



Significant Risk of Significant Adverse Impact (SROSAI)

All fact sheets should be read in conjunction with the [Offshore Petroleum and Greenhouse Gas Storage Act 2006](#) (the **OPGGGS Act**), associated regulations, relevant guidelines and policies (available on [NOPTA's website](#))

The OPGGS Act provides for the coexistence of greenhouse gas (**GHG**) and petroleum industries, including in some circumstances where a GHG operation could impact a petroleum activity or vice versa. To manage this, the responsible Commonwealth Minister (**RCM**) must have regard to certain matters, including whether there is a *significant risk of a significant adverse impact* (**SROSAI**), when making certain decisions under the OPGGS Act.

The purpose of this fact sheet is to provide an overview of SROSAI, how it is determined and when it should be considered by relevant applicants.

Note: the scope of this fact sheet is limited to the definition of a SROSAI as described on sections 27, 27A, 28, 28A and 29 of the OPGGS Act focusing on SROSAI for circumstances where a GHG operation could have an impact on petroleum exploration or recovery. Consideration of SROSAI for approval of key petroleum operations and grant of certain petroleum production licences (sections 25 and 26 of the OPGGS Act), is outside the scope of this SROSAI Fact Sheet.

This fact sheet should be read in conjunction with the OPGGS Act, the [Offshore Petroleum and Greenhouse Gas Storage \(Greenhouse Gas Injection and Storage\) Regulations 2023](#) (**GHG Regulations**) and the following guideline and fact sheets:

- [Key Greenhouse Gas Operations Fact Sheet](#) (**KGO Fact Sheet**);
- Guideline: Offshore Greenhouse Gas Injection Licences (**Injection Licence Guideline**); and
- Developing a GHG resource – GHG Injection Licence and Site Plan applications Fact Sheet (**Injection Licence and Site Plan Fact Sheet**).

What is SROSAI?

There are circumstances where GHG and petroleum operations may impact each other. For the purpose of determining a SROSAI, 'impacts' are considered to be only those impacts that result in an *adverse impact*. If the operation could not impact, or will not have an *adverse impact* (see [Adverse Impact](#) below), then the RCM is not required to consider SROSAI further.

If the operation will have an *adverse impact* the RCM is required to consider whether there is a *significant risk* of a *significant adverse impact* when making certain decisions under the OPGGS Act.

SROSAI – relevant decisions

The OPGGS Act provides for the manner of determining whether there is a *significant risk* that a GHG operation will have a *significant adverse impact* on petroleum exploration or petroleum recovery operations that are being, or could be, carried on under an existing or future petroleum title, or the commercial viability of the recovery of petroleum, in sections 27, 27A, 28, 28A and 29 of the OPGGS Act for the purposes of the following decisions:

- approval of a key GHG operation (**KGO**) for holders of a GHG assessment permit (including a cross-boundary GHG assessment permit) or GHG holding lease (including a cross-boundary GHG holding lease) (sections 292, 292A, 321 and 321A of the OPGGS Act);
- grant of a GHG injection licence or a cross-boundary GHG injection licence (sections 362, 368B and 370 of the OPGGS Act); and
- exercising powers to protect petroleum discovered in the title area of a pre-commencement petroleum title, that overlaps wholly or partly with the title area of a GHG injection licence (section 383 of the OPGGS Act).

Adverse Impact

For the purposes of determining whether there is a SROSAI, a GHG operation will have an *adverse impact* on petroleum exploration or petroleum recovery operations that are being or could be carried on under an existing or future petroleum title, or the commercial viability of the recovery of petroleum if, and only if, the relevant GHG operation will result in:

- an increase in the capital costs (other than costs prescribed in the GHG Regulations) of the petroleum exploration or petroleum recovery operations; or
- an increase in the operating costs (other than costs prescribed in the GHG Regulations) of the petroleum exploration or petroleum recovery operations; or



- a reduction in the rate of recovery of the petroleum; or
- a reduction in the quantity of the petroleum that will be able to be recovered;

as per subsections 27(5), 27A(5), 28(5), 28A(5) or 29(5) of the OPGGS Act.

How is SROSAI determined?

If there is an *adverse impact* from a GHG operation on petroleum exploration or petroleum recovery operations that are being or could be carried on under an existing or future petroleum title, or the commercial viability of the recovery of petroleum, (in accordance with subsections 27(5), 27A(5), 28(5), 28A(5) or 29(5) of the OPGGS Act), Part 2 of the GHG Regulations sets out the manner of determining whether there is a SROSAI.

Note: each section of the OPGGS Act that relate to SROSAI impose limitations on:

- (a) when an operation is considered to have an adverse impact on other operations; and
- (b) when the risk of an adverse impact can be treated as significant; and
- (c) when an adverse impact can be treated as significant.

There will not be a SROSAI if the amount that, under the GHG Regulations, is taken to be the probability-weighted impact cost of the relevant operation, is less than the amount that, under the GHG Regulations, is taken to be the threshold amount (subsections 27(6), 27A(6), 28(6), 28A(6) and 29(6) of the OPGGS Act and section 11 of the GHG Regulations).

Further information on the steps taken to determine whether there is a SROSAI if an *adverse impact* has been identified is provided below.

SROSAI Steps

1. Manner of determining whether there is a significant risk of a significant adverse impact

Subsection 9(1) of the GHG Regulations: *compare the probability-weighted impact cost to potential economic value*

There is a SROSAI if the probability-weighted impact cost of the main operation is at least 0.15% of the potential economic value of the potentially affected operations that are being, or could be, carried on under an existing or future petroleum title (determined in accordance with subsection 9(5) of the GHG Regulations).

Under subsection 9(2) of the GHG Regulations, the probability-weighted impact cost of a *main operation* is

determined by applying statistical techniques that are appropriate to risk assessment to the probability-weighted impact costs of *events* (determined in accordance with subsection 9(3) of the GHG Regulations) that could occur as a result of the main operation

Note: see section 5 of the GHG Regulations for definitions including *main operation* and *potentially affected operations*.

Subsection 9(3) of the GHG Regulations: *probability-weighted impact cost of events*

The probability-weighted impact cost of an event that could occur as a result of a main operation and, if it occurred, could have an adverse impact on potentially affected operations is determined by:

- (a) estimating the probability of the event occurring and having an adverse impact; and
- (b) estimating the loss of potential economic value in relation to the potentially affected operations if the event occurred and had an adverse impact; and
- (c) multiplying the estimated probability by the estimated loss in potential economic value.

An estimate of the probability of having an adverse impact on potentially affected operations that are not currently being carried on must take into account the probability of the operations being carried on in the future (subsection 9(4) of the GHG Regulations).

Example 1

If there is a 10% chance of a single event, as a result of the main operation, occurring and having an adverse impact which results in a loss of potential economic value of A\$50 million (m), then the probability-weighted impact cost of this event will be A\$5m.

The probability-weighted impact cost of the main operation will be equal to A\$5m as there is only a single event.

If this amount is less than the threshold amount then there would be no SROSAI.

Subsection 9(5) of the GHG Regulations: *potential economic value of potentially affected operations*

In relation to petroleum operations, the potential economic value of potentially affected operations is to be determined by estimating the net present value of future cashflows from a petroleum resource, taking into account:

- the amount of petroleum projected to be recoverable;
- the projected production profile;
- projected petroleum prices;



- projected costs of recovery; and
- any other relevant matters.

Example 2

If there is a 10% chance of a single event, as a result of the main operation, occurring and having an adverse impact which results in a loss of potential economic value of A\$100m, then the probability-weighted impact cost of this event will be **A\$10m**.

The probability-weighted impact cost of the main operation will be equal to A\$10m as there is only a single event.

If this amount is greater than the threshold amount (see below), refer to the following example:

Assume it is 2023 and an operation is expected to produce 50 Bscf of gas in 2028. The price of gas in 2023 is A\$10/MMscf. The inflation rate is 2% and the appropriate discount rate is 9% (see below). There are nominal costs of A\$500m only in 2028.

Revenue = A\$10/MMscf * 1.02⁵ * 50 Bcf = A\$552m

Costs = A\$500m

Before Tax Cashflow = A\$552m - A\$500m = A\$52m.

NPV(9) = A\$52m / (1.09)⁵ = A\$33.8m

Therefore, a probability-weighted impact cost of A\$10m would represent A\$10m / A\$33.8m = 29.6% of the potential economic value (A\$33.8m) of the potentially affected operation, which is greater than 0.15%.

Important Note: if the probability-weighted impact cost of a main operation (determined in accordance with subsection 9(2) of the GHG Regulations) is not equal to or greater than the threshold amount (per section 11 of the GHG Regulations – see below), it is not necessary to proceed.

When the probability-weighted impact cost of a main operation is equal to or greater than the threshold amount, then it is necessary to calculate if the probability-weighted impact cost is at least 0.15% of the potential economic value, as in Example 2.

Subsection 9(6) of the GHG Regulations: *discounting rate for future value and losses in value*

Estimates of potential economic value under subsection 9(5) of the GHG Regulations, and the loss of value under subsection 9(3) of the GHG Regulations, are to be adjusted to present values using a discount rate equal to the long-term bond rate plus 5%.

The long-term bond rate is the average (expressed as a decimal rounded to 4 decimal places) of the capital market yields for the latest available 12 months on Commonwealth Government 10-year bonds (published

by the [Reserve Bank of Australia](#)).

2. Calculate the threshold amount in accordance with section 11 of the GHG Regulations

The threshold amount on a day is:

$$\$7,000,000 \times \frac{\text{most recent GDP deflator}}{\text{commencement GDP deflator}}$$

Amounts are to be worked out:

(a) using the index numbers published in terms of the most recently published index reference period for the Implicit Price Deflator for Expenditure on Gross Domestic Product (published by the [Australian Bureau of Statistics](#)); and

(b) disregarding index numbers published in substitution for previously published index numbers (except where the substituted numbers are published to take account of changes in the index reference period).

Note: see section 11 of the GHG Regulations for definitions including *commencement GDP deflator*, *index number* and *most recent GDP deflator*.

There will not be a SROSAI if the probability-weighted impact cost of the main operation is less than the threshold amount.

Example: Threshold Calculation

The commencement GDP deflator (the sum of the 4 quarters to September 2023) is 428.6.

Assume that it is June 2025 and the most recent GDP deflator (over the 4 quarters to June 2025) is 445.9.

Therefore, the threshold amount should be calculated as follows:

$$A\$7,000,000 \times (445.9/428.6)$$

Which is equal to A\$7,282,547.83

3. Notice of intended determination of SROSAI

In accordance with section 12 of the GHG Regulations the decision-maker must give notice in writing of the intended SROSAI determination to the applicant for a KGO or GHG injection licence, and each potentially affected petroleum titleholder, and invite written submissions by the person to whom the notice has been given. Any submissions made must be taken into account by the decision-maker in making a determination.

Note: for the grant of a GHG injection licence or cross-boundary GHG injection licence the RCM or Cross-



boundary Authority (CBA)¹ may also take any submissions by the person to whom the notice has been given into consideration in determining any conditions the RCM or CBA thinks appropriate under subsections 358(1) or 358A(1) of the OPGGS Act.

Consideration of any agreements reached (if any) with potentially affected petroleum titleholders

If there is a SROSAI (other than in circumstances where blocks specified in the application for an injection licence contain petroleum for which recovery is commercially viable or is likely to become commercially viable within 15 years, see Consideration of SROSAI when granting injection licence – blocks containing petroleum below), the RCM will consider other factors as part of their decision, for example the public interest or any agreements with affected petroleum titleholders (sections 292, 292A, 321, 321A, 362, 368B and 370 of the OPGGS Act). Generally, if there is an agreement with affected petroleum titleholders the RCM must have regard to:

- whether the affected petroleum titleholder has agreed in writing to the relevant operations being carried out; and
- the particular terms of the agreement.

Note: the provisions in the OPGGS Act related to agreements with affected titleholders are complex and different requirements may apply depending on the circumstances. In some cases approval may be granted without an agreement however, there are exceptions relating to affected petroleum titleholders with rights acquired before the relevant provisions commenced on 22 November 2008 and certain related rights.² In some situations, if the RCM is satisfied that there is a SROSAI the RCM must have regard to whether the affected petroleum titleholder has agreed in writing to the operation being carried out, and the terms of that agreement (sections 292, 321, 362, 368B and 370 of the OPGGS Act). Early engagement with NOPTA and underlying petroleum titleholder(s) is recommended.

Consideration of SROSAI when granting injection licences – blocks containing petroleum

The RCM or CBA cannot grant a GHG injection licence if there is a SROSAI in circumstances where blocks specified in the application contain petroleum for which recovery is commercially viable or is likely to become commercially viable within 15 years, and those blocks are within the area of a petroleum production licence,

pre-commencement petroleum exploration permit or pre-commencement petroleum retention lease, even if there is an agreement between the petroleum and GHG titleholders (see paragraphs 362(1)(f) and 362(2)(f) of the OPGGS Act).

When should SROSAI be considered?

Applicants for approval of a KGO³ or grant of a GHG injection licence (including cross-boundary titleholders) should consider SROSAI early in the application process.

Please see the [KGO Fact Sheet](#), GHG Injection Licence and Site Plan Guideline and GHG Injection Licence and Site Plan Fact Sheet for further information.

Early engagement with NOPTA and underlying petroleum titleholder(s) is recommended.

More information

If you have any specific questions, please contact NOPTA via ghg@nopta.gov.au.

Please note: this document is intended as a guide only. It is subject to, and does not replace or amend the requirements of, the Offshore Petroleum and Greenhouse Gas Storage Act 2006 and associated regulations, which should be read in conjunction with this guideline. It should not be relied on as legal advice or regarded as a substitute for legal advice in individual cases.

Version history

Version	Date	Comment
1.0	02/01/2025	New factsheet

¹ See Part 1.3A – Cross-boundary Authorities of the OPGGS Act, section 76D Decision-making.

² See section 7 of the OPGGS Act for definitions of pre and post-commencement titles.

³ Applicants for a GHG Assessment Permit should also have regard to SROSAI in the proposed work program (see item 4.44 of the [Guideline: Offshore Greenhouse Gas Assessment Permits – Work-bid](#) and item 1.21 of the [Offshore Greenhouse Gas Guideline for Consolidated Work-bid and Cross-boundary Greenhouse Gas Assessment Permits](#))