carefully weighed when developing decommissioning strategies and timelines.

3 ABBREVIATIONS

Abbreviation	Description
ABEX	Abandonment (Decommissioning) Expenditure
AFE	Approval for Expenditure
ALARP	As Low as Reasonably Practicable
BA	Business Arrangement Area/Unit
BAT	Best Available Technology
CoG	Centre of Gravity
COP	Cease of Production
D&W	Drilling & Wells
DAR	Decommissioning All Risks Insurance
DGx	Decision Gates 0 to 4
DoA	Delegation of Authority
DOP	Drilling Operations Procedures
DP	Decommissioning Plan
EDC	Engineering down and cleaning
EMSA	European Maritime Safety Agency
EPA	Emergency Preparedness Analysis
EPRD	Engineering, Preparation, Removal & Disposal
EU	European Union
FEED	Front-end Engineering Design
FPSO	Floating Production Storage and Offloading
HAZID	Hazard Identification
HAZOP	Hazard and Operability Study
HSSEQ	Health, Safety, Security, Environment and Quality
IA(P)	Impact Assessment (Programme)
ISO	International Organisation for Standardisation
JV	Joint Venture
L2S	License to Share
LRP	Long Range Plan
LTEP	Lifetime Extension Program
MDL	Master Document Listing
MODU	Mobile Offshore Drilling Unit
MoE	Ministry of Energy (Energidepartementet)
MPP	Manpower Projection Plan

MWS	Marine Warranty Surveyor
NCS	Norwegian Continental Shelf
NEA	Norwegian Environmental Agency (MDir)
NGO	Non-Governmental Organisation
NOIA	Norwegian Ocean Industry Authority (Havtil)
NORM	Radioactive Hazardous Waste
OHTS	Open Hole to Surface
ON	Offshore Norge
OPEX	Operations Expenditure
OSPAR	Oslo Paris Convention
PCB	Project Control Basis
PEP	Project Execution Plan
PL	Production License
PO	Purchase Order
PP&A	Permanent Plug and Abandonment
QRA	Quantitative Risk Analysis
RACI	Review, Approve, Consult, Inform Matrix
SAFEOP	Safety and Operability Review
SG	Special Groups
SIMOPS	Simultaneously Operations
SME	Subject Matter Experts
TL	Transport Utilisation Facilities
TRA	Total Risk Analysis
UKCS	United Kingdom Continental Shelf
WBS	Work Breakdown Structure
	Waste from Electrical and Electronic Equipment

4 INTRODUCTION

4.1 Introduction and background

Over the past five to ten years, numerous decommissioning projects have been undertaken by an increasing number of operators on the NCS, resulting in a significant growth in relevant project management experience. This trend is further evidenced by the rising membership within the Offshore Norge Decommissioning Specialist Network, which highlights a growing interest and demand for expertise in this field.

The Offshore Norge Decommissioning Specialist Network conducted a workshop with the objective of developing a prioritized roadmap for activities over the forthcoming five years. A key outcome was the identification of the need for a best practice document to capture and share insights gained from decommissioning project activities, thereby facilitating knowledge transfer across the sector. Accordingly, a team comprised of network members was assembled to author this document.

In the course of several meetings, the team deliberated on the structure and content of the document. Ultimately, it was decided that the lifecycle of a decommissioning project would be divided into five distinct phases, as outlined in Section 6.1 and depicted in Figure 1 below. The level of detail to be included was carefully considered to ensure confidentiality was maintained at all times.

Additional key topics addressed in the document include:

- Governance Process
- Decommissioning Timing
- Organisation
- Business Case
- Lessons Learned
- Stakeholder Management
- Duration of Production License
- Strategy Development
- Asset Mapping
- Contract and Commercial Considerations
- Contractor Engagement and Studies
- Decision Support
- Disposal Activities
- Project Management and Planning

- Verifications and Reviews
- Authority Submittals
- Decommissioning All Risks (DAR) Insurance
- Pipeline/Umbilical Cleaning
- Disposal Activities
- Final Project Deliverables
- Disposal of Spares
- As-Built Documentation
- Field License Documentation Archiving
- Environmental Monitoring
- Norwegian Environmental Agency (NEA) Close-Out Report

Please note that certain topics are covered in more than one phase, as their relevance may differ across various stages of the decommissioning process.

5 REGULATIONS

See appendix 8.1, for an overview of the various Acts/Regulations/Standards that are valid for decommissioning. It Is Important to review and understand this prior to commencing work. The list in appendix 8.1 is based on the regulations as per DATE 2025 and are not exhaustive. A specific assessment must always be made.

6 DECOMMISSIONING PHASES

6.1 Introduction

To assist with describing best practises the decommissioning project life cycle is divided into the following five phases; each tied to relevant decision gates (which may vary by company):

1. **Business Identification:** Assess the need for decommissioning, form a project team (DG0).
2. **Planning:** Plan the project from DG0 to DG3; conduct Impact Assessment and submit Decommissioning Plan.
3. **Execution:** Carry out decommissioning work after DG3.
4. **Close Out:** Complete project activities up to DG4.
5. **Post-Decommissioning Environmental Monitoring:** Conduct environmental surveys per regulations once the project ends.

Figure 1 illustrates these phases for a typical large asset, though processes can differ for assets like subsea tiebacks. The diagram also demonstrates how lifetime extension considerations run in parallel with decommissioning preparations, starting from the business case through to monitoring after project completion.

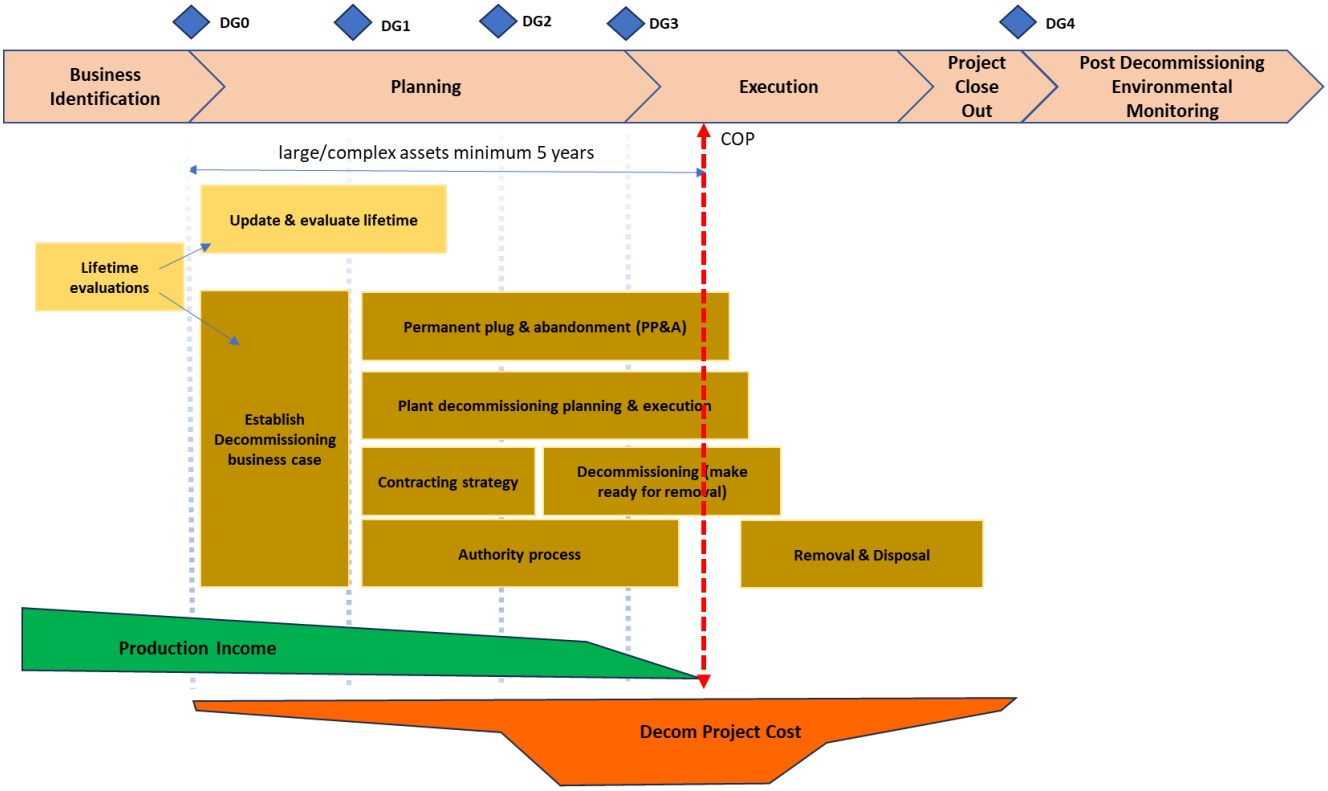


Figure 1: Decommissioning Project Life Cycle

Figure 1 illustrates the decline of production and related income as PP&A activities begin and continue until production stops, after which the final wells undergo PP&A. The figure indicates that decommissioning costs arise while production is still ongoing and tends to increase over time before falling off after removal activities.

Regarding the durations and timing of these phases, figure 1 suggests that DG0 and the start of the planning phase occur approximately 4–7 years before COP, though this period may change depending on asset complexity and the potential application of derogation.

The planning phase may extend to DG3 for some facilities, up to a year before COP. For platform wells, commencing PP&A before COP may be advantageous, allowing more wells to be managed prior to COP and thus reducing the post-COP period when the asset is not producing but remains operational, with ongoing OPEX (Operations) costs for PP&A, cleaning, and preparation for removal. This process may differ for subsea wells linked to an FPSO or for subsea tiebacks. For subsea wells if production has ceased and the wells are not monitored, they must be PP&A within three years.

The following sections provide best practices for each phase outlined above and depicted in figure 1.

6.2 Business Identification and Framing

6.2.1 Governance Process

Each company should establish a bespoke governance process for decommissioning, distinct from development projects. This process should include the gate process along with gate reviews, master document lists, WBS, cost estimates, and decommissioning guidelines, adapted as needed from standard development procedures. Phase names and scopes should be tailored to reflect decommissioning activities, rather than using development project terminology.

See appendix 8.2.1 for examples of the proposed WBS and appendix 8.2.2 for types of documents that should be included in a master document listing for each of the decision gates.

6.2.2 Decommissioning timing

Developing a Long-Range Plan (LRP) for assets may lead to a Lifetime Extension Program (LTEP) and/or a DG0 for a decommissioning project, both of which can proceed concurrently and affect each other.

Analysis of input data, such as reservoir and technical integrity information, determines when COP occurs (see figure 2). According to Norwegian Petroleum Law section 4.1, petroleum production must maximize extraction. If COP—when the asset turns cash negative—is expected within 4–7 years, it is recommended to start the decommissioning project.

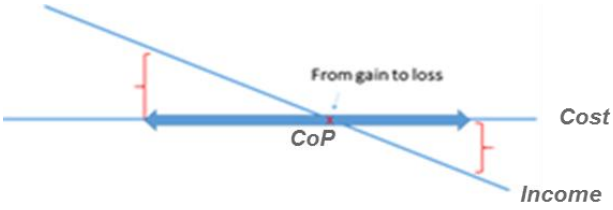


Figure 2: Definition of COP

The timing depends on the type and complexity of the asset and the completion of PP&A work. Additional time may be required if derogation is needed to leave part of the substructure in-situ.

For platform wells, determining the appropriate closing sequence is important in order to complete as many as possible before COP, while also maintaining production for as long as feasible. Subsea wells may require a different approach, such as postponing PP&A activities.

Early planning can support both optimal production leading up to COP and efficient execution of project activities, including PP&A work.

6.3 Planning - Project Phase

This section addresses key topics for the early phase following an asset decommissioning decision (see section 6.1) and project initiation. A project model tailored to the operator's execution process should be developed, detailing main elements, decision points, deliverables, and execution steps.

6.3.1 Organisation

The important points are summarised below:

1. **Comprehensive Coverage**: The decommissioning project organization should encompass all areas, including well PP&A, facilities, and operations, to ensure effective management of interfaces between different scopes.
2. **Project Management Strategy**: An early decision on whether to use internal resources, a management contractor, or a combination of both is crucial. The degree of integration with contractors should be considered based on the contracting strategy. Building internal expertise may be beneficial if multiple future decommissioning projects are expected.
3. **Asset Manager Role**: It needs to be decided if and when the Asset Manager role will transfer from Operations to the Decommissioning Project Manager, ideally around the point of COP or if at all.
4. **Operations Personnel Strategy**: A strategy for handling operations personnel should be developed, considering their future roles. Their key role in the decommissioning project

should be emphasized, while also clarifying what opportunities are available to them post project, including potential cross-function/discipline training.

6.3.2 Establish Decommissioning Business Case

One of the primary tasks is to develop a comprehensive business case that substantiates the need to initiate decommissioning planning and mobilise the decommissioning project team. The following considerations should be addressed during this process:

- **Strategy Definition:** Articulate a late life and decommissioning strategy, including potential derogation applications, encompassing wells, facilities, and pipelines.
- **Business Case Objectives:** Define clear objectives for the business case, detailing the project decision framework and partner engagement.
- **Area Assessment:** Evaluate areas for potential tiebacks or other strategic opportunities.
- **Scope of Work:** Clarify the scope of work.
- **Schedule and ABEX Estimate:** Develop a project schedule aligned with the overarching strategy and regularly update the ABEX (Abandonment Expenditure) estimate as appropriate.
- **Production and OPEX Review:** Review remaining production levels and operational expenditure (OPEX).
- **Project Economics:** Conduct economic analysis based on the defined strategy, schedule, and cost estimates, identifying when the asset transitions to negative cash flow and triggers cessation of production.
- **Integrity Aspects:** Assess asset integrity factors that may impact its remaining service life and influence decommissioning timelines.
- **Alternative Scenarios:** Analyse alternative scenarios such as asset sale, reuse, or tieback field re-routing to other facilities.
- **Modification Scope:** Identify any necessary brownfield modifications anticipated during decommissioning.
- **Environmental Aspects:** Review known environmental concerns that may affect the asset or decommissioning schedule.
- **Risk and Opportunity Register:** Establish a comprehensive register to track risks and opportunities throughout the project lifecycle.
- **Commercial Agreements:** Assess the current status of commercial agreements (including tie-ins, logistics/pipelines, licences) and evaluate their implications for the business case.
- **Authority Interface Plan:** Prepare an initial plan for interfacing with relevant authorities and regulatory bodies.
- **Removal Options:** Consider preliminary options for asset removal.
- **Removal Window:** Assess the optimal timing window for removal activities following achievement of the end state.

6.3.3 Lessons learned

Capturing and analysing experiences from previous projects is crucial. This process of gathering lessons learned is invaluable for enhancing future decommissioning efforts and avoiding past mistakes. For more details in the execution phase which might also be useful see section 6.4.4.

Key areas to focus on for lessons learned include:

- Project planning and execution
- Risk management
- Stakeholder communication
- Regulatory compliance
- Effectiveness of contracting strategies

By reviewing these elements, the organization can identify best practices and areas for improvement.

6.3.4 Stakeholder Management

Clear, regular communication with both internal and external stakeholders, especially regulators is critical for decommissioning projects. Proactively sharing information keeps everyone aligned and helps address aspects early. An effective stakeholder plan should identify key participants, define their roles, and set communication methods and frequency. Ongoing updates and meetings with regulators are necessary to maintain legal and environmental compliance.

6.3.5 Authority Submittals

During the planning phase of the project, the primary objective will be to prepare and submit the Decommissioning Plan (DP), which consists of the Disposal Plan and the Impact Assessment (IA), to the Ministry of Energy (MoE). The IA typically requires more time, as the process includes two public hearing periods of up to three months each. Consequently, careful scheduling for the preparation of the IA is essential in light of this timeline.

The DP including a summary of the public review of the IA, must be submitted to the MoE two to five years prior to COP. The MoE is responsible for distributing both the Disposal Plan and IA to other relevant departments, organizations, and Non-Governmental Organisations (NGOs).

In addition to determining the timing of these deliverables, it is necessary to consider any supporting studies or preparatory work that will support the IA. Reference should be made to the ON Handbook: Impact Assessment for Offshore Decommissioning, which provides an overview of required activities and content for the IA.

The preparation timelines for the DP are significant considerations underpinning the recommendation to commence decommissioning planning four to seven years prior to COP. If derogation is being considered, early engagement with the MoE is advised to clarify their expectations regarding the preparation of the DP and especially the IA. It is also beneficial to have a well-developed proposal available to facilitate these discussions.

Furthermore, attention should be given to the overall decommissioning strategy, the sequencing and timing of various work scopes, and coordination with other assets scheduled for decommissioning, as multiple DPs may be required depending on scope and timing.

A high-level schedule should be incorporated into the Disposal Plan part of the DP ensuring inclusion of a window for offshore execution. Incorporating this window within removal contracts can often secure more favourable pricing.

6.3.6 Duration of the production license

If decommissioning is scheduled after the production license expires, an extension is not needed for the decommissioning period. However, a valid production license must be in place until production ceases.

In addition, there is no need to have approved technical lifetime extension (LTE) also for any work after COP. However, when applying for an LTE It should be considered that the new date should be a few years after the projected COP. This will give flexibility in relation if the COP can be slightly extended while decommissioning work is ongoing.

6.3.7 Strategies

6.3.7.1 Baseline Decommissioning Strategy

Establish a comprehensive timeline for major work scopes. For instance, assess whether platform removal should commence immediately following the completion of PP&A activities or if a transition period in lighthouse mode is warranted. While the strategy serves as an initial guidance framework, it may be revised, if necessary, through a formal management of change process.

6.3.7.2 Subsurface and PP&A Strategy

A subsurface strategy outlining the plugging philosophy must be developed during the early planning phase. This foundational document underpins the PP&A program, detailing all activities related to the PP&A of well slots and their associated wellbores. The overall campaign scope encompasses both intervention-based pre-PP&A activities and rig-based PP&A operations across all accessible well slots.

Permanently abandoned wells will typically require barrier plugs for both the main reservoir formations and hydrocarbon-bearing overburden strata, supplemented by a tertiary open-hole-to-surface (OHTS) environmental plug. All plugs must be installed in accordance with an agreed zonal isolation strategy, adhering to relevant governing documentation. Tubular components, including production tubing and casing, shall be removed from the wells as required to facilitate correct placement of barrier and OHTS plugs.

6.3.7.3 Plant Decommissioning Strategy

This section defines the Plant Decommissioning program designed to prepare the asset for removal. The program outlines the steps to be taken after Cessation of Production (CoP), transitioning the platform from an operational hydrocarbon facility to a “cold” platform ready for handover to the EPRD contractor for removal. It should further establish criteria for

cleaning standards, safety protocols, hazardous waste handling, and overall safe working conditions.

Shut-in and cleaning of platform systems are generally carried out by platform operations personnel, supported by subcontractors as required. Preparation for removal will depend on the selected removal methodology (such as piece-small/medium or single-lift), with execution responsibility typically assigned to the EPRD contractor.

Given the involvement of multiple stakeholders during the plan-decom phase, it is advisable to develop a collaboration strategy clearly defining roles and responsibilities for late-life operations, PP&A, decommissioning, and preparatory activities leading up to cold platform status.

6.3.7.4 Contracting Strategy

This strategy addresses the tendering process for project work scopes, potential utilisation of existing frame agreements, and opportunities for alliances or cooperation with other operators. A decision must be made whether to conduct a Front-End Engineering Design (FEED) study paired with a commercial tender, or to pursue separate comprehensive commercial and technical tender processes. For smaller or less complex projects, a FEED study may not be necessary. The contracting strategy should be captured in a contracting map or matrix correlating each project phase to its corresponding contract package.

Selection of the pricing model—be it lump sum or reimbursable contracts, with or without incentives—is another key consideration. Lump sum contracts have demonstrated success for platform topside and jacket removals, particularly when contractors have thoroughly assessed the work prior to bidding.

For main removal contracts covering both platform and subsea elements, it is beneficial to provide an execution window, allowing the contractor to choose the optimal timing within that period. This flexibility generally yields more competitive bids, as contractors can optimise their schedules. However, clear decisions regarding allocation of weather risk are essential, specifically determining if the contractor or operator assumes responsibility should adverse weather arise during the chosen execution period.

6.3.7.5 Onshore Disposal Strategy (see section 6.3.12):

A decision is required on whether to incorporate onshore disposal within the removal contract or to establish it as a separate contract. Industry experience suggests that major removal contractors prefer to bundle onshore disposal with the removal contract (EPRD), streamlining coordination between removal and onshore site contractors. This approach enables the removal contractor to manage the entire project scope, contributing to greater operational efficiency. The operator must clarify how this aspect will be managed and determine the desired level of engagement during this phase, whether continuous or defined visits.

The potential to reuse or repurpose key asset elements, such as an FPSO, should be assessed, and a sales strategy developed if applicable.

6.3.8 Mapping & Condition

6.3.8.1 As Built Data/Documentation

Gathering and reviewing design, fabrication, installation, and as-built data before contracting is essential to identify potential risks for later preparation and removal work.

Ensure that as built documentation is kept up to date. This also includes weight and Centre of Gravity (CoG) reporting through the late life and decommissioning phases.

Also consider digitalise documentation and evaluate various ways this can be achieved.

It is recommended to establish a basis of removal documents for the platform as well as any subsea infrastructure. This document provides the technical details along with weights, sizes, etc of the individual parts of the facilities and this information will be required by contractors when they commence studies.

6.3.8.2 Inventory Mapping (Hazardous Waste)

An initial high-level inventory mapping of the facilities, with an emphasis on identifying hazardous waste, is typically carried out early in the planning phase. The resulting data serves as an important input to the IA. Establishing an overview of the types and locations of hazardous waste helps inform the removal contractor during studies and tender preparation.

Following the award of the EPRD contract, or a separate onshore disposal contract, a more detailed survey by the onshore disposal contractor is conducted to further identify hazardous waste.

It is important to have a good process in place for inventory mapping and below is described a good example of this and is based on it being carried out in three steps as follows:

- **Level I:** Desk-top study review of documents to perform a comprehensive breakdown of materials. An offshore walk-down may be included.
- **Level II:** Offshore Survey to identify, quantify and locate Hazardous materials using visual identification and sampling of available materials. The survey can be performed on "hot platform" where limitations to sampling are stated in the report.
- **Level III:** Complete mapping of all hazardous materials including intrusive sampling in the process, utility and living quarters. Typically performed in the cut zones offshore and at the Onshore Disposal site. If possible, this could be performed during a planned turn around.

The inventory mapping is organised according to EMSA Guidance on the Inventory of Hazardous Materials for ships. In addition, to the EMSA framework, waste classes for hydrocarbon production and contaminations typical for offshore oil and gas installations is

included along with a section for reuse. An example of the overview of the breakdown and organisation of the inventory is given in the table shown in appendix 8.3.

6.3.8.3 Integrity Assessments

Assessing asset integrity is crucial to quickly identify potential equipment or structural issues that could trigger unexpected shutdowns and premature decommissioning. Unplanned equipment failures often force urgent closure and mobilization of a decommissioning team, leading to rushed planning and suboptimal strategies.

6.3.8.4 Operations

Early involvement of operations personnel in decommissioning planning is essential, given their comprehensive knowledge of the asset. Key areas for consideration include:

- Conduct a thorough review of each system of the process to assess its role during decommissioning, with particular attention to the PP&A phase. Certain systems—for example, cranes—may be utilised more frequently during decommissioning than in standard operations.
- Identifying requirements for spare parts and necessary system upgrades arising from this review.
- Developing a maintenance strategy that encompasses both the late-life stage of the asset and the decommissioning phase; this should define maintenance intervals and address any risk considerations related to reduced maintenance frequency and potential failure, which may trigger the commencement of decommissioning activities.
- Establishing the sequence for facility shutdown, including cleaning and de-energising tasks relevant to removal preparations.
- Planning and initiating any required upgrades in a timely manner, ensuring such activities are incorporated either into the annual OPEX budget or as part of the gate approval process within the decommissioning project.
- Assessing the retention of utility systems and equipment for possible handover to, and use by, contractors responsible for removal or disposal.

This structured approach facilitates effective planning and execution throughout the decommissioning process.

6.3.9 Contracts & Commercial

6.3.9.1 Commercial/Service Agreements

When decommissioning offshore oil and gas installations, thoroughly review all commercial and service agreements to identify hidden decommissioning obligations that could impact the process. Early identification and management of these requirements help avoid delays and extra costs. Ensure notice periods are observed, and deadlines are met.

For subsea tiebacks, establish clear decommissioning agreements with host platforms to define each party's responsibilities, coordinate efforts, and align on decommissioning goals.

6.3.9.2 Contract strategies

Including a removal window in contracts is recommended, as it aligns with the decommissioning plan by setting a clear timeframe while allowing contractors flexibility in execution. Defined removal windows support efficient planning and minimize conflicts or delays.

A clear onshore disposal strategy is also essential. This may be included in the removal contract and should specify how materials will be managed upon arrival onshore to ensure environmentally responsible disposal that complies with regulations. Further details on cross-border waste management can be found in section 6.3.11.3.

6.3.9.3 Proximity and/or crossing agreements

For current proximity or crossing agreements, review and plan for proper closure while observing all obligations and notification requirements. Closing these agreements may require considerable time and thorough documentation.

Decommissioning and removal activities within 2 nautical miles of third-party assets may need Proximity Agreements; Offshore Norge's standard templates are recommended. Agreements may need to be arranged each time the area is accessed.

6.3.10 Contractors & Studies

Involving contractors at the early stages of the decommissioning process can be important for completing removal studies. Early engagement enables contractors to share relevant insights and expertise, which may inform the practicality and efficiency of removal plans. This approach can assist in identifying potential challenges and possible solutions prior to the commencement of decommissioning activities. The studies carried out will help identify primary risks, which should be assessed collaboratively by all parties to determine responsibility and ensure coverage within the contract. See appendix 8.4 for a list of recommended studies that may be considered; this list is not exhaustive, and individual projects may have additional or fewer requirements as appropriate.

When planning for pipeline and umbilical flushing, it is necessary to evaluate the requirement for these studies, especially if flushing operations involve a host platform. The objective is to achieve appropriate cleanliness standards for all lines while minimising impacts on host platform production. Alternatives such as dumping or injecting flushed volumes into wells may also be examined to manage materials and limit operational disruptions.

Engaging a third party for independent verification of removal concepts during the study phase is recommended practice. Such verification offers an impartial evaluation of proposed removal methods, assessing safety, efficiency, and regulatory compliance, and may identify potential issues to enhance the quality of the decommissioning plan.

In addition, conducting contractor surveys allows for collection of feedback and perspectives from those involved in the process. These surveys can highlight areas for potential

improvement and facilitate the integration of contractor experience and expertise into future decommissioning projects.

6.3.11 Decision Support

Maintaining up-to-date cost estimates alongside cost plans is necessary. This data contributes to the economic assessment and the overall decommissioning strategy, which must account for cash flow considerations and their effects on the company's finances. Regularly updating cost estimates help to minimize unforeseen issues later in the process. Before DG3, it is recommended to conduct a risk analysis using Monte Carlo simulation or a comparable method, with outcomes incorporated into the cost estimate presented at the DG3 gate.

The project should assess SIMOPS challenges across different work scopes, including wells PP&A, removal preparation, cleaning (topside and pipelines), and production. Risk assessments should be reviewed for each scope at various stages. Normal operations should be evaluated to identify activities that can be reduced or excluded, enabling other decommissioning tasks to occur simultaneously.

During FEED studies, project planning should be updated utilising input from contractors. Based on this feedback, adjustments to the decommissioning strategy may be implemented through the management of change process.

6.3.12 Disposal

6.3.12.1 Evaluate reuse/repurpose

It is essential to assess the potential for reuse or repurpose of an asset's components, including both topside equipment and subsea infrastructure. This evaluation should be undertaken early in the planning process to allow sufficient time to identify viable options and inform contractors before studies commence, particularly regarding offshore execution. Incorporating reuse and repurpose opportunities into project plans ensures these considerations are addressed from the outset. If any equipment is identified for transfer, the documentation associated with each item must be reviewed to confirm it meets all requirements for transfer and future use by a new owner.

Should it be determined that all or part of the facility will continue to be used in petroleum operations or for alternative purposes, the Ministry of Energy (MoE) must be consulted in accordance with Section 5.3 of the Petroleum Act to clarify responsibilities and ensure that any future decommissioning is managed appropriately.

6.3.12.2 Cross border

When planning onshore disposal, consider whether waste will be managed domestically or exported, including to non-EU countries. New regulations govern cross-border waste transfers, specifying what can be moved and which applications are required for each destination. Advance planning is necessary to ensure compliance with process steps, application requirements, and timelines.

6.3.12.3 Onshore Disposal Strategy

The contracting strategy should define acceptable disposal sites, even for EPRD contracts, as the Operator must approve the contractor's selection. The strategy should specify how closely the contractor must coordinate with the Operator when evaluating sites. Additionally, it must address cross-border waste management as outlined previously.

6.4 Execute phase

The project execution phase is when teams carry out the work needed to meet the project mandate. Offshore decommissioning projects are complex and require careful management of several key aspects to ensure effective, safe, and successful completion.

6.4.1 Management and Planning (Assurance and Interface)

During project execution, assurance and interface processes are essential for smooth progress and achieving objectives. Assurance verifies that projects meet quality and performance standards, while interface management coordinates communication among all stakeholders. Key aspects of assurance and interface management are outlined below.

6.4.1.1 Interface Management

Decommissioning projects often involves complex interfaces, and interface management during project execution is essential for ensuring smooth coordination and communication among all parties. Below are some key aspects to consider.

1. **Interface Management Process**: Defining processes for handling interfaces, identifying critical interfaces, and managing associated risks.
2. **Roles and Responsibilities**: Clearly defining tasks and ensuring effective communication and coordination.
3. **Use of Tools**: Utilising tools like the PIMS interface management module for documentation and alignment.
4. **Principle Interfaces**: Categorising interfaces into those within the company and external to the company for better coordination.

By focusing on and performing good interface management, decommissioning projects can achieve better coordination, minimise risk, and ensure a successful outcome.

6.4.1.2 Assurance process and quality activities (see to duty)

The assurance process in decommissioning projects is crucial for ensuring that the project meets its objective, adhere to regulatory requirements, and is executed safely and efficiently. Below are some key aspects of the assurance process.

1. **Project Assurance Procedure**: Outlines policies, principles, and processes for project assurance, including planning for entry, appraisal, selection, and improvement stages.

2. **Ownership and Responsibility**: Clearly defined roles and responsibilities ensure effective communication and task understanding.
3. **Subject Matter Experts (SMEs)**: SMEs provide specialized knowledge and expertise, ensuring thorough review of technical and commercial aspects.
4. **Assurance Plan**: Developed for the execution phase, detailing activities, meetings, and reviews like integrated value reviews and readiness reviews.

6.4.1.3 Baseline Planning

Establishing a plan that details deliverables, schedule, scope, and cost is essential. The baseline plan acts as a reference throughout the project. Here are key reasons why baseline planning matters.

1. **Performance Measurement**: Tracks project progress and performance over time, comparing actual progress against the baseline.
2. **Improved Estimates**: Refines estimates for future projects by analysing deviations from the baseline.
3. **Motivational Tool**: Sets clear expectations and goals, motivating the project team.
4. **Avoiding Cost Overruns and Scope Creep**: Identifies and addresses issues early by setting a clear point of comparison.

6.4.1.4 Risk management

Risk management is crucial during the execution phase of decommissioning projects, focusing on safety, environmental impact, and technical challenges. Continuous risk monitoring and monthly assessments are essential. Key risks include working near operating facilities, pollution, and reputation. A HSSEQ and Risk Management Plan should be established.

Key processes in risk management include:

1. **HAZID (Hazard Identification)**: Identifies potential hazards through brainstorming with a multidisciplinary team.
2. **HAZOP (Hazard and Operability Study)**: Examines processes to identify and mitigate risks that could lead to accidents or operational issues.
3. **SAFEOP (Safety and Operability Review)**: Ensures design and operation safety and compliance with standards through evaluations at various project stages.

6.4.2 Verification and Reviews

Verification and reviews are essential during project execution to ensure deliverables meet required standards and quality. Key review types include:

- Self-Verification

- Project Review
- Document Review
- Readiness and Constructability Reviews

For decommissioning, especially at gate reviews, it is crucial to focus on technical details as the project must advance to the next phase—unlike development projects, which may be stopped if necessary.

6.4.3 Authority Submittals

Regulatory compliance in decommissioning projects is a necessary component to ensure the safe and environmentally responsible closure of facilities. Regulatory submittals are required to confirm that decommissioning projects adhere to legal and environmental standards. The following outlines key regulatory submittals for a decommissioning project, with section 5 providing an overview of the relevant Acts, Regulations, and Standards.

Decommissioning Plan

According to §5-1 of the Petroleum Act, licensees are required to submit a decommissioning plan to the Ministry of Energy (MoE) before ceasing petroleum activities. This plan must include two sections: a disposal section and an impact assessment section. Approval from the MoE must be obtained prior to initiating any removal work.

Application for Consent

Per §25(e) of the Management Regulations, operators must apply for consent from the Norwegian Ocean Industry Authority (NOIA) well in advance of any disposal activities.

Pollution Permit (Application for Discharge)

Under §11 of the Pollution Control Act, the pollution control authority may grant permission for activities that could cause pollution upon application. This requirement is applicable in decommissioning projects. Listed below are typical applications needed during the execution phase of such projects:

- Application for discharge of structural water (submitted 12 weeks prior to discharge)
- Application for permit regarding seabed disturbance, including mudring of contaminated seabed
- Application for leaving chemicals in the umbilical (12 weeks prior)
- Application for a permit for preparatory activities (reference no. 7, 15 weeks prior)
- Application for ~~discharge~~ permit for final activities, such as leakage to sea from cutting operations (15 weeks prior)
- ~~Discharge~~ application/permit for PP&A (12 weeks prior)
- Cutting of well-heads - timeframe - x weeks

6.4.4 Lesson Learned

Both throughout the project phase and after important milestones reflecting on lesson learned is essential for continuous improvement and future success. Below are some key topics to consider.

1. **Identification**: Throughout the project lifecycle, it's important to identify lessons learned.
2. **Documentation**: Documenting lessons learned in a structured manner is crucial.
3. **Analysis**: Analysing the lessons learned helps understand their impact on the project.
4. **Sharing and Applying**: Sharing the lessons learned with the team and applying them to future projects is vital.
5. **Review and Update**: Regularly reviewing and updating the lessons learned ensures they remain relevant and useful.

6.4.5 Decommissioning All Risks (DAR) insurance/Marine Warranty Surveyor (MWS)

To reduce risk, DAR insurance underwriters may require an independent expert or MWS to assess and approve technical documentation, equipment, procedures, and operations. Even if not required, operators should consider whether engaging such an expert would be beneficial.

6.4.6 Pipeline/umbilical cleaning

Cleanliness should be governed by the ALARP principle, meaning cleaning continues until ppm readings are consistently stable after each flush, rather than aiming for a specific value.

6.4.7 Disposal Activities

6.4.7.1 Change of title

Typically, title transfers to the onshore disposal contractor when the asset is delivered to the quayside at the disposal site, but this should be clarified in advance. Even after the title changes, the operator remains responsible for ensuring safe, compliant completion of the work and must determine the necessary level of onsite oversight.

6.4.7.2 Reduce line of fire

A key consideration for the onshore disposal contractor is to minimise tasks that place personnel in the line of fire. This involves identifying opportunities to utilise machinery instead of manual labour for onshore disposal activities. The Operator should assess the contractor's work methods and encourage greater use of machines to reduce direct personnel involvement.

6.4.7.3 Waste Management

An effective waste management system must be established, with the onshore disposal contractor adhering to its protocols and ensuring all necessary information is accurately collected and reported in compliance with regulatory requirements.

Furthermore, if waste particularly hazardous material is to be transported across borders, careful planning is required, including strict adherence to established processes and obtaining approval for all relevant documentation. Increasingly stringent regulations have made it more challenging to export hazardous waste for disposal in other countries. While exemptions may be possible, they require a formal application and valid justification.

As part of this planning process, it is essential to estimate the volume of hazardous waste anticipated and, where feasible, arrange handling with an appropriate contractor in advance. Norway's capacity to process certain types of waste remains limited; should domestic capacity be insufficient, it may be possible to apply for an exemption to export the waste, although approval is not guaranteed.

6.4.7.4 Resale Requirements

In relation to the resale of parts of the asset, or pieces of equipment, consideration needs to be given to the following:

- Does, the conditions of the original Purchase Order (PO) allow it to be resold?
- Documentation requirements for resale, do you have the required documentation?
- In accordance with Norwegian regulations the responsibility remains with the operator to ensure the item is disposed of in accordance with the regulations unless dispensation is received from MoE.

6.5 Project Close Out

This section discusses project closure, noting that the team remains until all closeout activities are finished. A checklist assigning responsibilities for each task should be created and monitored during this phase.

6.5.1 Secure and review final deliverables

A thorough review of final deliverables ensures accurate documentation for mandatory reporting and supports corrective work if needed. This process creates a complete record of the decommissioning project.

Key deliverables are:

- **Closeout Reports:** Summarise the decommissioning project, challenges, solutions, and assist with regulatory compliance. These are not required by MoE but may be by NEA (MDir).
- **Final Disposal Reports:** Detail methods used for disposing decommissioned materials, confirming adherence to environmental rules.

- **Use of Chemicals:** Record all chemicals used, especially those outside the Approved for Disposal list, for environmental and regulatory oversight.
- **Equipment Recovery:** List and weigh all recovered equipment to aid inventory control and reporting.
- **Waste Management:**
    - Recycling and Reuse: Track and document recycled or reused materials, including companies and end users.
    - Landfill: Keep detailed landfill records to assess environmental impact.
- **Material Accounting:**
    - Incoming Material Manifest: Log all materials brought on site.
    - Material Accounting Report: Outline material use, recovery, and disposal.
- **Emissions Reporting:** Provide accurate emission data from offshore operations to meet regulations and support environmental responsibility.

6.5.2 Review of field license documentation archiving

Deleting field and license documentation according to retention policies is essential for effective project record management. This process securely disposes of sensitive and outdated information while ensuring legal compliance. It's also important to consult with the Norwegian Oil Museum to address industry heritage requirements.

Retention Policies Overview

Retention policies set timeframes for keeping documentation before deletion, aiming to:

- Comply with legal and regulatory standards,
- Protect confidential information,
- Optimize storage resources by discarding unnecessary records,
- Minimize physical archives by scanning required documents.

6.5.3 As built documentation

All relevant documentation, including as-built records for equipment marked for potential reuse, should be retained. The Offshore Norge Collab8 system EqHub is recommended for sourcing necessary documents for each piece of equipment.

After removal work, especially concerning pipelines, updated as-built documents must show the pipeline’s status. Identifying required as-built documentation early in the project is essential for effective planning.

6.5.4 Lesson Learned and Experience sharing

Conducting lessons learned and experience transfer during Project Close Out is crucial for an organization's success and ongoing improvement. These practices identify effective strategies and areas for enhancement, allowing teams to refine methods and avoid repeating mistakes. They also capture valuable insights, preserving knowledge as people move between roles or projects and supporting a culture of learning. Additionally, reviewing past projects informs better decision-making, leading to improved planning, execution, and project results.

6.5.5 Relinquishment of the license

The license is valid only until the end of production and does not cover decommissioning work. To return the license by January 1, the application must be submitted by October 1, per Petroleum Act 29 November 1996 No. 72, section 3-15. Safety zones must be removed once decommissioning is complete, and "Kartverket" must be notified about any equipment left on the seabed or surface, whether visible or buried.

6.5.6 Disposal of spares / tooling

When the asset is closed, all warehouse spares and equipment must be disposed of. Use the ON Collab8 system Loop and virtual inventory so other operators can see available items. It's also recommended to use this system during the production phase.

For more details about the systems see section 7.2.1.

6.5.7 Storage requirements of cores and samples

In accordance with the regulations, ref Forskrift til lov om petroleumsvirksomhet Section 55, all the cores and samples from the asset are to be stored indefinitely. However, the operator can apply to be exempt from this requirement and therefore destroy them.

6.5.8 License 2 Share

Following the relinquishment of a license, L2S must be updated to accurately reflect the license's current status. For Joint Ventures (JV) classified as Production Licenses (PL) or Business Arrangement Areas/Units (BA), the status in L2S will be set to "Relinquished." For JVs classified as Transportation Utilisation Facilities (TL) or Special Groups (SG), the status will be set to "Archive."

Existing user access to JV records will remain available for eight months from the archived date, unless otherwise specified, to facilitate the completion of economic activities after surrendering the JV. After this period, the system administrator will update user permissions to Read-Only for all users except designated JV admin or super users.

6.5.9 Contracts & Accounts closing

Establish a process to close contracts and purchase orders and set a final invoicing date for outstanding services. This allows project accounts to be closed promptly once all costs are approved. Closing accounts by an agreed deadline enables accurate final cost reporting, budget comparison, and variance analysis in the close out report. Final cost data will also support benchmarking and future project estimates.

6.6 Post Decommissioning Environmental Monitoring

6.6.1 Environmental Monitoring

In accordance with the requirements outlined in activities regulations section 52, "Generelle krav til miljøovervåking," external environmental monitoring is mandatory. The regulation references NEA guideline M-300, specifically sections 5.5 and 5.6, which address the necessity

for follow-up surveys post-decommissioning as well as continued environmental monitoring beyond the decommissioning phase. It is recommended that these surveys, where feasible, be incorporated into the regional environmental survey conducted every three years.

A critical component of the environmental survey process is establishing an agreed-upon post-production baseline survey. This baseline serves as a reference point to evaluate subsequent changes and determine whether additional surveys are warranted. Typically, Impact Assessments utilise data from the most recent regional monitoring activities within the relevant area; however, it must be confirmed whether this data originates from the development phase or stems from a distinct survey conducted during the operational life of the field.

~~The requirement for further environmental monitoring following decommissioning should be determined based on the outcomes of the follow-up survey and the recommendations presented in the operator's decommissioning report regarding ongoing monitoring needs.~~

It is suggested that post decommissioning monitoring should be discussed and agreed upon with the NEA.

6.6.2 NEA Close out report

The NEA may require a close out report for decommissioning applications once work is complete. An example index can be found in appendix 8.5. While the report is initially expected by year-end of offshore removal, it must include results from the final environmental survey, which may delay completion. The latest update allows submission based on draft survey results. Coordination with NEA is necessary to confirm the delivery timeline.

7 Industry collaboration

Offshore Norge coordinates several industry collaboration initiatives (Collabor8). The initiatives enable transformation through standardization and data sharing to the benefit of the industry.

7.1 Collaboration initiatives

Collabor8 offers services that support material sharing, the circular economy, and digitalisation in decommissioning. Offshore Norge recommends using these services, especially those focused on material management and equipment information, to enhance the reuse of materials and equipment during decommissioning activities.

7.2 Digital Collaboration

The material management portfolio in Collabor8 includes various services and initiatives designed to assist with different aspects of decommissioning processes related to equipment and material handling. This section outlines selected services and initiatives and explains, from Offshore Norge's perspective, how these may be applied within decommissioning activities.

7.2.1 Loop

The Loop service is a collaborative service and initiative for handling surplus material for energy operators. The initiative includes a digitalisation of the surplus material process and a service part for implementation, support and coordination.

Loop is set up with a software solution for registering material/equipment that is not needed by the operator. Included in the Loop service are broker agreements with approved brokers who are responsible for selling the materials and equipment registered in the solution in a safe and correct way.

The benefit of using Loop is the standard industry process for disposal of equipment and materials. Equipment and materials in stock related to an asset that will be decommissioned, and installed equipment and material on the assets, can be registered in Loop, and the brokers will find buyers and secure sales and/or recycling.

7.2.2 Virtual Inventory

Virtual Inventory is a software platform where all material and equipment in stock are registered. Currently all materials in stock for all operators on NCS are registered in the solution, and the service is also testing for sharing materials across the NCS and UKCS between international operators.

The service enables all operators to search for materials and equipment from one another and request these resources as needed.

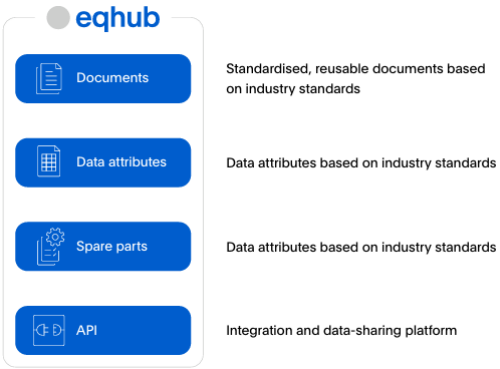
The benefits can be to highlight installed and on stock materials and equipment that will be decommissioned in Virtual Inventory. The service can be used within the "internal market" for all operators that use Virtual inventory to make the disposal processes both **possible and more efficient.**

7.2.3 EqHub

EqHub is a cloud-based solution for managing standard data and documentation across all operators on the Norwegian Continental Shelf. The solution gives access to quality-assured information when needed and provides a technical information library for products in accordance with ISO 15926.

The critical components of EqHub are:

- a repository solution for standard documents and data related to documents, in addition to documents
- a data standard with product structures, classes and attributes aligned with relevant and required industry standard
- functionalities for structuring and linking products, parts and spares



The benefit is access to correct and standardised documentation and equipment information. Decommissioning materials and equipment will require documents and technical information for correct and secure handling.

Another benefit is the availability of equipment, documentation and information related to disposal processes. When selling surplus material / equipment and recycling correct information is critical.

8 APPENDIX

8.1 Regulations

In the table below is a list of Acts, regulations, and standards that are relevant for decommissioning. Please note that the list is not exhaustive. Regulations are changing over time, and a specific evaluation needs to be carried out for each project.

Act/Regulation/Standard	Area of interest
Petroleum Act Chapter 5	Chapter 5 covers the following: Decommissioning plan (section 5-1) Notification of termination of use (section 5-2) Decision relating to disposal (section 5-3) Liability (section 5-4) Encumbrances (section 5-5) Takeover by the State (section 5-6)
Environmental Act	Section 4 - Scope of the Act related to petroleum activities. Section 11 ref. Section 16 - Application for discharge permit for decommissioning activities
Chapter 6 of Petroleum Regulations	Cease of Petroleum activities and covers Decommissioning plan, impact assessment, disposal part of DP and alternative liability for disposal
St. Melding Nr 47 (1999-2000)	Disposal of discarded pipelines and cables on the Norwegian Continental Shelf
Guideline for environmental monitoring M-300	M300 (5).pdf
Norsok-D-001	Drilling facilities
Norsok-D-002	Well intervention equipment
Norsok D-010	Wells integrity in drilling and well operations – separate chapter covers PP&A

Norsok S-001	Technical safety
Norsok S-002	Working environment
Norsok S-003	Environmental care
Norsok S-WA-006	HSE evaluation of suppliers and HSEQ requirements in contracts
Norsok S-012	HSE in construction related activities
Norsok Z-013	Risk and emergency preparedness assessment
Norsok Z-015	Temporary equipment (2020)
OSPAR 98/3	Disposal of disused offshore installations
Offshore Norge Handbook	Impact assessment for offshore decommissioning
Regulation of Shipment waste	Handling of waste
London Convention	Legal framework to prohibit and eliminate pollution from dumping of waste into the sea. This includes specific regulations for decommissioning of offshore installations to secure robust environmental processes.

8.2 Governance Process

8.2.1 Work breakdown Structure

The recommended WBS is defined in ON Decommissioning Work Breakdown Structure Handbook and is summarised in figure 3 below. For more details in relation to explaining how the different scopes of work fit into the structure refer to the Offshore Norge WBS handbook.

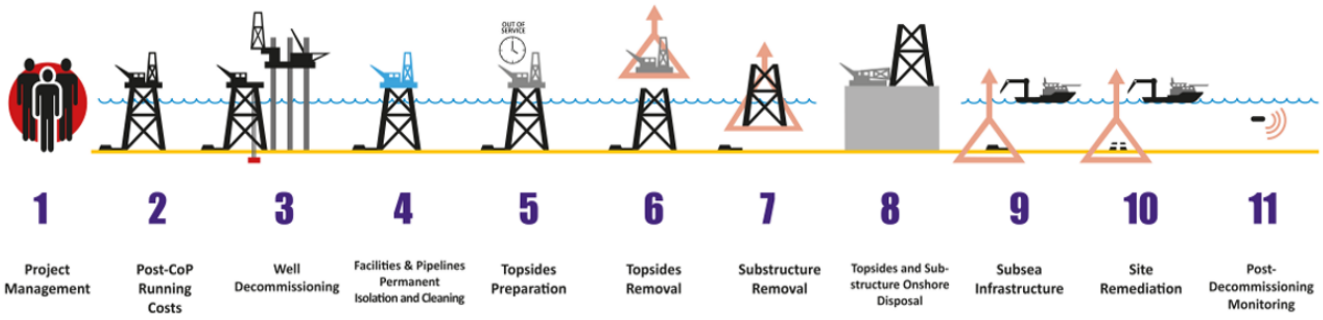


Figure 3: Work Breakdown Structure

8.2.2 Master Document Listing (MDL)

Below is an example list of documents to consider when preparing the MDL for different project decision gates. This list should be reviewed to determine which documents can be merged, omitted, or added as necessary. It needs to be established in which phase the document needs to be prepared ready for the relevant decision gate at the end of that phase. Note that some documents may span multiple phases and require updating; this should be specified. Additionally, indicate which documents must be shared with partners for review and approval.

PROJECT MANAGEMENT DOCUMENTATION
Business (Opportunity) Statement
Exit/Pacing Strategy
Business Case
Project Execution Plan (PEP)
Manpower Projection Plan (MPP)
QHSE Management Activity Plan
Document Management Plan
Project Control Basis (PCB)

Planning Basis
Basis of Estimate
Overall Project Schedule
Detail Project Schedule
Project Change Management
Stakeholder Management Plan
Authority Management Plan
Regulatory Compliance Plan
Contract Follow-up Strategy
Contract/Procurement Strategy
Project Monitoring Program
Project Monitoring Plan
Project Information Security procedure
Project ESG Objectives & Strategy
Interface Management Plan
Project Authorisation Matrix (DoA)
Emergency Response Plan
Project Site Manual
Framing Document Incl. exit/pacing strategy
Master Document Listing (MDL)
RACI for MDL deliveries
GENERAL DOCUMENTATION
Basis of Design (Removal)
Transition Evaluation report
Decommissioning Strategy Report
Master Document Listing (MDL) - Contractor
Removal Concept Evaluation Report

Economical/Commercial Analysis
Removal studies (platform/subsea/pipeline)
Pipeline/Umbilical Cleaning Study
Sustainability Report (Reuse/Repurpose)
Cost & Schedule Risk Analysis Report - Facilities
Documents - Review & Approval Matrix (RACI)
Comparative Assessment/ Quantitative Risk Assessment
Risk Management Plan Incl. Risk Register
Decommissioning Agreement (Support Agreement)
EPRD/Subsea removal/pipeline cleaning/EDC Contracts
MODU contracts (covers semi, jack up rigs plus module rig)
Wells Service Contracts
Site Clearance Report
Close Out Report
Technical "As Built" Documentation
Commercial Commitments
Regulatory Certificates
Decommissioning Plan
Application for COP
License partner briefings for decision gates
QHSE MANAGEMENT - GENERAL
Contractor QHSE Program/QHSE Management Activity Plan
Experience Transfer Register (Lessons Learned)
QHSSE contract commitments
ENVIRONMENTAL MANAGEMENT
Environmental Analysis/Studies - As required to support IA

Environmental Budget Report
Best Available Technology (BAT) Evaluation Report
Impact Assessment Program (IAP)
Impact Assessment (IA)
Waste Management Plan
Hazardous Waste Mapping - Level 2
Waste Disposal Reports (Platform/Subsea/Wells)
SAFETY
Safety Analysis/Studies
Quantitative Risk Analysis (QRA)/Total Risk Analysis (TRA) - Safety Case
Emergency Preparedness Analysis (EPA)
Emergency Preparedness Plan
Bridging Documents
PETROLEUM TECHNOLOGY
Subsurface basis of design
DRILLING & WELL (D&W)
Well design basis (Part of Design Basis, ref. Item 1.1)
Detailed well design and specifications of required equipment and services as basis for procurement.
Main Drilling Program, Long lead Item procurement plan, Contract strategy, Well Cost Estimate
Directional Surveys & Wellhead Coordinates
Well Abandonment Strategy
Well PP&A Programme
Cost & Schedule Risk Analysis Report
Approval for Expenditure (AFE)
Drilling Operations Procedures (DOP)

Well Handover Production to Wells Decommissioning
Well Handover document from D&W back to Asset
Final Well Barrier schematic of plugged well
GENERAL - FACILITIES TECHNICAL DOCUMENTATION
Updated Weight report
Utility consumption list
Interface Management Plan
Technical Integrity Report
OPERATIONS
Operations & Maintenance Plan (Plan for Decommissioning)

8.3 Material Inventory Breakdown Table

An example of the overview of the breakdown and organisation of the inventory is given in the table below:

Part I Materials contained in platform structure or equipment		
	Part I A	Construction materials and equipment
	Part I B	Fibers: insulation, sealings and gaskets
	Part I C	Flooring and coatings including micro plastics
	Part I D	Fuels, oils, hydraulics, lubricants and grease
	Part I E	WEEE, Electrical devices including batteries
	Part I F	Biological (toilets and sewage)
	Part I G	Jackets
	Part I H	Pipelines and umbilical's
Part II Operationally generated waste		
	Part II A	Oil and gas productions systems, including Mercury
	Part II B	Produced water systems including NORM
	Part II C	Drilling systems including drill cuttings and mud
	Part II D	Process and utility chemicals
	Part II E	Radioactive sources
	Part II F	Pressurised containers
	Part II G	General litter
	Part II H	Cut zones
Part III Stores		
	Part III A	Permanent storage
	Part III B	Temporarily storage
Part IV Reuse and Recycling		
	Part IV A	Reuse chemicals
	Part IV B	Reuse rotating equipment
	Part IV C	Reuse equipment
	Part IV D	Reuse architectural
	Part IV E	Recycling

8.4 Overview of studies/ surveys in the planning phase

Below is a non-exhaustive list of studies and surveys to consider during the planning phase. Each project determines its requirements based on asset type and complexity, and the list does not suggest any priority or order.

- Removal study for topsides and substructure by removal contractor
- Removal preparation study
- Engineering down and cleaning study
- Onshore disposal study for topsides and substructure
- Flushing study for pipelines/umbilical’s
- Drill Cuttings - contents and location
- Removal study for subsea infrastructure removal
- Structural Assessment especially with single lift
- Surveys of pipelines/umbilical’s (including depth buried)
- Surveys of the subsea infrastructure
- Survey of bottom of jacket legs including piles
- Offshore surveys for topsides removal
- Hazardous Waste/Inventory Mapping

- Impact assessment disposal studies
- Use of temporary systems
- Process study by host platform if flushing a subsea pipeline back to the host (need to ensure does not affect production)

8.5 NEA Close Out Report Index Example

Below is an example, from a subsea tieback asset, of the Index of a close out report sent to NEA. For other types of assets there may be other requirements, but the example below will be a good start point.

Contents (Innhold)

1. Introduction and summary (Introduksjon og oppsummering)

1.1 Location and general information about the license (Lokasjon og generelt om lisensen)

1.1.1 Permits (Tillatelser)

2. Abbreviations and definitions (Forkortelser og definisjoner)

3. Cessation activities and related information (Avslutningsaktiviteter og tilhørende informasjon)

3.1 Permanent cessation of production (Permanent opphør av produksjon)

3.2 Permanent Wells plugging (Permanent plugging)

3.3 Removal activities (Fjerningsaktiviteter)

3.3.1 Moving and installation of stone masses (Flytting og installering av steinmasser)

3.3.2 Removal of Fields subsea production facilities (protection frames, wellheads, manifold and connecting pipes) (Fjerning av «FIELD» undervannsproduksjonsanlegg (bunnramme, brønnhoder, manifold og oppkoblingsrør)

3.3.3 Removal of glass fibre structures, concrete blocks and mattresses (Fjerning av glassfiberstrukturer, betongblokker og -madrasser)

3.3.4 Manifest for materials coming onshore (Manifest for materialer som kommer i land)

3.3.5 Visual Inspections (Visuelle undersøkelser)

3.4 Legacy of transfer to other licenses (Etterlatelse og overføring til andre lisenser)

4. Waste management of subsea equipment (Avfallshåndtering av undervannsutstyr)

5. Environmental condition (Miljøtilstand)

5.1 Environmental consequences of cessation activities (Miljøkonsekvenser ved avsluttende aktiviteter)

5.2 Environmental monitoring (Miljøovervåking)

5.2.1 Summary of previous monitoring activities (Oppsummering av tidligere undersøkelser)

5.2.2 Monitoring after removal of equipment (Undersøkelse etter fjerning av utstyr)

6.Conclusion (Konklusjoner)

7. Reference (Referanser)