



Environment Protection Authority

# NSW Guide for Large Emitters

Guidance on how to prepare a greenhouse gas assessment as part of NSW environmental planning processes

January 2025



A vertical decorative bar on the left side of the page, featuring intricate Aboriginal patterns in shades of blue and white. The patterns include concentric circles, wavy lines, and geometric shapes, typical of traditional Indigenous art.

# Acknowledgement of Country

The NSW Environment Protection Authority acknowledges the Traditional Custodians of the land on which we live and work, honours the ancestors and the Elders both past and present and extends that respect to all Aboriginal people.

We recognise Aboriginal peoples' spiritual and cultural connection and inherent right to protect the land, waters, skies and natural resources of NSW. This connection goes deep and has since the Dreaming.

We also acknowledge our Aboriginal and Torres Strait Islander employees who are an integral part of our diverse workforce and recognise the knowledge embedded forever in Aboriginal and Torres Strait Islander custodianship of Country and culture.

Aboriginal artwork by Worimi artist Gerard Black

# Contents

<b>1</b>	<b>Introduction.....</b>	<b>4</b>
1.1	Objective.....	4
1.2	Policy context.....	5
1.3	Greenhouse gases and scopes.....	10
1.4	Overview .....	11
<b>2</b>	<b>Who the Guide applies to.....</b>	<b>11</b>
2.1	Criteria for when this guide applies.....	11
2.2	How and when EPA requirements apply .....	12
2.3	Considerations when assessing emissions.....	13
<b>3</b>	<b>Overview of requirements .....</b>	<b>14</b>
3.1	Emissions reduction objectives for projects.....	14
3.2	Steps that proponents must apply for all large emitter projects.....	16
3.3	Projects involving modifications of existing activities.....	18
<b>4</b>	<b>Greenhouse gas assessment.....</b>	<b>20</b>
4.1	Step 1: Describe the assessment boundary and scenarios .....	20
4.2	Step 2: Identify and prioritise sources of greenhouse gas emissions .....	21
4.3	Step 3: Select measures to avoid and reduce emissions.....	23
4.4	Step 4: Estimate emissions with mitigation measures.....	29
4.5	Step 5: Emission benchmarking and goal setting .....	32
4.6	Step 6: Offsets strategy.....	35
4.7	Step 7: Independent expert reviews.....	36
4.8	Step 8: GHG assessment report.....	37
<b>5</b>	<b>Guide review .....</b>	<b>38</b>
	<b>Glossary .....</b>	<b>39</b>
	<b>References .....</b>	<b>43</b>
	<b>Appendices.....</b>	<b>46</b>
	Appendix A: IPCC sectors and subsectors.....	46
	Appendix B: Scope 3 categories of note by industry type.....	48
	Appendix C: GHG Assessment Report outline.....	50
	Appendix D: Emissions estimate template.....	54

# 1 Introduction

The NSW Environment Protection Authority (EPA) *Climate Change Policy*<sup>1</sup> and *Climate Change Action Plan 2023-26*<sup>2</sup> outlines our regulatory approach and set of actions to address the causes and consequences of climate change in NSW. These actions support and build on climate change legislation in NSW, including the *Climate Change (Net Zero Future) Act 2023*, and the NSW Government's policies and initiatives, such as the *Net Zero Plan Stage 1: 2020–2030*.<sup>3</sup> This combined framework will help support industry to decarbonise and build greater preparedness and resilience to climate change risks.

The EPA has collaborated with other agencies to develop the NSW Guide for Large Emitters (this guide). The guide will help proponents prepare a greenhouse gas (GHG) assessment, including GHG emission reduction goals. It will also support the EPA and the planning authority to review the adequacy of that assessment.

The purpose of this guide is to:

- make sure that climate change considerations are adequately addressed by proponents seeking planning approval
- set out the expectations of what should be included in information submitted through planning processes
- ensure planning approvals contain appropriate conditions
- help NSW reach its legislated emissions reduction targets.

The EPA will consider the information in a proponent's environmental impact statement when it prepares advice for the planning authority, and when determining licence applications if planning approval is granted.

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## 1.1 Objective

This guide shows how the EPA expects proponents to assess GHG emissions for two types of projects: new proposals that are likely to have 'large' emissions, and proposed modifications to existing licensed premises that are likely to have 'large' additional GHG emissions. The criteria for when the guide applies, including the definition of 'large emitters', are set out in section 2.1.

This guide is intended to inform GHG aspects of a development, and consideration and assessment of a proposal. It sets out the information that must be addressed in environmental impact statements and modification reports as part of the NSW environmental planning assessment process. The guide is not intended to prescribe either the outcome of the planning authority's consideration of proposals (nor limit or fetter its statutory functions) under *the Environmental*

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<sup>1</sup> NSW EPA 2023a

<sup>2</sup> NSW EPA 2023b

<sup>3</sup> NSW DPIE 2020

*Planning and Assessment Act 1979* or the EPA's advice on related planning processes. Each proposal will be considered on its own merits.

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## 1.2 Policy context

### 1.2.1 NSW emissions reduction objectives

The build-up of greenhouse gases (GHG) in the atmosphere since the beginning of the industrial age is changing our climate, with serious consequences. Combating climate change requires a coordinated, multi-level government and agency response. The primary architecture governing this effort internationally is the United Nations Framework Convention on Climate Change (UNFCCC)<sup>4</sup> and the Paris Agreement.<sup>5</sup> Australia is a party to both initiatives. The Paris Agreement aims to limit global warming to well below 2°C, and preferably 1.5°C, compared to pre-industrial levels. The Commonwealth Government has committed to GHG emission reduction goals of 43% below 2005 levels by 2030 and net zero by 2050.<sup>6</sup> It develops national climate change policies and programs to help achieve these commitments. Significant approaches include the Powering Australia Plan and the Net Zero Plan and related sectoral plans (in development), the National Greenhouse and Energy Reporting Scheme and the Safeguard Mechanism.

The *NSW Climate Change (Net Zero Future) Act 2023* (section 3(1)) gives effect to the commitments established through the Paris Agreement and commits the NSW Government to effective action on climate change to ensure a sustainable and fair future for the people, economy and environment of NSW. The Act legislates guiding principles for action to address climate change, emissions reduction targets (Box 1), and an adaptation objective that NSW be more resilient to a changing climate. It also established an independent expert Net Zero Commission to monitor, review, report on and advise on progress towards these targets.

The *Net Zero Plan Stage 1: 2020–2030* and related policies provide the foundation for the NSW Government's action to reduce GHG emissions while growing the economy, creating jobs and reducing the cost of living.

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<sup>4</sup> *United Nations Framework Convention on Climate Change*, opened for signature 20 June 1992, 1771 UNTS 107 (entered into force 21 March 1994)

<sup>5</sup> *Paris Agreement*, opened for signature 22 April 2016 [2016] ATS 24 (entered into force 4 November 2016)

<sup>6</sup> *Australia's Nationally Determined Contribution Communication 2022* (Commonwealth of Australia, 2022)



### Box 1. NSW emission reduction targets

The NSW *Climate Change (Net Zero Future) Act 2023* legislates the following targets for reducing net GHG emissions in the state:

- a reduction of at least 50% of 2005 emissions levels by 30 June 2030,
- a reduction of at least 70% of 2005 emissions levels by 30 June 2035, and
- net zero emissions by 30 June 2050.

The Act also provides for the regulations to prescribe interim targets for 2040 and 2045.

## 1.2.2 The EPA's role in relation to climate change

The EPA is the primary environmental regulator for NSW and an active government partner on climate change policy, regulation and innovation.

Section 6 of the *Protection of the Environment Administration Act 1991* (POEA Act) outlines the EPA's statutory objectives to protect the environment and human health. The key elements are:

- to protect, restore and enhance the quality of the environment in NSW, having regard to the need to maintain ecologically sustainable development; and
- to reduce the risks to human health and prevent the degradation of the environment, including by taking action in relation to climate change (section 6(1)(b)).

Section 9 of the POEA Act imposes a statutory duty on the EPA to develop environmental quality objectives, guidelines and policies to ensure environment protection. Section 9(1)(a) includes an example of how that requirement includes objectives, guidelines and policies to ensure environment protection from climate change.

Activities that have the potential to significantly impact the environment require an environment protection licence (licence) from the EPA to operate. Schedule 1 of the *Protection of the Environment Operations Act 1997* (POEO Act) sets out those activities the EPA regulates and the scale of activity at which a licence is required. The POEO Act refers to these activities as scheduled activities.

Section 45 of the POEO Act sets out a range of matters the EPA must consider, where relevant, when exercising its licensing functions under Chapter 3 of the POEO Act. Among other matters, that section requires the EPA to consider:

- the objectives of the EPA
- the pollution caused, or likely to be caused, and the likely environmental impact
- practical measures for preventing, controlling, abating, or mitigating pollution, and
- practical measures for protecting the environment from harm because of that pollution.

The EPA's *Climate Change Policy* and *Climate Change Action Plan 2023-26* further describe how the EPA is fulfilling its duty and functions in relation to climate change. Figure 2 of the Policy sets out the key sources of GHG emissions in NSW and describes how they are covered by the EPA's regulatory framework. (It is replicated with minor changes in Table 1 below.)

## The EPA's role in NSW planning process

This guide relates specifically to proposals progressing through the NSW planning system.

NSW planning authorities are responsible for determining planning applications in NSW, in accordance with the *Environmental Planning and Assessment Act 1979* (EP&A Act). Planning authorities include local government, the Minister for Planning and Public Spaces and the Independent Planning Commission. The EPA is not a planning authority.

In accordance with the EP&A Act, the EPA provides advice to planning authorities about planning proposals that will require an environment protection licence or a licence variation. That includes developments that propose to expand operations or increase their production beyond the level or timeframe specified on their existing planning approval.

For **state significant development** and **state significant infrastructure** proposals, the Department of Planning, Housing and Infrastructure (DPHI) provides proponents with Secretary's Environmental Assessment Requirements (informed by relevant NSW agencies) and assesses the proposal on behalf of the Minister or the Independent Planning Commission. The process is slightly different for integrated development<sup>7</sup>.

The EPA advises DPHI on assessment requirements based on the proposed activity (or activities) and their characteristics. The EPA then provides advice on the information received by DPHI in the proponent's planning application, environmental impact assessment and other information the proponent is required to provide during the consideration of their proposal. That includes advice on the adequacy of the proponent's GHG mitigation measures.









Table 1 provides an overview of the main sources of greenhouse gas emissions in NSW and a description of the activities in each sector that the EPA directly regulates under its licensing framework. Emission sources are categorised based on Intergovernmental Panel on Climate Change (IPCC) sectors. Subsectors applied within Australian and NSW emission projections are given in Appendix A.

The geographic scope of the EPA's obligations is the state of NSW.

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<sup>7</sup> **Integrated development** (see section 4.46 of the EP&A Act) is development (not being State significant development or complying development) that, in order for it to be carried out, requires approvals under other legislation in addition to a planning approval under the EP&A Act; for example, an environment protection licence under the POEO Act. The main differences compared to State significant development are that the EPA provides assessment requirements to the DPHI Secretary, which must be addressed in the proponent's environmental impact statement; and its general terms of approval (conditions that would be imposed on a licence if planning approval is granted) or refusal (see section 4.47(2)). In cases where the EPA informs the consent authority that it will not grant the required licence, the consent authority must refuse planning approval.

**Table 1 Sectors contributing to NSW emissions and description of activities in EPA’s licensing framework**

Sector*	Description	Activities in this sector that the EPA directly regulates
 Electricity generation	Emissions from the combustion of fossil fuels for electricity generation	The EPA licenses larger electricity generation activities that generate almost all of these emissions (e.g. coal-fired power stations). Local councils generally regulate smaller activities, which typically have much lower emissions.
 Stationary energy (excluding electricity generation)	Emissions from on-site fossil fuel combustion (e.g. to run boilers and furnaces) used in manufacturing and other activities	The EPA licenses larger industrial activities that generate most of these emissions (e.g. metallurgy). Local councils generally regulate smaller premises (e.g. some commercial, residential, and smaller industrial premises).
 Industrial processes and product use	Emissions from chemical and/or physical transformation of materials, and consumption of synthetic greenhouse gases	The EPA licenses larger industrial premises that generate most of these emissions (e.g. chemical production). Local councils generally regulate smaller activities; however, these typically have much lower emissions.
 Fugitive emissions	Emissions from the extraction and distribution of coal and natural gas	In NSW fugitive emissions are mainly from coal and gas extraction activities, which are almost all licensed by the EPA (e.g. coal mines).
 Transport	Includes fossil fuel combustion emissions for use in transport activities (e.g. on-road vehicles, rail, domestic aviation and domestic shipping)	While some operators that the EPA licences use on-road vehicles or rail rolling stock, emissions from these account for a very small proportion of total transport sector emissions.
 Waste	Emissions due to waste disposal, treatment and processing, including domestic and industrial wastewater	Almost all large-scale waste disposal, storage and processing activities and large sewage treatment plants are licensed by the EPA.
 Agriculture	Includes emissions of methane, carbon dioxide and nitrous oxide from livestock, crops, and agricultural and forest soils	Most agricultural emissions are methane emissions from ruminant animals (mainly cattle and sheep). These animals are predominantly kept on grazing land, which is not licensed by the EPA. Some of these emissions are from livestock-intensive activities (e.g. feedlots), which the EPA does license.
 Land use, land-use change and forestry (LULUCF)	Emissions due to land use, land-use change and forestry can either be an emission source (positive emissions) or sink (negative emissions)	EPA has a role in regulating some forestry activities (e.g. native forestry).

\*Sectors are based on the Intergovernmental Panel on Climate Change (IPCC) classification system.



### 1.2.3 National Greenhouse and Energy Reporting and the Safeguard Mechanism

This guide refers to the National Greenhouse and Energy Reporting (NGER) scheme<sup>8</sup> and the Safeguard Mechanism, established by the Commonwealth *National Greenhouse and Energy Reporting Act 2007* (NGER Act) and related legislation. The Commonwealth Clean Energy Regulator administers the NGER Act, its legislative instruments, and related policies and processes.

The **NGER scheme** is a national framework for reporting and publishing company information about GHG emissions, energy production, energy consumption and other information specified under NGER legislation. The NGER Act applies to corporations that meet reporting thresholds.

The NGER scheme does not apply to organisations that are not corporations (such as local councils) or GHG emissions released from animals.

Many NGER scheme methodologies are recommended throughout this guide to help proponents prepare their GHG assessment. There is no NGER scheme methodology for the agriculture sector as of late 2024.<sup>9</sup>

The **Safeguard Mechanism** is the Australian Government's policy for reducing emissions at Australia's largest industrial facilities. It sets legislated limits, known as baselines, on the GHG emissions of these facilities. These baselines will decline, predictably and gradually, on a trajectory consistent with achieving Australia's emission reduction targets of 43% below 2005 levels by 2030 and net zero by 2050.

The Safeguard Mechanism applies to industrial facilities emitting more than 100,000 tonnes of scope 1 emissions per year, including mining, oil and gas production, manufacturing, transport and waste facilities. The Safeguard Mechanism applies to the electricity sector in a different way by applying a single 'sectoral' baseline across all electricity generators connected to one of Australia's main electricity grids. Individual grid-connected electricity generators are not covered as long as total emissions from grid-connected electricity generators do not exceed the sectoral baseline.

The Safeguard Mechanism also applies to project assessments conducted under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*. It primarily relates to projects likely to produce 100,000 tonnes or more of GHG emissions each financial year.

The Safeguard Mechanism does not require details of how emissions will be reduced, or include any assessment or authorisation of activities, and it is not an approval framework.

The EPA and NSW planning authorities are required by legislation to consider the environmental impacts of planning proposals. As a result, information on GHG emissions and reductions is required for NSW planning authorities to inform a decision on new and amended proposals.

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<sup>8</sup> The NGERS Scheme criteria and the threshold criteria in this Guide are separate and serve different purposes. This Guide refers to NGERS because it references NGERS methodologies to estimate emissions.

<sup>9</sup> [The Climate Change Authority's review of the National Greenhouse and Energy Reporting legislation: background](#)

## Box 2. Why these requirements are needed for Commonwealth Safeguard facilities

The Safeguard Mechanism does not preclude the need for the NSW EPA or a NSW planning authority to:

- properly understand the potential GHG impacts of proposed new or significantly modified proposals within NSW (that is, the new sources of GHG that will be released in NSW and how they are expected to change over time)
- ensure all proponents are adequately avoiding, minimising and managing their emissions over all stages of development (where development approval is granted).

It is important to note that the Safeguard Mechanism aims to support national emission reductions targets. Many jurisdictions, including NSW, have legislated emissions reduction targets that are more ambitious than the national targets.

Further information on the NGER scheme and the Safeguard Mechanism is available on the website of the [Clean Energy Regulator](#).

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## 1.3 Greenhouse gases and scopes

This guide relates to GHG emissions addressed under the NGER Act and includes the following gases and categories of gases: carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O), sulphur hexafluoride (SF<sub>6</sub>), hydrofluorocarbons (HFCs) and perfluorocarbons (PFCs).

This guide refers to scope 1 and scope 2 GHG emissions as defined under the NGER Act and scope 3 GHG emissions as defined within Australia's [National Greenhouse Accounts](#).<sup>10</sup>

- Scope 1 emissions are released to the atmosphere as a direct result of an activity, or series of activities, at a facility level. Scope 1 emissions are sometimes referred to as direct emissions.
- Scope 2 emissions are released to the atmosphere as a direct result of one or more activities that generate electricity, heating, cooling, or steam that is consumed by the facility but that do not form part of the facility. Scope 2 emissions are sometimes referred to as indirect emissions because they arise from the indirect consumption of an energy commodity.
- Scope 3 emissions are indirect emissions (other than scope 2 emissions) that are generated in the wider economy. They occur due to the activities of a facility, but from sources not owned or controlled by that facility's business. Some examples are extraction and production of purchased materials, transportation of purchased fuels and use of sold products and services.

In the definitions above, a 'facility' means a facility as defined under the NGER Act for the purpose of National Greenhouse and Energy Reporting.

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<sup>10</sup> DCCEEW 2024a

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## 1.4 Overview

This guide outlines how to identify proposals considered to have large GHG emissions, and how the proponents of such proposals must assess their emissions and develop GHG reduction goals.

The guide specifically addresses:

- types of GHG and scopes of emissions to be considered
- how the EPA identifies proposals likely to have large emissions
- how and when the EPA's requirements apply in the environmental impact assessment process
- estimating emissions for the proposal
- how measures to avoid or reduce emissions must be identified and assessed
- how to develop emissions goals for the proposal
- how obligations for electricity firming infrastructure under Part 12 of the Electricity Infrastructure Investment Regulation 2021 must be demonstrated
- how strategies to offset emissions must be developed, **if** offsets are proposed
- proposed measures to monitor and report on emissions and mitigation performance
- the expected content of GHG assessments within environmental impact assessments
- the time frame for reviewing this guide.

## 2 Who the guide applies to

This section sets out the criteria the EPA may take into account in addition to other factors it considers relevant when deciding whether and how the guide applies to a proposal that requires a licence or will be carried out at an existing licensed premises.

The EPA will use the approach outlined in this guide to ensure that proposals are considered in an effective, consistent and equitable manner. The EPA will normally consider a proposal to have large emissions if the project meets the criteria in this section. The criteria are a guide only and are not intended in any way to fetter the EPA's regulatory discretion in how or to which projects the guide is applied to. Other relevant factors, including those factors in section 45 of the POEO Act, may be considered in conjunction with these criteria. The EPA will consider each proposal on its own merits.

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### 2.1 Criteria for when this guide applies

The assessment requirements in this guide apply to a project if it meets all of the following three criteria:

- 1) The project proposal requires development assessment and approval, or a change to an approval, under the *Environmental Planning and Assessment Act 1979*
- 2) The project involves one or more scheduled activities under Schedule 1 of the POEO Act and/or will be carried out at an existing licensed premises

3) The project is likely to emit **25,000 tonnes or more of scope 1 and 2 emissions carbon dioxide equivalent** (CO<sub>2</sub>-e) in any financial year during the operational life of the project (based on planned operational throughput and as designed).

**Note:** For a modification, the threshold refers to an additional 25,000 tonnes or more of scope 1 and 2 emissions (CO<sub>2</sub>-e) in any financial year when the modification project becomes operational, over and above emissions from the existing licensed premises.

The 25,000 tonne CO<sub>2</sub>-e threshold applies to ongoing operational emissions. This is to ensure that the GHG assessment requirements do not create a barrier for projects that will have low ongoing operational emissions but large construction emissions in the short-term. The requirements do not apply to projects for activities listed under Schedule 1 of the POEO Act that involve only construction activities, or pilot plants.

Proponents are encouraged to adopt a precautionary approach and to apply the requirements to borderline projects. In such cases, proponents can seek advice early from the EPA about whether this guide will apply to their development proposal or modification.

If the proposal meets the threshold criteria, the proponent must meet the GHG assessment requirements as outlined in Sections 3 and 4.

The EPA may take a more flexible approach to the application of this guide where the project supports NSW to decarbonise in a substantial way, supports the development of renewable energy, and/or contributes to broader global emissions reduction. As the economy transitions there are industries and projects that will be critical in enabling broader decarbonisation. In some instances, short-term increases in emissions may be required to deliver longer-term emissions reductions.

For example, the EPA may vary the requirements for projects or modifications that could include, but are not limited to:

- a project forming part of a suite of changes over time to a complex licensed premises (or group of related licensed premises in NSW) that would collectively contribute to large emission reductions in NSW
- supporting the decarbonisation of the electricity grid or the development of the renewable energy industry
- progressing innovative and transformative projects or technologies that will support future emissions reductions and a low-carbon future.

In these cases, the proponent would still be required to include or refer to a strategic document that describes the proposed program of works (including their location and timing), provide the information the EPA needs (e.g. emission projections) and shows how the various components of the program work together.

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## 2.2 How and when EPA requirements apply

The EPA expects proponents to consider and address the objectives and content of this guide for all project proposals that meet the criteria outlined in section 2.1 above.

The assessment requirements apply to projects that receive Secretary's Environmental Assessment Requirements and are likely to be large GHG emitters; or to modification applications that are likely to be large GHG emitters. They do not apply to Part 5.1 assessments under the EP&A Act.

Project emission estimates must include energy savings measures and emission mitigations planned for in the project design. However, any carbon offsets that the proponent proposes to use (or must purchase and surrender to satisfy obligations under the Commonwealth Safeguard Mechanism) do not count towards the threshold criteria for identifying projects with large GHG emissions.

The EPA will use this guide when recommending GHG assessment requirements for proposals or modifications and providing advice to the planning authority under the Environmental Planning and Assessment Act 1979 on the adequacy of the proponent's environmental impact statement and the proponent's project proposals. However, each project proposal will be considered on its own merits.

The EPA expects proponents to comply with the recommendations in this guide when preparing modification reports for state significant developments or state significant infrastructure projects, when the modification results in additional emissions of 25,000 t CO<sub>2</sub>-e or more of scope 1 and 2 emissions in any financial year during the operational life.

The requirements do not apply to proposals that have progressed beyond the environmental impact assessment stage of the planning process at the time the consultation draft guide was published; that is as at 20 May 2024. This is because the purpose of the guide is to inform the proponent's environmental impact statement. However, planning authorities can use the guide to inform their considerations. The EPA may also refer proponents to the guide when seeking additional information if environmental impact statements are considered by the EPA to be inadequate.

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## 2.3 Considerations when assessing emissions

When assessing whether a project's scope 1 and 2 emissions may exceed 25,000 t (CO<sub>2</sub>-e) per year, proponents must:

- determine an appropriate GHG assessment boundary for the project (see section 4.1)
- ensure that emission estimates being assessed include mitigations that are part of or integral to the project design, but exclude consideration of carbon offsets
- use the latest version of the Clean Energy Regulator's Emissions and Energy Threshold Calculator and user guide (CER 2023a) or apply appropriate NGER methods, and/or another appropriate emissions estimation methodology where NGER methodologies do not cover key sources of emissions (e.g. the Primary Industry Challenges Centre Greenhouse Accounting tools<sup>11</sup> or the *Moving towards carbon neutrality* technical manual<sup>12</sup>).

### Box 3. GHG assessment boundary for modification proposals

The GHG assessment boundary for the project defines which emission sources and activities are included and excluded in the assessment.

For a modification proposal:

- The assessment boundary must be defined to account for any emission increases or decreases at the premises related to the project. It must define which emission sources and activities are

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<sup>11</sup> <https://piccc.org.au/resources/Tools.html>

<sup>12</sup> <https://www.mla.com.au/globalassets/mla-corporate/research-and-development/program-areas/feeding-finishing-and-nutrition/pathways-to-carbon-neutrality-for-australian-feedlots.pdf>



included in the assessment and which are excluded. This will allow the overall impact of the GHG emissions resulting from the modification to be assessed.

- The 25,000 tonne CO<sub>2</sub>-e threshold relates to additional GHG emissions expected to be emitted due to the modification of the licensed premises, not the entire premises. For example, if the existing premises emits more than 25,000 tonnes CO<sub>2</sub>-e per annum, but the modification will not increase GHG emissions by an additional 25,000 tonnes CO<sub>2</sub>-e per annum, then that modification would not be subject to the assessment requirements within this guide.

When a project involves a modification to an existing premises, defining a GHG assessment boundary is the first step to understanding whether or not the climate change requirements for large emitters apply.

Further information is available on the Commonwealth Clean Energy Regulator's website (for example its *Emissions and Energy Threshold Calculator* and user guide).<sup>13</sup>

NSW agencies must also consider the guiding principles of the Climate Change (Net Zero Future) Act 2023 when fulfilling their statutory functions. In May 2024, the NSW Government directed entities involved in assessment and decision-making processes under the planning system to consider NSW's emissions-reduction targets and, to the extent relevant, consider these guiding principles when examining new developments<sup>14</sup>. Proponents seeking planning approval or a change to a planning approval can assist planning authorities to consider these principles by describing how their proposal addresses them.

## 3 Overview of requirements

The proponent's GHG assessment provides a public disclosure of the expected emissions, emission reduction measures (adopted and considered), emission goals and monitoring planned for the proposed project.

This section sets out the EPA's expectations for emissions reduction objectives for projects, and provides an overview of the steps proponents should complete to undertake a GHG assessment and develop GHG emission reduction goals.

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### 3.1 Emissions reduction objectives for projects

The EPA expects proponents to apply the mitigation hierarchy shown in Figure 1, to make genuine efforts to first avoid then reduce emissions. This includes considering measures to replace (substitute) higher-emission energy sources and materials with lower-emission ones, before offsetting residual emissions to meet emission goals. Proponents must demonstrate how they have considered and applied this mitigation hierarchy.

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<sup>13</sup> CER 2023

<sup>14</sup> <https://www.ipcn.nsw.gov.au/resources/pac/media/files/pac/general/2024-policy-documents/signed--min24572--letter-to-ipc-comissioner--nsw-net-zero-redacted.pdf>

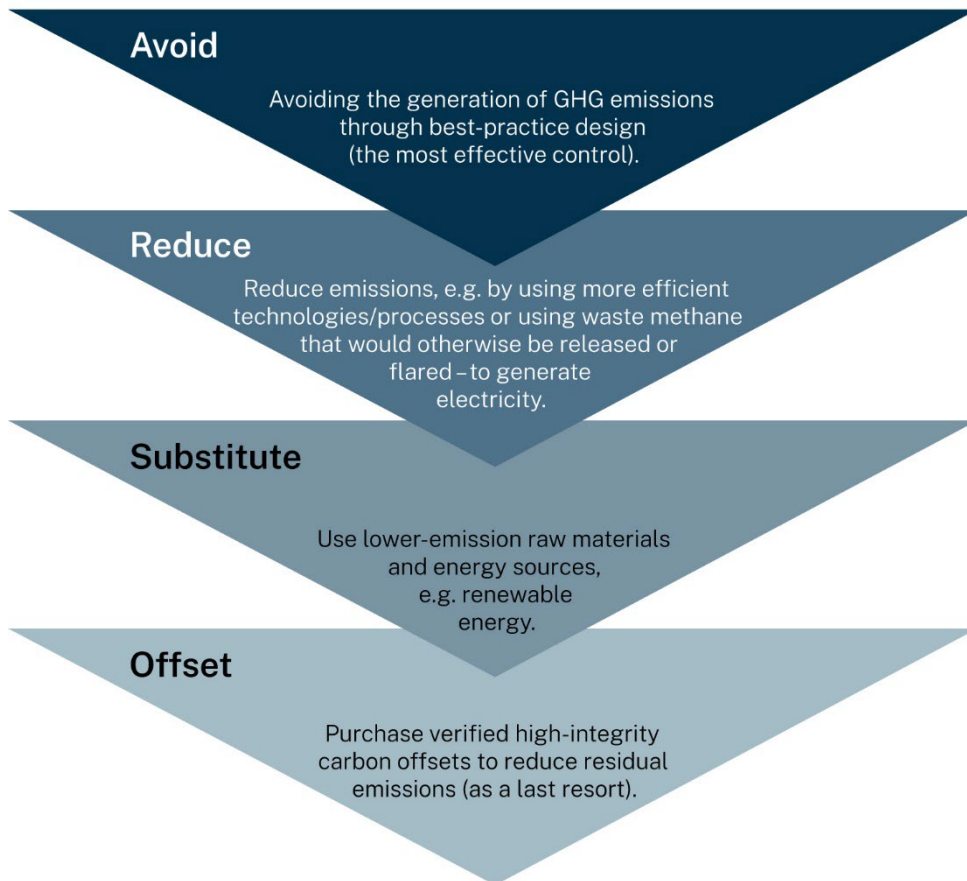


Figure 1 GHG emissions mitigation hierarchy

Proponents of large emission projects are expected to set interim and long-term scope 1 GHG emissions goals. Scope 2 emission goals are also required. Scope 3 emission goals are encouraged but not mandatory (see section 4.5).

Emission avoidance and mitigation measures included in the project design may reduce project emissions below the emissions threshold specified for ‘large emitters’ (refer to section 2.1), in which case this guide does not need to be applied. However, any carbon offsets that the proponent proposes to use and Safeguard Mechanism credits do not count towards the threshold criteria for identifying projects with large GHG emissions, as specified in section 2.2.

## 3.2 Steps that proponents must apply for all large emitter projects

Figure 2 is an overview of the iterative steps proponents must take to prepare a GHG assessment.

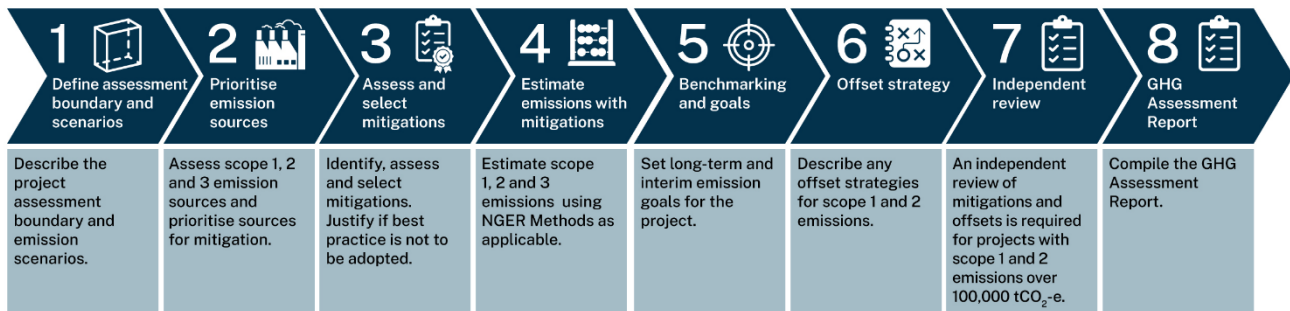


Figure 2 Steps in undertaking a GHG assessment

### Step 1: Describe the assessment boundary and emission scenarios

In step 1, proponents should describe the GHG assessment boundary established for the project, and name and describe the scenarios included in the assessment (see Box 3). The assessment boundary must clearly specify the emission-related activities included and excluded from the assessment. If a modification is likely to increase or decrease emissions from existing operations, the affected sources related to these existing operations must be included within the assessment boundary for the project. In this manner the overall (net) impact of the project on GHG emissions may be assessed in a ‘project only’ scenario. As a minimum, parts of the operation where emissions will increase **must** be included. Further scenarios that must be included for project modifications are set out in Box 5.

### Step 2: Identify and prioritise sources of greenhouse gases

Steps 2 to 6 are set out in a sequence for clarity but are expected to involve an iterative process to tailor mitigation measures, finalise emissions estimates and refine emissions reduction goals and other commitments for the project. The setting of emissions goals for the project may both inform and be informed by the assessment of mitigation measures that are commercially and technically available during the project’s life.

In step 2 you must identify all sources of scope 1, 2 and 3 emissions, and prioritise sources for mitigation. To help do this, you may initially estimate emissions excluding mitigations, using the emission estimation methods required for step 4.

### Step 3: Select measures to avoid and reduce emissions

Here you must show how the mitigation hierarchy has been applied. Your highest priority is to avoid emissions through design of the project and planned operational approaches. The next highest priority is to reduce them (see Figure 1). Over time the EPA will publish best-practice emissions reductions guidelines for specific sectors that can be used to inform this step.

### Step 4: Estimate emissions with mitigation measures

In this step you must document emission estimates for the proposed project as designed, taking into account any emissions avoidance and mitigation measures you have committed to implementing.

## **Step 5: Emission benchmarking and goal setting**

In step 5 you will set out the long-term and interim emission goals for the project for scope 1 and scope 2 emissions, taking into account anticipated regulatory obligations for the project (for example, being subject to the Safeguard Mechanism) and proposed mitigations.

Emissions reduction goals should include material efforts to reduce emissions leading towards net zero by 2050. When developing goals, the proponent must consider NSW legislated interim emission reduction targets. Goals for facilities covered by the Safeguard Mechanism should start at the Safeguard Mechanism baseline. Safeguard proponents should then consider whether they can further reduce their emissions to contribute more to NSW achieving its legislated interim emission reduction targets; that is, whether their goals can exceed their Safeguard obligation. We expect emissions reduction trajectories to be broadly consistent with the NSW or industry specific emissions reduction trajectory. If the project emissions trajectory, accounting for emission goals, does not align with the overall NSW net zero emissions trajectory or the sector-specific trajectory, the proponent must explain why the emission reduction trajectory still represents a meaningful contribution to NSW's emission reduction targets or supports NSW to decarbonise.

## **Step 6: Offset strategy**

Step 6 involves setting out any carbon offset strategies that you intend to use to achieve your emission reduction goals. Carbon offsets must be used only for residual emissions that cannot be avoided or reduced. Offsets are not compulsory, but any proposed offsets must be based on methods that are clear, enforceable and accountable. Offsets sourced from NSW-based projects are preferred as offsets outside NSW do not currently count towards the NSW emissions reduction inventory. Offsets will not be considered when determining whether the project meets the criteria set out in section 2.1.

## **Step 7: Independent expert reviews**

Projects with scope 1 and 2 emissions exceeding 100,000 t CO<sub>2</sub>-e per year at any time over the operational life of the project require mitigation assessments to be verified by an independent expert reviewer. If you propose to use offsets for such a project, the independent expert review must consider whether suitable offsets are likely to be available at the time of the proposed acquisition and cancellation of offsets, and give the reasons for reaching this view. For modifications, this threshold applies to the project's additional emissions only.

## **Step 8: GHG assessment report**

The GHG Assessment Report must reflect the data, assumptions, methods, and findings from steps 1–7 and be prepared using the template provided (Appendix C). Section 4 describes the steps of the GHG assessment in more detail.

#### **Box 4. Emissions reductions at multiple or complex facilities**

The EPA recognises that GHG emissions from some activities or industries are harder or more expensive to abate than others. To provide greater flexibility, proponents can include commitments to reduce GHG emissions at their related premises. For example, where corporations have multiple licences or large complex sites (even if under one licence) in NSW and are seeking approval to emit more than 25,000 tonnes CO<sub>2</sub>-e per annum of new GHG emissions, proponents can commit to avoiding or reducing emissions at their other NSW-licensed premises or as part of other activities carried out within the same licensed premises as part of their overall approach to reducing GHG emissions, to reduce the net impact of the new emissions they are seeking planning approval to release. The principle is to support emissions reductions across NSW. This enables resources to be used where they can achieve a higher level of emission reduction.

In these circumstances, the proponent can refer to a strategic document that gives information about the proponent's long-term and interim scope 1 and 2 emission reduction goals over a suite of licences or sites (in NSW) and how they will be achieved (including proposed mitigation measures and proposed offset strategies).

However, project specific information will still be required on:

- the estimated emissions from the proposed project
- how best practice approaches to designing and reducing emissions from the project has been applied.

For a modification to an existing licensed premise, you may also refer to a strategic document when assessing **scope 3** emission estimations. This will be most relevant where the project is a modification for part of a complex premises, where it is challenging to separate new scope 3 emissions from the premises' existing scope 3 emissions.

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### **3.3 Projects involving modifications of existing activities**

Where a project involves a modification to existing infrastructure or activities, the GHG assessment must include information on scope 1 and 2 emissions from existing operations, including:

- emissions by source
- mitigation measures and any offset strategies being implemented
- any obligations under the Safeguard Mechanism
- current and planned emissions goals.

**Box 5** sets out scenarios to be included in the GHG assessment for projects involving modifications to existing activities that trigger the large-emitter criteria set out in section 2.1. These scenarios relate to scope 1 and 2 emissions. Scope 3 emissions only have to be assessed for the 'project only' scenario but may be included for other scenarios.



### Box 5. Scenarios that must be included – modifications of existing activities

If a project involves modifications of existing activities that trigger the large-emitter criteria set out in section 2.1, then the GHG assessment for the project must include the following emission scenarios for scope 1 and 2 emissions within the project boundary:

For modification proposals:

- a **'business-as-usual'** scenario addressing sources and projected emissions that are expected to occur without the proposed modification project. This scenario should include any existing or planned emissions reductions
- a **'modified business'** scenario addressing overall sources and emissions associated with existing operations and including the implementation of the proposed modification project. This scenario should include any planned emissions mitigations, for both existing operations and the proposed project
- a **'project only'** scenario addressing only the sources and emissions included within the GHG assessment boundary of the project. This scenario should include any planned mitigations. In essence, these are the GHG emissions that determine whether the project exceeds the criteria in this guide.

Providing these scenarios will allow the emissions for the modification to be considered within the context of total emissions for the premises. They will also show which of the measures being undertaken to reduce emissions from existing operations may reduce overall emissions when considered together with the proposed modification.

The EPA expects to see best-practice measures being used to inform the design of modifications. It also encourages proponents to commit to other improvements to reduce emissions from existing operations, to minimise overall emissions.

# 4 Greenhouse gas assessment

Steps that proponents must complete during their GHG assessment are explained below in more detail.

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## 4.1 Step 1: Describe the assessment boundary and scenarios

The first step is to clearly describe the GHG assessment boundary for the project (including time frames), and the emission scenarios to be included in the assessment.

The assessment boundary must account for GHG emissions associated with all stages of the project, addressing (as appropriate):

- construction, including demolition, land clearing and excavation
- operation
- decommissioning
- closure
- post-closure activities, such as remediation and rehabilitation (where relevant).

Some potential project stages may not be relevant or may not have material emissions. For example, closed landfills and some mining activities will still have emissions post closure, but other activities might produce minimal GHG emissions post closure. In these cases, the proponent may describe which stages of the project need to account for greenhouse gas emissions. If any stage is not applicable the proponent should give a qualitative description of the nature of any GHG emissions at that stage.

For new developments, the assessment boundary relates to the activities that would be authorised by an environment protection licence. For an already-licensed premises where a modification to the planning approval is being sought, the assessment boundary relates to the changed activities. The assessment boundary may extend to another related premises, as described in Box 4.

Proposals involving new developments and modifications to existing licensed premises should develop scope 1 and 2 emission projections that address all sources associated with activities within the assessment boundary. For modifications, some parts of a premises may not need to be modelled if their operation will not change and emissions will not increase as a result of the modification; however, if emissions are projected to substantially increase as a consequence of the modification project, those parts of the premises need to be modelled. The process of setting an assessment boundary will help determine the parts of the premises that should be included in the assessment.

For proposed modifications, this 'project only' scenario must include an annual breakdown of both:

- new sources of emissions associated with proposed activities within the modification
- emission sources associated with existing activities that would be changed by the modification. Ideally, both emission increases and decreases should be included.

This enables the net GHG emissions impact of the proposed modification to be assessed and understood for the 'project only' scenario.

For modifications, the 'business-as-usual' and 'modified business' scenarios also need to be described as explained in Box 5.

All scenarios must be named and described. It must be clear which scenarios are being put forward for project assessment and approval. For example, you may include emission projections for unmitigated and mitigated operations (to show how effectively emissions may be abated) and specify that the scenario including mitigations is to be considered for project assessment and approval.

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## 4.2 Step 2: Identify and prioritise sources of greenhouse gas emissions

Using the assessment boundary, the next step is to identify sources of GHG emissions and decide which sources should take priority when assessing mitigations. To identify the high-priority sources, you may initially estimate emissions excluding planned mitigations (for modifications, see Business-as-usual scenario in step 1). When doing this, use the emission estimation methods required for step 4.

The assessment must include all relevant GHG types<sup>15</sup> addressed under the NGER Act, which include:

- carbon dioxide (CO<sub>2</sub>)
- methane (CH<sub>4</sub>)
- nitrous oxide (N<sub>2</sub>O)
- sulphur hexafluoride (SF<sub>6</sub>)
- hydrofluorocarbons (HFCs)
- perfluorocarbons (PFCs).

The assessment must:

- address scope 1, 2 and 3 emissions as described in section 1.3 and illustrated in Figure 3
- provide an annual breakdown of emissions and cover all years the proposal will apply to.

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<sup>15</sup> The emission types that need to be addressed will vary depending on the industry and nature of the proposal. Proponents need to address their material GHG emission sources. Agricultural proponents may find this website useful: <https://www.dpi.nsw.gov.au/dpi/climate/Low-emissions-agriculture/carbon-farming-fundamentals/what-are-greenhouse-gases-ghgs>

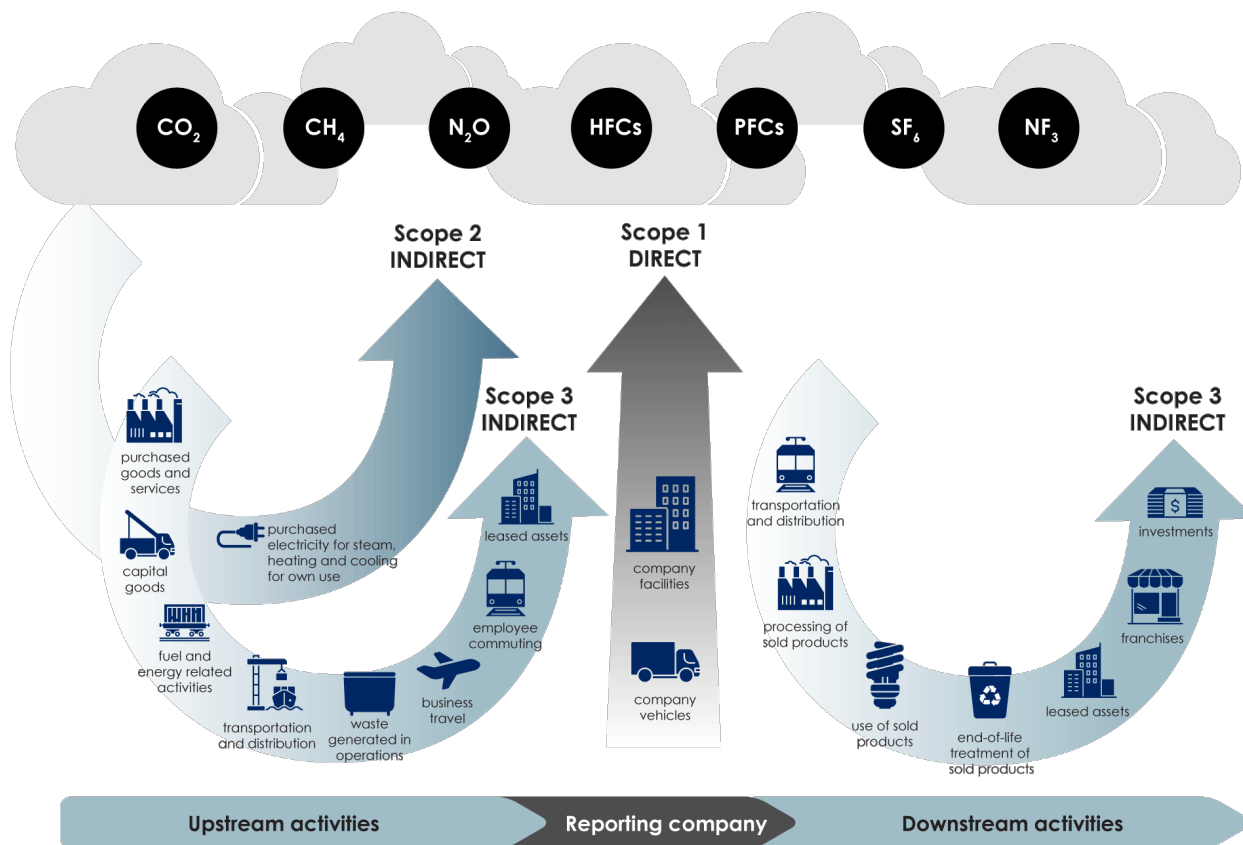


Figure 3 Scope 1, 2 and 3 emissions (World Resources Institute & World Business Council for Sustainable Development, 2013)

Scope 1 (direct) GHG emissions are released directly into the atmosphere by sources under the proponent’s operational control.<sup>16</sup> Examples include:

- emissions from fuel combustion by sources such as boilers, kilns, generators, trucks and cars
- emissions from manufacturing or processing of chemicals and materials, such as the manufacture of chemicals and aluminium
- fugitive emissions, such as methane emissions from coal mines, livestock, landfills, wastewater treatment plants and from natural gas exploration, production, transition, storage and distribution
- hydrofluorocarbon emissions from gas leakage during the use of air conditioning and refrigeration equipment.

Scope 2 GHG emissions are released to the atmosphere as a direct result of one or more activities that generate electricity, heating, cooling or steam that is consumed by the development but do not form part of the development. While emissions from fuel combustion by power stations that generate electricity for sale are considered scope 1 emissions for the power station, such emissions are considered scope 2 emissions for parties purchasing the electricity for use by their project activities.

Scope 3 emissions are all other indirect emissions that occur due to project activities from sources not owned or controlled by the proponent. The 15 distinct scope 3 reporting categories are shown in

<sup>16</sup> CER 2024a

Figure 3 and listed in Table 2. They include upstream emissions associated with goods and services used by the project and downstream emissions from the transportation, distribution and processing of sold products, and the use of products.

**Table 2 Upstream and downstream reporting categories of scope 3 emissions<sup>17</sup>**

Upstream scope 3 emissions	Downstream scope 3 emissions
Purchased goods and services	Downstream transportation and distribution
Capital goods (extraction, production and transport of assets used to produce products and services e.g. buildings, machinery, tools and equipment)	Processing of sold products
Fuel and energy-related activities (not included in scope 1 or scope 2)	Use of sold products
Upstream transport and distribution	End-of-life treatment of sold products
Waste generated in operations	Downstream leased assets
Business travel	Franchises
Employee commuting	Investments (including equity and debt investments and project finance)
Upstream leased assets	-

The GHG assessment must identify the appropriate scope 3 categories for the project. Appendix B lists industry categories that the CDP identifies as typically accounting for most of the scope 3 emissions.<sup>18</sup> However, this list is only a guide: the GHG assessment will confirm the most relevant scope 3 categories.

## 4.3 Step 3: Select measures to avoid and reduce emissions

The emissions estimate must be made for the project **as designed**. This means it must account for mitigation measures that currently exist and are planned for inclusion in the project over its lifetime.

Step 3 involves identifying and selecting measures to avoid and mitigate emissions from the project. As previously noted, you should initially estimate emissions excluding mitigations, to help prioritise sources and identify mitigation options. If doing this, use the emission estimation methods described in step 4.

The EPA acknowledges that scope 2 emissions may increase with greater electrification and that scope 2 emissions will begin to reduce with decarbonisation of the electricity grid. We expect proponents to consider long-term reductions for scope 1 and scope 2 emissions. That includes where their GHG management strategy involves a transition to electric equipment, and the reduction in scope 2 emissions is primarily due to decarbonisation of the electricity grid.

<sup>17</sup> World Resources Institute & World Business Council for Sustainable Development 2013a

<sup>18</sup> CDP 2024



### 4.3.1 Identify mitigation measures

As stated in section 3.1, the EPA expects proponents to demonstrate they have made all genuine efforts to apply the mitigation hierarchy to first avoid and then reduce emissions, before proposing offsets for residual emissions to meet emission reduction goals (Figure 2). Emissions mitigations are required for the 'project only' scenario.

Proponents must demonstrate that best-practice measures (see **Box 6**) will be implemented within the GHG assessment or provide evidence-based justification for why best practice measures are not feasible and why other measures are proposed.

Proponents can also apply the approach outlined in the Commonwealth's *Safeguard Mechanism Guidelines for setting international best practice benchmarks*<sup>19</sup> to demonstrate how the emissions intensity of their activity compares to international best-practice benchmarks (see **Box 6**).

Over time the EPA will publish best-practice guidelines for specific sectors.

When selecting GHG emission mitigation measures, proponents must ensure the proposed measures will not compromise other pollution controls or the premises' overall environmental performance.

#### **Box 6. Best-practice design, technology and management**

'Best practice' refers to the most effective combination of processes and technologies, including how an installation or activity is designed, built, maintained, operated and decommissioned, to avoid and minimise environmental impacts from GHG emissions.<sup>20</sup>

Applying or adopting best practice may include:

- identifying best practice for the sector that is appropriate to the scale of the project at the time the GHG assessment is being conducted. Best practice may be identified from a best-practice guide published by the EPA, a literature review or input from independent experts
- avoiding or reducing emissions through best-practice design and demonstrating best-practice operations, as described above
- adopting more efficient, renewable and low-emissions processes and technologies
- identifying and investing in emerging technologies so that they can be used in the project
- identifying technologies or practices for the sector that are likely to be ready to be adopted at some time during the project life
- reviewing evidence to confirm that proposed actions can achieve the stated emissions reductions
- identifying local conditions and characteristics of the project that might influence the choice of technologies or procedures to mitigate emissions
- comparing emissions and energy-intensity performance metrics with those of comparable domestic and international facilities, including those with the lowest emissions intensities for relevant activities

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<sup>19</sup> DCCEEW 2023

<sup>20</sup> European Commission 2024

- adopting energy-efficiency practices, solar and battery technologies and battery-electric fuelled vehicles and machinery.

**Avoiding emissions** through design may involve:

- comparing absolute emissions and emissions-intensity performance metrics with comparable activities
- minimising emissions and intensity at design stage
- adopting more efficient, renewable, and/or low-emissions technologies (**Box 6**).

It may be possible to avoid emissions at other stages of the project (construction, commissioning, operations, maintenance and refurbishment) as lower-emissions approaches, materials and technologies become more available and cost-effective. The proponent should consider how they can adopt additional measures over time e.g. when assets are refurbished or replaced.

**Reducing emissions** can involve:

- optimising operational plans, including staging, location and process characteristics such as:
  - closed-loop systems and low-impact materials and products
  - adapting temporary works for permanent purposes
  - reusing or repurposing waste energies and materials and co-products and by-products
- adopting maintenance strategies for optimal productivity from plant, equipment, machinery and vehicles
- embedding mitigation measures in quality management systems for monitoring, reporting and continual improvement
- undertaking energy measurement, verification and audits of activities to identify where and how energy is consumed and wasted. This may identify cost savings or returns on investment, as well as emissions reduction opportunities
- designing and implementing integrated gas management plans for coal mining operations, including effective pre- and post-mining drainage, and the effective capture and use of methane for power generation
- investing in emerging technologies to speed up their implementation, to reduce emissions during the life of the operation
- engaging with supply chains and sourcing from suppliers located close to the activity. Local sourcing can potentially bring further socioeconomic benefits, particularly for areas of relative social disadvantage.

For **agricultural proponents**, the EPA acknowledges there may be limited mitigations that can be applied to ruminant enteric fermentation emissions from cattle and sheep (as solutions are still being developed). The Department of Primary Industries and Regional Development can provide assistance, guidance and tools to assist agricultural proponents with emissions management strategies through its On-farm carbon advice project.<sup>21</sup> Guidance is available on the Department of Primary Industries and Regional Development website at [Low Emissions Agriculture](#). There are also

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<sup>21</sup> <https://www.dpi.nsw.gov.au/dpi/climate/Low-emissions-agriculture/On-farm-Carbon-Advice>

emissions calculation tools available to primary producers e.g. the AIA Environmental Accounting Platform, administered by Agricultural Innovation Australia.

Agricultural proponents must describe mitigation techniques that they propose to use for other sources of emissions (such as fuel, fertiliser and manure, and diesel or other electricity generation). For more information for agricultural proponents see the fact sheet *NSW EPA Guide for Large Emitters – information for agricultural proponents* (on the EPA website).

**Substituting emissions** may involve:

- replacing higher-emissions processes, materials and energy sources or technologies with lower-emissions options that produce the same or improved output. For example, solar and battery technologies installed at premises could provide lower-emission energy than fossil-fuelled generators, while reducing operating cost and improving security of supply.
- adapting processes with new technology or materials (for example, using low-temperature methods, natural processes, or more efficient sequencing and finishing)
- replacing fossil-fuelled vehicles, machinery and equipment with battery-electric alternatives that reduce emissions, improve the safety of the working environment, and reduce noise and air pollution in the local communities
- using lower-emission materials that are available, or which could be developed (for example, using recycled materials in concrete, higher-strength steel products, or coatings that increase performance while reducing emissions)
- reviewing the emissions performance of existing assets at end of life and replacing them with lower-emission assets (for example, replacing end-of-life halogen or fluorescent lighting with more efficient LED lighting, which would reduce both emissions and operating costs).

**Offsetting emissions** must only be done for emissions that cannot be avoided, reduced or substituted (i.e. residual emissions), to meet emission goals. The requirements for any proposed offsets are described in section 4.6.

#### **Box 7. Further guidance to support emission reduction actions**

The NSW Government publishes guidance and information to help business and industry become more energy efficient and reduce their greenhouse gas emissions. Links to these and other best-practice guidance material are provided on the climate change resources page of the EPA and the climate change webpages of the NSW Department of Climate Change, Energy, the Environment and Water (NSW DCCEEW).

The Australian Government's *Safeguard Mechanism Guidelines for setting international best practice benchmarks* informs the development of international best-practice benchmark emissions intensities for specific production activities, adapted for Australian conditions. Established best-practice emission intensities are included in the *National Greenhouse and Energy Reporting (Safeguard Mechanism) Rule 2015 (Cth)* for production activities addressed under the Safeguard Mechanism.

### Box 8. Reducing scope 2 emissions

Proponents that are high energy users will automatically reduce their scope 2 emissions in line with decarbonisation of the electricity grid. In the meantime, the EPA expects high energy users to consider how they can further reduce their scope 2 emissions. Options include:

- energy efficiency practices
- installation of on-site renewable power generation such as solar energy, and energy storage such as batteries
- purchasing renewable energy certificates
- entering into green power purchasing agreements.

### 4.3.2 Assessing the feasibility and effectiveness of mitigation measures

When selecting mitigation measures you must consider the mitigation hierarchy, best-practice considerations (section 4.3.1) and project emission goals (section 4.5), as well as technical, logistical and financial factors.<sup>22</sup>

Emissions reductions are often achieved through efficiency measures or new technologies and processes that may provide cost savings or returns on investment in the short, near or long term. However, mitigation measures may also result in costs to the proponent. While it is not expected that emissions reductions be pursued at any cost, it is expected that the proponent will consider plausible cost-recovery options and other benefits gained to help balance the costs and improve the financial viability of measures. The overall mitigation assessment must consider the cost of abating emissions (section 4.3.3).

Questions to guide the feasibility assessment are as follows:

- Which technologies are commercially and technically ready to be adopted now (or are likely to be ready during the project's life)?
- Is the measure compatible with the project's production and operational processes?
- Does the measure provide other benefits? For example, electrifying vehicles, plant and equipment can save costs, improve worker health and safety, and improve social licence by reducing noise and air pollution in the community.
- Can technologies be scaled and implemented to achieve the project's mitigation objectives?
- Are measures financially feasible considering plausible cost optimisation and cost recovery options?

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<sup>22</sup> Decisions with respect to achievability will have regard to technical, logistical and financial considerations. Technical and logistical considerations include a wide range of issues that will influence the feasibility of an option: for example, whether a particular technology is compatible with an enterprise's production processes. Financial considerations relate to the financial viability of an option. It is not expected that reductions in emissions should be pursued 'at any cost'. Nor does it mean that the preferred option will always be the lowest-cost option. However, it is important that the preferred option is cost-effective. The costs need to be affordable in the context of the relevant industry sector within which the enterprise operates. This will need to be considered on a case-by-case basis through discussions with the EPA.

- Has the cost of emissions been accounted for in the cost–benefit analysis (section 4.3.3)?
- Are there opportunities for pilot projects or for working with government or peak industry bodies to test and develop new measures?

Questions to guide the assessment of the effectiveness of mitigation measures are as follows:

- Have avoidance and reduction measures been assessed for all material sources?
- What percentage reduction in specific source emissions is supported by each measure?
- Does the measure represent best practice?
- If the measure is not best practice, how does its effectiveness compare to that of best practice?
- Is there independent or peer-reviewed evidence of the effectiveness of measures?
- How will the effectiveness be measured and monitored over time?
- What risks to effectiveness are associated with the measure?
- What are the consequences of a failed measure?
- How will the risks to effectiveness be mitigated?
- To what extent can internal control testing procedures assure the effectiveness of measures?
- What type and mixture of preventative, detective, and corrective controls can be used?
- Are there effective contingencies in place should measures fail to achieve the expected level of abatement?

The assessment must indicate the relative contributions of mitigation measures to achieving the mitigation objectives and emission reductions goals of the project.

When quantifying emissions and emission reductions for the project, you must:

- report uncertainties in estimated emissions
- clearly state uncertainties in the effectiveness of mitigation measures, or the prerequisites needed to deploy mitigation measures based on the best available information at the time, and contingency actions that could be implemented to achieve the level of performance
- describe uncertainties in the timing and feasibility of emerging technologies being relied upon to support progress towards emissions reduction goals
- describe the process that will be used to record and store data to evaluate the performance of the controls
- include the criteria you will use to determine whether additional measures need to be implemented, should the mitigation measures not achieve the desired level of performance.

For agricultural proponents, you will need to use the National Greenhouse Gas inventory calculations. For more information, see also the fact sheet *NSW EPA Guide for Large Emitters – information for agricultural proponents* (on the EPA website).

### **4.3.3 Accounting for the cost of emissions**

The overall mitigation assessment must also consider the cost of emissions; however, the EPA does not require confidential economic data, including proponents' internal cost of carbon or a cost–benefit analysis, to be included in the environmental impact statement.

An increasing number of companies are using an internal carbon price to reduce GHG emissions in their operations and supply chains, with prices reviewed regularly to account for prices rising over time.<sup>23</sup> Internal carbon pricing can be used to drive low-carbon investment, drive energy efficiency, change internal behaviour, stress-test investments and address GHG regulations.

For NSW Government projects, refer to the valuation of carbon emissions within TPG23-08 NSW *Government Guide to Cost-Benefit Analysis*.<sup>24</sup>

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## 4.4 Step 4: Estimate emissions with mitigation measures

This step sets out the requirements when delivering emissions estimates for the proposed project.

For projects involving modifications to existing operations, you must ensure consistency in the scope 1 and scope 2 emission estimates for the ‘business as usual’, ‘modified business’, and ‘project only’ scenarios (Box 5).

For more information for agricultural proponents see the fact sheet *NSW EPA Guide for Large Emitters – information for agricultural proponents* (on the EPA website).

### 4.4.1 Quantify scope 1 and 2 emissions

Scope 1 and 2 emissions must be credibly estimated for each financial year over the project life based on maximum capacity and planned operational throughput.

- Emissions must be specified separately for:
  - construction (including demolition, land clearing and excavation)
  - operations
  - decommissioning
  - closure
  - the post-closure stage (including remediation and rehabilitation)
- You must use the latest National Greenhouse Account (NGA) factors and NGER methods for estimating emissions (where applicable).
- Where suitable NGER methods are not available, we will accept methodologies that are publicly available and recognised by industry, government and other experts as being appropriately robust, such as the Greenhouse Gas Protocol.<sup>25</sup>
- Apply the global warming potentials specified in the most recent NGER reporting requirements.
- Where possible, use higher-order methods specified in the NGER Act.

The Clean Energy Regulator’s *Methods and Measurement Criteria Guideline*<sup>26</sup> has more information on the NGER methods, including location-based and market-based scope 2 emission accounting methods. **Box 9** gives more information on emission estimation methods.

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<sup>23</sup> CDP 2021

<sup>24</sup> NSW Treasury 2023

<sup>25</sup> [About US, GHG Protocol](#)

<sup>26</sup> CER 2024c

Emission estimates must include mitigation measures, with their abatement effectiveness clearly stated.

Assessments for projects involving modifications must estimate financial year scope 1 and 2 emissions for the scenarios listed in Box 5.

Time frames must be included for each of the above scenarios (for example, the approved operating period for the 'business as usual' scenario).

The GHG assessment must deliver annual (financial year) estimates of:

- scope 1 emissions, by greenhouse gas and cumulatively for all greenhouse gases, specified by source and categorised by the Intergovernmental Panel on Climate Change (IPCC) sectors as applied within Australia's national emission projections<sup>27</sup> (see Appendix A)
- scope 1 emissions intensity per unit of production or activity for the primary scheduled activity under Schedule 1 of the POEO Act<sup>28</sup>
- total scope 2 emissions (see Box 8 for methods)
- scope 2 emissions intensity per unit production or activity for the primary scheduled activity under Schedule 1 of the POEO Act.

Estimates of scope 1 emissions intensity per unit of production for the project should be based on the Safeguard Mechanism: Prescribed production variables and default emissions intensities<sup>29</sup> where applicable. Where production activities are not available under the Safeguard Mechanism, proponents should base emissions intensity estimates on production variables representative of the scheduled activity (or activities) to be undertaken.

The GHG assessment must clearly document the assumptions, data and methods applied in the estimation of emissions. It must provide sufficient supporting information to allow the calculation of scope 1 and 2 emissions to be replicated, with information disaggregated for each operation (e.g. quantity of individual fuels consumed, emissions of fugitive gas, electricity consumption and production estimates, global warming potentials applied, and the abatement effectiveness applied for GHG emission mitigation measures). If this information is not provided, the GHG assessment report will not be considered complete, and the EPA is likely to request additional information.

The GHG assessment must clearly state any uncertainties in the effectiveness of mitigation measures, the contingency actions to be implemented to ensure the level of claimed performance, and how the project design allows for the contingency actions to be adopted or retrofitted.

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<sup>27</sup> IPCC is also referenced by the National Greenhouse Gas Inventory: <https://www.dcceew.gov.au/climate-change/publications/national-inventory-report-2022>

<sup>28</sup> This should be accompanied by annualised production variables, to enable calculations to be reviewed.

<sup>29</sup> DCCEEW 2024b



### Box 9. Scope 2 emissions accounting methods

There are two methods for estimating scope 2 emissions: location-based and market-based.

The location-based method calculates emissions based on the average emission intensity of the power grid the electricity is being sourced from. This means that the emissions are tied to a time and physical location where the GHG was released into the atmosphere.

The market-based approach calculates emissions based on the electricity a company purchases. This includes direct contracts with electricity suppliers and renewable energy certificates, including large-scale generation certificates and a Green Power electricity purchase. The market-based approach does not reflect the actual emissions from a company's electricity consumption on site but allows a company to offset its emissions by purchasing renewable sources of energy.

When estimating scope 2 emissions as part of your GHG assessment, it is mandatory to use the location-based method. However, you are also encouraged to do a market-based calculation. This approach acknowledges that combined, both methods provide a more complete picture of emissions from electricity use. It is also consistent with how scope 2 emissions are reported under the NGER scheme, which mandates the use of the location-based method, and an option to additionally report using the market-based approach.

Refer to [Voluntary market-based scope 2 emissions guideline](#)<sup>30</sup> for more details.

## 4.4.2 Quantify scope 3 emissions

Scope 3 emissions must be estimated on an annual basis (per financial year) by relevant category and in total for all categories, and be based on maximum capacity and planned operational throughput.

NGA scope 3 emission factors should be applied where available. [Technical Guidance for Calculating Scope 3 Emissions](#)<sup>31</sup> (Scope 3 guide) gives data requirements and methods for calculating GHG emissions for each category. The GHG Protocol provides a list of [available third-party databases](#) to help users collect data for scope 3 GHG inventories.

You should focus on categories that contribute the most to total scope 3 emissions. You should also consider categories where emission reductions could be made e.g. via contractual arrangements with suppliers for transport services. (See Table 1 in the Scope 3 guide.)

The GHG assessment must deliver annual (financial year) estimates of scope 3 emissions, by relevant category and in total, for all categories most likely to be relevant and representative of most scope 3 emissions.

The GHG assessment must clearly document the assumptions, data and methods applied in the estimation of scope 3 emissions. Where possible, activity data and related emission factors should be included.

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<sup>30</sup> CER 2024g

<sup>31</sup> World Resources Institute & World Business Council for Sustainable Development 2013b

The purpose of estimating Scope 3 emissions is to:

- support the early prioritisation of emission avoidance and mitigation strategies, such as adjusting project design to use materials with lower embodied emissions (such as recycled content)
- ensure proponents consider indirect emissions within their value chains e.g. to support emission reductions from the transportation of raw materials and products by purchasing locally sourced materials or using suppliers or contractors that have transitioned or are transitioning their fleets to low- or zero-emission vehicles
- help NSW agencies to understand, interrogate and cross-check emissions from non-industrial sectors of the economy.

#### **Box 10. Further information and assistance when quantifying GHG emissions**

- [National Greenhouse and Energy Reporting \(NGER\) scheme](#)<sup>32</sup>
- [NGER Reporting Guides](#)<sup>33</sup>
- [NGER Measurement Determination](#)<sup>34</sup>
- [NGER Reporting Uncertainty Guideline](#)<sup>35</sup>
- [National Greenhouse Accounts \(NGA\) factors](#)<sup>36</sup>
- [National Greenhouse and Energy Reporting \(Safeguard Mechanism\) Rule 2015](#)<sup>37</sup>
- [Intergovernmental Panel on Climate Change \(IPCC\)](#)<sup>38</sup>
- [Greenhouse Gas Protocol Standards](#)<sup>39</sup>
- [ISO 14064-1:2018](#)<sup>40</sup>

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## 4.5 Step 5: Emission benchmarking and goal setting

The GHG assessment must address the anticipated regulatory obligations for the project under the Safeguard Mechanism (where applicable), consider how project emissions compare to NSW emissions, and set out the proponent's overarching long-term and interim GHG emission goals for the project.

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<sup>32</sup> CER 2024h

<sup>33</sup> CER 2024e

<sup>34</sup> CER 2024d

<sup>35</sup> CER 2024f

<sup>36</sup> DCCEEW 2024a

<sup>37</sup> Australian Government 2024a

<sup>38</sup> IPCC 2024

<sup>39</sup> World Resources Institute & World Business Council for Sustainable Development n.d.

<sup>40</sup> ISO 2018

## 4.5.1 Setting emission goals for the project

Proponents are required to set an overarching long-term scope-1 GHG emission reduction goal for the project that represents a meaningful contribution to the emissions reduction objectives of the State.<sup>41</sup>

Emissions reduction goals should include material efforts to reduce emissions leading towards net zero by 2050. When developing goals, the proponent must consider NSW legislated interim emission reduction targets. Goals for facilities covered by the Safeguard Mechanism should start with the Safeguard Mechanism baseline and then consider setting more ambitious reduction goals as practicable.

Proponents must also set interim scope 1 emission goals that will lead to achieving their long-term scope 1 goal. Interim goals are to be set for intervals of five years or less. Scope 1 goals must be described in absolute terms (e.g. tonnes of CO<sub>2</sub>-e for a given year). Emission intensity goals should also be developed where appropriate.

Proponents are also required to specify goals for scope 2 emissions. Scope 3 goals are not required.

We expect the proponent to develop goals that are achievable and explain how they will be achieved and why they are a meaningful contribution to NSW emission reduction targets in the context of the industry sector or economy.

We expect emissions reduction trajectories to be broadly consistent with the NSW or industry specific emissions reduction trajectory. If the project emissions trajectory, accounting for emission goals, does not align with the overall NSW net zero emissions trajectory, the proponent must explain why the emission reduction trajectory still represents a meaningful contribution to NSW's emission reduction targets and/or supports NSW to decarbonise. We recognise that emissions reduction trajectories may be 'lumpy' and may depend on the implementation of different technologies or processes at different stages of a project.

Further advice and guidance on setting emission targets and goals is available from:

- [Corporate Emissions Reduction Transparency \(CERT\) report](#)<sup>42</sup>
- [Science Based Targets Initiative](#)<sup>43</sup>

### **Box 11. The importance of reducing fugitive methane emissions from fossil fuels projects**

Methane has a high global warming potential and a short atmospheric lifetime compared to carbon dioxide. It is responsible for around 30% of the rise in global temperatures<sup>44</sup> since the Industrial Revolution and is 28 times more effective than carbon dioxide at trapping heat in the atmosphere over a 100-year timeframe.<sup>45</sup> However, over a 20-year time frame, it is 82.5<sup>46</sup> times

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<sup>41</sup> The NSW Current Policy and Base case projections can be accessed via the [NSW Net Zero Emissions Dashboard](#). Comparisons must be done considering total NSW emissions projections and emissions projections for the relevant IPCC sectors and subsectors.

<sup>42</sup> CER 2024i

<sup>43</sup> Science Based Targets n.d.

<sup>44</sup> IEA 2022

<sup>45</sup> CER 2024j

<sup>46</sup> IPCC 2021

more effective. This is due to methane's very short atmospheric lifetime, which means its greenhouse effect is concentrated in the short-term. As methane warms the Earth much faster than carbon dioxide, reducing methane emissions is important for slowing the rate of atmospheric warming.

Australia is a signatory to the [Global Methane Pledge](#), which is about taking fast global action on reducing methane emissions and widely regarded as the single most effective strategy to keep the goal of limiting warming to 1.5°C.

Managing fugitive methane emissions is a priority for the EPA and reducing methane emissions will play an important role in contributing to NSW achieving its target of net zero emissions by 2050 under the *Climate Change (Net Zero Future) Act 2023*. The EPA's fact sheet, [Fugitive methane](#), provides more information about the major sources of fugitive methane in NSW.

In the [Net Zero Commission's 2024 Annual Report](#), the Commission raised concerns about the risks to the State's legislated emissions reduction targets from increased emissions in the resources sector. Coal mining and gas extraction projects are a significant source of fugitive methane emissions in NSW. Given the significant contribution to global warming and the concerns raised in the Net Zero Commission's annual report, we expect proponents of coal mining and gas extraction proposals to make substantial efforts to follow the mitigation hierarchy (which prioritises avoiding and mitigating emissions with offsets as a last resort) and then to set ambitious emissions reduction goals that build on the Safeguard Mechanism baseline (where relevant). These goals should be comparable to NSW interim and long-term legislated emissions reduction goals. If the project emissions trajectory and goals do not align with the overall NSW net zero legislated targets and emissions trajectory, the proponent must demonstrate why the alternative emission reduction trajectory is appropriate and provide supporting evidence.

## 4.5.2 Obligations for Safeguard facilities

If the project is likely to be regulated by the Safeguard Mechanism (or is a proposed modification to a Safeguard facility), then the proponent's Safeguard baseline and decline rate obligations are its starting point when considering its goals and trajectory. However, we do expect Safeguard facilities to consider the NSW legislated emissions reduction targets when developing emissions reduction goals.

The NSW emissions reductions targets are more ambitious than the national emissions reduction targets. The Safeguard Mechanism does not preclude the need for NSW to properly understand the potential GHG impacts of proposed new or significantly modified developments, and we encourage all proponents to adequately consider how to avoid, minimise and manage their emissions over all stages of the development.

When setting emission goals for the project (see section 4.5.1), premises that will be (or are) subject to the Safeguard Mechanism should state whether they intend to reduce their emissions beyond their Safeguard obligations and, if so, how their emissions compare with NSW legislated emission reduction goals (i.e. net zero by 2050).

The GHG assessment must provide information about the project's expected Safeguard Mechanism obligations under the NGER Act, with emissions estimated over the life of the project.

The assessment should include, where relevant:

- any expected baseline determinations as a starting point, including whether the proponent has sought, or proposes to seek, trade-exposed adjustments to decline rates
- how estimated scope 1 emissions intensity per unit of production (see section 4.4.1) compares with default and best-practice emissions intensities specified in the National Greenhouse and Energy Reporting (Safeguard Mechanism) rules
- how proposed emission goals align with any expected decline rate for the facility baseline (for example, if the proponent is committing to reducing emissions beyond its Safeguard obligations)
- any sectoral baseline, and how proposed emissions will impact on the sectoral baseline
- expected use of flexible compliance arrangements, including Safeguard Mechanism Credits (SMCs) and borrowing arrangements.

Further information about the Safeguard Mechanism is available on the [Clean Energy Regulator's website](#).<sup>47</sup>

The Safeguard Mechanism sets requirements for the highest-emitting facilities.

### 4.5.3 Obligations for electricity firming infrastructure

If the project is electricity firming infrastructure, and the proponent intends to enter into a Long-Term Energy Service Agreement with the Consumer Trustee, the requirement in this subsection applies.

For the life of the project, the proponent is to provide information about the project's expected obligations under Part 12 of the Electricity Infrastructure Investment Regulation 2021.<sup>48</sup> That information includes how the project's proposed emission goals align with obligations under the Regulation, including the requirement for net zero emissions from 2036.

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## 4.6 Step 6: Offsets strategy

The EPA expects proponents to apply the mitigation hierarchy to first avoid then reduce emissions as much as possible, before proposing to use offsets to achieve their specified emission goals (e.g. the proponent's own goals or any requirements specified by the NSW Government). This mitigation hierarchy is consistent with the approach taken in most other Australian jurisdictions in relation to GHG management.

Carbon offsets must only be used for residual emissions that cannot be avoided or reduced. The EPA acknowledges that commitments made in the offset strategy will be subject to market conditions at the time that offsets are procured.

When developing an offsets strategy, proponents must consider:

- the projected residual emissions profile over the life of the project

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<sup>47</sup> CER 2024b

<sup>48</sup> See EPA's [Guideline on offsetting requirements for electricity firming infrastructure](#)

- the number of offsets that will need to be acquired in each year to meet Commonwealth obligations, and any additional offsets proposed to make a greater contribution to NSW emission reduction targets
- the origin of the offsets
- the level of confidence that the identified offsets will be available.

Offsets do not count towards the threshold criteria for identifying projects with large emissions i.e. the threshold of 25,000 tonnes of CO<sub>2</sub>-e.

It is important to note that SMCs are not carbon offsets, as stated on the Clean Energy Regulator's webpage.<sup>49</sup> The EPA recognises that proponents subject to the Safeguard Mechanism are entitled to use SMCs to satisfy their Safeguard Mechanism emission reduction obligations. Therefore, NSW will accept the purchase and surrender of SMCs as part of a proponent's GHG management strategy for this purpose. Any further use of SMCs as part of a proponent's GHG management strategy should be short-term arrangements leading to more substantial abatement. It is unlikely that the EPA will support the purchase and surrender of SMCs as a long-term or ongoing part of a proponent's offset strategy, beyond what is required to meet an organisation's Safeguard obligation.

Where carbon offsets are proposed, they must meet offset integrity principles set out in the Commonwealth Carbon Credits (Carbon Farming Initiative) Act 2011<sup>50</sup> and the Climate Active Carbon Neutral Standard for Organisations.<sup>51</sup> The offsets integrity principles ensure that any unit used to offset emissions represents a genuine and credible emissions reduction. Proponents should describe how their proposed offset strategy meets the requirements of the integrity principles.

The EPA prefers that proponents prioritise the use of carbon offsets from NSW-based offset projects – for example, Australian Carbon Credit Units generated from NSW-based projects – because offsets generated outside of NSW do not currently count towards the NSW emissions reduction inventory. If required, offset projects in other Australian locations may be used. International carbon offsets will not be accepted. The NSW EPA will continue to work with other NSW agencies and other jurisdictions (including the Australian Government) to seek to address this carbon-accounting issue.

If you plan to use carbon offsets, you must develop an offsets strategy that specifies the projected timing of offsets to be acquired and cancelled.

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## 4.7 Step 7: Independent expert reviews

For projects with scope 1 and 2 emissions exceeding 100,000 t CO<sub>2</sub>-e per year at any time over the operational life of the project, mitigation assessments must be verified by an independent expert review.

If offsets are proposed for a project, the independent expert review must consider whether suitable high-integrity offsets are likely to be available at the time when it is proposed to acquire offsets (see section 4.6).

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<sup>49</sup> CER - Safeguard mechanism credit units

<sup>50</sup> Australian Government 2024b

<sup>51</sup> Climate Active 2022

The proponent will need to provide evidence that the review has been conducted by an independent and suitably qualified reviewer.

Box 12 sets out factors to consider when selecting and engaging independent expert reviewers.

### **Box 12. Guidance for selecting and engaging independent expert reviewers**

The proponent must exercise due diligence prior to engaging an independent and suitably qualified expert reviewer to ensure that the reviewer:

- is a fit and proper person to provide expert advisory services, having regard to the individual's character, competence and conduct
- has appropriate qualifications and experience to undertake the review having regard to the nature and complexity of the review
- must be a member of a relevant professional body, such as Environmental Institute of Australia and New Zealand Inc or the Planning Institute of Australia
- does not have actual or perceived conflicts of interest
- has not been an employee of the proponent within the last five years.

An expert reviewer of mitigation assessments will require qualifications and experience relevant to best-practice emissions mitigation for the project activities being assessed.

An expert reviewer of the offset strategy will require qualifications and experience relevant to offset evaluation and procurement and carbon offset markets.

An independent and suitably qualified expert is a person who is independent from the proponent and does not have (or intend to have) any material or significant dealings with the proponent (or an associated entity) that could interfere with the exercise of independent judgement.

The engagement of the independent and suitably qualified expert reviewer should be transparent and documented. As stated above, the proponent will need to provide evidence that the review has been conducted by an independent and suitably qualified reviewer. Such evidence may include a current resume, a capability statement, a declaration of independence or a conflict of interest declaration, and certified copies of the expert's relevant qualifications.

The Clean Energy Regulator (CER) holds a register of greenhouse and energy auditors, who must meet thorough eligibility requirements and whose performance is regularly reviewed and assessed. Auditors on the register can be considered suitably qualified to carry out independent expert reviews in compliance with the guide.

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## **4.8 Step 8: GHG assessment report**

The GHG assessment report must be well documented to reflect the information requirements, data, assumptions, methods and findings from steps 1–7.

The structure and content of the GHG assessment report is set out in Appendix C.



## 5 Guide review

This guide will be reviewed in two years or as needed. Climate science and policy are developing at a rapid pace. The review may consider issues including, but not limited to, how to make clearer the overall performance proponents are expected to meet. When reviewing this guide, the EPA will consider work it and other agencies of the NSW Government have progressed or completed, which may include:

- sector-emission reduction targets and/or emission budgets
- any review of the EPA's *Climate Change Action Plan*
- the development of best-practice guides and minimum requirements
- the use of offsets and market-based approaches
- any subordinate regulations to the *Climate Change (Net Zero Future) Act 2023*.

# Glossary

**Abatement effectiveness:** Abatement effectiveness refers to how well specific measures or actions reduce the emissions of greenhouse gases, contributing to the overall goal of mitigating climate change. It measures the success of interventions in lowering emissions and their impact on the environment.

**Assessment boundary:** An assessment boundary defines the greenhouse gas emissions sources associated with all relevant stages of a project, such as construction (including demolition, land clearing and excavation), operation, decommissioning, closure, and post-closure (including remediation and rehabilitation).

**Australian Carbon Credit Unit (ACCU):** 1 ACCU = 1 tonne of carbon stored. ACCUs are the central tradeable unit of the Commonwealth Emissions Reduction Fund. ACCUs are issued by the Clean Energy Regulator in accordance with *Carbon Credits (Carbon Farming Initiative) Act 2011*.

**Best practice:** Best practice refers to the most effective combination of processes and technologies, including how an installation or activity is designed, built, maintained, operated and decommissioned to avoid and minimise environmental impacts from GHG emissions.

**Business-as-usual (BAU):** Refers to existing operations excluding the proposed project.

**Cancellation of offset units:** Transferring offset units to a cancellation account so that they may not be used for any other purpose.

**Carbon dioxide equivalent (CO<sub>2</sub>-e):** The standard unit for measuring greenhouse gas emissions. Different greenhouse gases have different global warming potential; CO<sub>2</sub>-e brings them all into a single, comparable unit.

**Carbon offsets (or offsets):** Activities that reduce greenhouse gas emissions or remove greenhouse gases from the atmosphere to compensate for emissions produced elsewhere. One tonne of offsets is equivalent to 1 tonne of CO<sub>2</sub>-e. There are various types and qualities of offsets, depending on the methodologies used to create them. Some offsets have additional social or environmental benefits. Carbon offsets are often used to offset an entity's or jurisdiction's residual emissions to meet a net emissions reduction target.

**Clean Energy Regulator (CER):** The CER is an Australian Government agency responsible for administering and enforcing policies, programs, and initiatives related to clean energy, emissions reduction, and carbon markets.

The *Climate Change (Net Zero Future) Act 2023* sets out the NSW Government commitment to effective action on climate change and emission reduction targets including net zero by 2050. It established an independent Net Zero Commission to monitor, review, report on and advise on progress towards these targets.

**Commonwealth *Carbon Credits (Carbon Farming Initiative) Act 2011*:** The Commonwealth *Carbon Credits (Carbon Farming Initiative) Act 2011* establishes a scheme allowing individuals and businesses to earn carbon credits by reducing greenhouse gas emissions or sequestering carbon through land-based projects.

**Contingency actions:** Contingency actions refer to predefined strategies and plans to address unexpected challenges or setbacks in emission reduction efforts, ensuring adaptability and resilience in achieving climate goals.

**Corporate Emissions Reduction Transparency (CERT):** The Corporate Emissions Reduction Transparency (CERT) report was developed by the CER. It is a means for businesses operating under the NGER scheme to publicly report on their climate action

**Emission goal:** An emission goal is a measurable commitment to limit the amount of greenhouse gas emissions released to the atmosphere to a specified level. Scope 1 emission goals, and the emissions reductions being targeted to achieve goals, must be specified in absolute terms, e.g. tonnes CO<sub>2</sub>-e for a given year.

**Emissions intensity (EI):** Emissions intensity measures the amount of greenhouse gas emissions produced per unit of activity, output, or economic measure, providing insight into environmental efficiency.

**Emissions intensity goal:** An emissions intensity goal is a measurable commitment to limit the greenhouse gas emissions intensity per unit of activity, output or economic measure in a given year.

**Environmental impact statement:** An environmental impact statement is a detailed report that evaluates the potential environmental effects of a proposed project or action and mitigation measures, aiding in informed decision-making and regulatory approval processes.

***Environment Protection and Biodiversity Conservation Act, 1999 (EPBC Act):*** The Commonwealth EPBC Act governs the protection of nationally significant ecosystems, wildlife and places. It establishes a framework for assessing and managing the environmental impact of activities such as development, mining and land use.

**Environment protection licence (licence):** An environment protection licence issued under the POEO Act authorises the holder to carry out a scheduled activity at a premises while meeting specific environmental conditions and standards, ensuring environmental compliance and protection.

**Emissions scenarios:** Emissions scenarios are hypothetical projections of future greenhouse gas emissions used to study and predict potential climate impacts and inform climate policies.

**Greenhouse gas (GHG):** A gas that absorbs infrared radiation, thus contributing to the 'greenhouse effect', a phenomenon of sealing the sun's warmth in the Earth's lower atmosphere. This is what is driving man-made climate change.

**Greenhouse Gas Assessment Report (GHG Assessment):** A GHG Assessment is a document that summarises the application of the steps outlined in section 4 of this guide and follows the outline in Appendix C of this guide.

**GHG Protocol:** The GHG Protocol is a widely recognised and widely used accounting standard for measuring and managing greenhouse gas emissions. It provides guidelines and methodologies for organisations and governments to quantify and report their greenhouse gas emissions accurately and consistently. The GHG Protocol helps track emissions, set emission goals, and develop strategies to address climate change.

**Global warming potential (GWP):** A measure of how much heat a greenhouse gas traps in the atmosphere, relative to carbon dioxide with a GWP of 1.

**Land use, land-use change and forestry (LULUCF):** LULUCF is a category within greenhouse gas accounting that tracks the emissions and removals of greenhouse gases associated with activities related to land use and land management. This includes changes in land cover, deforestation, afforestation, and forest management practices, as well as emissions and removals from

agricultural and other land-related activities. LULUCF plays a crucial role in a country's overall greenhouse gas balance and its efforts to combat climate change.

**Material emissions:** Is defined for the purpose of this guide as being greater than 5% of the project's overall scope 3 emissions.

**Mitigation measures:** Mitigation measures are actions taken to reduce or prevent negative impacts or risks, especially in the context of climate change, where they focus on avoiding and reducing greenhouse gas emissions.

**Mitigation hierarchy:** The GHG mitigation hierarchy is a prioritised approach to addressing greenhouse gas emissions. The goal is to prioritise avoidance and reduction before turning to offsetting measures.

**Modification:** A proposed change to an existing licensed premises or activity necessitating planning approval.

**National Greenhouse and Energy Reporting (NGER):** NGER is the Australian regulatory framework which mandates that large businesses and facilities report their greenhouse gas emissions, energy consumption and production details, so that environmental impacts may be monitored and managed.

**National greenhouse accounts (NGA):** National greenhouse accounts refer to comprehensive reports or records that track and quantify a country's greenhouse gas emissions and removals. These accounts provide essential data for assessing and managing a nation's contribution to climate change and its progress in reducing emissions.

**Operational control:** Operational control refers to the authority and ability of an organisation to make decisions and implement measures that directly affect its greenhouse gas emissions and energy consumption.

**Paris Agreement:** At the 21st session of the Conference of the Parties ('COP21') to the UNFCCC (see definition below) held in Paris in 2015, the world agreed to a global goal to limit average temperature increases to 'well below 2°C' and pursue efforts to keep warming below 1.5°C above pre-industrial levels.

**Power purchase agreement:** An agreement between a power generator and a business or organisation to buy electricity at a fixed price over a long term. Such agreements can be used to purchase any kind of electricity but have recently become associated with electricity generated from renewable energy projects.

**Project life:** Project life refers to the duration or lifespan of a specific project, from its initiation (construction) to its completion or termination (decommissioning).

**Project emissions:** Project emissions are the greenhouse gas emissions (scope 1, 2 and 3) in the assessment boundary and or associated with the project as designed.

***Protection of the Environment Administration Act 1991 (POEA Act):*** The POEA Act is NSW legislation that establishes the EPA and its objectives, powers and functions, including to reduce human health risks and environmental degradation by taking action in relation to climate change.

***Protection of the Environment Operations Act 1997 (POEO Act):*** The POEO Act is the key piece of environment protection legislation administered by the EPA. The primary object of the Act is to protect, restore and enhance the quality of the NSW environment. It also provides a single licensing arrangement for environmental licences and approvals relating to air, noise and water pollution and waste management.

**Renewable energy certificates (RECs):** Renewable energy certificates are small-scale technology certificates (STCs) or large-scale generation certificates (LGCs) created under the Australian Government's Renewable Energy Target. Large-scale generation certificates are equal to one megawatt-hour of renewable energy generated or displaced by a power station. Small-scale technology certificates are equal to one megawatt-hour of renewable energy generated or displaced by an eligible renewable energy system. The aim of these instruments is to reduce GHG emissions in the electricity sector and increase renewable energy generation. Businesses and individuals can create, sell, and trade renewable energy certificates to satisfy their liabilities under the Renewable Energy Target or achieve a voluntary corporate ambition.

**Safeguard Mechanism:** Safeguard Mechanism is a regulatory framework that places emission limits on large facilities to prevent emissions from increasing and to support Australia's climate goals.

**Science-based targets:** Science-based targets provide a clearly-defined pathway for companies to reduce greenhouse gas emissions, helping prevent the worst impacts of climate change and future-proof business growth. Targets are considered 'science-based' if they are in line with what the latest climate science deems necessary to meet the goals of the Paris Agreement – limiting global warming to 1.5°C above pre-industrial levels. (See <https://sciencebasedtargets.org/how-it-works>.)

**Scope 1, 2 and 3 emissions:** Scope 1 and 2 emissions are defined under the NGER Act, and scope 3 emissions under the *National Greenhouse Accounts*, as follows:

- **Scope 1** emissions are released to the atmosphere as a direct result of an activity, or series of activities (including ancillary activities) that constitute the facility. Scope 1 emissions are sometimes referred to as direct emissions.
- **Scope 2** emissions are released to the atmosphere as a direct result of one or more activities that generate electricity, heating, cooling, or steam that is consumed by the facility but that do not form part of the facility. Scope 2 emissions are sometimes referred to as indirect emissions arising from the indirect consumption of an energy commodity.
- **Scope 3** emissions are indirect emissions other than scope 2 emissions that are generated in the wider economy. They occur due to the activities of a facility, but from sources not owned or controlled by that facility's business. Some examples are extraction and production of purchased materials, transportation of purchased fuels, use of sold products and services, and flying on a commercial airline by a person from another business.

**Sectoral baseline:** A sectoral baseline is a reference level used to gauge expected greenhouse gas emissions from a specific industry or sector without any emission-reducing actions, aiding in measuring progress and effectiveness of mitigation efforts.

**United Nations Framework Convention on Climate Change (UNFCCC):** An international environmental body formed as a result of a treaty adopted in 1992. The UNFCCC is the body responsible for organising global consensus on climate change related issues. The UNFCCC convenes an annual conference, referred to as the Conference of the Parties (COP).

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# Appendices

## Appendix A: IPCC sectors and subsectors

Emission sources are to be categorised based on Intergovernmental Panel on Climate Change (IPCC) sectors and subsectors as applied within Australian and NSW emission projections and listed in the table below.

Sector	Subsector	
Electricity generation (public electricity generation)	Coal	
	Gas	
	Hydro	
	Wind	
	Solar	
	Other	
	Pumped hydro (storage)	
	Battery (storage)	
	Stationary energy (excluding electricity generation)	Agriculture, forestry and fishing
		Buildings
Domestic gas production and distribution		
LNG		
Manufacture of solid fuels		
Manufacturing		
Military		
Mining		
Oil and other gas extraction		
Petroleum refining		
Transport	Articulated trucks	
	Buses	
	Cars	
	Domestic aviation	
	Domestic navigation	
	Light commercial vehicles	
	Motorcycles	
	Other transportation	
	Railways	
	Rigid trucks	
Fugitive emissions	Domestic natural gas (gas other than LNG)	
	LNG	
	Oil	
	Open cut mines	
	Underground coal mines	
Industrial processes and product use	Chemical industry	
	Metal industry	
	Mineral industry	
	Non-energy products from fuel and solvent use	
	Other product manufacture and use	

Sector	Subsector
	Other production Product uses as substitutes for ozone depleting substances
Waste	Solid waste – Composting Solid waste – Incineration Solid waste – Waste to landfill Wastewater – Domestic and commercial Wastewater – Industrial
Land use, land use change and forestry	Agricultural and other land Forest conversion to agriculture and other land Forests
Agriculture	Crops Dairy Fertilisers Grain-fed beef Grazing beef Lime and urea Other animals Pigs Sheep

## Appendix B: Scope 3 categories of note by industry type

The GHG assessment must address categories identified in the assessment to account for most of the scope 3 emissions associated with the project. The 15 distinct reporting scope 3 reporting categories are shown in Figure 3 and listed in Table 2.

Categories identified by the CDP as typically accounting for most of the scope 3 emissions by industry type based on industry surveys are listed below (CDP, 2024).

This list is provided for information purposes only, with the GHG assessment to confirm and assess the most relevant scope 3 categories for the project.

Industry	Relevant scope 3 category
Agricultural commodities	For more information, see the fact sheet <i>NSW EPA Guide for Large Emitters – information for agricultural proponents</i> .
Capital goods	Category 11: Use of sold products Category 1: Purchased goods and services
Cement	Category 1: Purchased goods and services Category 3: Fuel-and-energy-related activities Category 4: Upstream transportation and distribution Category 9: Downstream transportation and distribution
Chemicals	Category 1: Purchased goods and services Category 11: Use of sold products Category 12: End-of-life treatment of sold products Category 4: Upstream transportation and distribution Category 3: Fuel-and-energy-related activities Category 2: Capital goods Category 9: Downstream transportation and distribution
Coal	Category 11: Use of sold products
Construction	<b>Building developers:</b> Category 11: Use of sold products Category 4: Upstream transportation and distribution Category 12: End-of-life treatment of sold products Category 2: Capital goods Category 3: Fuel-and-energy-related activities <b>Construction contractors:</b> Category 1: Purchased goods and services Category 2: Capital goods
Electric utilities	Category 11: Use of sold products Category 3: Fuel-and-energy-related activities Category 15: Investments Category 1: Purchased goods and services Category 4: Upstream transportation and distribution
Financial services	Category 15: Investments
Food and beverages	Category 1: Purchased goods and services

Industry	Relevant scope 3 category
	Category 9: Downstream transportation and distribution Category 4: Upstream transportation and distribution
Metals and Mining	<b>Mining:</b> Category 10: Processing of sold products <b>Processing Metals:</b> Category 1: Purchased goods and services
Oil and gas	Category 11: Use of sold products Category 1: Purchased goods and services
Paper and forestry	<b>Forestry:</b> Category 1: Purchased goods and services Category 10: Processing of sold products Category 12: End-of-life treatment of sold products Category 9: Downstream transportation and distribution <b>Processors:</b> Category 1: Purchased goods and services Category 9: Downstream transportation and distribution Category 4: Upstream transportation and distribution
Real estate	<b>Building developers:</b> Category 2: Capital goods Category 3: Fuel and energy-related activities Category 11: Use of sold products Category 4: Upstream transportation and distribution Category 12: End-of-life treatment of sold products <b>Building owners:</b> Category 2: Capital goods Category 13: Downstream leased assets Category 1: Purchased goods and services Category 3: Fuel-and-energy-related activities
Steel	Category 1: Purchased goods and services Category 11: Use of sold products Category 10: Processing of sold products Category 12: End-of-life treatment of sold products
Transport OEMS	Category 11: Use of sold products Category 1: Purchased goods and services
Transport services	Category 4: Fuel-and-energy-related activities Category 3: Upstream transportation and distribution Category 1: Purchased goods and services

## Appendix C: GHG Assessment Report outline

Section	Subsection	Requirements
Executive summary	-	<ul style="list-style-type: none"> <li>Provide a brief description of the project (including the name, proponent, location, project life, project stages etc.).</li> <li>Describe the assessment boundary, emissions sources included and the key emissions sources.</li> <li>Describe the results from the GHG emissions assessment including:               <ul style="list-style-type: none"> <li>scope 1, 2 and 3 emissions estimates in tonnes of CO<sub>2</sub>-e per year (average annual for both maximum capacity and planned operational throughput)</li> <li>key mitigation measures</li> <li>emission goals and commitment to continuous improvement to ensure they can be achieved (minimum 5 yearly).</li> </ul> </li> <li>Describe project's Safeguard Mechanism or NGER reporting obligations if applicable.</li> </ul>
1. Introduction	-	<ul style="list-style-type: none"> <li>Describe the project and specify whether it is a new development or modification.</li> <li>Specify the triggers for the project being classified as a large emitter.</li> <li>Identify the IPCC sectors and subsectors of the project emissions.</li> <li>Describe the relevant stages of the project and include the period in years for each stage.</li> </ul>
2. Legislative and policy context	-	<ul style="list-style-type: none"> <li>Provide an overview of the legislative and policy context as it related to GHG emissions assessment, mitigation and reporting.</li> <li>This should include the <u>Climate Change (Net Zero Future) Act 2023</u>, <u>Net Zero Plan Stage 1: 2020–2030</u>, <u>Protection of the Environment Administration Act 1991</u>, <u>Protection of the Environment Operations Act 1997</u> and other relevant legislation and policies, including anticipated NGER and Safeguard Mechanism requirements (if applicable).</li> </ul>
4. GHG emissions assessment	4.1 Assessment boundary	<ul style="list-style-type: none"> <li>Describe the GHG assessment boundary clearly indicating sources to be included and excluded.</li> </ul>
	4.2 Emissions scenarios	<ul style="list-style-type: none"> <li>Describe the 'project only' scenario for new developments and projects involving modifications, and the 'business-as-usual' and 'modified-business' scenarios for modification projects.</li> </ul>
	4.3 Emissions sources (and emissions from any existing operations)	<ul style="list-style-type: none"> <li>List GHG emissions sources within the project assessment boundary</li> <li>Address the scope 1, 2 and 3 emissions sources (consider using a figure to illustrate the emissions sources within the boundary).</li> </ul>

Section	Subsection	Requirements
		<ul style="list-style-type: none"> <li>• Prioritise sources for mitigation and, if required, referencing initial emission estimates excluding mitigations to inform prioritisation.</li> <li>• For projects involving a modification, provide information on scope 1 and 2 emissions from existing operations, including: <ul style="list-style-type: none"> <li>○ inventoried emissions by source (see Appendix D)</li> <li>○ mitigation measures and offset strategies being implemented</li> <li>○ any obligations under the Safeguard Mechanism</li> <li>○ current and planned emission goals.</li> </ul> </li> </ul>
	4.4 Mitigation measures	<ul style="list-style-type: none"> <li>• Provide a description of measures to be implemented to avoid and reduce the project's scope 1, scope 2 and scope 3 emissions. For scope 1 and 2 mitigation measures, include the following details from the assessment of mitigation measures: <ol style="list-style-type: none"> <li>a) whether the planned measures represent the full range of best-practice design, technology and management measures that could be implemented</li> <li>b) the feasibility and likely effectiveness of these measures, including risk mitigation and performance measures to be implemented</li> <li>c) a comparison of the project's emissions and emissions intensity per unit production benchmarked against other comparable projects, best practice, and industry sector standards/milestones where they exist</li> <li>d) where best practice is not proposed to be adopted, provide a robust, verifiable justification.</li> </ol> </li> <li>• Include reference to the mitigation hierarchy.</li> <li>• Include a reference to considering the cost of abatement.</li> <li>• Provide the uncertainties in the effectiveness of GHG mitigation measures and contingency actions to ensure level of performance.</li> <li>• When quantifying emission reductions for the project: <ul style="list-style-type: none"> <li>○ describe how you will record and store data for evaluating performance</li> <li>○ include the criteria you will use to determine whether additional measures need to be implemented, such as the contingency measures identified above, should the mitigation measures not achieve the desired level of performance.</li> </ul> </li> <li>• For projects with scope 1 and 2 emissions exceeding 100,000 tonnes of CO<sub>2</sub>-e per year at any time over the operational life of the project, mitigation assessments must be verified by an independent expert review. You must provide evidence that the review has been conducted by an independent and suitably credentialled reviewer.</li> </ul>



Section	Subsection	Requirements
	4.5 Assessment methodology	<ul style="list-style-type: none"> <li>Document emission estimation methods applied.</li> <li>Describe the underlying assumptions and data used to develop the emissions estimates.</li> </ul>
	4.6 Emissions estimate	<ul style="list-style-type: none"> <li>Provide the underlying activity data, emissions factors and emissions intensities (all data that will allow the emissions estimates to be replicated). (See Appendix D.)</li> <li>Describe, in tabulated form, scope 1 and 2 emissions for each financial year over the project life, based on maximum capacity and planned operational throughput for each stage of the project and each scenario (as designed). (See Appendix D.)</li> <li>Describe the scope 1 and 2 emissions intensity per unit of production or activity.</li> </ul>
	4.6.1 Scope 1 and scope 2 emissions estimate	
	4.6.2 Scope 3 emissions estimate	<ul style="list-style-type: none"> <li>Describe the underlying assumptions used to develop the emissions estimates.</li> <li>Provide the underlying activity data, emissions factors and emissions intensities (all data that will allow the emissions estimates to be replicated).</li> <li>Describe in tabulated form, scope 3 emissions for each financial year over the project life (see Appendix D).</li> </ul>
	4.6.3 Independent expert review outcome	<ul style="list-style-type: none"> <li>Describe the outcome from the independent expert review (if applicable) and attach a copy of the review report to the GHG assessment report.</li> </ul>
<b>5. Emission benchmarking and goal setting</b>	5.1 Reporting obligations	<ul style="list-style-type: none"> <li>If applicable, provide information relevant to Safeguard Mechanism reporting. Do this for the life of the project. You should include: <ul style="list-style-type: none"> <li>a) any expected individual facility baseline determinations</li> <li>b) how the project's proposed emission goals align with any expected decline rate for the individual facility baseline</li> <li>c) any sectoral baseline</li> <li>d) how the project's proposed emissions will impact on the sectoral baseline</li> <li>e) how the project's estimated scope 1 emissions intensity per unit production compares to any relevant emissions intensity specified in the National Greenhouse and Energy Reporting (Safeguard Mechanism) rules.</li> </ul> </li> <li>If projected emissions exceed Safeguard Mechanism obligations, state how the project's emissions compare with NSW legislated emission reduction goals.</li> </ul>
	5.1.1 Safeguard	

Section	Subsection	Requirements
	5.1.2 Electricity firming infrastructure	<ul style="list-style-type: none"> <li>If applicable, for the life of the project, describe the obligations for electricity firming infrastructure, including how the project's proposed emission goals align with obligations under the <i>Electricity Infrastructure Investment Regulation 2021</i>, including the requirement for net zero emissions from 2036.</li> </ul>
	5.2 Goals	<ul style="list-style-type: none"> <li>Describe scope 1 emissions goals (long-term and interim), scope 2 emission goals, and consider scope 3 goals.</li> </ul>
	5.3 Emissions trajectory	<ul style="list-style-type: none"> <li>Consider developing a graphical figure which shows the project's estimated emissions trajectory taking into account emission goals.</li> </ul>
<b>6. Offset strategy</b>	-	<ul style="list-style-type: none"> <li>Provide an estimate of the number of offsets planned to be used for the project (see Appendix D).</li> <li>Describe the domestic offsets considered for the project in order to meet the project's emission goals.</li> <li>Describe how the offsets meet the offset integrity principles in the Commonwealth <i>Carbon Credits (Carbon Farming Initiative) Act 2011</i>.</li> </ul>
<b>7. Conclusion</b>	-	<ul style="list-style-type: none"> <li>Describe the results from the GHG emissions assessment including: <ul style="list-style-type: none"> <li>scope 1, 2 and 3 emissions estimates</li> <li>emissions goals.</li> </ul> </li> </ul>
<b>References</b>	-	<ul style="list-style-type: none"> <li>Include references to all sources described and used in the assessment.</li> </ul>
<b>Appendices</b>	-	<ul style="list-style-type: none"> <li>Activity and emissions data to be attached as an appendix. Emissions are to be provided for all scenarios (see Appendix D).</li> <li>For projects exceeding 100,000 tonnes CO<sub>2</sub>-e per year, attach documentation and findings from the independent expert review, including evidence that the review was undertaken by a suitably qualified reviewer.</li> </ul>

## Appendix D: Emissions estimate template

Scope 1 and 2 activity and emissions data are to be reported for both the operational and the maximum throughput on an annual basis. Scope 3 activity and emissions data is to be provided based on operational throughput. In the case of projects involving modifications, scope 1 and 2 emissions are to be provided for all required scenarios.

Below is an example of the format for reporting on operational stage emissions.

### Scope 1 and 2 emissions activity data – operational throughput

Production	Production Rate	Units	Source	Sector	Sub-sector	Scope	Units	2024	2025	2026	2027	...	2046	2047	2048	2049	2050
------------	-----------------	-------	--------	--------	------------	-------	-------	------	------	------	------	-----	------	------	------	------	------

### Scope 1 and 2 emissions activity data – maximum throughput

Production	Production Rate	Units	Source	Sector	Sub-sector	Scope	Units	2024	2025	2026	2027	...	2046	2047	2048	2049	2050
------------	-----------------	-------	--------	--------	------------	-------	-------	------	------	------	------	-----	------	------	------	------	------

### Scope 1 and 2 emissions data – operational throughput

Production	Production Rate	Units	Source	Sector	Sub-sector	Scope	Units	2024	2025	2026	2027	...	2046	2047	2048	2049	2050
------------	-----------------	-------	--------	--------	------------	-------	-------	------	------	------	------	-----	------	------	------	------	------

Scope 1 and 2 emissions data – maximum throughput

Production	Production Rate	Units	Source	Sector	Sub-sector	Scope	Units	2024	2025	2026	2027	...	2046	2047	2048	2049	2050
------------	-----------------	-------	--------	--------	------------	-------	-------	------	------	------	------	-----	------	------	------	------	------

Scope 3 activity rates and emissions

Scope 3 emissions category	Units	2024	2025	2026	2027	...	2046	2047	2048	2049	2050
Activity rates											
Scope 3 emissions	t CO <sub>2</sub> -e										

Scope 1 emissions intensity

Production	Details	Units	2024	2025	2026	2027	...	2046	2047	2048	2049	2050
Planned operations throughput	Production variable	Mtpa										
	Scope 1 emissions	t CO <sub>2</sub> -e										
	Emissions intensity	t CO <sub>2</sub> -e / t production										
Maximum capacity	Production variable	Mtpa										
	Scope 1 emissions	t CO <sub>2</sub> -e										
	Emissions intensity	t CO <sub>2</sub> -e / t production										



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