
Guidelines for plan for development and operation of a petroleum deposit (PDO) and plan for installation and operation of facilities for transport and utilisation of petroleum (PIO)



Norwegian Ministry
of Labour and Social Inclusion



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Abbreviations

PDO	Plan for Development and Operation
PIO	Plan for Installation and Operation
BOK	Concretisation Decision
BOV	Decision to Continue
BOG	Decision to Implement
IA	Impact Assessment
RIA	Regional Impact Assessment
HSE	Health, Safety and the Environment
BAT	Best available technologies
NGL	Natural Gas Liquids
MPE	Ministry of Petroleum and Energy
AID	Ministry of Labour and Social Inclusion
KLD	Ministry of Climate and Environment
NFD	Ministry of Trade, Industry and Fisheries
KDD	Ministry of Local Government and Regional Development
NPD	Norwegian Petroleum Directorate
PSA	Petroleum Safety Authority Norway
NVE	Norwegian Water Resources and Energy Directorate

Energy Act	Act relating to the generation, conversion, transmission, trading, distribution and use of energy, etc. (the Energy Act), 29 June 1990, No. 50.
Pollution Control Act	Act concerning protection against pollution and concerning waste (the Pollution Control Act), 13 March 1981 No. 6.
IA Regulations	Regulations relating to impact assessments of 19 December 2014 No. 1758
Measurement Regulations	Regulations relating to measurement of petroleum for fiscal purposes and for calculation of CO₂ tax (the Measurement Regulations), 1 November 2001 No. 1234
Petroleum Regulations (pf):	Regulations to the Act relating to petroleum activities, 27 June 1997 No. 653
Petroleum Act (pl)	Act relating to petroleum activities (the Petroleum Act), 29 November 1996 No. 72
Planning and Building Act (pbl)	Act relating to planning and processing of building applications (the Planning and Building Act), 27 June 2008 No. 71
Framework Regulations	Regulations relating to health, safety and the environment in the petroleum activities and on certain onshore facilities (the Framework Regulations), 12 February 2010 No. 158
Resource Management Regulations	Regulations relating to resource management in the petroleum activities (Resource Management Regulations), 18 June 2001 No. 749
Management Regulations	Regulations relating to management and the duty to provide information in the petroleum activities and at certain onshore facilities (the Management Regulations), 29 April 2010 No. 611
Tariff Regulations	Regulations relating to stipulation of tariffs, etc. for specific facilities, 20 December 2002 No. 1724
TPA Regulations	Regulations relating to third party access to facilities, 20 December 2005 No. 1625

1 INTRODUCTION

The Ministry of Petroleum and Energy (MPE) and the Ministry of Labour and Social Inclusion (AID) hereby issue updated guidelines for preparation of plans for development and operation of a petroleum deposit (PDO) and plans for installation and operation of facilities for transport and utilisation of petroleum (PIO). This edition replaces the guidelines from March 2018.

The preparation of PDOs and PIOs is governed by the Act of 29 November 1996, No. 72 relating to petroleum activities, the Regulations to the Act relating to petroleum activities stipulated by Royal Decree of 27 June 1997 and the Regulations relating to health, safety and the environment in the petroleum activities and on certain onshore facilities stipulated by Royal Decree of 12 February 2010 with associated regulations.

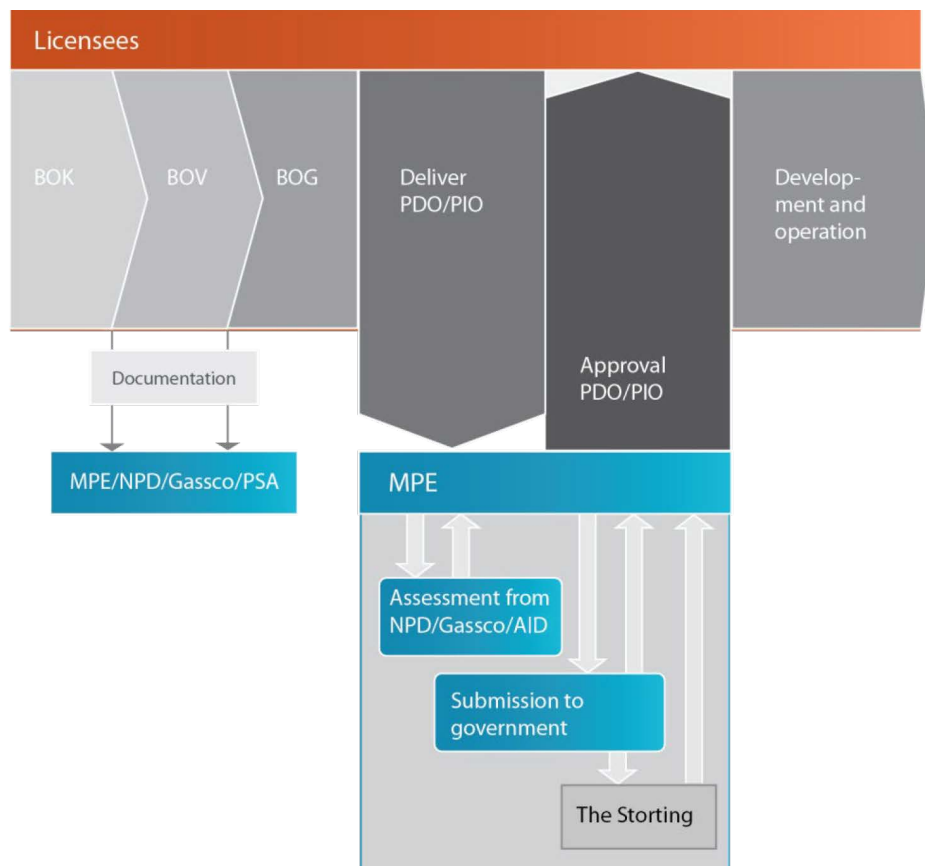
PDOs and PIOs consist of a development or installation section, and an impact assessment section. The guidelines provide information about how the authorities should be involved in the planning phase of a development/installation project, as well as how the authorities process development/installation plans. It also provides guidelines for:

- The impact assessment process
- The development section of a PDO
- The installation section of a PIO

The guidelines describe topics that must normally be covered in the plans. The documentation must be adapted to the specific scope of the development.

These guidelines have been updated to reflect regulatory changes made since the previous version.

Figure 1 Timeline for authority processing of PDOs and PIOs



The authorities define the different milestones in the project development process as follows:

- **Concretisation Decision - BOK:** Milestone where licensees have identified at least one technical and financially feasible concept that provides a basis for initiating studies that lead to concept selection.
- **Decision to Continue - BOV:** Milestone where the licensees decide to continue studies for one concept that leads to a Decision to Implement.
- **Decision to Implement - BOG:** Milestone where the licensees make an investment decision that results in submission of a PDO or PIO.

2 GENERAL INFORMATION

2.1 Description of PDO and PIO

A PDO describes the development of a petroleum deposit, or several petroleum deposits jointly, (development section), and the consequences the planned development measures will have (impact assessment). A PDO is prepared by the licensees in the production licence(s) where the deposit is located. PDOs must be approved by the MPE.

A PIO is a plan for construction, placement, operation and use of facilities for petroleum activity, including shipment facilities, pipelines, cooling facilities, facilities for production and transmission of electricity and other facilities for transport or utilisation of petroleum. For example, in the development of the Johan Sverdrup field, a PIO was submitted for oil and gas export pipelines, as well as a separate PIO for power from shore for the field. The special licence that is granted under a PIO will apply to installation and operation of the facility in question. A separate concession period will be assigned to the licence, which will be necessary when the right to installation and operation does not follow from an approved PDO.

As a point of departure, a PDO must account for the total development concept. In its assessment of the plan, the MPE will determine which parts of the development concept will be handled by the licensees in a production licence (PDO) and which parts will be constructed and operated pursuant to a special licence for installation and operation (PIO). Whether parts of the development concept will be handled by a different owner than a licensee in the production licence, either from the start or at a later point in time, will be decisive as regards whether they will be assigned a different concession period or whether other terms will be set for the licence.

In connection with a development, licensees should reach out to the MPE at an early stage to clarify whether a PIO is needed, and to clarify any other circumstances, including regulation of third party access to the facility, ownership and operatorship. If the development entails establishing or changing an onshore facility, the licensee should also seek to clarify with the MPE whether the onshore facility in its entirety is comprised by the scope of the Petroleum Act.

The relationship between PDOs and PIOs is described in more detail in Odelsting Proposition No. 46 (2002-2003), Item 2.3.

The PDO and PIO can be joined together in one document, if expedient.

The PDO and PIO must be delivered to the authorities in electronic format.

See Sections 4-2 and 4-3 of the Petroleum Act.

2.2 Impact assessment

The purpose of impact assessments (IAs) is to account for the effects that a development or a facility and its operation could have on the environment, including cultural monuments and cultural environment, natural resources and society. IAs are prepared to ensure these effects are taken into account in the decision-making process.

At an early stage, the licensee should identify potential existing IAs that could fulfil the study obligation, in whole or in part. If a licensee is considering applying for an exemption from the IA obligation on the basis of existing IAs, it should clarify this point with the MPE at an early stage. If the development entails a development on land and/or connection to the onshore power system, it is important to note that these measures can trigger an independent reporting obligation and mandatory impact assessment under the rules of the Planning and Building Act relating to impact assessment.

The Act of 19 June 2009 relating to the management of biological, geological and landscape diversity (Nature Diversity Act) is in effect on Norwegian land territory and in Norwegian territorial waters. Some of the Act's provisions also apply on the continental shelf, insofar as they are applicable. The impact assessment prepared in connection with PDOs and PIOs already safeguards many of the principles stipulated in the Nature Diversity Act. Nevertheless, it is still important that the licensee considers the Act when preparing the study programme for the IA, particularly in connection with onshore facilities, where the entire Act will be applicable.

2.3 Organisation of the authorities' handling of PDOs and PIOs

PDOs and PIOs form the basis for the MPE to approve development and operation of petroleum deposits and to grant a special licence for installation and operation. The Storting annually¹ consents to the preconditions under which the Ministry can approve projects without submitting a PDO or PIO to the Storting. The following preconditions² are valid for 2022:

1. The project cannot have fundamental or societal aspects of significance.
2. The upper limit for the total investments per project constitutes NOK 15 billion.
3. Each project must show acceptable socio-economic profitability and be reasonably robust against changes in the price development for oil and natural gas.

See Figure 1 on page 6 for a schematic presentation of how the authorities are handling PDOs and PIOs.

The MPE coordinates the official handling of PDOs and PIOs, and the processing takes place in cooperation with the AID, the Norwegian Petroleum Directorate (NPD) and the Petroleum Safety Authority Norway (PSA). Gassco is involved if the plans involve processing and transport of gas. The same applies to the NVE in matters that are covered by the scope of the Energy Act. In plans where the licensees are considering connecting the development to the onshore power system, NVE, Statnett SF and local grid companies play a role as regards the power system. The Ministry of Climate and Environment (KLD), the Ministry of Trade, Industry and Fisheries (NFD) and the Ministry of Transport and Communications (SD), as well as their underlying agencies and directorates, are consultation bodies in the impact assessment, which is discussed further in Chapter 4.

The documentation requirements for PDOs and PIOs are adapted to the environmental authorities' need for information about the decisions that are required pursuant to the Pollution Control Act with associated regulations. At an early stage, the licensees should clarify with the environmental authorities (the Norwegian Environment Agency) how the application process for the emission/discharge permit should take place for the relevant development. The same applies vis-à-vis the NVE with regard to licence requirements pursuant to the Energy Act.

As regards the area for health, safety and the environment (HSE), Section 27 of the Framework Regulations contains provisions concerning the content of PDOs and PIOs for development and operation of petroleum deposits and onshore facilities that are subject to the Petroleum Act.

For transboundary fields and pipelines, plans must be submitted for approval by the authorities in both countries. The Norwegian and UK authorities have jointly published the [Guidelines for development of transboundary oil and gas fields](#), which can be found on the NPD's website.

See Sections 4-2, 4-3 of the Petroleum Act, Sections 20, 21, 22, 22a, 22b, 22c, 28 and 29 of the Petroleum Regulations.

2.4 Official handling

The authorities shall be involved in both the planning phase and implementation phase of a PDO and

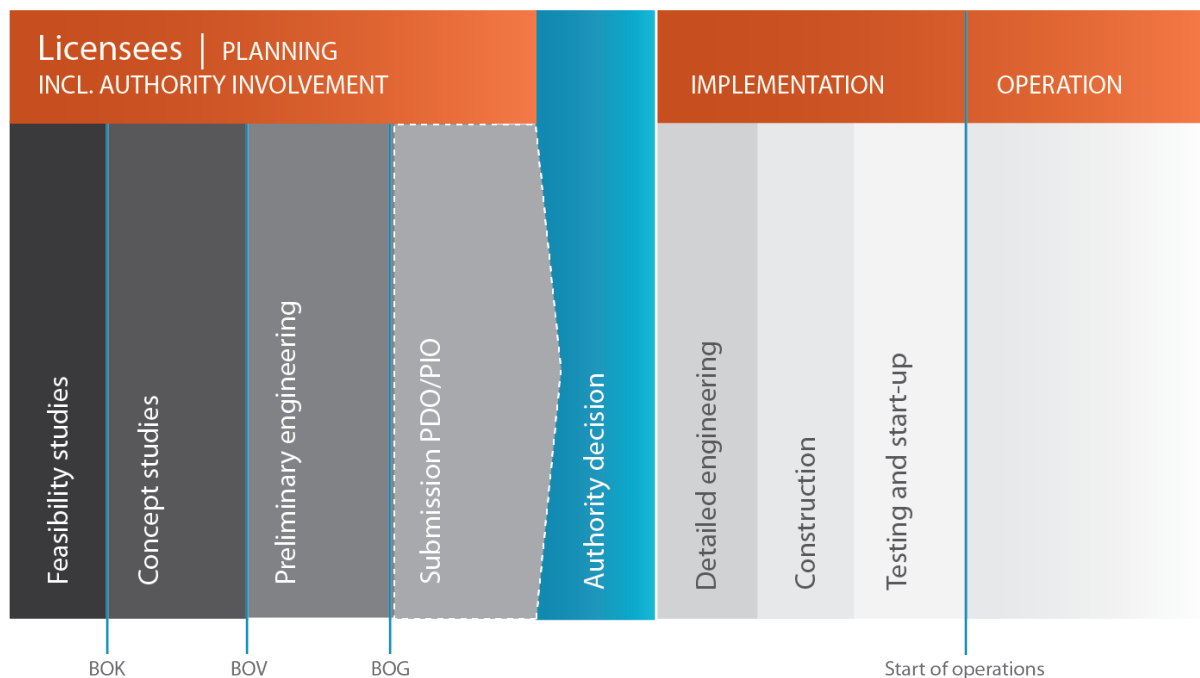
¹This is normally in the budget document (Prop. 1 S)

² cf. Proposition 1 S (2021-2022) and Recommendation to the Storting 9 S (2021-2022).

PIO, see Figure 1 on page 6. It is very important that the authorities are involved in the planning phase to highlight and assess various issues at an early stage of the project, including facilitating efficient final processing of the plan.

The guidelines promote facilitation such that the documentation that the authorities need at milestones prior to submission of the final plan, is adapted to the industry's project progress and document preparation. If the licensees clarify issues that are key to the authorities at an early stage, this could reduce the need to prepare further documentation.

Figure 2 Project development process



Official processing in the planning phase (before submission of PDO/PIO)

The planning phase starts with feasibility studies after completing conceptual development, goes via Concretisation Decision (BOK) and Decision to Continue (BOV) and leads to the Decision to Implement (BOG).

During the planning phase there will normally be meetings and other dialogue between the authorities and licensees for assessment and potential clarification of various issues. After receiving information/documentation at BOK and BOV, the authorities will provide feedback to the licensees. The feedback will normally comprise expectations as regards further work leading up to BOV and BOG, which the authorities consider essential in order to grant approval of the final plan.

Official handling of submitted plan

Subsequent to BOG the PDO/PIO is submitted to the authorities for approval. The licensees then have a three-month deadline to endorse the management committee's decision concerning submission of the plan, cf. Article 16 of the joint operating agreement. The implementation phase is in effect until start-up of the completed development.

PDOs and PIOs shall be submitted electronically to the MPE and AID, with copies to the NPD and PSA. In the event of a PIO for gas treatment and transport, or a PDO involving gas infrastructure, a copy must also be sent to Gassco. The MPE will coordinate handling of the plan. The AID, NPD and potentially Gassco, will submit their assessment to the MPE. The PSA will submit its assessment to the AID.

The proposed study programme for the impact assessment and the actual impact assessment must both be submitted for public consultation. It is important to note that the process related to the impact assessment must start well before and be completed prior to submission of the development plan. Early submission of the proposed study programme and impact assessment is a prerequisite for expedient and efficient authority handling of the overall plan.

Based on the impact assessment, including the comments received during consultation, and the sections relating to the development and installation, the MPE will present the case to the Storting. In those instances where the case will be processed by the Storting, the MPE will also prepare a proposition to the Storting. When the Storting has processed the plan, the MPE will formally approve the PDO/ grant a special licence for installation and operation by means of a letter to the licensees.

Good contact must be maintained between the operator and the MPE in connection with the authorities' handling after the PDO/PIO has been submitted. The authorities' handling of a PDO or PIO will normally take from three to six months, depending on factors such as whether or not the case must be processed by the Storting.

2.5 Partner involvement and quality assurance in project implementation

The operator has the practical responsibility for preparation of PDOs and PIOs. This work must take place in close cooperation with the other licensees. The license group shall function as an internal control system in the production licence. The purpose is to ensure a high-quality decision basis, and a strategy for efficient quality assurance should be prepared as early as possible in the planning of a PDO and PIO, where involvement of the licensees and transfer of experience from other projects is safeguarded. Reference is furthermore made to 5.5 and 6.3.

See Section 10-2 of the Petroleum Act and Section 56 of the Petroleum Regulations. See also Section 17 of the Framework Regulations and the Management Regulations.

2.6 Ripple effects

The authorities' goal is for proven petroleum deposits and developments to generate the greatest possible values for society. It is desirable for the planning of a new development to facilitate positive local and regional ripple effects. Contact between the licensee, local business and industry and relevant authorities must therefore be established at an early stage of planning. Necessary analyses of e.g. local expertise, capacity, demand for labour and measures aimed at enhancing expertise should be conducted early on in the process. Operators of new, independent developments must conduct an analysis of regional and local ripple effects of the development, no later than two years after the field has started producing. A final report is prepared and made available to the public by the licensees, and is sent to the MPE for information.

2.7 Significant contractual obligations – early investments

Contractual obligations prior to approval of a PDO

Significant contractual obligations cannot be entered into and construction work cannot start until the PDO has been approved, unless the MPE has granted consent for this. This means that the licensee must submit an application to the MPE, explaining the need to enter into significant contractual obligations prior to approval of the PDO. In order to receive consent to enter into significant contractual obligations or to start construction work, the licensee must document to the MPE that the disadvantages of postponement of this are significant.

An application for consent should comprise:

- Statement on preliminary development plans
- An explanation for why early obligation is necessary
- Statement on the possibility of the contracts being cancelled and cancellation costs

A consent to enter into contracts before the PDO is approved does not entail an advance approval of the PDO or the elements covered by the contracts. Licensees that apply for, and receive consent to enter into contracts before the PDO is approved, do this at their own risk. The licensees must also take into account that other authorities will process necessary applications pursuant to other legislation, without consideration for the fact that contractual obligations have already been undertaken.

See Section 4-2(5) of the Petroleum Act.

Contractual obligations prior to the granting of a licence based on PIO

Pursuant to the Petroleum Act, there is generally no restriction as regards entering into significant contractual obligations or starting construction work in connection with installation and operation of facilities for transport and for utilisation of petroleum. However, entering into contractual obligations will be at the applicant's own risk, as long as a special licence for installation and operation has not been granted.

It is also important to note that a licence must be granted before any placement of pipelines or facilities can start.

See Section 4-3(4) of the Petroleum Act.

2.8 Onshore facilities and offshore power production

Facilities for recovery of subsea petroleum deposits and facilities for transport of petroleum are subject to the Petroleum Act, regardless of whether the facilities are located at sea or on land. Facilities for utilisation of recovered petroleum that are on land, are only subject to the Petroleum Act when such utilisation is necessary for, or constitutes an integrated part of production or transport of petroleum.

Utilisation is defined in Section 1-6 (i) of the Petroleum Act as “cooling in order to liquefy gas, refining and petrochemical activity, production and transmission of electric power and other use of produced petroleum, storage of petroleum as well as the construction, placing, operation and use of a facility for the purpose of utilisation”.

Facilities on land that are subject to the Petroleum Act are subject to an approved PDO or PIO.

Offshore facilities for the production and transmission of electrical energy to supply a petroleum installation can be regulated by the Petroleum Act, and are subject to an approved PDO or PIO. Facilities for production and transmission of high voltage electric energy may also be subject to a licence under Section 3-1 of the Energy Act, or Chapter 3 of the Ocean Energy Act depending on where production and transmission take place. The Energy Act applies to Norwegian land territory and to inland waters out to the baseline. The Ocean Energy Act applies to Norwegian sea territory outside the baseline and on the continental shelf, but may be set aside by the Ministry if there is an issue/presence of double regulation, typically in the case of energy facilities that are integrated in the petroleum activity in question. As a rule, establishing such facilities will be subject to a mandatory impact assessment under the Petroleum Act and/or the Ocean Energy Act and/or the Planning and Building Act.

The authority to issue licences under the Energy Act is delegated to NVE, while the MPE issues licences under the Ocean Energy Act. The MPE is the body of appeal for the NVE's licence decisions. Both the Energy Act and Ocean Energy Act may apply, in addition to the Petroleum Act. To the extent that measures must be considered in relation to multiple statutes, it is important that both the MPE and NVE are informed at the earliest possible point in time to ensure a comprehensive and coordinated process by the authorities with regard to the consideration of impact assessments and licence applications.

Land facilities that fall under the scope of the Planning and Building Act are, as a point of departure, subject to the statute's provisions concerning building matters. However, facilities that require a

licence under Section 3-1 of the Energy Act are exempt from these provisions.

It is important that the MPE is informed, if there is any doubt about facilities on land that may be covered under the Petroleum Act. Under the Petroleum Act, the Government has the authority to issue supplementary rules to define the Petroleum Act's area of application. Such an assessment is performed specifically in relation to individual facilities, cf. Section 1-4(6) of the Petroleum Act.

See Sections 4-2 and 4-3 of the Petroleum Act, cf. Section 1-4 and Section 1-6(c)(g)(i)(m) of the Petroleum Act, and Chapters 4 and 14 of the Planning and Building Act. See Sections 1-1 and 3-1 of the Energy Act. See also the Regulations relating to processing and inspection in construction matters (SAK) of 24 June 2003 No. 749, Section 7.

2.9 Unitisation and area development

A unitised development of one or more petroleum deposits could be socio-economically profitable. In certain cases, the licensee has a duty to attempt to establish an agreement with surrounding production licences. If the criteria for unitisation are present and no agreement is reached, the MPE could stipulate how the unitised petroleum activities should take place.

The duty pursuant to the unitisation provision applies to all licensees in a relevant area, with a natural activity obligation for the licensee(s) that are considering a concrete development or another form of petroleum activity. The duty to attempt to achieve unitisation arises either when a petroleum deposit extends across multiple blocks, or in the event of multiple petroleum deposits where it is obviously rational to unitise operations.

If there are multiple known petroleum deposits in an area and they are located in several different production licences, and one or more of these are being considered for development, unitisation possibilities for recovery, transport, utilisation and cessation must be examined and evaluated. It is important to obtain an overview of unitisation possibilities and gains at an early stage in the planning phase.

The solutions for unitised petroleum activities that are chosen for multiple separate deposits depend e.g. on the resource basis, maturity of the area and existing infrastructure.

The authorities place emphasis on the licensees' consideration of development of new deposits in an area context. It is a requirement that possible unitisation of development of deposits is extensively evaluated, and that this is documented.

A unitisation agreement must be signed and submitted to the MPE, no later than when the PDO is submitted.

See Section 4-7 of the Petroleum Act.

2.10 Third party access

The Regulations relating to third party access to facilities (TPA regulations) regulate the process for entering into agreements relating to third party use of facilities for recovery, transport or utilisation of petroleum. The purpose is to achieve efficient use of facilities and to secure good incentives for exploration and recovery activity for the licensee based on the good resource management considerations. It is primarily the parties themselves that must agree the commercial terms for such use through negotiations.

Upstream gas pipeline networks are open to third party use for natural gas companies and qualified customers that have a duly substantiated reasonable need for transport and/or processing of natural gas. The Ministry stipulates tariffs for such use in the *Regulations relating to stipulation of tariffs, etc. for*

specific facilities (Tariff Regulations). Facilities that are subject to the Tariff Regulations are not regulated under the TPA regulations.

See Section 4-8 of the Petroleum Act, the TPA regulations, Ch. 9 of the Petroleum Regulations and the Tariff Regulations.

2.11 Power from shore

In its processing of Recommendation to the Storting No. 114 (1995-1996), the Storting decided that an overview of energy demand and the costs of using power from shore instead of gas turbines must be presented for all new field developments. Power from shore must be assessed by the operator and followed up by the authorities in connection with the processing of each plan for development and operation. The technological and financial consequences of a power from shore solution vary greatly from development to development. A precondition for a solution with power from shore is that this can take place without negative effects on the power system. At the same time, natural diversity and the measure costs must be taken into consideration.

The NPD must be contacted at the earliest stage possible in connection with assessment of power from shore. The PSA should also be informed as early as possible. Prior to concept selection, the NPD must be informed of the alternatives being assessed, and the consequences they will have with regard to selecting power from shore, cf. Chapter. 3.2.

Necessary clarifications with the NVE, Statnett SF and other potential power grid companies must also be made at an early stage of planning. The regulation of and terms and conditions for connection to the onshore power system are based on the Energy Act with associated regulations.

The official handling pursuant to the Energy Act and the Petroleum Act must be based on the same preconditions. Timely adaptation of impact assessments and licence applications are therefore important. The process of authority approval of electrical installations can be time-consuming.

Necessary impact assessments must be conducted, and necessary applications for connection to the onshore power system must be submitted to the NVE, before the PDO is sent to the MPE for approval. It is recommended that the processing of licence applications is clarified with the NVE before this date as well.

2.12 New or amended PDO/PIO

The licensee shall inform the MPE about significant deviations from or changes in the assumptions for a submitted or approved plan. This also applies to landing applications or facilities that were not previously included under the Petroleum Act.

Significant deviations as described are subject to approval by the MPE and the Ministry may require that a new or amended plan be submitted. This could also apply in cases where the authorities see a need for changes as a consequence of new knowledge about the deposit, new technology, commercial conditions or other factors that make such changes relevant, cf. Odelsting Proposition No. 43 (1995-1996).

In the event of significant changes to existing fields or facilities, for example changes in production strategy or changes to infrastructure, a new plan may be required. The same applies if a new project must be subjected to an impact assessment. If the project relates to production of a new deposit in connection with an existing field, the main rule is that a new PDO will be required, or that the licensee must apply for a PDO exemption.

During the development phase, deviations on the cost side can emerge as overruns in relation to an approved PDO or PIO. The MPE reports on these issues to the Storting annually, based on information from the licensees. In the event of significant cost deviations, the information to the MPE must state

which cost elements are caused by overruns and which are caused by actual changes in the development project.

Following a statement from the AID, the MPE will determine whether a new or amended plan will be required on the basis of a concrete evaluation in each individual case. In this evaluation, the MPE will e.g. emphasise factors such as whether the change entails a considerable increase in the investments in the field, pipeline or facility.

See Section 4-2(7) of the Petroleum Act, cf. Section 20(5), and Section 4-11 of the Petroleum Regulations.

2.13 Exemption from PDO/PIO

The licensee can apply for an exemption from the requirement to submit a PDO and PIO. It is recommended that licensees contact the MPE and the NPD at the earliest possible stage to determine whether it is appropriate to apply for an exemption. The application is sent to the MPE with a copy to the NPD.

In order to receive an exemption from the requirement to submit a PDO and PIO, certain criteria for impact assessment requirements must be fulfilled.

PDO exemptions will primarily be relevant in connection with the development of smaller deposits that can be reached from existing facilities on fields with approved plans for development and operation. The following criteria must normally be met in order to grant an exemption²:

- The deposit is near, or above or below, a deposit that already has an approved plan for development and operation
- The entire deposit can be drilled and produced from facilities that are covered under an approved plan for development and operation
- The deposit lies within a licensed area. If there is a basis for unitisation between different licensees, the necessary unitisation agreement must be in place
- Modifications to facilities must not entail elevated risk to personnel, the environment or material assets
- There must be a satisfactory marketing solution for gas

This list is not exhaustive.

The application must substantiate that there are grounds for an exemption. It is important that the authorities gain early access to the applicants' technical and financial evaluations to ensure the best possible basis for making decisions. The Ministry can also grant an exemption from the requirement for a PDO in the case of tie-ins to facilities covered under an approved plan for development and operation without drilling facilities, i.e. that the deposit has to be drilled from a mobile drilling rig through an existing or new subsea template.

A deposit that is developed in this way will normally be incorporated as part of the existing field without being assigned a separate name. A precondition for this is that the deposit has the same licensees and the same ownership interests as in the original field.

The main plan for drilling and well activity must be enclosed with the application.

See Section 4-2(6) of the Petroleum Act, cf. Section 4-3(4).

See Section 8(1) of the Resource Management Regulations and Section 27(2) of the Framework Regulations.

² See Odelsting Proposition No. 43 (1995-1996) On the Act relating to petroleum activities, comments concerning Section 4-2.

2.14 Development over multiple stages

If the development is planned in two or more stages the plan must, to the extent possible, cover the total development. The PDO for the first construction stage must document that the chosen development solution is optimised with regard to total value creation and further development stages. An overarching assessment of how the individual development scenarios for further stages will safeguard the totality of the development must be provided.

See Section 4-2(4) of the Petroleum Act.

2.15 Language

PDOs and PIOs must be in Norwegian unless otherwise agreed with the MPE. For the simplest possible procedure, it is beneficial if the licensees' summary in the PDO and PIO is designed to be as similar as possible to the MPE's propositions to the Storting. See for example Proposition No. 80 S (2017-2018) concerning development and operation of the Johan Castberg field with status for the oil and gas activities or Proposition No. 41 S (2018-2019) concerning development and operation of Johan Sverdrup field second stage of construction and installation and operation of power from shore to the area with the fields Johan Sverdrup, Edvard Grieg, Ivar Aasen and Gina Krog.

3 DOCUMENTATION DURING THE PLANNING PHASE PRIOR TO SUBMISSION OF A PDO AND PIO

Documentation to the authorities is adapted to the size and scope of the development. The documentation can be based on the licensees' own decision basis, so it is not normally necessary to prepare special documentation for the authorities.

3.1 General information about the planning phase

The primary purpose of the planning phase is to determine whether a business concept is technically feasible, has manageable uncertainty, fulfils regulatory requirements and has sufficient profitability. The planning phase can be divided into feasibility studies, concept studies and pre-engineering.

The feasibility studies determine whether a business idea can be concretised into a business opportunity. This phase is concluded with a "concretisation decision" (BOK), which should include a description of one or more concepts with cost frameworks.

The concept studies concretise the technical and financial basis for a business opportunity in such a way that profitability and feasibility can be documented, before proceeding with a development solution. The concept studies lead to a "decision to continue" (BOV).

The pre-engineering further develops the basis for a business concept to such a level that a final "decision to implement" (BOG) can be made, and the PDO or PIO can be submitted to the authorities for approval.

In order to contribute to good interaction between licensees and authorities, and to lay a foundation for efficient authority handling of the final plans, relevant documentation must be made available to the authorities at an early stage of the project's planning phase.

3.2 Information to the authorities at BOK and BOV

The operator is asked to contact the NPD and the PSA well before BOK to clarify what documentation will be provided to the authorities during the planning phase of the project. During the planning phase, it will be relevant to have meetings with the NPD, the PSA and Gassco. It may also be relevant to have a meeting with the NVE concerning power from shore.

A confirmation that BOK has been made shall be sent to the NPD in electronic format with a copy to the MPE and the PSA. A confirmation that BOV has also been made shall be sent to the MPE in electronic format with a copy to the NPD and the PSA.

The licensees must contact the authorities upon concept selection if this decision will be made before BOV.

3.3 Fields that require new transport with or without treatment capacity for gas

As part of its specific responsibility for evaluating the upstream pipeline network, Gassco shall consider further development of the gas transport system and associated facilities with a view to achieving comprehensive general transport and treatment solutions for the petroleum activities.

When a licensee considers it likely that a need will arise for new or expanded transport or treatment capacity for natural gas, Gassco must be informed. In order to ensure the best possible decision process, it is important that Gassco is informed at the earliest possible stage, preferably when feasibility studies are initiated.

In consultation with the licensee, Gassco will determine which transport and/or treatment solutions

will be assessed. Gassco must present the assessments to the MPE before a concept selection is made.

See Section 66 and 66A of the Petroleum Regulations.

4 GUIDELINES FOR THE IMPACT ASSESSMENT SECTION OF A PDO AND PIO

4.1 Introduction

As regards development of petroleum deposits and facilities it is the licensees, in practice the operator, who are responsible for conducting an impact assessment process, preparing and presenting an impact assessment (IA).

The IA is a part of PDOs and PIOs and therefore constitutes a part of the basis for the authorities' decision to approve a PDO and PIO. The impact assessment is delivered to the MPE no later than when the development plan is submitted, including a summary and review of the consultation statements.

HSE questions related to the development are described in the PDO and PIO and are processed in the normal manner by the AID and the PSA pursuant to provisions in the Petroleum Act and relevant HSE regulations.

The IA process entails that the operator of the relevant field prepares an IA programme that is submitted for consultation. After the consultation, an updated proposed study programme is sent to the MPE for stipulation. The MPE stipulates the study programme after meeting with the operator, where the consultation comments are reviewed.

The operator then prepares the actual IA and submits this for consultation. After the consultation process is complete, the operator will summarise any comments and how they will be taken into consideration in the development. The PDO will contain this summary, including the operator's comments concerning the comments made in the consultation process. See a more detailed description of the impact assessment process in 4.6.

4.2 Purpose

The purpose of IAs is to clarify the effects on the environment, including cultural monuments and cultural environment, natural resources and the society in general of a development or an installation and the operation of the petroleum deposit.

The IA shall ensure that these effects are taken into consideration in the planning of a development or an installation, and when decisions are made regarding whether or not a PDO or PIO is approved and, if so, on what conditions. The IA process is open and shall ensure that interested parties who may have an opinion on the development and installation be given the opportunity to express their views. The process ensures that the general public is made aware of potential consequences of the development and possible alternatives other than those put forward by the operator. This also applies with regard to implementation of necessary remedial measures. The consultation process for the IA is therefore an important part of the PDO and PIO process and helps ensure that the authorities have a good basis for their decision-making.

In the consultation, interested parties must have the opportunity to evaluate the operator's description of the effects the development and/or installation might have. The IA must therefore:

- Describe alternative development solutions that have been assessed
- Describe the plans for the field development and/or facility and what impact they might have on the environment, natural resources and society
- Discuss the significant positive and negative consequences that could presumably arise
- Describe remedial measures, and propose any necessary follow-up studies and monitoring programmes.

4.3 Legal basis

The Petroleum Act contains provisions on impact assessments. The Petroleum Regulations stipulate the detailed content of an impact assessment. For onshore developments, which comprise an onshore facility or facility for power from shore, the Planning and Building Act shall also apply.

The Planning and Building Act also contains rules on impact assessments for measures within the scope of this Act. In matters concerning connection to the onshore power system, for example through building a facility for the production or transmission of electric energy, these parts of the measure could trigger an independent reporting and impact assessment obligation pursuant to the IA Regulations, with NVE as the responsible authority. The impact assessments shall e.g. be used as a basis for the NVE's handling of licence applications according to Section 3-1 of the Energy Act.

In instances where an IA is also required pursuant to the Planning and Building Act for measures that require a licensing process according to the Energy Act, it is important that the MPE and NVE are contacted at an early stage to clarify questions related to coordination of the official handling.

See Sections 4-2(2) and 4-3(4) of the Petroleum Act, cf. Sections 20, 22, 22a, 22b, 22c and 29(4) of the Petroleum Regulations.
See also Sections 4-2(2) and 14-2(1) of the Planning and Building Act, as well as Section 6(1) of the IA Regulations.

4.4 Study obligation covered by existing impact assessments

If the study obligation is considered to be covered by existing impact assessments, it is unnecessary to prepare a new IA. This must be substantiated vis-à-vis the MPE in a letter that explains why existing assessments cover the present project. The licensees should use the most current information possible as a basis, such as an existing IA for an individual field, regional IA and the underlying material for the management plans, so that sufficient information is submitted for the MPE to assess the above-mentioned scenario. It is important to start the process early, so there is time to carry out a new IA if the study obligation is not covered by existing assessments. The operator is asked to contact the MPE at an early stage to clarify any relevant issues.

On the basis of such an inquiry from the licensees, the MPE will determine whether or not a new IA must be prepared. The clarification will be made following an assessment of whether it has been substantiated that the presumed effects have already been satisfactorily assessed. The MPE requests comments concerning the application from the NFD and KLD. A final confirmation of a fulfilled impact assessment duty will be provided with the MPE's approval of the PDO or PIO.

See Section 4-2(3) of the Petroleum Act.

4.5 Regional impact assessments

The purpose of a regional impact assessment (RIA) is to obtain a better overview of regional consequences of petroleum developments. At the same time, this allows for a simplification of the process related to impact assessments for individual developments. The RIA and IA for an individual field must, together, satisfy the impact assessment requirement in applicable regulations.

In most cases, an IA for the individual development is most relevant. However, in areas where multiple developments are planned, an RIA could be expedient. An RIA could increase efficiency, which can simplify the work related to preparing impact assessments for the individual fields. An RIA will also provide a better overall picture of the environmental effects in the area.

The licensees will decide whether to prepare an RIA. If specific reasons so require, the authorities can order a licensee to prepare an RIA pursuant to Section 4-2(3) of the Petroleum Act. If the licensees want to prepare an RIA, it is important that the operator starts a dialogue with the MPE at an early stage to clarify factors related to the preparation.

Regional assessments can be used as documentation for future developments in the area covered by the assessment. The MPE does not require that the RIA be updated each time it is used as documentation for a development. However, it would be natural to consider updating the assessments when the assumptions behind the assessments have significantly changed, for example if new, major developments that have not been taken into account are to be implemented, or other factors indicate that the assessments are outdated. It would also be sensible for the assessments to be updated with regard to update work that is potentially carried out as a step in an IA related to subsequent developments.

The sector reports and foundation reports that are prepared in connection with management plans, can be used as a technical basis in the same way that corresponding technical reports from the RIA have been used. The MPE underlines the importance of the study obligation for a development being fulfilled in accordance with applicable statutes and regulations. This can either take place through a separate IA, or a combination of a separate IA and an RIA. It will be up to the licensees themselves to determine the most expedient way to fulfil the study obligation.

The type of information that will potentially be covered by the RIA should be clear from the study programme for a development. If the developer plans to use an RIA that is being prepared in a new development, this must also be reflected in the impact assessment programme.

4.6 Process related to impact assessments

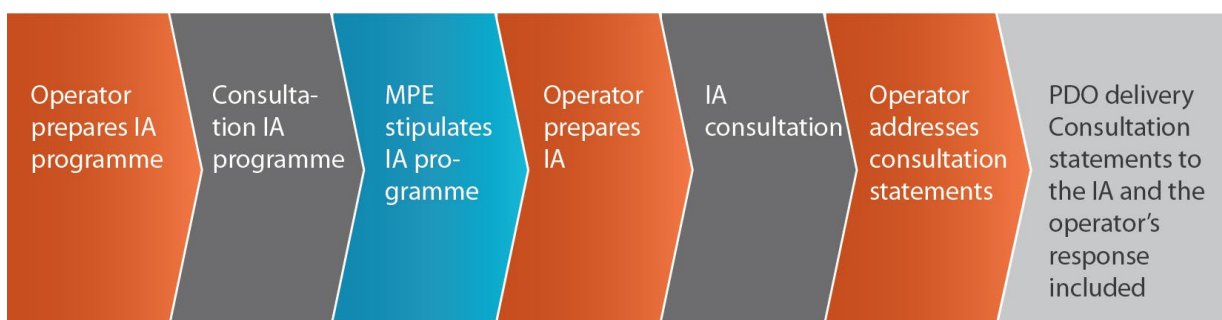
When should the work on impact assessments start?

In many cases, it will be natural to start the work on an impact assessment when one has assessed a deposit that is financially interesting to develop through drilling, testing and potential appraisal wells.

At this time, the operator should contact the MPE to discuss the IA for the relevant deposit, so that the subsequent work can be organised in the best possible manner. During this meeting, it would be natural for the operator to present the preliminary development plans. The schedule for the IA process, consultation deadlines and the need for any further meetings should also be clarified.

See Sections 22 - 22 c) of the Petroleum Regulations.

Figure 3 Impact assessment timeline



Impact assessment programme (Study programme)

The IA process starts with the operator preparing a draft study programme. The programme must describe the development and the anticipated effects of the development on the environment, including cultural monuments and the cultural environment, any transboundary environmental effects, natural resources, fisheries and society in general. The proposed programme shall be prepared on the basis of available knowledge and necessary updates thereof, and it should provide an account of any need for new studies and documentation.

The study programme determines which elements to highlight in the IA and forms the basis for the IA to be implemented.

See Section 22 and Section 29(4) of the Petroleum Regulations.

Consultation regarding the study programme

The public consultation is an important part of the study programme process. All interested parties are given the opportunity to evaluate the licensees' description of the effects the development could have, and to point out potential conflicts and possible alternatives. In this manner, the consultation will contribute to determining which issues should be further analysed in the impact assessment. The operator should be in a dialogue with the MPE in advance to ensure that the programme includes the most important elements and that relevant interested parties are included in the consultation.

The operator sends the proposed study programme for consultation to the relevant authorities and special interest organisations, with a copy to the MPE. The study programme can be sent electronically and must also be made available on the internet. The [advisory consultation list](#) can be found on the MPE's website. The consultation list does not exclude other interested parties from submitting comments in the consultation process.

The deadline for submitting comments is set in consultation with the MPE and will, as a general rule, be 12 weeks. The consultation deadline should not be shorter than six weeks. The length of the consultation period will depend on the size, complexity and scope of potential consequences for the environment, society and other industries, as well as to what extent these consequences have been studied previously. Any comments shall be sent to the operator with a copy to the MPE.

When regional assessments are used as a basis for an impact assessment programme, they will also be part of the consultation regarding the impact assessment programme. If the regional assessments that are used are not enclosed with the impact assessment programme, it must clearly be stated where the interested parties can obtain the relevant studies.

See Section 22(3) of the Petroleum Regulations.

Stipulation of the study programme

When the operator has received the comments concerning the proposed study programme, a summary of the statements with comments as regards how the statements will be taken into account in the IA is prepared. At the same time, the operator will contact the MPE for a meeting to review the comments. On this basis, the MPE will stipulate the final study programme. The MPE will ensure that the study programme fulfils the regulatory requirements regarding the contents of a study programme.

The MPE will determine the IA programme by means of a letter to the licensees. If a study programme must be drawn up that also fulfils the requirements in the Planning and Building Act, the processing of the study programme in the MPE shall be coordinated with the consideration of the study programme in the Ministry of Local Government and Regional Development (KDD). The MPE presents the study programme to the KDD.

See Section 22(2)(3) of the Petroleum Regulations, cf. Section 2(4) and Sections 7 and 8 of the IA Regulations.

Consultation regarding the impact assessment

The purpose of the IA consultation is to shed light on whether the effects of the development have been satisfactorily described. The consultation deadline is determined in consultation with the MPE and will normally be 12 weeks. In any event, the consultation deadline should not be shorter than six weeks.

Like the programme, the consultation deadline will depend on the nature of the development. A list of affected authorities and organisations that could be relevant interested parties in the consultation process can be found on the [MPE's website](#).

The operator sends the IA out for consultation in accordance with the consultation list used for the proposed study programme, and simultaneously announces in [Norsk lysingsblad](#) that the IA has been submitted for consultation. Both parts can be done electronically. An electronic copy of the IA is sent to the MPE at the same time. The IA must also be made available on the internet. In special cases, the MPE can decide that the MPE itself will send out the IA for consultation.

The IA is a part of the PDO and PIO. It is therefore important that the IA is submitted for consultation sufficiently well in advance of planned submission of the PDO/PIO, to ensure that any comments and remarks can be addressed in the PDO/PIO.

See Section 22a(4) of the Petroleum Regulations.

Study obligation fulfilled and requirement for additional studies

When the operator has received the comments given during the consultation process, a summary of the comments with the operator's proposal on how the comments will be taken into account in the development, is submitted to the MPE. At the same time, the operator contacts the MPE for a meeting to review the comments. On the basis of the IA and associated consultation comments, the MPE will determine whether the study obligation has been fulfilled. This is done in connection with processing of the PDO/PIO.

The MPE can require additional studies or supplementary information before the study obligation is deemed to have been fulfilled. This could be relevant, for example, if information emerges in the consultation process which indicates that the study programme has not been followed up as regards significant elements, or that the parties consulted have uncovered new issues that are of material significance for an approval decision. This could also be relevant in the event of changes in a development project that do not require a new PDO/PIO, or with a sequenced development where the impact assessment describes the entire development, but a decision has only been made for the previous construction stage.

Additional studies shall normally be submitted for consultation to the parties that have commented in connection with consultation for the original impact assessment. The study obligation is not deemed to be fulfilled until any additional studies have been included in the consultation process and a decision has been made by the MPE. The deadline for comments is normally substantially shorter than in connection with the consultation for the IA itself, but should not be shorter than two weeks.

See Section 22a(5)(6) of the Petroleum Regulations.

Approval of the development

The comments received during consultation regarding the IA will be part of the basis for making decisions in the authorities' processing of a PDO/PIO. Based on the impact assessment, development and installation section, as well as the consultation comments, the MPE presents the case to the Government. In cases where the matter will be processed by the Storting, the MPE will also prepare a proposition to the Storting. The MPE's proposal shows how the effects of the development and submitted statements have been assessed, and what significance they have been assigned. It is the MPE, by means of a letter, that finally formally approves the PDO, grants a special license for installation and operation and issues confirmation of a fulfilled study obligation.

See Section 4-2(1) of the Petroleum Act, cf. Section 20(4) of the Petroleum Regulations.

4.7 Study programme

The study programme shall serve as information to the authorities and as a basis for consultation. The programme should be as short and concise as possible, and should not normally exceed 30 A4 pages of text (excluding appendices). The study programme must be in Norwegian and unnecessary use of technical terminology should be avoided.

It is important that the study programme provides the parties to be consulted with a clear and easily understandable overview of the planned project, planned study work and the extent to which existing regional assessments and background material for management plans will be used.

Below is a proposed outline and content of the study programme. If the plan is to use existing regional impact assessments, it must be demonstrated that the studies have taken the effects of the development sufficiently into consideration.

- Preface
- 0. Summary
- 1. Introduction
- 2. Plans for development and operation, relevant development solutions
- 3. Environmental consequences and remedial measures
- 4. Consequences for the fisheries and other maritime industries
- 5. Societal consequences
- 6. Planned studies

The *preface* should briefly describe why the study programme has been made and who is responsible for the study programme.

The *summary* and conclusion (total of no more than five pages) should summarise the main items of the study and present the most important conclusions and recommendations.

Chapter 1

This chapter should explain the purpose of the study programme and statutory requirements for the IA. The process, official procedure and schedule should also be discussed. The schedule should also be clarified with the MPE in advance.

Chapter 2

The study programme should provide a brief description of the licensees, the history of the licence, resources, production plans, alternative development solutions that are relevant, HSE, the external environment, economy and cessation of the activities.

Chapter 3

There should be a preliminary description of the planned content of the IA as regards environmental factors and environmental impact. The effects of discharges/emissions and consequences viewed in relation to national objectives should be included. A description should be provided of any known cultural monuments in the area, and whether any such monuments have been uncovered through the work that has been done. The description should include how one plans to deal with the consequences of regular and acute discharges on plant and animal life in the sea areas and along the coastline, as well as on cultural monuments and cultural environment. An account should be provided of how the requirement for the best available techniques (BAT) will be safeguarded in the planned development, where technology includes technological, operational or organisational solutions.

An overview should be provided of which remedial measures the licensee plans to evaluate to limit emissions to air and discharges to sea. To the extent such information is available, the operator should submit an overview of the energy volume and costs of supplying the facility with power from shore instead of using offshore gas turbines, as well as the costs of potentially reinjecting CO₂ from produced gas, turbines and other facilities. Potential NO_x reduction measures must also be considered.

The primary objective of not allowing environmentally hazardous discharges to sea from deposits with independent development solutions should be used as a basis for the remedial measures being considered. The expected content of chemicals, etc. in produced water should be indicated, to the extent possible. Whether existing studies of remedial measures can be used, or whether new studies are needed, should be discussed with the MPE at an early stage.

An account shall also be given of any transboundary environmental effects, i.e. potential significant environmental effects for countries other than Norway. The expected emissions/discharges from ship traffic associated with the activities on the Norwegian shelf should be estimated.

It is important when preparing the study programme that the operator considers the Nature Diversity Act, particularly in connection with onshore facilities, where the entire Act will apply.

Chapter 4

This chapter should provide a preliminary description of the consequences for the fisheries and other maritime industries of e.g. the area that will be occupied by the development, as well as what the IA must describe concerning this topic.

Chapter 5

This should provide a preliminary description of the planned contents of the IA as regards the effects on society at large. Planned operations and base services must be discussed. For developments where significant ripple effects can be expected on land, the competence and capacity of local and regional business and industry, as well as the need for labour in connection with the development, should be discussed. The discussion should consider whether the development in employment will have different consequences for women and men. An account of expectations for facilitation by local and regional authorities should also be given.

Furthermore, one should account for other societal topics that are proposed for study in the IA, including national employment effects, revenue for the Norwegian state, etc.

Chapter 6

This chapter should include a brief overview of the issues to be illuminated in new studies and how they will be conducted and reported in the IA. It may also be appropriate to include a preliminary table of contents for the IA.

See Section 22 of the Petroleum Regulations. See Storting White Paper No. 58 (1996-1997), Item 14.6, 8th paragraph, cf. Item 6.2, 3rd paragraph. See also Recommendation to the Storting No. 114 (1995-1996).

4.8 Impact assessment

The point of departure for the impact assessment shall be the issues defined in the study programme. It is important that also remedial measures that have been rejected are mentioned. This should then be substantiated on the basis of environmental, financial, technical or reservoir factors. It would be advantageous to discuss the degree of documentation of these elements with the MPE at an early stage of the process. The MPE's evaluation of the relevant remedial measures will then be based on the assumption that cost-effective environmental measures shall be implemented.

Relationship to regional impact assessments

The main point for the authorities and other consultation bodies is that the IA, together with other relevant documentation, such as approved regional assessments, cover the requirements stipulated for IAs in connection with new developments. When the RIA or background material for management plans is used by the operator in connection with field developments and are thereby included in the IA process, both the RIAs, the background material for the management

plans and their appendices shall be available in connection with the IA programme consultation process.

Scope

The scope of an IA will depend in part on the size of the development and the degree to which other documentation, for example RIAs, is used.

Outline

As it is important that the IA fulfils the study programme, the proposed outline for the IA is very similar to the outline proposed for the study programme.

- Preface
- 0. Summary
- 1. Introduction
- 2. Plans for development, installation and operation
- 3. Summary of submitted consultation statements concerning the study programme
- 4. Environmental consequences and remedial measures
- 5. Consequences for the fisheries and other maritime industries
- 6. Societal consequences
- 7. Emergency preparedness against acute pollution
- 8. Summary of consequences and remedial measures and follow-up studies and monitoring

The *preface* should briefly describe why the IA was prepared and who is responsible for the assessment.

The *summary* and conclusion (total of no more than five pages) should summarise the main items of the assessment and present the most important conclusions and recommendations.

Chapter 1

This chapter should explain the purpose of the assessment, including a brief description of the statutory requirements for the IA. The process, official procedure and schedule should be discussed. An overview of decisions by the authorities that are necessary in connection with the project must also be provided.

Chapter 2

This chapter can contain a brief description of the licensees, the history of the production licence, resources, production plans, alternative development solutions considered, selection of the development solution and production strategy, which criteria have been used as a basis for selecting the development solution and production strategy, including production regularity, HSE, the external environment, finances and cessation of the activities.

Chapter 3

This chapter must contain a summary of the consultation comments received in connection with the study programme, with an evaluation of the comments and, if applicable, reference to where the various issues are discussed in the impact assessment.

Chapter 4

This chapter must include an account of the effects the development could have on environmental factors, through the construction period (developments, installation and drilling), operations and cessation of the activity. Preventive and remedial measures must be included in the description. Any subsequent development phases and tie-ins to other fields and onshore facilities, as well as any unitisation of the petroleum activities, shall be described.

Insofar as possible, planned discharges/emissions to sea, air and land must be quantified and forecasts must be presented, and the risk of acute discharges/emissions must be considered. An account of

potential material assets, including natural resources and cultural monuments that could be impacted by the development, must be provided.

Any environmental consequences for habitats, animal and plant life in the sea areas and along the coastline must be described, including regular or acute discharges from the petroleum activities. An account should also be given of any significant transboundary environmental effects, i.e. potential significant environmental effects for countries other than Norway. If these factors are documented in existing or new regional assessments, references should be provided. At the same time, it should be substantiated that these assessments reflect due consideration of the volume of discharges expected in connection with the activities. The expected content of chemicals, etc. in produced water, as well as chemicals associated with drilling (drilling fluid) should, to the extent possible, be indicated.. Remedial measures must also be reviewed in connection with the discussion of each specific type of discharge.

An account must be provided of how environmental criteria and knowledge of the environmental consequences have been used as a basis for the technical solutions chosen. An account of the consequences of the technical solutions chosen, and how the BAT requirement will be safeguarded in the planned development must also be given, including – but not limited to – energy solution and handling of produced water. An overview must also be provided of the planned remedial measures to limit emissions to air and discharges to water, along with a preliminary assessment of these measures and including an assessment of all relevant measures to reduce CO₂-emissions. The operator must submit an overview of the energy volume and costs of supplying the facility with power from shore instead of using offshore gas turbines. Partial electrification with mobile wind turbines should be considered if this is a suitable measure. The costs of possibly reinjecting CO₂ from produced gas, turbines and other facilities shall be presented if the measure is considered. Potential NO_x reduction measures must be considered.

If cultural monuments are uncovered, the rules for dealing with such monuments must be followed. Any measures must be described.

Chapter 5

The area that the chosen development solution will occupy and the associated impact on the fishery industry must be described. There should be a brief description of alternative solutions and why they were rejected. If documentation has been provided in the enclosed regional assessments, references should be provided.

The IA also describes possible operational disadvantages for conducting fishery activity, apart from direct area occupation. This could be related to vessel operations during the construction and/or operations period and during cessation.

Chapter 6

The IA shall provide a description of impacts on society at large and commercial aspects of the chosen development solution. This includes planned operations and base services. This will only be relevant for independent developments that may yield ripple effects of a certain scope. Alternative solutions and why they were rejected should be briefly described.

Expected revenues for the Norwegian State must be calculated and national employment effects as a result of investments and operations must be estimated, including ripple effects.

An analysis should be made of local and regional business and industry competence and capacity in relation to the operator's needs for goods and services in the development and operations phases. The initiatives that will be taken to enhance expertise in local business and industry should be examined. This could include use of supplier networks and information about tender procedures. A description should be given of what will be done under the direction of the company, and any possibilities for cooperation with other players.

An analysis and evaluation should also be made of various types of labour in relation to the operator's own needs in the development and operations phases. Measures should be proposed, both under the auspices of the company and measures that could possibly be implemented in cooperation with various authorities, in order to meet the need for labour highlighted in the analysis. Expected local, regional and national employment effects should be described. However, this expectation shall not constitute a guideline for the employment process. The analysis must include an evaluation of whether the development in employment will have different consequences for women and men.

An analysis and evaluation should also be performed of the company's need for participation by the authorities – local, regional and national – in connection with the development. This applies particularly to landing solutions and in those cases where the operations organisation is located at a different site than the main office. Depending on the nature and size of the development, the study may include disposition of area, different types of infrastructure, house-building capacity and financing of various tasks.

A description should be provided of other societal factors that will be particularly affected on the local level, and which measures could be initiated, or which contributions could be made to benefit the local community and the municipality, including the consequences of the development on social planning in the local community.

Chapter 7

This chapter must provide an evaluation of technical and organisational preparedness against acute pollution.

Chapter 8

The chapter must provide a summary of consequences and remedial measures. Follow-up studies and monitoring are also described in this chapter.

Appendix

The appendix to the impact assessment should present overviews of the background material for regional management plans, other performed studies and other relevant background material. The appendix must also include a plan for how potential follow-up studies and monitoring programmes are to be implemented.

See Section 22a(1)(2) of the Petroleum Regulations.

As regards cultural monuments: See Section 10-1(2) of the Petroleum Act, cf. Section 22a of the Petroleum Regulations and Sections 1, 9 and 14 of the Cultural Artefacts Act. See also any relevant licence terms and conditions.

4.9 Impact assessments in connection with transboundary environmental effects

The rule relating to transboundary pollution is based on the obligations Norway has undertaken pursuant to the Convention of 25 February 1991 regarding impact assessments for measures that may entail transboundary environmental effects (Espoo Convention), with subsequent amendments. Sweden, Finland, Denmark and the United Kingdom have also ratified the convention, which entered into force on 10 September 1997.

In brief, the rules entail that countries that may suffer significant adverse environmental impacts from other countries' activities are entitled to information about the project and an opportunity to exert influence. The evaluation of which activities may entail "significant adverse transboundary environmental effects" must be subject to a specific assessment in each individual case. Elements to be considered will include the distance to the border, the activity's size, type of effect, scope of the effects, the size of the risk, possibility of spreading and the unique value of the natural environment in the specific area. The recipient country and its citizens are also entitled to participate in the national IA

process.

Rules regarding notification of transboundary effects are found in Section 22c of the Petroleum Regulations. See also Sections 4-1(4) and 14-4 of the Planning and Building Act, cf. Section 19 of the IA Regulations. See also Council Directive 2011/92 EF on evaluation of the environmental effects of certain public and private projects.

Projects in Norway where there is risk of significant transboundary environmental effects

The licensee shall give an account of potential significant adverse transboundary environmental effects in the study programme. The MPE is required to consider whether the scope of the effects is such that other countries must be notified. However, the operator should notify the MPE of potential significant adverse transboundary environmental effects at an early stage, so that the Ministry's assessment and potential work to notify the authorities in other countries does not delay stipulation of the study programme.

If the MPE finds that there is a significant risk of significant adverse transboundary environmental effects, the study programme, with information about the project, shall be sent to the authorities in the relevant countries. The MPE will normally do this at the same time as the KLD is informed. The MPE will also ensure that relevant countries that wish to participate in the impact assessment process are given a reasonable time period during which to indicate whether or not the country wants to participate in the impact assessment process. The consultation rules for the impact assessment will also apply to these countries. The MPE will update the KLD and other relevant authorities regarding such matters.

The MPE has a reporting obligation to other countries. The licensees must therefore expect a somewhat longer consultation period for the study programme in these cases.

See Section 22c of the Petroleum Regulations, cf. Section 4-1, last subsection of the Planning and Building Act, cf. Section 14-4 and Section 19 of the IA Regulations.

4.10 Exemption from the impact assessment requirement

In extraordinary cases, the licensee may apply for an exemption from the IA requirement. The criteria for applying for an IA exemption in connection with a PDO is that the development will not entail production of more than 4000 barrels of crude oil per day and/or more than 500,000 m³ of natural gas per day, and that the development is not otherwise assumed to have significant commercial or environmental effects. The criteria for applying for an exemption from the IA requirement in connection with a PIO is that a facility for transport or utilisation of petroleum does not entail a pipeline with a diameter larger than 800 mm and a length of more than 40 km, and that it is not otherwise assumed to have significant commercial or environmental effects.

In addition to this, the licensee may, in special cases, also apply for an exemption from the study obligation, even if the development or the facility for transport or utilisation of petroleum exceeds the threshold values stipulated in the regulations. However, if such exemption can be granted, the EFTA Surveillance Authority (ESA) must be notified of the reasons for the exemption.. As a consequence of the strict criteria, the MPE assumes that the exemption rule will not be of substantial practical importance.

See Section 4-2(6) and Section 4-3(4) of the Petroleum Act, cf. Section 22b and Section 29(4) of the Petroleum Regulations. See also Sections 20(3) and 21 of the Framework Regulations, as well as Section 8(1) of the Resource Management Regulations.

4.11 Other legislation

Some developments may be subject to other legislation that also requires an IA, for example the Planning and Building Act and the Ocean Energy Act.

The Petroleum Act does not provide exemptions from the study obligation under such legislation. In such cases, there may be an independent obligation to report and to perform an IA. The official handling and the required content of the study programme and the IA may vary in relation to different legislation. The relationship to other legislation must be clarified between the MPE and other affected authorities as early as possible during preparation of the measure, and before planned delivery of the PDO/PIO. In practice, the Planning and Building Act and the IA Regulations are the legal statutes that licensees will encounter most often in the IA context. A brief description is provided below for this reason.

The MPE will coordinate the work in relation to other affected authorities to ensure the most expedient coordination of the official processing as regards impact assessments.

See Section 4-2 and Section 14-2(1) of the Planning and Building Act, cf. Section 6 of the IA Regulations.

Parts of facilities that are covered by both the Petroleum Act and the Planning and Building Act

The Planning and Building Act will apply when a facility is placed on land or offshore within one nautical mile outside the baseline. However, pipelines in the sea transporting petroleum within the area under the scope of the Planning and Building Act are exempted from the Act. The Act stipulates an IA requirement.

If a PDO entails building and construction measures that are in conflict with the area section of the mandatory planning decision under the Planning and Building Act, the Ministry cannot approve the plan until the planning authority has given its consent.

The official handling is largely the same as that under the Petroleum Act. It should be noted that the impact assessment process must be completed before planning decisions are made or before building permits are granted under the Planning and Building Act. The same applies to those cases where decisions are made according to specific statutes, where the decisions can have a significant impact on the environment, natural resources or the society.

The licensee should normally, based on the dialogue with the MPE, expect a somewhat longer handling period in cases where the measure may be in conflict with national or important regional considerations. In such cases, the study programme shall be submitted to the KDD before it is stipulated by the MPE. The KDD has two weeks from when it receives the study programme until it must respond as to whether or not it will be submitting remarks. The IA is sent to the MPE, which submits it for public consultation and simultaneously presents it for public inspection in the municipality where the facility will be established.

The consenting authority can determine that an environmental follow-up programme must be prepared, with a view to monitoring and alleviating significant negative effects. The programme shall ensure that the proposer, in cooperation with the relevant supervisory authorities, monitors the effects of the activity, including consideration of any potential unforeseen effects and implementing appropriate corrective measures.

Separate guidelines have been prepared for the IA Regulations for planning pursuant to the Planning and Building Act. The guidelines can be found on the KDD's website, regjeringen.no/kdd

See Section 2(1)(e) of the IA Regulations, cf. Section 2, final subsection.

See Sections 8, 10 and 12 of the IA Regulations. See Section 20(2) of the Petroleum

Regulations.

Parts of the facilities that are covered by both the Petroleum Act and the Harbours and Fairways Act
Pipelaying and other petroleum activities in Norwegian territorial waters that may have an impact on traffic and safety at sea will require permits, and possibly also mandatory studies under the provisions on the Harbours and Fairways Act (Act of 17 April 2009 No. 19 relating to harbours and fairways, etc.).

Parts of the facilities that are covered by both the Petroleum Act and Energy Act/Ocean Energy Act
Construction and operation of facilities for generation and transmission of high voltage electric energy – such as gas power plants or large electric facilities, require a licence under Section 3-1 of the Energy Act. The authority to issue licences under the Energy Act has been delegated to NVE. The MPE is the body of appeal for the NVE's licence decisions. The Energy Act applies to Norwegian land territory and to inland waters out to the baseline.

Such measures will, as a rule, also trigger an independent reporting obligation to the NVE, with a proposed impact assessment programme pursuant to the rules in the Planning and Building Act. For a more detailed account of the official procedure under the IA Regulations and the Energy Act in relation to these cases, reference is made to the MPE's website energifaktanorge.no, and to the NVE's website nve.no/nett.

The Energy Act and/or the Ocean Energy Act will apply along with the Petroleum Act. The Energy Act applies to Norwegian land territory and to inland waters out to the baseline, while the Ocean Energy Act applies to renewable energy generation outside the baseline and on the continental shelf. To the extent that the measures are to be considered under multiple statutes, it is important that the MPE and the NVE are informed at the earliest possible point in time to ensure comprehensive and coordinated processing by the authorities as regards consideration of impact assessments and applications for consent under the Energy Act, Ocean Energy Act and the Petroleum Act.

The necessary impact assessments must be performed and the necessary applications for tie-in to the power system on land must be submitted to the NVE before the PDO is submitted to the MPE. It is recommended that the processing of licence applications is clarified with the NVE prior to this time. Licence processing of electrical facilities follows statutory processes with impact assessments, consultation, etc. which is time-consuming. It is necessary that the authorities' handling process under all relevant statutes is based on the same assumptions to the greatest extent possible. In any event, for this reason there should be coordination as regards time and processing of impact assessments and permit applications.

In cases where land-based power production shall be established or planned in connection with the power system, it is important to ensure that the effects of the measure on the land-based power system and the relationship to regional and national electric power balances are thoroughly evaluated by both the developer and the authorities, throughout the entire process. This will ensure that the general public, the affected organisations and authorities can evaluate the case on a sufficiently studied basis. It is particularly important that NVE, Statnett and grid companies responsible for regional power system studies are included on consultation lists and are consulted at all stages of the matter (consultation regarding the notification, stipulation of the study programme, consultation regarding the implemented IA, application, etc.).

See Section 2-1 of the Energy Act, Section 3-2 of the Energy Act Regulations, cf. Sections 4-2 and 14-2 of the Planning and Building Act, Section 6 of the IA Regulations, cf. Section 2, last subsection.

Parts of the facilities that are covered by both the Petroleum Act and Ocean Energy Act

The Ocean Energy Act applies to Norwegian sea territory outside the baseline and on the continental shelf, and e.g. governs the conversion and transmission of electric energy at sea. The Act is administrated by the MPE and contains provisions concerning licences and IAs.

Final processing of licence applications pursuant to the Ocean Energy Act will be coordinated by the NVE. Decisions made by the NVE can be appealed to the MPE.

See Chapters 3 and 4 of the Ocean Energy Act.

Nature Diversity Act

In the assessment, it should e.g. emerge whether there are prioritised species, threatened or near-threatened species on the Norwegian red list for species in the relevant area. Correspondingly, it should also emerge whether there are nature types on the Norwegian red list for nature types in the relevant area.

See Section 2 of the Nature Diversity Act.

Other central legislation that may be relevant:

- Act of 17 June 2005 No. 62 relating to working environment, working hours and employment protection, etc.
- Act of 9 June 1978 No. 50 concerning the cultural heritage
- Act of 13 March 1981 No. 6 relating to protection against pollution and relating to waste

5 GUIDELINES FOR THE DEVELOPMENT SECTION OF THE PDO

5.1 Introduction

A PDO shall describe the main characteristics of the development solution, resource basis, financial estimates, HSE factors and the external environment, as well as specifying assumptions. The scope of the documentation should be clarified with the MPE, the NPD, the AID and the PSA well before submission.

For the sake of clarity, it is emphasised that the resource basis, the technical solutions, and the financial estimates must be sufficiently reviewed. Calculations highlighting technical and financial uncertainties that are critical for the project must be performed. The plan(s) should also contain an overview of future business opportunities that could provide grounds for changes in the investment scope. The requirements relating to the PDO content are specified below in this chapter.

It is presumed that any background documentation will be submitted as part of the PDO. When the development comprises facilities for transport or utilisation of petroleum, the PDO must contain information about such factors.

The following sections will address topics in the development section of the PDO that affect both resource factors and HSE factors.

See Section 4-2 of the Petroleum Act, Sections 20, 21 of the Petroleum Regulations and Section 27 of the Framework Regulations.

5.2 Description of the production licence

The history and current status of the production licence must be described, including current and previous licensees.

5.3 Unitisation of petroleum activities

The licensee's duty to attempt to enter into agreements regarding unitisation is described in Chapter 2.9 of the guidelines.

The unitisation solutions that are chosen depend on the resource basis, maturity of the area and existing infrastructure, among other factors.

Factors that are of significance for HSE in connection with potential unitisation of petroleum activity, must also be described.

A unitisation agreement for the deposit(s) must be entered into and submitted to the MPE no later than when the PDO is submitted. The development plan must refer to the unitisation agreement and describe the key elements of the agreement. If a unitisation agreement following negotiations has not been established, the licensee must report this to the MPE.

See Section 4-7 of the Petroleum Act, Section 21(2)(a) of the Petroleum Regulations and Section 27(1)(2)(d) of the Framework Regulations.

5.4 Area assessment

The area assessment should focus on how the planned development can contribute to a further development of deposits in the nearby area. The description should provide an overview of:

- Technical opportunities for tie-in of other deposits to the planned facility (potentially reference to such description)
- Expected development of available capacity on the planned facility, and potential measures to increase available capacity (potentially reference to such description)
- Proven deposits in the area, expected resource basis and factors of significance as regards

- potential tie-in
- Mapped and unproven deposits in the area, expected resource basis and factors of significance as regards potential tie-ins
- Planned exploration wells and other potential measures for clarification of the resources in the area.

To the extent possible, deposits that are not covered by the licensee's own production licence should also be described.

See Section 21(2)(1) and Section 29(2)(j) of the Petroleum Regulations. See also Section 4-8 of the Petroleum Act and the TPA Regulations.

5.5 See-to duty

The licensee shall see to it that the petroleum activities are conducted responsibly and in accordance with applicable regulations and with due consideration of good resource management, health, safety and the environment.

This also means that the see-to duty is a key part of the quality assurance of development projects on the Norwegian Shelf. All licensees apart from the operator are therefore required to provide a written statement on which activities they have completed/are planning to execute to fulfil their see-to duty in connection with preparation and implementation of the PDO, including any internal studies, external studies, verifications, participation in various committees in the production licence and other activities. The statement shall be submitted to the MPE. See also 2.5 above.

See Section 10-2 of the Petroleum Act. See also Section 7 of the Framework Regulations.

5.6 Organisation and implementation

A description must be provided of planning, implementation and organisation of the development, including plans for safeguarding employee participation.

The ownership of the facility should be described. If the facilities included in the PDO are also subject to the requirement for an acknowledgement of compliance from the PSA, it should be clearly indicated which party will apply for this.

See Section 10-6(1) of the Petroleum Act. See also Section 21(2)(d), Section 29(2)(d) of the Petroleum Regulations and Sections 56, 57 and 58 of the Petroleum Regulations and Section 27(1)(2)(b) of the Framework Regulations.

Project implementation – partner involvement and quality assurance during project implementation

An overview must be provided of how the development project will be implemented with a description of:

- The project's management system
- Contract strategy for the development
- Overall method of tender evaluation and selection of supplier
- Experience transfer from recently conducted projects, including describing the measures that have ensured experience transfer from development projects with similar challenges, as well as relevant experience from other projects in the industry
- The partners' involvement in planning and implementation of the project
- Description of the project organisation's experience from Norwegian development projects and that will be available for follow-up of the project, including:
 - o How many people that will be recruited externally, as well as from other parts of the organisation, including the partners' contribution with personnel resources for follow-up and quality assurance
 - o Operator's own experience from previous comparable projects
- Risk assessment, risk management and follow-up in the project planning and implementation phase, including the following factors:

- Which parts of the project (which contractors if agreements have been signed) that will be followed up by the licensee (operator and partners), including the background for this prioritisation
- What measures the licensee will take in these phases, including tender evaluation, based on an assessment of historical reasons for delays, deficiencies in previous deliveries or cost overruns, in order to avoid loss of net present value
- How the licensee will ensure that personnel who follow up the project are familiar with Norwegian regulations
- Other forms of follow-up that are planned in connection with the contractors' work
- Describe the project's main risks with associated remedial measures. This could e.g. be done in the form of a risk registry.

Schedule and activity plans

- A schedule for the development, split into activities, is normally required. The schedule should include a description of which activities are critical with regard to timing.

5.7 Societal ripple effects

There must be an account of the commercial aspects that will be affected by the development. The account must contain a description of the regional and local ripple effects that development and operations are expected to generate, including how qualification of relevant local suppliers will be facilitated during the development and operations phase. The contact established between the licensee and local businesses and relevant authorities must be illustrated.

5.8 Development solutions

The plan must describe and explain the chosen development solution. Alternative solutions that have been considered should be briefly described. If it is difficult to submit just one development solution for all areas at the time of submission, multiple solutions may be considered. The relevant development alternatives should then all be documented to the same extent. There should also be a clear indication of the situations in which the different development solutions would apply.

If the development includes onshore facilities, these facilities must be included in the description of the development solution. The MPE should be contacted if there is any doubt concerning whether or not a facility on land is covered under the Petroleum Act. Otherwise, please note the importance of the need for coordination with impact assessments pursuant to the Planning and Building Act, cf. Chapter 4.11.

The plan should also contain an overview of future business opportunities that may provide a basis for changes in the development solution.

See Section 4-2 of the Petroleum Act, Section 21(2)(a)(g) of the Petroleum Regulations. See also Section 21(3) of the Petroleum Regulations.

5.9 Description of the scope of the development

A clear and exact description must be provided of the scope of the development with regard to the deposits that are included, both in terms of geographical area and stratigraphically.

If the plan entails development in two or more stages the plan shall, to the extent possible, address the overall development.

The first stage of a development could also affect the further stages of development, including the total recovery from the field and the recovery of other petroleum resources in the area. To enable evaluation of these effects, the PDO shall, insofar as possible, describe the further stages or

alternative stages of the development. A description must also be provided of what each stage involves, which deposits will be produced and which facilities will be used.

If the plan is not intended to cover all the stages that will make up the overall development, a description of which stages are covered in the current plan must be provided.

The authorities can limit their approval to specific stages.

PDO area and area fee exemption

Exemptions from area fees will be calculated on the basis of the geographic extent of the deposits covered under the PDO, as long as production takes place from the deposits. Any needs and plans for further delineation of the field should be described.

The area delineating the deposits in the planned development (PDO area) is proposed by the licensee in the PDO. The area is listed in the format and in accordance with the specifications that are used in applications for an area fee exemption. The final PDO area is stipulated in the PDO approval decision. This area normally comprises the deposits that are covered by concrete plans.

See Sections 4-2(4), 4-3(2) of the Petroleum Act and Section 21(2)(a) and Section 39(2) of the Petroleum Regulations.

5.10 Reservoir factors

A geotechnical and technical reservoir description must be provided for the petroleum deposit or deposits that the licensee plans to develop. Key elements of the description will be an estimate of the petroleum volumes in place and a study of alternative production methods. The planned production schedule and recovery rate should be described, and uncertainties should be highlighted.

See Section 21(2)(b) of the Petroleum Regulations.

Geotechnical assessment

An overview of seismic surveys, wildcat and appraisal wells, as well as other relevant data must be provided. The description of the seismic surveys should include the data basis, interpretation, method(s) for depth conversion and potential modelling studies.

The following illustrations should be enclosed:

- Map showing the extent of seismic surveys used
- Time map
- Depth map
- Velocity map
- Interpreted seismic sections through the wells

The description of the geological framework should include:

- Regional geology with tectonic development
- Chronostratigraphy or biostratigraphy
- Lithostratigraphy
- Sequence stratigraphy

Sedimentological and structural interpretation must be described, including reservoir zones and description of faults and fracturing that could have an impact on the scope and production properties of the reservoir. Facies, petrography and diagenesis in the reservoir zones must be described to provide an overview of the reservoir properties. Potential flow barriers and highly permeable layers must be specially described. Thickness maps and correlations through the field should be enclosed.

Pressure support should be discussed, if relevant.

Assessment of possible subsidence and sand production should be included.

The following elements should be included in the petrophysical documentation:

- Formation parameters (lithology, porosity, permeability, water saturation, cut criteria, interpretation method)
- Comparison of laboratory analyses (core plug measurements and water analyses) with data derived from logs
- Pressure data and observed fluid contacts
- Formation temperature
- Models for lateral variation of formation parameters and distribution of fluid contacts in reservoir zones and segments

The following estimates should be documented for resources in place:

- Rock volume
- Hydrocarbons in place at reservoir conditions
- Hydrocarbons in place at standard conditions

The volumes should be divided according to hydrocarbon type and among the deposits and reservoir units included in the plan. The input data and calculation method for the resource estimate should be listed, and the uncertainty in the estimate should be described and quantified.

Presentation of relevant data for technical reservoir studies from all exploration and potential test production wells, as well as assessment of the different reservoir data should be included, and particularly:

- SCAL-special core analyses
- PVT analyses
- Dynamic data

5.11 Production strategy

The selected production strategy for the field must be described and explained. An account of how the production strategy will be maintained through the production phase must be provided. The strategy must include short-term and long-term plans and measures that will have an impact on production speed and the total recoverable volumes of petroleum.

Drive mechanisms and expected production and injection rates are documented through reservoir simulation. Results of sensitivity analyses are included.

Important input data used in the reservoir simulation should be stated. Data files with input data for simulation must be transferred to the NPD, if the NPD finds this expedient. Uncertainties in input data and how this affects the calculation of recovery from the reservoir should be evaluated.

The assessment of various production strategies, including different drive mechanisms, should be provided. This is substantiated with:

- Necessary data basis
- Expected production and injection rates (documented with reservoir simulation)
- Uncertainty analyses

Oil recovery usually requires pressure maintenance from the start-up of production. If this is not chosen, an explanation must be provided.

Reserves and resources, recovery rate

The description of estimated recovery and recovery rate should include the following:

- Recoverable marketable petroleum volumes (reserves) with uncertainties in the assumptions on which the plan is based
- Technically recoverable resources for different production methods

Recoverable marketable petroleum volumes (reserves). The values must be consistent with what is to be reported in RNB format, as shown in the below table.

Product Deposit/ Project	Oil mill. Sm ³ (P90)	Oil mill. Sm ³ (mean)	Oil mill. Sm ³ (P10)	Gas billion Sm ³ (P90)	Gas billion Sm ³ (mean)	Gas billion Sm ³ (P10)	NGL mill. tonnes	Cond. mill. Sm ³
Total								

Production schedule (production profiles) and forecasts

Expected production profiles for oil, gas, condensate, NGL and water for the entire field and for the individual deposits, and different production facilities, if applicable, must be stated along with the associated uncertainty. Injection profiles for gas and/or water should also be included, if relevant.

Measures that can improve recovery

Measures and technologies that can increase recovery beyond the basic estimate in the PDO must be considered. The consideration must also cover whether it is profitable to include such measures from production start-up. This could e.g. comprise:

- More wells, potentially new well solutions
- Water and gas shutdown (chemical and mechanical)
- Advanced injection methods

A plan for new studies over the course of the production schedule and for implementation of measures, if relevant, should be presented.

See Section 4-1 of the Petroleum Act, cf. Section 21(2)(a) of the Petroleum Regulations. See also Odelsting Proposition No. 43 (1995-1996) pg. 41.

5.12 Production technology

Wells

Information should be provided about the assessments that led to the selection of well types and number of production and injection wells. The need for extra well slots and need for observation wells, if relevant, should be included. The number of wells, drilling plan, planned well positions and completion strategy that form the basis for the expected production profile should be indicated. The impact of the facility's production and injection capacity on the production schedule and total recovery should be assessed.

Production and reservoir monitoring

The planned maximum rate from individual wells must be stated. Rate sensitivity of the displacement in the reservoir, coning, etc. must be taken into account, if relevant.

The need for gas lift must be evaluated.

If sand production is expected to become a problem, a description must be provided of how this will be handled.

The strategy for selecting production intervals (reservoir zones, etc.), criteria for potential recompletion and programme for monitoring the reservoir must be presented.

If pre-drilling of development wells is necessary, a plan for acquiring information from these and for how the information will be used in the continued process during the development must be included.

Any challenges associated with drilling due to pressure changes that are caused by production or injection must be described.

Potential production strategies should be indicated for zones or parts of the deposit that the licensee does not plan to produce under the current plan, but which could be profitable if assumptions change, for example with regard to the resource volume or oil price.

Fluid chemistry

Information should be provided concerning the composition of the reservoir fluid. The following properties should be described: corrosivity, scaling, wax and asphalt deposits, hydrate formation and emulsion tendencies.

See Section 4-1 of the Petroleum Act, cf. Section 21(2)(a) of the Petroleum Regulations.

5.13 Main plan for drilling and well activity

The PDO must include a main plan for drilling and well activity.

The main plan should contain the following:

- Purpose and schedule for the planned drilling and well activities
- References to relevant governing documentation for the respective activities
- Overview of deviations in relation to regulatory requirements and internal procedures/requirements
- Description of the planned drilling and well activities, with associated use of downhole equipment, surface equipment and safety valves
- Well sketch with clear indications of barriers in connection with drilling and well activities and technical solutions for completion and permanent plugback of the well
- Summary of potential technical and operational problems that can occur during the activities, identified risk, as well as precautions planned in this connection
- Geological forecasts and information of significance for the activities
- Account of any planned use of oil-based drilling fluid
- Plan for disposal of drill cuttings

The main plan for drilling and well activity shall be submitted as a separate document attachment to the PDO or to the application for exemption from the PDO rule.

See Section 27(3)(1)(a) of the Framework Regulations.

5.14 Technical description of facilities

A description of the technical solutions for the development shall be provided. The plan should contain a description of the selected type of facility and the facility's flexibility and robustness vis-à-vis changes in reserve basis and production schedule. The solutions and technology selected to prevent major accidents and to minimise hazardous emissions to air and discharges to water should be included and documented. The licensees must have systems in place to document the risk reduction processes that are used to achieve the safety goals, including barrier management, as well as how the uncertainty aspects in the risk are handled.

If changes have been made in relation to the documentation submitted at BOV, this should be addressed specifically. Activities planned during the period between BOV and BOG must also be described.

The facility's energy efficiency should be described.

If the development involves use of new technology, the PDO shall contain a description of the qualification of this technology.

There must be an assessment of development solutions with regard to use of manned underwater operations for all phases of the petroleum activities.

There must also be an account of safety zones in connection with development and operation of the petroleum deposits.

The plan should indicate the regularity expected for the entire facility and for central main components. An account should be provided of the sensitivity to potential changed technical or commercial conditions.

See Section 21(2)(c) and (e) and Section 26 of the Petroleum Regulations, as well as Section 27 of the Framework Regulations.

Load-bearing structures, deck arrangement and subsea facilities

The type and design lifetime of load-bearing structures, deck arrangement and subsea facilities should be described and illustrated with layout drawings.

The deck arrangement must show the main equipment and the relative placement of the various areas. Emphasis shall be placed on robust solutions that are optimal for safety, as well as flexibility with regard to area, weight capacity, risers and tie-in possibilities in connection with potential future changes.

If there is a risk of subsidence in the installation area, a description must be provided of the consequences this could have for the facilities and which measures that could be implemented to protect the facilities.

For subsea developments, the layout drawings must show the respective placement and design of the planned facilities. An account should be given of the flexibility for further tie-ins. Measures the licensee plans to implement to safeguard considerations for fishery activities, i.e. installation of protective structures and other covering of pipelines, equipment and anchor lines, should also be described. Planned maritime operations in connection with tow-out to fields, installation, operations and maintenance should be described.

Process and support facilities

The flow chart for the main process, with capacity indications and a description of the arrangement of main areas, should be presented.

The following should also be described:

- Principles and criteria for selecting arrangements and main components
- Philosophy for securing the facility
- Flexibility vis-à-vis expected changed operating conditions
- Barrier management

A description should be provided of the possibilities for future changes to the process with a view towards changes in rates, fluid content and pressure conditions, as well as the possibility of accepting wellstreams from other deposits.

Accommodation capacity

An account should be given of the planned accommodation capacity in relation to the need for personnel in the various phases of the petroleum activity covered under the PDO.

Transport systems

When the development includes facilities for transport or utilisation of petroleum, the PDO must contain information about such factors. The plan should contain an assessment of the relevant landing methods and locations. Even if a PIO will be submitted, facilities for transport or utilisation must also be briefly described in the PDO.

In the description of the transport system, an account should be given of the criteria used in connection with selection of technical solutions. This may include:

- Volume and composition of the hydrocarbons to be transported
- Corrosivity development over the planned lifetime of the system
- Possibilities for increasing capacity
- Tie-in point
- Regularity
- Trawlability
- Financial situation
- Health, safety, the environment and quality
- Risk exposure
- Robustness/flexibility
- Operational aspects

Layout drawings showing the total transport system, including any tie-in points, should accompany the description.

An account should be given of the transport system's sensitivity to potential changes in technical or commercial factors.

Priority rules for various users' oil and gas transport must be described.

See Section 4-2(2) of the Petroleum Act, cf. Section 21(2)(i) of the Petroleum Regulations.

Measurement systems

The plan must contain a brief description of the measurement systems. If the licensee wants to use measurement solutions that are not covered in the Measurement Regulations, this must be clarified with the NPD in sufficient time before the PDO is submitted. The following information must be submitted to the NPD in this connection:

- Measurement principle
- Quantification of expected measurement uncertainty
- Cost/benefit evaluation of the selected solution

See Section 13 of the Measurement Regulations.

5.15 Operations and maintenance

A general description must be provided of the requirements for operation and maintenance of the facility and which operations and maintenance philosophy shall be used as a basis, including use of integrated operations (IO). This must include a description of how the consideration for efficient operation will be safeguarded throughout the field's lifetime, including the possibility of implementing new technology. It will be natural to discuss this in relation to the items about regularity mentioned in Chapter 5.14.

See Section 21(2)(e) and Section 29(2)(e) of the Petroleum Regulations. See also Section 27(1)(2)(j) of the Framework Regulations.

5.16 Other factors of significance as regards HSE

The account in the PDO must also cover the following elements, cf. Section 27 of the Framework Regulations:

- HSE goals and risk acceptance criteria
- The operator's handling of the interfaces between participants in the development and coordination and follow-up of the participants' activities
- Factors that are significant for HSE in the event of unitisation of petroleum activities
- For the shelf-based part of the activities: health service plans, including preventive health service and curative services, hygiene and medical preparedness
- A plan for executing and following up analyses
- An overview of technical or area-specific documents that can elaborate on the description in the plans
- An overview of standards and specifications that will apply to the development
- Other factors of significance as regards HSE

For onshore petroleum facilities, the account must also include:

- A description of the location and land-use and site plan
- A proposed outer safety area and assessment of the need for a zoning plan or change in existing zoning plan
- Information about which permits, etc. have otherwise been applied for pursuant to the current regulations

5.17 Use of facilities belonging to others

If the plan involves using existing facilities in the sea or on the land territory, a description of these facilities must be provided, including a description of necessary modifications as a result of the tie-in.

The description must also clarify the physical and ownership boundary between own facilities and facilities belonging to others, and indicate possible uncertainties associated with the tie-in. There must also be an account of the distribution of responsibility between the parties. The licensee group that owns the existing facility has an independent responsibility to clarify with the authorities whether the modifications or changes lead to a requirement for a new or modified PDO or PIO.

If the ownership right or right of use is transferred to another ownership group than that which has submitted the application, this must be indicated.

An agreement with a tariff must be negotiated before the PDO is submitted. When entering into an agreement to use a facility belonging to another party, the most important elements from the negotiation process and agreement must be reported, cf. Section 14 of the TPA Regulations. A standardised form for reporting can be found on the NPD's website, npd.no.

See Sections 4-2 and 4-8 of the Petroleum Act and Section 21(2)(a) of the Petroleum Regulations. See also Section 28(3)(b) of the Petroleum Regulations and the TPA Regulations.

5.18 Disposal of facilities

The licensee must describe how the facilities can be disposed of once petroleum activities cease, and also stipulate costs for disposal. A review of various disposal solutions at this stage may be of significance for the choice of materials and technical solutions. Opportunities for further use once production has ceased from the deposit(s) should also be included in the description.

Cessation of petroleum activity and disposal of facilities are regulated in Chapter 5 of the Petroleum Act. Requirements for disposal of facilities also follow from the OSPAR Convention. The OSPAR Commission's ministerial meeting on 23 July 1998 made a decision regarding disposal of disused offshore installations. This decision reiterated the general prohibition against disposal at sea of such installations. According to the decision, exceptions from this prohibition can be made for certain installations or parts of installations if an overall assessment in the individual instance indicates weighty reasons for offshore disposal. The Storting ratified the decision through Proposition No. 8 to the Storting (1998-1999).

See Sections 21(2)(h) and 29(2)(h) of the Petroleum Regulations, as well as Proposition No. 8 to the Storting (1998-1999). See also Section 27(3)(1)(d) of the Framework Regulations.

5.19 Costs in the development phase

The project must be sufficiently developed to estimate all investment elements with reasonable uncertainty before the PDO is submitted to the authorities. Investment costs shall be broken down and stated pursuant to NS-EN-ISO-19008: 2018. Operating costs must be included, and separate profiles must be listed for NO_x tax and CO₂ costs, including the tax and quotas. All numbers shall be in the monetary value of the year the PDO is submitted to the authorities.

The licensees must present sensitivity analyses for financial parameters which provide a good picture of the project's range of uncertainty, preferably in the form of a tornado diagram. How the licensees deal with uncertainty in cost estimates must be clearly stated. Cost estimates must be stated as an anticipated value. Estimates with confidence levels 10/90 and 90/10 must also be presented. In instances where cost estimates are based on foreign currency, in whole or in part, the currency conversions used to convert to Norwegian kroner, as well as the percentage share of the costs incurred in foreign currency shall be specified. The licensees are themselves responsible for any overruns in relation to the cost projections.

An account should be provided of future commercial opportunities that may form a basis for changes in the investment scope.

See Sections 21(1) and 21(2)(f), as well as Sections 29(1) and 29(2)(f) of the Petroleum Regulations.

5.20 Profitability assessments

Profitability assessments, uncertainty/robustness assessments and a qualitative stress test of financial climate risk (transition risk) must be shown.

Cost and sales profiles

Cost and sales profiles must be shown. Development investments, operating costs, tariff costs and income, as well as costs for plugging of wells and disposal must be listed in unbiased, fixed NOK values per year. Expected, low and high projections for sales profiles should also be shown, with the exception of gas for fuel and flaring, as well as potential injection profiles.

See Section 21(2)(f) of the Petroleum Regulations.

Assumptions

All assumptions used in profitability assessments must be shown. Important assumptions:

- Product prices
- Currency exchange rates
- Environmental taxes
- Unit tariffs for processing and transport of petroleum, as well as other services
- Tax assumptions

Results

Profitability must be represented as expected net present value (7 percent real rate of return) before and after tax. Environmental taxes must be included in the calculations before tax. The expected internal rate of return and expected payback time must be shown.

The uncertainty- and robustness assessment must include assessments of effects on the net present value of potentially higher/lower oil and gas prices, recoverable resources, investments and operational costs than expected. The break even oil price must be included in the assessment.

See Section 21(2)(f) of the Petroleum Regulations.

The qualitative stress test of financial climate risk shall include a comparison of the break-even oil price of the development project with different scenarios for oil and gas prices that are in accordance with the goals of the Paris Agreement, including the 1,5 degree goal.

5.21 Updated reporting for the revised national budget

An update of the petroleum-related data provided in connection with reporting for the revised national budget should be submitted with the PDO. This must be submitted as separate reporting to the NPD.

5.22 Naming fields and designating facilities

The licensees should, in a timely manner, and not later than when the PDO is submitted, propose a name for the field to be approved by the authorities, represented by the MPE.

The main rule for choosing names is that it must be Norwegian, fit with the other existing field names in the area in question and safeguard security considerations. Independent developments may be subject to other guidelines as regards the selection of names. The NPD can be contacted for input on the choosing of names, as appropriate.

Permanently placed facilities shall be designated with their quadrant/block number and letters from A to Z, with the exception of U and T, for each field or block. AA, AB, etc. can be used if necessary. Beyond this, the operator is free to choose the designation of facilities.

See Section 79, 86(2) of the Petroleum Regulations and Section 12 of the Resource Management Regulations.

6 GUIDELINES FOR THE INSTALLATION SECTION OF THE PDO

6.1 Introduction

A special licence for the installation and operation of facilities is granted by the MPE, cf. Section 4-3 of the Petroleum Act. A PIO shall include the primary features of the development solution, financial estimates, HSE factors and assumptions. The plan must contain calculations that clarify the project's critical uncertainties. The plan shall also include an overview of future commercial opportunities that may provide a basis for changes in the investment scope.

The PIO shall be adapted to the size and complexity of the development. It is not necessary to mention all details of the project in the plan, a reference to supporting documentation can be made. The scope of documentation should be clarified with the MPE, NPD and PSA/AID well in advance, and any supporting documentation can be submitted along with the PIO.

Below follows a description of topics for the installation section of the PIO that concern both resource and HSE factors.

See Section 4-3 of the Petroleum Act, Sections 28 and 29 of the Petroleum Regulations and Section 27 of the Framework Regulations.

6.2 Description of the project

Briefly describe the history and current status of the project, including participants and distribution of ownership.

6.3 See-to duty

The licensee shall ensure that the activities can be carried out in a prudent manner pursuant to applicable legislation, while safeguarding the consideration for sound resource management, health, safety and the environment.

This also implies that the see-to duty is a key part of the quality-assurance of development projects on the Norwegian Shelf. This is why all licensees except the operator are asked to submit a written account of which activities they have carried out/plan to carry out in order to satisfy the see-to duty in connection with preparing and implementing the PIO, including any internal studies, external studies, verifications, participation in various committees in the production licence and other activities. This account shall be submitted to the MPE. See also 2.5.

See Section 10-2 of the Petroleum Act. See also Section 7 of the Framework Regulations.

6.4 Organisation and implementation

Provide a description of planning, implementation and organisation of the project, including plans to ensure employee participation.

The facility's ownership mix should be described. If the facilities comprised by the PIO are also subject to the requirement for an acknowledgement of compliance from the PSA, it should be clear who will be applying for this.

See Section 29(2)(d) of the Petroleum Regulations, cf. Sections 56, 57 and 58. See also Section 27(1)(2)(b) of the Framework Regulations.

Project implementation – partner involvement and quality-assurance in project implementation
Present an overview of how the project will be implemented with a description of:

- The project's management system
- Contract strategy for the project
- Lessons learned from recently completed projects, including a description of measures that have ensured lessons learned from projects with similar challenges, as well as relevant experience from other projects in the industry
- The partners' involvement in planning and implementation of the project
- Description of the project organisation's experience from Norwegian development projects which will be available in project follow-up, including:
 - o How many own employees with experience from Norwegian development projects will be available to follow up the project and how many will have to be recruited externally
 - o Operator's own experience from previous comparable projects
- Risk assessment, risk management and follow-up in the project planning and implementation phase, including the following factors:
 - o Which parts of the project (which contractors, if agreements have been entered into) will be followed up by the developer, including the basis for this prioritisation
 - o What measures the licensee will take in these phases, including tender evaluation, based on an assessment of historical reasons for delays, deficiencies in previous deliveries or cost overruns, in order to avoid loss of net present value
 - o How the developer will ensure that personnel following up the project are familiar with the Norwegian regulations
 - o Other forms of planned follow-up of the contractor's work
 - o Describe the project's main risks with associated remedial measures. This could e.g. be done in the form of a risk registry.

Schedule and activity plans

A schedule will normally be required for the project, split into activities. The schedule should include a description of which activities are time-critical.

6.5 Societal ripple effects

Provide an account of the commercial circumstances affected by the development. This account shall include a description of the anticipated regional and local ripple effects from the development and operations, including how qualification of relevant local suppliers in the development and operations phase has been facilitated. Clarify what contact the licensee has had with local businesses and relevant authorities.

6.6 Development solutions

The plan must describe and substantiate the chosen development solution. Alternative solutions that have been considered should be described briefly. If it is difficult to present only one development solution in all areas at the time of application, multiple solutions can be described. The relevant development alternatives should then be equally well documented. It must also be clearly indicated in which situations each individual development solution is applicable.

If the development includes onshore facilities, these facilities shall be included in the description of the development solution. If there is any doubt as to whether an onshore facility is subject to the Petroleum Act, the MPE must be contacted. Please also note the need for coordination with impact assessments pursuant to the Planning and Building Act, cf. Chapter 4.11.

The plan should also include an overview of future business opportunities that may provide a basis for changes to the development solution.

See Section 4-2 of the Petroleum Act, Section 21(2)(a) and (g) of the Petroleum Regulations.
See also Section 21(3) of the Petroleum Regulations.

6.7 Technical description of facilities

Provide a description of technical solutions for the development. This plan shall include a description of the chosen type of facility. The facility's flexibility vis-à-vis changes in transported or processed volume should be clarified. The choice of solutions and technology to prevent major accidents and minimise environmentally harmful emissions to air and discharges to water must be included.

The developer must have systems to document the risk reduction processes used to achieve the safety goals, including barrier management, and how uncertainty aspects in the risk are handled.

The facility's energy efficiency should be described.

The plan shall indicate the regularity expected for the entire system, as well as key primary components. An account must be given of the transport system's sensitivity to any changed technical or commercial factors.

See Section 29(2)(c) and (e) of the Petroleum Regulations, cf. Section 26. See also Section 27(1)(2)(f) of the Framework Regulations, cf. Section 27(3)(1)(b) and (c).

Load-bearing structures, subsea facilities and system design

The design life for load-bearing structures, layout drawings for deck arrangement and subsea facilities should be described. If there is a risk of subsidence in the installation area, the consequences this may have for the facilities and the measures that will be implemented to secure the facilities must be described.

The deck arrangement must show primary equipment and placement of the various areas in relation to each other, and particularly the placement of all critical equipment. Emphasis shall be placed on solutions that are robust and optimal as regards safety, as well as flexibility as regards area, weight capacity, risers and tie-in opportunities in connection with potential future changes.

As regards subsea developments, layout drawings must show the relative placement and design of the planned facilities. Provide an account of flexibility for additional tie-ins. Measures planned for implementation in order to safeguard the consideration for fishery activities, i.e. installation of protective structures and other covering of pipes, equipment and anchor lines, should also be described. Planned marine operations, as well as manned underwater operations in connection with towing, installation, operations and maintenance, shall be described.

Process and auxiliary facilities

A flow diagram for the main process, with capacity designations, as well as a description of the arrangement of primary areas, shall be presented.

The following should also be described:

- Principles and criteria for choosing the arrangement and main components
- Barrier management
- Philosophy for securing the facility
- Flexibility vis-à-vis expected changed operating conditions, as well as future use

Opportunities for future changes of the process with a view towards unforeseen reservoir behaviour, as well as opportunities for receiving wellstreams from satellite fields, should be described.

Accommodation capacity

Provide an account of planned accommodation capacity as regards the personnel need in the various phases of the petroleum activities comprised by the PIO.

Transport systems

When the development comprises facilities for transport or exploitation of petroleum, the PIO shall include information about such factors. The plan must also contain an assessment of the relevant landing options and locations.

The description of the transport system should account for the criteria used to select technical solutions. This may include:

- Lifetime and design life
- Volume and composition of the transported hydrocarbons
- Corrosivity assessment throughout the system's planned lifetime
- Opportunity to increase capacity
- Tie-in point
- Regularity
- Trawlability
- Finances
- Health, safety, environment and quality
- Risk exposure
- Robustness/flexibility
- Operational aspects

Layout drawings showing the overall transport system, including any tie-in points, must accompany the description.

An account should be provided of the transport system's sensitivity to any changed technical or commercial factors.

Priority rules for different users' oil/gas transport must be described.

See Section 4-2(2) of the Petroleum Act, as well as Chapter 3.5.

Assumptions

An account of the assumptions forming the basis for engineering shall be described, including:

- Lifetime and design life
- Choice of materials
- Corrosion protection
- Operation and maintenance philosophy, included integrated operations (IO) and management of technical integrity.
- Regularity

Choice of route and locations

An account should be provided of route conditions, with reference to completed and planned route surveys. Other planned activities in the route area should be mentioned. The facility placement and pipeline route should be indicated on a map with coordinates in an appropriate scale. Any alternative routes should also be indicated.

Relevant landing sites for the transport system should be discussed.

Pipelines on the seabed within the territorial limit require a permit pursuant to the Harbour and Fairways Act.

See Section 28(2)(b) and (c) of the Petroleum Regulations, cf. Section 29(2)(a). See also Section 27 of Act No. 19 of 17 April 2009 relating to harbours and fairways.

Volumes and composition of the transported or utilised petroleum

To the extent possible, the plan should describe which fields and petroleum deposits the facilities are intended to serve. Resource volumes with an uncertainty assessment should be stated.

Anticipated transport need and plateau period must be described.

Information about hydrocarbon composition shall also be included when such data is known.

Capacity factors

The plan shall account for the volumes, pressure and composition of hydrocarbons for which the facility is designed. This applies for both the incoming stream and final products. The plan shall state the anticipated composition of the final products from fractionation plants.

The opportunities for increasing capacity, changed product composition and any limitations must be stated.

Measurement systems

The plan shall include a brief description of the measurement systems. If there is a desire to use measurement systems not mentioned in the Measurement Regulations, this must be clarified with the NPD well before submission of the PIO. The following information must then be presented to the NPD:

- Measurement principle
- Quantification of anticipated measurement uncertainty
- Cost/benefit assessment of chosen solution

See Section 13 of the Measurement Regulations.

6.8 Phased developments

If the development is planned in two or more phases, the plan must, to the extent possible, comprise the overall development. The authorities can limit the permit to certain phases. The first phase in a development may affect the further development. This may affect production from relevant fields, recovery of other petroleum resources in the area and future transport solutions. In order to assess these impacts, the PIO shall, to the extent possible, describe the further phases or alternative phases of the development.

If the plan is not meant to comprise all phases, a description of what is included in each phase must be provided.

See Sections 4-2(4), 4-3(2) of the Petroleum Act and Section 29(1) of the Petroleum Regulations.

6.9 Tie-in of the development to other fields or facilities

When entering into agreements regarding the use of others' facilities, one must report the most important elements in the negotiation process and agreement, cf. Section 14 of the TPA Regulations. A standardised reporting form can be found on the NPD website, npd.no.

As regards tie-in to and use of upstream gas pipeline networks and associated facilities, cf. Section 69 of the Petroleum Regulations, the principle of open third-party access applies. As regards the tie-in to and use of facilities not regulated as upstream gas pipeline networks, an agreement must be negotiated with a tariff before the plan is submitted. If the plan involves the use of existing facilities offshore or onshore, a description thereof must normally be presented, including a description of necessary modifications as a result of the tie-in.

Furthermore, the description must clarify the physical boundary between one's own and others' facilities, and indicate potential uncertain factors associated with the tie-in. Provide an account of the distribution of responsibilities between the parties. The licensee group owning the existing facility

has an independent responsibility to clarify with the authorities as to whether the modifications or changes entail a requirement for a new or amended PIO.

If the right of ownership or right of use is transferred to a group of owners other than the one behind the submitted plan, this must be described.

See Sections 4-2 and 4-8 of the Petroleum Act. See also Sections 9 and 28(3)(b) of the Petroleum Regulations, as well as Chapter 9 and the TPA Regulations and potentially the Tariff Regulations for use of pipelines with regulated tariffs.

6.10 Third party access to the facility

The plan must provide an assessment of the opportunity for future tie-in of other petroleum deposits or pipelines in the area, as well as an analysis of the financial consequences and overall safety-related consequences if other licensees are going to use the facilities.

An overview should also be provided of other potential petroleum deposits in the area, with particular emphasis on the resource base and maturity. This also applies to adjacent petroleum deposits with status as prospects, even when they are not covered by the production licence.

See Sections 21(2)(l) and 29(2)(j) of the Petroleum Regulations. See also Section 4-8 of the Petroleum Act and the TPA Regulations.

Opportunities for use of facilities by others

The plan must account for the facilities' opportunities for transporting and processing production from other fields.

It must be documented that technical solutions, HSE factors, tariff structure, rules regarding ownership and other agreements (e.g. voting rules) are designed to ensure the socio-economically sound utilisation of infrastructure. The plan should account for technical and legal factors of significance for third party access to the facilities described in the PIO, as well as the owners' potential right to use available capacity. These topics must be addressed with the MPE, and with Gassco as regards gas infrastructure, well before the PIO is submitted.

The plan must describe licensee factors and resource estimates for key fields and petroleum deposits in the area with a view towards third-party use and the need for transport solutions.

See Section 29(2)(j) of the Petroleum Regulations. See also Section 4-8 of the Petroleum Act, potentially Section 5 of the TPA Regulations or potentially the Tariff Regulations

6.11 Operations and maintenance

Provide an overall description of the requirements for operation and maintenance of the facility, as well as the operating and maintenance philosophy used as a basis, including the use of integrated operations (IO). It will be natural to discuss this in relation to the items regarding regularity discussed in Chapter 6.7.

See Sections 21(2)(e) and 29(2)(e) of the Petroleum Regulations. See also Section 27(1)(2)(j) of the Framework Regulations.

6.12 Other factors of significance for HSE

The account in the PIO shall also comprise the following factors, cf. Section 27 of the Framework Regulations:

- Goals for HSE and risk acceptance criteria

- The operators' handling of interfaces between participants in the development, as well as coordination and follow-up of the participants' activities
- As regards the offshore part of the activities: Plans for health service, including preventive health service and curative services, hygiene and medical preparedness
- A plan for implementation and follow-up of analyses
- An overview of technical or area-specific documents that can expand upon the description in the plans
- An overview of standards and specifications that will apply for the development
- Other factors of significance for HSE

As regards onshore petroleum plants, the account must also include:

- A description of the location and a land-use/overall layout plan
- A proposed outer safety area and assessment of the need for a zoning plan or change in existing zoning plan
- Information about permits applied for pursuant to other applicable legislation

6.13 Disposal of facilities

The licensee shall describe how the facilities can be disposed of once petroleum activities cease, and shall stipulate costs for disposal. A review of various disposal solutions at this stage may be of significance for the choice of materials and technical solutions. Opportunities for further use should also be included in the description.

Report No. 47 to the Storting (1999-2000) "Disposal of disused pipelines and cables on the Norwegian continental shelf" provides guidelines for disposal of pipelines and cables.

As a general rule, it shall be possible to leave pipelines and cables in place when they pose no disadvantage or do not amount to a safety risk as regards demersal fishing, compared with the costs of burial, covering or removal.

See Section 29(h) of the Petroleum Regulations. See also Section 27(3)(1)(d) of the Framework Regulations.

6.14 Costs

The project must be sufficiently developed to estimate all investment elements with reasonable uncertainty before the PIO is submitted to the authorities for approval. Investment costs shall be stated pursuant to NORSOK standard Z-014. Operating costs must be included, and separate profiles must be listed for CO₂ and NO_x taxes.

The licensees must present sensitivity analyses for financial parameters which provide a good picture of the project's range of uncertainty, preferably in the form of a tornado diagram. It must be clear how the licensees deal with uncertainty in cost estimates, which shall be given as an anticipated value.

Also present estimates with confidence levels 10/90 and 90/10. In instances where cost estimates are based on foreign currency, in whole or in part, the currency conversions used to convert to Norwegian kroner, as well as the percentage share of the costs incurred in foreign currency shall be specified. The licensees are themselves responsible for any overruns in relation to the cost projections.

An account should be provided of future commercial opportunities that may provide a basis for changes in the investment scope.

See Section 29(1) and (2)(f) of the Petroleum Regulations.

6.15 Profitability assessments

Profitability assessments and uncertainty assessments must be shown. Cost and tariff profiles, as well as assumptions for these assessments, must also be shown.

See Section 29(2)(f) of the Petroleum Regulations.

Cost and tariff profiles

Facility investments, operating costs, tariff costs, tariff income and costs for disposal should be listed in fixed NOK values per year. These should be unbiased. Through-put profiles should also be shown.

Assumptions

All assumptions used in profitability assessments should be shown. Important assumptions:

- Currency exchange rates
- Inflation
- Unit tariffs for processing and transport of the products
- Environmental taxes
- Tax assumptions

Results

Profitability assessments before and after tax should be shown, as well as an uncertainty assessment. Concerning pipelines and installations not regulated by the tariff regulations (“Regulations relating to the stipulation of tariffs etc. for certain facilities”) such assessments are normally included in the assessment of the field development project.

Financial uncertainty assessment

It should be clear how uncertainty has been handled in the project, e.g. as regards design and flexibility.

The overall financial risk with key uncertainty factors, from both the owner and user sides of the facilities, as well as from a socio-economic viewpoint, should be described and quantified. Methods and assumptions used in handling uncertainty, should be described.

Optimisation of plants and operations

A presentation of the project’s finances should include analyses showing that optimisation has taken place as regards:

- Development concept
- Flexibility, i.e. the opportunity to adapt to changed capacity needs

Tariffs

The plan should describe agreements and principles for tariff calculation for the volumes presumed to be transported or processed, as well as principles for tariff calculation for potential volumes beyond this.

As regards upstream gas pipeline networks and associated plants, the MPE will consider whether or not the facility is regulated under the Tariff Regulations.

See Section 4-8(2) of the Petroleum Act, Section 9 of the TPA Regulations, the Tariff Regulations and Section 28(3)(a) of the Petroleum Regulations.

6.16 Updated reporting for revised national budget

Please provide an update on the petroleum-related data submitted in connection with reporting for the revised national budget, alongside submission of the PIO. This shall be submitted as separate reporting to the NPD.

6.17 Designating facilities

Permanently placed facilities shall be designated with their quadrant, block number and letters from A to Z, with the exception of U and T, for each field or block, cf. Section 12 of the Resource Management Regulations. AA, AB, etc. can be used if needed. Beyond this, the operator is free to choose designations for facilities.

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