NOPSEMA
Australia's offshore energy regulator

GUIDANCE NOTE

Design Notification Guidance

Document No: N-04030-GN2325 A119913899138

Date: 12/06/2025

Core concepts

- It is critical that operators give due consideration to health and safety aspects at the earliest stages of the design of, or significant changes to, an offshore or greenhouse gas facility. It is at this stage that decisions are made which will profoundly affect the levels of risk over the entire life of the facility. Many of these decisions will be extremely difficult to change once it is built.
- The design notification scheme provides for early engagement on proposed production facilities and GHG facilities, allowing for NOPSEMA to comment on any design matters that they consider may affect the safety of the facility, or that might otherwise impact on the reduction of safety risks to a level that is as low as reasonably practicable.
- The design notification scheme for a new or significantly altered production or greenhouse gas facility requires an operator to submit to NOPSEMA a design notification which must comply with the content requirements of the Offshore Petroleum and Greenhouse Gas Storage (Safety) Regulations 2024 [OPGGS(S) Regulations]. The regulations define what a significantly altered facility is. Essentially a facility is only significantly altered if there is a change of function. Each case should be reviewed against the criteria in the regulations by the person submitting the design notification.
- The design notification should describe how the principles of risk evaluation and risk management are being applied to the design to ensure that major accident risks will be controlled to achieve compliance with the relevant legislative provisions. As a part of this, the hardware and functions of the facility must be described so that the level of risk can be assessed by NOPSEMA.
- A key feature of a design notification is a description of the design process and the extent to which decision making has given appropriate consideration ensuring the safety of the facility and reducing risks to health and safety to a level that is ALARP.
- The design notification submission must be submitted to NOPSEMA in sufficient time to allow for any comments made by NOPSEMA to be taken into account in the final design decision and before any construction or alteration work is commenced.
- There is no acceptance or rejection involved in the design notification scheme. The output from the assessment will be in the form of written comments that must be addressed in the subsequent safety case.
- The regulations refer to “concepts” and “designs”. A concept, for the purposes of NOPSEMA’s interpretation of the regulations, is a potential field development solution described at a high level (for example, a FPSO or a fixed jacket structure). A design is a particular implementation of a concept. A design notification is only required once a single concept has been selected and progressed to the design phase.

Table of Contents

Abbreviations and definitions

ALARP	As Low as Reasonably Practicable
Facility	Where the term facility is used, it should be taken to refer to both a production facility (section 2.4FA of the regulations) and a greenhouse gas facility (section 2.4FB of the regulations).
FEED	Front End Engineering Design
GHG	Greenhouse Gas, as defined in the OPPGS Act (Chap 1, Part 1.2, Div 1, Sect 7)
MAE	Major Accident Event
NOPSEMA	National Offshore Petroleum Safety and Environmental Management Authority
OPPGS Act	Offshore Petroleum and Greenhouse Gas Storage Act 2006, which was amended by Parliament in May 2024, and published in December 2024. Also referred to as "*the Act*".
OPPGS(S) Regulations	Offshore Petroleum and Greenhouse Gas Storage (Safety) Regulations 2024. Also referred to as "*the regulations*".
RFFWI	Request for Further Written Information
SEMS	Safety and Environmental Management System

1. Purpose

The purpose of this guideline is to provide guidance to both Industry and NOPSEMA assessors on the design notification scheme as required by the Commonwealth Offshore Petroleum and Greenhouse Gas Storage (Safety) Regulations 2024 [OPGGS(S)] and any relevant State or Northern Territory equivalents where powers have been conferred on NOPSEMA (currently only Victoria).

2. Scope

It is the experience of regulators operating safety case regimes for the offshore oil and gas sector—such as those in Australia and the United Kingdom—that, by the time the safety case is submitted to the regulator, it is prohibitively difficult to make changes to the facility's design that materially affect safety. During the safety case assessment phase, regulators often find themselves spending significant time and engaging in extensive dialogue with the operator to verify that existing design decisions are ALARP—decisions which could have been addressed easily and at substantially lower cost for all parties during the design stage. To address this issue, the Design Notification Scheme introduces early engagement between the operator and NOPSEMA on the health and safety aspects of a facility's design.

This guidance note applies to, and is in relation to, a vessel or structure that is a new or significantly altered production facility or a new greenhouse gas (GHG) facility. Under the scheme, the design notification must be submitted in sufficient time to allow for any comments made by NOPSEMA to be considered in the final design and before any construction or alteration work begins.

This document provides guidance on the following specific requirements of the design notification process:

- when a design notification must be given to NOPSEMA
- how to give a design notification to NOPSEMA
- contents of a design notification
- the process and time required for NOPSEMA to review a design notification
- what to do with NOPSEMA feedback on a design notification.

3. Design Notification

3.1. Introduction

The purpose of the design notification scheme under the Regulations is to ensure that NOPSEMA can comment on aspects of the facility design that are critical to the management of safety and the reduction of safety risks to level that is ALARP, early enough in the design process for changes to be made where necessary.

The regulations detail the information that is to be provided as a part of the notification. The focus of the information provided is on descriptions of design information, design choices and the reasoning behind those choices. The purpose of the design notification scheme is to ensure alignment between the project and the regulator on these types of design choices.

The intention of the Design Notification Scheme is to introduce early engagement with NOPSEMA for a facility at the design phase of project development. For this to be effective, NOPSEMA encourages submissions as early as is reasonably practicable in the design life cycle which meet the requirements of the regulations. This may be, for example, following concept selection but prior to substantial FEED having been undertaken. It is recognised that the information required by the regulations may be preliminary at the time of the submission. In this case, the design notification should describe the designs that are under consideration and the process that will be applied to selecting the final design.

3.2. Guidance note structure

This guidance note is structured to reflect the structure of the Regulations. The relevant Regulations, under Chapter 2, Part 3 are Sections:

- 2.4F: Purpose of this Part
- 2.4FA New production facilities
- 2.4FB New GHG facilities
- 2.4G Design notification for proposed new production facility or new GHG facility
- 2.4H Requirements of design notification
- 2.4J NOPSEMA must assess and respond to a design notification.

3.3. Section 2.4F – Purpose of this Part

2.4F Purpose of this Part

This Part is made for the purposes of paragraph 17(3)(s) of Schedule 3 to the Act and applies to and in relation to a vessel or structure that is:

(a) a new production facility; or

(b) a new GHG facility.

The regulations apply to and are in relation to a vessel or structure that is a new production facility or a new GHG facility if they are constructed after the commencement date of this Part. What constitutes a new production or GHG facility is defined in Sections 2.4FA and 2.4FB of the regulations.

3.4. Section 2.4FA – New production facilities

Section 2.4FA sets out the meaning of '*new production facility*' for the purpose of the scheme.

2.4FA New production facilities

(1) A vessel or a structure is a new production facility if the vessel or structure:

(a) either:

(i) for a new vessel or structure—is, or is to be, constructed on or after the commencement of this Part; or

(ii) for an existing vessel or structure—is, or is to be, significantly altered after the commencement of this Part; and

(b) is, or is proposed to be, located at a site in Commonwealth waters; and

(c) is, or is proposed to be, used at that site for:

(i) the recovery of petroleum; or

(ii) the processing of petroleum; or

(iii) the storage and offloading of petroleum; or

(iv) any combination of those activities;

This section of the regulations limits the requirement for a design notification to new production facilities or to those which are undergoing significant alteration. The regulation does not require the presence of

hydrocarbons on a facility, only that the facility is used "for the recovery of petroleum". Based on this NOPSEMA considers that the regulations apply to any new production facilities which are required as a part of petroleum recovery activities, for example an offshore facility that is used only for the control of subsea infrastructure used to recovery petroleum.

Facilities which are only engaged in drilling or well servicing activities, which are temporary operations, are not required to submit a design notification (e.g. MODUs). The well and completion design and Xmas trees themselves will be included as a part of the facility's design notification. Separate design notifications are not required for hydrocarbon service pipeline facilities, but the principal features of any pipeline connected to a facility will need to be provided as a part of the facility's design notification [Reg 2.4H(i)(iv)].

Section 2.4FA(d) specifically excludes a number of other vessel and structure types:

2.4FA New production facilities

(d) is not, or will not be, any of the following:

(i) an offtake tanker;

(ii) a tug or an anchor handler;

(iii) a vessel or structure used for supplying a facility or otherwise travelling between a facility and the shore;

(iv) a vessel or structure used for any purpose such that it is declared under section 1.6 not to be a facility;

Section 1.6 of the Regulations defines a number of activities, the performance of which do not make a vessel or structure a facility. These are primarily support vessels or vessels used for construction activities.

Design notifications are also required for facilities which are "significantly altered" as defined in subsection 2.4FA(2).

2.4FA New production facilities

(2) An existing vessel or structure is significantly altered if:

(a) the vessel or structure is altered or repurposed, or proposed to be altered or repurposed, in a way that enables, or will enable, the altered or repurposed vessel or structure to be used for:

(i) the recovery of petroleum; or

(ii) the processing of petroleum; or

(iii) the storage and offloading of petroleum; or

(iv) any combination of the activities mentioned in subparagraphs (i) to (iii); and

(b) either:

(i) without the alteration or repurposing, the vessel or structure is not able to be used, or would not be able to be used, for an activity mentioned in paragraph (a); or

(ii) if, before the alteration or repurposing, the vessel or structure is able to be used for a particular activity mentioned in paragraph (a), the vessel or structure is, after the alteration or repurposing, able to be used for a different activity mentioned in paragraph (a).

This definition essentially requires that the facility undergoes a change in function to be captured under this regulation. A typical example of this would be the conversion of an FSO to an FPSO or the addition of processing capabilities to a well head platform. If there is no change in function at the facility, then a design notification would not be required. Examples where a design notification would not be required include:

- the addition of compression on a facility which is already used for the processing of petroleum
- the addition of a water injection system or an integrated Enhanced Oil Recovery chemical pumping skid, as they improve hydrocarbon recovery but do not change the primary function of the facility.

Typical brownfields modifications to a facility, which do not involve a change in function, will not require a design notification. That does not preclude the need for the submission of a revised safety case where required by the regulations.

NOPSEMA recognises the potential for cases to exist where it is not clear whether a design notification is required. If there is any doubt regarding whether one is required, NOPSEMA encourages submitting persons to seek clarification from NOPSEMA as early as possible.

3.5. Section 2.4FB – New GHG facilities

The definition of a new GHG facility is similar to that for a new production facility. Regulations 2.4FB(1)(a), (b) and (d) share the same wording with '*new production facility'* replaced with *'new GHG facility'.*

Subregulation (c) provides the following definition for a GHG facility:

> ***2.4FB New GHG facilities***
>
> *(c) is, or is proposed to be, used at that site for:*
>
> *(i) the injection of a greenhouse gas substance into the seabed or subsoil; or*
>
> *(ii) the storage of a greenhouse gas substance in the seabed or subsoil; or*
>
> *(iii) the compression of a greenhouse gas substance; or*
>
> *(iv) the processing of a greenhouse gas substance; or*
>
> *(v) the pre-injection storage of a greenhouse gas substance; or*
>
> *(vi) the offloading of a greenhouse gas substance; or*
>
> *(vii) the transportation of a greenhouse gas substance; or*
>
> *(viii) the monitoring of a greenhouse gas substance stored in the seabed or subsoil; or*
>
> *(ix) any combination of activities covered by any of the preceding subparagraphs;*

There is no requirement for a crewed or surface facility for this regulation to apply. For example, if a dedicated CO_2 transport ship (similar to an LNG tanker) was used to capture liquified CO_2 from different onshore collection sites (GHG hubs) and then transports the CO_2 to an onshore receiving terminal, then none of these facilities would be included, but the section of the subsea CO_2 injection pipeline (in Commonwealth and Victorian State Waters) from the onshore receiving terminal to the subsea Xmas trees and wells used to inject the CO_2 into the permanent subsurface storage reservoir, would all be included in the design notification.

Figure 1 is a similar example of a CO_2 transport and subsurface storage scheme that illustrates those facilities that would require a design notification and those that do not. If a state has conferred regulatory powers and functions to NOPSEMA for its coastal waters, then the full pipeline length from offshore to landfall will be required to have a design notification and not just the section in Commonwealth waters. Otherwise, NOPSEMA will only assess the portion in Commonwealth waters. However, the design, activities undertaken and materials used in the state part of the pipeline which could affect the behaviour of the pipeline in Commonwealth waters will have to be described as a part of the pipeline design notification.

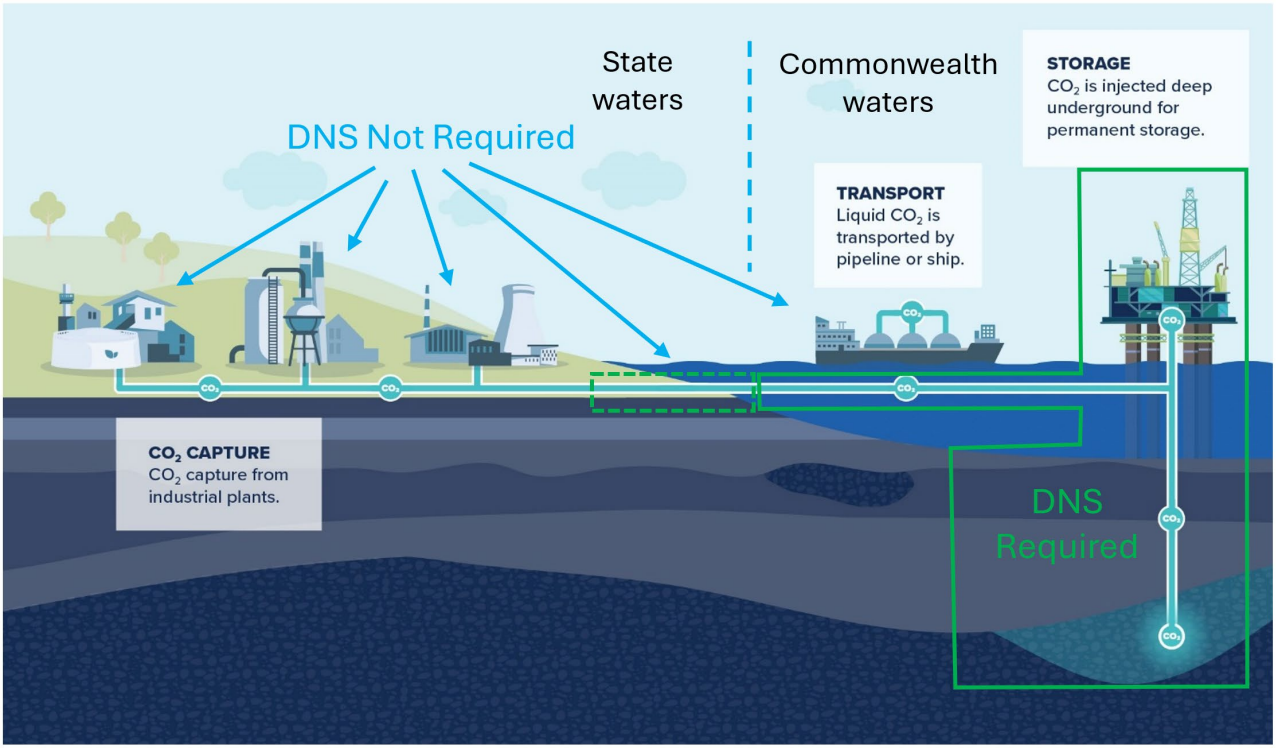

Figure 1. Potential CO_2 transport and storage concepts (Modified Graphic - courtesy of Global CCS Institute)

The definition of '*significantly altered*' is similar to that for production facilities - a GHG facility must be altered so that it can take on one of the functions of subsection (a). The wording of this regulation will, in most cases, capture an existing production facility that is repurposed for GHG storage. This includes cases where a facility may have used CO_2 reinjection for enhanced recovery. Where the facility is repurposed to only store CO_2, the facility would be regarded as having been repurposed from hydrocarbon recovery to storage of a GHG substance in the seabed or subsoil.

3.6. Section 2.4G – Design notification for proposed new production facility or new GHG facility

Section 2.4FB

(1) A person must submit to NOPSEMA a design notification for a new production facility or a new GHG facility.

> *Note: See paragraph 2.26(1)(e) which requires a design notification to be submitted to NOPSEMA in order for NOPSEMA to accept a safety case for a new production facility or a new GHG facility.*

(2) The design notification must comply with the requirements specified in section 2.4H.

Section 2.4G requires that a person must submit to NOPSEMA a design notification for a new production facility or new GHG facility that complies with the requirements specified in section 2.4H.

The note to subsection 2.4G(1) highlights that paragraph 2.26(1)(e) requires a design notification to be submitted to NOPSEMA before NOPSEMA can accept a safety case for a new production facility or a new GHG facility.

A "person" in this context would usually be the titleholder, operator or an associate (e.g. a person from a business responsible for the design of the structure, authorised by the titleholder).

NOPSEMA has produced a standard cover sheet (Design notification submission cover sheet - N-04030-FM2320) which should be included as a part of the submission. Submissions should be made in accordance with the "*Making Submissions to NOPSEMA Guideline – N-04000-GL-0225".*

It should be noted that NOPSEMA's comments may not cover all aspects of the facility if the submission does not have sufficient information or lacks definition of key details creating the potential for problems to only be identified at the safety case stage.

3.7. Section 2.4H – Requirements of design notification

This section sets out the required information for the design notification. This section includes procedural requirements as well as requirements for design information to be included in the submission.

NOPSEMA recognises that not all information may be fully defined at the time of the design notification submission. Where required, the degree of certainty of the information should also be addressed in the submission. A justification should be provided when there is a variation from the content requirements.

3.7.1. Timing of submission

Subsections 2.4H(a) sets out the timing for when a design notification should be submitted to NOPSEMA.

2.4H Requirements of design notification

For the purposes of subsection 2.4G(2), the design notification for a new production facility or a new GHG facility (the ***new facility****) must:*

(a) be submitted to NOPSEMA:

(i) in sufficient time to allow for any comments made by NOPSEMA to be taken into account in the final design decision; and

(ii) before any construction or alteration work is commenced;

While terminology of project stages varies widely through the industry, the design notification submission should not be before completion of concept level engineering but prior to substantial Front End Engineering Design (FEED) work is undertaken. Submitting the design notification later in the development increases the cost and schedule risk to the submitting person that if consideration of NOPSEMA comments requires a change in the design of the facility.

The design notification must be submitted "*in sufficient time to allow for any comments made by NOPSEMA to be taken into account in the final design decision*" [Reg 2.4H(a)(i)] and "*before any construction has started*" [Reg 2.4H(a)(ii)].

3.7.2. Submission in writing and contact details

2.4H Requirements of design notification

(b) be in writing; and

(c) include the following:

(i) the name of the person submitting the design notification;

(ii) the address in Australia of that person;

(iii) the contact details of that person;

This subsection sets out procedural requirements. NOPSEMA requires an electronic submission of a PDF document through the submissions' mailbox. The person submitting must be registered to use the system and receive an email notification that the submission is successful. Further information regarding the submission process is available in '*Making submissions to NOPSEMA*' (N-04000-GL0225).

3.7.3. Design process, facility description and standards

2.4H Requirements of design notification

(d) include a description of the following:

(i) the design process (from the initial concept to the submitted design) for the new facility;

(ii) the design and performance standards used to guide the design process;

(e) include a description of the chosen design for the new facility, including:

(i) diagrams of the design; and

(ii) a summary of other design options that were considered; and

(iii) for a vessel or structure that is to be repurposed—the justification of the suitability for repurposing the vessel or structure; and

(iv) the criteria used to select the design in the design notification and the process by which the selection was made;

Subsections (d) and (e) require the submitting person to provide sufficient information to NOPSEMA so that an assessment can be made as to the appropriateness of the design decisions made. This section recognises that design involves a process of selecting an option from a number of potential solutions; to assess whether the chosen option reduces risk to ALARP it is necessary for the assessor to understand the reasoning for the selection of that option.

Subsection (d)(i) requires that a description of the design process is included. This explanation may, for example, include:

- a description of the criteria, design philosophy, and standards that were used during the design process
- an outline of how these design considerations influenced the decisions that were made
- a summary of the studies that were undertaken during the selection of the design option
- a summary of any other design options that were considered and why they were rejected.

The explanation of the design process should include descriptions of the following (where relevant):

- how the selected option's facility layout has been developed
- involvement of the workforce in the design process (which may include for example a summary of key workshops, attendance and key staff involved)
- the project design envelope including parameters, methodologies, and assumptions
- a description of the process for design option analysis
- design assurance processes including technical review, quality assurance, and peer review
- the technologies considered for the project, including reasons for rejection of certain technologies and the readiness level of any new or emerging technology.

A description of the design and performance standards used to guide the design process is required by subsection (d)(ii). At the time of submission of the design notification it is only expected that a description of the design and performance standards used to inform the design at the time of submission is provided. This may be in the form of a list of standards but may also be provided at a higher level where relevant. The description might, for example, refer to a suite of standards rather than individual standards and/or describe the use of in-house performance standards and why their use is appropriate.

Given the expected timing of the design notification, it is recognised that the final standards used in the design may at times vary from that in the design notification.

It should be noted that this is a separate process from the validation process. Validation is required to be undertaken on the design standards used in the final design and requires validation of those standards by the independent validator.

The summary of the "other design options" required by (e)(ii) should include a brief description of each the options considered with the reasoning as to why that was not a preferred option, to address subsection (e)(iv). The focus on the discussion should be on safety related issues. The summary should describe how the chosen option contributes to the reduction of risk to a level that is ALARP.

As a part of providing enough detail to the assessor, (e)(i) requires diagrams of the design. This may, for example, include the following, where available and applicable to the chosen concept:

- Facility location map, in particular showing the relationship to any other nearby infrastructure that may impact on the operations of the facility
- Topsides layouts, at least to the level of functional blocks (e.g. helideck, living quarters, main process blocks and flare location)
- Typical control room and living quarters arrangements so as to indicate the extent of facilities to be provided, (e.g. ablutions, beds, galley, control room, office and recreational spaces)
- Escape routes
- Foundation and primary steel arrangements for substructure and topsides
- Process Flow Diagrams
- Well and completion schematic with stratigraphic horizons and producing formations identified
- Cargo / ballast tank layout
- Routes for any pipelines connected to the facility.

It is recognised by NOPSEMA that some of this information may be preliminary or not available at the time of submission. In this case, the design notification should describe the concepts that are under consideration and the process that will be applied to selecting the final design. Indicative information may be provided where relevant.

2.4H Requirements of design notification

(f) include a description of how the design in the design notification for the new facility ensures that risks associated with hazards that have the potential to cause a major accident event are reduced to a level that is as low as reasonably practicable

This subsection indicates that the design notification must include a description of the expected MAEs and the design elements which are in place to reduce risk to ALARP. For the purpose of the design notification the focus should be on the design aspects and hardware controls, and other design elements, that are in-place for that purpose. The final demonstration of the reduction of safety risk to ALARP will be made in the safety case.

3.8. Specific information to include

Subsections (g)(i) – (v) provide a list of information that must be included in the design notification.

2.4H Requirements of design notification

(g)(i) how the new facility will be able to withstand such forces acting upon it as are reasonably foreseeable throughout its entire lifecycle, including during the post closure period until fully decommissioned

To allow for this to be assessed, both the design conditions and mechanisms to resist these conditions will be required. This may include descriptions of the following conditions:

- Metocean event design return periods and target collapse return period
- Seismic design return periods
- Vessel impact forces expressed in terms of the mass and velocity of the design vessel
- Potential fire events
- Explosion overpressures
- Design life of the facility
- Fatigue design philosophy
- Pipeline stability and free spanning

The submission should provide both the philosophy for design decisions and numerical values for design parameters where available. Potential failure mechanisms should be described as a part of the submission.

2.4H Requirements of design notification

(g)(ii) how the layout and configuration of the new facility, including the layout and configuration of its plant, will not adversely impact upon its safety and integrity

The description should address the layout and configuration philosophy, with a focus on process separation and escape routes. This should reference the layout description required under 2.4H(i)(i). The information should address how the layout is influenced by fire and explosion considerations.

2.4H Requirements of design notification

(g)(iii) how the fabrication, transportation, construction, commissioning, operation, modification, maintenance and repair of the new facility will proceed without adversely impacting upon its safety and integrity

NOPSEMA recognises that at the time of submission a full project delivery model may not have been developed and there may be limited detail available with respect to the requirements of this regulation. The level of detail expected would be aligned with that in a typical preliminary project execution plan, for example. The focus in addressing this regulation should be on how these activities can be conducted in a way that does not adversely impacting upon the facility's safety and integrity.

To address this regulation items which may be considered to be described, where information is available, include:

- quality assurance at the fabrication site, including independent verification
- contractor strategies, including operator oversight of contractors
- transportation and installation philosophies, including pipelay (where a pipeline is connected to a facility)
- process for the selection of major contractors during pre-operations phase activities and any process for independent verification of contractor work
- approach to design calculation checking and verification
- commissioning philosophy
- asset integrity management system philosophy
- use of class and/or other independent verification bodies.

2.4H Requirements of design notification

(g)(iv) how the new facility will be able to be decommissioned and, if necessary, dismantled in such a way that it will, as far as is reasonably practicable, have sufficient integrity to enable decommissioning to be carried out safely

The design notification must describe how the facility will be decommissioned and removed at the end of its operational life. The full decommissioning and removal of the facility (including associated pipelines) should be assumed as minimum requirement in all cases.

The description should include as a minimum the following:

- how the facility will be decommissioned and removed (e.g. lifting, loading, towing, etc.)
- the design elements of the facility required to support the intended decommissioning and removal methodology
- design features which will control degradation factors, such as corrosion, so that decommissioning and removal can be completed safety and efficiently at the end of the operational life of the infrastructure.

The information provided should be consider realistic conceptual level decommissioning plans based on currently available technologies and equipment. Should alternative decommissioning methodologies be available in the future, NOPSEMA would be able to assess these methodologies in future safety cases.

2.4H Requirements of design notification

(g)(v) how, in the event of reasonably foreseeable damage to the new facility, the new facility will be able to retain sufficient integrity to enable actions to be taken to safeguard the health and safety of persons at, or near, the new facility

This description should address how the design has sufficient robustness to protect health and safety of persons following an abnormal or accidental event at or near the facility. The design notification should address safety critical hardware (e.g. structures, process, piping, control systems, electrical and communications systems). Design codes typically provide design guidance for addressing damage to facilities for various disciplines; for example, AS ISO 19900 provides a discussion of various approaches to ensuring structural robustness of a facility.

3.9. Materials

Subsection (h) introduces a requirement that the design notification describes the materials used in the construction of the facility and their suitability.

2.4H Requirements of design notification

(h) include a description of how the design in the design notification for the new facility makes use of construction materials that are:

(i) suitable, having regard to the need to ensure that at all times the new facility maintains such structural integrity as is reasonably practicable;

and

(ii) as far as is reasonably practicable, able to provide sufficient protection against anything that may prejudice the structural integrity of the new facility

The description of the materials used in the construction of the facility should include both the types of materials used and the philosophy for their selection. For some materials this may be a reference to relevant design codes (for example choosing materials for the fixed substructure in accordance with the requirements of AS ISO 19902), however, the design notification should ensure that the relevance of the code to the design requirements is discussed.

The choice of materials for pipes and pipelines should be discussed considering the fluids to be transported. Where the composition or temperature of the fluid is particularly challenging (e.g. high CO_2 content, or

extreme temperature operations) the choice of material should be highlighted with the selected material compared to potential alternatives. The choice of any uncommon materials should also be discussed.

An understanding of materials is particularly important when considering repurposing an existing hydrocarbon facility for GHG use. The design notification should address the design process which will ensure that the risk remains ALARP when the fluid and duty changes from hydrocarbon production to GHG injection. Particular consideration should be given to corrosion protection.

To provide context to the choice of materials for piping and pipelines the composition of the fluid to be conveyed should be described.

In addition to the materials themselves any systems which are designed to protect the integrity of the materials should be discussed. This may include coatings, corrosion protection systems and fire protection systems.

3.10. Specific descriptions required

2.4H Requirements of design notification

(i) include a description of the following:

(i) the layout of the new facility;

(ii) the safety and environmental management system by which the intended major accident risk control measures are to be maintained;

(iii) the process technology proposed to be used for the new facility;

(iv) the principal features of any pipeline proposed to be connected to or used in connection with the new facility;

(v) any petroleum-bearing reservoir or identified storage formation intended to be exploited using the new facility;

(vi) the basis of design for any wells to be connected to the new facility;

Subsection (i) provides a list of specific descriptions that are required. This information should be provided through both text and diagrams. Of note is (i)(ii), which requires a description of the safety and environmental management system (SEMS). Given the timing of the design notification NOPSEMA does not expect that a fully developed SEMS will be available. The design notification should however detail the general philosophy of the system and how MAEs will be identified and managed. If the proposed SEMS is based on an international or Australian standard, a recognised model used in industry, or an existing SEMS, that should be described.

The overall process technology should be described. This should identify the major aspects of the process system including reference to any particularly high-risk items and any novel technology that is to be employed.

The design notification should describe the principal features of pipelines connected to the facility [Reg (i)(iv)]. This should be a summary describing the connecting pipeline dimensions and route, operating pressure, fluid contents, free spans and stabilisation requirements and relevant safety features (e.g. presence of subsea isolation valves).

Subsections (i)(v) and (i)(vi) concern the reservoir and wells. The information provided should show the location of the reservoirs in relation to the facility. Some of the required information may be included in the Well Operations Management Plan (WOMP), however it must also be explicitly included in the design notification. The level of information in the design notification is not expected to be to the same level as that in the WOMP. The description should include (where relevant):

- reservoir and fluid properties
- pore pressure vs vertical depth profile (TVDSS) with overburden stratigraphy clearly annotated on plot
- map of seabed with surface well locations, water depths (bathymetry) and facilities locations; and cross-section across field showing expected well paths
- description of any materials and equipment to be used in undertaking the well activity (casing, completion and Xmas tree)
- production / injection rates per well and total field rates.

For GHG storage sites additional relevant information would include:

- GHG composition, Pressure, Volume and Temperature (PVT) fluid studies and phase behaviour diagram with the flow path conditions (P,T) from injection point to reservoir entry clearly annotated on it
- geological cross-section(s) through the injection storage site and wider complex highlighting the major geological seals for GHG containment, including the planned injection well penetrations
- description of the status of reservoir at start of the injection process (e.g. depleted hydrocarbon reservoir or deep aquifer) with last measured pressure or inferred pressure provided
- summary of Geomechanical Modelling (3D Mechanical Earth Model) study used to quantify risk of subsurface loss of containment from caprock seal failure or fault reactivation
- describe the safe operating envelope (P vs Q) for GHG injection.

3.11. Safety Critical Operations, Procedures and Equipment

2.4H Requirements of design notification

(j) include an initial list of operations, procedures and equipment that are critical to safety;

This subsection requires that the items identified are listed in the design notification. The development of this list may follow from or be a part of the identification of Major Accident Events (MAEs). This list flags to

the assessor the items that have been considered in the design and which may need to be discussed in the design notification.

For equipment, the submission should include a preliminary list of equipment, limited to those items that are critical to safety, required for the management of major accident events, identified in the current phase of the project. Table 1 offers examples of typical equipment that may be critical to safety. This list is not intended to be proscriptive in any way. A comprehensive list, representative of FEED or detailed engineering, is not required at the design notification stage.

Any novel operations, procedures or equipment should be identified at this stage, if known.

Table 1. Examples of types of equipment that may be critical to safety

Discipline	Typical equipment to be considered
Wells	Xmas trees Surface-Controlled Subsurface Safety Valve
Fire and blast	Fire detection systems Active fire protection (misting, inergen systems, firewater pumps etc) Helideck DIFFS Helicopter refuelling systems Fire dampers
Structures and mechanical	Passive fire protection Blast walls Corrosion protection systems Escape routes Foundations Substructure Topsides structure Flowlines (integrity and monitoring) Cranes and other lifting equipment
Electrical	Earth bonding systems UPS and/or power backup systems
Marine	Mooring systems Bilge systems Ballast systems Oil spray detection systems in cargo pumprooms Gas detection systems in ballast tanks Tanker offloading systems
Process	Subsea isolation valves High integrity pressure protection system Depressurisation systems (e.g. flare system) Inert gas systems Process safety control systems Blowdown and pressure safety valves Process shutdown valves Gas detection systems Safety instrumented system Pressure vessels

Discipline	Typical equipment to be considered
	Rotating equipment (list specific items) Fired heaters Heat exchangers Hazardous area ventilation
Safety	Escape routes Alarm systems Emergency shutdown systems Accommodation grab bags Lifeboats Communications systems TEMPSC Fast rescue craft Standby vessel Subsea isolation valves

The list of operations and procedures should focus on those that are critical to safety, particularly as they relate to other items in this regulation.

3.12. Location Specific Conditions

Subsections (k) and (l) require specific details concerning the metocean and geological conditions at the site.

2.4H Requirements of design notification

(k) include a plan setting out the proposed location of the new facility and anything that may be connected to the new facility, including particulars of:

(i) the meteorological and oceanographic conditions to which the new facility may foreseeably be subject; and

(ii) the properties of the seabed and subsoil at the proposed location of the new facility; and

(l) include a description of the following:

(i) any environmental, meteorological and seabed limitations on the safe installation, operation and decommissioning of the new facility;

(ii) the arrangements for identifying risks from seabed and marine hazards such as pipelines and moorings of adjacent installations

To satisfy these subsections, NOPSEMA anticipates that the design notification includes, to the extent known, a preliminary overall location plan of the proposed facility. An initial indication of the facility's likely

orientation and prevailing wind and wave directions (e.g. a directional rose) should be provided, if available. The plan should also include initial information regarding site bathymetry and the potential locations of any new or existing seabed items that may interact with the facility (e.g., pipelines, subsea skids, rock outcrops, shallow gas).

Subsection (l)(i) requires a description of the environmental and meteorological limitations for safe installation, operation, and decommissioning, including relevant metocean data, such as described in Table 2.

Table 2. Typical metocean data

Phase	Relevant data / limitations
Installation	Installation timing Limiting environmental event return period Limiting wave, wind and current conditions
Operation	Design return period for the operating, extreme and abnormal events Corresponding wave, wind and current conditions and consideration of solitons. Directionality (was omni-directional or directional wave data used in the design) Maximum crest elevation for each return period above, and description of how this was determined Significant and maximum wave heights, with associated periods (which may be presented as a graph if return period contours were used in the design), to the extent known at the time of the submission
Decommissioning	Data to the extent known. It is noted that this may be conceptual at the time of the design notification submission. For example, it may be sufficient to identify the period during the year when decommissioning would be expected to occur. This section of the design notification should align with the methodology described under subsection (g)(iv).

A description of the known properties of the seabed and soil should be included. This description should cover the extent of the facility's foundations. Soil shear strength profiles may be included. Any seabed hazards should be identified, including faults, areas of sea floor instability, potential for scour, sediment mobility, shallow gas and subsidence. A description of any process to identify further seabed risks through the on-going design process may be included.

For GHG injection, the potential for reservoir expansion leading to seabed uplift should be considered, including the impact on subsea infrastructure. For GHG injection into a depleted hydrocarbon reservoir, subsurface hysteresis (dilation) should be assessed.

To meet the requirements of subsection (l)(ii) the arrangements for identifying risks should be described. This should include a description of intended surveys of the site to identify hazards as well as a description of engineering studies carried out as a part of the design process.

3.13. Description of operations and activities

2.4H Requirements of design notification

(m) include a description of the types of operation, and the activities in connection with an operation, that are proposed to be undertaken at the new facility.

Sufficient description of the activities to be conducted at the facility should be included. The level of detail should be such to enable the assessor to determine whether appropriate MAEs and other safety risks have been addressed in the design notification. The level of detail required is less than would be expected in a safety case but should identify the key operations that are expected to be undertaken. It is recognised that it may not be feasible to fully describe all foreseeable operating conditions and hazards, in the notification given the timing of the submission.

Potential interactions with connected wells, other vessels and other facilities should be described. Particular attention should be given to simultaneous operations.

As a part of the response to this regulation, the operator should describe the proposed crewing philosophy for the facility and give estimates for the numbers of personnel that will be present on the facility.

The part of the design notification addressing this section of the regulations would be expected to be in the form of a summary of the activities and operations. Further detail will generally be defined through the other subsections of section 2.4H.

4. Section 2.4J - NOPSEMA must assess and respond to a design notification

Section 2.4J sets out the basis, methodology and time allowed for NOPSEMA's assessment of design notifications. It should be noted that unlike a safety case NOPSEMA does not "accept" a design notification. The final outcome of the assessment process will be a set of written comments detailing any issues or concerns from the information provided during the process.

During the design notification review NOPSEMA may issue a Request for Further Written Information (RFFWI) [Reg 2.4(j)(3)]. While a RFFWI must be formally addressed through a written response, there is also the option to engage less formally through liaison meetings. These meetings can be both to clarify the RFFWI and to provide an opportunity for the person submitting to clarify their responses.

A RFFWI will be limited to seeking further information that is required to be included in a design notification if this information has not been provided or seeking clarification where there is conflicting information within the design notification.

The overall assessment process must be completed within 90 days of receiving the submission. Unlike safety case assessments, if NOPSEMA requests additional written information this will "stop the clock" on the 90 days until the last of that information is received. The person submitting the response to a RFFWI

must provide information that addresses all queries before the assessment period restarts. This will require NOPSEMA to assesses whether the provided information meets this requirement.

As a matter of policy NOPSEMA will conclude an assessment if the required information is not provided within 180 calendar days, unless otherwise agreed with the person submitting the design notification.

The final comments from NOPSEMA will be issued to the submitting person at the conclusion of the assessment process. This will be on a standard form, with each comment identified by a number. It is suggested that to ensure each comment is addressed in the subsequent safety case this form is included in that safety case with the comments either addressed directly in a Table of comments and responses or that the Table includes a reference to the appropriate section of the safety case that addresses the comment.

An overview of the assessment process is shown in Figure 2.

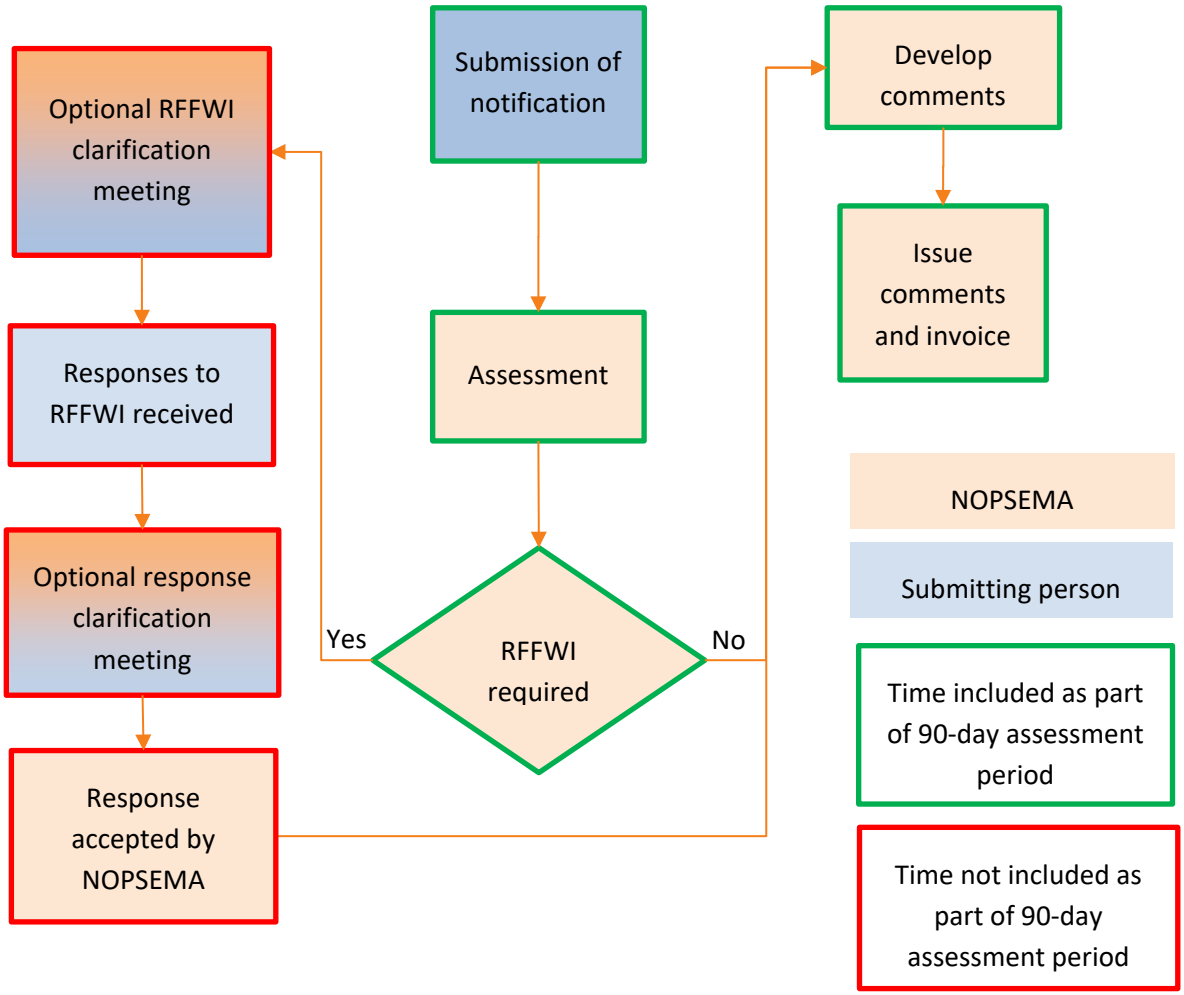

Figure 2. Assessment process

5. Concordance table

While not required by the regulations, the submitting person may wish to include a concordance table to check the completeness of their submission and to facilitate the assessment process. Where used

references to sections of the submission which satisfy particular subparts of the regulation should be as specific as possible.

An example of a concordance table is provided in Appendix A.

6. Related documents

N-04030-PL2322 - Design Notification Scheme Assessment

N-04000-GL0225 - Making Submissions to NOPSEMA

N-04200-GL0063 - Validation Guideline

N-04300-GN0106 - Safety Case Content and Level of Detail

N-04030-FM2320 - Design Notification Submission Cover Sheet

N-04030-FM2321 - Design Notification Request for Further Written Information

N-04030-LT2324 - Design Notification Response

Appendix A: Example concordance table

Regulation Part 3	Requirement	Section(s) of submission which address regulation
2.4(H) Requirements of design notification		
(d) include a description of the following		
(i)	the design process (from the initial concept to the submitted design) for the new facility	
(ii)	the design and performance standards used to guide the design process	
(e) include a description of the chosen design for the new facility, including		
(i)	diagrams of the design	
(ii)	a summary of other design options that were considered	
(iii)	for a vessel or structure that is to be repurposed—the justification of the suitability for repurposing the vessel or structure	
(iv)	the criteria used to select the design in the design notification and the process by which the selection was made	
(f)	include a description of how the design in the design notification for the new facility ensures that risks associated with hazards that have the potential to cause a major accident event are reduced to a level that is as low as reasonably practicable	
(g) include information explaining the following		
(i)	how the new facility will be able to withstand such forces acting upon it as are reasonably foreseeable throughout its entire lifecycle, including during the post closure period until fully decommissioned	
(ii)	how the layout and configuration of the new facility, including the layout and configuration of its plant, will not adversely impact upon its safety and integrity	
(iii)	how the fabrication, transportation, construction, commissioning, operation, modification, maintenance and repair of the new facility will proceed without adversely impacting upon its safety and integrity	
(iv)	how the new facility will be able to be decommissioned and, if necessary, dismantled in such a way that it will, as far as is reasonably practicable, have sufficient integrity to enable decommissioning to be carried out safely	

Regulation Part 3	Requirement	Section(s) of submission which address regulation
(v)	how, in the event of reasonably foreseeable damage to the new facility, the new facility will be able to retain sufficient integrity to enable actions to be taken to safeguard the health and safety of persons at, or near, the new facility	
(h) include a description of how the design in the design notification for the new facility makes use of construction materials that are		
(i)	suitable, having regard to the need to always ensure that the new facility maintains such structural integrity as is reasonably practicable	
(ii)	as far as is reasonably practicable, able to provide sufficient protection against anything that may prejudice the structural integrity of the new facility	
(i) include a description of the following		
(i)	the layout of the new facility	
(ii)	the safety and environmental management system by which the intended major accident risk control measures are to be maintained	
(iii)	the process technology proposed to be used for the new facility	
(iv)	the principal features of any pipeline proposed to be connected to or used in connection with the new facility	
(v)	any petroleum-bearing reservoir or identified storage formation intended to be exploited using the new facility	
(vi)	the basis of design for any wells to be connected to the new facility	
(j)	**include an initial list of operations, procedures and equipment that are critical to safety**	
(k)	**include a plan setting out the proposed location of the new facility and anything that may be connected to the new facility, including particulars**	
(i)	the meteorological and oceanographic conditions to which the new facility may foreseeably be subject	
(ii)	the properties of the seabed and subsoil at the proposed location of the new facility	
(l) include a description of the following		

Regulation Part 3	Requirement	Section(s) of submission which address regulation
(i)	any environmental, meteorological and seabed limitations on the safe installation, operation and decommissioning of the new facility	
(ii)	the arrangements for identifying risks from seabed and marine hazards such as pipelines and moorings of adjacent installations	
(m)	include a description of the types of operation, and the activities in connection with an operation, that are proposed to be undertaken at the new facility	