



QATARENERGY DECOMMISSIONING GUIDELINE

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1.0 PURPOSE

QatarEnergy's Decommissioning Guideline promotes a long-term outlook on decommissioning by harmonising planning and execution activities across the State of Qatar's energy sector. QatarEnergy's decommissioning recommendations stem from the Qatar National Vision 2030 (QNV) and QatarEnergy's Environment Policy. Additionally, the recommendations leverage industry best practices, international conventions, QatarEnergy standards, and the Ministry of Environment and Climate Change (MoECC) requirements.

The Guideline will be regularly updated to reflect the State of Qatar's priorities and industry best practices.

2.0 SCOPE AND APPLICABILITY

The scope of this Guideline is to provide guidance on planning and executing decommissioning. This scope necessitates the energy sector's adoption of responsible asset stewardship throughout the asset's lifecycle, *i.e.*, lifecycle management.

Lifecycle management translates into decommissioning reporting requirements that improve sector-wide understanding of decommissioning risks. The reporting requirements promote late-life asset stewardship through early planning (during pre-operations and operations stages) to anticipate the desired end state, *i.e.*, the base case (during decommissioning and post-decommissioning stages).

Additionally, a Risk-Based Approach for decommissioning planning is recommended. The approach sets the decommissioning base case of Full Removal, anticipates risks to achieve the base case, and builds an understanding of post-decommissioning risks.

The Guideline applies to all assets in the State of Qatar within the petroleum sector and operations located in Industrial Cities (Ras Laffan Industrial City, Mesaieed Industrial City, and Dukhan Concession Area), including assets operated by QatarEnergy, joint ventures, and subsidiaries or other third parties.

QatarEnergy's Decommissioning Guideline offers recommendations on the subjects discussed herein. This Guideline shall not amend, replace or supersede the provisions of any Foundation Document or contractual arrangement previously entered into by the relevant parties. In the event of any discrepancies, conflicts, or ambiguities between this Guideline and the Foundation Documents or any other formal agreement previously entered, the terms and conditions of the Foundation Documents or such other formal agreement shall prevail.

All communication related to QatarEnergy's Decommissioning Guideline and decommissioning reporting requirements and discussion shall be directed to the Guideline's custodian: Manager, Oil Facilities Department at Tower 7 Level 9, Building No. 7 Zone 63, Street 951, Doha, Qatar, nm_alhajri@qatarenergy.qa

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3.0 GUIDELINE

3.1 INTRODUCTION – OVERVIEW OF THE DECOMMISSIONING GUIDELINE

3.1.1 Guideline Overview

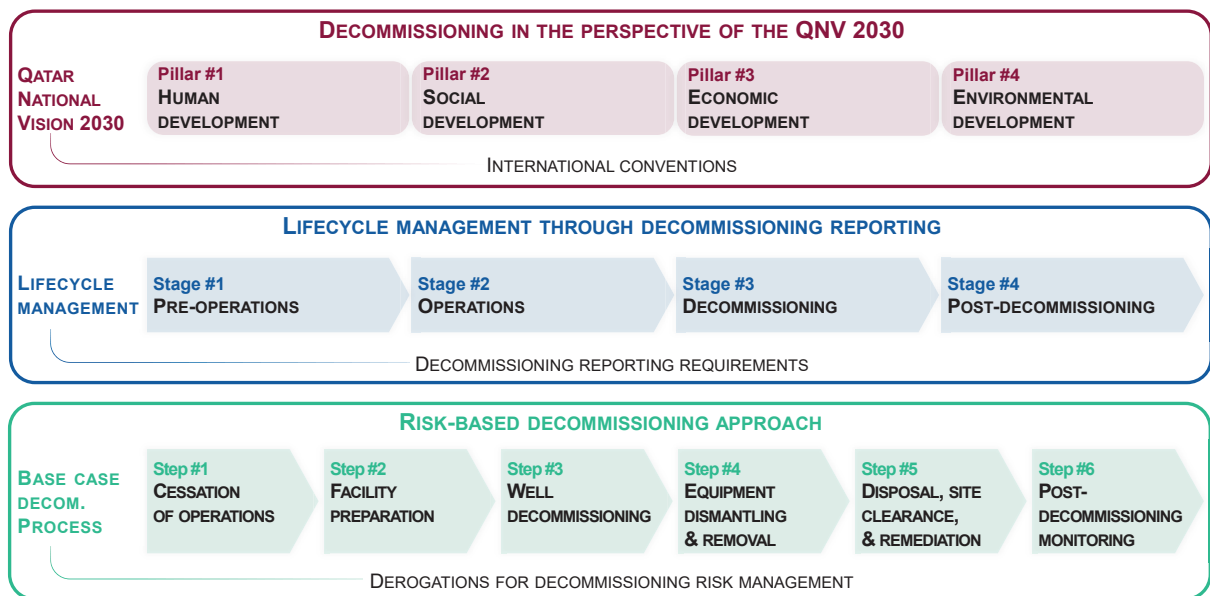
The State of Qatar's energy sector plays a pivotal role in managing domestic and international energy flows. As the energy sector ramps up its activity, so do the requirements to commission and decommission facilities in a timely and responsible manner.

Accordingly, the Guideline's objectives are the following:

- Articulate decommissioning in the perspective of the QNV 2030
- Deploy lifecycle management through decommissioning reporting
- Establish the risk-based decommissioning approach

These objectives are illustrated in FIGURE 1 and translate into the structure of this Guideline.

FIGURE 1: QatarEnergy's DECOMMISSIONING GUIDELINE



Objective #1: Articulate Decommissioning In The Perspective Of The QNV

QatarEnergy, as a steward of the State of Qatar's natural resources, aligns sector activities with the priorities outlined in the QNV. In January 2024, the Third National Development Strategy 2024-2030 was issued, emphasising the State of Qatar's status as a global leader in the hydrocarbon industry and the energy sector's role in achieving the QNV. Furthermore, QatarEnergy's Environment Policy is a direct consequence of the QNV and calls for the energy sector to adopt responsible asset stewardship.

Chapter 3.2 details the priorities for decommissioning based on the State of Qatar's development pillars, industry best practices, and relevant international conventions ratified by the State of Qatar.



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Objective #2: Deploy Lifecycle Management Through Decommissioning Reporting

To align with the State of Qatar's priorities, the energy sector should adopt responsible asset stewardship throughout the asset's lifecycle. Lifecycle management entails early planning for decommissioning throughout the asset's life to achieve the base case. Additionally, early planning reduces decommissioning risks to as low as reasonably practicable (ALARP).

Chapter 3.3 details how lifecycle management translates into five decommissioning reporting requirements that improve the sector-wide understanding of decommissioning risks.

Objective #3: Establish The Risk-based Decommissioning Approach

Through the Guideline, QatarEnergy establishes a common starting point for all assets to support a unified view of decommissioning and sets the decommissioning base case of Full Removal. This is enabled through a Risk-Based Approach, which anticipates risks associated with methods to achieve the base case and builds an understanding of post-decommissioning risks.

Chapter 3.4 details the base case guidance across the Decommissioning Process (the steps taken to decommission facilities) for four asset categories. Additional guidance is provided for requesting Derogations within an acceptable range of risk.

3.1.2 Decommissioning Definition

Decommissioning relates to environmental recovery (including land Remediation) and the permanent removal of facilities from service (either partially or in its entirety), where such facilities are not planned to be upgraded or modified, including safe cessation of operations, facilities dismantlement, materials disposal, and, with all risks reduced to ALARP.

Facilities in the decommissioning context are (i) those facilities constructed and used by QatarEnergy to carry out petroleum operations and (ii) for those facilities not operated by QatarEnergy, those "Facilities" contemplated in each joint venture or entity's Foundation Documents with QatarEnergy as defined therein, whether owned in whole or in part by such joint venture or entity, including without limitation, any common facilities jointly owned with other joint ventures.

Decommissioning should be anticipated as early as a facilities' pre-operations stage – *i.e.*, front-end engineering design (FEED) – and occurs throughout its operational life – *i.e.*, partial decommissioning. At all times, the facilities should be operated and maintained in a manner that supports the decommissioning base case.

Two forms of decommissioning are recognised:

1. **Partial decommissioning:** focused on specific components of facilities and equipment.
2. **Full decommissioning:** focused on all of the facilities and equipment.

Mothballing relates to the preservation of facilities and equipment to ensure their integrity during out-of-service or idle periods and, therefore, does not fall under the remit of this Guideline.

The Operator should implement processes to ensure that mothballed facilities and equipment are subject to sufficient maintenance for potential reactivation. All future-use plans should be justified and documented so that if future use is no longer feasible or expected, the facilities and equipment are decommissioned. QatarEnergy may request the

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Operator decommission the facilities and equipment where it determines mothballing is unjustified.

Cold State relates to the period between the facilities' shutdown and eventual decommissioning, where maintenance and inspection activities are conducted to maintain the facilities' safety systems to mitigate and prevent risks. The Cold State is subject to the guidance contained within Chapter 3.4.2.

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3.2 NATIONAL AMBITION – DECOMMISSIONING IN THE PERSPECTIVE OF THE QATAR NATIONAL VISION 2030

3.2.1 The Qatar National Vision 2030 Overview

The State of Qatar has outlined its priorities through the QNV, aiming to become an advanced country that can sustain its development and provide a high standard of living for generations to come. Achieving the vision requires contributions from all national sectors, including the energy sector. QatarEnergy, as a steward of the State of Qatar's natural resources, aligns sector activities with the priorities outlined in the QNV.

FIGURE 2: DECOMMISSIONING IN THE PERSPECTIVE OF THE QNV



The QNV outlines several challenges that the State of Qatar seeks to address. Of note, for decommissioning, are the following:

- Meeting the needs of the current and future generations.
- Promoting balanced growth to sustain resources and maintain economic stability.
- Fostering economic progress with a commitment to environmental stewardship.

Four development pillars are set to address these challenges and achieve the QNV. These pillars form the basis of this Guideline's priorities.

QNV Pillar #1 | Human Development – Uplifting national capabilities and health

Decommissioning planning and execution require a set of emerging capabilities in the State of Qatar (e.g., risk assessors, decontamination specialists, hazardous materials (HAZMAT) handlers, and experts in reuse, recycling, and waste processing). Additionally, decommissioning requires the importation of new technologies and innovation/ research that support the industry and uplift national capabilities.

Public health is closely intertwined with the environment. Given the complexity of decommissioning, an environmental incident (e.g., gas leaks from pipelines or hazardous material spills) may considerably impact public health. Additionally, when executing decommissioning, the energy sector is responsible for protecting the population's health, particularly the personnel directly involved in decommissioning.

QNV Pillar #2 | Social Development – Contributing to the State of Qatar's international reputation

As one of the world's largest energy exporters, the State of Qatar is a norm setter in the global energy sector. Late-life asset stewardship through decommissioning is a nascent subject globally. In developing and adopting this Guideline, the State of Qatar's energy sector contributes to its international reputation.



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QNV Pillar #3 | Economic Development – Strengthening the economy

Effective decommissioning involves efficient and economically sound planning and execution. Furthermore, decommissioning is capital-intensive and requires a national supply chain that supports in-country value, translating into special capabilities, technologies, and infrastructures that may be unique to the region (e.g., hazardous materials management, topside and jacket lifting technologies, pipeline excavation, and topography realignment).

QNV Pillar #4 | Environmental Development – Preserving the environment

The State of Qatar has centred its environmental strategy around preserving and protecting air, land, water, and biodiversity. The energy sector's business activities will have environmental impacts (e.g., construction or industrial operations), requiring technological investments to drive economic progress while preserving the environment:

- **Air:** adhering to air pollutant limits and minimising emissions (e.g., fugitive emissions, combustion engines, and leaks).
- **Land:** taking appropriate steps to dispose of and reduce waste and restore environmental conditions and habitats.
- **Water:** anticipating and monitoring the impact of activity on groundwater, marine environments, and coastal areas.
- **Biodiversity:** preventing damage to the ecosystem (e.g., conservation of habitats).

The Environmental Development pillar is a cornerstone of QatarEnergy's Environment Policy, which aims to protect the ecosystem for current and future generations. Through decommissioning, the energy sector should preserve and restore areas of activity, return the land (ecosystem) to its original state as far as reasonably practicable, and anticipate any potential post-decommissioning environmental risks.



3.2.2 International Conventions

The State of Qatar is a signatory to a series of international conventions. As a party to these conventions, the State of Qatar is committed to protecting the environment, promoting responsible decommissioning practices, and contributing to global sustainability efforts. The following are some of the relevant international conventions adhered to by the State of Qatar:

- **International Maritime Organization Guidelines and Standards for the Removal of Offshore Installations and Structures on the Continental Shelf and Exclusive Economic Zone (ratified on 19 May 1977):** ensures environmentally sound practices in the disposal of offshore structures.
- **Kuwait Regional Convention for Co-operation on the Protection of the Marine Environment from Pollution (ratified on 24 March 1978):** emphasises marine ecosystem preservation during decommissioning and provides guidance for handling Hazardous Wastes generated during decommissioning.
- **Convention on Biological Diversity (ratified on 29 December 1993):** intends to develop national strategies for the conservation and sustainable use of biological diversity.
- **Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal (ratified on 13 April 1996):** aims to minimise the generation of Hazardous Wastes and ensure that measures are in place to control Hazardous Waste operations.
- **United Nations Convention on the Law of the Sea (ratified on 09 December 2002):** states that any installations or structures that are abandoned or disused should be removed as necessary to ensure the safety of navigation.
- **Minamata Convention on Mercury (ratified on 04 November 2020):** addresses measures on mercury air emissions and land/ water releases, interim storage of mercury and its disposal once it becomes waste, and sites contaminated by mercury.

These conventions pertain to responsible decommissioning practices, environmental protection, and sustainable outcomes. Where relevant and practicable, the Operator should align with these conventions when planning for decommissioning.

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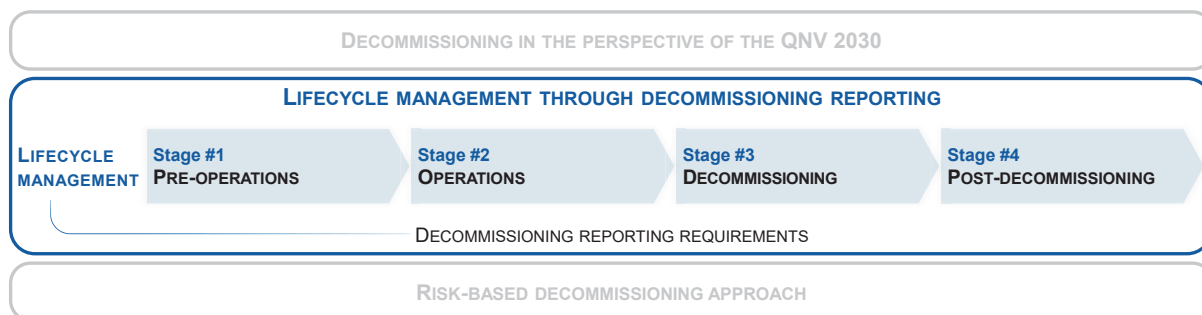
3.3 REPORTING GUIDANCE – LIFECYCLE MANAGEMENT THROUGH DECOMMISSIONING REPORTING

3.3.1 Lifecycle Management Overview

The State's priorities call for the energy sector to adopt responsible asset stewardship across the asset's lifecycle, *i.e.*, lifecycle management. The objectives of lifecycle management are the following:

- **Anticipate and plan for decommissioning across the asset's lifecycle** with consistent Decommissioning Plans and accurate Cost Estimates.
- **Promote asset stewardship** to ensure that energy facilities are well managed throughout their lifecycle to achieve the base case.
- **Clarify decommissioning risks** to guide the Operator in reducing risks to ALARP.

FIGURE 3: LIFECYCLE MANAGEMENT THROUGH DECOMMISSIONING REPORTING



The objectives and industry best practices have shaped the principles of lifecycle management. QatarEnergy recommends that the Operator adopt these principles to consider decommissioning planning across the asset's lifecycle and minimise risks to ALARP. The lifecycle management principles are detailed in TABLE 1.

TABLE 1: LIFECYCLE MANAGEMENT PRINCIPLES

Lifecycle Stage	Lifecycle Management Principles
Pre-operations	Anticipate future risks Ensure that risk assessments in the initial field development and facilities engineering design phases consider specific environmental, economic, social, and technical impacts of decommissioning. Design for decommissioning Design the facilities to ensure that Full Removal is feasible during the facilities' FEED, enabling early anticipation of risks (economic, environmental, and technical). Assess future reuse options for all or part of the facilities.



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	Use materials, features, and the latest available technologies to facilitate decommissioning and maximise recycling as far as reasonably practicable. Anticipate final disposal of all or part of the facilities based on robust technical and Health, Safety, and Environment (HSE) standards. Establish Baseline Conditions Establish the environmental Baseline Conditions in the facilities' area to clarify the expected decommissioning outcome.
Operations	Adopt regular decommissioning reporting Identify initial Decommissioning Methods, update the Decommissioning Plan and Cost Estimate regularly (every five years). Monitor and reduce risks Maintain an environmental risk register (ERR) throughout the facilities' operational life to guide risk-based analyses before the decommissioning stage. Reduce risks to ALARP to minimise environmental impacts and risks at the decommissioning stage. Maintain facilities integrity to facilitate decommissioning Adopt risk-based inspection, maintenance, and reliable operating regimes, keep detailed records, investigate failures, and conduct required actions in a timely manner. Maintain the facilities' integrity in a condition where decommissioning can be conducted in accordance with the Decommissioning Plan. Maintain detailed records of environmental baseline data collected during initial assessments. Document any subsequent measurements, incidents, or Remediation efforts across the facilities' operational life. Avoid Deferred Decommissioning Manage and avoid Deferred Decommissioning for the facilities and equipment that are no longer active (e.g., mothballed or Cold State facilities) and ensure they are promptly decommissioned. Transfer decommissioning knowledge Share decommissioning-related documentation (including Decommissioning Plans, Cost Estimates, Closeout

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	Reports, and relevant assessments) with the New Operator in the case of an operatorship transfer.
Decommissioning	Adhere to the decommissioning base case unless Derogations have been approved Execute decommissioning in accordance with the approved Decommissioning Plan and Cost Estimate during the Engineering, Procurement, Removal, and Disposal (EPRD) phase. Completely remove onshore and offshore facilities and meet the decommissioning base case detailed in Chapter 3.4.2. Otherwise, perform a Comparative Assessment if alternative decommissioning options or deviations from the base case guidance are proposed. Decommissioning options are alternative decommissioning outcomes from the base case subject to a Derogation/ Comparative Assessment (refer to APPENDIX E for more details). Remediate the environment based on risk Adjust the monitoring and Remediation objectives for soil, water, and seabed according to risks identified in the Environmental Impact Assessment (EIA) or Environmental Management Plan (EMP) and according to agreed future land use requirements or as per the MoECC stipulations. Restore the site to Baseline Conditions Where reasonably practicable, commit to returning the site/ area to the established environmental baseline or as per QatarEnergy and/ or MoECC stipulations. Utilise domestic supply chain for decommissioning Commit to utilising domestic facilities, such as onshore yards and waste management facilities within the State of Qatar, to execute decommissioning. The facilities for decommissioning are assumed to be available within the State of Qatar in the future unless cross-boundary activities are required and confirmed.
Post-decommissioning	Perform risk-based monitoring Monitor the previous location of the facilities to ensure risks (<i>e.g.</i>, residual risks) are acceptable. This includes post-decommissioning site assessments and risk-based environmental monitoring as required by the EMP and addressing the quantified risks established in the EIA.

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	The previous location of the facilities should be returned to its original environmental state or an acceptable condition to QatarEnergy and the MoECC Anticipate residual risks in the location based on guidance from the Operator and consider the post-decommissioning impact on nearby facilities.
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3.3.2 Decommissioning Reporting Guidance

3.3.2.1 Decommissioning Reporting Summary

Lifecycle management translates into five decommissioning reporting requirements. The reporting requirements align with the MoECC's expectations and ensure a robust Decommissioning Process. TABLE 2 provides an overview of the reporting requirements.

TABLE 2: SUMMARY OF DECOMMISSIONING REPORTING REQUIREMENTS

Reporting Requirement	Description
Decommissioning Plan Approved by QatarEnergy Detailed further in Chapter 3.3.2.2	Requirement The Decommissioning Plan is a formalised step-by-step demonstration of how the Operator plans to conduct Decommissioning Activities in alignment with the base case guidance in Chapter 3.4.2. The Decommissioning Plan is updated regularly (every five years) throughout the facilities' operational life to reflect best practices. It provides guidance on near-term (partial) and long-term (full) decommissioning. Justification The Decommissioning Plan is a whole-of-life document that facilitates early and ongoing planning for decommissioning, enables risk identification and mitigation, and establishes an understanding of when and how decommissioning is executed.
Decommissioning Cost Estimate Approved by QatarEnergy Detailed further in Chapter 3.3.2.3	Requirement The Decommissioning Cost Estimate is the itemised breakdown of the total cost of executing the Operator's Decommissioning Plan, which should be conducted and updated by a third-party engineering consultant selected by the Operator and approved by QatarEnergy. The Cost Estimate is updated regularly (every five years) throughout the facilities' operational life to capture the developing accuracy of anticipated costs as the facilities approach their decommissioning stage. The resulting Cost Estimate should be reported in United States Dollars (USD), undiscounted, and nominal (money-of-the-day or MOD) terms. Justification The Cost Estimate will form the basis of ongoing funding requirements and enable prudent financial planning.

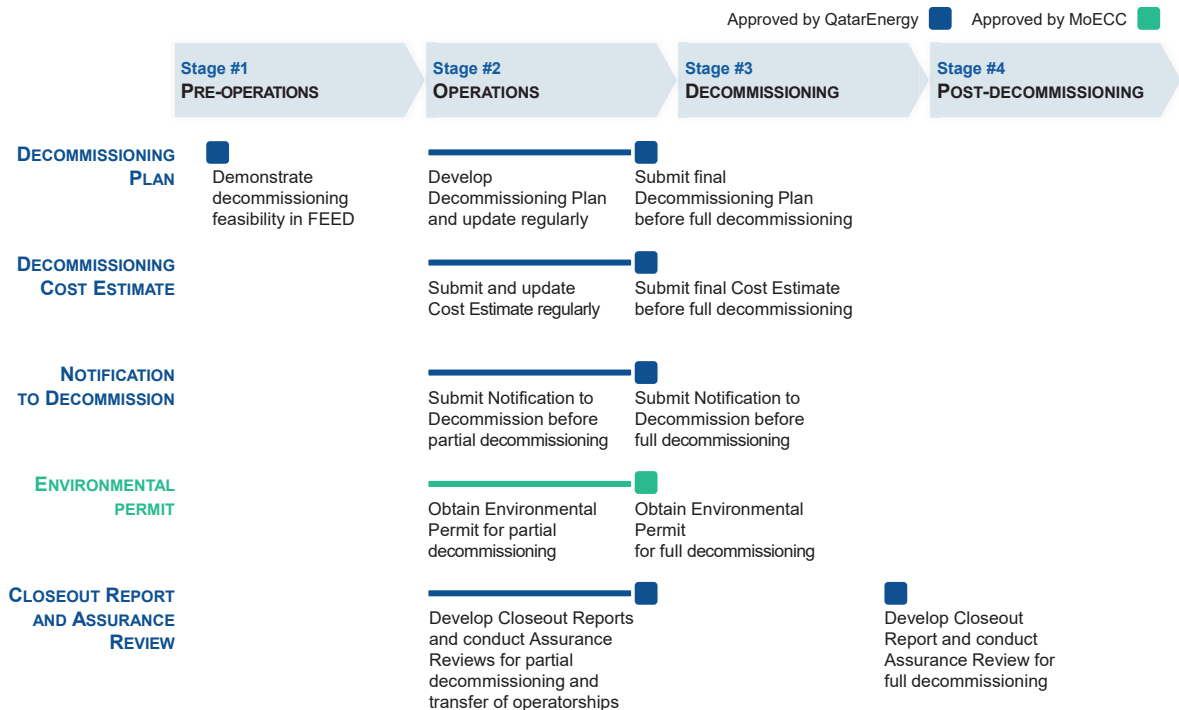
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Notification to Decommission Approved by QatarEnergy Detailed further in Chapter 3.3.2.4	Requirement The Notification to Decommission notifies QatarEnergy of the Operator's intention to execute partial or full decommissioning as per the Decommissioning Plan. Justification The Notification to Decommission allows QatarEnergy to identify the appropriate timing of the facilities' cessation of operations and commencement of decommissioning, which is aligned with the State of Qatar's broader interests. Additionally, the Notification to Decommission supports the identification of potential efficiencies with other projects that may occur in the near term.
Environmental Permit Approved by the MoECC Detailed further in Chapter 3.3.2.5	Requirement The Environmental Permit ensures that the environmental impacts of decommissioning are assessed and managed through the environmental permitting procedure. The environmental permitting procedure typically requires the Operator to conduct an EIA and develop an EMP to identify and mitigate environmental impacts. All such submissions should comply with the MoECC's regulations and requirements. Justification Through an environmental permitting procedure, the EIA establishes requirements for environmental impact mitigation, enables environmental planning, and provides inputs to the scope of an associated EMP.
Decommissioning Closeout Report and Assurance Review Approved by QatarEnergy Detailed further in Chapter 3.3.2.6	Requirement The Closeout Report and Assurance Review entails conducting assurance reviews of executed decommissioning, which are recorded in a Closeout Report. The Closeout Report provides an overview of the actual decommissioning outcomes compared to the Decommissioning Plan, Cost Estimate, and any other decommissioning-related document for the facilities. Additionally, it identifies post-decommissioning residual risks. The Assurance Review is the process by which the Closeout Report is reviewed to assess the adequacy of decommissioning execution. Justification

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	The Closeout Report and Assurance Review clarify completed activities and facilitate future risk planning.
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FIGURE 4 illustrates a high-level reporting submission timeline that contributes to lifecycle management. The following sub-chapters detail the five decommissioning reporting requirements, their components, submission timelines, and other relevant recommendations.

FIGURE 4: INDICATIVE REPORTING REQUIREMENTS SUBMISSION TIMELINE



Indicative templates for the reporting requirements may be found in the appendices (APPENDIX A – APPENDIX D).

Decommissioning Reporting Requirements Review And Approval Process

The review and approval processes for the Decommissioning Plan, Decommissioning Cost Estimate, Notification to Decommission, and Decommissioning Closeout Report are detailed through the following steps:

1. The Operator should develop/ update and submit the reporting requirements to QatarEnergy.
2. QatarEnergy should review the reporting requirements and, where required, request revisions and/ or clarifications from the Operator.
3. If revisions are required, the Operator should revise the reporting requirements according to QatarEnergy's requests and resubmit (repeat step 1).
4. QatarEnergy should provide approval for the reporting requirements.

3.3.2.2 Decommissioning Plan



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The Decommissioning Plan details the methods and procedures for safe and effective decommissioning. The Decommissioning Plan articulates how the Operator's decommissioning approach aligns with the base case guidance detailed in Chapter 3.4.2 and scopes decommissioning over the asset's entire lifecycle.

The Decommissioning Plan should detail any deteriorated condition or technical limitation of facilities and equipment that may prevent or negatively impact future decommissioning. Such details should be supported by a plan on how the facilities and equipment will be restored or engineered to an appropriate condition (*i.e.*, corrective maintenance or repair) to mitigate deviations from the base case guidance (detailed in Chapter 3.4.2). Any issues where an engineered solution is not feasible should be supported with an assessment of the decommissioning impacts and a summary of alternative Decommissioning Methods.

Decommissioning Plan Components

TABLE 3 describes the Decommissioning Plan components, with an example template provided in APPENDIX A. The components are indicative and may be further restructured and/ or detailed by the Operator, provided that the requested information/ data is included.

TABLE 3: DESCRIPTIONS FOR DECOMMISSIONING PLAN COMPONENTS

Components	Description
Facilities Decommissioning Scope	The Operator should detail the facilities' decommissioning scope to ensure an appropriate Decommissioning Plan is produced. Accordingly, the Operator should provide an overview of the facilities and equipment requiring decommissioning. The scope should be developed based on the Facilities Inventory (detailed below in the "Facilities Inventory" component), including the following aspects: Facilities description The facilities description provides general information about the facilities, including its type, location, layout, interconnections/ interferences with other facilities, <i>etc.</i> Current facilities and equipment Based on the Facilities Inventory, any relevant specifications for decommissioning (<i>e.g.</i>, location, associated platform, weight, dimensions, and burial status) should be described. Installation history The Operator should outline the installation timeline of facilities and equipment as per the Facilities Inventory.
Decommissioning Risk Considerations	Decommissioning risks and potential interferences to conduct activities as per the Decommissioning Plan may be identified throughout the asset's lifecycle.



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	The Operator should describe the identified risks, which may include the following considerations: • Early-stage design for decommissioning The Operator should detail any decommissioning risks anticipated at the facilities' design stage, measures to facilitate decommissioning, and strategies for maximising recycling potential. • Environmental baseline condition The Operator should provide a summary of the environmental Baseline Conditions. The summary should give an overview of major environmental events across the asset's lifecycle that might affect the feasibility of returning the location of the facilities to its initial/ acceptable conditions. The Operator should also summarise any major irreversible environmental risks across the facilities' operational life and suggest contingency plans to reduce risks to ALARP. • Technical decommissioning risks and mitigation measures Any technical risks arising from asset integrity assessments across the facilities' operational life should be detailed with relevant restoration/ mitigation plans to adhere to the decommissioning base case (detailed in Chapter 3.4.2). Consideration should also be given to nearby facilities that may be impacted during decommissioning.
Decommissioning Methods	The decommissioning base case (detailed in Chapter 3.4.2) establishes the expected end state for the facilities and equipment. The Operator should demonstrate their adherence to base case guidance through the following considerations: • Decommissioning approach The Operator should describe the selected Decommissioning Methods for each of the facilities and equipment and the justification for the selected method (e.g., aligned with QatarEnergy's Decommissioning Guideline). • Deviations from QatarEnergy's Decommissioning Guideline Due to facilities-specific conditions, the facilities may necessitate deviations from the decommissioning base



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	case (detailed in Chapter 3.4.2) to achieve the best decommissioning outcome. Accordingly, the Operator should specify deviations from the base case guidance detailed in Chapter 3.4.2. The deviations should be supported by technical justification and supporting studies/ assessment summaries. The Operator should also describe all alternative decommissioning options from the base case through a Comparative Assessment that assesses the options based on societal, environmental, technical, and safety criteria, as detailed in APPENDIX E. The Operator should reflect the deviations in the Decommissioning Plan only when approved at the EPRD phase.
Decommissioning Activities	Given an expected end state for the facilities and equipment, the process of achieving that end state needs to be developed (in line with the Decommissioning Process and Decommissioning Activities in Chapter 3.4.2). The Operator should detail the step-by-step sequence of activities to conduct decommissioning of the facilities and site Remediation of the location of the facilities. The step-by-step sequence should provide clear guidance so that a new Operator, such as in case of a transfer of operatorship, can execute the proposed Decommissioning Activities.
Decommissioning Outlook	To ensure that QatarEnergy and the Operator take appropriate preparatory measures to facilitate decommissioning, the Operator should provide an outlook of the expected timing of activities, which may include the following considerations: Near-term decommissioning The Operator should detail the expected decommissioning planned for the next five years, with justification (e.g., no longer in use or cessation of operations). Additionally, the near-term forecast signals pre-decommissioning actions for the Operator, such as submitting a Notification to Decommission (detailed in Chapter 3.3.2.4) and obtaining an Environmental Permit (detailed in Chapter 3.3.2.5). Long-term decommissioning The long-term schedule provides an indicative forecast of when partial and full decommissioning may occur with their estimated duration. The Operator should develop the long-term schedule with level two details

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	(refer to FIGURE 7). Further guidance on the breakdown of the Decommissioning Process is detailed throughout Chapter 3.4.2. A long-term schedule is not necessary where full decommissioning is expected to take place within the next five years. Future developments/ facilities upgrades The Operator should detail any planned development/ updates for the facilities and equipment. Anticipating such installations should also inform the required updates for future Decommissioning Plans.
Project Management	Decommissioning requires management, knowledge, and skills distinct from the facilities' operational activities. Accordingly, the Operator should detail the project management that will be undertaken, the approach to HSE management, incorporate Management of Change processes, and outline lessons learnt from available Closeout Reports (e.g., from partial decommissioning). HSE requirements may include EIAs, EMPs, ERRs, risk assessments, emergency response plans, personnel training plans, and HSE audits and inspections. Chapter 3.3.4 outlines HSE studies that the Operator should conduct across the asset's lifecycle.
Facilities Inventory	The Facilities Inventory provides a detailed account of the facilities and equipment, ensuring the comprehensiveness of the Decommissioning Plan. Accordingly, the Operator should detail each of the facilities and equipment with specifications on installation type, installation service, construction materials, weight, dimensions, and any specialised materials, components, or fluids. The Facilities Inventory should appear as an appendix to the Decommissioning Plan (APPENDIX A).

Decommissioning Plan Submission Timelines

TABLE 4 outlines the five junctures where a Decommissioning Plan should be submitted.

TABLE 4: DECOMMISSIONING PLAN SUBMISSION TIMELINES

Timeline	Details
By the end of FEED	The Operator should detail the feasibility of decommissioning the facilities within the Hazard

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	Identification (HAZID)/ ERR reports, which should evolve throughout the project's design phases.
After the commencement of operations	The Operator should submit a Decommissioning Plan as per their contractual requirements or, if not stated within the contract, no later than five years after the commencement of operations and thereafter no later than at five-year intervals.
Two years before cessation of operations	The Operator should submit a final Decommissioning Plan.
Two years before an expected asset transfer to a new Operator	The Incumbent Operator should submit a final Decommissioning Plan. The final Decommissioning Plan should reflect any stipulations by the MoECC following the outcome of the environmental permitting process (Chapter 3.3.2.5).
At the request of QatarEnergy	The Operator should submit an updated Decommissioning Plan when there are (i) material future developments/ facility upgrades/ asset life extensions, (ii) major changes in the financial, economic, legislative, or technical environment, or (iii) when otherwise directed by QatarEnergy.

Each update of the Decommissioning Plan should reflect the latest economic state (e.g., supply chain factors and economic considerations), facilities-specific technical considerations, and decommissioning technological innovations.



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3.3.2.3 Decommissioning Cost Estimate

The Decommissioning Cost Estimate forecasts the total cost of decommissioning the facilities. The Cost Estimate should be developed using nominal values (*i.e.*, MOD). Additionally, Cost Estimate assumptions should be aligned with QatarEnergy and supported by a detailed work breakdown structure (WBS) for each step in the Decommissioning Process.

The Operator should contract a third-party engineering consultant to develop/ update the Cost Estimate in alignment with the Decommissioning Plan. The Operator is responsible for selecting the contracted party to develop/ update the Cost Estimate; however, the contracted party's capabilities should meet QatarEnergy's qualifications.

The Cost Estimate should be aligned with the decommissioning base case (detailed in Chapter 3.4.2). Cost estimation adjustments based on deviations from the base case should only be recognised once the corresponding Derogations have been approved by QatarEnergy.

The reported Cost Estimate should be:

- Undiscounted
- MOD
- USD

Financial reporting of approved Decommissioning Cost Estimates should adhere to QatarEnergy's accounting and financial policies.

Decommissioning Cost Estimate Components

TABLE 5 describes the Decommissioning Cost Estimate components, with an example template provided in APPENDIX B. The components are indicative and may be further restructured and/ or detailed by the Operator, provided that the requested information/ data is included.

TABLE 5: DESCRIPTIONS FOR DECOMMISSIONING COST ESTIMATE COMPONENTS

Component	Description
Facilities Decommissioning Scope	The Operator should detail the facilities' decommissioning scope to ensure an appropriate Decommissioning Plan is produced. Accordingly, the Operator should provide an overview of the facilities and equipment that the cost estimation will address. The corresponding Decommissioning Activities should be detailed as per the WBS elements below and the Decommissioning Process (detailed in Chapter 3.4.2): • WBS-01: Project management • WBS-02: Cessation of operations

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	• WBS-03: Facility preparation • WBS-04: Well decommissioning • WBS-05: Equipment dismantling & removal • WBS-06: Disposal, site clearance, & Remediation • WBS-07: Post-decommissioning monitoring
Cost Estimate Assumptions and Methodology	The Operator should detail all assumptions and methodologies used to estimate the facilities' decommissioning costs. This estimation strategy should: • Align directly with the Decommissioning Activities contained in the Decommissioning Plan. • Outline the assumptions used in developing the cost breakdown, including the methodologies and formulas employed in deriving estimates for each element within the WBS. • Include any additional WBS elements required to address the Decommissioning Plan's technical scope. • Detail explicitly the contingencies considered for each cost element to ensure accuracy in cost estimation.
Decommissioning Cost Estimates	Based on the WBS and outlined assumptions, the Operator should calculate the cost estimate for each planned Decommissioning Activity. The resulting Cost Estimate should be reported in undiscounted, nominal (MOD) terms in USD and have a +/- 20% FEED-level estimation accuracy.
Decommissioning Cost Schedule	The Operator should include a breakdown of the decommissioning costs by year, reflecting the estimated annual decommissioning costs (where available) incurred from the reporting year until the completion of planned partial and full decommissioning as per the Decommissioning Plan. Where the Operator's contract stipulates funding requirements for decommissioning, this section should be supported by a timeline of expected decommissioning fund contributions.

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Decommissioning Cost Estimate Submission Timelines

TABLE 6 outlines the four junctures where a Decommissioning Cost Estimate should be submitted. The Decommissioning Cost Estimate should be submitted with each Decommissioning Plan.

TABLE 6: DECOMMISSIONING COST ESTIMATE SUBMISSION TIMELINES

Timeline	Details
After the commencement of operations	The Operator should submit a Decommissioning Cost Estimate as per their contractual requirements or, if not stated within the contract, no later than five years after commencement of operations and thereafter no later than at five-year intervals.
Two years before cessation of operations	The Operator should submit a final Decommissioning Cost Estimate.
Two years before an expected asset transfer to a new Operator	The Incumbent Operator should submit a final Decommissioning Cost Estimate.
At the request of QatarEnergy	The Operator should submit an updated Decommissioning Cost Estimate when there are (i) material future developments/ facility upgrades/ asset life extensions, (ii) major changes in the financial, economic, legislative, or technical environment, or (iii) when otherwise directed by QatarEnergy.

Each update of the Decommissioning Cost Estimate should include revised assumptions and cost estimates to reflect the latest economic state (e.g., supply chain factors and economic considerations), facilities-specific technical considerations, and decommissioning technological innovations.

Decommissioning Funding

Decommissioning funding requirements will typically be formalised in the Foundation Document between QatarEnergy and the relevant entity or joint venture. Unless otherwise stipulated in such agreement, the principles for funding decommissioning (as applicable) include the following:

- A decommissioning fund should be established with an appropriate institution in the State of Qatar.
- The joint venture or relevant entity's decommissioning liability should be fully funded before either the expiry of the relevant Foundation Document or the cessation of operations, whichever comes first.
- The decommissioning fund is to be handed over to QatarEnergy no later than the expiry of the relevant Foundation Document.

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- Where a part of the facilities (*i.e.*, sub-part of the facilities) is to be decommissioned, decommissioning fund withdrawals should not exceed such sub-part's pro-rata share of accumulated decommissioning funds.

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3.3.2.4 Notification To Decommission

The Notification to Decommission informs QatarEnergy of the Operator's intention to execute decommissioning. It allows QatarEnergy to identify the appropriate timing of the facilities' cessation of operations and commencement of decommissioning, aligned with the State of Qatar's broader strategic interests.

Additionally, the Notification to Decommission allows QatarEnergy to identify potential efficiencies with other projects and/ or Decommissioning Activities that may be occurring in the near term (e.g., aligning offshore decommissioning schedules to reduce costs of barges) and ensure readiness for the financial implications (e.g., asset write-off and funding readiness).

The Notification to Decommission should provide an overview of the facilities and equipment to be decommissioned, the high-level Decommissioning Methods, and a summary of the Cost Estimate. Accordingly, the Operator should identify which parts of the Decommissioning Plan are covered by the Notification to Decommission.

Notification to Decommission Submission Timelines

TABLE 7 outlines the two junctures where a Notification to Decommission should be submitted.

TABLE 7: NOTIFICATION TO DECOMMISSION SUBMISSION TIMELINES

Timeline	Details
Before commencing decommissioning	The Operator should submit a Notification to Decommission prior to commencing partial and full decommissioning.
At the request of QatarEnergy	The Operator should submit a Notification to Decommission at the request of QatarEnergy to cease the facilities' operations for partial and full decommissioning.

QatarEnergy will assess whether additional assurances (e.g., additional environmental assessments or asset integrity assessments) are required before the Operator proceeds with decommissioning. If additional assurances are required, the Operator should provide the additional assurance as stipulated by QatarEnergy.

The Notification to Decommission should be submitted to QatarEnergy for approval.



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3.3.2.5 Environmental Permit

The Environmental Permit ensures alignment of the Operator's Decommissioning Plan with the MoECC's requirements and provides the Operator with the authorisation to proceed with decommissioning. An Environmental Permit is required for any project deemed to have a significant environmental aspect, such as a decommissioning project. Obtaining the Environmental Permit typically requires the Operator to conduct an EIA and develop an EMP.

An EIA identifies, predicts, and assesses the potential environmental impacts associated with a project and its planned activities. An EIA may include characterising baseline environmental conditions, identifying environmental legislative and regulatory requirements, identifying the project's environmental aspects and impacts, assessing the likelihood of environmental impact, and recommending environmental preventative/ mitigation measures.

An EMP outlines the Operator's plan to mitigate and monitor the environmental aspects identified in the EIA. The EMP may detail environmental regulatory requirements, environmental assessments, preventative and corrective measures for the environment, environmental monitoring requirements, and environmental contingency planning and response plans.

The Environmental Permit application should be submitted to the MoECC as per their requirements and guidance.

Environmental Permit Application Submission Timelines

TABLE 8 outlines the two junctures where an Environmental Permit application should be submitted.

TABLE 8: ENVIRONMENTAL PERMIT APPLICATION SUBMISSION TIMELINES

Timeline	Details
Before commencing decommissioning	The Operator should submit an Environmental Permit application prior to commencing partial and full decommissioning as per the MoECC's requirements and guidance.
At the request of QatarEnergy	The Operator should submit an Environmental Permit application at the request of QatarEnergy to cease the facilities' operations for partial and full decommissioning.

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3.3.2.6 Decommissioning Closeout Report And Assurance Review

The Decommissioning Closeout Report details the extent of site Remediation conducted by the Operator after completing decommissioning and monitoring activities. Once shared, QatarEnergy will conduct an Assurance Review to ensure that decommissioning has been completed as required and that the residual risks from the facilities have been identified. The Operator is also subject to Assurance Reviews before any planned transfer of operatorship.

QatarEnergy's approval of the Closeout Report constitutes agreement that environmental site Remediation has been undertaken as far as is reasonably practicable, and QatarEnergy is willing to accept the residual risks from the facilities.

Decommissioning Closeout Report Components

TABLE 9 describes the Closeout Report components, with an example template provided in APPENDIX D. The components are indicative and may be further restructured and/ or detailed by the Operator, provided that the requested information/ data is included.

TABLE 9: DESCRIPTIONS FOR DECOMMISSIONING CLOSEOUT REPORT COMPONENTS

Component	Description
Decommissioning Execution and Deviations	The Operator should detail the Decommissioning Activities conducted for each of the facilities and equipment and highlight any deviations from the Decommissioning Plan. The actual execution timeline should provide an overview of the Decommissioning Activities conducted and detail any notable concerns/ observations during the Decommissioning Process.
Cost Summary	The realised costs may deviate from the last approved Cost Estimate. To enhance the accuracy of future Cost Estimates, the Operator should provide a comprehensive overview of the incurred costs. As such, the Operator should detail and summarise the realised decommissioning costs as per the approved Cost Estimate. The costs should be detailed for each WBS element as outlined in the Cost Estimate. Further, the actual costs should be compared with the Cost Estimate with a justification for any significant deviations and unforeseen costs.
Environmental Impact	The Operator should detail the observed environmental impacts through monitoring activities, including the achieved site Remediation in alignment with the asset's EIA/ EMP. The environmental impacts should be detailed by the impact type, environmental management measure, outcome, and additional mitigation measures to mitigate further impact.

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Residual Risks	The previous location of the facilities may be left with residual risks. To ensure that QatarEnergy and the new Operator can anticipate such risks, the Operator should clarify residual risks. Consideration should also be given to nearby facilities that may be impacted during and/ or post-decommissioning. The Operator should detail all identified residual risks based on monitoring activities before transferring operatorship to QatarEnergy. Each risk should be supported by a proposal on how it may be measured, managed, and mitigated, including proposals for necessitated risk assessments and/ or monitoring activities. The Operator should demonstrate when the risks were identified and how they have been mitigated throughout the asset's lifecycle and/ or Decommissioning Process.
Conclusions and Lessons Learnt	Decommissioning is an evolving practice, and therefore, recording the lessons learnt from decommissioning planning and execution supports the development of decommissioning practices. The Operator should provide an overview of lessons learnt throughout the Decommissioning Process, from the project's inception to completion. The lessons learnt may reflect components of decommissioning execution, cost estimation, environmental impact management, residual risks management, and any other notable aspect identified by the Operator with potential solutions or improvements.

Decommissioning Assurance Review

QatarEnergy conducts Assurance Reviews to ensure that decommissioning has been completed appropriately and that site Remediation requirements are met. Assurance Reviews are based on data generated from post-decommissioning monitoring activities (detailed in Chapter 3.4.2) and detailed in the Closeout Report. The monitoring activities should ensure the adherence of conducted Decommissioning Activities to the Operator's Decommissioning Plan. Such monitoring activities may include the following:

- Remotely operated vehicle (ROV) leak detection surveys
- Pipeline ROV survey (including burial depth, free spans, and debris clearance)
- General seabed survey of the 500-metre zone
- Visual inspections for all land facilities
- Soil and groundwater sampling as listed in the EMP (refer to Chapter 3.4.2)
- Structural integrity assessments for any facilities and equipment left *in situ*
- Maintenance of pipeline markers or navigational aids

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QatarEnergy and/ or the MoECC may require further monitoring activities.

Through the Assurance Review, QatarEnergy will review monitoring data to ensure the adequacy of decommissioning execution. The frequency of Assurance Reviews will be determined based on the outcomes of post-decommissioning monitoring activities.

If QatarEnergy determines the site restoration and Remediation of the previous location of the facilities to be inadequate or incomplete as per the latest agreed Decommissioning Plan, the Operator should undertake further Remediation until the required standards are met. Where additional decommissioning is not required, the Operator should develop and submit the final Closeout Report to QatarEnergy.

Closeout Report And Assurance Review Timelines

TABLE 10 outlines the three junctures where a Closeout Report and Assurance Review should be submitted/ conducted.

TABLE 10: CLOSEOUT REPORT AND ASSURANCE REVIEW TIMELINES

Timelines	Details
Up to 12 months after partial decommissioning	The Operator should submit a Closeout Report that details the partial decommissioning targeting specific facilities and equipment (e.g., decommissioning a single well, pipeline, or process train), after which an Assurance Review will be conducted.
Prior to any expected transfer of operatorship	The Operator should submit a Closeout Report that consolidates all partial decommissioning conducted throughout the facilities' operational life, after which an Assurance Review will be conducted. The Assurance Reviews should be based on the Closeout Reports, post-decommissioning surveys, and required Remediation from partial decommissioning activities throughout the facilities' operational life.
Up to 12 months after full decommissioning	The Operator should submit a Closeout Report that details the full decommissioning, after which an Assurance Review will be conducted.

In the case of partial decommissioning, the Operator retains responsibility for ongoing environmental monitoring for as long as it is responsible for the previous location of the facilities.



3.3.3 Transfer Of Operatorship

A transfer of operatorship is a special circumstance in which the operatorship is transferred to a new Operator for any reason. The transfer of operatorship also constitutes any circumstance in which there is a change in the party obligated to conduct decommissioning. The following materials are required in the operatorship transfer to the new Operator and should be agreed upon by all parties before the transfer:

- Decommissioning Plan
- Cost Estimate
- Operations EMP compliance data/ environmental assessments
- Closeout Reports for any partial decommissioning during the operatorship
- Asset integrity assessments, where such assessments are required to demonstrate the asset's integrity to execute decommissioning as per the Decommissioning Plan
- Other relevant materials used to develop the documents above

QatarEnergy may request additional desktop studies or primary surveys as part of the transfer process if there is uncertainty or discrepancy between current reported environmental conditions and the agreed baseline.

The transfer of operatorship process is also subject to Assurance Reviews (detailed further in Chapter 3.3.2.6) to ensure that partial decommissioning has been completed as per the Decommissioning Plan and residual risks from the facilities have been identified. QatarEnergy may then provide the new Operator with any such documents to continue their updates throughout the asset's lifecycle.


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3.3.4 Environmental And Safety Assessments Across The Asset's Lifecycle

In addition to the reporting requirements and established environmental and safety reporting requirements, TABLE 11 outlines a series of HSE assessments the Operator should submit throughout the asset's lifecycle.

**TABLE 11: EXPECTED HSE ASSESSMENTS TO BE DEVELOPED FOR
DECOMMISSIONING PROJECTS**

Asset's Lifecycle	Requirement
Pre-operations	Ensure the ERR and HAZID process throughout project concept development includes decommissioning feasibility and asset integrity considerations.
Operations	- Maintain EMP (independent of the EMP developed for an Environmental Permit) compliance data throughout the facilities' operational life. - Maintain an ERR throughout the facilities' operational life.
Before conducting decommissioning	- Provide Major Accident Hazard Management (MAHM) Assessment for Major Accident Hazard (MAH) facilities as required by QatarEnergy. - Revise and update the MAH Risk Register based on relevant HSE risks and Formal Safety Assessments (FSA), e.g., HAZID, Hazard and Operability Study (HAZOP), and Simultaneous Operations (SIMOPS). - Conduct technical and HSE risk assessments for potential decommissioning impacts/ knock-on effects on interconnected facilities and common facilities. - Conduct Environmental Site Assessment and further studies (Soil and Groundwater Environmental Site Assessment (SGW ESA)/ seabed assessment) if required. - Conduct Hazardous Material Surveys to identify and quantify hazardous materials within plant items (e.g., asbestos and pyrophoric materials). - Conduct structural integrity assessments if required. - Update the EMP, including a waste management plan. - Develop emergency response plans for decommissioning site execution activities.

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Post-decommissioning	• Conduct post-decommissioning site surveys. • Develop an EMP for post-decommissioning monitoring activities.
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3.4 BASE CASE GUIDANCE – RISK-BASED DECOMMISSIONING APPROACH

3.4.1 Risk-based Decommissioning Approach Overview

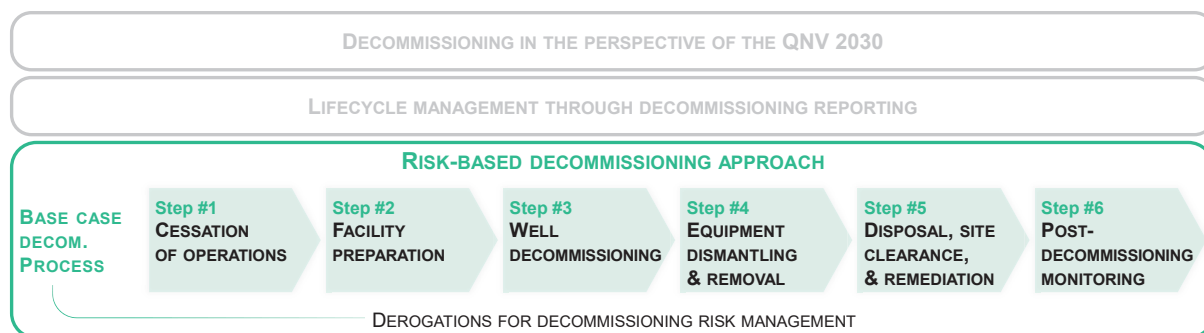
Energy sector operations have the potential for long-lasting environmental implications and risks long after facilities have been decommissioned. Decommissioning should be conducted in a manner that minimises post-decommissioning risks and anticipates risks to achieve the base case. To support long-term decommissioning planning, a Risk-Based Approach is recommended to ensure decommissioning is seen as a lifecycle-driven activity. This Risk-Based Approach is applied to the Decommissioning Process, resulting in recommendations for the Decommissioning Methods to ensure the best decommissioning outcomes.

The Risk-Based Approach entails the following:

- **Set the decommissioning base case of Full Removal**, ensuring a unified approach to decommissioning across the energy sector while demonstrating technical, environmental, and commercial suitability of Decommissioning Methods.
- **Anticipate risks to achieve the base case of Full Removal** by ensuring the facilities' design serves the best decommissioning outcome, minimising potential decommissioning risks from the pre-operations stage, and conducting Comparative Assessments where there is a need to derogate within an acceptable range of risk.
- **Build an understanding of post-decommissioning risks** that may impact the return of the location where the facilities were located to an acceptable condition.

The Decommissioning Process, illustrated in FIGURE 5, comprises six steps to achieve the base case.

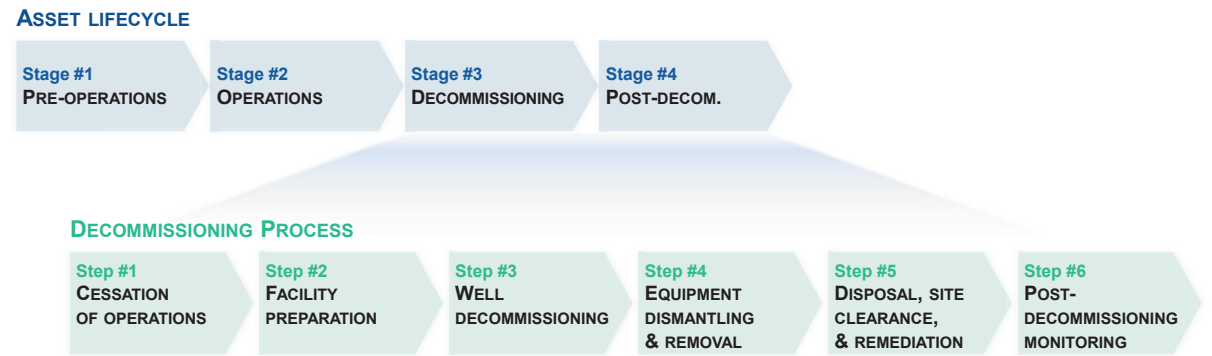
FIGURE 5: RISK-BASED DECOMMISSIONING APPROACH



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The Decommissioning Process applies to the final two stages of the asset's lifecycle (decommissioning and post-decommissioning – see FIGURE 6). The base case guidance is detailed across the Decommissioning Process (Chapter 3.4.2) and applies to both partial and full decommissioning.

FIGURE 6: DECOMMISSIONING PROCESS WITHIN THE ASSET'S LIFECYCLE



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3.4.2 Decommissioning Base Case

3.4.2.1 Decommissioning Base Case Summary

The decommissioning base case outlines the expected decommissioning outcomes that promote the State of Qatar's priorities. The base case is structured across four asset categories to address the varying degrees of decommissioning complexity, outlined in TABLE 12.

TABLE 12: DECOMMISSIONING BASE CASE PER ASSET CATEGORY

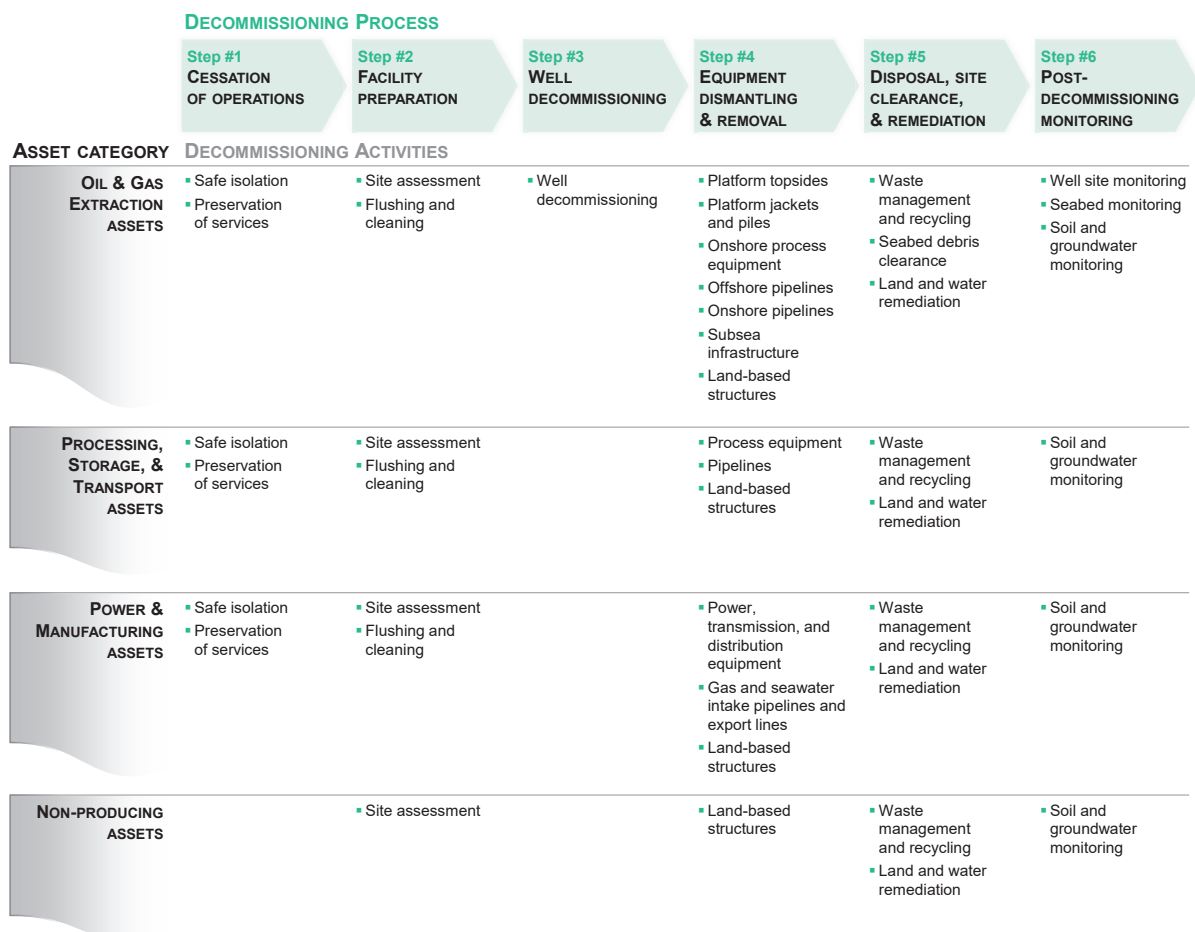
Asset Category	Decommissioning Base Case
1 – Oil & Gas Extraction assets (further detailed in Chapter 3.4.2.1)	
Platform topsides	Full Removal
Platform jackets and piles	Full Removal
Offshore pipelines	Decommission <i>in situ</i>
Subsea infrastructure	Full Removal
Wells	Decommission (plugged and abandoned)
Onshore process equipment	Full Removal
Onshore pipelines	Full Removal
Land-based structures	Full Removal
2 – Processing, Storage, & Transport assets (further detailed in Chapter 3.4.2.3)	
Process equipment	Full Removal
Pipelines	Full Removal
Structures	Full Removal
3 – Power & Manufacturing assets (further detailed in Chapter 3.4.2.4)	
Power, transmission, and distribution equipment	Full Removal
Storage tanks	Full Removal

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Gas and seawater intake pipelines (metallic and non-metallic) and export lines	Full Removal
Land-based structures	Full Removal
4 – Non-producing assets (further detailed in Chapter 3.4.2.5)	
Land-based structures	Full Removal

The base case is further detailed across the Decommissioning Process. Each step in the Decommissioning Process is delineated into Decommissioning Activities, which are selectively applied across four asset categories. FIGURE 7 maps the Decommissioning Activities across asset categories, which are detailed in the following Chapters.

FIGURE 7: DECOMMISSIONING PROCESS AND ACTIVITIES ACROSS EACH ASSET CATEGORY



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3.4.2.2 Oil & Gas Extraction Assets

Oil & Gas Extraction assets are 'upstream' facilities and equipment uniquely characterised by their oil and gas wells and variability in unprocessed hydrocarbon volumes. TABLE 13 provides further details on Oil & Gas Extraction assets.

TABLE 13: OIL & GAS EXTRACTION ASSETS DESCRIPTION

Characteristic	Detail
Composition	Topsides/ surface process equipment, wells, and offshore/ subsea facilities, including: - Offshore oil and gas wells, platforms, pipelines, and facilities - Onshore oil and gas wells, pipelines, and facilities - Offshore installations associated with LNG facilities
Decommissioning focus area	High-risk and costly activities related to well plugging and abandonment (P&A), large structures, and complex marine and offshore operations

TABLE 14 details the guidance for Oil & Gas Extraction assets as per the Decommissioning Process steps described in Chapter 3.4.2.1.

TABLE 14: DETAILED BASE CASE GUIDANCE FOR OIL & GAS EXTRACTION ASSETS

Activity	Minimum Decommissioning Requirements
Cessation Of Operations	
Safe isolation	Upon cessation of operations and facility shutdown, the Operator should ensure that all hydrocarbon and chemical inventory is safely removed. Additionally, the facilities should be prepared for flushing, cleaning, and safe Deconstruction. This 'Cold State' period should be reduced as far as reasonably practicable. During the Cold State, ongoing maintenance will still be required to preserve the integrity of the facilities and minimise safety and environmental hazards. The facilities may require several different isolation tasks to be completed. However, it is considered 'Cold' when: Where applicable, temporary facilities have been removed.



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- All residual production fluids have been evacuated through the closed drains system to a safe containment location before purging with a suitable inert medium.
- All systems have been drained, purged, and left open to the atmosphere to allow free venting of residual gases.
- All unused production chemicals/ fuels have been evacuated to tote tanks or other suitable media.
- Process systems have been positively isolated to prevent fluid migration beyond local systems and components. Any remaining open drain points have been isolated, or a temporary collection system has been established if isolation is not practicable.
- All electrical equipment other than that required for the preservation of essential systems or the execution of Deconstruction activities has been safely isolated before removal. This includes de-energising, lockout tagout (LOTO), and providing detailed isolation schemes and drawings before handing over the facilities to contractors.
- All non-essential materials have been removed from the facilities and clear access is provided.

During the Cold State, the Operator should conduct ongoing maintenance to preserve the integrity of the facilities from degradation hazards. This will include maintaining temporary drainage and containment systems, inspecting remaining live equipment (e.g., utility systems), monitoring and maintaining any inerted systems, and conducting structural integrity surveys to identify and mitigate potential dropped object risk.

Prior to the final handover, the Operator should:

- Evaluate all process systems for residual radiation caused by Naturally Occurring Radioactive Material (NORM) or radioactive sources.
- Inventorize all irrecoverable waste and detail any residual contaminants (fluid composition and anticipated volumes).
- Document all isolation schemes, location maps, and survey data.

This information should be passed to the Deconstruction contractor.


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	Partial decommissioning While isolating the facilities and equipment to be decommissioned, the Operator should ensure that any interconnected systems are identified and isolated/ rerouted before handover. To ensure a safe working environment for decommissioning, the Operator should systematically disconnect and secure energy sources, implement LOTO procedures, and verify the absence of hazardous energy. A pre-handover safety review should be conducted.
Preservation of services	The Operator should: - Identify and preserve interconnected equipment and interfaces with live upstream or downstream facilities. - Maintain any essential or identified safety-critical systems and services required during decommissioning, as specified in the facility MAH report, such as utilities, instrument/ process air, firefighting, generators, transformers, hazard lights, emergency response equipment, and heating, ventilation, and air conditioning (HVAC). - Ensure pollution control facilities (e.g., treatment plants/ landfills) are the last to be decommissioned until alternate arrangements are made or that current facilities can handle the decommissioning load.
Facility Preparation	
Site assessment	HSE studies The series of HSE studies required within the project execution process should be delivered to and approved by QatarEnergy before the commencement of any decommissioning project (refer to TABLE 11 for 'pre-decommissioning' requirements). Data completeness review The Operator should assess the completeness of environmental monitoring data collected throughout the facilities' operational life. This should involve reviewing historic operational EMP compliance and the completeness of environmental monitoring data. Known environmental impacts or incomplete monitoring In the event of known impacts or if operations EMP compliance data is incomplete, additional primary data



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	may be required to confirm site environmental conditions immediately before decommissioning by sampling the location and/ or adjacent locations. This typically includes an SGW ESA for onshore facilities and a seabed assessment for offshore platforms. The EIA submitted by the Operator before constructing any facility should be the reference point. Additional sampling may be required based on these studies. If primary data collection is not reasonably practicable, secondary data from the location or adjacent locations may be considered upon approval from QatarEnergy. No baseline situation If there is no reliable environmental baseline, the Operator should examine and assess the conditions surrounding the asset and consider EIAs submitted by other geographically proximate Operators. This data should formalise the target Remediation for the decommissioning location before seeking approval from QatarEnergy and the MoECC (as applicable). Other studies Other technical supporting studies, such as structural integrity assessments, will be required upon request to ensure that the proposed removal techniques in the Decommissioning Plan do not impose safety hazards or further risks. The outcomes of such studies should be incorporated into the final Decommissioning Plan for approval by QatarEnergy. Method statements The Operator should provide detailed method statements for all major works. These will be reviewed by QatarEnergy as required.
Flushing and cleaning	Cleanliness standard The standard for final cleanliness of hydrocarbon process piping and vessels should be measured by the concentration of Oil in Water (OiW) of the wash water, which should be no more than 30 ppm before commencing Deconstruction activities. Suitable cleaning and Decontamination techniques will depend on the nature of the product and the extent of any residues. Contractor method statements for flushing should demonstrate how water usage can be minimised and how excessive chemical treatment can be avoided. Prior to flushing and cleaning, the Operator may need to identify long lead items for disposal in other countries.



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	These activities may require additional environmental modelling, such as hydrodynamic modelling of pipeline discharges or large tank flushing/ cleaning discharges. If wash water is not collected through current facilities' closed drain systems, then suitable temporary collection should be provided so that wastewater treatment can be conducted offsite. Facilities retained in an extended Cold State before decommissioning may require repeated preparatory activities (see sub-activity "Safe isolation" above). NORM management NORM Decontamination should be controlled to protect personnel and the environment. The Operator should ensure that: • Decontamination activities are conducted by MoECC-licensed NORM management contractors. • Decontamination activities are conducted in a facility authorised by QatarEnergy and the MoECC. • The MoECC-approved Decontamination methods are used to prevent the migration of contaminants. • All previously NORM-contaminated equipment are returned to the regular Deconstruction stream ('normal handling') when exposure levels are confirmed to be within acceptable limits. Note: Guidance on NORM transportation and waste are detailed below in the "Waste management and recycling" Activity.
Well Decommissioning	
Well decommissioning	Well integrity risks, including those that could result in harm to personnel or the environment, must be managed throughout the life of the well. The well can be plugged and abandoned when it no longer has a use, and it will not leak at any time following its abandonment. Well Suspension The Operator must demonstrate that a well is in use or can be reasonably expected to be used in the future. A well that cannot be demonstrated to have such use must be abandoned as soon as reasonably practicable within two years. QatarEnergy may agree to extend agreed suspension periods on a case-by-case basis if it can be demonstrated that integrity risks will be managed as



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reasonably practicable and QatarEnergy can be satisfied that the extension is justified.

Well P&A

All proposals for well abandonment shall be included in a detailed P&A plan, which is subject to QatarEnergy's approval.

All well types (oil, gas, water producing, injector, or observation) are plugged and abandoned as per the QatarEnergy Drilling Reference Manual. P&A requires that at least two independent permanent barriers are set in each hydrocarbon-bearing zone in the well and that surface plugs are placed. The process shall ensure that no fluid or flow is possible through the wellbore, and that there is no communication from any permeable formation to the surface *via* any casing annulus.

Suspended, sidetracked, or converted wells are considered active until the full wellbore from reservoir to surface, including any sidetracks, is permanently plugged.

Satisfactory P&A is verified and agreed with QatarEnergy upon review and approval of well P&A reports immediately following site activities, where QatarEnergy will determine if the final well state meets the P&A standards. This may entail a third-party verification if requested by QatarEnergy.

Monitoring

P&A wells are subject to a monitoring period to verify that hydrocarbon permeable zones and aquifers have been properly isolated. For onshore wells, this includes a monitoring period of two to five years (case to case) to confirm all pressures are zero. For offshore (platform and subsea) wells, the mud line suspension wellhead assembly should be retained for at least two years to facilitate long-term monitoring before final removal.

For platform wells, conductor and surface casing strings may be retained until slots are required or until the platform is decommissioned, meaning that ongoing inspection of the conductor assemblies, well caps or suspension trees should be conducted as part of the platform's ongoing preventive maintenance program. Additionally, any leaks at the wellhead should be detected by wellbay gas detection systems.

Where platform decommissioning is scheduled prior to the end of the well monitoring period, the Operator should agree on the monitoring plans with QatarEnergy.



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	Final decommissioning A well is considered finally decommissioned when the stipulated monitoring period has been completed satisfactorily, and all surface wellhead equipment (including any suspension trees and pressure monitoring equipment used in the P&A phase) is removed and the well site returned to its original conditions. Decommissioning a subsea well includes retrieving all casing strings to a minimum of three metres below the seabed to accommodate fishery activities in the area. For offshore platform wells, the conductor and casing strings cemented to the surface should remain in place until a slot recovery programme is initiated or until platform decommissioning, when the structure and casing strings should be removed from the field. For onshore wells, wellheads should be cut below most of the outer casing spools, horizontally cutting all casings, including cement. The Operator retains responsibility for all operational, suspended, and abandoned wells until all wells are finally decommissioned, well sites are restored, and the concession area is returned to QatarEnergy. Any additional well site monitoring requirements (and durations) beyond this should be agreed upon as part of the well closeout and handover process.
Equipment Dismantling & Removal	
Platform topsides	Removal methods should minimise offshore operations, multiple lifts, and potential vessel HSE risks as far as reasonably practicable. All topsides should be returned to an approved onshore location for reuse, recycling, or disposal. The Operator should plan for and demonstrate maximum reusable/ recyclable materials recovery. Methods for progressive dismantling of recovered topsides after transportation onshore are to be documented in method statements and may be reviewed by QatarEnergy.
Platform jackets and piles	Jackets should be fully removed. Any piles should be severed below the natural seabed level at a depth that ensures any remains are unlikely to become uncovered. Jackets should not be stripped of marine growth offshore and instead be dealt with at onshore yards. The Operator should achieve a sufficient cut depth of one to three metres below the natural seabed level. However, consideration will be given to the prevailing seabed conditions and currents. The cut depth should be detailed



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	in the Decommissioning Plan and discussed with QatarEnergy and the MoECC. Any potential technical restrictions to removing platform piles/ footings should be identified to QatarEnergy as soon as they are anticipated, and alternative approaches should be proposed to QatarEnergy for its consideration. Jackets should be transported onshore by a single lift/ float and tow unless size and weight restrictions render this impracticable. If not achieved by a single lift, the main risks associated with cutting and lifting should be assessed and reduced to ALARP; the number of sections and cuts required, and vessel operations should be minimised. After the jacket and pile caps are removed, the seabed area should be surveyed.
Onshore process equipment	All surface process equipment (piping, vessels, generators, turbines, reduction cells, furnaces, cooling towers, heat exchangers (HEX), boiler and fuel storage systems, septic tanks, etc.) should be removed. Progressive dismantling should be performed at licensed sites where waste can be managed. The Operator should adopt removal methods that maximise recycling potential. All storage tanks should be removed unless potential reuse options have been identified and the decision to decommission is formally deferred. Any deferral should be time-bound and include provisions for care and maintenance. Verification Soil Sampling (VSS) should be conducted after the removal of product storage tanks to assess the presence of any soil impacts from previous leaks and spills. Decommissioning by Toppling or Demolition may be considered, provided that acceptable safety standards are maintained, and that the recovery of recyclable material is not compromised. Toppling of structures at height, such as conveying systems, may not be permissible on safety grounds. Above-ground storage tanks Method statements should consider safe dismantling methods, including: Focusing on areas with a higher potential for subsidence or collapse, particularly at pipeline crossings.



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	• Ensuring adequate liquid seal by water filling and blanking-off tank openings. • Inerting the tank and providing structural support for removal. • Cutting tank wall sections and removing base plate and tank foundations, along with all other interconnected piping and secondary/ tertiary structures. Underground storage tanks Underground storage tanks should be fully removed by isolating and inerting the tank, removing residual products, cleaning the tanks and pipes, and disposing of all materials. Backfilling and soil covering should be completed once the tanks are removed.
Offshore pipelines	Offshore pipelines should be decommissioned as soon as practicable where there is no feasible future intended use. The main pipeline sections and all ancillary equipment to the main line (pig traps, valve assemblies, valve skids, structures, mattresses, etc.) may be decommissioned <i>in situ</i>, provided that the conditions stipulated by the MoECC are met. Pipeline sections within the 500-metre zone from a connected platform, and the shore section 500 metres from the beach valve (onshore battery limit) should be removed if reasonably practicable to facilitate future development and minimise third-party impacts. Offshore pipelines left <i>in situ</i> should be cleaned before cutting both ends. The requirements for filling, sealing, and burying both ends or using natural filling of seawater after cleaning should be identified in the Decommissioning Plan and approved by QatarEnergy. The Operator should also ensure that potential impacts and risks to third parties are reduced to ALARP by providing that: • Pipelines are not subject to or at risk of future development of spans. • Exposed, vulnerable sections are buried/ rock-dumped, or expected to self-bury over time. All debris should be cleared from the 500-metre zone of the remaining installation, and 50-metre line on either side of the pipeline. Redundant materials and waste will be transported onshore for disposal.

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Onshore pipelines	Land-based large-diameter pipelines should be removed as far as is reasonably practicable, as determined by QatarEnergy. Tie-in spools should be removed between decommissioned and non-decommissioned sections of pipelines. Onshore pipelines and all small-bore flowlines (<12" diameter) should be removed. All buried electrical cables should also be removed. Long-term suspension of abandoned or disused pipelines is not permitted unless alternative arrangements for future use have been agreed upon and an approved preservation maintenance programme is in place. Any non-metallic pipelines should be fully removed.
Subsea infrastructure	All subsea infrastructures (including manifolds, umbilicals, subsea cables, riser guards, wellhead protection structures, drilling templates, etc.) should be recovered and returned to shore for further processing. All fibre-optic (FO) and power cables should be de-energised, isolated at both ends and reeled in for disposal.
Land-based structures	All above-ground steelwork and concrete should be entirely removed from the location during decommissioning. Foundations should be excavated and backfilled with compacted granular fill or other material according to the type of soil to achieve a landscape as close as reasonably practicable to the original conditions. Excavated non-impacted concrete foundations may be broken up and re-incorporated into the soil upon approval from QatarEnergy and subject to future land use requirements. The remediated site/ location should not be visually impacted.
Disposal, Site Clearance, & Remediation	
Waste management and recycling	A waste management plan should be developed through the site assessment and as part of the EMP. The plan should be developed following applicable QatarEnergy standards and relevant area guidelines and regulations and demonstrate how waste generation is minimised throughout decommissioning. Additionally, waste management techniques should minimise emissions as far as reasonably practicable.



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	The waste management plan should commit to a waste management hierarchy (<i>i.e.</i>, reduce, reuse, and recycle). This hierarchy translates into maximising recycling potential, considering reuse options, and considering the salvage value of dismantled or preserved equipment. All debris should be removed before replacing any surface ground soil. Waste streams should be segregated and separated by MoECC-authorized waste treatment facilities. Onshore yards and waste management facilities are assumed to be available within the State of Qatar in the future, unless cross-boundary waste movement is required and confirmed. NORM-contaminated waste should be secured and transported correctly to avoid secondary contamination. All movement of NORM waste to a location outside the QatarEnergy concession area should be communicated to QatarEnergy and the MoECC in advance. Transportation should be point-to-point by an MoECC-licensed NORM contractor to a location appointed by the Operator and approved by QatarEnergy. The transportation may be subject to permitting through the MoECC. Final disposition records of all disposed wastes should be retained. These records should detail the quantities disposed, the receiving location, the waste contractor, and the disposal methods.
Seabed debris clearance	All debris should be cleared from the 500-metre zone of the remaining installation, and 50-metre line on either side of the pipeline. Redundant materials and waste will be transported onshore for disposal. Specialised equipment and techniques should be considered wherever practicable to minimise the need for over-trawling and reduce sediment disturbance. Legacy offshore drill cuttings should be managed if they impose a hazard or risk, as mentioned in the EIA/ EMP, and are subject to further discussion with QatarEnergy.
Land and water Remediation	According to available environmental baseline information and conditions and as per QatarEnergy and MOECC requirements, an EMP should be established and followed to remediate the site using proper technologies to restore it to initial conditions or at least to acceptable conditions as per future use requirements. This may require: • Minimising and monitoring vessels used for decommissioning and other sources of emissions during decommissioning.



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	• Remediating impacted water bodies and monitoring and protecting aquifers and underground water bodies from the migration of contaminants. • Assessing soil contamination and implementing risk-based Remediation technologies to return soil condition to an acceptable state. • Handling legacy onshore drill cuttings as outlined in the EIA/ EMP (if applicable). • Restoring the landscape as far as is reasonably practicable so that it does not present aesthetic concerns or other hazards to populations or overland transport. • Providing additional primary survey data if environmental baseline information is incomplete or inconclusive.
Post-decommissioning Monitoring	
Well site monitoring	If residual risks to the well site remain after final decommissioning, or if there are difficulties in returning the well site to its initial conditions, the well site will require risk-based monitoring.
Seabed monitoring	Where practicable, conduct an ROV survey to ensure Baseline Conditions are achieved as per QatarEnergy requirements. Further post-decommissioning environmental surveys may be required in addition to debris identification and clearance surveys. Monitoring will be risk-based where significant contamination near an installation necessitates monitoring the levels of hydrocarbons, heavy metals, or other contaminants in sediment and biota. Post-decommissioning seabed monitoring should continue as per the agreed EMP until the concession area is returned to QatarEnergy. The agreed strategy may entail multiple surveys scheduled after the initial study depending on the associated risk. <i>In situ</i> offshore pipelines A pipeline abandoned <i>in situ</i> should be subject to a suitable monitoring and maintenance programme, as determined by the decommissioning closeout process. The form and duration of the planned monitoring activity should consider pipeline stability and ensure that any sections that

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	have evolved into snagging hazards are remedied or removed. The results of every post-decommissioning monitoring survey should be reported, and the frequency of further surveys should be discussed and agreed/ reduced over time.
Soil and groundwater monitoring	Any land that has not been remediated to a level acceptable to the MoECC may require ongoing monitoring in the future. Requirements should be agreed upon with the MoECC. Soil and groundwater monitoring should continue post-decommissioning as per the agreed EMP until the concession area is returned to QatarEnergy.

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3.4.2.3 Processing, Storage, & Transport Assets

Processing, Storage, & Transport assets are 'midstream and downstream' facilities and equipment involved in refining, processing, and storing/ transmitting crude oil and natural gas. TABLE 15 provides further details on Processing, Storage, & Transport assets.

TABLE 15: PROCESSING, STORAGE, & TRANSPORT ASSETS DESCRIPTION

Characteristic	Detail
Composition	Facilities dedicated to refining, processing, storing, and transporting hydrocarbons, including: - Onshore LNG facilities - Common/ shared facilities - Petrochemical plants (e.g., sulphur plants), refineries, and fertiliser plants - Oil and gas refining, processing, storage, and/ or transport facilities
Decommissioning focus area	- Removal of hazardous materials (chemicals, catalysts, etc.) and the identification and handling of any process residues - Central storage and transport infrastructures (e.g., storage tanks, transfer pipelines, and loading arms) which require decommissioning unless future use options have been accepted

TABLE 16 details the guidance for Processing, Storage, & Transport assets as per the Decommissioning Process steps described in Chapter 3.4.2.1.

TABLE 16: DETAILED BASE CASE GUIDANCE FOR PROCESSING, STORAGE, & TRANSPORT ASSETS

Activity	Minimum Decommissioning Requirements
Cessation Of Operations	
Safe isolation	Upon cessation of operations and facility shutdown, the Operator should ensure that all hydrocarbon and chemical inventory is safely removed. Additionally, the facilities should be prepared for flushing, cleaning, and safe Deconstruction. This 'Cold State' period should be reduced as far as reasonably practicable. During the Cold State, ongoing maintenance will still be required to preserve the integrity



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	of the facilities and minimise safety and environmental hazards. The facilities may require several different isolation tasks to be completed. However, it is considered 'Cold' when: • Where applicable, temporary facilities have been removed. • All residual production fluids have been evacuated through the closed drains system to a safe containment location before purging with a suitable inert medium. • All systems have been drained, purged, and left open to the atmosphere to allow free venting of residual gases. • All unused production chemicals/ fuels have been evacuated to tote tanks or other suitable media. • Process systems have been positively isolated to prevent fluid migration beyond local systems and components. Any remaining open drain points have been isolated, or a temporary collection system has been established if isolation is not practicable. • All electrical equipment other than that required for the preservation of essential systems or the execution of Deconstruction activities has been safely isolated before removal. This includes de-energising, LOTO, and providing detailed isolation schemes and drawings before handing over the facilities to contractors. • All non-essential materials have been removed from the facilities and clear access is provided. During the Cold State, the Operator should conduct ongoing maintenance to preserve the integrity of the facilities from degradation hazards. This will include maintaining temporary drainage and containment systems, inspecting remaining live equipment (e.g., utility systems), monitoring and maintaining any inerted systems, and conducting structural integrity surveys to identify and mitigate potential dropped object risk. Prior to the final handover, the Operator should: • Evaluate all process systems for residual radiation caused by NORM or radioactive sources. • Inventorize all irrecoverable waste and detail any residual contaminants (fluid composition and anticipated volumes).
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	Document all isolation schemes, location maps, and survey data. This information should be passed to the Deconstruction contractor. Partial decommissioning While isolating the facilities and equipment to be decommissioned, the Operator should ensure that any interconnected systems are identified and isolated/ rerouted before handover. To ensure a safe working environment for decommissioning, the Operator should systematically disconnect and secure energy sources, implement LOTO procedures, and verify the absence of hazardous energy. A pre-handover safety review should be conducted.
Preservation of services	The Operator should: - Identify and preserve interconnected equipment and interfaces with live upstream or downstream facilities. - Maintain any essential or identified safety-critical systems and services required during decommissioning, as specified in the facility MAH report, such as utilities, instrument/ process air, firefighting, generators, transformers, hazard lights, emergency response equipment, and HVAC. - Ensure pollution control facilities (e.g., treatment plants/ landfills) are the last to be decommissioned until alternate arrangements are made or that current facilities can handle the decommissioning load.
Facility Preparation	
Site assessment	HSE studies The series of HSE studies required within the project execution process should be delivered to and approved by QatarEnergy before the commencement of any decommissioning project (refer to TABLE 11 for 'pre-decommissioning' requirements). Data completeness review The Operator should assess the completeness of environmental monitoring data collected throughout the facilities' operational life. This should involve reviewing historic operational EMP compliance and the completeness of environmental monitoring data.



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	Known environmental impacts or incomplete monitoring In the event of known impacts or if operations EMP compliance data is incomplete, additional primary data may be required to confirm site environmental conditions immediately before decommissioning by sampling the location and/ or adjacent locations. This typically includes an SGW ESA for onshore facilities and a seabed assessment for offshore platforms. Additional sampling may be required based on these studies. If primary data collection is not reasonably practicable, secondary data from the location or adjacent locations may be considered upon approval from QatarEnergy. No baseline situation If there is no reliable environmental baseline, the Operator should examine and assess the conditions surrounding the asset and consider EIAs submitted by other geographically proximate Operators. This data should formalise the target Remediation for the decommissioning location before seeking approval from QatarEnergy and MoECC (as applicable). Other studies Other technical supporting studies, such as structural integrity assessments, will be required upon request to ensure that the proposed removal techniques in the Decommissioning Plan do not impose safety hazards or further risks. The outcomes of such studies should be incorporated into the final Decommissioning Plan for approval by QatarEnergy. Method statements The Operator should provide detailed method statements for all major works. These will be reviewed by QatarEnergy as required.
Flushing and cleaning	Cleanliness standard The standard for final cleanliness of process piping and vessels should be measured by the concentration of OiW of the wash water, which should be no more than 30 ppm before commencing Deconstruction activities. Suitable cleaning and Decontamination techniques will depend on the nature of the product and the extent of any residues. Contractor method statements for flushing should demonstrate how water usage can be minimised and how excessive chemical treatment can be avoided.



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	Prior to flushing and cleaning, the Operator may need to identify long lead items for disposal in other countries. These activities may require additional environmental modelling, such as hydrodynamic modelling of pipeline discharges or large tank flushing/ cleaning discharges. If wash water is not collected through current facilities' closed drain systems, then suitable temporary collection should be provided so that wastewater treatment can be conducted offsite. Facilities retained in an extended Cold State before decommissioning may require repeated preparatory activities (see sub-activity "Safe isolation" above). NORM management NORM Decontamination should be controlled to protect personnel and the environment. The Operator should ensure that: • Decontamination activities are conducted by MoECC-licensed NORM management contractors. • Decontamination activities are conducted in a facility authorised by QatarEnergy and the MoECC. • The MoECC-approved Decontamination methods are used to prevent the migration of contaminants. • All previously NORM-contaminated equipment are returned to the regular Deconstruction stream ('normal handling') when exposure levels are confirmed to be within acceptable limits. Note: Guidance on NORM transportation and waste are detailed below in the "Waste management and recycling" Activity.
Equipment Dismantling & Removal	
Process equipment	All surface process equipment (piping, vessels, generators, turbines, reduction cells, furnaces, cooling towers, HEX, boiler and fuel storage systems, septic tanks, etc.) should be removed. Progressive dismantling should be performed at licensed sites where waste can be managed. The Operator should adopt removal methods that maximise recycling potential. All storage tanks should be removed unless potential reuse options have been identified and the decision to decommission is formally deferred. Any deferral should be



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	time-bound and include provisions for care and maintenance. VSS should be conducted after the removal of product storage tanks to assess the presence of any soil impacts from previous leaks and spills. Decommissioning by Toppling or Demolition may be considered, provided that acceptable safety standards are maintained, and that the recovery of recyclable material is not compromised. Toppling of structures at height, such as conveying systems, may not be permissible on safety grounds. Above-ground storage tanks Method statements should consider safe dismantling methods, including: • Focusing on areas with a higher potential for subsidence or collapse, particularly at pipeline crossings. • Ensuring adequate liquid seal by water filling and blanking-off tank openings. • Inerting the tank and providing structural support for removal. • Cutting tank wall sections and removing base plate and tank foundations, along with all other interconnected piping and secondary/ tertiary structures. Underground storage tanks Underground storage tanks should be fully removed by isolating and inerting the tank, removing residual products, cleaning the tanks and pipes, and disposing of all materials. Backfilling and soil covering should be completed once the tanks are removed.
Pipelines	Land-based large-diameter pipelines should be removed as far as is reasonably practicable, as determined by QatarEnergy. Tie-in spools should be removed between decommissioned and non-decommissioned sections of pipelines. Onshore pipelines and all small-bore flowlines (<12" diameter) should be removed. All buried electrical cables should also be removed.

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	Long-term suspension of abandoned or disused pipelines is not permitted unless alternative arrangements for future use have been agreed upon and an approved preservation maintenance programme is in place. Any non-metallic pipelines should be fully removed.
Land-based structures	All above-ground steelwork and concrete should be entirely removed from the location during decommissioning. Foundations should be excavated and backfilled with compacted granular fill or other material according to the type of soil to achieve a landscape as close as reasonably practicable to the original conditions. Excavated non-impacted concrete foundations may be broken up and re-incorporated into the soil upon approval from QatarEnergy and subject to future land use requirements. The remediated site/ location should not be visually impacted. Civil assets Any infrastructure, such as roads, jetties, and quaysides, may remain without monitoring if reuse is agreed upon and no major environmental impacts are anticipated. Port infrastructure built on reclaimed lands, which alter the topography, may be preserved for potential future use.
Disposal, Site Clearance, & Remediation	
Waste management and recycling	A waste management plan should be developed through the site assessment and as part of the EMP. The plan should be developed following applicable QatarEnergy standards and relevant area guidelines and regulations and demonstrate how waste generation is minimised throughout decommissioning. Additionally, waste management techniques should minimise emissions as far as reasonably practicable. The waste management plan should commit to a waste management hierarchy (<i>i.e.</i>, reduce, reuse, and recycle). This hierarchy translates into maximising recycling potential, considering reuse options, and considering the salvage value of dismantled or preserved equipment. All debris should be removed before replacing any surface ground soil. Waste streams should be segregated and separated by MoECC-authorized waste treatment facilities. Onshore yards and waste management facilities are assumed to be available within the State of Qatar in the



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	future, unless cross-boundary waste movement is required and confirmed. NORM-contaminated waste should be secured and transported correctly to avoid secondary contamination. All movement of NORM waste to a location outside the QatarEnergy concession area should be communicated to QatarEnergy and the MoECC in advance. Transportation should be point-to-point by an MoECC-licensed NORM contractor to a location appointed by the Operator and approved by QatarEnergy. The transportation may be subject to permitting through the MoECC. Final disposition records of all disposed wastes should be retained. These records should detail the quantities disposed, the receiving location, the waste contractor, and the disposal methods.
Land and water Remediation	According to available environmental baseline information and conditions and as per QatarEnergy and MOECC requirements, an EMP should be established and followed to remediate the site using proper technologies to restore it to initial conditions or at least to acceptable conditions as per future use requirements. This may require: • Minimising and monitoring emissions during decommissioning. • Remediating impacted water bodies and monitoring and protecting aquifers and underground water bodies from the migration of contaminants. • Assessing soil contamination and implementing risk-based Remediation technologies to return soil condition to an acceptable state. • Restoring the landscape as far as is reasonably practicable so that it does not present aesthetic concerns or other hazards to populations or overland transport. • Providing additional primary survey data if environmental baseline information is incomplete or inconclusive.
Post-decommissioning Monitoring	
Soil and groundwater monitoring	Any land that has not been remediated to a level acceptable to the MoECC may require ongoing monitoring in the future. Requirements should be agreed upon with the MoECC.

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	Soil and groundwater monitoring should continue post-decommissioning as per the agreed EMP until the concession area is returned to QatarEnergy.
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3.4.2.4 Power & Manufacturing Assets

Power & Manufacturing assets are non-oil and non-gas producing facilities and equipment (although hydrocarbons may be present as fuel gas, diesel storage, etc.). TABLE 17 provides further details on Power & Manufacturing assets.

TABLE 17: POWER & MANUFACTURING ASSETS DESCRIPTION

Characteristic	Detail
Composition	Facilities with limited hydrocarbon and toxic inventories, including: • Electricity generation (renewables and fossil fuels), desalination, and wastewater plants • Metals/ materials manufacturing, fabrication, and coating plants
Decommissioning focus area	• Power and utility plants which require safe electrical isolation from interconnected facilities • Manufacturing facilities which require assessment and Remediation of soil conditions due to potential contamination from heavy industrial activity, such as steel and aluminium plants • The recovery of commercially viable products from process systems

TABLE 18 details the guidance for Power & Manufacturing assets as per the Decommissioning Process described in Chapter 3.4.2.1.

TABLE 18: DETAILED BASE CASE GUIDANCE FOR POWER & MANUFACTURING ASSETS

Activity	Minimum Decommissioning Requirements
Cessation Of Operations	
Safe isolation	Upon cessation of operations and facility shutdown, the Operator should ensure that all hydrocarbon and chemical inventory is safely removed. Additionally, the facilities should be prepared for flushing, cleaning, and safe Deconstruction. This 'Cold State' period should be reduced as far as reasonably practicable. During the Cold State, ongoing maintenance will still be required to preserve the integrity of the facilities and minimise safety and environmental hazards.



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	The facilities may require several different isolation tasks to be completed. However, it is considered 'Cold' when: • All gas supply piping has been depressurised and purged before disconnection. • Hydrocarbon and chemical storage tanks have been drained, purged, and left open to the atmosphere to allow free venting of residual gases. • All unused production chemicals/ fuels have been evacuated to tote tanks or other suitable media. • All commercially viable products contained within manufacturing process units have been removed for potential reuse/ recycling where removal is practicable. • Irrecoverable waste has been inventoried, and details of any residual contaminants (fluid composition and anticipated volumes) have been passed to the Deconstruction contractor. • All electrical equipment other than that required for the preservation of essential systems or the execution of Deconstruction activities has been safely isolated before removal. This includes de-energising, LOTO, and providing detailed isolation schemes and drawings before handing over the facilities to contractors. Partial decommissioning While isolating the facilities and equipment to be decommissioned, the Operator should ensure that any interconnected systems are identified and isolated/ rerouted before handover. Timely management of shutdown activities will be required to manage potential impacts on the grid. To ensure a safe working environment for decommissioning, the Operator should systematically identify upstream and downstream interfaces with respect to power assets, disconnect and secure energy sources, implement LOTO procedures, and verify the absence of hazardous energy. A pre-handover safety review should be conducted, and all activities should be coordinated with permits as per the asset's Electrical System Safety Rules.
Preservation of services	The Operator should: • Ensure that any generating units proposed for reuse are identified, tagged, and carefully preserved before,


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	and during decommissioning as per the original equipment manufacturer's (OEM) guidance. • Identify and preserve interconnected equipment and interfaces with live upstream or downstream facilities. • Maintain any essential or identified safety-critical systems and services required during decommissioning, as specified in the facility MAH report, such as utilities, instrument/ process air, firefighting, generators, transformers, hazard lights, emergency response equipment, and HVAC. • Ensure pollution control facilities (e.g., treatment plants/ landfills) are the last to be decommissioned until alternate arrangements are made or that current facilities can handle the decommissioning load.
Facility Preparation	
Site assessment	HSE studies The series of HSE studies required within the project execution process should be delivered to and approved by QatarEnergy before the commencement of any decommissioning project (refer to TABLE 11 for 'pre-decommissioning' requirements). Data completeness review The Operator should assess the completeness of environmental monitoring data collected throughout the facilities' operational life. This should involve reviewing historic operational EMP compliance and the completeness of environmental monitoring data. Known environmental impacts or incomplete monitoring In the event of known impacts or if operations EMP compliance data is incomplete, additional primary data may be required to confirm site environmental conditions immediately before decommissioning by sampling the location and/ or adjacent locations. This typically includes an SGW ESA for onshore facilities and a seabed assessment for offshore platforms. Additional sampling may be required based on these studies. If primary data collection is not reasonably practicable, secondary data from the location or adjacent locations may be considered upon approval from QatarEnergy.


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	No baseline situation If there is no reliable environmental baseline, the Operator should examine and assess the conditions surrounding the asset and consider EIAs submitted by other geographically proximate Operators. This data should formalise the target Remediation for the decommissioning location before seeking approval from QatarEnergy and the MoECC (as applicable). Other studies Other technical supporting studies, such as structural integrity assessments, will be required upon request to ensure that the proposed removal techniques in the Decommissioning Plan do not impose safety hazards or further risks. The outcomes of such studies should be incorporated into the final Decommissioning Plan for approval by QatarEnergy. Method statements The Operator should provide detailed method statements for all major works. These will be reviewed by QatarEnergy as required.
Flushing and cleaning	Cleanliness standard The standard for final cleanliness of process piping and vessels should be measured by the concentration of OiW of the wash water, which should be no more than 30 ppm before commencing Deconstruction activities. Suitable cleaning and Decontamination techniques will depend on the nature of the product and the extent of any residues. Contractor method statements for flushing should demonstrate how water usage can be minimised and how excessive chemical treatment can be avoided. Prior to flushing and cleaning, the Operator may need to identify long lead items for disposal in other countries. These activities may require additional environmental modelling, such as hydrodynamic modelling of pipeline discharges or large tank flushing/ cleaning discharges. If wash water is not collected through current facilities' closed drain systems, then suitable temporary collection should be provided so that wastewater treatment can be conducted offsite. Facilities retained in an extended Cold State before decommissioning may require repeated preparatory activities (see sub-activity "Safe isolation" above).



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Equipment Dismantling & Removal

Power, transmission, and distribution equipment

All surface process equipment (piping, vessels, generators, turbines, reduction cells, furnaces, cooling towers, HEX, boiler and fuel storage systems, septic tanks, *etc.*) should be removed.

Progressive dismantling should be performed at licensed sites where waste can be managed. The Operator should adopt removal methods that maximise recycling potential. In the case of metals/ manufacturing facilities, Deconstruction methods should consider the recovery of commercially viable products.

All buried electrical cables should also be removed.

All storage tanks should be removed unless potential reuse options have been identified and the decision to decommission is formally deferred. Any deferral should be time-bound and include provisions for care and maintenance.

VSS should be conducted after the removal of product storage tanks to assess the presence of any soil impacts from previous leaks and spills.

Decommissioning by Toppling or Demolition may be considered, provided that acceptable safety standards are maintained, and that the recovery of recyclable material is not compromised. Toppling of structures at height, such as conveying systems, may not be permissible on safety grounds.

Above-ground storage tanks

All hydrocarbon and non-hydrocarbon-containing storage tanks that have not been identified for reuse should be decommissioned systematically. Method statements should consider safe dismantling methods, including:

- Ensuring adequate liquid seal by water filling and blanking-off tank openings.
- Inerting hydrocarbon-containing tanks and providing structural support for removal.
- Cutting tank wall sections and removing base plate and tank foundations, along with all other interconnected piping and secondary/ tertiary structures.

Underground storage tanks

Underground storage tanks should be fully removed by isolating and inerting the tank, removing residual products,

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	cleaning the tanks and pipes, and disposing of all materials. Backfilling and soil covering should be completed once the tanks are removed.
Gas and seawater intake pipelines (metallic and non-metallic) and export lines	All on-plot large-diameter main import and export pipelines should be isolated at the facility battery limit and fully removed. This includes all gas intake pipelines, fibreglass-reinforced plastic (FRP) seawater intake lines and main incoming storage tank lines. Off-plot sections of pipelines should be removed up to the Operator's battery limit unless otherwise agreed. All proposals for retaining a line <i>in situ</i> (either fully or in part) should be approved by QatarEnergy.
Land-based structures	All above-ground steelwork and concrete should be entirely removed from the location during decommissioning. Foundations should be excavated and backfilled with compacted granular fill or other material according to the type of soil to achieve a landscape as close as reasonably practicable to the original conditions. Excavated non-impacted concrete foundations may be broken up and re-incorporated into the soil upon approval from QatarEnergy and subject to future land use requirements. The remediated site/ location should not be visually impacted. In the case of manufacturing facilities, particular care should be demonstrated regarding the cleanliness of subsurface materials planned to be incorporated into the site due to the higher potential for contamination. Civil Assets Any infrastructure, such as roads, jetties, and quaysides, may remain without monitoring if reuse is agreed upon and no major environmental impacts are anticipated. Port infrastructure built on reclaimed land, which alter the topography, may be preserved for potential future use.
Disposal, Site Clearance, & Remediation	
Waste management and recycling	A waste management plan should be developed through the site assessment and as part of the EMP. The plan should be developed following applicable QatarEnergy standards and relevant area guidelines and regulations and demonstrate how waste generation is minimised throughout decommissioning. Additionally, waste



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	management techniques should minimise emissions as far as reasonably practicable. The waste management plan should commit to a waste management hierarchy (<i>i.e.</i>, reduce, reuse, and recycle). This hierarchy translates into maximising recycling potential, considering reuse options, and considering the salvage value of dismantled or preserved equipment. All debris should be removed before replacing any surface ground soil. Waste streams should be segregated and separated by MoECC-authorized waste treatment facilities. Onshore yards and waste management facilities are assumed to be available within the State of Qatar in the future, unless cross-boundary waste movement is required and confirmed. Final disposition records of all disposed wastes should be retained. These records should detail the quantities disposed, the receiving location, the waste contractor, and the disposal methods.
Land and water Remediation	According to available environmental baseline information and conditions and as per QatarEnergy and MOECC requirements, an EMP should be established and followed to remediate the site using proper technologies to restore it to initial conditions or at least to acceptable conditions as per future use requirements. This may require: • Minimising and monitoring emissions during decommissioning. • Remediating impacted water bodies and monitoring and protecting aquifers and underground water bodies from the migration of contaminants. • Assessing soil contamination and implementing risk-based Remediation technologies to return soil condition to an acceptable state. • Restoring the landscape as far as is reasonably practicable so that it does not present aesthetic concerns or other hazards to populations or overland transport. • Providing additional primary survey data if environmental baseline information is incomplete or inconclusive.
Post-decommissioning Monitoring	
Soil and groundwater monitoring	Any land that has not been remediated to a level acceptable to the MoECC may require ongoing monitoring

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	in the future. Requirements should be agreed upon with the MoECC. Soil and groundwater monitoring should continue post-decommissioning as per the agreed EMP until the concession area is returned to QatarEnergy.
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3.4.2.5 Non-producing Assets

Non-producing assets are structures or buildings that do not hold hydrocarbons or its derivatives. The classification of 'Non-producing' is not definitive, and guidance should always be sought from QatarEnergy and the MoECC (where required) regarding specific technical and permit requirements before decommissioning decisions are made. TABLE 19 provides further details on Non-producing assets.

TABLE 19: NON-PRODUCING ASSETS DESCRIPTION

Characteristic	Detail
Composition	Generally, Non-producing assets are considered as the following: - Structures or buildings for human habitation and use - Facilities that do not produce, utilise, or store hazardous, toxic, or combustible materials - Industrial facilities with zero potential to produce or emit hydrocarbons and/ or its derivatives
Decommissioning focus area	- Removal and disposal of all waste generated during decommissioning - Return of soil conditions to acceptable conditions for future use

TABLE 20 details the guidance for Non-producing assets as per the Decommissioning Process described in Chapter 3.4.2.1.

TABLE 20: DETAILED BASE GUIDANCE FOR NON-PRODUCING ASSETS

Activity	Minimum Decommissioning Requirements
Facility Preparation	
Site assessment	HSE Studies An EMP and Waste Management Plan is recommended for non-producing assets. Further, HSE studies may be required for more complex projects.
Equipment Dismantling & Removal	
Land-based structures	Demolition of civil buildings should maintain acceptable safety standards and ensure that the recovery of recyclable materials is not compromised. All above-ground steelwork and concrete should be entirely removed from the location during



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	decommissioning. Foundations should be excavated and backfilled with compacted granular fill or other material according to the type of soil to achieve a landscape as close as reasonably practicable to the original conditions. Excavated non-impacted concrete foundations may be broken up and re-incorporated into the soil upon approval from QatarEnergy and subject to future land use requirements. The remediated site/ location should not be visually impacted. In the case of manufacturing facilities, particular care should be demonstrated regarding the cleanliness of subsurface materials planned to be incorporated into the site due to the higher potential for contamination. Civil Assets Any infrastructure, such as roads, jetties, and quaysides, may remain without monitoring if reuse is agreed upon and no major environmental impacts are anticipated. Port infrastructure built on reclaimed land, which alter the topography, may be preserved for potential future use.
Disposal, Site Clearance, & Remediation	
Waste management and recycling	A waste management plan should be developed through the site assessment and as part of the EMP. The plan should be developed following applicable QatarEnergy standards and relevant area guidelines and regulations and demonstrate how waste generation is minimised throughout decommissioning. Additionally, waste management techniques should minimise emissions as far as reasonably practicable. The waste management plan should commit to a waste management hierarchy (<i>i.e.</i>, reduce, reuse, and recycle). This hierarchy translates into maximising recycling potential, considering reuse options, and considering the salvage value of dismantled or preserved equipment. All debris should be removed before replacing any surface ground soil. Waste streams should be segregated and separated by MoECC-authorized waste treatment facilities. Onshore yards and waste management facilities are assumed to be available within the State of Qatar in the future, unless cross-boundary waste movement is required and confirmed. Final disposition records of all disposed wastes should be retained. These records should detail the quantities

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	disposed, the receiving location, the waste contractor, and the disposal methods.
Land and water Remediation	According to available environmental baseline information and conditions and as per QatarEnergy and MOECC requirements, an EMP should be established and followed to remediate the site using proper technologies to restore it to initial conditions or at least to acceptable conditions as per future use requirements. This will require the removal of all debris, ensuring public safety and ensuring that the state of the land does not present aesthetic concerns or other hazards to populations or overland transport.
Post-decommissioning Monitoring	
Soil and groundwater monitoring	No monitoring is required on the basis that contamination levels are acceptable and Remediation has been achieved based on QatarEnergy standards and the MoECC requirements. It is assumed that any changes to the visual properties of the land (topography) will be self-remediated over time.



3.4.3 Derogations for Decommissioning Risk Management

The Operator's selected Decommissioning Methods should, unless otherwise agreed, align with the decommissioning base case (detailed in Chapter 3.4.2). Derogations from the Guideline can be raised when:

- There is a justified technical limitation to achieving the decommissioning base case (detailed in Chapter 3.4.2).
- An alternative decommissioning option is proposed based on a different standard, which is demonstrated to be equivalent to or better than that adopted by QatarEnergy.

In requesting a Derogation, the Operator should adhere to the following principles:

- Request Derogations only at the project's EPRD phase.
- Justify deviations from the decommissioning base case arising from technical removal and safety challenges.
- Conduct a Comparative Assessment prior to requesting a Derogation.
- Clarify any additional risks that may arise from the alternative decommissioning options. Any deviations requested should present a better choice than the base case and prove that risks are reduced to ALARP through the Comparative Assessment.
- Seek QatarEnergy's final approval and satisfy all stipulated conditions.

A Comparative Assessment enables the Operator to assess alternative decommissioning approaches which deviate from the base case guidance detailed in Chapter 3.4.2. The Comparative Assessment should:

- Identify alternative decommissioning options and conduct initial screening, relying on industry best practices and standards.
- Assess decommissioning options according to safety, technical, environmental, and societal criteria.
- Undergo review and approval on a case-by-case basis.

APPENDIX E provides further guidance on Comparative Assessments.

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4.0 REFERENCES TO OTHER DOCUMENTS

In addition to industry best practices, the base case guidance in this Guideline is based on QatarEnergy's technical documents derived from the State of Qatar's national laws and ratified international conventions. TABLE 21 outlines the 24 documents relevant to decommissioning.

QatarEnergy standards, procedures, and references are dynamic documents that undergo regular reviews and updates. The Operator should verify the status, content, and specifications of any standard, procedure, or reference document with QatarEnergy. This collaborative approach ensures alignment with the latest industry best practices and regulatory requirements.

TABLE 21: REFERENCES TO OTHER DOCUMENTS

Document Title	Document Number	Internal/ External Document (if any)	Document Referencing
Disposal of Items Procedure	PM-CPM-CRP-312	Internal	Upwards
Abandonment of Fixed Offshore Installations (Topsides and Jackets)	CORP-ENV-STD-034	Internal	Upwards
Corporate Standard for Environmental Requirements for Decommissioning & Restoration of Facilities	CORP-ENV-STD-040	Internal	Upwards
Standard for Major Accident Hazard Management	QP-MAH-STD-001	Internal	Upwards
Procedure for Project Decommissioning and Handover	CORP-COM-PRC-043	Internal	Upwards
Standard for Managing Naturally Occurring Radioactive Material (NORM)	CORP-SAF-STD-002	Internal	Upwards
Drilling Operations Manual Suspension and Abandonment	VOLUME 5 – CHAPTER 15	Internal	Sideways

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Subsea Pipelines <i>In-situ</i> Abandonment Guideline - Acceptance Criteria	VS-PLC-GDL-004	Internal	Sideways
Standard for Waste Management	QP-ENV-STD-004	Internal	Upwards
Guideline for Waste Management	QP-ENV-GDL-006	Internal	Sideways
Ras Laffan Industrial City Environmental Regulations	IML-ENV-REG-007	Internal	Upwards
Mesaieed Industrial City Environmental Standards	IMM-ENV-STD-001	Internal	Upwards
Environmental Assessment and Authorisation for Capital Projects	IP-ENV-001	Internal	Upwards
Procedure for Environmental Assessment in Projects	QP-GDL-V-003	Internal	Upwards
Preparation of Environmental Management Plans	QP-GDL-V-002	Internal	Sideways
QP Standard for HSE Risk Management	QP-HSE-STD-100	Internal	Upwards
MAH Report Standard	QP-MAH-STD-020	Internal	Upwards
QP Standard for SIMOPS Assessment	QP-SAF-STD-007	Internal	Upwards
MAH Studies Interrelation Guideline	QP-MAH-GDL-001	Internal	Sideways
Corporate Guideline for MAH Report	CORP-MAH-GDL-002	Internal	Upwards
Management of Change Standard	QP-HSE-STD-040	Internal	Upwards
QP Standard for Waste Management	QP-ENV-PRC-005	Internal	Sideways

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QP Standard for Lifting Equipment and Operations	QP-PAI-STD-005	Internal	Sideways
Corporate Procedure for Lifting Equipment and Operations	CORP-ENG-PRC-038	Internal	Sideways
Corporate Guideline for Major Accident Hazard Management (MAHM) Report	CORP-MAH-GDL-002	Internal	Sideways
Qatar National Vision 2030	-	External	N/A
Environment Policy (Foundational Policies, QatarEnergy)	-	External	N/A

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5.0 DEFINITIONS

TABLE 22: DEFINITIONS OF COMMONLY USED TERMS

The attached definitions of terms is intended to assist with the interpretation of the Guidelines only. If unclear, kindly contact QatarEnergy for clarification.

Term	Definition
Baseline Conditions	The initial state or condition of a facilities' location, area, ecosystem, or environment before significant changes or impacts occur due to a particular activity, project, or event.
Decommissioning Activity	The breakdown of the Decommissioning Process steps into discrete decommissioning-related actions, from "Safe isolation" to "Soil and groundwater monitoring."
Decommissioning Method	The different ways a Decommissioning Activity may be conducted to achieve the base case (Full Removal).
Deconstruction	The process of controlled removal of facilities by a defined means, often by reverse installation.
Decontamination	A process of cleaning any facilities and equipment containing hydrocarbon or other hazardous substances to an agreed level of cleanliness.
Deferred Decommissioning	When the date of a facilities' decommissioning is postponed due to justified reasons.
Demolition	A Decommissioning Method, utilising Toppling, crushing, or bulldozing in a controlled manner to achieve facilities and equipment removal.
Derogation	A formal exemption allowing the deviation from QatarEnergy's decommissioning base case.
Engineering, Procurement, Removal, and Disposal (EPRD)	The comprehensive process for engineering design/ studies, contractor engagement, materials and equipment procurement, and decommissioning execution.
Environmental Impact Assessment (EIA)	An analysis that identifies, predicts, and assesses the potential environmental impacts associated with a project and its planned activities Refer to CORP-ENV-PRC-046 for further guidance.

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Environmental Management Plan (EMP)	A document that outlines the Operator's plan to mitigate and monitor the environmental aspects identified in the EIA. Refer to CORP-ENV-PRC-046 for further guidance.
Environmental Risk Register (ERR)	A register of environmental risks identified through various risk assessments. Refer to QP-HSE-STD-100 for further guidance.
Foundation Document	An agreement to which QatarEnergy is a party, governing inter alia, the rights and obligations of a joint venture or other third party in relation to the conduct of certain petroleum operations or other operations, including but not limited to; Production Sharing Agreements, Development and Fiscal Agreements and any other form of concession agreements.
Full Removal	Full Removal of facilities and equipment involves disposing of all installations, structures, pipelines, or other materials at ground or seabed level.
Formal Safety Assessments (FSA)	A suite of safety studies executed after hazard identification and up to quantitative risk assessment. The specific studies within the FSA may vary between different facilities and installations because the specific hazards may differ. Refer to QP-MAH-STD-001 for further details.
Hazardous Waste	Materials or substances that, due to their chemical, physical, or biological properties, pose potential risks to human health, the environment, or both. These wastes require special handling, storage, and disposal procedures to minimise harm and prevent pollution.
Major Accident Hazard (MAH)	A situation with the potential to result in a major accident, which is defined as follows: An uncontrolled occurrence in the operation of a facility/ installation and/ or project resulting in, or having the potential to result in, fire or explosion. This includes the release of hydrocarbons, chemicals, or any substance with the potential for multiple fatalities or serious personal injury to multiple persons. It may also cause significant damage to the facility/ installation or equipment thereon, including any loss in the stability of the installation and/ or any major environmental consequence. Refer to QP-HSE-STD-100 for further details.

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Non-Hazardous Waste	Also known as general or non-regulated waste, it encompasses materials that do not exhibit Hazardous Waste characteristics. These materials are considered safe for routine disposal by established waste management practices and regulations.
Notification to Decommission	A document that includes the Operator's intention to execute decommissioning.
Operator	The entity responsible for managing the day-to-day operations of the asset.
Remediation	Any action undertaken to eliminate, control, or reduce associated risks resulting from contamination of the soil and/or groundwater media.
Risk-Based Approach	The approach sets the decommissioning base case of Full Removal, anticipates risks to achieve the base case, and builds an understanding of post-decommissioning risks.
Simultaneous Operations (SIMOPS)	Two or more activities carried out within and in proximity to QatarEnergy assets and operations (e.g., on/ around the same Wellhead Jacket/platform/station/unit). Refer to QP-SAF-STD-007 for further guidance.
Soil And Groundwater Environmental Site Assessment (SGW ESA)	An environmental assessment that quantifies soil and groundwater impact. Refer to CORP-ENV-STD-040 for further guidance.
Toppling	The process of safely applying external forces to a structure or a building, causing it to collapse.

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APPENDIX

APPENDIX A - DECOMMISSIONING PLAN TEMPLATE

This Appendix provides a structure for the Decommissioning Plan, based on Chapter 3.3.2.2, with an indicative view of its recommended contents. The Operator can amend the template, provided that the content aligns with this Guideline.

1.0 FACILITIES DECOMMISSIONING SCOPE

1.1. FACILITIES DESCRIPTION

Provide the facilities' general description with the following, where applicable:

- Facilities type
- Location
- Layout/ map pictures
- General arrangement of facilities and equipment
- Field locations and blocks
- Interconnections/ interferences with other facilities
- Production capacity
- Cessation of operations or life extension decision

1.2. FACILITIES AND EQUIPMENT

The list of current facilities and equipment should, at a minimum, include the details outlined in TABLE A-1. Refer to the Facilities Inventory (TABLE A-3) to detail the facilities and equipment that are part of the Decommissioning Plan. The specified details for each facilities and equipment type may vary depending on their characteristics.

TABLE A-1: [...] DESCRIPTION

Facilities or Equipment	Identification Code	Description	Location	Dimensions (weight, height, etc.)
[Facilities or equipment type]				
[...]				



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1.3. INSTALLATION HISTORY

Provide a chronological sequence of the facilities and equipment installation history in alignment with the Facilities Inventory. The details may include:

- Date of installation
- Details of any major modifications

2.0 DECOMMISSIONING RISK CONSIDERATIONS

2.1. EARLY-STAGE DESIGN FOR DECOMMISSIONING

Share the design considerations that contribute to the decommissioning base case, including:

- Listing the decommissioning risks anticipated at the facilities' design stage.
- Detailing the measures taken at the facilities' design stage to facilitate decommissioning and maximise recycling potential.

2.2. ENVIRONMENTAL BASELINE CONDITIONS

Describe the environmental Baseline Conditions at the asset's inception and provide updates on any major events/ changes in environmental conditions that might affect the possibility of returning the site to Baseline Conditions following decommissioning. In developing this section, the following should be included:

- Description of the major environmental baseline characteristics of the location where the facilities are located.
- Summary of any major irreversible environmental risk identified across the facilities' operational life and subsequent plans to minimise risks to ALARP.

2.3. TECHNICAL DECOMMISSIONING RISKS AND MITIGATION MEASURES

In this section, the following elements should be detailed:

- Structural, integrity, and technical limitations to decommissioning from maintenance checks and risk registers across the facilities' operational life.
- Proposed mitigation plans to alleviate risks of deviation from the proposed Decommissioning Methods.
- Interdependencies with other facilities that the proposed Decommissioning Methods may impact.
- Insurances against unidentified risks (e.g., Decommissioning All Risk Insurance).

3.0 DECOMMISSIONING METHODS

3.1. DECOMMISSIONING APPROACH

Outline the selected Decommissioning Method for each of the facilities and equipment, the reason for selecting the method, and a description of the selected decommissioning base case. The summary of selected Decommissioning Methods should, at a minimum, include the details outlined in TABLE A-2.

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TABLE A-2: SUMMARY OF SELECTED DECOMMISSIONING METHODS

Facilities and Equipment	Identification Code	Selected Method	Reason For Selection	Base Case Description
[Facilities and equipment type]				
[...]				

3.2. DEVIATIONS FROM QatarEnergy's DECOMMISSIONING GUIDELINE

Justify any deviation from the base case (detailed in Chapter 3.4.2). Where applicable, the outlined deviations should be supported by a Comparative Assessment (further guidance in APPENDIX E).

4.0 DECOMMISSIONING ACTIVITIES

Describe the sequence of activities required to perform decommissioning and site Remediation of the location where the facilities are located. The sequence of Decommissioning Activities should follow FIGURE 7.

5.0 DECOMMISSIONING OUTLOOK

5.1. NEAR-TERM DECOMMISSIONING

Provide a detailed forecast of the facilities' partial and full decommissioning planned for the next five years, including:

- List of the facilities and equipment that are candidates for decommissioning in the next five years.
- Schedule of the Decommissioning Activities to be conducted in the following five years, including project stages.
- Justifications for decommissioning (e.g., no longer in use or cessation of operations).

5.2. LONG-TERM DECOMMISSIONING

Provide an indicative forecast of when partial and full decommissioning are expected to occur from the Decommissioning Plan's reporting date. The forecast should include the timing, duration, and project stages of the associated Decommissioning Activities and life extension decisions.

5.3. FUTURE DEVELOPMENTS/ FACILITY UPGRADES

Detail any anticipated structural modifications or new installations:

- Describe any field development decision that may result in future developments.
- Describe any life extension decision that may result in future developments.



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6.0 PROJECT MANAGEMENT

Detail the project management approach for the facilities' decommissioning, including the following, where relevant:

- Outline the project team's roles and responsibilities.
- List relevant permits and consents to be obtained from ministerial bodies/ Industrial Cities.
- Detail the HSE requirements including, where applicable, EIAs, EMPs, ERRs, risk assessments, emergency response plans, personnel training plans, and HSE audits and inspections.
- Detail the applicable Management of Change processes.
- Outline lessons learnt from available Closeout Reports (e.g., from partial decommissioning).

7.0 FACILITIES INVENTORY

The Facilities Inventory should, at a minimum, include the details outlined in TABLE A-3 for each of the facilities and equipment.

TABLE A-3: OVERVIEW OF FACILITIES INVENTORY

Facilities Or Equipment	Identification Code	Materials	Dimensions (weight, height, etc.)	Installation Date
[Facilities or equipment type]				
[...]				



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APPENDIX B - DECOMMISSIONING COST ESTIMATE TEMPLATE

This Appendix provides a structure for the Decommissioning Cost Estimate, based on Chapter 3.3.2.3, with an indicative view of its recommended contents. The Operator can amend the template, provided that the content aligns with this Guideline. Any reports and industry standards (e.g., reports from a third-party engineering consultant) used for preparing the Cost Estimate should be attached.

1.0 FACILITIES DECOMMISSIONING SCOPE

Refer to the Decommissioning Plan's "Facilities Decommissioning Scope" to detail the facilities and equipment that need to be decommissioned.

2.0 COST ESTIMATE ASSUMPTIONS AND METHODOLOGY

List all WBS elements and assumptions taken in developing the Cost Estimate. The following assumptions for the WBS elements in TABLE B-1 are non-exhaustive. The Cost Estimate should be aligned with the decommissioning base case guidance detailed in Chapter 3.4.2.

TABLE B-1: COST ESTIMATE ASSUMPTIONS AND WBS-BREAKDOWN GUIDANCE

WBS Element	Guidance And Assumptions
WBS-01: Project Management	
Project management	- Project management should be represented as an allowance based on a fixed percentage of the total Decommissioning Cost Estimate or itemised in later submissions when a more detailed cost breakdown is available. - The Decommissioning Activities should be conducted under the Operator's supervision.
WBS-02: Cessation Of Operations	
Safe isolation	- Process shutdown, blowdown, and mechanical/ electrical isolation should be considered as operational tasks and, therefore, should not be included in the Cost Estimate. - This WBS element should only include costs outside the remit of operations.
Preservation of services	Offshore Facilities - Offshore crew accommodation and transport costs should be included. - All utilities required for preparation should be available on topsides (e.g., fresh water, air, and power).

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	Onshore Facilities - Onshore crew accommodation and transport costs should be included. - Onshore maintenance crew manning should be based on a 'day shift' basis with no requirement for 24/ 7 manning unless otherwise specified.
WBS-03: Facility Preparation	
Site assessment	This WBS element should include costs and assumptions related to the preparation of statutory permits, technical, and HSE studies, pre-decommissioning site surveys, SGW ESAs, and mobilisation works.
Flushing and cleaning	Flushing and cleaning costs should be based on contractor method statements, demonstrating how water usage can be minimised and how excessive chemical treatment can be avoided.
WBS-04: Well Decommissioning	
Well decommissioning	General Considerations - Statutory permits are to be in place before commencing decommissioning and included in project management costs. Additional regulatory permit application studies/ assessment costs are not to be included in this WBS element. - All wells are considered problem-free unless confirmed otherwise in the Decommissioning Plan and listed separately. - Personnel inclusions/ exclusions should be specified (e.g., deck crew, medics, and crane operators). - Well P&A, decommissioning costs, and expected times should be based on the available technology. Offshore Considerations - All platform and subsea wells are to use a Mobile Offshore Drilling Unit (MODU) to P&A unless specifically stated otherwise. Standard jack-up rates will be considered without an allowance for a Heavy-Duty Jack Up or well intervention vessels unless justified. - Rig rates are to include crewing costs. Additional personnel costs are to be based on standard day rates per discipline.


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	• Allowances are not to be included for any MODU or platform modifications required for compatibility. • Mobilisation/ demobilisation and inter-field moves should be itemised and are assumed to start and finish from the State of Qatar's territorial waters. • Allowances for offshore personnel, helicopters, marine vessels, and associated services associated with the MODU, and wells P&A will be included. • Allowances for additional costs due to abnormal weather are not to be included in the Cost Estimate. Onshore Considerations • Onshore wells are to require a land-based rig. Standard rates will be used where a rig-based abandonment is deemed necessary, without an allowance for specialised equipment unless separately listed. • Rig-free abandonment technologies (if proposed) should be itemised separately. • Rig rates are to include crewing costs. Additional personnel costs are to be based on standard day rates per discipline.
WBS-05: Equipment Dismantling & Removal	
Platform topsides	• All vessel mobilisation, transit to/ from the site and demobilisation should be at a reduced day rate. • This WBS should include all vessel operations. • Topsides should be removed as a single lift unless otherwise specified. In the event of several lifts, these should assume the same heavy lift vessel (HLV). • The costs for a float-over barge should include topsides installed using this method.
Platform jackets and piles	• All vessel mobilisation, transit to/ from the site and demobilisation should be at a reduced day rate. • Jackets should be removed by single lift unless otherwise specified. • A construction vessel should be used for any initial preparation of the jacket before lifting. • A construction vessel should be used to secure, lift, and drain caissons before lifting.

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Process equipment	• Labour cost estimations should be based on a unit rate (based on standard industry norms). • Material and equipment costs (lifting equipment, cutting gear, heavy plant, vehicles, <i>etc.</i>) should be specified as a composite hourly rate. • The costs within this WBS element should be inclusive of personnel, lifting equipment, materials, and laydown costs. • This WBS element should not include transport offsite, as it is covered in WBS-06: Disposal, Site Clearance, & Remediation.
Pipelines	• All pipelines and tie-in points should use pigs for flushing and flush from the pig launcher to the pig receiver for the full length of the line/ section being decommissioned. • The pipeline pressure and temperature should remain out of the hydrated curve during decommissioning without the need for a hydrate inhibitor. • Where any pipeline infrastructure is shared between multiple joint ventures, the removal costs should be apportioned. • All utilities required for offshore pipeline flushing should be available on topsides (<i>e.g.</i>, fresh water, air, and power). • Redundant materials should be taken to the recycling facility with associated cost assumptions detailed under this WBS element.
Subsea infrastructure	• Redundant materials should be taken to a recycling facility with subsea recovery associated costs detailed under this WBS element. • Where any infrastructure is shared between multiple joint ventures, the removal costs should be apportioned.
WBS-06: Disposal, Site Clearance, & Remediation	
Waste management and recycling	• All topsides, bridges, and jacket sections should be transported to the quayside on suitably sized transport barges and offloaded using quayside cranes. • Onshore yards in the State of Qatar should be available in the future, with suitable quayside facilities.

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	All waste should be managed and disposed of domestically, within the State of Qatar.
Seabed debris clearance	Eventual processing and disposition of seabed debris should be included in the overall cost estimation for Hazardous and Non-Hazardous Waste management. The cost of seabed clearance should include all vessel, ROV, and seabed clearing costs, including transfer to the shores.
Land and water Remediation	This WBS should include all cost assumptions related to land and water Remediation activities.
WBS-07: Post-decommissioning Monitoring	
General considerations	- Post-decommissioning monitoring activities should be identified in the EIA/ EMP and agreed with the MoECC and QatarEnergy. - Maximum monitoring duration should be 12 months unless alternative requirements are agreed.
Well site monitoring	The assumptions for this WBS element should follow the guidance within “General considerations” above.
Seabed monitoring	The assumptions for this WBS element should follow the guidance within “General considerations” above.
Soil and groundwater monitoring	The assumptions for this WBS element should follow the guidance within “General considerations” above.

3.0 DECOMMISSIONING COST ESTIMATES

3.1. SUMMARY OF DECOMMISSIONING COST ESTIMATES

The Summary of Decommissioning Cost Estimates should, at a minimum, provide an overview of the facilities’ estimated decommissioning costs. It should include the details outlined in TABLE B-2 for each WBS element.

TABLE B-2: DECOMMISSIONING COST ESTIMATE SUMMARY BREAKDOWN PER WBS ELEMENT

WBS	Base Cost	Contingency	Total
WBS-01			
WBS-03			
WBS-04			

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WBS-05			
WBS-06			
WBS-07			
Total estimate			

3.2. COST ESTIMATION ACCURACY

Outline the resulting Cost Estimate's estimation accuracy (in %). The Cost Estimate should have a +/- 20% FEED-level estimation accuracy.

3.3. DETAILED DECOMMISSIONING COST ESTIMATES

Detail the estimated decommissioning costs per their respective WBS element, with reference to TABLE B-3 for an indicative structure.

TABLE B-3: [WBS NAME] DETAILED DECOMMISSIONING COST ESTIMATES

WBS Element	Sub-element	Base Cost	Contingency	Total
[WBS element]	[sub-element 1]			
	[sub-element 2]			
	[...]			
[...]				
Total estimate				

4.0 DECOMMISSIONING COST SCHEDULE

Provide a year-by-year cost schedule of the estimated decommissioning costs. The cost schedule should begin from the Cost Estimate's reporting year and extend until the expected completion of decommissioning.

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APPENDIX C - NOTIFICATION TO DECOMMISSION TEMPLATE

This Appendix provides a structure for the Notification to Decommission, based on Chapter 3.3.2.4, with an indicative view of its recommended contents. The Operator can amend the template, provided that the content aligns with this Guideline.

1.0 NOTIFICATION LETTER

The notification letter should include the following information:

- Venture name
- Commercial Registration number
- Consent to Operate (CTO) reference number
- Expected decommissioning start/ end date
- Project contact persons (including the QatarEnergy Asset Owner), commercial contact person, and engineering contact person
- Additional contact information, including the address, telephone number, fax number, and any other relevant contact information

2.0 DECOMMISSIONING SCOPE AND METHODS

Refer to the Decommissioning Plan's "Facilities Decommissioning Scope" and "Decommissioning Methods" sections to provide the respective summaries.

3.0 ESTIMATED DECOMMISSIONING COSTS

Refer to the Decommissioning Cost Estimate's "Summary of Decommissioning Cost Estimates" section to provide an overview of the estimated decommissioning costs.

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APPENDIX D - CLOSEOUT REPORT TEMPLATE

This Appendix provides a structure for the Closeout Report, based on Chapter 3.3.2.6, with an indicative view of its contents. The Operator can amend the template, provided that the content aligns with this Guideline.

1.0 DECOMMISSIONING EXECUTION AND DEVIATIONS

Detail the Decommissioning Activities executed in line with, and deviating from, the Decommissioning Plan per the facilities and equipment type (e.g., pipeline), with reference to TABLE D-1 for an indicative structure.

TABLE D-1: [...] DESCRIPTION

Facilities and Equipment	Identification Code	Description	Execution Method As Per The Decommissioning Plan	Actual Execution Details And Outcome	Deviations From The Decommissioning Plan
[Facility and equipment type]					
[...]					

2.0 COST SUMMARY

2.1. SUMMARY OF DECOMMISSIONING COSTS

Summarise the decommissioning costs and compare the planned and actual costs per the WBS, following the indicative structure in TABLE D-2.

TABLE D-2: PLANNED AND ACTUAL DECOMMISSIONING COST ESTIMATE SUMMARY

WBS	Total Cost As Per The Cost Estimate (USD)	Actual Total Cost (USD)	Deviations From The Cost Estimate (%)
WBS-01			
WBS-03			
WBS-04			
WBS-05			

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WBS-06			
WBS-07			
Total estimate			

2.2. DETAILED DECOMMISSIONING COSTS

Detail the realised decommissioning costs by their respective WBS, with reference to the indicative structure in TABLE D-3.

TABLE D-3: PLANNED AND ACTUAL [WBS NAME] COSTS

WBS Element	Sub-element	Total Cost As Per The Cost Estimate (USD)	Actual Total Cost (USD)	Deviation From The Cost Estimate (%)	Comments
[WBS element]	[sub-element 1]				
	[sub-element 2]				
	[...]				
[...]					
Total estimate					

3.0 ENVIRONMENTAL IMPACT

Provide an overview of the environmental impact of decommissioning and the respective management measures, outcomes, and additional mitigation measures required, with reference to the indicative structure in TABLE D-4.

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TABLE D-4: OVERVIEW OF ENVIRONMENTAL MANAGEMENT THROUGHOUT THE ASSET'S LIFECYCLE

Decom-missioning Step	Decom-missioning Activity	Impact	Environmental Management Measure	Outcome	Additional Mitigation Measures

4.0 RESIDUAL RISKS

The Operator may propose their own risk evaluation method with a similar level of detail as TABLE D-5.

TABLE D-5: RESIDUAL RISK TABLE

Risk Identified	Impact Significance Rating	Measures Already Taken	Monitoring Requirements	Timelines And Costs	Mitigation Measure

TABLE D-5's elements are further explained as follows:

- **Risk identified:** Description of the identified residual risk from the Decommissioning Process.
- **Impact significance rating:** Evaluation of the potential impact of the facilities' residual risks.
- **Measures already taken:** Actions already implemented to address or mitigate the identified risk.
- **Monitoring requirements:** Specifications for ongoing monitoring activities to track the risk over time.
- **Timelines and costs:** Timeline for implementing mitigation measures and the associated costs for risk management.
- **Mitigation measure:** Proposed action plan or strategy to mitigate or reduce the identified risk.

5.0 CONCLUSIONS AND LESSONS LEARNT

Summarise the lessons learnt that may be shared with other assets to improve their approach to decommissioning, with reference to the indicative structure in TABLE D-6.

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TABLE D-6: CONCLUSIONS AND LESSONS LEARNT

Aspect	Conclusions	Lessons learnt
Decommissioning execution and deviations		
Decommissioning costs		
Environmental impact		
Residual risks		



APPENDIX E - GUIDE TO COMPARATIVE ASSESSMENTS

The Comparative Assessment guidance is recommended based on industry best practices. The Operator can propose an alternative methodology for conducting a Comparative Assessment, provided that the content aligns with this Guideline.

1.0 COMPARATIVE ASSESSMENT SCOPE

A Comparative Assessment evaluates the Operator's proposed deviations from the base case guidance detailed in Chapter 3.4.2. The assessment validates alternative decommissioning options and ensures that the selected options achieve the best decommissioning outcomes.

The Comparative Assessment should be appropriately detailed to support the practicability of each potential decommissioning option and contain supporting evidence and technical studies as required.

When carrying out a Comparative Assessment, the Operator should consider the following:

1. The Operator should assess the impact of each option using established methodologies.
2. The decommissioning option should be selected by comparing aspects where the impacts of the options differ most significantly.
3. The decommissioning option selection process should be described.

2.0 METHODOLOGY

Comparative Assessments submitted to QatarEnergy are recommended to follow the methodology described in the following two steps.

Step 1: Identification of options and initial screening

The identification of different decommissioning options relates to the extent of removal. Typical options include partial retention or full retention of facilities *in situ*.

Optioneering can be conducted in a single phase or in two phases. An early screening assessment shortlists the options, followed by a detailed Comparative Assessment of the shortlisted options. Each option should then be reviewed to determine if it warrants a more in-depth Comparative Assessment. A HAZID-like approach, utilising checklists or guidewords, may be employed to guide these selections.

Step 2: Assessment

TABLE E-1 provides an example of the criteria against which each option should be assessed, based on the BEIS – UK Department for Business, Energy, and Industrial Strategy. The sub-criteria are indicative and should be assessed on a case-by-case basis driven by risk assessments conducted immediately prior to decommissioning.

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TABLE E-1: EVALUATION CRITERIA FOR COMPARATIVE ASSESSMENTS

Criteria	Sub-Criterion	Description	Assessment Approach
Safety	Safety risk to project personnel	An estimate of the safety risk to offshore and onshore personnel, based on the alternative decommissioning option.	General risk management principles should be applied in assessing and comparing the safety risks of different decommissioning options.
	Safety risk to other users of the area	An estimate of the safety risk to other users of the sea or land area from the long-term legacy of the asset, based on the alternative decommissioning option.	The initial assessment should be qualitative and assessed through a risk matrix. QatarEnergy may request quantitative risk assessment (QRA) techniques to calculate Potential Loss of Life (PLL), Individual Risk Per Annum (IRPA), and Fatal Accident Rate (FAR) for complex cases.
Environment	Operational environmental impacts	An assessment of the environmental impacts that could arise from alternative offshore and onshore operations.	Environmental impact assessments and comparisons of different decommissioning options should be based on an Environmental Issues Identification (ENVID) approach. This approach predicts the environmental impact of each option and evaluates them against a fixed set of acceptance criteria. Additional primary and secondary data analysis (including sampling) may be required to demonstrate the suitability of the selected option.
	Legacy environmental impacts	An assessment of the environmental impacts that could arise from long-term legacy effects of the facilities and equipment, based on the alternative decommissioning option.	
	Energy use	An estimate of the total net energy consumption for the proposed work programme, including the energy associated with recycling.	
	Gaseous emissions	An estimate of the total net CO ₂ emissions from the proposed work	

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		programme, including allowances associated with recycling.	
Technical	Technical feasibility	An assessment of the technical feasibility of the alternative decommissioning option.	The technical assessment should demonstrate the limitation of achieving the decommissioning base case with supporting evidence as required (e.g., structural assessment). The feasibility technical assessment of alternative decommissioning options should be based on existing industry experience and available decommissioning resources. The planned timing of the work and foreseeable technological development should also be considered.
Societal	Effects on commercial activities	An estimate of the financial impact, gain or loss that affected commercial entities might experience from the alternative decommissioning option.	Societal risks can be combined in safety, environmental, and technical assessments.
	Employment	An estimate of the employment opportunities that the alternative opportunity creates/ impacts.	
	Impact on communities	An assessment of the impacts of the alternative option on communities.	

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APPENDIX F - REVISION HISTORY LOG

TABLE F-1: REVISION HISTORY LOG

Revision Number: 00

Date: 02/10/2024

Item Revised	Revision Description	Page No.
Whole Document	Document created	
Remarks: This is a new document with no revision history to log		

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APPENDIX G - LIST OF ABBREVIATIONS

TABLE G-1: LIST OF ABBREVIATIONS

Abbreviation	Description
ALARP	As Low as Reasonably Practicable
CTO	Consent To Operate
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
ENVID	Environmental Issues Identification
EPRD	Engineering, Procurement, Removal, and Disposal
ERR	Environmental Risk Register
ESA	Environmental Site Assessment
FAR	Fatal Accident Rate
FEED	Front End Engineering Design
FO	Fibre-optic
FRP	Fibreglass-reinforced Plastic
HAZID	Hazard Identification
HAZMAT	Hazardous Materials
HAZOP	Hazard and Operability Study
HEX	Heat Exchanger
HLV	Heavy Lift Vessel
HSE	Health, Safety, and Environment
HVAC	Heating, Ventilation, and Air Conditioning
IRPA	Individual Risk per Annum
LNG	Liquified Natural Gas
LOTO	Lockout Tagout
MAH	Major Accident Hazards

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MAHM	Major Accident Hazard Management
MOD	Money-of-the-day
MODU	Mobile Offshore Drilling Unit
MoECC	Ministry of Environment and Climate Change
NORM	Naturally Occurring Radioactive Material
OEM	Original Equipment Manufacturer
OiW	Oil in Water
P&A	Plugging and Abandonment
PLL	Potential Loss of Life
QNV	Qatar National Vision 2030
QRA	Quantitative Risk Assessment
ROV	Remotely Operated Vehicle
SGW	Soil and Groundwater
SIMOPS	Simultaneous Operations
USD	United States Dollars
VSS	Verification Soil Sampling
WBS	Work Breakdown Structure